National Telecommunications
and Information Administration

Environmental Assessment
Volume 2: Appendices F - O

NANA Regional Corporation, Inc. (EAXX-006-60-3D-1754935958)

NANA Region Middle Mile Fiber Optic Project

Northwest Arctic Borough, Alaska

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Appendix F – Alternative Analysis

National Telecommunications
and Information Administration

Alternative Analysis

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List of Acronyms

ANILCA	Alaska Native Interest Lands Conservation Act
BLM	Bureau of Land Management
EA	Environmental Assessment
Gbps	Gigabits per second
GEO	Geostationary
HDD	Horizontal Directional Drilling
IIJA	Infrastructure Investment and Jobs Act
LEO	Low Earth Orbit
LIDAR	Light Detection and Ranging
m	meters
ms	milliseconds
NANA	NANA Regional Corporation
NEPA	National Environmental Policy Act
NP	National Park
NPS	National Park Service
NWR	National Wildlife Refuge
ROW	Right of Way
RTT	Round Trip Time
USFWS	US Fish and Wildlife Service

1 INTRODUCTION

This report presents the proposed action and alternatives for achieving the project's purpose and need, as well as a no action alternative (Figure 1). This provides the analysis to determine which alternatives to carry forward for analysis in the Environmental Assessment (EA) under the National Environmental Policy Act (NEPA).

NEPA requires consideration of a reasonable range of alternatives that are technically and economically feasible and meet the purpose and need. In some instances, when more than one alternative is found to meet these criteria, more than one alternative should be included in the EA. Reasonable alternatives may include different sitting options (e.g., different fiber routes) or differences in construction or deployment (e.g., wireless deployment or aerial fiber).

An alternative may be considered but eliminated from further analysis under NEPA if it would not be technically or economically feasible or if it would not meet the purpose and need.

The purpose of this project is to consider authorizations for infrastructure development that would provide broadband high-speed internet to the communities of Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Noatak, and Shungnak.

A range of the alternatives are presented in Table 1-1 and Table 2-1. Appendix A has figures depicting the relevant alternatives.

Section 2 provides a discussion and analysis of each alternative.

Section 3 provides a conclusion of which alternatives are analyzed in the EA.

Table 1-1: Alternatives.

#	Alternative	Description
1	Alternative 1	Alignment that was made to be constructable, practicable, and minimize environmental impacts.
2	Alternative 2	Alternative 2 is a variation of Alternative 1, with changes in the eastern part of the alignment. This alternative eliminates the single cable "loop" connecting the easternmost communities, and replaces it with a double run cable, going north to Ambler, then Shungnak, and then Kobuk.
3	SF-299 Route	Alternative 3 is the original SF-299 Route (the SF-299 is the right-of-way (ROW) application for utilities on federal lands) proposed by the applicant. On further design, changes were made to this alignment due to constructability, practicality, or to minimize environmental impacts.
4	Kobuk Valley National Park Route	Crosses through Kobuk Valley National Park (NP). Substantially reduces the use of US Fish and Wildlife Service (USFWS) Selawik National Wildlife Refuge (NWR). Follows Alternative 1 for the other locations.
5	"Low Gradient" Kobuk National Park Route	Prioritizes a low gradient route through Kobuk Valley NP. Follows Alternative 1 for the other locations.
6	Microwave Tower Network	Delivers service through a series of microwave relay towers
7	Satellite Services	Delivers service through a series of Low Earth Orbit or Geostationary orbiting satellites
8	Alternative modified "Cut Across"	Cuts straight across a western portion of Selawik NWR, parallel to a section line.
9	Portage/Sinuaruk Creek Pass	Substantially reduces use of Selawik NWR by using Portage/Sinuaruk Creek Pass.
10	Selawik Lake	Avoids USFWS lands by introducing a dogleg with crossing of Selawik Lake.
11	Initial Route	Route based on the project feasibility study. This includes two separate alignments through the USFWS refuge, and utilization of Portage/Sinugruk Creek Pass.
12	Grant Route	The original route envisioned in the grant application. Primarily a marine and river footprint.

Table 1-2: Route Summary

Item	No Action	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Stream/River Crossings	0	761	768	759	589	591
River Crossings (Aerial)	0	20	19	3	26	28
River Crossings (Bore/HDD*)	0	14	11	0	17	17
River Crossings (Ground Lay)	0	727	738	756	546	546
Land Ownership (Total 30' to either side of line, acres)	0	4,276.96	4,032.04	4,307.61	4,050.48	4,084.54
Alaska Native Allotment	0	0	0	0	0.01	4.08
Alaska Native Lands Patented or Interim Conveyed	0	2,048.93	1,944.31	2,084.17	2,095.80	2,095.44
Army	0	0	0	0.03	0	0
Bureau of Land Management	0	1,046.10	984.40	1,056.74	978.45	978.45
Fish and Wildlife Service	0	637.73	567.93	569.03	105.56	105.56
Local Government	0	0.66	0	0.66	0	0
National Park Service	0	0	0	0	338.87	368.44
Private	0	24.96	19.12	27.81	19.03	19.03
State	0	401.19	401.19	453.19	401.19	401.19
Undetermined (i.e. water)	0	117.40	115.10	115.97	111.56	112.35
Veg Clearing (Veg >0.2 m)	0	791.26	728.37	893.80	843.25	835.93
Slope (# of 100' segments of differing alignment)						
> 15 degrees	0	0	0	-	1	0
> 10 degrees	0	10	0	-	4	0
> 9 degrees	0	1	1	-	9	4
> 8 degrees	0	5	2	-	14	6
> 7 degrees	0	8	5	-	26	16
> 6 degrees	0	16	15	-	53	34
> 5 degrees	0	32	29	-	140	67
> 4 degrees	0	91	68	-	303	150
Cost Difference from Alt 1	-	Base Case ($45 million)	+$39,020	-	+$5,125,128	+$5,283,565

* 2 aerial crossings in each route are attached to existing bridges (Kivalina and Selawik)

2 Alternatives

2.1 Alternative 1

This route connects the communities of the Northwest Arctic Borough (Figure 1). Two loops provide resiliency and redundancy, and connect:

- Kotzebue-Noorvik-Selawik
- Ambler-Kobuk-Shungnak

Lines extend from the loops, and connect to:

- Noatak and Kivalina
- Buckland and Deering
- Kiana

This alignment features a crossing of Hotham Inlet (near Kotzebue), and a single corridor through most of the Selawik National Wildlife Refuge (NWR) to the loop that connects the Upper Kobuk communities.

The total cost of this project is $65 million. The cost for construction of the routes is $45 million. The remainder of the project costs are common elements (such as network stations in each community). $45 million is the base case to compare different routing alignment for economic feasibility, because the remaining cost is common to all alternatives.

This alternative meets the Purpose and Need of the proposed project and is technically and economically feasible.

2.2 Alternative 2

Alternative 2 is a variation of Alternative 1, with changes in the eastern part of the alignment (Figure 1). This alternative eliminates the single cable loop connecting Ambler-Kobuk-Shungnak; and replaces it with a double run cable located within a common corridor, running north to Ambler, and then east to Shungnak and Kobuk.

This alternative has cost tradeoffs when compared to Alternative 1 (Table 2.2-1). For Alternative 2, the cable is changed from a single cable alignment to a co-located double cable (overall requiring 20.5 miles of additional cable). This alignment also increases the total number of waterbody crossings (where the former single cable crossing now is a double crossing) but eliminates an aerial and three HDD (horizontal directional drilling) crossing (along the southern portion of the loop that is no longer proposed for construction). The elimination of the southern portion of the loop also saves 33.4 miles of trail construction, and 6 days of clearing effort. A cost estimate was prepared for this additional cost (Table 2.2-1) and was found to be $39,020.11 more expensive than Alternative 1.

Table 2.2-1 Cost for Alternative 2 in comparison to Alternative 1

Line Item	Alternative 2	Southern Variant
Additional cable deployment	$1,474,825.70	$3,093,536.83
Reduction to trail construction	$(1,201,443.37)	$(816,549.84)
6 days reduction to clearing effort	$(390,078.00)	

HDD crossing reduced	$(190,699.22)	$(190,699.22)
1 aerial crossing reduction	$(34,000.00)	
Material	$380,415	$817,167
Total	**$39,020.11**	**$2,903454.77**

This route is "economically feasible," and it would fulfill the Purpose and Need. As a result, this alternative is analyzed in the EA.

A variation of this alternative was considered, with construction occurring on the southern part of the original Alternative 1 loop, instead of the northern route. This would go east to Kobuk, then northwest to Ambler. The cost for this alignment is provided in Table 2.2-1. It is more expensive because it would require 43 miles of additional cable. The cost savings are for 22.7 less miles of trail construction, and one less HDD crossing. As a result, this 'northern variant' was discarded from analysis.

2.3 Alternative 3

Alternative 3 is the original SF-299 Route (the SF-299 is the right-of-way [ROW] application for utilities on federal lands) proposed by the applicant (Figure 1).

This alignment was investigated in a Spring 2025 field visit, and some portions were found not to be practical to construct (one example is discussed in detail in Alternative 8). Other alignment shifts were made to provide a more refined, lower environmental impact alignment – resulting in Alternative 1.

2.4 Alternative 4

In this alternative, the alignment crosses through Kobuk Valley National Park (NP) (Figure 1-1). It substantially reduces the use of USFWS Selawik NWR lands by routing through National Park Service (NPS) lands north of the Kobuk River. It follows Alternative 1 or 2 for the remainder of the alignment.

2.4.1 Steep terrain

Winter roadless construction equipment can tolerate a limited cross slope, prior to having safety and stability difficulties (i.e. sliding, rolling over).

To examine routes for steepness, the alignment where each route differed from each other was broken down into 100-foot intervals, and LIDAR (Light Detection and Ranging) was used to calculate a cross slope 50 feet to the right and 50 feet to the left of the route. This comparison provides the slope in degrees. Table 2.4.1-1 provides the number of these 100' trail segments at different slopes for Alternatives 1, 2, 4, and 5.

Table 2.4.1-1 Slope for Alternative 1, 2, 4, and 5

100' Intervals of Trail with Slope Gradients of:	Alternative 1	Alternative 2	Alternative 4	Alternative 5
> 15 degrees	0	0	1	0
> 10 degrees	10	0	4	0
> 9 degrees	1	1	9	4
> 8 degrees	5	2	14	6

> 7 degrees	8	5	26	16
> 6 degrees	16	15	53	34
> 5 degrees	32	29	140	67
> 4 degrees	91	68	303	150

The relatively flat landscape Alternative 2 takes through the Selawik NWR presents less topographic variation.

2.4.2 Clearing

Clearing is proposed for vegetation >0.2 m tall. Landfire vegetation mapping provides vegetation height for the alignments. Table 2.4.2-1 provides the acres of vegetation for each alternative, summarized by different agency landownership and vegetation height.

More clearing is required (>0.2 m) in Alternative 4 than Alternative 1. More large vegetation (>2 m) clearing is required for Alternative 4 than Alternative 1. Table 2.4.2-1: Analysis of Vegetation Clearing for Alternative 1, 2, 4, and 5 (30 foot buffer, 15 feet to either side of the line)

	Agency					
	USFWS	NPS	Non USFWS/ NPS	Total		ANILCA Conservation Units
	Acres	Acres	Acres	Acres	%	Acres
Alternative 1	318.90	-	1,819.72	2,138.63	100%	318.90
Veg Height (No Clearing - <0.2 m)	216.50	-	1,130.86	1,347.35	63%	216.50
Veg Height 0.2 m to 1 m	89.20	-	576.25	665.45	31%	89.20
Veg Height 1m - 2 m	2.55	-	47.86	50.41	2%	2.55
Veg Height >2 m	10.66	-	64.75	75.41	4%	10.66
Alternative 2	283.99	-	1,732.15	2,016.14	100%	283.99
Veg Height (No Clearing - <0.2 m)	204.70	-	1,083.06	1,287.76	64%	204.7
Veg Height 0.2 m to 1 m	70.53	-	545.28	615.81	31%	70.53
Veg Height 1m - 2 m	2.33	-	42.57	44.9	2%	2.33
Veg Height >2 m	6.43	-	61.23	67.66	3%	6.43
Not Classified	-	-	0.01	0.01	0%	-
Alternative 4	52.78	169.44	1,803.17	2,025.40	100%	222.22
Veg Height (No Clearing - <0.2 m)	46.98	33.91	1,101.24	1,182.14	58%	80.89
Veg Height 0.2 m to 1 m	4.57	54.73	573.68	632.98	31%	59.30
Veg Height 1m - 2 m	0.63	4.64	43.12	48.38	2%	5.26
Veg Height >2 m	0.61	76.16	85.13	161.90	8%	76.77
Not Classified	-	-	0.01	0.01	0%	-
Alternative 5	52.78	184.22	1,805.38	2,042.39	100%	237.01
Veg Height (No Clearing - <0.2 m)	46.98	58.25	1,101.22	1,206.45	59%	105.23
Veg Height 0.2 m to 1 m	4.57	67.56	576.00	648.13	32%	72.13

Veg Height 1m - 2 m	0.63	3.24	42.97	46.83	2%	3.86
Veg Height >2 m	0.61	55.17	85.18	140.97	7%	55.78

More clearing is required (>0.2 m) in Alternative 4 than Alternative 1. More large vegetation (>2 m) clearing is required for Alternative 4 than Alternative 1.

2.4.3 Major River Crossings

This alternative route would require 3 additional major river crossings (Kobuk, Akillik, Hunt). One of those crossings would require an HDD bore of extended length, requiring specialized machinery. 10 additional aerial crossings would be required.

2.4.4 Cost

This alternative has cost tradeoffs when compared to Alternative 1 (Table 2.4.4-1). The cable is changed from a single cable alignment to a co-located double cable (overall requiring 27 miles of additional cable). There is a reduction in trail construction that is required (30.1 miles). There is an additional 26 days of clearing required. Crossings would add 5 additional aerial crossings, and one HDD crossing would be extended (requiring specialized machinery).

Table 2.4.4-1 Cost for Alternatives 4 and 5

Line Item	Alternative 4	Alternative 5
Additional cable deployment	$1,942,453	$186,000
Reduction (or increase) for trail construction	$(1,082,737)	$401,900
Increase for clearing effort	$615,000	$615,000
HDD crossings (including extended HDD)	$1,733,688	$1,733,688
10 additional aerial crossing	$1,265,250	$1,265,250
Additional Material	$651,475	$741,727
Total	**$5,125,128**	**$5,283,565**

2.4.5 Alternative 4 Summary

Alternative 4:

- Has steep slopes.
- Requires greater clearing of vegetation, and greater clearing of vegetation >2 m tall.
- Additional river crossings
- Additional cost

2.5 Alternative 5

In this alternative, USFWS proposes a "low gradient" alignment variation of Alternative 4, with a different, low grade, route through the Kobuk Valley National Park (Figure 1-1). The remainder of this alignment follows Alternative 1 and 2.

The steep terrain (Table 2.4.1-1), vegetation clearing (Table 2.4.2-1), and cost (Table 2.4.4-1) are higher than for Alternative 1 or 2.

Routes inside the Kobuk Valley NPS lands face a fundamental tradeoff between steep gradient (with smaller vegetation) and less gradient habitats (with taller vegetation). The greater amount of vegetation clearing would require different machinery and approximately 26 more days of work. In addition, additional extended bore for the Kobuk River would increase cost, and there would be additional cost for 10 additional aerial crossings.

2.6 Alternative 6: Microwave Tower Network

This alternative would deliver service through a series of microwave relay towers installed at locations throughout the NANA region. This technology requires maintaining line-of-sight between towers and would involve constructing approximately 20-30 towers (60-120 feet tall) throughout the region.

A microwave tower network provides (Analog Devices 2025, Christophe 2011, Credence Research 2024, Ericsson 2022, Infinity Technology Solutions 2023, Infinity Technology Services 2023, Internet Society 2019, Microwave Journal 2012, Military Aerospace 2010, NTIA 2013):

- *Limited bandwidth:* The Tribal Broadband Connectivity Grant Program[1] defines “unserved” as areas where download/upload speeds fall below 25/3 Mbps or there is no access to broadband at all.
    - The series of microwave broadband communication towers being installed by the OTZ Telephone Cooperative, Inc is cited as providing up to 25 Mbps/3Mbps (BLM 2024). (As of September 2025, OTZ currently advertises service as 1Mbps/256kbps[2])
- *Higher latency:* Depending on the equipment vendor and configuration, delay may be introduced on a per-hop basis. This is true in both fiber and microwave network infrastructure. The project’s proposed fiber is a single hop between all communities. Microwave would require multiple hops between communities, due to the line-of-sight restriction.
    - Super High Frequency bands (3-30GHz) are limited by the visual horizon to 30–40 miles (48–64 km).
    - On top of the propagation latency, there is also have processing latency. The more “hops” in a networks, the more processing latency is added. This applies to both microwave and fiber networks.
    - Christophe (2022) describes a pilot test that included three microwave hops delivered results of 30.9 ms (millisecond) and 25.45 ms when interface speeds of 19,200 baud and 38,400 baud were used between the relay equipment and routers.
- *Congestion:* Subscribers would likely experience variable service quality during high-demand periods where demand would exceed transport capability.

While Alternative 6 is feasible from a cost standpoint, the technology does not meet the purpose and need for the project. It is not feasible to co-locate the utility ROWs between microwave towers,

[1] TBCP NOFO 1, Section 2 (j) defines “qualifying broadband service” as service with “— (i) a download speed of not less than 25 megabits per second; (ii) an upload speed of not less than 3 megabits per second; and (iii) a latency sufficient to support real time, interactive applications. For purposes of this program, NTIA will interpret the 25/3 standard to mean the ability to provide 25 Mbps downstream and 3 Mbps upstream simultaneously to every household in the eligible service area. NTIA will interpret latency to mean 95 percent or more of all peak period measurements of network round trip latency (i.e., the total round-trip latency between the customer premises and the closest designated Internet core peering interconnection point) are at or below 100 milliseconds.”

[2] https://otz.net/service-plans/internet-service-2/

because microwave towers require high areas (for line of site) and fiber optic lines avoid impacts to high locations.

2.7 Alternative 7: Satellite Services

This alternative would leverage either Low Earth Orbit or Geostationary orbiting satellites to provide connectivity. Geostationary (GEO) satellites orbit at fixed positions approximately 22,000 miles above Earth, and Low Earth Orbit (LEO) satellites circle much closer to the planet at altitudes of approximately 300-1,200 miles.

This approach would require minimal ground infrastructure within the region but would rely entirely on third-party satellite systems for service delivery. Currently available satellite options include services offering speeds up to 30/3 Megabits per second (Mbps) with various data limitations; thus being defined as "underserved."

Alternative 7 technology would have significantly lower quality service (APNIC Labs 2022, Federal Communication Commission 2023, IEEE 2024, Meinrath et al. 2025, Resilio 2023, Space: Science & Technology 2023, Telarus 2024):

- *Insufficient bandwidth:*
    - Ogutu and Oughton (2021) demonstrate how limited the capacity will be once resources are spread across users in each satellite coverage area. For example, if there is 1 user per 10 km^2 the estimate is a mean per user capacity of 24.94 Mbps, 1.01 Mbps and 10.30 Mbps for Starlink, OneWeb and Kuiper respectively in the busiest hour of the day. These rates classify as "unserved" according to the IIJA.
- *Prohibitive latency:* 25-700 milliseconds for Low Earth Orbit systems and 550-650 milliseconds for Geostationary systems, rendering many real-time applications like telemedicine virtually unusable
    - LEO Satellites: Round-trip time (RTT): typically, 25–80 ms; ~20 ms is possible in theory, and recent observed medians are ~45 ms.
    - GEO Satellites: RTT: typically, 500–700 ms; often 600–750 ms end-to-end once protocol overheads are included.
- *Service degradation:* performance reduction during precipitation events, which are common in the region
    - LEO Satellites: Doppler effects, complex handover management, and reliance on dense constellations. Both are subject to spectrum interference, space weather, and rain fade (especially in the Ka-band).
    - GEO Satellites: Poor elevation angles above ~70° latitude, and rain fade issues at Ka-band. Larger dishes or Ku-band alternatives can, however, mitigate this. GEO may even be below the horizon above ~81° latitude. Both are subject to spectrum interference, space weather, and rain fade (especially in the Ka-band).
- *Capacity constraints:* limited total bandwidth shared among all users in a coverage area would cause congestion during peak usage periods. This technology will not meet federal requirements for speed when there are more than 6 households per square mile (Meinrath et al. 2005).

- *Limited scalability:* future capacity additions require launching new satellites, a process outside local influence
    - LEO Satellites: LEO satellites have a generally shorter lifetime compared to GEO satellites, which means they need to be replaced more frequently.
    - GEO Satellites: When covering large areas, may face interference and saturation problems in the frequency band, especially in densely populated areas.
    - In addition, due to their shorter service life, replacement costs are higher, which may limit long-term economic viability.
- *Medium and long-term viability:* Low Earth Orbit satellites experience orbital decay due to Earth's gravitational pull, requiring regular replacement to maintain network availability. The replacement process involves rocket launches which are inherently subject to failure risks, potentially compromising overall system reliability and continuity of service.

While satellite technology continues to evolve, even next-generation systems will not provide the reliability or capacity to meet the definitions of services in the IIJA. Thus, this alternative fails to meet the purpose and need of the project.

2.8 Alternative 8

In this alternative, the USFWS proposes making an alignment change that cuts straight across a western portion of the refuge, parallel to a section line (Figure 1-2). This proposal still requires the use of some USFWS lands but reduces the use of the USFWS refuge.

This alignment was originally evaluated under the SF-299 route. During route constructability site inspections, this alignment was found to require construction on steep terrain.

To provide quantitative metrics, the same slope analysis was completed for this portion of the alignment, as was conducted for the Kobuk National Park routes. To examine routes for steepness, the alignment was broken down into 100-foot intervals, and LIDAR was used to calculate a cross slope 50 feet to the right and 50 feet to the left of the route. This comparison provides the slope in degrees.

Table 2.7.2-1 Slope for Different Alternatives Limited to the Area of 8

100’ Intervals of Trail with Slope Gradients of:	Kiana to Selawik (USFWS Cut Across Vicinity)	
	Alternative 2	Alternative 8
> 15 degrees	0	2
> 10 degrees	0	4
> 9 degrees	0	6
> 8 degrees	0	8
> 7 degrees	0	12
> 6 degrees	0	14
> 5 degrees	2	27
> 4 degrees	10	48

When Alternative 8 is compared to the routings in Alternative 2 (Table 2.7.2-1), it is apparent that Alternative 8 has steeper alignments than Alternative 2.

2.9 Alternative 9

This alignment makes use of non-USFWS lands along the Portage Creek and Sinauruk Creek drainages (Figure 1-3).

This alignment would significantly reduce Alaska Native Interest Lands Conservation Act (ANILCA) Conservation Units, by aligning the project along non-USFWS and/or NPS lands.

This alignment was a part of a previous construction concept, proposed in Alternative 11: Initial Route. As a result, it was included in a site visit by the project team during the Spring of 2025.

This alignment requires use of a mountain pass between Portage Creek and Sinauruk Creek drainages. This pass is owned by a private landowner. The route was examined in person by the development team during the reconnaissance in the Spring of 2025. The private land extends across the pass and up the steep slopes. As a result, construction would be required up the steep slopes of the surrounding mountains.

2.10 Alternative 10

In this alternative, the USFWS proposes making an alignment change that moves the alignment out of USFWS lands and instead introduces a dogleg with a crossing of Selawik Lake specifically to avoid USFWS lands (Figure 1-4).

This new crossing of a major waterbody puts the reliability of the fiber at risk with

- two additional shoreline crossings (entrance and exit) and
- risk of cutting the cable by lake ice.

The most vulnerable portion of the project is the marine crossing of Hotham Inlet, near Kotzebue. A cut in the marine portion of the project means that the only fiber connecting most of the communities to Kotzebue is this overland route. As a result, it is important to keep this portion of the line functional. Large bodies of water, like Selawik Lake, have a greater danger of ice cutting the cable than overland installation. This alternative's routing into Selawik Lake puts the cable at a higher risk for outages to the entire system. This threat to system reliability causes the project to need to avoid crossing Selawik Lake entirely.

If Selawik Lake's ice damages the cable, it can't be accessed for repairs until ice-free summer conditions. (In contrast, an overland outage can be repaired during the winter). This means that the vulnerability of the system is greater, as communities may be isolated from telecommunications access until repairs can be completed the following summer.

During local meetings, an elder also stated that Selawik Lake has difficult and sensitive permafrost and icing conditions, which they recommended to be avoided.

2.11 Alternative 11

Alternative 11 was developed based on the project feasibility study (Figure 1-5). This route includes:

- Dual corridor through the USFWS Refuge (to increase reliability)
- Different route into Deering

Upon further analysis, this route was found to have

- Additional impacts to ANILCA Conservation Units (2 routes through the USFWS Refuge)
- More difficult terrain between Kiana and Ambler
- Landownership and terrain blocking Portage/Sinuaruk Creek Pass

2.12 Alternative 12: Grant Route

The original grant proposed a primarily subsea and in-river route for the proposed cable (Figure 1-5).

While in-river submarine cable technology exists and has been successfully implemented in temperate river environments, the Arctic environment presents challenges.

The best examples of the risks associated with submarine cable alternatives are the difficulties other projects in the region have had in providing services. The Quintillion network began operations in December 2017. It has suffered line breaks[3] in 2023, 2024, and 2025 - these were from ice scouring and breaking the line. It has taken months to repair the outages, because repairs must wait for summer.

As a result, some fiber projects in Alaska have moved away from in-water construction and towards overland construction with specific crossings of waterbodies. This minimizes the potential impacts to the waterbody, minimizes risk of breaks (of the cable) in the waterbody, and if breaks occur, allow repairs to be made without having to wait till spring.

[3] Citations for Quintillion breakages: https://alaskapublic.org/news/2023-06-12/cut-cable-causes-weeks-long-north-slope-northwest-alaska-internet-and-cellphone-outages, https://broadbandbreakfast.com/quintillion-to-repair-broken-arctic-fiber-line-after-six-month-delay/, https://www.nomenugget.net/news/fiber-optic-cable-cut-interrupts-internet-and-cell-services, https://www.alaskasnewssource.com/2025/01/27/quintillion-says-ice-scour-is-cause-long-term-internet-outage/

3 Alternatives Summary

This alternative analysis presents a reasonable range of alternatives and screens them for technical and economic feasibility, as well as achieving the project's purpose and need. The alternatives advanced forward for analysis are:

- Alternative 1
- Alternative 2

Table 3-1: Alternatives.

#	Alternative	Included in EA?
1	Alternative 1	Yes
2	Alternative 2	Yes
3	SF-299 Route	No
4	Kobuk Valley National Park Route	No
5	"Low Gradient" Kobuk National Park Route	No
6	Microwave Tower Network	No
7	Satellite Services	No
8	Alternative modified "Cut Across"	No
9	Portage/Sinuaruk Creek Pass	No
10	Selawik Lake	No
11	Initial Route	No
12	Grant Route	No

4 References

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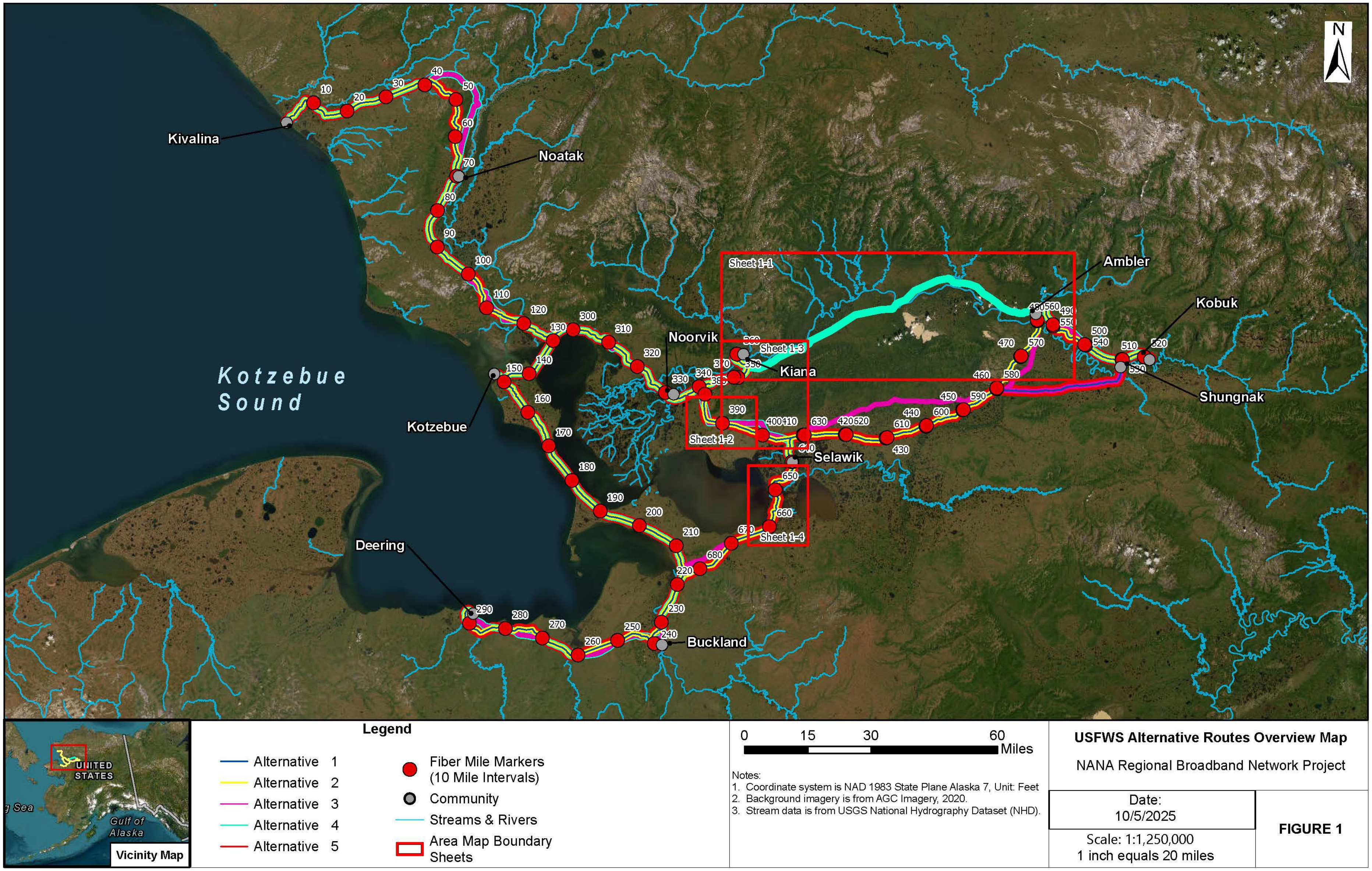
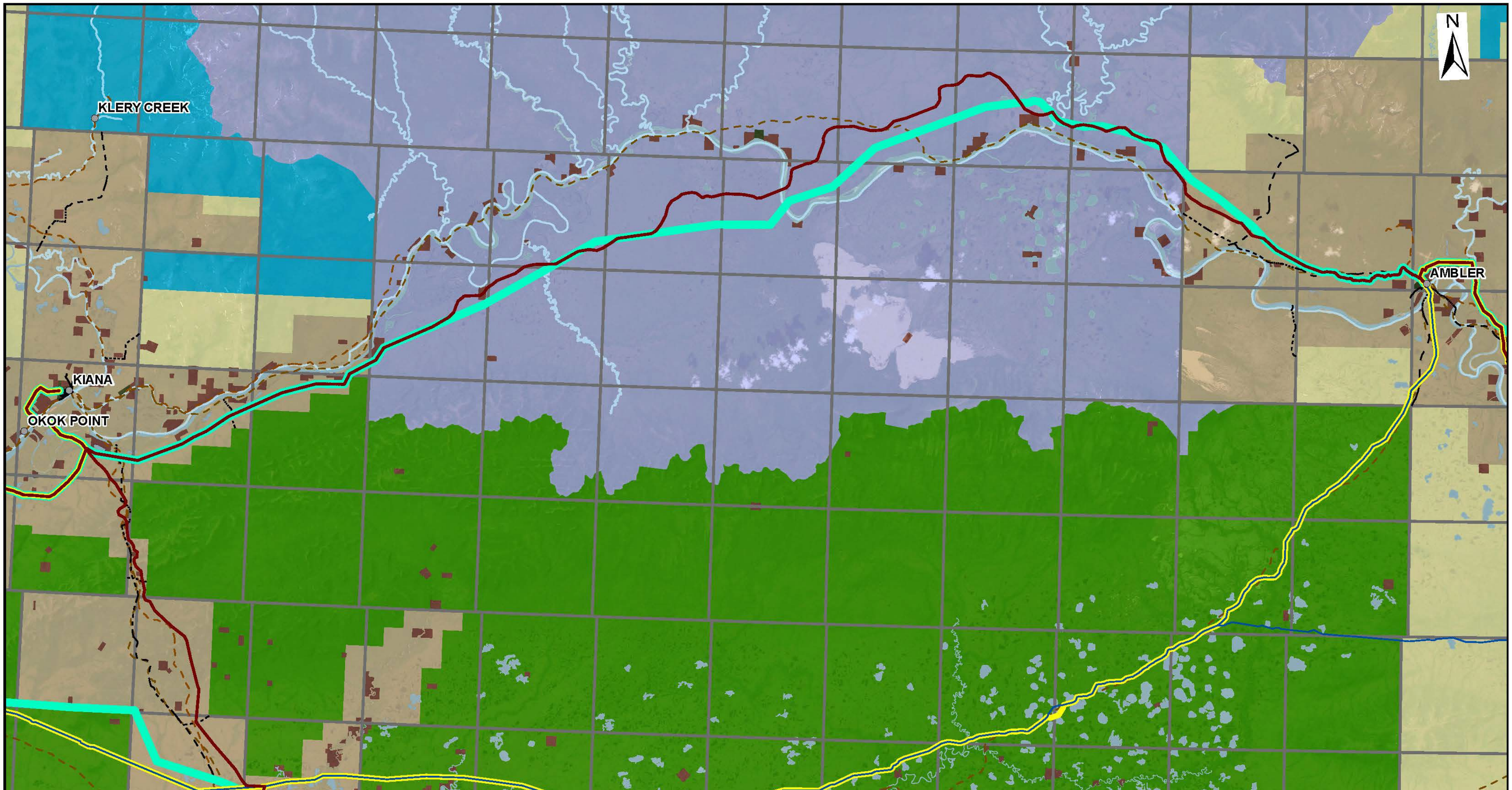
Appendix A: Figures


Kivalina
Noatak
Noorvik
Kiana
Ambler
Kobuk
Shungnak
Selawik
Kotzebue
Kotzebue Sound
Deering
Buckland
Sheet 1-1
Sheet 1-2
Sheet 1-3
Sheet 1-4
N
UNITED STATES
Gulf of Alaska
Vicinity Map
Legend
Alternative 1
Alternative 2
Alternative 3
Alternative 4
Alternative 5
Fiber Mile Markers (10 Mile Intervals)
Community
Streams & Rivers
Area Map Boundary Sheets
0 15 30 60 Miles
Notes:
1. Coordinate system is NAD 1983 State Plane Alaska 7, Unit: Feet
2. Background imagery is from AGC Imagery, 2020.
3. Stream data is from USGS National Hydrography Dataset (NHD).
USFWS Alternative Routes Overview Map
NANA Regional Broadband Network Project
Date:
10/5/2025
Scale: 1:1,250,000
1 inch equals 20 miles
FIGURE 1



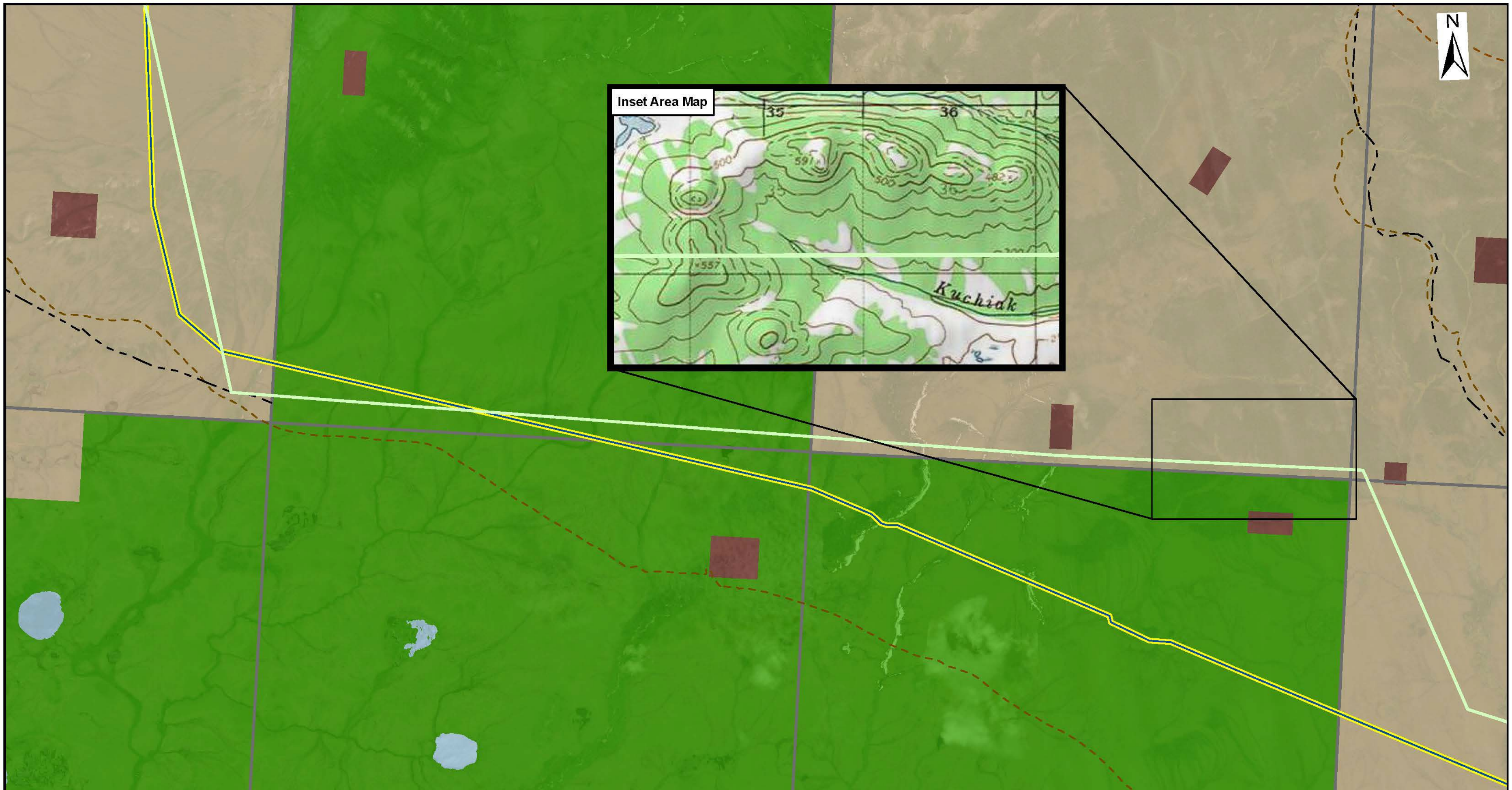
Noatak National Park Service Route

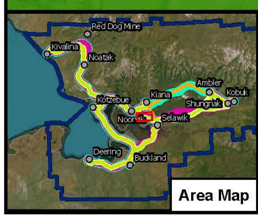
NANA Regional Broadband Network Project

Date :
10/5/2025

Scale: 1:300,000
1 inch equals 5 mile

FIGURE 1-1





Legend

- Alternative 1
- Alternative 2
- Alternative 8
- Communities

Land Ownership

- Native Allotment
- Native Lands
- Bureau of Land Management
- Fish and Wildlife Service
- National Park Service
- State
- Waterbody

0 0.5 1 2 Miles

Notes:
1. Coordinate system is NAD 1983 State Plane Alaska 7, Unit: Feet
2. Background imagery is from AGC Imagery, 2020.

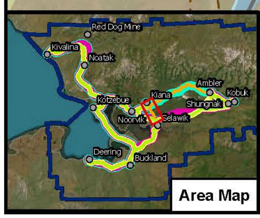
Western Refuge & "Cut Across"

NANA Regional Broadband Network Project

Date : 10/5/2025

Scale: 1:64,000
1 inch equals 1 mile

FIGURE 1-2



Legend

- Alternative 1
- Alternative 2
- Alternative 9
- Communities
- NAB Trails

Land Ownership

- Native Allotment
- Native Lands
- Bureau of Land Management
- Fish and Wildlife Service
- National Park Service
- State
- Waterbody

0 1 2 4 Miles

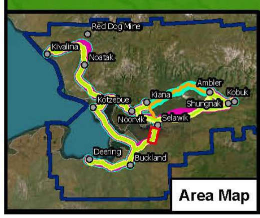
Notes:
1. Coordinate system is NAD 1983 State Plane Alaska 7, Unit: Feet
2. Background imagery is from AGC Imagery, 2020.

Portage/Sinuaruk Creek Pass
NANA Regional Broadband Network Project

Date :
10/5/2025

Scale: 1:100,000
1 inch equals 2 mile

FIGURE 1-3



Legend

- Alternative 1
- Alternative 2
- Alternative 10
- Communities
- NAB Trails

Land Ownership

- Native Allotment
- Native Lands
- Bureau of Land Management
- Fish and Wildlife Service
- National Park Service
- State
- Waterbody

0 0.5 1 2 Miles

Notes:
1. Coordinate system is NAD 1983 State Plane Alaska 7, Unit: Feet
2. Background imagery is from AGC Imagery, 2020.

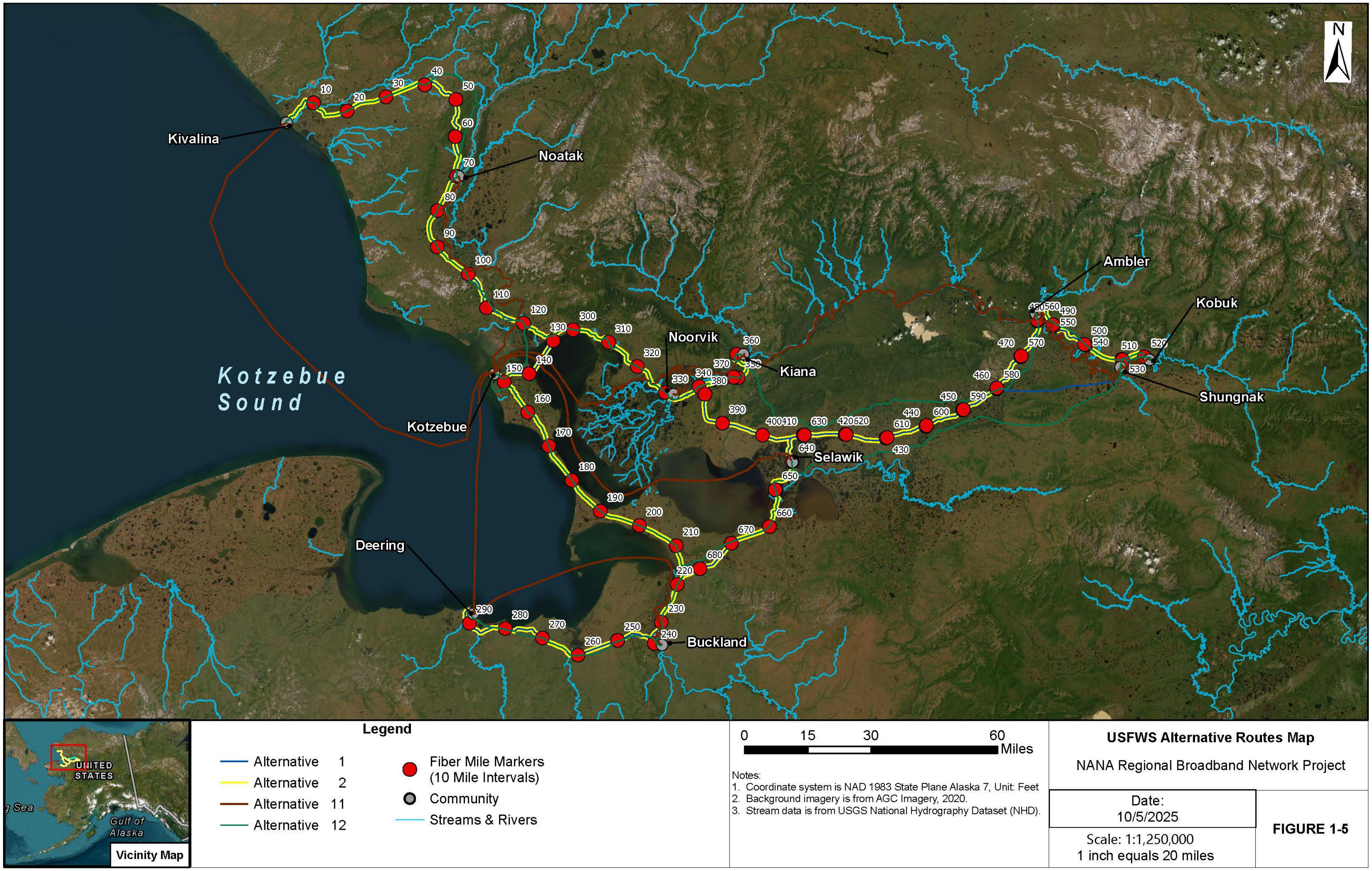
Selawik Lake

NANA Regional Broadband Network Project

Date : 10/5/2025

Scale: 1:64,000
1 inch equals 1 mile

FIGURE 1-4



USFWS Alternative Routes Map

NANA Regional Broadband Network Project

FIGURE 1-5

Appendix G – Contaminated Sites

Table 1: Contaminated sites that are within 500 feet of the alternatives

Site Name	City	Status	DEC Database Remarks [sic]	Summary
City of Ambler Clinic (AVEC), Hazard ID 294	Ambler	Open	Historical diesel release caused by faulty fuel pipeline union. Corrective action by RP was inadequate as contaminant plume migrated beneath Clinic building. Workers in the Clinic have been affected by fuel odors during periods of warm weather. USS 5013. Update 12-4-08: Old clinic had vapor intrusion issue, new clinic built in 2002. AVEC did some remediation at site as stated in August 29, 2001 letter in file.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.
Buckland Prototype Home, Hazard ID 7087	Buckland	Informational	The findings of the evaluation indicated no evidence of environmental impacts at the subject site.	No expected impacts to project because there is no evidence of environmental impacts at the subject site, per AK DEC database.
Buckland IRA Fuel Depot, Hazard ID 6570	Buckland	Open	At the time of the 2001 site reconnaissance, this bulk fuel storage facility consisted of eleven aboveground storage tanks (ASTs; three gasoline and eight diesel) located on a gravel pad. The tank farm was fenced and contained within a lined bermed area. The tank farm was active at the time of site reconnaissance, but a new consolidated tank farm built approximately 150' to the northwest of the subject site, prior to 2007. A sheen was noted near the dispenser shed during site reconnaissance. On April 5, 2008, a 7,750-gallon release (spill no. 08389909601) was reported to the Department of Environmental Conservation (DEC) Prevention and Emergency Response Program (PERP). The spill occurred when a 2" supply line from a 42,000 gallon AST to the fuel pump failed at the dispensing unit. Kuskokwim Architects and Engineers (KAE) operated the facility on behalf of Village Safe Water (VSW) at the time of the release. KAE was already in the process of containing/recovering this fuel when PERP responded to the spill. Approximately 3,100 gallons of diesel were recovered. In August 2009, DEC Solid Waste informed the Contaminated Sites Program that 14 supersacks of petroleum contaminated soil were shipped to Kotzebue without authorization when VSW asked for authorization to transport these supersacks from Kotzebue.	No expected impact to the project because of location.

Site Name	City	Status	DEC Database Remarks [sic]	Summary
Kobuk Abandoned Tank Farm, Hazard ID 4117	Kobuk	Open	Historic petroleum contamination discovered at the location of former tank farm. This site was established in 1991 after a 4,000-gallon underground storage tank (UST) used to supply new motor oil to the Jiffy Lube facility (formerly known as Q-Lube) failed a tank tightness test. In September of 2007, the Alaska Department of Environmental Conservation (DEC) Reuse and Redevelopment Program completed a DEC Brownfield Assessment and Cleanup (DBAC) at the Kobuk's former fuel storage location; also known as the Kobuk Abandoned Tank Farm Site. During the limited cleanup of this project, roughly 270 cubic yards (CY) of soil were generated and stockpiled just outside the Kobuk landfill. 03/01/2008 - up to 300 cubic yards of contaminated material were removed from the site in 2007 and relocated to a stockpile near the Kobuk landfill. This material was tested at an average concentration below 2,000 parts per million (ppm) of diesel range organics (DRO). The intent was to use this material as daily cover year 2008. The City of Kobuk owns this site and maintained a tank farm prior to the Alaska Energy Authority (AEA) bulk fuel consolidation. Kobuk sought and obtained a Community Development Block Grant (CDBG) from the Department of Commerce, Community and Economic Development (DCCED), to procure a new emergency generator for their community. The site had not been previously assessed, but it was assumed there are historical petroleum impacts that Kobuk would like to address before reusing the site. In addition to the CDBG, the community has also obtained dedicated funds to conduct some cleanup of the site. The site was prioritized for a DEC Brownfield Assessment in 2007. The site was reassigned to a 38 designation on this date. FKA 480.57.001. On August 15, 2012, Shannon & Wilson Incorporated (S&W) collected five soil samples from the stockpile. The samples were analyzed for diesel range organics (DRO) and benzene, toluene, ethylbenzene, and xylenes (collectively known as BTEX). Four of the samples exhibited concentrations of DRO above DEC migration-to-groundwater cleanup level, which is 250 mg/kg. Concentrations of DRO ranged from 186 mg/kg to 3,640 mg/kg. None of the samples contained BTEX	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.

Site Name	City	Status	DEC Database Remarks [sic]	Summary
			concentrations above DEC's cleanup levels. Kobuk has a relatively dry climate with precipitation averaging 17 inches per year and a snowfall average of approximately 56 inches.	
Nullagvik Hotel - Kotzebue, Hazard ID 3809	Kotzebue	Open	In November 2006, one 500-gallon UHOT was removed from the site. On August 27-30, 2012, one 3,000-gallon UHOT was removed. Site characterization was performed following the removal of each UHOT revealing releases from both UHOT systems. The September 2012 site characterization included the excavation of approximately 500 cubic yards of impacted soil that was disposed of in the landfill. During the excavation, debris (glass, metal, coal, wood scraps, empty drums made into a make-shift septic system) were uncovered. The debris likely originated from the cannery that existed on the site before the hotel was constructed in the 1970s. Excavation confirmation samples revealed diesel range organics (DRO) up to 589 milligrams per kilogram (mg/kg). On September 16-20, 2020, six soil borings were advanced on the site to a depth of 10 feet below ground surface (bgs). Concentrations of DRO, gasoline range organics (GRO), residual range organics (RRO), and volatile organic compounds (VOCs) were all detected, but all below DEC Arctic Zone Cleanup Levels. Groundwater concentrations revealed DRO and RRO above groundwater cleanup levels. Groundwater is thought to be resulting from perched, melting permafrost. Permafrost is prevalent at the site. All concentrations of contaminants were below the residential target level for vapor intrusion.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.
Hanson Trading Company UHOT, Hazard ID 4046	Kotzebue	Open	Petroleum contamination above DEC cleanup levels was found during the removal of a 500-gallon underground heating oil tank in October 2007. Site is adjacent to Kotzebue Sound.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.
Kotzebue IRA Lagoon Street Bldg,	Kotzebue	Open	On November 30, 2015, a fuel line to an aboveground heating oil tank was accidentally sheared off by snow removal equipment operations at the Kotzebue IRA / Native Village of Kotzebue Lagoon Street building, causing the release of 350 gallons of arctic grade (#1 diesel) heating oil	No expected impact due to geographic location.

Site Name	City	Status	DEC Database Remarks [sic]	Summary
Hazard ID 7581			to the snow covered ground beneath the tank directly adjacent to the building foundation, and onto an underground utility corridor. Initial response actions included contaminated snow removal, melt water treatment, break-up mitigation, release investigation, and contaminated soil removal which was limited due to the presence of infrastructure and permafrost. Contaminated soil remains around a buried sewer line, at the permafrost layer on the bottom of the excavation, and in the sidewall nearest the building foundation. Gasoline range organics, diesel range organics, benzene, toluene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene remain in soil at or above DEC cleanup levels. The building was formerly used for reindeer processing and is now used for storage. Excavated contaminated soil is being land-farmed off-site at a property across the road from the Kotzebue Solid Waste Landfill. According to the February 2017 Release Investigation/Site Characterization Report the Kikiktagruk Inupiat Corporation (KIC) is responsible for the operation and management of the land-farmed soil. DEC oversight of the land-farmed soil remediation will be managed by the Prevention, Preparedness, and Response Program under spill number 15289933401.	
Former School Tank Farm Gravel Pad - Selawik, Hazard ID 1271	Selawik	Open	Historical discharges from tank farm to gravel pad. Tank farm consisted of 10 ASTs totaling 92,900 gallons capacity. Later records indicate as many as 20 tanks were located at this location. The tanks were moved to a different location in 1998 during construction of a school addition. Site is 600-800' west of the Selawik River. GW reportedly not used in the village. All DW is taken from the Selawik River upstream of the community. No GW encountered to 315' during site investigations. Maximum active zone thickness ~30". Infiltration of SW is confined to the active layer during summer months.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.
ADOT&PF SREB - Selawik,	Selawik	Open	The Department of Transportation and Public Facilities is planning to construct a concrete floor in the Snow Removal Equipment Building (SREB) at the Selawik Airport. During the phase I evaluation of the shop floors, the presence of contamination was identified on the gravel floor	No expected impact due to geographic location.

Site Name	City	Status	DEC Database Remarks [sic]	Summary
Hazard ID 3660			of the SRE building at the Selawik Airport. Nortech estimates approximately 6.5 cubic yard of contaminated soil remain at the facility. Phase I was limited to visual observations (no screening or analytical). Visual observations were limited due to the presence of wet gravel making it difficult to discern between just wet gravel and gravel stained by contamination. Visual observations suggested contamination limited in depth.	
Selawik Old AVEC Tank Farm, Hazard ID 6702	Selawik	Open	The Native Village of Selawik submitted a DEC Brownfield Assessment Request Form for an area-wide assessment of Selawik which includes the former AVEC tank farm. The site is located on the east side of the village school and close to residential houses. Some drinking water may be derived directly from the Selawik River; however, the Village derives its drinking water from Selawik Lake and a water treatment plant. Historically, the site was used by AVEC for fuel tank storage and electrical generation. The pipeline used to fill the tanks ran from the river - east to west - to the southern part of the property at the generator building. In 2003, the northern ASTs were decommissioned. In 2012, the generator building was decommissioned and the eight empty fuel tanks were cut up and disposed of in the Selawik landfill. As of 2013, Cribbing, sub-grade piping, structures, tank farm liner, and trash from dumping activities remain on site. The AVEC Property is currently enclosed within a chain-link fence (10/16/2019). Site cross-referenced with Selawik area-wide Brownfield Assessment/Selawik Barge Landing Area, 500.57.001.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.
Selawik Water Treatment Plant, Hazard ID 8443	Selawik	Open	A tank overfill occurred in November 2020 when an employee began a tank transfer at a 5,000 gallon day tank and walked away. It is estimated that approximately 7 hours passed before it was discovered and the rate is estimated to be 1000 gal/hour. There was an unknown amount of fuel in the tank before the transfer. A site assessment was performed in July 2021 and indicated soil contamination and visible sheen on the groundwater.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.

Site Name	City	Status	DEC Database Remarks [sic]	Summary
Selawik Areawide Brownfield Assessment & Barge Landing Area	Selawik	Informational	The Barge Landing Area is currently used for staging and transferring materials transported by barge. The space available at the facility has been found inadequate and plans are being made to upgrade the facility. The active barge landing area is located approximately 1,400 feet north-northwest of the Davis-Ramoth School along the south bank of the Selawik River. The barge landing area features a gravel pad of about 100 feet by 200 feet for staging materials. A 300-foot-long gravel-surfaced access ramp leads from a pad north of the Selawik River. A steel fuel pipeline roughly parallels the north side of the pad and west side of the ramp, terminating at a marine header near the river edge. The Barge Landing Area was likely developed in the early to mid 1990s, and was used during the construction of the new school. The marine header was installed between 2000 and 2003. A visual reconnaissance and sampling was conducted on Oct. 1, 2010. About twenty-four 20-foot shipping containers, a variety of construction materials, storage tanks, two diesel generators, and various scrap were present on or near the gravel storage pad. Burned trailers and scrap were present off the western edge of the storage pad. Decommissioned ASTs, stored vertically in two groups are stored on the pad: fourteen tanks are stored at the northern end of the gravel pad and an additional fourteen vertical tanks and three tanks are located northeast of the storage pad and ramp on the tundra. Four locations at the Barge Landing area were selected for sampling. Sample depths ranged from 0.3 to 1 foot bgs. Limited screening and sampling did not suggest that large releases of contaminants have occurred, but several potential sources of contaminants are present at the Barge Landing. Site part of an area-wide Brownfield file, associated files 500.38.001, 500.38.003, and 500.38.007.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.
Shungnak Native Store, Hazard ID 3484	Shungnak	Open	Numerous historic spills and leaks have occurred at the Shungnak Native store. In 1993, 450 gallons of heating fuel released at the Store's unlined bermed day tank area. Approximately 250 gallons of product was recovered by sorbent pads, which were put in plastic bags; and some was scooped from depressions and put in to 55 gallon drums.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.

Site Name	City	Status	DEC Database Remarks [sic]	Summary
			Fate of these drums and bags is unknown. In 1994, 275 gallons of gas Spilled from the store's broken flex hose. The quantity of recovered free product is unknown. In 1998, five gallons of gasoline leaked from the store's pipe during fill operations. The contaminated soil was removed and place in the tank farm (TF) area. In 2001, at the Shungnak Store and AVEC pipeline, contamination was discovered 6 ft. bgs while a hole was being dug to install a utility pole between the store TF and the power plant TF. The product was allegedly gasoline from the 1994 Shungnak Native Store 275 gallon gas spill. The tank and pipeline responsible for the release was repaired. In 2002, 20 gallons of diesel spilled during fueling. Five gallons of free product was recovered and impacted snow and gravel was removed and disposed in the landfill. In 2002, Harry Commack reported an old pipeline had leaked fuel onto his property. According to him, the old pipeline was built around 1976 and might have been associated with the Public Health Service or possibly AVEC. He also mentioned a newer pipeline associated with the Native Store that had a large crack in it. The pipelines were decommissioned in 2005, and the contamination associated with the pipelines was addressed. A PERP 2002 site inspection and discussions with the contractors excavating a pipeline in Shungnak indicated that gross contamination near the corner of Jim Street and Back Street at the Shungnak Store remains, but no free product was observed. This site (Hazard ID 3832) also includes spill no. 18389918101; spill date = 6/30/18; substance = diesel; quantity = ~250 gallons; source: lateral above ground tank at tank farm; cause: improper tank shut-down procedures resulted in release; PPRP file no. 490.02.001.	
Shungnak AVEC Tank Farm, Hazard ID 8482	Shungnak	Open	During geotechnical exploration activities conducted on November 5, 2018, significant hydrocarbon odors were noted in the top 1-2 feet of gravel fill at the test pit located in the northwest corner of the site. The presence of hydrocarbon odors in the soil are likely attributed to spills/leaks from refueling activities and/or faulty equipment from the aboveground storage tanks and associated piping located on the site.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with locational tracking, BMP, and an inadvertent discovery plan.

Site Name	City	Status	DEC Database Remarks [sic]	Summary
			The storage tanks are used to store diesel fuel that the City of Shungnak uses for power generation.	
Shungnak School HOT, Hazard ID 8504	Shungnak	Open	Two tanks on Northwest Arctic Borough School District property were connected to a three-way valve used by the school, local utilities, and the Shungnak Native Store. During a fill, the three-way valve was improperly opened, allowing fuel to flow into the two opened top school tanks. This caused one tank to overfill. Spilled diesel traveled south across the hill before turning east and flowing downhill towards the Kobuk River. Silty sand substrate allowed the majority of diesel spilled to percolate into substrate at top of the hill. However, a significant, yet unknown amount flowed downhill. The 2021 field report confirms downhill contamination has moved closer to the river, but ground water was not encountered during delineation. Field investigations also do not indicate the Kobuk River, a source of drinking water, or groundwater has been affected as of 2021. Contamination at the top of the hillside appears to be 10ft below ground surface and may also overlap a previously unreported historical spill that was discovered during 2020 delineation. Some contaminated soils were removed and sent to the landfill, while the rest of the contaminated soils remain at the site in a stockpile.	This is a potential source of contamination. Risk of encountering is low due to distance and position. Risk will be managed with an inadvertent discovery plan.

Appendix H – Water Crossings

Crossing ID	Crossing Width	NHD Flow Type	Reach Code	ANADROMOUS	Species	LAT	LONG	Land Owner	ANDR Navigable Waters	Name	Crossing Method	Crossing Season
1	<25	Perennial Stream	19050404006255			67.801445	-164.35614	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
2	25-50	Perennial Stream	19050404006237			67.79936	-164.309318	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
3	25-50	Perennial Stream	19050404006234			67.797208	-164.285831	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
4	25-50	Perennial Stream	19050404006235			67.796524	-164.285227	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
5	<25	Perennial Stream	19050404000220	YES	CHp,COp,Kp,Pp,Sp,DVs,Wp	67.78813	-164.277809	Alaska Native Lands Patented or Interim Conveyed		Slough of Wulik River	Ground Lay	Winter
6	200-500	Perennial Stream	19050404003821	YES	CHp,COp,Kp,Pp,Sp,DVs,Wp	67.785017	-164.275146	Alaska Native Lands Patented or Interim Conveyed	YES	Wulik River	Aerial	Winter
7	25-50	Perennial Stream	19050404003853	YES	CHp,COp,Kp,Pp,Sp,DVs,Wp	67.781113	-164.270033	Alaska Native Lands Patented or Interim Conveyed		Slough of Wulik River	Ground Lay	Winter
8	25-50	Perennial Stream	19050404003851			67.777435	-163.997962	Bureau of Land Management			Ground Lay	Winter
9	25-50	Perennial Stream	19050404010092			67.779819	-163.987998	Bureau of Land Management			Ground Lay	Winter
10	25-50	Perennial Stream	19050404003861			67.788734	-163.952383	State			Ground Lay	Winter
11	<25	Perennial Stream	19050404003901			67.801073	-163.908754	State			Ground Lay	Winter
12	25-50	Perennial Stream	19050404003986			67.812974	-163.791727	State			Ground Lay	Winter
13	<25	Perennial Stream	19050404003974			67.814442	-163.764863	State			Ground Lay	Winter
14	<25	Perennial Stream	19050404004018			67.82036	-163.721155	State			Ground Lay	Winter
15	<25	Perennial Stream	19050404004020			67.825752	-163.690043	State			Ground Lay	Winter
16	50-100	Perennial Stream	19050404004038			67.829211	-163.670066	State			Ground Lay	Winter
17	25-50	Perennial Stream	19050404004099			67.840753	-163.603247	State			Ground Lay	Winter
18	25-50	Perennial Stream	19050404004105			67.843813	-163.585491	State			Ground Lay	Winter
19	<25	Perennial Stream	19050404004103			67.844586	-163.581004	State			Ground Lay	Winter
20	<25	Perennial Stream	19050404004107	YES	DVs	67.850756	-163.545155	State			Ground Lay	Winter
21	50-100	Perennial Stream	19050404004130			67.855694	-163.516413	State			Ground Lay	Winter
22	<25	Perennial Stream	19050404010120			67.859574	-163.493804	State			Ground Lay	Winter
23	<25	Perennial Stream	19050404010120			67.860607	-163.487778	State			Ground Lay	Winter
24	<25	Perennial Stream	19050404010120			67.860741	-163.486999	State			Ground Lay	Winter
25	<25	Perennial Stream	19050404004148			67.8751	-163.403068	State			Ground Lay	Winter
26	50-100	Perennial Stream	19050404004078	YES	CHp,Sp,DVsr	67.875749	-163.40062	State		Tutak Creek	Ground Lay	Winter
27	25-50	Perennial Stream	19050404004184	YES	DVs	67.882021	-163.335432	State			Ground Lay	Winter
28	<25	Perennial Stream	19050404004189			67.891406	-163.258177	State			Ground Lay	Winter
29	<25		19050404004187			67.886437	-163.211748	State			Ground Lay	Winter
30	<25		19050404004181			67.867774	-163.157075	State			Ground Lay	Winter
31	<25		19050404010103			67.851764	-163.096094	State			Ground Lay	Winter
32	<25		19050403011254			67.849637	-163.069063	State			Ground Lay	Winter
33	<25		19050403031387			67.820722	-163.010908	State			Ground Lay	Winter
34	<25		19050403011639			67.811884	-163.006588	State			Ground Lay	Winter
35	<25		19050403011636			67.800841	-163.000821	State			Ground Lay	Winter
36	<25		19050403011633			67.766391	-163.01985	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
37	25-50		19050403011624			67.757589	-163.02439	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
38	50-100		19050403011642			67.756102	-163.031195	Alaska Native Lands Patented or Interim Conveyed	YES	Kuchak Creek	Ground Lay	Winter
39	<25		19050403011657			67.738336	-162.984057	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
40	<25		19050403011680			67.664872	-163.003357	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
41	<25		19050403011660			67.658528	-162.997371	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
42	<25		19050403011573			67.639657	-162.970291	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
43	25-50	Perennial Stream	19050403011740	YES	CHs	67.636579	-162.970792	Alaska Native Lands Patented or Interim Conveyed		Kiyak Creek	Aerial	Winter
44	<25		19050403011762			67.621441	-162.980211	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
45	25-50	Perennial Stream	19050403011758			67.615812	-162.989087	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
46	<25	Perennial Stream	19050403013378			67.556556	-163.011522	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

47	25-50	Perennial Stream	19050403011811			67.551196	-163.022613	Alaska Native Lands Patented or Interim Conveyed	YES	Kuchoruk Creek	Ground Lay	Winter
48	25-50	Perennial Stream	19050403011980			67.506966	-163.072766	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
49	<25	Perennial Stream	19050403012073			67.503887	-163.082232	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
50	25-50	Perennial Stream	19050403012083			67.483788	-163.106624	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
51	25-50		19050403032208			67.46014	-163.144303	Bureau of Land Management			Ground Lay	Winter
52	25-50	Perennial Stream	19050403012189			67.433862	-163.168266	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
53	<25	Perennial Stream	19050403012252			67.428505	-163.182155	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
54	25-50	Perennial Stream	19050403012256			67.417785	-163.202373	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
55	<25	Perennial Stream	19050403012259			67.413708	-163.208571	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
56	<25	Perennial Stream	19050403012264			67.40459	-163.214874	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
57	<25	Perennial Stream	19050403012267			67.396674	-163.217819	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
58	<25	Perennial Stream	19050403012289			67.38561	-163.217291	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
59	25-50	Perennial Stream	19050403012315			67.363223	-163.204681	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
60	<25	Perennial Stream	19050403012328			67.358231	-163.200383	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
61	<25	Perennial Stream	19050403012306			67.354253	-163.196485	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
62	<25	Perennial Stream	19050403012144			67.342357	-163.158942	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
63	<25	Perennial Stream	19050403012475			67.330478	-163.141049	Bureau of Land Management			Ground Lay	Winter
64	<25	Perennial Stream	19050403013676			67.315747	-163.120148	State			Ground Lay	Winter
65	25-50	Perennial Stream	19050403013685			67.314574	-163.117959	State			Ground Lay	Winter
66	50-100	Perennial Stream	19050403013687			67.311581	-163.110943	State			Ground Lay	Winter
67	<25	Perennial Stream	19050403013689			67.308196	-163.100149	State			Ground Lay	Winter
68	25-50	Perennial Stream	19050403012494			67.3021	-163.080728	State			Ground Lay	Winter
69	<25	Perennial Stream	19050403031341			67.29874	-163.070029	State			Ground Lay	Winter
70	25-50	Perennial Stream	19050403012135			67.294122	-163.059224	State			Ground Lay	Winter
71	25-50	Perennial Stream	19050403012505			67.284429	-163.035435	State			Ground Lay	Winter
72	<25	Perennial Stream	19050403012506			67.284373	-163.028898	State			Ground Lay	Winter
73	<25	Perennial Stream	19050403012509			67.279628	-163.009345	State			Ground Lay	Winter
74	50-100	Perennial Stream	19050403012521			67.267598	-162.96777	Bureau of Land Management			Ground Lay	Winter
75	25-50	Perennial Stream	19050403012524			67.261207	-162.946031	Bureau of Land Management			Ground Lay	Winter
76	25-50	Perennial Stream	19050403012527			67.254559	-162.921132	Bureau of Land Management			Ground Lay	Winter
77	50-100	Perennial Stream	19050403012549			67.243308	-162.878982	Bureau of Land Management			Ground Lay	Winter
78	25-50	Perennial Stream	19050403012551			67.239439	-162.87053	Bureau of Land Management			Ground Lay	Winter
79	50-100		19050403012552			67.239235	-162.869573	Bureau of Land Management			Ground Lay	Winter
80	<25		19050403031118			67.176017	-162.731413	Bureau of Land Management			Ground Lay	Winter
81	<25		19050403012621			67.162154	-162.712988	Bureau of Land Management		Mamelak Creek	Ground Lay	Winter
82	50-100		19050403002212			67.117996	-162.646085	Bureau of Land Management			Ground Lay	Winter
83	<25		19050403002176			67.105666	-162.583535	Bureau of Land Management			Ground Lay	Winter
84	<25		19050403002173			67.097105	-162.541702	Bureau of Land Management			Ground Lay	Winter
85	<25		19050403002172			67.093497	-162.520443	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
86	<25		19050403021635			67.09071	-162.501737	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
87	<25		19050403014031			67.086742	-162.464879	Bureau of Land Management			Ground Lay	Winter
88	>500	Perennial Stream	19050403000114	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wpr	67.083393	-162.417144	Alaska Native Lands Patented or Interim Conveyed	YES	Noatak River	HDD	Summer
89	200-500	Perennial Stream	19050403000114	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wpr	67.083658	-162.398986	Alaska Native Lands Patented or Interim Conveyed		Noatak Side Channel	HDD	Summer
90	50-100	Perennial Stream	19050403002323	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wpr	67.082424	-162.390513	Alaska Native Lands Patented or Interim Conveyed		Noatak Side Channel	Ground Lay	Winter
91	50-100	Perennial Stream	19050403002324	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wpr	67.082302	-162.387734	Alaska Native Lands Patented or Interim Conveyed		Noatak Side Channel	Ground Lay	Winter

92	<25	Perennial Stream	19050403012756			67.05843	-162.291604	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
93	200-500	Perennial Stream	19050403012761	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wp	67.045583	-162.244115	Alaska Native Lands Patented or Interim Conveyed	YES	Little Noatak Slough	HDD	Summer
94	25-50	Perennial Stream	19050403014198			67.040914	-162.213915	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
95	25-50	Perennial Stream	19050403014212			67.04083	-162.2134	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
96	<25	Perennial Stream	19050304015019			67.029722	-162.158752	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
97	<25	Perennial Stream	19050304014922			66.901853	-162.27318	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
98	25-50	Perennial Stream	19050403027556			66.901368	-162.35676	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
99	25-50	Perennial Stream	19050403027327			66.901174	-162.388087	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
100	25-50	Perennial Stream	19050403022425			66.893234	-162.479999	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
101	<25		19050403022181			66.868479	-162.50859	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
102	<25		19050403022493			66.865058	-162.489425	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
103	50-100		19050403027543			66.837977	-162.421438	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
104	<25		19050403027468			66.830955	-162.409801	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
105	<25		19050403027358			66.830727	-162.403357	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
106	25-50		19050403027375			66.826069	-162.404326	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
107	25-50		19050403027516			66.825349	-162.404706	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
108	50-100		19050403027439			66.80991	-162.373281	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
109	50-100		19050403027342			66.784143	-162.324838	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
110	200-500		19050403027651			66.759664	-162.266017	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
111	25-50		19050403027372			66.757639	-162.25882	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
112	50-100		19050403027265			66.72805	-162.197724	Bureau of Land Management			Ground Lay	Winter
113	25-50		19050403027509			66.707347	-162.163452	Bureau of Land Management			Ground Lay	Winter
114	<25		19050403027525			66.694152	-162.146005	Bureau of Land Management			Ground Lay	Winter
115	25-50		19050403027537			66.691168	-162.142729	Bureau of Land Management			Ground Lay	Winter
116	50-100	Perennial Stream	19050403027245			66.672423	-162.128367	Bureau of Land Management			Ground Lay	Winter
117	50-100	Perennial Stream	19050403027293			66.665906	-162.121746	Bureau of Land Management			Ground Lay	Winter
118	<25	Perennial Stream	19050304014515			66.612679	-162.058563	Bureau of Land Management			Ground Lay	Winter
119	100-200	Perennial Stream	19050403028579			66.591429	-162.008927	Bureau of Land Management			Ground Lay	Winter
120	50-100	Perennial Stream	19050403028511			66.581731	-161.988029	Bureau of Land Management			Ground Lay	Winter
121	25-50	Perennial Stream	19050403028622			66.576799	-161.977995	Bureau of Land Management			Ground Lay	Winter
122	<25	Perennial Stream	19050403028565			66.575918	-161.976203	Bureau of Land Management			Ground Lay	Winter
123	<25		19050403028598			66.531004	-161.891631	Bureau of Land Management			Ground Lay	Winter
124	<25	Perennial Stream	19050403028557			66.527244	-161.885928	Bureau of Land Management			Ground Lay	Winter
125	<25	Perennial Stream	19050403028596			66.520318	-161.875702	Bureau of Land Management			Ground Lay	Winter
126	<25	Perennial Stream	19050403028521			66.505967	-161.854535	Bureau of Land Management			Ground Lay	Winter
127	<25	Perennial Stream	19050403028586			66.505614	-161.854015	Bureau of Land Management			Ground Lay	Winter
128	100-200	Perennial Stream	19050403028641			66.494658	-161.826942	Bureau of Land Management			Ground Lay	Winter
129	25-50	Perennial Stream	19050403028635			66.4861	-161.807799	Bureau of Land Management			Ground Lay	Winter
130	50-100	Perennial Stream	19050403028535			66.481433	-161.794675	Bureau of Land Management			Ground Lay	Winter
131	25-50	Perennial Stream	19050403028626			66.472855	-161.766929	Bureau of Land Management			Ground Lay	Winter
132	50-100	Perennial Stream	19050403028606			66.46076	-161.733989	Bureau of Land Management			Ground Lay	Winter
133	<25	Perennial Stream	19050403028544			66.455291	-161.717715	Bureau of Land Management			Ground Lay	Winter
134	25-50	Perennial Stream	19050403028617			66.443419	-161.682427	Bureau of Land Management			Ground Lay	Winter
135	<25	Perennial Stream	19050203009997			66.413304	-161.518686	Bureau of Land Management			Ground Lay	Winter
136	<25	Perennial Stream	19050203008361			66.410778	-161.490951	Bureau of Land Management			Ground Lay	Winter
137	25-50	Perennial Stream	19050203008153			66.408544	-161.472796	Bureau of Land Management			Ground Lay	Winter

138	<25	Perennial Stream	19050203009329			66.406291	-161.45606	Bureau of Land Management			Ground Lay	Winter
139	<25	Perennial Stream	19050203008455			66.403375	-161.434408	Bureau of Land Management			Ground Lay	Winter
140	<25	Perennial Stream	19050203008807			66.401872	-161.423262	Bureau of Land Management			Ground Lay	Winter
141	25-50		19050203008277			66.395157	-161.375129	Bureau of Land Management			Ground Lay	Winter
142	25-50	Perennial Stream	19050203009999			66.39498	-161.373847	Bureau of Land Management			Ground Lay	Winter
143	25-50	Perennial Stream	19050203009293			66.3883	-161.329568	Bureau of Land Management			Ground Lay	Winter
144	<25	Perennial Stream	19050203009115			66.386152	-161.316802	Bureau of Land Management			Ground Lay	Winter
145	<25	Perennial Stream	19050203010061			66.381647	-161.290056	Bureau of Land Management			Ground Lay	Winter
146	25-50	Perennial Stream	19050203009007			66.378185	-161.269525	Bureau of Land Management			Ground Lay	Winter
147	<25	Perennial Stream	19050203008333			66.365519	-161.198296	Bureau of Land Management			Ground Lay	Winter
148	<25	Perennial Stream	19050203008561			66.353688	-161.150283	Bureau of Land Management			Ground Lay	Winter
149	<25	Perennial Stream	19050203008031			66.348499	-161.127792	Bureau of Land Management			Ground Lay	Winter
150	<25	Perennial Stream	19050203010317			66.344979	-161.109391	Bureau of Land Management			Ground Lay	Winter
151	<25	Perennial Stream	19050203008381			66.338071	-161.081857	Bureau of Land Management			Ground Lay	Winter
152	25-50	Perennial Stream	19050203009775			66.330147	-161.051864	Bureau of Land Management			Ground Lay	Winter
153	<25	Perennial Stream	19050203008533			66.317206	-161.005128	Bureau of Land Management			Ground Lay	Winter
154	<25	Perennial Stream	19050203008459			66.31293	-161.002936	Bureau of Land Management			Ground Lay	Winter
155	<25	Perennial Stream	19050203010035			66.311718	-161.002653	Bureau of Land Management			Ground Lay	Winter
156	25-50	Perennial Stream	19050203008097			66.310116	-161.002209	Bureau of Land Management			Ground Lay	Winter
157	50-100	Perennial Stream	19050203008925			66.308873	-161.003158	Bureau of Land Management	YES	Kauk River	Ground Lay	Winter
158	25-50	Perennial Stream	19050203008109			66.282688	-160.984002	Bureau of Land Management			Ground Lay	Winter
159	50-100	Perennial Stream	19050203004459			66.248492	-160.959059	Bureau of Land Management			Ground Lay	Winter
160	25-50	Perennial Stream	19050203004386			66.23055	-160.945635	Bureau of Land Management			Ground Lay	Winter
161	<25	Perennial Stream	19050203004368			66.20583	-160.964147	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
162	<25	Perennial Stream	19050203004362			66.143963	-161.032823	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
163	25-50	Perennial Stream	19050203004361			66.115306	-161.074614	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
164	<25	Perennial Stream	19050203004342			66.07008	-161.129675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
165	25-50	Perennial Stream	19050203004336			66.036732	-161.122291	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
166	>500		19050203000027	YES	CHs, CHsp, COp, Kp, Pp, DVp, Wp	66.030642	-161.140616	Alaska Native Lands Patented or Interim Conveyed	YES	Buckland River	HDD	Summer
167	25-50		19050203001192			66.0299	-161.149547	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
168	<25		19050203001199			66.023903	-161.171268	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
169	100-200		19050203001194			66.023131	-161.177284	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
170	50-100		19050203001197			66.011918	-161.20222	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
171	25-50		19050203001221			65.983645	-161.191293	Alaska Native Lands Patented or Interim Conveyed		Kanik Creek	Ground Lay	Winter
172	25-50		19050203001221			65.983645	-161.191293	Alaska Native Lands Patented or Interim Conveyed		Kanik Creek	Ground Lay	Winter
173	25-50		19050203000527			66.006159	-161.251442	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
174	50-100		19050203001180			66.009403	-161.301971	Bureau of Land Management			Ground Lay	Winter
175	25-50		19050203001105			66.015947	-161.381137	Bureau of Land Management			Ground Lay	Winter
176	<25		19050203001092			65.995536	-161.472961	Bureau of Land Management			Ground Lay	Winter
177	50-100		19050203000175			65.989806	-161.521661	Bureau of Land Management		Duck Creek	Ground Lay	Winter
178	<25		19050202001672			65.973188	-161.628437	Bureau of Land Management			Ground Lay	Winter
179	50-100		19050202001668			65.969916	-161.649385	Bureau of Land Management			Ground Lay	Winter
180	25-50		19050202001908			65.965498	-161.677638	Bureau of Land Management			Ground Lay	Winter
181	25-50		19050202001913			65.959341	-161.71694	State			Ground Lay	Winter
182	25-50		19050202001914			65.956746	-161.733482	State			Ground Lay	Winter
183	25-50		19050202001849			65.947528	-161.792116	State		Wabash Creek	Ground Lay	Winter
184	25-50	Perennial Stream	19050202001964			65.938558	-161.86389	State			Ground Lay	Winter
185	200-500	Perennial Stream	19050202000352	YES	CHs,Ps,DVp	65.938419	-161.878856	State	YES	Kiwalik River	HDD	Summer
186	<25	Perennial Stream	19050202002760			65.948012	-161.914062	State			Ground Lay	Winter
187	<25	Perennial Stream	19050202002804			65.9621	-161.94755	State			Ground Lay	Winter
188	<25	Perennial Stream	19050202002779			65.965371	-161.959265	State		Mud Creek	Ground Lay	Winter
189	25-50	Perennial Stream	19050202002830			65.968918	-161.983541	State		Minnehaha Creek	Ground Lay	Winter
190	25-50	Perennial Stream	19050202002819			65.975356	-162.022984	State		Richmond Creek	Ground Lay	Winter

191	<25	Perennial Stream	19050202002907			65.983782	-162.07665	State			Ground Lay	Winter
192	25-50	Perennial Stream	19050202002903			65.989697	-162.096365	State		Virginia Creek	Ground Lay	Winter
193	50-100		19050202002901			66.003064	-162.144705	Alaska Native Lands Patented or Interim Conveyed		Kirk Creek	Ground Lay	Winter
194	25-50		19050202002881			66.00357	-162.145834	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
195	<25		19050202001063			66.004104	-162.147024	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
196	50-100		19050202002941			66.02681	-162.221051	Alaska Native Lands Patented or Interim Conveyed		Alder Creek	Ground Lay	Winter
197	100-200	Perennial Stream	19050202002948			66.019136	-162.374049	Alaska Native Lands Patented or Interim Conveyed		Willow Creek	Ground Lay	Winter
198	<25		19050202002962			66.025439	-162.347477	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
199	50-100		19050202002953			66.02223	-162.403662	Alaska Native Lands Patented or Interim Conveyed		Camp Creek	Ground Lay	Winter
200	25-50		19050202002996			66.029653	-162.499963	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
201	<25		19050202002995			66.02898	-162.511173	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
202	100-200		19050202002984			66.028544	-162.526034	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
203	25-50	Perennial Stream	19050202002975			66.025832	-162.570689	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
204	>500	Coastline	19050202021801			66.014121	-162.668781	Alaska Native Lands Patented or Interim Conveyed	YES	Kugruk Estuary	Ground Lay	Summer
205	100-200	Perennial Stream	19050202003594	YES	CHs,Ps,DVp	66.052188	-162.781504	Alaska Native Lands Patented or Interim Conveyed	YES	Inmachuk River	Aerial	Winter
206	25-50	Perennial Stream	19050202003554			66.073686	-162.787407	Alaska Native Lands Patented or Interim Conveyed		Smith Creek	Ground Lay	Winter
207	<25	Perennial Stream	19050304007304			67.037643	-162.078175	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
208	<25	Perennial Stream	19050304001462			67.060631	-161.990448	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
209	25-50	Perennial Stream	19050304001468			67.059595	-161.970038	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
210	<25		19050304001560	YES	CHp,Pp,DVp,Wp	67.054822	-161.911693	Alaska Native Lands Patented or Interim Conveyed		Unnamed Creek	Ground Lay	Winter
211	50-100	Perennial Stream	19050304001509	YES	CHp,Pp,DVp,Wp	67.055055	-161.9048	Alaska Native Lands Patented or Interim Conveyed		Unnamed trib to Hothan Inlet	Aerial	Winter
212	<25	Perennial Stream	19050304001507			67.054548	-161.889505	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
213	<25	Perennial Stream	19050304000888			67.051631	-161.802331	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
214	25-50	Perennial Stream	19050304001586			67.047527	-161.780117	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
215	<25	Perennial Stream	19050304001585			67.044869	-161.772564	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
216	<25	Perennial Stream	19050304001580			67.040821	-161.761068	Bureau of Land Management			Ground Lay	Winter
217	25-50	Perennial Stream	19050304001601	YES	CHps	67.03971	-161.740338	Bureau of Land Management		Singauruk Creek	Aerial	Winter
218	<25	Perennial Stream	19050304001600			67.032444	-161.71773	Bureau of Land Management			Ground Lay	Winter
219	25-50	Perennial Stream	19050304001596			67.031279	-161.715641	Bureau of Land Management			Ground Lay	Winter
220	50-100	Perennial Stream	19050304001701			67.024814	-161.681331	Bureau of Land Management			Ground Lay	Winter
221	50-100	Perennial Stream	19050304001716			67.028546	-161.644024	Bureau of Land Management			Ground Lay	Winter
222	50-100	Perennial Stream	19050304001705			67.024481	-161.620859	Bureau of Land Management			Aerial	Winter
223	25-50		19050304002091	Yes	DVs	66.995851	-161.536527	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
224	50-100	Perennial Stream	19050304002086			66.98635	-161.49594	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
225	<25	Perennial Stream	19050304002080			66.979464	-161.475584	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
226	25-50	Perennial Stream	19050304002083			66.97741	-161.469517	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
227	<25	Perennial Stream	19050304002078			66.975214	-161.46303	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

228	100-200	Perennial Stream	19050304001846	YES	DVp	66.967913	-161.44879	Alaska Native Lands Patented or Interim Conveyed	YES	Amaouk Creek	Aerial	Winter
229	25-50	Perennial Stream	19050304001842			66.949906	-161.447483	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
230	25-50	Perennial Stream	19050304000978			66.937497	-161.383623	Bureau of Land Management			Ground Lay	Winter
231	25-50	Perennial Stream	19050304000985			66.937129	-161.381242	Bureau of Land Management			Ground Lay	Winter
232	50-100	Perennial Stream	19050304002462			66.918868	-161.289854	Bureau of Land Management			Ground Lay	Winter
233	100-200	Perennial Stream	19050304002399			66.91322	-161.266393	Bureau of Land Management			Ground Lay	Winter
234	<25	Perennial Stream	19050304002398			66.904143	-161.257009	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
235	25-50	Perennial Stream	19050304002387			66.888469	-161.241694	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
236	>500	Perennial Stream	19050304019085	YES	CHp,Kp,Pp,DVp,SFp,Wp	66.878826	-161.234026	Alaska Native Lands Patented or Interim Conveyed	YES	Melvin Channel (Kobuk River)	HDD	Summer
237	100-200	Perennial Stream	19050304002774	YES	CHp,Kp,Pp,DVp,SFp,Wp	66.857342	-161.152216	Alaska Native Lands Patented or Interim Conveyed		Side Channel of Melvin	Ground Lay	Winter
238	25-50	Perennial Stream	19050304007171			66.850798	-161.127201	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
239	50-100	Perennial Stream	19050304015837			66.847884	-161.118937	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
240	<25	Perennial Stream	19050304015827			66.844236	-161.108596	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
241	50-100	Perennial Stream	19050304007166			66.841141	-161.098172	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
242	>500	Perennial Stream	19050304000095	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	66.824148	-161.061108	Alaska Native Lands Patented or Interim Conveyed	YES	Nazuruk Channel (Kobuk River)	HDD	Summer
243	<25	Perennial Stream	19050304017556			66.825306	-161.054176	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
244	<25	Perennial Stream	19050304015749			66.826112	-160.965493	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
245	25-50	Perennial Stream	19050304015745			66.830346	-160.947252	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
246	25-50	Perennial Stream	19050304017151			66.834031	-160.931794	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
247	25-50	Perennial Stream	19050304003169			66.840225	-160.895211	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
248	50-100	Perennial Stream	19050304003224			66.867768	-160.785035	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
249	50-100	Perennial Stream	19050304003249			66.872421	-160.746535	Alaska Native Lands Patented or Interim Conveyed	YES	Oksik Creek	Ground Lay	Winter
250	200-500	Perennial Stream	19050304018441			66.873847	-160.729025	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
251	25-50	Perennial Stream	19050304003326			66.88442	-160.666757	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
252	50-100	Perennial Stream	19050304003354			66.887114	-160.618371	Alaska Native Lands Patented or Interim Conveyed	YES	Unnamed Duffy Slough	Ground Lay	Winter
253	25-50	Perennial Stream	19050304003414			66.88777	-160.586812	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
254	25-50	Perennial Stream	19050304003424			66.897887	-160.540612	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
255	25-50	Perennial Stream	19050304003432			66.895791	-160.51074	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
256	50-100	Perennial Stream	19050304001045			66.894626	-160.496899	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
257	<25	Perennial Stream	19050304015921			66.894466	-160.472899	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
258	<25	Perennial Stream	19050304001045			66.894231	-160.4555	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
259	25-50	Perennial Stream	19050304003495			66.911344	-160.410472	Alaska Native Lands Patented or Interim Conveyed	YES	Unmanokuk Creek	Ground Lay	Winter
260	25-50	Perennial Stream	19050304015981			66.918587	-160.399961	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
261	25-50	Perennial Stream	19050304015996			66.931397	-160.389898	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
262	<25	Perennial Stream	19050304016034			66.932359	-160.391822	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

263	100-200	Perennial Stream	19050304003515			66.93811	-160.411519	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
264	>500	Perennial Stream	19050304017232			66.940212	-160.432666	Alaska Native Lands Patented or Interim Conveyed	YES	Kobuk River	HDD	Summer
265	<25	Perennial Stream	19050304003530			66.940545	-160.435363	Alaska Native Lands Patented or Interim Conveyed		Kobuk River Side Channel	Ground Lay	Winter
266	>500	Perennial Stream	19050304000117	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	66.950656	-160.48257	Alaska Native Lands Patented or Interim Conveyed	YES	Kobuk River	HDD	Summer
267	<25	Perennial Stream	19050304007053	YES	CHp,COp,Kp,Pp,Sp,DV,HWp,SFp,Wp	66.973474	-160.454049	Alaska Native Lands Patented or Interim Conveyed		Kobuk River Side Channel	Ground Lay	Winter
268	<25	Perennial Stream	19050304007060	YES	CHp,COp,Kp,Pp,Sp,DV,HWp,SFp,Wp	66.972813	-160.468309	Alaska Native Lands Patented or Interim Conveyed		Kobuk River Side Channel	Ground Lay	Winter
269	<25	Perennial Stream	19050304007053	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	66.973474	-160.454049	Alaska Native Lands Patented or Interim Conveyed		Tributary to Kobuk River	Ground Lay	Winter
270	<25	Perennial Stream	19050304007060			66.972817	-160.46826	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
272	<25	Perennial Stream	19050304003532			66.941637	-160.441219	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
273	<25	Perennial Stream	19050304003532			66.941646	-160.441182	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
274	<25	Perennial Stream	19050304003530	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	66.940545	-160.435363	Alaska Native Lands Patented or Interim Conveyed		Kobuk River Side Channel	Ground Lay	Winter
276	100-200	Perennial Stream	19050304003515			66.938116	-160.411482	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
277	<25	Perennial Stream	19050304016034	YES	CHp,COp,Kp,Pp,Sp,DVp,HWp,SFp,Wp	66.932376	-160.391804	Alaska Native Lands Patented or Interim Conveyed		Kobuk River Side Channel	Ground Lay	Winter
278	25-50	Perennial Stream	19050304015996	YES	CHp,COp,Kp,Pp,Sp,DVp,HWp,SFp,Wp	66.931406	-160.389857	Alaska Native Lands Patented or Interim Conveyed		Tributary to Kobuk River	Ground Lay	Winter
279	25-50	Perennial Stream	19050304015981			66.918597	-160.399909	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
280	25-50	Perennial Stream	19050304003495			66.911334	-160.410452	Alaska Native Lands Patented or Interim Conveyed	YES	Unmanokuk Creek	Ground Lay	Winter
281	<25	Perennial Stream	19050304001045			66.894236	-160.455497	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
282	<25	Perennial Stream	19050304015921			66.894471	-160.472896	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
283	50-100	Perennial Stream	19050304001045			66.89463	-160.496904	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
284	25-50	Perennial Stream	19050304003432			66.8958	-160.510731	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
285	25-50	Perennial Stream	19050304003424			66.897879	-160.540604	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
286	25-50	Perennial Stream	19050304003414			66.887772	-160.586813	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
287	50-100	Perennial Stream	19050304003354			66.887115	-160.618372	Alaska Native Lands Patented or Interim Conveyed	YES	Unnamed Duffy Slough	Ground Lay	Winter
288	25-50	Perennial Stream	19050304003326			66.884419	-160.66675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
289	200-500	Perennial Stream	19050304018441			66.873853	-160.729018	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
290	50-100	Perennial Stream	19050304003249			66.87242	-160.746528	Alaska Native Lands Patented or Interim Conveyed	YES	Oksik Creek	Ground Lay	Winter
291	<25		19050304001180			66.836187	-160.762758	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
292	<25		19050304003244			66.827909	-160.764752	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
293	25-50		19050304015695			66.824759	-160.76551	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
294	25-50		19050304015678			66.814415	-160.767998	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
295	<25		19050304015673			66.811532	-160.768692	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
296	<25		19050304015608			66.799696	-160.770897	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
297	<25		19050304003106			66.769148	-160.763473	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

298	<25		19050301001055			66.746822	-160.729595	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
299	<25		19050301001054			66.746605	-160.726459	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
300	<25		19050301080418			66.746246	-160.72128	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
301	25-50		19050301001045			66.745789	-160.714699	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
302	<25		19050301080235			66.742652	-160.669591	Fish and Wildlife Service			Ground Lay	Winter
303	25-50		19050301001036			66.742528	-160.667808	Fish and Wildlife Service			Ground Lay	Winter
304	25-50		19050301001029			66.741632	-160.654967	Fish and Wildlife Service			Ground Lay	Winter
305	50-100		19050301080129			66.740069	-160.632603	Fish and Wildlife Service			Ground Lay	Winter
306	25-50		19050301080118			66.739552	-160.625208	Fish and Wildlife Service			Ground Lay	Winter
307	25-50		19050301001026			66.737998	-160.603036	Fish and Wildlife Service			Ground Lay	Winter
308	50-100		19050301001005			66.736557	-160.582516	Fish and Wildlife Service		Kokopuk Creek	Ground Lay	Winter
309	25-50		19050301080034			66.73444	-160.552436	Fish and Wildlife Service			Ground Lay	Winter
310	25-50		19050301001187			66.731316	-160.508214	Fish and Wildlife Service			Ground Lay	Winter
311	<25		19050301079891			66.730583	-160.49787	Fish and Wildlife Service			Ground Lay	Winter
312	25-50		19050301079954			66.729715	-160.489855	Fish and Wildlife Service			Ground Lay	Winter
313	<25		19050301079818			66.726707	-160.469243	Fish and Wildlife Service			Ground Lay	Winter
314	25-50		19050301082590			66.725902	-160.466942	Fish and Wildlife Service	YES	Singauruk River	Ground Lay	Winter
315	50-100		19050301001216			66.72197	-160.436839	Fish and Wildlife Service		Napatolik Creek	Ground Lay	Winter
316	25-50		19050301079503			66.721673	-160.434811	Fish and Wildlife Service			Ground Lay	Winter
317	25-50		19050301079503			66.721231	-160.431793	Fish and Wildlife Service			Ground Lay	Winter
318	25-50		19050301079492			66.714754	-160.387591	Fish and Wildlife Service			Ground Lay	Winter
319	50-100		19050301079487			66.71407	-160.382934	Fish and Wildlife Service			Ground Lay	Winter
320	25-50		19050301079454			66.713015	-160.375741	Fish and Wildlife Service			Ground Lay	Winter
321	<25		19050301001449			66.708175	-160.342804	Fish and Wildlife Service			Ground Lay	Winter
322	50-100		19050301001446			66.700685	-160.291555	Fish and Wildlife Service			Ground Lay	Winter
323	<25		19050301078861			66.689771	-160.21637	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
324	25-50		19050301001289			66.688385	-160.206844	Alaska Native Lands Patented or Interim Conveyed	YES	Oblaron Creek	Aerial	Winter
325	50-100		19050301001289			66.68814	-160.205162	Alaska Native Lands Patented or Interim Conveyed	YES	Oblaron Creek	Aerial	Winter
326	25-50		19050301001289			66.687988	-160.204114	Alaska Native Lands Patented or Interim Conveyed	YES	Oblaron Creek	Aerial	Winter
327	<25		19050301001319			66.6842	-160.17811	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
328	25-50		19050301001350			66.681951	-160.162691	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
329	25-50		19050301001358			66.680557	-160.153135	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
330	200-500		19050301038978			66.689787	-159.981114	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
331	50-100		19050301078589			66.695017	-159.916084	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
332	100-200	Perennial Stream	19050301013798			66.695596	-159.905398	Alaska Native Lands Patented or Interim Conveyed	YES	Fish River	Ground Lay	Winter
333	<25		19050301013778			66.695153	-159.818854	Fish and Wildlife Service			Ground Lay	Winter
334	50-100		19050301070377			66.695053	-159.813071	Fish and Wildlife Service			Ground Lay	Winter
335	<25		19050301013767			66.695804	-159.771103	Fish and Wildlife Service			Ground Lay	Winter
336	200-500		19050301013064			66.698341	-159.670905	Fish and Wildlife Service	YES	Ikagoak River	Ground Lay	Winter
337	100-200		19050301070394			66.697598	-159.628452	Fish and Wildlife Service			Ground Lay	Winter
338	50-100		19050301017789			66.697049	-159.612591	Fish and Wildlife Service			Ground Lay	Winter
339	50-100		19050301070426			66.696387	-159.593503	Fish and Wildlife Service			Ground Lay	Winter
340	50-100		19050301013083			66.695004	-159.559385	Fish and Wildlife Service			Ground Lay	Winter
341	25-50		19050301013093			66.694077	-159.538803	Fish and Wildlife Service	YES	Nuleargowik River	Ground Lay	Winter
342	25-50		19050301070182			66.691747	-159.518639	Fish and Wildlife Service			Ground Lay	Winter
343	25-50		19050301013098			66.68586	-159.460979	Fish and Wildlife Service			Ground Lay	Winter
344	25-50		19050301070076			66.681359	-159.421064	Fish and Wildlife Service			Ground Lay	Winter
345	50-100		19050301069988			66.674274	-159.375202	Fish and Wildlife Service			Ground Lay	Winter
346	25-50		19050301012831			66.67192	-159.289962	Fish and Wildlife Service			Ground Lay	Winter
347	25-50		19050301012823			66.670858	-159.259378	Fish and Wildlife Service			Ground Lay	Winter
348	25-50		19050301057711			66.676069	-159.222173	Fish and Wildlife Service			Ground Lay	Winter
349	25-50		19050301057711			66.676512	-159.219062	Fish and Wildlife Service			Ground Lay	Winter

