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# Appendix B

Collaboration and Coordination

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# Appendix B. Collaboration and Coordination

## B.1 COLLABORATION

The Bureau of Land Management is the lead agency for the Central Yukon Resource Management Plan. At the outset of the planning process, the Bureau of Land Management sent letters of invitation to local, state, federal, and tribal representatives, inviting them to participate as cooperating agencies for the Central Yukon Resource Management Plan.

**Table B-1  
Cooperating Agency Participation**

Agencies and Tribes Invited to be Cooperators	Agencies and Tribes that Signed Memorandums of Understanding
U.S. Department of the Interior, Fish and Wildlife Service	Yes
U.S. Department of the Interior, National Park Service	No
Alaska Department of Natural Resources, Representing the State of Alaska	Yes
Denali Borough	No
Fairbanks North Star Borough	No
North Slope Borough	No
Northwest Arctic Borough	No
Eielson Air Force Base	No
Joint Base Elmendorf-Richardson	No
U.S. Army Garrison Fort Wainwright	No
The BLM invited all tribal entities listed in Section B.2 to be cooperators	See Section B.2

## B.2 TRIBAL AND ALASKA NATIVE CORPORATIONS CONSULTATION

**Table B-2  
Federally Recognized Tribes and Alaska Native Claims Settlement Act Native Corporations Contacted during Scoping**

Federally Recognized Tribes	Alaska Native Claims Settlement Act Native Corporations (Associated Tribes)
Alatna Village	K'oyitl'ots'ina, Limited (Alatna, Allakaket, Hughes, and Huslia)
Allakaket Village*	
Hughes Village	
Huslia Village	
Village of Anaktuvuk Pass	Nunamiut Corporation, Incorporated (Anaktuvuk Pass)
Evansville Village	Evansville, Incorporated (Evansville Village)
Louden Village (Galena)	Gana-A'yoo, Limited (Galena, Kaltag, Koyukuk, and Nulato)
Village of Kaltag	
Village of Koyukuk*	
Nulato Village*	
Nenana Native Association	Toghotthele Corporation (Nenana)
Native Village of Nuiqsut	Kuukpik Corporation (Nuiqsut)

<b>Federally Recognized Tribes</b>	<b>Alaska Native Claims Settlement Act Native Corporations (Associated Tribes)</b>
Native Village of Minto	Seth-De-Va-Ah Corporation (Minto)
Native Village of Ruby*	Dineega Corporation (Ruby)
Native Village of Stevens	Dinyee Corporation (Stevens Village)
Native Village of Tanana*	Tozitna, Limited (Tanana)
Native Village of Unalakleet	Unalakleet Native Corporation (Unalakleet)
Manley Hot Springs Village	Bean Ridge Corporation (Manley Hot Springs)
Rampart Village	Baan O Yeel Kon Corporation (Rampart)
Native Village of Venetie Tribal Government*	None

<b>Regional Native Corporation</b>
NANA, Regional Corporation Inc.
Arctic Slope Regional Corporation
Doyon, Ltd.

\*Cooperator

### B.3 LIST OF PREPARERS

**Table B-3  
List of Preparers**

<b>Name</b>	<b>Role/Responsibility</b>
<b>Bureau of Land Management</b>	
Michelle Ethun	Project Manager, Contracting Officer's Representative, Air Quality and Climate, Wilderness Characteristics, Lands and Realty and Utility Corridor, Travel Management, Areas of Critical Environmental Concern, Wilderness Study Area, Wild and Scenic Rivers, Back Country or Scenic Byways, Iditarod National Historic Trail, Environmental Justice, Social and Economic Conditions, Administrative Record/ePlanning
Tim LaMarr	Field Office Manager
Tim Hammond	Assistant Field Manager, Forest and Woodland Products
Stewart Allen	Environmental Justice, Social and Economic Conditions
Kelly Egger	Visual Resources, Recreation and Visitor Services, Travel Management
Dave Esse	Soil Resources, Water Resources, Wetland Resources
Mark Faughn	GIS
Crystal Glassburn	Cultural Resources, Paleontological Resources
John Hoppe	Energy and Minerals
Erin Julianus	Wildlife, Subsistence
Bob Karlen	Fish and Aquatic Species
Ed Klimasauskas	Energy and Minerals
Erica Lamb	Soil Resources, Water Resources, Wetland Resources
Craig McCaa	Public Involvement
Jennifer McMillan	Vegetation Communities
Quinn Sawyer	Energy and Minerals, Renewable Energy
Tom St. Clair	Wildland Fire Ecology and Management, Forest and Woodland Products
Sheri Wilson	Lands and Realty and Utility Corridor
<b>Forest Service</b>	
Christy Prescott	Environmental Justice, Social and Economic Conditions

Name	Role/Responsibility
<b>EMPSi – Environmental Management and Planning Solutions, Inc.</b>	
Chad Ricklefs, AICP	Senior Project Manager
Kate Krebs	Assistant Project Manager and Lead Facilitator
David Batts	Program Manager
Angie Adams	Task Manager, Natural Resources Specialist, Recreation Lead, Wilderness Characteristics, Areas of Critical Environmental Concern, Wilderness Study Area, Wild and Scenic Rivers, Back Country or Scenic Byways, Iditarod National Historic Trail
Victoria Arling	Administrative Support and 508 Compliance
Amanda Biedermann	Areas of Critical Environmental Concern, Wild and Scenic Rivers, Public Involvement
Lindsay Chipman	Fish and Aquatic Species
Amy Cordle	Air Quality and Climate
Francis Craig	Energy and Minerals
Kevin Doyle	Cultural Resources, Paleontological Resources
Zoe Ghali	Wildland Fire Ecology and Management, Forest and Woodland Products
Peter Gower, AICP	Lands and Realty and Utility Corridor, Renewable Energy, Recreation and Visitor Services, Travel Management
Derek Holmgren	Assistant Project Manager, Soil Resources, Water Resources, Visual Resources
Amy Lewis	Back Country or Scenic Byways, Iditarod National Historic Trail, Subsistence, Public Involvement
Kim Murdock	Technical Editing
Katie Patterson, JD	Task Manager, Mineral Specialist, Non-Renewable Resources Lead, Energy and Minerals
Holly Prohaska	Senior Project Advisor, NEPA Specialist and Quality Assurance
Julie Remp	Vegetation Communities, Wildlife
Marcia Rickey	GIS/eGIS Specialist Lead
Cindy Schad	Formatting and 508 Compliance
Josh Schnabel	Visual Resources, Lands and Realty and Utility Corridor, Renewable Energy, Recreation and Visitor Services, Travel Management
Matt Smith	Soil Resources, Water Resources
Andy Spellmeyer	Wilderness Characteristics
Megan Stone	Administrative Record
Randy Varney	Technical Editing
Meredith Zaccherio	Vegetation Communities, Wetland Resources
<b>ABR, Inc.</b>	
Sue Bishop	Task Manager, Renewable Resources Lead, Vegetation Communities
Wendy Davis	Wetland Resources
Adrian Gall	Wildlife, Section 7 Consultation
Alex Prichard	Wildlife
John Seigle	Fish and Aquatic Species

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# Appendix C

## Land Tenure

Lands That Meet the Criteria Identified for Disposal per FLPMA 203 Only in Alternative B

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## **ACRONYMS AND ABBREVIATIONS**

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Full Phrase

BLM

Bureau of Land Management



# Appendix C. Land Tenure

In preparation for this land use planning initiative, the Bureau of Land Management (BLM) conducted an inventory of the public land in the planning area to determine whether there are any tracts that meet one or more of the Federal Land Policy Management Act (FLPMA) Section 203 disposal criteria, Section 206 exchange criteria, or Alaska-specific exchanges under the Alaska National Interest Lands Conservation Act (ANILCA) or Alaska Native Claims Settlement Act (ANCSA). This is because the BLM may only sell public land using the Section 203 FLPMA authority, if lands meet the criteria.

The lands that meet the criteria to be retained, acquired, exchanged, or disposed of are identified as Zone 1, 2, or 3. These decisions have no effect on the ongoing State of Alaska land conveyance process; convenience for Native corporation selections; allotments selected under the John D. Dingell, Jr. Conservation, Management, and Recreation Act; or other valid selections.

- Lands in Zone 1 would be retained under BLM management; inholdings would be considered for acquisition on a willing seller basis (areas of critical environmental concern, research natural areas, designated important habitat, high-priority riparian habitat, lands managed for wilderness character, backcountry conservation areas, and recreation assets, including special recreation management areas and extensive recreation management areas).
- Lands in Zone 2 would generally be retained but would be available for acquisition or exchange, whichever is appropriate, to enhance public resource values, improve management capabilities, or reduce the potential for land use conflict.
- Lands in Zone 3 meet the criteria for lands available for disposal or exchange (all Fairbanks Subunit parcels).
  - FLPMA Section 203 sales would not be permitted under the Preferred Alternative (Alternative C2)
  - Disposal is only considered in Alternative B
  - Land exchange would be considered at the implementation level to benefit public interests. Exchanges would focus on efficient management of public lands and objectives including protection of fish and wildlife habitats, cultural resources, wilderness and aesthetic values, enhancing recreational opportunities, and community expansion. Exchanges generally would not be pursued until final State and Native entitlement is reached.
- Lands in Zones 2 and 3 would be reassigned to Zone 1 if the U.S. Fish and Wildlife Service includes them in future designations of important habitat under the Endangered Species Act.

## **C.1 EXCHANGE OR DISPOSAL CRITERIA \*(SEE PAGE C-3)**

- Isolated parcels, such as those near Fairbanks, typically less than a township in size (acres)
- A tract that no longer serves the purpose for which it was acquired
- A tract whose disposal would serve the public objectives, such as expansion of communities and economic development or a recreation and public purposes or other lands action with reversionary clause or any other reversionary interests
- A tract that, because of its location or other characteristics, is difficult or uneconomic to manage and is not suitable for management by another federal agency

- A tract where there are minor boundary adjustments around Conservation System Unit boundaries allowed under ANILCA 103(b) (23,000-acre limit)
- A tract where disposal would promote management consolidation and ownership
- The BLM would consider mutually benefiting public interest land exchanges. Exchanges are authorized in Alaska by FLPMA Section 206, Section 22(f) of ANCSA, and Section 1302(h) of the ANILCA. When considering public interest, the BLM would give full consideration to efficient management of public lands and to securing resource management objectives. Reserved federal interests in split-estate lands anywhere in the planning area may be considered for conveyance out of federal ownership.
- Before any parcel is considered for exchange or disposal, the BLM would ensure that public access and recreation opportunities are important considerations of any land tenure adjustment pursuant to Secretarial Order 3373 and BLM Informational Bulletin No. 2020-010, Evaluating Public Access in Bureau of Land Management Public Land Disposals and Exchange.

## C.2 LANDS THAT MEET THE CRITERIA THAT ARE IDENTIFIED FOR EXCHANGE IN ALL ACTION ALTERNATIVES (B, C1, C2, AND D)

ID	Description	Legal Description	Size (Acres)
AKF02000-5013	Ester Dome Observatory	T1N, R3W, S25, FM	6
AKF02000-5010	Ski Boot Hill Extension— Geophysical Observatory-1	T1N, R1W, S17, FM	5
AKF02000-5011	Ski Boot Hill Extension— Geophysical Observatory-2	T1N, R1W, S17, FM	5
AKF03000-4122	Nulato West #02	T9S, R2E, KM	3,840
AKF03000-4146	Tanana #03	T2N, R20W, FM	3,840
AKF03000-4021	Anderson #01	T6S, R8W, S31, FM	269
AKF03000-4067	Julius #05	T5S, R8W, S10, FM	161
AKF03000-4022	Anderson #02	T6S, R8W, S15, FM	51
AKF03000-4063	Julius #01	T5S, R8W, Sections 1,12, FM	1,132
AKF03000-4064	Julius #02	T5S, R7, 8W, FM	3,040
AKF03000-4065	Julius #03	T5S, R8W, Sections 26, 35, FM	1,280
AKF03000-4093	Minto #03	T3N, R10W, Sections 34, FM	640
AKF03000-4094	Minto #04	T2N, R10W, Sections 8–10, FM	1,920
AKF03000-4163	North Garnet Island	T8N, R15W, S21, FM	80
AKF03000-4164	Nenana Parcel	T4S, R8W, S25 FM	320
AKF02000-5023	Mineral Survey Meehan/Deep Creek Parcels	T3N, R2E	120
AKF02000-5048	Utility Corridor	T9S, R10E, S3, FM	160
AKF03000-4090	Minto-Old Townsite	T1N, R8W, FM	321
AKF03000-4132	Sagwon Airstrip	T1S, R14E, UM	2,564
AKF03000-3045	Irgnyiulk Lake	T12S, R4E, S8, UM	640
AKF03000-4068	Kakiagun Lake North	T12N, R3E, UM	2,747
AKF03000-4144	Tanana #01	T6N, R18W, FM	2,560
AKF03000-4145	Tanana #02	T5N, R19W, FM	3,174
AKF03000-4089	Minto-Elliott	T5N, R10W, Sec. 27–30, FM	2,557
AKF03000-4153	Toklat #02	T5S, R14W, FM	2,414
AKF03000-4028	Bettles #01	T24N, R19W, FM	1,280
AKF03000-4029	Bettles #02	T25N, R18W, FM	3840

ID	Description	Legal Description	Size (Acres)
AKF03000-4030	Bettles #03	T26N, R17W, FM	1,280
AKF03000-4091	Minto #01	T5N, R9W, T4N, R10W, FM	1,279
AKF03000-4092	Minto #02	T4N, R10W, FM	3,840
AKF02000-2002-	Ester Dome	T1N, R2W, S30, FM	310
AKF02000-2005	Mineral Survey Cache Creek	T1S, R2W, S3, FM	47
AKF02000-2004	Irish Gulch	T2N, R1E, S32, FM	120
AKF02000-5008	Taroka Road property	T1S, R2W, S30, FM	20
AKF02000-5009	Isberg Road property	T1S, R2W, S30, FM	20
AKF02000-5017	Mineral Survey Murphy Dome-Elliott Hwy.	T2N, R1E, S19, FM	36
AKF02000-5018	Mineral Survey Murphy Dome Road	T1N, R2W, S7, FM	60
AKF02000-5020	Mineral Survey Happy Creek	T1N, R2W, S35	40
AKF02000-5022	Mineral Survey Skoogy Creek	T2N, R1E, S1, FM	40
AKF02000-5024	Mineral Survey Cleary Hill Mine area	T3N, R1E, S25, FM	120
AKF02000-5024	Mineral Survey Cleary Hill Mine area	T3N, R2E, S30, FM	335
AKF02000-5025	Mineral Survey Fish Creek Mine area	T2N, 3E, S3, 4 FM	15
AKF02000-5025	Mineral Survey Fish Creek Mine area	T3N, 3E, S33, 34 FM	15
AKF02000-5026	Mineral Survey St. Patrick South	T1N, R2W, S35, FM	19
AKF02000-5026	Mineral Survey St. Patrick South	T1S, R2W, S4,5	600
AKF02000-5027	Mineral Survey Gold Hill	T1S, 2W, S3,4	40
AKF02000-5036	Green Road North Pole	T1S, R1E, S24, FM	154
AKF02000-5039	Hartman Lake	T6S, R4E, S2, FM	<7
AKF02000-5040	Harding Lake	T6S, R4E, S2, FM	10
AKF02000-5041	Harding Lake Material Site	T6S, R4E, S2, FM	11
AKF02000-5050	Upper Stone Boy Creek	T2S, R16E, FM	640
AKF03000-4131	Ruby East	T10S, R17E, KM	4,480
AKF03000-4159	Yukon River-Yistletaw	T8S, R8E, S1,2, KM	370

\*R&PP Act (43 USC 869 et seq.)—This plan considers R&PP disposals on Zone 2 and 3 lands throughout the planning area. Selected lands that meet the criteria for disposal under the R&PP Act would have to be fully adjudicated before the BLM would entertain an R&PP application.

### C.3 LANDS THAT MEET THE CRITERIA THAT ARE IDENTIFIED FOR DISPOSAL ONLY IN ALTERNATIVE B

ID	Description	Legal Description	Size (Acres)
AKF02000-5013	Ester Dome Observatory	T1N, R3W, S25, FM	6
AKF02000-5010	Ski Boot Hill Extension— Geophysical Observatory-1	T1N, R1W, S17, FM	5
AKF02000-5011	Ski Boot Hill Extension— Geophysical Observatory-2	T1N, R1W, S17, FM	5
AKF03000-4122	Nulato West #02	T9S, R2E, KM	3,840
AKF03000-4146	Tanana #03	T2N, R20W, FM	3,840
AKF03000-4021	Anderson #01	T6S, R8W, S31, FM	269
AKF03000-4067	Julius #05	T5S, R8W, S10, FM	161
AKF03000-4022	Anderson #02	T6S, R8W, S15, FM	51
AKF03000-4063	Julius #01	T5S, R8W, Sections 1,12, FM	1,132
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AKF03000-4094	Minto #04	T2N, R10W, Sections 8–10, FM	1,920
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AKF03000-4132	Sagwon Airstrip	T1S, R14E, UM	2,564
AKF03000-3045	Irgnyiulk Lake	T12S, R4E, S8, UM	640
AKF03000-4068	Kakiagun Lake North	T12N, R3E, UM	2,747
AKF03000-4144	Tanana #01	T6N, R18W, FM	2,560
AKF03000-4145	Tanana #02	T5N, R19W, FM	3,174
AKF03000-4089	Minto-Elliott	T5N, R10W, Sec. 27–30, FM	2,557
AKF03000-4153	Toklat #02	T5S, R14W, FM	2,414
AKF03000-4028	Bettles #01	T24N, R19W, FM	1,280
AKF03000-4029	Bettles #02	T25N, R18W, FM	3840
AKF03000-4030	Bettles #03	T26N, R17W, FM	1,280
AKF03000-4091	Minto #01	T5N, R9W, T4N, R10W, FM	1,279
AKF03000-4092	Minto #02	T4N, R10W, FM	3,840
AKF02000-2002-	Ester Dome	T1N, R2W, S30, FM	310
AKF02000-2005	Mineral Survey Cache Creek	T1S, R2W, S3, FM	47
AKF02000-2004	Irish Gulch	T2N, R1E, S32, FM	120
AKF02000-5008	Taroka Road property	T1S, R2W, S30, FM	20
AKF02000-5009	Isberg Road property	T1S, R2W, S30, FM	20
AKF02000-5017	Mineral Survey Murphy Dome- Elliott Hwy.	T2N, R1E, S19, FM	36
AKF02000-5018	Mineral Survey Murphy Dome Road	T1N, R2W, S7, FM	60
AKF02000-5020	Mineral Survey Happy Creek	T1N, R2W, S35	40
AKF02000-5022	Mineral Survey Skoogy Creek	T2N, R1E, S1, FM	40
AKF02000-5024	Mineral Survey Cleary Hill Mine area	T3N, R1E, S25, FM	120

<b>ID</b>	<b>Description</b>	<b>Legal Description</b>	<b>Size (Acres)</b>
AKF02000-5024	Mineral Survey Cleary Hill Mine area	T3N, R2E, S30, FM	335
AKF02000-5025	Mineral Survey Fish Creek Mine area	T2N, 3E, S3, 4 FM	15
AKF02000-5025	Mineral Survey Fish Creek Mine area	T3N, 3E, S33, 34 FM	15
AKF02000-5026	Mineral Survey St. Patrick South	T1N, R2W, S35, FM	19
AKF02000-5026	Mineral Survey St. Patrick South	T1S, R2W, S4,5	600
AKF02000-5027	Mineral Survey Gold Hill	T1S, 2W, S3,4	40
AKF02000-5036	Green Road North Pole	T1S, R1E, S24, FM	154
AKF02000-5039	Hartman Lake	T6S, R4E, S2, FM	<7
AKF02000-5040	Harding Lake	T6S, R4E, S2, FM	10
AKF02000-5041	Harding Lake Material Site	T6S, R4E, S2, FM	11
AKF02000-5050	Upper Stone Boy Creek	T2S, R16E, FM	640
AKF03000-4131	Ruby East	T10S, R17E, KM	4,480
AKF03000-4159	Yukon River-Yistletaw	T8S, R8E, S1,2, KM	370

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# Appendix D

Relationship to BLM Policies, Plans, and  
Programs

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

BLM

Bureau of Land Management

RMP

resource management plan

# Appendix D. Relationship to BLM Policies, Plans, and Programs

The Bureau of Land Management (BLM) planning regulations provide that resource management plans (RMPs) be consistent with approved or adopted resource-related plans and other policies and programs of other federal agencies, state and local governments, and Indian tribes, so long as the guidance and RMPs are also consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands.

In Alaska, public land management is further directed by the Alaska National Interest Lands Conservation Act, the Alaska Native Claims Settlement Act, and the Alaska Statehood Act, particularly in regard to land tenure, access, and subsistence. Under the Alaska Statehood Act, the State of Alaska was allowed to select 104 million acres of federal land. Approximately 26 percent of BLM-managed land in the planning area is State-selected. The Alaska Native Claims Settlement Act requires the transfer of 44 million acres of public land to Alaska Native corporations. Approximately 7 percent of BLM-managed land in the planning area is Native-selected. Because conveyance of State- and Native-selected lands is ongoing, the implementation of planning decisions on selected lands may be delayed until final ownership is determined.

Below is a preliminary list of other policies, plans, and guides that the BLM considered during the planning process.

## D.1 POLICIES

BLM policies are outlined in a variety of sources, including manuals, handbooks, executive orders, and instruction memoranda (available at <https://www.blm.gov/policy/instruction-memorandum>).

## D.2 HANDBOOKS AND MANUALS

BLM manuals include a specific policy for each subject. The BLM Alaska Statewide Land Health Standards (BLM 2011) outlines the BLM Alaska's policy on land health.

- BLM Manual 1601, Land Use Planning Manual (BLM 2000)
- BLM Handbook H-1601-1, Land Use Planning Handbook (BLM 2005)
- BLM Handbook H-1790-1, National Environmental Policy Handbook (BLM 2008)
- A Desk Guide to Cooperating Agency Relationships and Coordination with Intergovernmental Partners (BLM 2012)

## D.3 PLANS

### D.3.1 BLM Plans

- Eastern Interior RMP
- Kobuk-Seward Peninsula RMP
- Fort Greely RMP
- National Petroleum Reserve Alaska Integrated Activity Plan—2013 (under revision)
- Dalton Highway Management Area Integrated Invasive Plant Strategic Plan—2013
- Various habitat management plans for Areas of Critical Environmental Concern
- Iditarod National Historic Trail Comprehensive Management Plan, BLM, 1986

**D.3.2 Other Federal Agency Land Use Plans**

- Koyukuk/Northern Unit Innoko/Nowitna National Wildlife Refuges Comprehensive Conservation Plan—2009
- Kanuti National Wildlife Refuge Revised Comprehensive Conservation Plan – 2008
- Arctic National Wildlife Refuge Comprehensive Conservation Plan—2015
- Yukon Flats National Wildlife Refuge Comprehensive Conservation Plan—1987
- Gates of the Arctic National Park General Management Plan—1986 (being amended)
- Denali National Park and Preserve General Management Plan and amendments—1896, 1997, and 2006
- U.S. Army Garrison Alaska Integrated Natural Resource Management Plan—2013
- U.S. Army Transformation Environmental Impact Statement—2004

**D.3.3 State of Alaska Plans**

- Eastern Tanana Basin Area Plan—2015
- Yukon-Tanana Area Plan—2014
- Wildlife Action Plan—2015
- Aquatic Nuisance Species Management Plan—2002

**D.3.4 Local Government Plans**

- North Slope Borough Comprehensive Plan—2005 and 2019
- North Star Borough Regional Comprehensive Plan—2005
- Denali Borough Comprehensive Plan and amendments—adopted 2009, amended 2015
- Northwest Arctic Borough Comprehensive Plan—1993 (under revision)

**D.3.5 Tribal or Alaska Native Claims Settlement Act Corporation Plans**

- Arctic Slope Regional Corporation 2018–2023 Strategic Plan

#### **D.4 REFERENCES**

- BLM (U.S. Department of the Interior, Bureau of Land Management). 2000. 1601—Land Use Planning. BLM Manual. Rel. 1-1666. Washington, DC. November 22, 2000.
- \_\_\_\_\_. 2005. H-1601-1—Land Use Planning Handbook. Rel. 1-1693. Washington, DC. March 11, 2005.
- \_\_\_\_\_. 2008. H-1790-1—National Environmental Policy Act. Rel. 1-1710. BLM Washington Office. January 30, 2008.
- \_\_\_\_\_. 2011. Alaska Statewide Land Health Standards. Alaska State Office. Anchorage. September 2, 2011.
- \_\_\_\_\_. 2012. A Desk Guide to Cooperating Agency Relationships and Coordination with Intergovernmental Partners. BLM Washington Office.

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# Appendix E

Alaska National Interest Lands Conservation  
Act (ANILCA) Access—  
Implementing Sections 811 and 1110(a)

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

ANILCA	Alaska National Interest Lands Conservation Act
BLM	Bureau of Land Management
TMP	travel management plan

# Appendix E. Alaska National Interest Lands Conservation Act (ANILCA) Access— Implementing Sections 811 and 1110(a)

This section provides guidance on implementing Sections 811 and 1110(a) of ANILCA, as follows:

- Under Section 811 of ANILCA, the Secretary of the Interior shall permit on public lands the appropriate use, for subsistence purposes, of snowmachines, motorboats, and other means of surface transportation traditionally used for such purposes by residents (see ANILCA Section 102[3] for the definition of public lands [National Park Service 1980]).
- Under Section 1110 of ANILCA, the Secretary shall permit on conservation system units, national recreation areas, national conservation areas, and public lands designated as wilderness study the use of snowmachines, motorboats, airplanes, and nonmotorized surface transportation methods for traditional activities and for travel to and from villages and homesites.

Pursuant to ANILCA Sections 811 and 1110, such uses are subject to reasonable regulation. The National Park Service and U.S. Fish and Wildlife Service have developed regulations to implement Section 811; while the Bureau of Land Management (BLM) has not developed similar regulations, it will follow a process similar to those promulgated by the National Park Service and the U.S. Fish and Wildlife Service (36 Code of Federal Regulations 13.460[b] and 50 Code of Federal Regulations 36.12[b]).

The BLM would implement restrictions on and closures to the use of snowmachines, motorboats, and other means of surface transportation traditionally used for subsistence purposes by rural residents (ANILCA Section 811[b]); however, it would do this only if the BLM Authorized Officer determines that such use is causing or is likely to cause an adverse impact on public health and safety, resource protection, historic or scientific values protection, subsistence uses, endangered or threatened species conservation, or other purposes, values, and uses for which the lands are being managed under the Federal Land Policy and Management Act or designated by ANILCA.

The BLM will follow the regulations implementing Section 1110, as found in 43 Code of Federal Regulations 36. The BLM will implement restrictions on and closures to snowmachines, motorboats, aircraft, and nonmotorized surface transportation methods for traditional activities, such as domestic dogs, horses, and other pack or saddle animals. Restrictions or closures would be implemented only if the BLM Authorized Officer makes a finding, pursuant to 43 Code of Federal Regulations 36.11(h), that such uses would be detrimental to the resource values of the area.

To meet the requirements of Sections 811 and 1110), decisions in this draft resource management plan/environmental impact statement are listed as *proposed* supplemental rules. In addition, because the transportation and travel management plan (TMP) is deferred, proposed interim supplemental rules are identified to address more immediate issues until the TMP is completed.

After the resource management plan/environmental impact statement record of decision and travel management decision record are signed, the BLM will undertake the following process for both interim and final decisions:

- Publish the notice of proposed supplemental rules in the *Federal Register* and other formats and locations reasonably calculated to inform residents in the affected vicinity
- Allow a minimum of 60 days for the public comment period on the proposed supplemental rules
- Hold public hearings in the affected communities and other locations deemed appropriate by the BLM
- Respond to comments and publish the final supplemental rules in the *Federal Register*
- Make the final supplemental rules known by the following methods (at a minimum):
  - Make supplemental rules and maps with relevant information available for public inspection at the BLM office and at other places convenient to the public and at locations and in formats reasonably calculated to inform residents in the affected vicinity
  - Post signs at appropriate sites
  - List supplemental rules and show relevant maps on BLM brochures and websites

If the decision in the record of decision is to develop a step-down transportation and TMP, the BLM will follow the supplemental rule process described above to address any TMP decisions that are covered by Sections 811 and 1110. This rule process will be completed after the decision record on the transportation and TMP.

## **E.1 REFERENCE**

National Park Service. 1980. Alaska National Interest Lands Conservation Act (ANILCA). XXIII. Appendix. Public Law 96-487. December 2, 1980. Internet website: <https://www.nps.gov/locations/alaska/upload/ANILCA-Electronic-Version.PDF>.

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# Appendix F

Standard Operating Procedures and  
Fluid Mineral Leasing Stipulations

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

ACEC	areas of critical environmental concern
AO	Authorized Officer
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
EIS	environmental impact statement
NEPA	National Environmental Policy Act
NNIS	nonnative invasive species
RMP	resource management plan
SOP	standard operating procedure
USFWS	U.S. Fish and Wildlife Service



# Appendix F. Standard Operating Procedures and Fluid Mineral Leasing Stipulations

## F.1 INTRODUCTION

The Bureau of Land Management (BLM) has developed standard operating procedures (SOPs) and fluid mineral leasing stipulations to protect resources. These guidelines were based on the standards and guidelines in the Alaska Statewide Land Health Standards (Instruction Memorandum AK 2004-023) and by the goals outlined in this resource management plan (RMP)/environmental impact statement (EIS).

The SOPs are requirements, procedures, management practices, and design features that the BLM will use to protect resources. Leasing stipulations are requirements to reduce impacts on natural resources from fluid mineral exploration and development. The SOPs and leasing stipulations generally do not restate existing requirements in regulations or laws, including state laws. Regulations or laws may require conditions that are more stringent than those presented in this section. Chapter 6 of the Analysis of the Management Situation, Central Yukon RMP<sup>1</sup> includes a partial list of mandates and authorities pertaining to federal lands.

## F.2 STANDARD OPERATING PROCEDURES

SOPs apply to all actions on public land, whether the BLM implements them or if it authorizes them and they are implemented by another individual, organization, or agency. The SOPs were based on the best information available during development of the Central Yukon RMP/EIS.

The BLM will apply the SOPs to its actions and to activities that it authorizes, as follows: Federal Land Policy and Management Act leases and permits, special recreation permits, oil and gas activities, renewable energy activities, mining plans of operation, and authorizations for rights-of-way.

For fluid mineral leasing activities, SOPs would apply, in addition to the standard lease terms and leasing stipulations. Only those SOPs concerning resources that are potentially affected by the action would be applied to authorized permits and authorizations. For example, SOPs protecting caribou habitat would not apply to projects that are not in caribou habitat. They may be modified through site-specific analysis of subsequent authorizations but still must meet the goals and objectives of the RMP/EIS.

SOPs will continue to evolve as better resource information is gained and changes in technology become available. Modifications to SOPs may be appropriate if other measures are taken to protect resources that would result in the same or reduced impact.

SOPs are considered during the site-specific analysis during activity-level planning and, if adopted, are applied as conditions of approval to land use authorizations and permits.

If a particular SOP is demonstrated to be infeasible or not practicable for a specific activity or authorization, then exclusion or modification of that SOP, or deployment of an alternative SOP, may be considered, at the discretion of the Authorized Officer (AO).

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<sup>1</sup>Bureau of Land Management. 2016. Analysis of the Management Situation, Central Yukon Resource Management Plan. Central Yukon Field Office. Fairbanks, Alaska. April 2016. Internet website: <https://eplanning.blm.gov/eplanning-ui/project/35315/570>.

SOPs are not selected as a condition of the permitted activities if the applicant has included them as part of the proposal or has identified an alternative. An example of the latter is the adoption of an acceptable best management practice to meet stated resource management objectives. Applicants are encouraged to consider alternative methods, best management practices, and design features for the BLM's consideration during the permitting process. If an applicant does not include alternatives for agency consideration, the SOPs identified will be incorporated into an approval for a proposed activity.

The BLM AO or representative is responsible for ensuring that the intent of the SOPs presented in this RMP/EIS are followed and that permittees comply with the conditions of the authorization. Noncompliance will be documented, and a notice may be sent to the permittee, along with corrective actions and a time frame in which the actions are to be completed.

The following is a complete list of the SOPs that the BLM would apply during implementation of the RMP/EIS.

### **F.2.1 Air (AIR)**

**SOP AIR-1** Consider smoke effects on human health, communities, recreation, and tourism in all wildland and prescribed fire management activities.

**SOP AIR-2** To prevent degradation of the lands and protect health, the following elements will be adhered to:

- a) Before National Environmental Policy Act (NEPA) analysis begins for an application to develop a central processing facility, airstrip, road, gas compressor station, or other potential *substantial* air pollutant emission source, the permittee will submit for BLM approval a complete list of reasonably foreseeable air pollutant emissions, including criteria air pollutants and hazardous air pollutants designated under authority of the Clean Air Act, as amended.
- b) The BLM may require air quality modeling for purposes of analyzing project direct, indirect, or cumulative impacts on air quality, air quality related values, and hazardous air pollutants, if necessary for BLM NEPA analysis and should no recent modeling analysis be available as a proxy. The BLM may require air quality modeling depending on the following:
  - i. The magnitude of potential air emissions from the project
  - ii. Proximity to a federally mandated Class I area
  - iii. Proximity to a population center
  - iv. Location in or proximity to a nonattainment or maintenance area
  - v. Meteorological or geographic conditions
  - vi. Existing air quality conditions
  - vii. Magnitude of existing development in the area
  - viii. Issues identified during the NEPA process
- c) If air quality modeling indicates that project-related emissions cause or contribute to unnecessary or undue degradation of the public lands, or exceedances of the National Ambient Air Quality Standards/Alaska Ambient Air Quality Standards, air quality related values, and hazardous air pollutants levels, or if it fails to protect health (either directly or through use of subsistence resources), then the BLM may require the permittee to change their proposal or propose mitigation

to reduce impacts. Project changes and mitigation measures will be analyzed through appropriate NEPA analysis to determine effectiveness.

- d) Depending on the significance of the predicted impacts, a lessee proposing a central processing facility or other facility with potentially significant impacts on air quality may be required to monitor air pollutant emissions and/or air quality impacts for at least 1 year of operation. Depending upon the initial monitoring results, the BLM AO may require additional monitoring.

If monitoring indicates impacts would fail to protect health (either directly or through use of subsistence resources), the BLM AO may require changes in the lessee's activities at any time to reduce these emissions, such as using cleaner burning fuels or installing additional emission control systems.

### **F.2.2 Soils (SOI)**

**SOP SOI-1** When the organic mat is thick enough to be practically segregated, all organic material will be saved in a separate area from overburden to the extent practicable (defined in 43 Code of Federal Regulations [CFR], Subpart 23.3 [d]) for future use.

**SOP SOI-2** When available, stockpiled soil and overburden will be spread over mine tailings and stabilized to minimize erosion. The shape of contoured tailing and overburden should approximate the shape of the surrounding terrain.

**SOP SOI-3** At sites where stockpiled soil quantities are insufficient to distribute over the entire disturbed area, specific areas best suited for reclamation should be selected to receive organic material. Use organic material from adjacent areas, if approved. At sites where organic material is not available, stockpiles of fine inorganic material may be used in place of the organics.

**SOP SOI-4** Roadways will be ditched on the uphill side. Culverts or low water crossings will be installed at suitable intervals. Spacing of drainage devices and water bars will be appropriate for the road gradient and soil erodibility of the site. Water bars will be placed across reclaimed roads.

**SOP SOI-5** Prudent use of erosion control measures, including diversion terraces, riprap, matting, temporary sediment traps, and water bars, will be employed as necessary to control soil erosion. The type and location of a sediment control structure, including construction methods, will vary by site-specific characteristics.

**SOP SOI-6** Snow and ice bridges will be removed, breached, or slotted before spring ice breakup. Ramps and bridges will be substantially free of soil and debris.

**SOP SOI-7** Overland moves and heavy equipment use are as follows:

- Whenever possible, overland moves that are a part of permitted operations will occur during winter, when frost and snow cover is sufficient to minimize vegetation and soil disturbance and compaction. The BLM AO will determine the date when sufficient frost and snow cover exists; no overland moves should occur until these conditions are met.
- Design and locate winter trails and ice roads for overland moves to minimize compaction of soils and breakage, abrasion, compaction, or displacement of vegetation.
- Clearing of drifted snow is generally allowed, to the extent that vegetation ground cover is not disturbed.

- When access is required in snow-free months, routes over naturally hardened sites will be selected to avoid trail braiding, and wetlands and permafrost soil will be avoided. The permittee will employ vehicle types and methods that minimize vegetation and soil disturbance; examples of such vehicles are aircraft or watercraft and low-ground-pressure vehicles.
- The use of heavy machinery in saturated soil conditions will be limited to machinery designated as low ground pressure, unless mats or other mitigation are employed, subject to AO approval.

**SOP SOI-8** Areas disturbed during project operation or construction will be restored to be as near to pre-project conditions as practical. Wetland topsoil will be selectively handled. Mulching, erosion control, and fertilization may be required to achieve acceptable stabilization of surface materials. Interseeding, secondary seeding, or staggered seeding may be required to accomplish revegetation objectives. Follow-up seeding or corrective erosion control measures may be required on areas of surface disturbance where reclamation fails. Corrective erosion control measures could include broadcasting woody debris, planting viable portions of live shrubs (sprigging), and transplanting live vegetation from adjacent areas.

**SOP SOI-9** Disturbed areas are expected to be reclaimed as soon as possible after the disturbance, with efforts continuing until the site is stabilized.

**SOP SOI-10** Reduce disturbance of soils by minimizing footprint of surface-disturbing activities, consolidating access to minimize the number of routes, and requiring prompt implementation of methods to mitigate soil erosion.

**SOP SOI-11** Avoid disturbance of the vegetation mat and permafrost soil areas whenever feasible.

**SOP SOI-12** For long-term storage of soil stockpiles, provide protective cover, such as organic mulch, herbaceous vegetation, jute matting, or other erosion-preventative fabric.

**SOP SOI-13** Surface-disturbing proposals involving construction on slopes greater than 3:1 will include an approved erosion control strategy and a topsoil segregation/restoration plan. Sites will be properly surveyed and designed by an engineer registered in the State of Alaska; the BLM will approve the sites prior to construction and maintenance.

### **F.2.3 Watersheds and Fisheries (WAT/FISH)**

**SOP WAT/FISH-1** Road crossings or low water crossings (fords) will not be permitted in the spawning habitat of fish species during spawning or the immobile life stages of fish (eggs and alevins), unless the applicant can demonstrate to the AO that on a site-specific basis impacts would be minimal.

**SOP WAT/FISH-2** New, replacement, and reconstructed stream crossing structures, such as bridges and culverts, will be designed to accomplish the following:

- Convey flood flows consistent with the purpose and period of use of the structure (e.g., seasonal or year-round) under natural conditions, consistent with BLM Manual 9112
- Preserve or improve fish passage
- Maintain channel integrity
- Provide slope protection (e.g., riprap) on both the inlet and outlet end of culverts and on approach embankments of bridges

- Incorporate adjacent reclamation, such as willow cuttings, wattles, and brush layering, on the disturbed areas upstream and downstream of the abutments. Incorporate, where possible, root wads or other bioengineering techniques

**SOP WAT/FISH-3** Drilling is prohibited in the 100-year floodplain of fish-bearing rivers and streams, and fish-bearing lakes, except where the applicant can demonstrate to the AO on a site-specific basis that impacts would be minimal, or the AO otherwise determines the drilling is necessary (e.g., for bridge design).

**SOP WAT/FISH-4** Pesticides and other toxicants will be applied in a manner that does not measurably inhibit the attainment of desired conditions or adversely impact priority aquatic species.

**SOP WAT/FISH-5** All water intakes will be screened and designed to prevent fish intake and mortality, in accordance with Alaska Department of Fish and Game requirements.

**SOP WAT/FISH-6** For surface-disturbing activities with the potential to affect stream channel integrity, reduce riparian functioning condition, or, reduce the Watershed Condition Rating, baseline geomorphic and hydrologic data will be required before the surface is disturbed. The BLM will be available to advise operators on the exact type of information and detail as needed to meet this requirement.

**SOP WAT/FISH-7** In mining operations and fluid mineral leasing operations, all process water and groundwater seeping into an operating area must be treated appropriately. This will be done before such water re-enters the natural water system.

**SOP WAT/FISH-8** Settling ponds will be cleaned out and maintained at appropriate intervals to comply with state and federal water quality standards. Fine sediment captured in the settling ponds will be protected from washout and left in a stable condition at the end of each field season.

**SOP WAT/FISH-9** Streams altered by channeling, diversion, or damming will be restored to a condition that will allow for proper functioning of the riparian zone and stream channels. Active streams will be returned to the natural water course. Alternatively, a new channel will be created at the stream's lowest energy state (valley bottom). The channel will approximate the old natural channel in shape, gradient, and meander frequency by using a stable channel design.

**SOP WAT/FISH-10** All permitted operations will be conducted so as not to block any stream or drainage system, unless temporarily authorized by the AO.

**SOP WAT/FISH-11** Structural and vegetation treatments in riparian and wetland areas will be compatible with the capability of the site, including the system's hydrologic regime. The treatments will contribute to maintenance or restoration of proper functioning condition.

**SOP WAT/FISH-12** When a stream must be crossed, the crossing will be as close as possible to a 90-degree angle to the riparian area and stream, and at as low a bank angle as possible. Stream crossings will be made at stable sections in the stream channel, based on Rosgen channel-type evaluations.

**SOP WAT/FISH-13** The storage of fuel drums, the establishment of stationary fuel storage facilities, and the storage of hazardous materials will not occur within riparian zones (from the ordinary high-water mark to the outer edge of riparian vegetation) or within 100 feet of a water body, whichever is greater. Storage also will not be permitted within 500 feet of the active floodplain of any fish-bearing water body when practicable.

**SOP WAT/FISH-14** Vehicular travel up and down streambeds, except by watercraft, is prohibited. The exception is if ice is frozen to a sufficient depth to sustain the activity and the streambanks are a sufficient distance apart to allow for passage without adverse impacts on them. Rivers and streams will be crossed at shallow riffles, from point bar to point bar, whenever possible.

**SOP WAT/FISH-15** Stream and marsh crossings shall be designed and constructed to ensure free passage of fish, reduce erosion, maintain natural drainage, and minimize adverse effects on natural streamflow.

- To allow for sheet flow and floodplain dynamics and to ensure passage of fish and other organisms, bridges are preferred over culverts. However, culverts may be permitted on smaller streams, if they are large enough to avoid restricting fish passage or adversely affecting natural streamflow and floodplain function.
- The BLM will require fish sampling at any stream crossing where flow is channelized. The permittee may be required to gather these data, or this requirement may be waived if an acceptable dataset already exists and is approved by the AO. Alternatively, the permittee may assume fish presence and design accordingly.
- Stream and marsh crossings are to be designed on at least 1 year of relevant hydrologic data.
- To ensure that crossings provide for fish passage, all proposed crossing designs would adhere (as applicable) to the standards outlined in fish passage design guidelines developed by the U.S. Fish and Wildlife Service (USFWS) Alaska Fish Passage Program (USFWS 2019), USFWS Culvert Design Guidelines for Ecological Function (USFWS 2020), and Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings (Forest Service 2008).
- The crossing structure design shall account for permafrost, sheet flow, additional freeboard during breakup, and other unique conditions of the planning area.

**SOP WAT/FISH-16** Use existing upland material sources that meet suitability and economic needs, whenever possible. Avoid using material from wetlands, lakes, and active or inactive floodplains, unless no feasible upland alternative exists. Sales or permits for in-stream gravel extraction within an active channel will not be allowed in priority fish species spawning habitat.

#### **F.2.4 Vegetation and Nonnative Invasive Species (VEG/NNIS)**

**SOP VEG/NNIS-1 NNIS of Concern:** The nonnative invasive species (NNIS) of Concern are all terrestrial and aquatic NNIS species identified by the BLM at the time of the permitted action. Planning, inventory, treatment, and monitoring are required for all permitted activities to ensure that the permitted (and associated) activities do not contribute to, or result in, the introduction, establishment, or spread of invasive species.

**SOP VEG/NNIS-2 Acknowledgement of invasive species presence:** Invasive plants and aquatic organisms will be addressed in writing for every proposed action (and renewal or modifications to previously permitted activities) on BLM-managed lands, including BLM projects and activities.

**SOP VEG/NNIS-3 During activity:** If NNIS of Concern are detected at any time during any permitted activity, the permittee will report them to the BLM AO within 30 days of detection. The notification will include plant samples or photographs, or both, for identification, as well as global positioning system points or detailed location descriptions.

**SOP VEG/NNIS-4 Eradication:** For all projects where NNIS of Concern are detected (before, during, or after the permitted activity) and eradication is deemed necessary by the BLM, the permittee will describe in writing the proposed eradication methods. The BLM will approve only those eradication plans that meet the requirements described in both the current BLM National Vegetation Management EIS and regionally specific Integrated Pest Management Plan. The application of herbicide or pesticide by the permittee will require the BLM's prior authorization and will be restricted to approved application methods and active ingredients. Additional site-specific environmental analysis may be required.

**SOP VEG/NNIS-5 Site rehabilitation:** All revegetation methods that require importation of materials that may include vegetative matter will only contain native plant species. This includes but is not limited to materials salvaged from the site and respread; weed-free seed or seedlings; weed-free topsoil or mulch; or material gathered under a special permit for site revegetation.

**SOP VEG/NNIS-6 Projects that require Invasive Species Monitoring Plans:** For some permitted activities, the BLM will require an Invasive Species Monitoring Plan that describes post-activity monitoring and includes a Hazard Analysis Critical Control Point Evaluation. An Invasive Species Monitoring Plan will be required for all permitted activities that involve any of the following:

- Ground disturbance greater than 2 acres
- Ground disturbance of more than 0.5 miles in total length
- Operations within waterways or involving water handling operations
- Importation (from another part of the state or beyond) of equipment or substances, including weed-free seed, straw, gravel, topsoil, or mulch that could harbor invasive species

**SOP VEG/NNIS-7 Post-activity monitoring timeline:** Initial post-activity monitoring for NNIS of Concern will be completed during the active growing season, within 1 year of project completion. If NNIS of Concern are identified, an eradication plan would be established as an addendum to the invasive species monitoring plan.

**SOP VEG/NNIS-8 Collaborative Networks:** At the discretion of the BLM AO, permittees may be encouraged to work with surrounding land management agencies/owners to establish and/or maintain Cooperative Weed Management Areas or similar collaborative networks.

**SOP VEG/NNIS-9** Off-highway vehicle use will comply with designations in the area and may be subject to further restrictions to protect vegetation, soils, or wildlife habitat.

**SOP VEG/NNIS-10** Disturbed stream banks will be recontoured and revegetated, or other protective measures will be taken, to prevent soil erosion into adjacent waters and provide stream bank stability. Active stream bank revegetation or other stabilization techniques (e.g., ADFG 2005) will be required for all erosion-prone areas, such as stream banks and near stream areas. Seeding or fertilization, or both, will be required for sites with little to no organic content, that is, sites that are essentially bare mineral soil.

**SOP VEG/NNIS-11** At the conclusion of operations, roads and other disturbed areas will be recontoured and revegetated, in accordance with an approved reclamation plan or plan of operations. Revegetation will occur through seeding of native seed or by providing for soil conditions that allow the site to revegetate naturally, whichever provides the most effective means of reestablishing ground cover and minimizing erosion. The final land surface will be scarified to provide seed traps and erosion control.