350	25-50		19050301057710			66.676837	-159.216781	Fish and Wildlife Service			Ground Lay	Winter
351	25-50		19050301057725			66.67728	-159.213674	Fish and Wildlife Service			Ground Lay	Winter
352	<25		19050301065611			66.67855	-159.204754	Fish and Wildlife Service			Ground Lay	Winter
353	<25		19050301057719			66.679564	-159.197629	Fish and Wildlife Service			Ground Lay	Winter
354	25-50		19050301057730			66.680438	-159.191482	Fish and Wildlife Service			Ground Lay	Winter
355	25-50		19050301057727			66.680603	-159.190324	Fish and Wildlife Service			Ground Lay	Winter
356	<25		19050301065622			66.682066	-159.180033	Fish and Wildlife Service			Ground Lay	Winter
357	25-50		19050301065624			66.682706	-159.175531	Fish and Wildlife Service			Ground Lay	Winter
358	<25		19050301065610			66.688116	-159.137421	Fish and Wildlife Service			Ground Lay	Winter
359	<25		19050301078059			66.696257	-159.059955	Fish and Wildlife Service			Ground Lay	Winter
360	<25		19050301078076			66.696572	-159.057467	Fish and Wildlife Service			Ground Lay	Winter
361	<25		19050301078025			66.697713	-159.036635	Fish and Wildlife Service			Ground Lay	Winter
362	25-50		19050301078021			66.697812	-159.028255	Fish and Wildlife Service			Ground Lay	Winter
363	25-50		19050301012538			66.698865	-158.979679	Fish and Wildlife Service			Ground Lay	Winter
364	<25		19050301012544			66.703065	-158.956481	Fish and Wildlife Service			Ground Lay	Winter
365	<25		19050301012542			66.705702	-158.94153	Fish and Wildlife Service			Ground Lay	Winter
366	25-50		19050301012464			66.710836	-158.906925	Fish and Wildlife Service			Ground Lay	Winter
367	<25		19050301012455			66.711483	-158.896513	Fish and Wildlife Service			Ground Lay	Winter
368	50-100		19050301081044			66.71766	-158.845747	Fish and Wildlife Service			Ground Lay	Winter
369	50-100		19050301011795			66.719482	-158.839354	Fish and Wildlife Service			Ground Lay	Winter
370	25-50		19050301017647			66.722404	-158.832279	Fish and Wildlife Service			Ground Lay	Winter
371	25-50		19050301017660			66.724466	-158.820529	Fish and Wildlife Service			Ground Lay	Winter
372	<25		19050301011782			66.726259	-158.807191	Fish and Wildlife Service			Ground Lay	Winter
373	25-50		19050301011785			66.72708	-158.801073	Fish and Wildlife Service			Ground Lay	Winter
374	25-50		19050301078595			66.72795	-158.794599	Fish and Wildlife Service			Ground Lay	Winter
375	50-100		19050301011767			66.733319	-158.766131	Fish and Wildlife Service			Ground Lay	Winter
376	<25		19050301078760			66.737044	-158.746721	Fish and Wildlife Service			Ground Lay	Winter
377	<25		19050301078710			66.737306	-158.739079	Fish and Wildlife Service			Ground Lay	Winter
378	<25		19050301078710			66.737279	-158.738568	Fish and Wildlife Service			Ground Lay	Winter
379	<25		19050301078710			66.737179	-158.736624	Fish and Wildlife Service			Ground Lay	Winter
380	100-200		19050301000833			66.738449	-158.70861	Fish and Wildlife Service		Kuchuk Creek	Aerial	Winter
381	50-100		19050301017636			66.739646	-158.701257	Fish and Wildlife Service			Ground Lay	Winter
382	<25		19050301011442			66.743041	-158.673068	Fish and Wildlife Service			Ground Lay	Winter
383	25-50		19050301011506			66.74358	-158.665109	Fish and Wildlife Service			Ground Lay	Winter
384	<25		19050301017590			66.744356	-158.653622	Fish and Wildlife Service			Ground Lay	Winter
385	<25		19050301078831			66.745489	-158.631726	Fish and Wildlife Service			Ground Lay	Winter
386	<25		19050301078808			66.746355	-158.614953	Fish and Wildlife Service			Ground Lay	Winter
387	25-50		19050301011454			66.746546	-158.595117	Fish and Wildlife Service			Ground Lay	Winter
388	25-50		19050301078811			66.749016	-158.584677	Fish and Wildlife Service			Ground Lay	Winter
390	50-100		19050301011352			66.763881	-158.530464	Fish and Wildlife Service			Ground Lay	Winter
391	100-200		19050301011210			66.772923	-158.503496	Fish and Wildlife Service			Ground Lay	Winter
392	>500		19050301038333			66.773766	-158.49609	Fish and Wildlife Service			Ground Lay	Winter
393	25-50		19050301011345			66.778492	-158.471763	Fish and Wildlife Service			Ground Lay	Winter
394	25-50		19050301011345			66.783357	-158.459514	Fish and Wildlife Service			Ground Lay	Winter
395	50-100		19050301080921			66.788589	-158.40752	Fish and Wildlife Service			Ground Lay	Winter
396	25-50		19050301011272			66.792378	-158.388003	Fish and Wildlife Service			Ground Lay	Winter
397	25-50		19050301011268			66.796364	-158.37509	Fish and Wildlife Service			Ground Lay	Winter
398	25-50		19050301071614			66.808932	-158.334835	Fish and Wildlife Service			Ground Lay	Winter
399	<25		19050301011245			66.810584	-158.329171	Fish and Wildlife Service			Ground Lay	Winter
400	25-50		19050301010932			66.818559	-158.28572	Fish and Wildlife Service			Ground Lay	Winter
401	<25		19050301080132			66.819902	-158.281324	Fish and Wildlife Service			Ground Lay	Winter
402	<25		19050301010927			66.832094	-158.231976	Fish and Wildlife Service			Ground Lay	Winter
403	<25		19050301010925			66.83953	-158.223382	Fish and Wildlife Service			Ground Lay	Winter
404	<25		19050301080541			66.84257	-158.212133	Fish and Wildlife Service			Ground Lay	Winter
405	50-100		19050301010843			66.845569	-158.202031	Fish and Wildlife Service			Ground Lay	Winter
406	<25		19050301010854			66.860136	-158.181775	Fish and Wildlife Service			Ground Lay	Winter
407	25-50		19050301068102			66.864427	-158.168507	Fish and Wildlife Service			Ground Lay	Winter
412	50-100		19050301000662			66.87625	-158.118576	Fish and Wildlife Service		Kugarak River	Aerial	Winter
413	25-50		19050301010739			66.903173	-158.095097	Fish and Wildlife Service			Ground Lay	Winter
414	25-50		19050301010736			66.90495	-158.092368	Fish and Wildlife Service			Ground Lay	Winter
415	<25		19050301010732			66.915808	-158.081156	Fish and Wildlife Service			Ground Lay	Winter
416	200-500		19050301010702			66.923512	-158.059252	Fish and Wildlife Service			Ground Lay	Winter
417	<25		19050301068614			66.927172	-158.046817	Fish and Wildlife Service			Ground Lay	Winter
418	<25		19050301010695			66.927463	-158.045579	Fish and Wildlife Service			Ground Lay	Winter
419	<25		19050301072378			66.93039	-158.037684	Fish and Wildlife Service			Ground Lay	Winter
420	25-50		19050301010613			66.9338	-158.027897	Fish and Wildlife Service			Ground Lay	Winter

421	25-50		19050301010651			66.935251	-158.022677	Fish and Wildlife Service			Ground Lay	Winter
422	25-50		19050301010690			66.940566	-158.006997	Fish and Wildlife Service			Ground Lay	Winter
423	<25		19050301010688			66.943924	-157.998667	Fish and Wildlife Service			Ground Lay	Winter
424	25-50		19050301068792			66.951153	-157.982445	Fish and Wildlife Service			Ground Lay	Winter
425	25-50		19050301010687			66.954154	-157.974587	Fish and Wildlife Service			Ground Lay	Winter
426	<25		19050303028658			66.970343	-157.929992	Fish and Wildlife Service			Ground Lay	Winter
427	<25		19050303028764			66.973809	-157.924693	Fish and Wildlife Service			Ground Lay	Winter
428	25-50		19050303028883			66.976531	-157.920296	Fish and Wildlife Service			Ground Lay	Winter
429	<25		19050303028924			66.977531	-157.91857	Fish and Wildlife Service			Ground Lay	Winter
430	<25		19050303028965			66.978916	-157.916182	Fish and Wildlife Service			Ground Lay	Winter
431	<25		19050303021695			66.997878	-157.888576	Bureau of Land Management			Ground Lay	Winter
432	<25		19050303021697			66.998386	-157.888031	Bureau of Land Management			Ground Lay	Winter
433	<25		19050303003113			67.003667	-157.883988	Bureau of Land Management			Ground Lay	Winter
434	<25		19050303021752			67.009487	-157.877327	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
435	<25		19050303016909			67.029371	-157.839605	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
436	25-50	Perennial Stream	19050303017076			67.054663	-157.842216	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
437	>500	Perennial Stream	19050303022660	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	67.083803	-157.852471	Alaska Native Lands Patented or Interim Conveyed	YES	Kobuk River (Nazuruk Channel)	HDD	Summer
438	<25	Perennial Stream	19050303033226			67.102871	-157.839552	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
439	200-500	Perennial Stream	19050303000838	YES	CHs,DVp,Wp	67.1031	-157.769481	Alaska Native Lands Patented or Interim Conveyed	YES	Ambler River	HDD	Summer
440	25-50	Perennial Stream	19050303033000			67.098293	-157.766957	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
441	25-50	Perennial Stream	19050303032906			67.091691	-157.762952	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
442	25-50	Perennial Stream	19050303032859			67.089218	-157.761675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
443	25-50	Perennial Stream	19050303032600			67.087677	-157.761993	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
444	25-50	Perennial Stream	19050303032697			67.07737	-157.759177	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
445	<25	Perennial Stream	19050303032650			67.076481	-157.758013	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
446	25-50	Perennial Stream	19050303032543			67.073048	-157.753523	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
447	25-50	Perennial Stream	19050303032375			67.06606	-157.740626	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
448	<25	Perennial Stream	19050303004939			67.057633	-157.720778	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
449	<25		19050303033622			67.054846	-157.712326	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
450	<25		19050303053033			67.050204	-157.710675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
451	25-50		19050303033614			67.047091	-157.709439	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
452	25-50		19050303031570			67.042905	-157.707777	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
453	<25		19050303031190			67.029578	-157.698778	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
454	<25		19050303030862			67.023876	-157.66584	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
455	50-100		19050303054312			67.023554	-157.66384	Alaska Native Lands Patented or Interim Conveyed	YES	Rabbit Creek	Ground Lay	Winter
456	100-200		19050303054207			67.024316	-157.648803	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
457	50-100		19050303052917			67.019879	-157.595124	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
458	50-100		19050303052917			67.018286	-157.591812	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
459	50-100		19050303004807			67.002241	-157.581385	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter

460	100-200		19050303053898			67.000033	-157.57404	Alaska Native Lands Patented or Interim Conveyed		Pitkik Creek	Ground Lay	Winter
461	<25		19050303029555			66.999864	-157.573475	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
462	<25		19050303029198			66.997817	-157.566665	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
463	<25		19050303029366			66.997266	-157.564834	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
464	25-50		19050303029195			66.997049	-157.55534	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
465	<25		19050303029194			66.997255	-157.549927	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
466	100-200		19050303004824			66.997642	-157.539863	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
467	<25		19050303004828			66.995371	-157.520618	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
468	<25		19050303029068			66.990721	-157.49771	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
469	<25		19050303029048			66.990335	-157.496545	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
470	25-50		19050303053657			66.98903	-157.492603	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
471	25-50		19050303028684			66.980627	-157.467237	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
472	50-100		19050303028494			66.975803	-157.452689	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
473	25-50		19050303028534			66.975136	-157.450679	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
474	25-50		19050303028304			66.974333	-157.448257	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
475	100-200	Perennial Stream	19050303004754			66.967661	-157.42816	Alaska Native Lands Patented or Interim Conveyed	YES	Garland Creek	Ground Lay	Winter
476	25-50	Perennial Stream	19050303004753			66.965993	-157.420906	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
477	25-50	Perennial Stream	19050303054376			66.959687	-157.404078	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
478	50-100	Perennial Stream	19050303026901			66.956032	-157.392387	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
479	<25	Perennial Stream	19050303026358			66.943784	-157.351913	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
480	25-50	Perennial Stream	19050303026243			66.942383	-157.347235	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
481	50-100	Perennial Stream	19050303026617			66.939719	-157.344057	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
482	100-200	Perennial Stream	19050303001217	YES	CHp	66.938402	-157.339858	Alaska Native Lands Patented or Interim Conveyed	YES	Shungnak River	Aerial	Winter
483	<25	Perennial Stream	19050303027763			66.937606	-157.331439	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
484	<25	Perennial Stream	19050303025261			66.93253	-157.311681	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
485	<25	Perennial Stream	19050303025253			66.932386	-157.311124	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
486	<25	Perennial Stream	19050303025218			66.931981	-157.30956	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
487	<25	Perennial Stream	19050303025175			66.931075	-157.306063	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
488	50-100	Perennial Stream	19050303004365			66.930087	-157.302248	Alaska Native Lands Patented or Interim Conveyed		Sheshok Creek	Ground Lay	Winter
489	25-50	Perennial Stream	19050303024969			66.930023	-157.302004	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
490	25-50	Perennial Stream	19050303025113			66.929891	-157.301493	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
491	<25	Perennial Stream	19050303024968			66.928297	-157.295342	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
492	25-50	Perennial Stream	19050303024601			66.926547	-157.288285	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

493	<25	Perennial Stream	19050303024600			66.926208	-157.286758	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
494	<25	Perennial Stream	19050303024661			66.926179	-157.286623	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
495	<25	Perennial Stream	19050303024493			66.925578	-157.283916	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
496	<25	Perennial Stream	19050303024519			66.92452	-157.279145	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
497	<25	Perennial Stream	19050303053625			66.92369	-157.272755	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
498	<25	Perennial Stream	19050303024372			66.923543	-157.271553	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
499	<25	Perennial Stream	19050303024444			66.923294	-157.269507	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
500	<25	Perennial Stream	19050303024331			66.923105	-157.267961	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
501	25-50	Perennial Stream	19050303024358			66.922795	-157.265418	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
502	25-50	Perennial Stream	19050303024394			66.922699	-157.264637	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
503	<25	Perennial Stream	19050303024228			66.921836	-157.261014	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
504	25-50	Perennial Stream	19050303024161			66.921321	-157.258301	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
505	<25	Perennial Stream	19050303024012			66.920055	-157.247727	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
506	25-50	Perennial Stream	19050303023999			66.918533	-157.236728	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
507	<25	Perennial Stream	19050303023531			66.916152	-157.212586	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
508	<25	Perennial Stream	19050303023472			66.916013	-157.211181	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
509	25-50	Perennial Stream	19050303004311			66.914263	-157.187868	Alaska Native Lands Patented or Interim Conveyed	YES	Cosmos Creek	Aerial	Winter
510	<25	Perennial Stream	19050303023414			66.913627	-157.181968	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
511	<25	Perennial Stream	19050303023368			66.913585	-157.181604	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
512	<25	Perennial Stream	19050303023360			66.913488	-157.180777	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
513	<25	Perennial Stream	19050303023554			66.913299	-157.179153	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
514	<25	Perennial Stream	19050303023337			66.913136	-157.176942	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
515	<25	Perennial Stream	19050303023418			66.912927	-157.173664	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
516	25-50	Perennial Stream	19050303004325			66.912577	-157.168189	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
517	<25	Perennial Stream	19050303023216			66.91249	-157.164962	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
518	<25	Perennial Stream	19050303023262			66.912814	-157.138615	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
519	<25	Perennial Stream	19050303023349			66.912871	-157.137954	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
520	<25	Perennial Stream	19050303023258			66.912916	-157.137424	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
521	<25	Perennial Stream	19050303023501			66.913178	-157.134359	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
522	25-50	Perennial Stream	19050303052606			66.913243	-157.133595	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
523	<25	Perennial Stream	19050303023247			66.913289	-157.127946	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
524	<25	Perennial Stream	19050303023361			66.915217	-157.11943	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
525	25-50		19050302013215			66.916065	-157.095975	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

526	25-50	Perennial Stream	19050302009542	YES	DVp	66.920531	-157.066277	Alaska Native Lands Patented or Interim Conveyed	YES	Wesley Creek	Aerial	Winter
527	25-50		19050302015307			66.92115	-157.05169	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
528	25-50		19050302015307			66.92155	-157.046788	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
529	25-50		19050302015379			66.927498	-157.007338	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
530	50-100		19050302009541			66.928243	-156.999967	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
531	25-50		19050302009540			66.930992	-156.950178	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
532	25-50		19050302009539			66.93071	-156.945965	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
533	50-100	Perennial Stream	19050302009507	YES	DVp	66.917581	-156.927102	Alaska Native Lands Patented or Interim Conveyed		Dahl Creek	Ground Lay	Winter
534	<25		19050302019167			66.914209	-156.881023	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
535	<25	Perennial Stream	19050302019167			66.914209	-156.880995	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
536	50-100	Perennial Stream	19050302009507	YES	DVp	66.917581	-156.927074	Alaska Native Lands Patented or Interim Conveyed		Dahl Creek	Ground Lay	Winter
537	25-50	Perennial Stream	19050302009539			66.93071	-156.945965	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
538	25-50	Perennial Stream	19050302009540			66.930992	-156.95015	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
539	50-100	Perennial Stream	19050302009541			66.928243	-156.999939	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
540	25-50	Stream	19050302015379			66.927498	-157.00731	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
541	25-50	Stream	19050302015307			66.92155	-157.046788	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
542	25-50	Stream	19050302015307			66.92115	-157.051662	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
544	25-50	Perennial Stream	19050302013215			66.916065	-157.095947	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
545	<25	Perennial Stream	19050303051118			66.902906	-157.128617	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
546	<25	Perennial Stream	19050303050949			66.900793	-157.130759	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
547	<25	Perennial Stream	19050303050949			66.90044	-157.131115	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
548	<25	Perennial Stream	19050303050827			66.899539	-157.132028	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
549	>500	Perennial Stream	19050302009571	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	66.879787	-157.148862	Alaska Native Lands Patented or Interim Conveyed	YES	Kobuk River	HDD	Summer
550	200-500	Perennial Stream	19050302020996	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	66.870912	-157.140382	Alaska Native Lands Patented or Interim Conveyed	YES	Kobuk River	HDD	Summer
551	200-500	Perennial Stream	19050302001465	YES	CHp	66.856625	-157.149556	Alaska Native Lands Patented or Interim Conveyed	YES	Pick River	HDD	Summer
552	25-50		19050302019164			66.847877	-157.162789	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
553	25-50		19050303048093			66.839526	-157.183685	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
554	<25		19050303047939			66.83952	-157.185415	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
555	<25		19050303047719			66.839402	-157.215684	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
556	25-50		19050303016424			66.839377	-157.221825	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
557	<25		19050303048055			66.83936	-157.226203	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
558	<25		19050303048056			66.839354	-157.22773	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
559	50-100	Perennial Stream	19050303004267			66.839258	-157.267926	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter

560	25-50	Perennial Stream	19050303047979			66.839256	-157.268944	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
561	<25	Perennial Stream	19050303047771			66.8381	-157.284929	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
562	<25	Perennial Stream	19050303047771			66.837732	-157.286558	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
563	<25	Perennial Stream	19050303004259			66.837542	-157.287395	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
564	<25	Perennial Stream	19050303047811			66.836716	-157.294788	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
565	<25	Perennial Stream	19050303047838			66.837039	-157.304548	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
566	<25	Perennial Stream	19050303047871			66.837117	-157.306898	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
567	25-50	Perennial Stream	19050303004266			66.837473	-157.317671	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
568	25-50	Perennial Stream	19050303047744			66.837551	-157.320025	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
569	<25	Perennial Stream	19050303047856			66.835215	-157.338265	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
570	25-50	Perennial Stream	19050303047865			66.834581	-157.342446	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
571	<25	Perennial Stream	19050303047702			66.834323	-157.348856	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
572	<25	Perennial Stream	19050303047806			66.833554	-157.379407	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
573	<25	Perennial Stream	19050303047835			66.833533	-157.380228	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
574	<25	Perennial Stream	19050303047888			66.833501	-157.381488	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
575	<25	Perennial Stream	19050303047763			66.833432	-157.384234	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
576	<25	Perennial Stream	19050303047801			66.833203	-157.393294	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
577	50-100	Perennial Stream	19050303047849			66.833082	-157.398062	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
578	<25	Perennial Stream	19050303047844			66.833032	-157.40002	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
579	<25	Perennial Stream	19050303047844			66.833001	-157.401227	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
580	<25	Perennial Stream	19050303047844			66.832977	-157.402169	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
581	50-100	Perennial Stream	19050303047843			66.83267	-157.414253	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
582	50-100	Perennial Stream	19050303047824			66.832459	-157.42253	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
583	<25	Perennial Stream	19050303047755			66.832226	-157.431646	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
584	<25	Perennial Stream	19050303047805			66.832159	-157.43424	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
585	<25	Perennial Stream	19050303047778			66.832082	-157.437257	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
586	<25	Perennial Stream	19050303047794			66.831991	-157.440812	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
587	<25	Perennial Stream	19050303047913			66.8319	-157.444354	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
588	<25	Perennial Stream	19050303047832			66.831773	-157.449269	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
589	25-50	Perennial Stream	19050303003811			66.83125	-157.470686	Alaska Native Lands Patented or Interim Conveyed	YES	Black River	Ground Lay	Winter
590	<25	Perennial Stream	19050303047734			66.831214	-157.475921	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
591	<25	Perennial Stream	19050303047748			66.831191	-157.479296	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
592	25-50	Perennial Stream	19050303047786			66.831131	-157.48789	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

593	<25		19050303047830			66.831414	-157.505981	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
594	<25		19050303048008			66.831603	-157.507432	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
595	100-200		19050303016353			66.83374	-157.526899	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
596	<25		19050303003874			66.832559	-157.54899	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
597	<25		19050303047879			66.831184	-157.574626	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
598	<25		19050303048107			66.830872	-157.58044	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
599	<25		19050303047852			66.830669	-157.584218	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
600	<25		19050303047904			66.830617	-157.585188	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
601	25-50	Perennial Stream	19050303048333			66.830326	-157.598148	Bureau of Land Management			Ground Lay	Winter
602	<25	Perennial Stream	19050303047968			66.830139	-157.604851	Bureau of Land Management			Ground Lay	Winter
603	<25	Perennial Stream	19050303047985			66.829902	-157.607355	Bureau of Land Management			Ground Lay	Winter
604	25-50	Perennial Stream	19050303047799			66.829435	-157.61229	Bureau of Land Management			Ground Lay	Winter
605	25-50	Perennial Stream	19050303047799			66.82925	-157.614235	Bureau of Land Management			Ground Lay	Winter
606	25-50	Perennial Stream	19050303003882			66.82914	-157.615399	Bureau of Land Management			Ground Lay	Winter
607	50-100	Perennial Stream	19050303003829			66.827674	-157.630862	Bureau of Land Management	YES	Black River	Ground Lay	Winter
608	<25	Perennial Stream	19050303047883			66.827533	-157.632351	Bureau of Land Management			Ground Lay	Winter
609	<25	Perennial Stream	19050303047905			66.827321	-157.63458	Bureau of Land Management			Ground Lay	Winter
610	<25	Perennial Stream	19050303047812			66.827142	-157.636469	Bureau of Land Management			Ground Lay	Winter
611	<25	Perennial Stream	19050303048039			66.827033	-157.637615	Bureau of Land Management			Ground Lay	Winter
612	<25	Perennial Stream	19050303047672			66.825555	-157.645169	Bureau of Land Management			Ground Lay	Winter
613	25-50	Perennial Stream	19050303052229			66.82545	-157.645696	Bureau of Land Management			Ground Lay	Winter
614	<25	Perennial Stream	19050303047643			66.825102	-157.647439	Bureau of Land Management			Ground Lay	Winter
615	25-50	Perennial Stream	19050303047534			66.822086	-157.662538	Bureau of Land Management			Ground Lay	Winter
616	25-50	Perennial Stream	19050303004027			66.821133	-157.686665	Bureau of Land Management			Ground Lay	Winter
617	25-50	Perennial Stream	19050303004040			66.821242	-157.699533	Bureau of Land Management			Ground Lay	Winter
618	25-50	Perennial Stream	19050303047543			66.820681	-157.718073	Bureau of Land Management			Ground Lay	Winter
619	<25	Perennial Stream	19050303052240			66.820583	-157.719802	Bureau of Land Management			Ground Lay	Winter
620	<25	Perennial Stream	19050303047530			66.820318	-157.724521	Bureau of Land Management			Ground Lay	Winter
621	25-50	Perennial Stream	19050303047533			66.820114	-157.728138	Bureau of Land Management			Ground Lay	Winter
622	25-50	Perennial Stream	19050303047539			66.820024	-157.729741	Bureau of Land Management			Ground Lay	Winter
623	25-50	Perennial Stream	19050303052257			66.819909	-157.731781	Bureau of Land Management			Ground Lay	Winter
624	<25	Perennial Stream	19050303047529			66.819816	-157.73342	Bureau of Land Management			Ground Lay	Winter
625	<25	Perennial Stream	19050303047528			66.819656	-157.736272	Bureau of Land Management			Ground Lay	Winter
626	<25	Perennial Stream	19050303047512			66.819312	-157.742367	Bureau of Land Management			Ground Lay	Winter
627	50-100	Perennial Stream	19050303052284			66.819391	-157.747999	Bureau of Land Management			Ground Lay	Winter
628	25-50	Perennial Stream	19050303047781			66.819529	-157.75718	Bureau of Land Management			Ground Lay	Winter
629	<25	Perennial Stream	19050303004082			66.819554	-157.764539	Bureau of Land Management			Ground Lay	Winter
630	<25	Perennial Stream	19050303047558			66.819445	-157.771594	Bureau of Land Management			Ground Lay	Winter
631	<25	Perennial Stream	19050303047544			66.819776	-157.774373	Bureau of Land Management			Ground Lay	Winter
632	<25	Perennial Stream	19050303047573			66.819964	-157.775835	Bureau of Land Management			Ground Lay	Winter
633	<25	Perennial Stream	19050303047557			66.820129	-157.777125	Bureau of Land Management			Ground Lay	Winter
634	<25	Perennial Stream	19050303047582			66.820296	-157.778431	Bureau of Land Management			Ground Lay	Winter
635	25-50	Perennial Stream	19050303052309			66.820681	-157.78144	Bureau of Land Management			Ground Lay	Winter
636	25-50	Perennial Stream	19050303047642			66.820798	-157.782356	Bureau of Land Management			Ground Lay	Winter
637	<25	Perennial Stream	19050303047728			66.821049	-157.784314	Bureau of Land Management			Ground Lay	Winter
638	50-100	Perennial Stream	19050303047656			66.821891	-157.790897	Bureau of Land Management			Ground Lay	Winter
639	<25	Perennial Stream	19050303047759			66.822406	-157.794917	Bureau of Land Management			Ground Lay	Winter
640	<25	Perennial Stream	19050303048125			66.822612	-157.796532	Bureau of Land Management			Ground Lay	Winter
641	<25	Perennial Stream	19050303047687			66.822604	-157.797864	Bureau of Land Management			Ground Lay	Winter
642	<25	Perennial Stream	19050303047709			66.822507	-157.80041	Bureau of Land Management			Ground Lay	Winter
643	<25	Perennial Stream	19050303047768			66.822461	-157.80161	Bureau of Land Management			Ground Lay	Winter
644	25-50	Perennial Stream	19050303047676			66.822432	-157.802378	Bureau of Land Management			Ground Lay	Winter
645	<25	Perennial Stream	19050303047718			66.822372	-157.803952	Bureau of Land Management			Ground Lay	Winter
646	25-50	Perennial Stream	19050301010206			66.8217	-157.821486	Bureau of Land Management		Kerchurak Creek	Ground Lay	Winter
647	25-50	Perennial Stream	19050301010219			66.820594	-157.831536	Bureau of Land Management			Ground Lay	Winter
648	<25	Perennial Stream	19050301010196			66.820563	-157.834999	Bureau of Land Management			Ground Lay	Winter
649	25-50	Perennial Stream	19050301010223			66.820171	-157.861277	Bureau of Land Management			Ground Lay	Winter
650	<25	Perennial Stream	19050301010228			66.821936	-157.963833	Fish and Wildlife Service			Ground Lay	Winter

651	25-50	Perennial Stream	19050301010238			66.822642	-157.990068	Fish and Wildlife Service			Ground Lay	Winter
652	50-100	Perennial Stream	19050301010243			66.82291	-158.003116	Fish and Wildlife Service			Ground Lay	Winter
653	25-50	Perennial Stream	19050301010269			66.823788	-158.035701	Fish and Wildlife Service			Ground Lay	Winter
654	25-50	Perennial Stream	19050301080148			66.82407	-158.0439	Fish and Wildlife Service			Ground Lay	Winter
655	<25	Perennial Stream	19050301010280			66.825826	-158.080673	Fish and Wildlife Service			Ground Lay	Winter
656	25-50	Perennial Stream	19050301010399			66.827127	-158.11834	Fish and Wildlife Service			Ground Lay	Winter
657	25-50	Perennial Stream	19050301010395			66.827681	-158.123422	Fish and Wildlife Service			Ground Lay	Winter
658	25-50	Perennial Stream	19050301010410			66.828832	-158.151153	Fish and Wildlife Service			Ground Lay	Winter
659	50-100	Perennial Stream	19050301000655			66.829308	-158.160218	Fish and Wildlife Service	YES	Kugarak River	Aerial	Winter
660	25-50		19050301010913			66.827997	-158.247428	Fish and Wildlife Service			Ground Lay	Winter
661	<25	Perennial Stream	19050301071714			66.819902	-158.281324	Fish and Wildlife Service			Ground Lay	Winter
662	25-50	Perennial Stream	19050301010932			66.818559	-158.28572	Fish and Wildlife Service			Ground Lay	Winter
663	<25		19050301011245			66.810584	-158.329171	Fish and Wildlife Service			Ground Lay	Winter
664	25-50		19050301071614			66.808932	-158.334835	Fish and Wildlife Service			Ground Lay	Winter
665	25-50		19050301011268			66.796364	-158.37509	Fish and Wildlife Service			Ground Lay	Winter
666	25-50		19050301011272			66.792378	-158.388003	Fish and Wildlife Service			Ground Lay	Winter
667	50-100		19050301080921			66.788589	-158.40752	Fish and Wildlife Service			Ground Lay	Winter
668	25-50		19050301011345			66.783357	-158.459514	Fish and Wildlife Service			Ground Lay	Winter
669	25-50		19050301011345			66.778492	-158.471763	Fish and Wildlife Service			Ground Lay	Winter
670	>500		19050301038333			66.773766	-158.49609	Fish and Wildlife Service			Ground Lay	Winter
671	100-200		19050301011210			66.772923	-158.503496	Fish and Wildlife Service			Ground Lay	Winter
672	50-100		19050301011352			66.763881	-158.530464	Fish and Wildlife Service			Ground Lay	Winter
674	25-50		19050301078811			66.749016	-158.584677	Fish and Wildlife Service			Ground Lay	Winter
675	25-50		19050301011454			66.746546	-158.595117	Fish and Wildlife Service			Ground Lay	Winter
676	<25		19050301078808			66.746355	-158.614953	Fish and Wildlife Service			Ground Lay	Winter
677	<25		19050301078831			66.745489	-158.631726	Fish and Wildlife Service			Ground Lay	Winter
678	<25		19050301017590			66.744356	-158.653622	Fish and Wildlife Service			Ground Lay	Winter
679	25-50		19050301011506			66.74358	-158.665109	Fish and Wildlife Service			Ground Lay	Winter
680	<25		19050301011442			66.743041	-158.673068	Fish and Wildlife Service			Ground Lay	Winter
681	50-100		19050301017636			66.739646	-158.701257	Fish and Wildlife Service			Ground Lay	Winter
683	<25		19050301078710			66.737179	-158.736624	Fish and Wildlife Service			Ground Lay	Winter
684	<25		19050301078710			66.737279	-158.738568	Fish and Wildlife Service			Ground Lay	Winter
685	<25		19050301078710			66.737306	-158.739079	Fish and Wildlife Service			Ground Lay	Winter
686	<25		19050301078760			66.737044	-158.746721	Fish and Wildlife Service			Ground Lay	Winter
687	50-100		19050301011767			66.733319	-158.766131	Fish and Wildlife Service			Ground Lay	Winter
688	25-50		19050301078595			66.72795	-158.794599	Fish and Wildlife Service			Ground Lay	Winter
689	25-50		19050301011785			66.72708	-158.801073	Fish and Wildlife Service			Ground Lay	Winter
690	<25		19050301011782			66.726259	-158.807191	Fish and Wildlife Service			Ground Lay	Winter
691	25-50		19050301017660			66.724466	-158.820529	Fish and Wildlife Service			Ground Lay	Winter
692	25-50		19050301017647			66.722404	-158.832279	Fish and Wildlife Service			Ground Lay	Winter
693	50-100		19050301011795			66.719482	-158.839354	Fish and Wildlife Service			Ground Lay	Winter
694	50-100		19050301081044			66.71766	-158.845747	Fish and Wildlife Service			Ground Lay	Winter
695	<25		19050301012455			66.711483	-158.896513	Fish and Wildlife Service			Ground Lay	Winter
696	25-50		19050301012464			66.710836	-158.906925	Fish and Wildlife Service			Ground Lay	Winter
697	<25		19050301012542			66.705702	-158.94153	Fish and Wildlife Service			Ground Lay	Winter
698	<25		19050301012544			66.703065	-158.956481	Fish and Wildlife Service			Ground Lay	Winter
699	25-50		19050301012538			66.698865	-158.979679	Fish and Wildlife Service			Ground Lay	Winter
700	25-50		19050301078021			66.697812	-159.028255	Fish and Wildlife Service			Ground Lay	Winter
701	<25		19050301078025			66.697713	-159.036635	Fish and Wildlife Service			Ground Lay	Winter
702	<25		19050301078076			66.696572	-159.057467	Fish and Wildlife Service			Ground Lay	Winter
703	<25		19050301078059			66.696257	-159.059955	Fish and Wildlife Service			Ground Lay	Winter
704	<25		19050301065610			66.688116	-159.137421	Fish and Wildlife Service			Ground Lay	Winter
705	25-50		19050301065624			66.682706	-159.175531	Fish and Wildlife Service			Ground Lay	Winter
706	<25		19050301065622			66.682066	-159.180033	Fish and Wildlife Service			Ground Lay	Winter
707	25-50		19050301057727			66.680603	-159.190324	Fish and Wildlife Service			Ground Lay	Winter
708	25-50		19050301057730			66.680438	-159.191482	Fish and Wildlife Service			Ground Lay	Winter
709	<25		19050301057719			66.679564	-159.197629	Fish and Wildlife Service			Ground Lay	Winter
710	<25		19050301065611			66.67855	-159.204754	Fish and Wildlife Service			Ground Lay	Winter
711	25-50		19050301057725			66.67728	-159.213674	Fish and Wildlife Service			Ground Lay	Winter
712	25-50		19050301057710			66.676837	-159.216781	Fish and Wildlife Service			Ground Lay	Winter
713	25-50		19050301057711			66.676512	-159.219062	Fish and Wildlife Service			Ground Lay	Winter
714	25-50		19050301057711			66.676069	-159.222173	Fish and Wildlife Service			Ground Lay	Winter
715	25-50		19050301012823			66.670858	-159.259378	Fish and Wildlife Service			Ground Lay	Winter
716	25-50		19050301012831			66.67192	-159.289962	Fish and Wildlife Service			Ground Lay	Winter
717	50-100		19050301069988			66.674274	-159.375202	Fish and Wildlife Service			Ground Lay	Winter
718	25-50		19050301070076			66.681359	-159.421064	Fish and Wildlife Service			Ground Lay	Winter

719	25-50		19050301013098			66.68586	-159.460979	Fish and Wildlife Service			Ground Lay	Winter
720	25-50		19050301070182			66.691747	-159.518639	Fish and Wildlife Service			Ground Lay	Winter
721	25-50		19050301013093			66.694077	-159.538803	Fish and Wildlife Service	YES	Nuleargowik River	Ground Lay	Winter
722	50-100		19050301013083			66.695004	-159.559385	Fish and Wildlife Service			Ground Lay	Winter
723	50-100		19050301070426			66.696387	-159.593503	Fish and Wildlife Service			Ground Lay	Winter
724	50-100		19050301017789			66.697049	-159.612591	Fish and Wildlife Service			Ground Lay	Winter
725	100-200		19050301070394			66.697598	-159.628452	Fish and Wildlife Service			Ground Lay	Winter
726	200-500		19050301013064			66.698341	-159.670905	Fish and Wildlife Service	YES	Ikagoak River	Ground Lay	Winter
727	<25		19050301013767			66.695804	-159.771103	Fish and Wildlife Service			Ground Lay	Winter
728	50-100		19050301070377			66.695053	-159.813071	Fish and Wildlife Service			Ground Lay	Winter
729	<25		19050301013778			66.695153	-159.818854	Fish and Wildlife Service			Ground Lay	Winter
730	100-200		19050301013798			66.695595	-159.905425	Alaska Native Lands Patented or Interim Conveyed	YES	Fish River	Ground Lay	Winter
731	50-100		19050301078589			66.695017	-159.916084	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
732	200-500		19050301038978			66.689787	-159.981114	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
733	>500	Perennial Stream	19050301070237			66.675414	-160.030607	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
734	<25		19050301070192			66.667195	-160.029732	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
735	100-200	Perennial Stream	19050301077719			66.627678	-160.038467	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
736	100-200	Perennial Stream	19050301001499			66.578895	-160.00816	Alaska Native Lands Patented or Interim Conveyed	YES	Kungsugrug River	Ground Lay	Winter
737	<25	Perennial Stream	19050301077168			66.562918	-160.039815	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
738	<25	Perennial Stream	19050301069501			66.541973	-160.082408	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
739	200-500	Perennial Stream	19050301069059	YES	SFp,Wp	66.472236	-160.14099	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
740	200-500	Perennial Stream	19050301014220			66.436397	-160.172928	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
741	<25	Perennial Stream	19050301077009			66.435547	-160.179593	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
742	100-200	Perennial Stream	19050301000308			66.404656	-160.189886	Alaska Native Lands Patented or Interim Conveyed	YES	Mangoak River	Ground Lay	Winter
743	50-100	Perennial Stream	19050301076941			66.381384	-160.217937	Fish and Wildlife Service			Ground Lay	Winter
744	50-100	Perennial Stream	19050301014760			66.374172	-160.242962	Fish and Wildlife Service			Ground Lay	Winter
745	25-50	Perennial Stream	19050301014770	YES	SFp,Wp	66.371155	-160.258675	Bureau of Land Management		Selawik River Side Channel	Ground Lay	Winter
746	<25	Perennial Stream	19050301014768			66.369517	-160.267197	Bureau of Land Management			Ground Lay	Winter
747	25-50	Perennial Stream	19050301014767			66.367337	-160.278541	Bureau of Land Management			Ground Lay	Winter
748	25-50	Perennial Stream	19050301014781			66.3631	-160.30602	Bureau of Land Management			Ground Lay	Winter
749	25-50	Perennial Stream	19050301014795	YES	SFp,Wp	66.35805	-160.34486	Bureau of Land Management		Selawik River Side Channel	Ground Lay	Winter
750	25-50	Perennial Stream	19050301014798			66.357187	-160.351488	Bureau of Land Management			Ground Lay	Winter
751	<25	Perennial Stream	19050301014801			66.356139	-160.359541	Bureau of Land Management			Ground Lay	Winter
752	25-50	Perennial Stream	19050301014791			66.353464	-160.380062	Bureau of Land Management			Ground Lay	Winter
753	<25	Perennial Stream	19050301014792			66.348964	-160.414525	Bureau of Land Management			Ground Lay	Winter
754	50-100	Perennial Stream	19050301014786			66.34471	-160.447039	Bureau of Land Management			Ground Lay	Winter
755	50-100	Perennial Stream	19050301014828			66.336733	-160.507843	Bureau of Land Management			Ground Lay	Winter
756	25-50		19050301014887			66.331359	-160.530033	Bureau of Land Management			Ground Lay	Winter
757	25-50		19050301014856			66.323838	-160.546071	Bureau of Land Management			Ground Lay	Winter
758	25-50		19050301014857			66.315123	-160.564637	Bureau of Land Management			Ground Lay	Winter
759	25-50		19050301014869			66.309628	-160.576334	Bureau of Land Management			Ground Lay	Winter
760	25-50		19050203008913			66.288397	-160.621465	Bureau of Land Management			Ground Lay	Winter
761	<25		19050203008573			66.275128	-160.649617	Bureau of Land Management			Ground Lay	Winter
762	50-100		19050203009395			66.250504	-160.720848	Bureau of Land Management	YES	Kauk River	Ground Lay	Winter
763	<25		19050203008093			66.245958	-160.773201	Bureau of Land Management			Ground Lay	Winter
764	25-50		19050203004398			66.229071	-160.865989	Bureau of Land Management			Ground Lay	Winter
765	25-50		19050203004390			66.219787	-160.91632	Bureau of Land Management			Ground Lay	Winter
922	25-50		19050301010913			66.827997	-158.247428	Fish and Wildlife Service			Ground Lay	Winter
923						67.733536	-164.536453	State			Bridge Attachment	Winter
924	22 miles					66.970558	-162.162839	State			Subsea	Summer
925	100-200	Perennial Stream	19050301001499	YES	SFp,Wp	66.602871	-160.00839	Alaska Native Lands Patented or Interim Conveyed	YES	Selawik River	Bridge Attachment	Winter

926	100-200	Perennial Stream	19050301001499	YES	SFp,Wp	66.601034	-159.999412	Alaska Native Lands Patented or Interim Conveyed	YES	Selawik River	Aerial	Winter
927	100-200	Perennial Stream	19050301001499	YES	SFp,Wp	66.606775	-160.000595	Alaska Native Lands Patented or Interim Conveyed	YES	Selawik River	Aerial	Winter
928	25-50					67.001609	-157.88509	Bureau of Land Management			Ground Lay	Winter

Crossing ID	Name	Reach Code	Landowner	M/T/R/S	Lat	Long
15		19050203006427	Alaska Native Lands Patented or Interim Conveyed	K007N012W21	65.988642	-161.198683
16		19050203006399	Alaska Native Lands Patented or Interim Conveyed	K007N012W20	65.999614	-161.223671
14		19050203006402	Alaska Native Lands Patented or Interim Conveyed	K007N012W21	65.997924	-161.212578
27		19050304008777	Alaska Native Lands Patented or Interim Conveyed	K017N010W25	66.848921	-160.759435
2		19050403016490	Alaska Native Lands Patented or Interim Conveyed	K025N019W31	67.524142	-163.057335
9		19050403022186	Alaska Native Lands Patented or Interim Conveyed	K017N017W06	66.897224	-162.466788
10		19050403022356	Alaska Native Lands Patented or Interim Conveyed	K017N017W06	66.895923	-162.470847
13		19050203007401	Alaska Native Lands Patented or Interim Conveyed	K008N012W14	66.087671	-161.117096
24		19050304011142	Alaska Native Lands Patented or Interim Conveyed	K017N011W19	66.85654	-161.148312
25		19050304011183	Alaska Native Lands Patented or Interim Conveyed	K017N011W29	66.850266	-161.125723
26		19050304018264	Alaska Native Lands Patented or Interim Conveyed	K017N009W18	66.874349	-160.707067
29		19050301082250	Alaska Native Lands Patented or Interim Conveyed	K015N006W14	66.696081	-159.881529
36	Kobuk River Oxbow Lake	19050303012973	Alaska Native Lands Patented or Interim Conveyed	K019N005E08	67.064296	-157.844759
37		19050302009857	Alaska Native Lands Patented or Interim Conveyed	K018N009E33	66.916051	-156.906249
39		19050303011198	Alaska Native Lands Patented or Interim Conveyed	K017N007E25	66.839314	-157.239273
28		19050301082238	Alaska Native Lands Patented or Interim Conveyed	K015N006W22	66.692003	-159.931203
49		19050301036510	Alaska Native Lands Patented or Interim Conveyed	K015N006W31	66.663005	-160.028656
50	Shogvik Lake	19050301080700	Alaska Native Lands Patented or Interim Conveyed	K015N006W31	66.653028	-160.029696
52		19050301080705	Alaska Native Lands Patented or Interim Conveyed	K014N006W07	66.621624	-160.031448
54		19050301082407	Alaska Native Lands Patented or Interim Conveyed	K014N006W29	66.586705	-160.012927
53		19050301036850	Alaska Native Lands Patented or Interim Conveyed	K014N006W29	66.588657	-160.013425
55		19050301080782	Alaska Native Lands Patented or Interim Conveyed	K013N006W06	66.556354	-160.042208
51		19050301080788	Alaska Native Lands Patented or Interim Conveyed	K013N007W12	66.634081	-160.045213
56		19050301082330	Alaska Native Lands Patented or Interim Conveyed	K013N007W34	66.482532	-160.140912
57		19050301080722	Alaska Native Lands Patented or Interim Conveyed	K012N007W09	66.457037	-160.152137
58		19050301074534	Alaska Native Lands Patented or Interim Conveyed	K012N007W32	66.40091	-160.192613
48		19050301082238	Alaska Native Lands Patented or Interim Conveyed	K015N006W22	66.692003	-159.931203
47		19050301082250	Alaska Native Lands Patented or Interim Conveyed	K015N006W14	66.696081	-159.881529
38		19050302009857	Alaska Native Lands Patented or Interim Conveyed	K018N009E33	66.916051	-156.906249
4		19050403018196	Bureau of Land Management	K020N018W07	67.148227	-162.714329
5		19050403018197	Bureau of Land Management	K020N018W07	67.143169	-162.714586
6		19050403018203	Bureau of Land Management	K020N018W20	67.119897	-162.662021

7		19050403014873	Bureau of Land Management	K020N017W31	67.086801	-162.46597
35		19050303013213	Bureau of Land Management	K019N004E36	67.001947	-157.884744
59		19050203009080	Bureau of Land Management	K010N009W18	66.270536	-160.65935
1		19050404008959	Bureau of Land Management	K028N024W35	67.77616	-164.004278
3		19050403032039	Bureau of Land Management	K024N020W21	67.46013	-163.144308
11		19050203008176	Bureau of Land Management	K011N012W10	66.369271	-161.21754
12		19050203009768	Bureau of Land Management	K011N012W10	66.367421	-161.20755
40		19050303053320	Bureau of Land Management	K017N006E32	66.828811	-157.618893
34		19050301023319	Fish and Wildlife Service	K016N002E20	66.774022	-158.485955
42		19050301023319	Fish and Wildlife Service	K016N002E20	66.774022	-158.485955
33		19050301024336	Fish and Wildlife Service	K016N001E35	66.746755	-158.609489
43		19050301024336	Fish and Wildlife Service	K016N001E35	66.746755	-158.609489
32		19050301081816	Fish and Wildlife Service	K015N001W09	66.713719	-158.876918
44		19050301081816	Fish and Wildlife Service	K015N001W09	66.713719	-158.876918
31		19050301033394	Fish and Wildlife Service	K015N002W14	66.697968	-159.014985
45		19050301033394	Fish and Wildlife Service	K015N002W14	66.697968	-159.014985
30		19050301035302	Fish and Wildlife Service	K015N005W15	66.698184	-159.718409
46		19050301035302	Fish and Wildlife Service	K015N005W15	66.698184	-159.718409
41		19050301081191	Fish and Wildlife Service	K016N004E03	66.822349	-157.978181
17		19050202006947	State	K006N015W08	65.938703	-161.860111
21		19050202006871	State	K006N015W06	65.944495	-161.905688
20		19050202006902	State	K006N015W06	65.943271	-161.904174
18		19050202006922	State	K006N015W08	65.939959	-161.889311
23		19050202006830	State	K006N015W06	65.946775	-161.908866
22		19050202006860	State	K006N015W06	65.945128	-161.906364
19		19050202006920	State	K006N015W07	65.941129	-161.89813

Crossing ID	Crossing Width	NHD Flow Type	Reach Code	ANADROMOUS	Species	LAT	LONG	Land Owner	Navigable	Name	Crossing Method	Crossing Season
1	<25	Perennial Stream	19050404006255			67.801445	-164.35614	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
2	25-50	Perennial Stream	19050404006237			67.79936	-164.309318	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
3	25-50	Perennial Stream	19050404006234			67.797208	-164.285831	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
4	25-50	Perennial Stream	19050404006235			67.796524	-164.285227	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
5	<25	Perennial Stream	19050404000220	YES	CHp,COp,Kp,Pp,Sp,DVs,Wp	67.78813	-164.277809	Alaska Native Lands Patented or Interim Conveyed		Slough to Wulik River	Ground Lay	Winter
6	200-500	Perennial Stream	19050404003821	YES	CHp,COp,Kp,Pp,Sp,DVs,Wp	67.785017	-164.275146	Alaska Native Lands Patented or Interim Conveyed	YES	Wulik River	Aerial	Winter
7	25-50	Perennial Stream	19050404003853	YES	CHp,COp,Kp,Pp,Sp,DVs,Wp	67.781113	-164.270033	Alaska Native Lands Patented or Interim Conveyed		Slough to Wulik River	Ground Lay	Winter
8	25-50	Perennial Stream	19050404003851			67.777435	-163.997962	Bureau of Land Management			Ground Lay	Winter
9	25-50	Perennial Stream	19050404010092			67.779819	-163.987998	Bureau of Land Management			Ground Lay	Winter
10	25-50	Perennial Stream	19050404003861			67.788734	-163.952383	State			Ground Lay	Winter
11	<25	Perennial Stream	19050404003901			67.801073	-163.908754	State			Ground Lay	Winter
12	25-50	Perennial Stream	19050404003986			67.812974	-163.791727	State			Ground Lay	Winter
13	<25	Perennial Stream	19050404003974			67.814442	-163.764863	State			Ground Lay	Winter
14	<25	Perennial Stream	19050404004018			67.82036	-163.721155	State			Ground Lay	Winter
15	<25	Perennial Stream	19050404004020			67.825752	-163.690043	State			Ground Lay	Winter
16	50-100	Perennial Stream	19050404004038			67.829211	-163.670066	State			Ground Lay	Winter
17	25-50	Perennial Stream	19050404004099			67.840753	-163.603247	State			Ground Lay	Winter
18	25-50	Perennial Stream	19050404004105			67.843813	-163.585491	State			Ground Lay	Winter
19	<25	Perennial Stream	19050404004103			67.844586	-163.581004	State			Ground Lay	Winter
20	<25	Perennial Stream	19050404004107	YES	DVs	67.850756	-163.545155	State			Ground Lay	Winter
21	50-100	Perennial Stream	19050404004130			67.855694	-163.516413	State			Ground Lay	Winter
22	<25	Perennial Stream	19050404010120			67.859574	-163.493804	State			Ground Lay	Winter
23	<25	Perennial Stream	19050404010120			67.860607	-163.487778	State			Ground Lay	Winter
24	<25	Perennial Stream	19050404010120			67.860741	-163.486999	State			Ground Lay	Winter
25	<25	Perennial Stream	19050404004148			67.8751	-163.403068	State			Ground Lay	Winter
26	50-100	Perennial Stream	19050404004078	YES	CHp,Sp,DVsr	67.875749	-163.40062	State		Tutak Creek	Ground Lay	Winter
27	25-50	Perennial Stream	19050404004184	YES	DVs	67.882021	-163.335432	State			Ground Lay	Winter
28	<25	Perennial Stream	19050404004189			67.891406	-163.258177	State			Ground Lay	Winter
29	<25		19050404004187			67.886437	-163.211748	State			Ground Lay	Winter
30	<25		19050404004181			67.867774	-163.157075	State			Ground Lay	Winter
31	<25		19050404010103			67.851764	-163.096094	State			Ground Lay	Winter
32	<25		19050403011254			67.849637	-163.069063	State			Ground Lay	Winter
33	<25		19050403031387			67.820722	-163.010908	State			Ground Lay	Winter
34	<25		19050403011639			67.811884	-163.006588	State			Ground Lay	Winter
35	<25		19050403011636			67.800841	-163.000821	State			Ground Lay	Winter
36	<25		19050403011633			67.766391	-163.01985	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
37	25-50		19050403011624			67.757589	-163.02439	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
38	50-100		19050403011642			67.756102	-163.031195	Alaska Native Lands Patented or Interim Conveyed	YES	Kuchak Creek	Ground Lay	Winter
39	<25		19050403011657			67.738336	-162.984057	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
40	<25		19050403011680			67.664872	-163.003357	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
41	<25		19050403011660			67.658528	-162.997371	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
42	<25		19050403011573			67.639657	-162.970291	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
43	25-50	Perennial Stream	19050403011740	YES	CHs	67.636579	-162.970792	Alaska Native Lands Patented or Interim Conveyed		Kiyak Creek	Aerial	Winter
44	<25		19050403011762			67.621441	-162.980211	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
45	25-50	Perennial Stream	19050403011758			67.615812	-162.989087	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
46	<25	Perennial Stream	19050403013378			67.556556	-163.011522	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

47	25-50	Perennial Stream	19050403011811			67.551196	-163.022613	Alaska Native Lands Patented or Interim Conveyed	YES	Kuchoruk Creek	Ground Lay	Winter
48	25-50	Perennial Stream	19050403011980			67.506966	-163.072766	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
49	<25	Perennial Stream	19050403012073			67.503887	-163.082232	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
50	25-50	Perennial Stream	19050403012083			67.483788	-163.106624	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
51	25-50		19050403032208			67.46014	-163.144303	Undetermined			Ground Lay	Winter
52	25-50	Perennial Stream	19050403012189			67.433862	-163.168266	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
53	<25	Perennial Stream	19050403012252			67.428505	-163.182155	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
54	25-50	Perennial Stream	19050403012256			67.417785	-163.202373	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
55	<25	Perennial Stream	19050403012259			67.413708	-163.208571	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
56	<25	Perennial Stream	19050403012264			67.40459	-163.214874	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
57	<25	Perennial Stream	19050403012267			67.396674	-163.217819	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
58	<25	Perennial Stream	19050403012289			67.38561	-163.217291	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
59	25-50	Perennial Stream	19050403012315			67.363223	-163.204681	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
60	<25	Perennial Stream	19050403012328			67.358231	-163.200383	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
61	<25	Perennial Stream	19050403012306			67.354253	-163.196485	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
62	<25	Perennial Stream	19050403012144			67.342357	-163.158942	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
63	<25	Perennial Stream	19050403012475			67.330478	-163.141049	Bureau of Land Management			Ground Lay	Winter
64	<25	Perennial Stream	19050403013676			67.315747	-163.120148	State			Ground Lay	Winter
65	25-50	Perennial Stream	19050403013685			67.314574	-163.117959	State			Ground Lay	Winter
66	50-100	Perennial Stream	19050403013687			67.311581	-163.110943	State			Ground Lay	Winter
67	<25	Perennial Stream	19050403013689			67.308196	-163.100149	State			Ground Lay	Winter
68	25-50	Perennial Stream	19050403012494			67.3021	-163.080728	State			Ground Lay	Winter
69	<25	Perennial Stream	19050403031341			67.29874	-163.070029	State			Ground Lay	Winter
70	25-50	Perennial Stream	19050403012135			67.294122	-163.059224	State			Ground Lay	Winter
71	25-50	Perennial Stream	19050403012505			67.284429	-163.035435	State			Ground Lay	Winter
72	<25	Perennial Stream	19050403012506			67.284373	-163.028898	State			Ground Lay	Winter
73	<25	Perennial Stream	19050403012509			67.279628	-163.009345	State			Ground Lay	Winter
74	50-100	Perennial Stream	19050403012521			67.267598	-162.96777	Bureau of Land Management			Ground Lay	Winter
75	25-50	Perennial Stream	19050403012524			67.261207	-162.946031	Bureau of Land Management			Ground Lay	Winter
76	25-50	Perennial Stream	19050403012527			67.254559	-162.921132	Bureau of Land Management			Ground Lay	Winter
77	50-100	Perennial Stream	19050403012549			67.243308	-162.878982	Bureau of Land Management			Ground Lay	Winter
78	25-50	Perennial Stream	19050403012551			67.239439	-162.87053	Bureau of Land Management			Ground Lay	Winter
79	50-100		19050403012552			67.239235	-162.869573	Bureau of Land Management			Ground Lay	Winter
80	<25		19050403031118			67.176017	-162.731413	Bureau of Land Management			Ground Lay	Winter
81	<25		19050403012621			67.162154	-162.712988	Bureau of Land Management		Mamelak Creek	Ground Lay	Winter
82	50-100		19050403002212			67.117996	-162.646085	Bureau of Land Management			Ground Lay	Winter
83	<25		19050403002176			67.105666	-162.583535	Bureau of Land Management			Ground Lay	Winter
84	<25		19050403002173			67.097105	-162.541702	Bureau of Land Management			Ground Lay	Winter
85	<25		19050403002172			67.093497	-162.520443	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
86	<25		19050403021635			67.09071	-162.501737	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
87	<25		19050403014031			67.086742	-162.464879	Bureau of Land Management			Ground Lay	Winter
88	>500	Perennial Stream	19050403000114	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wpr	67.083393	-162.417144	Alaska Native Lands Patented or Interim Conveyed	YES	Noatak River	HDD	Summer
89	200-500	Perennial Stream	19050403000114	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wpr	67.083658	-162.398986	Alaska Native Lands Patented or Interim Conveyed		Noatak Side Channel	HDD	Summer
90	50-100	Perennial Stream	19050403002323	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wpr	67.082424	-162.390513	Alaska Native Lands Patented or Interim Conveyed		Noatak Side Channel	Ground Lay	Winter
91	50-100	Perennial Stream	19050403002324	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wpr	67.082302	-162.387734	Alaska Native Lands Patented or Interim Conveyed		Noatak Side Channel	Ground Lay	Winter

92	<25	Perennial Stream	19050403012756			67.05843	-162.291604	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
93	200-500	Perennial Stream	19050403012761	YES	CHp,COp,Kp,Pp,Sp,DVp,SFp,Wp	67.045583	-162.244115	Alaska Native Lands Patented or Interim Conveyed	YES	Little Noatak Slough	HDD	Summer
94	25-50	Perennial Stream	19050403014198			67.040914	-162.213915	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
95	25-50	Perennial Stream	19050403014212			67.04083	-162.2134	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
96	<25	Perennial Stream	19050304015019			67.029722	-162.158752	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
97	<25	Perennial Stream	19050304014922			66.901853	-162.27318	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
98	25-50	Perennial Stream	19050403027556			66.901368	-162.35676	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
99	25-50	Perennial Stream	19050403027327			66.901174	-162.388087	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
100	25-50	Perennial Stream	19050403022425			66.893234	-162.479999	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
101	<25		19050403022181			66.868479	-162.50859	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
102	<25		19050403022493			66.865058	-162.489425	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
103	50-100		19050403027543			66.837977	-162.421438	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
104	<25		19050403027468			66.830955	-162.409801	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
105	<25		19050403027358			66.830727	-162.403357	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
106	25-50		19050403027375			66.826069	-162.404326	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
107	25-50		19050403027516			66.825349	-162.404706	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
108	50-100		19050403027439			66.80991	-162.373281	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
109	50-100		19050403027342			66.784143	-162.324838	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
110	200-500		19050403027651			66.759664	-162.266017	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
111	25-50		19050403027372			66.757639	-162.25882	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
112	50-100		19050403027265			66.72805	-162.197724	Bureau of Land Management			Ground Lay	Winter
113	25-50		19050403027509			66.707347	-162.163452	Bureau of Land Management			Ground Lay	Winter
114	<25		19050403027525			66.694152	-162.146005	Bureau of Land Management			Ground Lay	Winter
115	25-50		19050403027537			66.691168	-162.142729	Bureau of Land Management			Ground Lay	Winter
116	50-100	Perennial Stream	19050403027245			66.672423	-162.128367	Bureau of Land Management			Ground Lay	Winter
117	50-100	Perennial Stream	19050403027293			66.665906	-162.121746	Bureau of Land Management			Ground Lay	Winter
118	<25	Perennial Stream	19050304014515			66.612679	-162.058563	Bureau of Land Management			Ground Lay	Winter
119	100-200	Perennial Stream	19050403028579			66.591429	-162.008927	Bureau of Land Management			Ground Lay	Winter
120	50-100	Perennial Stream	19050403028511			66.581731	-161.988029	Bureau of Land Management			Ground Lay	Winter
121	25-50	Perennial Stream	19050403028622			66.576799	-161.977995	Bureau of Land Management			Ground Lay	Winter
122	<25	Perennial Stream	19050403028565			66.575918	-161.976203	Bureau of Land Management			Ground Lay	Winter
123	<25		19050403028598			66.531004	-161.891631	Bureau of Land Management			Ground Lay	Winter
124	<25	Perennial Stream	19050403028557			66.527244	-161.885928	Bureau of Land Management			Ground Lay	Winter
125	<25	Perennial Stream	19050403028596			66.520318	-161.875702	Bureau of Land Management			Ground Lay	Winter
126	<25	Perennial Stream	19050403028521			66.505967	-161.854535	Bureau of Land Management			Ground Lay	Winter
127	<25	Perennial Stream	19050403028586			66.505614	-161.854015	Bureau of Land Management			Ground Lay	Winter
128	100-200	Perennial Stream	19050403028641			66.494658	-161.826942	Bureau of Land Management			Ground Lay	Winter
129	25-50	Perennial Stream	19050403028635			66.4861	-161.807799	Bureau of Land Management			Ground Lay	Winter
130	50-100	Perennial Stream	19050403028535			66.481433	-161.794675	Bureau of Land Management			Ground Lay	Winter
131	25-50	Perennial Stream	19050403028626			66.472855	-161.766929	Bureau of Land Management			Ground Lay	Winter
132	50-100	Perennial Stream	19050403028606			66.46076	-161.733989	Bureau of Land Management			Ground Lay	Winter
133	<25	Perennial Stream	19050403028544			66.455291	-161.717715	Bureau of Land Management			Ground Lay	Winter
134	25-50	Perennial Stream	19050403028617			66.443419	-161.682427	Bureau of Land Management			Ground Lay	Winter
135	<25	Perennial Stream	19050203009997			66.413304	-161.518686	Bureau of Land Management			Ground Lay	Winter
136	<25	Perennial Stream	19050203008361			66.410778	-161.490951	Bureau of Land Management			Ground Lay	Winter
137	25-50	Perennial Stream	19050203008153			66.408544	-161.472796	Bureau of Land Management			Ground Lay	Winter

138	<25	Perennial Stream	19050203009329			66.406291	-161.45606	Bureau of Land Management			Ground Lay	Winter
139	<25	Perennial Stream	19050203008455			66.403375	-161.434408	Bureau of Land Management			Ground Lay	Winter
140	<25	Perennial Stream	19050203008807			66.401872	-161.423262	Bureau of Land Management			Ground Lay	Winter
141	25-50		19050203008277			66.395157	-161.375129	Bureau of Land Management			Ground Lay	Winter
142	25-50	Perennial Stream	19050203009999			66.39498	-161.373847	Bureau of Land Management			Ground Lay	Winter
143	25-50	Perennial Stream	19050203009293			66.3883	-161.329568	Bureau of Land Management			Ground Lay	Winter
144	<25	Perennial Stream	19050203009115			66.386152	-161.316802	Bureau of Land Management			Ground Lay	Winter
145	<25	Perennial Stream	19050203010061			66.381647	-161.290056	Bureau of Land Management			Ground Lay	Winter
146	25-50	Perennial Stream	19050203009007			66.378185	-161.269525	Bureau of Land Management			Ground Lay	Winter
147	<25	Perennial Stream	19050203008333			66.365519	-161.198296	Bureau of Land Management			Ground Lay	Winter
148	<25	Perennial Stream	19050203008561			66.353688	-161.150283	Bureau of Land Management			Ground Lay	Winter
149	<25	Perennial Stream	19050203008031			66.348499	-161.127792	Bureau of Land Management			Ground Lay	Winter
150	<25	Perennial Stream	19050203010317			66.344979	-161.109391	Bureau of Land Management			Ground Lay	Winter
151	<25	Perennial Stream	19050203008381			66.338071	-161.081857	Bureau of Land Management			Ground Lay	Winter
152	25-50	Perennial Stream	19050203009775			66.330147	-161.051864	Bureau of Land Management			Ground Lay	Winter
153	<25	Perennial Stream	19050203008533			66.317206	-161.005128	Bureau of Land Management			Ground Lay	Winter
154	<25	Perennial Stream	19050203008459			66.31293	-161.002936	Bureau of Land Management			Ground Lay	Winter
155	<25	Perennial Stream	19050203010035			66.311718	-161.002653	Bureau of Land Management			Ground Lay	Winter
156	25-50	Perennial Stream	19050203008097			66.310116	-161.002209	Bureau of Land Management			Ground Lay	Winter
157	50-100	Perennial Stream	19050203008925			66.308873	-161.003158	Bureau of Land Management	YES	Kauk River	Ground Lay	Winter
158	25-50	Perennial Stream	19050203008109			66.282688	-160.984002	Bureau of Land Management			Ground Lay	Winter
159	50-100	Perennial Stream	19050203004459			66.248492	-160.959059	Bureau of Land Management			Ground Lay	Winter
160	25-50	Perennial Stream	19050203004386			66.23055	-160.945635	Bureau of Land Management			Ground Lay	Winter
161	<25	Perennial Stream	19050203004368			66.20583	-160.964147	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
162	<25	Perennial Stream	19050203004362			66.143963	-161.032823	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
163	25-50	Perennial Stream	19050203004361			66.115306	-161.074614	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
164	<25	Perennial Stream	19050203004342			66.07008	-161.129675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
165	25-50	Perennial Stream	19050203004336			66.036732	-161.122291	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
166	>500		19050203000027	YES	CHs, CHsp, COp, Kp, Pp, DVp, Wp	66.030642	-161.140616	Alaska Native Lands Patented or Interim Conveyed	YES	Buckland River	HDD	Summer
167	25-50		19050203001192			66.0299	-161.149547	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
168	<25		19050203001199			66.023903	-161.171268	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
169	100-200		19050203001194			66.023131	-161.177284	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
170	50-100		19050203001197			66.011918	-161.20222	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
171	25-50		19050203001221			65.983645	-161.191293	Alaska Native Lands Patented or Interim Conveyed		Kanik Creek	Ground Lay	Winter
172	25-50		19050203001221			65.983645	-161.191293	Alaska Native Lands Patented or Interim Conveyed		Kanik Creek	Ground Lay	Winter
173	25-50		19050203000527			66.006159	-161.251442	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
174	50-100		19050203001180			66.009403	-161.301971	Bureau of Land Management			Ground Lay	Winter
175	25-50		19050203001105			66.015947	-161.381137	Bureau of Land Management			Ground Lay	Winter
176	<25		19050203001092			65.995536	-161.472961	Bureau of Land Management			Ground Lay	Winter
177	50-100		19050203000175			65.989806	-161.521661	Bureau of Land Management		Duck Creek	Ground Lay	Winter
178	<25		19050202001672			65.973188	-161.628437	Bureau of Land Management			Ground Lay	Winter
179	50-100		19050202001668			65.969916	-161.649385	Bureau of Land Management			Ground Lay	Winter
180	25-50		19050202001908			65.965498	-161.677638	Bureau of Land Management			Ground Lay	Winter
181	25-50		19050202001913			65.959341	-161.71694	State			Ground Lay	Winter
182	25-50		19050202001914			65.956746	-161.733482	State			Ground Lay	Winter
183	25-50		19050202001849			65.947528	-161.792116	State		Wabash Creek	Ground Lay	Winter
184	25-50	Perennial Stream	19050202001964			65.938558	-161.86389	State			Ground Lay	Winter
185	200-500	Perennial Stream	19050202000352	YES	CHs,Ps,DVp	65.938419	-161.878856	Undetermined	YES	Kiwalik River	HDD	Summer
186	<25	Perennial Stream	19050202002760			65.948012	-161.914062	State			Ground Lay	Winter
187	<25	Perennial Stream	19050202002804			65.9621	-161.94755	State			Ground Lay	Winter
188	<25	Perennial Stream	19050202002779			65.965371	-161.959265	State		Mud Creek	Ground Lay	Winter
189	25-50	Perennial Stream	19050202002830			65.968918	-161.983541	State		Minnehaha Creek	Ground Lay	Winter
190	25-50	Perennial Stream	19050202002819			65.975356	-162.022984	State		Richmond Creek	Ground Lay	Winter

191	<25	Perennial Stream	19050202002907			65.983782	-162.07665	State			Ground Lay	Winter
192	25-50	Perennial Stream	19050202002903			65.989697	-162.096365	State		Virginia Creek	Ground Lay	Winter
193	50-100		19050202002901			66.003064	-162.144705	Alaska Native Lands Patented or Interim Conveyed		Kirk Creek	Ground Lay	Winter
194	25-50		19050202002881			66.00357	-162.145834	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
195	<25		19050202001063			66.004104	-162.147024	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
196	50-100		19050202002941			66.02681	-162.221051	Alaska Native Lands Patented or Interim Conveyed		Alder Creek	Ground Lay	Winter
197	100-200	Perennial Stream	19050202002948			66.019136	-162.374049	Alaska Native Lands Patented or Interim Conveyed		Willow Creek	Ground Lay	Winter
198	<25		19050202002962			66.025439	-162.347477	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
199	50-100		19050202002953			66.02223	-162.403662	Alaska Native Lands Patented or Interim Conveyed		Camp Creek	Ground Lay	Winter
200	25-50		19050202002996			66.029653	-162.499963	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
201	<25		19050202002995			66.02898	-162.511173	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
202	100-200		19050202002984			66.028544	-162.526034	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
203	25-50	Perennial Stream	19050202002975			66.025832	-162.570689	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
204	>500	Coastline	19050202021801			66.014121	-162.668781	Alaska Native Lands Patented or Interim Conveyed	YES	Kugruk Estuary	Ground Lay	Summer
205	100-200	Perennial Stream	19050202003594	YES	CHs,Ps,DVp	66.052188	-162.781504	Alaska Native Lands Patented or Interim Conveyed	YES	Inmachuk River	Aerial	Winter
206	25-50	Perennial Stream	19050202003554			66.073686	-162.787407	Alaska Native Lands Patented or Interim Conveyed		Smith Creek	Ground Lay	Winter
207	<25	Perennial Stream	19050304007304			67.037643	-162.078175	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
208	<25	Perennial Stream	19050304001462			67.060631	-161.990448	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
209	25-50	Perennial Stream	19050304001468			67.059595	-161.970038	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
210	<25		19050304001560	YES	CHp,Pp,DVp,Wp	67.054822	-161.911693	Alaska Native Lands Patented or Interim Conveyed		Unnamed Creek	Ground Lay	Winter
211	50-100	Perennial Stream	19050304001509	YES	CHp,Pp,DVp,Wp	67.055055	-161.9048	Alaska Native Lands Patented or Interim Conveyed		Unnamed trib to Hothan Inlet	Aerial	Winter
212	<25	Perennial Stream	19050304001507			67.054548	-161.889505	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
213	<25	Perennial Stream	19050304000888			67.051631	-161.802331	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
214	25-50	Perennial Stream	19050304001586			67.047527	-161.780117	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
215	<25	Perennial Stream	19050304001585			67.044869	-161.772564	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
216	<25	Perennial Stream	19050304001580			67.040821	-161.761068	Bureau of Land Management			Ground Lay	Winter
228	100-200	Perennial Stream	19050304001846	YES	DVp	66.967913	-161.44879	Alaska Native Lands Patented or Interim Conveyed	YES	Amaouk Creek	Aerial	Winter
218	<25	Perennial Stream	19050304001600			67.032444	-161.71773	Bureau of Land Management			Ground Lay	Winter
219	25-50	Perennial Stream	19050304001596			67.031279	-161.715641	Bureau of Land Management			Ground Lay	Winter
220	50-100	Perennial Stream	19050304001701			67.024814	-161.681331	Bureau of Land Management			Ground Lay	Winter
221	50-100	Perennial Stream	19050304001716			67.028546	-161.644024	Bureau of Land Management			Ground Lay	Winter
324	25-50		19050301001289			66.688385	-160.206844	Alaska Native Lands Patented or Interim Conveyed	YES	Oblaron Creek	Aerial	Winter
223	25-50		19050304002091	Yes	DVs	66.995851	-161.536527	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
224	50-100	Perennial Stream	19050304002086			66.98635	-161.49594	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
225	<25	Perennial Stream	19050304002080			66.979464	-161.475584	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
226	25-50	Perennial Stream	19050304002083			66.97741	-161.469517	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

227	<25	Perennial Stream	19050304002078			66.975214	-161.46303	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
325	50-100		19050301001289			66.68814	-160.205162	Alaska Native Lands Patented or Interim Conveyed	YES	Oblaron Creek	Aerial	Winter
229	25-50	Perennial Stream	19050304001842			66.949906	-161.447483	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
230	25-50	Perennial Stream	19050304000978			66.937497	-161.383623	Bureau of Land Management			Ground Lay	Winter
231	25-50	Perennial Stream	19050304000985			66.937129	-161.381242	Bureau of Land Management			Ground Lay	Winter
232	50-100	Perennial Stream	19050304002462			66.918868	-161.289854	Bureau of Land Management			Ground Lay	Winter
233	100-200	Perennial Stream	19050304002399			66.91322	-161.266393	Undetermined			Ground Lay	Winter
234	<25	Perennial Stream	19050304002398			66.904143	-161.257009	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
235	25-50	Perennial Stream	19050304002387			66.888469	-161.241694	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
236	>500	Perennial Stream	19050304019085	YES	CHp,Kp,Pp,DVp,SFp,Wp	66.878826	-161.234026	Alaska Native Lands Patented or Interim Conveyed	YES	Melvin Channel (Kobuk River)	HDD	Summer
237	100-200	Perennial Stream	19050304002774	YES	CHp,Kp,Pp,DVp,SFp,Wp	66.857342	-161.152216	Alaska Native Lands Patented or Interim Conveyed		Side Channel of Melvin	Ground Lay	Winter
238	25-50	Perennial Stream	19050304007171			66.850798	-161.127201	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
239	50-100	Perennial Stream	19050304015837			66.847884	-161.118937	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
240	<25	Perennial Stream	19050304015827			66.844236	-161.108596	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
241	50-100	Perennial Stream	19050304007166			66.841141	-161.098172	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
242	>500	Perennial Stream	19050304000095	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	66.824148	-161.061108	Alaska Native Lands Patented or Interim Conveyed	YES	Nazuruk Channel (Kobuk River)	HDD	Summer
243	<25	Perennial Stream	19050304017556			66.825306	-161.054176	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
244	<25	Perennial Stream	19050304015749			66.826112	-160.965493	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
245	25-50	Perennial Stream	19050304015745			66.830346	-160.947252	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
246	25-50	Perennial Stream	19050304017151			66.834031	-160.931794	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
247	25-50	Perennial Stream	19050304003169			66.840225	-160.895211	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
248	50-100	Perennial Stream	19050304003224			66.867768	-160.785035	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
249	50-100	Perennial Stream	19050304003249			66.872421	-160.746535	Alaska Native Lands Patented or Interim Conveyed	YES	Oksik Creek	Ground Lay	Winter
250	200-500	Perennial Stream	19050304018441			66.873847	-160.729025	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
251	25-50	Perennial Stream	19050304003326			66.88442	-160.666757	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
252	50-100	Perennial Stream	19050304003354			66.887114	-160.618371	Alaska Native Lands Patented or Interim Conveyed	YES	Unnamed Duffy Slough	Ground Lay	Winter
253	25-50	Perennial Stream	19050304003414			66.88777	-160.586812	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
254	25-50	Perennial Stream	19050304003424			66.897887	-160.540612	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
255	25-50	Perennial Stream	19050304003432			66.895791	-160.51074	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
256	50-100	Perennial Stream	19050304001045			66.894626	-160.496899	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
257	<25	Perennial Stream	19050304015921			66.894466	-160.472899	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
258	<25	Perennial Stream	19050304001045			66.894231	-160.4555	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
259	25-50	Perennial Stream	19050304003495			66.911344	-160.410472	Alaska Native Lands Patented or Interim Conveyed	YES	Unmanokuk Creek	Ground Lay	Winter
260	25-50	Perennial Stream	19050304015981			66.918587	-160.399961	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
261	25-50	Perennial Stream	19050304015996			66.931397	-160.389898	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

262	<25	Perennial Stream	19050304016034			66.932359	-160.391822	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
263	100-200	Perennial Stream	19050304003515			66.93811	-160.411519	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
264	>500	Perennial Stream	19050304017232			66.940212	-160.432666	Alaska Native Lands Patented or Interim Conveyed	YES	Kobuk River	HDD	Summer
265	<25	Perennial Stream	19050304003530			66.940545	-160.435363	Alaska Native Lands Patented or Interim Conveyed		Kobuk River Side Channel	Ground Lay	Winter
266	>500	Perennial Stream	19050304000117	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	66.950656	-160.48257	Alaska Native Lands Patented or Interim Conveyed	YES	Kobuk River	HDD	Summer
267	<25	Perennial Stream	19050304007053	YES		66.973474	-160.454049	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
268	<25	Perennial Stream	19050304007060	YES		66.972813	-160.468309	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
269	<25	Perennial Stream	19050304007053	YES		66.973474	-160.454049	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
270	<25	Perennial Stream	19050304007060			66.972817	-160.46826	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
272	<25	Perennial Stream	19050304003532			66.941637	-160.441219	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
273	<25	Perennial Stream	19050304003532			66.941646	-160.441182	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
274	<25	Perennial Stream	19050304003530	YES		66.940545	-160.435363	Alaska Native Lands Patented or Interim Conveyed		Kobuk River Side Channel	Ground Lay	Winter
276	100-200	Perennial Stream	19050304003515			66.938116	-160.411482	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
277	<25	Perennial Stream	19050304016034	YES		66.932376	-160.391804	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
278	25-50	Perennial Stream	19050304015996	YES	DVp	66.931406	-160.389857	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
279	25-50	Perennial Stream	19050304015981			66.918597	-160.399909	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
280	25-50	Perennial Stream	19050304003495			66.911334	-160.410452	Alaska Native Lands Patented or Interim Conveyed	YES	Unmanokuk Creek	Ground Lay	Winter
281	<25	Perennial Stream	19050304001045			66.894236	-160.455497	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
282	<25	Perennial Stream	19050304015921			66.894471	-160.472896	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
283	50-100	Perennial Stream	19050304001045			66.89463	-160.496904	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
284	25-50	Perennial Stream	19050304003432			66.8958	-160.510731	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
285	25-50	Perennial Stream	19050304003424			66.897879	-160.540604	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
286	25-50	Perennial Stream	19050304003414			66.887772	-160.586813	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
287	50-100	Perennial Stream	19050304003354			66.887115	-160.618372	Alaska Native Lands Patented or Interim Conveyed	YES	Unnamed Duffy Slough	Ground Lay	Winter
288	25-50	Perennial Stream	19050304003326			66.884419	-160.66675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
289	200-500	Perennial Stream	19050304018441			66.873853	-160.729018	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
290	50-100	Perennial Stream	19050304003249			66.87242	-160.746528	Alaska Native Lands Patented or Interim Conveyed	YES	Oksik Creek	Ground Lay	Winter
291	<25		19050304001180			66.836187	-160.762758	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
292	<25		19050304003244			66.827909	-160.764752	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
293	25-50		19050304015695			66.824759	-160.76551	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
294	25-50		19050304015678			66.814415	-160.767998	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
295	<25		19050304015673			66.811532	-160.768692	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
296	<25		19050304015608			66.799696	-160.770897	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

297	<25		19050304003106			66.769148	-160.763473	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
298	<25		19050301001055			66.746822	-160.729595	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
299	<25		19050301001054			66.746605	-160.726459	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
300	<25		19050301080418			66.746246	-160.72128	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
301	25-50		19050301001045			66.745789	-160.714699	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
302	<25		19050301080235			66.742652	-160.669591	Fish and Wildlife Service			Ground Lay	Winter
303	25-50		19050301001036			66.742528	-160.667808	Fish and Wildlife Service			Ground Lay	Winter
304	25-50		19050301001029			66.741632	-160.654967	Fish and Wildlife Service			Ground Lay	Winter
305	50-100		19050301080129			66.740069	-160.632603	Fish and Wildlife Service			Ground Lay	Winter
306	25-50		19050301080118			66.739552	-160.625208	Fish and Wildlife Service			Ground Lay	Winter
307	25-50		19050301001026			66.737998	-160.603036	Fish and Wildlife Service			Ground Lay	Winter
308	50-100		19050301001005			66.736557	-160.582516	Fish and Wildlife Service		Kokopuk Creek	Ground Lay	Winter
309	25-50		19050301080034			66.73444	-160.552436	Fish and Wildlife Service			Ground Lay	Winter
310	25-50		19050301001187			66.731316	-160.508214	Fish and Wildlife Service			Ground Lay	Winter
311	<25		19050301079891			66.730583	-160.49787	Fish and Wildlife Service			Ground Lay	Winter
312	25-50		19050301079954			66.729715	-160.489855	Fish and Wildlife Service			Ground Lay	Winter
313	<25		19050301079818			66.726707	-160.469243	Fish and Wildlife Service			Ground Lay	Winter
314	25-50		19050301082590			66.725902	-160.466942	Fish and Wildlife Service	YES	Singauruk River	Ground Lay	Winter
315	50-100		19050301001216			66.72197	-160.436839	Fish and Wildlife Service		Napatolik Creek	Ground Lay	Winter
316	25-50		19050301079503			66.721673	-160.434811	Fish and Wildlife Service			Ground Lay	Winter
317	25-50		19050301079503			66.721231	-160.431793	Fish and Wildlife Service			Ground Lay	Winter
318	25-50		19050301079492			66.714754	-160.387591	Fish and Wildlife Service			Ground Lay	Winter
319	50-100		19050301079487			66.71407	-160.382934	Fish and Wildlife Service			Ground Lay	Winter
320	25-50		19050301079454			66.713015	-160.375741	Fish and Wildlife Service			Ground Lay	Winter
321	<25		19050301001449			66.708175	-160.342804	Fish and Wildlife Service			Ground Lay	Winter
322	50-100		19050301001446			66.700685	-160.291555	Fish and Wildlife Service			Ground Lay	Winter
323	<25		19050301078861			66.689771	-160.21637	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
326	25-50		19050301001289			66.687988	-160.204114	Alaska Native Lands Patented or Interim Conveyed	YES	Oblaron Creek	Aerial	Winter
482	100-200	Perennial Stream	19050303001217	YES	CHp	66.938402	-157.339858	Alaska Native Lands Patented or Interim Conveyed	YES	Shungnak River	Aerial	Winter
526	25-50		19050302009542	YES	DVp	66.920531	-157.066277	Alaska Native Lands Patented or Interim Conveyed	YES	Wesley Creek	Aerial	Winter
327	<25		19050301001319			66.6842	-160.17811	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
328	25-50		19050301001350			66.681951	-160.162691	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
329	25-50		19050301001358			66.680557	-160.153135	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
330	200-500		19050301038978			66.689787	-159.981114	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
331	50-100		19050301078589			66.695017	-159.916084	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
332	100-200	Perennial Stream	19050301013798			66.695596	-159.905398	Alaska Native Lands Patented or Interim Conveyed	YES	Fish River	Ground Lay	Winter
333	<25		19050301013778			66.695153	-159.818854	Fish and Wildlife Service			Ground Lay	Winter
334	50-100		19050301070377			66.695053	-159.813071	Fish and Wildlife Service			Ground Lay	Winter
335	<25		19050301013767			66.695804	-159.771103	Fish and Wildlife Service			Ground Lay	Winter
336	200-500		19050301013064			66.698341	-159.670905	Fish and Wildlife Service	YES	Ikagoak River	Ground Lay	Winter
337	100-200		19050301070394			66.697598	-159.628452	Fish and Wildlife Service			Ground Lay	Winter
338	50-100		19050301017789			66.697049	-159.612591	Fish and Wildlife Service			Ground Lay	Winter
339	50-100		19050301070426			66.696387	-159.593503	Fish and Wildlife Service			Ground Lay	Winter
340	50-100		19050301013083			66.695004	-159.559385	Fish and Wildlife Service			Ground Lay	Winter
341	25-50		19050301013093			66.694077	-159.538803	Fish and Wildlife Service	YES	Nuleargowik River	Ground Lay	Winter
342	25-50		19050301070182			66.691747	-159.518639	Fish and Wildlife Service			Ground Lay	Winter
343	25-50		19050301013098			66.68586	-159.460979	Fish and Wildlife Service			Ground Lay	Winter
344	25-50		19050301070076			66.681359	-159.421064	Fish and Wildlife Service			Ground Lay	Winter
345	50-100		19050301069988			66.674274	-159.375202	Fish and Wildlife Service			Ground Lay	Winter
346	25-50		19050301012831			66.67192	-159.289962	Fish and Wildlife Service			Ground Lay	Winter
347	25-50		19050301012823			66.670858	-159.259378	Fish and Wildlife Service			Ground Lay	Winter

348	25-50		19050301057711			66.676069	-159.222173	Fish and Wildlife Service			Ground Lay	Winter
349	25-50		19050301057711			66.676512	-159.219062	Fish and Wildlife Service			Ground Lay	Winter
350	25-50		19050301057710			66.676837	-159.216781	Fish and Wildlife Service			Ground Lay	Winter
351	25-50		19050301057725			66.67728	-159.213674	Fish and Wildlife Service			Ground Lay	Winter
352	<25		19050301065611			66.67855	-159.204754	Fish and Wildlife Service			Ground Lay	Winter
353	<25		19050301057719			66.679564	-159.197629	Fish and Wildlife Service			Ground Lay	Winter
354	25-50		19050301057730			66.680438	-159.191482	Fish and Wildlife Service			Ground Lay	Winter
355	25-50		19050301057727			66.680603	-159.190324	Fish and Wildlife Service			Ground Lay	Winter
356	<25		19050301065622			66.682066	-159.180033	Fish and Wildlife Service			Ground Lay	Winter
357	25-50		19050301065624			66.682706	-159.175531	Fish and Wildlife Service			Ground Lay	Winter
358	<25		19050301065610			66.688116	-159.137421	Fish and Wildlife Service			Ground Lay	Winter
359	<25		19050301078059			66.696257	-159.059955	Fish and Wildlife Service			Ground Lay	Winter
360	<25		19050301078076			66.696572	-159.057467	Fish and Wildlife Service			Ground Lay	Winter
361	<25		19050301078025			66.697713	-159.036635	Fish and Wildlife Service			Ground Lay	Winter
362	25-50		19050301078021			66.697812	-159.028255	Fish and Wildlife Service			Ground Lay	Winter
363	25-50		19050301012538			66.698865	-158.979679	Fish and Wildlife Service			Ground Lay	Winter
364	<25		19050301012544			66.703065	-158.956481	Fish and Wildlife Service			Ground Lay	Winter
365	<25		19050301012542			66.705702	-158.94153	Fish and Wildlife Service			Ground Lay	Winter
366	25-50		19050301012464			66.710836	-158.906925	Fish and Wildlife Service			Ground Lay	Winter
367	<25		19050301012455			66.711483	-158.896513	Fish and Wildlife Service			Ground Lay	Winter
368	50-100		19050301081044			66.71766	-158.845747	Fish and Wildlife Service			Ground Lay	Winter
369	50-100		19050301011795			66.719482	-158.839354	Fish and Wildlife Service			Ground Lay	Winter
370	25-50		19050301017647			66.722404	-158.832279	Fish and Wildlife Service			Ground Lay	Winter
371	25-50		19050301017660			66.724466	-158.820529	Fish and Wildlife Service			Ground Lay	Winter
372	<25		19050301011782			66.726259	-158.807191	Fish and Wildlife Service			Ground Lay	Winter
373	25-50		19050301011785			66.72708	-158.801073	Fish and Wildlife Service			Ground Lay	Winter
374	25-50		19050301078595			66.72795	-158.794599	Fish and Wildlife Service			Ground Lay	Winter
375	50-100		19050301011767			66.733319	-158.766131	Fish and Wildlife Service			Ground Lay	Winter
376	<25		19050301078760			66.737044	-158.746721	Fish and Wildlife Service			Ground Lay	Winter
377	<25		19050301078710			66.737306	-158.739079	Fish and Wildlife Service			Ground Lay	Winter
378	<25		19050301078710			66.737279	-158.738568	Fish and Wildlife Service			Ground Lay	Winter
379	<25		19050301078710			66.737179	-158.736624	Fish and Wildlife Service			Ground Lay	Winter
819	25-50	Perennial Stream	19050303004311			66.914263	-157.187868	Alaska Native Lands Patented or Interim Conveyed	YES	Cosmos Creek	Aerial	Winter
381	50-100		19050301017636			66.739646	-158.701257	Fish and Wildlife Service			Ground Lay	Winter
382	<25		19050301011442			66.743041	-158.673068	Fish and Wildlife Service			Ground Lay	Winter
383	25-50		19050301011506			66.74358	-158.665109	Fish and Wildlife Service			Ground Lay	Winter
384	<25		19050301017590			66.744356	-158.653622	Fish and Wildlife Service			Ground Lay	Winter
385	<25		19050301078831			66.745489	-158.631726	Fish and Wildlife Service			Ground Lay	Winter
386	<25		19050301078808			66.746355	-158.614953	Fish and Wildlife Service			Ground Lay	Winter
387	25-50		19050301011454			66.746546	-158.595117	Fish and Wildlife Service			Ground Lay	Winter
388	25-50		19050301078811			66.749016	-158.584677	Fish and Wildlife Service			Ground Lay	Winter
390	50-100		19050301011352			66.763881	-158.530464	Fish and Wildlife Service			Ground Lay	Winter
391	100-200		19050301011210			66.772923	-158.503496	Fish and Wildlife Service			Ground Lay	Winter
392	>500		19050301038333			66.773766	-158.49609	Fish and Wildlife Service			Ground Lay	Winter
393	25-50		19050301011345			66.778492	-158.471763	Fish and Wildlife Service			Ground Lay	Winter
394	25-50		19050301011345			66.783357	-158.459514	Fish and Wildlife Service			Ground Lay	Winter
395	50-100		19050301080921			66.788589	-158.40752	Fish and Wildlife Service			Ground Lay	Winter
396	25-50		19050301011272			66.792378	-158.388003	Fish and Wildlife Service			Ground Lay	Winter
397	25-50		19050301011268			66.796364	-158.37509	Fish and Wildlife Service			Ground Lay	Winter
398	25-50		19050301071614			66.808932	-158.334835	Fish and Wildlife Service			Ground Lay	Winter
399	<25		19050301011245			66.810584	-158.329171	Fish and Wildlife Service			Ground Lay	Winter
400	25-50		19050301010932			66.818559	-158.28572	Fish and Wildlife Service			Ground Lay	Winter
401	<25		19050301080132			66.819902	-158.281324	Fish and Wildlife Service			Ground Lay	Winter
402	<25		19050301010927			66.832094	-158.231976	Fish and Wildlife Service			Ground Lay	Winter
403	<25		19050301010925			66.83953	-158.223382	Fish and Wildlife Service			Ground Lay	Winter
404	<25		19050301080541			66.84257	-158.212133	Fish and Wildlife Service			Ground Lay	Winter
405	50-100		19050301010843			66.845569	-158.202031	Fish and Wildlife Service			Ground Lay	Winter
406	<25		19050301010854			66.860136	-158.181775	Fish and Wildlife Service			Ground Lay	Winter
407	25-50		19050301068102			66.864427	-158.168507	Fish and Wildlife Service			Ground Lay	Winter
926	100-200	Perennial Stream	19050301077719	YES	SFp,Wp	66.601034	-159.999412	Alaska Native Lands Patented or Interim Conveyed	YES	Selawik River	Aerial	Winter
413	25-50		19050301010739			66.903173	-158.095097	Fish and Wildlife Service			Ground Lay	Winter
414	25-50		19050301010736			66.90495	-158.092368	Fish and Wildlife Service			Ground Lay	Winter
415	<25		19050301010732			66.915808	-158.081156	Fish and Wildlife Service			Ground Lay	Winter
416	200-500		19050301010702			66.923512	-158.059252	Fish and Wildlife Service			Ground Lay	Winter

417	<25		19050301068614			66.927172	-158.046817	Fish and Wildlife Service			Ground Lay	Winter
418	<25		19050301010695			66.927463	-158.045579	Fish and Wildlife Service			Ground Lay	Winter
419	<25		19050301072378			66.93039	-158.037684	Fish and Wildlife Service			Ground Lay	Winter
420	25-50		19050301010613			66.9338	-158.027897	Fish and Wildlife Service			Ground Lay	Winter
421	25-50		19050301010651			66.935251	-158.022677	Fish and Wildlife Service			Ground Lay	Winter
422	25-50		19050301010690			66.940566	-158.006997	Fish and Wildlife Service			Ground Lay	Winter
423	<25		19050301010688			66.943924	-157.998667	Fish and Wildlife Service			Ground Lay	Winter
424	25-50		19050301068792			66.951153	-157.982445	Fish and Wildlife Service			Ground Lay	Winter
425	25-50		19050301010687			66.954154	-157.974587	Fish and Wildlife Service			Ground Lay	Winter
426	<25		19050303028658			66.970343	-157.929992	Fish and Wildlife Service			Ground Lay	Winter
427	<25		19050303028764			66.973809	-157.924693	Fish and Wildlife Service			Ground Lay	Winter
428	25-50		19050303028883			66.976531	-157.920296	Fish and Wildlife Service			Ground Lay	Winter
429	<25		19050303028924			66.977531	-157.91857	Fish and Wildlife Service			Ground Lay	Winter
430	<25		19050303028965			66.978916	-157.916182	Fish and Wildlife Service			Ground Lay	Winter
431	<25		19050303021695			66.997878	-157.888576	Bureau of Land Management			Ground Lay	Winter
432	<25		19050303021697			66.998386	-157.888031	Bureau of Land Management			Ground Lay	Winter
433	<25		19050303003113			67.003667	-157.883988	Bureau of Land Management			Ground Lay	Winter
434	<25		19050303021752			67.009487	-157.877327	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
435	<25		19050303016909			67.029371	-157.839605	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
436	25-50	Perennial Stream	19050303017076			67.054663	-157.842216	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
437	>500	Perennial Stream	19050303022660	YES	CHp,COp,Kp,Pp,Sp,DVs,HWp,SFp,Wp	67.083803	-157.852471	Alaska Native Lands Patented or Interim Conveyed	YES	Kobuk River (Nazuruk Channel)	HDD	Summer
438	<25	Perennial Stream	19050303033226			67.102871	-157.839552	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
439	200-500	Perennial Stream	19050303000838	YES	CHs,DVp,Wp	67.1031	-157.769481	Alaska Native Lands Patented or Interim Conveyed	YES	Ambler River	HDD	Summer
440	25-50	Perennial Stream	19050303033000			67.098293	-157.766957	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
441	25-50	Perennial Stream	19050303032906			67.091691	-157.762952	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
442	25-50	Perennial Stream	19050303032859			67.089218	-157.761675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
443	25-50	Perennial Stream	19050303032600			67.087677	-157.761993	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
444	25-50	Perennial Stream	19050303032697			67.07737	-157.759177	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
445	<25	Perennial Stream	19050303032650			67.076481	-157.758013	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
446	25-50	Perennial Stream	19050303032543			67.073048	-157.753523	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
447	25-50	Perennial Stream	19050303032375			67.06606	-157.740626	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
448	<25	Perennial Stream	19050303004939			67.057633	-157.720778	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
449	<25		19050303033622			67.054846	-157.712326	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
450	<25		19050303053033			67.050204	-157.710675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
451	25-50		19050303031570			67.042905	-157.707777	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
451	25-50		19050303033614			67.047091	-157.709439	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
453	<25		19050303031190			67.029578	-157.698778	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
454	<25		19050303030862			67.023876	-157.66584	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
455	50-100		19050303054312			67.023554	-157.66384	Alaska Native Lands Patented or Interim Conveyed	YES	Rabbit Creek	Ground Lay	Winter
456	100-200		19050303054207			67.024316	-157.648803	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
457	50-100		19050303052917			67.019879	-157.595124	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

458	50-100		19050303052917			67.018286	-157.591812	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
459	50-100		19050303004807			67.002241	-157.581385	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
460	100-200		19050303053898			67.000033	-157.57404	Alaska Native Lands Patented or Interim Conveyed		Pitkik Creek	Ground Lay	Winter
461	<25		19050303029555			66.999864	-157.573475	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
462	<25		19050303029198			66.997817	-157.566665	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
463	<25		19050303029366			66.997266	-157.564834	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
464	25-50		19050303029195			66.997049	-157.55534	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
465	<25		19050303029194			66.997255	-157.549927	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
466	100-200		19050303004824			66.997642	-157.539863	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
467	<25		19050303004828			66.995371	-157.520618	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
468	<25		19050303029068			66.990721	-157.49771	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
469	<25		19050303029048			66.990335	-157.496545	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
470	25-50		19050303053657			66.98903	-157.492603	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
471	25-50		19050303028684			66.980627	-157.467237	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
472	50-100		19050303028494			66.975803	-157.452689	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
473	25-50		19050303028534			66.975136	-157.450679	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
475	100-200	Perennial Stream	19050303004754			66.967661	-157.42816	Alaska Native Lands Patented or Interim Conveyed	YES	Garland Creek	Ground Lay	Winter
476	25-50	Perennial Stream	19050303004753			66.965993	-157.420906	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
477	25-50	Perennial Stream	19050303054376			66.959687	-157.404078	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
478	50-100	Perennial Stream	19050303026901			66.956032	-157.392387	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
479	<25	Perennial Stream	19050303026358			66.943784	-157.351913	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
480	25-50	Perennial Stream	19050303026243			66.942383	-157.347235	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
481	50-100	Perennial Stream	19050303026617			66.939719	-157.344057	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
927	100-200	Perennial Stream	19050301077719	YES	SFp,Wp	66.606775	-160.000595	Alaska Native Lands Patented or Interim Conveyed	YES	Selawik River	Aerial	Winter
483	<25	Perennial Stream	19050303027763			66.937606	-157.331439	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
484	<25	Perennial Stream	19050303025261			66.93253	-157.311681	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
485	<25	Perennial Stream	19050303025253			66.932386	-157.311124	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
486	<25	Perennial Stream	19050303025218			66.931981	-157.30956	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
487	<25	Perennial Stream	19050303025175			66.931075	-157.306063	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
488	50-100	Perennial Stream	19050303004365			66.930087	-157.302248	Alaska Native Lands Patented or Interim Conveyed		Sheshok Creek	Ground Lay	Winter
489	25-50	Perennial Stream	19050303024969			66.930023	-157.302004	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
490	25-50	Perennial Stream	19050303025113			66.929891	-157.301493	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
491	<25	Perennial Stream	19050303024968			66.928297	-157.295342	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

492	25-50	Perennial Stream	19050303024601			66.926547	-157.288285	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
493	<25	Perennial Stream	19050303024600			66.926208	-157.286758	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
494	<25	Perennial Stream	19050303024661			66.926179	-157.286623	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
495	<25	Perennial Stream	19050303024493			66.925578	-157.283916	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
496	<25	Perennial Stream	19050303024519			66.92452	-157.279145	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
497	<25	Perennial Stream	19050303053625			66.92369	-157.272755	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
498	<25	Perennial Stream	19050303024372			66.923543	-157.271553	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
499	<25	Perennial Stream	19050303024444			66.923294	-157.269507	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
500	<25	Perennial Stream	19050303024331			66.923105	-157.267961	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
501	25-50	Perennial Stream	19050303024358			66.922795	-157.265418	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
502	25-50	Perennial Stream	19050303024394			66.922699	-157.264637	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
503	<25	Perennial Stream	19050303024228			66.921836	-157.261014	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
504	25-50	Perennial Stream	19050303024161			66.921321	-157.258301	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
505	<25	Perennial Stream	19050303024012			66.920055	-157.247727	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
506	25-50	Perennial Stream	19050303023999			66.918533	-157.236728	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
507	<25	Perennial Stream	19050303023531			66.916152	-157.212586	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
508	<25	Perennial Stream	19050303023472			66.916013	-157.211181	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
510	<25	Perennial Stream	19050303023414			66.913627	-157.181968	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
511	<25	Perennial Stream	19050303023368			66.913585	-157.181604	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
512	<25	Perennial Stream	19050303023360			66.913488	-157.180777	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
513	<25	Perennial Stream	19050303023554			66.913299	-157.179153	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
514	<25	Perennial Stream	19050303023337			66.913136	-157.176942	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
515	<25	Perennial Stream	19050303023418			66.912927	-157.173664	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
516	25-50	Perennial Stream	19050303004325			66.912577	-157.168189	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
517	<25	Perennial Stream	19050303023216			66.91249	-157.164962	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
518	<25	Perennial Stream	19050303023262			66.912814	-157.138615	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
519	<25	Perennial Stream	19050303023349			66.912871	-157.137954	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
520	<25	Perennial Stream	19050303023258			66.912916	-157.137424	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
521	<25	Perennial Stream	19050303023501			66.913178	-157.134359	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
522	25-50	Perennial Stream	19050303052606			66.913243	-157.133595	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
523	<25	Perennial Stream	19050303023247			66.913289	-157.127946	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
524	<25	Perennial Stream	19050303023361			66.915217	-157.11943	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
525	25-50		19050302013215			66.916065	-157.095975	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

217	25-50	Perennial Stream	19050304001601	YES	CHps	67.03971	-161.740338	Bureau of Land Management		Singauruk Creek	Aerial	Winter
527	25-50		19050302015307			66.92115	-157.05169	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
528	25-50		19050302015307			66.92155	-157.046788	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
529	25-50		19050302015379			66.927498	-157.007338	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
530	50-100		19050302009541			66.928243	-156.999967	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
531	25-50		19050302009540			66.930992	-156.950178	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
532	25-50		19050302009539			66.93071	-156.945965	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
533	50-100		19050302009507	YES	DVp	66.917581	-156.927102	Alaska Native Lands Patented or Interim Conveyed		Dahl Creek	Ground Lay	Winter
534	<25		19050302019167			66.914209	-156.881023	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
535	<25	Perennial Stream	19050302019167			66.914209	-156.880995	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
536	50-100	Perennial Stream	19050302009507	YES	DVp	66.917581	-156.927074	Alaska Native Lands Patented or Interim Conveyed		Dahl Creek	Ground Lay	Winter
537	25-50	Perennial Stream	19050302009539			66.93071	-156.945965	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
538	25-50	Perennial Stream	19050302009540			66.930992	-156.95015	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
539	50-100	Perennial Stream	19050302009541			66.928243	-156.999939	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
540	25-50	Stream	19050302015379			66.927498	-157.00731	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
541	25-50	Stream	19050302015307			66.92155	-157.046788	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
542	25-50	Stream	19050302015307			66.92115	-157.051662	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
544	25-50	Perennial Stream	19050302013215			66.916065	-157.095947	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
545	<25	Perennial Stream	19050303051118			66.902906	-157.128617	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
546	<25	Perennial Stream	19050303050949			66.900793	-157.130759	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
547	<25	Perennial Stream	19050303050949			66.90044	-157.131115	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
548	<25	Perennial Stream	19050303050827			66.899539	-157.132028	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
574	25-50		19050303028304			66.974333	-157.448257	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
660	25-50		19050301010913			66.827997	-158.247428	Fish and Wildlife Service			Ground Lay	Winter
661	<25	Perennial Stream	19050301071714			66.819902	-158.281324	Fish and Wildlife Service			Ground Lay	Winter
662	25-50	Perennial Stream	19050301010932			66.818559	-158.28572	Fish and Wildlife Service			Ground Lay	Winter
663	<25		19050301011245			66.810584	-158.329171	Fish and Wildlife Service			Ground Lay	Winter
664	25-50		19050301071614			66.808932	-158.334835	Fish and Wildlife Service			Ground Lay	Winter
665	25-50		19050301011268			66.796364	-158.37509	Fish and Wildlife Service			Ground Lay	Winter
666	25-50		19050301011272			66.792378	-158.388003	Fish and Wildlife Service			Ground Lay	Winter
667	50-100		19050301080921			66.788589	-158.40752	Fish and Wildlife Service			Ground Lay	Winter
668	25-50		19050301011345			66.783357	-158.459514	Fish and Wildlife Service			Ground Lay	Winter
669	25-50		19050301011345			66.778492	-158.471763	Fish and Wildlife Service			Ground Lay	Winter
670	>500		19050301038333			66.773766	-158.49609	Fish and Wildlife Service			Ground Lay	Winter
671	100-200		19050301011210			66.772923	-158.503496	Fish and Wildlife Service			Ground Lay	Winter
672	50-100		19050301011352			66.763881	-158.530464	Fish and Wildlife Service			Ground Lay	Winter
674	25-50		19050301078811			66.749016	-158.584677	Fish and Wildlife Service			Ground Lay	Winter
675	25-50		19050301011454			66.746546	-158.595117	Fish and Wildlife Service			Ground Lay	Winter
676	<25		19050301078808			66.746355	-158.614953	Fish and Wildlife Service			Ground Lay	Winter
677	<25		19050301078831			66.745489	-158.631726	Fish and Wildlife Service			Ground Lay	Winter
678	<25		19050301017590			66.744356	-158.653622	Fish and Wildlife Service			Ground Lay	Winter
679	25-50		19050301011506			66.74358	-158.665109	Fish and Wildlife Service			Ground Lay	Winter
680	<25		19050301011442			66.743041	-158.673068	Fish and Wildlife Service			Ground Lay	Winter
681	50-100		19050301017636			66.739646	-158.701257	Fish and Wildlife Service			Ground Lay	Winter

683	<25		19050301078710			66.737179	-158.736624	Fish and Wildlife Service			Ground Lay	Winter
684	<25		19050301078710			66.737279	-158.738568	Fish and Wildlife Service			Ground Lay	Winter
685	<25		19050301078710			66.737306	-158.739079	Fish and Wildlife Service			Ground Lay	Winter
686	<25		19050301078760			66.737044	-158.746721	Fish and Wildlife Service			Ground Lay	Winter
687	50-100		19050301011767			66.733319	-158.766131	Fish and Wildlife Service			Ground Lay	Winter
688	25-50		19050301078595			66.72795	-158.794599	Fish and Wildlife Service			Ground Lay	Winter
689	25-50		19050301011785			66.72708	-158.801073	Fish and Wildlife Service			Ground Lay	Winter
690	<25		19050301011782			66.726259	-158.807191	Fish and Wildlife Service			Ground Lay	Winter
691	25-50		19050301017660			66.724466	-158.820529	Fish and Wildlife Service			Ground Lay	Winter
692	25-50		19050301017647			66.722404	-158.832279	Fish and Wildlife Service			Ground Lay	Winter
693	50-100		19050301011795			66.719482	-158.839354	Fish and Wildlife Service			Ground Lay	Winter
694	50-100		19050301081044			66.71766	-158.845747	Fish and Wildlife Service			Ground Lay	Winter
695	<25		19050301012455			66.711483	-158.896513	Fish and Wildlife Service			Ground Lay	Winter
696	25-50		19050301012464			66.710836	-158.906925	Fish and Wildlife Service			Ground Lay	Winter
697	<25		19050301012542			66.705702	-158.94153	Fish and Wildlife Service			Ground Lay	Winter
698	<25		19050301012544			66.703065	-158.956481	Fish and Wildlife Service			Ground Lay	Winter
699	25-50		19050301012538			66.698865	-158.979679	Fish and Wildlife Service			Ground Lay	Winter
700	25-50		19050301078021			66.697812	-159.028255	Fish and Wildlife Service			Ground Lay	Winter
701	<25		19050301078025			66.697713	-159.036635	Fish and Wildlife Service			Ground Lay	Winter
702	<25		19050301078076			66.696572	-159.057467	Fish and Wildlife Service			Ground Lay	Winter
703	<25		19050301078059			66.696257	-159.059955	Fish and Wildlife Service			Ground Lay	Winter
704	<25		19050301065610			66.688116	-159.137421	Fish and Wildlife Service			Ground Lay	Winter
705	25-50		19050301065624			66.682706	-159.175531	Fish and Wildlife Service			Ground Lay	Winter
706	<25		19050301065622			66.682066	-159.180033	Fish and Wildlife Service			Ground Lay	Winter
707	25-50		19050301057727			66.680603	-159.190324	Fish and Wildlife Service			Ground Lay	Winter
708	25-50		19050301057730			66.680438	-159.191482	Fish and Wildlife Service			Ground Lay	Winter
709	<25		19050301057719			66.679564	-159.197629	Fish and Wildlife Service			Ground Lay	Winter
710	<25		19050301065611			66.67855	-159.204754	Fish and Wildlife Service			Ground Lay	Winter
711	25-50		19050301057725			66.67728	-159.213674	Fish and Wildlife Service			Ground Lay	Winter
712	25-50		19050301057710			66.676837	-159.216781	Fish and Wildlife Service			Ground Lay	Winter
713	25-50		19050301057711			66.676512	-159.219062	Fish and Wildlife Service			Ground Lay	Winter
714	25-50		19050301057711			66.676069	-159.222173	Fish and Wildlife Service			Ground Lay	Winter
715	25-50		19050301012823			66.670858	-159.259378	Fish and Wildlife Service			Ground Lay	Winter
716	25-50		19050301012831			66.67192	-159.289962	Fish and Wildlife Service			Ground Lay	Winter
717	50-100		19050301069988			66.674274	-159.375202	Fish and Wildlife Service			Ground Lay	Winter
718	25-50		19050301070076			66.681359	-159.421064	Fish and Wildlife Service			Ground Lay	Winter
719	25-50		19050301013098			66.68586	-159.460979	Fish and Wildlife Service			Ground Lay	Winter
720	25-50		19050301070182			66.691747	-159.518639	Fish and Wildlife Service			Ground Lay	Winter
721	25-50		19050301013093			66.694077	-159.538803	Fish and Wildlife Service	YES	Nuleargowik River	Ground Lay	Winter
722	50-100		19050301013083			66.695004	-159.559385	Fish and Wildlife Service			Ground Lay	Winter
723	50-100		19050301070426			66.696387	-159.593503	Fish and Wildlife Service			Ground Lay	Winter
724	50-100		19050301017789			66.697049	-159.612591	Fish and Wildlife Service			Ground Lay	Winter
725	100-200		19050301070394			66.697598	-159.628452	Fish and Wildlife Service			Ground Lay	Winter
726	200-500		19050301013064			66.698341	-159.670905	Fish and Wildlife Service	YES	Ikagoak River	Ground Lay	Winter
727	<25		19050301013767			66.695804	-159.771103	Fish and Wildlife Service			Ground Lay	Winter
728	50-100		19050301070377			66.695053	-159.813071	Fish and Wildlife Service			Ground Lay	Winter
729	<25		19050301013778			66.695153	-159.818854	Fish and Wildlife Service			Ground Lay	Winter
730	100-200		19050301013798			66.695595	-159.905425	Alaska Native Lands Patented or Interim Conveyed	YES	Fish River	Ground Lay	Winter
731	50-100		19050301078589			66.695017	-159.916084	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
732	200-500		19050301038978			66.689787	-159.981114	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
733	>500	Perennial Stream	19050301070237			66.675414	-160.030607	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
734	<25		19050301070192			66.667195	-160.029732	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
735	100-200	Perennial Stream	19050301077719			66.627678	-160.038467	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
736	100-200	Perennial Stream	19050301001499			66.578895	-160.00816	Alaska Native Lands Patented or Interim Conveyed	YES	Kungsugrug River	Ground Lay	Winter
737	<25	Perennial Stream	19050301077168			66.562918	-160.039815	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
738	<25	Perennial Stream	19050301069501			66.541973	-160.082408	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

739	200-500	Perennial Stream	19050301069059	YES	SFp,Wp	66.472236	-160.14099	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
740	200-500	Perennial Stream	19050301014220			66.436397	-160.172928	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
741	<25	Perennial Stream	19050301077009			66.435547	-160.179593	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
742	100-200	Perennial Stream	19050301000308			66.404656	-160.189886	Alaska Native Lands Patented or Interim Conveyed	YES	Mangoak River	Ground Lay	Winter
743	50-100	Perennial Stream	19050301076941			66.381384	-160.217937	Fish and Wildlife Service			Ground Lay	Winter
744	50-100	Perennial Stream	19050301014760			66.374172	-160.242962	Fish and Wildlife Service			Ground Lay	Winter
745	25-50	Perennial Stream	19050301014770	YES	SFp,Wp	66.371155	-160.258675	Bureau of Land Management			Ground Lay	Winter
746	<25	Perennial Stream	19050301014768			66.369517	-160.267197	Bureau of Land Management			Ground Lay	Winter
747	25-50	Perennial Stream	19050301014767			66.367337	-160.278541	Bureau of Land Management			Ground Lay	Winter
748	25-50	Perennial Stream	19050301014781			66.3631	-160.30602	Bureau of Land Management			Ground Lay	Winter
749	25-50	Perennial Stream	19050301014795	YES	SFp,Wp	66.35805	-160.34486	Bureau of Land Management			Ground Lay	Winter
750	25-50	Perennial Stream	19050301014798			66.357187	-160.351488	Bureau of Land Management			Ground Lay	Winter
751	<25	Perennial Stream	19050301014801			66.356139	-160.359541	Bureau of Land Management			Ground Lay	Winter
752	25-50	Perennial Stream	19050301014791			66.353464	-160.380062	Bureau of Land Management			Ground Lay	Winter
753	<25	Perennial Stream	19050301014792			66.348964	-160.414525	Bureau of Land Management			Ground Lay	Winter
754	50-100	Perennial Stream	19050301014786			66.34471	-160.447039	Bureau of Land Management			Ground Lay	Winter
755	50-100	Perennial Stream	19050301014828			66.336733	-160.507843	Bureau of Land Management			Ground Lay	Winter
756	25-50		19050301014887			66.331359	-160.530033	Bureau of Land Management			Ground Lay	Winter
757	25-50		19050301014856			66.323838	-160.546071	Bureau of Land Management			Ground Lay	Winter
758	25-50		19050301014857			66.315123	-160.564637	Bureau of Land Management			Ground Lay	Winter
759	25-50		19050301014869			66.309628	-160.576334	Bureau of Land Management			Ground Lay	Winter
760	25-50		19050203008913			66.288397	-160.621465	Undetermined			Ground Lay	Winter
761	<25		19050203008573			66.275128	-160.649617	Bureau of Land Management			Ground Lay	Winter
762	50-100		19050203009395			66.250504	-160.720848	Bureau of Land Management	YES	Kauk River	Ground Lay	Winter
763	<25		19050203008093			66.245958	-160.773201	Bureau of Land Management			Ground Lay	Winter
764	25-50		19050203004398			66.229071	-160.865989	Bureau of Land Management			Ground Lay	Winter
765	25-50		19050203004390			66.219787	-160.91632	Bureau of Land Management			Ground Lay	Winter
800	<25	Perennial Stream	19050303050827			66.899539	-157.132028	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
801	<25	Perennial Stream	19050303050949			66.90044	-157.131115	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
802	<25	Perennial Stream	19050303050949			66.900793	-157.130759	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
803	<25	Perennial Stream	19050303051118			66.902906	-157.128617	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
804	<25	Perennial Stream	19050303023361			66.915217	-157.11943	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
805	<25	Perennial Stream	19050303023247			66.913289	-157.127946	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
806	25-50	Perennial Stream	19050303052606			66.913243	-157.133595	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
807	<25	Perennial Stream	19050303023501			66.913178	-157.134359	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
808	<25	Perennial Stream	19050303023258			66.912916	-157.137424	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
809	<25	Perennial Stream	19050303023349			66.912871	-157.137954	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
810	<25	Perennial Stream	19050303023262			66.912814	-157.138615	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
811	<25	Perennial Stream	19050303023216			66.91249	-157.164962	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
812	25-50	Perennial Stream	19050303004325			66.912577	-157.168189	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
813	<25	Perennial Stream	19050303023418			66.912927	-157.173664	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
814	<25	Perennial Stream	19050303023337			66.913136	-157.176942	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
815	<25	Perennial Stream	19050303023554			66.913299	-157.179153	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
816	<25	Perennial Stream	19050303023360			66.913488	-157.180777	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

817	<25	Perennial Stream	19050303023368			66.913585	-157.181604	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
818	<25	Perennial Stream	19050303023414			66.913627	-157.181968	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
222	50-100	Perennial Stream	19050304001705			67.024481	-161.620859	Bureau of Land Management			Aerial	Winter
820	<25	Perennial Stream	19050303023472			66.916013	-157.211181	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
821	<25	Perennial Stream	19050303023531			66.916152	-157.212586	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
822	25-50	Perennial Stream	19050303023999			66.918533	-157.236728	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
823	<25	Perennial Stream	19050303024012			66.920055	-157.247727	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
824	25-50	Perennial Stream	19050303024161			66.921321	-157.258301	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
825	<25	Perennial Stream	19050303024228			66.921836	-157.261014	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
826	25-50	Perennial Stream	19050303024394			66.922699	-157.264637	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
827	25-50	Perennial Stream	19050303024358			66.922795	-157.265418	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
828	<25	Perennial Stream	19050303024331			66.923105	-157.267961	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
829	<25	Perennial Stream	19050303024444			66.923294	-157.269507	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
830	<25	Perennial Stream	19050303024372			66.923543	-157.271553	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
831	<25	Perennial Stream	19050303053625			66.92369	-157.272755	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
832	<25	Perennial Stream	19050303024519			66.92452	-157.279145	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
833	<25	Perennial Stream	19050303024493			66.925578	-157.283916	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
834	<25	Perennial Stream	19050303024661			66.926179	-157.286623	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
835	<25	Perennial Stream	19050303024600			66.926208	-157.286758	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
836	25-50	Perennial Stream	19050303024601			66.926547	-157.288285	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
837	<25	Perennial Stream	19050303024968			66.928297	-157.295342	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
838	25-50	Perennial Stream	19050303025113			66.929891	-157.301493	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
839	25-50	Perennial Stream	19050303024969			66.930023	-157.302004	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
840	50-100	Perennial Stream	19050303004365			66.930087	-157.302248	Alaska Native Lands Patented or Interim Conveyed		Sheshok Creek	Ground Lay	Winter
841	<25	Perennial Stream	19050303025175			66.931075	-157.306063	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
842	<25	Perennial Stream	19050303025218			66.931981	-157.30956	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
843	<25	Perennial Stream	19050303025253			66.932386	-157.311124	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
844	<25	Perennial Stream	19050303025261			66.93253	-157.311681	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
845	<25	Perennial Stream	19050303027763			66.937606	-157.331439	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
847	50-100	Perennial Stream	19050303026617			66.939719	-157.344057	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
848	25-50	Perennial Stream	19050303026243			66.942383	-157.347235	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
849	<25	Perennial Stream	19050303026358			66.943784	-157.351913	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
850	50-100	Perennial Stream	19050303026901			66.956032	-157.392387	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

851	25-50	Perennial Stream	19050303054376			66.959687	-157.404078	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
852	25-50	Perennial Stream	19050303004753			66.965993	-157.420906	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
853	100-200	Perennial Stream	19050303004754			66.967661	-157.42816	Alaska Native Lands Patented or Interim Conveyed	YES	Garland Creek	Ground Lay	Winter
854	25-50		19050303028304			66.974333	-157.448257	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
855	25-50		19050303028534			66.975136	-157.450679	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
856	50-100		19050303028494			66.975803	-157.452689	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
857	25-50		19050303028684			66.980627	-157.467237	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
858	25-50		19050303053657			66.98903	-157.492603	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
859	<25		19050303029048			66.990335	-157.496545	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
860	<25		19050303029068			66.990721	-157.49771	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
861	<25		19050303004828			66.995371	-157.520618	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
862	100-200		19050303004824			66.997642	-157.539863	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
863	<25		19050303029194			66.997255	-157.549927	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
864	25-50		19050303029195			66.997049	-157.55534	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
865	<25		19050303029366			66.997266	-157.564834	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
866	<25		19050303029198			66.997817	-157.566665	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
867	<25		19050303029555			66.999864	-157.573475	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
868	100-200		19050303053898			67.000033	-157.57404	Alaska Native Lands Patented or Interim Conveyed		Pitkik Creek	Ground Lay	Winter
869	50-100		19050303004807			67.002241	-157.581385	Alaska Native Lands Patented or Interim Conveyed	YES		Ground Lay	Winter
870	50-100		19050303052917			67.018286	-157.591812	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
871	50-100		19050303052917			67.019879	-157.595124	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
872	100-200		19050303054207			67.024316	-157.648803	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
873	50-100		19050303054312			67.023554	-157.66384	Alaska Native Lands Patented or Interim Conveyed	YES	Rabbit Creek	Ground Lay	Winter
874	<25		19050303030862			67.023876	-157.66584	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
875	<25		19050303031190			67.029578	-157.698778	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
876	25-50		19050303031570			67.042905	-157.707777	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
877	25-50		19050303033614			67.047091	-157.709439	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
878	<25		19050303053033			67.050204	-157.710675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
879	<25		19050303033622			67.054846	-157.712326	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
880	<25	Perennial Stream	19050303004939			67.057633	-157.720778	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
881	25-50	Perennial Stream	19050303032375			67.06606	-157.740626	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
882	25-50	Perennial Stream	19050303032543			67.073048	-157.753523	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
883	<25	Perennial Stream	19050303032650			67.076481	-157.758013	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter

884	25-50	Perennial Stream	19050303032697			67.07737	-157.759177	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
885	25-50	Perennial Stream	19050303032600			67.087677	-157.761993	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
886	25-50	Perennial Stream	19050303032859			67.089218	-157.761675	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
887	25-50	Perennial Stream	19050303032906			67.091691	-157.762952	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
888	25-50	Perennial Stream	19050303033000			67.098293	-157.766957	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
890	<25	Perennial Stream	19050303033226			67.102871	-157.839552	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
892	25-50	Perennial Stream	19050303017076			67.054663	-157.842216	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
893	<25		19050303016909			67.029371	-157.839605	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
894	<25		19050303021752			67.009487	-157.877327	Alaska Native Lands Patented or Interim Conveyed			Ground Lay	Winter
895	<25		19050303003113			67.003667	-157.883988	Bureau of Land Management			Ground Lay	Winter
896	<25		19050303021697			66.998386	-157.888031	Bureau of Land Management			Ground Lay	Winter
897	<25		19050303021695			66.997878	-157.888576	Bureau of Land Management			Ground Lay	Winter
898	<25		19050303028965			66.978916	-157.916182	Fish and Wildlife Service			Ground Lay	Winter
899	<25		19050303028924			66.977531	-157.91857	Fish and Wildlife Service			Ground Lay	Winter
900	25-50		19050303028883			66.976531	-157.920296	Fish and Wildlife Service			Ground Lay	Winter
901	<25		19050303028764			66.973809	-157.924693	Fish and Wildlife Service			Ground Lay	Winter
902	<25		19050303028658			66.970343	-157.929992	Fish and Wildlife Service			Ground Lay	Winter
903	25-50		19050301010687			66.954154	-157.974587	Fish and Wildlife Service			Ground Lay	Winter
904	25-50		19050301068792			66.951153	-157.982445	Fish and Wildlife Service			Ground Lay	Winter
905	<25		19050301010688			66.943924	-157.998667	Fish and Wildlife Service			Ground Lay	Winter
906	25-50		19050301010690			66.940566	-158.006997	Fish and Wildlife Service			Ground Lay	Winter
907	25-50		19050301010651			66.935251	-158.022677	Fish and Wildlife Service			Ground Lay	Winter
908	25-50		19050301010613			66.9338	-158.027897	Fish and Wildlife Service			Ground Lay	Winter
909	<25		19050301072378			66.93039	-158.037684	Fish and Wildlife Service			Ground Lay	Winter
910	<25		19050301010695			66.927463	-158.045579	Fish and Wildlife Service			Ground Lay	Winter
911	<25		19050301068614			66.927172	-158.046817	Fish and Wildlife Service			Ground Lay	Winter
912	200-500		19050301010702			66.923512	-158.059252	Fish and Wildlife Service			Ground Lay	Winter
913	<25		19050301010732			66.915808	-158.081156	Fish and Wildlife Service			Ground Lay	Winter
914	25-50		19050301010736			66.90495	-158.092368	Fish and Wildlife Service			Ground Lay	Winter
915	25-50		19050301010739			66.903173	-158.095097	Fish and Wildlife Service			Ground Lay	Winter
916	25-50		19050301068102			66.864427	-158.168507	Fish and Wildlife Service			Ground Lay	Winter
917	<25		19050301010854			66.860136	-158.181775	Fish and Wildlife Service			Ground Lay	Winter
918	50-100		19050301010843			66.845569	-158.202031	Fish and Wildlife Service			Ground Lay	Winter
919	<25		19050301080541			66.84257	-158.212133	Fish and Wildlife Service			Ground Lay	Winter
920	<25		19050301010925			66.83953	-158.223382	Fish and Wildlife Service			Ground Lay	Winter
921	<25		19050301010927			66.832094	-158.231976	Fish and Wildlife Service			Ground Lay	Winter
922	25-50		19050301010913			66.827997	-158.247428	Fish and Wildlife Service			Ground Lay	Winter
923						67.733536	-164.536453	State			Bridge Attachment	Winter
924	22 miles					66.970558	-162.162839	State			Subsea	Summer
925	100-200	Perennial Stream	19050301077719	YES	SFp,Wp	66.602871	-160.00839	Alaska Native Lands Patented or Interim Conveyed	YES	Selawik River	Bridge Attachment	Winter
380	100-200		19050301000833			66.738449	-158.70861	Fish and Wildlife Service		Kuchuk Creek	Aerial	Winter
412	50-100		19050301000662			66.87625	-158.118576	Fish and Wildlife Service	YES	Kugarak River	Aerial	Winter
928	25-50					67.001609	-157.88509	Bureau of Land Management			Ground Lay	Winter

CrossingID	Name	Reach Code	AGENCY_NAM	mtrs	LatStart	LongStart
4		19050403018196	Bureau of Land Management	K020N018W07	67.148227	-162.714329
5		19050403018197	Bureau of Land Management	K020N018W07	67.143169	-162.714586
6		19050403018203	Bureau of Land Management	K020N018W20	67.119897	-162.662021
7		19050403014873	Bureau of Land Management	K020N017W31	67.086801	-162.46597
15		19050203006427	Alaska Native Lands Patented or Interim Conveyed	K007N012W21	65.988642	-161.198683
16		19050203006399	Alaska Native Lands Patented or Interim Conveyed	K007N012W20	65.999614	-161.223671
14		19050203006402	Alaska Native Lands Patented or Interim Conveyed	K007N012W21	65.997924	-161.212578
27		19050304008777	Alaska Native Lands Patented or Interim Conveyed	K017N010W25	66.848921	-160.759435
35		19050303013213	Bureau of Land Management	K019N004E36	67.001947	-157.884744
34		19050301023319	Fish and Wildlife Service	K016N002E20	66.774022	-158.485955
42		19050301023319	Fish and Wildlife Service	K016N002E20	66.774022	-158.485955
33		19050301024336	Fish and Wildlife Service	K016N001E35	66.746755	-158.609489
43		19050301024336	Fish and Wildlife Service	K016N001E35	66.746755	-158.609489
32		19050301081816	Fish and Wildlife Service	K015N001W09	66.713719	-158.876918
44		19050301081816	Fish and Wildlife Service	K015N001W09	66.713719	-158.876918
31		19050301033394	Fish and Wildlife Service	K015N002W14	66.697968	-159.014985
45		19050301033394	Fish and Wildlife Service	K015N002W14	66.697968	-159.014985
30		19050301035302	Fish and Wildlife Service	K015N005W15	66.698184	-159.718409
46		19050301035302	Fish and Wildlife Service	K015N005W15	66.698184	-159.718409
59		19050203009080	Bureau of Land Management	K010N009W18	66.270536	-160.65935
1		19050404008959	Bureau of Land Management	K028N024W35	67.77616	-164.004278
2		19050403016490	Alaska Native Lands Patented or Interim Conveyed	K025N019W31	67.524142	-163.057335
3		19050403032039	Bureau of Land Management	K024N020W21	67.46013	-163.144308
9		19050403022186	Alaska Native Lands Patented or Interim Conveyed	K017N017W06	66.897224	-162.466788
10		19050403022356	Alaska Native Lands Patented or Interim Conveyed	K017N017W06	66.895923	-162.470847
11		19050203008176	Bureau of Land Management	K011N012W10	66.369271	-161.21754
12		19050203009768	Bureau of Land Management	K011N012W10	66.367421	-161.20755
13		19050203007401	Alaska Native Lands Patented or Interim Conveyed	K008N012W14	66.087671	-161.117096
17		19050202006947	State	K006N015W08	65.938703	-161.860111
21		19050202006871	State	K006N015W06	65.944495	-161.905688
20		19050202006902	State	K006N015W06	65.943271	-161.904174
18		19050202006922	State	K006N015W08	65.939959	-161.889311

23		19050202006830	State	K006N015W06	65.946775	-161.908866
22		19050202006860	State	K006N015W06	65.945128	-161.906364
19		19050202006920	State	K006N015W07	65.941129	-161.89813
24		19050304011142	Alaska Native Lands Patented or Interim Conveyed	K017N011W19	66.85654	-161.148312
25		19050304011183	Alaska Native Lands Patented or Interim Conveyed	K017N011W29	66.850266	-161.125723
26		19050304018264	Alaska Native Lands Patented or Interim Conveyed	K017N009W18	66.874349	-160.707067
29		19050301082250	Alaska Native Lands Patented or Interim Conveyed	K015N006W14	66.696081	-159.881529
36	Kobuk River Oxbow Lake	19050303012973	Alaska Native Lands Patented or Interim Conveyed	K019N005E08	67.064296	-157.844759
37		19050302009857	Alaska Native Lands Patented or Interim Conveyed	K018N009E33	66.916051	-156.906249
28		19050301082238	Alaska Native Lands Patented or Interim Conveyed	K015N006W22	66.692003	-159.931203
49		19050301036510	Alaska Native Lands Patented or Interim Conveyed	K015N006W31	66.663005	-160.028656
50	Shogvik Lake	19050301080700	Alaska Native Lands Patented or Interim Conveyed	K015N006W31	66.653028	-160.029696
52		19050301080705	Alaska Native Lands Patented or Interim Conveyed	K014N006W07	66.621624	-160.031448
54		19050301082407	Alaska Native Lands Patented or Interim Conveyed	K014N006W29	66.586705	-160.012927
53		19050301036850	Alaska Native Lands Patented or Interim Conveyed	K014N006W29	66.588657	-160.013425
55		19050301080782	Alaska Native Lands Patented or Interim Conveyed	K013N006W06	66.556354	-160.042208
51		19050301080788	Alaska Native Lands Patented or Interim Conveyed	K013N007W12	66.634081	-160.045213
56		19050301082330	Alaska Native Lands Patented or Interim Conveyed	K013N007W34	66.482532	-160.140912
57		19050301080722	Alaska Native Lands Patented or Interim Conveyed	K012N007W09	66.457037	-160.152137
58		19050301074534	Alaska Native Lands Patented or Interim Conveyed	K012N007W32	66.40091	-160.192613
48		19050301082238	Alaska Native Lands Patented or Interim Conveyed	K015N006W22	66.692003	-159.931203
47		19050301082250	Alaska Native Lands Patented or Interim Conveyed	K015N006W14	66.696081	-159.881529
38		19050302009857	Alaska Native Lands Patented or Interim Conveyed	K018N009E33	66.916051	-156.906249

Appendix I – Vegetation

Table 1. Area of each vegetation type within the right-of-way for each action alternative and for the Project area. Vegetation types indicated as "Clearing Needed" include all vegetation, including those less than 8 inches in height.

Landfire Vegetation Type	Clearing Needed	Alternative		Alternative 2	
		30 ft Buffer Area (acres)	60 ft Buffer Area (acres)	30 ft Buffer Area (acres)	60 ft Buffer Area (acres)
LF 11: Water	N	65.03	130.56	63.45	127.43
LF 20: Developed	N	28.93	57.54	27.18	54.08
LF 33: Sparsely Vegetated	N	0.70	1.40	0.70	1.40
LF 40: Sedge Meadow	N	60.64	121.22	57.80	115.50
LF 50: Tidal Flats and Marshes	N	7.21	14.33	7.21	14.33
LF 71: Shrub and Herbaceous Peatlands	N	247.91	495.58	245.75	491.31
LF 72: Peatland Forests	Y	18.96	38.07	17.56	35.14
SAF 201: White Spruce	Y	10.57	20.95	7.86	15.66
SAF 202: White Spruce-Paper Birch	Y	11.52	23.01	9.46	18.84
SAF 203: Balsam Poplar	Y	67.31	134.81	64.26	128.71
SAF 204: Black Spruce	Y	6.20	12.42	5.93	11.90
SAF 252: Paper Birch	Y	0.42	0.83	0.42	0.83
SRM 901: Alder	Y	36.74	73.18	34.86	69.43
SRM 902: Alpine Herb	N	0.13	0.26	0.13	0.26
SRM 903: Beach Wildrye-Mixed Forb	N	8.70	17.34	7.40	14.79
SRM 907: Dryas	N	4.13	8.26	3.20	6.46
SRM 909: Freshwater Marsh	N	1.15	2.25	1.20	2.34
SRM 911: Lichen Tundra	N	21.44	42.63	18.59	37.03
SRM 912: Low Scrub Shrub Birch-Ericaceous	Y	474.83	949.05	448.02	895.31
SRM 913: Low Scrub Swamp	Y	0.27	0.54	0.27	0.54
SRM 915: Mixed Herb-Herbaceous	N	56.03	111.94	54.11	107.99
SRM 916: Sedge-Shrub Tundra	Y	500.54	1,001.65	461.29	923.21
SRM 917: Tall Shrub Swamp	Y	281.29	562.64	268.20	536.36
SRM 918: Tussock Tundra	N	227.96	456.47	211.27	423.16
SRM 921: Willow	Y	0.01	0.04	0.01	0.04

Source: Landfire 2025a,b

Table 2. Areas of vegetation height, based on Landfire vegetation height dataset, for each alternative and for the Project area.

Landfire Vegetation Type	Alternative 1		Alternative 2	
	30 ft Buffer Area (acres)	60 ft Buffer Area (acres)	30 ft Buffer Area (acres)	60 ft Buffer Area (acres)
Veg Height (No Clearing - <0.2m)	1,347.35	2,694.25	1,287.76	2,575.18
Veg Height 0.2 m to 1 m	665.45	1,331.18	615.81	1,231.88
Veg Height 1m - 2 m	50.41	100.82	44.90	89.77
Veg Height >2m	75.41	150.68	67.66	135.17
#N/A	0.01	0.04	0.01	0.04

Table 3. Cross reference between Landfire Vegetation Type and Resilience Rank and Likely Wetland Status

Landfire Vegetation Type	Resilience Rank	Likely Wetland Status	Alt 1 60 ft Buffer (acres)	Alt 2 60 ft Buffer (acres)
Fill-NoData	NA	NA	0.04	0.04
Alaska Arctic Coastal Sedge-Dwarf-Shrubland	L	Wetland	3.22	3.22
Alaska Arctic Floodplain Forest	L	Floodplain	13.61	13.61
Alaska Arctic Large River Floodplain Forest	L	Floodplain	34.33	34.28
Alaska Arctic Mesic Alder Shrubland	M	Upland	73.18	69.43
Alaska Arctic Permafrost Plateau Dwarf-Shrub Lichen Tundra	L	Upland	2.25	2.34
Alaska Arctic Tidal Flat	H	Wetland		
North American Arctic Bedrock and Talus	H	NA	1.01	1.01
North American Arctic Dryas Tundra	L	NA	20.99	20.99
North American Arctic Dwarf-Shrub Lichen Tundra	L	Upland	15.10	12.84
North American Arctic Dwarf-shrub-Sphagnum Peatland	M	Wetland	495.45	491.18
North American Arctic Freshwater Marsh	H	Wetland	7.75	6.33
North American Arctic Lichen Tundra	H	NA		
North American Arctic Mesic Herbaceous Meadow	H	Upland	0.54	0.54
North American Arctic Mesic Sedge-Willow Tundra	M	Wetland	30.39	28.79
North American Arctic Mesic-Wet Low Willow Shrubland	M	Wetland	454.04	421.02
North American Arctic Polygonal Ground Shrub-Tussock Tundra	L	Wetland	60.56	58.20
North American Arctic Scrub Birch-Ericaceous Shrubland	L	Upland	42.63	37.03
North American Arctic Sparse Tundra	H	NA	2.25	1.95
North American Arctic Wet Sedge Tundra and Polygonal Ground	L	Wetland	47.09	43.41
North American Arctic-Subarctic Coastal Dune & Beach Meadow	H	Upland		

North American Arctic-Subarctic Shrub-Tussock Tundra	L	Wetland	562.59	536.31
North American Arctic-Subarctic Tidal Salt and Brackish Marsh	H	Wetland	14.33	14.33
North American Arctic-Subarctic Tussock Tundra	L	Wetland		
Western North American Boreal Alpine Dwarf-shrubland	M	Wetland		
Western North American Boreal Alpine Mesic Herbaceous Meadow	M	Upland	0.26	0.26
Western North American Boreal Black Spruce Bog and Dwarf-Tree Peatland	L	Wetland	38.07	35.14
Western North American Boreal Black Spruce-Tamarack Fen	L	Wetland		
Western North American Boreal Cliff Scree and Rock	H	Upland		
Western North American Boreal Dry Aspen-Steppe Bluff	L	Upland		
Western North American Boreal Dry Grassland	H	Upland		
Western North American Boreal Freshwater Emergent Marsh	H	Wetland	0.51	0.13
Western North American Boreal Lowland Large River Floodplain Conifer Forest	L	Floodplain	8.61	5.07
Western North American Boreal Mesic Birch-Aspen Forest	L	Upland	0.83	0.83
Western North American Boreal Mesic Bluejoint-Forb Meadow	H	Upland		
Western North American Boreal Mesic Scrub Birch-Willow Shrubland	M	Upland	2.43	2.14
Western North American Boreal Mesic White Spruce Forest	L	Upland	12.33	10.59
Western North American Boreal Mesic-Wet Black Spruce Forest and Woodland	L	Wetland	3.38	3.38
Western North American Boreal Montane Floodplain Conifer Forest	L	Floodplain		
Western North American Boreal Riparian Stringer Conifer Forest	L	Upland		
Western North American Boreal Shrub Floodplain	M	Floodplain		
Western North American Boreal Shrub Swamp	M	Wetland	1001.65	923.21
Western North American Boreal Shrub-Sedge Bog & Acidic Fen	M	Wetland	949.05	895.31
Western North American Boreal Shrub-Sedge Rich and Alkaline Fen	M	Wetland	63.33	62.21
Western North American Boreal Spruce-Lichen Woodland	L	Upland	2.33	2.33
Western North American Boreal Treeline White Spruce Woodland	L	Upland		

Western North American Boreal Wet Black Spruce-Tussock Woodland	L	Wetland	6.59	6.07
Western North American Boreal Wet Meadow	H	Wetland	0.55	0.55
Western North American Boreal Treeline Hardwood-White Spruce Woodland	L	Upland		
Western North American Boreal Treeline White Spruce-Hardwood Woodland	L	Upland		
Western North American Boreal Mesic Hardwood-White Spruce Forest	L	Upland	9.60	7.82
Western North American Boreal Mesic White Spruce-Hardwood Forest	L	Upland	9.89	8.96
Western North American Boreal Mesic-Wet Black Spruce-Hardwood Forest and Woodland	L	Wetland	0.12	0.12
Western North American Boreal Lowland Large River Floodplain Deciduous Forest	L	Floodplain	4.89	2.51
Western North American Boreal Lowland Large River Floodplain Mixed Forest	L	Floodplain	3.53	2.06
Western North American Boreal Montane Floodplain Deciduous Forest	L	Floodplain		
Western North American Boreal Montane Floodplain Mixed Forest	L	Floodplain		
Western North American Boreal Riparian Stringer Deciduous Forest	L	Upland		
Western North American Boreal Riparian Stringer Mixed Forest	L	Upland		
Alaska Arctic Floodplain Shrubland	M	Floodplain	31.24	30.46
Alaska Arctic Large River Floodplain Shrubland	M	Floodplain	47.69	44.84
North American Arctic Wet Sedge-Sphagnum Peatland	H	Wetland	0.13	0.13
North American Arctic Polygonal Ground Tussock Tundra	L	Wetland	0.05	0.05
North American Arctic-Subarctic Coastal Dune & Beach	H	Upland		
Western North American Boreal Lowland Large River Floodplain Shrubland (Conifer Forest)	L	Floodplain		
Western North American Boreal Lowland Large River Floodplain Sparse Vegetation	H	Floodplain		
Western North American Boreal Montane Floodplain Sparse Vegetation	H	Floodplain		
Alaska Arctic Large River Floodplain Sparse Vegetation	H	Floodplain	0.39	0.39
Western North American Boreal Montane Floodplain Shrubland (Conifer Forest)	L	Floodplain		
Western North American Boreal Riparian Stringer Shrubland (Conifer Forest)	L	Floodplain		
Western North American Boreal Herbaceous Floodplain	H	Riparian		

Western North American Boreal Herbaceous Rich and Alkaline Fen	H	Wetland	7.04	6.11
Western North American Boreal Lowland Large River Floodplain Shrubland (Deciduous Forest)	L	Floodplain	3.04	3.01
Western North American Boreal Lowland Large River Floodplain Shrubland (Mixed Forest)	L	Floodplain		
Western North American Boreal Montane Floodplain Shrubland (Deciduous Forest)	L	Floodplain		
Western North American Boreal Montane Floodplain Shrubland (Mixed Forest)	L	Floodplain		
Western North American Boreal Riparian Stringer Shrubland (Deciduous Forest)	L	Riparian		
Western North American Boreal Riparian Stringer Shrubland (Mixed Forest)	L	Riparian		
Open Water	H	NA	130.56	127.43
Quarries-Strip Mines-Gravel Pits-Well and Wind Pads	H	NA	0.11	0.11
Developed-Low Intensity	H	NA	10.82	10.09
Developed-Medium Intensity	H	NA	0.93	0.92
Developed-Roads	H	NA	45.68	42.95
North American Glacier and Ice Field	H	NA		
Agriculture-Cultivated Crops and Irrigated Agriculture	H	NA		

** Unmapped areas are marine (ocean) environment*

Table 4. Sensitive Plant Species listed in Kobuk Seward Peninsula Resource Management Plan (ACCS 2025)

Scientific Name	Common Name	Sensitive Species in 2004?	Sensitive Species in BLM (2019)?	Remarks
Artemisia globularia var. lutea	purple wormwood	Yes	Yes	
Artemisia senjavenensis	yellow-ball wormwood	Yes	Yes	
Beckwithia g/aciafis ssp. alaskensis	Alaskan glacier buttercup	Yes	No	Recent taxonomic change tentatively shows this taxon as Ranunculus glacialis
Cardamine microphylla SSP. blaisdellii	small-leaf bittercress	No	No	
Carex heleonastes	Hudson Bay sedge	No	No	
Doualasia beringensis	Bering dwarf primrose	Yes	No	
Gentianopsis detonsa ssp. detonsa	sheared gentian	No	No	
Oxytropsis arctica var. barnebyana	Barneby's milkvetch	Yes	No	
Oxytropis kobukensis	Kobuk locoweed	Yes	Yes	Endemic to sand dune habitat in Kobuk Valley National Park.
Pedicularis hirsuta	hairy lousewort	Yes	Yes	
Potentilla fraaiformis	strawberry cinquefoil	No	Yes	
Potentilla stipularis	stipulated cinquefoil	Yes	No	
Primula tschuktschorum	Chukchi primrose	No	Yes	
Ranunculus auricomus	qoldilocks buttercup	No	No	
Ranunculus glacialis ssp. camissonis	Glacier buttercup	No	No	
Rumex krausei	Cape Krause sorrel	No	Yes	Present on initial draft BLM Alaska SSS list - omitted from final in error.
Saussurea triangulate	Waring Mountain saw-wort	No	No	Shown as Saussurea sp. 1 on ANHP trackinq list.
Smelowskia iohnsonii	Johnson's smelowskia	No	Yes	
Trisetum sibiricum ssp. littorale	Siberian oatgrass	No	No	

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Appendix J – Birds

Table 1. Bird species that are known or expected to occur in the project area and are included on the U.S. Fish and Wildlife Service Birds of Conservation Concern, Bureau of Land Management Special Status Species, or Alaska Department of Fish and Game Species of Greatest Conservation Need lists.

Common Name	Latin Name	Agency List[1]	Notes
Waterbirds			
Emperor Goose	*Chen canagica*	SGCN	Outside range but seen in area
Greater White-fronted Goose	*Anser albifrons frontalis*	SGCN	
Brant[2]	*Branta bernicla nigricans*	SGCN	
Trumpeter Swan	*Cygnus buccinator*	BCC, SGCN	Outside range but seen in area
Northern Pintail	*Anas acuta*	SGCN	
Canvasback	*Aythya valisineria*	SGCN	
Steller's Eider[2]	*Polysticta stelleri*	BCC, SSS, SGCN	
Spectacled Eider[2]	*Somateria fischeri*	BCC, SSS, SGCN	
King Eider[2]	*Somateria spectabilis*	SGCN	
Common Eider	*Somateria mollissima v-nigrum*	SGCN	
Harlequin Duck	*Histrionicus histrionicus*	SGCN	
Surf Scoter	*Melanitta perspicillata*	SGCN	
White-winged Scoter[2]	*Melanitta fusca*	SGCN	
Black Scoter	*Melanitta americana*	SGCN	
Long-tailed Duck	*Clangula hyemalis*	SGCN	
Horned Grebe	*Podiceps auritus*	SGCN	
Red-necked Grebe	*Podiceps grisegena*	SGCN	
Red-throated Loon	*Gavia stellata*	SSS, SGCN	
Arctic Loon	*Gavia arctica*	SGCN	
Yellow-billed Loon	*Gavia adamsii*	BCC, SSS, SGCN	
Sandhill Crane[2]	*Antigone canadensis*	SGCN	
Shorebirds			
Black-bellied Plover[2]	*Pluvialis squatarola*	SGCN	
American Golden-Plover	*Pluvialis dominica*	BCC, SGCN	
Upland Sandpiper	*Bartramia longicauda*	SGCN	Outside range but seen in area
Bristle-thighed Curlew	*Numenius tahitiensis*	BCC, SSS, SGCN	
Whimbrel	*Numenius phaeopus rufiventris*	BCC, SSS, SGCN	
Bar-tailed Godwit	*Limosa lapponica*	BCC, SSS, SGCN	

Common Name	Latin Name	Agency List[1]	Notes
Hudsonian Godwit	*Limosa haemastica*	BCC, SSS, SGCN	
Ruddy Turnstone	*Arenaria interpres*	SGCN	
Black Turnstone	*Arenaria melanocephala*	BCC SGCN	
Red Knot	*Calidris canutus roselaari*	BCC, SSS, SGCN	
Surfbird	*Calidris virgata*	SGCN	
Sharp-tailed Sandpiper[2]	*Calidris acuminata*	SGCN	
Stilt Sandpiper[2]	*Calidris himantopus*	SGCN	Outside range but seen in area
Sanderling[2]	*Calidris alba*	SGCN	Outside range but seen in area
Dunlin	*Calidris alpina arcticola*	BCC, SSS, SGCN	
Least Sandpiper	*Calidris minutilla*	SGCN	
Buff-breasted Sandpiper[2]	*Calidris subruficollis*	BCC, SSS, SGCN	Outside range but seen in area
Pectoral Sandpiper	*Calidris melanotos*	BCC SGCN	
Semipalmated Sandpiper	*Calidris pusilla*	SGCN	
Western Sandpiper	*Calidris mauri*	BCC, SGCN	
Long-billed Dowitcher	*Limnodromus scolopaceus*	SGCN	
Spotted Sandpiper	*Actitis macularius*	SGCN	
Wandering Tattler	*Tringa incana*	BCC, SGCN	
Lesser Yellowlegs	*Tringa flavipes*	BCC, SGCN	
Greater Yellowlegs	*Tringa melanoleuca*	SGCN	Outside range but seen in area
Red-necked Phalarope	*Phalaropus lobatus*	SGCN	
Red Phalarope	*Phalaropus fulicarius*	SGCN	
Seabirds			
Common Murre	*Uria aalge*	SGCN	
Thick-billed Murre	*Uria lomvia*	BCC, SGCN	
Black Guillemot[3]	*Cepphus grylle*	SGCN	
Kittlitz's Murrelet	*Brachyramphus brevirostris*	BCC, SSS, SGCN	
Horned Puffin	*Fratercula corniculata*	SGCN	
Tufted Puffin	*Fratercula cirrhata*	BCC, SGCN	
Northern Fulmar	*Fulmarus glacialis*	SGCN	
Short-tailed Shearwater[2]	*Puffinus tenuirostris*	SGCN	
Pomarine Jaeger	*Stercorarius pomarinus*	SGCN	
Parasitic Jaeger	*Stercorarius parasiticus*	SGCN	
Long-tailed Jaeger	*Stercorarius longicaudus*	SGCN	
Black-legged Kittiwake	*Rissa tridactyla*	SGCN	
Ivory Gull[2,3]	*Pagophila eburnea*	BCC SGCN	Outside range but seen in area

Common Name	Latin Name	Agency List[1]	Notes
Sabine's Gull	*Xema sabini*	SGCN	
Ross's Gull[2,3]	*Rhodostethia rosea*	BCC, SGCN	
Herring Gull	*Larus argentatus*	SGCN	Project area at northern edge of range
Glaucous-winged Gull	*Larus glaucescens*	SGCN	Project area at northern edge of range
Glaucous Gull	*Larus hyperboreus*	SGCN	
Aleutian Tern	*Onychoprion aleuticus*	BCC, SSS, SGCN	
Pelagic Cormorant	*Urile pelagicus*	SGCN	Outside range but seen in area
Raptors			
Golden Eagle	*Aquila chrysaetos*	SGCN	
Northern Harrier	*Circus hudsonius*	BCC	
Bald Eagle	*Haliaeetus leucocephalus*	SGCN	
Rough-legged Hawk	*Buteo lagopus*	SGCN	
American Kestrel	*Falco sparverius*	SGCN	Outside range but seen in area
Gyrfalcon[3]	*Falco rusticolus*	SGCN	
Snowy Owl[3]	*Bubo scandiacus*	BCC, SGCN	
Great Gray Owl[3]	*Strix nebulosa*	SGCN	
Short-eared Owl	*Asio flammeus*	BCC, SGCN	
Boreal Owl[3]	*Aegolius funereus*	SGCN	Outside range but seen in area
Landbirds			
Spruce Grouse[3]	*Canachites canadensis*	SGCN	
Willow Ptarmigan[3]	*Lagopus lagopus*	SGCN	
Olive-sided Flycatcher	*Contopus cooperi*	BCC, SSS, SGCN	Outside range but seen in area
Alder Flycatcher	*Empidonax alnorum*	SGCN	
Northern Shrike	*Lanius borealis*	SGCN	
Common Raven[3]	*Corvus corax*	SGCN	
Boreal Chickadee[3]	*Poecile hudsonicus*	SGCN	
Gray-headed Chickadee[3]	*Poecile cinctus lathami*	BCC, SSS, SGCN	
Horned Lark	*Eremophila alpestris*	SGCN	
Bank Swallow	*Riparia riparia*	SGCN	
Tree Swallow	*Tachycineta bicolor*	SGCN	
Arctic Warbler	*Phylloscopus borealis*	SGCN	
Ruby-crowned Kinglet	*Corthylio calendula*	SGCN	
Bohemian Waxwing	*Bombycilla garrulus*	SGCN	
Gray-cheeked Thrush	*Catharus minimus*	SGCN	
Hermit Thrush	*Catharus guttatus*	SGCN	Outside range but seen in area
Varied Thrush	*Ixoreus naevius*	SGCN	

Common Name	Latin Name	Agency List[1]	Notes
Bluethroat	*Luscinia svecica*	SGCN	
Northern Wheatear	*Oenanthe oenanthe*	SGCN	
American Pipit	*Anthus rubescens*	SGCN	
Pine Grosbeak[3]	*Pinicola enucleator*	SGCN	
Lapland Longspur	*Calcarius lapponicus*	SGCN	
Snow Bunting[3]	*Plectrophenax nivalis*	SGCN	
McKay's Bunting[3]	*Plectrophenax hyperboreus*	BCC, SSS, SGCN	
Fox Sparrow	*Passerella iliaca*	SGCN	
American Tree Sparrow	*Spizelloides arborea*	SGCN	
Dark-eyed Junco	*Junco hyemalis*	SGCN	
White-crowned Sparrow	*Zonotrichia leucophrys*	SGCN	
Golden-crowned Sparrow	*Zonotrichia atricapilla*	SGCN	
Savannah Sparrow	*Passerculus sandwichensis*	SGCN	
Rusty Blackbird	*Euphagus carolinus*	BCC, SSS, SGCN	
Orange-crowned Warbler	*Leiothlypis celata*	SGCN	
Blackpoll Warbler	*Setophaga striata*	SGCN	
Yellow-rumped Warbler	*Setophaga coronata*	SGCN	
Wilson's Warbler	*Cardellina pusilla*	SGCN	

[1] BCC = United States Fish and Wildlife Service Birds of Conservation Concern (USFWS 2021); SSS = Bureau of Land Management Special Status Species (BLM 2019); SGCN = Alaska Department of Fish and Game Species of Greatest Conservation Need (ADFG 2025).

[2] Primarily expected to be present in the project area only during spring or fall migration.

[3] Present during winter.

Table 2. Acres and percentage of landcover classes classified as high or moderate value in the draft State Wildlife Action Plan (ADF&G 2025) for selected bird species within 1 km of the fiber optic cable routes for Alternatives 1 and 2.

Common Name	Alternative 1		Alternative 2	
	Acres	%	Acres	%
Waterbirds				
Emperor Goose	81,945	18	79,900	19
Greater White-fronted Goose	225,771	50	221,416	52
Northern Pintail	72,593	16	70,513	17
Spectacled Eider	53,189	12	51,147	12
King Eider	202,179	45	197,827	47
Surf Scoter	41,617	9	38,861	9
White-winged Scoter	38,587	9	36,206	9
Black Scoter	89,135	20	86,375	20
Long-tailed Duck	236,515	53	232,125	55
Red-necked Grebe	111,657	25	102,378	24
Red-throated Loon	68,308	15	66,256	16
Yellow-billed Loon	34,432	8	32,384	8
Sandhill Crane	290,359	65	277,619	66

Common Name	Alternative 1		Alternative 2	
				Shorebirds
Black-bellied Plover	47,974	11	47,961	11
American Golden-Plover	183,424	41	181,048	43
Bristle-thighed Curlew	187,077	42	184,717	44
Whimbrel	241,162	54	231,144	55
Bar-tailed Godwit	256,725	57	247,503	59
Hudsonian Godwit	47,248	11	40,122	10
Ruddy Turnstone	172,313	38	169,986	40
Black Turnstone	47,944	11	47,931	11
Red Knot	5,241	1	5,214	1
Surfbird	10,097	2	10,040	2
Sharp-tailed Sandpiper	47,213	11	47,209	11
Sanderling	23	0	23	0
Dunlin	47,974	11	47,961	11
Least Sandpiper	91,498	20	83,160	20
Pectoral Sandpiper	247,372	55	238,196	56
Semipalmated Sandpiper	207,931	46	205,574	49
Western Sandpiper	202,310	45	199,994	47
Long-billed Dowitcher	208,067	46	198,911	47
Wandering Tattler	49,056	11	46,803	11
Lesser Yellowlegs	50,224	11	42,724	10
Greater Yellowlegs	50,277	11	42,776	10
Red-necked Phalarope	130,442	29	121,162	29
Red Phalarope	81,951	18	79,899	19
				Seabirds
Common Murre	34,641	8	32,603	8
Thick-billed Murre	34,641	8	32,603	8
Kittlitz's Murrelet	38,367	9	36,311	9
Horned Puffin	34,641	8	32,603	8
Tufted Puffin	34,641	8	32,603	8
Pomarine Jaeger	39,191	9	37,159	9
Parasitic Jaeger	241,136	54	236,732	56
Long-tailed Jaeger	287,045	64	275,782	65
Black-legged Kittiwake	34,641	8	32,603	8
Sabine's Gull	81,923	18	79,878	19
Glaucous-winged Gull	40,804	9	38,753	9
Glaucous Gull	134,834	30	125,102	30
Aleutian Tern	134,050	30	124,321	29
Pelagic Cormorant	34,641	8	32,603	8
				Raptors
Golden Eagle	363	<1	330	<1
Northern Harrier	92,777	21	81,964	19
Bald Eagle	41,242	9	38,994	9
Rough-legged Hawk	9,316	2	9,230	2
Gyrfalcon	363	<1	330	<1
Snowy Owl	17,388	4	17,363	4
Short-eared Owl	168,003	37	164,520	39
				Landbirds
Willow Ptarmigan	321,278	72	309,361	73

Common Name	Alternative 1		Alternative 2	
Alder Flycatcher	133,218	30	121,790	29
Northern Shrike	111,850	25	99,265	23
Boreal Chickadee	25,376	6	21,845	5
Gray-Headed Chickadee	22,859	5	19,604	5
Horned Lark	5,408	1	5,347	1
Bank Swallow	40,653	9	37,797	9
Tree Swallow	9,311	2	8,165	2
Arctic Warbler	107,822	24	95,708	23
Gray-cheeked Thrush	142,681	32	129,790	31
Varied Thrush	31,137	7	26,879	6
Bluethroat	116,256	26	107,056	25
Northern Wheatear	4,484	1	4,427	1
American Pipit	5,210	1	5,150	1
Pine Grosbeak	22,632	5	19,422	5
Lapland Longspur	173,259	39	170,920	40
Snow Bunting	6,242	1	6,171	2
McKay’s Bunting	188,918	42	186,588	44
Fox Sparrow	189,310	42	169,363	40
American Tree Sparrow	272,923	61	257,717	61
White-crowned Sparrow	190,366	42	170,601	40
Golden-crowned Sparrow	139,045	31	126,730	30
Savannah Sparrow	254,578	57	241,569	57
Rusty Blackbird	132,199	29	113,404	27
Blackpoll Warbler	143,849	32	130,754	31
Yellow-rumped Warbler	33,068	7	28,500	7
Wilson's Warbler	183,888	41	164,661	39

Table 3. Acres of landcover classes classified as high or moderate value in the draft State Wildlife Action Plan (ADF&G 2025) for selected bird and mammal species within 60 feet (9 meters), 3,280 feet (1 kilometer), and 13,123 feet (4 kilometers) of the fiber optic cable routes for Alternatives 1 and 2.

Landcover Class[1]	60 foot Buffer		3,280 foot Buffer		13,123 foot Buffer		Species Count	
	Alternative		Alternative		Alternative		Alternative	
	1	2	1	2	1	2	1	2
Alaska Arctic Coastal Sedge-Dwarf-Shrubland	4	4	376	376	901	901	26	5
Alaska Arctic Mesic Alder Shrubland	48	48	5,978	5,973	18,533	18,494	13	9
Alaska Arctic Permafrost Plateau Dwarf-Shrub Lichen Tundra	0	0	53	53	248	248	17	3
Alaska Arctic Tidal Flat	0	0	48	48	230	230	16	0
Developed-Low Intensity	9	9	677	666	890	890	7	2
Developed-Medium Intensity	<1	<1	135	135	153	153	7	1
Developed-Roads	49	46	992	983	1,471	1,471	0	1
N.A. Arctic Bedrock and Talus	0.8	0.8	197	197	884	883	17	5
N.A. Arctic Dryas Tundra	32	31	3,726	3,708	16,068	16,031	17	6
N.A. Arctic Dwarf-Shrub Lichen Tundra	60	59	5,227	5,191	17,031	16,933	13	7
N.A. Arctic Dwarf-shrub-Wet Sedge-Sphagnum Peatland	319	319	28,734	28,731	86,702	86,687	25	4
N.A. Arctic Freshwater Marsh	1	1	355	346	1,672	1,647	30	4
N.A. Arctic Lichen Tundra	10	9	923	920	3,123	3,104	9	2
N.A. Arctic Mesic Herbaceous Meadow	33	33	4,999	4,999	16,628	16,628	12	12
N.A. Arctic Mesic-Wet Low Willow Shrubland	124	123	14,250	14,066	52,110	51,541	14	11
N.A. Arctic Scrub Birch-Ericaceous Shrubland	291	290	28,900	28,904	97,646	97,642	12	12
N.A. Arctic Sparse Tundra	1	1	394	389	1,820	1,792	18	3
N.A. Arctic Wet Sedge Tundra and Polygonal Ground	136	136	13,267	13,266	43,534	43,528	31	5
N.A. Arctic-Subarctic Coastal Dune and Beach	0	0	23	23	202	202	13	2
N.A. Arctic-Subarctic Shrub-Tussock Tundra	1,330	1,302	129,634	127,362	444,330	434,638	21	12
N.A. Arctic-Subarctic Tidal Salt and Brackish Marsh	15	15	5,142	5,142	18,108	18,108	31	3
N.A. Arctic-Subarctic Tussock Tundra	224	222	19,704	19,673	55,874	55,815	19	9
Open Water	47	44	34,049	32,017	148,918	142,088	32	2
Quarries-Strip Mines-Gravel Pits-Well and Wind Pads	<1	<1	37	37	73	73	1	0
Recently Burned-Herb and Grass Cover	0	0	21	21	2,141	2,141	0	6
Recently Logged-Herb and Grass Cover	0	0	3	3	26	26	0	5
Recently Logged-Shrub Cover	0	0	0	0	3	3	3	8
W.N.A. Boreal Alpine Mesic Herbaceous Meadow	0	0	<1	<1	4	4	5	5

Landcover Class[1]	60 foot Buffer		3,280 foot Buffer		13,123 foot Buffer		Species Count	
	Alternative		Alternative		Alternative		Alternative	
	1	2	1	2	1	2	1	2
W.N.A. Boreal Black Spruce Bog and Dwarf-Tree Peatland	15	12	1,705	1,439	6,460	5,762	17	6
W.N.A. Boreal Cliff, Scree, and Rock	0	0	166	133	2,180	2,135	8	2
W.N.A. Boreal Freshwater Emergent Marsh	<1	<1	28	21	101	73	20	4
W.N.A. Boreal Mesic Alder Shrubland	56	47	5,475	4,802	24,933	22,642	17	10
W.N.A. Boreal Mesic Birch-Aspen Forest	10	8	1,932	1,621	9,271	8,155	8	5
W.N.A. Boreal Mesic Bluejoint-Forb Meadow	19	17	4,155	3,822	14,904	13,725	8	4
W.N.A. Boreal Mesic Scrub Birch-Willow Shrubland	645	561	61,653	53,310	235,810	204,608	15	11
W.N.A. Boreal Mesic White Spruce-Hardwood Forest	14	12	3,539	3,019	28,125	26,717	15	9
W.N.A. Boreal Mesic-Wet Black Spruce Forest and Woodland	9	7	1,162	959	5,621	5,374	9	8
W.N.A. Boreal Mixed Spruce-Hardwood Forest & Woodland	8	6	1,669	1,243	9,886	9,020	15	9
W.N.A. Boreal Shrub Swamp	18	16	3,029	2,654	10,042	8,940	24	8
W.N.A. Boreal Shrub-Sedge Bog and Acidic Fen	513	433	45,462	38,609	145,264	122,875	18	9
W.N.A. Boreal Spruce-Lichen Woodland	11	10	2,323	2,117	10,964	10,720	11	7
W.N.A. Boreal Treeline White Spruce-Hardwood Woodland	90	80	12,228	10,641	61,657	55,823	15	7
W.N.A. Boreal Wet Black Spruce-Tussock Woodland	0	0	6	4	69	66	9	7
W.N.A. Boreal Wet Meadow	54	45	6,567	5,743	22,949	20,694	12	7
Unclassified (marine waters)	82	82	-	-	-	-	-	-
TOTAL	4,277	4,032	448,942	423,367	1,617,561	1,529,231		

[1] N.A. (North American); W.N.A. (Western North American)

[2] Number of species that this landcover class is moderate or high value habitat for (maximum of 84 bird species and 18 mammal species with habitat rankings; ADF&G 2025).

Bird Guilds

Descriptions and habitat associations of waterbird, seabird, raptor, landbird, and shorebird guilds that likely occur in the project area. Species include those listed as a U.S. Fish and Wildlife Service Bird of Conservation Concern, Bureau of Land Management Special Status Species, or an Alaska Department of Fish and Game Species of Greatest Conservation Need.

Waterbirds

A total of 21 waterbird species, including ducks, loons, grebes, and cranes, occur in the project area. Waterbirds occur primarily in aquatic and wetland associated habitats, with the highest species diversity occurring in freshwater marshes and open water. During the breeding season, most waterbirds utilize freshwater habitats including marshes, wet sedge tundra, and peatlands that provide nesting sites and brood-rearing areas with diverse microhabitats and abundant invertebrate prey. Marine environments are used during migration, by nonbreeding individuals, and for foraging by some species such as loons, long-tailed duck, scoters and eiders (Kessel 1989; Morgan et al. 2016; Rizzolo et al. 2020; Uher-Koch et al. 2020). Nearshore waters at the mouths of rivers are especially important during spring to migrant waterfowl when most other habitats are covered by ice or snow (Kessel 1989). Four species (Steller’s, spectacled, and king eiders, and white-winged scoter) are primarily migrants or rare summer visitors near the project area, and none of the waterbird species remain in the area during winter.

Seabirds

A total of 20 seabird species, including alcids, gulls, jaegers, and terns, occur in the project area. While seabirds are primarily associated with marine environments, they also utilize terrestrial areas for nesting, staging, and breeding. The highest terrestrial habitat use occurs in tundra ecosystems, particularly shrub-tussock tundra and dwarf-shrub lichen tundra, which are primarily used by long-tailed and parasitic jaegers for breeding (Kessel 1989). Wetland complexes, including peatlands, boreal bogs, and acidic fen systems, support multiple species including Aleutian tern and glaucous gull (North 2020). Coastal terrestrial habitats such as sedge-dwarf shrublands, dunes, and beaches provide nesting sites for some gull species but represent a small portion of the landscape. The nearest seabird colonies are located outside the project area. Historically, up to 180 Aleutian terns have nested on Qikiqtaichaik Island on the Noatak Delta (Drew et al. 2005). Additionally, Puffin and Chamisso islands in Kotzebue Sound, and Sullivan Bluffs near Deering (Kessel 1990; Drew et al. 2005; Morgan et al. 2016), support cliff-nesting species such as murres, puffins, glaucous gulls, kittiwakes, and cormorants. While terrestrial habitats serve as breeding and staging areas, marine waters provide primary foraging opportunities year-round, with species such as pelagic cormorants, black-legged kittiwakes, common murres, and horned puffins feeding on fish and benthic invertebrates in nearshore environments during summer, and glaucous and Ross' gulls and black guillemots utilizing the sea ice edge during migration and winter months (Kessel 1989; Divoky 1988; Morgan et al. 2016). One species, short-tailed shearwater, does not breed in the area and is expected to be present primarily during migration (Kessel 1989; Carboneras et al. 2020). Three seabird species (black guillemot, ivory gull, and Ross’ Gull) may be present near the sea ice edge during winter.

Raptors

A total of 10 raptor species, including hawks, eagles, and owls, use the Project area. Most species are uncommon to rare, which likely reflects habitat limitations in the project area and naturally low densities of raptors across landscapes. Species diversity is highest in rocky terrain types (bedrock and talus, cliff and scree, and tundra on well-drained slopes), which comprise less than 1 percent of the Project area, and are used by breeding golden eagle, rough-legged hawk, and gyrfalcon (Bente 2011; Herzog 2019; Bechard et al. 2020). Bald eagles occur uncommonly or as summer visitants and are primarily associated with major rivers that provide both fish resources and potential nesting trees (Kessel 1989). Raptors also utilize tundra and meadow habitats for foraging, including wet sedge tundra, herbaceous meadows, and tidal marshes that provide abundant prey resources. Four species (snowy owl, great gray owl, boreal owl, and gyrfalcon) may be present during winter.

Landbirds

A total of 35 landbird species, including grouse and passerines, inhabit the project area. The highest landbird diversity occurs in forested and tall shrubland habitats, including boreal forests, riparian woody shrublands and shrub swamps, and Arctic shrublands (birch-ericaceous and willow). Shrub thickets (1.2 to 2.4 meters tall) are some of the most productive habitats for passerines on the Seward Peninsula, supporting species such as willow ptarmigan, gray-cheeked thrush, Fox Sparrow, and warbler species (Kessel 1989). Taller shrub thickets (up to 4.9 meters tall) can be found in protected valleys and are frequented by blackpoll warbler. These habitats comprise nearly a third of the project area and reflect landbirds' need for vertical structure and woody vegetation that provides essential perching sites, nesting habitat, and insect diversity (Spindler and Kessel 1980; Boelman et al. 2015). Seven species (spruce grouse, willow ptarmigan, common raven, boreal chickadee, gray-headed chickadee, pine grosbeak, and snow bunting) are considered year-round residents whereas one species (McKay’s bunting) winters in the area.

Shorebirds

A total of 27 species of shorebirds occur in the Project area. Shorebird species concentrate in wetland and coastal habitats, with the highest species diversity occurring in tidal salt and brackish marshes and wet sedge tundra. Tidal salt, brackish marshes, and coastal wetlands provide rich invertebrate feeding areas, especially during spring and fall migration, for shorebirds such as Dunlin and sandpiper and phalarope species (Kessel 1989). During the breeding season, most shorebirds use wetlands (wet sedge tundra, freshwater marshes, and peatlands) with diverse microhabitats that provide both dry areas for nesting and littoral areas for feeding (Kessel 1989). All shorebird species are migrants, and four species (sharp-tailed sandpiper, stilt sandpiper, sanderling, and buff-breasted sandpiper) are only expected in the project area during migration.

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Appendix K – Cultural Resources

Appendix K1 – Section 106 Initiation Email

Appendix K2 – Section 106 Initiation Letter

Appendix K3 – Request for Letter of Non Objection

Appendix K4 – Native Village of Deering Letter of Non Objection

Appendix K5 – City of Deering Letter of Non Objection

Appendix K6 – Inadvertent Discovery Plan

Appendix K7 – SHPO Concurrence

Appendix K8 – Conclusion of Section 106

Appendix K1 – Section 106 Initiation Email

From:	Andrew Bielakowski
Cc:	Pereira, Amanda; Nunez, Juan; Cori Carraway; Travis Stubblefield; Jason Louvier; Matt Narus; Stephen Braund; Paul Lawrence
Subject:	NTIA - TBCP - NANA Regional Broadband Network Project - Section 106 of NHPA Consultation...
Date:	Wednesday, June 25, 2025 1:06:46 PM
Attachments:	image002.png 20250625_NTIA to Stakeholders_Section 106 Invitation Letter.pdf

Greetings,

NANA Regional Corporation, Inc. (NANA), an Alaska Native Regional Corporation, proposes to construct and operate the NANA Regional Broadband Network Project (Proposed Project). The Proposed Project will utilize funding provided by a National Telecommunications and Information Administration (NTIA) grant from the Tribal Broadband Connectivity Program to provide broadband access to portions of the NANA region that are unserved and underserved by broadband internet. NANA proposes to bring the option for broadband internet service to all eleven communities within the NANA region. The Proposed Project would establish approximately 695.1 miles of fiber optic infrastructure "middle-mile" through the deployment of long-haul fiber, connecting communities in northwest Arctic Alaska to regional and national telecommunications networks.

The Proposed Project is federally funded and subject to consultation under Section 106 of the National Historic Preservation Act (NHPA), as amended. In accordance with Section 106 of the NHPA, NTIA, acting as the lead federal agency, is initiating consultation with agencies, Tribes, and other interested parties that have an interest or concern about any cultural resources, historic properties, or traditional cultural sites, pursuant to the implementing regulations found at 36 CFR § 800. Although NTIA is the lead federal agency for the Proposed Project, the Bureau of Land Management (BLM), National Park Service (NPS), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (FWS) are cooperating agencies and using this consultation to meet their obligations under Section 106 of the NHPA.

NTIA, and on behalf of BLM, FWS, NPS, and USACE, is inviting you to participate in and comment on our Section 106 of the NHPA process (36 CFR § 800.2(c)). Please see the attached letter discussing the proposed project and consultation process. Under Section 106 of the NHPA, this Proposed Project is being evaluated for its potential to affect historic properties. NTIA recognizes its responsibilities pursuant to Section 106 of the NHPA regarding consultation with Alaska Native tribes, communities, and organizations concerning properties of religious and/or cultural significance that could be affected by the undertaking. Communications may be emailed to me at andrew.bielakowski@firstnet.gov. Please indicate your intent to participate in the process and any comments you may have by July 25, 2025. Please do not hesitate to contact me if you have any comments, questions, or concerns about the Proposed Project.

Regards,
Andy

Andrew Bielakowski
Environmental Program Officer
Office of Internet Connectivity and Growth

National Telecommunications and Information Administration

(202) 657-7982
andrew.bielakowski@firstnet.gov
1401 Constitution Avenue, NW
Washington, DC 20230

Appendix K2 – Section 106 Initiation Letter

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and
Information Administration
Washington, D.C. 20230

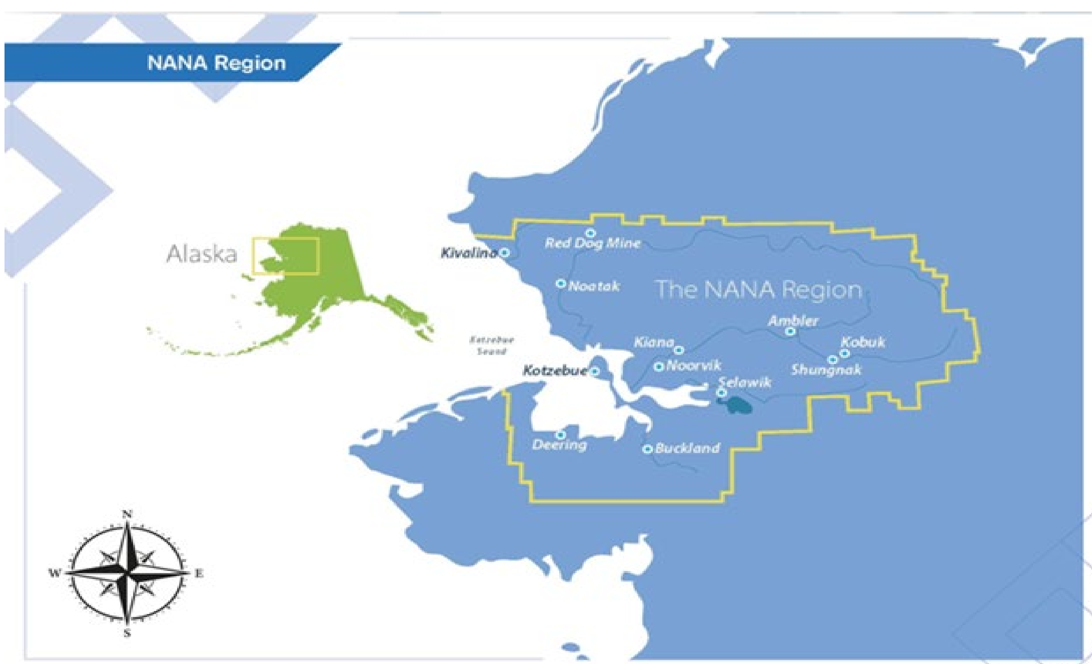
June 25, 2025

Subject: Invitation to Consult per Section 106 of the National Historic Preservation Act on the NANA Regional Broadband Network Project

Response Requested by: July 25, 2025

To Whom It May Concern:

NANA Regional Corporation, Inc. (NANA), an Alaska Native Regional Corporation, proposes to construct and operate the NANA Regional Broadband Network Project (Proposed Project). The Proposed Project will utilize funding provided by a National Telecommunications and Information Administration (NTIA) grant from the Tribal Broadband Connectivity Program to provide broadband access to portions of the NANA region that are unserved and underserved by broadband internet. Installation of additional broadband infrastructure would allow scalable high-speed data transmission, providing reliable and fast internet access to residents, businesses, and public institutions that are currently unserved/underserved and would support real-time communication, future growth, and provide a stable, affordable, durable connection. NANA proposes to bring the option for broadband internet service to all eleven communities within the NANA region: Ambler (Ivisaappaat), Buckland (Nunatchiaq), Deering (Ipnatchiaq), Kiana (Katyaak), Kivalina (Kivaliñiq), Kobuk (Laugviik), Kotzebue (Qiqiktaġruk), Noatak (Napaaqtuġmiut), Noorvik (Nuurvik), Selawik (Akuligaq), and Shungnak (Isiŋnaq). The Proposed Project would establish approximately 695.1 miles of fiber optic infrastructure "middle-mile" through the deployment of long-haul fiber, connecting communities in northwest Arctic Alaska to regional and national telecommunications networks (Figure 1 below).

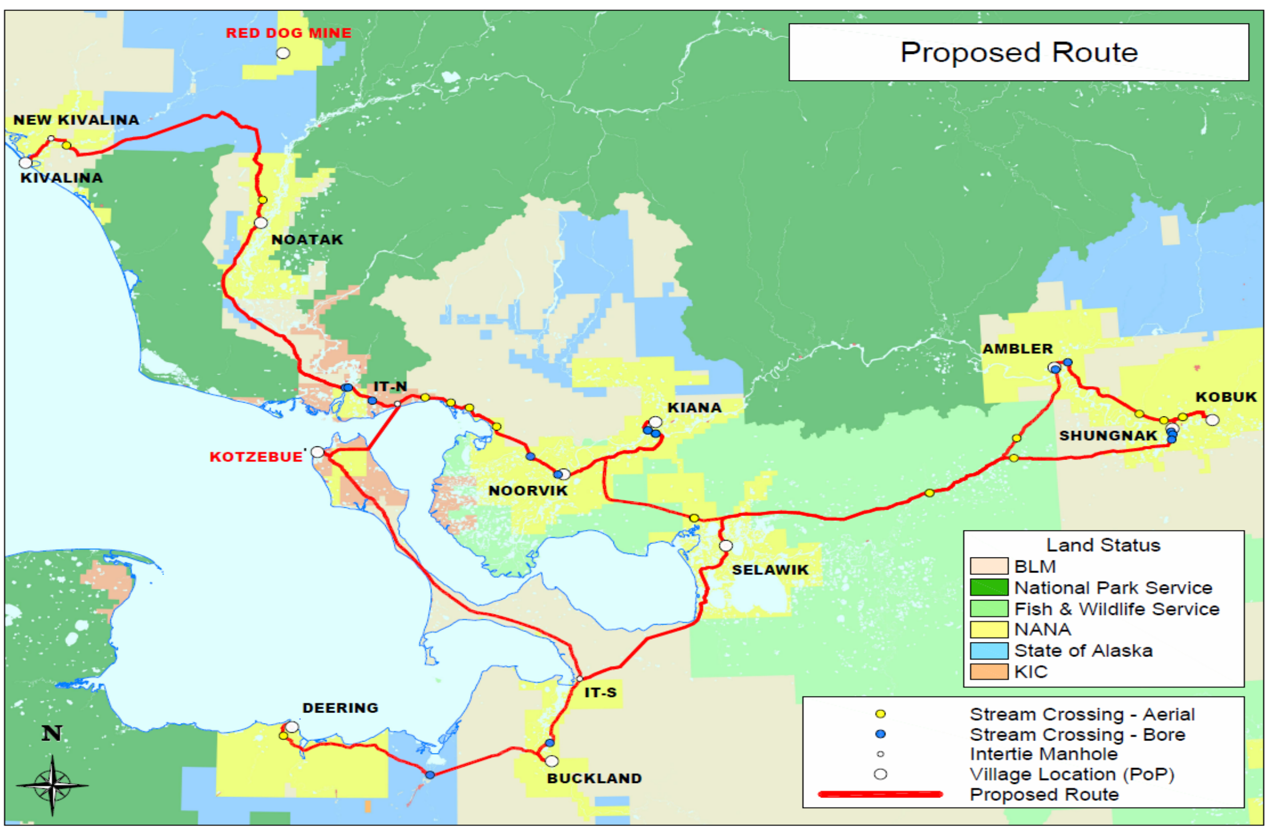


The Proposed Project is federally funded and subject to consultation under Section 106 of the National Historic Preservation Act (NHPA), as amended. In accordance with Section 106 of the NHPA, NTIA, acting as the lead federal agency, is initiating consultation with agencies, Tribes, and other interested parties that have an interest or concern about any cultural resources, historic properties, or traditional cultural sites, pursuant to the implementing regulations found at 36 CFR § 800. Although NTIA is the lead federal agency for the Proposed Project, the Bureau of Land Management (BLM), National Park Service (NPS), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (FWS) are cooperating agencies and using this consultation to meet their obligations under Section 106 of the NHPA. It is important to note that these cooperating agencies have other consultation obligations under, but not limited to, Government-to-Government consultation and the Alaska National Interest Lands Conservation Act (ANILCA); therefore, this consultation is specific to Section 106 of the NHPA, and other consultations may be required and conducted. We are submitting this letter to introduce the Proposed Project, and to formally invite your organization to participate.

Description of Proposed Project Phases

Proposed Construction

The Proposed Project would include installation of a fiber optic cable across federal, state, and Alaska Native and village corporation lands and waters in northwest Alaska (Figure 2 below). Likewise, the proposed fiber optic cable (FOC) route would incorporate a combination of terrestrial ground-laid, subsea, directional bored, trenched, and aerial cable placement methodologies.



The majority of the network would consist of ground-laid FOC installed during winter months across the terrestrial landscape, lakes/ponds, minor stream crossings, and major river crossings. A deployment of approximately 14 people, along with tracked, low-ground-pressure cable deployment equipment, a mobile sleigh camp, vegetation clearing equipment, digging equipment, and snowmachines, would transit the route during construction. Where vegetation clearing is necessary, a mulcher would cut vegetation to the level of the snow surface. Cable would be laid along the ground and anchored at a maximum of 6,000-foot intervals. FOC would be laid across the ice of lakes, ponds, and minor streams, and allowed to sink to the bottom after the ice thaws. At major river crossings, included in the table below, the FOC would be horizontally directionally drilled under the river, or would be run aerially over the water. One wooden pole, 45-50 feet tall, would be placed vertically on each riverbank and support the aerial section of cable.

Construction would occur during the summer for subsea crossings and major river crossings. An excavator on floats, two tugboats, and two accompanying barges would be used for subsea crossings. Trenching would occur from the low tide point to a water depth exceeding operating range of the excavator. Trenching would also occur in terrestrial areas of high pedestrian or ATV traffic, primarily around communities.

Within each community, a communications shelter, or point-of-presence (PoP), will be placed within the existing utility easement or other designated location. For those communities requesting service, once the FOC leaves the PoP, FOC would be strung on existing poles aboveground to connect individual structures with minimal ground disturbance anticipated.

Proposed Future Maintenance and Operations

Maintenance and operations activities are expected to be minimal and would include:

- One annual flight above the proposed route to identify any damage or areas of concern. Timing would be coordinated with landowners, land managing agencies, and consider potential sight and sound impacts to wildlife.
- Helicopter-supported preventative maintenance, if needed. Examples may include straightening poles and tightening guy wires.
- Cable damage repairs. Summer damage repair would be supported by helicopter; winter damage repair would be supported by helicopter, snowmachine, or low ground pressure vehicle and could include splicing sections of new FOC into the existing line.

Proposed Future Decommissioning

The expected useful life of the fiber optic network is 50 years. The fiber optic cable is expected to self-bury into the landscape over time. The fiber cable and ground anchors would be left in place to avoid unnecessary disturbance of the tundra/vegetation. Poles would be cut off at ground level, and supporting infrastructure would be removed. This activity is proposed to take place during the winter months, to avoid ground disturbance.

Preliminary Area of Potential Effect

The Area of Potential Effect (APE) for both the terrestrial and subsea portions of the Proposed Project is the requested federal and state rights-of-way, which is 30 feet in width, 15 feet from either side of the FOC centerline. The Proposed Project will utilize a variety of land statuses: federal, state, and Alaska Native and village corporation lands and waters. NANA and its cultural consultant, Stephen R. Braund & Associates (SRB&A), will be working with land managers and owners to acquire any required permits or access permissions.

Identification Efforts

A desktop cultural resource literature review, archaeological probability, and field methodology report is being completed. Initial information from this study has been shared with the Alaska State Historic Preservation Office (SHPO) and the other federal agencies with Section 106 of the NHPA obligations, in order to gain concurrence with field methodologies for archaeological permitting required for field survey. As a result, helicopter supported cultural resources survey activities will be taking place in the NANA region throughout the month of August 2025. The preliminary report is available upon request. Additionally, the cultural resources report documenting the results of the field surveys will be made available once completed in Fall 2025.

Proponent Stakeholder Engagement and Federal Consultation Efforts

Consistent with 36 CFR § 800.2(c)(4), NTIA has authorized NANA and SRB&A to participate in Section 106 of NHPA consultation with stakeholders for the Proposed Project. As part of the consultation for the Proposed Project, NTIA, with support from NANA and SRB&A, has developed a comprehensive list of potential stakeholders that are being invited to participate in Section 106 of the NHPA consultation (attached). This list will be updated pending any comments received.

- NANA held meetings with the City and Tribal governments in each of the communities along the proposed route to introduce and describe the Proposed Project, discuss plans and timelines, show the proposed routes into/out of the communities, answer questions, address concerns, and solicit feedback on the Proposed Project and proposed routes, in order to make potential adjustments where needed.
  - In August 2024, meetings were held in: Ambler, Buckland, Kiana, Kivalina, Kobuk, Noatak, Noorvik, and Shungnak.
  - In November of 2024, meetings were held in Deering and Selawik.
  - Additional community engagement meetings are planned for the village communities in the region in the fall of 2025.
- NTIA has been informally and formally meeting with federal and state agencies that will be involved in the Proposed Project either as land managing agencies or those with permitting approval authority. Meetings have been held to introduce and describe the Proposed Project, discuss plans and timelines, show and solicit feedback on the Proposed Project and proposed routes, answer questions, and address concerns, in order to make potential adjustments where needed. Some of these meetings have been focused on those agencies with specific obligations under Section 106 of the NHPA to discuss cultural resources field methodologies.

Conclusion

NTIA, and on behalf of BLM, FWS, NPS, and USACE, is inviting you to participate in and comment on our Section 106 of the NHPA process (36 CFR § 800.2(c)). We also request that you identify any additional parties not included in the distribution list below that should be contacted to determine if they are interested in the Proposed Project and would like to receive information about it.

Under Section 106 of the NHPA, this Proposed Project is being evaluated for its potential to affect historic properties. In addition to consulting with SHPO, NTIA recognizes its responsibilities pursuant to Section 106 of the NHPA regarding consultation with Alaska Native tribes, communities, and organizations concerning properties of religious and/or cultural significance that could be affected by the undertaking. All information provided will be kept confidential and used only to avoid, minimize, or mitigate any adverse effects to historic properties.

Communications may be emailed to Andrew.Bielakowski@firstnet.gov or phoned at 202-657-7982. Please indicate your intent to participate in the process by July 25, 2025. Please do not hesitate to contact me if you have any comments, questions, or concerns about the Proposed Project.

Best regards,

Andrew Bielakowski

Andrew.Bielakowski@firstnet.gov
Environmental Program Officer
Office of Internet Connectivity and Growth
National Telecommunications and Information Administration
202-657-7982 mobile

Attachment:
Stakeholder List

Section 106 of the NHPA Stakeholder Distribution List

Federal and State Agencies (9)	
National Telecommunications and Information Administration	Andrew Bielakowski
Advisory Council on Historic Preservation	Megan Borthwick
Bureau of Land Management	Jenny Blanchard
U.S. Fish and Wildlife Service	Wilhelm Wiese
U.S. Army Corps of Engineers	Christopher Parrish
National Park Service	Brendan Doucet
Alaska State Historic Preservation Office	McKenzie Herring
Alaska Department of Natural Resources	David Hite
Alaska Department of Transportation and Public Facilities	Scott Maybrier
Federally Recognized Tribes and Tribal Entities (12)	
Native Village of Kivalina	Enoch Adams, Jr.
Native Village of Noatak	Jennifer Sage
Native Village of Kotzebue	Maqik Toni Raye Bergan
Noorvik Native Community	Elmer Armstrong, Jr.
Native Village of Kiana	Lee Barr, Jr.
Native Village of Selawik	Alan Ticket, Sr.
Native Village of Deering	Alvin Iyatunguk, Sr.
Native Village of Buckland	Percy Ballot, Sr.
Native Village of Ambler	Molly Brown
Native Village of Shungnak	Fred Sun, Sr.
Native Village of Kobuk	Henry Horner, Sr.
Chickaloon Village Traditional Council	Angela Wade/Gary Harrison
ANCSA Regional and Village Corporations and Associated Organizations (4)	
NANA Regional Corporation, Inc. (Lands Department)	Liz Qaulluq Cravahlo
Kikiktagruk Inupiat Corporation	Thomas Baker
Buckland Naumachia Corporation	Floyd Ticket
Maniilaq Association	Kimberly Bebout
City and Borough Governments and Associated Organizations (12)	
City of Kivalina	Austin Swan, Sr.
City of Kotzebue	Derek Haviland-Lie
City of Noorvik	Joshua Melton
City of Kiana	Brad Reich

City of Selawik	Tanya Ballot
City of Deering	Kevin Moto
City of Buckland	Glenna Parish
City of Ambler	Conrad Douglas
City of Shungnak	Dawn Davis
City of Kobuk	Alex Sheldon, Sr.
Northwest Arctic Borough	Noah Naylor
Northwest Arctic Leadership Team	Elizabeth Ferguson
Invited Participants (2)	
NANA Regional Corporation, Inc. (Project Team)	Travis Stubblefield/Jason Louvier
Kuna Engineering (Environmental Consultant)	Matt Narus

Appendix K3 – Request for Letter of Non Objection

NANA

September 3rd 2025

City of Deering
P.O. Box 36049
Deering, Alaska 99736

Subject: Request for a Letter of Non-Objection – Construction of a Broadband Facility

Dear City Council:

On behalf of NANA Regional Corporation, I respectfully request a Letter of Non-Objection for land use for the construction, operation, and maintenance of a broadband facility adjacent to NANA's village office building.

Project Overview:
Under the U.S. Department of Commerce, National Telecommunications and Information Administration's Tribal Broadband Connectivity Program, NANA has been awarded a broadband infrastructure deployment grant. This grant provides design, permitting, and installation of a high-speed fiber broadband network connecting the eleven tribal communities in the NANA region through middle-mile infrastructure. Additionally, our board of directors have allocated funding for the last-mile infrastructure connecting homes to the fiber network.

As part of the project under NEPA and Section 106 Reviews, we directed Stephen R. Braund & Associates to perform field studies on the NANA Lot in Deering as well as the fiber route and other village sites throughout the region. Please see attached memo identifying their findings in Deering on the lot.

Installation of broadband infrastructure would allow scalable high-speed data transmission, providing reliable and fast internet access to residents, businesses, and public entities that are currently unserved/underserved and would support real-time communication, future growth, and provide a stable, affordable, durable connection

Please contact me at 907.265.4115 or Jason.louvier@nana.com if you have any questions and/or would like additional information. Thank you for your consideration.
Respectfully,

Jason Louvier

Jason Louvier
Project Superintendent,
NANA Regional Broadband Network
Economic Development and Sustainability Department

Redacted Sensitive Information

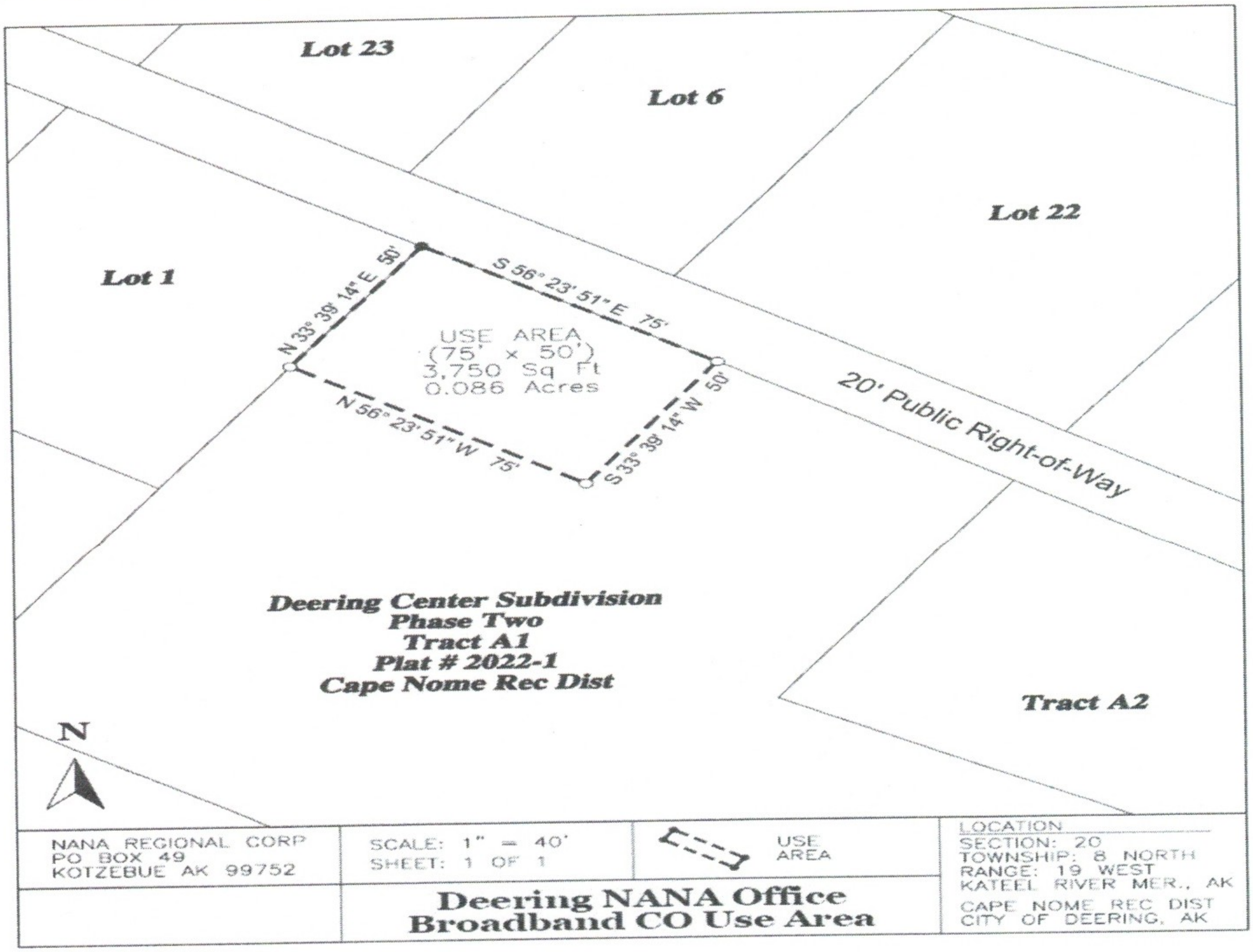
Appendix K4 – Native Village of Deering Letter of Non Objection

Native Village of Deering
Deering, Alaska 99736

Re: Letter of non-objection

To whom it may concern

This letter confirms that the Native Village of Deering has no objections for NANA Regional Corporation, Inc. to construct a new Broadband Facility in the location identified below.



Signature

Secretary
Title

9.17.25
Date

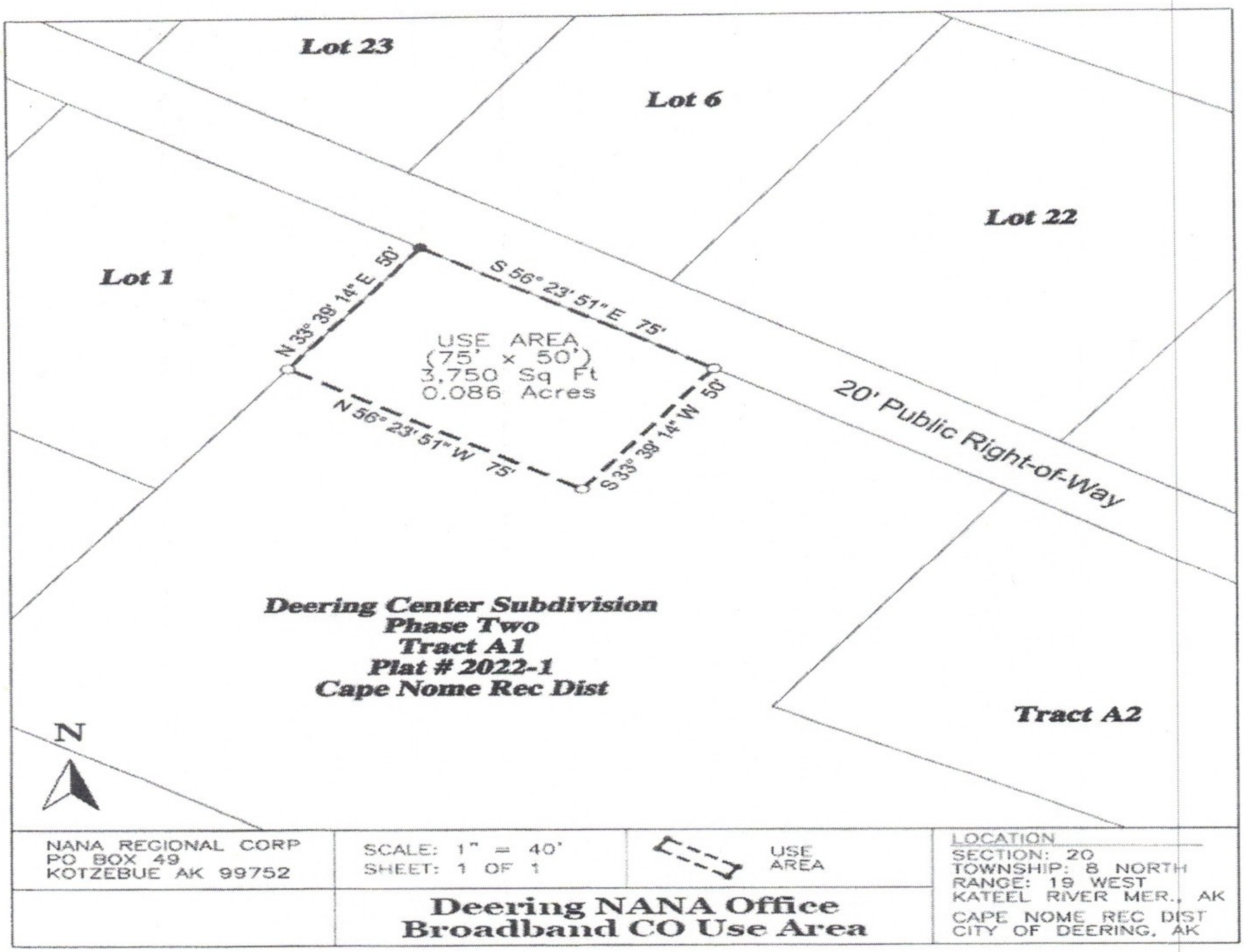
Appendix K5 – City of Deering Letter of Non Objection

City of Deering
P.O. Box 36049
Deering, Alaska 99736

Re: Letter of non-objection

To whom it may concern

This letter confirms that the City of Deering has no objections for NANA Regional Corporation, Inc. to construct a new Broadband Facility in the location identified below.



[signature]

Signature

Mayor

Title

9/17/2025

Date

Appendix K6 – Inadvertent Discovery Plan

Cultural Resources and Human Remains Inadvertent Discovery Plan

for

NANA Broadband Project

Prepared for:

National Telecommunications and Information Administration
1401 Constitution Ave., NW
Washington, DC 20230

and

NANA Regional Corporation Inc.
909 West 9th Avenue
Anchorage, AK 99501
www.nana.com

October 6, 2025

Prepared by:

Stephen R. Braund & Associates
P.O. Box 10-1480
Anchorage, Alaska, 99510-1480
907-276-8222
907-276-6117 (fax)
info@srbak.com

Table of Contents

Identification, Notification, Evaluation, and Recordation of Discoveries

The following provides the cultural resource and human remains inadvertent discovery plan that NANA will follow in the event that NANA or its contractors (hereafter Project Field Personnel) identify cultural material or human remains during construction activities associated with the Project.

Standard Process for Inadvertent Discoveries

Project Field Personnel Procedures

Upon discovery of archaeological or historic resources (including human remains) Project Field Personnel shall enact the following steps:

1. Project Field Personnel shall stop all work in the area of the discovery, and take the necessary measures to secure a 100-foot radius buffer around the resource(s) with high visibility flagging or staking
2. Project Field Personnel shall immediately notify the NANA supervisor, who will contact a qualified Cultural Resources Professional that will inspect the site and determine the area and nature of the affected find.
3. The NANA supervisor will contact the National Telecommunications and Information Administration's (NTIA) Cultural Resources Professional, and report as much of the following information of the discovery as possible, including:
    a. Description and photographs of the discovery (is it an artifact/site/structure/burial etc.)
    b. The location of the discovery (GPS coordinates and general location in the Project area)
    c. A general assessment of the condition of the discovery (is it damaged, is it preserved, are there any immediate threats to the preservation of the discovery including erosion or human activities)
4. Project Field Personnel shall keep location information confidential, shall not share with other contractors that are not directly working at the site, and will not resume work in the area until directed by a NANA supervisor.

See Appendix A for Project Field Personnel handout that summarizes the above actions.

Cultural Resources Professional Procedures

Upon notification from Project Field Personnel, NANA's Cultural Resources Professional shall enact the following steps:

1. If the resources encountered include human remains, the Cultural Resources Professional shall immediately contact the Alaska State Troopers Missing Persons Clearinghouse at (907) 269-5038 and the Alaska State Medical Examiner's Office Reporting Hotline at (907) 334-2200 as per Alaska Statute (AS) 12.65.005 and provide them with any information they request.

2. If no human remains are present, the Cultural Resources Professional shall contact NTIA, SHPO, and the landowner on which the discovery occurred and provide them with the following information.
    a. A brief description of the project-related activity that encountered the discovery
    b. A description of the resources encountered, their current condition, and the protective measures used to safely secure the resource from any potential disturbances
3. The Cultural Resources Professional shall collect sufficient information about the find to provide a summary to consulting parties (i.e., the local federally-recognized tribe(s) or tribal representative, NTIA, SHPO, NANA, and the landowner). See Appendix C for a list of consulting parties and their contact information. Depending on the nature of the find, this effort may require a field visit to adequately characterize the discovery for consulting parties. The Cultural Resources Professional shall include in their summary the date and time of discovery, the type and approximate extent of cultural material, the degree of integrity, and any additional information that would support dialogue between consulting parties.
4. Consulting parties will confer to determine if the find does in fact represent a significant discovery (i.e., may be considered to be eligible for listing on the National Register of Historic Places), and if avoidance of the discovered material is possible or practical to prevent further disturbance to the site.
    a. If avoidance is selected as the preferred strategy and consulting parties agree the site was not impacted and can be easily avoided (e.g., circumvent a site landform), then the Cultural Resources Professional will prepare a memo detailing the avoidance plan. Once NTIA, SHPO, and the landowner have agreed on the avoidance plan, construction activities may resume in accordance with the approved avoidance measures.
    b. If avoidance is selected as the preferred strategy and consulting parties believe the site was impacted or cannot be avoided without anticipated or potential impact or disturbance, the Cultural Resources Professional will travel to the site and collect as much data about the discovery as necessary to determine the nature of the find without further disturbing the integrity of the deposits. This data may include the location of the discovery, type and observed number of artifacts, depth and distribution of cultural material, preliminary cultural affiliation, the extent of disturbance resulting from construction activities, photographs and sketch maps of the discovery, and any other pertinent information requested by any consulting parties. Excavated sediment associated with the find will be screened with 1/8" hardware mesh to collect any excavated artifacts or remains. Any identified artifacts or remains which have been removed from their original context during construction activities (i.e., backhoe, hand tools, spoil dirt) will be collected and cataloged for later analysis and curation. Once these steps have been completed, the site will be reburied, stabilized, protected, or restored according to the agreement reached between consulting parties (i.e., backfilled, cribbed and shored for future analysis) and documented photographically by the Cultural Resources Professional. After the

discovery has been addressed in accordance with the consultation agreement and the documentation collected by the Cultural Resources Professional has been provided to consulting parties, construction activities within the buffer may resume.

    c. If avoidance of the discovered site/feature is not possible or practical, the consulting parties shall confer to determine a suitable method of minimizing or mitigating any adverse effects (i.e., horizontal directional drilling, data recovery). Any agreements reached through this consultation shall be documented, and if necessary, formalized through a memorandum of agreement or other binding resolution.