**SOP VEG/NNIS-12** Riparian vegetation, if removed during operations, will be reestablished.

**SOP VEG/NNIS-13** When authorizing mineral material sale sites, avoid priority plant species and communities if feasible. If sales are authorized in vegetated areas, all overburden vegetation mats, and associated natural debris will be saved and appropriately stored for use during site reclamation to facilitate vegetation recovery.

**SOP VEG/NNIS-14** Existing roads and trails will be used for access, where feasible, rather than creating new roads and trails.

**SOP VEG/NNIS-15** Where possible, ground operations, including those requiring moving heavy equipment overland, will occur when frost and snow cover are at sufficient depths, and 3 inches of snow water equivalent, to prevent long-term damage to tundra or wetland vegetation and soils. Ground operations will be avoided during spring break-up.

**SOP VEG/NNIS-16** The BLM may require modifications to or may disapprove a proposed activity that is likely to result in an impairment to the continued existence of a special status species or result in the destruction or adverse modification of a designated or proposed critical habitat.

**SOP VEG/NNIS-17** All ground-disturbing authorizations, permits, and sales will include stipulations to prevent the introduction and/or spread of invasive nonnative plants and noxious weeds.

## **F.2.5 Wildlife (WILD)**

**SOP WILD-1** For facilities that occupy more than 3 acres in known or suspected migration corridors (caribou) or movement corridors (sheep), and which have the potential to significantly impact such migration or movement, the BLM AO may require the development of an ecological land classification map (or similar instrument) of the development area as part of the permitting process. The map will integrate geomorphology, surface form, and vegetation at a scale, resolution and level of positional accuracy that allows for detailed analyses of alternative development. The map would be provided to the BLM AO in advance of issuance of an authorization; such that ground-based wildlife and/or vegetation habitat surveys may be conducted prior to BLM AO approval of exact facility location.

**SOP WILD-2** Employ industry-accepted best management practices to prevent raptors and other birds from colliding with or being electrocuted by utility lines, alternative energy structures, towers, and poles.<sup>2</sup> In important bird areas, if possible, bury utility lines. Where raptors are likely to nest in human-made structures (such as cell phone towers) and such use could impede operation or maintenance of the structures or jeopardize the safety of the raptors, equip the structures with devices engineered to discourage raptors from building nests. An alternative is to equip the structures with nesting platforms that would safely accommodate raptor nests without interfering with structure performance.

Follow best management practices, in accordance with the Avian Power Line Interaction Committee, for power lines. Guidelines for towers should follow those of the USFWS;<sup>3</sup> this is separate from power lines and preventing electrocution of birds.

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<sup>2</sup>APLIC 2006. Suggested Practices for Avian Protection on PowerLines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C and Sacramento, CA. Internet website: <http://www.aplic.org/>.

<sup>3</sup>Siting, Construction, Operation, and Decommissioning of Communications Towers. September 14, 2000.



**SOP WILD-3** The use of guy wires on towers should be avoided, if possible; however, if tall towers require the use of guy-wired apparatus, regardless of purpose, they will be marked in accordance with USFWS guidance,<sup>4</sup> or a more current version of that guidance.

**SOP WILD-4** Permittees must take the following precautions to avoid attracting wildlife to food, garbage, and other attractants:

- Storage of food in bear-proof containers
- Use bear-resistant containers for all garbage, petroleum products, and other bear attractants.
- Prohibition from feeding wild animals

**SOP WILD-5** To prevent the entrapment of small animals, particularly birds, all hollow pipes or tubes that are 2 to 10 inches in diameter will be filled or capped prior to installation (unless fixed horizontally). Mining claim posts will be capped.

**SOP WILD-6** The optimal state-of-the-science technology and methodologies will be utilized by the BLM and permittees to prevent the nesting, denning, or shelter of wildlife (especially ravens, raptors, and foxes where ground-nesting birds are sensitive to associated artificial increases in predators).

**SOP WILD-7** Permitted activities in the vicinity of eagle nests must be conducted in accordance with the Bald and Golden Eagle Protection Act and USFWS Alaska Region recommendations. That may include restrictions on activities such as buffers around nests or seasonal restrictions on activities.

**SOP WILD-8** The permittee will ensure that all associated operations are conducted to avoid or minimize impacts to migratory birds. The primary mechanism to avoid and minimize impacts is to plan to conduct work that may disturb wildlife outside of the nesting season. The USFWS provides region-specific guidance for Alaska on dates to avoid land disturbance and vegetation clearing. BLM may require surveys for species deemed sensitive prior to permitted activity.

**SOP WILD-9** The BLM may require applicants to conduct inventories for special status species and to avoid or minimize impacts on these species, pursuant to BLM policy and the Endangered Species Act. The BLM may recommend modifications to any proposals. This would be to further the BLM's conservation and management objective to not approve any activity that would contribute to a need to list such a species or its habitat. The BLM may not approve or may require modifications to a proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened and endangered or sensitive species or result in the destruction or adverse modification of a designated or proposed critical habitat.

**SOP WILD-10** Where practicable, authorized use may be redirected to protect special status species habitat, to enhance indigenous animal population, or to otherwise maintain public land health through avoidance of sensitive habitat. If impacts on special status species populations and habitats cannot be avoided, the applicant (or the BLM for internal actions) will develop mitigation measures to reduce impacts.

**SOP WILD-11** Design and construct rights-of-way to avoid and minimize impediments to the free movement of wildlife and to allow for the safe, unimpeded passage of the public, with deference to those participating in traditional subsistence activities. Applicants must demonstrate that they have considered such features in their project design and construction planning. Examples of such practices include:

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<sup>4</sup>Ibid.

- Aboveground pipelines will be elevated a minimum of 7 feet, measured from the ground to the bottom of the pipeline at vertical support members to facilitate wildlife movement under the pipe
- Ramps over pipelines (or burial of pipelines) may be required in areas where facilities or terrain may funnel wildlife movement
- A minimum distance of 500 feet will be maintained between aboveground pipelines and roads.
- Road design and construction no higher than necessary to accommodate their intended purpose.

**SOP WILD-12** Locate and/or minimize linear rights-of-way or special use authorizations to reduce disturbance to identified important wildlife habitat. Coordinate road construction and use among authorization holders and applicants. Close and reclaim existing duplicate roads.

### **F.2.6 Wildland Fire Management (FM)**

**SOP FM-1** Permittees and casual users will be held financially responsible for any actions or activity that results in a wildland fire. Costs associated with wildland fires include damage to natural or cultural resources and costs associated with any suppression action taken on the fire.

**SOP FM-2** The BLM will not be held responsible for protecting permittees' structures or their personal property from wildland fire. It is the responsibility of permittees and lessees to mitigate and minimize risk to their personal property and structures from wildland fire, following the conditions in their permits.

**SOP FM-3** Gas-powered equipment must be equipped with manufacturer-approved and functional spark arrestors.

**SOP FM-4** To avoid potential impacts on aquatic life, the application of fire chemicals, including retardant, will be avoided within 300 feet of waterbodies. Deviations are acceptable when life or property is threatened, and fire chemicals are reasonably expected to alleviate the threat. The BLM AO may approve a deviation if potential damage to natural resources outweighs the impact to aquatic resources.

**SOP FM-5** Off-road use of heavy equipment and other motorized vehicles in wildland fire suppression activities will be conducted in a manner that minimizes erosion, riparian area damage, water quality degradation, fish habitat degradation, and stream channel sedimentation.

**SOP FM-6** Off-road use of heavy equipment and other motorized vehicles requires approval of the BLM AO.

**SOP FM-7** Repair suppression damage in accordance with a repair plan provided by the BLM Field Office to the protection agency.

**SOP FM-8** Utilize active management best management practices such as mowing; pre-commercial and commercial thinning; manual and mechanical cutting; linear fuel breaks; biological and chemical treatment; access road maintenance; prescribed fire and controlled burns; timber salvage; timber and biomass sales; piling; yarding; removing vegetative material; selling of vegetative products (including, but not limited to firewood, biomass, timber, and fence posts); application of pesticides, bio-pesticides and herbicides; seeding native species; invasive species management; jackpot and pile burning; fuels conversion to a less flammable type such as spruce to hardwoods; shear blading; and shaded fuel breaks.

**SOP FM-9** Utilize fire management options to capitalize on resource benefits from wildfires where possible.

**SOP FM-10** Maximize the use of natural barriers and physical features (such as roads and rights-of-ways) within landscapes when designing fuel breaks and other vegetative treatments.

### **F.2.7 Visual Resource Management (VRM)**

**SOP VRM-1** Facilities allowed in the viewsheds of developed recreation sites shall be screened with vegetation or blend in with the color or line form of the surrounding landscape. Consideration to the primary uses of established utility and transportation corridors will be considered where appropriate as the line and form of the surrounding landscape.

### **F.2.8 Forestry (FOR)**

**SOP FOR-1** Timber disposals will include buffers to prevent disturbance of priority fish species habitat and sedimentation into streams. Buffer widths will be dependent on harvest method, season of harvest, equipment used, slope, vegetation, and soil type. Winter operations will be considered to avoid the need for road building and to reduce impacts on soils, vegetation, and riparian areas.

### **F.2.9 Mineral Materials and Locatable Minerals (MIN-LMM)**

**SOP MIN-LMM-1** Whenever possible, use existing upland material sources that meet suitability and economic needs. Using material from wetlands, lakes, and 100-year floodplains will be avoided, unless no feasible upland alternative exists. Sales or permits for in-stream gravel extraction within an active channel will not be allowed in priority fish species spawning habitat. Mineral material extraction from lakes, active floodplains, riparian zones, wetlands, deltas, lakes, and active or inactive stream or river channels should be avoided and is subject to constraints developed through project-specific NEPA analysis.

**SOP MIN-LMM-2** When authorizing mineral material sale sites, avoid habitats important to local fish populations (such as fish spawning and overwintering sites). Avoid key geomorphic features, such as the river cut banks and associated riparian zones and springs, wetlands, and active channels of small, single channel rivers. Avoid mineral material extraction from habitats important to wildlife populations, such as (but not limited to) calving areas and raptor nesting sites. Sites directly affecting these habitats should not be considered unless alternative sites are not available.

When authorizing mineral material sale sites, avoid priority plant species and communities.

**SOP MIN-LMM-3** When mining gravel in 100-year floodplains, maintain buffers that will constrain active channels to their original locations and configurations.

**SOP MIN-LMM-4** Use existing access routes during the season for which the route was designed and developed.

**SOP MIN-LMM-5** Upon closure of mining operations, dispose of all mining improvements, deleterious materials and substances, contaminants, and hazardous and solid waste. The latter includes scrap steel, derelict mining machinery, and parts. These materials will be disposed of in accordance with applicable federal and state laws and regulations. Burial is not an acceptable form of disposal.

### **F.2.10 Lands and Realty (LR)**

**SOP LR-1** Consider previously disturbed sites prior to allowing uses on undisturbed sites.

### **F.2.11 Travel and Transportation Management (TTM)**

**SOP TTM-1** For BLM permitted activities require that ice thickness be tested before equipment over 1,500 pounds curb weight is transported; this would be done to confirm adequate ice, as determined by the U.S. Army Corps of Engineers' ice engineering table.

Some travel up and down streambeds would be allowed by the individual vehicles collecting snow from river drifts or ice aggregate from the channel (where ice is grounded). Use of the streambed as the primary ice road or snow trail route is prohibited. Rivers and streams shall be crossed at areas of grounded ice, whenever possible.

**SOP- TTM-2** For BLM permitted activities, petroleum, oil, and lubricants could be transported in amounts greater than 1,000 gallons over ice only under the direction of a licensed professional engineer.

### **F.2.12 National Trails (NAT)**

**SOP NAT-1** To eliminate, minimize, or limit the spread of NNIS on BLM-managed lands, the BLM will authorize feed and mulch (hay cubes, hay pellets, or straw, for example) that are certified as weed-free through the Alaska Weed-Free Forage Certification Program (or other programs with approval of the BLM AO). Where Alaska-certified sources are not available, locally produced forage and mulch may be used, with the approval of the BLM AO. If no certified weed-free or local sources are available, then other products may be used, with the approval of the BLM AO.

### **F.2.13 Hazardous Materials and Health and Human Safety (HAZMAT)**

**SOP HAZMAT-1** The burial of garbage is prohibited. All putrescible waste will be incinerated, backhauled, or composted in a manner approved by the BLM AO. All unburnable solid waste will be backhauled and disposed of in an approved waste disposal facility, in accordance with the regulations and procedures of the U.S. Environmental Protection Agency and Alaska Department of Environmental Conservation.

**SOP HAZMAT-2** If wastes are incinerated on site, the permittee will ensure that only solid waste combustibles that originate from on-site are incinerated, and that they are incinerated in accordance with Environmental Protection Agency and Alaska Department of Environmental Conservation requirements.

The permittee will ensure that incineration of garbage using burn barrels is conducted in compliance with Alaska Division of Forestry Burn Barrell Specification. These specifications can be found at <http://drn.alaska.gov/burn/specifications>.

No solid waste is to remain on site for more than 90 days unless authorized in writing by the BLM AO.

**SOP HAZMAT-3** (*Note: This SOP restates current State requirements and will be adjusted according to any future updates to State requirements*). Pit privies must be located at least 100 feet from any waterbody and 100 feet from the high-water mark of streams, rivers, or lakes. The BLM AO may require a larger separation distance, to protect high-value resources. No septic system will be installed without the BLM AO's approval and must comply with 18 Alaska Administrative Code, Subsection 72.030. Gray water must be filtered before being released to the surface and must be discharged in a way that does not cause erosion. Gray water may not be released to any water body. If regulations and procedures cannot be met, all wastewater must be collected and transported to a state-approved disposal facility.

Upon closure of a campsite, a pit privy must be sprinkled with lime and then completely backfilled with a minimum of 2 feet of over-material when the pit has reached capacity, or the operation is terminated. The surface area must be covered and regraded to its approximate original appearance.

**SOP HAZMAT-4** All hazardous materials and petroleum, oil, and lubricants will be stored in containers that are compatible with the material being stored. Containers will be labeled with the responsible party's name, the contents of the container, and the date the container was purchased.

**SOP HAZMAT-5** Storage of petroleum, oil, and lubricants equal to and greater than 55 gallons at any site will require secondary containment. The containment area must have the following characteristics:

- Be constructed to hold at least 110 percent of the largest container
- Be lined with an impermeable liner that is free of cracks or gaps
- Be compatible with the contents stored
- Be sufficiently impervious to contain leaks or spills

**SOP HAZMAT-6** When 40 CFR 112 requires a Spill Prevention, Control, and Countermeasure plan to be prepared for activities occurring on BLM-managed lands, a copy shall be provided to the BLM AO for awareness purposes.

**SOP HAZMAT-7** Leaking equipment must have a drip basin placed under the leak area. Also, the basin must be protected from rainwater collection to ensure no release to the surrounding environment. When equipment maintenance has the potential to release fluids, an impermeable liner must be used to ensure that spills are contained.

**SOP HAZMAT-8** Notice of any reportable spill (as required by 40 CFR, Subpart 300.125 and 18 Alaska Administrative Code, Section 75.300) will be given to the BLM AO as soon as possible, but no later than 24 hours after occurrence. This requirement is in addition to, and does not replace, reporting requirements under other federal and state law. All spills will be contained and cleaned up in accordance with Alaska Department of Environmental Conservation guidance as soon as the release has been identified, unless health and safety of personnel is at risk.

A copy of any report required or requested by any federal agency or state government as a result of a reportable release or spill of any toxic substance will be furnished to the BLM AO, concurrently with filing the reports to the involved federal agency or state government.

**SOP HAZMAT-9** If refueling cannot be avoided within the riparian zone or within 100 feet of a water body, a catch basin and petroleum, oil, and lubricant-type absorbent pads will be used to collect any overflow.

**SOP HAZMAT-10** With the exception of watercraft or aircraft, fueling operations for motorized apparatus will not occur in riparian zones (from the ordinary high-water mark to the outer edge of riparian vegetation) nor within 100 feet of a water body, whichever is greater. These activities also will not be allowed within 500 feet of the active floodplain of any fish-bearing water body whenever practicable.

**SOP HAZMAT-11** For oil and gas operations and mining plans of operation, a hazardous materials emergency contingency plan will be prepared and implemented before transportation, storage, or use of fuel or hazardous substances. The plan will include a set of procedures to ensure prompt response, notification, and cleanup of a hazardous substance spill or threat of a release. The plan will include a list of resources

available for response, such as heavy-equipment operators, spill-cleanup materials, and companies. It also will include names and phone numbers of federal and state contacts.

**SOP HAZMAT-12** For oil and gas operations, all pumpable solid, liquid, and sludge waste will be disposed of by injection, in accordance with U.S. Environmental Protection Agency, Alaska Department of Environmental Conservation, and Alaska Oil and Gas Conservation Commission regulations and procedures. The BLM AO may permit alternate disposal if the lessee demonstrates that subsurface disposal is not feasible or prudent and the alternative method would not result in adverse environmental effects.

**SOP HAZMAT-13** For oil and gas operations, mining operations, and other leases and permits, sufficient oil spill cleanup materials, such as absorbents and containment devices, will be stored at all fueling points and vehicle maintenance areas. Field crews will carry such materials on all overland moves, seismic work trains, and similar overland moves by heavy equipment. All personnel will be trained to properly respond to spills.

#### **F.2.14 Subsistence (SUB)**

**SOP SUB-1** The BLM AO may require permittees to provide information to potentially affected subsistence communities regarding the timing, siting, and scope of a proposed activity.

**SOP SUB-2** The BLM AO may require permittees to consult with potentially affected subsistence communities to receive input regarding ways to minimize impacts on subsistence. Permittees will be required to provide the BLM with documentation of their consultation.

**SOP SUB-3** Permittees are prohibited from intentionally disturbing individuals engaged in subsistence activities.

**SOP SUB-4** Roads must be designed, constructed, maintained, and operated to protect subsistence use and access to traditional subsistence hunting and fishing areas.

**SOP SUB-5** Use of aircraft, especially rotary wing aircraft, near known subsistence camps and cabins or during sensitive subsistence hunting periods would be kept to a minimum.

#### **F.2.15 Connectivity Corridors (LANDSCAPE)**

**SOP LANDSCAPE-1** Landscape connectivity corridors will be analyzed for all discretionary activities that disrupt habitat connectivity, cause habitat fragmentation, or present barriers or deterrents to wildlife movement. Such activities will be authorized in the corridors only when no other feasible alternative exists. In all cases, analysis of impacts for proposed activities in the corridors would include careful consideration of cumulative impacts on habitat connectivity.

Mitigation would be required for direct, indirect, or cumulative impacts that increase habitat fragmentation, reduce structural or functional connectivity, or create barriers or deterrents to wildlife movement. Where relevant, required mitigation may include:

- Seasonal or time restrictions on activities
- Burial of infrastructure or facilities
- Wildlife escapement design features in excavations
- Siting and orientation of infrastructure and facilities to allow maximum opportunities for unfettered wildlife movement

- Use of vegetation to provide screened and unfragmented movement corridors around infrastructure and facilities
- Measures to minimize or eliminate visual or soundscape impacts that may deter wildlife movement
- Other measures determined necessary by the AO

### **F.2.16 Ecological Benchmarks (BENCHMARK)**

**SOP BENCHMARK-1 Suitability retention: Hydrologic connectivity, size, and intactness (Alternatives B and C1)** Discretionary land uses may not be authorized in BLM-managed watersheds within to benchmarks if they will result in any of the following:

- Temporarily or permanently disrupt hydrologic connectivity in any watershed such that the next higher and lower order watersheds are disconnected from each other because of the proposed action
- Reduce the size of the total suitable benchmark area below the minimum dynamic reserve size, plus 10 percent
- Temporarily or permanently reduce intactness below 85 percent in any watershed that contributes to the makeup of a benchmark area. All disturbed areas that are not fully reclaimed and deemed complete in accordance with the standards in **Appendix L**, Reclamation Standards for All Surface-Disturbing Activities, of the RMP/EIS will be counted against watershed intactness.

**SOP BENCHMARK-2 Suitability retention: Ecological representation (Alternatives B and C1)** Key ecological traits that contribute to benchmark suitability—land cover, lake edge density, climate moisture index, and gross primary productivity—will be monitored by measuring them once every 3 years. If a downward trend in any one or more of the four traits is detected between two measurements, then monitoring would change to an annual schedule. If a downward trend in any one or more of the four traits is detected in three sequential measurements, then an analysis would be conducted to determine the causal factors. If the cause is determined to be partially or wholly attributable to BLM-permitted activities, then permitting of new discretionary activities may cease or require further analysis; moreover, all practicable relevant mitigation would be applied to nondiscretionary activities until the trend reverses for three sequential measurements.

**SOP BENCHMARK-3 Maintenance of ecological values (Alternatives B and C1)** Analysis of land uses proposed in a benchmark area will include quantifying the expected reduction in fundamental benchmark properties ranking, the expected reduction in the resilience to climate change rating, and the expected reduction in the amount of focal species habitat. The BLM AO would consider the impacts after mitigation for these values. The AO also would consult with managers of non-BLM-managed lands in the benchmark, when determining whether to authorize discretionary actions. All practicable mitigations for impacts on these values would be applied to nondiscretionary actions.

## **F.3 FLUID MINERAL LEASING**

### **F.3.1 Standard Operating Procedures (MIN-LEA)**

**SOP MIN-LEA-1** In mining and fluid mineral leasing operations, all process water and groundwater seeping into an operating area must be treated appropriately prior to reentering the natural water system. One method is to use settling ponds.

**SOP MIN-LEA-2** For oil and gas operations and mining plans of operation, a hazardous materials emergency contingency plan will be prepared and implemented before transportation, storage, or use of fuel or hazardous substances. The plan will include a set of procedures to ensure prompt response, notification,

and cleanup in the event of a hazardous substance spill or threat of a release. The plan will include the names and phone numbers of federal and state contacts. It also will include a list of resources available for response, such as heavy-equipment operators, spill-cleanup materials, or companies.

Leasing stipulations are specific to fluid mineral activity, including exploration, development, and production. These leasing stipulations are included in a lease in addition to the standard lease terms. Fluid minerals include oil and gas, geothermal, and coal bed natural gas.

Additional site-specific leasing stipulations may be added if they are determined to be necessary through further analysis. Leasing stipulations may be excepted, modified, or waived by the BLM AO, pursuant to 43 CFR, Subparts 3101.1–4 and Washington, DC, Office Instruction Memorandum 2008-032.

The environmental analysis prepared for fluid mineral development (such as applications for permit to drill or sundry notices) will address proposals to except, modify, or waive a leasing stipulation. To except, modify, or waive a stipulation, the environmental analysis would need to show the following:

- The circumstances or relative resource values in the area had changed following issuance of the lease
- Less restrictive requirements could be developed to protect the resource of concern
- Operations could be conducted without causing unacceptable impacts
- The resource value of concern does not occur within the lease area

An exception exempts the holder of a lease from the leasing stipulation on a one-time basis. A modification changes the language or provisions of a leasing stipulation, either temporarily or for the term of the lease. A waiver permanently exempts the leasing stipulation.

Compliance with leasing stipulations is monitored by the BLM AO or representative. Noncompliance may result in monetary fines or operation shutdown.



**F.3.2 Fluid Mineral Leasing Stipulations**

Stipulation	Area Where It Applies	Exception, Modification, Waiver	Alternative This Applies To			
<b>SOILS OBJECTIVE:</b> To maintain the chemical, physical, and biotic properties of soils; this includes maintaining soil productivity, stability, and biotic properties. This would prevent excessive erosion and potential mass wasting and would improve the likelihood of successful reclamation.						
Surface occupancy and use is prohibited for fluid mineral leases on sensitive soils in high-value watersheds.	Sensitive soils in high-value watersheds	<p><b>Exception:</b> The AO may grant an exception if the operator can demonstrate that the proposed action would not contribute to degradation of the soil resource (such as excessive soil erosion, mass wasting, or lost productivity) or downslope resource conditions (such as reduced water quality due to sedimentation).</p> <p><b>Modification:</b> The AO may modify the area affected by this stipulation if portions of the leasehold do not contain sensitive soils.</p> <p><b>Waiver:</b> The AO may waive this stipulation if the entire leasehold does not contain sensitive soils.</p>	<b>B</b>	<b>C1</b>	<b>C2</b>	<b>D</b>
			<b>X</b>			

Stipulation	Area Where It Applies	Exception, Modification, Waiver	Alternative This Applies To			
			B	C1	C2	D
Apply controlled surface use stipulations to fluid mineral leases on slopes greater than 35 percent and in areas with sensitive soils. Before sensitive soils are disturbed, the AO must approve a reclamation plan, which must demonstrate the following: (1) no other practicable alternatives exist for relocating the activity, (2) the activity would be located to reduce effects on soil and water resources, (3) site productivity would be maintained or restored, (4) surface runoff and sedimentation would be adequately controlled, (5) on- and off-site areas would be protected from accelerated erosion, (6) no areas susceptible to mass wasting would be disturbed, and (7) surface-disturbing activities would be prohibited during extended wet periods.	Slopes greater than 35 percent in areas with sensitive soils	<p><b>Exception:</b> The AO may grant an exception to this stipulation if the operator can demonstrate that the proposed action would not contribute to soil resource degradation, such as by excessive soil erosion, mass wasting, or lost productivity, or contribute to downslope resource conditions, such as reduced water quality due to sedimentation.</p> <p><b>Modification:</b> None</p> <p><b>Waiver:</b> None</p>	X			
Apply controlled surface use stipulations to fluid mineral leases on slopes greater than 35 percent and in areas with sensitive soils. Before sensitive soils are disturbed, a plan must be approved by the BLM AO. The plan must demonstrate the following: (1) no other reasonable alternatives exist for relocating the activity, (2) the activity would be located to reduce impacts on soil and water resources, (3) surface runoff and sedimentation would be adequately controlled, (4) on- and off-site areas would be protected from accelerated erosion, (5) no areas susceptible to mass wasting would be disturbed, and (6) surface-disturbing activities would be prohibited or appropriate mitigations would be applied during extended wet periods.	Slopes greater than 35 percent in areas with sensitive soils	<p><b>Exception:</b> The AO may grant an exception to this stipulation if the operator can demonstrate that the proposed action will not contribute to degradation of the soil resource (e.g., excessive soil erosion, mass wasting, and/or lost productivity) or downslope resource conditions (e.g., reduced water quality due to sedimentation).</p> <p><b>Modification:</b> None</p> <p><b>Waiver:</b> None</p>	B	C1	C2	D
				X	X	X

Stipulation	Area Where It Applies	Exception, Modification, Waiver	Alternative This Applies To			
<b>FISH OBJECTIVE:</b> Maintain and protect aquatic habitat to support populations of sheefish, salmon, and Dolly Varden, identified as relevant and regionally important and that require special management to maintain critical habitat.						
Surface occupancy and use is prohibited in the 100-year floodplain of the identified streams, including the design and location of permanent or temporary oil and gas facilities within 300 feet of the rivers for the following areas of critical environmental concern (ACECs): <ul style="list-style-type: none"> <li>• Accomplishment Creek ACEC</li> <li>• Alatna River ACEC</li> <li>• Jim River ACEC</li> <li>• South Fork Koyukuk River ACEC</li> <li>• Sulukna ACEC</li> </ul>		<b>Exception:</b> The AO may grant an exception if the lessee demonstrates that impacts would be minimal or that there is no feasible or prudent alternative.  <b>Modification:</b> None  <b>Waiver:</b> None	<b>B</b>	<b>C1</b> <b>X</b>	<b>C2</b>	<b>D</b>
Surface occupancy and use is prohibited in the watershed of the identified streams, including the design and location of permanent or temporary oil and gas facilities within 300 feet of the rivers for the following ACECs: <ul style="list-style-type: none"> <li>• Accomplishment Creek ACEC</li> <li>• Altana River ACEC</li> <li>• Jim River ACEC</li> <li>• South Fork Koyukuk River ACEC</li> <li>• Sulukna ACEC</li> <li>• Wheeler Creek ACEC</li> <li>• Chandalar River ACEC</li> <li>• Sethkokna River ACEC</li> <li>• Kihlitna Creek ACEC</li> <li>• Indian River ACEC</li> </ul>		<b>Exception:</b> The AO may grant an exception if the lessee demonstrates that impacts would be minimal or that there is no feasible or prudent alternative.  <b>Modification:</b> None  <b>Waiver:</b> None	<b>B</b> <b>X</b>	<b>C1</b>	<b>C2</b>	<b>D</b>

Stipulation	Area Where It Applies	Exception, Modification, Waiver	Alternative This Applies To			
<b>RIPARIAN OBJECTIVE:</b> To protect the unique biological and hydrological features and functions associated with perennial and intermittent streams, lakes, ponds, reservoirs, floodplains, wetlands, and riparian areas.						
Surface occupancy and use is prohibited in perennial or intermittent streams, lakes, ponds, reservoirs, 100-year floodplains, wetlands, and riparian areas.	100-year flood plain	<p><b>Exception:</b> No exceptions would be allowed in streams, natural lakes, or wetlands. The AO may grant an exception for riparian areas, floodplains, and artificial ponds or reservoirs if the operator can demonstrate that (1) there are no practicable alternatives to locating facilities in these areas, (2) the proposed actions would maintain or enhance resource functions, and (3) all reclamation goals and objectives would be met.</p> <p><b>Modification:</b> The AO may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include these types of areas.</p> <p><b>Waiver:</b> The AO may waive this stipulation if the entire leasehold does not include these types of areas.</p>	<p><b>B</b> <b>X</b></p>	<b>C1</b>	<b>C2</b>	<b>D</b>
<b>WILDLIFE OBJECTIVE:</b> Minimize impacts on wildlife species from BLM-authorized activities.						
Disturbance caps would be applied to discretionary activities in the following: <ul style="list-style-type: none"> <li>• Dall sheep habitat area (5 percent disturbance cap on discretionary permitted activities)</li> <li>• Dall sheep movement corridor (15 percent disturbance cap on discretionary permitted activities)</li> <li>• Dall sheep study area (no disturbance cap on discretionary permitted activities)</li> </ul>	Identified Dall sheep habitats	<p><b>Exception:</b> The AO may grant an exception if Dall sheep are not currently using the area.</p> <p><b>Modification:</b> None</p> <p><b>Waiver:</b> This stipulation may be waived if Dall sheep data show changes in current habitat use areas.</p>	<b>B</b>	<b>C1</b> <b>X</b>	<b>C2</b>	<b>D</b>

Stipulation	Area Where It Applies	Exception, Modification, Waiver	Alternative This Applies To			
			B	C1	C2	D
No surface occupancy or use is allowed in the Dall sheep habitat area, which contains crucial licks.	Dall sheep habitat area, Sukakpak/Snowden ACEC	<p><b>Exception:</b> The AO may grant an exception to a fluid mineral lease only where the proposed action would have the following impact:</p> <ul style="list-style-type: none"> <li>• Would not have direct, indirect, or cumulative effects on Dall sheep or its habitat</li> <li>• Is proposed to be undertaken as an alternative to a similar action on a nearby parcel and would provide a clear conservation gain to Dall sheep</li> </ul> <p><b>Modification:</b> No modifications</p> <p><b>Waiver:</b> None</p>		X		
From April 15 to June 15, motorized intrusions may occur for up to 10 percent of any hour, and as many as five motorized noise events over ambient sound may occur per day. Motorized noise would not exceed 50 a-weighted decibels at identified Dall sheep habitat area between 7 a.m. and 7 p.m.	Dall sheep habitat area	<p><b>Exception:</b> The AO may grant an exception to a fluid mineral lease only where the proposed action would do the following:</p> <ul style="list-style-type: none"> <li>• Would not have direct, indirect, or cumulative effects on Dall sheep or its habitat</li> <li>• Is proposed to be undertaken as an alternative to a similar action on a nearby parcel and would provide a clear conservation gain to Dall sheep</li> </ul> <p><b>Modification:</b> No modifications</p> <p><b>Waiver:</b> None</p>		X		

Stipulation	Area Where It Applies	Exception, Modification, Waiver	Alternative This Applies To			
			B	C1	C2	D
Manage the following areas as open to fluid mineral leasing, subject to timing limitations for exploration, development, or facility construction within 0.5 miles of any known priority raptor nests, from April 15 through August 15 (from March 15 through July 20 for gyrfalcon nests).	Raptor nests	<p><b>Exception:</b> The AO may grant an exception if the lessee demonstrates that impacts would be minimal or that there is no feasible or prudent alternative.</p> <p><b>Modification:</b> Season may be adjusted, based on actual nest occupancy.</p> <p><b>Waiver:</b> If no known occupied nests are present, a waiver can be granted.</p>	B	C1	C2	D
			X	X	X	
No surface occupancy or use is allowed within 0.5 miles of golden eagle nests.	Golden eagles	<p><b>Exception:</b> The AO may grant an exception if the lessee demonstrates that impacts would be minimal or that there is no feasible or prudent alternative.</p> <p><b>Modification:</b> Season may be adjusted, based on actual nest occupancy.</p> <p><b>Waiver:</b> If no known occupied nests are present, a waiver can be granted.</p>	B	C1	C2	D
			X	X	X	

Stipulation	Area Where It Applies	Exception, Modification, Waiver	Alternative This Applies To			
			B	C1	C2	D
To protect threatened, endangered, or other special status species and their habitats, the lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered species. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid an approved activity that would contribute to a need to list such a species or its habitat. The BLM may require a modification to or disapprove a proposed activity that is likely to jeopardize the continued existence of a proposed or listed threatened and endangered species or result in the destruction or adverse modification of a designated critical habitat.	All BLM-managed lands	<b>Exception:</b> None <b>Modification:</b> None <b>Waiver:</b> None	X	X	X	X
<b>WILD AND SCENIC RIVER OBJECTIVE:</b> To protect wild and scenic rivers' outstandingly remarkable values, free-flowing nature, and water quality of suitable segments.						
Surface use and occupancy is prohibited within the study corridor of suitable wild and scenic river segments classified as wild.	Suitable segments classified as wild	Standard exceptions, modifications, and waivers apply.	B X	C1	C2	D
<b>WILDERNESS CHARACTERISTICS OBJECTIVE:</b> To protect identified areas, to apply management, and to protect wilderness character as a priority over other multiple uses by maintaining at least a 5,000-acre parcel, opportunities for solitude, and appearance of naturalness.						
Surface occupancy and use are prohibited in areas that are managed to emphasize other multiple uses, while applying management restrictions to reduce impacts on wilderness characteristics.	Lands with wilderness characteristics	<b>Exception:</b> None <b>Modification:</b> None <b>Waiver:</b> None	B X	C1 X	C2	D

### F.3.3 Standard Lease Terms

All fluid mineral leases would include the standard lease terms contained in BLM Form 3100-11 (Offer to Lease and Lease for Oil and Gas, U.S. Department of the Interior, BLM, October 1992, or later addition). The standard lease terms provide the lessee with the right to use the leased land to explore for, drill for, extract, remove, and dispose of fluid mineral deposits that are under the leased lands. The standard lease terms also require that operations be conducted in a manner that minimizes impacts on the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users.

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### F.3.5 Glossary

**100-year floodplain.** The area inundated by the 100-year flood or the 1 percent annual exceedance probability flood. It is the flood that has a 1 percent chance of being equaled or exceeded in any single year. It is often mistakenly thought of as the flood that occurs once every 100 years. If a project is within the 100-year floodplain and the project life is expected to be 30 years, it would have a 25 percent chance of experiencing flood damage due to a 100-year flood. For a project with an anticipated life of 15 years, the chance of incurring flood damage due to a 100-year flood would be 14 percent.

The 100-year floodplain is difficult to accurately map without extensive ground surveys. On-the-ground surveys conducted in the Central Yukon planning area typically employ the valley width that corresponds to an elevation of three times maximum bankfull depth as an estimate of the 100-year floodplain (FEMA 2015).

**aircraft.** Fixed-wing and rotary-wing aircraft.

**ambient air quality standard.** Air pollutant concentrations of the surrounding outside environment that cannot legally be exceeded during fixed time intervals and in a specific geographic area.

**area of critical environmental concern (ACEC).** Special area designation established through the BLM's land use planning process (43 CFR 1610.7-2), where special management attention is required (when such



areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The level of allowable use in an ACEC is established through the collaborative planning process. Designation of an ACEC allows for resource use limitations to protect identified resources or values.

**connectivity corridor.** Component of a landscape that facilitates the movement of matter, energy, or organisms between elements of the landscape.

**criteria air pollutant.** The Clean Air Act of 1970 identified six air pollutants of concern, called criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. They are the only air pollutants that national air quality standards define as having allowable concentrations in ambient air. States may adopt ambient air quality standards for additional pollutants of concern.

**critical habitat.** Habitat that is necessary to maintain viable populations of wildlife during specific seasons or reproductive periods (BLM Manual 6780).

**Dall sheep habitat area (DSHA).** BLM-managed lands identified as having the highest habitat conservation value in relation to Dall sheep.

**disturbance.** Alteration of the vegetative cover or ground surface. Human disturbance is caused by human activities, such as clearing, excavating, or introducing sources of invasive species. Natural disturbance is caused by natural events, such as lightning-caused wildfires or windstorms.

**ecological benchmark.** An area that is representative of key ecological indicators for an ecoregion and, thus, can serve as a reference for understanding the natural dynamics of ecosystems and their response to human activities to facilitate adaptive management strategies.

**ecological integrity.** The state of an ecosystem where structure, composition, and function are characteristic for the region, ecological processes are intact and self-sustaining, and the ecosystem evolves naturally.

**endangered species.** An animal or plant species designated by the U.S. Fish and Wildlife Service to receive federal protection status because it is in danger of extinction throughout all or a significant portion of its natural range.

**environmental impact statement (EIS).** A detailed statement of a given project's environmental consequences, including unavoidable adverse environmental effects, alternatives to the proposed action, the relationship between local short-term uses and long-term productivity, and any irreversible or irretrievable commitment of resources.

**hazardous air pollutant.** Also known as a toxic air pollutant, it is a pollutant that causes or may cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects. The Environmental Protection Agency is required to control 187 hazardous air pollutants, including volatile organic compounds, heavy metals, and persistent bio-accumulative toxins. The most widespread volatile organic compounds commonly analyzed are benzene, ethylbenzene, toluene, xylene, n-hexane, and formaldehyde.

**ice road.** A winter road that runs on a naturally frozen water surface. Ice roads are not passable in unfrozen conditions.

**landscape.** An entity with structural elements of patch, mosaic, and corridor, reflecting a mix of ecosystems, habitats, and land uses.

**minimize.** To reduce harmful effects to a level that does not have significant adverse effect on wildlife populations or their habitat in the planning area or significantly reduce the public's opportunity for successful harvest or nonconsumptive use of wildlife.

**mitigation.** Includes avoiding an impact by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

**National Ambient Air Quality Standards (NAAQS).** The Clean Air Act requires the U.S. Environmental Protection Agency to set national ambient air quality standards (codified in 40 CFR 50) for pollutants considered harmful to public health and the environment. The Clean Air Act identifies two types of national ambient air quality standards: Primary standards provide public health protection, including protecting the health of sensitive populations, such as asthmatics, children, and the elderly; and secondary standards protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The U.S. Environmental Protection Agency has set standards for six principal pollutants (see criteria air pollutants, above). Periodically, it reviews the standards and may revise them.

**outstandingly remarkable value.** A value among those listed in Section 1(b) of the Wild and Scenic Rivers Act of 1968: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values." Other similar values that may be considered are ecological, biological, or botanical.

**permafrost.** Soil, sand, gravel, or bedrock that has remained below 32 degrees Fahrenheit for two or more years.

**pollutant.** Any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.

**resource (and their values, services, or functions).** Natural, social, or cultural objects or qualities; resource values are the importance, worth, or usefulness of resources; resource services are the benefits people derive from resources; and resource functions are the physical, chemical, or biological processes that involve resources.

**riparian.** Relating to or situated on the bank of a river.

**Rosgen stream classification.** A classification system for natural rivers in which a morphological arrangement of stream characteristics is organized into relatively similar stream types. Morphologically similar stream reaches are divided into seven major stream type categories (A–G) that differ in entrenchment, gradient, width/depth ratio, and sinuosity in various landforms.

**sensitive soils.** The soils mapped by the BLM to be in one of the following categories: steep slopes, thaw-sensitive permafrost, or wetland soils or those that are highly susceptible to erosion or that have high moisture content.

**sensitive species.** All species that are under status review, that have small or declining populations, or that live in unique habitats. They may also be any species requiring special management. Sensitive species

include threatened, endangered, or proposed species, as classified by the U.S. Fish and Wildlife Service, or species designated by a state wildlife agency as needing special management (IM AK 2004-23)

**special status species.** Special status species include endangered species, threatened species, proposed species, candidate species, State-listed species, and BLM Alaska sensitive species.

**subsistence use.** The customary and traditional use by rural Alaska residents of wild renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of inedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing for personal or family consumption; and for customary trade. This includes any use of surface use transportation as a means of access to subsistence resources, as provided for under ANILCA Sections 811 and 1110.

**suitable river.** An eligible river segment found through administrative study to meet the criteria for designation as a component of the National Wild and Scenic Rivers System, as specified in Section 4(a) of the Wild and Scenic Rivers Act (BLM Manual 6400, Wild and Scenic Rivers—Policy and Program Direction for Identification, Evaluation, Planning, and Management).

**timber.** All woody vegetation that is 5 inches in diameter at breast height or larger is classified as timber. By industry convention, diameter at breast height is the diameter of the outside bark measured 4.5 feet above ground level. This convention is the standard used to describe timber size in this RMP/EIS.

**wilderness characteristic.** This include an area's size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation; it may also include supplemental values. Lands with wilderness characteristics are those that the BLM has inventoried and determined to possess wilderness characteristics, as defined in Section 2(c) of the Wilderness Act.

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# Appendix G

## Adaptive Management Framework

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

BEACONS	Boreal Ecosystems Analysis for Conservation Networks
BLM	Bureau of Land Management
CSU	conservation system unit
EIS	environmental impact statement
FLPMA	Federal Land Policy and Management Act
RMP	resource management plan



# Appendix G. Adaptive Management Framework

## G.1 LANDSCAPE RESOURCE VALUES

It is Department of the Interior policy (522 Department Manual 1) to encourage the use of adaptive management, as appropriate, as a tool in managing lands and resources. To this end, Bureaus are directed (whenever using adaptive management) to “conduct appropriate and applicable environmental monitoring to determine resource status, promote learning, and evaluate progress toward achieving objectives” and to “incorporate adaptive management principles, as appropriate, into policies, plans, guidance, agreements, and other instruments for the management of resources under the Department’s jurisdiction.”

Department policy (604 Department Manual 1) also directs Bureaus to achieve landscape goals through development of integrated landscape-level strategies that inform management decisions and work processes, and that promote:

- incorporation of best available science;
- consideration of multiple scales;
- interdisciplinary, science-based understanding of landscape dynamics;
- integration of science, management, and monitoring and evaluation efforts; and
- resilience to environmental change.

That policy also links adaptive management and landscape objectives, requiring Bureaus to evaluate the effectiveness of management actions using monitoring indicators to determine if management actions are achieving desired landscape outcomes and, if not, to determine the causative factors in order to inform changes in management actions to achieve the desired outcomes.

Bureau of Land Management (BLM) policy (Instruction Memorandum 2014-125) directs the BLM to consider relevant data and information from rapid ecoregional assessments and other landscape assessments during land use planning and project-level decision-making.

The Federal Land Policy and Management Act (FLPMA) requires the BLM to maintain an inventory of all public lands and their resource and other values. The BLM also must keep the inventory current to reflect changes in conditions and to identify new and emerging resources and other values. FLPMA also mandates that the BLM relies on the inventory of the public lands, their resources, and other values in developing land use plans.

Advances in landscape science since the previous resource management plan (RMP) allow identification and inventory of landscape resource values that previously could not be inventoried in a manageable format. These include identifying and inventorying potential ecological benchmarks—areas, or networks of areas, that are representative of the range of ecological characteristics of an ecoregion—and areas suitable to function as structural linkages between jurisdictions with missions more narrowly focused on conservation, thus providing for resilience to environmental change.

Magness et al. (2018) published an inventory of structural landscape connectivity in the region. The Boreal Ecosystems Analysis for Conservation Networks (BEACONS) project inventoried potential ecological

benchmarks in the planning area, incorporating data and information from rapid ecoregional assessments and other landscape assessments. These two inventory efforts provide a framework to comply with direction in FLPMA and to formulate a landscape-scale adaptive management strategy in compliance with Department and BLM policy. The goal is to draw on best available science to understand conditions and trends across multiple scales, adapt to changes in conditions and trends, promote resilience to environmental change, and facilitate informed decisions. These will be used to manage healthy, productive lands that support the BLM's multiple use mission over the life of the plan.

### **G.1.1 Rationale**

Alaska's ecosystems are changing. Documented changes include the following:

- Temperature: Consistently warmer average annual temperatures, longer growing seasons, an increased number of growing degree days, fewer extreme cold days per year, and earlier average river breakup (Thoman and Walsh 2019; IPCC 2014)
- Precipitation: Increased annual precipitation, more frequent winters with freezing rain, shorter snow seasons, and shrinking perennial snowfields in key parts of the planning area (Thoman and Walsh 2019)
- Permafrost: Changing permafrost stability and distribution (Hinzman et al. 2006) and warmer deep permafrost temperatures across northern and interior Alaska (Thoman and Walsh 2019)
- Fire regime: Changing fire regimes (Kaisischke et al. 2006) characterized by more frequent large fire seasons and more smoky days (Thoman and Walsh 2019)
- Plants: An advancing tree line, expanding shrub species range, conditions favoring broadleaf species over conifers and moss (IPCC 2014), and greening of North Slope tundra (Thoman and Walsh 2019)
- Animals and Fish: Changing animal populations (IPCC 2014), range expansion for beavers, and large fish die-offs attributed to high water temperatures (Thoman and Walsh 2019)

Maintaining connectivity corridors, resilience, and adaptability are key to managing for such changes (Cooke 2017; Beever et al. 2015; Heller and Zavaleta 2009). Furthermore, managing for such changes is essential to carrying out the BLM's multiple use mission. Resource development activities, both large and small, influence ecosystem processes through the footprint of facilities and infrastructure, their supply chain, and their production stream. Conversely, ecosystem processes influence the economic margins and feasibility of both current and future resource development.

Communities whose economies depend on public lands are often the most seriously affected by ecological degradation (BLM 1994). Similar relationships apply for social considerations, such as the quality of recreational experiences, clean water availability, and other ecosystem services; thus, healthy resource industries and communities depend on the sustained yield of healthy, productive ecosystems. Monitoring the condition and trends and corresponding adaptive management are essential for achieving that sustained yield.

### **G.1.2 Objectives**

The planning area is unique in that it overlaps eight ecoregions, is characterized by ecosystems adapted to large fires, and contains large tracts of intact land where landscape-scale ecological processes function with minimal disruption. In addition, BLM-managed lands in the planning area are next to, and thus serve as important connections between, nine conservation system units (CSUs) under the Alaska National Interest

Lands Conservation Act. Most BLM planning must be a reactive approach to maintaining or restoring ecological integrity and connectivity corridors; nevertheless, these characteristics create the opportunity in this planning process to proactively manage for the sustained yield of landscape resilience, connectivity, and adaptability. This is in order to support multiple use activities, while maintaining functional landscapes.