5. The location and details of the discovery will be recorded by the Cultural Resources Professional and submitted to the AHRS.

See Appendix B for SRB&A handout that summarizes the above actions including relevant contact information for consulting parties.

Additional Actions for Treatment of Human Remains

In the event that human remains, grave goods, or funerary objects are encountered at any time during ground disturbing activities associated with the Project, NANA shall ensure that at all times the remains are treated with dignity and respect, and that the following procedures are followed:

1. All parties will defer to law enforcement (e.g., the Alaska State Troopers) and/or the State Medical Examiner for a determination of whether the remains are historic or are of a forensic nature and/or subject to law enforcement investigation. Remains that are subject to further law enforcement investigation will no longer be subject to this Plan.
2. Consulting parties will confer to determine if the Project construction can be relocated or moved to avoid further disturbance of the remains.
    a. If the Project component or activity can be relocated, rerouted, modified, or adjusted to avoid any in situ remains, NTIA and/or the landowner/land manager will consult and defer to local tribe(s) or tribal representative to determine an appropriate way to manage any disturbed remains (e.g., reinter in place, remove to local house of worship, transfer to Tribe).
    b. NANA will ensure that all necessary permits are obtained from the Alaska Bureau of Vital Statistics and provide copies to all consulting parties.
    c. The location of the human remains will be submitted to the OHA's AHRS, a confidential database of historic, archaeological, and paleontological resources in Alaska.
    d. If consultation reveals that the Project component or activity cannot feasibly be relocated, rerouted, modified or adjusted, and additional human remains may or will experience further disturbance during Project activities, consulting parties shall confer to determine a suitable method of minimizing or mitigating any adverse effects. Any agreements reached through this consultation shall be documented, and if necessary, formalized through a memorandum of agreement or other binding resolution.

e. If human remains are found on federal lands, then the federal agencies will follow NAGPRA and consult with Tribes to determine the disposition of the ancestral remains.

Appendix A: Field Personnel Handout

INADVERTENT DISCOVERY AND HUMAN REMAINS FIELD PROCEDURES
PROJECT FIELD PERSONNEL PROCEDURES

For NANA Construction Field Personnel

IF YOU ENCOUNTER ARCHAEOLOGICAL OR HISTORIC RESOURCES (INCLUDING HUMAN REMAINS) WHILE IN THE FIELD, IMMEDIATELY STOP WORK AND FOLLOW THESE STEPS:

- Stop all work in the area of the discovery and take the necessary measures to secure a 100-foot radius buffer around the resource(s) with high visibility flagging or staking.

- Immediately notify the Cultural Resources Professional [Phone Number and Email] and report as much of the following information of the discovery as possible, including:
    - Description and photographs of the discovery (is it an isolated artifact/site/structure/burial etc.)
    - The location of the discovery (GPS coordinates and general location in the Project area)
    - A general assessment of the condition of the discovery (is it damaged, is it preserved, are there any immediate threats to the preservation of the discovery including erosion or human activities)

- Keep location information confidential, do not share with other contractors that are not directly working at the site, and do not resume work in the area or backfill any excavations until directed by a NANA supervisor.

Appendix B: SRB&A Handout

INADVERTENT DISCOVERY AND HUMAN REMAINS FIELD PROCEDURES PROCEDURES

If Archaeological or Historic Resources or Human Remains are Encountered during Construction for the NANA Broadband Project

Confirm construction personnel have **STOPPED WORK** and secured the discovery from disturbance

The Cultural Resources Professional will report the discovery to the appropriate officials depending on whether human remains are encountered

If Human Remains

Contact Authorities
Alaska State Troopers
Missing Persons Clearinghouse
And
Alaska State Medical Examiner's Office Reporting Hotline

then contact

No Human Remains

Contact Agencies
NTIA and **Alaska Office of History and Archaeology/State Historic Preservation Officer**

AND

Contact Landowner

Contact Local Tribal and City Entities
(See Appendix C for list of Tribal and City Governments)

CONTACT INFO AND DETAILED STEPS PROVIDED ON REVERSE SIDE

For NANA Construction Field Personnel and On-Site Supervisors

IF YOU ENCOUNTER ARCHAEOLOGICAL OR HISTORIC RESOURCES (INCLUDING HUMAN REMAINS) WHILE IN THE FIELD, IMMEDIATELY STOP WORK AND FOLLOW THESE STEPS:

- Stop all work in the area of the discovery, and take the necessary measures to secure a 100-foot radius buffer around the resource(s) with high visibility flagging or staking
- Immediately notify the Cultural Resources Professional [Phone Number and Email] and report as much of the following information of the discovery as possible, including:
  - Description and photographs of the discovery (is it an artifact/site/structure/burial etc.)
  - The location of the discovery (GPS coordinates and general location in the Project area)
  - A general assessment of the condition of the discovery (is it damaged, is it preserved, are there any immediate threats to the preservation of the discovery including erosion or human activities)
- Keep location information confidential, do not share with other contractors that are not directly working at the site, and do not resume work in the area until directed by a NANA supervisor.

For Cultural Resources Professional

UPON NOTIFICATION THAT ARCHAEOLOGICAL OR HISTORIC RESOURCES (INCLUDING HUMAN REMAINS) HAVE BEEN ENCOUNTERED, IMMEDIATELY FOLLOW THESE STEPS:

- If the resources encountered include human remains, you are legally obligated to immediately contact the Alaska State Troopers Missing Persons Clearinghouse at (907) 269-5038 and the Alaska State Medical Examiner's Office Reporting Hotline at (907) 334-2200 and provide them with any information they request.
  - They may request that a qualified archaeologist assess the age of the remains, or they may send an officer of the peace to examine the remains.

- If no human remains are present, contact the NTIA, SHPO, and the landowner on which the discovery occurred:
  - For NTIA call Environmental Program Officer Andrew Bielakowski (202) 657-7982
  - For the Alaska State Historic Preservation Officer (Deputy SHPO-Sarah Meitl) or Nick Schmuck at the Office of History and Archaeology (OHA) in Anchorage call (907) 269-8720 or (907) 269-8723
  - For BLM lands call Field Archaeologist Jenny Blanchard at (907) 621-4641
  - For USFWS lands call Wilhelm Wiese at (907) 302-4839
  - For NANA lands call Liz Qaulluq Cravahlo at (907) 442-8135
  - For Kikiktagruk Inupiat Corporation lands call Thomas Baker at (907) 442-3165

- Provide each contact the following information:
  - A brief description of the project-related activity that encountered the discovery
  - A description of the resources encountered, their current condition, and the protective measures used to safely secure the resource from any anticipated disturbances

- Follow the additional consultation steps outlined in the plan regarding resolution of inadvertent discoveries.

Appendix C: Additional Consulting Parties and Contact Information

Federally Recognized Tribes

Interested Party	Contact name	Contact number
Native Village of Kivalina	Enoch Adams, Jr.	(907) 645-2153
Native Village of Noatak	Jennifer Sage	(907) 485-2173
Native Village of Kotzebue	Christina Hensley	(907) 442-3467
Noorvik Native Community	Elmer Armstrong, Jr.	(907) 636-2144
Native Village of Kiana	Lee Barr, Jr.	(907) 475-2109
Native Village of Selawik	Alan Ticket, Sr.	(907) 484-2165
Native Village of Deering	Alvin Iyatunguk, Sr.	(907) 363-2138
Native Village of Buckland	Floyd Ticket	(907) 494-2171
Native Village of Ambler	Molly Brown	(907) 445-2196
Native Village of Shungnak	Fred Sun	(907) 437-2163
Native Village of Kobuk	Henry Horner Sr.	(907) 948-2203

City and Borough Governments and Associated Organizations

Interested Party	Contact name	Contact number
City of Kivalina	Austin Swan Sr.	(907) 645-2137
City of Kotzebue	Derek Haviland-Lie	(907) 442-3401
City of Noorvik	Joshua Melton	(907) 636-2100
City of Kiana	Brad Reich	(907) 475-2136
City of Selawik	Tanya Ballot	(907) 484-2123
City of Deering	Kevin Moto	(907) 363-2136
City of Buckland	Glenna Parish	(907) 494-2121
City of Ambler	Conrad Douglas	(907) 445-2122
City of Shungnak	Dawn Davis	(907) 444-5988
City of Kobuk	Alex Sheldon, Sr.	(907) 948-2217

Appendix K7 – SHPO Concurrence

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Natural Resources

DIVISION OF PARKS AND OUTDOOR RECREATION
Office of History & Archaeology

550 West 7th Avenue, Suite 1310
Anchorage, AK 99501-3561
907-269-8700
http://dnr.alaska.gov/parks/oha

File No.: 3130-1R NTIA/2025-00578

November 24, 2025

Andrew Bielakowski
Andrew.Bielakowski@firstnet.gov
Environmental Program Officer
Office of Internet Connectivity and Growth
National Telecommunications and Information Administration

SUBJECT: Continuation of Consultation per Section 106 of the National Historic Preservation Act on the NANA Regional Broadband Network Project, Survey Results and Finding of Effect

Dear Mr. Bielakowski:

The Alaska State Historic Preservation Office (AK SHPO) received the subject correspondence and associated cultural resources survey report on October 24, 2025. Upon review, we **concur** that a finding of **no adverse effect** is appropriate for the subject undertaking. Our office appreciates the efforts made to identify, avoid, and otherwise minimize effects to known and potential historic properties through route alterations. Should changes in scope or location occur, please contact our office as soon as feasible to ensure that these measures are still appropriate.

As a reminder, should previously unidentified archaeological resources be discovered during the project, work must be interrupted in the area of the discovery until the resources have been evaluated using the National Register of Historic Places eligibility criteria (36 CFR 60.4) in consultation with our office.

Thank you for the opportunity to review. Please contact Mckenzie Herring at 907-269-8726 or mckenzie.herring@alaska.gov if you have any questions or if we can be of further assistance.

Sincerely,

Sarah Meitl

Sarah Meitl
Deputy State Historic Preservation Officer

SJM:msh

Appendix K8 – Conclusion of Section 106

From:	Andrew Bielakowski
To:	Blanchard, Jenny H; Wiese, Wilhelm (Wil); brendan_doucet@nps.gov; Ann_E_Carlson@nps.gov; Sargent, John C CIV USARMY CEPOA (USA); Christopher.M.Parrish@usace.army.mil; MBORTHWICK@ACHP.GOV
Cc:	Pereira, Amanda (NTIA); Cori Carraway; Ryan Cooper
Subject:	NTIA - TBCP - NANA Regional Broadband Network Project - Conclusion of Section 106 of NHPA Consultation...
Date:	Monday, December 1, 2025 7:07:36 AM
Attachments:	image003.png

[EXTERNAL MESSAGE - CAUTION]

This email originated outside of our organization, please be careful with links or attachments

Greetings,

NANA Regional Corporation, Inc. (NANA), an Alaska Native Regional Corporation, proposes to construct and operate the NANA Regional Broadband Network Project (Proposed Project). The Proposed Project will utilize funding provided by a National Telecommunications and Information Administration (NTIA) grant from the Tribal Broadband Connectivity Program to provide broadband access to portions of the NANA region that are unserved and underserved by broadband internet. NANA proposes to bring the option for broadband internet service to all eleven communities within the NANA region. The Proposed Project would establish fiber optic infrastructure “middle-mile” through the deployment of long-haul fiber, connecting communities in northwest Arctic Alaska to regional and national telecommunications networks.

The Proposed Project is federally funded and subject to consultation under Section 106 of the National Historic Preservation Act (NHPA), as amended. In accordance with Section 106 of the NHPA, NTIA, acting as the lead federal agency, initiated consultation on June 25, 2025 with agencies, Tribes, and other interested parties that have an interest or concern about any cultural resources, historic properties, or traditional cultural sites, pursuant to the implementing regulations found at 36 CFR § 800. The Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (FWS), National Park Service (NPS), and U.S. Army Corps of Engineers (USACE) accepted the invitation to be involved in the Section 106 process as cooperating agencies and determined that they would be using the consultation to meet their obligations under Section 106 of the NHPA. The Advisory Council on Historic Preservation (ACHP) stated that they did not need to be directly involved in the consultation, although ACHP staff would be available to provide technical assistance, if needed. No other identified stakeholders responded to the initial invitation letter.

Through consultation with stakeholders, NTIA defined the Area of Potential Effect (APE) for both the terrestrial and subsea portions of the Proposed Project as the requested federal and state rights-of-way (ROW), which is 60 ft. in width, 30 ft. from either side of the FOC centerline. Through consultation with SHPO and the agencies, Stephen R. Braund & Associates (SRB&A), on behalf of NANA, developed a survey methodology to identify cultural resources within the APE that have the potential to be eligible or listed to the National Register of Historic Places (NRHP). SRB&A conducted cultural resource field investigations for the Proposed Project from August 1 to August 31, 2025. Field investigations included an initial aerial helicopter reconnaissance of the entire FOC alignment

APE, pedestrian survey of approximately 68.99 acres, and subsurface testing at over 40 different locations.

The field survey identified seven sites (KTZ-00169, KTZ-00477, NOA-00361, SHU-00037, SHU-00045, and SLK-000142, and SLK-000147). NTIA determined a finding of “No Adverse Effect” to historic properties (listed or treated as eligible) in the Proposed Project APE. In addition, it was determined that there would be no adverse effect to the Cape Krusenstern Archaeological District National Historic Landmark (NHL) (NOA-00042), which the APE crosses. On October 23, 2025, NTIA provided a summary of the survey results, availability of the survey report, and the determination of effect to stakeholders. SHPO, BLM, FWS, NPS, and USACE concurred with NTIA’s determination of effect. No other identified stakeholders responded to the survey results/determination of effect letter.

Through this determination and consultation with stakeholders, NTIA has taken into account the effect of this Undertaking on historic properties and fulfilled its responsibilities under Section 106 of the NHPA. Proposed Project construction will operate under an Inadvertent Discovery of Cultural Resources Plan to address post-survey discoveries, if applicable. Please accept this email as a summary and conclusion of the Section 106 process for this Undertaking, and use this for your records and any internal actions your agency requires.

Regards,
Andy

National Telecommunications and Information Administration

Andrew Bielakowski
Environmental Program Officer
Office of Internet Connectivity and Growth

(202) 657-7982
andrew.bielakowski@firstnet.gov
1401 Constitution Avenue, NW
Washington, DC 20230

Appendix L – ANILCA 810

ANILCA Section 810 Analysis

NANA Region Middle Mile Fiber Optic Project

Northwest Arctic Borough, Alaska

List of Acronyms

ANILCA	Alaska National Interest Lands Conservation Act
BLM	Bureau of Land Management
EA	Environmental Assessment
FOC	fiber optic cable
HDD	Horizontal Directional Drilling
NEPA	National Environmental Policy Act
NPS	National Park Service
NTIA	National Telecommunications and Information Administration
Project	NANA Region Middle Mile Fiber Optic Project
USFWS	U.S. Fish and Wildlife Service

1 Background

The Alaska National Interest Lands Conservation Act (ANILCA, Public Law 96-487) established protections for millions of acres of federally owned or managed land in Alaska, including lands managed by the National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), and Bureau of Land Management (BLM).[1] When a proposed action involves withdrawal, reservation, lease, or otherwise permission to use, occupy, or dispose of public lands (such as issuance of a right of way, lease, or other permit), Section 810 of ANILCA requires evaluation of the effect of the proposed action and each alternative on subsistence uses (Evaluation). Such an Evaluation must conclude with a finding that the proposed action and alternatives may, or will not, significantly restrict subsistence uses for identified subsistence communities or groups (Finding). A Finding that the proposed action *may* significantly restrict requires that the agency proceed to a notice and hearing; whereas a Finding of no significant restriction completes the ANILCA Section 810 process.

[1] As relevant here, "public lands" pursuant to ANILCA "means land situated in Alaska which, after December 2, 1980, are Federal lands, except--(A) land selections of the State of Alaska which have been tentatively approved or validly selected under the Alaska Statehood Act and lands which have been confirmed to, validly selected by, or granted to the Territory of Alaska or the State under any other provision of Federal law; (B) land selections of a Native Corporation made under the Alaska Native Claims Settlement Act [ANCSA] which have not been conveyed to a Native Corporation, unless any such selection is determined to be invalid or is relinquished; and (C) lands referred to in section 19(b) of [ANCSA]." As codified, section 19(b) of ANCSA addresses acquisition of title to surface and subsurface estates in reserve, as well as the election(s) of Village Corporations.

2 Overview of the Proposed Action and Alternatives

The NANA Region Middle Mile Fiber Optic Project (Project) is utilizing federal funds provided by the National Telecommunications and Information Administration (NTIA) for a project that is proposed to cross lands managed by the BLM and USFWS. The purpose of the project is to develop infrastructure that would provide broadband high-speed internet to the communities of Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Noatak, and Shungnak. An Environmental Assessment (EA) has been prepared to fulfill the obligations under the National Environmental Policy Act (NEPA), and this ANILCA Section 810 analysis has been prepared in conjunction with the NEPA process in accordance with Section 810 procedural requirements.

The proposed action includes the construction, operation and maintenance, and decommissioning of a fiber optic cable network across northwest Alaska. The Project would install 670-680 miles of fiber optic cable (FOC). The Project will primarily utilize surface-laid terrestrial FOC with strategic subsea, aerial, horizontal directionally drilled (HDD), and trenched segments where necessary for system integrity, resident safety, and environmental protection. In addition to connecting the communities of Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Noatak, and Shungnak, the proposed project would also connect to Kotzebue, Noorvik, and Selawik.

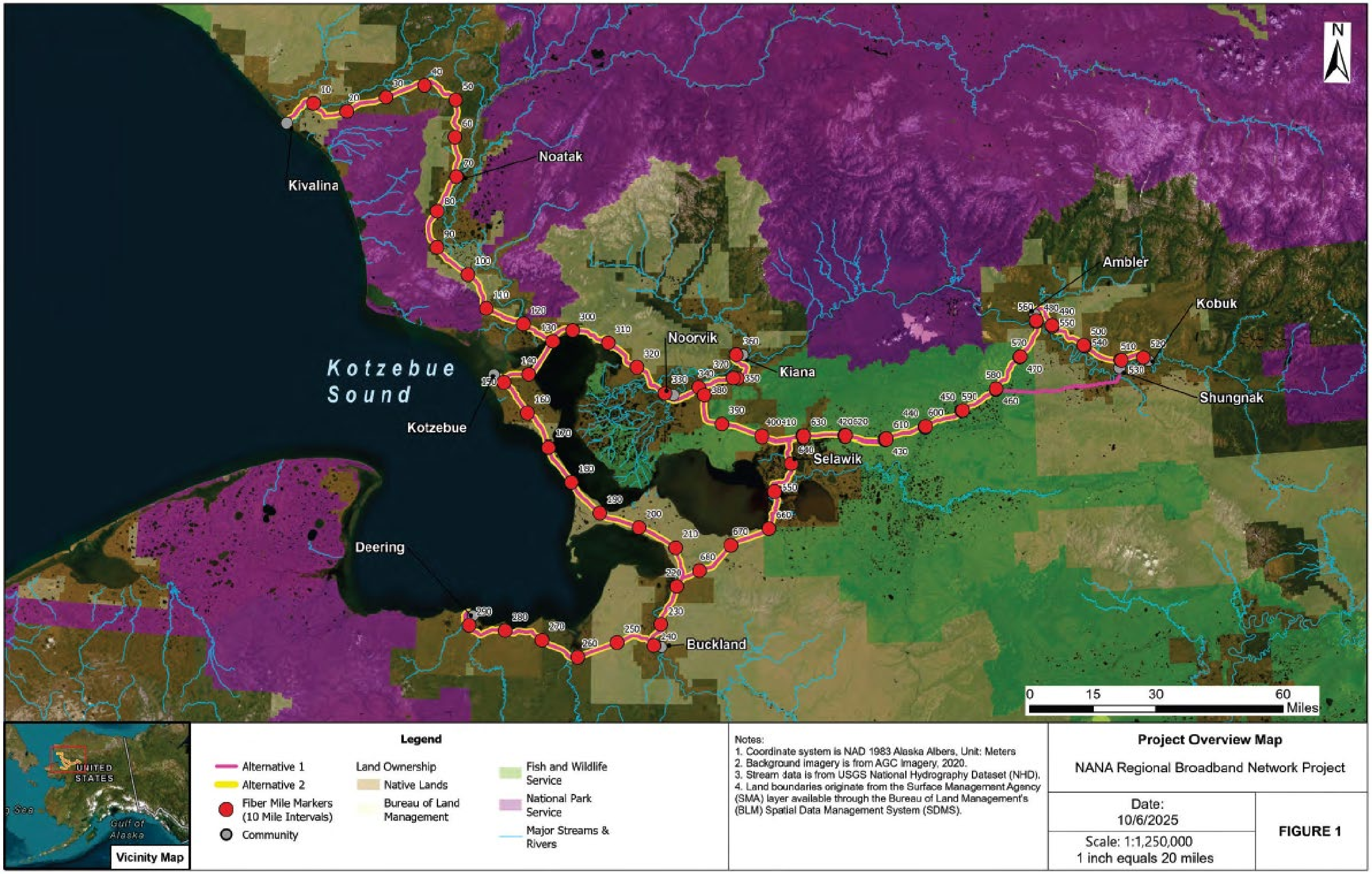
Construction of surface-laid FOC segments would occur primarily in the winter. Construction crews would traverse the route with low-ground pressure vehicles including tractors, dozers, and snowmachines and pull sleighs with fiber optic cable, fuel, and living quarters for the crew. Cable would be laid across the ice over most wetlands, streams, rivers, and lakes. Heavy “boxes” would be placed on top of the ground at water body crossings and at least every 6000 feet along the line to anchor the FOC in place. Vegetation above the level of the snow, including shrubs and trees, would be cleared to allow for the passage of equipment.

Construction of some aerial river crossings and HDD crossings would occur during the summer. Equipment and personnel would access crossing locations via barge. At aerial crossings, equipment would be used to clear vegetation along the banks and to bore holes for placement of support poles. One to three poles on either side of the river would be used to support the FOC, which would be strung across approximately 20 feet above the water level. At HDD crossings, equipment would be used to bore underneath the river channel.

After construction is completed an inspection of the FOC would occur during the summer. Crews would access the route via helicopter and walk sections of the line. In subsequent years, annual overflights would occur via helicopter to inspect the FOC and other infrastructure. If breaks in the line occur, access to the area would be via helicopter or snowmachine and new sections of line would be spliced in around the break. If major repairs are needed to the line or other infrastructure, equipment and methods similar to those used during construction would be used.

The FOC and anchor boxes would be left in place when the network is decommissioned. Poles and support infrastructure at river crossings would be removed.

Two alternative routes are being evaluated for the project that use BLM and USFWS lands. In Alternative 1, a “loop” would be used between Ambler, Shungnak and Selawik. Alternative 2 is routed similarly to Alternative 1, however no loop would occur, eliminating a 19-mile-long ROW corridor west of Shungnak. Additionally, a No Action Alternative is being evaluated.



Map of ownership and proposed fiber optic cable route connecting communities of Kotzebue, Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Noatak, Noorvik, Selawik, and Shungnak.

3 Evaluation

3.1 Factor 1: Evaluate the effect of the proposed action and alternatives on subsistence use and needs.

Evaluation of the effects of the proposed action is focused on the 11 communities within the northwest arctic Alaska region that would be connected by the FOC route, including Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Kotzebue, Noatak, Noorvik, Selawik, and Shungnak. All of the communities are highly dependent on subsistence to meet their nutritional, cultural, social, spiritual, and economic needs. Over three-quarters of households in all of the communities either gave or received subsistence resources during the most recent study year.

Subsistence use areas for the 11 communities extend across a large area and encompasses the entirety of the Project area. Generally, Kobuk River communities focus their hunting activities along the Kobuk River and in overland areas extending north and south of the river and around other communities in the region. Kotzebue Sound communities have a greater focus on marine uses, with subsistence activities occurring throughout Kotzebue Sound and into the Chukchi Sea; however, these communities also use local river systems, including the Kobuk and Noatak rivers, to hunt caribou and other large land mammals and to harvest fish, berries, and other resources. Kivalina subsistence uses occur primarily in the Chukchi Sea and in and around the Wulik and Kivalina rivers. Selawik subsistence users use lands and waters of the Selawik River, Selawik Lake, and Kobuk Delta drainages. Subsistence users in Buckland and Deering use waters of Kotzebue Sound, Eschscholtz Bay, and local rivers, and lands to the south, east and west of their communities.

Overall, the seasonal pattern of subsistence use is similar between communities in the region, with residents targeting the most subsistence resources during the summer (June through August) and fall (September and October) months when fishing and hunting of large land mammals and marine mammals are at their peak. All communities report overland uses during the winter months, when they travel by snowmachine to hunt caribou, furbearers, and small game. Other winter subsistence activities include ice fishing and cutting firewood. The early spring months are a transitional time when residents continue to engage in key winter activities (e.g., hunting and trapping small land mammals and furbearers, caribou, and ptarmigan) while also preparing for the upcoming spring harvests. Spring (April/May) subsistence activities include ice fishing and migratory bird hunting. Marine mammal hunting begins in the spring and continues through the summer. Other summer activities include fishing, berry picking, and harvesting birds and bird eggs.

Presence of the fiber optic cable and associated infrastructure on the landscape is not expected to substantially affect distribution and abundance of subsistence resources and access to subsistence resources. The cable is likely to be largely unnoticed by most subsistence species. Overland sections of cable and anchors would be buried by snow in the winter and would not affect ability to travel via snowmachine. Aerial crossings would be visible to subsistence users in all seasons but would not impede access as lines would be high enough to allow for travel underneath by boats and snowmachines. Aerial lines and support structures could result in some mortality of migratory birds, however impacts would be mitigated through following best management practices. Intentional and unintentional alterations to habitats from cutting/mowing of woody vegetation and impacts of overland vehicle travel are not expected to substantially effect the abundance or distribution of subsistence species. In some places removal of vegetation could create additional access corridors for travel by snowmachine by subsistence users.

Winter construction would occur within the wintering range of the Western Arctic Caribou Herd and during a time period when subsistence users harvest caribou. Winter construction activities could temporarily displace caribou and other subsistence wildlife species from areas, however no substantial change to the overall distribution or abundance of caribou and other wildlife is expected as mobile construction camps would represent points of activity within a large area of available habitat. The snow "trail" and presence of the cable left behind from construction would not be expected to impact the distribution of caribou or other wildlife. Subsistence hunters may experience minor and temporary reductions in access as they avoid construction activities.

Summer construction activities along water bodies, including transporting of equipment, horizontal directional drilling, and aerial crossing construction, would temporarily affect abundance and distribution of fish and wildlife and would temporarily affect access to areas for subsistence use. Effects would be minor and of short duration as construction at a single location is expected to last less than a week.

Subsistence users in the region have expressed concerns over the effects of helicopters and other low flying aircraft on migration of caribou. Routine helicopter overflights would be scheduled for summer, when caribou are largely absent from the project area. However, repairs could be required at any time of year, and helicopter use could temporarily displace caribou or other subsistence resources and impact subsistence users' access to resources. Repairs could also require use of methods and equipment similar to those used during construction, and effects on subsistence resources and users would be expected to be similar to those of construction. A minor and temporary limitation on the access of subsistence users to harvestable resources may occur in limited areas for short-term periods during maintenance or repairs.

Comparison of Alternatives

Effects of Alternative 1 and Alternative 2 are similar, except that under Alternative 2 the potential for effects to abundance and distribution of subsistence resources and access to subsistence resources would be reduced by elimination of the 19-mile-long ROW corridor west of Shungnak. Under the No Action Alternative, no direct impacts to subsistence would occur as FWS and BLM would not authorize construction of a fiber optic cable network across Federal lands.

3.2 Factor 2: Evaluate the Availability of Other Lands for the Purposes Sought to be Achieved

Several other alternatives routes were considered to reduce or eliminate use of Federal public lands. NANA Regional Corporation, Inc. (NANA), originally proposed a route that would use submerged lands in State of Alaska managed waters. NANA ultimately applied for rights-of-way for a primarily over-land route, citing concerns over the reliability of a network involving cables submerged in arctic rivers. An overland route paralleling the Kobuk River between Kiana and Ambler, Shungnak, and Kobuk that would cross Kobuk Valley National Park and NANA-owned lands was considered. The route would require use of less federal public lands but was not preferred by NANA due to increased expected cost of constructing in more steep and forested terrain, and additional permitting requirements for crossing National Park Service managed lands. Other adjustments to the route were considered to avoid federal public lands between Noorvik and Selawik, and between Selawik and Buckland.

3.3 Factor 3: Evaluate Other Alternatives That Would Reduce or Eliminate the Proposed Action from Lands Needed for Subsistence Purposes.

In addition to the alternative routes discussed above, alternative technologies were considered for providing broadband connectivity to communities in the region. Alternative technologies considered include microwave repeater networks and satellite services.

Microwave networks rely on towers placed every twenty to forty miles to relay broadband signal. One microwave tower network is currently operating in the region, and a second is under development. Both networks use Federal public lands for the siting of towers. Microwave signals have limited bandwidth when compared to FOC and it is unclear whether microwave technologies would be able to meet overall demand for connectivity in the long term.

Satellite services, including low-earth orbit or geostationary orbiting satellites could be used to provide internet connectivity without the use of Federal Public lands. However, drawbacks to satellite technologies include potential for providing insufficient bandwidth into the future, higher latency than FOC, and overall limited capacity.

4 Finding

This Evaluation has determined that:

- A significant reduction in subsistence uses from impacts to harvestable resources, habitat or increased competition for resources would not occur;
- A significant reduction in subsistence uses due to changes in the availability of resources caused by an alteration in their distribution, migration, or location would not occur; and
- A significant reduction in subsistence uses due to changes in access to resources would not occur.

Based on review and evaluation of information indicated above, the proposed action will not result in a significant restriction of subsistence uses.

Appendix M – Land Use

Surface Classification	Region Code	Unit Code	Management Intent	Alt 1	Alt 2
			to activities occurring during the migration periods and to the protection of movement corridors. Consult ADF&G prior to issuing an authorization involving a long-term or permanent use.		
Habitat	K	8	Manage unit for the protection of sensitive species and habitats. Any development that may be authorized shall adhere to the following guideline: Authorizations involving long-term or permanent uses are to consider impacts upon waterfowl concentrations and WAH. Special consideration is to be given to activities occurring during the migration periods and to the protection of movement corridors. Consult ADF&G prior to issuing an authorization involving a long-term or permanent use.	x	x
Habitat	K	9	Manage for mineral values. Any mineral development that may be authorized shall adhere to the following guideline: Authorizations issued in this unit involving long-term or permanent uses are to consider impacts upon the WAH. Special consideration is to be given to activities occurring during the migration periods and during the period they are using it as part of their winter range. The protection of caribou movement corridors is also to be an important consideration. Consult ADF&G prior to issuing an authorization involving a long-term or permanent use.	x	x
Misc	K	13	Manage for mineral and habitat values. Mineral development is considered appropriate within the unit but shall adhere to the following guideline: Authorizations issued in this unit involving long-term or permanent uses are to consider impacts upon the WAH. Special consideration is to be given to activities occurring during migration periods and during the period they are using it as part of their winter range. The protection of caribou movement corridors is also to be an important consideration. Consult ADF&G prior to issuing an authorization involving a long-term or permanent use. Authorizations are not to be issued within one-half mile of the Spring Creek hot springs except for permits that are revocable at will and the use authorized by the permit has been determined to not adversely affect the hot springs or the activities that occur there.	x	x
Habitat	KT	1	Manage unit to protect sensitive species and habitats. Authorizations within the City of Kivalina and in the area occupied by a material extraction site under ADL 412110 are considered appropriate. Any such development that is authorized shall avoid impacts to these species/habitats and/or shall mitigate impacts.	x	x
General	KT	7	Manage for multiple uses. Prior to issuing an authorization consult reference sources mentioned in ‘Resources and Uses’ and consult ADF&G, NMFS, or USFWS, as appropriate.	x	x
General	U	1	Manage for multiple uses. Since mineral potential within portions of this unit may actually have a high potential, it is likely that exploration and development of locatable minerals will occur during the planning period. Such developments are considered appropriate, but all such developments must follow the following management guideline. All authorizations issued in this unit involving long-term or permanent uses are to consider impacts upon Dall sheep and the WAH. Special consideration is to be given to activities occurring during the migration periods	x	x

Table 1: DNR land use plan units that intersect with the alternatives

Surface Classification	Region Code	Unit Code	Management Intent	Alt 1	Alt 2
General	K	1	Manage for multiple uses. Authorizations issued in this unit involving long-term or permanent uses are to consider impacts upon the WAH. Special consideration is to be given to activities occurring during the migration periods and to the protection of movement corridors and protection of core insect relief areas. Consult ADF&G prior to issuing an authorization involving a long-term or permanent use.	x	x
Habitat	K	4	Manage to protect sensitive species and habitats. Any development that may be authorized shall adhere to the following guideline: Authorizations issued in this unit involving long-term or permanent uses are to consider impacts upon the WAH. Special consideration is to be given to activities occurring during the winter and to uses that may impact areas used for insect relief. Consult ADF&G prior to issuing an authorization involving a long-term or permanent use. There is a 1,157 acre parcel adjacent to the Red Dog Mine road that was selected by the Northwest Arctic Borough and may be considered appropriate for conveyance as part of their municipal entitlement. This plan authorizes reclassification of this parcel to Settlement if and when a final finding and decision is made under the Municipal Entitlement Act to convey this land.	x	x
Misc	K	5	Unit is to be managed to maintain this area for the potential development of a transportation route. See discussion in 'Resources and Uses' section. DNR is to consult with DOT&PF to determine if a proposed use or activity is compatible with the transportation corridor. The purpose of this review is to determine if it would adversely affect the development of a transportation facility. Any development that may be authorized shall adhere to the following guideline: Authorizations are to consider impacts to the WAH and upon moose rutting areas. Special consideration is to be given to the impacts of activities occurring during migration periods or when this area is used for its winter range. Consult ADF&G prior to issuing an authorization involving a long-term or permanent use. Protect waterfowl concentrations.	x	x
Habitat	K	6	Manage unit to protect sensitive species and habitats, particularly those associated with the WAH, moose and waterfowl concentrations. Any development that may be authorized shall adhere to the following guideline: Authorizations involving long-term or permanent uses are to consider impacts upon sensitive habitats and, particularly, the WAH. Special consideration is to be given to the impacts of activities occurring during migration periods or when this area is used for its winter range. Consult ADF&G prior to issuing an authorization involving a long term or permanent use.	x	x
General	K	7	Manage for multiple uses. Any development that may be authorized shall adhere to the following guideline: Authorizations issued in this unit involving long-term or permanent uses are to consider impacts upon waterfowl concentrations and WAH. Special consideration is to be given	x	x

Surface Classification	Region Code	Unit Code	Management Intent	Alt 1	Alt 2
			and to the protection of movement corridors and winter range. Consult ADF&G prior to issuing an authorization involving a long term or permanent use		
Habitat	U	5	Manage unit for habitat and harvest values. Protect dispersed recreation, access and cultural resources. Uses may be authorized in this unit but consideration must be given to the impact upon the caribou herd by a potential use. Consult ADF&G prior to issuing an authorization involving a long-term or permanent use that may impact this population. Maintain harvest opportunities.	x	x

Table 2: 17(b) Easements that intersect with the alternatives

Easement Identification	Easement Trail	Use Restrictions	Alt 1	Alt 2
AMRA4_1C4C5D1	Existing Trail up to 25'	Winter Only	x	x
AMRA4_2C5	Existing Trail up to 25'	Winter Only	x	x
AMRA4_2C5	Existing Trail up to 25'	Winter Only	x	x
KTZA1_13aD1	Existing Trail up to 25'	No Restrictions	x	x
KTZA2_6D1	Existing Trail up to 25'	Winter Only	x	x
KTZD1_B	Existing Trail up to 25'	No Restrictions	x	x
KTZD2_75C4	Air, light, or visibility purposes	No Restrictions	x	x
KTZD2_76C4	Pipeline	No Restrictions	x	x
KTZD2_8aC5	Road up to 60' or greater for existing road	No Restrictions	x	x
KTZD2_8D1D9	Existing Trail up to 25'	Winter Only	x	x
KTZD2_8D1D9	Existing Trail up to 25'	Winter Only	x	x
NOAC3_6O	Existing Trail up to 25'	No Restrictions	x	x
NOAC3_A	Existing Trail up to 25'	Other	x	x
NOAC3_B	Existing Trail up to 25'	Other	x	x
SHUD2_10aC3D9L	Road up to 60' or greater for existing road	No Restrictions	x	x
SHUD2_10C3D9L	Road up to 60' or greater for existing road	No Restrictions	x	x
SHUD2_9C3D9L	Road up to 60' or greater for existing road	No Restrictions	x	x
SHUD3_12C5D3			x	
SHUD3_1C5D1	Existing Trail up to 25'	Winter Only	x	x
SHUD3_1C5D1	Existing Trail up to 25'	Winter Only	x	x
SHUD3_20D1	Existing Trail up to 25'	No Restrictions	x	
SHUD3_20D1	Proposed Trail up to 25'	Winter Only	x	
SLKA5_10O	Proposed Trail up to 50'	Winter Only	x	x
SLKA5_4D1D9	Existing Trail up to 25'	Winter Only	x	x
SLKA5_5D1	Existing Trail up to 25'	Winter Only	x	x
SLKB3_1D1D9	Existing Trail up to 25'	No Restrictions	x	x
SLKC3_1D1D9	Existing Trail up to 25'	No Restrictions	x	x
SLKC3_3C3D1D9	Existing Trail up to 25'	No Restrictions	x	x
SLKC3_4D1	Existing Trail up to 25'	No Restrictions	x	x
SLKD5_14C5D9	Existing Trail up to 25'	Winter Only	x	x
SLKD5_1C3C5D1D9	Existing Trail up to 25'	Winter Only	x	x
SLKD5_2C3C5D1	Existing Trail up to 25'	Winter Only	x	x
SLKD5_8bC4C5D1	Existing Trail up to 25'	No Restrictions	x	x

Table 3: Northwest Arctic Borough's mapped trails that intersect with the alternatives

Trail Name	Alt 1	Alt 2		Trail Name	Alt 1	Alt 2
5TH AVENUE	X	X		OTZ to ORV	X	X
5TH/FRONT STREET	X			OTZ to WOLF	X	X
ABL to SHG	X	X		OTZ to WTK	X	X
AIRPORT ACCESS ROAD	X	X		Pipe Spit	X	X
BACK STREET	X			RED DOG MINE ROAD	X	X
BKC to DRG	X	X		RIVER ACCESS ROAD	X	X
DAHL CREEK ROAD	X	X		RIVER STREET	X	X
DEERING ROAD	X	X		SECOND AVENUE	X	X
DEVIL LAKE ROAD	X	X		SELAWIK STREET	X	X
EIGHTH AVENUE	X	X		SEWAGE LAGOON ROAD	X	X
FIFTH AVENUE	X	X		SHG to Hotsprings	X	
IAN to WLK	X	X		SHG to OBU	X	X
KVL to WTK	X	X		TED STEVENS WAY	X	X
LAGOON STREET	X	X		THIRD AVENUE	X	X
LANDFILL ACCESS	X	X		Untitled Path	X	X
LANDFILL ACCESS ROAD	X	X		VORTAC RESERVOIR ROAD	X	X
LANDFILL/SEWAGE LAGOON ACCESS	X	X		WARING STREET	X	X
MISSION STREET	X	X		WLK to ABL	X	X
ORV to IAN	X	X		WLK to BKC	X	X
ORV to WLK	X	X		WLK to SHG	X	
OTZ to BKC	X	X				

Appendix N - Subsistence

1. Ambler

1.1. Harvest Data

Table 1: Ambler Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				% of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
2012	All Resources	98	96	96	87	92		170,468	2,243	603	100.0%
	Salmon	68	40	40	28	45		10,096	133	36	5.9%
	Non-Salmon Fish	92	77	72	53	68		49,411	650	175	28.9%
	Large Land Mammals	94	74	64	64	72		102,116	1,344	361	59.9%
	Small Land Mammals	36	32	30	21	21		2,566	34	9	1.5%
	Marine Mammals	62	2	2	26	60		602	8	2	0.3%
	Migratory Birds	58	40	38	23	30		2,242	30	8	1.3%
	Upland Game Birds	55	40	38	28	26	477	477	6	2	0.2%
	Bird Eggs	6	2	2	0	4		13	0	0	<0.1%
	Marine Invertebrates	4	2	2	2	2	172	172	2	1	0.1%
	Vegetation	98	85	77	51	51		2,772	36	10	1.6%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 2012 (Braem, Mikow, Wilson, and Kostick 2015).
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Table 2: Ambler Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Number	Total Pounds	Average HH Pounds	Per Capita Pounds
Salmon										
2013	Salmon	83	65	64	40	64		27,158	394	120
2014	Salmon	87	60	60	36	76		28,934	391	107
Non-Salmon Fish										
2013	Non-Salmon Fish	94	90	81	64	83		48,312	700	213
2014	Non-Salmon Fish	93	78	78	56	66		61,970	837	228
Large Land Mammals										
2003	Large Land Mammals	95	74	69	56	71	343	50,620	756	202
2009	Large Land Mammals	78	78	76	54	44	468	64,824	968	272
Small Land Mammals										
2003	Small Land Mammals	6	6	6	0	0	34	0	0	0
2009	Small Land Mammals	20	20	18	12	6	99	0	0	0
Migratory Birds										
1997	Migratory Birds			74			1,822	4,387	57	13

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Number	Total Pounds	Average HH Pounds	Per Capita Pounds
Upland Birds										
1997	Upland Game Birds			46			583	568	7	2
Bird Eggs										
1997	Bird Eggs			0			0	0	0	0

Notes: Blank cells indicate no data.

Sources: 1997 (Georgette 2000); 2003 (ADF&G 2025); 2009 (Braem 2012a); 2013 (Braem, Godduhn, Mikow, Brenner, Trainor, Wilson, and Kostick 2018); 2014 (Braem et al. 2018)

Stephen R. Braund & Associates, 2025.

Table 3: Ambler Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Number [1]	Total Pounds [2]	Mean HH Pounds	Per Capita Pounds	
1997	Canada Geese			66			462	1,533	20	5	
	Mallard			54			389	759	10	2	
	White-fronted Geese			17			174	737	10	2	
	Other Birds			46			583	568	7	2	
	Willow Ptarmigan			43			535	535	7	2	
2003	Caribou	95	74	69	53	50	325	44,237	660	176	
	Moose	52	29	15	15	45	11	5,814	87	23	
	Black Bear	26	15	10	8	16	5	475	7	2	
	Brown Bear	2	8	2	2	0	1	93	1	0	
	Wolf	5	5	5	0	0	19	0	0	0	
2009	Caribou	78	78	76	52	44	456	61,962	925	260	
	Black Bear	6	8	6	6	0	4	354	5	1	
	Red Fox	8	6	6	4	4	4	0	0	0	
	Beaver	14	14	14	10	2	75	0	0	0	
	Wolf	10	10	8	4	2	12	0	0	0	
2012	Caribou	91	70	62	62	60	685	93,220	1,227	330	54.6%
	Broad Whitefish	62	36	34	25	42	9,150	29,280	385	104	17.1%
	Sheefish	81	62	57	43	51	1,156	12,875	169	46	7.5%
	Chum Salmon	66	38	38	26	43	1,621	9,214	121	33	5.4%
	Moose	49	28	19	21	34	14	7,715	102	27	4.5%
	Humpback Whitefish	19	11	9	6	13	1,544	3,243	43	11	1.9%
	Beaver	28	23	23	15	15	115	2,266	30	8	1.3%
2013	Sheefish	90	79	75	50	67	2,582	29,437	427	130	
	Chum salmon	81	64	62	39	62	4,321	25,577	371	113	
	Broad whitefish	71	50	48	31	60	3,364	10,764	156	47	
	Humpback whitefish	42	33	27	17	33	2,233	4,690	68	21	

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Number [1]	Total Pounds [2]	Mean HH Pounds	Per Capita Pounds	
	Northern pike	39	35	29	14	16	646	2133	31	9	
2014	Chum salmon	82	58	58	36	67	4,182	25,993	351	96	
	Sheefish	91	75	75	47	51	1,806	20,585	278	76	
	Broad whitefish	53	29	29	20	42	9,492	30,375	411	112	
	Arctic grayling	46	40	38	15	24	908	817	11	3	
	Dolly Varden	36	26	24	4	20	67	222	3	1	

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

For All Resources study years (2012), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

Sources: 1997 (Georgette 2000); 2003 (ADF&G 2025); 2009 (Braem 2012a); 2012 (Braem et al. 2015); 2013 (Braem et al. 2018); 2014 (Braem et al. 2018)

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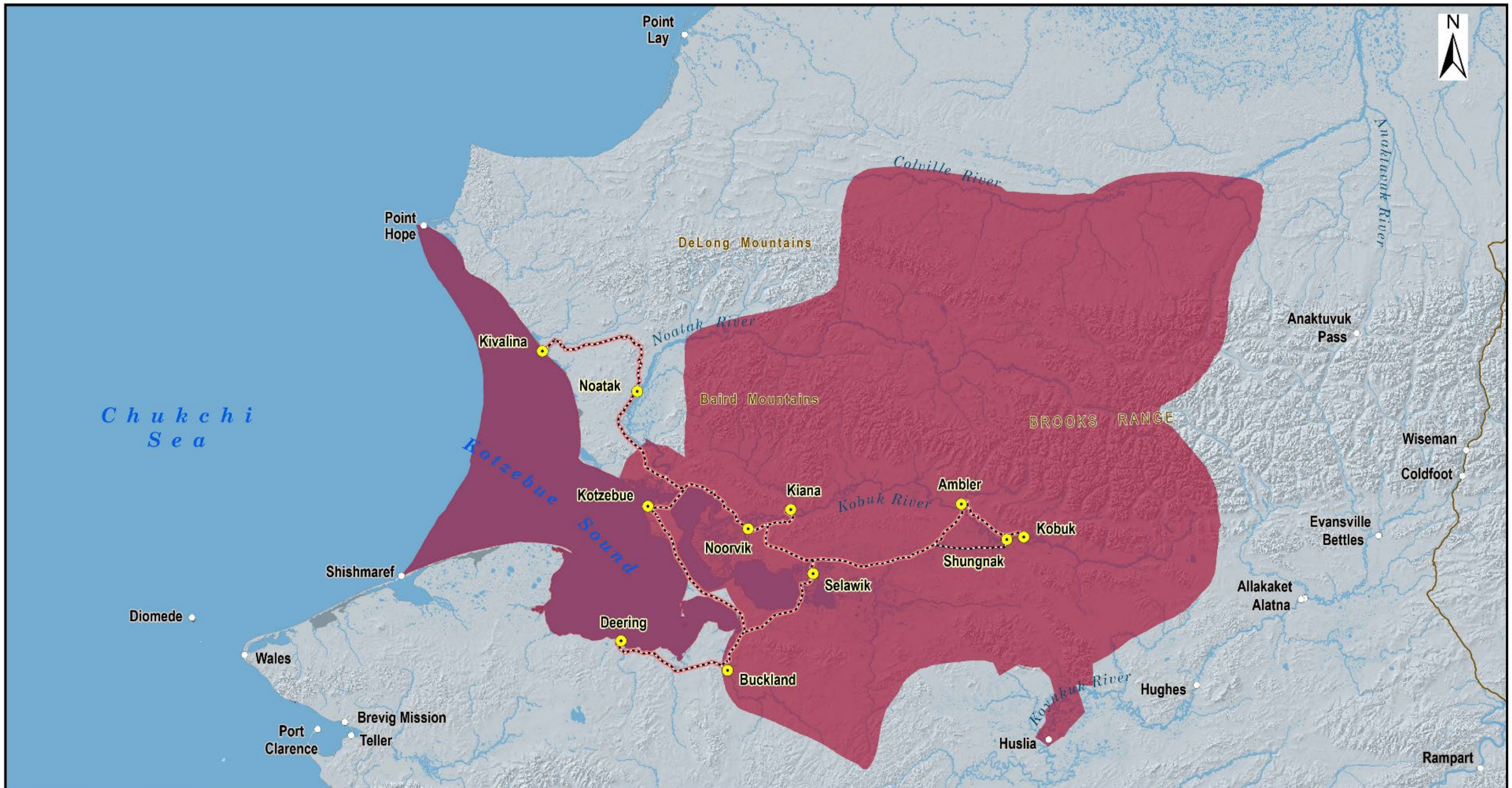
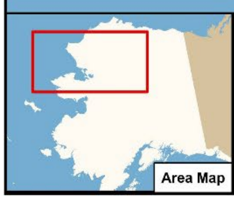
1.2. Subsistence Use Areas

Figure 1: Ambler Subsistence Use Areas, All Resources





Ambler Subsistence Use Areas, All Resources [1]

Alternative 1

Alternative 2

Subsistence Study Community

Other Community

0 25 50 100 Miles

[1] **Subsistence Data Sources**

1. Braem et al. 2015
2. Schroeder et al. 1987
3. Watson 2018

Ambler Subsistence Use Areas, All Resources

NANA Region Middle Mile Fiber Optic Project

NANA

Date : 10/2/2025

Scale: 1:2,400,000
1 inch equals 38 mile

FIGURE 1

1.3. Timing of Subsistence Activities

Figure 2: Ambler Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Freshwater non-salmon fish	■	■	■	■	■	■	■	■	■	■	■	■	1990s
Marine non-salmon fish							■	■	■	■			1970s
Salmon								■	■				1990s
Caribou	■	■	■	■	■		■	■	■	■	■	■	2010s
Moose	■	■	■					■	■	■	■	■	2010s
Bear				■	■			■	■	■	■		2010s
Sheep				■									2010s
Furbearers	■	■	■	■	■	■	■	■			■	■	2010s
Small land mammals	■	■	■	■	■	■			■	■	■	■	2010s
Marine mammals						■							2010s
Upland birds	■	■	■	■	■	■	■	■	■	■	■	■	2010s
Waterfowl				■	■	■	■	■	■	■			2010s
Eggs	No Data												
Marine Invertebrates	No Data												
Plants and Berries						■	■	■	■	■	■		1990s
Wood	■	■	■	■	■		■	■	■	■	■	■	1970s
Sources: Watson (2018); Anderson, Anderson, Bane, Nelson, and Towarak (1998); Braem (2012a); Braem et al. (2015)													

2. Buckland

2.1. Harvest Data

Table 4: Buckland Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
2003	All Resources	99	90	90	89	82	174,785	226,074	2,569	554	100.0%
	Salmon	65	41	39	53	28	3,939	23,962	272	59	10.6%
	Non-Salmon Fish	83	72	72	60	59	158,099	39,099	444	96	17.3%
	Large Land Mammals	90	63	60	22	18	662	99,650	1,132	244	44.1%
	Small Land Mammals	33	33	22	5	16	175	783	9	2	0.3%
	Marine Mammals	80	35	37	64	18	297	50041	569	123	22.1%
	Migratory Birds	55	51	42	28	36	1238	3489	40	9	1.5%
	Upland Game Birds	36	34	31	10	24	451	451	5	1	0.2%
	Bird Eggs	55	53	51	30	35	8793	1847	21	5	0.8%
	Marine Invertebrates	5	2	1	4	1	4	9	0	0	0.0%
	Vegetation	93	82	81	33	46	1128	6744	77	17	3.0%
2018	All Resources	100	93	93	85	99	325,037	325,037	3,218	553	100.0%
	Salmon	94	59	56	46	72	70,115	70,115	694	119	21.6%
	Non-Salmon Fish	94	79	77	70	75	47,104	47,104	466	80	14.5%
	Large Land Mammals	97	65	59	54	75	137,775	137,775	1,364	235	42.4%
	Small Land Mammals	39	38	35	27	13	1,759	1,759	17	3	0.5%
	Marine Mammals	92	59	55	52	75	50324	50324	498	86	0
	Migratory Birds	66	48	45	34	31	6,500	6,500	64	11	2.0%
	Upland Game Birds	44	42	37	27	13	290	290	3	0	0
	Bird Eggs	70	58	54	30	31	2560	2560	25	4	0
	Marine Invertebrates	11	8	7	3	6	232	232	2	0	0
	Vegetation	100	92	92	68	54	8,370	8,370	83	14	2.6%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 2003 (Magdanz, Koster, Naves, and Fox 2011); 2018 (Mikow and Cunningham 2020).

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Table 5: Buckland Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Salmon										
2013	Salmon	81	53	52	37	55		25,705	245	50
2014	Salmon	84	53	53	40	63		37,732	385	73
Non-Salmon Fish										
2013	Non-Salmon Fish	94	84	79	61	61		23,491	224	46
2014	Non-Salmon Fish	94	82	82	67	73		39,328	401	76
Large Land Mammals										
2009-10	Large Land Mammals	67	67	66	49	47	549	79,382	892	183
2016-17	Large Land Mammals	99	86	83	72	83	710	101,658	1,017	193
Small Land Mammals										
2009-10	Small Land Mammals	29	30	26	10	9	65	0	0	0
2016-17	Small Land Mammals	11	12	10	2	1	16	0	0	0
Migratory Birds										
1996	Migratory Birds			65			1,853	4,590	57	12
Upland Game Birds										
1996	Upland Game Birds			25			255	254	3	1
Bird Eggs										
1996	Bird Eggs			50			3,370	942	12	2

Notes: Blank cells indicate no data.

Sources: 1996 (Georgette 2000); 2009-10 (Braem 2012a); 2013-2014 (Braem et al. 2018); 2016-17 (Gonzalez, Mikow, and Kostick 2018)

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Table 6: Buckland Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
1996	Lesser Canada Geese			33			342	1,362	17	4	
	White-fronted Geese			13			205	867	11	2	
	Northern Pintail			28			407	635	8	2	
	Mallard			33			239	466	6	1	
	Cacklers			33			158	368	5	1	
2003	Caribou	86	61	58	54	48	637	86,660	985	212	38.3%
	Smelt	80	66	65	39	43	143,603	20,105	228	49	8.9%
	Fall Chum	55	31	30	43	25	1,918	11,508	131	28	5.1%

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
	Moose	43	17	13	30	22	17	9,127	104	22	4.0%
	Spotted Seal	33	30	28	7	17	88	8,624	98	21	3.8%
	Berries	92	81	81	31	40	997	6,478	74	16	2.9%
	Chinook Salmon	25	18	16	16	12	427	5,298	60	13	2.3%
	Coho Salmon	22	20	17	7	11	773	4,021	46	10	1.8%
	Sheefish	49	31	27	40	27	688	3,785	43	9	1.7%
	Muskox	13	8	7	11	8	6	3,772	43	9	1.7%
	Broad Whitefish	29	22	17	20	13	1,165	3,729	42	9	1.6%
	Ringed Seal	20	19	16	6	11	50	3,688	42	9	1.6%
	Unknown Seal	10	8	7	4	6	40	3,465	39	8	1.5%
	Humpback Whitefish	18	18	17	7	10	1,596	3,351	38	8	1.5%
	Burbot	46	36	34	20	25	722	3,033	34	7	1.3%
2009-10	Caribou	67	67	64	46	44	535	72,797	818	168	
	Moose	21	29	9	9	13	8	4,104	46	9	
	Muskox	7	10	4	4	4	4	2,262	25	5	
	Brown Bear	3	4	3	0	0	3	219	2	1	
2013	Chum salmon	74	46	45	33	47	3,104	18,376	175	36	
	Rainbow smelt	86	78	76	53	35	2,054	12,323	117	24	
	Sheefish	61	37	26	23	40	896	4,926	47	10	
	Coho salmon	52	35	31	14	31	838	3,878	37	8	
	Humpback whitefish	29	21	20	8	14	1,118	2,347	22	5	
2014	Chum salmon	81	48	48	39	61	4,188	26,033	266	50	
	Rainbow smelt	88	73	73	51	47	3,812	22,871	233	44	
	Coho salmon	33	24	23	16	19	1,144	5,883	60	11	
	Sheefish	63	43	43	24	48	1,067	5,869	60	11	
	Broad whitefish	34	30	28	11	16	1,150	3,679	38	7	
2016-17	Caribou	99	86	83	72	81	693	94,217	942	179	
	Moose	15	11	7	6	11	13	7,130	71	13	
	Brown bear	4	4	4	1	0	4	311	3	1	
2018	Caribou	97	65	59	54	65	949	129,092	1,278	220	39.7%
	Chum Salmon	72	48	46	38	49	8,228	49,444	490	84	15.2%
	Bearded Seal	66	45	42	41	34	119	34,175	338	58	10.5%
	Unknown Smelt	87	75	73	61	35	128,792	18,031	179	31	5.5%
	Coho Salmon	68	51	48	34	38	3,069	16,423	163	28	5.1%
	Sheefish	65	39	38	35	39	2,444	13,441	133	23	4.1%
	Spotted Seal	44	41	37	32	13	105	10,316	102	18	3.2%
	Moose	28	17	8	8	23	14	7,653	76	13	2.4%
	Saffron Cod	68	46	45	34	31	19,017	3,994	40	7	1.2%

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

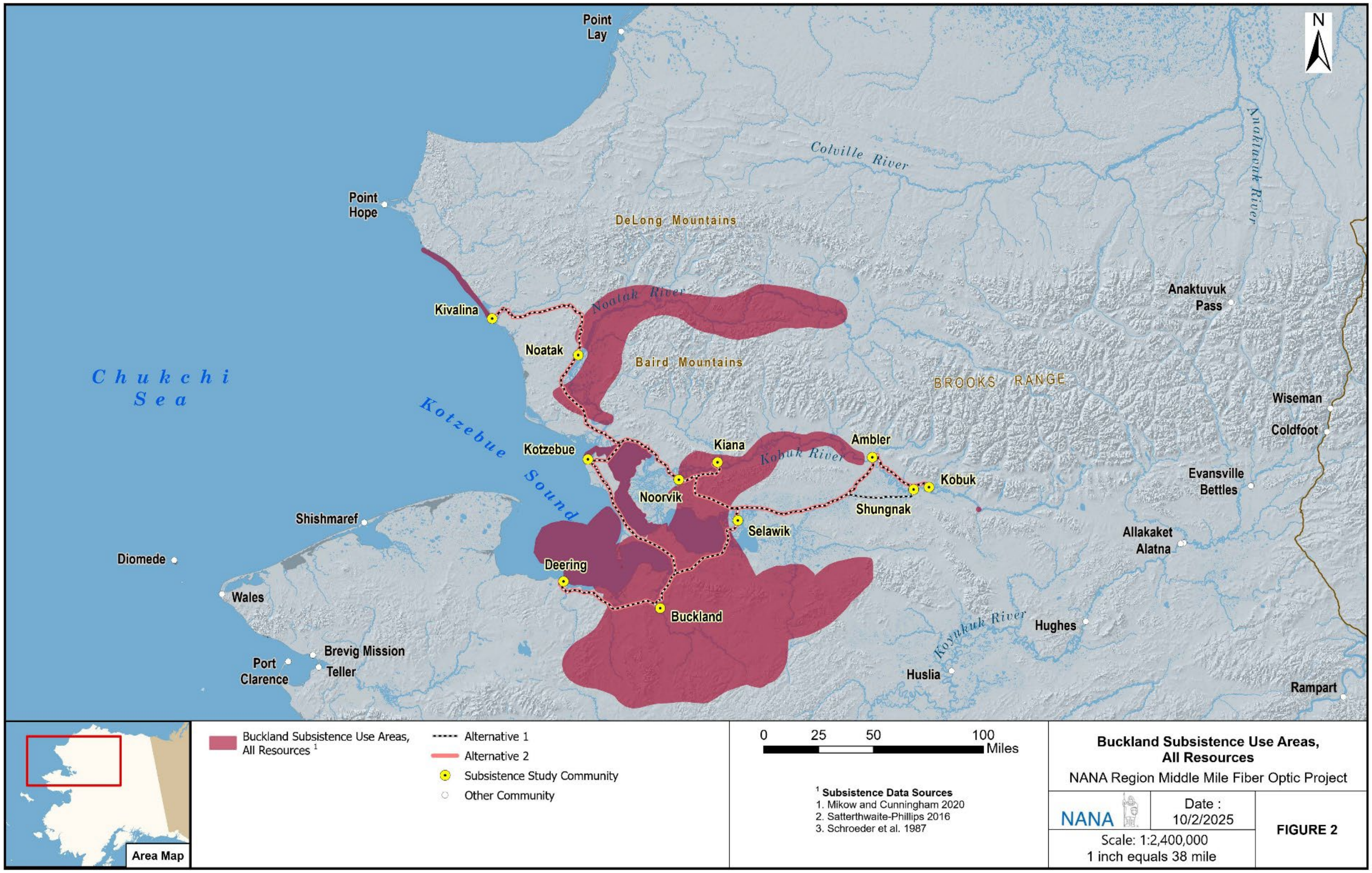
For All Resources study years (1983, 1992, 2005), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

Sources: 1996 (Georgette 2000); 2003 (Magdanz et al. 2011); 2009 (Braem 2012a); 2012-14 (Braem et al. 2018); 2016-17 (Gonzalez et al. 2018); 2018 (Mikow and Cunningham 2020).

Stephen R. Braund & Associates, 2025.

2.2. Subsistence Use Areas

Figure 3: Buckland Subsistence Use Areas, All Resources



Buckland Subsistence Use Areas, All Resources

NANA Region Middle Mile Fiber Optic Project

Date : 10/2/2025

Scale: 1:2,400,000
1 inch equals 38 mile

FIGURE 2

2.3.Timing of Subsistence Activities

Figure 4: Buckland Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Non-Salmon Fish	No Data												
Salmon	No Data												
Caribou													2010s
Moose													2010s
Bear													2010s
Muskox													2010s
Furbearers and Small land mammals													2010s
Marine mammals													2010s
Upland birds	No Data												
Waterfowl	No Data												
Eggs	No Data												
Marine Invertebrates	No Data												
Plants and Berries	No Data												
Wood	No Data												

Sources: Braem (2012); Gonzalez et al. (2018); Mikow and Cunningham (2020)

3. Deering

3.1. Harvest Data

Table 7: Deering Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
1994	All Resources	100	92	92	92	97	99,121	99,121	2,253	672	100.0%
	Salmon	95	76	76	68	78	5,715	27,000	614	183	27.2%
	Non-Salmon Fish	100	78	78	73	92	6,680	6,680	152	45	6.7%
	Large Land Mammals	95	65	62	57	73	161	27,768	631	188	28.0%
	Small Land Mammals	38	30	30	16	19	78	169	4	1	0.2%
	Marine Mammals	92	49	49	54	76	113	32603	741	221	32.9%
	Migratory Birds	81	62	62	49	57	1113	2915	66	20	2.9%
	Upland Game Birds	49	41	41	30	27	350	350	8	2	0.4%
	Bird Eggs		49	49	0	0	1278	217	5	1	0.2%
	Marine Invertebrates	27	14	14	5	22	27	27	1	0	0.0%
	Vegetation	92	81	81	46	46	1392	1392	32	9	1.4%
2013	All Resources	100	91	84	78	100	84,824	84,824	1,928	663	100.0%
	Salmon	100	72	66	44	56	11,214	11,214	255	88	13.2%
	Non-Salmon Fish	75	50	47	34	63	3,921	3,921	89	31	4.6%
	Large Land Mammals	100	44	38	63	84	56,131	56,131	1,276	439	66.2%
	Small Land Mammals	19	19	16	3	9	179	179	4	1	0.2%
	Marine Mammals	94	38	19	41	84	9324	9324	212	73	0
	Migratory Birds	66	31	31	28	47	1,398	1,398	32	11	1.6%
	Upland Game Birds	19	19	16	9	6	158	158	4	1	0
	Bird Eggs	81	38	31	22	66	388	388	9	3	0
	Marine Invertebrates	19	13	13	3	9	124	124	3	1	0
	Vegetation	94	81	75	53	59	1,989	1,989	45	16	2.3%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 1994 (Magdanz, Utermohle, and Wolfe 2002); 2013 (Braem et al. 2018)

Stephen R. Braund & Associates, 2025.

Table 8: Deering Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Large Land Mammals										
2007-08	Large Land Mammals	87	55	45	55	74	185	25,773	548	168
2011-12	Large Land Mammals	93	63	63	77	80	237	32,164	748	206
2017	Large Land Mammals	96	63	57	59	78	347	49,018	925	268
Small Land Mammals										
2007-08	Small Land Mammals	13	16	13	6	3	24	0	0	0
2011-12	Small Land Mammals	13	23	10	10	10	13			
2017	Small Land Mammals	4	4	4	2	0	2	0	0	0
Migratory Birds										
1997-98	Migratory Birds			53			486	1,287	26	8
Upland Game Birds										
1997-98	Upland Game Birds			18			128	128	3	1
Bird Eggs										
1997-98	Bird Eggs			29			1,492	447	9	3

Notes: Blank cells indicate no data.

Sources: 1997-98 (Georgette 2000); 2007-08 (Braem 2011); 2011-12 (Mikow, Braem, and Kostick 2014); 2017 (Gonzalez, Mikow, and Koster 2020)

Stephen R. Braund & Associates, 2025.

Table 9: Deering Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
1994	Bearded Seal	92	49	49	49	68	75	28,274	643	192	28.5%
	Chum Salmon	95	70	70	68	68	3,274	19,643	446	133	19.8%
	Caribou	78	57	54	43	57	142	19,246	437	131	19.4%
	Moose	78	41	32	35	54	15	8,317	189	56	8.4%
	Dolly Varden	78	60	60	46	49	1,230	4,058	92	28	4.1%
	Pink Salmon	73	65	65	54	41	1,932	4,057	92	28	4.1%
	Spotted Seal	19	14	14	11	8	29	2,797	64	19	2.8%
	Unknown Salmon	8	8	8	8	0	370	2,219	50	15	2.2%
	Saffron Cod	92	68	68	54	62	6,177	1,297	29	9	1.3%
	Berries	92	81	81	30	35	199	1,291	29	9	1.3%
	Unknown Canada Geese	78	62	62	43	43	313	1,070	24	7	1.1%
1997-98	Canada Geese			47			137	545	11	3	
	Common Murre Eggs			24			746	224	4	1	

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
	Northern Pintail			29			133	207	4	1	
	Glaucous Gull Eggs			16			676	203	4	1	
	Mallard			32			70	136	3	1	
2007-08	Caribou	87	55	45	55	74	182	24,743	526	162	
	Muskox	13	10	3	6	10	2	899	19	6	
	Brown Bear	3	3	3	3	3	2	130	3	1	
2011-12	Caribou	93	63	63	77	77	237	32,164	748	206	
2013	Caribou	100	44	38	56	72	404	54,978	1,250	430	64.8%
	Bearded Seal	78	34	16	31	63	29	8,258	188	65	9.7%
	Chum Salmon	72	50	44	38	41	1,309	6,568	149	51	7.7%
	Pink Salmon	63	44	41	25	31	849	2,718	62	21	3.2%
	Coho Salmon	22	19	16	13	9	327	1,669	38	13	2.0%
	Dolly Varden	47	38	38	19	19	489	1,614	37	13	1.9%
	Sheefish	50	19	13	16	47	176	968	22	8	1.1%
2017	Caribou	93	63	57	59	72	342	46,539	878	254	
	Moose	33	9	7	7	26	5	2,479	47	14	

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

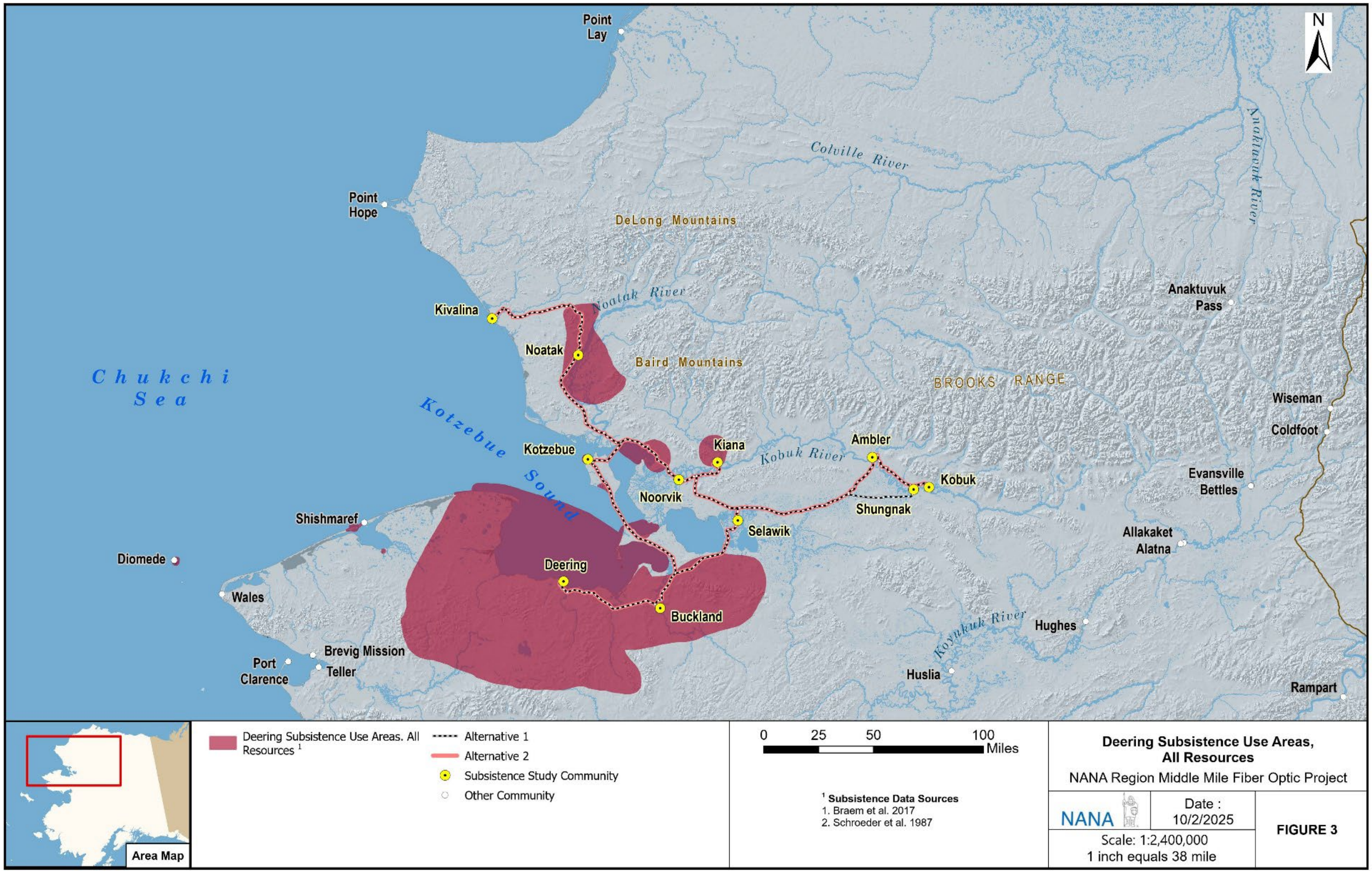
For All Resources study years (1983, 1992, 2005), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

Sources: 1994 (Magdanz et al. 2002); 1997-98 (Georgette 2000); 2007-08 (Braem 2011); 2011-12 (Mikow et al. 2014); 2013 (Braem et al. 2018); 2017 (Gonzalez et al. 2020)

Stephen R. Braund & Associates, 2025.

3.2. Subsistence Use Areas

Figure 5: Deering Subsistence Use Areas, All Resources



Deering Subsistence Use Areas, All Resources

NANA Region Middle Mile Fiber Optic Project

Date : 10/2/2025

Scale: 1:2,400,000

1 inch equals 38 mile

FIGURE 3

3.3. Timing of Subsistence Activities

Figure 6: Deering Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Freshwater non-salmon fish	No Data												
Marine non-salmon fish	No Data												
Salmon	No Data												
Caribou													2010s
Moose													2010s
Bear													2010s
Muskox													2010s
Furbearers & Small Land Mammals													2010s
Marine mammals													2010s
Upland birds	No Data												
Waterfowl	No Data												
Eggs	No Data												
Marine Invertebrates	No Data												
Plants and Berries	No Data												
Wood	No Data												
Sources: Braem (2011); Braem, Mikow, Brenner, Godduhn, Retherford, and Kostick (2017); Gonzalez et al. (2020)													

4. Kiana

4.1.Harvest Data

Table 10: Kiana Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
2006	All Resources	99	92	92			24,266	133,211	1,402	347	100.0%
	Salmon	95	64	60			322	50,241	529	131	37.7%
	Non-Salmon Fish	79	68	65			15,962	38,268	403	100	28.7%
	Large Land Mammals	86	66	62			5,546	32,523	342	85	24.4%
	Small Land Mammals	86	73	75			842	5027	53	13	3.8%
	Marine Mammals	70	10	5			6	2590	27	7	1.9%
	Migratory Birds	47	38	38			599	1663	18	4	1.2%
	Upland Game Birds	30	31	27			272	1507	16	4	1.1%
	Bird Eggs	9	4	4			671	1346	14	4	1.0%
	Marine Invertebrates	7	8	5			43	43	1	0	0.0%
	Vegetation	1	1	0			0	0	0	0	0.0%
2021	All Resources	100	90	90	83	100	145,261	145,261	1,424	386	100.0%
	Salmon	98	76	74	74	86	63,817	63,817	626	170	43.9%
	Non-Salmon Fish	98	62	45	74	93	304	45,288	444	120	31.2%
	Large Land Mammals	93	60	50	55	74	5,665	27,713	272	74	19.1%
	Small Land Mammals	98	88	88	60	69	4,398	4,398	43	12	3.0%
	Marine Mammals						1214	2145	21	6	1.5%
	Migratory Birds	90	10	5	48	90	5	1,389	14	4	1.0%
	Upland Game Birds	33	24	19	19	17	114	380	4	1	0.3%
	Bird Eggs						102	85	1	0	0.1%
	Marine Invertebrates						170	46	0	0	0.0%
	Vegetation	7	0	0	2	7	0	0	0	0	0.0%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 2006 (Magdanz et al. 2011); 2021 (Lamb, Brown, Cold, and Navarro 2024)

Stephen R. Braund & Associates, 2025.

Table 11: Kiana Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Salmon										
2012	Salmon	92	55	51	43	86		16,219	158	37
2013	Salmon	90	72	70	28	78		19,099	205	48
2014	Salmon	93	63	61	41	83		18,205	186	46
Non-Salmon Fish										
2012	Non-Salmon Fish	86	66	62	52	75		41,393	402	94
2013	Non-Salmon Fish	82	64	63	25	52		38,501	414	96
2014	Non-Salmon Fish	85	66	66	44	76		39,239	400	99
Large Land Mammals										
1999	Large Land Mammals	97	68	67	57	81	506	71,351	743	187
2009-10	Large Land Mammals	97	68	67	57	81	506	71,351	743	187
Small Land Mammals										
1999	Small Land Mammals	0	0	13	0	0	21	0	0	0
2009-10	Small Land Mammals	0	0	13	0	0	21	0	0	0
Migratory Birds										
1993	Migratory Birds			43			913	2,185	21	6
1996	Migratory Birds			32			874	2,171	20	5
Upland Birds										
1993	Upland Birds			8			168	167	2	0.4
1996	Upland Birds			15			271	244	2	0.6
Bird Eggs										
1993	Bird Eggs	0	0	0	0	0	0	0	0	0
1993	Bird Eggs			0			0	0	0	0

Notes: Blank cells indicate no data.

Sources: 1993 (Wolfe and Paige 1995); 1996 (Georgette 2000); 1999 (ADF&G 2025); 2009-10 (Braem 2012a); 2012-2014 (Braem et al. 2018)

Stephen R. Braund & Associates, 2025.

Table 12: Kiana Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
1993	Lesser Canada Geese			29			225	895	9	2	
	Northern Pintail			20			191	298	3	1	
	American Wigeon			22			214	281	3	1	
	White-fronted Geese			8			45	189	2	0	

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
	Willow Ptarmigan			8			166	166	2	0	
1996	Lesser Canada Geese			28			204	812	8	2	
	Mallard			21			192	374	4	1	
	Northern Pintail			19			168	261	2	1	
	White-fronted Geese			8			57	240	2	1	
	Willow Ptarmigan			9			184	184	2	0.5	
1999	Caribou	97	68	65	52	75	488	66,316	691	174	
	Moose	30	13	8	6	22	8	4,099	43	11	
	Black Bear	18	18	10	11	8	9	805	8	2	
	Brown Bear	8	11	2	2	6	2	131	1	0	
2006	Caribou	94	62	57			306	41,612	438	109	31.2%
	Chum Salmon	73	61	57			4,604	27,629	291	72	20.7%
	Whitefish	60	44	42			10,834	22,189	234	58	16.7%
	Moose	40	21	14			16	8,629	91	23	6.5%
	Sheefish	64	55	53			1,298	7,140	75	19	5.4%
	Burbot	30	25	27			909	3,819	40	10	2.9%
	Pike	25	21	20			1,043	3,444	36	9	2.6%
	Blueberry	83	70	71			442	2,874	30	8	2.2%
	Coho Salmon	21	14	16			510	2,656	28	7	2.0%
	Bearded Seal	16	7	5			6	2,590	27	7	1.9%
	Beaver	23	23	22			88	1,776	19	5	1.3%
	Dolly Varden	35	27	25			413	1,363	14	4	1.0%
	Sockeye Salmon	10	8	9			270	1,350	14	4	1.0%
	Salmonberry	49	36	36			206	1,342	14	4	1.0%
2009-10	Caribou	77	80	75	54	55	414	56,337	547		
	Moose	16	16	16	12	6	16	8,433	82		
2012	Sheefish	82	62	59	43	69	1,787	20,377	198	46	
	Chum salmon	92	54	48	43	82	2,442	13,878	135	32	
	Broad whitefish	55	35	29	26	42	3,596	11,506	112	26	
	Humpback whitefish	45	29	23	25	35	2,307	4,844	47	11	
	Burbot	35	22	19	14	28	453	1,902	19	4	
2013	Chum salmon	88	70	69	28	76	2,969.2 Ind.	17,577	189	44	
	Sheefish	76	60	57	21	43	1,783	20,328	219	51	
	Broad whitefish	49	39	33	9	25	2,829	9,054	97	23	
	Humpback whitefish	42	36	31	6	19	3,248	6,821	73	17	
	Coho salmon	25	21	18	5	15	161	747	8	2	
2014	Chum salmon	92	62	59	41	79	2,849	17,710	181	45	
	Broad whitefish	51	30	30	20	34	4,113	13,161	134	33	

Study Year	Resource	Percentage of Households: Use	Try to Harvest	Harvest	Give	Receive	Estimated Harvest: Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	Percent of Total Harvest
	Sheefish	83	59	59	32	62	1,073	12,228	125	31	
	Humpback whitefish	35	24	24	16	21	4,570	9,596	98	24	
	Northern pike	23	18	18	7	6	419	1,382	14	4	
2021	Caribou	98	60	43	74	76	295	40,061	393	106	27.6%
	Broad whitefish	55	24	24	31	45	9,165	29,327	288	78	20.2%
	Chum salmon	83	60	50	50	57	4,747	24,558	241	65	16.9%
	Sheefish	95	64	62	64	69	1,200	13,365	131	36	9.2%
	Humpback whitefish	21	17	17	21	14	4,555	9,565	94	25	6.6%
	Moose	50	21	10	29	40	10	5,226	51	14	3.6%
	Northern pike	38	33	31	24	17	1,173	3,871	38	10	2.7%
	Unspecified whitefish	10	7	7	7	7	1,190	2,858	28	8	2.0%
	Least cisco	12	10	10	10	10	2,822	1,975	19	5	1.4%
	Blueberry	93	83	81	38	40	412	1,649	16	4	1.1%
	Pink salmon	19	24	19	12	5	624	1,479	14	4	1.0%
	Bearded seal	36	10	5	26	33	5	1,389	14	4	1.0%

Notes: Blank cells indicate no data.

[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.

[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

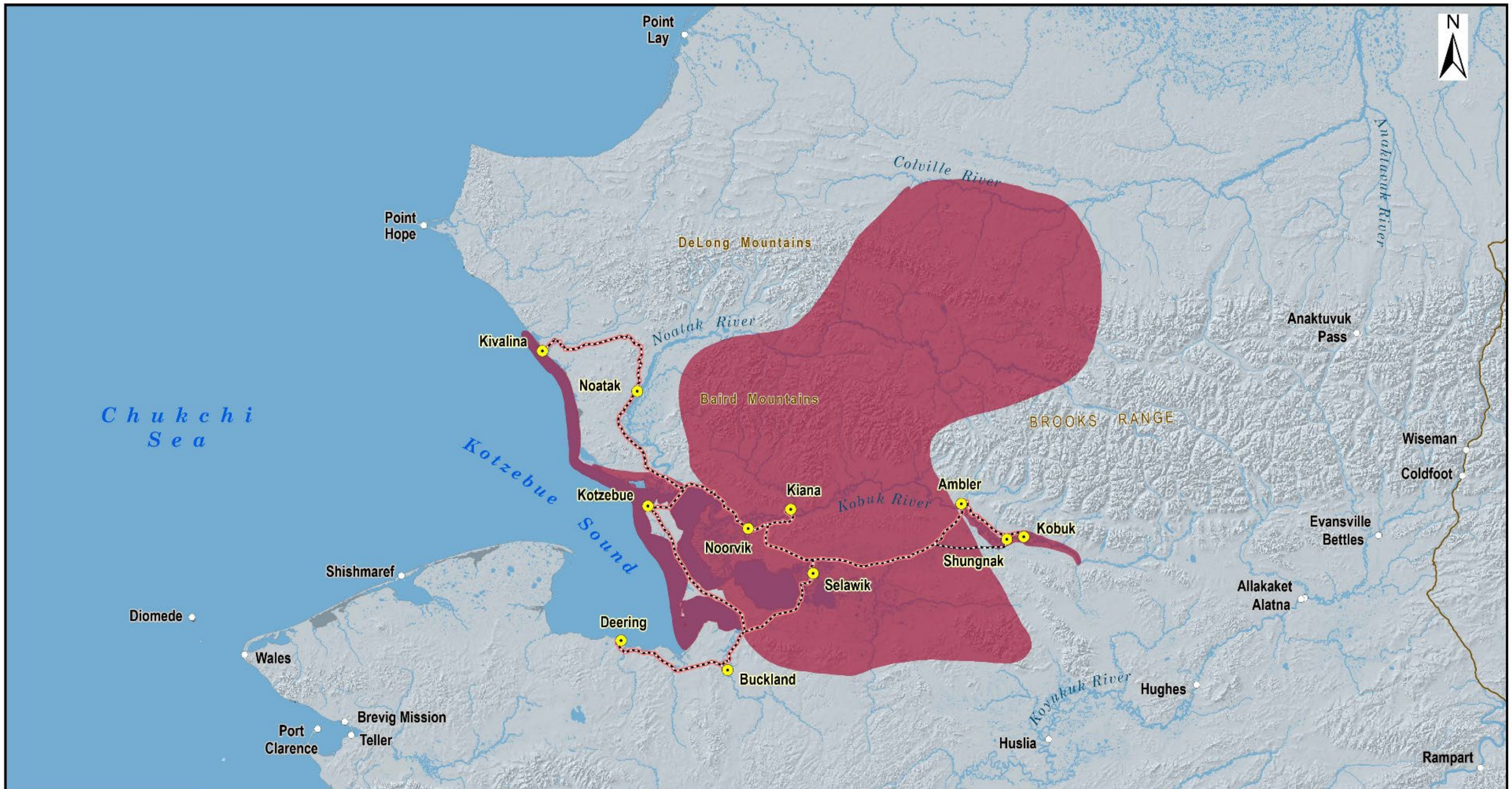
For All Resources study years (1983, 1992, 2005), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

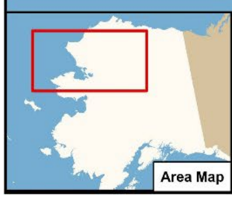
Sources: 1993 (Wolfe and Paige 1995); 1996 (Georgette 2000); 1999 (ADF&G 2025); 2006 (Magdanz et al. 2011); 2009-10 (Braem 2012a); 2012-2014 (Braem et al. 2018); 2021(Lamb et al. 2024)

Stephen R. Braund & Associates, 2025.

4.2. Subsistence Use Areas

Figure 7: Kiana Subsistence Use Areas, All Resources





Kiana Subsistence Use Areas, All Resources [1]

Alternative 1

Alternative 2

Subsistence Study Community

Other Community

0 25 50 100 Miles

[1] **Subsistence Data Sources**
1. Schroeder et al. 1987

Kiana Subsistence Use Areas, All Resources

NANA Region Middle Mile Fiber Optic Project

NANA

Date : 10/2/2025

Scale: 1:2,400,000
1 inch equals 38 mile

FIGURE 4

4.3. Timing of Subsistence Activities

Figure 8: Kiana Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Fish													1980s
Caribou													2020s
Moose													2020s
Bear													1980s
Furbearers & Small Land Mammals													2020s
Marine mammals													2020s
Upland birds													2010s
Waterfowl													2010s
Eggs	No Data												
Marine Invertebrates	No Data												
Plants and Berries													1990s
Wood													1970s
Sources: Alaska Department of Fish and Game (1986); Braem (2012a); Lamb, Brown, Cold, and Navarro (2024)													

5. Kivalina

5.1. Harvest Data

Table 13: Kivalina Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
1964	All Resources						233,376	233,376	8,976	1,341	100.0%
	Salmon						998	997	38	6	0.4%
	Non-Salmon Fish						67,547	67,546	2,598	388	28.9%
	Large Land Mammals						257	36,506	1,404	210	15.6%
	Small Land Mammals						25	9	0	0	0.0%
	Marine Mammals						1071	126641	4871	728	54.3%
	Migratory Birds										
	Upland Game Birds										
	Bird Eggs						496	496	19	3	0.2%
	Marine Invertebrates										
	Vegetation						1180	1180	45	7	0.5%
1965	All Resources						269,497	269,497	10,365	1,549	100.0%
	Salmon						81	81	3	0	0.0%
	Non-Salmon Fish						24,605	24,605	946	141	9.1%
	Large Land Mammals						1,016	144,872	5,572	833	53.8%
	Small Land Mammals						49	9	0	0	0.0%
	Marine Mammals						603	99029	3809	569	36.7%
	Migratory Birds										
	Upland Game Birds						16	11	0	0	0.0%
	Bird Eggs						0	0	0	0	0.0%
	Marine Invertebrates										
	Vegetation						677	677	26	4	0.3%
1982	All Resources						210,074	210,074	4,470	778	100.0%
	Salmon						325	325	7	1	0.2%
	Non-Salmon Fish						48,628	48,628	1,035	180	23.1%
	Large Land Mammals						354	51,517	1,096	191	24.5%
	Small Land Mammals						65	12	0	0	0.0%
	Marine Mammals						386	105908	2253	392	50.4%
	Migratory Birds						323	736	16	3	0.4%
	Upland Game Birds						46	32	1	0	0.0%
	Bird Eggs						106	106	2	0	0.1%
	Marine Invertebrates										
	Vegetation						2764	2764	59	10	1.3%

Study Year	Resource	Percentage of Households: Use	Try to Harvest	Harvest	Give	Receive	Estimated Harvest: Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	Percent of Total Harvest
1983	All Resources						253,841	253,841	5,401	940	100.0%
	Salmon						1,475	1,475	31	5	0.6%
	Non-Salmon Fish						52,756	52,756	1,122	195	20.8%
	Large Land Mammals						572	80,139	1,705	297	31.6%
	Small Land Mammals						122	48	1	0	0.0%
	Marine Mammals						206	116920	2488	433	46.1%
	Migratory Birds						438	1126	24	4	0.4%
	Upland Game Birds						242	160	3	1	0.1%
	Bird Eggs						62	62	1	0	0.0%
	Marine Invertebrates										
	Vegetation						1093	1093	23	4	0.4%
1992	All Resources	100	98	98	90	98	261,765	261,765	3,636	761	100.0%
	Salmon	63	44	42	37	37	937	5,081	71	15	1.9%
	Non-Salmon Fish	100	95	95	73	92	81,987	81,987	1,139	239	31.3%
	Large Land Mammals	97	77	74	58	74	371	56,798	789	165	21.7%
	Small Land Mammals	44	45	36	26	21	72	5	0	0	0.0%
	Marine Mammals	95	79	71	69	94	347	109339	1519	318	41.8%
	Migratory Birds	81	74	71	48	39	1,564	2,361	33	7	0.9%
	Upland Game Birds	52	47	42	32	16	637	446	6	1	0.2%
	Bird Eggs	68	40	39	32	50	3866	820	11	2	0.3%
	Marine Invertebrates	5	5	5	0	2	25	25	0	0	0.0%
	Vegetation	95	89	89	58	53	4,823	4,823	67	14	1.8%
2007	All Resources	100	95	95	90	100	61,559	261,366	3,227	608	100.0%
	Salmon	50	31	31	31	33	613	3,331	41	8	1.3%
	Non-Salmon Fish	93	86	86	79	83	53,770	75,189	928	175	28.8%
	Large Land Mammals	93	64	64	69	76	274	38,733	478	90	14.8%
	Small Land Mammals	31	26	19	10	14	26	39	0	0	0.0%
	Marine Mammals	93	76	69	74	88	351	131653	1625	306	50.4%
	Migratory Birds	81	67	64	50	64	1,101	3,233	40	8	1.2%
	Upland Game Birds	29	17	17	14	12	233	228	3	1	0.1%
	Bird Eggs	76	48	45	43	57	3384	820	10	2	0.3%
	Marine Invertebrates	7	5	5	5	5	41	85	1	0	0.0%
	Vegetation	90	69	69	55	64	1,764	8,051	99	19	3.1%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
Sources: 1964, 1965, 1982, 1983 (ADF&G 2025); 1992 (Fall and Utermohle 1995); 2007 (Magdanz, Braem, Robbins, and Koster 2010)											

Stephen R. Braund & Associates, 2025.

Table 14: Kivalina Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Large Land Mammals										
2010-11	Large Land Mammals	83	70	33	52	76	99	18,574	206	51
Small Land Mammals										
2010-11	Small Land Mammals	16	17	13	11	3	27	0	0	0
Migratory Birds										
1996	Migratory Birds			55			376	1,085	16	3
Upland Birds										
1996	Upland Birds			3			42	42	1	0
Eggs										
1996	Bird Eggs			33			1,413	424	6	1
Notes: Blank cells indicate no data. Sources: 1996 (Georgette 2000); 2010-11 (Braem and Kostick 2014)										

Stephen R. Braund & Associates, 2025.

Table 15: Kivalina Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
1964	Char						65,797	65,796	2,531	378	28.2%
	Ringed Seal						908	65,728	2,528	378	28.2%
	Bearded Seal						153	51,355	1,975	295	22.0%
	Caribou						256	36,338	1,398	209	15.6%
	Belukha						6	9,150	352	53	3.9%
1965	Caribou						1,010	144,434	5,555	830	53.6%
	Bearded Seal						119	41,044	1,579	236	15.2%

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
	Ringed Seal						467	35,447	1,363	204	13.2%
	Char						19,698	19,698	758	113	7.3%
	Belukha						12	18,690	719	107	6.9%
	Saffron Cod						4,869	4,869	187	28	1.8%
	Walrus						3	3,270	126	19	1.2%
1982	Char						48,341	48,341	1,029	179	23.0%
	Caribou						346	48,202	1,026	179	22.9%
	Bearded Seal						134	45,760	974	169	21.8%
	Belukha						27	43,050	916	159	20.5%
	Ringed Seal						172	13,070	278	48	6.2%
	Walrus						51	3,825	81	14	1.8%
	Moose						6	3,060	65	11	1.5%
	Berries						2,639	2,639	56	10	1.3%
1983	Caribou						564	76,652	1,631	284	30.2%
	Char						47,927	47,927	1,020	178	18.9%
	Belukha						28	44,910	956	166	17.7%
	Bowhead						1	39,600	843	147	15.6%
	Bearded Seal						60	19,862	423	74	7.8%
	Ringed Seal						109	7,066	150	26	2.8%
	Walrus						4	3,600	77	13	1.4%
	Saffron Cod						3,009	3,009	64	11	1.2%
	Moose						6	2,970	63	11	1.2%
1992	Dolly Varden	100	87	87	65	65	21,149	69,793	969	203	26.7%
	Bearded Seal	90	66	63	45	47	139	53,832	748	157	20.6%
	Caribou	97	77	74	53	68	351	47,539	660	138	18.2%
	Walrus	76	45	37	37	60	28	21,201	294	62	8.1%
	Bowhead	90	65	5	48	89	1	13,250	184	39	5.1%
	Belukha	87	61	26	50	69	10	10,007	139	29	3.8%
	Moose	47	31	23	31	31	17	9,059	126	26	3.5%
	Ringed Seal	50	44	42	27	21	110	7,562	105	22	2.9%
	Berries	95	84	84	53	37	710	4,612	64	13	1.8%
	Chum Salmon	61	44	40	34	34	681	4,178	58	12	1.6%
	Humpback Whitefish	53	42	36	29	24	2,377	4,160	58	12	1.6%
	Saffron Cod	79	74	74	31	24	4,453	3,117	43	9	1.2%
	Arctic Cod	82	77	77	40	23	27,077	2,978	41	9	1.1%
1996	Brant			39			194	443	6	1	
	Common Murre Eggs			21			1,286	386	6	1	
	Lesser Canada Geese			18			73	291	4	1	

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
	White-fronted Geese			9			29	124	2	0	
	Common Eider			9			21	87	1	0	
2007	Bearded Seal	83	64	62	67	64	229	96,188	1,188	224	36.8%
	Trout	93	81	81	67	64	20,527	67,739	836	158	25.9%
	Caribou	93	64	64	67	69	268	36,458	450	85	13.9%
	Belukha	88	52	38	45	76	42	28,285	349	66	10.8%
	Saffron Cod	81	74	74	64	38	25,824	5,294	65	12	2.0%
	Ringed Seal	48	36	33	31	29	71	5,280	65	12	2.0%
	Salmonberry	88	62	62	50	52	490	3,184	39	7	1.2%
2010-11	Caribou	79	67	29	51	73	86	11,657	130	32	
	Moose	49	35	13	22	43	13	6,917	77	19	

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

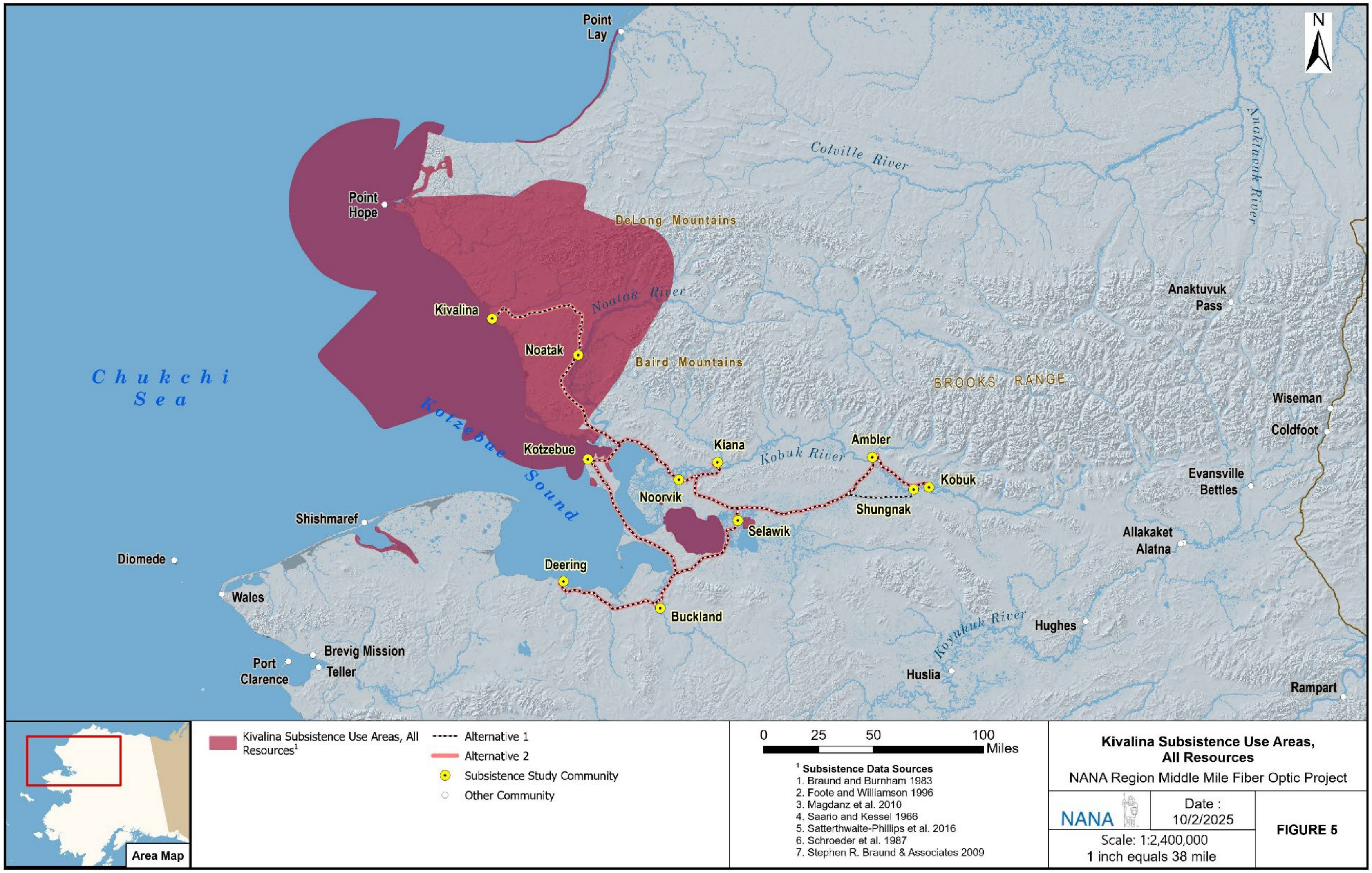
For All Resources study years (1994, 2007), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

Sources: 1964, 1965, 1982, 1983 (ADF&G 2025); 1992 (Fall and Utermohle 1995); 1996 (Georgette 2000); 2007 (Magdanz et al. 2010); 2010-11 (Braem and Kostick 2014)

Stephen R. Braund & Associates, 2025.

5.2. Subsistence Use Areas

Figure 9: Kivalina Subsistence Use Areas, All Resources


Point Lay
Point Hope
DeLong Mountains
Colville River
Anaktuvuk River
Noatak River
Kivalina
Noatak
Baird Mountains
BROOKS RANGE
Anaktuvuk Pass
Chukchi Sea
Kotzebue Sound
Kotzebue
Kiana
Kobuk River
Ambler
Kobuk
Shungnak
Noorvik
Selawik
Wiseman
Coldfoot
Evansville
Bettles
Allakaket
Alatna
Shishmaref
Diomede
Wales
Deering
Buckland
Koyukuk River
Hughes
Huslia
Brevig Mission
Port Clarence
Teller
Rampart
N
Area Map
Kivalina Subsistence Use Areas, All Resources[1]
Alternative 1
Alternative 2
Subsistence Study Community
Other Community
0 25 50 100 Miles
[1] Subsistence Data Sources
1. Braund and Burnham 1983
2. Foote and Williamson 1996
3. Magdanz et al. 2010
4. Saario and Kessel 1966
5. Satterthwaite-Phillips et al. 2016
6. Schroeder et al. 1987
7. Stephen R. Braund & Associates 2009
Kivalina Subsistence Use Areas, All Resources
NANA Region Middle Mile Fiber Optic Project
NANA
Date : 10/2/2025
Scale: 1:2,400,000
1 inch equals 38 mile
FIGURE 5

5.3. Timing of Subsistence Activities

Figure 10: Kivalina Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Non-Salmon Fish													2000s
Salmon													2000s
Caribou													2010s
Moose													2000s
Other Large Land Mammals													2000s
Furbearers and Small land mammals													2000s
Marine mammals													2000s
Upland birds													2000s
Waterfowl													2000s
Eggs													2000s
Berries													2000s
Plants and Wood													2000s

Sources: Braund and Burnham (1983); SRB&A (2005); SRB&A (2009); Magdanz et al. (2010)

6. Kobuk

6.1. Harvest Data

Table 16: Kobuk Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
2012	All Resources	100	100	100	90	100		50,743	1,410	309	100.0%
	Salmon	93	67	67	57	80		15,142	421	92	29.8%
	Non-Salmon Fish	93	80	80	53	70		13,850	385	84	27.2%
	Large Land Mammals	97	73	60	60	80		18,321	509	111	36.1%
	Small Land Mammals	40	40	37	27	17		663	18	4	1.3%
	Marine Mammals	63	0	0	23	63		0	0	0	0.0%
	Migratory Birds	73	40	40	40	57		1,625	45	10	3.2%
	Upland Game Birds	63	50	50	37	33		155	4	1	0.3%
	Bird Eggs	0	0	0	0	0		0	0	0	0.0%
	Marine Invertebrates	0	0	0	0	0		0	0	0	0.0%
	Vegetation	100	87	67	67	80		986	27	6	1.9%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 2012 (Braem et al. 2015).