### **G.1.3 Strategy**

The BLM proposes to manage land uses to sustain existing landscape connectivity in a small percentage of BLM-managed lands identified through the inventory described above. The BLM also proposes to manage land uses to sustain ecological representation within a selected set of potential ecological benchmarks. It would do this by monitoring changes throughout the benchmarks using the BLM Assessment, Inventory, and Monitoring framework and other appropriate monitoring methodologies, and adapting land use management in the benchmarks, if indicated. In addition to sustaining ecological representation within limited areas, this would allow the BLM to distinguish changes associated with permitted land uses from changes associated with other change agents. This would help inform management of permitted activities throughout the planning area.

#### ***Ecological Benchmarks***

BEACONS is a conservation matrix model (BEACONS 2017) that is designed to be used for proactive planning in large, intact landscapes. BEACONS identifies areas in a landscape that have the attributes needed to function as ecological benchmarks. Benchmark areas are intact, hydrologically connected areas large enough to accommodate natural disturbance regimes.

Benchmark networks are groups of benchmark areas that, collectively, are representative of key ecological indicators for an ecoregion (Cooke 2017). They can serve as references for understanding the natural dynamics of ecosystems and their response to human activities, and as buffers to environmental stressors.

In addition to the fundamental benchmark properties (intactness, hydrologic connectivity, size, and ecoregion representation), potential benchmarks can be compared or ranked, based on how well they represent other attributes, such as land status, amount of priority species habitat, or resilience.

#### ***Connectivity Corridors***

One aspect of managing for adaptability is allowing for range-wide adaptations of species, which may include redistribution on the landscape as ecosystems change. Lands managed for multiple uses can also serve as connectivity corridors or linkages between lands managed for conservation, which could accommodate these changes. Magness et al. (2018) used methods outlined in Brost (2010) and Jenness et al. (2011) to identify land facet-based connectivity corridors between CSUs in the planning area.

### **G.1.4 Management**

Both ecological benchmarks and connectivity corridors would be treated as resources on the landscape with defining attributes and would be managed for sustained yield of those defining attributes. While different benchmarks are identified under different alternatives, management of lands recognized as benchmarks would be the same under Alternatives B and C1. Management would be accomplished by applying the standard operating procedures (see RMP/environmental impact statement [EIS], **Appendix F**). Connectivity corridors would be the same under Alternatives B, C1, C2, and D and would be managed by applying the standard operating procedures.

## G.2 ECOLOGICAL BENCHMARKS IDENTIFICATION

The BLM used the BEACONS conservation matrix model to identify areas that currently have characteristics making them suitable as ecological benchmarks for the eight ecoregions in the planning area. These are areas that currently meet criteria that make them suitable as ecological benchmarks for the eight ecoregions in the planning area.

These characteristics are as follows:

- Hydrologic connectivity
- Size, relative to the minimum dynamic reserve
- Intactness (80 percent or greater)
- Representation of key ecological traits (land cover, lake edge density, climate moisture index, and gross primary productivity)

These characteristics are important for maintaining ecological resilience and landscape connectivity (BEACONS 2017). Within an adaptive management framework, benchmark areas serve as reference areas or controls for detecting and understanding the influence of human activity on ecological systems. They can support identification of management practices that sustain the many environmental, cultural, and economic values associated with the northwest boreal region and help to manage risk.

In this manner the BLM can use adaptive management to evaluate the effects of permitting decisions by using monitoring tools. One example is using the BLM Assessment, Inventory, and Monitoring indicators (MacKinnon et al. 2011; Taylor et al. 2014; BLM 2015) to compare effects of varying use levels and mitigation measures applied to permitted activities inside and outside the benchmarks. The BEACONS geographic information system products and techniques can also be used as a tool to identify areas with minimal conflict between maintaining ecological integrity and connectivity and potential development permitting scenarios.

The Central Yukon RMP interdisciplinary team refined the BEACONS outputs into manageable options to be carried forward in the RMP alternatives using the following process:

- **Excluding ecoregions.** The BLM originally included eight ecoregions in the BEACONS analysis. Four of these were excluded from further consideration because they either overlapped little with the planning area or they did not have many acres of federal land within their boundaries. The remaining four ecoregions were retained to plan for resilience as part of the Central Yukon RMP/EIS planning process.

Retained Ecoregions	Eliminated Ecoregions
Kobuk Ridges and Valleys	Alaska Range
Ray Mountains	Lime Hills
Yukon River Lowlands	Nulato Hills
Kuskokwim Mountains	Tanana Kuskokwim Lowlands

- **Refining list of potential benchmarks.** The model output created over 100 candidate benchmarks for each ecoregion. Analyzing the feasibility of managing each of these benchmarks would be prohibitively time intensive. The interdisciplinary team refined the list of benchmarks to be considered by restricting consideration to the top-ranked 12 or 13 benchmarks. The team ranked benchmarks using three criteria: fundamental benchmark properties, resilience to climate change,

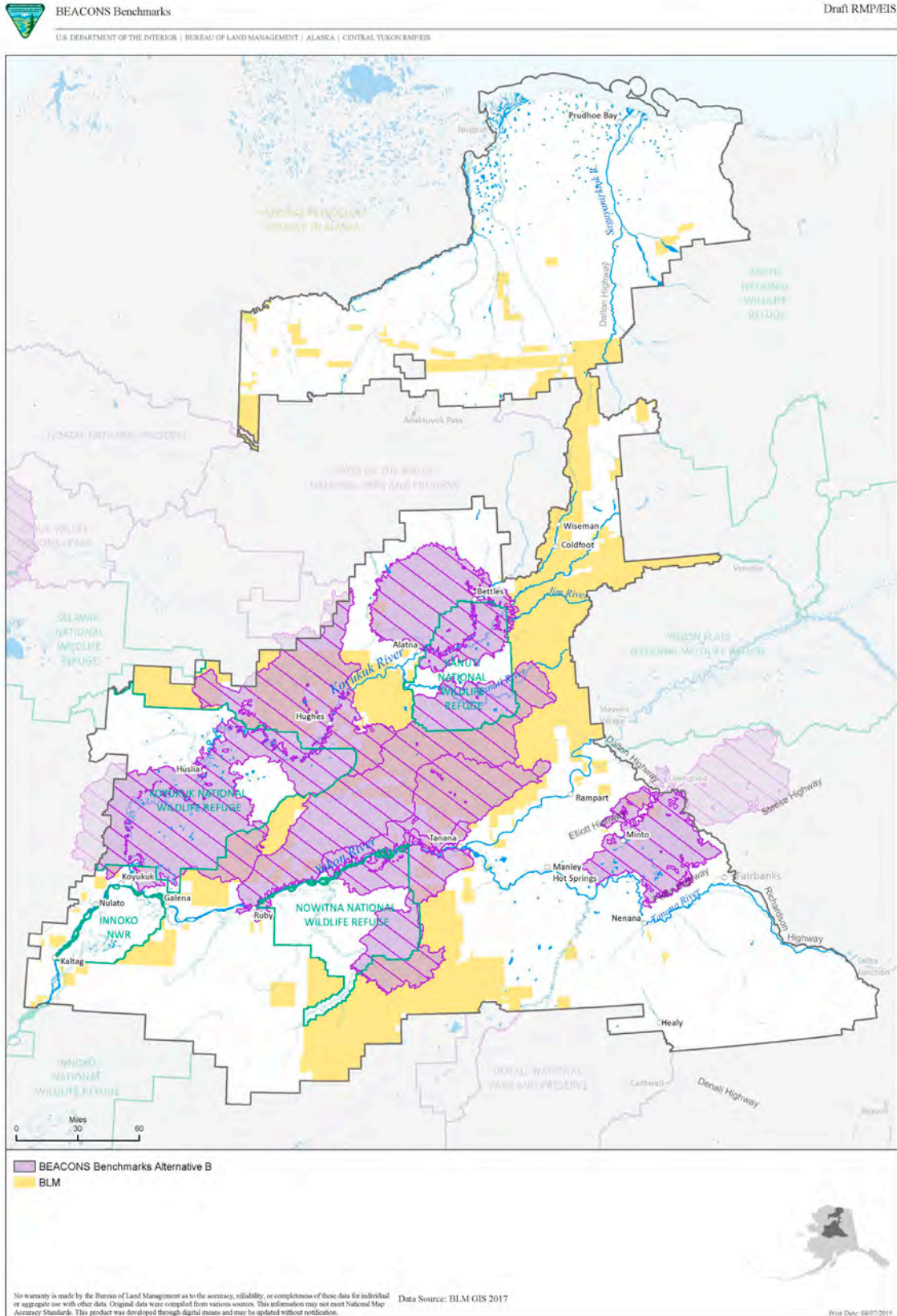
and the amount of priority species habitat. An overall rank was obtained for each of the 100-plus benchmarks. The interdisciplinary team did not consider benchmarks ranked lower than 13.

- **Selecting benchmark polygons.** Using the list of top-ranked benchmarks for each ecoregion, the interdisciplinary team proposed two sets of benchmarks: those with the most BLM-managed land and those with the most CSU land.
- The following alternatives were proposed:
  - **Alternative B—Select BEACONS benchmark from 13 top-ranked benchmarks with the greatest amount of BLM-managed land** (see **Map G-1**). The goal under this alternative would be to maintain the characteristics that make these areas suitable as ecological benchmarks. This allows the BLM to establish quantitative planning objectives, monitor the effectiveness of management decisions in meeting those objectives, and use that information to inform adaptive management strategies. The experimental control areas would lie mostly on BLM-managed lands, including approximately 5,518,846 acres of Central Yukon Field Office lands.
  - **Alternative C1—Select BEACONS benchmark from the top-ranked 13 benchmarks with the greatest amount of CSU lands** (national wildlife refuge, national park and preserve, or national conservation area; see **Map G-2**). Cooperation with other federal land managers would be emphasized under this alternative. The goal would be to supplement or contribute to the effectiveness of CSU benchmarks by managing adjacent BLM-managed lands appropriately and in close cooperation with the CSU land manager.

Similar to Alternative B, this alternative provides a framework that would allow the BLM, in cooperation with CSU land managers, to establish quantitative planning objectives and to monitor the effectiveness of management decisions to meet them, in order to inform adaptive management strategies. Benchmarks under Alternative C1 would incorporate 2,457,104 acres of BLM-managed lands in the Central Yukon Field Office.

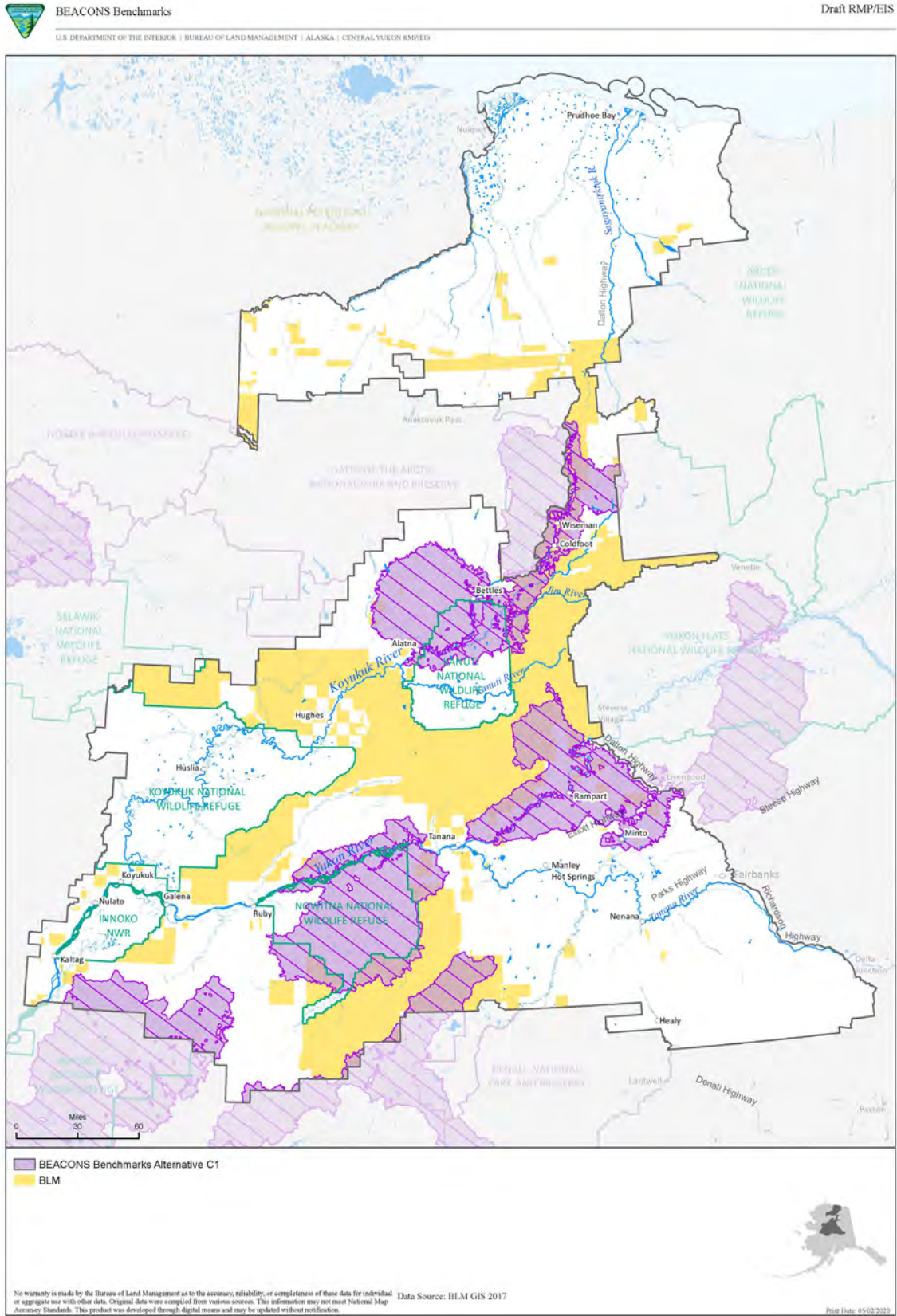
Standard operating procedures for authorized activities in benchmarks are provided in the RMP/EIS, **Appendix F**.

### Map G-1. BEACONS Benchmarks Alternative B





Map G-2. BEACONS Benchmarks Alternative C1



### **G.3 CONNECTIVITY CORRIDORS**

The use of corridors to connect core conservation areas is generally found in developed areas with highly fragmented ecosystems; however, there are also application examples in areas where opportunities exist for proactively conserving largely intact systems (Bennett and Mulongoy 2006), such as the landscapes of interior Alaska. The biodiversity benefits of such connectivity corridors can spill over into surrounding nontarget areas (Brudvig et al. 2009), extending the value of connectivity corridors beyond simply connecting core areas.

Classification of the habitat value is not just a question of habitat presence or absence. Areas fragmented by human use can still have considerable habitat value (McIntyre and Hobbes 1999). Because of this, management objectives in the matrix surrounding core conservation areas appropriately include recognition of ecological values and contributions to conservation across the landscape. This includes lands managed for multiple uses.

The combined benefits of connecting core conservation areas and extending conservation benefits into the matrix make connectivity corridors important for achieving landscape conservation goals on lands managed for multiple uses.

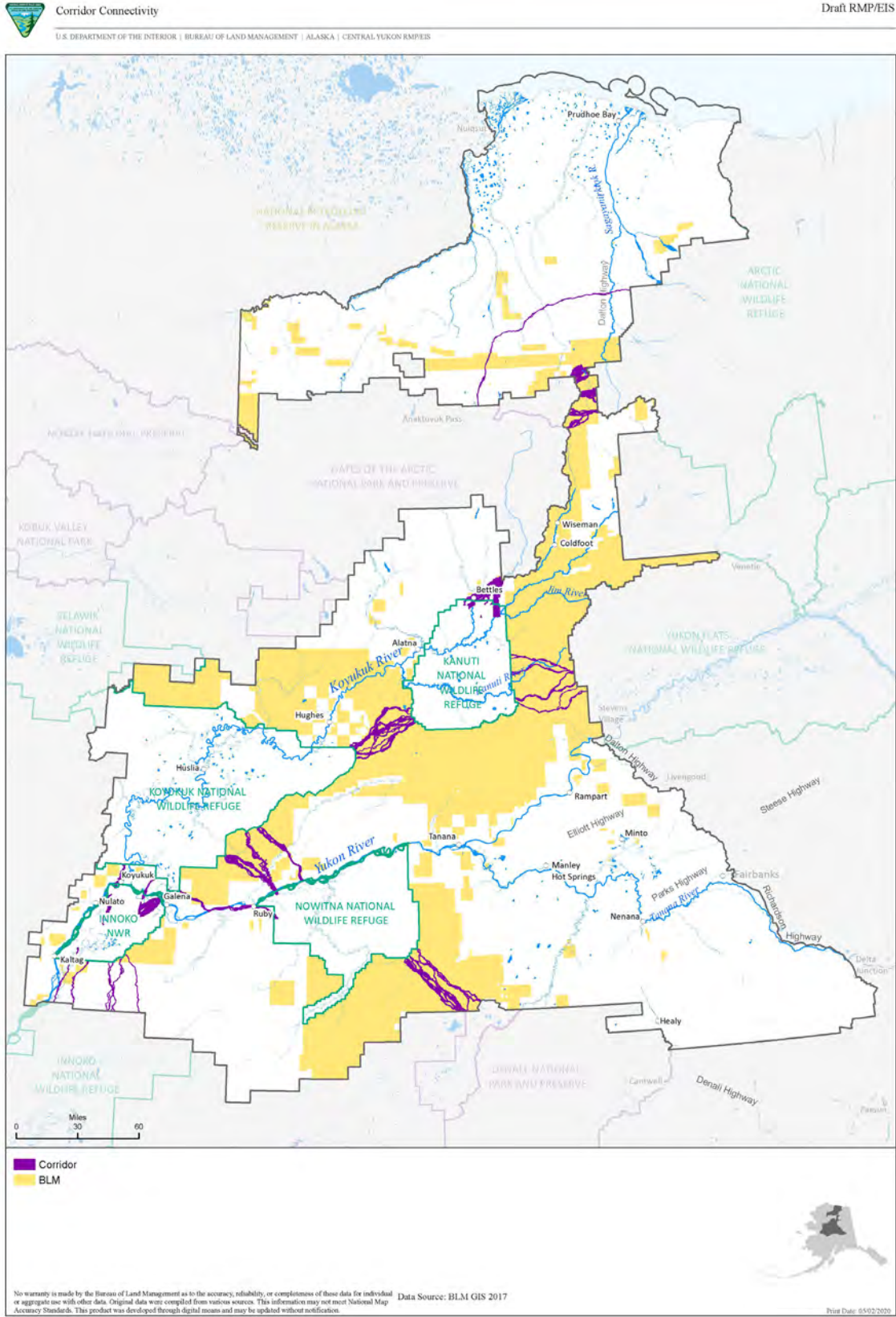
It is important to recognize that landscape connectivity corridors are landscape management features, not wildlife management features. The intent is not to capture currently used migration corridors, but to sustain resilience and capacity for adaptability in response to change.

The structural connectivity corridors proposed for all action alternatives (B, C1, C2, and D) in the Central Yukon RMP/EIS are based on enduring landscape features, which are not directly influenced by most management actions; however, given the recognition of least-cost pathways through the landscape, it follows that corresponding wildlife habitat connectivity is a functional requirement; thus, management actions focus on retaining general habitat connectivity, minimizing habitat fragmentation or loss, and avoiding barriers to wildlife movement within those corridors. See **Map G-3**, Connectivity Corridors. Connectivity corridors encompass 369,235 acres of BLM-managed lands.

Standard operating procedures for authorized activities in landscape corridors are provided in **Appendix F**.



### Map G-3. Connectivity Corridors



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## G.5 GLOSSARY

**adaptive management.** Adaptive management represents a process that tests, evaluates, and adjusts the assumptions, objectives, actions, and subsequent on-the-ground results from the implementation of RMP decisions. Used effectively, adaptive management provides resource managers with the flexibility to respond quickly and effectively to changing resource and user conditions. Changes in management actions are based on site-specific resource monitoring and evaluation. Adaptive management includes four phases: planning, implementation, monitoring, and evaluation.

**BEACONS benchmark.** A benchmark derived using the Boreal Ecosystem Analysis for Conservation Networks model.

**benchmarks.** Benchmark areas are intact, hydrologically connected areas large enough to accommodate natural disturbance regimes.

**benchmark polygons.** A line indicating the outer boundary of a benchmark on a map.

**benchmark networks.** Benchmark networks are groups of benchmark areas that, collectively, are representative of key ecological indicators for an ecoregion.

**biodiversity.** The genetic diversity, species diversity, and ecosystem diversity within an area of interest.

**BLM sensitive species.** Species designated as BLM sensitive must be native species that occur on BLM-managed lands and for which the BLM has significant management capability to affect their conservation status. In addition, one of the following two criteria must also apply:

- There is information that a species is known or predicted to undergo a downward trend such that viability of the species or a distinct population segment of the species is at risk across all or a significant portion of its range; or
- The species depends on ecological refugia, specialized habitats, or unique habitats, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

**connectivity corridors.** Components of a landscape that facilitate the movement of matter, energy, and/or organisms between elements of the landscape.

**conservation matrix model.** A conceptual framework for the design of ecological networks to facilitate biodiversity, conservation, and sustainable use across a spectrum of opportunities.

**core conservation areas.** Areas, such as parks and wildlife refuges, that are managed primarily for conservation purposes.

**conservation system unit (CSU) benchmark.** A benchmark consisting mostly of lands inside conservation system units designated in the Alaska National Interest Lands Conservation Act.

**ecoregions.** Geographical regions characterized by specific ecological patterns, including soil types, flora and fauna, climatic conditions, and ecological functions.

**ecosystem services:** The benefits that humans freely gain from the environment. These include provisioning services (such as food, water, and energy), regulating services (such as flood control, carbon sequestration, and air or water purification), cultural services (such as spiritual, therapeutic, and recreational benefits), and supporting services (such as nutrient cycling, primary production, and habitat provision).

**Federal Land Policy and Management Act (FLPMA).** A law passed in 1976 to establish public land policy, establish guidelines for its administration, and provide for the management, protection, development, and enhancement of the public lands.

**fire regime.** A description of the patterns of wildland fire occurrences, frequency, size, severity, and, sometimes, vegetation and fire effects in a given area or ecosystem. A fire regime is a generalization based on wildland fire histories at individual sites. There are five standard fire regimes:

- Fire Regime I—with a fire frequency of 0–35 years, surface fire to mixed fire type
- Fire Regime II—with a fire frequency of 0–35 years frequency, stand replacement fire type
- Fire Regime III—with a fire frequency of 35–100+ years, with a mixed fire type
- Fire Regime IV—with a fire frequency of 35–100+ years, with a stand replacement fire type
- Fire Regime V—with a fire frequency of 100+ years, with a stand replacement fire type

**fundamental benchmark properties.** Fundamental benchmark properties are intactness, hydrologic connectivity, size, and ecoregion representation. Areas that meet particular criteria for these properties are suitable to serve as ecological benchmarks.

**habitat.** The physical space in which a plant or animal lives, and the abiotic and biotic entities (e.g., resources) it uses and selects in that space.

**landscape.** An entity with structural elements of patch, mosaic, and corridor, reflecting a mix of ecosystems, habitats, and land uses.

**landscape connectivity.** The degree to which landscape components facilitate or impede movement of matter, energy, and/or organisms within and between elements of the environment.

**landscape resilience.** The ability of landscape components to absorb change and persist after perturbation.

**linkages.** See *connectivity corridors*.

**minimum dynamic reserve.** An estimate of the minimum reserve size required to incorporate natural disturbance and maintain ecological processes, relating the size of the dominant disturbance on a landscape to communities of species that may be differentially affected by this disturbance.

**mitigation.** Includes avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and compensating for the impact by replacing or providing substitute resources or environments (40 Code of Federal Regulations 1508.20).

**objective.** A description of a desired outcome for a resource.

**planning area.** The geographic area within which the BLM will make decisions during a planning effort. A planning area boundary includes all lands regardless of jurisdiction; however, the BLM will only make decisions on lands that fall under the BLM's jurisdiction (including subsurface minerals). Unless the State Director determines otherwise, the planning area for a RMP is the geographic area associated with a particular field office (43 Code of Federal Regulations 1610.1(b)). State Directors may also establish regional planning areas that encompass several field offices or states, or both, as necessary.

**priority species.** Species in the planning area that are recognized as significant for at least one factor, such as density, diversity, size, public interest, remnant character, or age (BLM Handbook 1601).

**resilience:** The capacity to recover from shocks and stressors, and rebound, adapt to, and thrive amidst changing conditions.

**resources (and their values, services, and/or functions).** Natural, social, or cultural objects or qualities; resource values are the importance, worth, or usefulness of resources; resource services are the benefits people derive from resources; resource functions are the physical, chemical, and/or biological processes that involve resources.

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# Appendix H

Aquatic and Riparian Resource  
Desired Conditions and Objectives

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

BLM	Bureau of Land Management
GIS	geographic information system
HUC	hydrologic unit code
PFC	proper functioning condition

# Appendix H. Aquatic and Riparian Resource Desired Conditions and Objectives

## H.1 AQUATIC AND HYDROLOGY DEFINITIONS

**100-year floodplain.** The area inundated by the 100-year flood or the 1 percent annual exceedance probability flood. It is the flood that has a 1 percent chance of being equaled or exceeded in any single year. It is often mistakenly thought of as the flood that occurs once every 100 years; in actuality, if a project within the 100-year floodplain is expected to last 30 years, it would have a 25 percent chance of experiencing flood damage due to a 100-year flood; for a project with an anticipated life of 15 years, the chance of incurring flood damage would be 14 percent. Annual precipitation is increasing in the planning area, so the probability of 100-year floods may increase (Thoman and Walsh 2019).

The 100-year floodplain is difficult to accurately map without extensive ground surveys. On-the-ground surveys conducted in the Central Yukon planning area typically employ the valley width that corresponds to an elevation of three times maximum bankfull depth as an estimate of the 100-year floodplain (FEMA 2015).

Given the difficulty of remotely mapping the 100-year floodplain and the desire to convey the intent of the various management alternatives to the reader, riparian buffer distances are used in this resource management plan as proxies for the 100-year floodplain. Buffer distances are given as a distance from bankfull elevation and are dependent on stream order as follows:

Stream Order	Buffer Distance (Feet)
First and second	100
Third	500
Fourth and fifth	1,000
Sixth through eighth	1,500

**alevins.** Newly spawned salmon or trout still carrying the yolk.

**aggradation.** A raising of the local base level of a stream due to sediment deposition.

**anadromous.** Fish that live most of their lives in the sea but return to freshwater to spawn. Anadromous streams are those that support fish species that migrate between freshwater and marine waters, such as salmon.

**Bank Erosion Hazard Index.** Evaluates the susceptibility to erosion for multiple erosional processes, such as surface erosion, fluvial entrainment, or mass erosion. The Bank Erosion Hazard Index uses a variety of variables (Rosgen 2008) and can be used to establish corresponding streambank erosion rates (Rosgen 2006).

**bank-to-height ratio.** A quantitative measure of the degree of vertical containment or degree of channel incision, as determined by the ratio of the lowest bank height, divided by the maximum bankfull depth.

**bankfull depth (maximum).** Maximum depth of the bankfull channel cross-section or the distance between the thalweg<sup>1</sup> and bankfull stage.

**bankfull depth (mean).** The mean depth of flow at the bankfull stage, determined as the cross-sectional area, divided by the bankfull surface width.

**bankfull discharge.** A frequently occurring peak flow whose stage represents the incipient point of flooding. It is often associated with a return period of 1–2 years, with an average of 1.5 years. It is expressed as the momentary maximum of instantaneous peak flows, rather than the mean daily discharge.

**bankfull stage.** The elevation of the water surface associated with the bankfull discharge.

**bankfull width.** The surface width of the stream, measured at the bankfull stage.

**bankfull width-to-depth ratio.** An index value that indicates the shape of the stream channel cross-section (ratio of bankfull width to the mean bankfull depth).

**degradation.** A lowering of the local base level of a stream, due to channel incision processes.

**dynamic equilibrium.** A river or stream's ability in the present climate to transport the streamflows and sediment of its watershed, overtime, in such a manner that the channel maintains its dimension, pattern, and profile without either aggrading or degrading.

**entrenchment ratio.** The vertical containment of a river that is quantitatively defined as the width of the flood-prone area, divided by the bankfull width (the flood-prone area width is that of the channel at an elevation that is twice the maximum bankfull riffle depth).

**essential fish habitat.** Those waters and substrate necessary for fish for spawning, breeding, feeding, or growing to maturity; it is defined by the Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265).

**flood-prone area width.** The width of the channel associated with the elevation that is twice the maximum bankfull depth. It includes the floodplain of the river and often the low terrace of alluvial streams.

**hydrologic connectivity.** The degree to which landscape components facilitate or impede the water-mediated transfer of matter, energy, or organisms within or between elements of the hydrologic cycle.

**hydrologic cycle.** Includes the fundamental components of precipitation, infiltration, runoff, and evaporation that indicate the origin of water and determines the downstream transfer of water, sediment, nutrients, and organic debris; it ultimately defines the physical and biological character of the stream.

**hydrologic regime.** Variations in the state and characteristics of a water body that are regularly repeated in time and space and that pass through phases, such as a season.

**lentic.** Wetlands or riparian areas with standing water habitat, such as lakes, ponds, seeps, bogs, and meadows.

**macroinvertebrate.** Bottom-dwelling species, such as crayfish and mayflies.

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<sup>1</sup>Line connecting the lowest points of successive cross-sections along the course of a valley or river.

**proper functioning condition (PFC).** The physical functioning of riparian-wetland areas through consideration of hydrology, vegetation, and soil/landform attributes. PFC is a state of resiliency that allows a riparian-wetland to hold together during a high-flow event, sustaining that system's ability to produce values with both physical and biological attributes. A riparian-wetland area is considered to be in PFC when adequate vegetation, landform, or large woody debris is present for the following functions: dissipate stream energy associated with high water flow, thereby reducing erosion and improving waters quality; filter sediment, capture bedload, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity.

**riparian.** Relating to or situated on the banks of a river.

**riparian-wetlands.** A form of wetland transition between permanently saturated wetlands and upland area. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Typical riparian areas are lands along, next to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are such sites as ephemeral streams or washes without vegetation that depends on free water in the soil.

**river stability (dynamic equilibrium).** A river or stream's ability in the present climate to transport the streamflows and sediment of its watershed over time, in such a manner that the channel maintains its dimension, pattern, and profile without aggrading or degrading.

**Rosgen stream classification.** A classification system for natural rivers in which a morphological arrangement of stream characteristics is organized into relatively similar stream types. Morphologically similar stream reaches are divided into seven major stream type categories (A–G) that differ in entrenchment, gradient, width/depth ratio, and sinuosity in various landforms (Rosgen 1994).

**stream hydrograph.** A chart that displays the change of a hydrologic variable over time. One of the most frequently created hydrographs shows the change in discharge of a stream over time.

**site potential.** The highest ecological status a riparian-wetland area can attain, given no political, social, or economic constraints; often referred to as the potential natural community.

## **H.2 WATERSHED AQUATIC RESOURCE VALUE MODEL**

An aquatic resources value model was developed for the Central Yukon Field Office, in conjunction with this plan. It is an indicator of the value of fish resources and habitat in the planning area.

On the lands that it manages, the Bureau of Land Management (BLM) ranked 767 watersheds, using the aquatic resources value model, after segregating the planning area into 6th level (12-digit) hydrologic units. The agency used the hydrologic unit code (HUC) system because it provides a framework that delineates watersheds using an accepted national standard hierarchical system based on surface hydrologic features. The ranking system was developed to score the fisheries values by watershed, using a combination of automated geographic information system (GIS) modeling and professional judgment.

Primary metrics that the BLM considered in ranking were fish species presence (diversity), salmon and non-salmon diadromous species<sup>2</sup> habitat, and the presence of unique or rare fishery resources or habitat.

Based on the model, the highest ranked watersheds—those with the highest fisheries resource values in the planning area—were used during the development of Alternatives B, C1, C2, and D.

Aquatic resource value rankings by watershed are depicted on **Maps 3.5, 3.6, and 3.7** in **Appendix A**. **Table H-1** outlines the ranking criteria and associated point system.

**Table H-1  
Rank Criteria and Scoring Used to Identify Aquatic Resource Values**

<b>Value</b>	<b>Definition</b>	<b>Score</b>
Endangered Species Act aquatic resources	Federally listed aquatic species are present.	3 Points
Essential fish habitat is present	Alaska Department of Fish & Game Anadromous Waters Catalog GIS data served as the basis for determining if salmon species occur in the watershed.	2 Points
Fish species diversity	Based on reports and professional knowledge, determine the number of fish species occurring in the watershed.	1–2 Species = 1 Point 3–4 Species = 2 Points 5–6 Species = 3 Points 7–8 Species = 4 Points > 9 Species = 5 Points
Non-salmon diadromous species present	Using the Anadromous Waters Catalog GIS data, select watersheds that contain non-salmon species, such as whitefish and lamprey.	2 Points
Unique/rare fishery resource or habitat or both	Spawning areas for salmon and non-salmon diadromous species based on the Anadromous Waters Catalog GIS data (5 points) and the presence of unique/rare fisheries resources (5 points).	Potential for 10 Points

**H.3 WATERSHED CONDITION MODEL**

The BLM developed a watershed condition model for this plan as an indicator of habitat health in the planning area. The agency evaluated the resource condition using the model, after segregating by area and using sixth level hydrologic units, as was done for the aquatic resource value model. The process categories and attributes used in the evaluation were adapted from a Forest Service Watershed Condition Classification Technical Guide (Potyondy and Geier 2011). The four process categories are the aquatic physical, aquatic biological, terrestrial physical, and the terrestrial biological. Each process category was evaluated using a defined set of attributes (**Table H-2**). Modifications and additional attributes were formulated by the BLM-Alaska fisheries staff, working closely with GIS staff. Watershed condition rankings are depicted on **Map 3.8** in **Appendix A**.

The model is used to inform the alternative development process, as well as to establish the current watershed condition and the predicted trend for the impacts analysis (**Chapter 3** of the Central Yukon Resource Management Plan/Environmental Impact Statement). The results also quantify the number of watersheds needing additional management attention to achieve the desired conditions.

<sup>2</sup>Species that migrate alternately between freshwater and salt water.

**Table H-2  
Attributes and Scoring Used to Identify Watershed Condition**

<b>Aquatic Physical (Weighting = 30 Percent)</b>		
<b>Attribute</b>	<b>Definition</b>	<b>Scoring</b>
Impaired waters (303[d])	Alaska Department of Environmental Concern Impaired Waters GIS data was used to determine if Clean Water Act Section 303(d)-listed streams were present.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.
Not formally listed water quality problems	Reports and professional knowledge were used to determine if other water quality problems were present.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.
Flow characteristics	National Hydrography Dataset Point and Flow line GIS data was used to determine if reservoirs, dams, or diversion facilities were present.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.
Habitat fragmentation	Reports and professional knowledge were used to determine if habitat fragmentation was occurring.	If aquatic habitat fragmentation areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.
Large woody debris	Reports and professional knowledge were used to determine if large woody debris is present and continues to be recruited into the system at near natural rates.	If areas are in the 6th level HUC, where large woody debris is present but is recruited into the system at less than natural rates because of riparian management, the watershed receives 3 points; otherwise 1 point is awarded.
Channel shape and function	Reports and professional knowledge were used to determine if stream channel shape and function exhibit the range of conditions expected in the absence of human influence.	If areas are in the 6th level HUC, where streams exhibit a channel shape and function outside the range of conditions expected, the watershed receives 3 points; otherwise 1 point is awarded.
Lentic system functionality	Reports and professional knowledge were used to determine if physical alteration from the natural condition of lentic bank/shore integrity, vegetation community, soil structure, or hydrology were present.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.

<b>Aquatic Biological (Weighting = 30 Percent)</b>		
<b>Attribute</b>	<b>Definition</b>	<b>Scoring</b>
Life form presence	Reports and professional knowledge were used to determine if expected aquatic life forms and communities are present, based on the potential natural communities present, or some life histories have been lost, or range has been reduced in the watershed due to human disturbance of habitat.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.
Native species	Alaska Exotic Plants Information Clearinghouse GIS data was used to determine if nonnative species are present.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.
Aquatic invasive plant species	Alaska Department of Environmental Concern GIS data was used to determine if aquatic nonnative species are present.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.
Vegetation condition	Reports and professional knowledge were used to determine if native vegetation is functioning properly throughout the stream corridor or along wetlands and water bodies.	If areas are in the 6th level HUC, where native vegetation is found to be nonfunctioning, then the watershed receives 3 points; otherwise 1 point is awarded.

<b>Terrestrial Physical (Weighting = 30 Percent)</b>		
<b>Attribute</b>	<b>Definition</b>	<b>Scoring</b>
Road and trail maintenance	Road, Revised Statute 2477, and trail GIS data were used to determine there are if roads or trails.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.
Roads proximity to water	Road, Revised Statute 2477, and trail GIS data were used to determine if roads or trails were within 300 feet of a waterbody.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.
Soil productivity/erosion	GIS data on roads, Revised Statute 2477, and trails buffered by 35 feet were used to determine the effect of roads and trails on soil productivity and erosion.	The buffered area in each watershed is divided by the total acres of the watershed. A value of 1 is assigned when buffered routes do not fall within a watershed; a value of 2 is assigned when the acreage of buffered routes is greater than 0 and less than 1; a value of 3 is assigned when the acreage of buffered routes is greater than or equal to 1.
Soil contamination	Alaska Department of Environmental Concern contaminated sites GIS data were used to determine if contaminated sites are present.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.



<b>Terrestrial Biological (Weighting = 10%)</b>		
<b>Attribute</b>	<b>Definition</b>	<b>Scoring</b>
Terrestrial invasive species	Alaska Exotic Plants Information Clearinghouse GIS data were used to determine if terrestrial nonnative plants are present.	If these areas are in the 6th level HUC, then the watershed receives 3 points; otherwise 1 point is awarded.

**Watershed Condition Model Summary Calculation:**

$$\begin{aligned}
 &(((\text{[Impaired\_Waters]} + \text{[Water\_Quality\_Problems]} + \text{[Flow\_Characteristics]} + \\
 &\text{[Habitat\_Fragmentation]} + \text{[Large\_Woody\_Debris]} + \text{[Channel\_Shape\_Function]} + \\
 &\text{[Lentic\_System\_Functionality]})/7)*.3) + (((\text{[Life\_Form\_Presence]} + \text{[Native\_Species]} + \\
 &\text{[Aquatic\_Invasive]} + \text{[Vegetation\_Condition]})/4)*.3) + (((\text{[Road\_Trail\_Maint]} + \\
 &\text{[Proximity\_Water]} + \text{[Soil\_Productivity\_Erosion]} + \text{[Soil\_Contamination]})/4)*.3) + \\
 &(((\text{[Terrestrial\_Invasive\_Species]})/1)*.1)
 \end{aligned}$$

**Watershed Ranking:**

- Watershed Condition Model Summary is equal to 1.0: functioning properly
- Watershed Condition Model Summary is greater than 1.0–2.0: functioning at risk
- Watershed Condition Model Summary is greater than 2.0: impaired function

**H.4 DESIRED CONDITIONS AND OBJECTIVES**

There is a goal of no net loss of aquatic habitat function. Reclamation standards should be applied, and resource conditions should be monitored for floodplains and riparian and aquatic resources with the application of standard operating procedures for all development activities.

See **Table H-3** for desired conditions and thresholds.

**H.5 RATIONALE**

**Table H-3  
Aquatic and Riparian Resource Desired Conditions and Objectives—Common to All  
Action Alternatives**

<b>Desired Conditions</b>	<b>Measurable Objective to Achieve Desired Conditions</b>	<b>Condition Thresholds</b>	<b>Stipulations</b>
Watersheds are managed so as to maintain the integrated ecological functions of rivers, streams, wetlands, and lakes and their associated riparian areas. They are also managed to provide, into perpetuity, the ecosystem services associated with properly functioning aquatic and riparian habitat: biological diversity, recreation, aesthetics, soil productivity, water quality, food, and raw materials.	N/A	N/A	N/A

H. Aquatic and Riparian Resource Desired Conditions and Objectives

Desired Conditions	Measurable Objective to Achieve Desired Conditions	Condition Thresholds	Stipulations
Riparian zones are fully functional over the width of the 100-year floodplain.	Riparian PFC	Determine the need for floodplain disturbance; outline required eight-step evaluation (see FEMA 2015).	Before the project is authorized, the proponent must demonstrate why the 100-year floodplain cannot be avoided; if so, the proponent should describe the methods used to minimize disturbance, such as excavating and storing riparian vegetation, to maintain vigorous conditions for replanting following the project. The proponent should use methods to protect floodplain function; examples are project sequencing, to minimize disturbance and make efficient use of riparian vegetation for immediate replanting; planning riparian leave strips for source vegetation; and striving to restore floodplain function within 3 years following project completion.
Riparian zones are fully functional over the width of the 100-year floodplain. <i>(continued)</i>	Riparian PFC <i>(continued)</i>	The following would be attained within 3 years of project completion: riparian-wetland spatial extent, vegetation density, dominant woody vegetation composition, age-class distribution, and canopy cover equivalent to the site potential. <sup>3</sup> This would be an interim objective until regional reference conditions are quantified; at that time, the objective would be within the upper 25th percentile of the regional reference condition. The riparian-wetland would have a rating of PFC, using the BLM's qualitative rapid assessment method (Prichard et al. 1998).	N/A

<sup>3</sup>The highest ecological status a riparian-wetland area can attain, given no political, social, or economic constraints; often referred to as the potential natural community.

H. Aquatic and Riparian Resource Desired Conditions and Objectives

Desired Conditions	Measurable Objective to Achieve Desired Conditions	Condition Thresholds	Stipulations
<p>Watersheds managed to closely approximate natural successional processes and hydrologic regimes (the frequency and magnitude of watershed disturbance match to the extent possible those that exist naturally).</p>	Floodplain connectivity (lateral)	Maintain a bank-to-height ratio of 1.0:1.2 (1.0:1.0, if new construction).	N/A
	Floodplain width	No loss of the 100-year floodplain width.	N/A
	Stream channel maintenance flows	Prioritize applying for 10 instream flow reservations over the life of the plan; this is to protect channel maintenance flows and provide for habitat needs of fish in high value HUCs.	N/A
	Floodplain connectivity (longitudinal)	Longitudinal connectivity: Streams and stream segments must remain connected and accessible to all species and life stages, as dictated by natural stream potential.	N/A
	Bed form diversity	As soon as the disturbance activity is done and for 5 years following reclamation, thresholds considered to be functioning will be based on regional reference reach conditions. They will address percent riffle, pool-to-pool spacing ratio, depth variability using pool maximum depth ratio (see Harman et al. 2012 for interim threshold values; final values to be provided on completion of the AIM regional reference condition and other regional reference data).	N/A
	Stream channel design	Stream diversions, bypasses, stream relocation, or stream reconstruction projects will be designed to achieve stable channel form, floodplain connectivity, bedform diversity, and riparian vegetation in proper functioning condition.	N/A
<p>Manage the physical, chemical, and biological properties of soil so that they support the full productive capacity of the land and its ecological processes, such as hydrological function of watersheds; provide the ecosystem services associated with properly functioning aquatic and riparian habitat.</p>	Erosion	Erosion is managed so as to have no apparent rills, gullies, trail braiding, or other indicators of degradation.	N/A
	Soil characteristics	Soil depth following disturbance will replicate pre-disturbance depth, so as to not restrict root growth or result in moisture extremes.	For reclaimed sites, soil amendments to adjust pH, to provide nutrients, and to increase soil microbial activity will be dictated by the results of a soil analysis.
		Abnormal hydrologic heaving, slumping, or thawing of permafrost is not occurring.	N/A
		The threshold for impairment to soil fertility, nutrient cycling, and hydrologic cycling processes will be less than 0.5 percent of any 12th level HUC.	N/A

H. Aquatic and Riparian Resource Desired Conditions and Objectives

Desired Conditions	Measurable Objective to Achieve Desired Conditions	Condition Thresholds	Stipulations
Natural input rates of sediment, organic matter, and nutrients; no excessive erosion or deposition	N/A	Natural stream design method will be used to develop an appropriate channel geometry and slope for the anticipated discharge and sediment regime. Designs will be required prior to disturbance and will be implemented as soon as the disturbance is over; it will be monitored and maintained for 5 years following reclamation.	N/A
	Lateral channel stability (streambank stability)	As soon as the disturbance is over and for 5 years following reclamation, stream design results in lateral stability, so that bank erosion is offset by an equal amount of deposition, such that the channel dimension remains stable. Bank stability ratio of bankfull width to bankfull depth of project area to bankfull width/bankfull depth of reference is 1.0:1.2. The Bank Erosion Hazard Index would have to meet performance standards presented in Table 8.7 of Harman et al. 2012.	N/A
Natural input rates of sediment, organic matter, and nutrients; no excessive erosion or deposition <i>(continued)</i>	Stream competency and stream power	Bed material is sized or stream channel is designed to prevent aggradation or degradation of stream channel (channel at dynamic equilibrium).	N/A
	Stream dynamics	Benthic macroinvertebrate community composition, relative abundance, and species richness will be managed to maintain an abundance and community composition within the upper 5th percentile of the regional reference condition (interim objective: similar to stream/lake potential).	To the extent possible, avoid modifying high sediment supply stream channels and streambanks of Rosgen channel type (1996; pp. 8, 9): A-3 through A-6, C-4 through C6; D-type, F-3 through F6; G3 through G6.
	Road density	Manage roads and access trails so as to avoid the 100-year floodplain; road density will be 0.1 mile per square mile or less in the watershed area (12th level HUC).	N/A

H. Aquatic and Riparian Resource Desired Conditions and Objectives

Desired Conditions	Measurable Objective to Achieve Desired Conditions	Condition Thresholds	Stipulations
<p>Natural input rates of sediment, organic matter, and nutrients; no excessive erosion or deposition <i>(continued)</i></p>	<p>Water quality</p>	<p>Meet federal and state water quality laws.</p>	<p>On Clean Water Act, Section 303(d)-listed streams, once a total maximum daily load is established, the BLM would authorize no additional disturbance until the proponent can demonstrate that further disturbance would be in compliance with water quality standards established in the total maximum daily load.</p>
	<p>Water quality <i>(continued)</i></p>	<p>Meet federal and state water quality laws. <i>(continued)</i></p>	<p>Must meet Alaska water quality antidegradation law. For all surface-disturbing activities requiring an erosion control plan, address the parameters commonly required in Alaska stormwater pollution prevention plans.</p> <p>As a means to address nonpoint source erosion, the BLM would encourage vegetation non-disturbance zones next to lotic and lentic<sup>4</sup> surface waters and may be applied toward compensatory mitigation to offset functional loss, where disturbance cannot be avoided.</p> <p>Suction dredging would be limited to the active channel, so streambanks would not be disturbed; instream use of heavy equipment to move substrate would not be allowed.</p>
	<p>Vertical channel stability</p>	<p>Channels are vertically stable; maintain appropriate entrenchment ratios, based on the channel type and landscape setting.</p>	<p>N/A</p>
<p>Watersheds are managed to create and sustain functional terrestrial, riparian, aquatic, and wetland habitats capable of supporting diverse populations of native aquatic- and riparian-dependent species and to be resilient and able to recover rapidly to a minimum of level 4 stream functional condition.</p>	<p>Large woody debris</p>	<p>In aquatic and riparian systems that evolved with wood near the streams, large woody debris is present and continues to be recruited into the system at site potential rates.</p>	<p>N/A</p>

<sup>4</sup>Fast-moving and slow-moving

H. Aquatic and Riparian Resource Desired Conditions and Objectives

Desired Conditions	Measurable Objective to Achieve Desired Conditions	Condition Thresholds	Stipulations
<p>Natural disturbance regimes remain the primary drivers of shifting patterns of species composition and structure in and between watersheds. Stream channel morphology, structure, complexity, and diversity are in ranges that are characteristic of the magnitude, timing, and duration exhibited by stream hydrographs under natural conditions.</p>	<p>Large woody debris <i>(continued)</i></p>	<p>A goal of no net loss of aquatic habitat function with high value HUCs. Apply reclamation standards and monitoring for resource conditions in floodplain, riparian, and aquatic resources and apply standard operating procedures for all development activities.</p>	<p>N/A</p>
	<p>Stream discharge</p>	<p>Watershed has free-flowing rivers and streams, or dams and diversions are operated to mimic natural hydrographs.</p>	<p>N/A</p>
<p>Retain native community composition of riparian plant and fish species at site potential.</p>	<p>Community composition</p>	<p>Over the life of the plan, conduct systematic surveys of priority restoration watersheds to establish reference condition.</p>	<p>N/A</p>
<p>Watersheds managed to prevent the introduction of invasive species.</p>	<p>Invasive species</p>	<p>Aquatic invasive species are controlled using methods demonstrated to be safe for soil, water, and native aquatic resources.</p>	<p>Following documented occurrence of invasive plant species on the currently deployed nonnative invasive species list for management, or aquatic invasive species, develop a plan for eradication or control as soon as practicable.</p>

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# Appendix I

Dall Sheep and Caribou Habitat Management

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

ACEC	area of critical environmental concern
BLM	Bureau of Land Management
DSHA	Dall sheep habitat area
DSMC	Dall sheep movement corridor
DSSA	Dall sheep study area
GMH	Galena Mountain herd
HHH	Hodzana Hills herd
OHV	off-highway vehicle
RMH	Ray Mountains herd
ROW	right-of-way

# Appendix I. Dall Sheep and Caribou Habitat Management

## I.1 DALL SHEEP HABITAT MANAGEMENT

### I.1.1 Dall Sheep Habitat Management

The Bureau of Land Management (BLM)-managed Dalton Utility Corridor traverses prime Dall sheep habitat in the Brooks Range of Alaska. The area is famous to backcountry hunters who value the rare road-accessible sheep-hunting opportunities. In support of Secretarial Order No. 3362, which highlights the duty of federal agencies to “expand opportunities for big-game hunting by improving priority habitats” and “to increase and maintain sustainable big game populations,” the BLM Central Yukon Field Office proposes to safeguard the highest priority habitat for Dall’s sheep, in particular, the known naturally occurring mineral sources (licks) for Dall’s sheep. These areas are referred to as Dall Sheep Priority Habitat Management Areas in **Map I-1**, below.

Mineral lick identification and monitoring in the region began before highway construction and has continued with a recent effort by the BLM to quantify mineral lick chemical properties and use patterns. It is known that each mineral lick provides a unique suite of trace minerals (region-specific data available; BLM unpublished data). A single subpopulation of sheep regularly rotates to several mineral licks in each area, further indicating that no single mineral lick will meet all the nutritional needs of a given sheep or subpopulation of sheep.

There is the potential for human development in and around the mineral licks, such as placer mining in low-lying areas and communication towers on mountaintops. Without clear delineation of priority habitat destruction of mineral licks, reduced accessibility is highly possible, with unknown but likely detrimental impacts on a population level.

Dall sheep habitat management under Alternative A is open to rights-of-way (ROWs) and mineral materials but is closed to fluid mineral and nonenergy solids leasing. The habitat is captured in five areas of critical environmental concern (ACECs) with varied management.

Alternative B identifies Dall sheep habitat in six ACECs where management varies with restrictions within 0.5 miles of mineral licks and proposed Federal Land Policy and Management Act withdrawals, closure to mineral materials sales, ROW avoidance and exclusion areas, timing limitations for development activities, and travel management limitations for permitted flights.

Alternatives C2 and D do not propose special management for Dall sheep habitat.

Dall sheep habitat management under Alternative C1 proposes a tiered level of management to accommodate development in core habitat areas, with management actions scaled to the habitat area type. This management has been defined under three headings with corresponding geographic areas and management parameters, as follows: Dall sheep habitat areas (DSHAs), Dall sheep movement corridors (DSMCs), and a Dall sheep study area (DSSA) (see **Map I-1**, below). DSHAs are BLM-managed lands identified as having the highest habitat conservation value in relation to Dall sheep. DSMCs are BLM-managed lands identified by the BLM and other agencies as having significant value to Dall sheep for accessing seasonal ranges, mineral sources, forage



habitat, and escape terrain. The spatial dimensions of the DMSCs was informed by Brownian Bridge models derived from location information collected between 2009 and 2012 from 20 radio-collared ewes. Because the knowledge of Dall sheep habitat utilization in the planning area is not currently inclusive of all known Dall sheep habitat, a DSSA is identified. It includes the remainder of the planning area that is known to be inhabited by Dall sheep but is not identified as DSHA or DSMC.

### ***Alternative C1***

#### ***Action (Effects Minimization and Mitigation Requirements)***

In DSHA and DSMC, apply the management techniques below to discretionary disturbances or activities.

#### **A—Disturbance limit**

Manage permitted human disturbances, whether temporary or permanent, so they cover less than 5 percent of DSHAs and 15 percent of DSMCs. If either limit is exceeded on BLM-managed lands, then no new permitted human disturbances would be permitted until the disturbance has been reduced to less than the cap. Disturbance calculations would include disturbances from all permitted activities, including discretionary actions. There would be no disturbance limit in DSSAs.

#### **B—Noise restrictions**

In DSHAs, from April 15 to June 15, motorized intrusions may occur for up to 10 percent of any hour, and as many as 5 motorized noise events over ambient sound may occur per day. Motorized noise would not exceed 50 dBA (a-weighted decibels) at identified DSHAs between 7 a.m. and 7 p.m.

#### **C—Best management practices**

In DSHAs, DSMCs, and the DSSA, while incorporating applicable best management practices, allow activity to occur. Economic considerations, such as increased costs associated with a given activity, would not necessarily mean that a best management practice be altered or rendered inapplicable.

#### ***Action (Vegetation)***

Prioritize DSHAs for vegetation management and conservation, including land health assessments.

Prohibit vegetation removal in DSHAs.

#### ***Action (Trails and Travel Management—Aircraft Restrictions)***

Flights associated with BLM-permitted activities would be conducted more than 2,000 feet above ground level over DSHAs (Cote 1996; Frid 2003; Hurley 2004) from April 15 to August 30.

In DSMCs and the DSSA, implementation-level travel management planning would emphasize minimizing impacts on Dall sheep and reducing the potential for unauthorized routes, while meeting human access needs. This emphasis may require improving or closing routes or creating new routes. Comprehensive travel and transportation planning would emphasize a net neutral effect on Dall sheep habitat.

No new routes would be created in DSHAs.

#### ***Action (Minerals)***

Allow exploration for all minerals, such as geophysical, trenching, and drilling, in DSMCs and the DSSA if they are not otherwise closed or withdrawn to obtain exploratory information.

#### ***Action (Fluid Minerals)***

No surface occupancy stipulations would apply to fluid mineral leases in DSHAs and DSMCs.

*Action (Locatable Minerals)*

Recommend DSHAs for withdrawal from locatable mineral entry and development. In DSMCs and the DSSA, locatable minerals authorizations would include all practicable mitigations to minimize surface disturbance and reduce impacts on sheep habitat and sheep movement. Any additional DSHAs identified after the record of decision is signed would be managed as DSMC, with respect to locatable minerals.

*Action (Mineral Materials)*

DSMCs and the DSSA would be closed to new mineral material disposal but would remain open to the expansion of existing active pits.

*Action (Nonenergy Solid Leasable Minerals)*

Close DSHAs to nonenergy solid mineral leasing and development. In DSMCs, exploration and prospecting noise levels would need to be monitored. They would not be allowed during sensitive pre-lambing and lambing periods, from April 15 to June 15, between 7:00 a.m. and 7:00 p.m.

*Action (Linear and Site-Type ROWs, Permits, and Leases, Excluding Wind and Solar)*

DSHAs will be exclusion areas for new linear and site type ROWs, permits, and leases, except for within ROW corridors designated for aboveground use. DSMCs will be avoidance areas for new ROWs, permits, and leases. Where avoidance is not possible in DSMCs, placement of a new ROW/permit/lease would be allowed in areas that minimize the effects on the Dall sheep population, and the disturbance footprint would be calculated in the 15 percent disturbance limit for DSMCs.

Renewal, amendment, or reauthorization of existing ROW permits in DSMCs would include a review of ROW impacts on Dall sheep habitat. The permittee may be required to alter existing infrastructure to meet current guidance for ROWs in DSMCs.

*Action (Transmission Lines)*

DSHAs would be exclusion areas for transmission lines and would be avoidance areas for high voltage transmission line ROWs. Transmission lines would be allowed in areas where the effect on the Dall sheep population would be minimized. In DSMCs, new transmission lines must be buried, to the extent feasible.

*Action (Pipelines)*

DSHAs will be exclusion areas for major pipelines (greater than 24 inches) in areas outside of designated utility corridors and avoidance areas inside designated utility corridors. DSMCs would be avoidance areas for major pipelines outside of designated utility corridors. When avoidance is not possible in avoidance areas, routes would be selected, subject to safety considerations, to minimize disturbance in DSHAs and DSMCs. In DSMCs, pipelines must be buried, where feasible.

*Action (Communication Sites)*

DSHAs would be exclusion areas and DSMCs would be avoidance areas for communication towers. Where avoidance is not possible in DSMCs or is necessary for human safety, communication towers would be allowed but would be in areas that minimize the effect on the Dall sheep population.

*Action (Road ROWs)*

DSHAs would be exclusion areas and DSMCs would be avoidance areas for road ROWs. If a road ROW is necessary for public safety or administrative access, or if it is subject to valid existing rights and creates new surface disturbance, it would be constructed to minimize the effects on the Dall sheep population.



*Action (ROW Corridors)*

In DSMCs, ROWs in corridors should be avoided, if possible. Where avoidance is not possible, the following should be implemented:

- Allow new linear ROWs in DSMCs
- Construct new ROWs in designated corridors as close as technically feasible to existing linear ROW infrastructure, to limit disturbance to the smallest footprint, unless using a different alignment better minimizes impacts on Dall sheep
- Apply the pertinent management for discretionary activities in DSMCs identified in *Effects Minimization and Mitigation Requirements*

**I.2 DSHA AND DSMC CONSIDERATIONS FOR IMPLEMENTATION-LEVEL TRAVEL MANAGEMENT PLANNING**

Implementation-level travel planning will be guided by the goals, objectives, and guidelines outlined in the Dall sheep section, relevant national and Alaska-specific guidance, and the following:

- A timeline to complete travel planning will be identified, prioritized, and updated annually in all relevant planning areas to accelerate data collection, route evaluation and selection, and on-the-ground implementation, including signing, monitoring, and rehabilitating.
- Among other designation criteria from 43 Code of Federal Regulations 8342.1(b), “areas and trails will be located to minimize harassment of wildlife or significant disruption of wildlife habitats.”
- During subsequent travel management planning, the following requirements would apply:
  - The BLM would consult “with interested user groups, federal, state, tribe, borough, and local agencies, local landowners, and other parties in a manner that provides an opportunity for the public to express itself and have its views given consideration”; consequently, a public outreach plan to fully engage all interested stakeholders will be incorporated into future travel management plans. All routes would be evaluated to determine their purpose and need and the potential resource or user conflicts from motorized travel; where resource or user conflicts outweigh the purpose and need, the route would be considered for closure or for relocation outside of Dall sheep habitat.
  - Dall sheep and their habitat would be considered when evaluating route designations or closures.
  - Routes that do not have a purpose or need would be considered for closure.
  - Routes that are duplicative, parallel, or redundant would be considered for closure.
  - Seasonal/diurnal restrictions on off-highway vehicle (OHV) use would be considered in important seasonal habitats where OHV use is disrupting Dall sheep habitat.
  - Routes not required for public access or recreation with a current administrative/agency purpose or need would be evaluated for administrative access only.
  - Scheduling road maintenance to avoid disturbance during sensitive periods and times would be considered, to the extent practicable. Time of day limits, such as no use between 7:00 p.m. and 7:00 a.m., would be considered to reduce impacts on Dall sheep during breeding periods.
- In DSHAs and DSMCs, the following requirements would apply:
  - Travel systems would be managed with an emphasis on improving the sustainability of the travel network in a comprehensive manner to minimize impacts on Dall sheep, to maintain human safety, and to prevent unauthorized cross-country travel, while meeting access needs. To do so,

- it may be necessary to improve portions of routes, to close routes, or to create new routes that meet user group needs, thereby reducing the potential for pioneering unauthorized routes. The emphasis of the comprehensive travel and transportation planning would be placed on having a neutral effect on Dall sheep habitat.
- When considering an upgrade of existing routes that would change route category (BLM route categories: road, primitive road, or trail) or capacity, the larger transportation network would be considered, while protecting Dall sheep habitat.
  - Existing roads or realignments, as described above, would be used to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new roads would be constructed to the absolute minimum standard necessary. Apply additional effective mitigation necessary to offset the resulting loss or fragmentation of Dall sheep habitat. Plan for new routes in consideration of the larger transportation network objectives and needs, while protecting Dall sheep habitat.
- Develop an educational process to advise OHV users of the potential for conflict with Dall sheep.

### **I.3 CORE CARIBOU HABITAT MANAGEMENT**

Three herds of fewer than 1,000 animals—the Galena Mountain herd (GMH), Ray Mountains herd (RMH), and Hodzana Hills herd (HHH)—are in the planning area. Much of their ranges consist of BLM-managed land and are associated with a series of uplands north of the Yukon River, known as the Kokrine Mountains, Ray Mountains, and Hodzana Highlands.

The ecology of these herds differs from larger migratory herds in the following way:

- They are considered nonmigratory because their winter and summer ranges overlap substantially.
- Their ranges are generally restricted to discrete mountain ranges.
- They do not have traditional calving grounds; whereby large numbers of animals congregate and calve in clearly delineated areas and do so consistently from year to year.

As such, land management in the ranges of these herds considers alternatives to traditional prescriptions associated with other herds, such as creating special management areas in the GMH and RMH to protect calving grounds.

#### **I.3.1 Galena Mountain Herd**

While historically the GMH has always been small, it currently numbers approximately 150 animals and is considered to be of conservation concern. For the last 10 years, the herd has been closed to all forms of hunting, including subsistence. The cause of the decline and subsequent small population size is high calf mortality due to predation. Unlike other nonmigratory herds, this herd is confined to a relatively small area in the vicinity of Galena Mountain. It is above the treeline during the spring and summer. Alpine habitat is necessary during this period, not only because it has high-quality forage but also because cows with young calves can more easily avoid predators when their vision is unobstructed by trees or flat topography.

Access to and continued use of this small alpine habitat is critical to the herd's perpetuation. The Alaska Department of Fish & Game has worked with the Alaska Department of Natural Resources and the BLM to minimize disturbance to maternal caribou during and after calving.

Mineral potential (specifically placer and rare earth elements) within the range of the GMH is moderate to low, and interest in these resources appears to be minimal. There are neither past nor current mining claims in the proposed special management area.

### **I.3.2 Ray Mountains Herd**

The importance of the RMH was highlighted during scoping. Subsistence hunters who rely on this herd routinely travel over 70 miles across the Kanuti Flats to it in the spring, particularly when the moose harvest is low and the Western Arctic Herd of caribou is not accessible from the villages.

Mineral potential and the occurrence of rare earth elements is high in the Ray Mountains. Many of the lands within the range of the RMH have valid State of Alaska selections. There is a large block of State mining claims in Spooky Valley and along the Kilolitna and Big Salt Rivers that will likely be developed once conveyance is completed.

Rare earth element mines are generally large, open pits. Impacts on caribou would be difficult to mitigate, and it is likely that they would simply be displaced where extensive development occurs. After conveyance, should development occur, lands that remain federally managed after conveyance would be critical to maintain for continued use by the RMH.

### **I.3.3 Hodzana Hills Herd**

During scoping, commenters raised concerns regarding the impacts of linear ROWs on caribou movement, impacts of resource development, and increased access to the HHH by hunters. They asked if regulations associated with the State's Dalton Highway Corridor Management Area should be revised or removed.

The Dalton utility and transportation corridor bisect the range of the HHH. The herd annually crosses the road, the TAPS, and other linear features and do not appear to be restricted in their movements. It appears standard stipulations regarding linear infrastructure sufficiently mitigate impacts on caribou movement.

While a few placer mines are active within the range of the HHH, these small-scale operations do not appear to affect individual caribou nor their population size, demographic features, or survival rates. While a portion of the range is State-selected, BLM-managed land unencumbered by State or Native selections next to the Dalton Highway does not have established mining claims, beyond those associated with the one or two small-scale operators mentioned above. It is unlikely that extensive mineral development would occur over the life of the Central Yukon Resource Management Plan.

### **I.3.4 Core Caribou Habitat Management Allocations**

#### ***Alternative A (No Action)***

The Galena Mountain, Tozitna North Subunit, and the Tozitna South Subunit were designated in the 1986 Central Yukon Resource Management Plan to protect the roughly delineated caribou calving grounds identified for the GMH and RMH. Both the Galena Mountain and Tozitna Subunits have ACEC management plans that guide management in these areas. Development and permitted activities in these areas has been minimal due to their inaccessibility. Development associated with mining in the Tozitna North and South Subunits ACECs (Ray Mountains) has been largely restricted due to the State selections that are in effect on much of these lands and on lands within the RMH range in general.

#### ***Alternative B***

The boundaries of the Galena Mountain ACEC would be adjusted to more accurately reflect the use of BLM-managed land by the GMH during spring and early summer.

The Tozitna North and South Subunits ACECs would be combined into one larger ACEC that was delineated using watershed boundaries and locations of collared caribou observed during calving.

A portion of the proposed Upper Kanuti ACEC met the relevance and importance criteria for caribou and is therefore carried forward under Alternative B. The boundary was delineated using collar data acquired during calving, like the Tozitna North and South Subunits ACECs. The Spooky Valley ACEC also meets the relevance and importance criteria for caribou and is therefore carried forward under Alternative B.

Aside from the allocation decisions described and proposed above, these areas do not require extensive special management. Additionally, the existing and proposed ACECs were developed using the traditional model of “protecting the calving grounds,” which, as described, may not be appropriate for small nonmigratory herds.

***Alternative C1***

Core habitat for the GMH and RMH would be designated under Alternative C1 to address the issues raised during scoping, described above. Alternative C1 would propose a ROW avoidance area in the GMH and RMH core habitat, as well as timing limitations for OHVs during core calving periods. The GMH and RMH core caribou habitat would be closed to fluid mineral leasing. This alternative also recommends a withdrawal from mineral entry in the RMH core habitat.

***Alternative C2 (Preferred Alternative)***

Core habitat for the GMH and RMH would be designated under Alternative C2 to address the issues raised during scoping, described above. Alternative C2 would propose a ROW avoidance area in the GMH and RMH core habitat, as well as timing limitations for OHVs during core calving periods. This alternative does not recommend a withdrawal from mineral entry in the RMH core habitat.

***Alternative D***

Designating special management areas for caribou is not proposed under Alternative D.

**Core Caribou Ranges by Township**

*Ray Mountains*

- T8, R18, FM
- T9, R15, FM
- T9, R16, FM
- T9, R17, FM
- T9, R18, FM
- T10, R15, FM
- T10, R16, FM
- T10, R17, FM
- T10, R18, FM
- T11, R17, FM
- T11, R18, FM
- T11, R19, FM
- T11, R20, FM
- T11, R21, FM
- T12, R17, FM
- T12, R18, FM
- T12, R19, FM
- T12, R20, FM
- T12, R21, FM
- T13, R17, FM
- T13, R18, FM
- T13, R19, FM
- T13, R20, FM
- T13, R21, FM
- T14, R17, FM

*Galena Mountain*

- T5, R15, KM
- T5, R16, KM
- T5, R17, KM
- T6, R15, KM
- T6, R16, KM
- T6, R17, KM
- T6, R18, KM
- T6, R19, KM
- T6, R20, KM

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# Appendix J

## Land Management Allocations

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

ACEC	areas of critical environmental concern
AGL	above ground level
ANCSA	Alaska Native Claims Settlement Act of 1971
BLM	Bureau of Land Management
CAMA	Central Arctic Management Area
DSHA	Dall Sheep Habitat Area
ERMA	extensive recreation management area
FLPMA	Federal Land Policy and Management Act of 1976
NSO	no surface occupancy
OHV	off-highway vehicle
PLO	Public Land Order
RMZ	recreation management zone
RNA	research natural area
ROW	right-of-way
SRMA	special recreation management area
VRM	visual resource management
WSA	Wilderness Study Area
WSR	Wild and Scenic River

# Appendix J. Land Management Allocations

## J.1 VISUAL RESOURCE MANAGEMENT

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<p><b>Action:</b> Manage the following areas as Visual Resource Management (VRM) Class I:</p> <ul style="list-style-type: none"> <li>• Central Arctic Management Area (CAMA) Wilderness Study Area (WSA)</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class I:</p> <ul style="list-style-type: none"> <li>• CAMA WSA</li> <li>• Spooky Valley Extensive Recreation Management Area (ERMA)</li> <li>• Nigu-Iteriak River ERMA</li> <li>• Suitable Wild and Scenic River (WSR) segments classified as wild</li> <li>• Lands with wilderness characteristics managed to protect wilderness characteristics as a priority over other multiple uses</li> <li>• Spooky Valley Area of Critical Environmental Concern (ACEC)</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class I:</p> <ul style="list-style-type: none"> <li>• CAMA WSA</li> <li>• Spooky Valley ERMA</li> <li>• Nigu-Iteriak River ERMA</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class I:</p> <ul style="list-style-type: none"> <li>• CAMA WSA</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class I:</p> <ul style="list-style-type: none"> <li>• CAMA WSA</li> </ul>

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<p><b>Action:</b> No similar action (no lands are managed as VRM Class II).</p>	<p><b>Action:</b> Manage the following areas as VRM Class II:</p> <ul style="list-style-type: none"> <li>• Dalton Corridor Backcountry Conservation Area</li> <li>• Sukakpak Region Special Recreation Management Area (SRMA)</li> <li>• Suitable WSR segments classified as recreational with a scenic outstanding remarkable value</li> <li>• Lands managed to emphasize other multiple uses while applying management restrictions to reduce impacts on wilderness characteristics</li> <li>• ACECs               <ul style="list-style-type: none"> <li>○ Galbraith Lake</li> <li>○ Jim River</li> <li>○ Spooky Valley</li> <li>○ Sukakpak/Snowden Mountain</li> </ul> </li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class II:</p> <ul style="list-style-type: none"> <li>• Dalton Highway Corridor SRMA, Outer Corridor Recreation Management Zone (RMZ)</li> <li>• Dalton Highway Corridor SRMA, Brooks Range South RMZ</li> <li>• Dalton Highway Corridor SRMA, Brooks Range North/Galbraith Lake RMZ, Chapman Lake RMZ</li> <li>• Lands managed to emphasize other multiple uses while applying management restrictions to reduce impacts on wilderness characteristics</li> <li>• ACECs               <ul style="list-style-type: none"> <li>○ Galbraith Lake</li> <li>○ Sukakpak/Snowden Mountain ACEC</li> </ul> </li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class II:</p> <ul style="list-style-type: none"> <li>• Dalton SRMA, Sukakpak Region RMZ</li> </ul>	<p><b>Action:</b> No similar action (no lands are managed as VRM Class II).</p>
<p><b>Action:</b> Manage the following areas as VRM Class III:</p> <ul style="list-style-type: none"> <li>• Dalton Corridor SRMA</li> <li>• Oolamnagavik-Colville River ERMA</li> <li>• Nigu-Iteriak ACEC</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class III:</p> <ul style="list-style-type: none"> <li>• Central Dalton SRMA, Dalton Uplands RMZ</li> <li>• Other suitable WSR segments classified as recreational</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class III:</p> <ul style="list-style-type: none"> <li>• Dalton Highway Corridor SRMA, Finger Mountain RMZ</li> <li>• Dalton Highway Corridor SRMA, Arctic Circle RMZ</li> <li>• Dalton Highway Corridor SRMA, Grayling Lake RMZ</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class III:</p> <ul style="list-style-type: none"> <li>• Dalton SRMA, Dalton Uplands RMZ</li> <li>• Dalton ERMA</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class III:</p> <ul style="list-style-type: none"> <li>• Dalton Utility and Transportation Corridor and the lands previously encumbered by Public Land Order (PLO) 5150</li> </ul>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<p><b>Action:</b> Manage the following areas as VRM Class IV:</p> <ul style="list-style-type: none"> <li>Galbraith Lake ACEC</li> <li>Inner Utility Corridor</li> <li>CAMA lands outside the WSA</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class IV:</p> <ul style="list-style-type: none"> <li>Central Dalton SRMA, Yukon River Crossing RMZ</li> <li>Central Dalton SRMA, Coldfoot RMZ</li> <li>All other BLM-managed lands</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class IV:</p> <ul style="list-style-type: none"> <li>Dalton Highway Corridor SRMA, Yukon River RMZ</li> <li>Dalton Highway Corridor SRMA, Coldfoot RMZ</li> <li>Utility and transportation corridors (Ambler and Umiat)</li> <li>All other BLM-managed lands</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class IV:</p> <ul style="list-style-type: none"> <li>Dalton SRMA, Yukon River Crossing RMZ</li> <li>Dalton SRMA, Coldfoot RMZ</li> <li>Utility and transportation corridors (Ambler and Umiat)</li> <li>All other BLM-managed lands</li> </ul>	<p><b>Action:</b> Manage the following areas as VRM Class IV:</p> <ul style="list-style-type: none"> <li>All other Bureau of Land Management (BLM)-managed lands</li> </ul>

**J.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN**

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<b>ACECs</b>				
<p><b>Action:</b> Manage the following areas as ACECs or research natural areas (RNAs):</p> <ul style="list-style-type: none"> <li>Arms Lake RNA</li> <li>Dulbi River ACEC</li> <li>Galbraith Lake ACEC</li> <li>Galena Mountain ACEC</li> <li>Hogatza River Tributaries ACEC</li> <li>Indian River ACEC</li> <li>Ishtalitna Creek Hot Springs RNA</li> <li>Jim River ACEC</li> <li>Kanuti Hot Springs ACEC</li> <li>Lake Todatonten Pingos RNA</li> <li>McQuesten Creek RNA</li> <li>Nigu-Iteriak ACEC</li> <li>Nugget Creek ACEC</li> <li>Poss Mountain ACEC</li> </ul>	<p><b>Action:</b> Manage the following areas as ACECs or RNAs:</p> <ul style="list-style-type: none"> <li>Accomplishment Creek ACEC</li> <li>Alatna River ACEC</li> <li>Arms Lake RNA</li> <li>Galbraith Lake ACEC</li> <li>Galena Mountain ACEC</li> <li>Hogatza River Tributaries ACEC</li> <li>Huslia ACEC</li> <li>Indian River ACEC</li> <li>Ishtalitna Creek Hot Springs ACEC/RNA</li> <li>Jim River ACEC</li> <li>Kanuti Hot Springs ACEC</li> <li>Klikhtentotzna Creek ACEC</li> <li>Lake Todatonten Pingos ACEC</li> <li>McQuesten Creek ACEC/RNA</li> <li>Mentanontli River/Lake Todatonten ACEC</li> </ul>	<p><b>Action:</b> Manage the following areas as ACECs or RNAs:</p> <ul style="list-style-type: none"> <li>Accomplishment Creek ACEC</li> <li>Alatna River ACEC</li> <li>Galbraith Lake ACEC</li> <li>Jim River ACEC</li> <li>South Fork Koyukuk River ACEC</li> <li>Sukakpak/Snowden Mountain ACEC</li> <li>Sulukna River ACEC</li> <li>Toolik Lake RNA</li> </ul>	<p><b>Action:</b> Manage the following areas as ACECs or RNAs:</p> <ul style="list-style-type: none"> <li>Toolik Lake RNA</li> </ul>	<p><b>Action:</b> Manage no areas as ACECs.</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>• Redlands Lake RNA</li> <li>• Snowden Mountain ACEC</li> <li>• South Todatonten Summit RNA</li> <li>• Spooky Valley RNA</li> <li>• Sukakpak Mountain ACEC</li> <li>• Sulukna River ACEC</li> <li>• Toolik Lake ACEC/RNA</li> <li>• Tozitna River ACEC</li> <li>• Tozitna Subunits North and South ACEC</li> <li>West Fork Atigun ACEC</li> </ul>	<ul style="list-style-type: none"> <li>• Midnight Dome/Kalhabuk ACEC</li> <li>• Nugget Creek ACEC</li> <li>• Poss Mountain ACEC</li> <li>• Redlands Lake RNA</li> <li>• Sethkokna River ACEC</li> <li>• South Fork Koyukuk River ACEC</li> <li>• South Todatonten Summit ACEC</li> <li>• Spooky Valley ACEC/RNA</li> <li>• Sukakpak/Snowden Mountain ACEC</li> <li>• Sulukna River ACEC</li> <li>• Toolik Lake ACEC/RNA</li> <li>• Tozitna ACEC</li> <li>• Upper Kanuti River ACEC</li> <li>• Upper Teedriinjik (Chandalar) River ACEC</li> <li>• West Fork Atigun ACEC</li> <li>• Wheeler Creek ACEC</li> </ul>	(see above)	(see above)	(see above)
<b>Arms Lake and Redlands Lake</b>				
<p><b>Arms Lake</b> Designate as an RNA to protect the sand dune complex and associated vegetation and limnological<sup>1</sup> characteristics.</p> <p><b>Redlands Lake</b> Designate as an RNA to protect the remnant lake and sand dunes complex.</p>	<p><b>Arms Lake</b> Designate as an ACEC/RNA to protect the sand dune complex and associated vegetation and limnological characteristics.</p> <p><b>Redlands Lake</b> Designate as an ACEC/RNA to protect the remnant lake and sand dunes complex.</p>	<p><b>Arms Lake</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p> <p><b>Redlands Lake</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p>	<p><b>Arms Lake</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p> <p><b>Redlands Lake</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p>	<p><b>Arms Lake</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p> <p><b>Redlands Lake</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p>
Propose for inclusion in the Ecological Reserve System (BLM 1986).	No similar action: this area would be maintained for scientific purposes or description of unique features.	No similar action (the ACECs/RNAs would not be designated under this alternative).	No similar action (the ACECs/RNAs would not be designated under this alternative).	No similar action (the ACECs/RNAs would not be designated under this alternative).

<sup>1</sup>Limnology is the scientific study of physical, chemical, meteorological, and biological conditions in fresh waters, especially ponds and lakes.

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>• Closed to Federal Land Policy and Management Act (FLPMA) leases and sales                             <ul style="list-style-type: none"> <li>○ Closed to fluid mineral leasing</li> <li>○ Closed to nonenergy solid mineral leasing</li> <li>○ Closed to land disposal through sale</li> </ul> </li> <li>• Recommend withdrawal from locatable mineral entry</li> <li>• Allow access through RNAs for vehicles over 1,500 pounds gross vehicle weight by permit (BLM 1986)</li> </ul>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal                             <ul style="list-style-type: none"> <li>○ Closed to fluid mineral leasing and development</li> <li>○ Closed to nonenergy solid mineral leasing</li> <li>○ Recommend withdrawal from locatable mineral entry</li> </ul> </li> <li>• Closed to mineral materials disposal</li> <li>• Prohibit commercial timber development; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit)</li> <li>• Right-of-way (ROW) exclusion area</li> </ul>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>
<b>Ishtalitna Creek Hot Springs and McQuesten Creek</b>				
<p><b>Ishtalitna Creek Hot Springs</b> Designate as an RNA to protect the low-gradient hot springs system and unique assemblages of plants associated with the system.</p> <p><b>McQuesten Creek</b> Designate as an RNA to protect the low-gradient hot springs system and geologic features.</p>	<p>Designate the <b>Ishtalitna Creek Hot Springs ACEC/RNA</b> and <b>McQuesten Creek ACEC/RNA</b> to protect low-gradient hot springs systems and associated vegetation and soils.</p>	<p><b>Ishtalitna Creek Hot Springs</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p> <p><b>McQuesten Creek</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p>	<p><b>Ishtalitna Creek Hot Springs</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p> <p><b>McQuesten Creek</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p>	<p><b>Ishtalitna Creek Hot Springs</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p> <p><b>McQuesten Creek</b> No similar action (the ACEC/RNA would not be designated under this alternative).</p>
<p>Propose for inclusion in the Ecological Reserve System (BLM 1986).</p>	<p>No similar action: this area would be maintained for scientific purposes or description of unique features.</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>• Closed to FLPMA leases and sales                             <ul style="list-style-type: none"> <li>○ Closed to fluid mineral leasing</li> <li>○ Closed to nonenergy solid mineral leasing</li> <li>○ Closed to land disposal through sale</li> </ul> </li> <li>• Recommend for withdrawal from locatable mineral entry</li> <li>• Allow access through RNAs for vehicles over 1,500 pounds gross vehicle weight by permit</li> <li>• Require an approved plan of operation for any surface-disturbing activity on existing mining claims (BLM 1986)</li> </ul>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal                             <ul style="list-style-type: none"> <li>○ Closed to fluid mineral leasing</li> <li>○ Closed to nonenergy solid mineral leasing</li> <li>○ Closed to land disposal through sale</li> <li>○ Recommend for withdrawal from locatable mineral entry</li> <li>○ Closed to mineral materials disposal</li> </ul> </li> <li>• In summer, off-highway vehicle (OHV) use is limited to designated routes or trails; all vehicles over 1,500 pounds curb weight require a permit</li> <li>• Prohibit commercial timber development; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit)</li> <li>• ROW exclusion area</li> <li>• Prohibit Special Recreation Permits</li> <li>• No commercial development of the hot springs</li> </ul>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>
<p>Closed to mineral leasing and non-metalliferous location; open to location and entry for metalliferous minerals (PLO 5180).</p>	<p>Carry forward closure; recommend withdrawal of these areas.</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>
<p>160 acres (0.25 square miles) surrounding the hot springs are withdrawn under Executive Order #5389.</p>	<p>Maintain withdrawal for the hot springs.</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>	<p>No similar action (the ACECs/RNAs would not be designated under this alternative).</p>
<p><b>Spooky Valley</b></p>				
<p><b>Spooky Valley</b> Designate as an RNA to protect geological, physiographic, vegetation, and scenic values.</p>	<p><b>Spooky Valley</b> Designate as an ACEC/RNA to protect vegetation, special status vegetation, scenery, and caribou habitat.</p>	<p>No similar action (the ACEC/RNA would not be designated under this alternative).</p>	<p>No similar action (the ACEC/RNA would not be designated under this alternative).</p>	<p>No similar action (the ACEC/RNA would not be designated under this alternative).</p>



Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
Propose for inclusion in the Ecological Reserve System (BLM 1986).	No similar action: this area would be maintained for scientific purposes or description of unique features.	No similar action (the ACEC/RNA would not be designated under this alternative).	No similar action (the ACEC/RNA would not be designated under this alternative).	No similar action (the ACEC/RNA would not be designated under this alternative).
<ul style="list-style-type: none"> <li>• Closed to FLPMA leases and sales               <ul style="list-style-type: none"> <li>○ Closed to fluid mineral leasing</li> <li>○ Closed to nonenergy solid mineral leasing</li> <li>○ Closed to land disposal through sale</li> </ul> </li> <li>• Recommend for withdrawal from locatable mineral entry</li> <li>• Allow access through RNAs for vehicles over 1,500 pounds gross vehicle weight by permit</li> <li>• Require an approved plan of operations for any surface-disturbing activity on existing mining claims (BLM 1986)</li> </ul>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal               <ul style="list-style-type: none"> <li>○ Closed to fluid mineral leasing</li> <li>○ Closed to nonenergy solid mineral leasing</li> <li>○ Closed to land disposal through sale</li> <li>○ Recommend for withdrawal from locatable mineral entry</li> <li>○ Closed to mineral materials disposal</li> </ul> </li> <li>• ROW avoidance area</li> <li>• OHV timing limitation (no OHVs from May 1 to June 30)</li> <li>• Manage as VRM Class I</li> </ul>	No similar action (the ACEC/RNA would not be designated under this alternative).	No similar action (the ACEC/RNA would not be designated under this alternative).	No similar action (the ACEC/RNA would not be designated under this alternative).
Closed to mineral leasing and nonmetalliferous location; open to location and entry for metalliferous minerals (PLO 5180).	Carry forward closure; recommend withdrawal of the ACEC/RNA.	No similar action (the ACEC/RNA would not be designated under this alternative).	No similar action (the ACEC/RNA would not be designated under this alternative).	No similar action (the ACEC/RNA would not be designated under this alternative).
<b>Lake Todatonten Pingos and South Todatonten Summit</b>				
<p><b>Lake Todatonten Pingos</b> Designate as an RNA to protect open system pingos.</p> <p><b>South Todatonten Summit</b> Designate as an RNA to protect open system pingos.</p>	<p><b>Lake Todatonten Pingos</b> Designate as an ACEC to protect the soil, hydrologic processes, and vegetation associated with the pingos system.</p> <p><b>South Todatonten Summit</b> Designate as an ACEC to protect the soil, hydrologic processes, and vegetation associated with the pingos system.</p>	No similar action (the ACECs/RNAs would not be designated under this alternative).	No similar action (the ACECs/RNAs would not be designated under this alternative).	No similar action (the ACECs/RNAs would not be designated under this alternative).

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
Propose for inclusion into the Ecological Reserve System (BLM 1986).	No similar action: this area would be maintained for scientific purposes or description of unique features.	No similar action (the ACECs/RNAs would not be designated under this alternative).	No similar action (the ACECs/RNAs would not be designated under this alternative).	No similar action (the ACECs/RNAs would not be designated under this alternative).
<ul style="list-style-type: none"> <li>• Closed to FLPMA leases and sales                             <ul style="list-style-type: none"> <li>○ Closed to fluid mineral leasing</li> <li>○ Closed to nonenergy solid mineral leasing</li> </ul> </li> <li>• Closed to land disposal through sale</li> <li>• Recommend for withdrawal from locatable mineral entry</li> <li>• Allow access through RNAs for vehicles over 1,500 pounds gross vehicle weight by permit (BLM 1986)</li> </ul>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal                             <ul style="list-style-type: none"> <li>○ Closed to fluid mineral leasing</li> <li>○ Closed to nonenergy solid mineral leasing</li> <li>○ Closed to land disposal through sale</li> </ul> </li> <li>• Pursue FLPMA withdrawal</li> <li>• Recommend withdrawal from locatable mineral entry</li> <li>• ROW exclusion area</li> <li>• Prohibit commercial timber development; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit)</li> <li>• Prohibit removal of vegetative substrate and litter from the pingos</li> <li>• No camping within the ACECs</li> </ul>	No similar action (the ACECs/RNAs would not be designated under this alternative).	No similar action (the ACECs/RNAs would not be designated under this alternative).	No similar action (the ACECs/RNAs would not be designated under this alternative).
<b>Galbraith Lake</b>				
<b>Galbraith Lake</b> Designate as an ACEC to protect cultural resources, rare or sensitive plants, high scenic values, and crucial Dall sheep lambing areas.	<b>Galbraith Lake</b> Designate as an ACEC to protect cultural resources, high scenic values, and crucial Dall sheep habitat, including mineral licks.	<b>Galbraith Lake</b> Designate as an ACEC to protect cultural resources.	No similar action (the ACECs would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<ul style="list-style-type: none"> <li>• Apply no surface occupancy (NSO) stipulations to fluid mineral leases</li> <li>• Require plans of operation, with protective stipulations and mitigation measures, to all surface-disturbing activities to avoid restricting sheep movement, unduly disturbing sheep habitat, or affecting any other protected resource</li> <li>• Limited motorized vehicle use by State statute and Alaska Department of Fish and Game hunting regulations (State law, not BLM limitation; the BLM has to be at least as restrictive as state law; Alaska Statute 19.40-210 closes BLM-managed lands within 5 miles of the Dalton Highway to OHV; Alaska Department of Fish and Game Hunter Information Series #111-13, "Dalton Highway Corridor")</li> </ul>	<ul style="list-style-type: none"> <li>• Closed to mineral materials disposal</li> <li>• Proposed ROWs must mitigate wildlife impacts and impacts on connectivity corridors</li> </ul>	<ul style="list-style-type: none"> <li>• Closed to mineral materials disposal</li> <li>• Proposed ROWs must mitigate wildlife and connectivity corridors impacts</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>• All BLM-authorized camps and support facilities in the confines of the ACEC, including cabins and tent frames, would be temporary and must be removed after their purpose has been accomplished</li> <li>• All recreation facilities would be consistent with the Dalton Highway Recreation Area Management Plan and would minimize disturbance to protected resources in the ACEC</li> <li>• Allow the development of public campground facilities</li> <li>• Allow use by guides and outfitters, but no surface-disturbing activities in association with guides and outfitters</li> </ul>	<ul style="list-style-type: none"> <li>• All BLM-authorized camps and support facilities in the confines of the ACEC, including cabins and tent frames, would be temporary and must be removed after their purpose has been accomplished; restrict camp footprint to southwest corner of the Galbraith south pit in the existing footprint</li> <li>• All recreation facilities, such as campgrounds, would be developed to minimize disturbance to protected resources in the ACEC</li> </ul>	<ul style="list-style-type: none"> <li>• All BLM-authorized camps and support facilities in the confines of the ACEC, including cabins and tent frames, would be temporary and must be removed after their purpose has been accomplished; if cultural resources are discovered, then camps and support facilities must be avoided in these areas</li> <li>• All recreation facilities, such as campgrounds, would be developed to minimize disturbance to protected resources in the ACEC</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>
<p>Aircraft associated with all BLM-authorized land use activities would be required to fly a minimum of 2,000 feet above ground level (AGL) from May 1 to August 31, unless doing so would endanger human life or be an unsafe flying practice.</p>	<p>No similar action (see <i>Wildlife and Travel Management and Transportation</i> for aircraft restrictions).</p>	<p>No similar action (see <i>Wildlife and Travel Management and Transportation</i> for aircraft restrictions).</p>	<p>No similar action (the ACECs would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>
<p>Manage as VRM Class IV.</p>	<p>Manage as VRM Class III.</p>	<p>No similar action (scenic values are not one of the relevant and important values being managed for; see <i>Recreation</i>).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<b>Dulbi River</b>				
<b>Dulbi River</b> Designate as an ACEC to protect crucial peregrine falcon habitat.	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).
Closed to fluid mineral leasing.	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).
<b>Galena Mountain</b>				
<b>Galena Mountain</b> Designate as an ACEC to protect the calving grounds of the Galena Mountain caribou herd.	<b>Galena Mountain</b> Designate as an ACEC to protect the calving grounds of the Galena Mountain caribou herd.	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).
<ul style="list-style-type: none"> <li>• No surface-disturbing activities during caribou calving, except for casual use and scientific study</li> <li>• All facilities should be temporary</li> <li>• Aircraft pilots must fly 2,000 feet AGL during calving</li> <li>• Prohibit normal landings, except emergencies or for scientific purposes from May 5 to June 30</li> </ul>	<ul style="list-style-type: none"> <li>• Recommend withdrawal from locatable mineral entry and location</li> <li>• Closed to fluid mineral leasing</li> <li>• Closed to mineral materials development</li> <li>• Closed to nonenergy solid mineral leasing</li> <li>• OHV timing limitation (no OHVs from May 1 to June 30)</li> <li>• ROW exclusion area</li> <li>• No surface-disturbing activities during from May 1 to June 30, except for casual use and scientific study</li> <li>• All facilities should be temporary</li> <li>• Aircraft associated with BLM-permitted activities would maintain an altitude of at least 2,000 feet AGL from May 1 to June 30</li> <li>• Aircraft landings associated with BLM-permitted activities are prohibited from May 1 to June 30</li> <li>• Unmanned aerial vehicle use is prohibited from May 1 to June 30</li> </ul>	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).