Stephen R. Braund & Associates, 2025.

Table 17: Kobuk Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Salmon										
2013	Salmon	92	67	58	33	54		12,148	392	85
2014	Salmon	68	57	54	29	36		11,454	347	76
Non-Salmon Fish										
2013	Non-Salmon Fish	96	92	88	54	54		49,952	1611	348
2014	Non-Salmon fish	100	89	89	64	71		14,244	432	94
Large Land Mammals										
2004	Large Land Mammals	93	89	68	50	89	154	23,116	826	188
2009	Large Land Mammals	89	89	86	75	68	224	32,415	982	220
Small Land Mammals										
2004	Small Land Mammals	4	4	4	0	0	2	0	0	0
2009	Small Land Mammals	43	36	36	18	25	47	0	0	0
Migratory Birds										
1996	Migratory Birds			56			710	1,937	77	19
Upland Birds										

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
1996	Upland Game Birds			20			83	83	3	1
Bird Eggs										
1996	Bird Eggs			0			0	0	0	0

Notes: Blank cells indicate no data.

Sources: 1996 (Georgette 2000); 2004 (ADF&G 2025); 2009-10 (Braem 2012a); 2013 (Braem 2012a); 2014 (Braem et al. 2018)

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Table 18: Kobuk Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				% of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Number[1]	Total Lbs	Average HH Lbs	Per Capita Lbs	
1996	White-fronted Geese		40			145	615	25	6		
1996	Lesser Canada Geese		44			130	517	21	5		
1996	Mallard		44			123	240	10	2		
1996	Northern Pintail		44			128	200	8	2		
1996	Cacklers		12			52	121	5	1		
2004	Caribou	89	82	61	46	64	134	18,224			
2004	Moose	64	68	21	21	61	7	3,766			
2004	Black Bear	50	64	21	21	36	9	774			
2004	Brown Bear	32	61	14	11	25	4	352			
2004	Wolf	4	4	4	0	0	1	0			
2009	Caribou	86	86	82	68	50	210	28,531			
2009	Moose	29	36	18	14	25	6	3,170			
2009	Beaver	32	25	25	11	18	28	0			
2009	Red Fox	14	14	7	4	7	9	0			
2009	Brown Bear	18	18	18	18	4	6	507			
2012	Caribou	93	67	57	57	73	119	16,173	449	98	31.8%
2012	Chum Salmon	90	67	67	53	73	2,637	14,988	416	91	29.5%
2012	Sheefish	90	73	73	43	53	1,062	11,833	329	72	23.3%
2012	Moose	50	30	10	13	43	4	1,937	54	12	3.8%
2012	Broad Whitefish	23	13	13	7	13	286	914	25	6	1.8%
2012	Beaver	27	23	20	17	10	56	624	18	4	1.2%
2013	Chum salmon	92	67	58	33	54	2,043	12,097	390	84	
2013	Sheefish	92	83	79	38	25	865	9,866	318	69	
2013	Broad whitefish	46	33	33	13	21	1,337	4,278	138	30	
2013	Humpback whitefish	50	42	42	13	25	1,382	2,903	94	20	
2013	Northern pike	46	38	38	4	8	61	200	7	1	
2014	Sheefish	100	86	86	46	50	781	8,898	270	59	

Study Year	Resource	Percentage of Households					Estimated Harvest				% of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Number[1]	Total Lbs	Average HH Lbs	Per Capita Lbs	
	Humpback whitefish	57	46	46	46	50	2,251	4,727	143	31	
	Chum salmon	68	57	54	29	36	1,840	11,436	347	76	
	Arctic grayling	57	50	50	19	22	231	208	6	1	
	Northern pike	36	32	32	4	14	55	181	6	1	

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

For All Resources study years (2012), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

Sources: 1996 (Georgette 2000); 2004 (ADF&G 2025); 2009-10 (Braem 2012a); 2012 (Braem et al. 2015); 2013 (Braem et al. 2018); 2014 (Braem et al. 2018)

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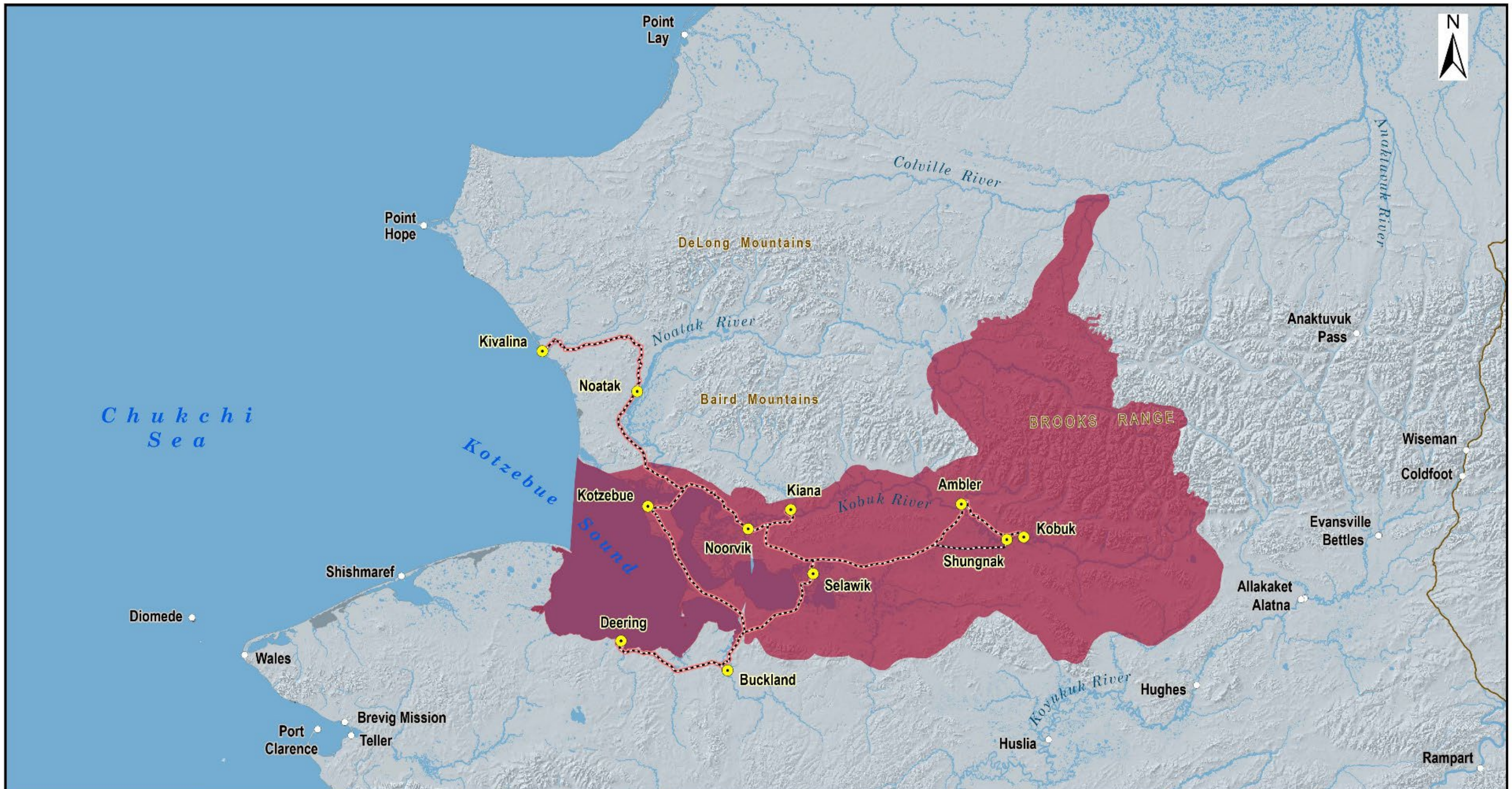
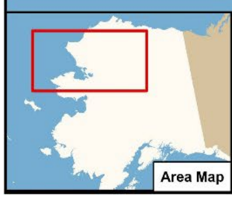
6.2. Subsistence Use Areas

Figure 11: Kobuk Subsistence Use Areas, All Resources





Kobuk Subsistence Use Areas, All Resources [1]

Alternative 1

Alternative 2

Subsistence Study Community

Other Community

0 25 50 100 Miles

[1] **Subsistence Data Sources**
1. Braem et al. 2015
2. Schroeder et al. 1987
3. Watson 2018

Kobuk Subsistence Use Areas, All Resources

NANA Region Middle Mile Fiber Optic Project

NANA

Date : 10/2/2025

Scale: 1:2,400,000
1 inch equals 38 mile

FIGURE 6

6.3. Timing of Subsistence Activities

Figure 12: Kobuk Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Fish													1970s
Caribou													2010s
Moose													2010s
Bear													2010s
Sheep	No Data												
Furbearers & Small Land Mammals													2010s
Marine mammals													
Upland birds													1970s
Waterfowl													1970s
Eggs	No Data												
Marine Invertebrates	No Data												
Plants and Berries													1970s
Wood													1970s

Sources: Anderson, Anderson, Bane, Nelson, and Towarak (1998) (Data are for "Lower Kobuk" and are only included for resources where no other data are available); Braem (2012a); Braem, Mikow, Wilson, and Kostick (2015)

7. Kotzebue

7.1. Harvest Data

Table 19: Kotzebue Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
1986	All Resources	100	78	78	72	96		1,067,280	1,395	398	100.0%
	Salmon	85	51	49	30	44	32,128	195,981	256	73	18.4%
	Non-Salmon Fish	86	72	72	51	71	206,250	236,479	309	88	22.2%
	Large Land Mammals	88	51	49	48	67	2,027	299,709	392	112	28.1%
	Small Land Mammals	45	21	17	10	32	1994	3643	5	1	0.3%
	Marine Mammals	64	23	18	24	60	1231	293114	383	109	27.5%
	Migratory Birds	52	39	39	20	17	6259	13869	18	5	1.3%
	Upland Game Birds	41	34	32	13	16	3097	2168	3	1	0.2%
	Bird Eggs	16	8	8	7	8	6577	1250	2	0	0.1%
	Marine Invertebrates	13	3	3	2	11	1248	315	0	0	0.0%
	Vegetation	81	58	58	25	41		20739	27	8	1.9%
1991	All Resources	99	97	95	84	94		2,163,033	2,674	593	100.0%
	Salmon	90	53	51	42	68	45,489	274,202	339	75	12.7%
	Non-Salmon Fish	96	84	83	65	80		593,152	733	163	27.4%
	Large Land Mammals	94	72	67	61	72	4,065	644,967	797	177	29.8%
	Small Land Mammals	28	18	17	8	15	2,273	2,511	3	1	0.1%
	Marine Mammals	77	40	37	43	72		575419	711	158	0
	Migratory Birds	50	37	35	20	23	5,501	6,371	8	2	0.3%
	Upland Game Birds	54	44	42	29	16	7977	5584	7	2	0
	Bird Eggs	24	19	17	9	8	5275	852	1	0	0
	Marine Invertebrates	27	7	7	5	23	723	722	1	0	0
	Vegetation	92	85	84	52	58		59,207	73	16	2.7%
2014	All Resources	99	88	86	82	96		606,003	734	203	100.0%
	Salmon	90	45	44	46	69		137,586	167	46	22.7%
	Non-Salmon Fish	93	65	63	59	78		115,534	140	39	19.1%
	Large Land Mammals	89	44	33	53	81		222,115	269	74	36.7%
	Small Land Mammals	13	9	8	2	7		531	1	0	0.1%
	Marine Mammals	78	15	12	41	77		91,033	110	31	15.0%
	Migratory Birds	41	18	17	18	30		10,218	12	3	1.7%
	Upland Game Birds	17	14	12	8	7		954	1	0	0.2%
	Bird Eggs	34	14	13	14	24		1,698	2	1	0.3%
	Marine Invertebrates	44	7	7	11	39		10487	13	4	1.7%

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
	Vegetation	89	74	74	41	51		15,848	19	5	2.6%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 1986 (Georgette and Loon 1993); 1991 (Magdanz et al. 1995); 2014 (Braem et al. 2017)

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Table 20: Kotzebue Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Large Land Mammals										
2012-13	Large Land Mammals	85	46	40	51	69	1,887	284,825	349	93
2013-14	Large Land Mammals	87	45	35	44	76	1,769	269,624	323	88
Small Land Mammals										
2012-13	Small Land Mammals	3	4	4	1	0	53	0	0	0
2013-14	Small Land Mammals	6	6	2	2	4	39	0	0	0
Migratory Birds										
1997	Migratory Birds			58			8,048	22,479	29	7
2012	Migratory Birds						2,999	7,765		
Upland Birds										
1997	Upland Birds			37				5,530	7	2
2012	Upland Birds						1,438	1,436		
Eggs										
1997	Bird Eggs			24			6,837	1,990	3	1
2012	Bird Eggs						5,896			

Notes: Blank cells indicate no data.

Sources: 1997 (Georgette 2000); 2012 (Naves and Braem 2014); 2012-13 (Godduhn et al. 2014); 2013-14 (Mikow and Kostick 2016)

Stephen R. Braund & Associates, 2025.

Table 21: Kotzebue Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
1986	Caribou	88	50	45	40	58	1,917	260,645	341	97	24.4%
	Bearded Seal	47	20	15	14	34	443	185,871	243	69	17.4%
	Sheefish	76	45	43	33	50	23,742	130,580	171	49	12.2%
	Moose	42	27	8	7	34	65	34,721	45	13	3.3%
	Ringed Seal	17	10	10	5	7	440	32,580	43	12	3.1%
	Trout	59	38	33	16	29	7,503	24,759	32	9	2.3%
	Belukha	19	13	3	5	17	20	20,165	26	8	1.9%
	Spotted Seal	9	7	6	3	3	201	19,737	26	7	1.8%
	Berries	81	57	57	21	40	19,139	19,139	25	7	1.8%
	Pike	43	31	30	12	17	5,750	18,976	25	7	1.8%
	Whitefish	55	21	21	9	39	9,594	16,789	22	6	1.6%
	Saffron Cod	43	32	31	22	13	67,233	14,119	18	5	1.3%
	Walrus	5	5	1	2	5	15	11,807	15	4	1.1%
	Flounder	10	7	7	1	2	10,678	11,746	15	4	1.1%
1991	Caribou	93	70	63	59	62	3,782	514,362	636	141	23.8%
	Sheefish	85	60	60	47	50	77,571	426,642	527	117	19.7%
	Bearded Seal	63	36	32	34	39	963	404,338	500	111	18.7%
	Chum Salmon	86	51	49	40	63	44,283	266,586	330	73	12.3%
	Moose	62	33	27	23	45	235	126,220	156	35	5.8%
	Ringed Seal	28	16	16	13	13	914	67,649	84	19	3.1%
	Dolly Varden [3]	79	43	42	33	56	20,165	66,543	82	18	3.1%
	Berries	92	84	83	48	54	8,664	56,319	70	15	2.6%
	Spotted Seal	12	9	9	8	4	251	24,577	30	7	1.1%
	Saffron Cod	66	56	56	42	26	101,900	21,399	26	6	1.0%
	Herring	45	36	35	24	17	3,562	21,371	26	6	1.0%
1997	Canada Geese			51			2,462	7,719	10	2	
	White-fronted Geese			25			1,421	6,027	8	2	
	Willow Ptarmigan			37			5,288	5,288	7	2	
	Mallard			20			997	1,944	3	1	
	Northern Pintail			20			868	1,355	2	0	
2012	Cackling/Canada goose						596	2,038			
	Ptarmigan						1,430	1,430			
	Black brant						596	1,359			
	Greater white-fronted goose						287	1,217			
	Northern pintail						464	724			
2012-13	Caribou	82	44	39	49	59	1,804	245,287	301	80	
	Moose	37	18	9	12	29	72	38,569	47	13	

Study Year	Resource	Percentage of Households: Use	Try to Harvest	Harvest	Give	Receive	Estimated Harvest: Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	Percent of Total Harvest
	Brown Bear	2	2	1	0	1	11	969	1	0	
2013-14	Caribou	84	43	34	42	71	1,680	228,438	274	75	
	Moose	44	15	8	15	36	74	39,837	48	13	
	Brown bear	2	3	1	1	1	12	1,006	1	0	
	Black bear	1	2	1	1	1	4	343	0	0	
2014	Caribou	84	39	29	47	72	1,286	174,823	212	59	28.8%
	Chum Salmon	83	43	42	41	58	21,144	131,432	159	44	21.7%
	Sheefish	84	57	52	44	55	17,322	95,270	115	32	15.7%
	Bearded Seal	55	13	11	28	47	65,131	65,131	79	22	10.7%
	Moose	52	22	9	22	46	81	43,608	53	15	7.2%
	Spotted Seal	9	3	2	5	7	143	13,996	17	5	2.3%
	King Crab	44	7	7	11	39	4,941	10,487	13	4	1.7%
	Blueberry	83	67	66	29	36	1,758	7,032	9	2	1.2%
	Dolly Varden	44	19	18	14	32	2,116	6,983	9	2	1.2%

Notes: Blank cells indicate no data.

[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.

[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

[3]Referred to in some studies as char or trout

For All Resources study years (1986, 1991, 2014), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

Sources: 1986 (Georgette and Loon 1993); 1991 (Magdanz et al. 1995); 1997 (Georgette 2000); 2012 (Naves and Braem 2014); 2012-13 (Godduhn et al. 2014); 2013-14 (Mikow and Kostick 2016); 2014 (Braem et al. 2017)

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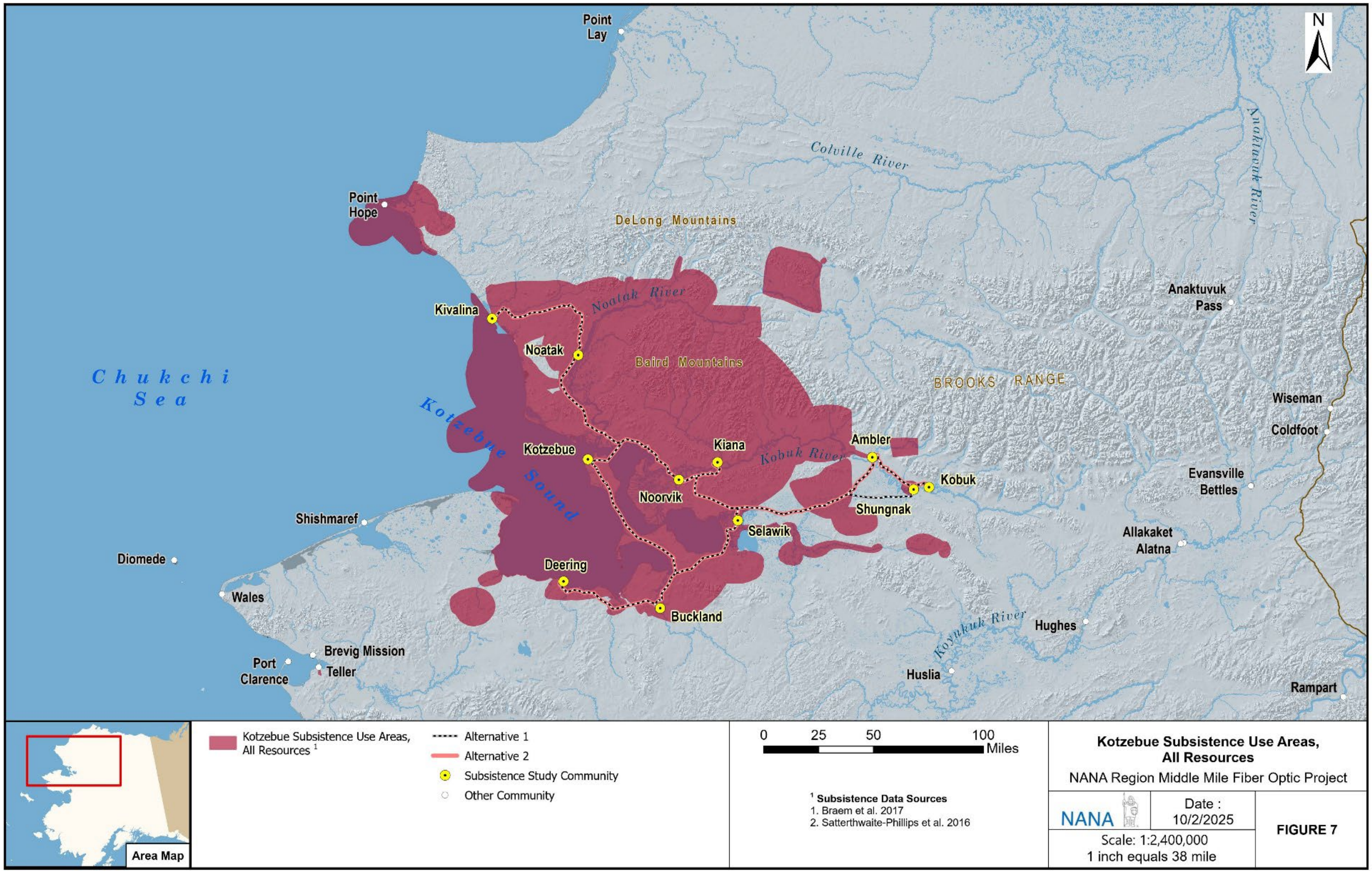
7.2. Subsistence Use Areas

Figure 13: Kotzebue Subsistence Use Areas, All Resources



[1] Subsistence Data Sources
1. Braem et al. 2017
2. Satterthwaite-Phillips et al. 2016

Kotzebue Subsistence Use Areas, All Resources

NANA Region Middle Mile Fiber Optic Project

NANA

Date : 10/2/2025

Scale: 1:2,400,000
1 inch equals 38 mile

FIGURE 7

7.3. Timing of Subsistence Activities

Figure 14: Kotzebue Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Non-Salmon Fish													1980s
Salmon													1980s
Caribou													2010s
Moose													2010s
Bear													2010s
Other Large Land Mammals													2010s
Furbearers and Small Land Mammals													2010s
Marine Mammals													2010s
Upland birds													2000s
Waterfowl													2000s
Eggs													2000s
Marine Invertebrates	No Data												2000s
Berries													1980s
Plants and Wood													1980s
Sources: Georgette and Loon (1993); SRB&A (2005); Godduhn, Braem, and Kostick (2014); Mikow and Kostick (2016); Braem et al. (2018)													

8. Noatak

8.1. Harvest Data

Table 22: Noatak Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
1994	All Resources	93	93	93	87	84	174,851	174,851	2,082	461	100.0%
	Salmon	62	62	69	47	37	7,613	45,564	542	120	26.1%
	Non-Salmon Fish	82	81	87	79	69	22,504	22,504	268	59	12.9%
	Large Land Mammals	84	84	91	71	54	619	85,099	1,013	224	48.7%
	Small Land Mammals	15	12	21	10	9	41	0	0	0	0.0%
	Marine Mammals	27	18	56	32	53	40	18078	215	48	10.3%
	Migratory Birds	41	40	49	19	16	482	1469	17	4	0.8%
	Upland Game Birds	18	18	22	10	13	210	210	3	1	0.1%
	Bird Eggs	7	7		0	0	116	19	0	0	0.0%
	Marine Invertebrates	3	3	6	3	4	69	69	1	0	0.0%
	Vegetation	79	79	81	34	43	1838	1838	22	5	1.1%
2007	All Resources	100	97	97	96	100	27,856	191,513	1,609	364	100.0%
	Salmon	94	79	77	71	77	4,630	26,686	224	51	13.9%
	Non-Salmon Fish	92	83	80	78	88	18,844	49,890	419	95	26.1%
	Large Land Mammals	98	74	66	78	92	464	67,152	564	128	35.1%
	Small Land Mammals	21	21	16	12	10	91	291	2	1	0.2%
	Marine Mammals	91	22	22	73	91	80	35352	297	67	0
	Migratory Birds	59	44	38	39	42	1,120	2,867	24	5	1.5%
	Upland Game Birds	30	23	17	14	21	221	209	2	0	0
	Bird Eggs	36	29	28	22	18	906	231	2	0	0
	Marine Invertebrates	1	0	0	1	1	0	0	0	0	0
	Vegetation	99	90	89	86	84	1,500	8,834	74	17	4.6%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 1994 (ADF&G 2025); 2007 (Magdanz et al. 2010)

Table 23: Noatak Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Percentage of Households					Estimated Harvest			
	Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Salmon									

Study Year	Percentage of Households					Estimated Harvest			
	Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
2012	93	84	78	57	59		48,023	381	80
2013	93	79	77	57	69		39,304	314	73
2014	95	83	82	62	70		51,169	409	93
Non-Salmon Fish									
2012	96	77	70	58	84		29,307	233	49
2013	97	80	50	65	85		18,057	145	34
2014	91	74	74	60	73		38,261	306	69
Large Land Mammals									
1999	96	74	72	62	63	691	95,553	965	230
2002	94	76	71	63	72	414	57,707	571	124
2010-11	81	45	23	32	74	87	14,899	130	27
2011-12	96	65	52	54	84	380	56,869	455	104
2016-17	97	70	52	57	85	348	50,824	397	89
Small Land Mammals									
1999	0	0	8	0	0	38	0	0	0
2002	5	5	5	0	0	16	0	0	0
2010-11	9	10	8	4	4	18	0	0	0
2011-12	20	25	14	5	8	64	212	2	0
2016-17	1	6	1	1	1	1	0	0	0
Migratory Birds									
1997	55				656	1,813	19	4	
Upland Birds									
1997		18				380	377	4	1
Eggs									
1997		24				569	159	2	0

Notes: Blank cells indicate no data.

Sources: 1997 (Georgette 2000); 1999, 2002 (ADF&G 2025); 2010-11 (Braem and Kostick 2014); 2011-12 (Mikow et al. 2014); 2012-2014 (Braem et al. 2018); 2016-17 (Gonzalez et al. 2018)

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Table 24: Noatak Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
1994	Caribou	84	84	91	71	50	615	83,664	996	221	47.8%
	Chum Salmon	60	60	68	46	35	7,198	43,190	514	114	24.7%
	Dolly Varden	81	79	87	75	38	4,629	15,276	182	40	8.7%

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
	Bearded Seal	24	18	44	25	32	36	14,142	168	37	8.1%
	Humpback Whitefish	18	16	22	16	10	1,684	3,537	42	9	2.0%
	Belukha	7	6	18	13	15	3	2,985	36	8	1.7%
	Berries	59	59	66	28	37	256	1,666	20	4	1.0%
1997	Canada Geese		47				214	814	8	2	
	White-fronted Geese		16				82	346	4	1	
	Willow Ptarmigan		18				329	329	3	1	
	Mallard		16				100	194	2	0	
	Northern Pintail		21				107	167	2	0	
1999	Caribou	96	74	72	61	62	683	92,902	938	224	
	Moose	18	4	3	4	14	4	2,367	24	6	
	Brown Bear	2	2	2	2	0	3	284	3	1	
	Black Bear	1	0	0	0	1	0	0	0	0	
	Wolf			4			15	0	0	0	
2002	Caribou	91	76	71	61	64	410	55,733	552	120	
	Moose	22	8	3	6	20	3	1,874	19	4	
	Brown Bear	2	1	1	1	1	1	100	1	0	
	Wolf	2	2	2	0	0	7	0	0	0	
	Wolverine	-9	2	2	-9	-9	9	0	0	0	
2007	Caribou	97	73	66	78	88	442	60,061	505	114	31.4%
	Trout	91	83	78	72	78	10,234	32,180	270	61	16.8%
	Bearded Seal	81	20	20	54	79	60	24,990	210	47	13.0%
	Chum Salmon	93	78	76	71	74	4,167	24,724	208	47	12.9%
	Whitefish	61	39	38	37	54	6,778	14,234	120	27	7.4%
	Belukha	81	8	4	60	81	8	7,633	64	15	4.0%
	Moose	46	16	9	27	46	11	5,691	48	11	3.0%
	Blueberry	99	88	88	81	72	657	4,268	36	8	2.2%
	Salmonberry	92	69	68	69	71	410	2,666	22	5	1.4%
	Walrus	23	2	1	13	23	3	1,851	16	4	1.0%
2010-11	Caribou	56	21	21	4	45	66	8,937	78	16	
	Moose	27	12	5	9	23	9	4,821	42	9	
	Dall Sheep	6	3	3	3	5	7	747	6	1	
	Brown Bear	3	3	3	1	0	4	394	3	1	
	Wolf	6	8	4	1	1	6	0	0	0	
2011-12	Caribou	95	62	50	51	78	360	48,918	391	90	
	Moose	32	24	9	13	25	14	7,310	59	13	
	Dall sheep	5	3	2	1	3	4	408	3	1	
	Brown bear	7	8	2	0	4	3	234	2	0	

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
	Beaver	12	15	9	3	4	30	212	2	0	
2012	Chum salmon	93	84	78	57	55	7,814	44,406	352	74	
	Dolly Varden	95	77	68	56	76	6,054	19,978	159	33	
	Broad whitefish	28	17	17	17	19	1,826	5,844	46	10	
	Coho salmon	5	4	4	2	2	612	2,969	24	5	
	Humpback whitefish	11	10	10	5	8	1,205	2,531	20	4	
2013	Chum salmon	90	77	75	55	66	5,655	33,477	268	62	
	Dolly Varden	97	77	43	60	81	3,220	10,627	85	20	
	Broad whitefish	52	38	25	30	30	1,924	6,157	49	12	
	Coho salmon	34	26	25	21	17	1,233	5,704	46	11	
	Humpback whitefish	9	7	7	6	2	337	708	6	1	
2014	Chum salmon	88	77	76	59	61	6,577	40,881	327	74	
	Dolly Varden	87	72	71	54	64	9,289	30,655	245	55	
	Coho salmon	29	23	22	16	18	1,859	9,554	76	17	
	Broad whitefish	23	18	17	10	13	879	2,811	23	5	
	Humpback whitefish	12	10	10	8	9	1,165	2,447	20	4	
2016-17	Caribou	96	70	51	56	84	337	45,783	358	80	
	Moose	24	15	6	9	24	9	4,821	38	8	
	Brown bear	2	3	2	0	0	3	220	2	0	
	Wolf	1	6	1	1	1	1	0	0	0	
	Wolverine	0	5	0	0	0	0	0	0	0	

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

For All Resources study years (1994, 2007), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

Sources: 1994 (ADF&G 2025); 1997 (Georgette 2000); 1999, 2002 (ADF&G 2025); 2007 (Magdanz et al. 2010); 2010-11 (Braem and Kostick 2014); 2011-12 (Mikow et al. 2014); 2012-2014 (Braem et al. 2018); 2016-17 (Gonzalez et al. 2018)

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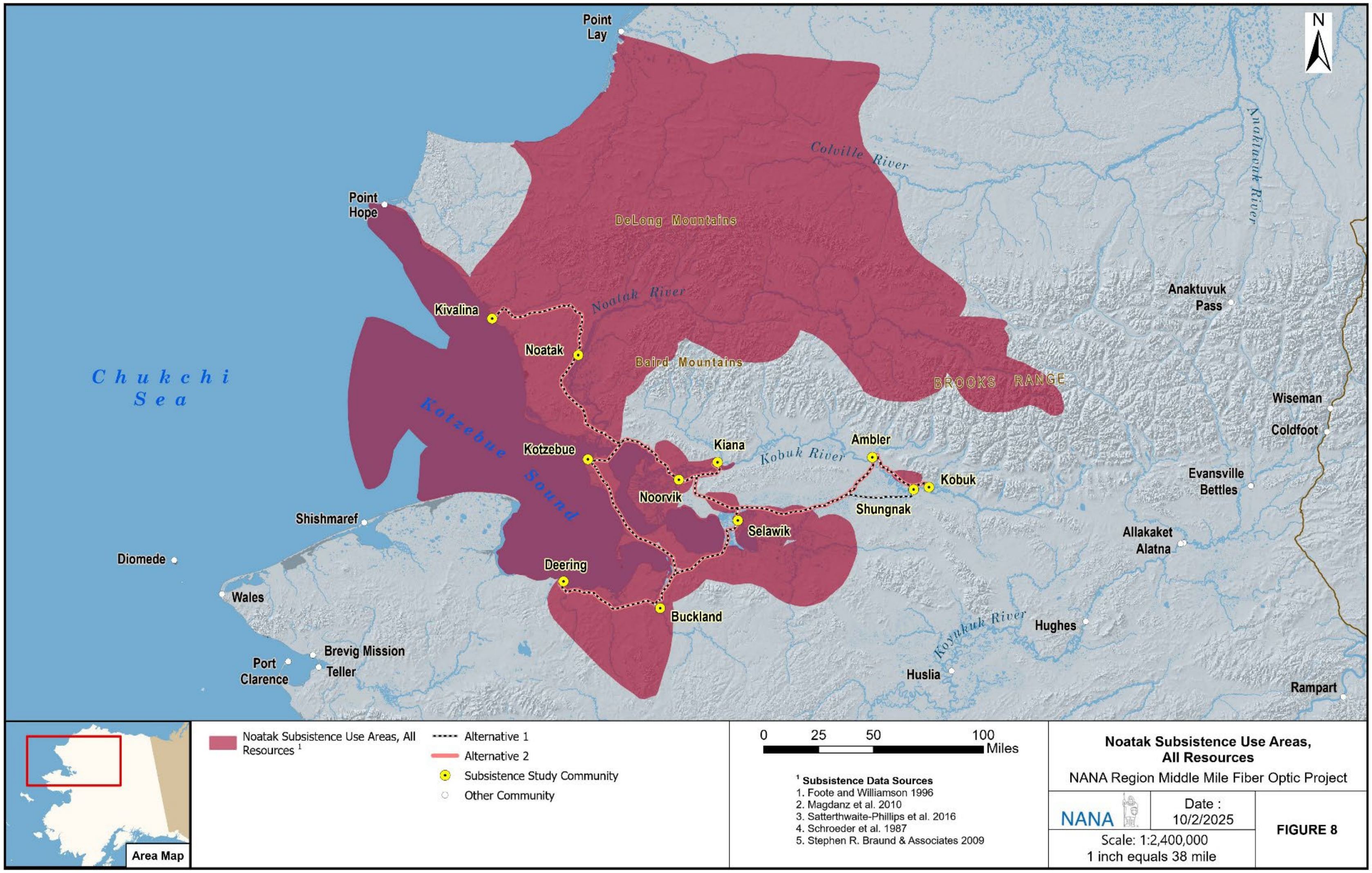
8.2. Subsistence Use Areas

Figure 15: Noatak Subsistence Use Areas, All Resources


Point Lay
Point Hope
Colville River
DeLong Mountains
Noatak River
Anaktuvuk River
Anaktuvuk Pass
Kivalina
Noatak
Baird Mountains
BROOKS RANGE
Chukchi Sea
Kotzebue Sound
Wiseman
Coldfoot
Kotzebue
Kiana
Kobuk River
Ambler
Kobuk
Evansville
Bettles
Noorvik
Shungnak
Shishmaref
Selawik
Allakaket
Alatna
Diomede
Deering
Wales
Buckland
Koyukuk River
Hughes
Brevig Mission
Port Clarence
Teller
Huslia
Rampart
N
Area Map
Noatak Subsistence Use Areas, All Resources [1]
Alternative 1
Alternative 2
Subsistence Study Community
Other Community
0 25 50 100 Miles
[1] Subsistence Data Sources
1. Foote and Williamson 1996
2. Magdanz et al. 2010
3. Satterthwaite-Phillips et al. 2016
4. Schroeder et al. 1987
5. Stephen R. Braund & Associates 2009
Noatak Subsistence Use Areas, All Resources
NANA Region Middle Mile Fiber Optic Project
NANA
Date : 10/2/2025
Scale: 1:2,400,000
1 inch equals 38 mile
FIGURE 8

8.3. Timing of Subsistence Activities

Figure 16: Noatak Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Data
Non-Salmon Fish													2000s
Salmon													2000s
Caribou													2010s
Moose													2010s
Bear													2000s
Muskox													2000s
Sheep													2000s
Furbearers and Small Land Mammals													2000s
Marine mammals													2000s
Upland birds													2000s
Waterfowl													2000s
Eggs													2000s
Berries													2000s
Plants and Wood													2000s

Sources: SRB&A (2009); Uhl and Uhl (1979); Magdanz et al. (2010); Braem and Kostick (2014); Mikow et al. (2014); Gonzalez et al. (2018).

9. Noorvik

9.1. Harvest Data

Table 25: Noorvik Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
2012	All Resources	100	94	93	75	96	353,142	353,142	2,616	603	100.0%
	Salmon	99	69	66	51	84	135,861	135,861	1,006	232	38.5%
	Non-Salmon Fish	96	61	60	51	78	130,019	130,019	963	222	36.8%
	Large Land Mammals	71	11	10	20	67	9,336	9,336	69	16	2.6%
	Small Land Mammals	90	40	40	37	60	60326	60326	447	103	17.1%
	Marine Mammals	90	86	86	40	54	5837	5837	43	10	1.7%
	Migratory Birds	83	54	52	35	53	7177	7177	53	12	2.0%
	Upland Game Birds	51	40	37	27	25	3731	3731	28	6	1.1%
	Bird Eggs	37	29	28	13	12	455	455	3	1	0.1%
	Marine Invertebrates	7	1	1	0	7	10	10	0	0	0.0%
	Vegetation	20	20	17	6	5	391	391	3	1	0.1%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 2012 (Braem et al. 2017)

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Table 26: Noorvik Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Salmon										
2013	Salmon	92	49	48	43	72		124,630	944	219
2014	Salmon	89	53	50	47	74		109,888	886	199
Non-Salmon Fish										
2013	Non-Salmon Fish	96	75	72	65	80		148,400	1,124	261
2014	Non-Salmon Fish	92	66	65	53	79		122,722	990	223
Large Land Mammals										
2002	Large Land Mammals	97	76	75	63	77	1,063	166,326	1,080	225
2008	Large Land Mammals	95	71	71	37	70	794	117,717	817	196
2017	Large Land Mammals	96	63	48	47	85	291	53,783	404	102
Small Land Mammals										
2002	Small Land Mammals	5	5	5	0	0	180	0	0	0
2008	Small Land Mammals	15	15	7	2	4	317	0	0	0

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
2017	Small Land Mammals	4	2	2	2	1	3	0	0	0
Migratory Birds										
1996	Migratory Birds			78			4,052	9,178	76	15
Upland Game Birds										
1996	Upland Game Birds			24			1,114	1,108	9	2
Bird Eggs										
1996	Bird Eggs			5			392	114	1	0
Notes: Blank cells indicate no data.										
Sources: 1996 (Georgette 2000); 2002 (ADF&G 2025); 2008 (Braem 2012a); 2013, 2014 (Braem et al. 2018); 2017 (Gonzalez et al. 2020)										

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Table 27: Noorvik Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
1996	White-fronted Geese			59			394	1,670	14	3	
	Mallard			59			833	1,624	13	3	
	Willow Ptarmigan			24			1,085	1,085	9	2	
	Lesser Canada Geese			37			207	824	7	1	
	Cacklers			42			326	760	6	1	
2002	Caribou	95	72	71	60	59	988	134,373	873	182	
	Moose	68	44	28	29	54	56	30,352	197	41	
	Black Bear	22	20	5	5	18	14	1,208	8	2	
	Brown Bear	15	16	3	3	13	5	393	3	1	
2008-9	Caribou	94	70	70	37	56	767	104,289	724	174	
	Moose	37	18	15	7	23	25	13,227	92	22	
	Brown Bear	2	6	2	0	0	2	201	1	0	
2012	Caribou	95	60	59	47	65	851	115,758	857	198	32.8%
	Sheefish	78	49	47	31	52	6,032	67,197	498	115	19.0%
	Chum Salmon	86	39	39	36	54	9,584	57,506	426	98	16.3%
	Broad Whitefish	81	47	47	35	53	10,087	32,279	239	55	9.1%
	Northern Pike	67	43	43	24	34	5,134	16,941	125	29	4.8%
	Humpback Whitefish	58	34	34	25	29	6,406	13,453	100	23	3.8%
	Moose	66	23	17	19	52	24	13,126	97	22	3.7%
	Bearded Seal	36	7	7	11	30	18	7,514	56	13	2.1%
	Burbot	67	45	42	19	37	876	3,681	27	6	1.0%
2013	Chum salmon	92	49	48	43	71	19,972	118,234	896	208	

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
	Broad whitefish	83	47	43	38	53	14,375	46,000	349	81	
	Sheefish	83	60	57	40	49	3,167	36,100	274	63	
	Humpback whitefish	42	27	27	25	18	15,944	33,484	254	59	
	Northern pike	58	41	39	27	24	7,932	26,176	198	46	
2014	Chum salmon	89	53	50	47	73	16,668	103,606	836	188	
	Sheefish	84	59	58	37	60	2,964	33,794	273	61	
	Broad whitefish	70	42	37	26	53	11,728	37,531	303	68	
	Burbot	56	35	32	19	42	306	1,286	10	2	
	Dolly Varden	44	24	22	9	29	260	857	7	2	
2017	Caribou	94	59	40	40	80	250	34,005	256	65	
	Moose	54	38	23	25	45	36	19,320	145	37	
	Brown Bear	7	5	4	4	3	5	458	3	1	

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

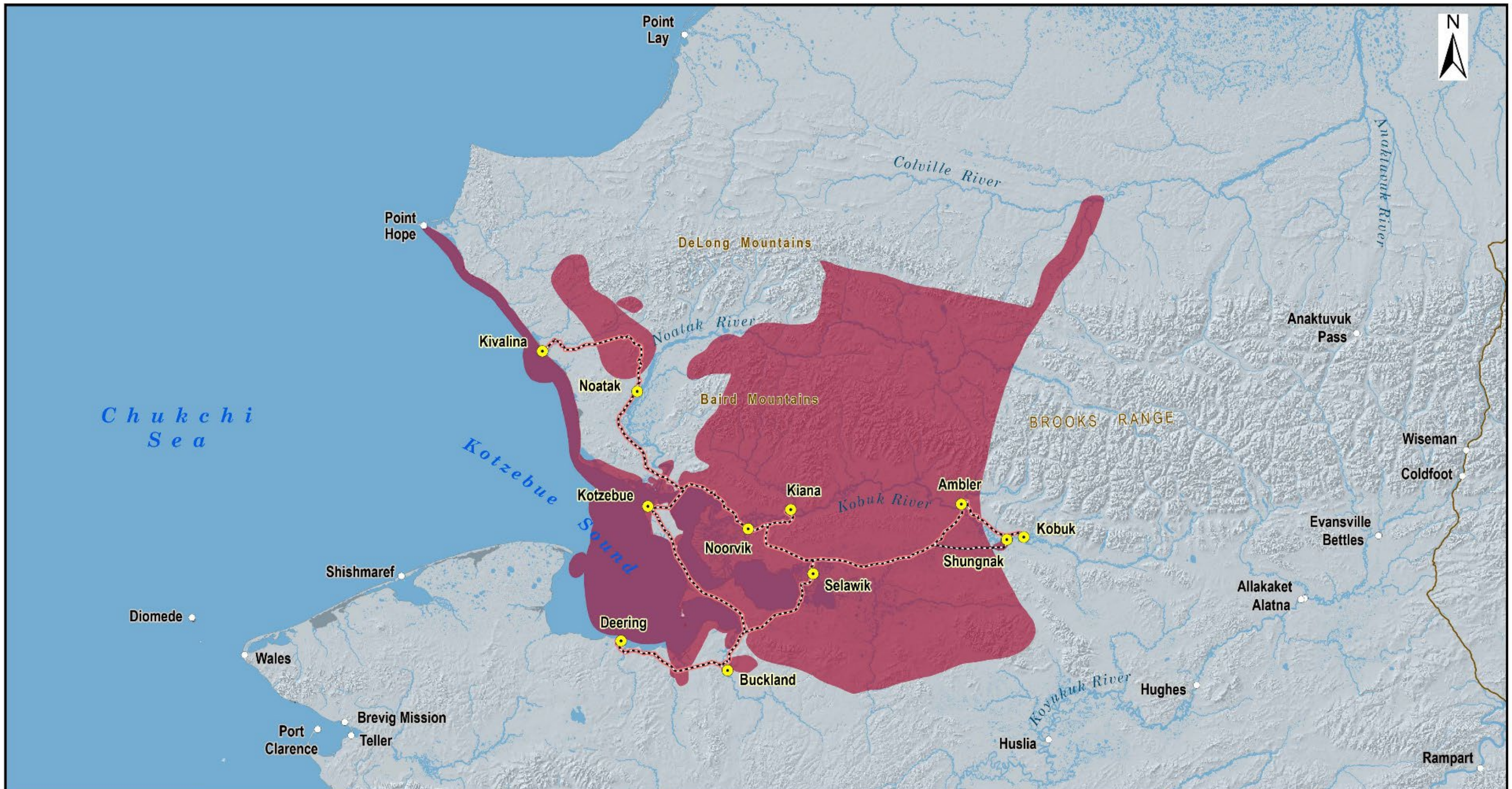
For All Resources study years (1983, 1992, 2005), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

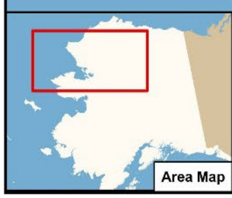
Sources: 1996 (Georgette 2000); 2002 (ADF&G 2025); 2008 (Braem 2012a); 2012 (Braem et al. 2017); 2013, 2014 (Braem et al. 2018); 2017 (Gonzalez et al. 2020)

Stephen R. Braund & Associates, 2025.

9.2. Subsistence Use Areas

Figure 17: Noorvik Subsistence Use Areas, All Resources





Noorvik Subsistence Use Areas, All Resources [1]

Alternative 1

Alternative 2

Subsistence Study Community

Other Community

0 25 50 100 Miles

[1] Subsistence Data Sources
1. Braem et al. 2017
2. Satterthwaite-Phillips et al. 2016
3. Schroeder et al. 1987

Noorvik Subsistence Use Areas, All Resources

NANA Region Middle Mile Fiber Optic Project

NANA

Date : 10/2/2025

Scale: 1:2,400,000
1 inch equals 38 mile

FIGURE 9

9.3. Timing of Subsistence Activities

Figure 18: Noorvik Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Fish	■	■		■	■	■	■	■	■	■	■	■	1980s
Caribou	■	■	■	■	■	■	■	■	■	■	■	■	1980s/2010s
Moose	■					■	■	■	■	■			1980s/2010s
Bear				■	■	■	■	■	■	■			1980s/2010s
Other Large Land Mammals	No Data												
Furbearers & Small Land Mammals	■	■	■	■	■	■				■	■	■	1980s/2010s
Marine mammals				■		■	■	■	■				2010s
Upland birds	■	■	■	■	■	■				■	■	■	1980s
Waterfowl				■	■	■	■	■	■	■	■		1980s
Eggs	No Data												
Marine Invertebrates	No Data												
Plants and Berries						■	■	■	■	■	■		1980s
Wood	■	■	■	■	■	■				■	■	■	1980s

Sources: Alaska Department of Fish and Game (1986); Braem (2012a); Braem et al. (2018); Gonzalez et al. (2020)

10. Selawik

10.1. Harvest Data

Table 28: Selawik Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
2011	All Resources	99	91	91	89	97		456,493	2,701	533	100.0%
	Salmon	97	74	59	62	86		114,559	678	134	25.1%
	Non-Salmon Fish	75	10	3	30	75		3,510	21	4	0.8%
	Large Land Mammals	88	75	73	67	73		310,175	1,835	362	67.9%
	Small Land Mammals	63	18	14	29	63		6478	38	8	1.4%
	Marine Mammals	95	80	80	58	53		6397	38	7	1.4%
	Migratory Birds	62	44	38	41	41		12524	74	15	2.7%
	Upland Game Birds	52	39	34	28	19		1350	8	2	0.3%
	Bird Eggs	36	30	27	24	17		1424	8	2	0.3%
	Marine Invertebrates	7	2	2	0	7		3	0	0	0.0%
	Vegetation	13	10	10	7	6		73	0	0	0.0%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 2011 (Braem, Fox, Magdanz, and Koster 2013)

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Table 29: Selawik Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Salmon										
2013	Salmon	35	8	7	12	32		2,190	13	3
2014	Salmon	44	9	9	10	41		7,756	42	10
Non-Salmon Fish										
2013	Non-Salmon Fish	81	61	61	54	55		179,851	1,052	240
2014	Non-Salmon Fish	70	56	52	38	45		123,763	676	157
Large Land Mammals										
1999	Large Land Mammals	97	64	63	77	88	1,361	210,190	1,347	298
2006	Large Land Mammals		66	64			983	152,187	906	198
Small Land Mammals										
1999	Small Land Mammals	97	64	63	77	88	1,361	210,190	1,347	298
2006	Small Land Mammals			20			134	2,255	13	3

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Numbers	Total Pounds	Average HH Pounds	Per Capita Pounds
Migratory Birds										
1993	Migratory Birds			43			1,431	3,757	29	7
1997	Migratory Birds			72			2,723	5,470	36	8
Upland Game Birds										
1993	Upland Game Birds			12			331	331	3	1
1997	Upland Game Birds			43			997	997	7	1
Bird Eggs										
1993	Bird Eggs	2	2	2	0	0	2	0	0	0
1997	Bird Eggs			3			63	11	0	0
Notes: Blank cells indicate no data.										
Sources: 1993 (Wolfe and Paige 1995); 1997 (Georgette 2000); 1999, 2006 (ADF&G 2025); 2013, 2014 (Braem et al. 2018)										

Stephen R. Braund & Associates, 2025.

Table 30: Selawik Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers [1]	Total Pounds [2]	Average HH Pounds	Per Capita Pounds	
1993	White-fronted Geese			12			244	1,034	8	2	
	Lesser Canada Geese			14			212	842	6	2	
	Cacklers			14			147	343	3	1	
	Willow Ptarmigan			12			331	331	3	1	
	Northern Pintail			17			181	283	2	1	
1997	Canada Geese			50			687	1,876	12	3	
	Willow Ptarmigan			43			997	997	7	1	
	Mallard			48			456	888	6	1	
	White-fronted Geese			12			138	587	4	1	
	Black Scoter			30			330	580	4	1	
1999	Caribou	97	61	61	75	84	1,289	175,335	1,124	249	
	Moose	55	33	29	38	41	64	34,171	219	49	
	Black Bear	5	10	4	3	2	7	588	4	1	
	Brown Bear	1	2	1	0	0	1	96	1	0	
2006	Caribou		65	63			934	127,120	757	165	
	Whitefish			40			26,431	46,254	275	60	
	Sheefish			53			5,129	35,903	214	47	
	Pike			46			11,108	33,324	198	43	
	Moose		25	24			46	24,870	148	32	
2011	Broad Whitefish	81	57	55	47	55	47,394	151,722	898	177	33.2%

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
	Caribou	97	70	54	59	80	683	92,947	550	109	20.4%
	Sheefish	77	64	57	46	45	6,190	68,958	408	81	15.1%
	Northern Pike	71	56	47	40	38	15,956	52,653	312	61	11.5%
	Humpback Whitefish	51	29	26	25	34	12,647	23,705	140	28	5.2%
	Moose	75	49	23	34	65	40	21,283	126	25	4.7%
	Chum Salmon	43	14	11	21	41	879	5,273	31	6	1.2%
	Burbot	51	40	32	29	25	1,081	4,541	27	5	1.0%
2013	Broad whitefish	63	40	39	34	42	23,159	74,110	433	99	
	Sheefish	77	56	56	45	46	8,561	47,086	275	63	
	Northern pike	61	49	48	37	30	10,528	34,741	203	46	
	Humpback whitefish	23	19	19	12	12	7,648	16,061	94	21	
	Least cisco	12	11	11	8	6	4,670	3,269	19	4	
2014	Chum salmon	39	8	8	9	36	1,151	7,157	39	9	
	Sheefish	62	50	47	27	35	4,164	22,899	125	29	
	Broad whitefish	54	36	35	28	30	17,202	55,046	301	70	
	Northern pike	56	47	42	25	25	8,855	29,221	160	37	
	Humpback whitefish	21	14	13	12	13	5,250	11,025	60	14	

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

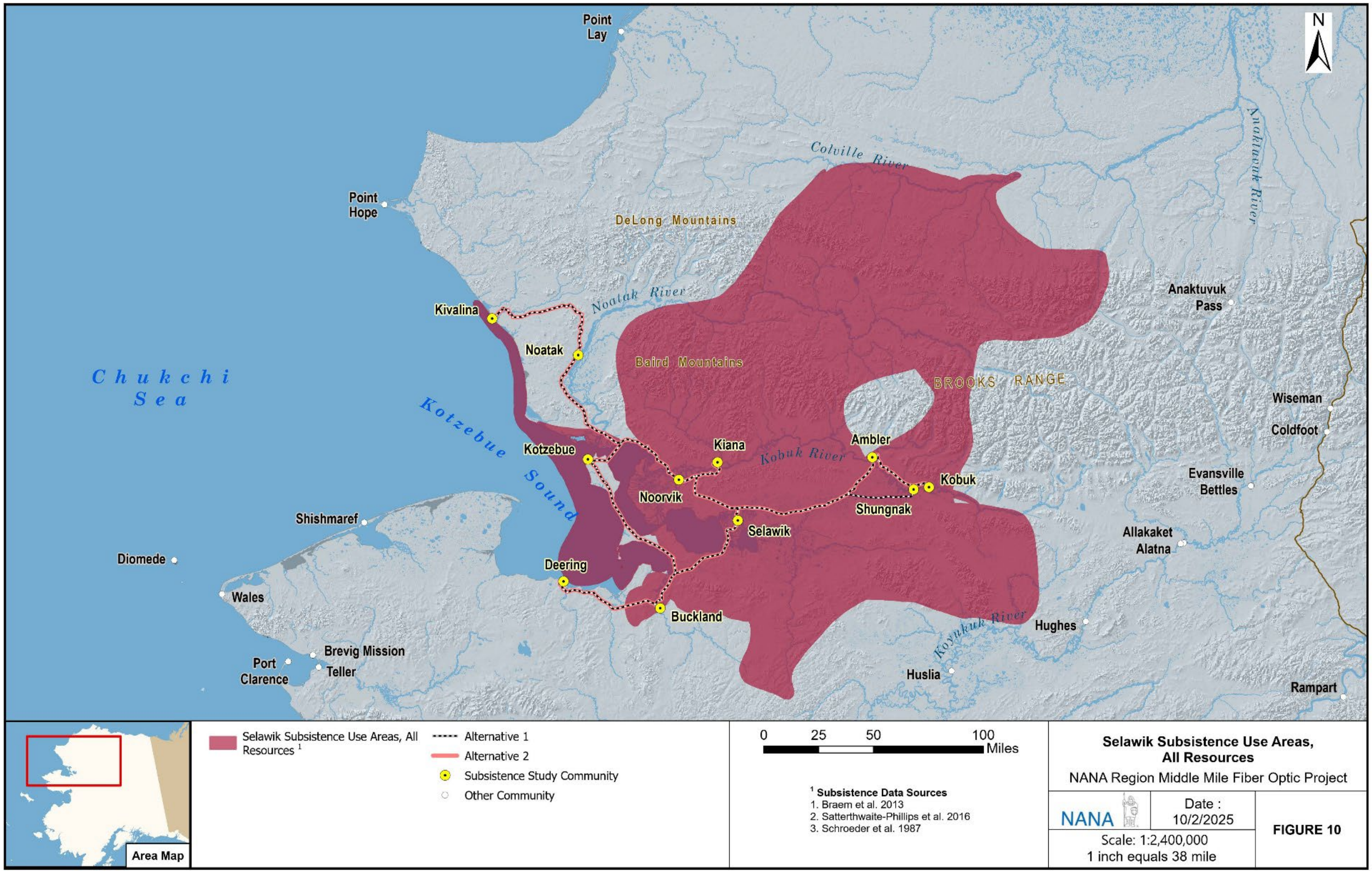
For All Resources study years (2011), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

Sources: Sources: 1993 (Wolfe and Paige 1995); 1997 (Georgette 2000); 1999, 2006 (ADF&G 2025); 2011 (Braem et al. 2013); 2013, 2014 (Braem et al. 2018)

Stephen R. Braund & Associates, 2025.

10.2. Subsistence Use Areas

Figure 19: Selawik Subsistence Use Areas, All Resources


N
Point Lay
Point Hope
Colville River
Anaktuvuk River
DeLong Mountains
Noatak River
Kivalina
Noatak
Baird Mountains
BROOKS RANGE
Anaktuvuk Pass
Chukchi Sea
Kotzebue Sound
Kotzebue
Kiana
Kobuk River
Ambler
Kobuk
Shungnak
Noorvik
Selawik
Wiseman
Coldfoot
Evansville
Bettles
Allakaket
Alatna
Shishmaref
Diomede
Wales
Deering
Buckland
Koyukuk River
Hughes
Huslia
Brevig Mission
Port Clarence
Teller
Rampart
Area Map
Selawik Subsistence Use Areas, All Resources [1]
Alternative 1
Alternative 2
Subsistence Study Community
Other Community
0 25 50 100 Miles
[1] Subsistence Data Sources
1. Braem et al. 2013
2. Satterthwaite-Phillips et al. 2016
3. Schroeder et al. 1987
Selawik Subsistence Use Areas, All Resources
NANA Region Middle Mile Fiber Optic Project
NANA
Date : 10/2/2025
Scale: 1:2,400,000
1 inch equals 38 mile
FIGURE 10

10.3. Timing of Subsistence Activities

Figure 20: Selawik Timing of Subsistence Activities

Resources	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Fish	No Data												
Caribou													2010s
Moose													2010s
Bear													2010s
Other Large Land Mammals	No Data												
Furbearers & Small Land Mammals													2010s
Marine mammals													2010s
Upland birds	No Data												
Waterfowl	No Data												
Eggs	No Data												
Marine Invertebrates	No Data												
Plants and Berries	No Data												
Wood	No Data												

Sources: Braem, Fox, Magdanz, and Koster (2013).

11. Shungnak

11.1. Harvest Data

Table 31: Shungnak Subsistence Harvest Estimates by Resource Category, All Resources Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest				Percent of Total Harvest
		Use	Try to Harvest	Harvest	Give	Receive	Numbers[1]	Total Pounds[2]	Average HH Pounds	Per Capita Pounds	
2002	All Resources	100	100	100	80	98		151,879	2,813	610	100.0%
	Salmon	76	61	57	27	55	3,847	22,942	425	92	15.1%
	Non-Salmon Fish	90	84	84	69	84	25,193	61,397	1,137	247	40.4%
	Large Land Mammals	98	69	67	51	84	417	60,838	1,127	244	40.1%
	Small Land Mammals	55	41	31	24	33	137	1174	22	5	0.8%
	Marine Mammals	71	4	2	24	71	2	373	7	1	0.2%
	Migratory Birds	75	55	53	33	51	996	2361	44	9	1.6%
	Upland Game Birds	49	39	39	16	29	277	264	5	1	0.2%
	Bird Eggs										
	Marine Invertebrates	0	0	0	0	0	0	0	0	0	0.0%
	Vegetation	96	92	92	39	45	537	2,529	47	10	1.7%
2012	All Resources	100	100	100	87	98		100,872	1,462	367	100.0%
	Salmon	87	41	39	39	72		15,417	223	56	15.2%
	Non-Salmon Fish	85	59	59	50	74		23,836	345	87	23.6%
	Large Land Mammals	96	52	48	43	87		56,487	819	206	55.9%
	Small Land Mammals	50	35	35	24	26		1,193	17	4	1.1%
	Marine Mammals	72	0	0	7	72		0	0	0	0
	Migratory Birds	65	39	37	28	50		2,349	34	9	2.3%
	Upland Game Birds	37	20	20	17	20		153	2	1	0
	Bird Eggs	2	0	0	0	2		0	0	0	0
	Marine Invertebrates	7	2	0	4	4		0	0	0	0
	Vegetation	96	96	78	52	39		1,438	21	5	1.4%

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 2002 (Magdanz, Walker, and Paciorek 2004); 2012 (Braem et al. 2015).

Stephen R. Braund & Associates, 2025.

Table 32: Shungnak Subsistence Harvest Estimates by Resource Category, Non-Comprehensive Study Years

Study Year	Resource	Percentage of Households					Estimated Harvest			
		Use	Try to Harvest	Harvest	Give	Receive	Number	Total Lbs	Average HH Lbs	Per Capita Pounds
Salmon										
2013	Salmon	76	49	47	27	57		42,964	661	151
2014	Salmon	86	63	61	35	63		32,037	517	126

Study Year	Resource	Percentage of Households: Use	Try to Harvest	Harvest	Give	Receive	Estimated Harvest: Number	Total Lbs	Average HH Lbs	Per Capita Pounds
Non-Salmon Fish										
2013	Non-Salmon Fish	84	67	67	43	61		60,889	937	215
2014	Non-Salmon Fish	91	67	67	30	70		64,619	1,042	253
Large Land Mammals										
1998	Large Land Mammals	100	80	76	59	44	587	87,914	1,570	359
2008	Large Land Mammals	95	73	70	48	70	421	61,450	1,182	243
Small Land Mammals										
1998	Small Land Mammals			24			23	0	0	0
2008	Small Land Mammals	36	30	25	11	7	57	0	0	0
Migratory Birds										
1993	Migratory Birds			50			1,750	3,921	71	16
Upland Game Birds										
1993	Upland Game Birds			30			421	421	8	2
Bird Eggs										
1993	Bird Eggs	2	0	0	2	2	0	0	0	0

Notes: Blank cells indicate no data.
[1]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

Sources: 1993 (Wolfe and Paige 1995); 1998 (ADF&G 2025); 2008 (Braem 2012b); 2013 (Braem et al. 2018); 2014 (Braem et al. 2018).

Stephen R. Braund & Associates, 2025.

Table 33: Shungnak Subsistence Harvest Estimates by Selected Species, All Study Years

Study Year	Resource	Percentage of Households: Use	Try to Harvest	Harvest	Give	Receive	Estimated Harvest: Number[1]	Total Lbs[2]	Average HH Lbs	Per Capita Lbs	% of Total Harvest
1993	Lesser Canada Geese			36			227	902	16	4	
	White-fronted Geese			38			198	840	15	3	
	Willow Ptarmigan			30			421	421	8	2	
	Northern Pintail			30			228	355	6	1	
	Black Scoter			24			152	267	5	1	
1998	Caribou	100	74	72	56	35	561	76,301	1,363	312	
	Moose	50	32	30	28	20	21	11,159	199	46	
	Black Bear	6	9	6	6	0	4	365	7	1	
	Brown Bear	6	7	2	2	4	1	89	2	0	
	Wolf			19			18	0	0	0	
2002	Caribou	98	67	67	49	71	403	54,864	1,016	220	36.1%
	Humpback Whitefish	84	67	65	41	53	19,340	40,615	752	163	26.7%

Study Year	Resource	Percentage of Households: Use	Try to Harvest	Harvest	Give	Receive	Estimated Harvest: Number[1]	Total Lbs[2]	Average HH Lbs	Per Capita Lbs	% of Total Harvest
	Chum Salmon	76	59	57	27	53	3,810	22,858	423	92	15.1%
	Sheefish	84	65	65	33	55	2,020	11,111	206	45	7.3%
	Moose	73	39	16	18	63	11	5,696	105	23	3.8%
	Broad Whitefish	45	25	22	22	35	1,744	5,580	103	22	3.7%
	Berries	94	84	84	33	31	365	2,374	44	10	1.6%
2008	Caribou	95	73	68	45	61	406	55,210	1,062	218	
	Moose	55	27	23	11	34	11	5,932	114	23	
	Black Bear	11	7	5	0	9	2	156	3	1	
	Brown Bear	9	9	7	2	5	2	152	3	1	
	Beaver	27	25	25	11	2	39	0	0	0	
2012	Caribou	93	52	48	41	74	396	53,802	780	196	53.3%
	Sheefish	83	57	57	48	61	1,556	17,334	251	63	17.1%
	Chum Salmon	78	39	37	30	65	2,595	14,747	214	54	14.6%
	Broad Whitefish	41	17	13	20	33	888	2,842	41	10	2.8%
	Moose	52	11	7	9	48	5	2,421	35	9	2.4%
	Humpback Whitefish	15	9	7	4	11	660	1,386	20	5	1.3%
	Beaver	50	35	35	24	22	68	1,110	16	4	1.1%
	Least Cisco	7	7	4	4	2	1,125	1,125	16	4	1.1%
2013	Chum salmon	74	49	47	27	55	7,257	42,964	661	151	
	Sheefish	84	65	65	33	47	3,559	40,574	624	143	
	Humpback whitefish	37	31	31	25	16	8,400	17,639	271	62	
	Broad whitefish	41	29	27	6	25	578	1,851	29	7	
	Northern pike	12	10	10	2	2	127	420	7	2	
2014	Sheefish	91	67	67	26	61	3,123	35,603	574	140	
	Chum salmon	84	63	61	35	58	5,101	31,710	511	124	
	Broad whitefish	49	40	40	9	35	7,776	24,883	401	98	
	Arctic grayling	37	33	33	9	21	1,116	1,004	16	4	
	Dolly Varden	33	26	26	7	21	216	714	12	3	

Notes: Blank cells indicate no data.
[1]Estimated numbers typically represent individuals except in some cases such as vegetation where they may represent gallons.
[2]Estimated pounds include only edible pounds and therefore do not include estimates for resources that are not typically eaten by community residents (e.g., furbearers).

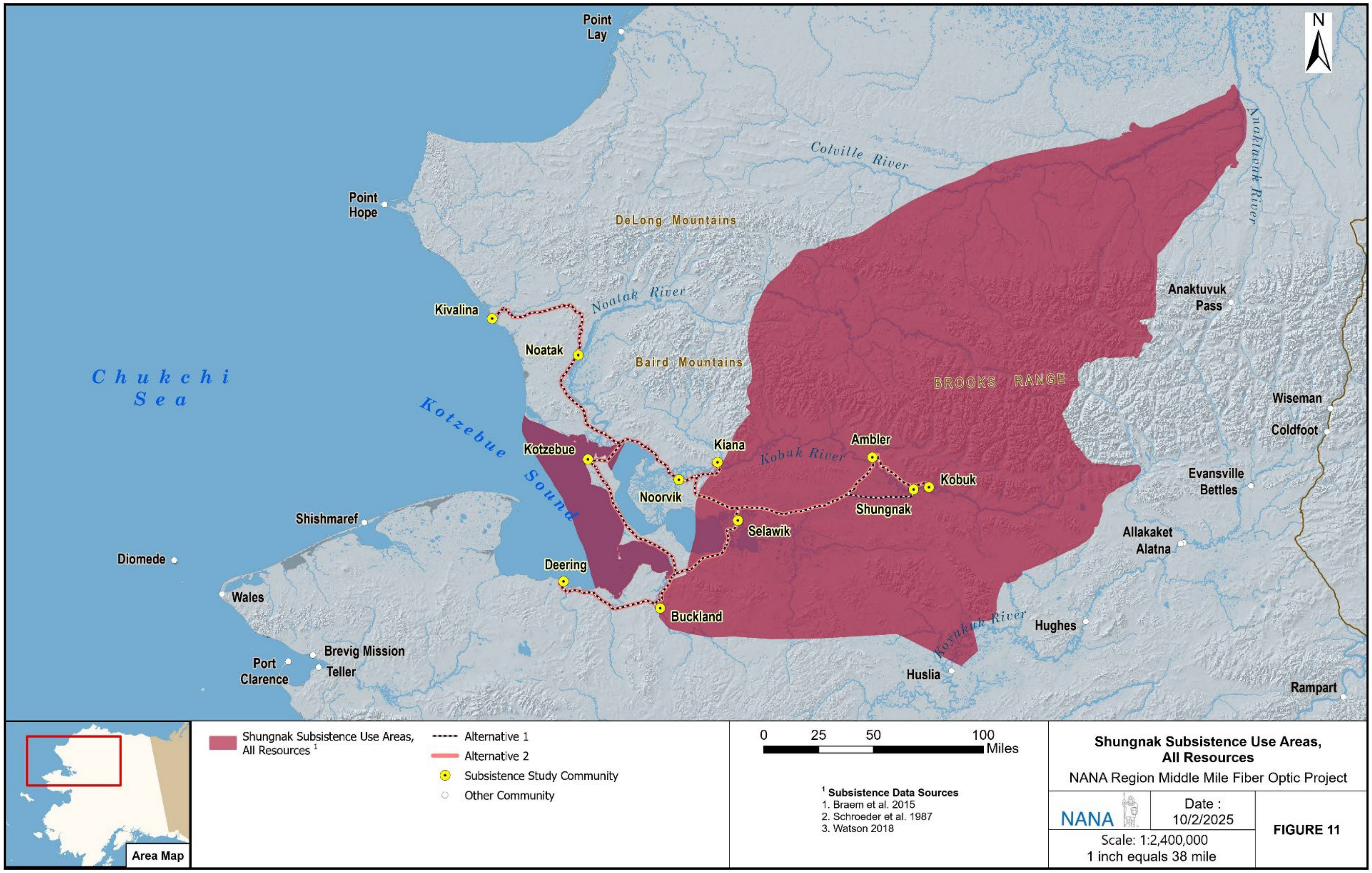
For All Resources study years (2002, 2012), species are listed in descending order by percent of total harvest and are limited to species accounting for at least 1.0 percent of the total harvest; for single-resource study years, species are listed in descending order by total estimated pounds and limited to the five top species. Years lacking "% of total harvest" data were not comprehensive (i.e., all resources) study years.

Sources: 1993 (Wolfe and Paige 1995); 1998 (ADF&G 2025); 2002 (Magdanz et al. 2004); 2008 (Braem 2012b); 2012 (Braem et al. 2015); 2013, 2014 (Braem et al. 2018).

Stephen R. Braund & Associates, 2025.

11.2. Subsistence Use Areas

Figure 21: Selawik Subsistence Use Areas, All Resources


Point Lay
Point Hope
Colville River
DeLong Mountains
Noatak River
Kivalina
Noatak
Baird Mountains
BROOKS RANGE
Anaktuvuk River
Anaktuvuk Pass
Chukchi Sea
Kotzebue Sound
Kotzebue
Kiana
Kobuk River
Ambler
Kobuk
Noorvik
Shungnak
Selawik
Wiseman
Coldfoot
Evansville
Bettles
Allakaket
Alatna
Shishmaref
Diomede
Wales
Deering
Buckland
Koyukuk River
Hughes
Huslia
Brevig Mission
Port Clarence
Teller
Rampart
N
Area Map
Shungnak Subsistence Use Areas, All Resources [1]
Alternative 1
Alternative 2
Subsistence Study Community
Other Community
0 25 50 100 Miles
[1] Subsistence Data Sources
1. Braem et al. 2015
2. Schroeder et al. 1987
3. Watson 2018
Shungnak Subsistence Use Areas, All Resources
NANA Region Middle Mile Fiber Optic Project
NANA
Date : 10/2/2025
Scale: 1:2,400,000
1 inch equals 38 mile
FIGURE 11

11.3. Timing of Subsistence Activities

Figure 22: Shungnak Timing of Subsistence Activities

Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Most Recent Decade for Subsistence Activity/Harvest Data
Fish													1980s
Caribou													2010s
Moose													2010s
Bear													2010s
Sheep	No Data												
Furbearers & Small Land Mammals													2010s
Marine mammals	No Data												
Upland birds													2010s
Waterfowl													2010s
Eggs	No Data												
Marine Invertebrates	No Data												
Plants and Berries													1980s
Wood													1980s

Sources: Alaska Department of Fish and Game (1986); Braem (2012a); Braem et al. (2015)

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Appendix O – Consultation

Appendix O1 – Scoping Meeting Maps

Appendix O2 – Broadband Community Meeting Questions

Appendix O3 – Energy Steering Committee Presentation

Appendix O4 – Letter to Tribal and City Leaders

Appendix O5 – Letter to Allotment Owners

Appendix O6 – EA Scoping Letter

Appendix O7 – Scoping Comment: WACH

Appendix O8 – Scoping Comment: Trustees of Alaska

Appendix O9 – Scoping Comment: DNR

Appendix O10 – Website Snapshot

Appendix O11 – USFWS Letter of Concurrence

Appendix O12 – Essential Fish Habitat Letter of Concurrence

Appendix O13 – NMFS Letter of Concurrence

Appendix O14 – Native Village of Kotzebue EA Comment

Appendix O15 – EPA EA Comment

Appendix O16 – OTZ Telephone Cooperative, Inc. EA Comment

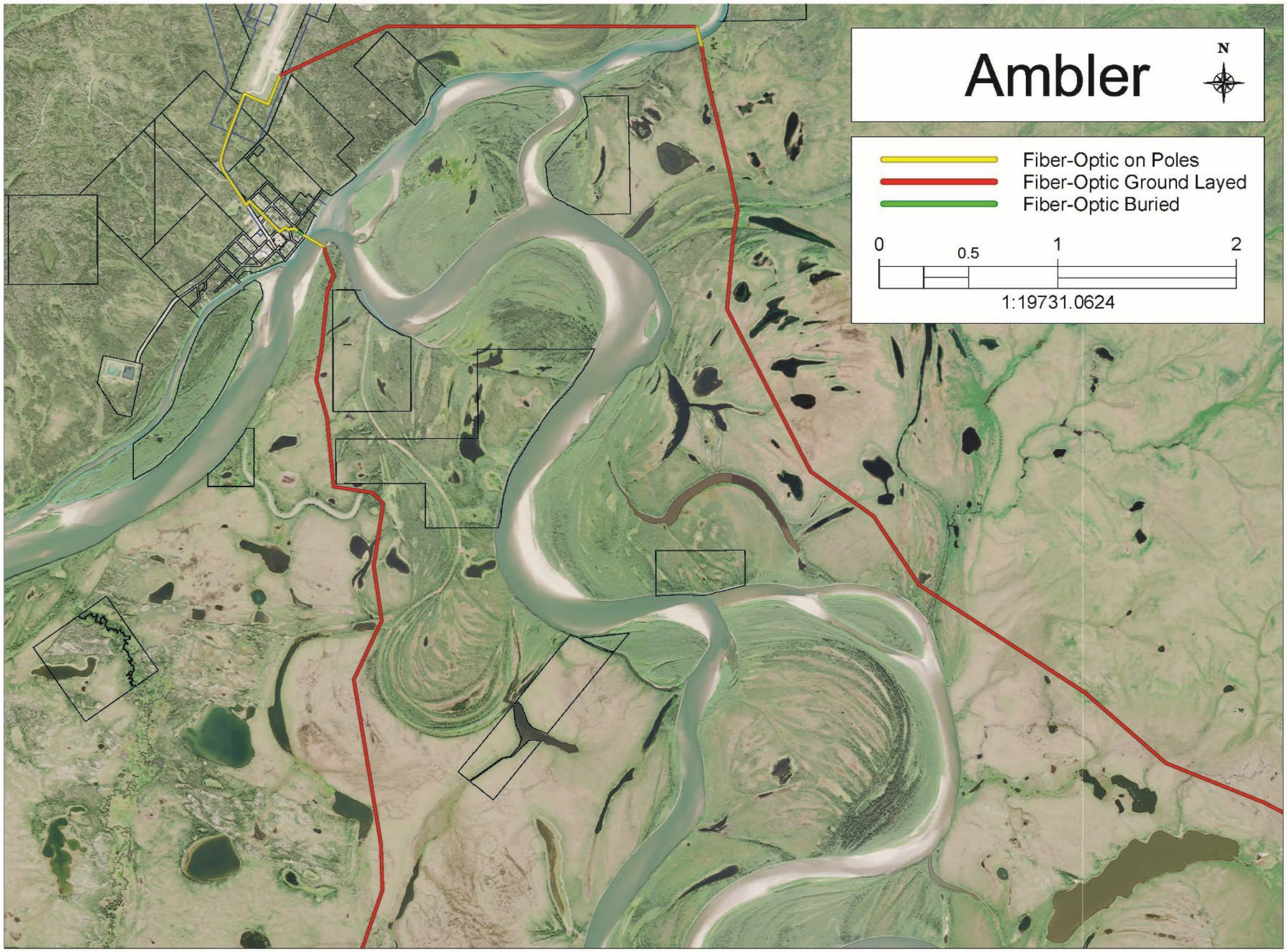
Appendix O17 – DNR EA Comment

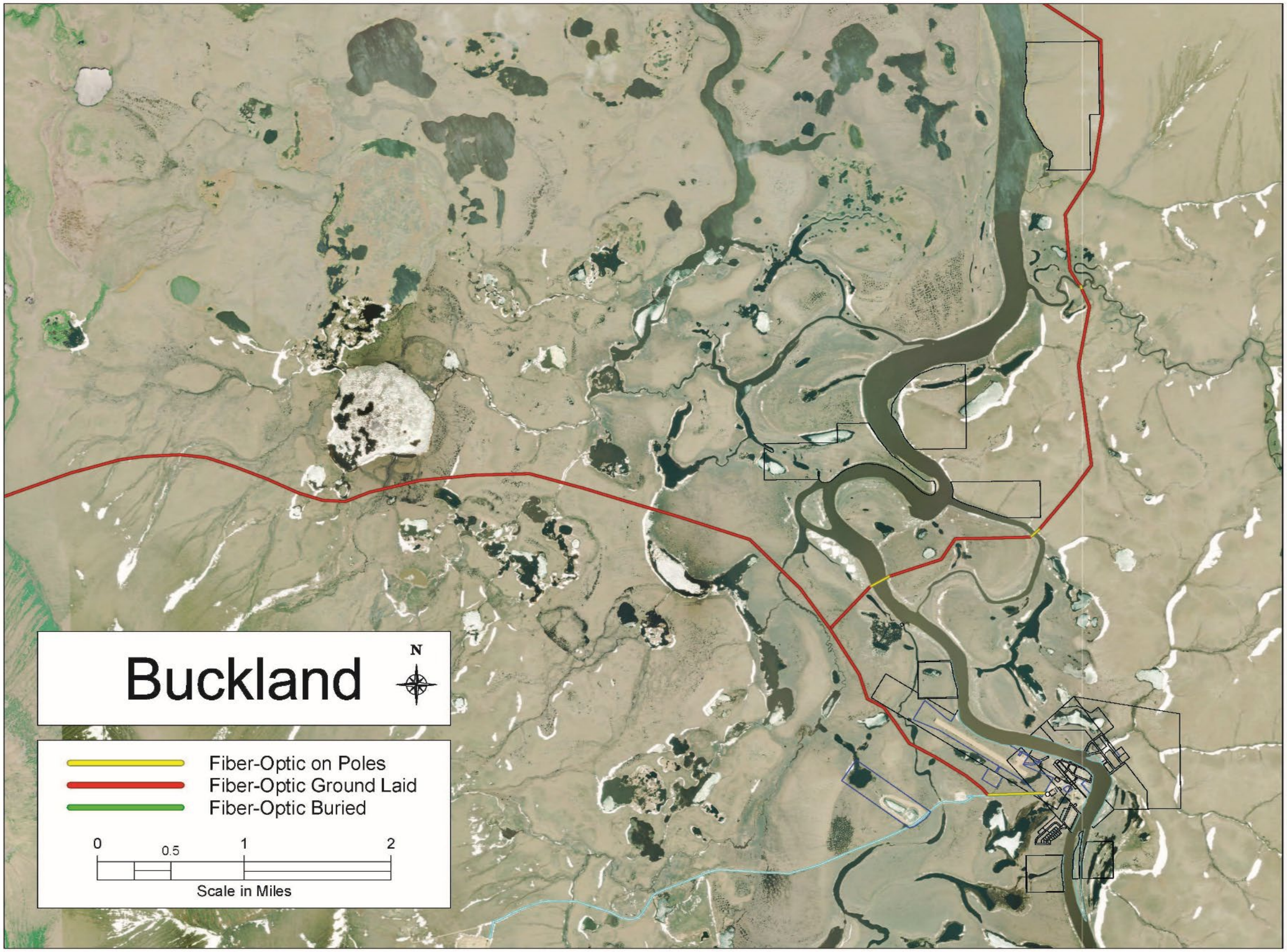
Appendix O18 – Western Arctic Caribou Herd EA Comment

Appendix O19 – Public Stakeholder EA Comment #1

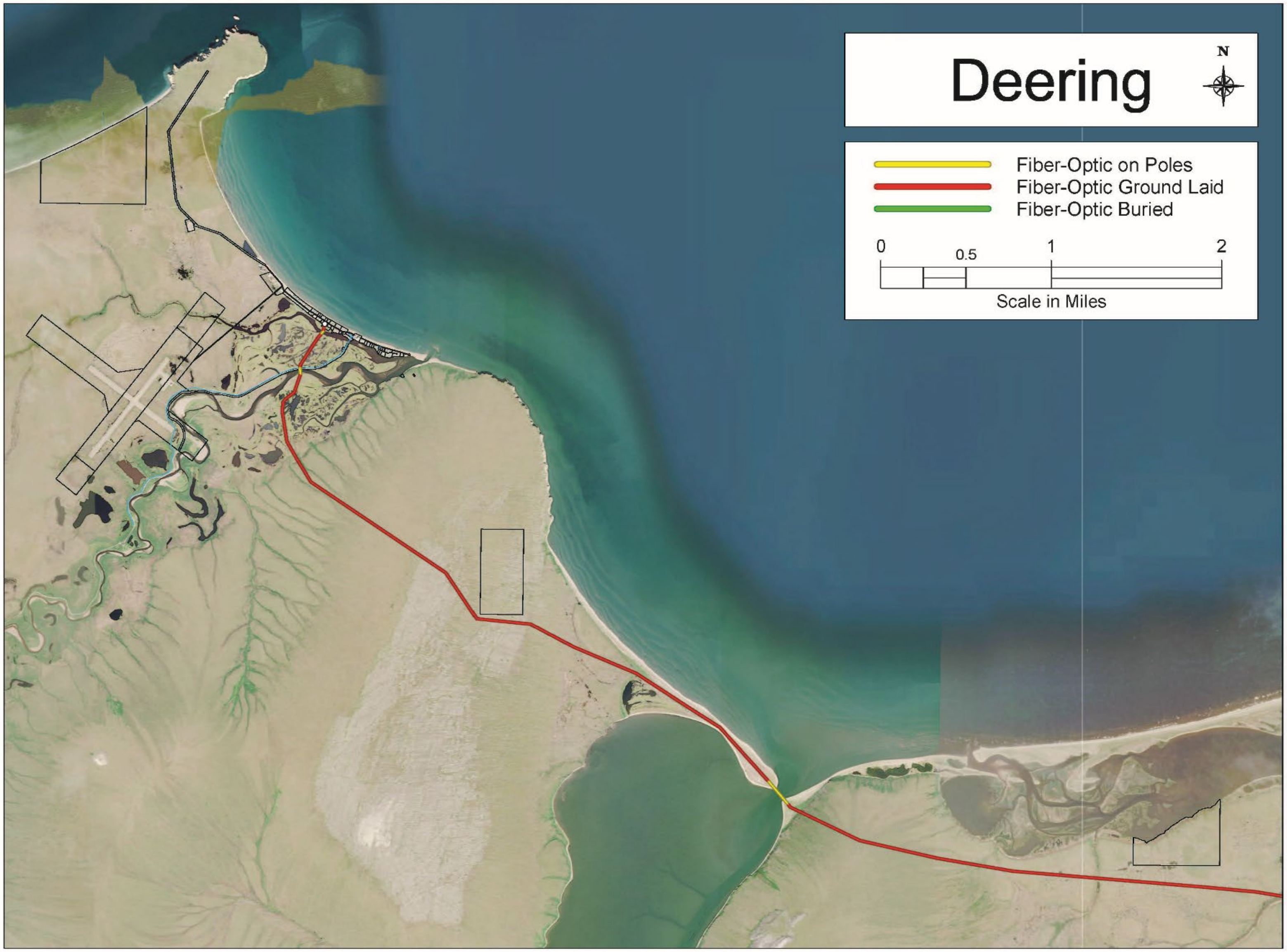
Appendix O20 – Public Stakeholder EA Comment #2

Appendix O21 – EA Comment/Response Matrix

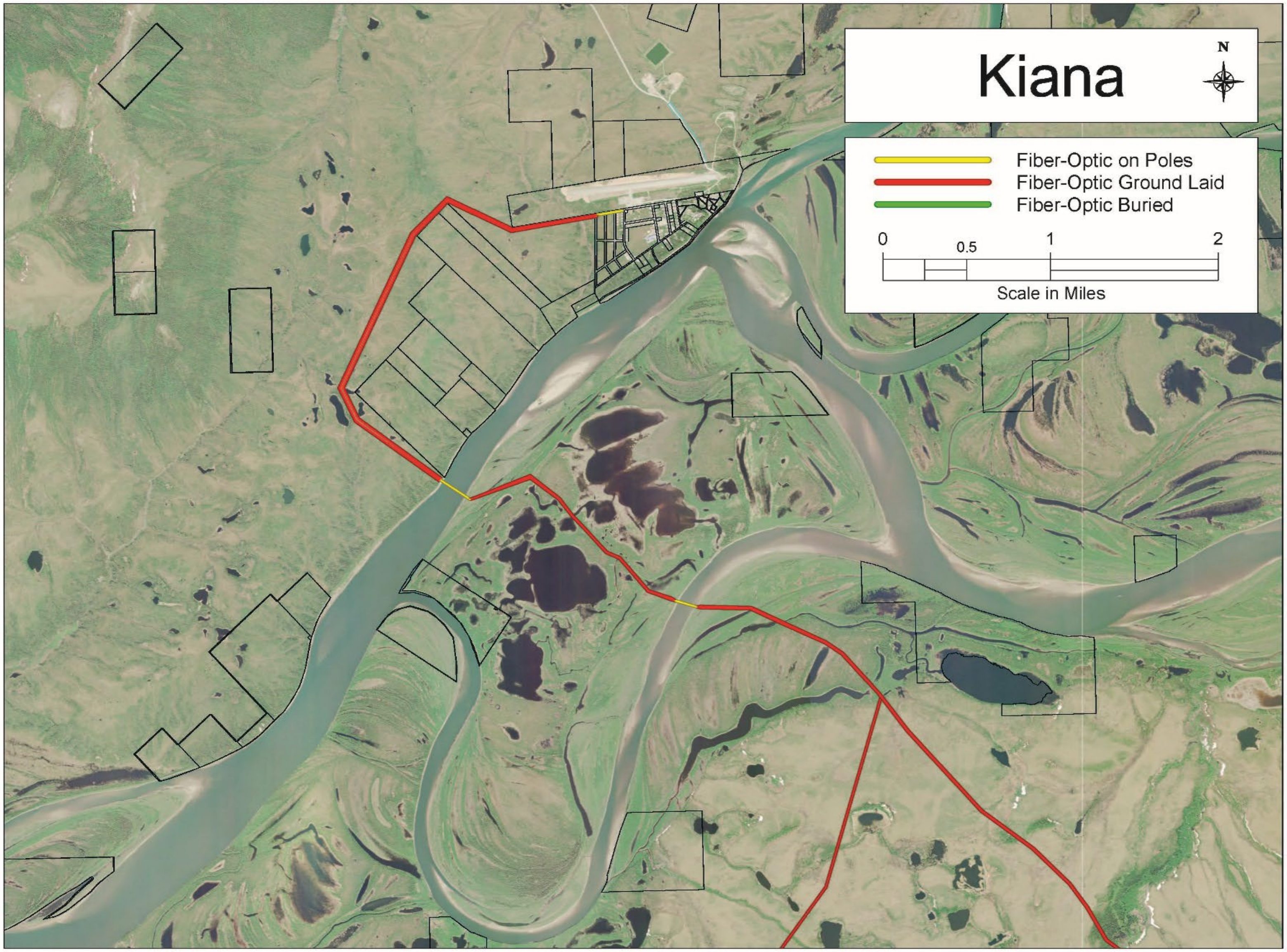

Ambler
N
Fiber-Optic on Poles
Fiber-Optic Ground Layed
Fiber-Optic Buried
0
0.5
1
2
1:19731.0624

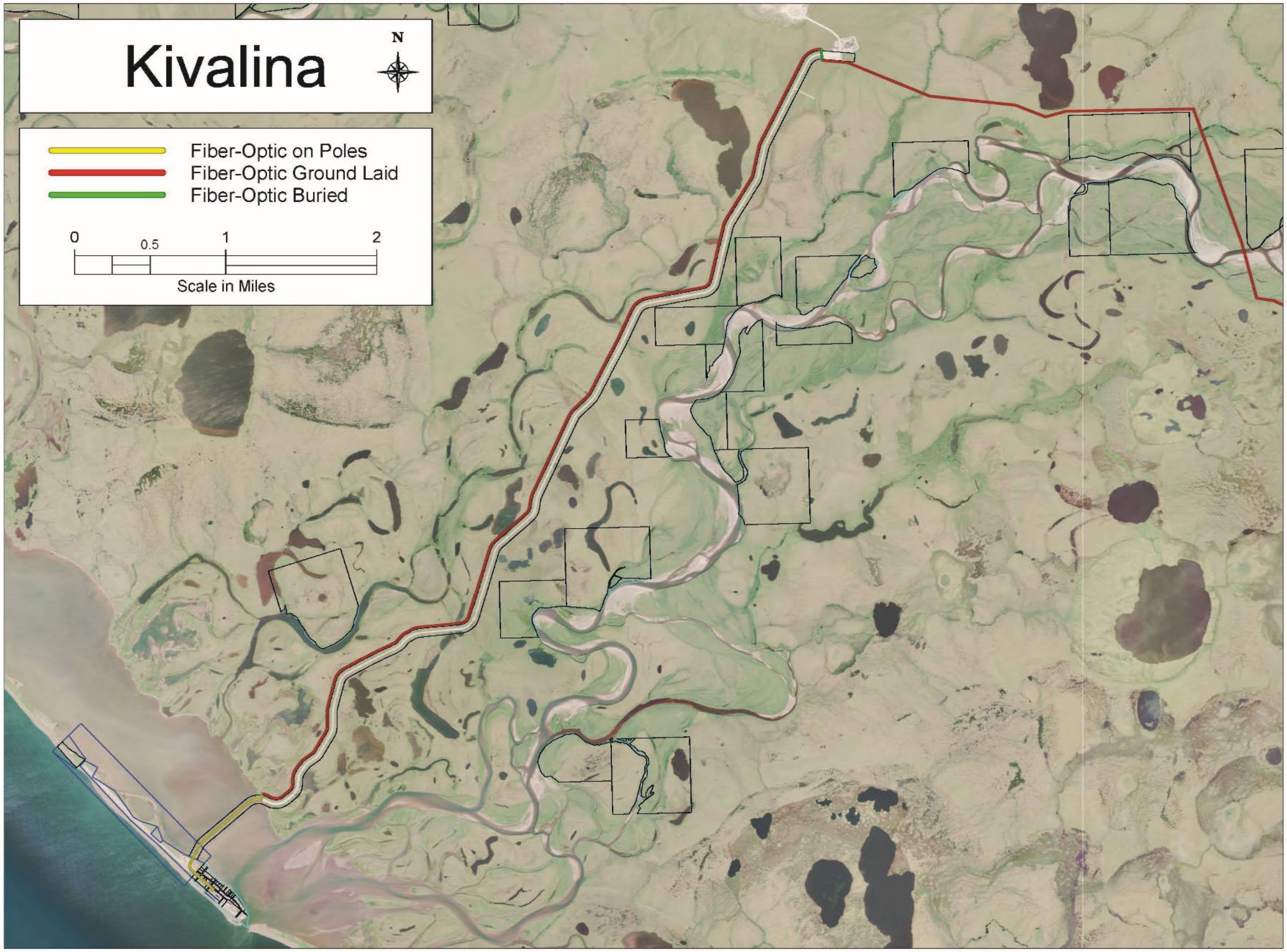


Buckland
N
Fiber-Optic on Poles
Fiber-Optic Ground Laid
Fiber-Optic Buried
0
0.5
1
2
Scale in Miles



Deering
N
Fiber-Optic on Poles
Fiber-Optic Ground Laid
Fiber-Optic Buried
0
0.5
1
2
Scale in Miles


Kiana
N
Fiber-Optic on Poles
Fiber-Optic Ground Laid
Fiber-Optic Buried
0
0.5
1
2
Scale in Miles


Kivalina
N
Fiber-Optic on Poles
Fiber-Optic Ground Laid
Fiber-Optic Buried
0
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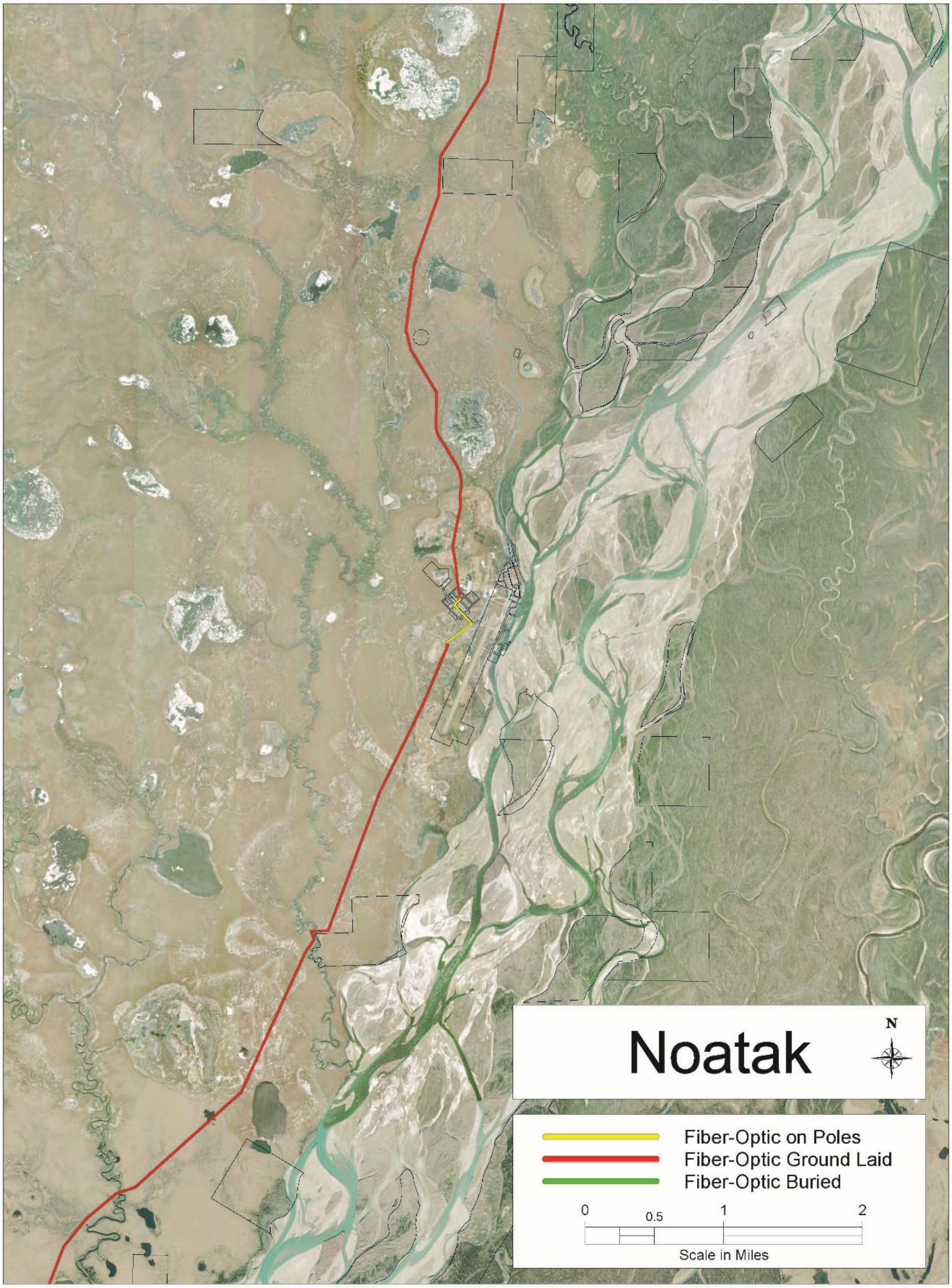
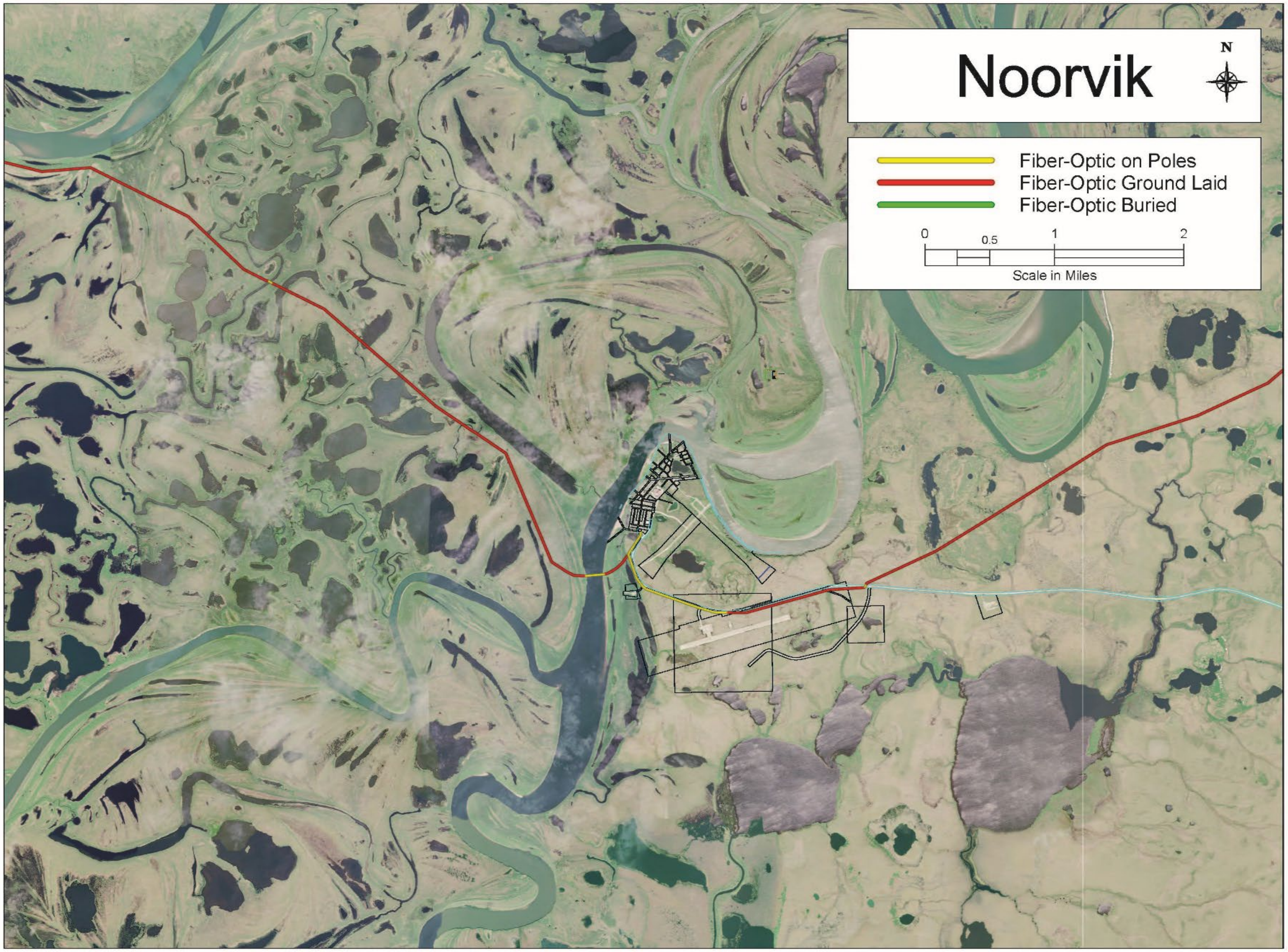
1
2
Scale in Miles

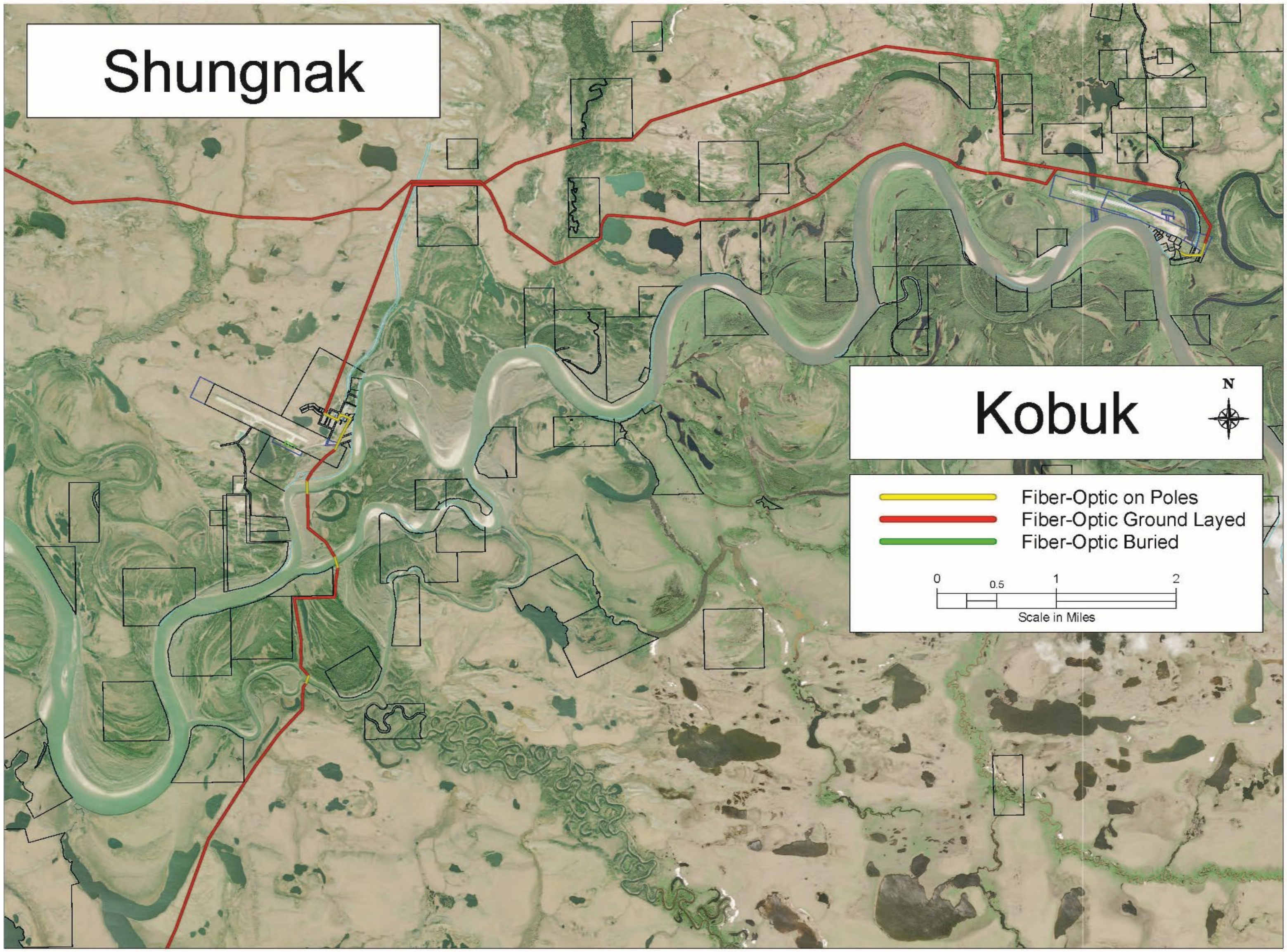


Noatak
N
Fiber-Optic on Poles
Fiber-Optic Ground Laid
Fiber-Optic Buried
0
0.5
1
2
Scale in Miles



Noorvik
N
Fiber-Optic on Poles
Fiber-Optic Ground Laid
Fiber-Optic Buried
0
0.5
1
2
Scale in Miles


Selawik
N
Fiber-Optic on Poles
Fiber-Optic Ground Laid
Fiber-Optic Buried
0
0.5
1
2
Scale in Miles


Shungnak
Kobuk
N
Fiber-Optic on Poles
Fiber-Optic Ground Layed
Fiber-Optic Buried
0
0.5
1
2
Scale in Miles

Appendix O2 – Broadband Community Meeting Questions

NANA Regional Broadband Network Project Community Engagement Meeting Q&A

During the community engagement meetings held in 2024, NANA discussed the project and requested feedback and recommendations for route modifications on the proposed fiber routes, identification of sensitive areas to stay away from within and around the village community and region, identification of subsistence areas to stay away from within and around the village community and region, and recommendation for winter and summer construction activities of the project.