Alternative A ( <i>No Action</i> )	Alternative B	Alternative C1	Alternative C2 ( <i>Preferred Alternative</i> )	Alternative D
<b>Tozitna River, Tozitna Subunit North, and Tozitna Subunit South</b>				
<p><b>Tozitna River</b> Designate the Tozitna River ACEC to protect crucial salmon spawning habitat.</p> <p><b>Tozitna Subunits North and South</b> Designate the Tozitna Subunits North and South ACEC to protect Ray Mountain caribou habitat (crucial caribou calving habitat)</p> <ul style="list-style-type: none"> <li>• Modify habitat by allowing limited action fires to burn in accordance with the Alaska Interagency Fire Management Plan</li> <li>• Surface occupancy associated with all BLM-authorized activities (see definitions below) would be prohibited from May 10 to June 30; authorized scientific and management studies and casual use activities would be exempt</li> <li>• All BLM-authorized activities would be conducted to avoid or minimize disturbance to caribou from July 1 to May 9</li> <li>• All BLM-authorized field camps and support facilities, including cabins and tent frames, would be temporary and must be removed after their purpose has been accomplished; the existing structures at and</li> </ul>	<p><b>Tozitna</b> Designate as an ACEC (includes the Tozitna River, Tozitna Subunit North, and Tozitna Subunit South existing ACECs) to protect caribou habitat, soils, water, and crucial Chinook, chum, and coho salmon spawning habitat.</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<p>around Kilo Hot Spring are exempt</p> <ul style="list-style-type: none"> <li>• All BLM-authorized activities and facilities would be designed to allow free movement of caribou</li> <li>• Aircraft associated with all BLM-authorized activities would be required to fly a minimum of 2,000 feet AGL from May 10 to June 30, unless doing so would endanger human life or be an unsafe flying practice</li> <li>• Aircraft associated with all BLM-authorized activities would be required to fly a minimum of 1,000 feet AGL from July 1 to May 9, unless doing so would endanger human life or be an unsafe flying practice; normal landings and takeoffs would be allowed</li> <li>• Use of live-fire ammunition and pyrotechnics by the Alaska Army National Guard would be prohibited</li> <li>• The BLM would monitor the Ray Mountains caribou herd during the next 3 years</li> </ul>	<p>(see above)</p>	<p>(see above)</p>	<p>(see above)</p>	<p>(see above)</p>
<p><b>Tozitna River ACEC</b> Recommend withdrawal of crucial spawning habitat from mineral location and FLPMA sales and leases; this withdrawal would extend 300 feet from each side of the stream mean high-water line</p>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal</li> <li>• Recommend withdrawal from locatable mineral entry</li> <li>• Closed to mineral extraction or collection (casual use and prospecting)</li> <li>• Closed to fluid mineral leasing and development</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A ( <i>No Action</i> )	Alternative B	Alternative C1	Alternative C2 ( <i>Preferred Alternative</i> )	Alternative D
<p>and would include the stream bed of unnavigable reaches.</p>	<ul style="list-style-type: none"> <li>• Closed to mineral materials development</li> <li>• Closed to nonenergy solid mineral leasing and development</li> <li>• ROW exclusion area within the 100-year floodplain</li> <li>• ROW avoidance area outside the 100-year floodplain</li> <li>• Prohibit surface-disturbing activities from May 1 to June 30</li> <li>• OHV timing limitation (no OHVs from May 1 to June 30)</li> <li>• All facilities should be temporary</li> <li>• Aircraft associated with BLM-permitted activities would maintain an altitude of at least 2,000 feet AGL from May 1 to June 30</li> <li>• Aircraft landings associated with BLM-permitted activities are prohibited from May 1 to June 30</li> <li>• Unmanned aerial vehicle use is prohibited from May 1 to June 30</li> <li>• Prohibit commercial timber development within the 100-year floodplain; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit)</li> <li>• All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would not be in the 100-year floodplain</li> </ul>	<p>(see above)</p>	<p>(see above)</p>	<p>(see above)</p>



Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<p><b>Tozitna Subunits North and South</b> Structures must be temporary.</p>	<p>No similar action; the Tozitna Subunit North and South would not be designated as an ACEC but would be in the Tozitna ACEC.</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>
<p><b>Upper Kanuti River</b></p>				
<p>No similar action; the Upper Kanuti River is not a designated ACEC.</p>	<p><b>Upper Kanuti River</b> Designate as an ACEC to protect cultural resources and Hodzana caribou habitat.</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>
<p>No similar action; the Upper Kanuti River is not a designated ACEC.</p>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal</li> <li>• Recommend withdrawal from locatable mineral entry</li> <li>• Closed to fluid mineral leasing</li> <li>• Closed to mineral materials development</li> <li>• Closed to nonenergy solid mineral leasing and development</li> <li>• OHV timing limitation (no OHV use from May 1 to June 30)</li> <li>• ROW avoidance area</li> <li>• Prohibit surface-disturbing activities from May 1 to June 30</li> <li>• All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would be temporary and must be removed after their purpose has been accomplished; if cultural resources are discovered, then camps and support facilities must avoid impacts in these areas</li> <li>• All recreation facilities, such as campgrounds, and permitted activities would be developed in a manner to avoid</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
(see above)	<p>disturbance, to protect resources in the ACEC (restricted to previously disturbed areas, where possible)</p> <ul style="list-style-type: none"> <li>• Aircraft associated with BLM-permitted activities would maintain an altitude of at least 2,000 feet AGL from May 1 to June 30</li> <li>• Aircraft landings associated with BLM-permitted activities are prohibited from May 1 to June 30</li> <li>• Unmanned aerial vehicle use is prohibited from May 1 to June 30</li> </ul>	(see above)	(see above)	(see above)
<b>Hogatza River Tributaries, Indian River, Klikhtentotzna Creek, Sethkokna River, South Fork Koyukuk River, Upper Teedriinjik (Chandalar) River, Wheeler Creek</b>				
<p><b>Hogatza River Tributaries</b> Designate as an ACEC to protect crucial salmon spawning habitat.</p> <p><b>Indian River</b> Designate as an ACEC to protect crucial salmon spawning habitat.</p>	<p><b>Hogatza River Tributaries</b> Designate as an ACEC to protect crucial summer chum spawning habitat.</p> <p><b>Indian River</b> Designate as an ACEC to protect crucial chinook and summer chum salmon spawning habitat.</p> <p><b>Klikhtentotzna Creek</b> Designate as an ACEC to protect crucial summer chum salmon spawning habitat.</p> <p><b>Sethkokna River</b> Designate as an ACEC to protect crucial chinook salmon spawning habitat, soil, and water.</p>	<p><b>Hogatza River Tributaries</b> No similar action (the ACEC would not be designated under this alternative).</p> <p><b>Indian River</b> No similar action (the ACEC would not be designated under this alternative).</p> <p><b>Klikhtentotzna Creek</b> No similar action (the ACEC would not be designated under this alternative).</p> <p><b>Sethkokna River</b> No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACECs would not be designated under this alternative).</p>	<p>No similar action (the ACECs would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
(see above)	<p><b>South Fork Koyukuk River</b> Designate as an ACEC to protect crucial chinook salmon and chum salmon spawning habitat.</p> <p><b>Upper Teedriinjik (Chandalar) River</b> Designate as an ACEC to protect crucial habitat for chinook, summer and fall chum, coho, whitefish, and cisco.</p> <p><b>Wheeler Creek</b> Designate as an ACEC (145,000 acres) to protect crucial summer chum salmon spawning habitat.</p>	<p><b>South Fork Koyukuk River</b> Designate as an ACEC to protect crucial chinook salmon and chum salmon spawning habitat.</p> <p><b>Upper Teedriinjik (Chandalar) River</b> No similar action (the ACEC would not be designated under this alternative).</p> <p><b>Wheeler Creek</b> No similar action (the ACEC would not be designated under this alternative).</p>	(see above)	(see above)
<ul style="list-style-type: none"> <li>Recommend withdrawal of crucial spawning habitat from mineral location and FLPMA sales and leases; this withdrawal would extend 300 feet from each side of the stream mean high-water line and would include the stream bed of unnavigable reaches</li> </ul>	<ul style="list-style-type: none"> <li>Pursue FLPMA withdrawal</li> <li>Recommend withdrawal from locatable mineral entry</li> <li>Closed to mineral materials disposal</li> <li>Closed to fluid leasable mineral leasing and development</li> <li>Closed to nonenergy solid mineral leasing and development</li> <li>Closed to mineral extraction or collection (i.e., casual use and prospecting)</li> <li>For BLM-authorized activities, over-ice travel is limited to designated corridors and required engineer thickness/strength testing approval</li> <li>Prohibit commercial timber development; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit)</li> </ul>	<ul style="list-style-type: none"> <li>NSO for fluid mineral leasing and development</li> <li>ROW avoidance</li> <li>All BLM-authorized camps and support facilities would not be located within the confines of the ACEC, including cabins and tent frames, except for scientific purposes</li> </ul>	No similar action (the ACECs would not be designated under this alternative).	No similar action (the ACECs would not be designated under this alternative).

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
(see above)	<ul style="list-style-type: none"> <li>All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would not be in the 100-year floodplain, except for scientific purposes</li> </ul>	(see above)	(see above)	(see above)
No similar action.	For the Hogatza River Tributaries: <ul style="list-style-type: none"> <li>ROW avoidance area</li> </ul>	See above for travel restrictions and ROW prescriptions common to all of these ACECs.	No similar action (the ACECs would not be designated under this alternative).	No similar action (the ACECs would not be designated under this alternative).
No similar action.	For the Indian River, Klikhtentotzna Creek, Sethkokna River, South Fork Koyukuk River, Upper Teedriinjik (Chandalar) River, and Wheeler Creek: <ul style="list-style-type: none"> <li>In summer, closed to OHV use</li> <li>ROW exclusion area</li> </ul>	See above for travel restrictions and ROW prescriptions common to all of these ACECs.	No similar action (the ACECs would not be designated under this alternative).	No similar action (the ACECs would not be designated under this alternative).
<b>Accomplishment Creek</b>				
No similar action: Accomplishment Creek is not a designated ACEC.	<b>Accomplishment Creek</b> Designate as an ACEC to protect crucial Dolly Varden overwintering habitat.	<b>Accomplishment Creek</b> Designate as an ACEC to protect crucial Dolly Varden overwintering habitat.	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).
No similar action: Accomplishment Creek is not a designated ACEC.	<ul style="list-style-type: none"> <li>Pursue FLPMA withdrawal (on lands not already withdrawn)</li> <li>Recommend withdrawal from locatable mineral entry</li> <li>Closed to mineral materials disposal</li> <li>Closed to fluid mineral leasing and development</li> <li>Closed to nonenergy solid mineral leasing and development</li> <li>Closed to mineral extraction or collection (i.e., casual use and prospecting)</li> <li>Closed to summer OHV use</li> <li>ROW exclusion area</li> </ul>	<ul style="list-style-type: none"> <li>NSO for fluid mineral leasing</li> <li>ROW avoidance area</li> <li>All BLM-authorized camps and support facilities would not be located within the confines of the ACEC, including cabins and tent frames, except for scientific purposes</li> </ul>	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
(see above)	<ul style="list-style-type: none"> <li>All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would not be in the 100-year floodplain, except for scientific purposes</li> </ul>	(see above)	(see above)	(see above)
<b>Alatna River</b>				
No similar action; Alatna River is not a designated ACEC.	<b>Alatna River</b> Designate as an ACEC to protect crucial whitefish and sheefish spawning habitat, supporting the main subsistence fishery resources for villages in the Upper Koyukuk River.	<b>Alatna River</b> Designate as an ACEC to protect crucial whitefish and sheefish spawning habitat, supporting the main subsistence fishery resources for villages in the Upper Koyukuk River.	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).
No similar action; Alatna River is not a designated ACEC.	<ul style="list-style-type: none"> <li>Pursue FLPMA withdrawal</li> <li>Recommend withdrawal from locatable mineral entry</li> <li>Closed to mineral materials disposal</li> <li>Closed to fluid mineral leasing and development</li> <li>Closed to nonenergy solid mineral leasing and development</li> <li>Closed to mineral extraction or collection (i.e., casual use and prospecting)</li> <li>Closed to summer OHV use</li> <li>ROW exclusion area</li> <li>Prohibit commercial timber development; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit)</li> <li>All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would not be located in the 100-year floodplain, except for scientific purposes</li> </ul>	<ul style="list-style-type: none"> <li>NSO for fluid minerals leasing</li> <li>ROW avoidance area</li> </ul>	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<b>Jim River</b>				
<p><b>Jim River</b> Designate as an ACEC to protect crucial salmon spawning habitat, recreational fishery, cultural resources, and high scenic values.</p>	<p><b>Jim River</b> Designate as an ACEC to protect Dall sheep, crucial chinook and chum spawning habitat and overwintering habitat for resident fish, soils, water, and cultural resources and scenic values.</p>	<p><b>Jim River</b> Designate as an ACEC to protect crucial Chinook and chum spawning habitat and overwintering habitat for resident fish, soils, water, and cultural resources and scenic values.</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>
<ul style="list-style-type: none"> <li>• Require plans of operation with protective stipulations and mitigation measures to all surface-disturbing activities to avoid unduly affecting aquatic and riparian habitat or threatened, endangered, or candidate species (including plants and peregrine falcons), or affecting any other protected resource</li> <li>• Seasonal use and surface occupancy restrictions, including oil and gas leasing, may be identified once inventory and monitoring studies have been conducted</li> <li>• All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would be temporary and must be removed after their purpose has been accomplished</li> <li>• Protect habitat crucial to threatened and endangered species, especially peregrine falcons</li> </ul>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal (on lands not already withdrawn)</li> <li>• Recommend withdrawal from locatable mineral entry</li> <li>• Closed to mineral materials disposal</li> <li>• Closed to fluid mineral leasing and development</li> <li>• Closed to nonenergy solid mineral leasing and development</li> <li>• Closed to mineral extraction or collection (i.e., casual use and prospecting)</li> <li>• ROW avoidance area</li> <li>• Prohibit commercial timber development; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit)</li> <li>• All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would be temporary and must be removed after their purpose has been accomplished; such facilities would not be located in the 100-year floodplain, except for scientific purposes; if cultural resources are discovered, then</li> </ul>	<ul style="list-style-type: none"> <li>• NSO for fluid mineral leasing and development</li> <li>• ROW avoidance area</li> <li>• For all BLM-authorized camps and support facilities within the confines of the ACEC, if cultural resources are discovered, then camps and support must avoid impacts in these areas</li> <li>• All recreational facilities, such as campgrounds, and permitted activities would be developed in a manner to minimize disturbance to protect resources within the ACEC (restricted to previously disturbed areas where possible)</li> <li>• Manage as VRM Class III</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>Approve new mineral materials sites within the floodplain only if no other economically feasible sites are available</li> </ul>	<p>camps and support must avoid impacts in these areas</p> <ul style="list-style-type: none"> <li>Closed to summer OHV use</li> <li>Manage as VRM Class III</li> <li>All recreation facilities, such as campgrounds, and permitted activities would be developed in a manner to avoid disturbance to protect resources in the ACEC (restricted to previously disturbed areas where possible).</li> </ul>	(see above)	(see above)	(see above)
<b>Mentanontli River/Lake Todatonten</b>				
<p>No similar action; the Mentanontli River/Lake Todatonten is not a designated ACEC.</p>	<p><b>Mentanontli River/Lake Todatonten</b> Designate as an ACEC to protect crucial feeding habitat for humpback whitefish and whitefish migration route.</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>
<p>No similar action; the Mentanontli River/Lake Todatonten is not a designated ACEC.</p>	<ul style="list-style-type: none"> <li>Pursue FLPMA withdrawal</li> <li>Recommend withdrawal from locatable mineral entry</li> <li>Closed to mineral materials disposal</li> <li>Closed to fluid mineral leasing and development</li> <li>Closed to nonenergy solid mineral leasing and development</li> <li>Closed to mineral extraction or collection (i.e., casual use and prospecting)</li> <li>Closed to summer OHV use</li> <li>ROW exclusion area</li> <li>Prohibit commercial timber development; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit)</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
(see above)	<ul style="list-style-type: none"> <li>All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would not be located in the 100-year floodplain, except for scientific purposes</li> </ul>	(see above)	(see above)	(see above)
<b>Midnight Dome/Kalhabuk</b>				
No similar action; Midnight Dome/Kalhabuk is not a designated ACEC.	<b>Midnight Dome/Kalhabuk</b> Designate as an ACEC to protect Dall sheep habitat and Mineral Lick Protection Zones.	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).
No similar action; Midnight Dome/Kalhabuk is not a designated ACEC.	<ul style="list-style-type: none"> <li>Pursue FLPMA withdrawal (on lands not already withdrawn)</li> <li>Recommend for withdrawal from locatable mineral entry</li> <li>Closed to fluid mineral leasing and development</li> <li>Closed to mineral materials disposal</li> <li>Closed to nonenergy solid mineral leasing and development</li> <li>Closed to summer OHV use</li> <li>Exclusion area for rotor-wing aircraft landing, except for those related to fish and wildlife management activities</li> <li>Prohibit surface-disturbing activity in priority habitat (including identified migration or movement corridors)</li> <li>Prohibit vegetation removal within a 0.5-mile radius of a mineral lick</li> </ul>	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).



Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<b>Nugget Creek, Poss Mountain, Snowden Mountain, and West Fork Atigun</b>				
<p><b>Nugget Creek, Poss Mountain, Snowden Mountain, and West Fork Atigun</b> as ACECs to protect crucial Dall sheep lambing areas and mineral lick.</p>	<p><b>Nugget Creek, Poss Mountain, and West Fork Atigun</b> Designate as ACECs to protect priority Dall sheep habitat (including mineral licks). For Snowden Mountain, see <i>Sukakpak/Snowden Mountain ACEC</i>.</p>	<p>No similar action (the ACECs would not be designated under this alternative). For Snowden Mountain, see <i>Sukakpak/Snowden Mountain ACEC</i>.</p>	<p>No similar action (the ACECs would not be designated under this alternative).</p>	<p>No similar action (the ACECs would not be designated under this alternative).</p>
<ul style="list-style-type: none"> <li>• Mineral lick sites (160-acre parcels) are withdrawn from mineral entry and location to surface occupancy by BLM-authorized land activities and to mineral materials extraction</li> <li>• Apply NSO stipulations to fluid mineral leases</li> <li>• Allow only mineral materials extraction with stipulations to prevent disturbance of Dall sheep habitat or access</li> <li>• Plans of operation with protective stipulations and mitigation measures would be applied to all surface-disturbing activities to avoid restricting sheep movement, unduly disturbing sheep habitat, or affecting any other protected resource</li> <li>• All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would be temporary and must be removed after their purpose has been accomplished</li> </ul>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal (on lands not already withdrawn)</li> <li>• Closed to:               <ul style="list-style-type: none"> <li>○ Locatable mineral entry and location</li> <li>○ Fluid mineral leasing and development</li> <li>○ Nonenergy solid mineral leasing and development</li> </ul> </li> <li>• Closed to mineral materials disposal</li> <li>• Prohibit surface-disturbing activities with 1.5 miles (2.5 kilometers) of mineral lick sites</li> </ul>	<p>No similar action (the ACECs would not be designated under this alternative).</p>	<p>No similar action (the ACECs would not be designated under this alternative).</p>	<p>No similar action (the ACECs would not be designated under this alternative).</p>

Alternative A ( <i>No Action</i> )	Alternative B	Alternative C1	Alternative C2 ( <i>Preferred Alternative</i> )	Alternative D
<ul style="list-style-type: none"> <li>Aircraft associated with all BLM-authorized land use activities would be required to fly a minimum of 2,000 feet AGL from May 1 to August 31, unless doing so would endanger human life or be an unsafe flying practice</li> </ul>	(see above)	(see above)	(see above)	(see above)
<p>No similar action (see actions common to all four ACECs above).</p>	<p><b>Nugget Creek</b></p> <ul style="list-style-type: none"> <li>Aircraft associated with all permitted use activities would be required to fly a minimum of 2,000 feet AGL from April 15 to September 30 in identified sheep habitat, unless doing so would endanger human life or be an unsafe flying practice or unless otherwise authorized or permitted</li> <li>Any proposed surface-disturbing activities must mitigate wildlife impacts and impacts on connectivity corridors</li> <li>1.5-mile (2.5-kilometer) radius centered around mineral licks is an exclusion area for rotor-wing aircraft during peak lambing</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
No similar action (see actions common to all four ACECs above).	<b>Poss Mountain</b> <ul style="list-style-type: none"> <li>• Closed to summer OHV use</li> <li>• 1.5-mile (2.5-kilometer) radius centered around mineral licks is an exclusion area for rotor-wing aircraft during peak lambing</li> <li>• Avoid surface-disturbing activity in identified migration or movement corridors</li> <li>• Prohibit vegetation removal within a 0.5-mile (0.8-kilometer) radius of a mineral lick</li> </ul>	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).
No similar action (see actions common to all four ACECs above).	<b>West Fork Atigun</b> <ul style="list-style-type: none"> <li>• 1.5-mile (2.5-kilometer) radius centered around mineral licks is an exclusion area for rotor-wing aircraft during peak lambing</li> <li>• Avoid surface-disturbing activity in identified migration or movement corridors</li> </ul>	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).
<b>Sukakpak/Snowden Mountain</b>				
<b>Sukakpak Mountain</b> Designate as an ACEC to protect high scenic values and geology.	<b>Sukakpak/Snowden Mountain</b> Designate as an ACEC to protect priority Dall sheep habitat (including mineral licks), high scenic values, and geology.	Designate the Sukakpak/Snowden ACEC to protect high scenic values and geology.	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>Mineral materials extraction would not be allowed on the slopes of Sukakpak Mountain</li> <li>NSO stipulations would be applied to fluid mineral leasing in the ACEC</li> <li>All recreation facilities would be consistent with the Dalton Highway Recreation Activity Management Plan</li> <li>Recreation opportunities in the area would be emphasized by trail development.</li> </ul>	<ul style="list-style-type: none"> <li>Pursue FLPMA withdrawal</li> <li>Recommend withdrawal from locatable mineral entry</li> <li>Closed to fluid mineral leasing and development</li> <li>Closed to mineral materials disposal</li> <li>Closed to nonenergy solid mineral leasing and development</li> <li>Prohibit timber harvest and vegetation removal, except as required for permitted activities</li> <li>Prohibit subsistence timber harvest and vegetation removal</li> <li>Avoid dozer use in fire suppression</li> <li>ROW avoidance area</li> <li>Prohibit surface-disturbing activities with 1.5 miles (2.5 kilometers) of mineral lick sites</li> <li>Closed to summer OHV use</li> <li>Exclusion area for rotor-wing aircraft during peak lambing</li> <li>Avoid surface-disturbing activity in identified migration or movement corridors</li> <li>Prohibit vegetation removal within a 0.5-mile (0.8-kilometer) radius of a mineral lick</li> <li>Manage as VRM Class III</li> </ul>	<ul style="list-style-type: none"> <li>NSO for fluid mineral leasing and development</li> <li>ROW avoidance area</li> <li>Prohibit timber harvest and vegetation removal, except as required for permitted activities</li> <li>Consider viewshed when planning dozer lines</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>
<b>Sulukna River</b>				
<p><b>Sulukna River</b> Designate as an ACEC to protect crucial salmon and sheefish (inconnu) spawning habitat.</p>	<p><b>Sulukna River</b> Designate as an ACEC to protect crucial spawning and rearing habitat for sheefish (inconnu) and other whitefish and salmon species.</p>	<p><b>Sulukna River</b> Designate as an ACEC to protect crucial spawning and rearing habitat for sheefish (inconnu) and other whitefish and salmon species.</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<p>No similar action.</p>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal</li> <li>• Recommend for withdrawal from locatable mineral entry within the 100-year floodplain</li> <li>• Closed to mineral materials disposal</li> <li>• Closed to fluid mineral leasing and development</li> <li>• Closed to nonenergy solid mineral leasing and development</li> <li>• Closed to mineral extraction or collection (i.e., casual use and prospecting) within the 100-year floodplain</li> <li>• In summer, limit motorized vehicle use to designated routes, trails, or crossings and allow access through the ACEC for vehicles over 1,500 pounds curb weight by permit</li> <li>• ROW exclusion area with the 100-year floodplain</li> <li>• Prohibit commercial timber development; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit) within the 100-year floodplain</li> <li>• All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would not be in the 100-year floodplain</li> </ul>	<ul style="list-style-type: none"> <li>• NSO for fluid mineral leasing</li> <li>• ROW avoidance area</li> <li>• All BLM-authorized camps and support facilities would not be located within the confines of the ACEC, including cabins and tent frames; except for scientific purposes</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<b>Toolik Lake</b>				
<p><b>Toolik Lake</b> Designate as an ACEC and RNA to protect research activities.</p>	<p><b>Toolik Lake</b> Designate as an ACEC and RNA to protect the high-value research station, supporting more than 14,000 scientific research plots, special status species, and vegetation.</p>	<p><b>Toolik Lake</b> Designate as an RNA to protect high-value research station, supporting more than 14,000 scientific research plots, special status species, and vegetation.</p>	<p><b>Toolik Lake</b> Designate as an RNA to protect research activities.</p>	<p>No similar action (the ACEC/RNA would not be designated under this alternative).</p>
<ul style="list-style-type: none"> <li>• Protect habitats crucial to species considered threatened, endangered, candidate, or sensitive by the U.S. Fish and Wildlife Service or the State of Alaska</li> <li>• All authorized actions would be reviewed to avoid conflict with ongoing research projects in the area</li> <li>• NSO stipulations would be applied to habitat for <i>Montia bostockii</i> locations</li> <li>• The sale of mineral materials would be confined to already-disturbed sites; new sites would be considered only if no other economically feasible alternatives are available</li> </ul>	<ul style="list-style-type: none"> <li>• All authorized actions would be reviewed to avoid conflict with permitted research projects in the area</li> <li>• Closed to new mineral materials disposal sites</li> </ul>	<ul style="list-style-type: none"> <li>• All authorized actions would be reviewed to avoid conflict with permitted research projects in the area</li> <li>• Mineral materials would be confined to already-disturbed sites; new sites would be considered only if no other economically feasible alternatives are available</li> </ul>	<ul style="list-style-type: none"> <li>• All authorized actions would be reviewed to avoid conflict with permitted research projects in the area</li> <li>• Closed to new mineral materials disposal sites</li> </ul>	<p>No similar action (the ACEC/RNA would not be designated under this alternative).</p>

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<ul style="list-style-type: none"> <li>• No recreational camping would be permitted</li> <li>• No public use campgrounds would be developed at Toolik Lake</li> <li>• OHV access for research activities would be allowed through permit</li> <li>• Guiding operations would not be authorized at Toolik Lake</li> </ul>	<ul style="list-style-type: none"> <li>• Closed to summer OHV use, except for permitted activities</li> <li>• Prohibit Special Recreation Permits, commercial transporters, and air taxis on the shores of Toolik Lake</li> </ul>	<ul style="list-style-type: none"> <li>• See Dalton Highway Corridor SRMA (Outer Corridor RMZ and Brooks Range North/Galbraith Lake RMZ) for camping restrictions</li> <li>• Closed to summer OHV use, except for permitted activities</li> <li>• Prohibit Special Recreation Permits on the shores of Toolik Lake</li> </ul>	<ul style="list-style-type: none"> <li>• Closed to summer OHV use, except for permitted activities</li> <li>• Prohibit Special Recreation Permits, commercial transporters, and air taxis on the shores of Toolik Lake</li> </ul>	<ul style="list-style-type: none"> <li>• No similar action (the ACEC/RNA would not be designated under this alternative).</li> </ul>
No lands in the RNA would be made available for disposal (state selection, exchange, or sale).	No lands in the RNA would be made available for disposal (exchange or sale).	No lands in the RNA would be made available for disposal (exchange or sale).	No lands in the RNA would be made available for disposal (exchange or sale).	No similar action.
Prepare a detailed management activity plan for the Toolik Lake Research Natural Area Plan, including the Galbraith Lake ACEC.	No similar action.	No similar action.	No similar action.	No similar action.
<b>Kanuti Hot Springs</b>				
<b>Kanuti Hot Springs</b> Designate as an ACEC to protect a hot springs system.	<b>Kanuti Hot Springs</b> Designate as an ACEC to protect a hot springs system.	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>• The ACEC and surrounding lands (160 acres) closed to mineral entry under PLO 399 of August 20, 1947, which withdrew all hot springs in Alaska from entry and all forms of appropriation</li> <li>• Restrict leasing and development to actions that would not directly affect the hot springs, any identified crucial wildlife habitat, and rare, endangered, or listed plant species</li> <li>• Apply NSO stipulations to fluid mineral leases</li> <li>• Maintain water quality of the spring area and adhere to Environmental Protection Agency and state water quality standards</li> <li>• All surface-disturbing activities having any effect on the resources in the ACEC would require plans of operation and appropriate mitigation to eliminate or minimize any adverse impacts</li> <li>• Close to mineral materials disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Same as Alternative A, plus:               <ul style="list-style-type: none"> <li>○ Prohibit timber and vegetation removal</li> <li>○ Prohibit subsistence timber harvest and vegetation removal</li> <li>○ Prohibit camping</li> <li>○ ROW exclusion area</li> </ul> </li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>
<b>Huslia</b>				
<p>No similar action; Huslia is not a designated ACEC.</p>	<p><b>Huslia</b> Designate as an ACEC to protect chinook, chum, coho, and sockeye salmon and whitefish spawning habitat.</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>



Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<p>No similar action; Huslia is not a designated ACEC.</p>	<ul style="list-style-type: none"> <li>• Pursue FLPMA withdrawal</li> <li>• Recommend withdrawal from locatable mineral entry</li> <li>• Closed to mineral materials disposal</li> <li>• Closed to fluid mineral leasing and development</li> <li>• Closed to nonenergy solid mineral leasing and development</li> <li>• Closed to mineral extraction or collection (i.e., casual use and prospecting)</li> <li>• In summer, limit motorized vehicle use to designated routes, trails, or crossings</li> <li>• ROW avoidance area</li> <li>• For BLM-authorized activities, over-ice travel is limited to designated corridors and required engineer thickness/strength testing approval</li> <li>• Prohibit commercial timber development; prohibit non-subsistence collecting of live vegetation (subsistence use still requires a permit)</li> <li>• All BLM-authorized camps and support facilities within the confines of the ACEC, including cabins and tent frames, would not be located in the 100-year floodplain, except for scientific purposes</li> </ul>	<ul style="list-style-type: none"> <li>• No similar action (the ACEC would not be designated under this alternative).</li> </ul>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>
<b>Nigu-Iteriak</b>				
<p><b>Nigu-Iteriak</b> Designate as an ACEC to protect geologic features and cultural resources (Utility Corridor Resource Management Plan).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>	<p>No similar action (the ACEC would not be designated under this alternative).</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>The upper Nigu section would remain closed to mineral location, mineral materials extraction, and mineral leasing</li> <li>The Iteriak section would be opened to mineral development (entry and leasing), but closed to mineral materials extraction</li> <li>OHV use only for subsistence purposes would be allowed</li> <li>Manage as VRM Class III</li> </ul>	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).	No similar action (the ACEC would not be designated under this alternative).

**J.3 FORESTRY**

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<p><b>Action:</b> Close the CAMA WSA to commercial harvesting of forest products.</p> <p>Implement provisions in the Alaska Forest Practices Act (Alaska Statute 41.17).</p> <p>No prohibition on commercial harvest, except in crucial wildlife habitat (e.g., RNAs).</p>	<p><b>Action:</b> Prohibit commercial timber development and prohibit nonsubsistence collecting of live vegetation (subsistence use still requires a permit) in the following areas:</p> <ul style="list-style-type: none"> <li>CAMA WSA</li> <li>Suitable WSR segments classified as wild</li> <li>Lands managed to protect wilderness characteristics</li> </ul>	<p><b>Action:</b> Prohibit commercial timber development and prohibit nonsubsistence collecting of live vegetation (subsistence use still requires a permit) in the following areas:</p> <ul style="list-style-type: none"> <li>CAMA WSA</li> <li>Within 66 feet of a water body within high value watersheds.</li> </ul>	<p><b>Action:</b> Prohibit commercial timber development and prohibit nonsubsistence collecting of live vegetation (subsistence use still requires a permit) in the CAMA WSA.</p>	<p><b>Action:</b> Prohibit commercial timber development and prohibit nonsubsistence collecting of live vegetation (subsistence use still requires a permit) in the CAMA WSA.</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<p>Stream buffers (50 feet) in the Utility Corridor; prohibit disturbance of vegetation within 300 feet of Jim River.</p> <p>Utility Corridor, Appendix N: Cutting trees within 50 feet of either side of a stream would be prohibited, unless the trees are a danger to human safety or are adversely affecting stream flow.</p>	<ul style="list-style-type: none"> <li>• Within 100 feet of a water body within high value watersheds</li> <li>• ACECs               <ul style="list-style-type: none"> <li>○ Alatna River</li> <li>○ Arms Lake</li> <li>○ Hogatza River Tributaries</li> <li>○ Huslia</li> <li>○ Indian River</li> <li>○ Ishtalitna Creek Hot Springs</li> <li>○ Jim River</li> <li>○ Klikhtentotzna Creek</li> <li>○ Lake Todatonten Pingos</li> <li>○ McQuesten Creek</li> <li>○ Mentanontli River/Lake Todatonten</li> <li>○ Redlands Lake</li> <li>○ Sethkokna River</li> <li>○ South Fork Koyukuk River</li> <li>○ South Todatonten Summit</li> <li>○ Sukakpak/Snowden Mountain</li> <li>○ Sulukna River (within the 100-year floodplain)</li> <li>○ Tozitna (within the 100-year floodplain)</li> <li>○ Upper Teedriinjik (Chandalar) River</li> <li>○ Wheeler Creek</li> </ul> </li> </ul> <p>Prohibit timber harvest and vegetation removal, except as required for permitted activities, in the Sukakpak/Snowden Mountain ACEC.</p> <p>Prohibit subsistence timber harvest and woody vegetation removal in the Kanuti Hot Springs ACEC.</p>	<p>Prohibit timber harvest and woody vegetation removal, except as required for permitted activities, in the Sukakpak/Snowden Mountain ACEC.</p>	<p>(see above)</p>	<p>(see above)</p>

**J.4 ALASKA NATIVE CLAIMS SETTLEMENT ACT (ANCSA) D-1 WITHDRAWALS**

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternatives C1 and C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<p><b>Action:</b> PLO 5173 withdrawing lands from mineral leasing and mineral location and entry (2,339,000 acres).</p> <ul style="list-style-type: none"> <li>• East edge of Nulato Hills, near Kanuti National Wildlife Refuge, and other scattered locations</li> <li>• Withdraws from location and entry under the mineral laws and from leasing under leasing laws</li> <li>• Paragraph 1 and 2—Reserved for selection under Section 12 of ANCSA and for reallocation under Section 12b of ANCSA</li> <li>• Paragraph 5—Reserved for study and review by the Secretary of the Interior for the purpose of classification or reclassification of any lands not conveyed, pursuant to Section 14 of ANCSA</li> </ul> <p>Amended by PLOs 5252 (makes some land available for state selection), 5321 (correction land description), and 5391 (adds lands)</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>	<p><b>Action:</b> Recommend revoking the withdrawal.</p>	<p><b>Action:</b> Recommend revoking the withdrawal.</p>
<p><b>Action:</b> PLO 5179 withdrawing lands from mineral leasing and mineral location and entry (1,027,000 acres).</p> <ul style="list-style-type: none"> <li>• Covers National Wildlife Refuges, part of Nigu River, and Veneti strip</li> <li>• Withdraws from location and entry under the mineral laws and from leasing under leasing laws</li> <li>• Paragraph 1—To reserve for study and possible recommendations to Congress for addition to or creation as units of National Park, Forest, Wildlife Refuge, and WSR system</li> <li>• Paragraph 2—To reserve for study and review by the Secretary of the Interior for the purpose of classification or reclassification, as appropriate</li> </ul> <p>Amended by PLOs 5192 (adds and deletes lands), 5250 (adds lands), 5251 (deletes lands), 5257 (adds lands), and 5254 (deletes lands)</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>	<p><b>Action:</b> Recommend revoking the withdrawal.</p>	<p><b>Action:</b> Recommend revoking the withdrawal.</p>

Alternative A (No Action)	Alternative B	Alternatives C1 and C2 (Preferred Alternative)	Alternative D
<p><b>Action:</b> PLO 5180 withdrawing lands from mineral leasing and mineral location and entry, except for metalliferous minerals (1,249,000 acres).</p> <ul style="list-style-type: none"> <li>Covers the Dalton Utiltiy Corridor, Nulato Hills, and other large block of BLM-managed lands</li> <li>Withdraws from entry under the mineral laws (except location for metalliferous minerals) and the leasing laws</li> <li>Reserved for study to determine the proper classification of the lands under Section 17(d)(1) of ANCSA and to ascertain the public values in the land that need protection</li> </ul> <p>Amended by PLOs 5193 (corrects or modifies land description), 5242 (allows for native selection), 5250 (removed some lands), 5251 (added more lands), 5254 (removes some lands), 5257, 5321 (added more lands), 5391 (removes lands), and 5418 (adds all unreserved lands in Alaska, 15,300,000 acres)</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>	<p><b>Action:</b> Recommend revoking the withdrawal.</p>	<p><b>Action:</b> Recommend revoking the withdrawal.</p>
<p><b>Action:</b> PLO 5184 withdrawing lands from mineral leasing and mineral location and entry (1,308,000 acres).</p> <ul style="list-style-type: none"> <li>Covers mostly checkerboard land around villages</li> <li>Covers lands withdrawn under Section 11 of ANCSA, approximately 11 million acres</li> <li>Withdraws from location and entry under the mineral laws and from leasing under leasing laws</li> </ul> <p>Reserved for study and review by the Secretary of the Interior for classifying or reclassifying any lands not conveyed, pursuant to Section 14 of ANCSA</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>
<p><b>Action:</b> PLO 5186 withdrawing lands from mineral leasing and mineral location and entry, except for metalliferous minerals (127,000 acres).</p> <ul style="list-style-type: none"> <li>Covers North Slope, Poorman area, south of Gates of the Arctic, near Tanana Flats; not much appears to be on BLM-managed lands</li> <li>Withdraws from entry under the mineral laws (except location for metalliferous minerals) and the leasing laws</li> </ul> <p>Modified by PLO 5242</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>
<p><b>Action:</b> PLO 5242 (6,000 acres):</p> <ul style="list-style-type: none"> <li>Partial revocation of PLO 5180 and 5186</li> </ul> <p>Withdraws from location and entry under the mineral laws and from leasing under leasing laws</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>	<p><b>Action:</b> Recommend revoking withdrawal.</p>

Alternative A (No Action)	Alternative B	Alternatives C1 and C2 (Preferred Alternative)	Alternative D
<b>Action:</b> PLO 5169 withdrawing lands from a location and entry under mineral laws and from leasing under the leasing laws. Withdrawals from state selection and reserves for native selection. Lands that cover part of CAMA, Umiat Meridian.	<b>Action:</b> Recommend revoking withdrawal.	<b>Action:</b> Recommend revoking withdrawal.	<b>Action:</b> Recommend revoking withdrawal.
<b>Action:</b> PLO 5173 withdrawing lands from mineral leasing and mineral location and entry (2,339,000 acres).	<b>Action:</b> Recommend revoking withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.
<b>Action:</b> PLO 5179 withdrawing lands from mineral leasing and mineral location and entry (1,027,000 acres).	<b>Action:</b> Recommend revoking withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.
<b>Action:</b> PLO 5180 withdrawing lands from mineral leasing and mineral location and entry, except for metalliferous minerals (1,249,000 acres).	<b>Action:</b> Recommend revoking withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.
<b>Action:</b> PLO 5184 withdrawing lands from mineral leasing and mineral location and entry (1,308,000 acres).	<b>Action:</b> Recommend revoking withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.
<b>Action:</b> PLO 5186 withdrawing lands from mineral leasing and mineral location and entry, except for metalliferous minerals (127,000 acres).	<b>Action:</b> Recommend revoking withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.
<b>Action:</b> PLO 5242 (6,000 acres).	<b>Action:</b> Recommend revoking withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.	<b>Action:</b> Recommend revoking the withdrawal.

### J.5 RIGHT-OF-WAY ALLOCATIONS

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<b>Action:</b> Manage the CAMA WSA as ROW exclusion area.	<b>Action:</b> Manage as ROW exclusion areas: <ul style="list-style-type: none"> <li>• Within the 100-year floodplain of high value watersheds</li> <li>• CAMA WSA</li> <li>• Hot Springs <ul style="list-style-type: none"> <li>○ Kanuti</li> <li>○ Ishtalitna</li> <li>○ Ray River</li> <li>○ Kilo</li> </ul> </li> <li>• Lands managed to protect wilderness characteristics as a priority over other multiple uses</li> </ul>	<b>Action:</b> Manage as ROW exclusion areas: <ul style="list-style-type: none"> <li>• CAMA WSA</li> <li>• Hot Springs <ul style="list-style-type: none"> <li>○ Kanuti</li> <li>○ Ishtalitna</li> <li>○ Ray River</li> <li>○ Kilo</li> </ul> </li> <li>• Dall Sheep Habitat Area (DSHA) (see <b>Appendix I</b> for specifications)</li> </ul>	<b>Action:</b> Manage as ROW exclusion areas: <ul style="list-style-type: none"> <li>• CAMA WSA</li> </ul>	<b>Action:</b> Manage as ROW exclusion areas: <ul style="list-style-type: none"> <li>• CAMA WSA</li> </ul>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
(see above)	<ul style="list-style-type: none"> <li>• ACECs               <ul style="list-style-type: none"> <li>○ Accomplishment Creek</li> <li>○ Alatna River</li> <li>○ Arms Lake</li> <li>○ Ishtalitna Creek Hot Springs</li> <li>○ Indian River</li> <li>○ Galena Mountain</li> <li>○ Kanuti Hot Springs</li> <li>○ Klikhetentotzan Creek</li> <li>○ Lake Todatonten Pingos</li> <li>○ Mcquesten Creek</li> <li>○ Mentanontli River/Lake Todatonten</li> <li>○ Redlands Lake</li> <li>○ Sethkokna River</li> <li>○ South Fork Koyukuk River</li> <li>○ South Todatonten Summit</li> <li>○ Sulukna River (within the 100-year floodplain)</li> <li>○ Tozitna (within the 100-year floodplain)</li> <li>○ Upper Teedriinjik (Chandalar) River</li> <li>○ Wheeler Creek</li> </ul> </li> </ul>	(see above)	(see above)	(see above)

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<p><b>Action:</b> No similar action; no ROW avoidance areas are identified.</p>	<p><b>Action:</b> Manage as ROW avoidance areas:</p> <ul style="list-style-type: none"> <li>• 160-acre area centered on hot springs</li> <li>• Within 0.25 miles of lentic areas</li> <li>• 100-year floodplain in non-high-value watersheds</li> <li>• Wetlands</li> <li>• Alpine vegetation</li> <li>• Lichen</li> <li>• Pingo clusters</li> <li>• Sensitive soils in high-value watersheds</li> <li>• Slopes greater than 35 percent</li> <li>• Lands managed to maintain wilderness characteristics while allowing multiple uses</li> <li>• Suitable WSR segments</li> <li>• ACECs                             <ul style="list-style-type: none"> <li>○ Hogatza River tributaries</li> <li>○ Huslia</li> <li>○ Jim River</li> <li>○ Spooky Valley</li> <li>○ Sukakpak/Snowden Mountain</li> <li>○ Tozitna (outside of the 100-year floodplain)</li> <li>○ Upper Kanuti River</li> </ul> </li> <li>• Dalton Corridor Backcountry Conservation Area</li> </ul>	<p><b>Action:</b> Manage as ROW avoidance areas:</p> <ul style="list-style-type: none"> <li>• 160-acre area centered on hot springs not otherwise managed as ROW exclusion</li> <li>• Within 0.25 miles of lentic areas</li> <li>• 100-year floodplain of high-value watersheds</li> <li>• Wetlands</li> <li>• Pingo clusters south of Lake Todatonten and adjacent to Kanuti Hot Springs</li> <li>• Slopes greater than 35 percent</li> <li>• Caribou calving areas:                             <ul style="list-style-type: none"> <li>○ Galena Mountain</li> <li>○ Ray Moutnains</li> </ul> </li> <li>• Dall sheep movement corridors (see <b>Appendix I</b> for specifications)</li> <li>• Lands with wilderness characteristics in CAMA lands outside the WSA and lands previously covered by PLO 5179 and Alatna River</li> <li>• ACECs                             <ul style="list-style-type: none"> <li>○ Accomplishment Creek</li> <li>○ Alatna River</li> <li>○ Jim River</li> <li>○ South Fork Koyukuk River</li> <li>○ Sukakpak Mountain</li> <li>○ Sulukna River</li> </ul> </li> </ul>	<p><b>Action:</b> Manage as ROW avoidance areas:</p> <ul style="list-style-type: none"> <li>• Pingo clusters south of Lake Todatonten and adjacent to Kanuti Hot Springs</li> <li>• Ray Mountans and Galena Mountain Core Caribou Ranges</li> <li>• Venetie arm</li> </ul>	<p><b>Action:</b> No similar action; no ROW avoidance areas are identified.</p>



**J.6 TRAVEL AND TRANSPORTATION MANAGEMENT**

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternatives C1 and C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<p><b>Action:</b> Limit use of vehicles greater than 1,500 pounds gross vehicle weight to the winter, with adequate snow cover, and to existing trails, where practical.</p>	<p><b>Action:</b> Manage the following areas as subject to seasonal limitations for OHV use (closed in summer):</p> <ul style="list-style-type: none"> <li>• ACECs                             <ul style="list-style-type: none"> <li>○ Accomplishment Creek</li> <li>○ Alatna River</li> <li>○ Indian River</li> <li>○ Jim River</li> <li>○ Klikhtentotzna Creek</li> <li>○ Mentanontli River/Lake Todatonten</li> <li>○ Midnight Dome/Kalhabuk</li> <li>○ Poss Mountain</li> <li>○ Sethkokna River</li> <li>○ South Fork Koyukuk River</li> <li>○ Sukakpak/Snowden Mountain</li> <li>○ Toolik Lake (except by permit)</li> <li>○ Upper Teedriinjik (Chandalar) River</li> <li>○ Wheeler Creek</li> </ul> </li> <li>• Within 160 acres of hot springs</li> </ul>	<p><b>Action:</b> Manage the following areas as subject to seasonal limitations for OHV use (closed in summer):</p> <ul style="list-style-type: none"> <li>• Toolik Lake ACEC/RNA (except by permit) <i>(Note: Toolik Lake ACEC/RNA has different boundaries; therefore, different acres in Alternatives C1 and C2, see Table 2-1 in Chapter 2.)</i></li> </ul>	<p><b>Action:</b> No similar action.</p>
<p><b>Action:</b> No similar action.</p>	<p><b>Action:</b> Manage the following areas as timing limitations for summer OHV travel (no OHVs May 1–June 30):</p> <ul style="list-style-type: none"> <li>• ACECs                             <ul style="list-style-type: none"> <li>○ Spooky Valley</li> <li>○ Galena Mountain</li> <li>○ Tozitna</li> <li>○ Upper Kanuti</li> </ul> </li> </ul>	<p><b>Action:</b> Manage the following areas as timing limitations to summer OHV travel (no OHVs May 1–June 30):</p> <ul style="list-style-type: none"> <li>• Galena Mountain</li> <li>• Ray Mountains Core Caribou Ranges</li> </ul>	<p><b>Action:</b> No similar action.</p>

**J.7 MINERALS**

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<b>Fluid Leasable Minerals</b>				
<p><b>Action:</b> The following areas are closed to fluid mineral leasing, due to resource concerns:</p>	<p><b>Action:</b>The following areas are closed to fluid mineral leasing, due to resource concerns:</p>	<p><b>Action:</b> The following areas are closed to fluid mineral leasing, due to resource concerns:</p>	<p><b>Action:</b> The following areas are closed to fluid mineral leasing, due to resource concerns:</p>	<p><b>Action:</b> The following areas are closed to fluid mineral leasing, due to resource concerns:</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>• CAMA WSA</li> <li>• ACECs               <ul style="list-style-type: none"> <li>○ Arms Lake</li> <li>○ Dulbi River</li> <li>○ Redlands Lake</li> <li>○ Ishtalitna Creek Hot Springs</li> <li>○ McQuesten Creek</li> <li>○ Spooky Valley</li> <li>○ Lake Todatonten Pingos</li> <li>○ South Todatonten Summit</li> <li>○ Upper Nigu-Iteriak</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Within 160 acres of hot springs</li> <li>• Within 0.25 miles of lentic areas</li> <li>• Within 100-year floodplain of high-value watersheds</li> <li>• Lands managed to protect wilderness characteristics</li> <li>• CAMA WSA</li> <li>• ACECs               <ul style="list-style-type: none"> <li>○ Accomplishment Creek</li> <li>○ Alatna River</li> <li>○ Arms Lake</li> <li>○ Galbraith Lake</li> <li>○ Galena Mountain</li> <li>○ Hogatza River Tributaries</li> <li>○ Huslia</li> <li>○ Indian River</li> <li>○ Ishtalitna Creek Hot Springs</li> <li>○ Jim River</li> <li>○ Klikhtentotzna Creek</li> <li>○ Lake Todatonten Pingos</li> <li>○ McQuesten Creek</li> <li>○ Mentanontli River/Lake Todatonten</li> <li>○ Midnight Dome/Kahlabuk</li> <li>○ Nugget Creek</li> <li>○ Poss Mountain</li> <li>○ Redlands Lake</li> <li>○ Sethkokna River</li> <li>○ Spooky Valley</li> <li>○ South Fork Koyukuk River</li> <li>○ South Todatonten Summit</li> <li>○ Sukakpak/Snowden Mountain</li> <li>○ Sulukna River (within the 100-year floodplain)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Within 160 acres of hot springs</li> <li>• Ray Mountains Core Caribou Area (<i>where lands not conveyed</i>)</li> <li>• CAMA WSA</li> <li>• Naturally occurring asbestos sites</li> </ul>	<ul style="list-style-type: none"> <li>• Within the 160-acre area centered on hot springs</li> <li>• CAMA WSA</li> <li>• Naturally occurring asbestos sites</li> </ul>	<ul style="list-style-type: none"> <li>• CAMA WSA</li> <li>• Naturally occurring asbestos sites</li> </ul>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
(see above)	<ul style="list-style-type: none"> <li>○ Toolik Lake</li> <li>○ Tozitna</li> <li>○ Upper Kanuti River</li> <li>○ Upper Teedriinkjik (Chandalar) River</li> <li>○ West Fork Atigun</li> <li>○ Wheeler Creek</li> <li>● Naturally occurring asbestos sites</li> </ul>	(see above)	(see above)	(see above)
<p>Per the Utility Corridor Resource Management Plan, NSO stipulations would apply to the inner corridor, eight identified mineral licks, Ivishak River and Kanuti Hot Springs ACECs, and streams closed to mineral location; these are the floodplains of the Jim River and Prospect Creek downstream of the eastern boundary of the inner corridor, and the Kanuti River downstream of the western boundary of the inner corridor.</p> <p>Rodo River, Kateel River, South Fork Huslia River, Ray River, and the three tributaries of Squaw Creek (northwest of Rampart) would be subject to a 300-foot NSO setback zone along either side of the water.</p> <p>Manage the following ACECs as open to fluid minerals, subject to NSO:</p> <ul style="list-style-type: none"> <li>● Sukakpak/Snowden Mtn</li> <li>● Nugget Creek</li> <li>● Poss Mtn</li> <li>● Snowden Mtn</li> <li>● W. Fork Atigun</li> <li>● Galbraith Lake</li> </ul>	<p><b>Action:</b> Manage the following areas as open to fluid mineral leasing, subject to NSO:</p> <ul style="list-style-type: none"> <li>● 100-year floodplain not otherwise closed</li> <li>● Sensitive soils in high-value watersheds</li> <li>● Suitable WSR segments classified as wild</li> <li>● Lands managed to maintain wilderness characteristics, while emphasizing multiple use</li> <li>● Kanuti Hot Springs ACEC</li> <li>● Within 0.5 miles of golden eagle nests</li> </ul>	<p><b>Action:</b> Manage the following areas as open to fluid mineral leasing, subject to NSO:</p> <ul style="list-style-type: none"> <li>● DSHA</li> <li>● Dall sheep movement corridors</li> <li>● Lands managed to maintain wilderness characteristics</li> <li>● ACECs: <ul style="list-style-type: none"> <li>○ Accomplishment Creek</li> <li>○ Alatna River</li> <li>○ Jim River</li> <li>○ South Fork Koyukuk River</li> <li>○ Sulukna River</li> <li>○ Sukapak/Snowden</li> </ul> </li> <li>● Within 0.5 miles of golden eagle nests</li> </ul>	<p><b>Action:</b> No similar action.</p>	<p><b>Action:</b> Manage the following areas as open to fluid mineral leasing, subject to NSO:</p> <ul style="list-style-type: none"> <li>● Within 160-acre area centered around hot springs, with an exception for geothermal leases or wells</li> </ul>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<p><i>Note: Areas withdrawn from or closed to fluid mineral leasing may also be listed as NSO or controlled surface use because of land use plans and PLOs being designated at different times. However, the GIS model for this plan only counts NSO or controlled surface use acres if they are open to fluid mineral leasing.</i></p>	(see above)	(see above)	(see above)	(see above)
<p><b>Action:</b> No similar action.</p>	<p><b>Action:</b> Manage the following areas as open to fluid mineral leasing, subject to controlled surface use.</p> <ul style="list-style-type: none"> <li>• Suitable WSR segments classified as recreational</li> </ul>	<p><b>Action:</b> Manage the following areas as open to fluid mineral leasing, subject to controlled surface use:</p> <ul style="list-style-type: none"> <li>• Slopes greater than 35 percent and in areas with sensitive soils</li> <li>• Sensitive soils in high value watersheds</li> </ul>	<p><b>Action:</b> Manage the following areas as open to fluid mineral leasing, subject to controlled surface use:</p> <ul style="list-style-type: none"> <li>• Slopes greater than 35 percent and in areas with sensitive soils</li> </ul>	<p><b>Action:</b> Manage the following areas as open to fluid mineral leasing, subject to controlled surface use:</p> <ul style="list-style-type: none"> <li>• Slopes greater than 35 percent and in areas with sensitive soils</li> </ul>
<p><b>Action:</b> Manage the Utility Corridor—Seasonal closures may be applied to areas crucial to federally listed threatened or endangered species.</p>	<p><b>Action:</b> Manage the following areas as open to fluid mineral leasing, subject to timing limitations:</p> <ul style="list-style-type: none"> <li>• Within 0.5 miles of any known priority raptor nests, from April 15 through August 15 (from March 15 through July 20 for gyrfalcon nests)</li> </ul>	<p><b>Action:</b> Same as Alternative B.</p>	<p><b>Action:</b> Same as Alternative B.</p>	<p><b>Action:</b> No similar action.</p>
<p><b>Nonenergy Solid Leasable Minerals</b></p>				
<p><b>Action:</b> The following areas are closed to nonenergy solid mineral leasing:</p> <ul style="list-style-type: none"> <li>• CAMA WSA</li> <li>• ACECs: <ul style="list-style-type: none"> <li>○ Arms Lake</li> <li>○ Ishtalitna Creek Hot Springs</li> <li>○ Lake Todatonten Pingos</li> </ul> </li> </ul>	<p><b>Action:</b> The following areas are closed to nonenergy solid mineral leasing:</p> <ul style="list-style-type: none"> <li>• CAMA WSA</li> <li>• 160-acre parcel around hot springs</li> <li>• 100-year floodplains in high value watersheds</li> <li>○</li> </ul>	<p><b>Action:</b> The following areas are closed to nonenergy solid mineral leasing:</p> <ul style="list-style-type: none"> <li>• CAMA WSA</li> <li>• 160-acre parcel around hot springs</li> <li>• Slopes greater than 35 percent</li> <li>• DSHA</li> </ul>	<p><b>Action:</b> The following areas are closed to nonenergy solid mineral leasing:</p> <p>CAMA WSA</p> <ul style="list-style-type: none"> <li>• 160-acre parcel around hot springs</li> <li>• Naturally occurring asbestos sites</li> </ul>	<p><b>Action:</b> The following areas are closed to nonenergy solid mineral leasing:</p> <ul style="list-style-type: none"> <li>• CAMA WSA</li> <li>• 160-acre parcel around hot springs</li> <li>• Naturally occurring asbestos sites</li> </ul>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>○ McQuesten Creek</li> <li>○ Redlands Lake</li> <li>○ South Todatonten Summit</li> <li>○ Spooky Valley</li> <li>○ Upper Nigu-Iteriak</li> </ul>	<ul style="list-style-type: none"> <li>• Within a 0.5-mile radius of golden eagle nests</li> <li>• Lands managed to protect wilderness characteristics</li> <li>• Suitable WSR segments classified as wild</li> <li>• Naturally occurring asbestos sites</li> <li>• ACECs               <ul style="list-style-type: none"> <li>○ Accomplishment Creek</li> <li>○ Alatna River</li> <li>○ Arms Lake</li> <li>○ Galbraith Lake</li> <li>○ Galena Mountain</li> <li>○ Hogatza River Tributaries</li> <li>○ Huslia</li> <li>○ Indian River</li> <li>○ Ishtalitna Creek Hot Springs</li> <li>○ Jim River</li> <li>○ Klikhtentotzna Creek</li> <li>○ Lake Todatonten Pingos</li> <li>○ McQuesten Creek</li> <li>○ Mentanontli River/Lake Todatonten</li> <li>○ Midnight Dome/Kalhabuk</li> <li>○ Nugget Creek</li> <li>○ Poss Mountain</li> <li>○ Redlands Lake</li> <li>○ Sethkokna River</li> <li>○ South Fork Koyukuk River</li> <li>○ South Todatonten Summit</li> <li>○ Spooky Valley</li> <li>○ Sukakpak/Snowden Mountain</li> <li>○ Sulukna River</li> <li>○ Toolik Lake (new sites)</li> <li>○ Tozitna</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Ray Mountains Core Caribou Area (<i>where lands not conveyed</i>)</li> <li>• Naturally occurring asbestos sites</li> </ul>	<p>(see above)</p>	<p>(see above)</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
(see above)	<ul style="list-style-type: none"> <li>○ Upper Kanuti River</li> <li>○ Upper Teedriinjik (Chandalar) River</li> <li>○ West Fork Atigun</li> <li>○ Wheeler Creek</li> <li>● Dalton Corridor Backcountry Conservation Area</li> </ul>	(see above)	(see above)	(see above)
<b>Locatable Minerals</b>				
<p><b>Action:</b> The following areas are withdrawn from locatable mineral entry, including metalliferous minerals:</p> <ul style="list-style-type: none"> <li>● ANCSA PLOs</li> <li>● PLO 5150 (Inner Corridor)</li> <li>● Mineral licks (160-acre parcel)</li> <li>● Upper Nigu</li> <li>● Kanuti Hot Springs</li> </ul>	<p><b>Action:</b> The inner corridor of PLO 5150 is withdrawn from locatable mineral entry.</p>	<p><b>Action:</b> Same as Alternative B.</p>	<p><b>Action:</b> No similar action (all PLOs would be lifted, so nothing would remain withdrawn).</p>	<p><b>Action:</b> No similar action (all PLOs would be lifted, so nothing would remain withdrawn).</p>
<p><b>Action:</b> The following areas are open to location of metalliferous minerals and closed to location of non-metalliferous minerals:</p> <ul style="list-style-type: none"> <li>● PLO 5180</li> <li>● PLO 5186</li> </ul>	<p><b>Action:</b> No similar action (these PLOs would be recommended for revocation).</p>	<p><b>Action:</b> No similar action (these PLOs would be recommended for revocation).</p>	<p><b>Action:</b> No similar action (these PLOs would be recommended for revocation).</p>	<p><b>Action:</b> No similar action (these PLOs would be recommended for revocation).</p>
<p><b>Action:</b> The following areas are recommended for withdrawal from locatable mineral entry:</p> <ul style="list-style-type: none"> <li>● Spawning habitat of selected anadromous streams, including portions of the North Fork Unalakleet River, Kateel River, Gisasa River, Tozitna River, Indian River, and Clear, Bear and Caribou Creeks (Hogatza River tributary streams)</li> </ul>	<p><b>Action:</b> The following areas are recommended for withdrawal from locatable mineral entry:</p> <ul style="list-style-type: none"> <li>● Hot springs not already withdrawn (160 acres)</li> <li>● Within 0.5 miles of golden eagle nest sites</li> <li>● Lands managed to protect wilderness characteristic</li> <li>● Suitable WSR segments classified as wild</li> <li>● Naturally occurring asbestos sites                             <ul style="list-style-type: none"> <li>● ACECs</li> </ul> </li> </ul>	<p><b>Action:</b> The following areas are recommended for withdrawal from locatable mineral entry:</p> <ul style="list-style-type: none"> <li>● DSHA</li> <li>● Ray Mountains Core Caribou Area (<i>where lands not conveyed</i>)</li> <li>● Within 0.5 miles of golden eagle nest sites</li> <li>● Naturally occurring asbestos sites</li> </ul> <p>Kanuti Hot Springs ACEC is currently withdrawn from</p>	<p><b>Action:</b> No areas are recommended for withdrawal from locatable mineral entry.</p>	<p><b>Action:</b> No areas are recommended for withdrawal from locatable mineral entry.</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>• Crucial peregrine falcon habitat</li> <li>• Kaltag and Nulato River watersheds</li> <li>• Subsistence withdrawal study areas</li> <li>• Withdrawal/exchange lands</li> <li>• RNAs:               <ul style="list-style-type: none"> <li>○ Arms Lake</li> <li>○ Ishtalitna Creek Hot Springs</li> <li>○ Lake Todatonten Pingos</li> <li>○ McQuesten Creek</li> <li>○ Redlands Lake</li> <li>○ South Todatonten Summit</li> <li>○ Spooky Valley</li> </ul> </li> <li>• Floodplains of the Jim River and Prospect Creek, downstream of east boundary inner corridor</li> <li>• Five townships outside of the Southeast corner of Kanuti National Wildlife Refuge (T14N R19W; T16N R15 and 16W; T17N R16W; T18N R16W)</li> </ul> <p>Mineral licks (160-acre parcels) and the Upper Nigu are currently withdrawn from locatable mineral entry.</p> <p>743,000 acres currently withdrawn from locatable mineral entry as part of the inner corridor (PLO 5150).</p> <p>Kanuti Hot Springs ACEC is currently withdrawn from</p>	<ul style="list-style-type: none"> <li>• Arms Lake</li> <li>• Accomplishment Creek</li> <li>• Alatna River</li> <li>• Galbraith Lake</li> <li>• Galena Mountain</li> <li>• Hogatza River Tributaries</li> <li>• Huslia</li> <li>• Indian River</li> <li>• Ishtalitna Creek Hot Springs</li> <li>• Jim River</li> <li>• Kliktentotzna Creek</li> <li>• Lake Todatonten Pingos</li> <li>• McQuesten Creek</li> <li>• Mentanontli River/Lake Todatonten</li> <li>• Midnight Dome/Kalhabuk</li> <li>• Nugget Creek</li> <li>• Poss Mountain</li> <li>• Redlands Lake</li> <li>• Sethkokna River</li> <li>• South Todatonten Summit</li> <li>• Spooky Valley</li> <li>• South Fork Koyukuk</li> <li>• Sukakpak/Snowden Mountain</li> <li>• Sulukna River (within the 100-year floodplain)</li> <li>• Tozitna</li> <li>• Upper Teedriinjik (Chandalar) River</li> <li>• Toolik Lake</li> </ul>	<p>locatable mineral entry as part of PLO 399.</p>	<p>(see above)</p>	<p>(see above)</p>

Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
locatable mineral entry as part of PLO 399.	<ul style="list-style-type: none"> <li>• Upper Kanuti River</li> <li>• West Fork Atigun</li> <li>• Wheeler Creek</li> </ul> Kanuti Hot Springs ACEC is currently withdrawn from locatable mineral entry as part of PLO 399.	(see above)	(see above)	(see above)
<b>Action:</b> No similar action.	<b>Action:</b> The following areas are closed to mineral extraction or collection (i.e., casual use and prospecting): <ul style="list-style-type: none"> <li>• ACECs                             <ul style="list-style-type: none"> <li>○ Accomplishment Creek</li> <li>○ Alatna River</li> <li>○ Hogatza River Tributaries</li> <li>○ Huslia</li> <li>○ Indian River</li> <li>○ Jim River</li> <li>○ Klikhtentotzna Creek</li> <li>○ Mentanontli River/Lake Todatonten</li> <li>○ Sethkokna River</li> <li>○ South Fork Koyukuk</li> <li>○ Sulukna River (within the 100-year floodplain)</li> <li>○ Tozitna</li> <li>○ Upper Teedriinjik (Chandalar) River</li> <li>○ Wheeler Creek</li> </ul> </li> </ul>	<b>Action:</b> No similar action.	<b>Action:</b> No similar action.	<b>Action:</b> No similar action.
<b>Mineral Materials (Salable Minerals)</b>				
<b>Action:</b> Manage the following areas as closed to mineral material disposal: <ul style="list-style-type: none"> <li>• 160-acre parcel around mineral lick sites</li> <li>• ACECs                             <ul style="list-style-type: none"> <li>○ Nugget Creek, with stipulations to prevent disturbance of Dall sheep habitat or access</li> </ul> </li> </ul>	<b>Action:</b> Manage the following areas as closed to mineral material disposal: <ul style="list-style-type: none"> <li>• 160-acre parcel around hot springs</li> <li>• 100-year floodplains in high-value watersheds</li> <li>• Within 0.5 miles of golden eagle nests                             <ul style="list-style-type: none"> <li>○</li> </ul> </li> </ul>	<b>Action:</b> Manage the following areas as closed to mineral material disposal: <ul style="list-style-type: none"> <li>• 160-acre parcel around hot springs</li> <li>• Slopes greater than 35 percent</li> <li>• DSHA and Dall sheep movement corridor (see</li> </ul>	<b>Action:</b> Manage the following areas closed to mineral material disposal: <ul style="list-style-type: none"> <li>• 160-acre parcel around hot springs</li> <li>• Naturally occurring asbestos sites</li> <li>• CAMA WSA</li> <li>• Toolik Lake ACEC/RNA</li> </ul>	<b>Action:</b> Manage the following areas closed to mineral material disposal: <ul style="list-style-type: none"> <li>• 160-acre for hot springs</li> <li>• Naturally occurring asbestos sites</li> <li>• CAMA WSA</li> </ul>



Alternative A (No Action)	Alternative B	Alternative C1	Alternative C2 (Preferred Alternative)	Alternative D
<ul style="list-style-type: none"> <li>○ Sukakpak Mountain (on the slopes)</li> <li>○ Kanuti Hot Springs</li> <li>○ Nigu-Iteriak</li> <li>● CAMA WSA</li> </ul> <p>Seasonal closures or other appropriate restrictions may also be applied to areas crucial to species covered by the Endangered Species Act (e.g., the Toolik Lake RNA).</p>	<ul style="list-style-type: none"> <li>● Naturally occurring asbestos sites</li> <li>● Portions of the Dalton Corridor Backcountry Conservation Area more than 5 miles from the Dalton Highway</li> <li>● CAMA WSA</li> <li>● Lands managed to protect wilderness characteristics</li> <li>● Suitable WSR segments classified as wild</li> <li>● ACECs               <ul style="list-style-type: none"> <li>○ Accomplishment Creek</li> <li>○ Alatna River</li> <li>○ Arms Lake</li> <li>○ Galbraith Lake</li> <li>○ Galena Mountain</li> <li>○ Hogatza River Tributaries</li> <li>○ Huslia</li> <li>○ Indian River</li> <li>○ Ishtalitna Creek Hot Springs</li> <li>○ Jim River</li> <li>○ Kanuti Hot Springs</li> <li>○ Klikhtentotzna Creek</li> <li>○ Mentanontli River/Lake Todatonten</li> <li>○ McQuesten Creek</li> <li>○ Midnight Dome/Kalhabuk</li> <li>○ Nugget Creek</li> <li>○ Poss Mountain</li> <li>○ Redlands Lake</li> <li>○ Sethkokna River</li> <li>○ South Fork Koyukuk River</li> <li>○ Spooky Valley</li> <li>○ Sukakpak/Snowden Mountain</li> <li>○ Sulukna River</li> </ul> </li> </ul>	<p><i>Wildlife</i> section for exceptions)</p> <ul style="list-style-type: none"> <li>● Galena Mountain and Ray Mountains Core Caribou Ranges</li> <li>● CAMA WSA</li> <li>● Naturally occurring asbestos sites</li> <li>● ACECs               <ul style="list-style-type: none"> <li>○ Alatna River</li> <li>○ Accomplishment Creek</li> <li>○ Jim River</li> <li>○ South Fork Koyukuk</li> <li>○ Sukapak Mountain</li> <li>○ Sulukna River</li> </ul> </li> </ul> <p>Toolik Lake RNA (confined to disturbed sites; new sites only if no other economically feasible alternatives)</p>	<ul style="list-style-type: none"> <li>● Galena Mountain and Ray Mountains Core Caribou Ranges</li> </ul>	<p>(see above)</p>

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
(see above)	<ul style="list-style-type: none"> <li>○ Toolik Lake (new sites)</li> <li>○ Tozitna</li> <li>○ Upper Kanuti River</li> <li>○ Upper Teedriinjik (Chandalar) River</li> <li>○ West Fork Atigun</li> <li>○ Wheeler Creek</li> </ul>	(see above)	(see above)	(see above)

## J.8 REFERENCES

BLM (U.S. Department of the Interior Bureau of Land Management). 1986. Central Yukon Planning Area Resource Management Plan Record of Decision. Fairbanks District Office, Northwest Resource Area. September 1986.

## J.9 GLOSSARY

**Alaska Native Claims Settlement Act (ANCSA).** A law passed by Congress in 1971 to settle aboriginal land claims in Alaska. Under the settlement the Natives received title to over 44 million acres, to be divided among some 220 Native villages and 12 regional corporations established by the act. The corporations shared in a payment of \$962,500,000.

**area of critical environmental concern (ACEC).** Special area designation established through the BLM's land use planning process (43 CFR 1610.7-2) where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The level of allowable use within an ACEC is established through the collaborative planning process. Designation of an ACEC allows for resource use limitations to protect identified resources or values.

**Dall sheep habitat area (DSHA).** BLM-managed lands identified as having the highest habitat conservation value in relation to Dall sheep.

**Dall sheep movement corridor (DSMC).** BLM-managed lands identified as having significant value to Dall sheep for accessing seasonal ranges, mineral sources, forage habitat, and escape terrain.

**Federal Land Policy and Management Act (FLPMA).** A law passed in 1976 to establish public land policy, guidelines for its administration, and provide for the management, protection, development, and enhancement of the public lands.

**no surface occupancy (NSO).** A fluid mineral leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the NSO area.

**research natural area.** A land management status that reserves the area for uses that are compatible with the resource of interest and research for which the area was designated.

**unmanned aerial vehicle (UAV).** A UAV is defined as an unmanned aerial vehicle and differs from an unmanned aircraft system in one major way: a UAV is just referring to the aircraft itself, not the ground control and communications units.

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# Appendix K

Recreation Management Areas and  
Backcountry Conservation Areas

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

AIVC	Arctic Interagency Visitor Center
BCA	backcountry conservation area
BLM	Bureau of Land Management
EIS	environmental impact statement
ERMA	extensive recreation management area
MP	milepost
OHV	off-highway vehicle
RMA	recreation management area
RMP	resource management plan
RMZ	recreation management zone
RV	recreational vehicle
SRMA	special recreation management area
SRP	Special Recreation Permit
USFWS	United States Fish and Wildlife Service

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# **Appendix K. Recreation Management Areas (RMAs) and Backcountry Conservation Areas (BCAs)**

This appendix provides additional details involving both recreation and visitor services and BCAs that are described in the alternatives comparison discussion in Chapter 2.

**Table K-1  
RMAs and BCAs Alternatives Comparison**

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<b>Action:</b> No similar action.	<b>Action:</b> Designate the Dalton Corridor BCA.	<b>Action:</b> No similar action.	<b>Action:</b> No similar action.	<b>Action:</b> No similar action.
<b>Action:</b> Manage the following special recreation management areas (SRMAs): <ul style="list-style-type: none"> <li>• Dalton Highway</li> <li>• Dalton Corridor</li> </ul>	<b>Action:</b> Manage the following SRMAs: <ul style="list-style-type: none"> <li>• Sukakpak Region (from milepost [MP] 181, just north of Marion Creek, to MP 237, Chandalar Shelf; backcountry)</li> <li>• Central Dalton (from MP 56, Yukon River Crossing, to MP 181, Coldfoot), consisting of the following recreation management zones (RMZs):               <ul style="list-style-type: none"> <li>○ Dalton Uplands (frontcountry; 339,000 acres)</li> <li>○ Coldfoot (rural; 7,000 acres)</li> <li>○ Yukon River Crossing (rural; 7,000 acres)</li> </ul> </li> </ul>	<b>Action:</b> Manage the following SRMAs: <ul style="list-style-type: none"> <li>• Dalton Highway corridor, consisting of the following RMZs:               <ul style="list-style-type: none"> <li>○ Yukon River (rural; 19,000 acres)</li> <li>○ Finger Mountain (frontcountry; 33,000 acres)</li> <li>○ Arctic Circle (frontcountry; 73,000 acres)</li> <li>○ Grayling Lake (frontcountry; 11,000 acres)</li> <li>○ Chapman Lake (backcountry; 8,000 acres)</li> <li>○ Coldfoot (rural; 27,000 acres)</li> <li>○ Brooks Range South (semi-primitive; 120,000 acres)</li> <li>○ Brooks Range North/Galbraith Lake (backcountry; 137,000 acres)</li> <li>○ Outer corridor (semi-primitive; 2,009,000 acres)</li> </ul> </li> </ul>	<b>Action:</b> Manage the Dalton SRMA consisting of the following RMZs: <ul style="list-style-type: none"> <li>• Sukakpak Region (353,000 acres; backcountry)</li> <li>• Dalton Uplands (frontcountry; 339,000 acres)</li> <li>• Coldfoot (rural; 7,000 acres)</li> <li>• Yukon River Crossing (rural; 7,000 acres)</li> </ul>	<b>Action:</b> No similar action.

K. Recreation Management Areas (RMAs) and Backcountry Conservation Areas (BCAs)

<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<p><b>Action:</b> Manage the following extensive recreation management areas (ERMAs):</p> <ul style="list-style-type: none"> <li>• Central Arctic Management Area</li> <li>• Nigu-Iteriak Area of Critical Environmental Concern/Research Management Area</li> <li>• Oolamnavik-Colville</li> </ul>	<p><b>Action:</b> Manage the following ERMAs:</p> <ul style="list-style-type: none"> <li>• Spooky Valley: Scenic value and remote recreation in a primitive setting</li> <li>• Nigu-Iteriak River (Central Arctic Management Area): Scenic values, float trips, and remote recreation in a primitive setting</li> </ul>	<p><b>Action:</b> Same as Alternative B.</p>	<p><b>Action:</b> Manage the Dalton ERMA: Existing values in a semi-primitive setting.</p>	<p><b>Action:</b> No similar action.</p>

**K.1 RECREATION SETTING CHARACTERISTICS MATRIX**

**K.1.1 PHYSICAL COMPONENT—Qualities of the Landscape**

<b>Landscape</b>	<b>Primitive Classification</b>	<b>Semi-primitive Classification</b>	<b>Backcountry Classification</b>	<b>Frontcountry Classification</b>	<b>Rural Classification</b>
<b>Remoteness (approximate distance from routes)</b>	More than 5 miles from either mechanized or motorized routes or established landing fields.	More than 1 mile from either mechanized or motorized routes or established landing fields.	Within 0.5 miles of mechanized routes or established landing fields.	Within 0.5 miles of low-clearance or passenger vehicle routes, four-wheel drive vehicles, and off-highway vehicles (OHVs) (includes unpaved roads and private land routes).	Within 0.5 miles of primary roads and highways.
<b>Naturalness (landscape, line, and color)</b>	Undisturbed natural landscape.	Undisturbed natural landscape with little evidence of previous human use.	Natural landscape without any modifications and in harmony with surroundings and not visually obvious or evident.	Character of the natural landscape partially modified, but nothing overpowers the natural landscape. Character of the natural landscape retained. A few modifications contrast with the character of the landscape.	Character of the natural landscape considerably modified.

K. Recreation Management Areas (RMAs) and Backcountry Conservation Areas (BCAs)

<b>Landscape</b>	<b>Primitive Classification</b>	<b>Semi-primitive Classification</b>	<b>Backcountry Classification</b>	<b>Frontcountry Classification</b>	<b>Rural Classification</b>
<b>Facilities</b>	No structures. No sign of human trails or previous use.	No structures. Foot, horse, and water trails only.	Developed trails made mostly of native materials (for example bridges made from logs). Structures are rare and isolated.	Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays. Maintained and marked trails, simple trailhead developments, and basic toilets.	Modern facilities such as campgrounds, group shelters, boat launches, and occasional exhibits.

**K.1.2 SOCIAL COMPONENT—Qualities Associated with Use**

<b>Use</b>	<b>Primitive Classification</b>	<b>Semi-primitive Classification</b>	<b>Backcountry Classification</b>	<b>Frontcountry Classification</b>	<b>Rural Classification</b>
Contacts with any other group (average).	Encounters with others rare.	Fewer than three encounters per day.	Three to six encounters per day.	Fifteen to 25 encounters per day off travel routes (e.g., campgrounds) and 30 or more encounters per day on travel routes. Seven to 14 encounters per day off travel routes (e.g., staging areas) and 15 to 29 encounters per day on travel routes.	People seem to be generally everywhere.
Group size (average, other than one's own group).	Three or fewer people per day. Group encounters are rare.	Six or fewer people per day. Groups are dispersed.	Four to six people per group. Groups are dispersed.	Thirteen to 25 people per group.	Twenty-six to 50 people per group.

K. Recreation Management Areas (RMAs) and Backcountry Conservation Areas (BCAs)

Use	Primitive Classification	Semi-primitive Classification	Backcountry Classification	Frontcountry Classification	Rural Classification
Evidence of use	No alteration of the natural terrain. No sign of previous users.	No alteration of the natural terrain. Only footprints observed. Sounds of people are rare.	Areas of alteration are uncommon. Little surface vegetation wear observed. Sounds of people are infrequent.	Small areas of alteration are prevalent. Surface vegetation is gone with compacted soils observed. Sounds of people are regularly heard. Small areas of alteration. Surface vegetation showing wear with some bare soils. Sounds of people are occasionally heard.	A few large areas of alteration. Surface vegetation is absent with hardened soils. Sounds of people are frequently heard.

**K.1.3 OPERATIONAL COMPONENT—Conditions Created by Management over Recreation Use**

Recreation Use Management	Primitive Classification	Semi-primitive Classification	Backcountry Classification	Frontcountry Classification	Rural Classification
Access (types of travel allowed)	Foot, horse, and non-motorized travel are common. No trails or trailheads are managed for motorized activities. Snowmobile and other means of surface transportation, motorboat, and aircraft activity permissible through Alaska National Interest Lands Conservation Act 1110(a) and 811.	Foot, horse, and non-motorized and limited levels of dispersed mechanized travel are common. No trails or trailheads are managed for motorized activities. Snowmobile and other means of surface transportation, motorboat, and aircraft activity permissible through Alaska National Interest Lands Conservation Act 1110(a) and 811.	Various forms of dispersed motorized and non-motorized use may be present, but they are not substantially noticeable.	Two-wheel drive vehicles are predominant, but also four-wheel drives and non-motorized, mechanized modes of travel.  Four-wheel drives, OHVs, dirt bikes, and snowmobiles, in addition to non-motorized, mechanical modes of travel.	Ordinary highway automobile and truck traffic are characteristic.

K. Recreation Management Areas (RMAs) and Backcountry Conservation Areas (BCAs)

<b>Recreation Use Management</b>	<b>Primitive Classification</b>	<b>Semi-primitive Classification</b>	<b>Backcountry Classification</b>	<b>Frontcountry Classification</b>	<b>Rural Classification</b>
Visitor services and information.	No maps or brochures available on-site.	Basic maps available. Area personnel are rarely available to provide on-site assistance.	Basic maps. Staff are infrequently present (e.g., seasonally, during high-use periods) to provide on-site assistance.	Information materials describe the recreation area and activities; staff are seasonally present; area brochures and maps; staff are on-site late spring through early fall.	Same as frontcountry classification. Staff are seasonally present.
Management controls.	No on-site posting/signs of visitor regulations, interpretive information, or ethics. Few use restrictions.	Basic user regulations at key access points. Minimum use restrictions.	Limited regulatory signs. Some use limitations or restrictions.	Rules, regulations, and ethics are clearly posted. Use restrictions, limitations, and closures. Some regulatory and ethics signage. Moderate use restrictions (e.g., camping and human waste).	Regulations are strict, and ethics are prominent. Use may be limited by permit or reservation.



## **K.2 SUKAKPAK REGION SRMA**

SRMAs are administrative units where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their value, importance, and/or distinctiveness, especially compared with other areas for recreation. For each SRMA, the Bureau of Land Management (BLM) establishes objective decisions, describes recreation setting characteristics, identifies management actions and allowable use decisions, and, if necessary, identifies implementation decisions.

### **K.2.1 Supporting Information**

The Sukakpak Region SRMA encompasses the area from Dalton Highway MP 181 just north of Marion Creek to MP 237 at Chandalar Shelf. This SRMA includes lands previously described as being in the inner utility corridor and outer utility corridor, as described in the Utility Corridor Resource Management Plan (RMP)/Environmental Impact Statement (EIS), signed in January 1991. In November 1991, the RMP for the Dalton Highway RMA was signed.

### **K.2.2 SRMA/RMZ Objectives Decisions**

SRMAs may be subdivided into RMZs, with discrete objectives. SRMA/RMZ objectives must define the specific recreation opportunities (i.e., activities, experiences, and benefits derived from those experiences) that become the focus of recreation and visitor services management.

#### ***Objective Statement***

Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

#### ***Activities***

**Primary Activities**—Driving and sight-seeing, photography, and watching wildlife

**Secondary Activities**—Camping, day hiking, bird-watching, and berry picking. There is seasonal use for big game hunting in the SRMA.

#### ***Experiences***

**Primary Experiences**—Enjoying the sights and smells of nature, experiencing new and different things, and being away from crowds

**Secondary Experiences**—Getting away from the usual demands of life, being free to make their own choices, and being with friends

#### ***Benefits***

**Personal/individual**—A greater connection with nature, an improved outlook on life, and an enhanced sense of personal freedom

**Community/social**—A greater appreciation for the cultural heritage, improved family bonding, and a heightened awareness of the natural world

**Environmental**—Increased knowledge and understanding of regional ecosystems and greater awareness of methods to minimize recreation impacts

### **K.2.3 Recreation Setting Characteristic Descriptions—Backcountry**

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 268 road miles from the southern edge of the SRMA, at MP 181; it continues to MP 237 at Chandalar Shelf. The area has mountain peaks of global recognition, such as Sukakpak and Snowden Mountains. There are several waysides in the SRMA, which culminate at the north end, with far-reaching vistas of the Brooks Range and valleys from the Chandalar Shelf pullout at MP 237.

**Social Components**—Recreation users in this SRMA can at times expect encounters with groups of 15 when stopping at points of interest along the roadway. In most waysides, group sizes typically range from 2 to 10 individuals with a small number of commercial tour companies accessing the area and using 15-passenger vans to transport their guests. Use in the SRMA increases throughout the summer, with a peak in late summer/early fall for sheep and caribou hunting activities. The community of Wiseman, with residents living a modern-day subsistence lifestyle, provides travelers with an opportunity to learn about life in the far north.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Community Center in Fairbanks, and online. There is signage along the roadway directing travelers to recreation opportunities, and information materials, such as the Dalton Highway Guide, are available throughout the year at selected sites. Staff are present seasonally. Use may be limited and may require a permit.

### **K.2.4 Management Actions and Allowable Use Decisions**

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. Special Recreation Permits (SRPs) are issued to businesses, organizations, and individuals to allow the use of specific public lands and related waters for commercial, competitive, and organized group use. Recreation Use Permits are required at approved sites, such as developed day use areas or visitor centers.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 16.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### **K.2.5 Implementation Decisions**

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring.

**Implementation Decisions**—A plan decision under consideration is to open the Arctic Circle wayside and campground to commercial development, with the designation as a development node.

## **K.3 CENTRAL DALTON SRMA**

### **K.3.1 Central Dalton SRMA Supporting Information**

The Central Dalton SRMA is described as the inner corridor and is bounded by the Yukon River Crossing RMZ to the south, the Coldfoot RMZ to the north, and, for much of the SRMA, the Backcountry Conservation Area to the east and west. The SRMA will be managed to provide three RMZs: Yukon River

Crossing, Dalton Uplands, and Coldfoot. The Yukon River Crossing and Coldfoot RMZs are relatively small in scale, compared with the overall size of the Central Dalton SRMA. They provide critical support for recreation users in this remote, roaded region of the planning area. Management within the SRMA provides for positive interactions between user groups, while protecting recreation opportunities.

The SRMA begins at the Yukon River Crossing at MP 56 and ends at MP 181 north of Marion Creek (see **Table K-2**). This SRMA has historically had the greatest number of recreation users in the planning area.

**Table K-2  
Central Dalton SRMA**

<b>RMZs</b>	<b>Dalton MP</b>	<b>Setting Characteristics</b>
Yukon River Crossing	MP 56–63	Rural
Dalton Uplands	MP 63–173	Frontcountry
Coldfoot	MP 173–181	Rural

High-quality experiences in the SRMA include the Arctic Interagency Visitor Center (AIVC), which provides a focal point for the BLM, the United States Fish and Wildlife Service (USFWS), and the National Park Service to communicate to travelers where opportunities to recreate exist on public lands. The number one attraction is a visit to the Arctic Circle wayside, where adventurers can pose for a picture in front of the well-known Arctic Circle “trophy sign” and receive a certificate that they have crossed into the northernmost region of the world.

Waysides with interpretive signs describing the natural and cultural history of the region support recreation users looking for a respite from the many challenges of driving the Dalton Highway. The SRMA has three campgrounds: 60 Mile, Arctic Circle, and Marion Creek. Campgrounds are open during the summer season; however, roadside camping in waysides and idle gravel pits occurs throughout the year. Night-sky viewing and winter travel are gaining in popularity as visitors travel the area in search of the aurora borealis (northern lights). The landscape is free of noise and light influences, which provides for high-quality night-sky viewing.

### **K.3.2 SRMA/RMZ Objectives Decisions**

#### ***Objective Statement***

Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

#### ***Activities***

Primary activities include driving and sight-seeing, photography, wildlife watching, day hiking, walking or running, fishing, and camping. Visitors can take destination tours to the Yukon River and Arctic Circle. Bow hunting is allowed by State statute, 5 miles from either side of the highway. Rifle hunting is allowed outside the 5-mile limit set by the State.

#### ***Experiences***

Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

### **Benefits**

Survey results show the benefits that recreation users achieve in the SRMA are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway and reach the Arctic Circle.

#### **K.3.3 Recreation Setting Characteristic Descriptions**

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 140 road miles from the Yukon River bridge, where BLM-managed lands for this SRMA begin. Visitor facilities in the SRMA are the BLM contact station at the Yukon River Crossing, along with restrooms on the east and west sides of the road. There are three BLM campgrounds: 60 Mile Campground; Arctic Circle Campground; and Marion Creek Campground, which is a 27-site fee campground, with parking for recreational vehicles (RVs), pull-through sites, potable water, an information kiosk, and outhouses. The 60 Mile Campground is the only site along the highway with a seasonal dump station for RVs.

Truck and trailer parking for river boat traffic is available on a State of Alaska site northwest of the bridge. At the Yukon River, there is a BLM lease area that is occupied by a business providing lodging, meals, and fuel. This site is rustic and representative of lodging facilities along the Dalton Highway. The character of the natural landscape is partially modified by the linear feature of the Trans-Alaska Pipeline System, but it does not overpower the natural landscape.

Facilities include the AIVC, and interpretive hiking trails connect to the east side of the road, where there is a truck stop, café, and lodging. Interpretive hiking trails adjacent to the AIVC feature panels at trailheads and the pioneer cemetery, a replica miner's cabin, and a drift mining display. There are rustic facilities, such as campsites, restrooms, trailheads, interpretive displays, maintained and marked trails, and simple trailhead developments. There are no recreation facilities in the planning area outside of those next to the Dalton Highway.

Airboat operators access the South Fork of the Koyukuk River on the west side of the bridge for big game hunting. At Grayling Lake, there is access for launching boats on the northwest end of the lake and adjacent to the road. Float plane access/use is popular at this site. Float boat recreationists can access the Middle Fork of the Koyukuk River at the bridge crossing, east of Wiseman on the Dalton Highway.

**Social Components**—Recreation users in this SRMA can at times expect encounters with groups of up to 50 people when arriving at destination sites, such as the Arctic Circle wayside. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Use of this site varies by season and time of day. Campground users will typically experience small camping parties with users in tents and a variety of RVs. Seasonal spikes, with different recreation user groups, occur in the SRMA throughout the year.

Interaction with other visitors will often occur at any of the waysides within the SRMA. A designated interpretive hiking trail at Finger Mountain provides for a recreation experience close to the highway, where encounters with other users are possible.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, and online. The BLM has staff

present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities.

### **K.3.4 Management Actions and Allowable Use Decisions**

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### **K.3.5 Implementation Decisions**

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring.

**Implementation Decisions**—A plan decision under consideration is to open the Arctic Circle wayside and campground to commercial development, with the designation as a development node.

### **K.3.6 Dalton Uplands RMZ**

#### ***Dalton Uplands RMZ Supporting Information***

The Central Dalton SRMA encompasses the area from the Yukon River Crossing at MP 56 to MP 165. The Dalton Uplands RMZ is linear and covers lands described as the inner corridor. It is bordered by the Yukon Crossing RMZ to the south, the Coldfoot RMZ to the north and, for much of the RMZ, the Backcountry Conservation Area to the east and west.

Activities that draw visitors to this unique road-accessible region include taking day trips to Finger Mountain, viewing the Arctic Circle, vehicle touring, and fishing in pristine streams. Other recreation sites of significance are Grayling Lake, Chapman Lake, and the numerous waysides with wildlife and scenic viewing opportunities.

The Dalton Uplands RMZ shall be managed to provide frontcountry recreation experiences. Management within the RMZ will provide for sustainable recreation opportunities.

#### ***Dalton Uplands SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Primary activities are driving and sight-seeing, photography, and watching wildlife. Secondary activities are camping, day hiking, bird-watching, and berry picking.

**Experiences**—Primary experiences are enjoying the sights and smells of nature, experiencing new and different things, and being away from crowds. Secondary experiences are getting away from the usual demands of life, being free to make their own choices, and being with friends.

**Benefits**—Personal/individual benefits are a greater connection with nature, an improved outlook on life, and an enhanced sense of personal freedom. Community/social benefits are greater appreciation for the

cultural heritage, improved family bonding, and a heightened awareness of the natural world. Environmental benefits are an increased knowledge and understanding of regional ecosystems and a greater awareness of methods to minimize recreation impacts.

### ***Recreation Setting Characteristic Descriptions—Frontcountry***

**Physical Components**—The Dalton Uplands RMZ encompasses the area from MP 86 to MP 165 at Chapman Lake. The character of the natural landscape is retained in the majority of the RMZ. A few modifications contrast with the character of the landscape where the Trans-Alaska Pipeline System is aboveground and visible.

Rustic facilities, such as campsites, restrooms, trailheads, and interpretive displays, exist throughout the road corridor of the RMZ. There are maintained and marked trails of short distance, and simple trailhead developments. The Finger Mountain wayside and the Arctic Circle wayside are two of the most visited waysides in the RMZ. Visitation at the Arctic Circle wayside reaches into the tens of thousands, which puts pressure on the infrastructure. The RMZ also includes the Arctic Circle Campground one-half mile from the Arctic Circle wayside.

**Social Components**—Travelers in the inner corridor in the RMZ can expect to see groups ranging in size from 2 to 50 people on travel routes and 50 or more vehicle encounters per day on highway travel routes. Encounters with smaller groups occur during off-peak seasons.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the RMZ. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Information materials are available throughout the year at selected sites.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

### **K.3.7 Coldfoot RMZ**

#### ***Coldfoot RMZ Supporting Information***

The Central Dalton SRMA encompasses the area from the Yukon River Crossing at MP 56 to MP 181. This SRMA has been divided into three RMZs. The Coldfoot RMZ encompasses lands from MP 165 to MP 190.

**Map K-1** includes the inner utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. In November 1991, the RMP for the Dalton Highway RMA was signed.

The primary draw to this area is for travelers to explore the many remote recreation opportunities that are accessible by vehicle on the Dalton Highway. Activities that draw visitors to the Coldfoot RMZ are the world-class AIVC, access into remote areas of the foothills of the Brooks Range by foot, and access to rural and remote areas from the Coldfoot airport. The RMZ also has the Marion Creek Campground and the Coldfoot truck stop and restaurant, which serve as a fueling station and mail stop for many local placer miners. Management in the RMZ will provide for sustainable recreation opportunities.

#### ***Coldfoot SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Driving and sight-seeing, photography, watching wildlife, day hiking, walking or running, fishing, river float trips, visitor center and programs, and camping.

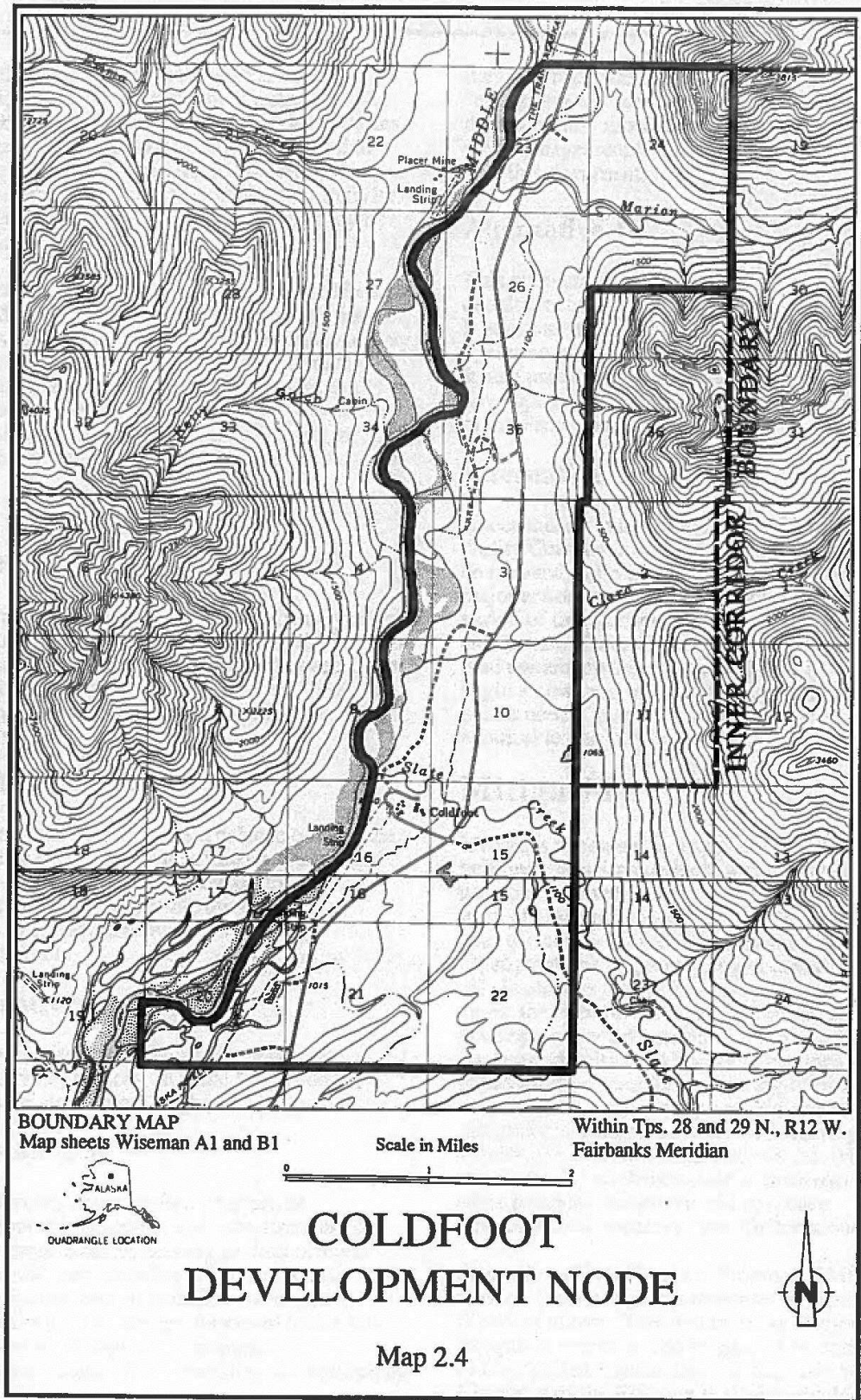
**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway.

#### ***Recreation Setting Characteristic Descriptions—Rural***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 259 road miles from Coldfoot. The BLM manages visitor facilities in the RMZ in the Coldfoot Development Node. Recreation facilities in the Coldfoot RMZ include the AIVC, interpretive hiking trails spanning from the AIVC, interpretive kiosks at trailheads, the pioneer cemetery with interpretive panels, Marion Creek Campground, a replica of a miner's cabin, and a drift mining display. Five miles north of Coldfoot and within the RMZ is Marion Creek Campground, a 27-site fee campground with RV parking, pull-through sites, potable water, an information kiosk, and outhouses.