Middle Mile Questions:

1. Will this project affect the caribou?
    a. No. This question is near and dear to our Inupiat way of life. We are consulting with locals in the communities to ensure that we are considering caribou migration patterns and subsistence hunting activities as part of our construction plan. Additionally, as part of our environmental and permitting process, we are working with one of the preeminent caribou biologists in the state. Through these efforts, we are confident that the project will not have a negative impact on caribou or subsistence activities.
2. Will the cable have power?
    a. No, the Fiber cable will not have any power flowing across it.
3. Will the cable be locatable if damaged?
    a. Yes, the fiber cable is locatable and there will be test equipment available to isolate damages.
4. How will you cross the rivers?
    a. Aerial crossings will be made over large rivers.
5. What about barge traffic, will the cable be high enough?
    a. Yes, the cable will be installed so as not to impact barge traffic.
6. Is the cable strong entity for snow machines?
    a. Yes, the cable is very durable and is constructed with armor to protect it from damage.
7. What happens if the cable is damaged?
    a. If the cable is damaged, employees will use test equipment to locate the damaged location and will either repair or replace that small section of cable.

8. Who will work on the network?
    a. NANA will be hiring workers in the communities to work on the network.
9. Will there be pipes on the ground?
    a. The design is for this cable to be laid onto the tundra. The only area where there maybe be conduit (pipes) in the ground is if the cable is going through a high traffic area near the community, that way we can avoid the cable being in the way of daily activity.
10. Will construction happen during hunting season?
    a. Primary construction will be completed during the winter months and as part of our planning and permitting process, we will ensure that construction will not take place when it would have the potential to impact hunting.
11. What is the strength of the cable?
    a. The cable is very strong, it has a cable breaking load of 50 Kn (11,240 pounds), this is like 7 adult bull moose hanging from the cable at one time!
12. What happens if it is damaged?
    a. If the cable is damaged, depending on the severity, the system may change the direction the signal is feeding from, so that the system can keep working. Workers would use test equipment to locate where the damage is and would repair or replace the damaged area of the cable.
13. Will extra cable be stored if break happens?
    a. Yes, extra cable and repair parts will be stored so that in the event there is damage, we can quickly repair it.
14. Will cable crossing river be higher for barge landings?
    a. Yes, the cable where it crosses large rivers will be placed high enough that it will not affect barge landings or other river activities.
15. Will the cable need amplifiers in the field?
    a. No, the cable will not need amplifiers in the field. There will be electronics housed in buildings or huts in each community.
16. Will there be work available?
    a. Yes, our intent is for the construction contractor to utilize local labor on the build project wherever possible and NANA intends to recruit and hire locally in the communities for workers to operate and maintain the system.

17. When will training begin?

    a. Coordination for training for the construction phase will begin once we have a contractor hired for the project. Training for operations and maintenance of the system will likely start sometime in mid-2025

18. Will we have jobs in the community?

    a. Yes, in addition to construction jobs while building the system, NANA intends to recruit and hire local workers in the communities to operate and maintain the system (installers, splicers, repair personnel, customer service, etc.)

19. Will there be training for the job opportunities?

    a. Yes, NANA will work with the construction contractor on local-hire and NANA will train workers to operate and maintain the system.

20. What happens to cables when placed in willows?

    a. If there are locations where, when the cable is placed, it does not lay down onto the ground (but is hung up in the willows), during the inspection phase of the project, those locations will be identified, and workers will lay the cable onto the ground.

21. What happens with cable from erosion?

    a. The cable is being laid in a serpentine manner, which means that there is some slack when the cable is laid out. This means that in the event there is erosion of other shifts in the ground, the cable should move with those shifts and continue to lay on/in the ground.

22. Will the cable get cut by ice?

    a. The cable is very durable and has armor to protect it. Through the design and construction plan for the cable route we strive to identify potential trouble areas and either avoid or make modifications to avoid damage as much as possible.

23. How will repairs happen in winter and summer?

    a. Damage locations would be identified, and, in the winter, repairs would likely be made by workers traveling to the damaged location from the nearest community via snow machine. In the summer, depending on where the damage is located, workers would likely be transported to the location via helicopter.

24. What is the schedule?

    a. Construction is planned to start in early 2026, with all of the middle-mile cable being placed by the end of the summer in 2026. Local (in community) systems are planned to be constructed and services turned up in 2 phases: phase 1, spring through fall of 2026 and phase 2, spring through fall of 2027.

25. Where will the equipment office be located?
    a. NANA is identifying locations in each community for the equipment office. In most cases, they will be located on the same lot as the NANA building.
26. Will the local piece be built first?
    a. There may be some small amount of the "local piece" being build first, but for the most part the middle-mile (connection between communities) will be built first. Final construction sequencing will be determined once we have hired the construction contractor.
27. What type of vehicle will build it?
    a. The final determination on the construction vehicles will be decided by the construction contractor and NANA, however, it will likely be a low pressure tracked vehicle similar to a Pisten-Bully which will pull a sled with the cable containers.
28. Will there be trail improvements?
    a. The route that the cable is being laid on will likely have some clearing done, where possible/practical, we plan to lay the cable near existing trail systems.
29. How long will permitting take?
    a. Currently we plan for the permitting to be completed by the fall of 2025.

ISP Questions:

1. Will the in-home router have Wi-Fi capabilities?
    a. Yes, it will have Wi-Fi
2. Will the data be secure?
    a. Data is secure from the wireless devices to the Internet Gateway.
3. Will NANA manage the Wi-Fi?
    a. Yes, the customer will be able to manage their own Wi-Fi or NANA can.
4. Will NANA provide parent controls?
    a. Yes, home gateways do offer parental control.
5. How many devices can connect to the router?
    a. The current planned limit is approximately 250 devices.
6. Can I take my service with me to camp?

a. No, this would be for your home and the area immediately surrounding it.

7. What will be available for low income and seniors?
   a. NANA is pursuing grants and other programs to be able to provide lower cost or subsidized services in the communities.
8. Will there be cyber security and end user training?
   a. Yes, there will be training on cyber security and training on the features and use of your router/modem device.

General Questions- Open Discussion and Comments

1. Will the guys have high viz?
   a. Yes, the workers will wear high-viz and follow stringent safety regulations.
2. When will the project be completed?
   a. We plan for Middle-mile (connection between communities) to be completed by fall of 2026 and Last-mile (in the communities) to be completed in 2 phases, 1 by fall of 2026 and 2 by fall of 2027.
3. Where will the equipment office be located?
   a. Final locations are still being determined, however, in most cases they will be located on the same lot as the NANA buildings.
4. What is difference in services between NANAs and competitors?
   a. NANA's system will be fiber optic cable (not satellite or microwave) and is an inherently more reliable system. NANA's system will provide faster speed packages than our competitors.
5. When will training become available?
   a. Training for workers will likely begin sometime in 2025, training for customers on use of the system will begin sometime ahead of system turn up (2026 and 2027).
6. Will this improve cellular service?
   a. Cellular providers would have the option to utilize this system, which could improve their services.
7. Will this service be available to other businesses and companies?
   a. Yes, services will be available to other businesses and companies.
8. Can you use Wi-Fi calling with your cell phone?

a. Yes, you can use Wi-Fi calling on this system.

9. What type of educational information about high-speed internet will be shared?

    a. The NANA team plans to share educational information on a wide range of internet topics, such as device information and use, internet safety, cybersecurity, remote learning, etc.

10. What is IoT?

    a. IoT is the "Internet of Things" it basically describes devices that connect with other devices and systems. When discussed in this application, it mainly is talking about "smart home" devices, things like; security systems, cameras, lights, thermostats and other home devices, that you will be able to control with your voice or your smartphone, utilizing your home Wi-Fi.

11. Will I be able to turn down dish network and use this to watch tv?

    a. You would be able to subscribe to streaming services and watch tv programming over this system.

Appendix O3 – Energy Steering Committee Presentation

NANA Regional Broadband Network

Northwest Arctic Energy Steering Committee Presentation

NANA

NANA Regional Broadband Network

Under the U.S. Department of Commerce, National Telecommunications and Information Administration's Tribal Broadband Connectivity Program, NANA has been awarded a $65,168,000 broadband infrastructure deployment grant.

Project Objective:

Connect the Village Communities of Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Kotzebue, Noatak, Noorvik, Selawik, and Shungnak with Fiber Optic Cable

MEET THE TEAM
Combined over 140 years of industry experience in Alaska

Albie Panikpaiq Dallemolle

Vice President of Economic Development and Sustainability

Jason Louvier

Project Superintendent

Brett Carter

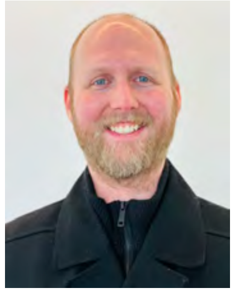
Sr. Director Compliance & Controls

Jeff Parrott

Director of Network Engineering & Operations

Travis Stubblefield

Director of OSP Engineering & Field Operations



Anthony Parker
Senior Network Engineer

Mark Groeschel
OSP Design Engineer

NANA Regional Broadband Network

NANA

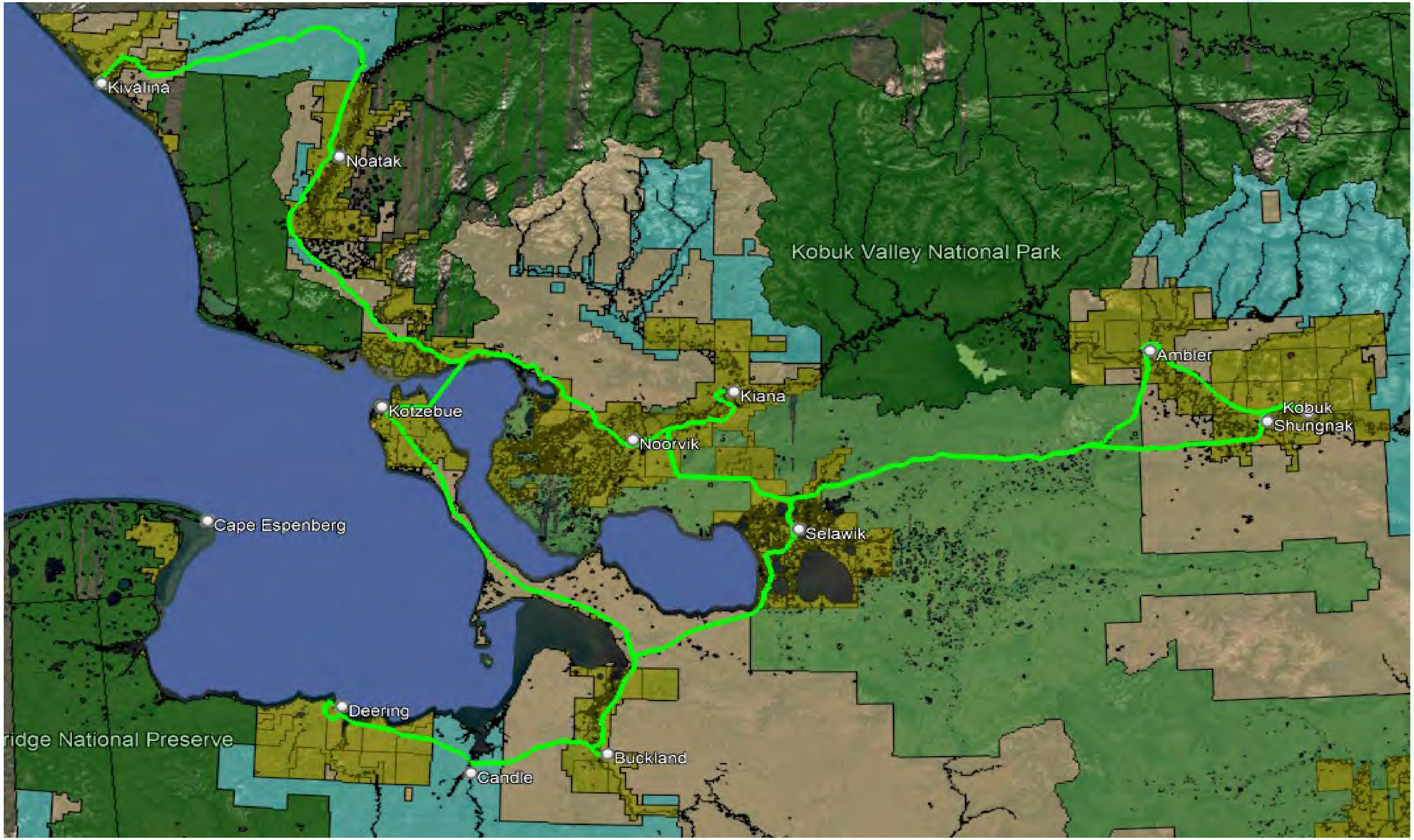
Below are some uses of the fiber infrastructure:

- Alternative Energy Monitoring
- Automotive Industry
- Broadcasting
- Call Center Support
- City Planning Software
- Computer Networking
- Data Center Services
- Expanded Search & Rescue
- Heart Monitoring
- Internet
- Lighting Management
- Mechanical Inspections
- Medical
- Military and Space
- Power Shedding
- Remote Education
- Remote Sensing
- Security Cameras
- Smart Appliances
- Surgical Procedures
- Telephone
- Television
- Temperature and Moisture Sensors
- Transportation Industry

Middle Mile Network Fiber Route

Middle Mile is the infrastructure between the village communities.

Proposed Fiber Route



Middle Mile Permitting & Land Use

Land Owners:

- NANA
- KIC
- BLM
- USFWS (Selawik NWR)
- State of Alaska

Other Permit Authorities:

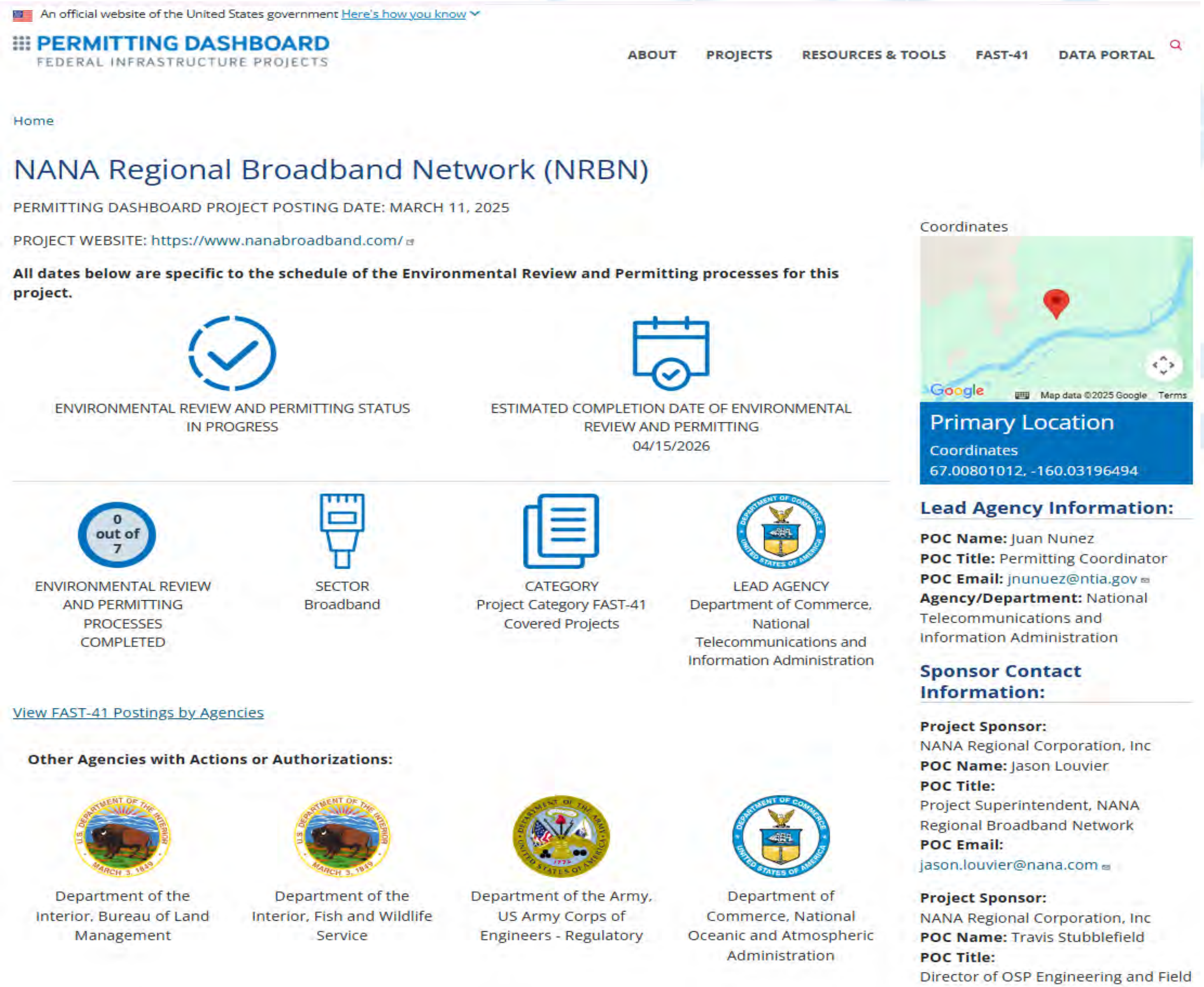
- ADF&G
- USACE
- USFWS/NMFS
- NAB
- Cities

Middle Mile Permitting & Land Use - continued

NANA has elected to enter the FAST 41 process for permitting of the Broadband Project.

This will enable work with all Federal permitting and environmental agencies at one time, expediting the process so we can get to construction.

Typically, this process is reserved for projects more than $200M however, we are eligible to join the process due to the project being tied to Broadband (supported industry sector) and being an ANC.



An official website of the United States government Here's how you know

PERMITTING DASHBOARD
FEDERAL INFRASTRUCTURE PROJECTS

ABOUT PROJECTS RESOURCES & TOOLS FAST-41 DATA PORTAL

Home

NANA Regional Broadband Network (NRBN)

PERMITTING DASHBOARD PROJECT POSTING DATE: MARCH 11, 2025

PROJECT WEBSITE: https://www.nanabroadband.com/

All dates below are specific to the schedule of the Environmental Review and Permitting processes for this project.

ENVIRONMENTAL REVIEW AND PERMITTING STATUS
IN PROGRESS

ESTIMATED COMPLETION DATE OF ENVIRONMENTAL REVIEW AND PERMITTING
04/15/2026

0 out of 7
ENVIRONMENTAL REVIEW AND PERMITTING PROCESSES COMPLETED

SECTOR
Broadband

CATEGORY
Project Category FAST-41 Covered Projects

LEAD AGENCY
Department of Commerce, National Telecommunications and Information Administration

View FAST-41 Postings by Agencies

Other Agencies with Actions or Authorizations:

Department of the Interior, Bureau of Land Management

Department of the Interior, Fish and Wildlife Service

Department of the Army, US Army Corps of Engineers - Regulatory

Department of Commerce, National Oceanic and Atmospheric Administration

Coordinates

Google Map data ©2025 Google Terms

Primary Location
Coordinates
67.00801012, -160.03196494

Lead Agency Information:

POC Name: Juan Nunez
POC Title: Permitting Coordinator
POC Email: jnunuez@ntia.gov
Agency/Department: National Telecommunications and Information Administration

Sponsor Contact Information:

Project Sponsor:
NANA Regional Corporation, Inc
POC Name: Jason Louvier
POC Title:
Project Superintendent, NANA Regional Broadband Network
POC Email:
jason.louvier@nana.com

Project Sponsor:
NANA Regional Corporation, Inc
POC Name: Travis Stubblefield
POC Title:
Director of OSP Engineering and Field

Middle Mile Network Design

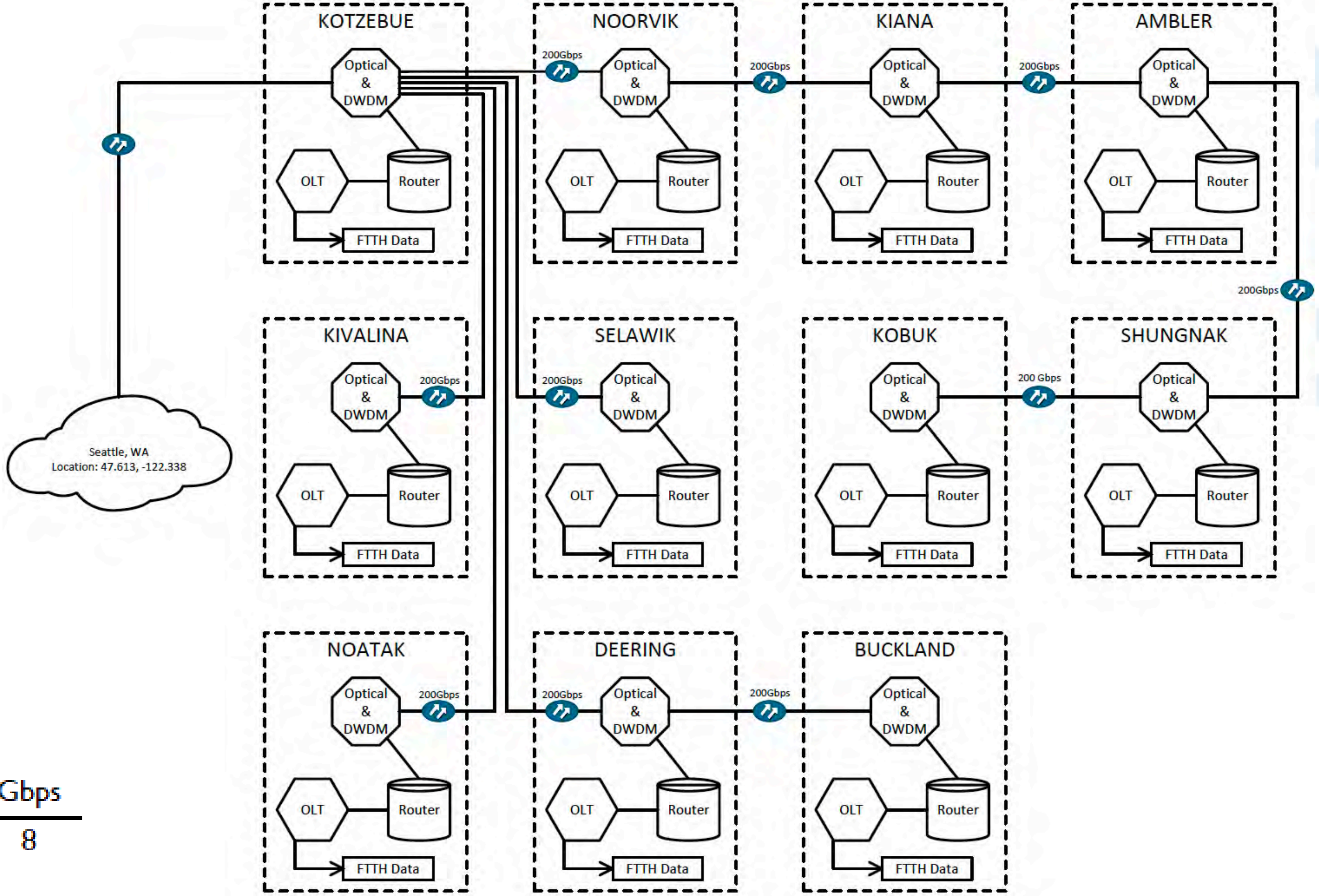
1,000 Megabits per second = 1 Gigabit per second

Initial Capacity Design

200 Gigabits per provisioned fiber pair

48 Fibers placed into each community

NWAB Locations	Zoom HD Required Speed Mbps	Mbps	Gbps
2,000	4	8,000	8



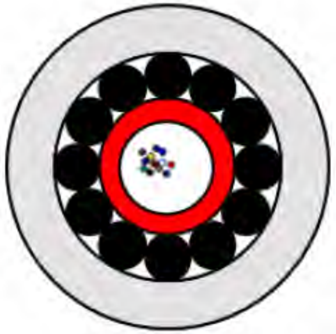
Middle Mile Winter Construction

PistenBully PB600

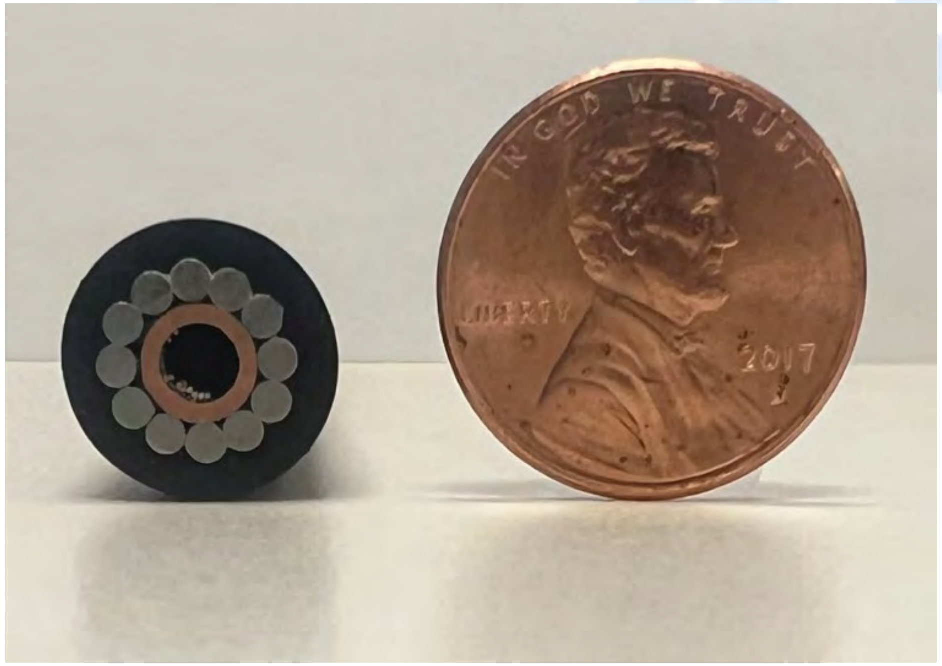
Sleigh Camp

Steigers Triple-Heading

Middle Mile Fiber Cable



Mechanical Parameter	Unit	Value
Cable Outer Diameter	mm	12
Fiber Count up to		48
Weight in air	kg / km	360
Minimum bending radius (MBR) with load	mm	800
Cable Breaking Load (CBL)	kN	50
Tension		
Dynamic (NTTS)	kN	40
Operational (NOTS)	kN	35
Static (NPTS)	kN	15
Operating temperature range*	°C	-50 to +60
Installation temperature range*	°C	-15 to +60
Storage temperature range*	°C	-50 to +70



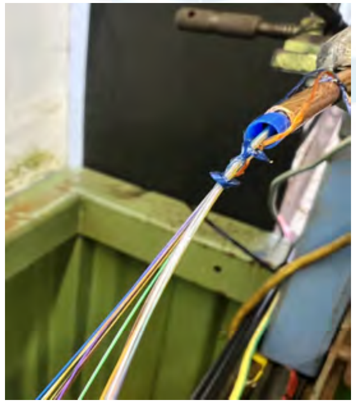
Actual Cable Size

Middle Mile Fiber Cable - continued

Fiber Inside Copper Tubing Before Armoring

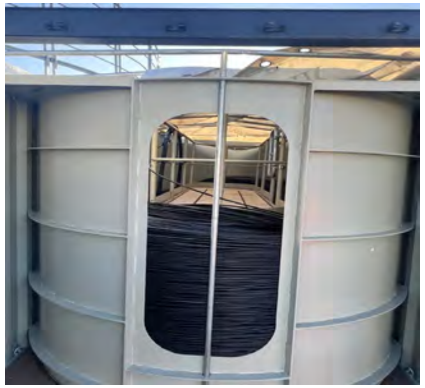
Fiber Batch Stored for Testing

Testing Stored Batch



Closeup of 24 Fibers

Empty Container



Loaded Container-25 Miles

Testing Post Loading

First Fiber Container

Last Mile Community Network

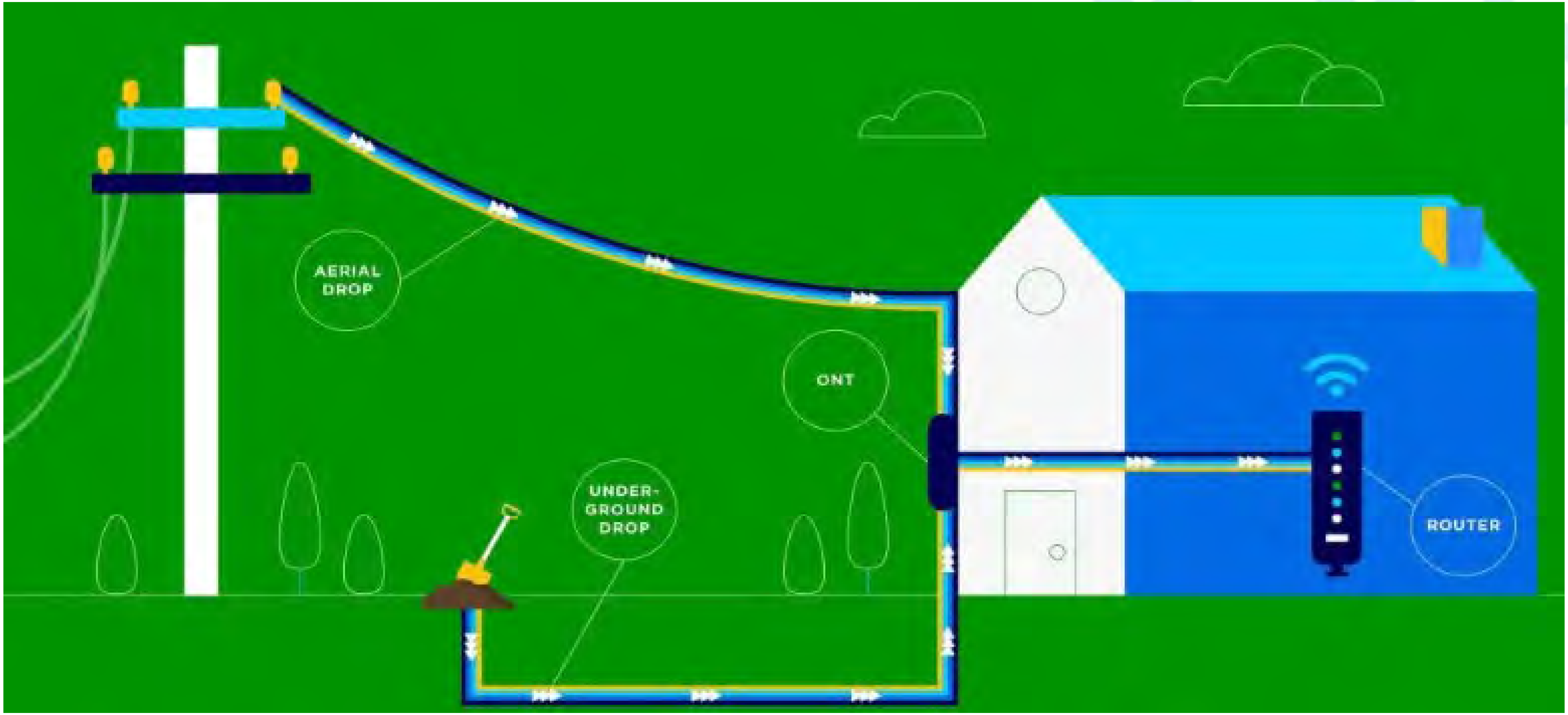
Last Mile is the infrastructure between the village communities.

- NANA Board of Directors approved two resolutions totaling $8M to build a Last-Mile Network in 10 villages to connect homes, clinics, schools, and NANA office buildings

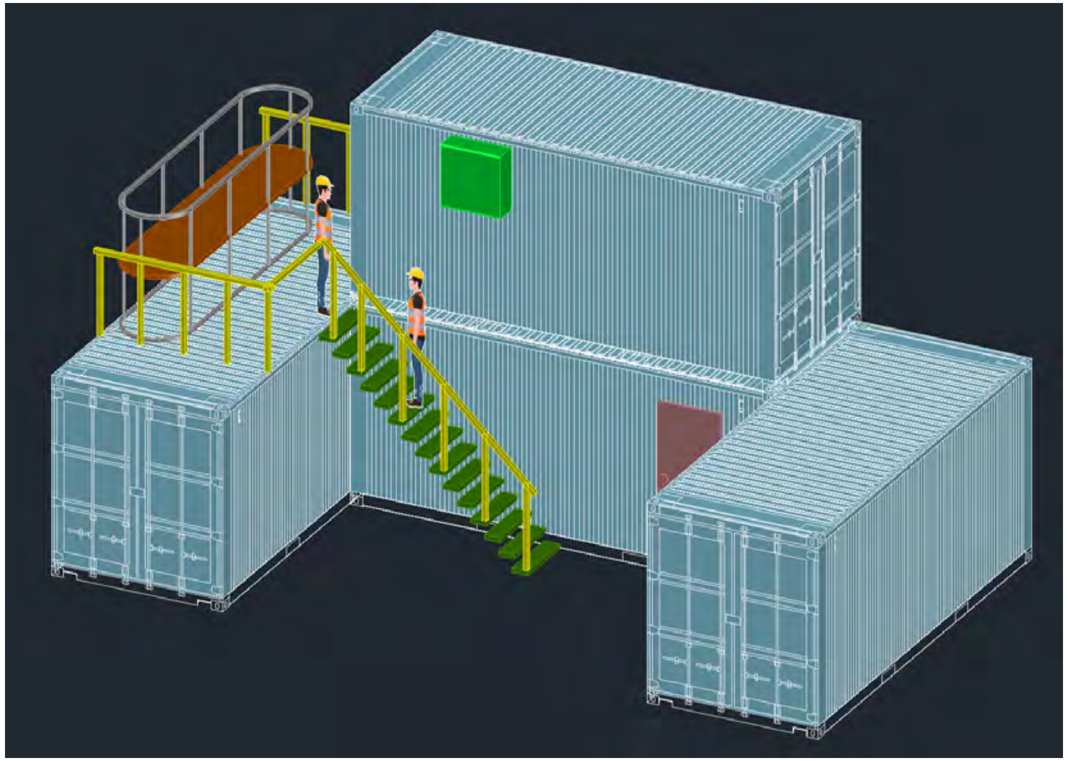
- Aerial Fiber-to-the-Premise has been chosen for deployment

- This is a physical connection using Fiber to the location
  - Lower operating expenses and maintenance costs
  - Secure transport using Fiber
  - Higher throughput capacity, up to 10Gbps
  - Lower cost future electronic upgrades

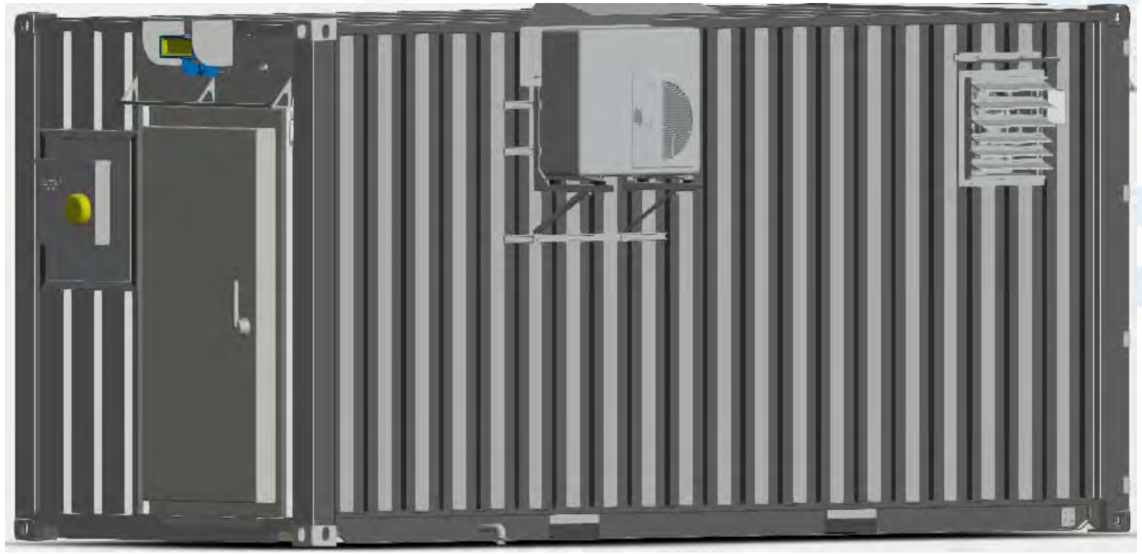
Last Mile Fiber Install



Proposed Facility Design: Village Central Office



Site Layout



Central Office

Establish Broadband Operating Company - ISP

NANA

Internet Service Provider (ISP) - A company that provides internet access to consumers and businesses.

Develop and establish a premier Internet Service Provider (ISP) company with a mandate to provide affordable internet service to NANA Shareholders and the NANA Region.

To operate the Middle and Last Mile broadband network infrastructure, a NANA Wholly-Owned ISP Subsidiary will be established.

Products and Services

Affordable High Speed Symmetrical Internet

- Parental Controls (Residential Services)
- Managed Wi-Fi
- Cybersecurity
- Managed Services
- NOC Support Services
- VOIP Services

Rural Health Care Services - Hospital and Clinics

Secure Medical Clinic / Hospital private interconnections, real-time collaboration and communication with one another and residents.

- Managed Services
- NOC Support Services
- Telemedicine
- Private Line Services

E-RATE Services - Schools and Libraries

Secure School and Library private network interconnections and wide area networks.

- Managed Services
- NOC Support Services
- Remote Learning (Distance Education)

NANA Operations Center (NOC)

- 24/7 Network Monitoring
- 24/7 Facility Monitoring
- Tier III Support
- Network Engineering
- Managed Network Services

Workforce Development

- Estimated Employees Needed in Region = 25

- Develop Workforce Training Program
  - Fiber Construction Training
  - Install and Repair Training
  - Network Operations Center (NOC) Training
  - Customer Service and Provisioner Training

- Technology Summits
  - Peak Opportunities to Explore
    - High School and Alaska Technical Center Technology Day
      - Introduction to Drone Technology
      - Introduction to Computer-Aided Design (CAD)
      - Internet of Things (IoT)
      - Broadband 101
      - Computer Programing
      - Connected Devises

FY 2025 Broadband Strategy Summary

NANA

Focus Area	FY25
Middle Mile	Complete Environmental Assessment
Middle Mile	Continue with permitting activities
Middle Mile	Procure fiber cable and other supplies
Middle Mile	Enter into contracts for middle-mile fiber installation
Middle Mile	Establish equipment testing lab environment
Last Mile	Finalize OSP Engineering and begin permitting
Last Mile	Begin Pole Attachment Agreements
Last Mile	Procure fiber cable and other supplies
Last Mile	Ship materials to Kotzebue for staging
Last Mile	Establish Go Live plan with soft launch
ISP	Obtain Licensing and Certifications
ISP	Establish Eligible Telecommunications Carrier as a Lifeline Broadband Provider
ISP	Register with Universal Service Administrative Company
ISP	Obtain assignment of IP addresses (ARIN)
ISP	Establish a secured physical and virtual network to manage middle and last mile networks
ISP	Develop company governance policies
ISP	Develop operating policies and procedures
ISP	Complete Product Development and management plan

Drone Work in Buckland

Drone Work in Shungnak

NANA

Drone Work in Kobuk

Drone Work in Kiana

Drone Work in Ambler

Drone Work in Noatak

Drone Work in Noatak

TAIKUU

NANA

Appendix O4 – Letter to Tribal and City Leaders

NANA

August 1, 2025

RE: NANA Regional Broadband Network Project - Upcoming Archaeological Field Work

Dear Tribal and City Leaders,

The NANA Regional Broadband Network Project is moving forward with fieldwork scheduled for August 2025 to support compliance with Section 106 of the National Historic Preservation Act (NHPA). This step ensures the project meets all federal requirements and demonstrates our commitment to respecting cultural and historical resources.

Fieldwork will be conducted across the project corridor, including surveys on federal, state, and Alaska Native Corporation lands. Stephen R. Braund & Associates (SRB&A) and Kuna Engineering are leading the work on behalf of NANA, which is overseen by the National Telecommunications and Information Administration (NTIA), the broadband project's federal funding agency.

Field teams will use helicopters to access remote locations and carry out aerial and on-the-ground assessments. While this is not construction work, residents may observe helicopter flights or hear related activity in the area. Community outreach and federal consultation efforts are ongoing, with additional engagement planned for Fall 2025.

This work ensures NANA's commitment to cultural stewardship and regulatory compliance as we prepare for winter 2026 ground deployment of the fiber.

Thank you for your time and continued partnership in moving this project forward.

Taikuu,

Albie Dallemolle
Vice President of Economic Development and Sustainability
NANA Regional Corporation

Appendix O5 – Letter to Allotment Owners

NANA

August 6, 2025

RE: NANA Regional Broadband Network Project – Public Scoping Notification

Dear Allotment Owner,

NANA Regional Corporation, Inc. (NANA) has proposed a broadband infrastructure project that would bring reliable, high-speed internet to communities throughout the NANA region. The goal is to install fiber optic cable along identified routes across federal, state, private, and Alaska Native Corporation lands to expand access to vital services like telehealth, education, and economic development.

The NANA Regional Broadband Network Project is moving forward with permitting as part of the National Environmental Policy Act (NEPA), which requires a public scoping process and environmental review led by the National Telecommunications and Information Administration (NTIA), in coordination with other federal agencies. Enclosed you will find a copy of the Scoping Letter from NTIA. It is also available on the project website at: https://www.nanabroadband.com/permitting/

You are receiving this letter because NANA and NTIA want to ensure local stakeholders are invited to participate in the NEPA process. This is a required step in the Environmental Assessment, and your voice is welcome.

Please note: **The NANA Regional Broadband Network Project does not anticipate any construction or activity on individual allotment lands.**

NANA is committed to transparent communication and meaningful community engagement. We have already held numerous public meetings throughout the region and will continue to provide updates as this project progresses. If you have any questions about this letter, the scoping notice, or the proposed project, please contact Jason Louvier, project superintendent at Jason.Louvier@nana.com.

Quyanaqpak for being part of this important high-speed internet project and supporting the future of broadband connectivity in our region.

Taikuu,

Albie Dallemolle
Vice President of Economic Development and Sustainability
NANA Regional Corporation

Appendix O6 – EA Scoping Letter

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, DC 20230

NTIA Requests Public Input on Issues related to the Proposed NANA Regional Broadband Network Project

AGENCIES:
Department of Commerce, National Telecommunications and Information Administration (NTIA)
Department of Commerce, National Oceanic and Atmospheric Administration (NOAA)
Department of the Army, US Army Corps of Engineers (USACE)
Department of the Interior, Bureau of Land Management (BLM)
Department of the Interior, Fish and Wildlife Service (FWS)
Department of the Interior, National Park Service (NPS)

SUMMARY:
NANA Regional Corporation, Inc. (NANA), a regional Alaska Native Corporation, has proposed to construct a Regional Broadband Network Project (project). The proposal would include installation of a fiber optic cable across federal, state, privately-owned lands, and waters in northwest Alaska.

NTIA, as the lead agency, in cooperation with the NOAA, USACE, BLM, FWS, and NPS, intends to prepare an Environmental Assessment for the project, in accordance with the National Environmental Policy Act of 1969, as amended (NEPA).

NTIA and cooperating agencies request your input on the issues related to this proposed project, potential alternative suggestions, and identification of relevant information and studies.

DATES:
Submit comments by *August 19, 2025*.

ADDRESSES:
Submit comments for consideration to:
- *NEPAComments@ntia.gov*
- *US Department of Commerce, National Telecommunications and Information Administration, 1401 Constitution Ave, NW, Room 4878, Washington, DC 20230*

SUPPLEMENTAL INFORMATION

Purpose and Need
The purpose of the proposed action is to develop and install broadband infrastructure within the NANA region of northwest Alaska. The project proposes to provide reliable, high-speed internet service, to enable access to distance learning, telehealth, public safety communications, and provide opportunities for economic development. The newly proposed infrastructure would support connectivity to meet current and future needs of residents, businesses, and public institutions. Anticipated federal authorizations and/or permits that would be required to achieve the purpose and need, and that carry a NEPA obligation, include Right of Way authorizations from the BLM and USFWS, a USACE Section 404 permit, and a USFWS compatibility determination.

The proposed action is needed because communities within the NANA region currently lack access to true broadband service. Available internet options offer inadequate connectivity, low speeds, and prohibitively high costs, which contribute to low internet adoption rates.

Background
The NANA region is without true broadband. Current options have poor connectivity, slow access, and prices that are beyond the reach of most residents. Internet adoption rates are low, and residents lack access to resources such as distance learning, telehealth, or the ability to work from home while remaining in their communities. Installation of additional broadband infrastructure would allow scalable high-speed data transmission, providing reliable and fast internet access to residents, businesses, and public institutions that are currently unserved/underserved and would support real-time communication, future growth, and provide a stable, affordable, durable connection.

Proposed Project Location
Located at the extreme northwestern edge of the North American continent, mostly above the Arctic Circle, the NANA region encompasses 38,000 miles, is sparsely populated, and isolated. No roads connect NANA villages to each other or to greater Alaska. Household goods and food are barged or flown into the region, resulting in high prices for basic goods, including food, fuel, and building materials.

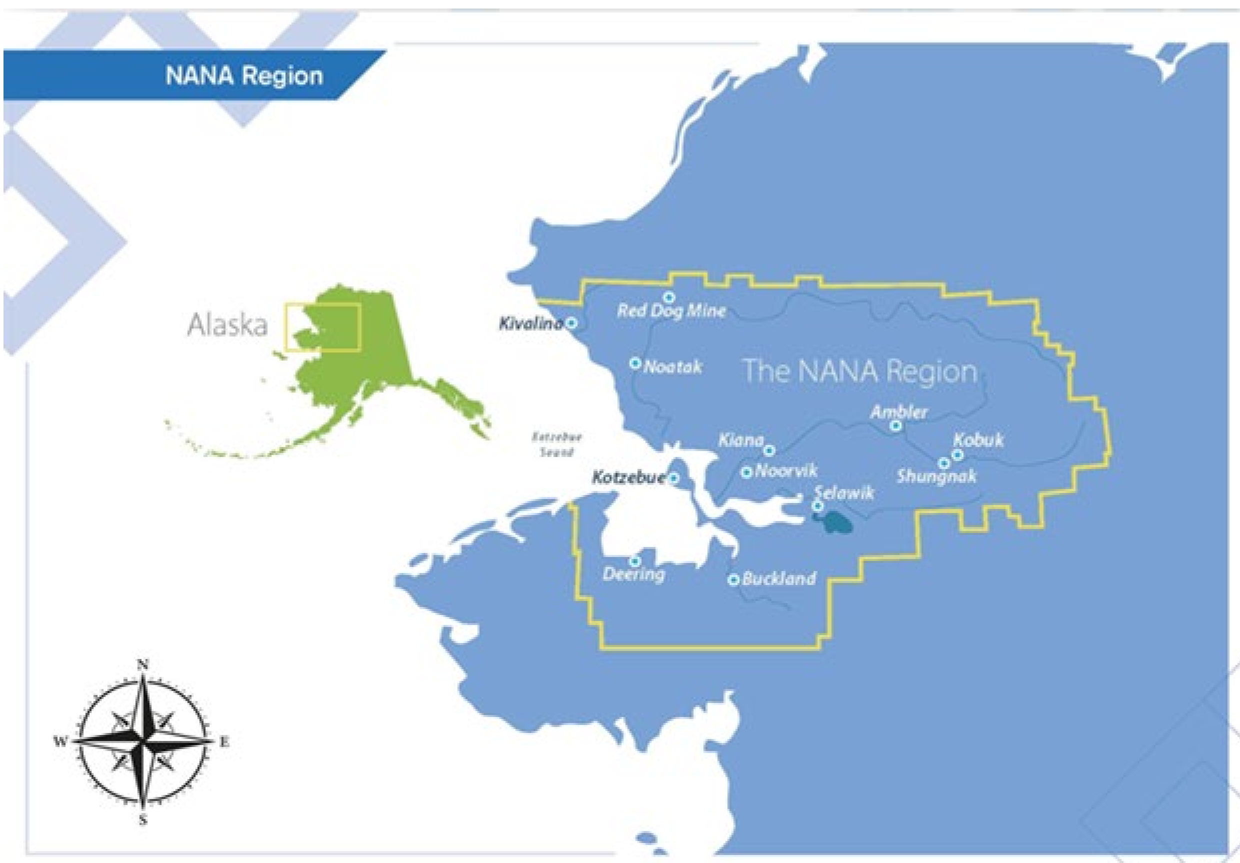
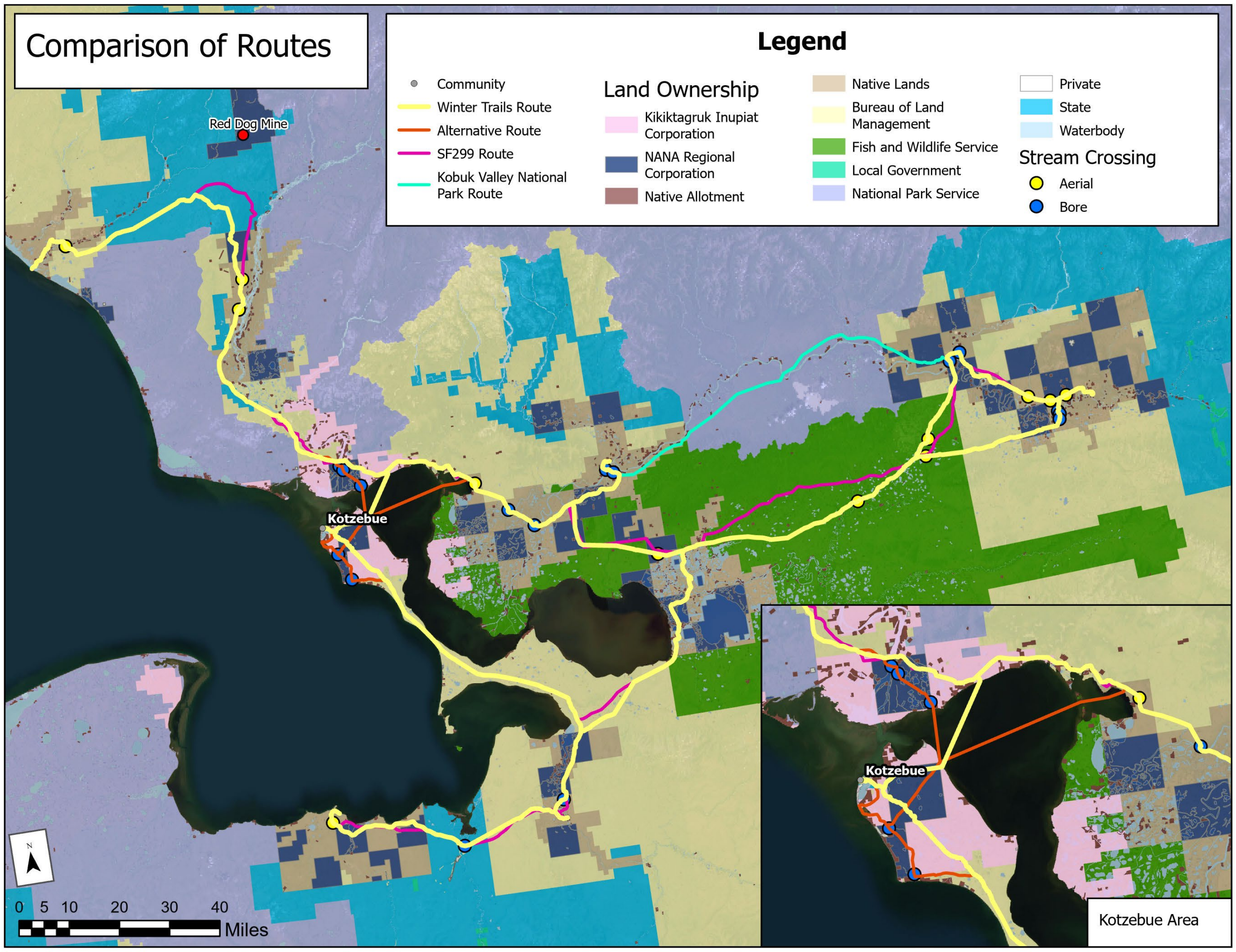


Figure 1. Map of NANA Region.

Proposed Action

The proposed project would establish fiber optic infrastructure through the deployment of long-haul fiber, connecting communities in northwest Arctic Alaska to regional and national telecommunications networks. The proposed fiber optic cable (FOC) route would incorporate a combination of terrestrial ground-laid, subsea, directional bored, trenched, and aerial cable placement methodologies. Figure 2 presents a map of the alternative routes proposed. The proposed route segments are also outlined in the table below.

Figure 2. Map of Routes.



* Ground-lay stream crossings are not depicted

Table 1. Analysis of Alternative Routes

Item	Winter Trails Route	Alternative Route	SF299 Route	Kobuk NP Route
Fiber Optic Cable (miles)	674	684	672	696
Subsea Fiber Crossings (miles)	10	27	10	10
Fiber Overland (miles)	639	611	651	678
Fiber Trench (miles)	1	20	0	0
Fiber Aerial (miles)	24	26	11	8
Stream/River Crossings	763	746	759	598
River Crossings (Aerial)	18	16	3	0
River Crossings (Bore/HDD)	17	18	0	0
River Crossings (Ground Lay)	728	712	756	598
Lake/Pond Crossings	59	57	53	N/A
ROW Width (feet)	30	30	30	30

*Lake/Pond Crossings were not annotated for Kobuk NP Route

Description of Construction Phases

WINTER PHASE CONSTRUCTION
The project proposes that the majority of the network would consist of ground-laid FOC installed during winter months across the terrestrial landscape, lakes/ponds, minor stream crossings, and river crossings. A deployment team will consist of approximately 14 people per crew (a total of 3 crews are anticipated for the project), along with tracked, low-ground-pressure cable deployment equipment, a mobile sleigh camp, vegetation clearing equipment, digging equipment, and snowmachines. Where vegetation clearing is necessary, a mulcher would cut vegetation to the level of the snow surface. Cable would be laid along the ground and anchored at no more than 6,000 foot intervals. FOC would be laid across the ice of lakes, ponds, and minor streams, and allowed to sink to the bottom after the ice thaws.

SUMMER PHASE CONSTRUCTION
Construction would occur during the summer for the subsea crossing and large river crossings. For subsea crossings, an excavator on floats, tugboat, barge, and static plow would be used. Trenching would occur from the low tide point to a water depth exceeding operating range of the excavator. Trenching would also occur in terrestrial areas of high pedestrian or ATV traffic, primarily around communities. At large river crossings the FOC would be horizontally directionally drilled (HDD) under the rivers, or installed aerially over the water. Aerial installation would involve one wooden pole placed vertically on each riverbank to support the aerial section of cable. The table below lists the proposed major river crossings.

Table 2. Major River Channel Crossings and Methods

River Name	Nearest Community	Crossing Method	
		Other routes*	SF299
Ambler River	Ambler	HDD	Aerial
Amaouk Creek	Noorvik	Aerial	Aerial
Buckland River	Buckland	HDD	Aerial
Cosmos Creek	Kobuk	Aerial	Aerial
Fish River	Selawik	Gravity Lay	Gravity Lay
Inmachuk River	Deering	Aerial	Aerial
Kiwalik River	Deering	HDD	Aerial
Kiyak Creek	Noatak	Aerial	Aerial
Kobuk River (6 crossings)	Kiana, Ambler, Shungak	HDD	Aerial
Kugaruk River (3 crossings)	Upper Kobuk Communities	Aerial	Aerial
Kugruk Estuary	Deering	Gravity Lay	Gravity Lay
Kungsugrug River	Selawik	Gravity Lay	Gravity Lay
Nazuruk and Melvin Channels of Kobuk River	Noorvik	HDD	Aerial
Noatak River	Noorvik	HDD	Aerial
Oblaron Creek	Selawik	Aerial	Aerial
Selawik River	Selawik	Existing 5th Avenue Bridge	Existing 5th Avenue Bridge
Shungnak River	Kobuk	Aerial	Aerial
Wesley Creek	Kobuk	Aerial	Aerial
Wulik River	Kivalina	Aerial	Aerial

Proposed Future Maintenance and Operations
Maintenance and operations activities are expected to be minimal and would include:

- One annual flight above the proposed route to identify any damage or areas of concern. Timing would be coordinated with landowners, land managing agencies, and consider potential sight and sound impacts to wildlife.
- Helicopter-supported preventative maintenance, if needed. Examples may include straightening poles and fiber markers, and/or tightening guy wires.
- Cable damage repairs. Summer damage repair would be supported by helicopter; winter damage repair would be supported by helicopter, snowmachine, or low ground pressure vehicle and could include splicing sections of new FOC into the existing line.

Proposed Future Decommissioning of Project
The expected useful life of the fiber optic network is 50 years. The fiber optic cable is expected to self-bury into the landscape over time. The fiber cable and ground anchors would be left in place to avoid unnecessary disturbance of the tundra/vegetation. Poles would be cut off at ground level, and supporting infrastructure would be removed. This activity is proposed to take place during the winter months, to avoid ground disturbance.

Past Community Engagement Efforts of the Proponent, NANA

- NANA has prioritized meaningful community engagement throughout the project planning process.

- Meetings were held with the City and Tribal governments in each of the communities along the proposed route to describe the project, discuss plans and timelines, and to answer any questions or address concerns.
- Initial public meetings in the village communities were held to introduce the project, show the proposed routes into/out of the communities, answer questions, and solicit feedback on the project and proposed routes, in order to make potential adjustments where needed.
    - In August 2024, meetings were held in: Ambler, Buckland, Kiana, Kivalina, Kobuk, Noatak, Noorvik, and Shungnak.
    - In November of 2024, meetings were held in Deering and Selawik.
    - Additional community engagement meetings are planned for the village communities in the region in the winter of 2025.
- Provided a project overview and update to the Northwest Arctic Energy Steering Committee Meeting May of 2025.

Appendix O7 – Scoping Comment: WACH

Western Arctic Caribou Herd Working Group

Goal: To work together to ensure the long-term conservation of the Western Arctic Caribou Herd and the ecosystem on which it depends, to maintain traditional and other uses for the benefit of all people now and in the future.

Chair: Vern Cleveland, Sr. Vice-Chair: Cyrus Harris

P.O. Box 175, Nome, AK 99762

August 19, 2025

Juan Nunez
Permitting Coordinator
National Telecommunications and Information Administration

Re: Request for Public Input on Issues related to the Proposed NANA Regional Broadband Network Project

Dear Mr. Nunez,

On behalf of the Western Arctic Caribou Herd Working Group (Working Group), I submit the following comments to the National Telecommunications and Information Administration and other partnering agencies regarding the request for public input on issues related to the proposed NANA Regional Broadband Network Project. We are interested in the proposed project and its potential impacts and request further consultation and information going forward.

The Working Group and its role in public processes

The Working Group is a permanent organization of diverse stakeholders that work cooperatively with each other and state, federal and regional resource management agencies with a goal "*to ensure the long-term conservation of the Western Arctic Caribou Herd and the ecosystem on which it depends, to maintain traditional and other uses for the benefit of all people now and in the future.*"

The Western Arctic Caribou Herd (WACH) is one of the largest caribou herds in Alaska and has provided an important subsistence resource and contributed to the cultural heritage of northwestern Alaska residents for thousands of years. The caribou of the WACH also provide opportunities for people from outside the range of the herd to hunt and experience caribou in vast Arctic landscapes and serve as an important source of income for commercial operators that provide services to visiting users. Furthermore, the WACH is a critical component of the larger western Arctic ecosystem, influencing natural processes and providing resources for many other species.

In recognition of these varied values, the Working Group consists of subsistence users representing over 40 communities within the range of the herd, other Alaska hunters, guides, transporters, conservationists, and reindeer herders. Since its formation in 1997, the Working Group has submitted numerous advisory recommendations to government agencies, regulatory boards, and other bodies to support decisions that will ensure the long-term conservation of the WACH, its habitat, and its use.

Request for further involvement in the proposed decision

Based on the routes depicted in Figure 2 of the request for public input, the proposed routes for this project would overlap important seasonal habitats of the WACH and several communities represented on the Working Group. Proposed project activities would involve helicopter and ground-based construction and maintenance activities that could disturb caribou and subsistence. The importance of the WACH cannot be overemphasized – for many years it was the largest herd in the state, and among the largest in North America, and is relied upon by many people throughout northern Alaska and beyond. Currently the herd is in a state of decline, which has spanned approximately two decades and has led to restriction of subsistence harvest of the WACH for northwest Alaska residents. This has strong consequences for people who rely on caribou for food and culture. We are concerned about any decisions that could negatively affect the WACH and its habitat.

Moving forward, **we request that the Working Group be kept involved in the planning process for this project with more formal consultation and opportunity to provide input on project alternatives and decisions**. Please include our Working Group facilitator (Holly Spoth-Torres; holly@huddleak.com), Resource Development Committee Chair (Tim Fullman; tim_fullman@tws.org), and Working Group Chair (Vern Cleveland, Sr.; vernsr75@hotmail.com) on all future correspondence related to this process and decision. This will help ensure we are kept apprised and able to inform the Working Group members and our constituencies about updates in the decision-making process.

We also request additional time for such deliberation and commenting. The two weeks provided for this scoping period were inadequate to allow a reasonable review and analysis of the proposed work and formation of meaningful comments. The Working Group includes representatives of stakeholder groups from across the state of Alaska. It takes time to inform our members of new proposals and to organize discussion and feedback, especially for those living in remote villages where communication can be a challenge. Furthermore, representatives of the Working Group need time to communicate information with their communities about development processes and Working Group positions, to facilitate other comment development and submission. Short comment periods severely challenge the ability of the Working Group and those we represent to meaningfully engage in decision making. We request 60 to 90-day comment periods in future stages of the process to allow meaningful engagement and commenting.

We likely will have other input on the proposed decision but require additional information about work and additional time for discussion to inform those comments. We look forward to working with you towards a decision that benefits the people of northwestern Alaska as well as the caribou and environment on which we all rely.

Thank you for your consideration.

On behalf of the Working Group,

Vern Cleveland Sr.

Vern Cleveland, Sr., Chair

cc:
Western Arctic Caribou Herd Working Group Members & Alternates

Appendix O8 – Scoping Comment: Trustees of Alaska

TRUSTEES FOR ALASKA

PROTECT | DEFEND | REPRESENT

Sent via e-mail

August 19, 2025

Adam Cassady
Principal Deputy Assistant Secretary and Deputy Administrator
National Telecommunications and Information Administration

Kevin Pendergast
State Director
U.S. Bureau of Land Management-Alaska

Col. Jeffrey Palazzini
District Commander
Alaska District, U.S. Army Corps of Engineers

Sarah Boario
Regional Director, Alaska
U.S. Fish and Wildlife Service

Sarah Creachbaum
Regional Director
National Park Service, Alaska Region

Re: Request for Public Input on the Proposed NANA Regional Broadband Network Project

To Whom It May Concern:

We submit this letter on behalf of the Brooks Range Council, Defenders of Wildlife, Alaska Soles/Great Old Broads for Wilderness, Northern Alaska Environmental Center, Wilderness Watch, The Wilderness Society, Friends of Alaska National Wildlife Refuges, and Alaska Wilderness League to convey our questions and concerns regarding the recent scoping announcement published on NANA's website regarding its proposed Regional Broadband Network Project (project).[1] We understand the NANA Corporation's desire for improved

[1] U.S. Dept. of Commerce, National Telecommunications and Information Administration, NTIA Requests Public Input on Issues related to the Proposed NANA Regional Broadband Network Project (undated) [hereinafter Scoping

121 W Fireweed Ln Ste 105, Anchorage, AK 99503
Phone: 907.276.4244 Fax: 907.276.7110 www.trustees.org

telecommunications for communities in northwest Alaska and support that goal. However, the federal agencies' permitting process thus far has been conducted with inadequate transparency and in a manner that may be unlawful.

It appears that, on Friday, August 1, NANA posted on an undated announcement from the National Telecommunications and Information Administration (NTIA) that the agency was beginning a formal scoping process under the National Environmental Policy Act (NEPA) and preparing an environmental assessment to evaluate the project's impacts.[2] The scoping announcement states that comments are due by August 19. The Announcement indicates that NTIA will act as the lead agency in permitting this extensive infrastructure project across state, private, and federally-managed lands in Arctic Alaska. It states that NTIA is acting as the lead agency in cooperation with the U.S. Army Corps of Engineers (USACE), Bureau of Land Management (BLM), Fish and Wildlife Service (USFWS), National Park Service, and National Oceanic and Atmospheric Administration. Only BLM and the NTIA have posted anything about this process on a public website.[3] The other federal agencies have not notified the general public of this very short scoping period or that any permit applications have been received for this project. To date, the FAST 41 dashboard has not been updated to account for this scoping process.[4] NANA's application has also not been made publicly available. As a result, there is little information accessible to the public about the proposal at this time, hampering meaningful engagement. Groups request that NTIA and the other agencies make NANA's application and supporting materials available to the public and extend the comment period to allow interested persons and groups time to review those documents prior to submitting scoping comments.

Critically, none of the limited documents provided to date identify that NANA and the federal permitting agencies intend to comply with Title XI of the Alaska National Interest Lands Conservation Act (ANILCA). ANILCA Title XI provides comprehensive procedures for the authorization of transportation and utility system units — including broadband infrastructure — through conservation system units.[5] Title XI establishes "a single comprehensive statutory authority for the approval or disapproval of applications for such systems."[6] Relevant to NANA's proposed project, Section 1104 requires applicants to use specific consolidated forms, and submit these forms to the heads of the federal agencies involved.[7] The agencies share decision-making responsibility on the application and must provide notice to stakeholders

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Announcement], https://www nanabroadband.com/wp-content/uploads/NANA-Regional-Broadband-Project-Scoping.pdf.

[2] NANA, NANA Regional Broadband Network Project, https://www.nanabroadband.com/permitting/.

[3] BLM, NANA Middle Mile Fiber Optic Line Project (updated Aug. 4, 2025), https://eplanning.blm.gov/eplanning-ui/project/2039860/510.; NTIA, Request for Public Input on Issues related to the Proposed NANA Regional Broadband Network Project, https://broadbandusa ntia.gov/funding-programs/documentation-and-reporting/NANA_Regional_Broadband_Project_Scoping.

[4] Federal Permitting Improvement Steering Council, FAST-41 Postings by Agencies for NANA Regional Broadband Network, https://www.permits.performance.gov/permitting-project/nana-regional-broadband-network-(nrbn)/agency-postings?pid=116126.

[5] 16 U.S.C. § §§ 3161–3168; *Id.* § 3162(4)(B)(v)(defining "transportation or utility system" to include "[s]ystems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communication").

[6] *Id.* § 3161(c).

[7] 16 U.S.C. § 3164(b)(1), (c) (ANILCA § 1104).

including the State of Alaska, local governments, and the general public.[8] The head of each federal agency involved must make detailed findings prior to approving a decision to construct a utility system in conservation system units.[9] These include consideration of: alternative routes that would minimize impacts on the conservation system unit; whether impacts would affect the purposes of the conservation system unit; any adverse effects to public values; and "short- and long-term social, economic, and environmental impacts of national, State, or local significance, including impacts on fish and wildlife and their habitat."[10] Any action that purports to approve a utility system through a conservation system unit without following Title XI's requirements is void.[11]

Despite the sparse information provided in the scoping announcement, it is clear from the maps that the project would cross through multiple conservation system units managed by USFWS and/or National Park Service.[12] The scoping announcement explains that "[a]nticipated federal authorizations and/or permits that would be required to achieve the purpose and need, and that carry a NEPA obligation, include right-of-way authorizations from BLM and USFWS, a USACE Section 404 permit, and a USFWS compatibility determination."[13] Because the project is for the purpose of constructing a utility system through one or more conservation system units, the federal agencies' permits are precisely the types of authorizations governed by Title XI. It is therefore deeply concerning that the scoping announcement does not mention ANILCA Title XI and fails to provide proper notice to the public.

The scoping announcement also raises questions regarding how the agencies will comply with myriad other legal requirements, including but not limited to: ANILCA Section 810's subsistence protection mandates; the National Historic Preservation Act (NHPA) Section 106's historic property requirements; NEPA's mandate that agencies prepare an environmental impact statement for projects with significant impacts on the human environment; the National Wildlife Refuge System Administration Act; the Clean Water Act; the Federal Land Management Policy Act; and the Endangered Species Act.

We request that your agencies make available to the public detailed information regarding the proposed project, including the application and supporting materials, the project's potential impacts on relevant conservation system units, and how your agencies intend to comply with ANILCA Title XI and other applicable laws and regulations. We also request a new scoping comment period of at least 45 days to allow groups time to consider the application materials when submitting comments.

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[8] *Id*. § 3164(b)(2), (d), (f).
[9] *Id*. § 3164(g)(2).
[10] *Id*.
[11] *Id*. § 3164(a). The applicability of Fast-41 to this process does not obviate the need to comply with ANILCA XI.
[12] Scoping Announcement, Fig. 2. No conservation system units are labeled on the maps provided in the scoping announcement. It appears the project would cross the Selawik National Wildlife Refuge, Kobuk Valley National Park, and potentially Cape Krusenstern National Monument and Noatak National Preserve. The fact that the scoping announcement does not specify which conservation system units would be traversed by the project only underscores the inadequacy of the federal agencies' process to date.
[13] Scoping Announcement.

If you have any questions or wish to clarify anything in this letter, please do not hesitate to contact me at (907) 433-2011 or by e-mail at bpsarianos@trustees.org. Thank you for your prompt attention to our concerns.

Sincerely,

s/Bridget Psarianos
Bridget Psarianos
Senior Staff Attorney
Trustees for Alaska

CC:

Jon Kurland
Regional Administrator
National Oceanic and Atmospheric Administration, Alaska Region

Daniel Opalski
Regional Director
U.S. Environmental Protection Agency, Region 10

Brian Bourdon
Realty Specialist
BLM-Alaska

U.S. Department of Commerce, National Telecommunications and Information Administration
NEPAComments@ntia.gov

Appendix O9 – Scoping Comment: DNR

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Natural Resources

OFFICE OF PROJECT MANAGEMENT AND PERMITTING

550 West 7th Avenue, Suite 1430
Anchorage, AK 99501-3561
Main: 907.269-8690
Fax: 907-269-5673

August 19, 2025

US Department of Commerce
National Telecommunications and Information Administration
1401 Constitution Ave, NW, Room 4878
Washington, DC 20230

Submitted via email to NEPAComments@ntia.gov

Re: NANA Regional Broadband Network Project

To Whom it May Concern,

The State of Alaska (State) reviewed the scoping information for the proposed NANA Regional Broadband Network Project. NANA Regional Corporation, Inc. (NANA), a regional Alaska Native Corporation, has proposed to construct a Regional Broadband Network Project (project), which would involve the installation of a fiber optic cable across federal, state, and privately-owned lands and waters in northwest Alaska. The project will be funded by the National Telecommunications and Information Administration (NTIA) and would deliver high-speed internet to seven rural communities in the NANA region of Alaska.

Federal lands in Alaska are subject to the provisions of the Alaska National Interest Lands Conservation Act (ANILCA). Included among these provisions is Title XI which specifically addresses the review of transportation and utility systems (TUS) in or across federal lands designated as conservation system units[1] (CSU) under ANILCA, such as the National Park and National Refuge lands currently identified as portions of the project. ANILCA Title VIII also requires a review of the impacts to subsistence uses and needs.[2]

The State appreciates the need for adequate internet connectivity in the region; as proposed the project has the potential to improve internet access for underserved Alaskans by connecting communities in northwest Alaska to regional and national telecommunications networks. The proposal aligns with the goals of improving regional infrastructure and addressing the digital divide.

Due to the mix of federal, state, native corporation, and other private property situated along each of the proposed routes, there are important considerations regarding state land ownership and management authorities that should be clearly addressed in any scoping documents and subsequent environmental assessments. As an impacted landholder and natural resource manager, the State requests the opportunity to review the draft Environmental Assessment (EA) documents. Additional State authorizations would be required during construction of the project.

[1] See ANILCA 102(4), definition of a conservation system unit.
[2] ANILCA 810

State agencies can provide valuable information during the EA development and should be consulted to inform the project proponents about those requirements. The following comments represent the consolidated views of state resource agencies, including the Departments of Natural Resources (DNR) and Fish and Game (ADF&G).

ANILCA Title XI Permitting

Title XI of ANILCA was created to address the unique social, environmental, and economic needs of Alaska by establishing a structured, balanced process for permitting transportation and utility systems in or across conservation lands such as Refuges and National Parks. The NTIA should reference the intent of ANILCA and the procedures of Title XI in future planning documents and the State recommends referring to 43 CFR 36 for permitting guidance.

A copy of "Understanding the TUS Process in Title XI of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA)" is attached to this letter to provide further information.

State Management Authority of Navigable Waters

Alaska DNR has management authority for state lands including navigable waters within the CSUs created under ANILCA, and requests explicit acknowledgement of this authority in any planning or EA documents. Along each of the proposed routes, installation of the fiber optic cable will require numerous crossings of waterbodies such lakes, rivers, streams, and tidally influenced waters using a combination of ground-laid, directional bored, trenched, or aerially supported methods. Even though trenches or boreholes may pass beneath the bed of navigable waterbodies, installation of a fiber optic cable is still considered a surface use and is therefore part of the surface estate. Any requests for input, scoping documents, and future EAs should disclose that State-owned submerged lands and navigable waters exist along the proposed route(s). Planning and environmental assessment documents should also provide tables, lists, or maps that clearly enumerate each of these water bodies and define their status as navigable waterbodies. The State requests that any future planning or EA documents add the brief description provided below:

> The Alaska Department of Natural Resources (DNR) has management authority for state lands, including the submerged land, water, tidelands, and shorelands of navigable waters within the State. This authority includes management of navigable waters, tidelands, and shorelands within and adjacent to the boundaries of federal lands, including conservation system units created under ANILCA. A map of these waters can be found on the DNR website using the "Navigable Waters (Title Purposes)" layer: https://mapper.dnr.alaska.gov/map#map=4/-16632245.12/8816587.34/0.

Permitting of Fiber Optic Cable Infrastructure in State Managed Waters

With consideration given to the length of the broadband network and the number of rivers and other water bodies present along the proposed route, it is likely that trail developers will need to construct water crossing infrastructure on State-owned lands. Any bridges, bridge pilings, culverts, or other improvements within State-owned navigable waters will require prior authorization from DNR. Requests for input and scoping documents should acknowledge the requirement to obtain authorizations from the State for trail infrastructure on or across navigable waters. According to the project planning geodatabase, the following water crossings will need appropriate permits from the State of Alaska due to their status as navigable waters (including those in conflict, title not resolved with the federal government): Kivalina Lagoon, Wulik River, Kuchoruk Creek, Noatak River, Little Noatak Slough, Hotham Straight (out to 3 mile limit on each side), Buckland River, Kiwalik River, Kugruk Lagoon, Mangoak River, Mile #633 – BLM determined navigable, crossing between Mile 631 & 632 BLM determined navigable, Mile #63 BLM determined navigable, Kungsugrug River, Selawik River (2 channels), Shogvik Lake inlet/outlet channels (between Selawik Airport and Mile #613), Amaouk Creek, Oksik Creek, unnamed stream and lake system tributary to Oksik Creek outside of USS 5166, unnamed (LKA, Duffy Slough) (Sec 10, T17N, R9W, KRM), Kobuk River, Kiana (2 channels), Ambler (1 channel), Shungnak (3 channels), Winter trail crossing #310 (unnamed stream/Shogvik Lake), Fish River, Ikagowak River, Kuchuk Creek, Ambler River at Kiana, Winter trail crossing #466 (Pittik Creek/Lake system), Shungnak River, Wesley Creek, Winter trail crossing #559 (unnamed stream), and the Black River.

Water Rights

Should the construction or maintenance of the broadband network require withdrawal or diversion of a significant volume of water, NANA and/or its contractors will need to obtain authorizations from the DNR's Water Section. A significant volume of water by State law is defined as *more than 5,000 gallons of water from a single source in a single day, more than 500 gallons of water per day from a single source for more than 10 days in a year, or more than 30,000 gallons per day from a single source.*[3]

Wildlife

At this stage, ADF&G finds the proposal lacks sufficient detail for a comprehensive wildlife review.

The ADF&G has primary responsibility for managing Alaska's fish and resident wildlife populations on all lands, including Federal public lands, and the Secretaries of the Interior and Agriculture have authority over the management of most Federal public lands in Alaska. While several Congressional Acts preempt ADF&G's primary management authority for certain species (e.g., endangered species); the State of Alaska continues to have stewardship and public trustee responsibilities for all wildlife (Alaska Constitution Article VIII, Section 4). In Alaska, Master Memorandum of Understandings establish cooperative management roles between ADF&G and each federal land management agency, providing the framework for collaboration and coordinated resource stewardship on fish and wildlife issues.

For the past several winters, caribou have been present along much of route on the Baldwin Peninsula, Selawik National Wildlife Refuge, and the areas surrounding the villages of Kobuk and Shungnak. Without a clear project timeline or duration, it is difficult to assess the potential impact on both wildlife and the subsistence users who depend on these resources.

The ADF&G Marine Mammal Program suggests the EA for this project include an evaluation of beluga presence timing windows in the project area and avoidance of summer subsea cable laying activities during those beluga presence timing windows to avoid disturbance.

[3] 11 AAC 93.035

Finally, please note that ADF&G Fish Habitat Permits will be required for any work impacting anadromous fish streams or fish passage. For assistance with the permitting process, the project team should continue to work directly with the Fairbanks Habitat Office, dfg.hab.infofai@alaska.gov, to discuss the specific requirements of their applications.

ANILCA Title VIII

As the project progresses and a final route is selected, the federal agency having primary jurisdiction will need to evaluate the effects of this project on subsistence uses and needs, as required by Section 810 of ANILCA. This evaluation must consider the availability of other lands and alternatives that would reduce or eliminate the use of public lands needed for subsistence purposes. The use of the existing winter trail system aims to minimize new land disturbance, however, the 810 will need to consider if the proposed route(s) may significantly restrict subsistence activities. If the determination is made that the use, occupancy or disposition of such lands would significantly restrict such uses, the federal agency having primary jurisdiction over such lands shall:

- Give notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to Section 805;
- Give public notice and hold public hearings, in the vicinity of the area(s) involved;
- If a significant restriction of subsistence uses is necessary, consistent with sound management principles, the federal agency must ensure the minimal amount of public lands is used and reasonable steps are taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

R.S. 2477 Trails

The public input request has proposed several alternative routes, each of which crosses multiple R.S. 2477 state rights-of-ways. DNR asserts the authority to manage these transportation easements in the best interest of Alaskans. R.S. 2477 trails have been used as historical transportation routes, and today these routes make up an essential network of trails by which Alaskans may access private property, mining claims, or inholdings within federally managed CSUs. Additionally, many of these routes are used to access subsistence opportunities and are expected to have higher frequency of use during hunting and fishing seasons. Future scoping or environmental assessment documents must acknowledge state management authority over R.S. 2477 and describe any anticipated impacts to R.S. 2477 trails or the use thereof.

Closing

Thank you for the opportunity to review and comment on this proposed project. Please contact me at (907)269-0880 or by email at catherine.heroy@alaska.gov to coordinate follow up discussions.

Sincerely,

Catherine Heroy

Catherine Heroy
Federal Program Manager

Attachments: Understanding the TUS Process in Title XI of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA)

Understanding the TUS Process in Title XI of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA)

Updated April 1, 2025

Outline of the application and decision process for Transportation and Utility Systems in and across Conservation System Units and Areas

Prepared by: The ANILCA Training access team, which created and presents the access training portion of ANILCA Training for Department of the Interior University and Institute of the North https://institutenorth.org/engage/events/anilca-training/: Doug Campbell, retired US Fish and Wildlife Service, Chief of Realty Division; Tina Cunning, ANILCA Trainer; Sally Gibert, ANILCA Trainer; Chuck Gilbert, retired National Park Service, Alaska Region Manager of Land Resources Program.

INTRODUCTION

The purpose of this document is to supplement the Access & Transportation (A&T) presentation portion of the ANILCA Training, focusing on the Transportation and Utility Systems (TUS) provisions in ANILCA Title XI. This document is prepared for information only and is not legally binding.

During deliberations preceding final passage of ANILCA, Congress considered reserving specific corridors for future access. Because future demands for transportation were still largely unknown, Congress opted instead to establish an application and decision process to be used as TUS needs arose. The TUS process is contained in ANILCA Sections 1101-1108 and applies to any Congressionally-designated conservation system unit[1] (CSU) and designated national recreation and national conservation areas (Area) in Alaska. ANILCA Section 1104 preempts "any provision of applicable law" in approving or disapproving a TUS unless this section is complied with.

ANILCA Section 1101 contains the findings of Congress:

Congress finds that -

(a) Alaska's transportation and utility network is largely undeveloped and the future needs for transportation and utility systems in Alaska would best be identified and provided for through an orderly, continuous decisionmaking process involving the State and Federal Governments and the public;

(b) the existing authorities to approve or disapprove application for transportation and utility systems through public lands in Alaska are diverse, dissimilar, and, in some cases, absent; and

(c) to minimize the adverse impacts of siting transportation and utility systems within units established or expanded by this Act and to insure the effectiveness of the decisionmaking process, a single comprehensive statutory authority for the approval or disapproval of applications for such systems must be provided in this Act.

ANILCA's TUS provisions for Department of the Interior (DOI) are implemented through 1986 regulations at 43 CFR part 36. A 1987 lawsuit[2] resulted in the DOI regulations being upheld by the District Court, then the plaintiffs appealed. The regulations were amended in 1997 with a single

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[1] Section 102(4) defines CSUs as units of the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, or National Forest Monument

[2] *Trustees for Alaska, et al., v. United States Department of the Interior, et. al.,* Case No. A87-055

change to a definition following negotiations to settle the lawsuit. The statutory ANILCA TUS provisions apply to both DOI and the Forest Service within Department of Agriculture (DA). In the absence of DA regulations, the DA Office of General Counsel advised[3] that the DOI regulations provide instructive guidance to the Forest Service.

The source documents referenced in this Outline include:

- ANILCA Sections 1101-1108 – ANILCA's TUS provisions
- DOI regulations at 43 CFR Part 36 – The TUS implementation regulations adopted in 1986, including the explanatory preamble and response to comments
- 1997 amendment to the 43 CFR Part 36 regulations – A single definition change.

See also the flow chart of TUS application, NEPA, and decision process and list of examples of TUS authorizations in Alaska national park and refuges (in the Curriculum Training Packet). Additional information by the authors of Title XI is in Alaska Law Review "You CAN get there from Here."

MYTHS

Several myths about the TUS process interfere with understanding the law and its implementation:

- ***Myth:*** *The TUS process doesn't work, and no TUSs have been authorized.*

  FACT: The TUS process has been used successfully and rights of way issued dozens of times on a variety of TUS projects both large and small.

- ***Myth:*** *It's easier to go directly to Congress for an authorization than use the TUS process.*

  FACT: A likely origin of this myth is the 1985 Congressional authorization (P. L. 99-96) of a land exchange between NANA (an Alaska Native regional corporation) and National Park Service (NPS) for the Red Dog mine access road through Cape Krusenstern National Monument. DOI had no Title XI regulations at that time, and the TUS provisions had not been tried, so NANA pursued authorization directly through legislation.

CHALLENGES

The TUS provisions Congress crafted for ANILCA were innovative and untested, and some trends were not anticipated. For example, the length and complexity of environmental analysis documents produced under the National Environmental Policy Act of 1970 (NEPA) significantly increased over time, so the NEPA deadlines in Title XI are often not realistic without applying the provision for reasonable extensions. Another factor is the wide array of federal agencies, each with their own mandates that may conflict with the ANILCA TUS process. While the TUS process has been successfully used many times to authorize transportation and utility systems, compliance with portions of the Title XI TUS application and decision procedures has grown more complex.

TEXT NOTES

The following fonts and symbols are used to provide supplemental information to the text:

Italicized Arial font = This font is used to distinguish supplemental, consensus-based contextual explanations of the statutory and regulatory direction, based on insights of the ANILCA Training access team, representing decades of implementation experience, lessons learned, and recommended best practices

[3]Office of General Counsel, verbal instructions, ANILCA Training, Juneau 2016

[Bracketed citations] = applicable regulatory provisions in 43 CFR 36 unless otherwise noted

"*Italicized quotes*" = terms defined in 43 CFR 36.2 when first used, followed by the [regulation citation]

KEY DEFINITIONS

"***appropriate federal agency***" is any agency that has jurisdiction to grant an authorization required for a TUS to be constructed. ANILCA Section 1104 [43 CFR 36.2(d)].

The working determination of "appropriate federal agency" faces increasingly complex and independent permitting authorities. Initially, the TUS authorization process focused on route selection by the affected federal land managers plus, in some instances, the Department of Transportation. [See Federal Register page 31622 of the 43 CFR 36 Preamble.] In recent years, all federal agencies with applicable permitting authorities participate in the TUS application process, (e.g., Corps of Engineers (COE), Federal Energy Regulatory Commission (FERC), US Coast Guard (USCG)).

"***applicable law***" is "*any law of general applicability (other than this title) under which any Federal department or agency has jurisdiction to grant any authorization (including but not limited to, any right-of-way, permit, license, lease, or certificate) without which a transportation or utility system cannot, in whole or part, be established or operated."* ANILCA Section 1102(a).

APPLICATION PROCESS

I. Pre-application meeting with the land manager(s) of the CSU or Area is strongly recommended but not required [43 CFR 36.3(a)] to discuss project scope, concerns, costs, constraints, and project timelines.

In practice, land management agencies stress the importance of pre-application meeting(s) so the applicant better understands the application steps and the agencies better understand the scope and objectives of the project. Complex projects may require multiple meetings.

A. Determine if the process described in ANILCA Sections 1101-1108 is applicable:

1) Does the proposed project qualify as a transportation system or utility? [43 CFR 36.2(p)]

The TUS process is not used or only partially used when other ANILCA authorities apply, such as ANILCA Section 1110(b)—Access to Inholdings or ANILCA Section 1111—temporary access to nonfederal land.

2) Would the proposed project be in or across a CSU or Area? [43 CFR Sec 36.1(a)]

If "no," the project will not be located on federal land within the CSU or Area then the TUS process does not apply.
If "yes," is there a route or site that is not on federal land in the CSU or Area that works for the TUS? Locating the proposed TUS so it is not on the CSU or Area may reduce costs, time, and controversies of crossing a CSU or Area. If the route or site is proposed to be located on the CSU or Area, the Secretaries may be possible to conduct a minor boundary

adjustment under ANILCA Section 103(b)[4] or a land exchange[5] in order to facilitate location of a portion or all of a TUS outside of a CSU or Area. However, the Federal District Court in Friends of Alaska Refuges v. Bernhardt and King Cove, D 06/01/20, Case 3:19-cv-00216-JWS, found land exchanges cannot be used to avoid the procedural mandates of Title XI for a proposed TUS to be located within a CSU or Area. In 2022 the Ninth Circuit reversed the District Court's decision. Both decisions were vacated in 2022.

B. Identify *"appropriate federal agency"* [43 CFR 36.2(d)] and applicable permitting authorities.

   There is often more than one such agency.

C. Identify pre-application data-gathering needs and activities; authorizations for necessary field work [43 CFR 36.3]

   1) Reasonable activities necessary to complete the application "*shall be permitted*" [43 CFR 36.3(b)] if they will not:

      a. cause significant or permanent damage

      b. unreasonably interfere with other authorized uses or activities

      c. significantly restrict subsistence uses

   2) In an NPS or FWS unit, pre-application activities must be *"compatible with the purposes for which the unit was established"* [43 CFR 36.2(f)], defined as "*will not significantly interfere with or detract from the purposes for which the area was established."*

Discuss NEPA compliance, deadline/extensions, realistic timeframes, and the two different decision pathways dependent on the presence or absence of agency authority and/or involvement of designated Wilderness. See TWO DECISION PATHWAYS below.

Alert applicant that part of the process is to determine if an alternative to the proposed TUS exists elsewhere within or outside of the CSU or Area with less impacts [43 CFR 36.7(a)(2)(ii)].

If there are one or more alternatives, a determination of economic feasibility and of reasonableness of such alternatives must be completed and the alternatives included in the NEPA analysis for agency(s) consideration.

If anticipate using a NEPA contractor, review with applicant the importance of contractor qualifications and experience to keep the project on track. Discuss pros and cons of having the agency prepare NEPA documents with funds provided by the applicant. Per NEPA, the agency selects the contractor (See 40 CFR 1506.5). FWS works with the applicant to determine the best NEPA contractor from a list of contractors provided by the applicant or may conduct NEPA in-house. NPS has similar practices.

II. Application of Standard Form 299 submitted to all appropriate federal agencies [43 CFR 36.4]

A. Simultaneous filing date if multiple agencies are involved [43 CFR 36.4(a)]

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[4]Section 103(b): *"Following reasonable notice in writing to the Congress of his intention to do so the Secretary and the Secretary of Agriculture may make minor adjustments in the boundaries of the areas added to or established by this Act as units of National Park, Wildlife Refuge, Wild and Scenic Rivers, National Wilderness Preservation, and National Forest Systems and as national conservation areas and national recreation areas. For the purposes of this subsection, a minor boundary adjustment shall not increase or decrease the amount of land within any such area by more than 23,000 acres."*

[5]Section 1302 authorizes land acquisition within or contiguous to CSUs through purchase, donation, or exchange under specified conditions, none of which require approval of Congress.

1) Filing with one Interior agency shall be considered as a filing with all of Interior's agencies [43 CFR 36.4(a)]
2) Any application filing fees are due at the time of filing [43 CFR 36.4(a)]
3) If single filing date not possible, applicant has up to 15 calendar days to file with all appropriate agencies [43 CFR 36.4(c)]
4) Identify a lead federal agency [43 CFR 36.5(a)]
   a) Land management agency with longest lineal portion of applicable ROW
   b) Different lead federal agency may be designated by agreement of the involved agencies
   c) Lead agency coordinates the overall TUS application and NEPA processes, although there may be a different lead agency for NEPA compliance
5) The lead federal agency for the TUS application identifies the filing date as the date of the latest application submittal to the appropriate federal agencies [43 CFR 36.4(c)]

B. Application deadlines

1) 60 days for each agency to determine sufficiency of application [43 CFR 36.5(c)]
2) 30 days for applicant to respond to any requests for more information [43 CFR 36.5(d)]
3) 30 days from receipt of additional information for agencies to determine sufficiency and, if sufficient, update "filing date" to be the date the final supplemental information was received [43 CFR 36.5(e)]

C. Agencies may grant additional time to provide requested information if applicant agrees the official filing date of completed application will be adjusted accordingly [43 CFR 36.5(d)(1)]

D. If applicant does not meet the original or extended filing deadlines, or any agency determines the application is deficient, the lead agency notifies the applicant the application is rejected and notifies other agencies to return their applications without further action [43 CFR 36.5(b), 5(d)(2), 5(e)(1)]

There is no process to appeal rejection of an application; however, the applicant may reinstate the application by providing requested information later [43 CFR 36.5(e)(2)] *or may restart the pre-application stage to refine project scope and submit a new application.*

E. Applications determined to be sufficient proceed to NEPA compliance

NEPA COMPLIANCE

I. NEPA and implementing regulations apply to the evaluation of all TUS applications through an Environmental Assessment (EA), Environmental Impact Statement (EIS), or a categorical exclusion [43 CFR 36.6(a)]

A. Lead agency, in cooperation with all appropriate federal agencies, completes an EA or Draft EIS within 9 months of the official filing date [43 CFR 36.6(a)(1)]

Lead agency facilitates the determination of the appropriate NEPA document in cooperation with the other appropriate federal agencies, ideally in consultation with the applicant during the pre-application process. A Categorical Exclusion is rare, but has been applied in limited circumstances, e.g., when a fiber optic cable was buried in a previously-constructed drainage ditch of the George Parks Highway through Denali National Park.

B. Lead agency may extend the 9-month NEPA preparation time for good cause [43 CFR 36.6(a)(2)]

1) Lead agency specifies a new time period, with rationale, and notifies the applicant
2) Lead agency publishes a notice of extension in Federal Register at least 30 days before end of original 9-month period

C. The NEPA document [43 CFR 36.7(a)(2)]:

The regulations do not require the following nine subjects to be addressed in the NEPA document, but as a practical matter the NEPA process is the best place to do so to avoid a disconnected step after NEPA compliance. ANILCA Section 1104(g)(2) requires detailed findings for eight of these, and the regulations add the ninth.

1) Need and economic feasibility
2) Economically feasible and prudent alternative route (defined at 43 CFR 36.2(h))
3) Feasibility of consolidating routes
4) Social, economic, and environmental impacts
5) Impacts on national security interests
6) Impacts on ANILCA unit purposes
7) Measures to avoid or minimize negative impacts
8) Comparison of adverse and beneficial affects to public values
9) Impacts, if any, on subsistence uses

D. Lead agency shall assure compliance with ANILCA Section 810 [43 CFR 36.6(a)(6)]

Section 810 applies to all federal agency decisions affecting "use, occupancy, or disposition of public lands" and requires an "evaluation" of effects on subsistence uses and efforts to "minimize adverse impacts" but does not require a complete absence of such impacts.

E. Cost Recovery

1) Application processing costs shall be reimbursed by the applicant if required by the authorities and policies of the appropriate federal agency [43 CFR 36.6(c)(1)]
2) Reasonable administrative and other costs of EIS preparation shall be reimbursed according to Bureau of Land Management's cost recovery procedures under Section 304 of the Federal Land Policy and Management Act (FLPMA) [43 CFR 36.6(c)(2)]

II. If the lead agency determines an <u>EIS is not required</u>, an EA and Finding of No Significant Impact (FONSI) will be prepared [43 CFR 36.6(a)(3)], or in rare cases a Categorical Exclusion may apply

III. If the lead agency determines an <u>EIS is required</u>:

A. The draft EIS will be subject to a hearing in Washington DC and at least one location in Alaska [43 CFR 36.6(a)(4)]

B. Consultation and public notice requirements include outreach to other federal agencies, the State, affected local governments, affected ANCSA corporations, and interested individuals and organizations [43 CFR 36.6(a)(5)]

C. The final EIS will be completed within 3 months of completing the draft EIS or within 1 year of the application filing date – whichever is later. Notice of availability of the final EIS shall be published in the Federal Register [43 CFR 36.6(b)]

TWO DECISION PATHWAYS

I. **DECISION PATHWAY ONE: Agency(s) has applicable authority to issue rights-of-way, <u>and</u> the proposed TUS is not in designated Wilderness** [43 CFR 36.7(a)]

A. Each appropriate federal agency has 4 months from completion of FONSI or Final EIS to decide to approve or disapprove the proposed TUS in accordance with applicable law and notify the applicant [ANILCA Section 1104(g); 43 CFR 36.7(a)(1)]

*Congress established a single statutory authority in Title XI for consistency in **processing** applications for TUSs in Alaska CSUs and Areas. Title XI provides no new authority for agency **decision-making on** applications. Each agency uses its own laws and regulations in **deciding** to approve or disapprove a TUS application. However, if there is conflict between agency procedures for processing applications and the provisions Title XI or its implementing regulations for processing applications, the provisions of Title XI and its implementing regulations supersede such agency procedures.*

B. Each agency, in making its decision to approve or disapprove an application, shall consider and make detailed findings for the nine subjects[6] listed in 43 CFR 36.7(a)(2)

*Although agencies use their existing authorities to make a decision whether to approve or disapprove a TUS application, Title XI and its implementing regulations require the agency to **consider** and make detailed findings on the nine subjects as part of their decision process. As a practical matter, these nine subjects are often addressed as part of NEPA compliance (see previous section).*

C. If each agency makes its decision to approve a TUS, the system shall be deemed approved [ANILCA Section 1106(a)(1)(A)], and the agencies proceed to issue permit(s) or other forms of authorizations.

D. If an appropriate federal agency disapproves any portion of a TUS, the entire application is disapproved [43 CFR 36.7(a)(4)]

E. If the application is disapproved, the applicant may file an administrative appeal pursuant to ANILCA Section 1106(a)(2) [43 CFR 36.7(a)(4)]:

The remainder of the decision pathway one is outside the jurisdiction of the administering agencies, hence is not covered in the DOI regulations. From this point in decision pathway one, guidance comes from the statute itself, which moves the decision process to the President. If the TUS application is approved by the President, the 43 CFR 36 regulations have some additional guidance regarding issuing permits.

1) Applicant appeals to the President
2) President must decide to approve or disapprove the application within 4 months
3) President shall consider the nine findings in 43 CFR 36.7(a)(2), NEPA compliance, public and agency comments, and individual agency decision documents
4) President's decision to approve or deny, along with rationale, will be published in the Federal Register
5) President shall approve the application if he finds:
   a) the system is in the public interest
   b) the system is "*compatible with the purposes of the unit,*" as defined in 43 CFR 36.1(f) to mean the TUS "*will not significantly interfere with or detract from the purposes for which the area was established.*"

[6] ANILCA and the regulations require the agency to "consider, and make detailed findings" for a specified list. For editorial convenience, the generic term "subjects" is used when referring to what the findings are required to address and no unsupported meaning is intended by use of that term to describe the lists.

Note that the President must use the Title XI definition of "compatible" which may be different than an agency's definition of compatible.

c) there is no economically feasible and prudent alternative route

Per Section 1106(a)(2), if the TUS meets all three of these criteria, the President's approval of a TUS application is not discretionary. Section 1106 is a new authority with new decision-making criteria for processing and issuing rights-of-way.

6) If the President approves the application, each federal agency shall promptly issue rights-of-way and other applicable authorizations [ANILCA Section 1106(a)(3)]
7) If the President denies the application, the applicant has exhausted administrative remedies and may proceed to judicial review in federal court [ANILCA Section 1106(a)(4)]

II. **DECISION PATHWAY TWO: Federal agency(s) does not have applicable law to authorize all or part of a TUS application, <u>or</u> any part of the proposed project would be in designated Wilderness [43 CFR 36.7(b)]**

A. The federal agency with jurisdiction over a portion of a TUS, for which the agency has no applicable specific law, shall recommend approval of that portion if it is determined [43 CFR 36.7(b)(1)(i)]:

1) Such system would be compatible with the purposes for which the area was established [43 CFR 36.7(b)(1)(i)(A)], and

***Note** that here, in decision pathway two, the agency **must use the Title XI definition of "compatible"** which may be different than the agency's definition of compatible.*

2) There is no economically feasible and prudent alternate route [43 CFR 36.7(b)(1)(i)(B)]

B. Each appropriate federal agency has 4 months from completion of the FONSI or final EIS to tentatively approve or disapprove each right-of-way in their jurisdiction, and the Secretary of the Interior shall make notification pursuant to ANILCA Section 1106(b) [43 CFR 36.7(b)(1)]

C. If there is applicable law for a portion of the TUS which is outside designated Wilderness, the applicable law shall be applied using Decision Process One in making the determination to approve or disapprove that portion of the TUS [43 CFR 36.7(b)(1)(ii)]

The provisions in B and C above might appear to contradict the intent that the TUS will ultimately be approved or disapproved as a whole. The Preamble to the regulations (51 FR 171, Sept. 4, 1986, page 31624] *explains the purpose of the described distinctions:*

*"When there is no existing law applying to a part of a TUS, there will most likely be some existing law for the other part. Some of the decision-making will therefore involve agencies which do and do not have existing authority. Those agencies that have authority will be able to process the permits and approvals and prepare the documents that will be transmitted to Congress. **Those agencies that do not have authority will only be able to prepare their recommendations**. The final decision on the whole project will rest with Congress, although it is not expected that Congress will revisit those determinations already made by agencies having preexisting congressionally delegated authority."* [Emphasis added]

D. The Federal Register notice of the FONSI or final EIS shall be accompanied by the rationale and findings supporting each appropriate federal agency's position, the findings regarding the nine subjects listed in 43 CFR 36.7(a)(2), the final NEPA compliance documents, and any comments from the public and other federal agencies [43 CFR 36.7(b)(2)]

E. Each federal agency "*promptly*" notifies the President of their tentative approval or disapproval of each authorization for which they have jurisdiction, along with their rationale [ANILCA Section 1106(b)]

F. There is no administrative appeal for a denial issued under the provisions of 43 CFR 36.7(b) [43 CFR 36(8)]

   The remainder of decision pathway two is outside the jurisdiction of the administering agencies, hence is not covered in the DOI regulations. From this point, guidance comes from the statute itself, which moves the decision process to the President and then to Congress. If the TUS application is approved by Congress, the 43 CFR 36 regulations have some additional guidance regarding issuing permits.

G. Within 4 months of receiving all NEPA documentation and agency rationale, the President shall decide whether the TUS application should be approved or denied [ANILCA Section 1106(b)(2)]

   1) If the President denies the TUS application, the applicant has no administrative appeal options but may file suit in federal court.

   2) If the President approves the TUS application, he/she shall submit such a recommendation for approval to Congress, along with the cumulative supporting documentation for the decision, plus conditions and stipulations that would govern the TUS if approved by Congress.

H. Congressional approval requires the Senate and House to approve a joint resolution within 120 calendar days following receipt of the President's recommendation and supporting documentation **[**ANILCA Section 1106(c)(1)]

   Subparagraphs 1106(c)(2) and 1106(c)(3) contain technical details on how to calculate the 120 calendar days for purposes of this section. If Congress does not approve the TUS application within 120 calendar days, the TUS is effectively denied and the applicant has no administrative or judicial remedies.

ISSUING PERMITS [43 CFR 36.9]

The following are the regulatory requirements for the agency(s) to issue a permit:

36.9(a) Once an application is approved under the provisions of §36.7(a), a right-of-way permit will be issued by the appropriate federal agency or agencies, according to that agency's authorizing statutes and regulations or, if approved pursuant to the provisions of §36.7(b), according to the provisions of title V of the Federal Land Policy Management Act of 1976 [43 U.S.C. 1701] or other applicable law. The permit shall not be issued until all fees and other charges have been paid in accordance with applicable law.

36.9(b) All TUS right-of-way permits shall include, but not be limited to, the following terms and conditions:

(1) Requirements to ensure that to the maximum extent feasible, the right-of-way is used in a manner compatible with the purposes for which the affected area was established or is managed;

(2) Requirements for restoration, revegetation and curtailment of erosion of the surface of the land;

(3) Requirements to ensure that activities in connection with the right-of-way will not violate applicable air and water quality standards and related facility siting standards established pursuant to law;

(4) Requirements, including the minimum necessary width, designed to control or prevent:

  (i) Damage to the environment (including damage to fish and wildlife habitat);

  (ii) Damage to public or private property; and

  (iii) Hazards to public health and safety.

(5) Requirements to protect the interests of individuals living in the general area of the right-of-way permit who rely on the fish, wildlife and biotic resources of the area for subsistence purposes; and

(6) Requirements to employ measures to avoid or minimize adverse environmental, social or economic impacts.

36.9(c) Any TUS approved pursuant to this part which occupies, uses or traverses any area within the boundaries of a unit of the National Wild and Scenic Rivers System shall be subject to such conditions as may be necessary to assure that the stream flow of, and transportation on, such river are not interfered with or impeded and that the TUS is located and constructed in an environmentally sound manner.

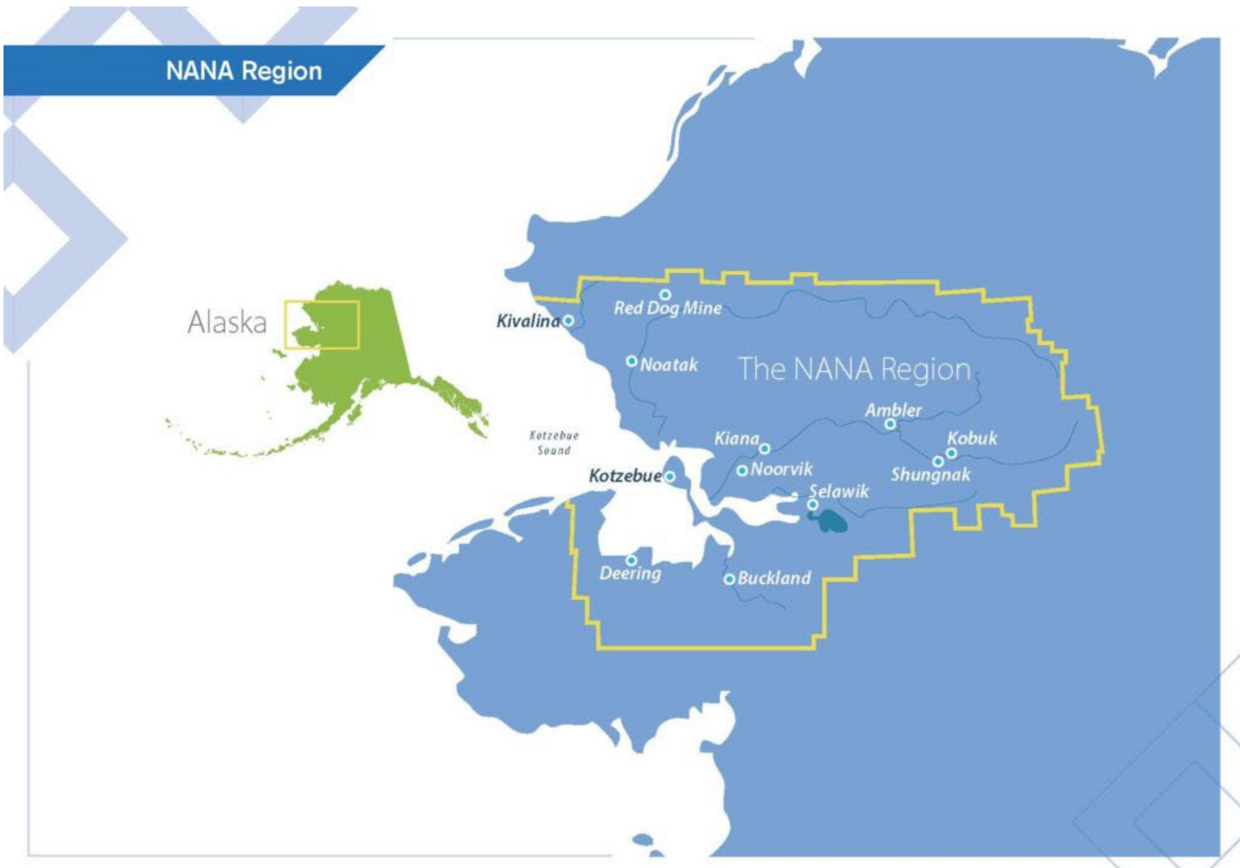
36.9(d) In the case of a pipeline described in section 28(a) of the Mineral Leasing Act of 1920, a right-of-way permit issued pursuant to this part shall be issued in the same manner as a right-of-way is granted under section 28, and the provisions of subsections (c) through (j), (1) through (q), and (u) through (y) of section 28 shall apply to right-of-way permits issued pursuant to this part.

Appendix O10 – Website Snapshot


NANA
Regional
Broadband
Network
HOME
PROJECT DETAILS
NEWS
TEAM
CONTACT
Bringing Broadband to
Northwest Arctic Residents
VIEW PROJECT DETAILS

Project Details

Under the U.S. Department of Commerce, National Telecommunications and Information Administration's Tribal Broadband Connectivity Program, NANA has been awarded a $65,168,000 broadband infrastructure deployment grant. This grant provides funding to complete the design, permitting, and installation of a high-speed fiber broadband network, spanning 1,100 kilometers (683 miles), connecting the eleven geographically dispersed tribal villages communities in the NANA region.



Located at the extreme northwestern edge of the North American continent, above the Arctic Circle, our region is vast, sparsely populated, and isolated; no roads connect our villages to each other or our region to greater Alaska. Practically all necessities for life are barged or flown into the region, resulting in extremely high prices for basic goods, including food, fuel, and building materials.

The region is without true broadband and the available internet is inadequate with extremely poor connectivity, slow access, and prices that are beyond the reach of most residents. Internet adoption rates are low, and many things taken for granted elsewhere are not available in the region, including distance learning, telehealth, or work from home opportunities.

COVID-19 devastated NANA families and communities in our region and highlighted this digital divide. While in other areas of the country, people were able to leverage the digital economy to adapt to pandemic lockdowns with online shopping, learning, and working, these were beyond the reach of the tribal Alaskan population in the NANA region.

With long lead times on permitting and accounting for the challenging construction conditions installation of a remote fiberoptic network in the Arctic entails, we expect this ambitious effort to take approximately four years.

The NANA Regional Broadband Network Project was officially accepted as a covered project in the FAST-41 program, gaining national recognition and permitting support to help bring high-speed internet to Northwest Alaska. This designation facilitates streamlined environmental reviews and improves coordination among agencies without changing any laws or public input opportunities.

In addition to the middle-mile buildout, which will connect the communities to one another and the world, NANA will also deliver a last-mile solution in each community, operating as an Internet Service Provider (ISP), bringing fast, affordable, and reliably consistent broadband services to each resident.

This ISP will provide affordable residential Internet service with unlimited data per household. This service level far surpasses the limited offerings currently available in the region, where all communities are considered unserved by NTIA standards.

In addition to providing Internet, our ISP will also create a Regional Network Operating Center (NOC) in Kotzebue, offering permanent jobs and infrastructure monitoring services across the region, as well as local village technician opportunities.

As an inherently regional entity, NANA supports NTIA's emphasis on regional solutions. We have collaborated in the past with other regional entities including Northwest Arctic Borough, the Northwest Arctic School District, Maniilaq Association (regional tribal health consortium), the Alaska Technical Center, and others. Together, we have addressed such challenges as workforce development, clean energy, and infrastructure development.

NANA looks forward to continuing those partnerships with area leadership to ensure broadband access to all regional residents, businesses, and schools. Our successful approach to this grant was truly a regional solution.

This project will deliver broadband access and bring digital equity to tribal communities in our region and will serve as a catalyst for lasting change for this generation and the generations to come. NANA has the community

Appendix O11 – USFWS Letter of Concurrence

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
Northern Alaska Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701

In Reply refer to:
FWS/R7/2025-0134615

September 18, 2025

Albie Dallemolle
Vice-President, Economic Development and Sustainability
NANA Regional Corporation, Inc.
P.O. Box 49
Kotzebue, Alaska, 99752

Dear Albie Dallemolle:

Thank you for your consultation initiation package received on August 6, 2025, regarding the NANA Regional Corporation, Inc. (NANA) Regional Middle Mile Fiber Optic Project (Project). NANA requested informal consultation with the U.S. Fish and Wildlife Service (Service or USFWS) in accordance with section 7 of the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 *et seq*.). The National Telecommunications and Information Administration (NTIA) has designated NANA authority as their non-federal representative to conduct this informal consultation (Memorandum from NTIA to Internet for All Grant Recipients and Service Field Offices, effective October 28, 2024). NANA has determined that the Project may affect, and is not likely to adversely affect polar bears (*Ursus maritimus*), spectacled eiders (*Somateria fischeri*), and the Alaska-breeding population of Steller's eiders (*Polysticta stelleri*), and designated critical habitat for polar bears.

Project Description

Project Purpose

NANA is proposing the design, construction, and operation of a high-speed broadband network, connecting each of the communities in the Northwest Arctic Borough to a fiber optic cable (FOC) system and associated infrastructure. The Project will install over 1,060 kilometers (km) of "middle mile" FOC connectivity between the unserved tribal communities of the region to a broadband Point of Presence in Kotzebue, Alaska. Once installed, this FOC network will provide long-term access to affordable and reliable high-speed internet, which provides a critical tool for better emergency communication capabilities, enhanced healthcare services, increased and new economic development, and improved educational opportunities, among other benefits.

Project Action Area

The Action Area means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved (50 CFR 402.02). The Project action area is along the 1,060-km-long route (Figure 1) that connects communities: Deering, Buckland, Shungnak, Kobuk, Ambler, Kiana, Noatak, and Kivalina, and traverses through Noorvik, Selawik, and Kotzebue. The FOC route will cross Bureau of Land Management (BLM)-managed lands and USFWS-managed lands (Selawik National Wildlife Refuge [SNWR]). An additional alternative route is being analyzed that avoids lands owned by Kikiktagruk Inupiat Corporation (KIC). For the marine portion of the Project, the Action Area includes the potential area for disturbance from presence of the cable laying barge and support vessels.

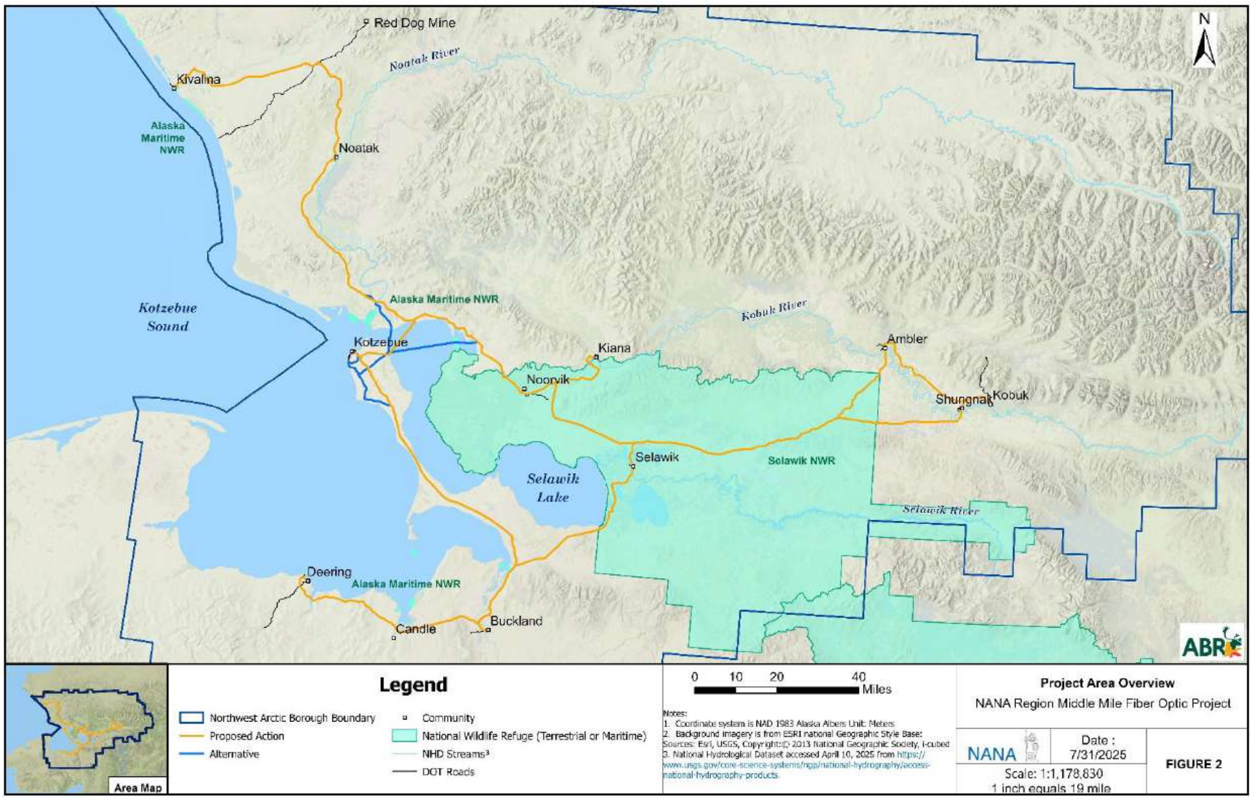


Figure 1. The Action Area of the Project, in which the orange route is the proposed fiber optic cable route system connecting the eight communities, and the light blue route is the potential alternative route. The dark blue line displays the boundary for the Northwest Arctic Borough. The shaded green region represents National Wildlife Refuge lands.

Project Timing

The construction season will be carefully scheduled around seasonal conditions in the region. Materials and equipment will be mobilized to the Project area during the open-water season of summer 2025, using regularly scheduled commercial barging service to Kotzebue.

NANA anticipates terrestrial construction would begin January 2026. All FOC placement would be installed during winter months (January through early May 2026 and 2027) and is expected to be completed by late spring 2027. Exact winter construction dates will depend on the region having adequate snow cover and ground conditions to support winter off-road travel. Winter construction will focus on the placement of ground-laid terrestrial sections and aerial river crossings.

In-village work, and complex water crossings (e.g., Hotham Inlet, Kobuk River, Noatak River), will be completed during summer (June through September 2026) when ice is not present in these waterbodies. The summer construction schedule will commence following sea and river ice melts, allowing barges hauling equipment to travel upriver (approximately May 2026). Construction within the villages will occur throughout summer 2026. Subsea construction in Hotham Inlet is scheduled for June or July 2026. Horizontal directional drilling (HDD) crossings at major rivers (e.g., Kobuk and Noatak rivers) will occur from June through August 2026. Winter ground-laid FOC inspections and cable seating will take place from July through August 2026 and 2027. Finally, demobilization and final inspections will be completed by September 2027.

Once installed, the telecommunications system will operate continuously, providing uninterrupted service to all connected communities regardless of seasonal conditions. Maintenance activities will be conducted as needed. The Project has been designed to support a minimal operational lifespan of 25 years, with the expectation of continued service beyond this period through proper maintenance and potential equipment upgrades. A 50-year lifespan is anticipated.

Project Activities

In order to deliver a high-speed broadband network to the various communities under the Project, the following supporting Project infrastructure will be constructed:

- A Network Operations Center will be constructed in Kotzebue adjacent to the existing Quintillion Cable Landing Station (CLS) to serve as the system's control hub.
- A CLS will be established in each village to house network equipment and provide connection points for local distribution (part of NANA's subsequent "last mile" project).
- Aerial cable crossings at major rivers and streams using wooden utility poles (typically 13–15 meters (m) tall and secured with guy wires).
- Heavy, low-profile anchors to secure the FOC on streambanks at minor stream crossings, where the cable will be gravity laid along the streambed surface. Where necessary, the FOC will be encased in split armor piping or similar between anchor points to increase stabilization, protect the cable, and prevent frazil ice buildup. These anchors and cable grips will also be placed at regular intervals of no greater than 1,820 m to mitigate lateral movement and preserve FOC splice integrity.
- FOC splice cases with specialized anchoring devices to ensure cable stability. Splice points will occur at a minimum of every 39 km.
- Two to four 1.2-m by 2.0-m concrete vaults with anchoring will be installed on each side of the Hotham Inlet crossing(s) to protect and secure the cable.
- Approximately 4,250 m of 5-centimeter (cm) conduit (with the FOC inside the conduit) will be installed under 16 major rivers by HDD.

In the subheadings below, the Project activities are broken down to describe the relevant construction activities that would occur in the winter and summer. However, maintenance activities will be conducted as needed and could occur at any time after installation of the FOC system. Additional details on the Project Activities can be found in the Biological Assessment (BA) on pages 8-21 (ABR Inc., 2025).

Winter Activities

The winter activities described in this section would occur between January and early May; see *Project Timing* above for specific timing. Winter installation will begin with a field survey of the planned FOC route, followed by vegetation clearing (as needed to facilitate access for cable placing equipment), pole placement in preparation of aerial cable crossings of larger rivers, and placement of the ground-laid FOC. The Project's construction will require several types of temporary work areas to support the FOC installation. Other temporary work areas include equipment staging areas in or near each village CLS. Mobile camps will traverse the corridor with the installation teams to support the cable placement activities. Mobile fuel sleighs would be used to provide additional fuel for transfer to individual vehicles and equipment. Fuel to support construction activities would be stored in 18,900-liter fuel sleighs alongside the mobile camps and would be disbursed to field crews in quantities up to 9,500 liters. Mobile camps would move with the crews and fuel would be supplied from nearby villages.

The field survey of the planned FOC route was completed in March 2025. Vegetation clearing activities will be limited to areas where vegetative cover prohibits wintertime off-road vehicle travel. The proposed FOC alignment was designed to minimize forested and shrubby landcover to reduce the amount of vegetative clearing.

The FOC will be placed during winter months to minimize ground disturbance using purpose-built equipment designed to perform with minimal impact to the variable tundra landscape. Low-ground-pressure-vehicles (e.g., PistenBully (tracked), CAT D6 bulldozer (tracked), Steiger Case tractor (tracked), Mulcher (tracked), Mini-excavators (tracked), Scissor-neck trailer, Flat-deck trailer, Medium sleigh trailer) will be used to deploy the FOC and transport personnel, mobile camps, fuel, equipment, and FOC tanks along the route. Support snowmachines would also be used for crew transportation.

There will be 2 to 3 FOC construction crews consisting of 12 to 14 personnel each will operate concurrently for construction on different sections of the FOC route, and winter FOC deployment is anticipated to last 100–110 days. Most of the FOC will be ground-laid and placed directly on the tundra. The cable will naturally settle into the vegetation during spring thaw and eventually, will become partially embedded into the organic surface layer over successive freeze-thaw cycles. Overland route segments cross extensive wetland complexes and will be installed during winter months when adequate snow cover and frozen substrate conditions will minimize ground disturbances. Although waterbody crossings are minimized by routing overland, when possible, the Project includes nearly 800 stream and lake crossings. Most waterbody crossings will be installed during the winter, but there are few exceptions that will be installed during the summer months (see *Summer Activities* below). Additional details on the plans for FOC waterbody crossings can be found in the BA (ABR Inc., 2025). Across major rivers, FOC will run aerially over waterways to allow for safe passage of boats, aircraft, and wildlife, in which the aerial cable will be connected to 14- to 15-m tall wooden poles, and have bird diverters to increase cable visibility and decrease the likelihood of bird strikes.

Summer Activities

The summer activities described in this section would occur between mid- to late-May through September; see Project Timing above for specific timing. Several complex Project construction components will occur during the ice-free summer months, including: the Hotham Inlet subsea crossing(s), major river crossings with HDD installations (e.g., Kobuk and Noatak rivers), all in-village construction, trenching outside of villages, and securing the FOC to existing utility poles. In addition to construction activities, helicopter supported inspections would be conducted to reposition the winter-ground-laid FOC by hand as needed. There will be three barges supporting summer Project activities in 2026 between June and September 2026 following marine transit routes: Kotzebue to Kivalina, Kotzebue to Selawik, and Kotzebue to Noorvik, Kiana, and Ambler.

For the subsea crossing(s), the FOC will be anchored to 1.2-m by 2.5-m concrete beach manholes (BMH) on either side of the channel, which will be constructed in stable locations that will minimize environmental impacts. The cable will then be trenched or bored between the BMH and the lowest tide point. Construction will then transition to operations using an excavator on floats, two tugboats 7.6-m by 28-m and two accompanying barges 46-m by 15 m and 62-m by 18-m. From the low-tide point, a barge will place cable in tandem with the floating excavator to be trenched as far as possible. Once the water is too deep to allow trenching, the FOC will be gravity laid or plow trenched by static skid across the sea floor to the opposite side of the inlet, where nearshore trenching and FOC laying activities will commence.

Sixteen major river crossings will be completed during the summer using HDD, which is a trenchless construction method that allows for placement of conduits without surface disturbance. Equipment needed (e.g., mini-excavators, utility poles, FOC, equipment and materials to support HDD) for the major river crossings will be transported upriver by the tugboats and barges used in the Hotham Inlet subsea crossing. One of the barges may serve as the field camp facility.

The Kugruk Estuary east of Deering will be crossed using gravity-lay methods in the summer months. The winter construction crews will ground-lay the FOC up to the overbanks of the estuary and will cut and store extra FOC on the banks. Crews will return by barge in the summer to gravity lay across the estuary and splice the cables.

Where ground-lay FOC sections have high pedestrian or all-terrain vehicle traffic, the cable will be buried to reduce risk to public safety and prevent cable damage. The Project will use the existing utility poles when entering/exiting villages and then transition to shallow trenched sections. Trenches will be excavated to approximately 0.6 m by 0.6 m but may vary based on the terrain; the FOC will be placed directly into the trench. Excavated material will be temporarily sidecast (less than 1 week) adjacent to the trench and then backfilled and recontoured to match the pre-existing conditions. The communities of Kiana, Kivalina, and Kobuk will not require trenching.

Following winter construction activities, a crew will return in the summer to ensure the cable is properly seated on tundra and to ensure all construction materials and debris have been cleared from the area. Inspections will be performed by helicopter flyovers, while paying particular attention to waterbody crossings and shrubby-vegetated areas to ensure the anchors and cable are seated securely to the ground and substrate.

Conservation Measures

As listed in section 2.2.11, *Project Mitigation Measures,* of the BA (ABR Inc., 2025), the applicant will implement the following conservation measures with the intent to avoid and minimize adverse effects to polar bears, spectacled eiders, Steller's eiders, and polar bear critical habitat resulting from the Project.

General Mitigation Measures

1. If construction activities will occur outside of the time window specified in the BA, the applicant will notify USFWS of the situation at least 60 days prior to the end of the specified time window to allow for reinitiation of consultation.
2. In-water work will be conducted at the lowest points of the tidal cycle when feasible.
3. Consistent with Alaska Statute 46.06.080, trash will be disposed of in accordance with state law. The Project proponent will ensure that all closed loops (e.g., packing straps, rings, bands) will be cut prior to disposal.

Dredging/Screeding/Underwater Excavating Activities

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

Intertidal Fill/Bank Stabilization and Maintenance

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

Additionally, best management practices (BMPs) will be implemented throughout Project operations to protect the marine environment, minimize bank erosion, and avoid creating drainage paths (as described in section 2.2.3.2, ABR Inc., 2025).

Project-Dedicated Vessels

Vessel and crew safety should never be compromised.

7. Vessel operators will:
    a. Maintain a watch for marine mammals at all times while underway.

  b. Stay at least 91 m away from listed marine mammals.
  c. Travel at less than 5 knots when within 274 m of a polar bear.
  d. Reduce vessel speed to 10 knots or less when weather conditions reduce visibility to 1.6 km or less.
8. Vessels will not allow lines to remain in the water unless both ends are under tension and affixed to vessels or gear.
9. Project-specific barges will travel at 12 knots or less.

NANA committed to other conservation measures in the BA but these measures were not specifically listed in the Project Mitigation Measures section in the BA (see section 2.2.11; ABR Inc., 2025). We considered the following measures from other sections of the BA to be part of the Proposed Action:

Project-Safety Features (from section 2.2.10 of the BA, ABR Inc., 2025)

10. The Project will install bird deterrents, reflective markers for wildlife, and visual marker balls for aircraft on all aerial lines. The bird diverters increase the visibility of the cable and decrease bird strikes. The Project will install the same style of diverters as used for the Arctic Slope Telephone Association Cooperative FOC project that connects Atqasuk to Utqiaġvik, which are proven to be effective in the Arctic environment and recommended by USFWS. The diverters spin in winds over 4.8 km per hour, reflect light, glow during dawn and dusk, and are visible to birds up to 0.4 km away, and they will be placed at 9-m intervals. The luminescent material on the diverters emits visible light for up to 12 hours after dusk and in low light or fog conditions.

Waste Hazard Mitigation Measures and Waste Disposal (from sections 2.2.7.1 and 2.2.7.2 of the BA, ABR Inc., 2025)

11. A Hazardous Materials Emergency Contingency Plan and Comprehensive Spill Prevention and Response Contingency Plan would be provided to BLM. This plan would detail the Project's BMPs in the proper handling, transport, storage, disposal, and spill prevention methods for hazardous materials and wastes.
12. All hazardous materials and waste would be handled by designated, trained personnel following established safety procedures.
13. Hazardous substance storage vessels, including mobile fuel tanks and containers of lubricants, would be labeled and stored in designated, secured areas during construction and transport to prevent leaks and spills.
14. Spill containment measures, such as secondary containment methods, would be used for storage tanks and during refueling operations. Spill response kits would be readily available. All petroleum related releases would be contained, remediated, and reported to the Alaska Department of Environmental Conservation.
15. Proper disposal methods for hazardous and non-hazardous waste would be followed according to regulatory requirements.
16. Proper waste containerization and disposal methods would be followed for fuel and oil waste, other hazardous materials (e.g., batteries), and non-hazardous waste (e.g., excess FOC, packaging materials, pallets, wood waste, food waste). See the BA (ABR Inc., 2025) for additional details for how types of waste would be disposed.

Effects to Listed Species and Critical Habitat

Our analysis included an evaluation of effects on polar bears, polar bear critical habitat, spectacled eiders, and the Alaska-breeding population of Steller's eiders from the proposed FOC route. Our analysis also includes the alternative route, should the Project avoid construction of FOC-supporting infrastructure on lands owned by KIC.

Polar Bears

The Project is located within the range of the Chukchi Sea (CS) subpopulation of polar bears and the majority of the Project would take place between January and September (although maintenance activities could happen any time of the year); therefore, the timing of activities, specifically winter activities, overlaps with polar bear denning season (approximately November to April). Polar bears could potentially den near the Action Area, but the likelihood is exceptionally low, as the CS subpopulation of polar bears predominantly dens along the Russian coast (USFWS 2016). Based on the United States Geological Survey (USGS) polar bear den catalogue, no historical dens have been documented near the Action Area (Durner et al. 2020). Considering the extremely low density of polar bears in the Action Area and the lack of historical dens in the Action Area, the potential for the Project to affect denning polar bears would be extremely unlikely (i.e., discountable).

Transient (non-denning) polar bears may occasionally pass through the Action Area during winter or summer activities, although the majority of habitat used by the CS polar bears is sea ice, where terrestrial use on the Alaska coast is limited (Rode et al. 2015). While the Project involves some use of barges/vessels, the barges would primarily be in waters proximate to the FOC route and be operating during the open-water season when sea ice is not present in the Action Area. Additionally, vessel operators will follow conservation measures to avoid disturbing polar bears (see Conservation Measures) that include watching for marine mammals at all times while underway, polar bear avoidance measures, and reduced vessel speed in the presence of polar bears. In recent years, only a small number of polar bears have been observed along the western coast of Alaska. In the event a non-denning polar bear encounters the Action Area, they could be exposed to disturbance from Project activities (i.e., human presence, snowmachine use, mobile camps, vegetation clearing, operation of heavy equipment, helicopters or barges). When disturbed, individual polar bears may respond behaviorally (e.g., escape response) or physiologically (e.g., increased heart rate, hormonal response) (86 FR 42982). However, we expect that any effects from disturbance would be minor and temporary (i.e., limited to changes in behavior that would not be biologically significant) and transient bears would be able to respond to Project disturbance by departing the area.

In summary, we conclude that effects to denning polar bears would be discountable because no CS polar bears are known to den near the Action Area, and effects to transient bears would be discountable and insignificant because 1) CS polar bears primarily use sea ice habitat and are rarely found in the terrestrial environment of the Action Area, 2) applicants will follow conservation measures to avoid disturbing polar bears during barging operations; and 3) any Project effects are expected to be limited to minor, temporary changes in behavior that would not result in injury or death of individual bears. Although it is unlikely for polar bears to occur in the

Project Area, to further reduce the potential for human-bear conflicts, we encourage the applicants to implement the Service's Best Management Practices to Minimize Impacts to Polar Bears (enclosed).

Designated Critical Habitat for Polar Bears

The Project Action Area overlaps Critical Habitat Unit (CHU) 1 (Sea Ice Habitat) and CHU 3 (Barrier Island Habitat) of designated critical habitat for polar bears. CHU 1 consists of 464,924 square kilometers (km^2) of sea ice habitat used for feeding, breeding, denning, and movements, which is sea ice over waters 300 m or less in depth that occurs over the continental shelf with adequate prey resources (primarily ringed and bearded seals) to support polar bears (i.e., physical and biological features (PFBs)). CHU 3 consists of 10,576 km^2 of barrier island habitat used for denning, refuge from human disturbance, and movements along the coast to access maternal den and optimal feeding habitat (i.e., PBFs). This includes all barrier islands along the Alaska coast and their associated spits, within the range of the polar bear in the United States, and the water, ice, and terrestrial habitat within 1.6 km of these islands (i.e., the no-disturbance zone).

Sea Ice Habitat would only be present in the Action Area during the winter activities of the Project, as sea ice does not occur in the Action Area during the summer open-water season. The FOC route overlaps CHU 1 over the Hotham Inlet crossing(s) between Kotzebue and the mainland, but the FOC construction over this section would occur during the summer when sea ice is not present. During the timeframe that sea ice habitat is present, the Project could overlap CHU 1 for transporting personnel, camps, and equipment between Kotzebue and other segments of the overland FOC route that would be worked on during the winter months. Therefore, Project activities would occur over a short duration within CHU 1. Because CS polar bears are rare and are not known to den in the Action Area, and the Project activities are temporary and transient in nature within CHU 1, we do not anticipate the Project would limit sea ice habitat used for feeding, breeding, denning, or movements by polar bears.

Only 0.7 percent (i.e., 7 km of the 1,060-km FOC route) of the Project overlaps with CHU 3, merely overlapping the no-disturbance zones of Barrier Island Habitat in the village of Kivalina and adjacent to the village of Deering. Additionally, the affected area makes up an extremely small portion of CHU 3. The entire winter FOC deployment is anticipated to occur for up to 110 days, in which we could expect 0.7 percent of the entire winter FOC deployment to occur over a short duration of time (i.e., a few days at most). We anticipate that limited summer activities would occur within CHU 3, as trenching will not occur in Kivalina, and there are no complex water crossings within CHU 3, however, additional site visits may occur throughout the year for maintenance on an as needed basis, but are expected to be infrequent. It is unlikely that polar bears would seek refuge in the Barrier Island Habitat within Kivalina because of the existing human presence and associated disturbance there. Additionally, while the Barrier Island Habitat (specifically, the no-disturbance zone) overlaps the FOC route in Kivalina and outside of Deering, the majority of habitat used by CS polar bears is sea ice, in which terrestrial use on the Alaska coast is limited, and CS-polar bear dens have not been documented within the Action Area. Overall, we do not anticipate that the Project will limit access to denning habitats, or prohibit bears from using optimal feeding habitats or islands for refuge from disturbance because 1) CS polar bears primarily use Sea Ice Habitat and are uncommon in the Action Area; 2) we expect the FOC deployment in CHU 3 to last a short duration of time; and 3) most of the Action Area occurs on land in which only 7 km of the 1,060-km route (i.e., 0.7 percent) overlaps CHU 3.

In summary, we conclude that the Project would not alter the PBFs that are essential to the CS polar bear subpopulation because (1) CS polar bears are rare and are not known to den in the Action Area; (2) the Project duration in CHU 1 and 3 is temporary and short; (3) there is minimal spatial overlap between the Project Action Area and CHU 1 and 3.

Listed Eiders

The Action Area overlaps with the known range of spectacled and the Alaska-breeding population of Steller's eiders (collectively referred to as listed eiders). While listed eiders nest on the Alaska Arctic Coastal Plain and the Yukon-Kuskokwim Delta, they do not nest in the Action Area. During the Project's winter activities (January through early May), listed eiders would occur in the offshore marine environment and neither spectacled or Steller's eiders are known to winter near the Action Area. During the Project's summer activities (mid-May through September), small numbers of listed eiders (e.g., breeding eiders migrating between breeding and non-breeding grounds, non-breeding listed eiders) could occur near the Action Area, but they generally stay offshore (Petersen et al., 1999). As a Project safety measure, NANA will install bird diverters on all aerial FOC water crossings to prevent potential listed eider collisions with FOC infrastructure should listed eiders occur in the Action Area. Overall, we do not anticipate summer terrestrial activities (e.g., helicopter operations, in-village construction) would impact listed eiders because listed eiders will generally remain outside of the Action Area during the summer months. Summer barge activity would be restricted to the Kotzebue Sound, in which barges would be transiting slowly (no greater than 12 knots) between Kotzebue and the coastal villages, and barge activity would not overlap with important marine habitats or stopover sites used by listed eiders. Therefore, we anticipate FOC and barge collision risk with listed eiders to be extremely low. While small numbers of listed eiders could potentially occur in the marine habitat proximate to the Action Area during summer activities, because barges would be transiting slowly, we would expect any effects from the Project to be minor and temporary (i.e., limited to changes in behavior that would not be biologically significant) because listed eiders exposed to disturbance from Project activities would be able to respond by departing the area.

We conclude that the effects of the Project to listed eiders would be insignificant and/or discountable because 1) the Project would not affect nesting listed eiders; 2) listed eiders generally stay offshore and are rare in the Action Area; and 3) if listed eiders were present in the Action Area, they are expected to respond to disturbances by departing the area. Responses are expected to be minor and temporary and not result in the injury or death of any listed eiders.

Summary

This concludes informal consultation pursuant to the regulations implementing the ESA (50 CFR 402.13). Reinitiation of consultation is necessary if (1) any take of listed species occurs; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered during informal consultation or in written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the identified action.

Thank you for your cooperation in meeting our joint responsibilities under the ESA. If you have any questions or comments regarding this letter, please contact Annie Maliguine at Anastasia_Maliguine@fws.gov and refer to project code 2025-0134615.

Sincerely,

Holly Carroll
Acting Field Supervisor
Northern Alaska Fish and Wildlife Field Office

cc:

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Best management practices to minimize impacts to polar bears

USFWS Marine Mammals Management

Polar bears are protected under the Marine Mammal Protection Act (MMPA) and were listed as a threatened species under the Endangered Species Act (ESA) in 2008. The MMPA and ESA both prohibit the "take" of polar bears with limited exceptions, such as for authorized incidental take and when necessary for human safety. Take includes disturbing, injuring, and killing polar bears.

Polar bears use sea ice, marine waters and terrestrial areas in northern and northwestern Alaska for resting, feeding, denning, and seasonal movements. They are most likely to be encountered within 25 miles of the coastline, especially along barrier islands during July–October. Polar bears may also be encountered farther inland, especially females during the denning period (November-April). Be aware that polar bears also occur within human settlements such as villages, camps, and work areas.

This document lists best management practices the Service recommends to minimize the risk of human activities causing adverse impacts to polar bears, as well as polar bear encounter guidelines and reporting procedures. Following as many relevant measures as possible through the development and implementation of a polar bear avoidance and encounter plan will help protect both human and bear safety. Adherence to measures does not, however, absolve personnel of responsibility if they take (harass, harm, capture, or kill) a polar bear in violation of the Marine Mammal Protection Act. If you have questions about any best management practices or how they might be implemented in specific scenarios, please contact USFWS Marine Mammals Management (MMM) at FW7_AK_Marine_Mammals@fws.gov, 907-786-3800, or 800-362-5148.

Contents

Best practices for avoiding polar bear encounters and impacts to bears

Project siting and timing

- Avoid siting projects in polar bear high-use areas to the maximum extent practicable. High-use areas include all land within 2 km (1.2 miles) of the Chukchi and Beaufort Sea coasts. Polar bears are most likely to be encountered along coastal movement corridors along the Beaufort Sea coast between July and October. Polar bears may congregate near coastal communities in September and October when remains of subsistence-harvested whales are present. If coastal siting is unavoidable, maintain an open transit corridor for bears that is free of human presence and activity to help avoid conflict.
- Avoid establishing infrastructure in or near polar bear denning habitat (see USGS habitat maps: https://alaska.usgs.gov/data/polarBear/denHabitat/polarBear_denHabitat_allACP) and avoid undertaking activities in or near polar bear denning habitat between November and April.
- Be vigilant for sows with cubs during the den emergence period (March–May) in inland as well as coastal areas.
- Polar bears typically rest during day and become more active during dusk, night, or dawn. Plan activities with this in mind.

Den detection and avoidance

- Aerial infrared (AIR) surveys can locate polar bear dens that can then be avoided between November and April to prevent disturbance to denning bears. Anyone planning industrial operations or other activities involving large human presence or equipment between November and April and within 25 miles of the Bering, Chukchi, or Beaufort coasts (outside of communities) should contact Marine Mammals Management to determine if completing one or more AIR surveys is necessary to lower the risk of impacts to denning bears.
- Avoid any activities within one mile of known or suspected polar bears dens, including dens encountered in the course of activities. Locations of known or suspected polar bear dens can be obtained from MMM. Report any observed polar bear dens to the MMM Regulatory Program at FW7_MMM_Reports@fws.gov as soon as possible and within 24 hours of discovery. Should occupied dens be identified within one mile of activities, cease work in the immediate area and immediately contact MMM for guidance before proceeding with activities. The Service will evaluate these instances on a case-by-case basis and determine the appropriate action.
- During transit off of ice roads and established tundra travel routes, personnel in potential denning areas should constantly be on the lookout for signs of denning (e.g., piles of snow from den excavation, tracks) between November and April. Use vehicle-based forward looking infrared cameras to scan for dens when possible. Personnel should avoid crossing topographic features suitable for denning, such as riverbanks and along bluffs.

Avoiding impacts to sows and cubs after den emergence

- If a sow and cubs of the year are seen, cease operations within a 1.6 km (1 mi) exclusion zone and notify the Service at 800-362-5148 (or 907-786-3800) and FW7_MMM_Reports@fws.gov. Any operations in between the sow/cubs and the shoreline must be notified, and the bears must be provided a clear and unimpeded path to the sea ice through coordination with bear monitors.

Attractants management

- Be aware that garbage, food, deliberate feeding, animal carcasses, chemicals, petroleum products, sewage, and grey water can attract polar bears. Polar bears are curious and may also be attracted to novel or unfamiliar items (e.g., plastic objects, snowmachines).
- Incinerate garbage and food waste at work sites as frequently as possible. Locate incinerators outside of living areas. If incineration is not an option, store wastes as described below and remove them from site (e.g., fly them out) as frequently as possible.
- Store attractants in a manner that minimizes odors and prevents access by bears. Use bear-resistant storage containers and waste receptacles. Containers should be approved and certified by the Interagency Grizzly Bear Committee as "bear-resistant" (see information at http://www.igbconline.org/html/bear-resistant-products). Always store food away from living quarters.
- Maintain clean work areas and/or camps.
- Clean any fuel spills or spills/leaks of other chemicals or toxic materials properly and immediately, even if they are small.
- When travelling, avoid carrying strongly scented attractants or store them in air-tight containers to minimize odor transmission, and consume food in enclosed and secure areas whenever possible.

Bear avoidance, detection, and deterrence protocols

- Establish specific protocols to minimize the risk of encounters and maximize human and animal safety if an encounter does occur. These should include such measures as:
  - regular on-site safety discussions
  - using the buddy system for activities away from buildings or outside fences
  - being vigilant, traveling in groups, and making noise to avoid surprise encounters
  - using bear detection tools/methods including human monitors or "bear guards", physical barriers, trip wire systems, alarms, and/or motion detectors/cameras
  - establishing a notification system/communication plan (e.g., using radio, blow horns, or sirens) to alert workers of a polar bear in the area and contact outside help if needed (e.g., by satellite phone)
  - designating safe area(s) to gather if a bear approaches work areas

  Additional precautions should be taken on barrier islands, in river drainages, along bluff habitat or ice leads/polynyas, near whale or other marine mammal carcasses, or in the vicinity of fresh tracks. For example, prior to landing/docking on barrier islands or other coastal areas, survey the area to ensure polar bears are not present.

- Prepare bear deterrence plans to implement if a polar bear approaches and must be hazed to protect workers and property. The Service has issued Polar Bear Deterrence Guidelines (link to notice: https://www.federalregister.gov/documents/2010/10/06/2010-25044/marine-mammal-protection-act-deterrence-guidelines) that describe passive and preventative deterrence measures that do not require advance training. These include tools such as loud acoustic devices, air horns, electric fencing, or using a vehicle or boat to block an approaching bear. Bear spray is another effective preventative deterrence tool for individuals informed in its proper use. Use of more advanced deterrence methods, such projectiles from a firearm (e.g., pepper balls, cracker shells, bean bags, rubber bullets) requires appropriate specialized training, and the Service may provide a Letter of Authorization for Intentional Harassment for projects intending to use advanced deterrence. Contact MMM for additional information on the Service's Bear Safety and Bear Deterrence Specialist training and intentional harassment authorization.
    - If deterrence plans include use of a firearm by a Service-approved bear deterrence specialist, make sure plans identify how rounds will be handled to prevent mixing of lethal and less-lethal rounds.
- If working near a North Slope Borough community, reach out to the North Slope Borough Department of Wildlife Management (phone: (907) 852-0350) for information on recent polar bear activity in the area to inform avoidance plans.

Information and measures in the Polar Bear Encounter Guidelines section of this document should be incorporated into encounter and deterrence protocols

Personnel training materials and procedures

- Ensure all personnel working in polar bear habitat receive appropriate safety training, including education on site-specific protocols. Depending on individual duties and activities, this may include Bear Safety Training from the Service or the Alaska Department of Fish and Game.
- Any personnel that may need to deter an approaching polar bear should receive training in use of deterrents, including hands-on practice. Training from the Service or Service-approved trainers is critical for individuals planning to use advanced hazing tools (e.g., projectiles from a firearm or approaches with vehicle).
- Share or publicly post materials on bear safety and encounter protocols at work sites.
- Complete on-site polar bear safety drills.

Industrial infrastructure: site design and snow and lighting management

- For industrial infrastructure, ensure good visibility in all work site locations though facility layout and lighting. All personnel areas, including entrances, should be illuminated during working hours. Waste-management areas and pedestrian traffic areas should be particularly well-lit.

- Exterior doors should open outward, and there should be windows in or near exterior doors so personnel can look for polar bears before exiting a building. To limit risk of bears entering buildings, use oval-shaped versus handle-type knobs on exterior doors. Prevent snow from piling up below windows if it could allow a bear to climb and enter the building through the window. Grates on windows (in compliance with fire codes) are recommended to limit potential entry by bears.
- Take measures to prevent snow drifts from forming around elevated structures (including roads and pads), as they may obstruct visibility or attract bears as denning habitat. Prevailing wind directions and resulting drift should be considered when placing barriers or storing materials. Establish protocols to remove accumulated snow from infrastructure, as needed, and consider the need to maintain visibility when placing snow berms.
- Minimize the potential for polar bear concealment. Arrange any objects outdoors in a way that reduces or eliminates spaces where a polar bear could be concealed. Where practicable, install skirting under elevated buildings, cap off stored pipes, block culverts in the winter, surround equipment storage areas with fencing, and place gates or other barriers on stairwells.
- Avoid creating corners and areas where bears may feel trapped or workers may become trapped by a bear.
- Minimize outdoor storage and rearrangement of outdoor objects, which may attract curious polar bears.
- If work and camp activities are co-located (e.g., on a pad) ensure living quarters are centrally located.
- Use electric or other fences that exclude bears from work and living areas, but recognize that fences are not fail-safe and awareness within or outside fences is necessary.
- If full illumination of a work site is not possible, monitoring by a bear guard using infrared night-vision cameras or binoculars may be sufficient to detect approaching bears. Contact MMM if you are considering infrared night-vision monitoring.

<u>Remote field camp safety practices</u>

- Minimize and prevent access to attractants. Store food, garbage, and other attractants in a manner that minimizes odors and prevents access by bears. Do not allow any bears to receive a food reward in a camp. Use containers approved and certified by the Interagency Grizzly Bear Committee as “bear-resistant” to store food, garbage, and other attractants (see attractant section above).
- Use an electric fence or alarm system as additional campsite protection.
- Avoid camping or lingering in bear high-use areas such as river drainages, coastal bluffs and barrier islands, or along ice leads/polynyas. Do not camp within one mile of river drainages with steep banks and bluffs during denning season (November-April).
- Along the Beaufort and Chukchi coasts, locate overnight camps inland. Based on known patterns of land use by polar bears, camping just a mile or two inland will dramatically decrease the chance a camp will be in the path of a polar bear. Be aware, however, that camping inland or along the coast can result in an encounter with a grizzly bear, so take bear conflict-avoidance precautions regardless of camping location.

Watercraft operations

- Be especially vigilant for swimming polar bears when vessels are underway. If a bear is encountered while a vessel is in transit, allow the bear to continue unhindered: reduce speed, monitor the bear's movement, and without making sudden changes to travel direction, move away from the area. Avoid traveling in the same direction as the bear. Never approach, herd, chase, or attempt to lure a bear.
- Reduce speed and avoid sudden changes in travel direction when visibility is low.
- Vessels should maintain the maximum distance possible from polar bears. Under no circumstances, other than an emergency, should any vessel deliberately approach within an 805-m (0.5-mile) radius of polar bears observed on land or ice.
- For vessel operations in polar bear habitat, ensure the vessel crew has access to a deterrence tool for polar bears (e.g., bear spray, cracker shells or other projectiles) as a safety measure in case the vessel becomes stuck in sea ice or otherwise loses mobility.

Aircraft operations (including unmanned systems/drones):

- Pilots of all aircraft types (fixed wing, helicopters, and drones) should fly at the maximum distance possible from concentrations of polar bears. While operating in polar bear habitat, aircraft should maintain an altitude of 1500 ft (457 m) above ground level when operationally possible; drones that must operate at lower altitudes should maintain the highest altitude operationally possible. Under no circumstances, other than an emergency, should aircraft operate at an altitude lower than 1500 ft within 0.5 mi (805 m) of polar bears observed on ice or land.
- When weather conditions do not allow a 1500 ft flying altitude, such as during severe storms or when cloud cover is low, aircraft may be operated below this altitude. However, when lower flight is necessary, the operator should avoid areas of known concentrations of polar bears and should take precautions to avoid flying directly over or within 0.5 miles (805 m) of these areas. Operators should stay aware of bear congregation sites near their work areas through communication with the Service and regional and local bodies (e.g., the North Slope Borough Department of Wildlife Management, community councils). Note that Barter Island and Cross Island are consistent bear concentration areas.
- Aircraft should avoid performing any evasive and sudden maneuvers, especially when traveling at lower altitudes. Avoid circling, turning, or hovering aircraft within 0.5 mi (805 m) of polar bears or in known polar bear concentration areas.
- If a polar bear is spotted within a landing zone or work area while an aircraft is in flight, aircraft operators should travel away from the site, and if flying at a lower altitude, slowly increase altitude to 1500 ft (or a level that is safest and viable given current traveling conditions). Except in emergency situations, do not land aircraft within 0.5 mile of a polar bear.
- If a polar bear is observed while an aircraft is temporarily grounded, personnel should board the aircraft and leave the area. The pilot should also avoid flying over the polar bear.
- Do not operate aircraft in such a way as to separate individual members of a group of polar bears from each other.

- USFWS MMM may provide more specific guidance for particular types of aircraft or operations (e.g., for specific uses of drones). Contact MMM with questions at FW7_AK_Marine_Mammals@fws.gov or 907-786-3800.

Polar bear encounter guidelines

The general strategy for minimizing human-bear conflicts is to: 1) be prepared; 2) avoid encounters; and 3) know how to respond if an encounter occurs. Preparation and avoidance measures—which include avoiding high-use areas, minimizing attractants, developing a human-bear safety plan, preventing surprise encounters, carrying deterrents and practicing using them—are all described above. Guidelines for encounters are listed in this section. These encounter guidelines are based on up-to-date, expert assessment of polar bear incidents and practices that minimize negative outcomes.

Note that polar bears react differently to human presence depending on a variety of biological and environmental factors, as well as their previous experience with humans. Hungry (skinny) bears can be particularly dangerous.

If a polar bear is encountered:

- <u>Prepare deterrent(s)</u>. Do not run from or approach polar bears. If the bear is unaware of human presence, allow it to continue what it was doing before it was encountered. Move to safe shelter (e.g. vehicle or building) if available and wait until it is safe to proceed.

- <u>Group up</u>. If no safe shelter is available, group up with others and stand positioned to allow for safe deployment of deterrents (e.g. firearm, pistol launcher, bear spray) – until the bear leaves.

- <u>Observe bear behavior</u>. Polar bears that stop what they are doing to turn their head or sniff the air in your direction have likely become aware of your presence. These animals may exhibit various behaviors:

  - C*urious* polar bears typically move slowly, stopping frequently to sniff the air, moving their heads around to catch a scent, or holding their heads high with ears forward. They may also stand up.
  - *A threatened or agitated* polar bear may huff, snap its jaws together, stare at you (or the object of threat) and lower its head to below shoulder level, pressing its ears back and swaying from side to side.
  - A *predatory* bear may sneak up on an object it considers prey. It may also approach in a straight line at constant speed without exhibiting curious or threatened behavior.

If a polar bear approaches you or your camp:

- Defend your group/camp. Any bear that approaches within range of your deterrents should be deterred. Stand your ground; do not run. Defend your group or camp, increasing the intensity of your deterrence efforts as necessary. Start with the least aggressive options, such as using noisemakers, yelling or clapping, or deploying air horns. Recent work has found bear spray to be an effective deterrent against polar bears, even under high wind scenarios. With wise use of deterrents, your group may be able to de-escalate the incident by keeping bears from making contact with site items, and by eventually increasing distance between you and the bear. Be aware that lethal take of polar bears is permissible if such taking is imminently necessary in defense of human life. Defense of life kills must be reported to the Service within 48 hours.

- If bear makes physical contact, fight back. If deterrence/lethal efforts have failed and a polar bear attacks (makes physical contact), **do not "play dead"**. Fight back using any deterrents available, aiming fists or objects at the bear's nose and face.

If defense of life becomes necessary:

- Defense of life kills are only allowed in self-defense or to save the life of a person in immediate danger. All defense-of-life kills of polar bears must be reported to the Service within 48 hours. Report to USFWS Marine Mammals Management (email FW7_MMM_Reports@fws.gov and/or call 1-800-362-5148). Events in the Arctic National Wildlife Refuge may alternatively be reported by calling the Arctic National Wildlife Refuge Manager at 1-800-362-4546 or by calling (907) 883-9409 and speaking to a law enforcement officer. If you send an email or leave a message, provide your name, contact info, and location so you can be reached to provide additional information about the incident.
- You will be required to document the circumstances leading up to, and immediately surrounding, the death of the bear, including documentation of the preventative methods you used to de-escalate the conflict in advance of killing the bear.
- The shooter may be required to transfer the carcass (including hide and skull) to a law enforcement officer or designated local representative. The shooter is responsible for the carcass once the bear is killed (it cannot be abandoned).
- The shooter may not keep any parts of the animal unless authorized by the US Fish and Wildlife Service.

Reporting

The Service requests that any polar bears sighted during activities are reported to FW7_MMM_Reports@fws.gov. Reports are mandatory if polar bears are harassed or harmed in an incident, and all sighting reports are helpful. Any injury or death of a bear related to human activities must be reported as soon as possible and no later than 48 hours after occurrence, as described in the defense of life section above. Please include as much of the following information as possible in reports:

- Date, time, and location of the polar bear observation
- Number of individual polar bears by sex and age, if possible
- Observer name and contact information
- Weather, visibility, and ice conditions at the time of the polar bear observation
- Estimated closest point of approach for the polar bear from personnel and facilities/equipment
- Project activity at time of the polar bear observation and possible attractants if present
- Polar bear behavior
- Description of the encounter with the polar bear. A full written description, including the duration of encounter and all actions taken to minimize harassment or harm to the bear, is required when a human-bear interaction occurs.
- In cases involving aircraft or vessels:
    a. Aircraft or vessel heading
    b. Aircraft or vessel speed
    c. Aircraft altitude
    d. Initial behaviors of the polar bear before responding to the aircraft or vessel
    e. A description of any apparent reactions from the polar bear to the aircraft or vessel
- If injured, distressed, or dead polar bears are observed that not associated with project activities (e.g., found outside the project area, previously wounded polar bears, or carcasses), please report this information to the Service as soon as possible at 1-800-362-5148 and FW7_MMM_Reports@fws.gov. The following website has instructions for reporting found polar bear remains: https://www.fws.gov/polar-bear-dead. Photographs, video, location information, or any other available documentation is very helpful for all reports.

Appendix O12 – Essential Fish Habitat Letter of Concurrence

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668

August 15, 2025

Amanda Pereira, Environmental Program Officer
National Telecommunications and Information Administration
Office of Internet Connectivity and Growth
1401 Constitution Ave., NW, Room 4878
Washington, DC 20230

Re: NANA Regional Middle Mile Fiber Optic Project; NMFS ECO Reference No. AKRO-2025-02339

Dear Ms. Pereira:

The National Marine Fisheries Service has reviewed the essential fish habitat (EFH) assessment provided on August 11, 2025, regarding the above referenced project. The purpose of this project is to install approximately 660 miles of fiber optic cable to provide internet service to eight remote communities in northwest Alaska. The proposed scope of work includes ground-laid fiber optic cable, aerial transmission, and horizontal directional drilling. The cable will be installed within freshwater and marine EFH.

Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and the Fish and Wildlife Coordination Act require Federal agencies to consult with us on all actions that may adversely affect EFH and other aquatic resources. The EFH consultation process is guided by the regulation at 50 CFR 600 Subpart K, which mandates the preparation of EFH assessments and outlines each agency's obligations. In support of this consultation process, you provided a notice of the proposed action, an assessment of effects, and your agency’s conclusion regarding impacts on EFH. We offer the following comments on this project.

Essential Fish Habitat

The North Pacific Fishery Management Council has identified EFH for nearshore marine waters in the vicinity of the project footprint’s marine component to include EFH for Chinook, chum, pink, sockeye, and coho salmon (NPFMC 2024a). Juvenile salmon use nearshore habitat during spring and early summer for feeding and predator avoidance prior to migration out to sea. Designated EFH for Pacific salmon also includes freshwater habitat supporting egg, larval, and juvenile life stages (NPFMC 2024a). The Alaska Department of Fish and Game’s Anadromous Waters Catalog identifies streams and rivers within the project footprint as supporting anadromous fish, including Chinook, chum, pink, sockeye and coho salmon (Giefer & Graziano 2024).

The proposed project location is designated as EFH for several species of groundfish or crab (NPFMC 2024b). In addition, the Nearshore Fish Atlas of Alaska (NMFS 2021) indicates that species utilizing nearshore habitat in the vicinity of the project include: starry flounder, Pacific herring, and least cisco.

Assessment of Effects to EFH

Your agency has concluded that the proposed project activity may adversely affect EFH in the project area. You also concluded those effects would be minimal and temporary in nature. Federal regulations define an adverse effect as "any impact which reduces the quality and/or quantity of EFH" (50 CFR 600.810(a)). Based on our review of the project plans and the information provided, we agree with your conclusion of effects. Potential adverse effects to EFH can be mitigated if your identified mitigation measures and best management practices are implemented. Therefore, we have no conservation recommendations for the proposed action and additional EFH consultation is not necessary.

Significant changes to the project may require reinitiating a consultation. Additional information regarding the EFH consultation process can be found in our EFH Fact Sheet and our Regional website, where you can find FAQs. Lucas Byker (lucas.byker@noaa.gov) is available to answer questions or discuss further actions.

Sincerely,

S. McDermott for

Assistant Regional Administrator
Habitat Conservation

cc: Ryan Cooper, rcooper@kunaeng.com
Jason Louvier, Jason.louvier@nana.com
Travis Stubblefield, travis.stubblefield@nana.com

References

Giefer, J., and S. Graziano. 2024. Catalog of waters important for spawning, rearing, or migration of anadromous fishes – Western Region, effective June, 2024, Alaska Department of Fish and Game, Special Publication No. 24-06, Anchorage.

National Marine Fisheries Service (NMFS). 2021. NOAA Fisheries Nearshore Fish Atlas of Alaska database (alaskafisheries.noaa.gov/mapping/sz/index.html?tab=fa).

North Pacific Fishery Management Council (NPFMC). 2024a. Fishery Management Plan for the Salmon Fisheries in the EEZ off Alaska. Anchorage, Alaska, North Pacific Fishery Management Council. https://www.npfmc.org/wp-content/PDFdocuments/fmp/Salmon/SalmonFMP.pdf

North Pacific Fishery Management Council (NPFMC). 2024b. Fishery Management Plan for Fish Resources of the Arctic Management Area. Anchorage, Alaska, North Pacific Fishery Management Council. https://npfmc.b-cdn.net/wp-content/PDFdocuments/fmp/Arctic/ArcticFMP.pdf

Appendix O13 – NMFS Letter of Concurrence

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668

November 6, 2025

Andrew Bielakowski
National Telecommunications & Information Administration (NTIA)
1401 Constitution Avenue, N.W.
Washington, D.C. 20230

Re: NTIA NANA Regional Broadband Network Fiber Optic Project, Letter of Concurrence, AKRO-2025-02216 (EAXX-006-60-3D-1754935958)

Dear Andrew Bielakowski:

The National Marine Fisheries Service (NMFS) has completed informal consultation under section 7(a)(2) of the Endangered Species Act (ESA) regarding the proposed NANA Regional Corporation, Inc. (NANA) Regional Broadband Network Fiber Optic Cable (FOC) laying project connecting several communities in northwest Alaska. The National Telecommunications & Information Administration (NTIA) requested written concurrence that the proposed action may affect, but is not likely to adversely affect bowhead whale (*Balaena mysticetus*), Arctic subspecies of ringed seal (*Phoca hispida hispida*), or Beringia DPS bearded seal (*Erignathus barbatus nauticus*).

Based on our analysis of the information you provided to us, and additional literature cited below, NMFS concurs with your determinations.

Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on May 6, 2024 (89 FR 24268). We are applying the updated regulations to this consultation. The 2024 regulatory changes, like those from 2019, were intended to improve and clarify the consultation process, and, with one exception from 2024 (offsetting reasonable and prudent measures), were not intended to result in changes to NMFS' existing practice in implementing section 7(a)(2) of the ESA (84 FR at 45015; 89 FR at 24268). We have considered the prior rules and affirm that the substantive analysis and conclusions articulated in this letter of concurrence would not have been any different under the 2019 regulations or pre-2019 regulations.

This letter underwent pre-dissemination review in compliance with applicable Data Quality Act guidelines. A complete administrative record of this consultation is on file in this office.

Consultation History

NMFS received your request for consultation and a Biological Assessment (BA) for the project on July 28, 2025. We received your correspondence identifying NANA and their contractor, ABR, Inc. (ABR) as your non-Federal representatives for this project on August 11, 2025. NANA submitted an update to the BA that includes an alternative to the original FOC alignment that would avoid lands owned by Kikiktagruk Inupiat Corporation (KIC).

On August 12, 2025, we informed the applicant about the September 26, 2024, U.S. District Court for the District of Alaska case that vacated the critical habitat designations for ringed seal and bearded seals under the ESA and remanded the rules to NMFS for further consideration (State of Alaska v. Nat'l Marine Fisheries Serv., Case No. 3:23-cv-00032-SLG (D. Alaska Sept. 26, 2024)). NMFS attended an interagency coordination meeting on August 13, 2025, and requested more information about the project via email on August 14, 2025. On August 14, 2025, ABR withdrew their request for consultation on ice seal critical habitat after considering the project timing and the court case. On August 20 and 22, 2025, ABR provided NMFS with additional information regarding the project schedule and proposed mitigation measures. NMFS initiated consultation on August 25, 2025.

Description of the Proposed Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas (50 CFR 402.02).

NTIA intends to provide funding under the Tribal Broadband Connectivity Program to NANA to complete its submarine and terrestrial FOC system. NANA is proposing the design, construction, and operation of a high-speed broadband network, connecting each of the communities in the Northwest Arctic Borough to a fiber optic cable (FOC) system and associated infrastructure. The project also requires a permit from the U.S. Army Corps of Engineers (USACE), Alaska District under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. NTIA will serve as the lead agency for the project.

The NANA Regional Broadband Fiber Optic Project (the Project) will install over 1,060 kilometers (km; 660 miles) of "middle mile" FOC connectivity between the unserved tribal communities of the region to a broadband Point of Presence in Kotzebue, Alaska (Figure 1). NANA is considering two alternatives for the alignment. The preferred FOC route alternative will consist of terrestrial ground-laid, trenched, river crossings using ground-lay, aerial, or horizontal directional drilling (HDD), and a submarine installation across Hotham Inlet within Kotzebue Sound. The 1,060-km-long (660-mile-long) proposed route will cross Bureau of Land Management (BLM)-managed lands and U.S. Fish and Wildlife Service (USFWS)-managed lands (Selawik National Wildlife Refuge [SNWR]). The preferred route is called the Winter Trails Alternative.

The Cape Blossom Alternative is a variation of the preferred alternative, with changes in the vicinity of Kotzebue to avoid lands owned by KIC (Figure 1). This route is being considered in the event that KIC does not authorize the project to go through their privately owned lands. This alternative utilizes the Department of Transportation and Public Facilities (DOT&PF) Cape

Blossom Road utility right of way. It also requires two crossings of the marine Hotham Inlet (whereas the Winter Trails Alternative only has one crossing of Hotham Inlet).

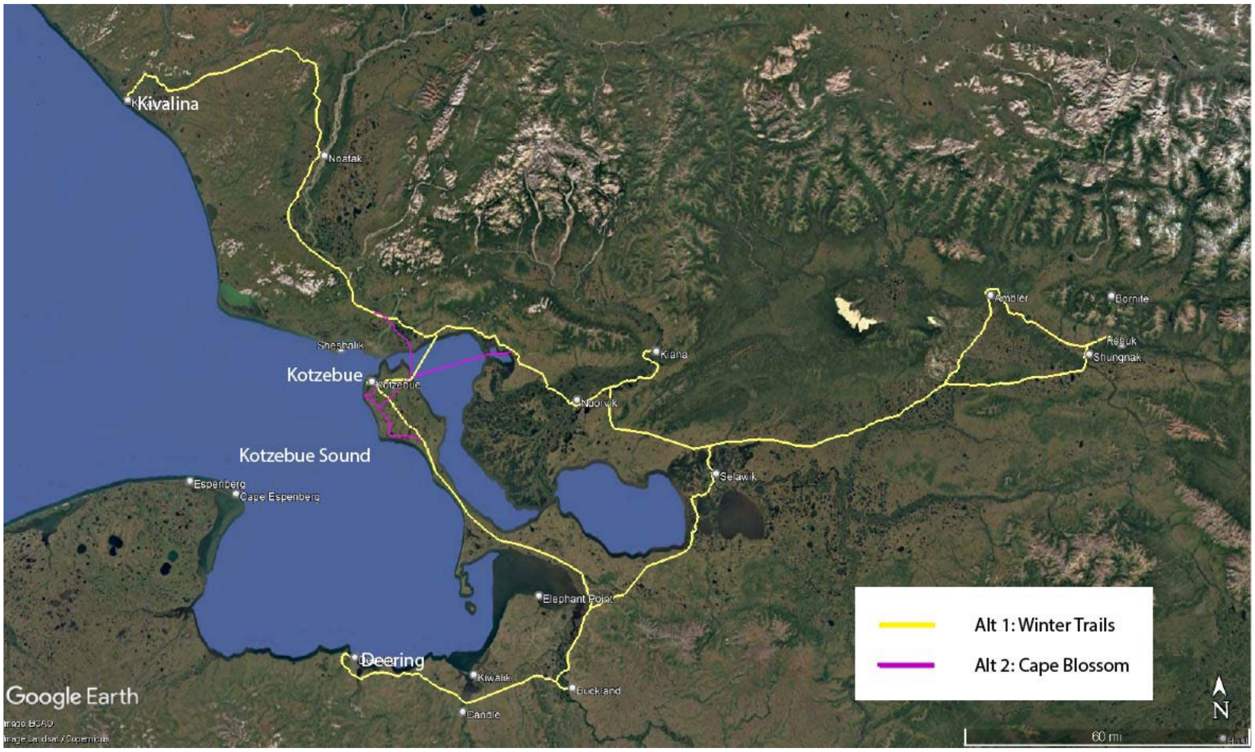

Figure 1. Proposed NANA routes near Kotzebue, Alaska (©Google Earth 2025)

The Winter Trails route terrestrial segments will cover approximately 1,043 km (648.2 mi) of the total project length of 1,060 km (658.4 mi) as summarized in Table 1.

Table 1. Approximate segment lengths and installation type for the proposed Winter Trails Route of the cable-laying operations for the NANA Broadband Project.

Ground lay segment start	Endpoint	Type	Length (mi)[a]	Length (km)
Kivalina	Noatak	Terrestrial	63.00	101.39
Noatak	N Hotham	Terrestrial	58.04	93.41
N Hotham	Island	Subsea	10.22	16.45
Island	Kotzebue	Terrestrial	7.89	12.70
Kotzebue	Elephant point	Terrestrial	69.00	111.04
Elephant point	Buckland	Terrestrial	20.80	33.47
Buckland	Deering	Terrestrial	55.03	88.56
Elephant point	Selawik Junction	Terrestrial	43.35	69.77
Noorvik Junction	N Hotham	Terrestrial	38.00	61.16
Noorvik Junction	Kiana	Terrestrial	28.00	45.06
Noorvik Junction	Ambler	Terrestrial	125.60	202.13

Ground lay segment start	Endpoint	Type	Length (mi)[a]	Length (km)
Ambler	Kobuk	Terrestrial	35.45	57.05
Kobuk	Shungnak	Terrestrial	11.65	18.75
Shungnak	Junction	Terrestrial	92.35	148.62
		Total	658.38	1,059.56
		Terrestrial total	648.16	1,043.11
		Subsea total	10.22	16.45

[a] The segment lengths are approximate as terrain may necessitate small deviations from the planned alignments.

The Cape Blossom alternative is being analyzed to assess a workable route if easements over lands owned by KIC are not obtained. This potential alternative proposes route changes in the Kotzebue area (including the Baldwin Peninsula and Hotham Inlet). All other terrestrial segments would remain unchanged (Figure 2). The Cape Blossom alternative would increase the subsea cable length to approximately 28 miles (45.1 km) (Table 2).

Table 2. Approximate segment lengths and installation type for the proposed Cape Blossom Route segments of the cable-laying operations for the NANA Broadband Project

Ground lay segment start	Endpoint	Type	Length (mi)[a]	Length (km)
Noatak segment	North shore	Terrestrial	11.47	18.46
North shore	Island	Subsea	6.00	9.66
Island	East shore	Subsea	22.00	35.41
East shore	Kotzebue segment	Terrestrial	9.08	14.61
Kotzebue segment		Terrestrial	21.00	33.80
		Total	69.55	111.93
		Terrestrial total	41.55	66.87
		Subsea total	28.00	45.06

[a] The segment lengths are approximate as terrain may necessitate small deviations from the planned alignments.

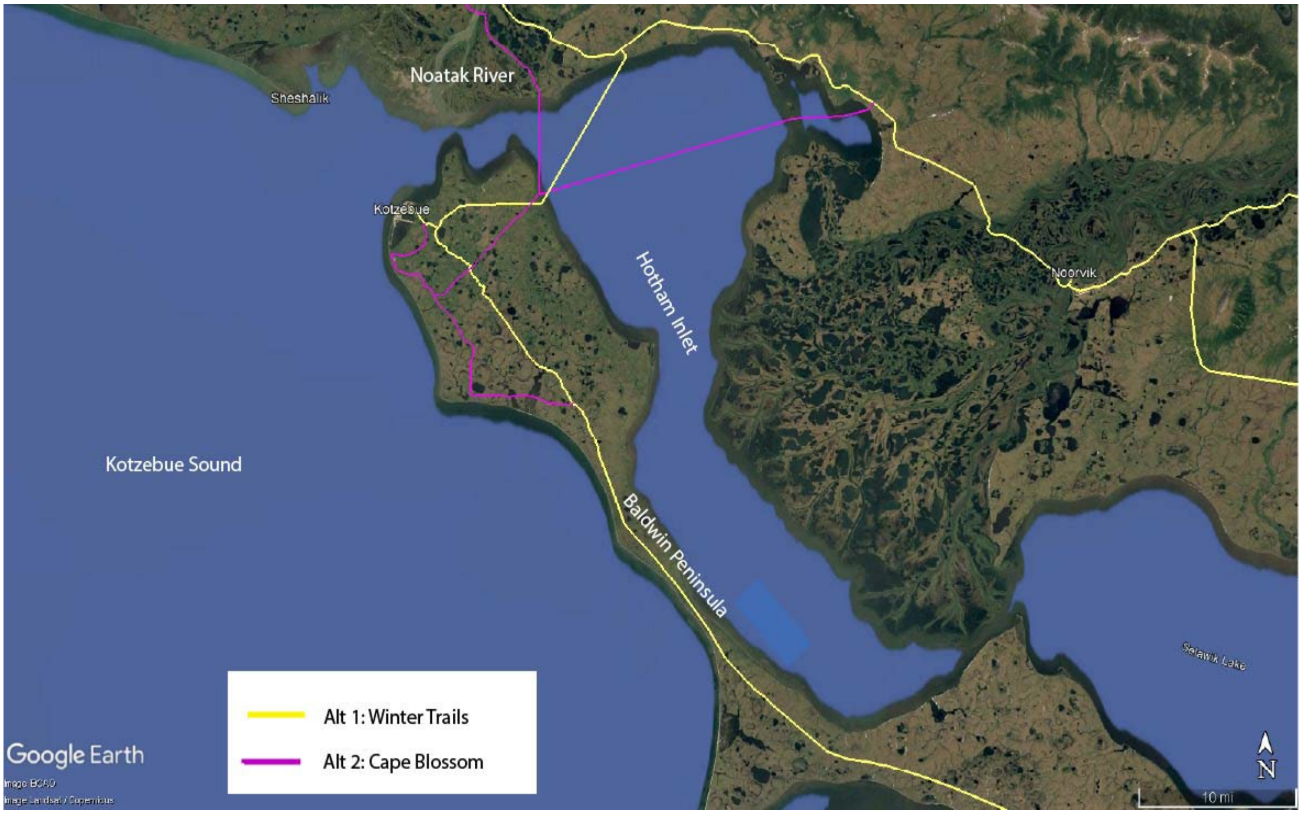

Figure 2. View of the NANA broadband Network project area detailing the Winter Trails and Cape Blossom alternatives (©Google Earth 2025).

The majority of the network will consist of ground-laid FOC that will be installed in the winter to minimize impacts to the sensitive tundra environment. The project will employ a hybrid system that primarily uses ground-lay terrestrial FOC with strategic marine, aerial, bored, and trenched segments where necessary for system integrity and environmental protection. This approach leverages proven construction methodologies specifically adapted for Arctic tundra conditions.

NANA anticipates initiating terrestrial construction during the winter of 2026 (expected to start in January) and placing the submarine FOC crossing(s) of Hotham Inlet (just east of Kotzebue) during the 2026 open-water season (approximately July). All FOC placement is expected to be completed by late spring of 2027.The submarine and terrestrial portions of the proposed alignments for the project are shown in Figure 1 and Figure 2. Timing for the project components will not vary slightly between the alternatives.

Submarine FOC Construction

For the subsea crossing(s), the FOC will be anchored to 1.2-meter (4-foot) by 2.5-meter (6.5 foot) concrete beach manholes (BMH) on either side of the channel, which will be constructed in stable locations that will minimize environmental impacts. The cable will then be trenched or bored between the BMH and the lowest tide point. Construction will then transition to operations using an excavator on floats, two tugboats and two accompanying barges. From the low-tide point, a barge will place cable in tandem with the floating excavator to be trenched as far as possible. Once the water is too deep to allow trenching, the cable will be gravity laid or plow trenched by static skid across the sea floor to the opposite side of the inlet, where nearshore trenching and FOC laying activities will commence (Figure 3). Best management practices (BMPs) will be implemented throughout project operations to protect the marine environment, minimize bank erosion, and avoid creating drainage paths. Construction and cable-laying for the subsea crossing(s) is expected to take four to six days for the Winter Trails Alternative or eight to 12 days for the Cape Blossom Alternative.

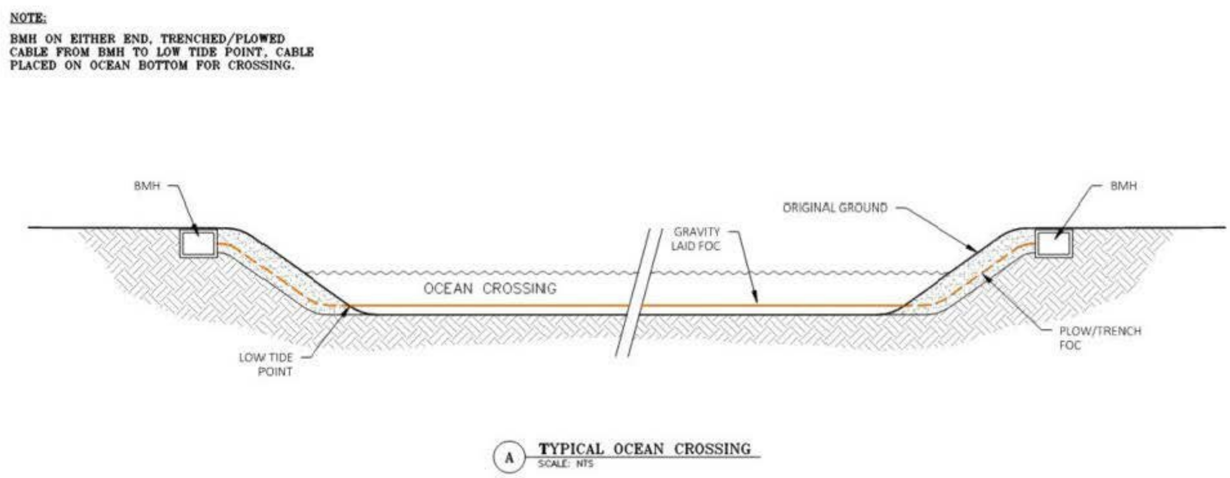

Figure 3. Schematic of the Hotham Inlet Subsea Cable Crossing

The FOC for both terrestrial and submarine installation is armored and designed for extreme climate conditions. The cable consists of three main layers (Figure 4):

- Cable core: 24 strands of optical fiber surrounded by a rigid seam-welded copper tube filled with water blocking and hydrogen absorbing compound,
- Armoring layer: Twelve 1.7 millimeter high-tensile strength steel wires, and
- Outer protection: Black high-density polyethylene sheath designed to seal the cable from water ingress.

The armored cable is 12 millimeters (0.472 inch) in diameter and can be deployed to depths greater than 4,900 meters (16,000 feet). Hotham Inlet is very shallow in the areas where the submarine FOC will be laid. The entrance to Hotham Inlet from the Kotzebue Sound is approximately 7.3 m (24 feet) deep, but the Inlet depth quickly decreases and varies from 1.8 to 3.6 meters (5.9 to 11.8 feet) deep where the alignments are planned.[1]

[1] https://nauticalcharts.noaa.gov/enconline/enconline.html accessed September 2o25

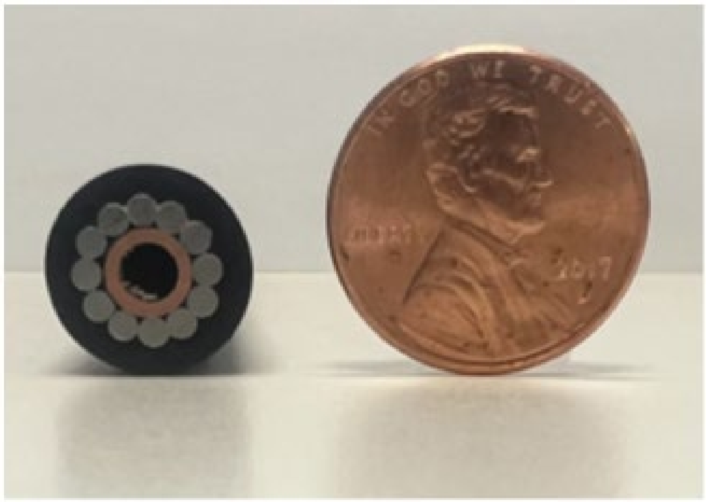

Figure 4. Photo of a cross-section of the fully armored fiber optic cable to illustrate overall dimensions. A U.S penny, measuring 19.1 mm (0.75 in), is shown for comparison.

Project-Related Vessels

The Hotham Inlet crossing routes will rely on two tugboats 7.6-meters by 28-meters [25-feet wide by 92-feet long]) and two accompanying barges (46-meters by 15 meters [150-feet by 50-feet] and 62-meters by 18-meters [205-feet by 60-feet]). The vessel used for cable installation operations will be dependent upon water depth, location, and installation method. Additionally, shore-end locations will be assisted by a landing craft. These vessels will have a shallow draft, making shallow waters and landings more accessible.

Equipment and materials will be shipped to Kotzebue from Anchorage, Seattle, and other locations using regularly scheduled commercial barge service. Project personnel will be flown to the region using commercial air services.

Conservation of Subsistence Uses and Access

Foods gathered from the Northwest Arctic Borough (NAB) sustain families nutritionally and for indigenous residents in particular spiritually, connecting people to each other, their ancestors, and to the environment. The proposed project will take care to observe and protect subsistence resources as the highest and best use of the region's lands, in accordance with Iñupiat Iḷitqusiat values and the NAB Lands Code. Consultation and coordination with local indigenous communities and deploying indigenous knowledge is of paramount importance to the project's long-term success. The area inside Hotham Inlet was rated as zero to four in relative importance to subsistence resources out of a scale of zero to eight in the NAB assessment of important areas for marine and coastal species. [2]

[2] Northwest Arctic Borough. 2016. Important areas for marine and coastal species. Pages 415-529 in Iñuuniałiqput Iḷiḷugu Nunaŋŋuanun: documenting our way of life through maps. Northwest Arctic Borough,

Project Schedule

The construction season will be carefully scheduled around seasonal conditions in the region. Materials and equipment will be mobilized to the Project area during the open-water season of summer 2025, using regularly scheduled commercial barging service to Kotzebue. NANA anticipates initiating terrestrial construction during the winter of 2026 (approximately January) and placing the submarine FOC crossing(s) of Hotham Inlet (just east of Kotzebue) during the 2026 open-water season (approximately July). All FOC placement is expected to be completed by late spring of 2027.

The summer construction schedule will commence following sea and river ice melts, allowing barges hauling equipment to travel upriver (approximately May 2026). Construction of the Winter Trails subsea crossing is anticipated to take four to six days (or eight to 12 days for the Cape Blossom Alternative) to complete and is scheduled for June or July 2026. Construction within the villages will occur throughout summer 2026. HDD crossings at major rivers (e.g., Kobuk and Noatak rivers) and the Kugruk Estuary gravity-lay will occur in June through August 2026.

Winter ground-laid FOC inspections and cable seating will take place from July through August 2026 and 2027. Finally, demobilization and final inspections will be completed by September 2027. This schedule is subject to change and all stakeholders will be kept informed of Project activities.

<u>Action Area</u>

The action area is defined in the ESA regulations (50 CFR 402.02) as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. The action area is distinct from and larger than the project footprint because some elements of the project may affect listed species some distance from the project footprint. The action area, therefore, extends out to a point where no measurable effects from the project are expected to occur.

Almost all of the terrestrial portions of the project are far inland and are unlikely to have any routes of effect to marine mammals (Figure 1). The NANA FOC route will be connected to the existing BMH for the Quintillion fiber network at the origin near Kotzebue, and then the alignment will be exclusively inland except for the crossings at Hotham Inlet (Figure 2). The alignment along Baldwin Peninsula is at least 0.5 km (0.31 mi) from the mean high-water line at all points, and ice seals usually limit their hauling out to within several meters of the waterline. Therefore, construction of this portion of the alignment is also unlikely to affect listed marine mammals. The fiber alignments terminate inland at the shoreline communities of Kivalina and Deering and there is no need for a BMH or intertidal construction at these sites (Figure 1).

Kotzebue, Alaska. Accessed at: https://www.nwabor.org/subsistence-mapping-program/digital-atlas/ . September 2025.

Therefore, our analysis focuses on the submarine cable laying portions of the alignment and the intertidal construction zones where the cables transition from subsea to terrestrial segments.

NMFS defines the action area for this project as the area within which project-related noise levels are ≥120 dB_{rms} re 1µPa or approaching ambient noise levels (i.e., the point where project-related sound attenuates to levels below non-anthropogenic sound).[3] Received sound levels associated with the cable-laying ship (source) are expected to decline to 120 dB_{rms} re 1µPa within 500 meters on either side of the source. To define the action area, we considered the size and type of vessels being used, the speed and equipment being used to lay the cable, characteristics of the marine environment such as depth and bottom compositions, and empirical measurements of noise from similar projects.

For the cable laying barge installing cable in shallow waters of Hotham Inlet, the distance to the 120 dB re 1 µPa rms threshold was estimated using measurements conducted of a similar vessel size and class in Cook Inlet. Blackwell and Greene (2003) measured the tug Leo pushing a full barge Katie II near the Port of Anchorage and recorded 149 dB re 1 µPa rms at 100 meters (328 feet) when the tug was using its thrusters to maneuver the barge during docking. The applicant has offered to expand this buffer to 500 m on either side of the cable laying vessel. Therefore, NMFS defines the action area for this project to include the vessel cable-laying routes, bounded by a buffer of 0.5 km (0.31 mi) on each side of the route for areas in which the cable-laying ship will be used based on the area of increased noise from vessel operations (Figure 5).

Other possible sound sources include the HDD actions and the submarine plow and floating excavator. HDD has been shown to generate moderate noise (90-120 db re 1 µPa (RMS) at close proximity (within 10–50 meters from the shoreline or exit point offshore). However, the sound generated is reduced by the distance the conduit is below the seafloor due to the insulating factor from the sediments. In addition, the HDD rigs, the greatest sound source, are operated on shore and the sound they produce that enters the water is often negligible (Küsel et al. 2022). Noise generated by subsea plows has not been studied extensively, but Nedwell and Howell (2004) measured a sound source level of 178 dB re 1 µPa at one meter at a wind farm installation using a large cable trenching plow. Using the simple spherical spreading model, this is equivalent to 158 dB re 1 µPa at 10 meters, which would decrease to 120 dB at approximately 80 meters (Nedwell and Howell 2004). Therefore, the proposed 500-meter buffer would encompass sound effects from these sources.

[3] We express noise as the sound force per unit micropascals (µPa), where 1 pascal (Pa) is the pressure resulting from a force of one newton exerted over an area of one square meter. Sound pressure level is expressed as the ratio of a measured sound pressure and a reference level. The commonly used reference pressure level in acoustics is 1 µPa, and the units for underwater sound pressure levels are decibels (dB) expressed in root mean square (rms), which is the square root of the arithmetic average of the squared instantaneous pressure values.

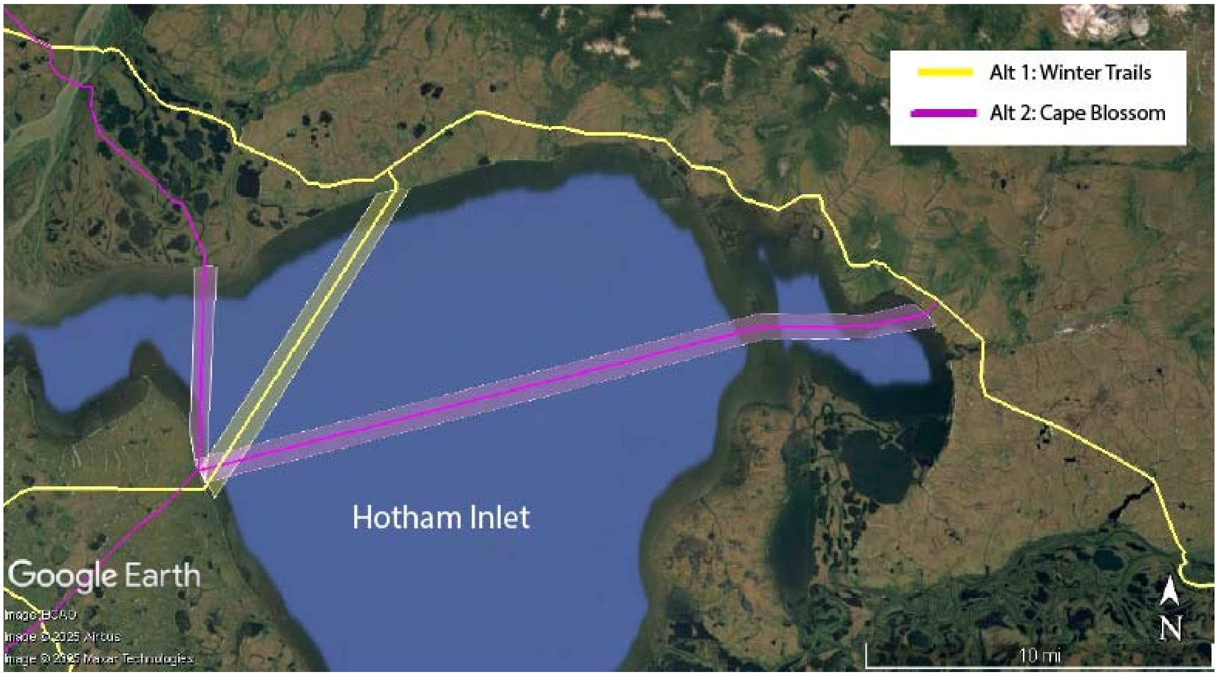

Figure 5. Illustration of the alternative Hotham Inlet crossings showing the approximate extent of the 0.5 km monitoring zones (shaded regions) on either side of the barge routes during cable installation.

The submarine cable segment lengths and associated monitoring zone areas are summarized in Table 2. Hotham Inlet is very shallow in the areas where the submarine FOC will be laid. The entrance to Hotham Inlet from the Kotzebue Sound is approximately 7.3 m (24 ft) deep, but the Inlet depth quickly decreases and varies from 1.8 to 3.6 meters (5.9 to 11.8 feet) deep where the alignments are planned.[4]

Table 3. Submarine cable segments and associated action areas for the NANA Broadband FOC project.

Alternative	Subsea Fiber Optic Crossings	Length (mi)	Length (km)	Area (km^2)
Winter Trails	Hotham Inlet	10	16	21
Cape Blossom	Hotham Inlet- North	6	10	8.45
Cape Blossom	Hotham Inlet- North	21	35	42.65
Cape Blossom	**Total**	**27**	**45**	**51.1**

The action area also includes the areas that will be disturbed by alignment clearing, snow trail construction, cable laying, cable burying, and terrestrial construction activities. However, as

[4] https://nauticalcharts.noaa.gov/enconline/enconline.html accessed September 2o25

stated previously, because these areas are situated far inland and well away from marine habitats, it is unlikely that these parts of the proposed action will affect marine mammals except when they are along the shoreline at Kotzebue and at the BMH sites at the Hotham Inlet crossings. Therefore, the potential effects of the terrestrial segment installation will not be discussed further.

Mitigation Measures

The NTIA via its non-federal designee ABR informed NMFS via an email on August 22, 2025, that the proposed action will incorporate the following mitigation measures:

For all reporting that results from implementation of these mitigation measures, NMFS will be contacted using the contact information specified in (Table 4). In all cases, notification will reference the NMFS consultation tracking number (AKRO-2025-02216).

General Mitigation Measures

1. The project proponent will 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).

2. If construction activities will occur outside of the time window specified in this letter, the applicant will notify NMFS of the situation at least 60 days prior to the end of the specified time window to allow for reinitiation of consultation.

3. In-water work will be conducted at the lowest points of the tidal cycle when feasible.

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

Project Lookout Requirements

5. Qualifying experience for Project Lookouts includes one or more of the following: Alaska Protected Resources Division PSO training, a college degree, college courses that included field or laboratory work, prior marine mammal observation employment (≥8hrs), volunteer marine mammal observation experience (e.g. ≥8hrs as a trained AK Beluga Monitoring Program observer (https://akbmp.org/), or experienced Alaska Native subsistence hunters from the region where the project is taking place.

6. Project Lookouts will be individuals independent of the project proponent and must have no other assigned tasks during monitoring periods.

7. Project Lookouts will:
    a. collectively be able to effectively observe the entirety of the monitoring zone;

b. be able to spot marine mammals and accurately record the date and time of all observed marine mammals in accordance with project protocols;
c. be able to see marine mammals that occur in the action area at a distance equal to the outer edge of the applicable monitoring zone;
d. have the ability to effectively communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals;
e. possess a copy of Project Lookout requirements; and
f. possess a notebook or template data forms (see Attachment 2 for sample forms).

8. Project Lookouts will not scan for marine mammals for more than eight hours without at least a one-hour break from monitoring duties between shifts. Project Lookouts will not perform Project Lookout duties for more than eight hours in a 24-hour period.

Project Lookout Procedures

9. Project Lookouts will have the ability, authority, and obligation to order appropriate mitigation response, including shutdown, to avoid takes of listed marine mammals.

10. One or more Project Lookouts will perform Project Lookout duties onsite throughout the authorized activity.

11. Where a team of three or more Project Lookouts are required, a lead observer or monitoring coordinator will be designated.

12. For each in-water activity, Project Lookouts will monitor all marine waters within the indicated monitoring zone radius for that activity (Table 4).

Table 4. Monitoring Zones for Each Activity.

Activity	**Zone Radius (m)**
Cable Laying activities	500
Shoreline activities	none

13. Project Lookouts will be positioned such that they will collectively be able to monitor the entirety of each activity's monitoring zone.

14. Prior to commencing any activity listed in Table 4, Project Lookouts will scan waters within the appropriate monitoring zone and confirm no marine mammals are within the monitoring zone for at least 30 minutes immediately prior to initiation of the in-water activity. If one or more marine mammals are observed within the monitoring zone, the in-water activity will not begin until the marine mammal(s) exit the monitoring zone of their

own accord, or the monitoring zone has remained clear of marine mammals for 30 minutes immediately prior to the commencement of any of the activities listed in Table 4.

15. The on-duty Project Lookouts will continuously monitor the monitoring zone and adjacent waters during any of the activities listed in Table 4 for the presence of marine mammals.

16. Activities listed in Table 4 will only take place:
    a. between sunrise and sunset;
    b. during conditions with a Beaufort Sea State of 3 or less; and
    c. when the entire monitoring zone and adjacent waters are visible (e.g., monitoring effectiveness is not reduced due to rain, fog, snow, haze, or other environmental/atmospheric conditions).

17. If visibility degrades such that Project Lookouts can no longer ensure that the monitoring zone remains devoid of marine mammals during any of the activities listed in Table 4, the crew will stop activities until the entire monitoring zone is visible and the Project Lookout has indicated that the zone remained devoid of marine mammals for 30 minutes.

18. The Project Lookouts will order ongoing activities listed in Table 4 to immediately cease if one or more marine mammals has entered, or appears likely to enter, the monitoring zone.

19. If any of the activities listed in Table 4 are shut down for less than 30 minutes due to the presence of marine mammals in the monitoring zone, the activities may commence when the Project Lookout provides assurance that the marine mammals were observed exiting the monitoring zone. Otherwise, the activities may only commence after the Project Lookout provides assurance that marine mammals have not been seen in the monitoring zone for 30 minutes (for cetaceans) or 15 minutes (for pinnipeds).

20. If a marine mammal is observed within a monitoring zone or is otherwise harassed, harmed, injured, or disturbed, the Project Lookout will immediately report that occurrence to NMFS using the contact information specified in Table 5.

21. Prior to commencing any activity listed in Table 4, Project Lookouts must become proficient in the use of a rangefinder, or, if a rangefinder is not being used, the Project Lookout must use stationary objects (e.g. buildings, buoys, islands, docks) at a known distance from their observation station to calibrate their perception of how far away the edge of the monitoring zone lies. At least one object should be in the range of 1,900 to 2,200 m for pile driving activities and 200 to 400 m for dredging/screeding. This self-calibration procedure will be done each day before observations begin.

22. Prior to commencing any activity listed in Table 4 or at changes in watch, the Project Lookout will establish a point of contact with the construction crew. The Project Lookout will brief the point of contact as to the monitoring procedures if a marine mammal is observed likely to enter or has entered the monitoring zone. If the point of contact goes

"off shift" and delegates their duties, the Project Lookout must be informed and brief the new point of contact.

Underwater Excavating (Plow and Excavator) Activities

23. All vessels involved in underwater excavating operations, including survey vessels, will transit at velocities ≤10 knots.

24. Plow and underwater excavating activities will slow the vessel whenever a listed marine mammal enters, or appears likely to enter the applicable monitoring zone (see Table 4).

25. Following a lapse of underwater excavating or plowing activities of more than 30 minutes, the Project Lookouts will authorize resumption of the activity only after the Project Lookouts provides assurance that listed marine mammals have not been present within the monitoring zone for at least 30 minutes immediately prior to resumption of operations.

Project-Dedicated Vessels (vessel and crew safety should never be compromised)

26. Vessel operators will:
    a. During cable-laying operations, it is unsafe to stop activities; therefore, there are no shutdown procedures for this project. PSOs will observe a 500-m (1,640-ft) monitoring zone and report sightings to NMFS.
    b. maintain a watch for marine mammals at all times while underway;
    c. stay at least 91 meters (100 yards) away from listed marine mammals, except that they will remain at least 460 meters (500 yards) away from endangered North Pacific right whales;
    d. travel at less than 5 knots when within 274 meters (300 yards) of a whale;
    e. avoid changes in direction and speed within 274 meters (300 yards) of a whale, unless doing so is necessary for maritime safety;
    f. not position vessel(s) in the path of a whale, and will not cut in front of a whale in a way or at a distance that causes the whale to change direction of travel or behavior (including breathing/surfacing pattern);
    g. reduce vessel speed to 10 knots or less when weather conditions reduce visibility to 1.6 kilometers (1 mile) or less.
    h. adhere to the Alaska Humpback Whale Approach Regulations when vessels are transiting to and from the project site: (see 50 CFR 216.18, 223.214, and 224.103(b); these regulations apply to all humpback whales). Specifically, pilot and crew will not:
        i. approach, by any means, including by interception (i.e., placing a vessel in

the path of an oncoming humpback whale), within 100 yards of any humpback whale;

ii. cause a vessel or other object to approach within 100 yards of any humpback whale; or

iii. disrupt the normal behavior or prior activity of a humpback whale by any other act or omission.

27. If a whale's course and speed are such that it will likely cross in front of a vessel that is underway, or approach within 91 meters (100 yards) of the vessel, and if maritime conditions safely allow, the engine will be put in neutral and the whale will be allowed to pass beyond the vessel, except that vessels will remain 460 meters (500 yards) from North Pacific right whales.