### Map K-1 Coldfoot Development Node





**Social Components**—Recreation users in this RMZ can at times expect encounters with groups of 50 when arriving in the Coldfoot truck stop. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Large concentrations of industrial traffic are to be expected. Campground users typically experience small camping parties with users in tents and a variety of RVs. Seasonal spikes occur in the RMZ with different recreation user groups from late February through early October.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites. Use of the roadway may be limited and may require a permit.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. For example, the land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

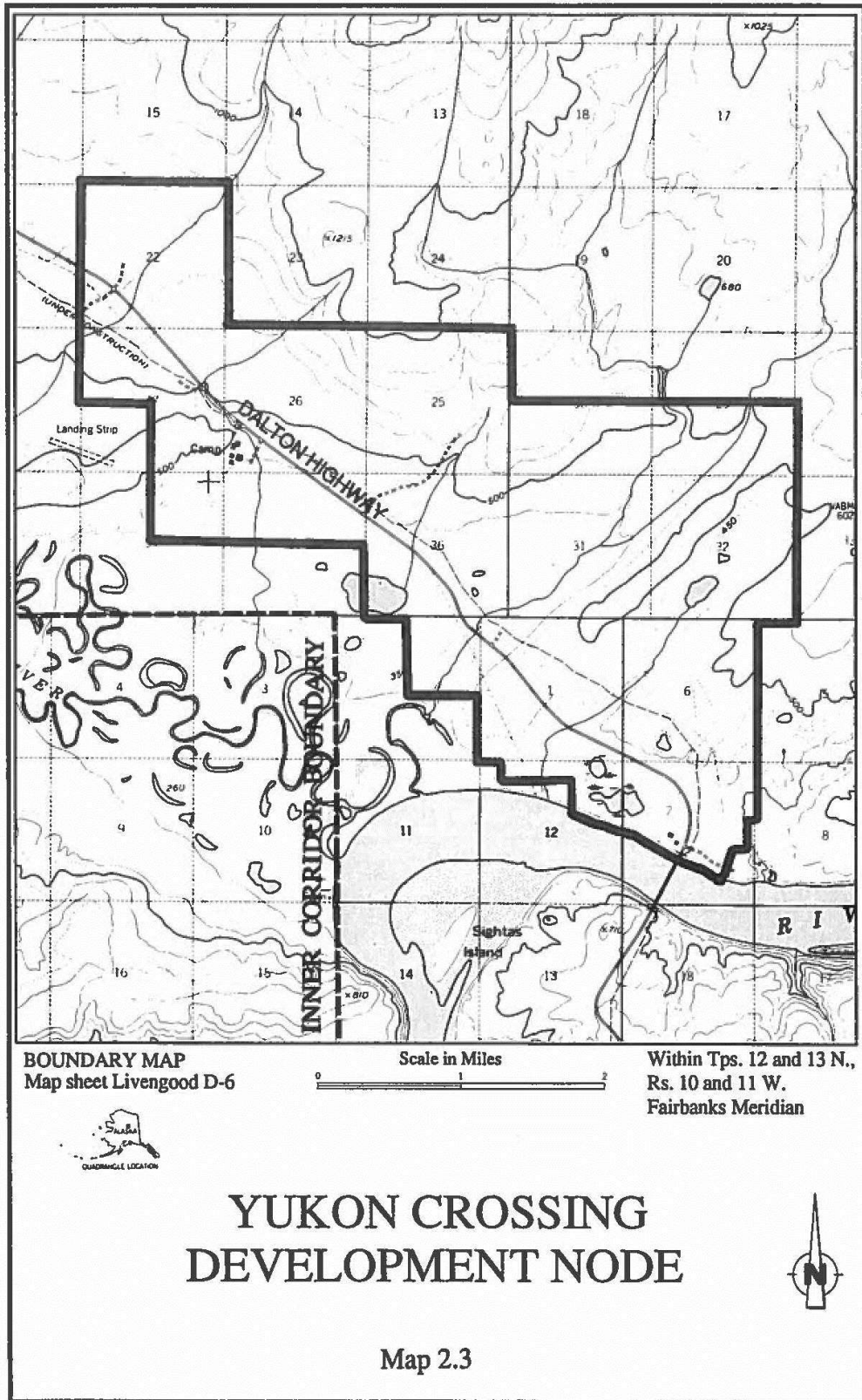
## **K.3.8 Yukon River Crossing RMZ**

### ***Yukon River Crossing RMZ Supporting Information***

The Central Dalton SRMA encompasses the area from the Yukon River Crossing RMZ at MP 56 to MP 181, just north of Marion Creek. It includes the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. In November 1991, the RMP for the Dalton Highway RMA was signed.

The Yukon River Crossing RMZ, from MP 56 to MP 85, is described as the area known as the Yukon River Crossing Development Node, as shown in **Map K-2**.

**Map K-2  
Yukon Development Node**



The Yukon River Crossing RMZ attracts recreationists seeking to experience the Yukon River and is an entry point to hunting, sight-seeing tours, and access to nearby villages. River access for hunters using boats in pursuit of big game is a popular fall activity for multigenerational families and friends. Reaching the destination of the legendary Yukon River is a highlight for many road touring travelers. The area includes rustic, seasonal lodging and restaurants, a BLM contact station with an information kiosk, a boat ramp and boat trailer parking, and the 60 Mile Campground with a dump station and nearby artesian well.

### ***Yukon River Crossing SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Primary activities include driving and sight-seeing, photography, bicycling, motorcycling, watching wildlife, day hiking, walking or running, fishing, and camping. During the fall hunting season, the boat launch at the Yukon River bridge provides access for hundreds of hunters in search of moose and other game.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway and reach the Yukon River Crossing.

### ***Recreation Setting Characteristic Descriptions—Rural***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 140 road miles from the Yukon River bridge. The BLM manages visitor facilities in the RMZ that are located at the Yukon River Crossing; they include a contact station that is staffed in summer, which receives approximately 9,000 visitors per year.

There are two decks, with interpretive panels, overlooking the Yukon River. An additional deck is near the contact station, with information about the Trans-Alaska Pipeline and construction of the Yukon River bridge. There are outhouses near the contact station and an area for picnics. On the west side of the road is a boat launch, with space for vehicle and boat trailer parking as well as outhouse facilities. The Yukon River Camp is located on BLM-managed lands through a realty lease. It offers meals, accommodations, and fuel. In addition, there is a truckers' wayside with a large pullout and outhouse on the west side of the road.

The 60 Mile Campground includes a limited number of developed sites that have picnic tables and fire rings. A dump station is near the campground and is open during the summer season. An artesian well with potable water is adjacent to the campground.

**Social Components**—When arriving at the Yukon River Camp, recreation users in this RMZ can at times expect encounters with groups of 50. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Use of this site varies by season and time of day. Campground users will typically experience small camping parties, with users in tents and a variety of RVs.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites. Use of the roadway may be limited and may require a permit.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreational uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

## **K.4 DALTON SRMA**

The Dalton SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. This SRMA covers the same area as the Sukakpak Region SRMA and the Central Dalton SRMA under Alternative B. The Dalton SRMA under Alternative C2 would also be comprised of four RMZs that correspond with the Sukakpak Region SRMA and the three RMZs for the Central Dalton SRMA. The objectives, management actions, and allowable uses are the same as described for those SRMAs.

## **K.5 SPOOKY VALLEY ERMA—PRIMITIVE**

ERMAs are administrative units that require specific management consideration to address recreational use, demand, and recreation and visitor services program investments. ERMAs are managed to support and sustain the principal recreation and the associated qualities and conditions. ERMA management is commensurate with and considered in context with the management of other resources and resource uses.

### **K.5.1 ERMA Objectives Decision**

ERMA objectives must define the recreation activities and the associated qualities and conditions that become the focus for recreation and visitor services management.

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

### **K.5.2 Management Actions and Allowable Use Decisions**

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreational uses and are required at approved sites.

**Other Programs**—Designate for seasonal, non-motorized use. Access into the ERMA would be by foot or, in winter, snowmobile.

### **K.5.3 Implementation Decisions**

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

## **K.6 NIGU-ITERIAK RIVER ERMA—PRIMITIVE**

### **K.6.1 ERMA Objectives Decision**

ERMA objectives must define the recreation activities and the associated qualities and conditions that become the focus for recreation and visitor services management.

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

### **K.6.2 Management Actions and Allowable Use Decisions**

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites. SRPs are required for any commercial recreation activities within this ERMA.

**Other Programs**—Designate for seasonal, non-motorized use. Access into the ERMA would be by foot or, in winter, snowmobile.

### **K.6.3 Implementation Decisions**

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

## **K.7 DALTON HIGHWAY CORRIDOR SRMA**

### **K.7.1 Dalton Highway Corridor SRMA Supporting Information**

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300 (see **Table K-3**). This SRMA has been divided into nine RMZs under Alternative C1. These include the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. In November 1991, the RMP for the Dalton Highway RMA was signed.

The primary draw to this area is for travelers to explore the many remote recreation opportunities that are accessible by vehicle along the Dalton Highway. Activities that draw visitors to this unique road-accessible

**Table K-3  
Dalton Highway Corridor SRMA**

<b>Recreation Management Zones</b>	<b>Dalton MP</b>	<b>Setting Characteristic</b>
Yukon River	MP 56–86	Rural
Finger Mountain	MP 86–115	Frontcountry
Arctic Circle	MP 115–132	Frontcountry
Grayling Lake	MP 132–152	Frontcountry
Chapman Lake	MP 152–165	Backcountry
Coldfoot	MP 165–190	Rural
Brooks Range South	MP 190–245	Semi-primitive
Brooks Range North/Galbraith Lake	MP 245–300	Frontcountry
Outer Corridor	N/A	Semi-primitive

region include day trips to the Arctic Circle; Dall sheep hunting in the Brooks Range; primitive backcountry camping within a short distance of the road; bridge-to-bridge river float trips; vehicle touring through the taiga, mountains, and arctic tundra; fishing in pristine streams; learning about the lifestyle of subsistence families; and visiting the world-class AIVC.

### **K.7.2 SRMA/RMZ Objectives Decisions**

Following is the overall description for the Dalton Highway Corridor SRMA. The following pages describe each of the nine RMZs within the Dalton Highway Corridor SRMA.

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Primary activities are driving and sight-seeing, photography, and watching wildlife. Secondary activities are camping, day hiking, birdwatching, and berry picking. RMZs in the Brooks Range North/Galbraith Lake, Yukon River, and Brooks Range South have seasonal high use for hunting.

**Experiences**—Primary experiences are enjoying the sights and smells of nature, experiencing new and different things, and being away from crowds. Secondary experiences are getting away from the usual demands of life, being free to make your own choices, and being with friends.

**Benefits**—Personal/individual benefits are a greater connection with nature, an improved outlook on life, and an enhanced sense of personal freedom. Community/social benefits are a greater appreciation for the cultural heritage, improved family bonding, and a heightened awareness of the natural world. Environmental benefits are increased knowledge and understanding of regional ecosystems and a greater awareness of methods to minimize recreation impacts.

### **K.7.3 Recreation Setting Characteristic Descriptions—Frontcountry**

**Physical Components**—The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300.

The character of the natural landscape is retained in the majority of the SRMA. A few modifications contrast with the character of the landscape, with the Trans-Alaska Pipeline System line, pump stations, and Department of Transportation stations visible along the route.

Rustic facilities, such as campsites, restrooms, trailheads, and interpretive displays, are throughout the road corridor of the SRMA. There are maintained and marked trails of short distance, simple trailhead developments, and basic toilets.

**Social Components**—Travelers in the inner corridor in the SRMA, from the Yukon River to Wiseman, can expect to see groups ranging in size from 2 to 50 people on travel routes and 50 or more encounters per day on highway travel routes. Encounters with smaller groups can be expected north of Wiseman, and group sizes in the outer corridor would not exceed 10 people. Evidence of use is seen throughout the highway corridor.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, the AIVC in Coldfoot, the winter visitor center hosted by the USFWS, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites.

#### **K.7.4 Management Actions and Allowable Use Decisions**

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

#### **K.7.5 Implementation Decisions**

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

#### **K.7.6 Yukon River RMZ**

##### ***Yukon River RMZ Supporting Information***

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. This SRMA has been divided into nine RMZs under Alternative C1. These include the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. The initial purpose for development of the corridor was for transportation of energy resources. In November 1991, the RMP for the Dalton Highway RMA was signed.

The Yukon River RMZ is from MP 56 to MP 86 covering the inner corridor. It attracts recreationists seeking to experience the Yukon River. It is an entry point to hunting, sight-seeing tours, and access to nearby villages. River access for hunters using boats in pursuit of big game is a popular fall activity for multigenerational families and friends. Reaching the destination of the legendary Yukon River is a highlight

for many road-touring travelers. The area includes rustic, seasonal lodging and restaurants, a BLM contact station with an information kiosk, a boat ramp and boat trailer parking, and the 60 Mile Campground with a dump station and nearby artesian well.

### ***Yukon River SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Activities include driving and sight-seeing, bicycling, motorcycling, photography, watching wildlife, day hiking, walking or running, fishing, and camping. During the fall hunting season, the boat launch at the Yukon River bridge provides access for hundreds of hunters in search of moose and other game.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway and reach the Yukon Crossing.

### ***Recreation Setting Characteristic Descriptions—Rural***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 140 road miles from the Yukon Crossing Bridge. The BLM manages visitor facilities in the RMZ located at the Yukon Crossing; they include a contact station that is staffed during the summer season. There are approximately 9,000 visitors per year.

There are two decks with interpretive panels overlooking the Yukon River. An additional deck is near the contact station, with information about the Trans-Alaska Pipeline and construction of the Yukon Bridge. There are outhouses near the contact station and an area for picnics. On the west side of the road is a boat launch with space for vehicle and boat trailer parking and outhouse facilities.

The Yukon River Camp is located on BLM-managed lands through a realty lease, which offers meals, accommodations, and fuel. In addition, there is a truckers' wayside, with a large pullout and outhouse, on the west side of the road.

The 60 Mile Campground includes a limited number of developed sites that have picnic tables and fire rings. A dump station near the campground is open during the summer season. An artesian well with potable water is adjacent to the campground.

**Social Components**—When arriving at the Yukon Crossing wayside, recreation users in this RMZ can at times expect encounters with groups of 50. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Use of this site varies by season and time of day. Campground users will typically experience small camping parties, with users in tents and a variety of camper outfits.



**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, the AIVC in Coldfoot, the winter visitor center hosted by the USFWS, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites. Use of the roadway may be limited and may require a permit.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. They include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

## **K.7.7 Finger Mountain RMZ**

### ***Supporting Information***

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. Under Alternative C1, this SRMA has been divided into nine RMZs. It includes the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. In November 1991, the RMP for the Dalton Highway RMA was signed.

The primary draw to this area is for travelers to explore the unique geologic formations found in the area. Finger Mountain has a small interpretive trail, including panels that inform visitors about the landscape. The major feature of the site is a tall rock formation in the shape of a finger pointed in the direction of Fairbanks.

### ***Finger Mountain SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Activities include driving and sight-seeing, photography, watching wildlife, day hiking on the designated trail system, and walking. Tour groups to the Arctic Circle frequently stop at this location when weather and access permit.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway into the Arctic region.

### ***Recreation Setting Characteristic Descriptions—Frontcountry***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 182 road miles from Finger Mountain. This site offers travelers one of the few opportunities south of the Brooks Range to experience a virtually treeless landscape, with vast expanses of rolling hills and a tussock-filled valley. The BLM manages visitor facilities in the RMZ located at MP 98, with a large parking area, outhouses, and a trail complete with interpretive signs. Hiking opportunities to Finger Mountain are on non-designated trails.

**Social Components**—Recreation users in this RMZ can at times expect encounters with groups of 50, when arriving at the Finger Mountain wayside. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Use of this site varies by season and time of day.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites. Use of the roadway may be limited and may require a permit.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

### **K.7.8 Arctic Circle RMZ**

#### ***Supporting Information***

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. Under Alternative C1, this SRMA has been divided into nine RMZs. It includes the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. In November 1991, the RMP for the Dalton Highway RMA was signed.

The primary draw for travelers to this area is to explore the many remote recreation opportunities that are accessible by vehicle along the Dalton Highway. Of particular interest to visitors is the Arctic Circle Campground and day-use wayside. Visitors from all over the world drive up the Dalton Highway to cross the Arctic Circle. Other activities that draw visitors to this unique, road-accessible region include day trips to the Arctic Circle, primitive backcountry camping within a short distance of the road, vehicle touring, fishing in pristine streams, and learning about the lifestyle of subsistence families.

#### ***SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Activities include driving and sight-seeing, photography, watching wildlife, day hiking, walking or running, fishing, and camping. Destination tours to the Arctic Circle are the single most sought-after activity by travelers on the Dalton Highway.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway and reach the Arctic Circle.

#### ***Recreation Setting Characteristic Descriptions—Rural***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 199 road miles from the Arctic Circle wayside. In the RMZ, the BLM manages visitor facilities located just north of MP 115; these facilities include the Arctic Circle wayside, with outhouses and the Arctic Circle trophy sign; the Arctic Circle Campground, with limited developed sites that have picnic tables and fire rings; and the truckers' wayside, with a large pullout and outhouse. A deck with interpretive panels is next to the trophy sign.

**Social Components**—Recreation users in this RMZ can at times expect encounters with groups of 50 when arriving at the Arctic Circle wayside. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Use of this wayside varies by season and time of day. Campground users typically experience small camping parties, with users in tents and a variety of camper outfits.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, and the Morris Thompson Cultural Visitors Center in Fairbanks. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites. Use of the roadway may be limited and may require a permit.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. A plan decision under consideration is to open the Arctic Circle wayside and campground to commercial development, with the designation of a development node.

## **K.7.9 Grayling Lake RMZ**

### ***Supporting Information***

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. Under Alternative C1, this SRMA has been divided into nine RMZs. It includes the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. In November 1991, the RMP for the Dalton Highway RMA was signed. The Grayling Lake RMZ is from MP 123 to MP 152 of the Dalton Highway.

The primary draw for travelers to this area is to explore the many remote recreation opportunities that are accessible by vehicle along the Dalton Highway. Activities that draw visitors to this unique, road-accessible region include float plane access, hunting, fishing, wildlife, and scenic lake and mountain viewing opportunities.

### ***SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Activities include driving and sight-seeing, photography, watching wildlife, day hiking, walking or running, fishing, and camping. Access to float planes for hunting is common in the late summer and fall seasons.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway and reach the Arctic Circle.

### ***Recreation Setting Characteristic Descriptions—Frontcountry***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 234 road miles from the Grayling Lake wayside. The BLM manages visitor facilities in the RMZ located at MP 150, with an outhouse and a large parking area. Interpretive panels are located near the outhouse and overlook the lake. There is access for launching boats on the northwest end of the lake and adjacent to the road. Float plane access and use are popular at this site.

**Social Components**—Recreation users in this RMZ can at times expect encounters with groups of 50. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Use of this site varies by season and time of day.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, the AIVC in Coldfoot, the winter visitor center hosted by the USFWS, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway, directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites. Use of the roadway may be limited and may require a permit.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

### **K.7.10 Chapman Lake RMZ**

#### ***Supporting Information***

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. Under Alternative C1, this SRMA has been divided into nine RMZs. It includes the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. The initial purpose for development of the corridor was for transportation of energy resources.

The primary draw to Chapman Lake is road-accessible recreation and wildlife viewing, and a commercial transportation area for travelers to explore the many remote recreation opportunities that are accessible by vehicle travel along the Dalton Highway. Activities that draw visitors to this area are the exceptional bird-watching, wildlife viewing, nature photography, camping, and big game hunting.

#### ***SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Activities include driving and sight-seeing, photography, watching wildlife, day hiking, walking or running, fishing, and camping. Chapman Lake provides one of the best waterfowl viewing areas within the corridor.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway and reach the Arctic Circle.

#### ***Recreation Setting Characteristic Descriptions—Frontcountry***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 245 road miles from Chapman Lake. There are no visitor facilities at Chapman Lake (MP 161). A gravel pit and a gated and locked access road to mining operations lead to the southeast corner of the lake.

**Social Components**—Because access to the lake is off the highway via a mining road access, there is limited interaction with other travelers. Group size can be expected to be 15 people or less. Groups that camp in the area are typically fall hunting parties of less than five people.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites. Use of the roadway may be limited and may require a permit.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

#### **K.7.11 Coldfoot RMZ**

##### ***Supporting Information***

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. Under Alternative C1, this SRMA has been divided into nine RMZs. It includes the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. The initial purpose for development of the corridor was for transportation of energy resources.

The primary draw to this area is for travelers to explore the many remote recreation opportunities that are accessible by vehicle along the Dalton Highway. Activities that draw visitors to the Coldfoot RMZ are the world-class AIVC, access to remote areas of the foothills of the Brooks Range by foot, and access to urban and remote areas from the Coldfoot airport. The RMZ also has the Marion Creek Campground and the Coldfoot truck stop and restaurant. These serve as a fueling station and mail stop for many local placer miners. Management in the RMZ will provide for sustainable recreation opportunities.

##### ***SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Activities include driving and sight-seeing, bicycling, motorcycling, photography, watching wildlife, day hiking, walking or running, fishing, river float trips, attending interpretive presentations and films, visiting the visitor center, visiting interpretive sites, and camping. In the winter, visitors participate in aurora viewing.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities.

In addition, a common benefit is achieving the life goal to travel the Dalton Highway and reach the Arctic Circle.

### ***Recreation Setting Characteristic Descriptions—Rural***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 259 road miles from Coldfoot. The BLM manages visitor facilities in the RMZ in the Coldfoot Development Node. Recreational facilities in the Coldfoot RMZ include the AIVC, interpretive hiking trails spanning from the AIVC, interpretive kiosks at trailheads, the pioneer cemetery with interpretive panels, Marion Creek Campground, a replica of a miner’s cabin, and a drift mining display. Five miles north of Coldfoot and within the RMZ is Marion Creek Campground, a 27-site fee campground with RV parking, pull-through sites, potable water, an information kiosk, and outhouses.

**Social Components**—Recreation users in this RMZ can at times expect encounters with groups of 50 when arriving at the Coldfoot truck stop. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Large concentrations of industrial traffic are to be expected. Campground users typically experience small camping parties, with users in tents and a variety of camper outfits. Seasonal spikes occur in the RMZ, with different recreation user groups, from late February through early October.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, the AIVC in Coldfoot, the winter visitor center hosted by the USFWS, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites. Use of the roadway may be limited and may require a permit.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

Permit demand for this RMZ is high. The AIVC is open from late May through early September each year. Interpretive programs, interpretive displays, self-led day hikes, a campground, and a bookstore all represent visitor services delivered by the BLM. Commercial recreation vendors and individuals in Wiseman who provide lodging and tours offer additional recreation opportunities in the area.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.



### **K.7.12 Brooks Range South RMZ**

#### ***Supporting Information***

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. Under Alternative C1, this SRMA has been divided into nine RMZs. It includes the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. The initial purpose for development of the corridor was for transportation of energy resources. This RMP states that the area “. . . shall be managed to provide a variety of developed and semi-developed motorized recreation opportunities.”

To this day, the primary draw to this area is for travelers to explore the many remote recreation opportunities that are accessible by vehicle travel along the Dalton Highway. Activities that draw visitors to this unique, road-accessible region include day trips to the Arctic Circle; visits to the historic mining community of Wiseman; Dall sheep hunting in the Brooks Range; primitive backcountry camping within a short distance of the road; bridge-to-bridge river float trips; vehicle touring through the taiga, mountains, and arctic tundra; fishing in pristine streams; learning about the lifestyle of subsistence families; and visiting the world-class AIVC.

#### ***SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Driving and sight-seeing, photography, watching wildlife, day hiking, walking or running, fishing, hunting, and camping.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway and reach the Arctic Circle.

#### ***Recreation Setting Characteristic Descriptions—Semi-primitive***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 274 road miles from the southern edge of the RMZ. (at MP 190); the RMZ continues to MP 245. The BLM manages visitor facilities in the RMZ located at Sukakpak Mountain wayside (MP 204) and Farthest North Spruce Tree wayside (MP 235). Each site has parking, interpretive panels, and outhouses. Camping is frequent near river crossings, along gravel bars, and in cleared gravel pits. By design, and in reflection of other land managers in the area, hiking routes are not designated, and are developed free of signage. These informal routes follow streambeds and mining access roads just as they have for generations.

**Social Components**—Recreation users in this RMZ can at times expect encounters with groups of 15 when stopping at points of interest. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Use in the RMZ increases throughout the summer, with a peak in late summer/early fall for sheep and caribou hunting.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities.

### ***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### ***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

## **K.7.13 Brooks Range North/Galbraith Lake RMZ**

### ***Supporting Information***

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. Under Alternative C1, this SRMA has been divided into nine RMZs. It includes the inner utility corridor and outer utility corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. The initial purpose for development of the corridor was for transportation of energy resources.

The primary draw to this area is for travelers to explore the many remote recreation opportunities that are accessible by vehicle along the Dalton Highway. Of particular interest is the Galbraith Lake area. Visitors camp north of the Brooks Range at the BLM-developed campground. Here they hunt, hike, go dog mushing, view wildlife, and enjoy expansive vistas above the Arctic Circle.

### ***SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Driving and sight-seeing, photography, watching wildlife, day hiking, walking or running, fishing, and camping.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities. In addition, a common benefit is achieving the life goal to travel the Dalton Highway and reach the Arctic region.

***Recreation Setting Characteristic Descriptions—Backcountry***

**Physical Components**—The remoteness of this area is in relation to the urban area of Fairbanks, which is 329 road miles from the southern edge of the RMZ. (at MP 245); the RMZ continues to MP 300. This is the northern edge of BLM-managed lands, adjacent to the Dalton Highway. BLM-managed visitor facilities in the RMZ are located at Galbraith Lake Campground (MP 275), which includes informal campsites with a limited number of fire rings, picnic tables, and an outhouse. A state-leased airfield near the campground is used by private and commercial pilots, state and federal agencies, and Alyeska, in support of the Trans-Alaska Pipeline System. Access to boat float trips for the Antigon River is at MP 271.

**Social Components**—Recreation users in this RMZ can at times expect encounters with groups of 15 when stopping at points of interest. Group sizes range from 2 to 50 individuals, with commercial tour companies using 15-passenger vans and 50-passenger motor coaches to transport their guests. Use in the RMZ increases throughout the summer with a peak in late summer/early fall for sheep and caribou hunting.

**Operational Components**—Personal, commercial (tour companies), and industrial traffic are present throughout the year along the roadway of the SRMA. The BLM has produced and provides informational materials that describe the area and activities. These materials are available at kiosks, the BLM office in Fairbanks, the Morris Thompson Cultural Visitors Center in Fairbanks, and online. The BLM has staff present seasonally—typically from mid-May through mid-September—at the Yukon Crossing Contact Station. There is signage along the roadway directing travelers to recreation opportunities. Informational materials are available throughout the year at selected sites. Use may be limited and may require a permit.

***Management Actions and Allowable Use Decisions***

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

***Implementation Decisions***

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

**K.7.14 Outer Corridor RMZ**

***Supporting Information***

The Dalton Highway Corridor SRMA encompasses the area from the Yukon River Crossing, at MP 56, to the northern edge of BLM-managed lands adjacent to the Utility Corridor at MP 300. The Outer Corridor

RMZ encompasses lands adjacent to the inner corridor, as described in the Utility Corridor RMP/EIS, signed in January 1991. In November 1991, the RMP for the Dalton Highway RMA was signed.

The primary draw to this area is for travelers to explore the many remote recreation opportunities that are accessible by vehicle along the Dalton Highway. Access to the outer corridor is by foot, boat, or fixed-wing aircraft. Activities that draw visitors to the region include hunting in the Brooks Range, primitive backcountry camping, backpacking, and fishing in a pristine landscape.

### ***SRMA/RMZ Objectives Decisions***

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

**Activities**—Backpacking, camping, hiking, big game hunting, wildlife viewing, photography, trapping, fishing, and taking float trips.

**Experiences**—Survey responses reflect that recreation users want to experience new and different things, enjoy the sights and smells of nature, be away from crowds, get away from the usual demands of life, and be free to make their own choices.

**Benefits**—Survey results show the benefits that recreation users achieve in the RMZ are a greater connection with nature and improved knowledge of outdoor recreation, ecosystems, and local communities.

### ***Recreation Setting Characteristic Descriptions—Semi-primitive***

#### **Physical Components—**

- a) Remoteness (approximate distance from routes)—The RMZ retains a current level of remoteness of more than 1 mile from either motorized routes or established landing fields. The existing, but varied, level of naturalness is maintained with no structures and no sign of existing human trails, aircraft landing areas, or previous use. Any new land uses would have a low level of contrast with the landscape and would not be visually obvious from recreation facilities. New rights-of-way (e.g., communication sites and utilities) are collocated with existing disturbances or at existing sites.
- b) Naturalness (landscape texture form, line, and color)—The existing, but varied, level of naturalness is maintained. Any new land uses would have a low level of contrast with the landscape and would not be visually obvious from recreation facilities. New rights-of-way (e.g., communication sites and utilities) are collocated with existing disturbances or at existing sites.
- c) Recreation facilities with basic visitor amenities occur at access points only.
- d) Fish and wildlife habitat—Vegetation and habitat would be maintained in their current condition. Big game ranges would appear primarily as a mosaic of forests and tundra.

#### **Social Components—**

- a) Contact with other groups—In the primary use season (August through November), participants experience an average of four encounters per day or fewer in areas classified as semi-primitive.
- b) There is an undisturbed natural landscape with no structures and little evidence of human use.

**Operational Components—**

- a) Public access (types of public travel allowed)—Away from the few motorized/mechanized access routes, recreationists use foot and horse travel predominantly within the Outer Corridor RMZ. Most roads and trails would be closed to vehicle traffic during the winter, and there would be minimal human disturbance of big game during this period.
- b) Visitor management controls and regulations—An adequate but not overly restrictive level of visitor and land use restrictions would be initially in place to protect recreation setting characteristics. Rules, regulations, and ethics would be clearly posted at appropriate access points.

**Management Actions and Allowable Use Decisions**

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreation uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

**Implementation Decisions**

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

**K.8 DALTON CORRIDOR BCA**

**K.8.1 Goal**

Conserve backcountry conservation management criteria areas and provide for dispersed wildlife-dependent recreation through BCAs.

**K.8.2 Wildlife Objective**

Manage the areas to protect their intact and undeveloped character, and manage habitats to support migration/movement corridors for recreationally important species of fish and wildlife; big game winter range, summer range, parturition areas, migration corridors, and associated stopover areas; and migratory bird habitats.

**K.8.3 Recreation Objective**

Provide for high-quality, wildlife-dependent, dispersed recreation opportunities, and foster realization of the targeted experiences and benefits listed below:

- Activities:
  - Hunting
  - Backpacking and climbing
  - Rafting
  - Dog sledding
  - Camping

- Wildlife viewing and nonconsumptive tourism
- Environmental and ecological studies
- Experiences:
  - Enjoying the area’s wildlife, scenery, views, and aesthetics
  - Experiencing the natural surroundings with scant industrial disruptions
  - Seeking primitive recreation in untrammelled landscapes
  - Authentic personal challenge, subsistence, or sport
- Benefits:
  - Personal:
    - An improved opportunity to access remote public lands
    - A closer relationship with the natural world
    - A greater understanding of the importance of wildlife to quality of life
    - Developing stronger ties with family and friends
    - Living a more outdoor-oriented lifestyle
    - Affordable backcountry recreation
  - Community/Social:
    - Strengthening relationships with family and friends
    - A greater household awareness and appreciation of the cultural heritage
    - Providing dispersed recreation opportunities, which enhance the experience
  - Environmental:
    - Greater protection of fish, wildlife, and plant habitat from growth, development, and public use impacts
    - Promoting land connectivity and preventing fragmentation of habitat and big game ranges
  - Economic:
    - Maintaining consumptive and nonconsumptive tourism revenue

#### **K.8.4 Physical Components**

The setting is primitive.

##### ***Remoteness (approximate distance from routes)***

The BCA retains the current level of remoteness being 5 miles from either mechanized, motorized routes or established landing fields. The existing, but varied, level of naturalness is maintained as an undisturbed natural landscape. Any new land uses would have a low level of contrast with the landscape and would not be visually obvious from the Dalton Highway. New rights-of-way (e.g., communication sites and utilities) would be collocated within existing disturbances or at existing sites.

##### ***Naturalness (landscape texture form, line, and color)***

The existing, but varied, level of naturalness is maintained. Any new land uses would have a low level of contrast with the landscape and would not be visually obvious from the Dalton Highway. New rights-of-way (e.g., communication sites and utilities) would be collocated within existing disturbances or at existing sites.

### ***Visitor Facilities***

The Coldfoot Visitors Center with basic visitor amenities remains available.

#### **K.8.5 Social Components**

The setting is primitive.

#### ***Contacts (with other groups)***

Participants encounter a primary use season along the Dalton Highway (April through September) with user groups divided into three categories: road users, frontcountry users, and backcountry users. Road dwellers expect numerous encounters per day, whereas frontcountry users expect fewer than 10 encounters per day; beyond 1 mile from the road, encounters are fewer than two group sightings per week.

#### ***Group Size***

Participants encounter a primary use season (April through September) and average up to six people per group in areas classified as frontcountry. Participants average typically one to four people per group in areas classified as backcountry.

#### ***Evidence of Use***

There remains slight visible evidence of use (dispersed social trails, limited trailheads, and parking areas). There are some trailing paths with evidence of foot traffic during snow-free seasons. Snow season use will be more evident with snowmobile trails and dog mushing trails, but this use is expected in a semi-primitive environment.

#### **K.8.6 Operational Components**

The setting is semi-primitive.

#### ***Public Access (types of public travel allowed)***

Beyond the road system, bush aircraft, raft, foot traffic, dog team, boat, and equestrian use are predominant in the BCA. Some evidence of motorized use is to be expected with the dispersed and vast terrain.

#### ***Visitor Services and Information***

No maps or brochures are available on-site. Contacts with BLM staff are by chance and unlikely. Visitor services are available in Fairbanks, Yukon Crossing, and Coldfoot.

#### ***Visitor Management Controls and Regulations***

There is no on-site posting or signage of visitor regulations, interpretive information, or ethics. The user has responsibility to research knowledge of restrictions from information the BLM provides. There are moderate use restrictions (e.g., camping and human waste). Use may require a permit.

### **K.9 DALTON ERMA—SEMI-PRIMITIVE**

ERMAs are administrative units that require specific management consideration to address recreational use, demand, and recreation and visitor services program investments. ERMAs are managed to support and sustain the principal recreation and the associated qualities and conditions. ERMA management is commensurate with and considered in context with the management of other resources and resource uses.

#### **K.9.1 ERMA Objectives Decision**

ERMA objectives must define the recreation activities and the associated qualities and conditions that become the focus for recreation and visitor services management.

**Objective Statement**—Participants in visitor assessments report an average 4.0 realization of the targeted experiences and benefit outcomes listed below (4.0 on a probability scale, where 1 is not at all realized and 5 is totally realized).

### **K.9.2 Management Actions and Allowable Use Decisions**

**Recreation and Visitor Services Program**—Overnight camping is limited to 14 days in a 30-day period in one location. Campers must move 5 miles at the end of 14 days. SRPs are issued for commercial recreational uses and are required at approved sites.

**Other Programs**—By Alaska state statute, the ERMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Per Alaska Statute 16.05.789, Prohibition on Hunting Adjacent to Highway between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River in the area within 5 miles on either side of the highway between the Yukon River and the Arctic Ocean.

### **K.9.3 Implementation Decisions**

Implementation decisions are actions to achieve or implement land use plan decisions. Implementation decisions include management, administration, information and education, and monitoring. The land use plan decision may be to designate overnight camping areas, while the supporting implementation decision may be to address specific site locations, size, and amenities to be provided.

## **K.10 GLOSSARY**

**backcountry conservation area (BCA).** Management allocation used to maintain and enhance habitat for recreationally important fish and wildlife species and to expand public access for hunting, angling, and other forms of wildlife-dependent recreation. When applied, they allow the BLM to prioritize habitat management actions, such as restoring riparian areas, controlling invasive species, managing vegetation, improving fish passage, and reducing wildfire risk.

**extensive recreation management area (ERMA).** A public lands unit identified in land use plans containing all acreage not identified as an SRMA. Recreation management actions within an ERMA are limited to only those of a custodial nature.

**off-highway vehicle (OHV) area designations.** BLM-managed lands are designated as Open, Limited, or Closed for OHV use.

- **Open.** Designated areas where all types of motorized vehicles (jeeps, all-terrain vehicles, motorized dirt bikes, etc.) are permitted at all times, anywhere in the area, on roads or cross country, subject to the operating regulations and vehicle standards set forth in 43 Code of Federal Regulations 8341 and 8342.
- **Limited.** Designated areas where motorized vehicles are restricted to designated routes. Off-road, cross-country travel is prohibited in Limited areas, unless an area is specifically identified as an area where cross-country over-snow travel is allowed. Some existing routes may be closed in Limited areas.
- **Closed.** Designated areas where off-road motorized vehicle travel is prohibited yearlong. Emergency use of vehicles is allowed yearlong.

**recreation management zone (RMZ).** SRMAs and/or ERMAs may be subdivided into recreation management zones to further delineate specific recreation opportunities and recreation setting characteristics.



**special recreation management area (SRMA).** A public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities. Both land use plan decisions and subsequent implementing actions for recreation in each SRMA are geared to a strategically identified primary market—destination, community, or undeveloped.

**special recreation permit (SRP).** Permits issued to businesses, organization, and individuals to allow the use of specific public land and related waters for commercial, competitive, and organized group use.

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# Appendix L

Reclamation Requirements for  
All Surface-Disturbing Activities

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

AIM	Assessment, Inventory, and Monitoring
AO	Authorized Officer
BLM	Bureau of Land Management
PNC	potential natural condition
RMP	resource management plan

# Appendix L. Reclamation Requirements for All Surface-Disturbing Activities

## L.1 INTRODUCTION

The Bureau of Land Management's (BLM) assessment, inventory, and monitoring (AIM) strategy standardizes field methods, electronic data capture and storage, and appropriate sample designs. This allows the BLM to collect data once and use the data for multiple applications from broad- to local-scale assessments of management objectives. At the broad scale, AIM data can be used to characterize the range of potential natural conditions (PNCs), from which the condition and trend of individual plots or stream reaches can be compared to assess the attainment of management objectives. The BLM's Land Use Planning Handbook H-1601-1 states that "Effectiveness monitoring is the process of collecting data and information in order to determine whether or not desired outcomes (expressed as goals and objectives in the land use plan) are being met (or progress is being made toward meeting them) as the allowable uses and management actions are being implemented." It is BLM policy that AIM data will be used to assess the effectiveness of resource management plans (RMPs) in meeting land use planning objectives (Instruction Memorandum 2016-139).

The Central Yukon RMP planning area includes large expanses of intact landscape. The primary divergence from natural conditions occurs with surface-disturbing activities from permitted actions, as well as trespass and emergency response actions. BLM regulations governing minerals and realty authorizations include general reclamation standards. However, they are qualitative, cannot be readily compared between programs or projects, and in some cases are expected to be refined through the land use planning process. For example, BLM Handbook H-3809-1 (Section 5.2.3) states, "Land use plans can be used to set reclamation objectives or identify the location of applicable measures needed to meet the performance standards. For example, a land use plan may be used to identify the location-specific measures that need to be in a fisheries rehabilitation plan submitted under 43 Code of Federal Regulation 3809.401(b)(3)(v), in order to meet the fisheries rehabilitation requirement under 43 Code of Federal Regulation 3809.420(b)(3)(ii)(E). Another example is for the land use plan to describe the species, seed mix, or treatments applicable to reclaiming surface disturbance in certain portions of the planning area."

AIM data characterize the range of resource conditions across the landscape using measurable, repeatable indicators. Instruction Memorandum 2016-139, which requires use of AIM data to assess RMP effectiveness, states ". . . if objectives are not met or if the area is not making progress toward meeting the objectives, the field office will conduct a causal factor analysis and whether or not the cause is the result of BLM decisions, the resulting report should discuss if and how the BLM can work to reduce or eliminate any of the causal factors." For allocative activities, such as opening an area to off-highway vehicle use, a monitoring program based on AIM protocols can provide after-the-fact monitoring of outcomes to help inform adaptive management strategies. However, for surface-disturbing authorizations, assessing reclamation results to ensure they effectively meet resource condition objectives as they are carried out avoids the need for adaptive response.

In addition, a common, measurable reclamation requirement applied to all surface-disturbing activities means that reclamation standards and evaluation metrics on public lands become a known quantity, allowing industry and managers to make more informed decisions with less uncertainty. This provides advantages for both industry and land managers, including:

- National Environmental Policy Act and permitting can be streamlined by providing a robust, reusable framework and terminology to standardize the analysis of reclamation plans, regardless of activity.
- Industry can rely on reclamation requirements and success criteria that do not change from operation to operation, regardless of the nature of the activity, providing consistency and predictability that are critical to successful business decisions.
- An appropriate ecological context based on site potential and actual range of environmental variability can eliminate perceptions of unrealistic reclamation expectations and perceptions that different operators are held to different standards.
- Operators or contractors, or both, can have trained crews that can assess reclamation at many different types of operations using the same data and methods that the BLM uses.
- The BLM can more readily achieve consistency across authorizations and have improved confidence that the decisions will achieve desired resource conditions.
- The BLM can confidently demonstrate how management of permitted activities is meeting RMP objectives, achieving land health standards, and avoiding undue and unnecessary degradation of public lands.

The BLM would use the PNCs derived from AIM data to develop RMP objectives and reclamation plans with the goal of preventing unnecessary or undue degradation. Regardless of the nature of the activity, minimum reclamation objectives for all surface-disturbing activities in the planning area would be to meet the requirements of applicable law, regulation, and policy; remove all wastes and hazards; achieve erosion control and soil stability; establish self-sustaining native vegetation; and prevent the spread of nonnative invasive species. In addition, reclamation would be required to result in the recovery of aquatic and terrestrial habitats to within PNCs for the Central Yukon RMP planning area based on the distribution of selected AIM indicators (see Appendix D in AIM National Aquatic Monitoring Framework Technical Reference 1735-1 and BLM Core Indicators and Methods Technical Note 440). To achieve these objectives, reclamation that meets the standards herein would be required for all surface-disturbing activities in the planning area initiated under this RMP.

## **L.2 SURFACE-DISTURBING ACTIVITIES**

For purposes of these standards, surface-disturbing activities are defined as those that involve excavation, earthwork, soil disturbance, soil compaction, stream bank alteration, increased soil erosion potential, vegetation removal, or vegetation damage extensive enough to affect vegetation health beyond one growing season.

The approach to achieving these standards would vary based on the following categories of surface-disturbing activity:

- **New authorized activities that afford the opportunity for pre-activity analysis and planning—**  
The proponent for authorized surface-disturbing activities would be required to conduct reclamation in accordance with these standards. Before issuing an authorization, the BLM may, at the discretion of the BLM Authorized Officer (AO) when not already required by regulation, require that the applicant for such activities provide a reclamation plan explaining how they would conduct reclamation and how they would monitor reclamation success to ensure these requirements were met. The BLM may also require that the applicant collect relevant baseline data and provide the data to the BLM before issuing an authorization, when such baseline data are required to determine



the appropriate PNCs for the site, or when it is believed that pre-disturbance site conditions may be at a departure from PNCs. Note that activities authorized prior to adoption of this land use plan are subject to the requirements of the plan in effect at the time they were authorized. Direction herein would not change reclamation requirements for previously authorized activities.

- **Modifications to previously authorized activities**—In general, reclamation requirements for modifications of previously authorized activities would be the same as those for new authorized activities. However, reclamation requirements for modifications of previously authorized activities would take into account shifted baseline conditions. In such circumstances, the AO would exercise discretion and flexibility in applying the exceptions in **Section L.4.2**.
- **Emergency response activities, such as fire suppression, oil spill response, or search and rescue**—The BLM would coordinate with emergency response organizations to achieve reclamation that meets these standards to the greatest degree possible.
- **Unauthorized activities, such as trespass, vandalism, or accidents**—The BLM would use available authorities to ensure that responsible parties reclaim disturbed public lands in accordance with these standards.

### L.3 POTENTIAL NATURAL CONDITIONS

PNCs represent the range of chemical, physical, and biological conditions expected at a site under minimal anthropogenic impacts, but they include natural disturbances. This concept is prevalent in our everyday lives where percentiles are used as clinical indicators to assess the size and growth of children in the United States. Clinical assessments help to understand the range of human health, whereas AIM assessments help understand the range of PNCs to prevent unnecessary or undue degradation.

In the case of RMP objectives and reclamation plans, the BLM uses indicators of ecosystem health and percentiles to assess the attainment of management objectives. For indicators that are expected to decrease with disturbance (e.g., vegetation composition), values above the 25th percentile would be considered within PNCs. Values between the 25th and 5th percentile would be considered a moderate departure from PNCs, and values below the 5th percentile would be considered a major departure from PNCs. For indicators that are expected to increase with disturbance (e.g., the amount of bare ground, nonnative invasive plant species, and the proportion of soil surface in large intercanopy gaps), values below the 75th percentile would be considered within PNCs. Values between the 75th and 95th percentile would be considered a moderate departure from PNCs, and values above the 95th percentile would be considered a major departure from PNCs.

In practice, that means up to 75 percent of the representative AIM sites could be in better condition than the reclaimed site, which would only need to be in a similar condition as the lower 25 percent of the range of natural conditions (less in some cases; see **Section L.4.2**, below). This may result in a “lower bar” for some reclamation than current guidance. However, use of AIM ensures that reclamation results can be measured to avoid subjectivity, and are representative of PNCs and site potential within the region.

### L.4 RECLAMATION REQUIREMENTS

Reclamation for surface-disturbing activity will be determined to be complete when the following criteria have been met:

- Meet all reclamation requirements in applicable law, regulation, or policy
- Remove or remediate any hazardous materials associated with the activity

- Remove or remediate any physical hazards resulting from the activity
- Remove all solid waste and debris associated with the activity
- Remove all associated buildings, structures, support facilities, and equipment, unless specifically authorized to remain
- Regrade and reshape the land to conform with adjacent landforms and to provide drainage control
- Establish measures necessary to control erosion, landslides, and water runoff
- Salvage and replace topsoil as a growth medium to the extent practicable
- Establish conditions within PNCs for selected AIM indicators:
  - For sites outside the 100-year floodplain of a perennial stream, establish conditions within PNCs for the following terrestrial AIM core indicators: amount of bare ground, vegetation composition, nonnative invasive plant species, and proportion of soil surface in large intercanopy gaps.
  - For sites within the 100-year floodplain of a perennial stream, establish conditions within PNCs for the following aquatic AIM indicators: bank overhead cover, bank cover and stability, percent riffle, floodplain connectivity, and riparian vegetation (understory and ground cover metrics). Interim benchmark objectives for aquatic AIM are outlined in **Table L-1**, below. These benchmarks will be updated based on the best available data for the region and latest science.

#### **L.4.1 Time Frames**

Time frames for achieving reclamation standards in some areas may be specified in the appropriate section of this plan. Some activities may specify a longer time frame in the authorization. For activities where the time frame is not otherwise specified, the BLM would require the design of reclamation methods to target 2 years to achieve reclamation objectives. If standards are not achieved within 2 years of initiating reclamation activities, the proponent would be required to remedy the factors contributing to the lack of success. In addition, the BLM may, at the discretion of the AO, require a detailed accelerated reclamation plan.

#### **L.4.2 Exceptions**

The following exceptions may be considered on a case-by-case basis:

- In the event there is insufficient AIM data to establish PNCs for an upland site at the time the BLM issues an authorization, the AO may approve an authorization-specific reclamation requirement of at least 70 percent native plant foliar cover with two consecutive growing seasons with self-sustaining upward trend. Self-sustaining upward trend means no fewer than two sample sets, measured at approximately the same time in the growing season during two consecutive growing seasons, which document an increase in plant foliar cover achieved without artificial stimulation, such as fertilizers or irrigation.
- On a case-by-case basis, the AO may approve reclamation plans that include objectives based on moderate departure from PNCs (5th–25th percentile range), provided that cumulatively the objectives lead to result in site stability and the prevention of unnecessary or undue degradation. This exception is designed to provide increased flexibility for sites that have had a history of disturbance.
- Outlier sites
  - When baseline data demonstrate that pre-disturbance site conditions are at a departure from PNCs, the AO may ask a BLM-led interdisciplinary team to evaluate the site and recommend a site-specific threshold for the indicators in lieu of establishing conditions within PNCs.