28. Vessels will not allow lines to remain in the water unless both ends are under tension and affixed to vessels or gear.

29. Project-specific barges will travel at 12 knots or less.

<u>Data Collection</u>

Project Lookouts have the following responsibilities for data collection:

30. Project Lookouts will record observations on data forms or into electronic data sheets.

31. The project proponent will ensure that Project Lookout data will be submitted electronically in a format that can be queried such as a spreadsheet or database (i.e., digital images of data sheets are not sufficient).

32. Project Lookouts will record the following:

    a. Project name, date, shift start time, shift stop time, and Project Lookout identifier;

    b. date and time of each reportable event (e.g., a listed marine mammal observation, operation modification, reason for operation change (e.g. speed reduction, path change), change in weather conditions);

    c. weather parameters (e.g., percent cloud cover, percent glare, visibility) and sea state where the Beaufort Wind Force Scale will be used to determine sea state (https://www.weather.gov/mfl/beaufort);

    d. number of marine mammals observed and, if possible, whether they are cetaceans (i.e., whales) or pinnipeds (i.e., sea lions, seals);

    e. the predominant anthropogenic sound-producing activities occurring during each listed marine mammal observation; and

f. whether the presence of a marine mammal necessitated the implementation of a change to operations (switch to neutral, change in course), and the duration of time that normal operations were affected by the presence of marine mammals.

Reporting

Unauthorized Take

33. If a marine mammal is determined by the Project Lookout to have been disturbed, harassed, harmed, injured, or killed (e.g., a listed marine mammal is observed entering a monitoring zone before operations can be shut down, or is injured or killed as a direct or indirect result of the action), the Project Lookout will report the incident to NMFS within one business day, with information submitted to akr.prd.records@noaa.gov. These Project Lookout records will include:

    a. digital, queryable documents containing Project Lookout observations and records, and digital, queryable reports;

    b. the date, time, and location of each event (provide geographic coordinates);

    c. description of the event;

    d. number of individuals of each listed marine mammal species affected;

    e. the time the animal(s) was first observed or entered the monitoring zone, and, if known, the time the animal was last seen or exited the zone, and the fate of the animal;

    f. mitigation measures implemented prior to and after the animal was taken;

    g. if a vessel struck a listed marine mammal, the contact information for the Project Lookout on duty on the vessel or the contact information for the individual piloting the vessel; and

    h. photographs or video footage of the animal(s), if available.

Stranded, Injured, Sick or Dead Listed Species (not associated with the project)

34. If the Project Lookout observes an injured, sick, or dead marine mammals (i.e., stranded), they will notify the Alaska Marine Mammal Stranding Hotline at 877-925-7773. The Project Lookouts will submit photos and available data to aid NMFS in determining how to respond to the stranded animal. If possible, data submitted to NMFS in response to stranded marine mammals will include date/time, location of stranded marine mammal, species and number of stranded individuals, description of the stranded marine mammal's condition, event type (e.g., entanglement, dead, floating), and behavior of live-stranded marine mammals.

Illegal Activities

35. If the Project Lookout observes listed marine mammals or other marine mammals being disturbed, harassed, harmed, injured, or killed (e.g., feeding or unauthorized harassment), these activities will be reported to NMFS Alaska Region Office of Law Enforcement; 1-800-853-1964).

36. Data submitted to NMFS will include date/time, location, description of the event, and any photos or videos taken.

North Pacific Right Whales

37. All observations of North Pacific right whales will be reported to NMFS within 24 hours. Photographs and/or video should be taken if possible to aid in Photo ID of individual animals. Reports will include all applicable information that will be included in a final report.

Extralimital Sightings

38. All observations of ESA-listed marine mammal species not considered in this consultation will be reported to NMFS within 24 hours. Photographs and/or video should be taken if possible to aid in Photo ID of individual animals. Reports will include all applicable information that would be included in a final report.

Final Report

39. A final report will be submitted to NMFS within 90 calendar days of the completion of the project summarizing the data recorded by emailing it to akr.prd.records@noaa.gov . The report will summarize all in-water activities associated with the proposed action, and results of Project Lookout monitoring conducted during the in-water activities.

40. The final report for projects will include:

    a. summaries of monitoring efforts, including dates and times of construction, dates and times of monitoring, dates and times and duration of operation modifications due to listed marine mammal presence;

    b. dates and times of listed marine mammal observations and group sizes.

    c. number of marine mammals observed during periods with and without project activities (and other variables that could affect detectability);

    d. numbers of marine mammal observations/individuals seen versus project activity at time of observation;

    e. digital, queryable documents containing Project Lookout observations and records, and digital, queryable reports.

Table 5. Summary of Agency Contact Information

Reason for Contact	**Contact Information**
Consultation Questions & Unauthorized Take	akr.prd.section7@noaa.gov
Reports & Data Submittal	akr.prd.records@noaa.gov
Stranded, Injured, or Dead Marine Mammals	Stranding Hotline (24/7 coverage) 1-877-925-7773
Oil Spill & Hazardous Materials Response	U.S. Coast Guard National Response Center: 1-800-424-8802 and AKRNMFSSpillResponse@noaa.gov
Illegal Activities *(not related to project activities; e.g., feeding, unauthorized harassment, or disturbance to marine mammals)*	NMFS Office of Law Enforcement (AK Hotline): 1-800-853-1964
In the event that this contact information becomes obsolete	NMFS Anchorage Main Office: 907-271-5006 or NMFS Juneau Main Office: 901-206-4342

ESA Listed Species Affected by the Action

Bowhead Whale

The bowhead whale (*Balaena mysticetus*) was listed as endangered under the Endangered Species Conservation Act (ESCA) in 1970 (35 FR 8491, June 2, 1970 (baleen whales listing); 35 FR 18319, December 2, 1970 (bowhead whales)), and continued to be listed as endangered following passage of the ESA. The only bowhead whale stock found in U.S. waters is the Western Arctic stock. Western Arctic bowhead whales are distributed in seasonally ice-covered waters of the Arctic and near-Arctic, generally north of 60°N and south of 75°N. Critical habitat has not been designated for the bowhead whale.

The most recent estimates of abundance for this stock were made in 2019; an ice-based survey estimated 14,025 (CV = 0.228) whales (Givens et al. 2021) while an aerial survey estimated 17,175 (CV = 0.237; Ferguson et al. 2022). The population has steadily increased in abundance since the 1980s (Givens et al. 2021) and may be approaching carrying capacity (Citta et al. 2023).

In Alaska, the majority of bowhead whales migrate annually from northern Bering Sea wintering areas (December to March), through the Chukchi Sea in spring (April to May), to the Beaufort Sea, where they spend much of the summer (June through early to mid-October) before returning to Bering Sea wintering areas in fall (September through December; Citta et al. 2020). A shift after 2012–2013 shows some bowheads are remaining in southern Chukchi Sea rather than moving through the Bering Strait and into the northwestern Bering Sea for the winter (Citta et al. 2023; Szesciorka and Stafford 2023). Spring northward migration into the southern Chukchi Sea was earlier in years with less mean January–March Chukchi Sea ice area and delayed in years with greater sea ice area. As sea ice continues to decline, northward spring-time migration could shift earlier or more bowhead whales may overwinter at summer feeding grounds (Szesciorka and Stafford 2023).

Bowheads feed almost exclusively on marine invertebrates, including small to moderately sized crustaceans, such as shrimp-like euphausiids (i.e., krill) and copepods. They are continuous filter feeders engulfing a steady stream of water carrying tiny copepods, mysids, euphausiids, and other schooling plankton which are captured on their baleen plates (Werth and Sformo 2021).

NMFS categorizes bowhead whales in the low-frequency cetacean functional hearing group, with an applied frequency range between 7 Hz to 36+ kHz (NMFS 2024a). Inferring from their vocalizations, bowhead whales should be most sensitive to frequencies between 20 Hz-5 kHz, with maximum sensitivity between 100-500 Hz (Erbe 2002).

Additional information on bowhead whale biology and habitat is available at:

Bowhead Whale Species Description

Marine Mammal Stock Assessment Reports: Cetaceans-Large Whales

Bowhead whales in the action area

Bowhead whales transit past the project area during spring (April–June) and fall migration (August –December) but rarely enter Kotzebue Sound (Quakenbush et al. 2010; Quakenbush et al. 2013; Citta et al. 2015). Because of their size and preference for deeper waters, it is unlikely that bowhead whales would overlap with effects from the Hotham Inlet cable-laying activities. As noted previously, Hotham Inlet is very shallow and most of the area where the barge will be operating is less than five meters deep. The cable-laying ship is expected to be in the Hotham Inlet in the spring and summer months when bowhead whales are more likely to be migrating through the area offshore, but it is very unlikely that they would enter Kotzebue Sound or Hotham Inlet.

Arctic Ringed Seal

NMFS published a final rule listing the Arctic subspecies of ringed seals (*Pusa hispida hispida*) as threatened under the ESA on December 28, 2012, primarily due to threats associated with long-term reductions in sea ice and on-ice snow expected to occur within the foreseeable future (77 FR 76706).

A reliable population estimate for Arctic ringed seals is not available (Muto et al. 2022). Kelly et al. (2010) estimated the total population in the Chukchi and Beaufort seas in Alaska to be at least 300,000 based on estimates from aerial surveys conducted in the late 1990s and 2000 (Frost et al. 2004; Bengtson et al. 2005), which they noted is likely an underestimate since the Beaufort Sea surveys were limited to within 40 km of shore. In the Bering Sea, as discussed by Muto et al. (2022), Conn et al. (2014) calculated an abundance estimate of 174,418 ringed seals (95 percent confidence interval: 141,588 to 201,090) in these waters using a limited sub-sample of aerial survey data collected from the U.S. portion off the Bering Sea in 2012. Because this estimate did not account for availability bias or include ringed seals in shorefast ice, the actual number of ringed seals in the U.S. portion of the Bering Sea is likely much higher (Muto et al. 2022). A 2021 survey of the Beaufort Sea by NMFS (analysis pending), in combination with previous surveys in the Bering and Chukchi Seas (Boveng et al. 2025), will allow for the determination of an estimate of ringed seal abundance in waters surrounding Alaska. It is anticipated that the total estimate of seals in this region will succeed 1 million individuals (NMFS 2024b).

Arctic ringed seals are highly associated with sea ice, which they use as a platform for whelping and nursing pups in spring, molting in spring to early summer, and resting throughout the year (Kelly et al. 2010)(Figure 6). Ringed seals are able to open and maintain breathing holes in the ice, which allows them to inhabit heavily ice-covered areas. At some breathing holes with sufficient snow cover, ringed seals excavate lairs in snowdrifts on the surface of the ice within which they rest and give birth to and nurse pups (Smith and Stirling 1975; Williams et al. 2006; Hauser et al. 2021). These subnivean lairs are important to pup survival because they provide shelter from extreme cold and concealment from predators (Lukin and Potelov 1978; Smith et al. 1991; Smith and Lydersen 1991; Stirling and Smith 2004).

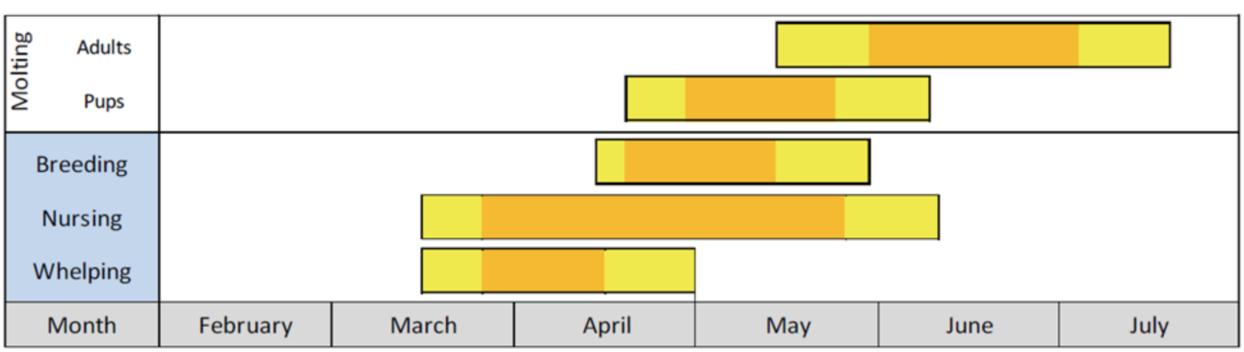

Figure 6. Approximate annual timing of Arctic ringed seal reproduction and molting. Yellow bars indicate the "normal" range over which each event is reported to occur and orange bars indicate the "peak" timing of each event (Kelly et al. 2010).

During winter and spring, ringed seals are found throughout the Chukchi and Beaufort seas (Frost 1985; Kelly 1988), and aerial surveys indicate that they use nearly the entire ice field over the Bering Sea shelf (Braham et al. 1984; Lindsay et al. 2021). Most ringed seals that winter in the Bering and southern Chukchi seas are thought to migrate north in spring as the ice recedes (Frost 1985). Tracking data indicate that ringed seals extensively use the continental shelf waters of the Chukchi and Beaufort seas during the open-water season, and some seals make excursions into deep waters north of the shelf break (Crawford et al. 2012; Quakenbush et al. 2019; Quakenbush et al. 2020; Von Duyke et al. 2020). Ringed seals (primarily juveniles) have also been observed near river mouths and in lagoons in some areas during the open water season, especially during fall (Oceana and Kawerak 2014; Gryba et al. 2021).

Arctic ringed seals typically lose a significant proportion of their blubber mass in late winter to early summer and then replenish their blubber reserves in late summer or fall into winter (Ryg et al. 1990; Young and Ferguson 2013; Quakenbush et al. 2020). Diet studies indicate that ringed seals in Alaska eat a wide variety of vertebrate and invertebrate prey species, but certain prey species, such as Arctic cod, saffron cod, shrimps, and amphipods occupy a prominent role in their diet (Dehn et al. 2007; Quakenbush et al. 2011b; Crawford et al. 2015; Quakenbush et al. 2020).

The behavioral context of ringed seal underwater vocalizations is not well known, but they are thought to play a role in the seals' reproductive behavior (Stirling 1983; Kelly 2022). NMFS defines the functional hearing range for phocids (earless seals) as 50 Hz to 86 kHz (NMFS 2018). A study on the hearing of captive ringed seals suggests that the species has the ability to detect signals surrounded by background noise (Sills et al. 2015).

More information on ringed seal biology, habitat, and distribution is available at:

Ringed Seal Species Description

Marine Mammal Stock Assessment Report: Pinnipeds-Phocids

2024 Status Review Arctic Ringed Seal Critical Habitat

Arctic ringed seals in the action area

Ringed seals are abundant in Kotzebue Sound, during winter and early spring when sea ice is at its maximal extent, and may be present year-round (Young et al. 2024). Ringed seal population densities tend to be greatest in areas of flat ice near the edge of the shore-fast ice zone and decline away from that edge (Frost et al. 2004). During the summer, ringed seals forage along ice edges offshore and in productive open water (Harwood et al. 2015). As a result, individual ringed seals may be present in the project area during the summer when the submarine FOC will be installed, but most are anticipated to be north of Kotzebue Sound. The NAB subsistence planning maps also show that Hotham Inlet's rating for the presence of arctic seals declines in the summer months.[5]

During open water periods in late fall, juveniles may be hauled out along river mouths or feeding in waters less than 200 m. Since cable-laying will occur in summer (most likely in July), many Arctic ringed seals will have likely moved or be moving north with the receding ice (Figure 6). However, it is reasonable to assume that seals may be present on any remaining ice or possibly in Hotham Inlet during cable-laying or nearshore BMH related actions.

Bearded Seal

The Beringia DPS of the *Erignathus barbatus nauticus* subspecies of bearded seal was listed as threatened under the ESA on December 28, 2012, primarily due to threats associated with long-term reductions in sea ice expected to occur within the foreseeable future stemming from climate change (77 FR 76739).

A reliable population estimate is not available (Muto et al. 2022). However, as discussed by Muto et al. (2022), using a limited sub-sample of spring aerial survey data collected from the U.S. portion of the Bering Sea in 2012, Conn et al. (2014) calculated a preliminary abundance estimate of 301,836 bearded seals (95 percent confidence interval: 238,195 to 371,147) in these waters.

Bearded seals are associated with moving pack ice that produces leads and other openings in the ice, and only rarely use areas of thick, continuous shorefast ice. They use sea ice as a platform for whelping and nursing of pups, pup maturation, and molting (shedding and regrowing hair and outer skin layers), as well as for resting (Cameron et al. 2010).

In late winter and early spring, bearded seals are widely but not uniformly distributed in broken, drifting pack ice the Bering Sea (Burns 1981; Braham et al. 1984). Some bearded seals also inhabit suitable pack ice the Chukchi and Beaufort seas over winter and spring (MacIntyre et al. 2015; Frouin-Mouy et al. 2016; Olnes et al. 2020; Quakenbush 2020). As the ice recedes in spring, many of the bearded seals that overwintered in the Bering Sea migrate north through the Bering Strait (mid-April to June) and spend the summer along the ice edge in the Chukchi and Beaufort seas, though some remain in open-water areas from the Bering Sea north (Burns 1981; Olnes et al. 2020; Quakenbush 2020).

During the open-water season, some bearded seals (largely juveniles) occur in small bays, lagoons, near river mouths, and up some rivers, particularly in late summer and fall (Oceana and Kawerak 2014; Gryba et al. 2021)[6]. While adult bearded seals have rarely been seen hauled out

[5] https://portal.nwabor.org/#map?lg=ebbc9421-4c02-4d54-b245-0c06e15589b6 accessed September 2025

[6] Northwest Arctic Borough. 2016. Important areas for marine and coastal species. Pages 415-529 in Iñuuniałiqput Iḷiḷugu Nunaŋŋuanun: documenting our way of life through maps. Northwest Arctic Borough, Kotzebue, Alaska. Accessed at: https://www.nwabor.org/subsistence-mapping-program/digital-atlas/ . September 2025.

on land in Alaska (Burns 1981; Nelson 1981), (solitary) juvenile bearded seals have been observed or documented via satellite telemetry during the open-water season hauled out on land in some areas (Oceana and Kawerak 2014; Gadamus et al. 2015; Olnes et al. 2020).

Bearded seals feed primarily on benthic organisms including invertebrates (crabs, shrimp, clams, worms, and snails) and some fish found on or near the seafloor (in waters typically less than 200 m deep; Cameron et al. 2010). Bearded seals of the Beringia DPS primarily feed on bivalves and crustaceans, along with fishes such as sculpins, cods, and flatfishes (Dehn et al. 2007; Quakenbush et al. 2011a; Crawford et al. 2015; Quakenbush et al. 2020).

Bearded seals vocalize intensively underwater in association with territorial and mating behaviors, which occur in the spring (Van Parijs et al. 2003; Van Parijs and Clark 2006). NMFS defines the functional hearing range for phocids (earless seals) as 50 Hz to 86 kHz (NMFS 2018).

Additional information on bearded seal biology and habitat is available at:

Bearded Seal Species Description

2010 Status Review

Marine Mammal Stock Assessment Report: Pinnipeds-Phocids

Bearded Seal Critical Habitat

Bearded seals in the action area

Bearded seals occur in the project area, generally when there is suitable pack ice over winter and spring. During the summer, individual bearded seals are present in Kotzebue Sound and may be present in the near the project area where the submarine FOC will be laid. However, most bearded seals will be found away from the coast, frequenting sea ice haulouts and foraging habitat in the offshore waters of the Chukchi Seas although some individuals periodically visit coastal areas and rivers (Burns 1981). The NAB subsistence planning maps also show that Hotham Inlet's rating for the presence of bearded seals declines in the summer months.[7]

A small tagging study completed in 2009 found that three bearded seals tagged in June in Kotzebue Sound followed these patterns and moved north, staying offshore and spent the majority of the summer in the north Chukchi Sea (Cameron and Boveng 2009). Since cable-laying will occur in spring and summer (from April through October), many bearded seals will have likely moved or be moving north with the receding ice. However, some seals may be present on remaining ice or in nearshore marine waters during cable-laying or nearshore BMH related actions.

[7] https://portal.nwabor.org/#map?lg=ebbc9421-4c02-4d54-b245-0c06e15589b6 accessed September 2025

Effects of the Action

"Effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02). The applicable standard to find that a proposed action may affect but is "not likely to adversely affect" listed species or critical habitat is that all of the effects of the action are expected to be insignificant, extremely unlikely to occur, or completely beneficial. "Insignificant effects" relate to the magnitude of the impact and are those that one would not be able to meaningfully measure, detect, or evaluate; insignificant effects should never reach the scale where take occurs.

While the ESA does not define "harass," NMFS issued guidance interpreting the term "harass" under the ESA as to: "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016). NMFS considers the following steps to assess whether proposed activities are likely to harass.

1. Whether an animal is likely to be exposed to a stressor or disturbance (i.e., an annoyance).

2. The nature of that exposure in term of magnitude, frequency, duration, etc. Included in this may be type and scale as well as considerations of the geographic area of exposures (e.g., is the annoyance within a biologically important location for the species, such as a foraging area, spawning/breeding area, or nursery area?).

3. The expected response of the exposed animal to a stressors or disturbance (e.g., startle, flight, alteration [including abandonment] of important behaviors).

4. Whether the nature and duration or intensity of that response is a significant disruption of those behavior patterns which include, but are not limited to, breeding, feeding, sheltering, resting, or migrating.

The potential effects of the proposed action on listed species include vessel strikes, disturbance from noise generated by vessels and equipment, and localized turbidity created by the cable laying barge and cable burying during the cable-laying process.

Vessel Strike Risk

Ship strikes can cause major wounds or death to marine mammals. An animal at the surface could be struck directly by a vessel, a surfacing animal could hit the bottom of a vessel, or a vessel propeller could injure or kill an animal below the water's surface. From 1978 to 2011, there were at least 108 recorded whale-vessel collisions in Alaska, with the majority occurring in Southeast Alaska between May and September (Neilson et al. 2012). Small recreational vessels traveling at speeds over 13 knots (24 km/hour [hr]) were most commonly involved in ship strike encounters; however, all types and sizes of vessels were reported (Neilson et al. 2012).

The majority of vessel strikes involved humpback whales (86 percent), and the number of humpback strikes increased annually by 5.8 percent from 1978 to 2011. Fin whales accounted for 2.8 percent of reported collisions, while gray whales were 0.9 percent, and sperm whales were 0.9 percent. About two percent of subsistence-hunted bowheads show signs of scars from vessel strikes. However, as seasonal sea ice continues to retreat due to climate change, vessel traffic in Arctic waters is increasing and could increase the risk of future collisions.[8]

The probability of strike depends on the frequency, speed, and route of the marine vessels, as well as the distribution and density of marine mammals in the area. Vanderlaan and Taggart (2007) used observations to develop a model of the probability of lethal injury based on vessel speed. They projected that the chance of lethal injury to a whale struck by a vessel travelling at speeds over 15 knots (27.78 km/hr) is approximately 80 percent, while for vessels travelling between 8.6 and 15 knots (15.92 km/hr), the probability of lethal injury drops to about 20 percent. The cable-laying vessel will be travelling at much slower speeds (typically 0.5-2.0 knots [1-4 km/hr]), essentially eliminating the possibility of vessel strike.

Smaller pinnipeds such as the Arctic ringed and bearded seals are highly maneuverable and are unlikely to interact with the cable-laying ship. Most ships in the Arctic purposefully avoid areas of ice and thus prefer periods and areas which minimize the chance of encountering ice. This necessarily mitigates many of the risks of shipping to populations of Arctic ringed and bearded seals, since they are closely associated with ice throughout the year. The 2024 status review for Arctic seals found that oil spills rather than vessel collisions were the greater risk factor for increased shipping traffic in the Bering and Chukchi seas (NMFS 2024b).

Project vessels will be traveling at slower speeds (<10 knots) and will adhere to National Oceanic and Atmospheric Administration (NOAA)/NMFS marine mammal viewing guidelines.[9] As noted previously, Hotham Inlet is much shallower than the bowhead whales' preferred depths and is further isolated by a narrow entrance from Kotzebue Sound. Given the expected effectiveness of the included mitigation measures, the low density of listed cetaceans near the cable-laying route, slow vessel speeds, and the ability of listed pinnipeds to avoid vessels due to their maneuverability, the probability of a vessel striking a listed marine mammal is very small, and thus adverse effects to these species are extremely unlikely to occur. Therefore, we conclude that adverse effects to marine mammals from vessel strikes related to the NANA Broadband FOC project are discountable.

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[8] https://www.fisheries.noaa.gov/species/bowhead-whale Accessed October 2025

[9] https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines Accessed September 2025

Disturbance Due to Vessel Presence and Noise

Acoustic Thresholds

Since 1997, NMFS has used generic sound exposure thresholds to determine whether an activity produces underwater sounds that might result in impacts to marine mammals (70 FR 1871, 1872, January 11, 2005). NMFS developed comprehensive guidance on sound levels likely to cause injury to marine mammals through onset of permanent and temporary threshold shifts (PTS (Level A harassment) and TTS; 89 FR 84827, April 3, 2024). NMFS is in the process of developing guidance for behavioral disruption (Level B harassment). However, until such guidance is available, NMFS uses the following conservative thresholds of underwater sound pressure levels, expressed in root mean square (rms), from broadband sounds that cause behavioral disturbance, and referred to as Level B harassment under section 3(18)(A)(ii) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1362(18)(A)(ii)):

- impulsive sound: 160 dB_{rms} re 1 µPa
- continuous sound: 120 dB_{rms} re 1µPa

The generalized hearing range for each hearing group is provided in Table 6.

Table 6. Underwater marine mammal hearing groups (NMFS 2024a).

Hearing Group^	ESA-listed Marine Mammals in the Action Area	Generalized Hearing Range*
Low-frequency (LF) cetaceans *(Baleen whales)*	Bowhead whales	7 Hz to 36 kHz
High-frequency (HF) cetaceans *(dolphins, toothed whales, beaked whales)*	None	150 Hz to 160 kHz
Very High-frequency (VHF) cetaceans *(true porpoises)*	None	200 Hz to 165 kHz
Phocid pinnipeds (PW) *(true seals)*	Ringed and bearded seals	40 Hz to 90 kHz
Otariid pinnipeds (OW) *(sea lions and fur seals)*	None	60 Hz to 68 kHz

^ Southall et al. 2019 indicates that as more data become available there may be separate hearing group designations for Very Low-Frequency cetaceans (blue, fin, right, and bowhead whales) and Mid-Frequency cetaceans (sperm, killer, and beaked whales). However, at this point, all baleen whales are part of the LF cetacean hearing group, and sperm, killer, and beaked whales are part of the HF cetacean hearing group. Additionally, recent data indicate that as more data become available for Monachinae seals, separate hearing group designations maybe appropriate for the two phocid subfamilies (Ruscher et al. 2021; Sills et al. 2021)

***** Represents the generalized hearing range for the entire group as a composite (i.e., all species within the group), where individual species' hearing ranges may not be as broad. Generalized hearing range chosen based on ~65 dB threshold from composite audiogram, previous analysis in NMFS 2018, and/or data from Southall et al. 2007; **Southall** et al. 2019. Additionally, animals can detect very loud sounds above and below that generalized hearing range.

+ NMFS is aware that the National Marine Mammal Foundation successfully collected preliminary hearing data on two minke whales during their third field season (2023) in Norway. These data have implications for not only the generalized hearing range for low-frequency cetaceans but also on their weighting function. However, at this time, no official results have been published. Furthermore, a fourth field season (2024) is proposed, where more data will likely be collected. Thus, it is premature for us to propose any changes to our current Updated Technical Guidance. However, mysticete hearing data is identified as a special circumstance that could merit re-evaluating the acoustic criteria in this document. Therefore, we anticipate that once the data from both field seasons are published, it will likely necessitate updating this document (i.e., likely after the data gathered in the summer 2024 field season and associated analysis are published).

Auditory or visual disturbance to listed marine mammals could potentially occur along the FOC-laying route. The primary underwater noise associated with the proposed vessel operation is the continuous noise produced from propellers, including propeller harmonics (Gray and Greeley 1980) and cavitation. HDD has been shown to generate moderate noise (90-120 db re 1 µPa (RMS) at close proximity (within 10–50 meters from the shoreline or exit point offshore). However, the sound generated is reduced by the distance the conduit is below the seafloor due to the insulating factor from the sediments. In addition, the HDD rigs, the greatest sound source, are operated on shore and the sound they produce that enters the water is often negligible (Küsel et al. 2022). Noise generated by subsea plows has not been studied extensively, but Nedwell and Howell (2004)measured a sound source level of 178 dB re 1 µPa at one meter at a wind farm installation using a large cable trenching plow. Using the simple spherical spreading model, this is equivalent to 158 dB re 1 µPa at 10 meters, which would decrease to 120 dB at approximately 80 meters (Nedwell and Howell 2004). Blackwell and Greene (2003) measured the tug Leo pushing a full barge Katie II near the Port of Anchorage and recorded 149 dB re 1 µPa rms at 100 meters (328 feet) when the tug was using its thrusters to maneuver the barge during docking. This barge is consistent with the vessel to be used for the NANA broadband project. When calculating the action area, the NANA (in their BA) determined a conservative disturbance radius (to the 120 dB isopleth) of 500 meters (0.31 miles) for the cable-laying ship, tug, and plow.

Marine mammals' reactions to vessel disturbance may include approach or deflection from the noise source, low level avoidance or short-term vigilance behavior, or short-term masking of echolocation or acoustic communication among individuals. Behavioral reactions to vessels can vary depending on the type and speed of the vessel, the spatial relationship between the animal and the vessel, the species, and the behavior of the animal prior exposure. Response also varies between individuals of the same species exposed to the same sound, depending on age and individual whale's past experiences. Vessels moving at slow speeds and avoiding rapid changes in direction or engine speed may be tolerated by some whales. Other individuals may deflect around vessels and continue on their migratory path; these behaviors are not likely to result in significant disruption of normal behavioral patterns. Whales have been known to tolerate slow-moving vessels within several hundred meters, especially when the vessel is not directed toward the animal and when there are no sudden changes in direction or engine speed (Wartzok et al. 1989; Richardson et al. 1995; Heide-Jørgensen et al. 2003).

Although some listed marine mammals could receive sound levels in exceedance of the acoustic threshold of 120 dB for behavioral disturbance from the vessels during this proposed project, take is unlikely to occur. Vessel transit for this proposed project is not likely to acoustically harass listed species, per the steps to assess harassment in the Interim Guidance on the ESA Term "Harass" (Wieting 2016). While listed marine mammals will likely be exposed to vessel noise from this proposed project, the noise will be low-frequency, with much of the acoustic energy occurring below frequencies associated with best hearing for the marine mammals expected to occur in the area. The duration of the exposure will be temporary (a few minutes) because the vessel will be in transit. Project vessels are travelling at very low speeds, and the noise from the vessels will be continuous, alerting marine mammals of their presence before the received level of sound exceeds 120 dB. Therefore, a startle response is not expected. Rather, deflection and avoidance are expected to be common responses in those instances where there is any response at all. The implementation of mitigation measures is expected to further reduce the probability of marine mammals reacting to transiting vessels.

The lack of adverse effects to marine mammals from cable-laying vessels is supported by recent marine mammal observations in the Arctic and the PSO report from the 2022 Aleutians I FOC project (Smultea Environmental Sciences 2022). In 2016, NMFS conducted a formal consultation for Quintillion Subsea Operations, a similar cable-laying project in the Arctic. Final marine mammal PSO reports (2016 and 2017) for the Quintillion project (Green et al. 2018) provided the following information.

- In 2016 and 2017, reactionary behaviors were documented during only two to three percent of all cetacean observations. Reactions included change of direction, avoidance, and swimming speed increase.
- None of the remaining 299 groups or 669 cetacean individuals encountered over the two years of monitoring exhibited a reaction to the presence of the cable ship.
- A majority of pinniped groups and individuals in 2016 and 2017, respectively, did not react to vessel activities. The most commonly observed reaction was “look”, meaning the animal acknowledged the presence of the vessel. Other reactions included diving, increased swimming speed, or clearly changing travel direction. No reactions were indications of the animals exhibiting threat or flee responses but were rather more curiosity or avoidance behaviors.
- The 2022 PSO report from the Aleutians I FOC project recorded similar results. Out of 196 observations comprising 378 marine mammals, only 1.5 percent of individuals were observed to react to the presence of the FOC vessel. All reactions recorded were incidences of Steller sea lions (3) or sea otters (2) orienting to look at the vessel.

The information from the Quintillion and Aleutians I reports provides substantiation that marine mammal response, if any, to these cable-laying vessels is not expected to rise to the level of harassment or take of ESA-listed species.

Given the potential for habitat use by the ice seals in the nearshore areas, and possibly in Hotham Inlet, involved in the project, we expect that a small number of individual ringed or bearded seals could potentially be encountered during the BMH connection work at Kotzebue, or during cable laying across Hotham Inlet. Seals may also be in the waters along the submarine FOC alignments. Bearded seals generally prefer water near ice on which they can haul-out, though seals may also swim in areas of open water. In addition, although bearded seals usually associate with sea ice, young seals may be found in ice- free areas, such as bays and estuaries, and could be more exposed to the vessel or nearshore activity than adult bearded seals. Ringed seals are predominantly found in water with greater than 80 percent ice cover, and most ice seals move north in the summer season (July) when the cable laying is expected to occur. Therefore, because the cable laying will be a short-term (eight to twelve days at most), transient disturbance, and will occur when fewer ice seals are likely to be present, we conclude that the potential for impacts to bearded or Arctic ringed seals due to vessel noise and presence to be insignificant.

With implementation of the mitigation measures incorporated into the project design, vessel transit is not expected to significantly disrupt normal marine mammal behavioral patterns (breeding, feeding, sheltering, resting, migrating, etc.), making harassment of listed marine mammals very unlikely. Previous monitoring during similar projects supports the conclusion that marine mammals successfully avoid or are largely undisturbed by cable-laying vessels. Much of the nearshore work will use HDD to avoid vessels and other work in and around more sensitive areas. Therefore, disturbance from the cable-laying vessel or the BMH installations are extremely unlikely to harass listed marine mammals, and any such effects will be insignificant.

Turbidity and Seafloor Disturbance from Cable Laying Activities

The cable-laying vessel will install and bury the cable using a float-mounted excavator and/ or a skid-mounted plow. This will create increased turbidity in and around the FOC alignment within tens of feet above the seafloor. Larger materials will sink quickly, but smaller particles may remain suspended for an hour or longer. The subsea crossing is anticipated to take four to six days for the Winter Trails Alternative or eight to 12 days for the Cape Blossom Alternative to complete. The impacts of the short-term increase in turbidity are unlikely to affect larger cetaceans, but pinnipeds including ringed and bearded seals forage along the seafloor and could be disturbed or hindered in their foraging by the turbidity generated by the barge passing or the excavation for the cable. The cable and the plow (if used) will be under tension at all times which will limit any risk of entanglement, and the equipment will be towed closely behind the vessel further reducing the likelihood of interactions with marine mammals.

The turbidity will be short-term and localized to the FOC alignment. It is expected that the waters will return to pre-disturbance conditions within a few hours of the barge, excavator/plow, and cable passing. It is possible that foraging seals may be attracted to the disturbance out of curiosity or because potential prey will be dispersed by the disturbance. However, they would be attracted to the disturbed area after the equipment has passed and even if they do forage in the areas affected by the excavator, the equipment will no longer pose a threat.

The impact of seafloor disturbance and turbidity is very minor, and thus effects to listed whales and pinnipeds will be immeasurably small. Therefore, we conclude that the effects from turbidity generated by the barge, floating excavator, and cable laying on listed species are insignificant.

Conclusion

Based on this analysis, NMFS concurs with your determination that the two alternatives for the proposed action may affect, but is not likely to adversely affect bowhead whale (*Balenea mysticetus*), Arctic subspecies of ringed seal (*Phoca hispida hispida*), or Beringia DPS bearded Seal (*Erignathus barbatus nauticus*). Reinitiation of consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and if (1) take of listed species occurs, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter, or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

Please direct any questions regarding this letter to Leanne Roulson at leanne.roulson@noaa.gov, and to akr.prd.section7@noaa.gov.

Sincerely,

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Appendix O14 – Native Village of Kotzebue EA Comment

NATIVE VILLAGE OF KOTZEBUE
PO Box 296, Kotzebue, Alaska 99752
(907) 442-3467 ● www.kotzebueira.org
Tribal Government serving the Iñupiaq people of Qikiqtaġruk.

November 13, 2025

Amanda Pereira
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW, Room 4878
Washington, DC 20230

RE: NANA Region Middle-Mile Fiber Optic Project Draft Environmental Assessment

Dear Ms. Pereira,

The Native Village of Kotzebue (NVOK) appreciates the opportunity to review the Draft Environmental Assessment for the NANA Region Middle-Mile Fiber Optic Project. The NVOK is a federally-recognized tribal government and we represent members that rely on the area of the project for obtaining a substantial portion of their annual food in the form of wildlife, fish, and plants. While the community of Kotzebue is not a targeted community for this infrastructure development, we are still an affected community of this project, since our members will be impacted at some level by the activity of deploying the fiber optic cable (FOC) across the countryside (the affected environment) where they pursue subsistence resources. Some of the activities, like helicopter use, and work efforts/machine noises occurring during line deployment, will disrupt wildlife species and have the potential of interfering with harvest activities.

Caribou in particular are especially valued. In recent years the caribou in the region have been declining, making opportunities to harvest them all the more critical. While the disturbance planned in this project will be temporary and mostly short-term, the opportunities to harvest caribou and other wildlife is also temporary and short-term from the perspective of annual timing and actual on the ground hunting activity. So, it will be important for the project managers to be aware of wildlife movement in the areas where the project work is occurring and plan to mitigate as best as possible any disruption to wildlife movement and hunting opportunities as work proceeds across the countryside.

Understanding that this is a new activity in the Region (and a new activity for NANA to manage) and the distance covered is almost 700 miles across a varied landscape, the lessons learned from other places like the North Slope, can only go so far, and it is reasonable to assume that many small, and likely some large, unforeseen negative impacts, or issues, will arise. We see the commitment made by NANA under **"Community Engagement and Subsistence Protections,"** to ameliorate some of these concerns and potential impacts, however, to be more specific the NVOK would request that NANA set up a Point of Contact project hotline/website where residents can call, or email project representatives, with issues and concerns in real-time. A daily, or weekly update, of project activities and progress on a website/Facebook page, would also be desirable to allow the public as much visibility into the project as reasonable. While the NVOK did not receive much communication from NANA prior to this point in the process, we would request that Kotzebue be considered an affected community going forward and that efforts are made by NANA to update the Tribe directly on project activities/progress, on a regular basis.

While methods of deployment of the FOC were discussed (e.g., laying on the ground and frozen water bodies, directional drilling, and aerial hanging), the lack of specificity to match deployment methods with a map of the route was concerning. It would be preferable to have a detailed map of the route displaying various deployment methods, if for no other reason that not leaving it up to the public to guess which types of methods are to be used where along the route. Having this available during the Environmental Assessment process, would also allow for specific comments and helpful input from interested parties to better inform the project and potentially mitigate issues in advance.

We appreciate consideration of our comments.

Sincerely,

Alex Whiting

Alex Whiting
Environmental Program Director

Appendix O15 – EPA EA Comment

From: Barnhart, Taylor <Barnhart.Taylor@epa.gov>
Sent: Thursday, October 30, 2025 12:58 PM
To: Pereira, Amanda <apereira@ntia.gov>
Subject: NANA Regional Broadband DEA - EPA No Comments

> You don't often get email from barnhart.taylor@epa.gov. Learn why this is important

Hello Amanda,

I hope this email finds you well. I have reviewed the DEA for the NANA Regional Broadband project. The DEA addresses all the questions I had during our meeting on 8/25/25 and doesn't raise additional comments. Therefore, the EPA will not be submitting a formal comment letter for this phase of the project.

Thank you,

Taylor Barnhart

Taylor Barnhart

NEPA Reviewer | NEPA Branch

U.S. EPA Region 10 | Seattle, Washington

barnhart.taylor@epa.gov | (206) 664-6916

Appendix O16 – OTZ Telephone Cooperative, Inc. EA Comment

November 14, 2025

Attention: Amanda Pereira
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW, Room 4878
Washington, DC 20230
apereira@ntia.gov
NEPAComments@NTIA.gov

RE: Draft Environmental Assessment for the NANA Regional Broadband Network Project (EAXX-006-60-3D-1754935958)

NANA Regional Corporation, Inc. (NT23TBC0290014)
NANA Region Middle Mile Fiber Optic Project

COMMENTS OF OTZ TELEPHONE COOPERATIVE, INC.

OTZ Telephone Cooperative, Inc. ("OTZ"), by its attorney, hereby files these Comments in response to the National Telecommunications and Information Administration ("NTIA") request for comment on the Draft Environmental Assessment for the NANA Regional Broadband Network Project (EAXX-006-60-3D-1754935958) ("Draft EA"). As a threshold matter, OTZ notes that the Draft EA is incomplete given the vague description of the project, lacks procedurally required information, is riddled with unsupported and arbitrary[1] conclusions, and violates the funding terms of the Notice of Funding Opportunity (NTIA-TBC-TBCPO-2021-2006948) ("NOFO"). In addition, it appears as if NANA is already moving forward with its fiber optic project *prior* to gathering the requisite government and local stakeholder permissions and, absent evidence indicating the nature and origin of the fiber optic cable ("FOC") NANA plans to use, NANA could be in violation of the Secure and Trusted Communications Networks

[1] *See* Administrative Procedure Act (APA) "arbitrary and capricious" standard in 5 U.S.C. § 706(2)(A).

Act of 2019.[2] Accordingly, NTIA must either reject the current Draft EA or seek additional information and evidence from NANA about the nature and location of the materials NANA will be stringing across the Alaska wilderness.

Duplicative Funding and No Purpose or Need

Project Funding pursuant to Section 2(o) of the NOFO is limited to "unserved" areas.[3] Specifically, funding is reserved for areas where "no broadband provider has been selected to receive, or is otherwise receiving, Federal or State funding…"[4] As NTIA is likely aware, OTZ is currently receiving government funding via loans from the U.S. Department of Agriculture Rural Utilities Service ("RUS") and is constructing a broadband network to provide services in the same northwest Alaska region as proposed by NANA. NANA's project is duplicative and there is no need or purpose for the project. Further, the Department of Government Efficiency (DOGE) has been mandated to review NTIA telecommunications grants as part of broader federal grant oversight. This oversight of waste, fraud, and abuse stems from Executive Order 14219 (February 19, 2025), directing all federal agencies, including those under the Department of Commerce, to review all existing contracts and grants. Given the cursory description of NANA's project,[5] the Draft EA does not provide any explanation how NANA's project is anything but redundant. NTIA should reject the Draft EA and seek explanation from NANA as to how their fiber project is not in violation of the NOFO.

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[2] 47 U.S.C. § 1608.
[3] NOFO § 2(o).
[4] *Id*.
[5] The Draft EA lacks any decent description or graphics of the nature of the project. All that is provided are maps of the proposed routes where NANA plans to string FOC without any clear indication where it might be trenched, elevated, or haphazardly placed on the ground.

Because of the duplicative nature of the NANA project, the Draft EA lacks an adequate statement of purpose and need as required by NTIA NEPA Procedures.[6] The Draft EA's stated purpose and need[7] neglects to delineate or provide evidence why the project is needed when another broadband project is already being constructed. In other words, there is no purpose for the project and certainly no need for it. An agency must provide a record that reveals the basis for its decision.[8] There is no such record here. Further, an agency must provide a "reasoned analysis" of the underlying data leading to its conclusion.[9] Such an analysis is missing from the Draft EA. NTIA "has failed to articulate a basis" for its Draft EA.[10]

Inadequacies

Pursuant to the Draft EA, NANA has already begun and scheduled construction on the project. The Draft EA mentions "construction in fall 2025" and "construction phases in Winter 2025."[11] Such construction, absent an approved EA and related agency buy-in is premature and illegal. Further, the Draft EA provides no indication that access has been acquired for monitoring/maintenance activities from DOD (Department of Defense), DNR (Alaska State of Natural Resources), DOT (Alaska State of Transportation and Public Facilities), AIDEA (Alaska Industrial Development and Export Authority), NAB (Northwest Arctic Borough), KIC

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[6] *See* https://broadbandusa.ntia.gov/sites/default/files/2025-06/NTIA_NEPA_Procedures_June_2025.pdf
[7] Draft EA at p. 1.
[8] *See* Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 420 (1971).
[9] *See* Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Automobile Ins. Co., 463 U.S. 29, 57 (1983), *citing* Greater Boston Television Corp. v. FCC, 143 U.S.App.D.C. 383, 394, 444 F.2d 841, 852 (1970), *cert. denied*, 403 U.S. 923 (1971).
[10] *Id*. at 54.
[11] Draft EA at 74.

(Kikiktagruk Inupiat Corporation), and any private entities.[12] Access for all of these has not yet been acquired, yet according to the Draft EA, construction has commenced.

The Draft EA discusses splices at intervals of roughly 24 miles or closer as necessitated by site conditions that will be enclosed within a weatherproof enclosure designed to secure and protect the joint where FOCs are interconnected,[13] but provides no mention of the location, composition, dimensions, or environmental impact of such splices. There are large river crossings where the cable will be suspended 20-ft. above the water on wooden poles, which, in theory, allows safe passage for boats and wildlife.[14] Again, there is no discussion of any environmental impact, exact location, or how big the poles will be and what the ground disturbance will be for their placement.

In the Draft EA's "Plan of Development," it states that "winter installation shall begin with a field survey of the FOC route to determine the precise path that the right-of-way (ROW) shall occupy."[15] Buried in the appendices, we find out that NANA has *no idea* exactly where the ROWs for its project will be. Environmental impacts cannot be adequately considered when required surveys have not yet been completed and the proposed ROWs are simply guesstimates.[16] NTIA has no obligation to provide cover for NANA's hastily prepared and deficient applications and construction rush job. The record does not support adoption of the Draft EA.

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[12] This includes any necessary Alaska 17(b) easements.
[13] Draft EA at p. 54.
[14] Draft EA at p. 55.
[15] Draft EA, Appendix C, Section 2.3.3 at p. 6.
[16] There is also no indication of a Compatibility Determination from the U.S. Fish and Wildlife Service.

Secure and Trusted Communications

The Draft EA is missing a legally sufficient description of the fiber NANA will be placing in the Alaska wilderness. NANA provides no brand name and no country of origin. Accordingly, one can only guess as to the environmental impact of the "mystery" FOC that will be entrenched and possibly leaking toxic chemicals into the tundra and dropped into rivers and streams, teeming with wildlife.[17] Without knowing the model number, country, and manufacturer of the FOC, it is possible NANA's project "poses an unacceptable risk to the national security of the United States," in violation of the Secure and Trusted Communications Networks Act.[18] Pursuant to the NOFO, federal monies cannot be used to purchase "covered communications equipment" under the Secure and Trusted Communications Networks Act.[19] Legalities aside, the prospect of NTIA allowing NANA to spend federal funds on equipment conceivably manufactured by a "foreign adversary"[20] is not a good look and contrary to the public interest. NTIA cannot defensibly reach a decision on releasing federal funds until it ensures that NANA's project complies with the federal laws and NTIA regulations discussed herein.

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[17] Inexpensive Chinese or "no-name" fiber optic cable may be embedded with malicious "backdoors" to track and steal U.S. telecommunications traffic and data.
[18] 47 U.S.C. 1608 § 2(c). *See also* 47 U.S.C. 1608 § 2(c)(2) (concerning specific determinations "made by the Department of Commerce").
[19] NOFO § 7(f).
[20] 47 U.S.C. 1608 § 8(c)(2).

Respectfully requested,

OTZ TELEPHONE COOPERATIVE, INC.

By: KC. Johnson

Kenneth C. Johnson
Law Office of Kenneth C. Johnson, PLLC
10608 Regent Park Ct.
Fairfax, VA 22030
(202) 271-2266

Its Attorney

Appendix O17 – DNR EA Comment

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Natural Resources

OFFICE OF PROJECT MANAGEMENT AND PERMITTING

550 West 7th Avenue, Suite 1430
Anchorage, AK 99501-3561
Main: 907.269.8690

November 14, 2025

National Telecommunications and Information Administration
Attention: Amanda Pereira
Environmental and NEPA Specialist
U.S. Department of Commerce
1401 Constitution Avenue, NW, Room 4878
Washington, DC 20230

Submitted via email to NEPAComments@ntia.gov

Re: Draft Environmental Assessment for the NANA Regional Broadband Network Project (EAXX-006-60-3D-1754935958)

Dear Ms. Pereira,

The State of Alaska (State) reviewed the National Telecommunications and Information Administration (NTIA) Draft Environmental Assessment (Draft EA) for the NANA Regional Broadband Network Project. The document describes the NANA Regional Corporation, Inc. (NANA) proposal to construct, operate, and maintain a broadband fiber network to eight rural communities under the Middle Mile Fiber Optic Project (Project). The Project proposes to provide broadband high-speed internet to the communities of Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Noatak, and Shungnak, and additional infrastructure in Noorvik and Selawik. For this Project, NTIA's authority would be to release funds to deploy the action, and the Bureau of Land Management (BLM) and U. S, Fish and Wildlife Service (USFWS) would permit rights-of-way for the fiber optic cable network and associated structures.

The State appreciates the need for adequate internet connectivity in the region and is providing information to inform the federal review. The following supportive comments focus on the requirements in the Alaska National Interest Lands Conservation Act (ANILCA), fish and wildlife resources, habitat, subsistence uses, historic rights-of-way, and water uses, as addressed under both state and federal laws. These comments incorporate input from the Departments of Natural Resources (DNR) and Fish and Game (ADF&G).

Compliance with ANILCA Title XI (Transportation and Utility Systems)

The proposed fiber optic route, including associated infrastructure and temporary work areas, crosses federal lands subject to the provisions of ANILCA, including portions of the Selawik National Wildlife Refuge. ANILCA Title XI applies to all federal agencies sharing decision-making responsibility for a proposed project if any part of that project goes through a CSU (ANILCA Section 1102(4)(A)). In this instance, the proposed broadband project spans the CSU Selawik National Wildlife Refuge and BLM non-CSU land. Therefore, the final EA or errata sheet should clarify that BLM's land use authorization is also issued under the ANILCA Title XI process.

- Access and Permitting: The final design and construction plan does not appear to create physical barriers or legal restrictions impeding public access to adjacent public lands or navigable waters for recreational and subsistence purposes. Construction and long-term maintenance activities will require temporary and permanent access rights of way permit. The Draft EA outlines the specific permitting requirements under ANILCA Title XI for the proposed transportation and utility system (TUS). It notes that, "Authorization of a TUS across lands designated for Minimal Management would require the CCP to be amended or revised …." (page 3) The final EA should identify the type of Comprehensive Conservation Plan (CCP) amendment/revision that will be needed. The EA demonstrates that the project will not significantly change the goals, objectives, or management direction of the refuge; it seems a minor CCP modification should suffice. A minor CCP modification or amendment should not impede the approval a right of way for this project.

- ANILCA prevails in Alaska: For example, the National Wildlife Refuge System Improvement Act of 1997 explicitly states that ANILCA's provisions take precedence in Alaska when a conflict arises. For a ROW authorized by ANILCA, all federal agencies, including the USFWS, must follow the procedures outlined in 43 CFR Part 36, which implements ANILCA Title XI. For the Refuge, this process supersedes the standard USFWS compatibility procedures for ROW applications in the Lower 48. If ROW approval is not initially granted by the USFWS, this decision is appealable to the President of the United States under ANILCA Section 1106(b). The Final EA should strike language requiring a CCP revision, amendment, or modification prior to right of way approval.

Terrestrial Resources, Winter Caribou, and Subsistence

The project corridor lies within the range of the Western Arctic Caribou Herd, an important resource for general hunters and providing subsistence to the region's residents.

- Caribou Migration and Disturbance: Construction activities, especially ground disturbance, trenching, and prolonged heavy equipment use during the winter months, pose a risk of sensory disturbance and short-term fragmentation of caribou habitat. ADF&G appreciates the inclusion of mitigation to consult with community and tribal members so that "construction will be scheduled during periods with the lowest possible impact to migratory species, such as caribou and birds, as well as marine life." This should minimize disturbance to wintering or migrating caribou.

- Subsistence Harvest: Disturbing wintering caribou herds can displace them from traditional harvest areas, imposing difficulty on local subsistence users. The State supports the analysis and determination in Appendix L – ANILCA 810 that there will not be significant impacts to subsistence resource populations or to subsistence hunting practices, however, the EA and Appendix D1 – Avoidance, Minimization, and Mitigation should outline the strategies included in Appendix L.

- Den Site Reporting: During construction there is a possibility of grizzly bear den-site disturbance. ADF&G requests the following:
    - Any den-site disturbances should be reported to the ADF&G office in Kotzebue or the website ADF&G: Report a Wildlife Encounter[1] if and when a disturbance has occurred.

Marine Mammals

The marine component of the project, including cable-laying activities within Hotham Inlet has the potential to impact marine mammals. Hotham Inlet is a known migration corridor and feeding area and the State supports the inclusion of marine mammal monitoring into Appendix D1 – Avoidance, Minimization, and Mitigation. The State concurs that consultation with National Marine Fisheries (NMFS) and USFWS regarding letters of authorization are required.

Sport Fisheries

Following successful installation, we anticipate that the long-term impact of the project on fish resources and habitat will be minimal.

R.S. 2477 Trails

The Draft EA provides a brief discussion of R.S. 2477 rights-of-way in section 3.3.3.1.11, but does not clarify the management authority of DNR over these rights-of-way. The Draft EA must clarify that the State of Alaska asserts the authority to manage R.S. 2477 routes in the best interest of Alaskans. This acknowledgement would be appropriate in section 3.3.3.1.11, or in section 3.3.3.1.5 ("Alaska Department of Natural Resources). Furthermore, the Draft EA would benefit from additional context describing the ways in which RS 2477 routes are used (e.g. access to mining claims, intercommunity travel, recreation), and how Alaskans benefit from free access across and along these routes.

Water Uses

In section 3.1.4.2.2.1 *Construction Impact* the Draft EA discusses the infrastructure necessary for spanning waterbodies, including horizontal directional drilling (HDD). This section states that "HDD methods require use of local water sources, ranging from 200 – 1,000 gallons for each individual crossing. These would be withdrawn from the local waterbody." The same section also includes the statement that "no impacts are anticipated for the water rights, temporary water use authorizations, and/or Reservations of Waters because water use is not a component of this project." These two statements appear to contradict, and they raise additional questions about the rate and sum of water use for the purpose of HDD on State-owned submerged lands. The final EA should explain the apparent contradiction presented by these two sentences and must clarify whether the 200 – 1,000-gallon water requirement is expected to be drawn from a single source on a single day, or if it will be spaced over time, or drawn from multiple sources. State law requires NANA and/or its contractors to obtain authorizations from DNR's Water Section if more than *5,000 gallons of water from a single source in a single day, more than 500 gallons of water per day from a single source for more than 10 days in a year, or more than 30,000 gallons per day from a single source.*[2]

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[1] https://www.adfg.alaska.gov/index.cfm?adfg=reportwildlifeencounter.main
[2] 11 AAC 93.035

Page Specific Comments
Please revise the text as shown by underline or strikeout.

Page 56 -- Title XI of the Alaska National Interest Lands Conservation Act (ANILCA) (16 USC 3161 et seq.) and the implementing regulations in 43 CFR Part 36 established procedures for approval or disapproval of Transportation and Utility System authorizations where any part of the route will be within any conservation system unit, national recreation area, or national conservation area in Alaska. In making a decision on authorization, each Federal agency shall consider and make detailed findings supported by substantial evidence.

Page 65 – Subsistence activities on all lands in Alaska, including private lands, are subject to state ~~or federal subsistence regulations, with the state~~ fish and wildlife management ~~managing~~ including State subsistence harvest ~~of fish and wildlife~~ on state and privately-owned land. Subsistence harvest of fish and wildlife on federal lands are managed by the Federal Subsistence Board regulations.

Page 71 -- ~~Sport~~ State hunting seasons vary, and include: black bear (all year), brown bear (all year), caribou (all year), moose (July 1 – December 31 and/or September 1- September 20), muskox (August 1 – March 15), wolf (August 1 – April 30), and wolverine (September 1 – March 31).

Closing
Thank you for the opportunity to review and comment on this proposed project. The State recognizes the additions and changes that were made to the Draft EA in response to input provided by the State of Alaska during the cooperating agency review and appreciates the opportunity to provide additional input to this project. We look forward to continued coordination with NTIA and the project applicant to ensure the design and execution of this project are consistent with the sustained yield of Alaska's fish, wildlife, and subsistence resources. Please contact me at (907) 269-0880 or by email at catherine.heroy@alaska.gov to coordinate any follow up discussions.

Sincerely,

Catherine Heroy

Catherine Heroy
Federal Program Manager

Appendix O18 – Western Arctic Caribou Herd EA Comment

Western Arctic Caribou Herd Working Group

Goal: To work together to ensure the long-term conservation of the Western Arctic Caribou Herd and the ecosystem on which it depends, to maintain traditional and other uses for the benefit of all people now and in the future.

Chair: Vern Cleveland, Sr. Vice-Chair: Cyrus Harris

P.O. Box 175, Nome, AK 99762

November 14, 2025

Amanda Pereira
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW, Room 4878
Washington, DC 20230

Re: NANA Regional Broadband Network Draft Environmental Assessment Comments

Dear Ms. Pereira,

On behalf of the Western Arctic Caribou Herd Working Group (Working Group), I submit the following comments to the National Telecommunications and Information Administration and other partnering agencies regarding the draft Environmental Assessment (EA) for the proposed NANA Regional Broadband Network Project. We appreciate the opportunity to provide input into the process.

<u>The Working Group and its role in public processes</u>

The Working Group is a permanent organization of diverse stakeholders that work cooperatively with each other and state, federal and regional resource management agencies with a goal "*to ensure the long-term conservation of the Western Arctic Caribou Herd and the ecosystem on which it depends, to maintain traditional and other uses for the benefit of all people now and in the future.*"

The Western Arctic Caribou Herd (WACH) is one of the largest caribou herds in Alaska and has provided an important subsistence resource and contributed to the cultural heritage of northwestern Alaska residents for thousands of years. The caribou of the WACH also provide opportunities for people from outside the range of the herd to hunt and experience caribou in vast Arctic landscapes and serve as an important source of income for commercial operators that provide services to visiting users. Furthermore, the WACH is a critical component of the larger western Arctic ecosystem, influencing natural processes and providing resources for many other species.

In recognition of these varied values, the Working Group consists of subsistence users representing over 40 communities within the range of the herd, other Alaska hunters, guides, transporters, conservationists, and reindeer herders. Since its formation in 1997, the Working Group has submitted numerous advisory recommendations to government agencies, regulatory boards, and other bodies to support decisions that will ensure the long-term conservation of the WACH, its habitat, and its use.

Response to specific aspects of the draft EA

The Working Group recognizes the value of reliable high-speed internet access. We also believe that this should not come at the cost of greater impacts to caribou and those that rely upon them, especially at a time when the WACH has shown sustained decline over the last two decades. In light of this, we offer the following recommendations.

The project area for terrestrial mammals is defined as occurring within 2.5 miles (4 km) of the cable route (p.32), based on observations of calving displacement. While such a distance has been repeatedly observed for displacement during calving, it should be acknowledged that the “zone of influence” in which caribou may be affected by infrastructure and human activity may be much larger. Studies of caribou herds in Canada have found that displacement distances may span up to 15 km from roads, depending on season and hunting conditions (Plante et al. 2018) while another study found a zone of influence of 16-17 km prior to crossing a mining road during migration (Boulanger et al. 2024). While these were for industrial roads, not for a cable on tundra, they nonetheless indicate that in some cases caribou may be sensitive to industrial activity at farther distances than suggested based on the study area definition used in the draft EA and thus that a larger study area definition may be needed.

The above concerns are compounded by a lack of specificity in the proposed mitigation plan to ensure impacts on caribou are avoided. The Management Plan described in Appendix E1 says that ground-based construction or maintenance activities will be ceased if large wildlife “is observed in the area” (p.22). However, there is no specification of what will count as being “in the area” or how this will be monitored. Based on the studies above, such distances may need to be much larger than what can be seen from the ground, and also potentially larger than the 4 km study area boundary. If monitoring consists only of ground-based observations it may be too late to avoid impacts by the time caribou are spotted. It is likely that multiple measures may be needed, including review of collar locations, aerial monitoring, and ground-based monitoring. Similarly, the plan states that helicopters will seek to maintain “an adequate distance” from known animal locations but what distance is considered adequate remains unstated and unjustified. Furthermore, it should be specified how many caribou or other large mammals need to be present for construction to stop. Greater detail and specificity are needed to ensure the Management Plan conforms to the best available scientific information and Indigenous Knowledge.

Additional specificity is also needed about the timeframe in which activities will occur on the landscape. The draft EA mentions the possibility of late spring/early summer construction activities, which could include tundra vehicle use, aerial flights, and barge/tugboat usage (p.69). This is potentially of great concern, depending on location and timing, as such activity could interfere with migration of pregnant caribou to their calving grounds. The importance of allowing these caribou to reach their calving range undisturbed cannot be overstated, especially during a period of ongoing herd decline. Additional information is needed to clarify when and where such activities might occur and what specific actions will be taken to avoid negative impacts to caribou.

Another area of concern regards the proposed use of wooden aerial crossing structures to string cable over large rivers. We are concerned about the potential for entanglement or other interference with caribou, people, and other animals. The draft EA states that these will only be used on federal lands but does not state why directional boring under rivers cannot be used in those areas. This might better avoid impacts to caribou and other species. We also request that the EA specify the expected lifetime for these crossing structures. This would help clarify how often they will need to be replaced and give an indication of the level of additional activity expected on the landscape.

Given the uncertainties noted above, including a lack of understanding regarding how studies of caribou response to activities on roads will translate to that of laying and maintaining cable, a prudent course of action might be to do a test run laying a section of cable and seeing how caribou respond to that before deploying the full 675 or more miles of cable. Monitoring of such a test should be done in such a way as to detect caribou responses and this information could be used to inform whether the full project should proceed and what, if any, additional mitigation measures are needed to reduce impacts.

It was surprising to us that the maps of recent winter range use only covered the years until 2021. The date on the map indicates that it was created in September 2025. Why were data for 2022-2024 winters not included? Recent scientific work has noted eastward shifts in WACH wintering locations (Gurarie et al. 2024). It would be helpful to indicate the full timeframe of available data to present a picture of WACH behavior. The WACH is critical to the many people that live in the range of the herd and rely on the herd for subsistence as well as to many others who care about the future of the herd and its habitat. Over time, the caribou need unimpeded access to their full range to be able to move in response to changing conditions. It is essential that the impacts of decisions be considered over long timeframes.

Finally, in our scoping comments for this project we requested additional time for deliberation and commenting. While we are glad to have more time than the two weeks provided for the scoping period, the draft EA comment period nonetheless was insufficient and far short of the 60 to 90-day comment period we requested to allow meaningful engagement and commenting. This is especially problematic as the ongoing government shutdown overlapped this period, reducing the availability of information for the group. Having comment periods proceed while the government is shut down is unreasonable. As we noted in our scoping comments, the Working Group includes representatives of stakeholder groups from across the state of Alaska. It takes time to inform our members of new proposals and to organize discussion and feedback, especially for those living in remote villages where communication can be a challenge. Furthermore, representatives of the Working Group need time to communicate information with their communities about development processes and Working Group positions, to facilitate other comment development and submission. Short comment periods severely challenge the ability of the Working Group and those we represent to meaningfully engage in decision making. We strongly request longer comment periods for future processes.

We appreciate the opportunity to provide input on this process and trust that as you make your decisions you will work towards protecting the health of the caribou, their use, and their habitat.

Thank you for your consideration.

On behalf of the Working Group,

Vern Cleveland Sr.

Vern Cleveland, Sr., Chair

cc:
Western Arctic Caribou Herd Working Group Members & Alternates
Kevin Pendergast, Alaska State Director, Bureau of Land Management
Sara Boario, Alaska Regional Director, US Fish and Wildlife Service

<u>Citations</u>

Boulanger J, Kite R, Campbell M, Shaw J, Lee D, Atkinson S. 2024. Estimating the effects of roads on migration: a barren-ground caribou case study. Canadian Journal of Zoology 102, 476-493.

Gurarie E, Beaupré C, Couriot O, Cameron, MD, Fagan WF, Joly K. 2025. Evidence for an adaptive, large-scale range shift in a long-distance terrestrial migrant. Global Change Biology 30, e17589.

Plante S, Dussault C, Richard JH, Côté SD. 2018. Human disturbance effects and cumulative habitat loss in endangered migratory caribou. Biological Conservation 224, 129-143.

Appendix O19 – Public Stakeholder EA Comment #1

From:

Sent: Tuesday, October 28, 2025 1:37 PM

To: NEPAComments <NEPAComments@ntia.gov>

Subject: Support for Draft Environmental Assessment – NANA Regional Broadband Network Project (EAXX-

006-60-3D-1753935958)

Dear National Telecommunications and Information Administration Committee,

I am writing to express my strong support for the NANA Regional Broadband Network Project (EAXX- 006-60-3D-1753935958). This initiative represents a critical step forward in bridging the digital divide for remote communities across Northwest Alaska. By expanding broadband infrastructure, the project will significantly enhance access to telehealth services—an essential need in regions where medical facilities are often distant and difficult to reach. Reliable high-speed internet will also empower businesses, enabling them to participate more fully in the digital economy and access new markets and tools that can drive economic growth. As a NANA shareholder and Tribal member of one of NANA's regional communities (Noatak, Alaska) I've personally experienced the challenges related to lack of reliable connectivity to the world. We have increased our reliability by voluntarily utilizing other ISP's networks, but they too, are costly & have frequent interruptions which directly impact people's ability to communicate. I am stating my support of the project and additional logic is provided below.

Beyond the economic and healthcare benefits, improved broadband connectivity will enrich the daily lives of residents by supporting education, communication, and personal development. Students will gain better access to online learning resources, families will stay more connected, and individuals will have greater opportunities to engage with the broader world. I commend the NTIA and its partners for prioritizing this transformative project and urge its swift advancement to ensure that Alaska's remote communities are not left behind in the digital age.

Sincerely,

Appendix O20 – Public Stakeholder EA Comment #2

From:

Sent: Monday, October 20, 2025 12:14 PM

To: NEPAComments <NEPAComments@ntia.gov>

Subject: Comment on Draft Environmental Assessment for the NANA Regional Broadband Network Project

(EAXX-006-60-3D-1754935958)

I fully support the execution of this project as it will greatly benefit communities and will have minimal impact to the surrounding environment.

Appendix O21 – EA Comment/Response Matrix

Sort Number	Stakeholder	Comment Date	Comment	Response
1	Native Village of Kotzebue	November 13, 2025	So, it will be important for the project managers to be aware of wildlife movement in the areas where the project work is occurring and plan to mitigate as best as possible any disruption to wildlife movement and hunting opportunities as work proceeds across the countryside.	Acknowledged. Appendix E1 contains the "Wildlife Monitoring, Interaction, and Avoidance Plan" which includes specific stipulations similar to those in the comment about avoidance of caribou, including: *-On-the-ground construction or maintenance activities shall be ceased if large wildlife is observed in the area. Particularly, activities shall not interfere with traditional migration or normal grazing patterns.* *-Extra precautions shall be taken to avoid activities that interfere with the fall caribou migration (August-December), winter grazing, and spring migration (April-May).* *--During the fall migration, which coincides with breeding season and possible hunting pressure from humans and predators, caribou may be more reactive to stimulus. Avoidance of disrupting caribou movement during this time shall include an emphasis on allowing the undisturbed passage of the first caribou ("lead caribou") moving through an area, as these individuals set preferred pathways for subsequent caribou movements through the area.*
2	Native Village of Kotzebue	November 13, 2025	Understanding that this is a new activity in the Region (and a new activity for NANA to manage) and the distance covered is almost 700 miles across a varied landscape, the lessons learned from other places like the North Slope, can only go so far, and it is reasonable to assume that many small, and likely some large, unforeseen negative impacts, or issues, will arise. We see the commitment made by NANA under "Community Engagement and Subsistence Protections," to ameliorate some of these concerns and potential impacts, however, to be more specific the NVOK would request that NANA set up a Point of Contact project hotline/website where residents can call, or email project representatives, with issues and concerns in real-time. A daily, or weekly update, of project activities and progress on a website/Facebook page, would also be desirable to allow the public as much visibility into the project as reasonable.	Acknowledged. The comment reflects the goals of the project, which is to provide the maximum public information and involvment as possible. To that end, the project applicant has been conducting community engagement since 2024, including village in-person meetings as well as a live website, with email which recieves rapid response to questions or comments. This has included the Native Village of Kotzebue recieving the Scoping and Draft EA; both for comment. NANA set up the project website, which has a project Point of Contact email, which any member of the project can use to direct concerns or comments to the project. NANA will take up the suggestion of a dedicated call hotline number and Facebook page. Inside the Draft EA, the project also commits to:*During the construction phases in Winter 2025-2026, Summer 2026, and potentially 2026-2027, NANA would provide updates to all stakeholders and continue to listen and learn from local community and indigenous leaders. A contact system for construction supervisors would be maintained, complemented by regular community radio announcements and a quick response system for addressing any subsistence concerns. Following construction completion, NANA would hold community meetings to gather feedback and provide information on broadband availability.*
3	Native Village of Kotzebue	November 13, 2025	While the NVOK did not receive much communication from NANA prior to this point in the process, we would request that Kotzebue be considered an affected community going forward and that efforts are made by NANA to update the Tribe directly on project activities/progress, on a regular basis.	Acknowledged. It is noted that NVOK has been on the scoping list for the project, including being recepients of August 2025 scoping and the Draft EA. It is also noted that in summer and fall 2024, NANA traveled to each village and held tribal and community engagement meetings. The proposed project was introduced and discussed, question and answer sessions were held, project maps were reviewed, and community feedback on proposed cable routes and potential adjustments were gathered. NANA commits to continuing to engage with NVOK, including attending a meeting in person.
4	Native Village of Kotzebue	November 13, 2025	While methods of deployment of the FOC were discussed (e.g., laying on the ground and frozen water bodies, directional drilling, and aerial hanging), the lack of specificity to match deployment methods with a map of the route was concerning. It would be preferable to have a detailed map of the route displaying various deployment methods, if for no other reason that not leaving it up to the public to guess which types of methods are to be used where along the route. Having this available during the Environmental Assessment process, would also allow for specific comments and helpful input from interested parties to better inform the project and potentially mitigate issues in advance.	Acknowledged. As illustrated in Table 2.3-1 of the EA, the vast majority of the project is groundlay fiber. The Stream, Lake, and Marine Crossing methods and locations are detailed in Appendix H. The remaining method is trenching, which are ~1.3 miles over the ~695 miles of the project. Individual sheet maps of the project were not made due to concerns about file size and the public navigating hundreds of pages of pdf maps, and being able to download the large file with limited bandwidth. Instead text descriptions and tables were used. The scoping letter provided the reference to the online map, which shows this information. The EA will be updated to also include the webaddress of this map.

5	Environmental Protection Agency	October 30, 2025	I hope this email finds you well. I have reviewed the DEA for the NANA Regional Broadband project. The DEA addresses all the questions I had during our meeting on 8/25/25 and doesn't raise additional comments. Therefore, the EPA will not be submitting a formal comment letter for this phase of the project.	Acknowledged.
6	OTZ Telephone Cooperative, Inc.	November 14, 2025	As a threshold matter, OTZ notes that the Draft EA is incomplete given the vague description of the project, lacks procedurally required information, is riddled with unsupported and arbitrary1 conclusions, and violates the funding terms of the Notice of Funding Opportunity (NTIA-TBC-TBCPO-2021-2006948) ("NOFO").	The Draft EA was prepared in compliance with NTIA's NEPA Procedures as well as DOI NEPA Procedures.
7	OTZ Telephone Cooperative, Inc.	November 14, 2025	In addition, it appears as if NANA is already moving forward with its fiber optic project prior to gathering the requisite government and local stakeholder permissions	Construction of the project has not begun. Construction is anticipated to begin in the Winter of 2025/2026 (early 2026)
8	OTZ Telephone Cooperative, Inc.	November 14, 2025	absent evidence indicating the nature and origin of the fiber optic cable ("FOC") NANA plans to use, NANA could be in violation of the Secure and Trusted Communications Networks Act of 2019.	Fiber used in the cable was manufactured by Corning (Corning SMF28ULL) in the United States. The cable is manufactured by Prysmian (Prysmian MINISUB LW 48_12 mm) in Germany and has been used on numerous fiber projects around the world, including similar ground lay and subsea projects in Alaska. The outer sheath on that cable is HDPE, which again is used on cables/ducts/conduits and in many other applications around the world, in the US and in Alaska on all sorts of projects
9	OTZ Telephone Cooperative, Inc.	November 14, 2025	Project Funding pursuant to Section 2(o) of the NOFO is limited to "unserved" areas.3 Specifically, funding is reserved for areas where "no broadband provider has been selected to receive, or is otherwise receiving, Federal or State funding…"4 As NTIA is likely aware, OTZ is currently receiving government funding via loans from the U.S. Department of Agriculture Rural Utilities Service ("RUS") and is constructing a broadband network to provide services in the same northwest Alaska region as proposed by NANA. NANA's project is duplicative and there is no need or purpose for the project. Further, the Department of Government Efficiency (DOGE) has been mandated to review NTIA telecommunications grants as part of broader federal grant oversight. This oversight of waste, fraud, and abuse stems from Executive Order 14219 (February 19, 2025), directing all federal agencies, including those under the Department of Commerce, to review all existing contracts and grants. Given the cursory description of NANA's project,5 the Draft EA does not provide any explanation how NANA's project is anything but redundant. NTIA should reject the Draft EA and seek explanation from NANA as to how their fiber project is not in violation of the NOFO.	The justification for the award is outside the scope of NEPA. NTIA as the funding agency determined the project was not duplicative; NTIA coordinated with the US Department of Agriculture (USDA) and the Federal Communications Commission (FCC) and conducted a thorough review of the proposed project. Aspects of the initial proposal that were determined to be duplicative were removed from the proposed action. The project as currently scoped was determined to not be a duplicative use of federal funding. Moreover, Appendix F of the Draft EA, Page 8, 9 provides an analysis of utilization of a Microwave Tower Network, including the specific citation of the TBCP Notice of Funding Opportunitiy which defines "unserved" as areas where download/upload speeds fall below 25/3 Mbps or there is no access to broadband at all. The series of microwave broadband communication towers being installed by the OTZ Telephone Cooperative, Inc is offering cited as providing up to 25 Mbps/3Mbps (BLM 2024).
10	OTZ Telephone Cooperative, Inc.	November 14, 2025	Because of the duplicative nature of the NANA project, the Draft EA lacks an adequate statement of purpose and need as required by NTIA NEPA Procedures.6 The Draft EA's stated purpose and need7 neglects to delineate or provide evidence why the project is needed when another broadband project is already being constructed. In other words, there is no purpose for the project and certainly no need for it. An agency must provide a record that reveals the basis or its decision.8 There is no such record here. Further, an agency must provide a "reasoned analysis" of the underlying data leading to its conclusion.9 Such an analysis is missing from the Draft EA. NTIA "has failed to articulate a basis" for its Draft EA.10	Clarifying language has been added to more clearly delineate the purpose for each individual cooperating agency. The Draft EA has been prepared in compliance with NTIA's NEPA Procedures as well as DOI NEPA Procedures.
11	OTZ Telephone Cooperative, Inc.	November 14, 2025	Pursuant to the Draft EA, NANA has already begun and scheduled construction on the project. The Draft EA mentions "construction in fall 2025" and "construction phases in Winter 2025."11 Such construction, absent an approved EA and related agency buy-in is premature and illegal.	Construction of the project has not begun. Construction is anticipated to begin in the Winter of 2025/2026 (early 2026). The cited phrase discussed that the presentations are occuring in Fall 2025. This language will be clarified in the Final EA.
12	OTZ Telephone Cooperative, Inc.	November 14, 2025	Further, the Draft EA provides no indication that access has been acquired for monitoring/maintenance activities from DOD (Department of Defense), DNR (Alaska State of Natural Resources), DOT (Alaska State of Transportation and Public Facilities), AIDEA (Alaska Industrial Development and Export Authority), NAB (Northwest Arctic Borough), KIC (Kikiktagruk Inupiat Corporation), and any private entities.12 Access for all of these has not yet been acquired, yet according to the Draft EA, construction has commenced.	Construction of the project has not begun. Construction is anticipated to begin in the Winter of 2025/2026 (early 2026). Construction will not be completed on lands that do not have access acquired. Unclear what montioring/maintenance activities or access have to do with this NEPA EA or the legal requirements of it.

13	OTZ Telephone Cooperative, Inc.	November 14, 2025	The Draft EA discusses splices at intervals of roughly 24 miles or closer as necessitated by site conditions that will be enclosed within a weatherproof enclosure designed to secure and protect the joint where FOCs are interconnected,13 but provides no mention of the location, composition, dimensions, or environmental impact of such splices.	The description of the splices are specifically stated in Appendix C of the Draft EA on page 7. The environmental impacts of the splices are specifically analyzed on Draft EA page 13, page 54, and page 72. The dimensions of each splice box are 28 inches x 14 inches x 14 inches Draft EA Page 13: *Construction of the project would not result in permanent changes to soils (i.e., erodibility, soil hydric class, sands). The construction methodology has been chosen to avoid impacts to soils. these methods include ground-laying cable, HDD bores, and aerial installation. Anchors, poles, and splices may disturb the local vegetation and soils, but their limited size is not anticipated to result in impacts to soils.* Draft EA Page 54: *Cable anchors (~640 anchors) and splice points (~24 splices) shall be placed to facilitate construction of the project. These are low-profile devices and enclosures, spaced at regular intervals of no greater than 6,000 feet or 24 miles (respectively). Anchors shall additionally be placed on either side of ~787 streams and lakes where ground-lay fiber occurs. These shall be above the organic mat but shall have minimal visual impacts.* Draft EA Page 71: *Cable anchors and splice points shall be visible to recreation users. These are low-profile devices and enclosures, spaced at regular intervals of no greater than 6,000 feet or 24 miles (respectively). Anchors shall additionally be placed on either side of streams and lakes where ground-lay fiber occurs. These shall be above the organic mat but shall have minimal recreational impacts.*
14	OTZ Telephone Cooperative, Inc.	November 14, 2025	There are large river crossings where the cable will be suspended 20-ft. above the water on wooden poles, which, in theory, allows safe passage for boats and wildlife.14 Again, there is no discussion of any environmental impact, exact location, or how big the poles will be and what the ground disturbance will be for their placement.	The description of the aerial crossings are specifically stated in Appendix C of the Draft EA on page 10 and 11. These include how big the poles are and the amount of ground disturbance. The locations of these are provided by latitude/longitude in Appendix H of the Draft EA. The environmental impact for aerial crossings are specifically discussed in the Draft EA on page 8, 9, 13, 14, 16, 17, 18, 32, 49, 55, 70, 71, 72
15	OTZ Telephone Cooperative, Inc.	November 14, 2025	In the Draft EA's "Plan of Development," it states that "winter installation shall begin with a field survey of the FOC route to determine the precise path that the right-of-way (ROW) shall occupy."15 Buried in the appendices, we find out that NANA has no idea exactly where the ROWs for its project will be. Environmental impacts cannot be adequately considered when required surveys have not yet been completed and the proposed ROWs are simply guesstimates.16 NTIA has no obligation to provide cover for NANA's hastily prepared and deficient applications and construction rush job. The record does not support adoption of the Draft EA.	The location of the Right of Way is known, and is defined and fixed in the Draft Environmental Assessment. The Right of Way is for the 60 foot buffer (30 feet on either side). The discussion about the "precise path" is based on the fact that the actual impacts are anticipated to be smaller than the entire Right of Way. The actual impacts are most likley up to a maximum disturbance of a 30 foot buffer (15 feet on either side), and may even be smaller in some locations (15 foot buffer, 7.5 feet on each side). This method was utilized to overestimate the potential impacts (providing a conservative approach), and to allow micro-siting of the alignment within the fixed 60 foot buffer. This allows for the accurate assessment of impacts for the alignment. The Plan of Development is a snapshot in time and was submitted to BLM and USFWS to support NANA's SF-299 in March 2025, and considerable work on the project has taken place over the course of the NEPA process.
16	OTZ Telephone Cooperative, Inc.	November 14, 2025	There is also no indication of a Compatibility Determination from the U.S. Fish and Wildlife Service.	The USFWS will complete a project specific Compatibility Determination separate from this EA.
17	OTZ Telephone Cooperative, Inc.	November 14, 2025	The Draft EA is missing a legally sufficient description of the fiber NANA will be placing in the Alaska wilderness. NANA provides no brand name and no country of origin. Accordingly, one can only guess as to the environmental impact of the "mystery" FOC that will be entrenched and possibly leaking toxic chemicals into the tundra and dropped into rivers and streams, teeming with wildlife.17 Without knowing the model number, country, and manufacturer of the FOC, it is possible NANA's project "poses an unacceptable risk to the national security of the United States," in violation of the Secure and Trusted Communications Networks Act.18 Pursuant to the NOFO, federal monies cannot be used to purchase "covered communications equipment" under the Secure and Trusted Communications Networks Act.19 Legalities aside, the prospect of NTIA allowing NANA to spend federal funds on equipment conceivably manufactured by a "foreign adversary"20 is not a good look and contrary to the public interest. NTIA cannot defensibly reach a decision on releasing federal funds until it ensures that NANA's project complies with the federal laws and NTIA regulations discussed herein.	Fiber used in the cable was manufactured by Corning (Corning SMF28ULL) in the United States. The cable is manufactured by Prysmian (Prysmian MINISUB LW 48_12 mm) in Germany and has been used on numerous fiber projects around the world, including similar ground lay and subsea projects in Alaska. The outer sheath on that cable is HDPE, which again is used on cables/ducts/conduits and in many other applications around the world, in the US and in Alaska on all sorts of projects. Sourcing of materials not properly subject of NEPA.
18	Department of Natural Resources	November 14, 2025	Therefore, the final EA or errata sheet should clarify that BLM's land use authorization is also issued under the ANILCA Title XI process	BLM's right-of-way (ROW) lease would be issued under the authority of Federal Land Policy and Managemenbt Act in accordance with federal regulations 43 CFR Part 2800. BLM land management actions must comply with state and federal laws and regulations.

19	Department of Natural Resources	November 14, 2025	Access and Permitting: The final design and construction plan does not appear to create physical barriers or legal restrictions impeding public access to adjacent public lands or navigable waters for recreational and subsistence purposes. Construction and long-term maintenance activities will require temporary and permanent access rights of way permit. The Draft EA outlines the specific permitting requirements under ANILCA Title XI for the proposed transportation and utility system (TUS). It notes that, "Authorization of a TUS across lands designated for Minimal Management would require the CCP to be amended or revised ...." (page 3) The final EA should identify the type of Comprehensive Conservation Plan (CCP) amendment/revision that will be needed. The EA demonstrates that the project will not significantly change the goals, objectives, or management direction of the refuge; it seems a minor CCP modification should suffice. A minor CCP modification or amendment should not impede the approval a right of way for this project.	Acknowledged
20	Department of Natural Resources	November 14, 2025	ANILCA prevails in Alaska: For example, the National Wildlife Refuge System Improvement Act of 1997 explicitly states that ANILCA's provisions take precedence in Alaska when a conflict arises. For a ROW authorized by ANILCA, all federal agencies, including the USFWS, must follow the procedures outlined in 43 CFR Part 36, which implements ANILCA Title XI. For the Refuge, this process supersedes the standard USFWS compatibility procedures for ROW applications in the Lower 48. If ROW approval is not initially granted by the USFWS, this decision is appealable to the President of the United States under ANILCA Section 1106(b). The Final EA should strike language requiring a CCP revision, amendment, or modification prior to right of way approval.	The project is following all required laws applicable to an authorization on a National Wildlife Refuge, including ANILCA regulations at 43 CFR 36.
21	Department of Natural Resources	November 14, 2025	the EA and Appendix D1 – Avoidance, Minimization, and Mitigation should outline the strategies included in Appendix L.	Strategies will be moved and duplicated as necessary (specifically discussion about alternatives considered and summer construction at a single location being of short duration).
22	Department of Natural Resources	November 14, 2025	Den Site Reporting: During construction there is a possibility of grizzly bear den-site disturbance. ADF&G requests the following: o Any den-site disturbances should be reported to the ADF&G office in Kotzebue or the website ADF&G: Report a Wildlife Encounter1 if and when a disturbance has occurred.	Appendix D1 will be updated to include language: Any den-site disturbances will be reported to the ADF&G office in Kotzebue or the website ADF&G: Report a Wildlife Encounter1 if and when a disturbance has occurred.
23	Department of Natural Resources	November 14, 2025	Marine Mammals The marine component of the project, including cable-laying activities within Hotham Inlet has the potential to impact marine mammals. Hotham Inlet is a known migration corridor and feeding area and the State supports the inclusion of marine mammal monitoring into Appendix D1 – Avoidance, Minimization, and Mitigation. The State concurs that consultation with National Marine Fisheries (NMFS) and USFWS regarding letters of authorization are required.	The USFWS and NMFS consultations have now been completed, with a finding that effects do not require formal consultations. These findings also listed practices to minimize impacts to regulated activities. The EA will be updated to include the updated status of these documents.
24	Department of Natural Resources	November 14, 2025	R.S. 2477 Trails The Draft EA provides a brief discussion of R.S. 2477 rights-of-way in section 3.3.3.1.11, but does not clarify the management authority of DNR over these rights-of-way. The Draft EA must clarify that the State of Alaska asserts the authority to manage R.S. 2477 routes in the best interest of Alaskans. This acknowledgement would be appropriate in section 3.3.3.1.11, or in section 3.3.3.1.5 ("Alaska Department of Natural Resources). Furthermore, the Draft EA would benefit from additional context describing the ways in which RS 2477 routes are used (e.g. access to mining claims, intercommunity travel, recreation), and how Alaskans benefit from free access across and along these routes.	BLM does not assert or claim management authority where State of Alaska R.S.2477 exists, nor does the information found in the environmental assessment state such. No additional modification to the EA are necessary from BLM's perspective. R.S. 2477 rights-of-way potentially affecting the Selawik National Wildlife Refuge are not within the scope of analysis for this proposed action. The assertion, adjudication, and recognition of such rights-of-way are matters of legal determination and are typically resolved through judicial or administrative proceedings. As such, the U.S. Fish and Wildlife Service does not have unilateral authority to confirm or deny the existence of R.S. 2477 claims, and any valid existing rights are subject to applicable federal and state law, including the Federal Land Policy and Management Act (FLPMA) and relevant Alaska statutes.

25	Department of Natural Resources	November 14, 2025	Water Uses In section 3.1.4.2.2.1 Construction Impact the Draft EA discusses the infrastructure necessary for spanning waterbodies, including horizontal directional drilling (HDD). This section states that "HDD methods require use of local water sources, ranging from 200 – 1,000 gallons for each individual crossing. These would be withdrawn from the local waterbody." The same section also includes the statement that "no impacts are anticipated for the water rights, temporary water use authorizations, and/or Reservations of Waters because water use is not a component of this project." These two statements appear to contradict, and they raise additional questions about the rate and sum of water use for the purpose of HDD on State-owned submerged lands. The final EA should explain the apparent contradiction presented by these two sentences and must clarify whether the 200 – 1,000-gallon water requirement is expected to be drawn from a single source on a single day, or if it will be spaced over time, or drawn from multiple sources. State law requires NANA and/or its contractors to obtain authorizations from DNR's Water Section if more than 5,000 gallons of water from a single source in a single day, more than 500 gallons of water per day from a single source for more than 10 days in a year, or more than 30,000 gallons per day from a single source.2	The required water withdrawals will not reach/exceed the water use levels requiring a permit from the Water Section. Projected water use is between 200-1,000 gallons per HDD crossing, at rates less that those cited in the comment. The language in the EA will be updated to reflect that water use is a component of the project.
26	Department of Natural Resources	November 14, 2025	Page 56 -- Title XI of the Alaska National Interest Lands Conservation Act (ANILCA) (16 USC 3161 et seq.) and the implementing regulations in 43 CFR Part 36 established procedures for approval or disapproval of Transportation and Utility System authorizationswhere any part of the route will be within any conservation system unit, national recreation area, or national conservation area in Alaska. In making a decision on authorization, each Federal agency shall consider and make detailed findings supported by substantial evidence.	Acknowledged. See BLM response regarding ROW authority at DNR Comment no.18 above.
27	Department of Natural Resources	November 14, 2025	Page 65 – Subsistence activities on all lands in Alaska, including private lands, are subject to state or federal subsistence regulations, with the state fish and wildlife management managing including State subsistence harvest of fish and wildlife on state and privately-owned land. Subsistence harvest of fish and wildlife on federal lands are managed by the Federal Subsistence Board regulations.	Acknowledged.
28	Department of Natural Resources	November 14, 2025	Page 71 -- ~~Sport~~ State hunting seasons vary, and include: black bear (all year), brown bear (all year), caribou (all year), moose (July 1 – December 31 and/or September 1- September 20), muskox (August 1 – March 15), wolf (August 1 – April 30), and wolverine (September 1 – March 31).	Language in the EA will be updated to replace "Sport" with "State"
29	Western Arctic Caribou Herd Working Group	November 14, 2025	The project area for terrestrial mammals is defined as occurring within 2.5 miles (4 km) of the cable route (p.32), based on observations of calving displacement. While such a distance has been repeatedly observed for displacement during calving, it should be acknowledged that the "zone of influence" in which caribou may be affected by infrastructure and human activity may be much larger. Studies of caribou herds in Canada have found that displacement distances may span up to 15 km from roads, depending on season and hunting conditions (Plante et al. 2018) while another study found a zone of influence of 16-17 km prior to crossing a mining road during migration (Boulanger et al. 2024). While these were for industrial roads, not for a cable on tundra, they nonetheless indicate that in some cases caribou may be sensitive to industrial activity at farther distances than suggested based on the study area definition used in the draft EA and thus that a larger study area definition may be needed.	Acknowledged. The cited studies in the comment are from Canada on industrial roads. The Draft EA does have a discussion in the impacts section, which also cites additional studies which illustrate the wide range of impacts from activity on caribou; including Dau (2023) of 30 miles, and Leblond et al. (2011) of 1.25 km. Dr. Eliezer Guraie is cited elsewhere discussing a 10-mile radius zone of influence. As a note, Northwest Arctic Borough Code state a 0.75 mile distance (9.25.020 Areawide Standards). Construction activities are not anticipated to occur in the fall, or in the location of calving (which is north of the Brooks Range, outside the project area). The project has committed to wildlife monitoring with ceasation of activities if large wildlife are obsered in the area, particularly if those activities interfere with traditional migration or normal grazing patterns. Indigenous knowledge will be deployed along the project route at each impacted village with NANA Lands Department identifying community escorts and community reporters. (Response Continued Below)

29 (cont)	Western Arctic Caribou Herd Working Group	November 14, 2025		Draft EA Appendix E1 contains the "Wildlife Monitoring, Interaction, and Avoidance Plan" which includes specific stipulations similar to those in the comment about avoidance of caribou, including: •On-the-ground construction or maintenance activities shall be ceased if large wildlife is observed in the area. Particularly, activities shall not interfere with traditional migration or normal grazing patterns. •Extra precautions shall be taken to avoid activities that interfere with the fall caribou migration (August-December), winter grazing, and spring migration (April-May). oDuring the fall migration, which coincides with breeding season and possible hunting pressure from humans and predators, caribou may be more reactive to stimulus. Avoidance of disrupting caribou movement during this time shall include an emphasis on allowing the undisturbed passage of the first caribou ("lead caribou") moving through an area, as these individuals set preferred pathways for subsequent caribou movements through the area.
30	Western Arctic Caribou Herd Working Group	November 14, 2025	The above concerns are compounded by a lack of specificity in the proposed mitigation plan to ensure impacts on caribou are avoided. The Management Plan described in Appendix E1 says that ground-based construction or maintenance activities will be ceased if large wildlife "is observed in the area" (p.22). However, there is no specification of what will count as being "in the area" or how this will be monitored. Based on the studies above, such distances may need to be much larger than what can be seen from the ground, and also potentially larger than the 4 km study area boundary. If monitoring consists only of ground-based observations it may be too late to avoid impacts by the time caribou are spotted. It is likely that multiple measures may be needed, including review of collar locations, aerial monitoring, and ground-based monitoring. Similarly, the plan states that helicopters will seek to maintain "an adequate distance" from known animal locations but what distance is considered adequate remains unstated and unjustified. Furthermore, it should be specified how many caribou or other large mammals need to be present for construction to stop. Greater detail and specificity are needed to ensure the Management Plan conforms to the best available scientific information and Indigenous Knowledge.	Project applicant supports inclusion of the fact that indigenous knowledge will be deployed along the project route at each impacted village with NANA identifying community escorts and community reporters for ground monitoring. In the area per Northwest Arctic Borough Code the recommended distance is 0.75 mile distance (9.25.020 Areawide Standards).
31	Western Arctic Caribou Herd Working Group	November 14, 2025	Additional specificity is also needed about the timeframe in which activities will occur on the landscape. The draft EA mentions the possibility of late spring/early summer construction activities, which could include tundra vehicle use, aerial flights, and barge/tugboat usage (p.69). This is potentially of great concern, depending on location and timing, as such activity could interfere with migration of pregnant caribou to their calving grounds. The importance of allowing these caribou to reach their calving range undisturbed cannot be overstated, especially during a period of ongoing herd decline. Additional information is needed to clarify when and where such activities might occur and what specific actions will be taken to avoid negative impacts to caribou.	The Draft EA Appendix C Page 4 states: *The FOC ground lay is planned to occur during the 2026 and possible 2027 winter construction season. NANA intends to mobilize equipment, barge supplies, and stage materials in summer/fall 2025 and mobilize personnel in late December 2025 to commence the ground lay in January 2026. Exact winter construction start dates shall depend on subsistence consideration, as well as requirements being met for adequate snow cover and ground conditions to support off-road winter travel to minimize environmental impacts (see Section 2.3 for more details). Cable inspections/seating, in-village work, and major water crossings shall occur during the summer of 2026 and 2027 (Section 3.0). The post-construction cable inspection and seating shall be conducted via helicopters.* The Draft EA Appendix C Page 13 states: *The summer construction schedule shall commence once sea and river ice melts, allowing barges hauling equipment to travel upriver (approximately May 2026). Construction within the villages shall occur throughout the summer of 2026 and 2027. Subsea construction is scheduled for June-July 2026. Major river crossings with HDD installations shall occur June-August 2026. Winter GLF inspections and cable seating shall take place from July-August 2026/2027. Finally, demobilization and final inspections shall be completed by September 2026 or 2027.* This timeframe specifically avoids the fall caribou migration season. This timeframe also avoids the April - May spring caribou migration period. The location of the project specifically avoids the caribou calving grounds (which are north of the Brooks Range, outside of the project area).

32	Western Arctic Caribou Herd Working Group	November 14, 2025	Another area of concern regards the proposed use of wooden aerial crossing structures to string cable over large rivers. We are concerned about the potential for entanglement or other interference with caribou, people, and other animals. The draft EA states that these will only be used on federal lands but does not state why directional boring under rivers cannot be used in those areas. This might better avoid impacts to caribou and other species. We also request that the EA specify the expected lifetime for these crossing structures. This would help clarify how often they will need to be replaced and give an indication of the level of additional activity expected on the landscape.	Aerial crossings are designed similar to the poles used in Shungnak and Kivalina where caribou either migrate through or winter near, and there has been no instances yet of interference HDD can not be reached by the boats required to haul the HDD equipment in the locations for aeria crossings. Entanglement to caribou is not anticpated to have a significant impact, because the project is limited the surface to a telephone pole, the cable itself, and a single ground anchor with guy wire. The guy wire will be taunt, and will have reflective material to make it visible. The cable will be attached to the pole to minimize the risk of entanglement. In regard to bird entanglement of the aerial crossings, the Draft EA commits to: *bird diverters would be installed to increase the visibility of the FOC, and such diverters have been shown to be effective at reducing bird collisions (Ferrer et al. 2020, Barrientos 2011).* The lifetime for these structures is expected to match the expected life expenctancy of the project (50 years). If maintenance is required before that time, it will be coordinated and permitted with applicable entities.
33	Western Arctic Caribou Herd Working Group	November 14, 2025	Given the uncertainties noted above, including a lack of understanding regarding how studies of caribou response to activities on roads will translate to that of laying and maintaining cable, a prudent course of action might be to do a test run laying a section of cable and seeing how caribou respond to that before deploying the full 675 or more miles of cable. Monitoring of such a test should be done in such a way as to detect caribou responses and this information could be used to inform whether the full project should proceed and what, if any, additional mitigation measures are needed to reduce impacts.	The Draft EA proposes an active management approach, with a wildlife monitoring protocol. These observations during the project will be used to update best practices during construction, allowing lessons learned in one part of the project to be applied to other parts of the project. As a note, the proposed project is not a road, but a telecommunication project. The ASTAC fiber project across the North Slope provided a comparison study. This work was in a different geography, but was in the range of the same caribou herd, and of a similar type of project as proposed.
34	Western Arctic Caribou Herd Working Group	November 14, 2025	It was surprising to us that the maps of recent winter range use only covered the years until 2021. The date on the map indicates that it was created in September 2025. Why were data for 2022-2024 winters not included? Recent scientific work has noted eastward shifts in WACH wintering locations (Gurarie et al. 2024). It would be helpful to indicate the full timeframe of available data to present a picture of WACH behavior. The WACH is critical to the many people that live in the range of the herd and rely on the herd for subsistence as well as to many others who care about the future of the herd and its habitat. Over time, the caribou need unimpeded access to their full range to be able to move in response to changing conditions. It is essential that the impacts of decisions be considered over long timeframes.	The data for 2022 - 2024 were not included because they were not available at the time the data analysis of radio collars was conducted for that map. The 2022 - 2024 observations are included in the Draft EA discussion, including specific discussion of Gurarie et al. 2024 findings of recent shifts. The language in the Draft EA includes: *The WAH wintering range varies but exhibits long-term decadal patterns (BLM 2024, Gurarie et al. 2024). For many years, the majority of the WAH wintered on or near the Seward Peninsula (Prichard et al. 2020b; Gurarie et al. 2024), but in recent years, more caribou have wintered farther north (i.e. Kobuk Valley, Brooks Range) (BLM 2024; Gurarie et al. 2024), making it more likely that caribou would be present in the project area during winter FOC deployment.*
35	Western Arctic Caribou Herd Working Group	November 14, 2025	Finally, in our scoping comments for this project we requested additional time for deliberation and commenting. While we are glad to have more time than the two weeks provided for the scoping period, the draft EA comment period nonetheless was insufficient and far short of the 60 to 90-day comment period we requested to allow meaningful engagement and commenting. This is especially problematic as the ongoing government shutdown overlapped this period, reducing the availability of information for the group. Having comment periods proceed while the government is shut down is unreasonable. As we noted in our scoping comments, the Working Group includes representatives of stakeholder groups from across the state of Alaska. It takes time to inform our members of new proposals and to organize discussion and feedback, especially for those living in remote villages where communication can be a challenge. Furthermore, representatives of the Working Group need time to communicate information with their communities about development processes and Working Group positions, to facilitate other comment development and submission. Short comment periods severely challenge the ability of the Working Group and those we represent to meaningfully engage in decision making. We strongly request longer comment periods for future processes.	NTIA acknowledges the comment, and notes that the comment period given is consistent with its NEPA Procedures.
36	Public	October 20, 2025	I fully support the execution of this project as it will greatly benefit communities and will have minimal impact to the surrounding environment.	NTIA acknowledges the comment

37	Public	November 14, 2025	I am writing to express my strong support for the NANA Regional Broadband Network Project (EAXX- 006-60-3D-1753935958). This initiative represents a critical step forward in bridging the digital divide for remote communities across Northwest Alaska. By expanding broadband infrastructure, the project will significantly enhance access to telehealth services—an essential need in regions where medical facilities are often distant and difficult to reach. Reliable high-speed internet will also empower businesses, enabling them to participate more fully in the digital economy and access new markets and tools that can drive economic growth. As a NANA shareholder and Tribal member of one of NANA's regional communities (Noatak, Alaska) I've personally experienced the challenges related to lack of reliable connectivity to the world. We have increased our reliability by voluntarily utilizing other ISP's networks, but they too, are costly & have frequent interruptions which directly impact people's ability to communicate. I am stating my support of the project and additional logic is provided below. Beyond the economic and healthcare benefits, improved broadband connectivity will enrich the daily lives of residents by supporting education, communication, and personal development. Students will gain better access to online learning resources, families will stay more connected, and individuals will have greater opportunities to engage with the broader world. I commend the NTIA and its partners for prioritizing this transformative project and urge its swift advancement to ensure that Alaska's remote communities are not left behind in the digital age.	NTIA acknowledges the comment