However, the BLM would grant no exceptions to PNCs to compensate for the loss of topsoil due to poor practices or negligence.

- Where disturbance occurs or is proposed to streams in valley types or landforms consisting of steep depositional fans or glacial troughs and outwash valleys, which have naturally braided or multi-threaded channels, reclamation should be focused on achieving site-appropriate valley profiles and establishing vegetation on the outer edges of the channel. This situation is expected to be very rare.

**Table L-1  
Interim Benchmark Objectives for Aquatic AIM**

Indicator	Description	Predicted Response to Stress	Units	Range of Values (Min. and Max.)		5th Percentile	25th Percentile	75th Percentile	95th Percentile
Bank Overhead Cover	Average percent overhead cover provided by stream banks (left and right), vegetation, or other objects measured at the scour line of the left and right banks across 11 transects (n=44)	Decrease	%	0	99	23.2	49.5		
Bank Cover and Stability	Percentage of 42 banks both stable (lacking visible signs of active erosions [e.g., slump, slough, and fracture]) and covered (greater than 50% cover provided by perennial vegetation, wood, or mineral substrate > 15 centimeter) (n=35)	Decrease	%	14	100	34	60		
Floodplain Connectivity	The ratio of average floodplain height to average bankfull height taken from the thalweg = (floodplain height + thalweg depth) / (bankfull height + thalweg depth). This is also known as Rosgen's Bank Height Ratio (n=44)	Increase	None	0	1.9			1.4	1.6
Riffle Habitat	Percentage of riffle habitat based on the length of all riffles divided by the overall length of the sampled stream reach (n=11)	Increase	%	54	84			74	84
Riparian Vegetation Complexity: Understory Woody Cover	Measure of the average vegetative cover provided by woody understory vegetation (0.5–5 meters). Proportional cover was binned into four classes (0.875, 0.575, 0.25, and 0.05) and then averaged across the left and right banks of 11 transects. (n=43)	Decrease	None	0.07	0.77	0.21	0.34		

Indicator	Description	Predicted Response to Stress	Units	Range of Values (Min. and Max.)		5th Percentile	25th Percentile	75th Percentile	95th Percentile
Riparian Vegetation Complexity: Understory Non-Woody Cover	Measure of the average vegetative cover provided by herbaceous understory vegetation (0.5–5 meters). Proportional cover was binned into four classes (0.875, 0.575, 0.25, and 0.05) and then averaged across the left and right banks of 11 transects. (n=44)	Decrease	None	0	0.27	0	0.02		
Riparian Vegetation Complexity: Ground Woody Cover	Measure of the average vegetative cover provided by woody ground cover vegetation (< 0.5 meters). Proportional cover was binned into four classes (0.875, 0.575, 0.25, and 0.05) and then averaged across the left and right banks of 11 transects. (n=44)	Decrease	None	0	0.81	0.15	0.29		
Riparian Vegetation Complexity: Ground Non-Woody Cover	Measure of the average vegetative cover provided by herbaceous ground cover vegetation (0.5–5 meter). Proportional cover was binned into four classes (0.875, 0.575, 0.25, and 0.05) and then averaged across the left and right banks of 11 transects. (n=44)	Decrease	None	0.16	0.72	0.22	0.31		

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# Appendix M

Approach and Summary to the Environmental  
Analysis

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

AAAQS	Alaska Ambient Air Quality Standards
ACEC	areas of critical environmental concern
AHRS	Alaska Heritage Resource Study
ADNR	Alaska Department of Natural Resources
AKLNG	Alaska Liquified Natural Gas
ANCSA	Alaska Native Claims Settlement Act of 1971
ANILCA	Alaska National Interest Lands Conservation Act of 1980
BCA	backcountry conservation area
BLM	Bureau of Land Management
BMP	best management practice
CAMA	Central Arctic Management Area
CFR	Code of Federal Regulations
CYRMP	Central Yukon Resource Management Plan
DOT&PF	Alaska Department of Transportation & Public Facilities
EIS	environmental impact statement
EO	executive order
ERMA	extensive recreation management area
FLPMA	Federal Land Policy and Management Act of 1976
FO	Central Yukon Field Office
<i>FR</i>	<i>Federal Register</i>
FNSB	Fairbanks North Star Borough
GHG	greenhouse gas
GIS	geographic information system
GMT	Greater Mooses Tooth
INHT	Iditarod National Historic Trail
LWC	lands with wilderness characteristics
MP	milepost
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NNIS	nonnative, invasive species
NSO	no surface occupancy
NTMC	National Trail Management Corridor
NWSR	National Wild and Scenic Rivers System

PFYC	Potential Fossil Yield Classification
OHV	off-highway vehicle
ORV	outstandingly remarkable value
PLO	public land order
RFD	reasonably foreseeable development
RFFAs	reasonably foreseeable future actions
RMA	recreation management area
RMP	resource management plan
RNA	research natural area
ROD	record of decision
ROW	right-of-way
SRMA	special recreation management area
TAPS	Trans-Alaska Pipeline System
TMA	travel management area
U.S.	United States
U.S.C.	United States Code
VRI	visual resource inventory
VRM	visual resource management
WSA	wilderness study area
WSR	wild and scenic river

# Appendix M. Approach to the Environmental Analysis

## M.1 INTRODUCTION

Direct, indirect, and cumulative impacts are considered in this effects analysis. The effects analysis was performed consistent with direction provided in 40 Code of Federal Regulations (CFR) 1502.16, Considering Cumulative Effects under the National Policy Act (CEQ 1997); BLM (Bureau of Land Management) National Environmental Policy Act (NEPA) Handbook H-1790-1 (BLM 2008); Council on Environmental Quality NEPA regulations for incomplete or unavailable information, 40 CFR 1502.22; and the executive memorandum to all federal agencies dated June 24, 2005, regarding Guidance on the Consideration of Past Actions in Cumulative Effects Analysis (CEQ 2005).

## M.2 DIRECT AND INDIRECT IMPACTS

Direct and indirect impacts are considered in **Chapter 3**, consistent with direction provided in 40 CFR 1502.16.

**Direct Effects**—Effects that are caused by the proposed action and occur at the same time and place (40 CFR 1508.8). Examples of direct effects are filling of wetlands through the placement of gravel pads, and direct mortality of wildlife or vegetation.

**Indirect Effects**—Effects that are caused by the proposed action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects “may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems” (40 CFR 1508.8). Indirect effects are caused by the proposed action but do not occur at the same time or place as the direct effects.

Potential effects are quantified where possible using geographic information system (GIS) and other applications; in the absence of quantitative data, best professional judgment prevailed. Impacts are sometimes described using ranges of potential impacts or in qualitative terms. The standard definitions for terms used in the analysis are as follows, unless otherwise stated:

**Context**—Describes the area or location (site specific, local, planning area-wide, or regional) in which the potential impact would occur. Site-specific impacts would occur at the location of the action, local impacts would occur in the general vicinity of the planning area, planning area-wide impacts would affect most or all of the planning area, and regional impacts would extend beyond the planning area boundaries.

**Duration**—Describes the length of time an effect would occur, either short term or long term. Short term is anticipated to begin and end within the first 5 years after an action is implemented. Long term lasts beyond 5 years to the end of or beyond the 20-year resource management plan (RMP) time frame.

**Intensity**—Impacts are discussed using quantitative data where possible.

### **M.3 CUMULATIVE IMPACTS**

The cumulative impact analysis considers impacts of a proposed action and its alternatives that may not be consequential when considered individually; however, when they are combined with impacts of other actions, they may be consequential. As defined by Council on Environmental Quality regulations (40 CFR 1508.7 and 1508.25(a)(2)), a cumulative impact is as follows:

. . . the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions [RFFAs] regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Because of the programmatic nature of an RMP, this cumulative effects analysis methodology is broad and generalized to address potential effects that could occur from a reasonably foreseeable management scenario combined with other reasonably foreseeable activities or projects. The cumulative effects analysis evaluates the projected trends and forecasts of each resource, resource use, or special designation that could result from the RMP. To understand the RMP's influence on cumulative effects, trends and forecasts are identified in consideration of:

- Past and present actions (synonymous with the affected environment, described in the Draft Central Yukon RMP [CYRMP]/environmental impact statement [EIS] Chapter 3)
- Reasonably foreseeable actions along with past and present actions (this is also representative of Alternative A)
- Each RMP action alternative along with past, present, and RFFAs

This analysis provides a broad understanding of how each alternative would influence the cumulative effects, or trends and forecasts, for each resource, resource use, or special designation in the same geographic area. If the resource trend is projected to change as a result of any action alternative, that constitutes a cumulative impact. The impact could be adverse or beneficial, depending on the direction of the change.

#### **M.3.1 Method**

The method used for the cumulative impacts analysis in this RMP/EIS consists of the following steps:

- Identify issues, characteristics, and trends in the affected environment that are relevant to assessing cumulative effects of the action alternatives. This includes discussions on lingering effects from past activities that demonstrate how they have contributed to the baseline condition for each resource. This information is summarized in **Chapter 3**.
- Define the spatial (geographic) and temporal (time) frame for the analysis. This time frame may vary between resources depending on the historical data available and the relevance of past events to the current baseline.
- Identify past, present, and RFFAs, such as human activities and natural phenomena, that could have additive or synergistic effects. Summarize past and present actions, within the defined temporal and spatial time frames, and identify any RFFAs that could have additive, countervailing, or synergistic effects on identified resources.
- Use a specific method to screen all the direct and indirect effects, when combined with the effects of external actions, to capture those synergistic and incremental effects that are potentially cumulative in nature. Both adverse and beneficial effects of external factors are assessed and then

evaluated in combination with the direct and indirect effects for each alternative on the various resources to determine if there are cumulative effects.

- Evaluate the impact of the potential cumulative effects and assess the relative contribution of the action alternatives to cumulative effects.
- Discuss the rationale for determining the impact rating, citing evidence from the peer-reviewed literature and quantitative information where available. When confronted with incomplete or unavailable information, ensure compliance with 40 CFR 1502.22.

The analysis also considers the interaction among the impacts of the proposed action with the impacts of various past, present, and RFFAs, as follows:

Additive—The impacts of actions add together to make up the cumulative impact.

Countervailing—The impacts balance or mitigate the impacts of other actions.

Synergistic—The impact of the actions together is greater than the sum of their individual impacts.

In this RMP/EIS, both the temporal and geographic scope of the cumulative impact analysis could vary according to the resource under consideration. Generally, the temporal scope of this analysis is the life of the RMP, which encompasses a 20-year planning period. The geographic scope generally encompasses the planning area but may extend beyond this area for some resources that are mobile or migrate (e.g., terrestrial wildlife). Details associated with the impact indicators, geographic scope, and analysis assumptions for each resource are found in **Section M.4**, below.

### **M.3.2 Past, Present, and Reasonably Foreseeable Future Actions**

Relevant past and present actions are those that have influenced the current condition of the resource. For the purposes of this RMP/EIS, past and present actions are both human controlled and natural events. Past actions were identified using agency documentation, NEPA analyses, reports and resource studies, peer-reviewed literature, and best professional judgment.

The term “reasonably foreseeable future action” is used in concert with the Council on Environmental Quality definitions of indirect and cumulative effects, but the term itself is not defined further. Most regulations that refer to “reasonably foreseeable” do not define the meaning of the words but do provide guidance on the term. For this analysis, RFFAs are those that are external to the RMP and are likely (or reasonably certain) to occur, although they may be subject to a degree of uncertainty. Typically, they are based on such documents as plans, permit applications, and fiscal appropriations. RFFAs considered in the cumulative effects analysis consist of projects, actions, or developments that can be projected, with a reasonable degree of confidence, to occur over the next 20 years.

The BLM evaluated recent environmental reports, surveys, research plans, NEPA compliance documents, and other source documents to identify these actions. RFFAs were assessed to determine if they were speculative and would occur within the analytical time frame of the RMP/EIS. Projects and activities considered in the cumulative effects analysis are summarized in **Table M-1**, below.

**Table M-1  
Past, Present, and Reasonably Foreseeable Future Actions that Comprise the Cumulative Impact Scenario**

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Lands and Realty (rights-of-way [ROWs])	Ambler Road	The Record of Decision (ROD) was signed in July 2020.	The proposed project would construct a new 211-mile roadway on the south side of the Brooks Range, extending west from the Dalton Highway to the south bank of the Ambler River.	The road would be open only to mining-related industrial use; it would be closed to the public. The project would include bridges, material sites, maintenance stations, and related infrastructure and utilities. The project is also expected to create job and business opportunities for rural residents in north-central and northwest Alaska through road construction, operations, and maintenance, and the construction, operations, and maintenance of mines. Millions of dollars in government revenues are anticipated as well.
ROW/Transportation Networks	Arctic Strategic Transportation and Resources	Varies	Varies	Information on these projects has already been provided through the reasonably foreseeable development (RFD) scenario and current lands and realty authorizations. This is a conceptual project by the State of Alaska; the BLM has authorized one route out of the many in the concept. <a href="https://www.arcgis.com/apps/Cascade/index.html?appid=ab8be9349a08477ebfb66d017e0aec8d">https://www.arcgis.com/apps/Cascade/index.html?appid=ab8be9349a08477ebfb66d017e0aec8d</a>
ROW	Bettles Winter Road	Varies	Varies	Similar to above; this project has already been included in current authorized projects but should be considered in the cumulative effects.
Lands and Realty (land status)	Valid State-selected Lands and Valid Top-filed Lands	Dependent; see description	Unknown	<p>The State of Alaska has valid state selections throughout the planning area. The State is currently overselected, and it is unknown which lands may be conveyed; however, all lands that have valid selections should be considered as eligible for conveyance within the life of the plan. This will result in some land pattern changes over the landscape.</p> <p>Lands, encumbered by State- or Native- selections by Public Land Order (PLO) 5150 in the Dalton Utility Corridor, are not valid selections but top-filed lands. The top-filed lands will become valid selections once the PLO is revoked. The State has expressed that this is a high priority, and it is reasonable to assume that these lands, once any portions of the PLO are revoked and a valid selection attaches, will be conveyed within years of the revocation.</p>



Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Lands and Realty (communication sites)	GCI TERRA	Ongoing	Throughout western Alaska, near the planning area	GCI Communication Corporation has worked and will continue to work on improving its broadband access across the western region of Alaska through its TERRA network, or Terrestrial for Every Rural Region in Alaska. This provides high-speed broadband service to 84 western Alaska communities and 45,000 residents from the Northwest Arctic Borough to Bristol Bay, by installing over 100 cell towers. The network relies on communication towers in the western region of the planning area near BLM-managed lands. A helicopter refueled these towers in summer 2018, which cost around \$1.5 million dollars. Such projects are likely to continue in the future, and will cause impacts related to disturbance by helicopter, the need for diesel fuel to power the towers, and any other potential construction and maintenance that may occur on this network.
Lands and Realty (communication sites)	Cell Towers	In August 2017, GCI launched coverage in the area for the first time by constructing a cell tower along milepost (MP) 175 of the Dalton Highway.	Along the Dalton Highway	GCI and other companies will likely establish and expand cell service via towers along the Dalton Highway spanning out from Coldfoot to Deadhorse. The addition of cell service along the Dalton Highway is part of \$30 million GCI is spending to expand coverage statewide. Increasing availability of mobile communication on the Dalton Highway would benefit those using the route for tourist and commercial purposes.
Lands and Realty (ROWS)	Fiber-optic Lines	In conjunction with the Ambler Road project. The ROD was signed in July 2020.	At least as large as the Ambler Road project; see description above.	The BLM anticipates that other utilities infrastructure associated with the Ambler Road will be constructed, such as fiber-optic lines. Impacts related to construction and maintenance are likely to occur.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Mining	Livengood Gold	The Feasibility Study Summary National Instrument 43-101 was published September 4, 2013. Pre-feasibility study results were published September 8, 2016.	The mining area is 48,000 acres and is located 70 miles northwest of Fairbanks. The mine is located in the Tolovana mining district within the Tintina Gold Belt.	The Livengood area has been placer mined since 1914. It is anticipated to produce 294,000 ounces of gold annually over the estimated 23-year life of the mine. The company controls 100 percent of its 75-square-mile land package, which is made up of Alaska State mining claims, fee simple land, federal placer claims, mineral lands leased from the Alaska Mental Health Land Trust, and leases with private holders of federal patented and unpatented lode and placer claims. <sup>1</sup>
Mining	True North	No longer operational. Final phases of site reclamation.	The 615 acres of existing facility disturbance are located approximately 25 highway miles northeast of Fairbanks, Alaska.	Mining activities ceased in 2009, and reclamation of the site began in 2010. As of 2014, the site was almost fully revegetated and prescribed for monitoring over the next several years.
Mining	Fort Knox	The mine was originally permitted in 1994 and currently operates 24 hours a day, 365 days a year.	The Fort Knox area is located approximately 25 highway miles northeast of Fairbanks, Alaska. The open pit is projected to cover approximately 0.4 square miles at mine closure. The tailings dam and pond would cover approximately 1.75 square miles.	On primarily State of Alaska and private lands in the Fairbanks North Star Borough (FNSB). Active, open-pit, truck, and shovel gold mining operation that uses carbon-in-pulp, heap leach, and gravity processes, located approximately 25 miles northeast of Fairbanks, Alaska. Production to date is around 330,000 ounces annually.
Mining	Ucore Rare Metals – Ray Mountains	Ucore is planning expanded exploration once the federal government tentatively approves title transfer.	The project area and mining claims are located along the Ray River and Kanuti-Kilolitna watersheds.	The Ray Mountains region has alluvial deposits that contain rare earth elements, on which Ucore Rare Metals plans to expand exploration. They are most abundant in lower-elevation terrain.

<sup>1</sup>A mining claim is a parcel of land for which the claimant has asserted a right of possession and the right to develop and extract a discovered, valuable, mineral deposit. Lode Claims—Deposits subject to lode claims include classic veins or lodes having well-defined boundaries. They also include other rock in-place bearing valuable minerals and may be broad zones of mineralized rock. Placer Claims—Placer claims are defined as “. . . including all forms of deposit, excepting veins of quartz, or other rock in-place.” In other words, every deposit not located with a lode claim should be appropriated by a placer location.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Military	Army 2020 Force Structure Realignment	The Programmatic Environmental Assessment and Finding of No Significant Impact were released January 2013.	Statewide	Reduction of 73 personnel at Fort Wainwright resulting from the Army 2020 Force Structure Realignment.
Military	Clear Air Force Base – Long Range Discrimination Radar	The proposed final environmental assessment was released May 2020. Current plans called for construction to begin in 2019 and be completed in 2020. The radar is to begin defensive operations thereafter.	110 miles west of Fort Greely, and 78 miles southwest of Fairbanks. There is an 11,438-acre undeveloped installation and 350 acres of developed area.	Clear Air Force Base has obtained a \$175 million Congressional approval for the construction of a fire station and Phase 1 construction of a Long Range Discrimination Radar.
Military	Eielson Air Force Base – Construction Projects	F-35s have started to arrive in 2020.	The planning area is approximately 26 miles southeast of Fairbanks, Alaska. The installation covers 19,790 acres, approximately 15,754 of which are forested.	Eielson Air Force Base has obtained an over \$500 million approval from Congress for six construction projects preparing for the arrival of 54 F-35s, including construction of a 16-bay weather shelter, earth-covered magazines, a 4-bay maintenance/corrosion control facility, a 4-bay squadron operations center, and a missile maintenance facility. The increase is planned to add over 1,500 personnel to the base, requiring additional buildings and updates to existing infrastructure.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Military	Eielson Air Force Base United States (U.S.) Air Force's F-35A Operational Beddown – Pacific	The Air Force released its ROD for the final supplemental EIS on December 19, 2017.	The planning area is approximately 26 miles southeast of Fairbanks, Alaska. The installation covers 19,790 acres, approximately 15,754 of which are forested.	Basing the F-35As at Eielson would bring an estimated 2,765 individuals to the community, including 1,563 military and civilian jobs and 1,202 military dependents. The proposed action would have positive impacts on the FNSB School District by adding an estimated 385 students that would fill current excess capacity. There would be 314 new households seeking housing in the community. Full-time operations associated with basing the F-35As at Eielson are expected to begin in fiscal year 2020. At that time, an estimated 2,321 jobs, \$176.1 million in labor income, and \$275.4 million in economic output would be generated by F-35A operations and maintenance activities. The EIS found potential significant impacts for on- and off-base noise impacts. Off base, an increased number of residences in Moose Creek would be exposed to noise levels. The ROD will provide additional stormwater runoff control, develop equipment and material laydown areas, and provide additional heat, water, and power to the South Loop.
Military	Fort Greely Communication Center	Construction is anticipated to begin in 2021.	Fort Greely is located approximately 100 miles southeast of Fairbanks, and 5 miles south of Delta Junction along the Richardson Highway. It has a total area of 169.7 square miles.	The National Defense Authorization Act for Fiscal Year 2021 authorized the construction of a \$48 million communications center in support of the critical missile defense assets at Fort Greely. It will house mission communication equipment.
Military	Army Testing, Infrastructure Improvement, and Enhanced Environmental Procedures	Finding of no significant impact published February 20, 2012.	Donnelly Training Area Fort Wainwright, Alaska, and Fort Greely, Alaska.	A total of 22 site-specific projects that are either new construction (8) or upgrades to existing facilities and ranges (14). Construction of new buildings in the Donnelly Training Area to replace outdated or unsafe facilities, installation of additional fiber-optic lines, power line extensions, and associated infrastructure upgrades are planned. Consolidate facilities from Main Post Fort Greely to the training ranges near the Bolio Test Complex and the Mobility Test Complex.
Oil and Gas	Alyeska Decommissioning of Pump Stations	Unknown	Pump stations in the inner corridor of Dalton Highway.	In the past and maybe in the future, Alyeska has decommissioned, or will decommission, existing pump stations. These stations, while not being used for that purpose, still have a development footprint on the land; however, decommissioning could potentially include activities in the future geared toward reclamation and restoration.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Oil and Gas	Coastal Plain Oil and Gas Leasing Program	The ROD was signed in August 2020.	The Arctic National Wildlife Refuge is located in the far northeast corner of Alaska, bordering Canada and the Beaufort Sea. The Coastal Plain program area is composed of approximately 1.6 million acres (roughly corresponding to the “1002 area” of the Arctic Refuge).	The EIS included which tracts of land will be offered for lease and the terms and conditions to be applied to such leases and authorizations for oil and gas activities. The decisions evaluated would not authorize any activity associated with the exploration or development of oil and gas resources on the Coastal Plain. Future on-the-ground actions requiring BLM approval, including proposed exploration plans and development proposals, would require a further NEPA analysis based on specific and detailed information about what kind of activity is proposed and where it will take place.
Oil and Gas	National Petroleum Reserve in Alaska Integrated Activity Plan	The Final EIS was published in June 2020.	Located in the National Petroleum Reserve in Alaska, an area of approximately 22 million acres located on Alaska’s North Slope. This area is directly north and west of the Central Yukon planning area.	The new Integrated Activity Plan/EIS will include consideration of a range of leasing alternatives that open new areas to leasing, examination of current special area boundaries, and consideration of new or revised lease stipulations and best management practices. The new plan will incorporate the most current information and lay out management goals and objectives that are environmentally responsible, respect traditional uses of the land, and maintain access to subsistence resources.
Oil and Gas	Alaska Stand Alone Pipeline Project	The final supplemental EIS was completed in June 2018, and the ROD was signed on March 4, 2019. Construction was anticipated to begin in 2019; however, it is unknown at this time when construction will begin.	The 733-mile, low-pressure pipeline will run from Prudhoe Bay to Point MacKenzie, with a 30-mile lateral line between the main pipeline and Fairbanks.	The Alaska Stand Alone Pipeline is Alaska’s in-state natural gas pipeline project designed to develop an affordable, long-term energy solution for Fairbanks, south-central, and as many other Alaskan communities as possible. The pipeline would carry up to 500 million cubic feet per day of consumer grade “lean gas.” Lean gas is energy ready for delivery to, and consumption by, customers. The Alaska Stand Alone Pipeline project optimization confirms that the “lean gas” design model improves tariffs for the Interior Alaska, reduces overall project risk, reduces the impact on the environment, and presents the potential for more community natural gas takeoffs along the alignment.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Oil and Gas	Alaska Liquefied Natural Gas (AKLNG) Project	The ROD was signed in September 2020.	The 807-mile liquefied natural gas pipeline running from Prudhoe Bay to the port in south-central Alaska.	The AKLNG Project is comprised of the following integrated and interdependent facilities: a liquefied natural gas terminal in south-central Alaska designed to produce up to 20 million metric tons per annum of liquefied natural gas; an approximately 807-mile, 42-inch-diameter gas pipeline; a gas treatment plant within the Prudhoe Bay Unit on the North Slope; an approximately 1-mile, 60-inch-diameter gas transmission line connecting the gas treatment plant to the Prudhoe Bay Unit gas production facility; and an approximately 63-mile, 32-inch-diameter gas transmission line connecting the gas treatment plant to the Point Thomson gas production facility. The mainline of the AKLNG Project will traverse over 800 miles from the gas treatment plant on the North Slope of Alaska through several boroughs before it crosses Cook Inlet and connects with the liquefaction plant and marine terminal in Nikiski.
Oil and Gas	Liberty Development Project	The Final EIS was released in August 2018. A notice of availability for the Liberty EIS ROD was published in the <i>Federal Register (FR)</i> in October 2018.	Foggy Island Bay in Beaufort Sea, Alaska, approximately 15 miles east of Prudhoe Bay. It is a 9.3-acre, offshore island and associated onshore support infrastructure.	Liberty Island would be built about 5 miles offshore in Foggy Island Bay of the Beaufort Sea Outer Continental Shelf. A nominal 12-inch sales oil pipeline inside a 16-inch outer pipe would transport crude oil to the Badami Sales Oil Pipeline. The offshore portion of the pipeline would be approximately 5.6 miles long, and the overland portion would be approximately 1.5 miles long to the Badami pipeline tie-in point. Associated onshore facilities to support the project would include use of permitted water sources, construction of gravel pads to support the pipeline tie-in location and Badami ice road crossing, ice roads and ice pad construction, hovercraft shelter, small boat dock, and development of a gravel mine site west of the Kadleroshilik River.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Oil and Gas	Point Thomson Unit Gas Transmission Line	ExxonMobil purchased Point Thomson in April 2016	<p>The planning area is 60 miles east of Prudhoe Bay.</p> <p>The field development covering an area of approximately 150 square miles involved the construction of three well pads: the central pad covering an area of 49 acres, and the east and west pads located about 4 miles each from the central pad and covering 18 acres each.</p> <p>An insulated pipeline measuring 22 miles in length and 12 inches in diameter conveys the gas condensate from the field and eventually to the Trans-Alaska Pipeline System (TAPS).</p>	<p>The current facilities at Point Thomson are capable of producing up to 10,000 barrels per day of natural gas condensates, which are diesel-like fluid that are shipped down the TAPS, and up to 200 million cubic feet of natural gas per day.</p> <p>ExxonMobil plans to increase production of condensate to 50,000 barrels per day by converting two injection wells to production wells. This plan would also increase gas production from the field.</p>
Oil and Gas	TAPS	Ongoing	The 800-mile-long pipeline stretches from Prudhoe Bay in the North Slope to tidewater in Valdez.	<p>TAPS is one of the world's largest pipeline systems. It has successfully transported more than 17 billion barrels of oil. At peak flow in 1988, 11 pump stations helped to move 2.1 million barrels of oil a day. Throughput in 2016 averaged 517,868 barrels a day, with four active pump stations remaining in the system. The 2016 average marked the first increase in TAPS throughput since 2002. The 2015 daily throughput average was 508,446 barrels. Throughput increased again in 2017, averaging 527,323 barrels a day, before dropping in 2018 to 509,315 barrels a day. Maintenance of the pipeline is expected to continue, and other pipelines may be built to feed into the system. Impacts from TAPS have included and will continue to include those related to construction, maintenance, and operation; establishment of man camps; creation and maintenance of access roads; fuel spills and dumps; habitat fragmentation; transport related to the pipeline, such as helicopter flights and tanker traffic; and economic benefits from resource extraction.</p>

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Oil and Gas	Interior Energy Project	Construction began in 2018 and had a targeted completion date of 2019.	Greater Fairbanks	<p>Joint project: Alaska Industrial Development and Export Authority; Alaska Energy Authority; the Department of Commerce, Community, and Economic Development; the Department of Revenue; and the Alaska Department of Natural Resources (ADNR) to find a solution to poor air quality and high energy costs common to Interior Alaska. Development of the Interior Gas Utility distribution system and expansion of the Fairbanks Natural Gas distribution system. As of 2015, these projects added up to an additional approximate 140 miles of installed natural gas distribution pipe in the FNSB.</p> <p>Alaska Industrial Development and Export Authority is evaluating both railroad and road alternatives to transport the liquefied natural gas. Alaska Industrial Development and Export Authority is currently negotiating with the FNSB Interior Gas Utility company to form a combined utility. The combined utility would then proceed with procurement of Cook Inlet gas liquefaction capacity and increased liquefied natural gas storage. Interior Gas Utility is also preparing to purchase the Titan liquefied natural gas liquefaction plant near Point McKenzie.</p>
Oil and Gas	Nanushuk Project Exploration and Development	The final EIS was signed November 2018; the ROD and Permit Evaluation were signed May 2019.	The planning area covers 63,304 acres. It is in the North Slope, between the Kuparuk and Alpine Units.	Oil Search Alaska, LLC is proposing development of hydrocarbon deposits from its oil and gas leasehold on the North Slope of Alaska. The proposed Nanushuk Project will target oil deposits in the Alpine C and Nanushuk reservoirs. The Final EIS proposed action includes construction of the Nanushuk Pad comprised of three drill pads, a central processing facility, an operations center pad, infield pipelines, the export/import Nanushuk Pipeline, infield roads, an access road, a tie-in pad, and a lake pump house pad.
Oil and Gas	Smith Bay Development	Initial planning phases of Appraisal Program. No plans for development at this time.	The planning area covers 300 square miles and is in the North Slope, southeast of Utqiagvik, Alaska.	Based on two exploration wells, Caelus Energy announced in October 2016 the discovery of an estimated 6 to 10 billion barrels of oil at the current lease. Predicted production is up to 200,000 barrels per day. In July 2019, Caelus Energy exited Alaska North Slope oil as an operator and sold its assets to ENI and ConocoPhillips, but it retained its Smith Bay interest. Due to the remoteness and unique challenges, no development is planned at this time for Smith Bay.



Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Oil and Gas	Northstar Unit, Endicott, and Milne Point	Operating	The unit is in the Beaufort Sea 12 miles northwest of Prudhoe Bay.	On April 22, 2014, BP Exploration Alaska, Inc sold interests in four British Petroleum-operated oilfields on the North Slope of Alaska to Hilcorp Alaska. The agreement includes associated pipelines in the Milne, Northstar, and Endicott fields.
Oil and Gas	Greater Mooses Tooth (GMT) 1 and 2	GMT1 began operating and produced the first oil in October 2018. GMT2 is expected to begin operating and produce oil in 2021.	The planning area is in the North Slope, near Kuparuk River Field and Nuiqsut.  GMT1 has an 11.8-acre drilling pad, a 7.6-mile road, and pipeline facilities to connect to the company's nearby Colville River Unit infrastructure.	GMT1 and GMT2 are both located on federal lands in the National Petroleum Reserve-Alaska.  The GMT1 pad has nine wells with a capacity for up to 33 wells. Peak gross production is estimated at 25,000 to 30,000 barrels per day.  In August 2015, ConocoPhillips Alaska, Inc. submitted an application to the BLM to permit a 14-acre pad and up to 48 wells, an 8.2-mile road, and an 8.6-mile pipeline connecting GMT2 with GMT1. ConocoPhillips expects GMT2 to be in production for 30 years from 2020–2050. ConocoPhillips estimates that the approximately 40,000 barrels of oil produced per day will result in royalties amounting to roughly \$2.13 billion, with payments shared among the resource owners.
Oil and Gas	Willow Master Development Plan	The ROD was signed in October 2020. The first oil is planned for 2025–2026.	The proposed action will be located in the Bear Tooth Unit in the northeast of the National Petroleum Reserve-Alaska.	The proposed Willow development includes five drill site locations necessary to economically develop the Bear Tooth Unit oil resources, an on-site Willow Central Processing Facility collocated on the Bear Tooth 3 drill site, and an infrastructure pad containing support facilities. The proposed road route provides the shortest road access route from the GMT Unit to the proposed Willow facilities.  ConocoPhillips estimated the resource estimate to range between 400 and 750 million barrels of oil equivalent, and that Willow could produce 100,000 barrels of oil per day.
Oil and Gas	CD-5	Operating	CD-5, part of the Alpine field development, is situated in the boundaries of the National Petroleum Reserve-Alaska on land owned by Kuukpik Corporation and the village corporation for Nuiqsut, with mineral rights owned largely by Arctic Slope Regional Corporation.	This alpine field satellite development drill site is on Alaska Native village corporation lands near Nuiqsut and is the first commercial oil production from the National Petroleum Reserve-Alaska. As a satellite to the Alpine Central Processing Facility, CD-5 has only minimal on-site processing facilities; however, it required 6 miles of gravel road, four bridges, and 32 miles of pipelines including completion of a gravel road and natural gas pipeline from the Alpine Central Processing Facility into Nuiqsut. ConocoPhillips Alaska, Inc. plans to continue drilling an additional 18 wells at CD-5 after the original 15 wells are completed, for an eventual total of 33 wells.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Oil and Gas	Spill Prevention and Response Exercises and Training	Ongoing	Beaufort Sea and Cook Inlet	Spill prevention and response exercises and training occur throughout the planning area and will continue to occur.
Transportation and Infrastructure	Dalton Highway Improvements	The design study report was released in August 2016. The project is to be completed in 2020.	Realignment of the highway from MP 0 to 9.	Alaska Department of Transportation & Public Facilities (DOT&PF) is planning the reconstruction and realignment of the highway from MP 0 to MP 9. There is a need for the project corridor to be updated to current safety standards as more than a third of the existing alignment has steep grades and sharp curves. The existing geometry also makes maintenance efforts difficult. The improvements include a reroute of the first 7 miles of the highway to the nearby valley bottom, widening the road to 36 feet, installation of culverts and drainage, and development of the material site at MP 6.5.
Transportation and Infrastructure	Dalton Highway Improvements	Currently in the preliminary design. Construction is anticipated to start in 2020.	Reconstruction of the highway from MP 18 to 37.	DOT&PF is upgrading the Dalton Highway to enhance safety and performance and reduce DOT&PF's maintenance costs. This project will reconstruct the Dalton Highway between MP 18 and MP 37, including drainage improvements, widening, and replacement of Hess Creek Bridge.
Transportation and Infrastructure	Dalton Highway Improvements	Currently in the preliminary design. Construction may be broken into three phases, and is anticipated to begin in 2021.	Dalton Highway MP 109 to 144	DOT&PF is reconstructing the Dalton Highway to address critical segments of the highway that do not meet current design standards. The project will address the narrow roadway, lack of shoulders, thawing permafrost, and drainage.
Transportation and Infrastructure	Dalton Highway Improvements	Construction is anticipated to begin in 2020.	Dalton Highway MP 305 to 335	DOT&PF is reconstructing the Dalton Highway to improve safety and reduce maintenance costs. The project will regrade and widen the road; flatten curves and grades; replace the Dan Creek Bridge at MP 331; construct new turnouts; improve drainage, including replacing and installing culverts; reconstruct approaches; and upgrade signing and delineators.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Transportation and Infrastructure	Yukon River Reconnaissance Study	Currently developing preliminary alternatives. Unknown when improvements will begin.	Yukon River Bridge, Dalton Highway MP 56.	DOT&PF is conducting preliminary work for potential Yukon River Bridge improvements at MP 56 on the Dalton Highway. Previous improvement projects have included seismic retrofitting, which cost around \$790,000. A reconnaissance study assessing existing conditions and initial needs was released in March 2018. The study concluded that “the Yukon River Bridge and Dalton Highway provide critical support to existing and future economic development and transportation needs of the Interior and North Slope of Alaska. The overarching project purpose is to ensure bridge access is maintained across the Yukon River.” See <a href="http://dot.alaska.gov/nreg/yukonriverrecon/">http://dot.alaska.gov/nreg/yukonriverrecon/</a> .
Transportation and Infrastructure	Frozen Debris Lobe, Dalton Highway	Unknown	Dalton Highway, MP 219	DOT&PF and Alyeska Pipeline are aware of slow-moving permafrost landslides along MP 219 that will affect both infrastructures. The frozen debris lobe, consisting of dirt, ice, and trees, is thought to increase its rate of yearly progression with warm weather. In 2018, the DOT&PF moved the Dalton Highway farther down the valley to buy the highway more time. No additional infrastructure relocations are planned at this time, as scientists and industry are monitoring the situation.
Transportation and Infrastructure	Parks Highway Improvements	Currently working toward final design. It is unknown when construction will begin.	Parks Highway MP 305 to 325	DOT&PF is reconstructing the Parks Highway to improve safety, eliminate seasonal load restrictions, and enhance commercial and recreation function. The project will repave; flatten curves and grades; replace the Little Goldstream Creek Bridge at MP 314; construct new and update passing lanes; improve drainage, including replacing and installing culverts; reconstruct approaches; and upgrade mailboxes, signing, and striping.
Transportation and Infrastructure	Alaska Intertie Project — Railbelt Power Pool Project.	Unknown	A 170-mile transmission line running between Willow and Healy	The 345-kilovolt transmission line includes several high-voltage transformers and three facilities placed in the Railbelt grid. In December 2019, Alaska’s Railbelt Utilities signed a memorandum of understanding, comprised of six electric utility companies, to form a semi-independent regional grid and planning organization. The potentially proposed project is the development of additional intertie lines, as there is currently only one, connecting Homer to Fairbanks. This would eliminate single-point failure problems.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Transportation and Infrastructure	Marine Shipping and Other Vessel Traffic	Ongoing	The Beaufort Sea and the Port of Seward	U.S. Coast Guard District 17 reported that for 2008 to 2012, total annual vessel traffic in the Arctic region grew from 120 to 250, a more than 100 percent increase. The growth rate was particularly high for tank vessels; tugs and other cargo vessels were the second and third largest categories of movements, respectively. Annually, more than 130,000 people and more than 2 million tons of cargo enter or exit Seward via the Alaska Railroad Corporation dock facilities.
Natural Event	Wildland fire	N/A	Statewide	The planning area is in a fire regime characterized by large, severe, stand-replacing wildfires. Since 2004, the largest wildfire year to date, approximately 26.6 million acres across the state have burned. Wildland fires are common in Interior Alaska during the summer months and are a result of both natural events (lightning strikes) and human-made events. The magnitude and frequency of wildland fire may change as a result of climate change.
Natural Event	Flooding	N/A	Statewide	Flooding may occur any time of the year across the state; however, it is most common in the spring during winter break-up and, in the fall, when precipitation is most frequent. Ice jams frequently dam thawing rivers and streams, restricting flow and resulting in flooding upstream. In 2015, flooding of the Sag River in Prudhoe Bay resulted in inundation of the Dalton Highway, the only land access point to North Slope oil fields. It cost Alyeska Pipeline over \$10 million dollars in response. Heavy rains in 1967 resulted in Fairbanks "Great Flood," resulting in four deaths and millions of dollars in damage. The town of Galena, Alaska, flooded in 2013, when an ice jam resulted in damming of the Yukon River. Over 90 percent of buildings were destroyed during the flood.
Natural Event	Earthquakes	N/A	Statewide	Alaska sits in an area of high seismic activity, with an average of one earthquake reported by the University of Alaska Fairbanks Alaska Earthquake Center every 15 minutes. The largest earthquake in Alaska occurred in 1964 (9.2 magnitude, Valdez); the largest Denali Fault earthquake occurred in 2002 (7.9, Cantwell). More than 50,000 earthquakes were recorded in Alaska in 2019.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Natural Event	Climate Change	N/A	Statewide	Average temperatures have risen in Alaska 3 degrees Fahrenheit over the past 60 years. Increases in temperatures have resulted in earlier break-up of river ice, changes in precipitation quantity and timing (snow versus rain), potential increases in permafrost thaw, and changes in ecosystem composition. Potential climate change impacts on the state also include increases in loss of sea ice, increased sediment output from rivers/increased input to the Arctic Ocean, and increased ocean elevations and coastal erosion, all of which affect wildlife. Changes in weather patterns and storm intensities are likely to affect other resources.
Natural Event	Soil and Permafrost Changes	N/A	Statewide	Mass wasting and landslides occur throughout the state, especially in areas underlain by permafrost. Frozen debris lobes (solifluction lobes) also occur throughout the state, with several rapidly moving lobes occurring along the Dalton Highway. In addition to soil and vegetation impacts, water quality is often affected from the addition of sediments to waterways and floodplains. Thermokarsting and other permafrost changes, such as the thawing of massive ground ice, have similar impacts. The frequency of these events is increased by both climate changes and increased development. These changes to permafrost ground have impacts not only on environmental resources but on development and infrastructure. Roads need to be relocated and maintained with increased frequency, increased erosion control media is required for construction projects, and specialized building techniques must be utilized.
Natural Event	Invasive Species and Disease	N/A	Statewide	The number of potential vectors is likely to increase, given that Alaska is sensitive to the ongoing and increasing effects of climate change and that Alaska is and will continue to be a major international hub for transportation, trade, and shipping. The ADNR reported that invasive species management cost \$29 million from 2007 to 2011 (see Institute of Social and Economic Research 2012, found here: <a href="https://iseralaska.org/static/legacy_publication_links/2012_07-InvasiveSpecies.pdf">https://iseralaska.org/static/legacy_publication_links/2012_07-InvasiveSpecies.pdf</a> ). The Alaska Department of Fish and Game developed an Aquatic Nuisance Species Management Plan in 2002 to address invasive species threats in the state. The ADNR also implements programs to manage invasive plant species like elodea and Canada thistle.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Poaching	Illegal hunting or fishing of species outside of regulated hunting seasons, without proper permits, in areas not permitted for hunting, or the take of species not permitted for hunting	N/A	Statewide	Big game species allowed for permitted take in Alaska include bison, caribou, elk, muskox, wolf, black and brown bear, Dall sheep, moose, deer, and mountain goat. Other small game and birds are also available. Poaching (illegal hunting) already occurs in the state. Increased access to undeveloped areas and increases in seasonal worker populations have the potential to increase the occurrence of illegal hunting along the proposed corridor.
Tourism and Recreation	Tourism, increased recreation, and increased demand for backcountry access for recreation opportunities	N/A	Statewide	<p>Throughout the U.S., participation in and demand for backcountry recreation is increasing. Improvements in gear and the explosion of activities, such as packrafting, backcountry skiing, hiking, snowmobiling, and other activities, are increasing the number of users on public lands throughout Alaska.</p> <p>Recreation and tourism occur statewide and may involve land-based activities as well as activities on lakes, rivers, and oceans in the planning area. Tourism is the second-largest private sector employer, and accounts for one in eight Alaskan jobs. The most recent available data indicate that the tourism industry generates more than 43,300 jobs, \$125.6 million in State taxes and revenues, \$2.2 billion in visitor spending, and \$1.5 billion in labor income from a total of approximately 2.24 million visitors (ADCCED 2018).</p> <p>The Economic Impact of Alaska's Visitor Industry 2017 (November 2018) can be found here: <a href="https://www.commerce.alaska.gov/web/ded/dev/tourismdevelopment/tourismresearch.aspx">https://www.commerce.alaska.gov/web/ded/dev/tourismdevelopment/tourismresearch.aspx</a></p> <p>Increased recreation on public lands in the planning area will create impacts related to increased user access and disturbance. Other activities on public lands, especially development, will also affect recreational users. For example, disturbances like changes to access opportunities, noise levels, and visual resources related to development are especially likely to affect backcountry recreational users.</p>

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Access	Alaska Road Commission, Hickle Highway, and various other roads/trails	Past	Distributed across the planning area	The Alaska Road Commission trail network, Hickle Highway, and various other historic roads and trails left a network of trails that largely remain as structural and visible elements on the landscape. Many have been asserted by the State as RS-2477 ROWs. They affect wildlife habitat, in both positive (e.g., edge effects and structural diversity) and negative (e.g., fragmentation) ways. They affect human use patterns by encouraging and facilitating access in areas that would otherwise be less accessible.
Development	Small-scale placer mining activities	Past, present, future — Ongoing	Concentrated in specific portions of the planning area: Koyukuk Mining District, Livengood Mining District, and Fairbanks area	Small-scale placer mining has been distributed in the planning area for over a century. Impacts include habitat fragmentation by access and clearing, reduced stream function level, reduced water quality, impacts on fish habitat, increased erosion potential, thawing of permafrost, and riparian vegetation alteration.
Development	Gravel extraction in the Dalton Utility Corridor	Past, present, future — Ongoing	Dalton Utility Corridor	Extraction consists of around 40 currently active pits; however, the number of pits that has been opened over time is uncertain. In addition to use for Dalton Highway construction and maintenance and TAPS construction and maintenance, material has been taken for use on the North Slope and for constructing offshore islands. Impacts include vegetation removal, permafrost thawing, increased erosion potential, fragmentation of habitat, restrictions to access, and the spread of invasive plants.
Development	Dalton Highway maintenance	Past, present, future — Ongoing	Dalton Utility Corridor	Development on the Dalton Highway includes maintenance and reconstruction as described above. Various impacts include the spread of invasive weeds through grading and plowing north, stream function alterations at bridge crossings and river training sites, transmission of dust, alteration of permafrost and the water table along the highway, and associated impacts on vegetation related to the accumulation of calcium chloride and fuel spills.
Research Activities	Toolik Field Station, plus distributed research along the Dalton Highway; some permitted, some not	Past, present, future — Ongoing	Statewide	Research activities occur throughout the state and the planning area. Sites like the Toolik Field Station facilitate research activity by providing services from lodging to technical support. Research activities cause impacts related to changes in access, use of equipment like batteries and fuel, creation and use of facilities, and noise. These impacts vary based on the nature of the research activity conducted.

Type of Project, Plan, or Action	Name	Timing/Status	Location and Size	Description
Wildland Fire Suppression Activities on Other Land	Wildland fire suppression effects	Since European settlement	Interior Alaska	<p>Interior Alaska's mosaic of vegetation is created by a disturbance regime. The most prominent disturbance is periodic, large, severe wildland fires. Fire suppression near populated areas and other infrastructure leads to a change in vegetation type over time with a tendency toward older spruce stands. In older spruce stands, fire suppression efforts become more difficult over time, and the risk of a large, destructive fire in areas of suppression increases over time.</p> <p>Further information is available at:  <a href="https://doi.org/10.1007/s10021-006-0095-0">https://doi.org/10.1007/s10021-006-0095-0</a></p>
Air Pollution	Increased potential for air pollution as caused by increased development	N/A	Statewide and beyond	<p>Deposition (wet and dry) occurs throughout Alaska from industrial activities that occur both in the state and overseas, particularly China and Siberia. Data are available from an air quality monitoring stations throughout Alaska.</p>
Wildland Fire Burn—Air Quality Issues from Wildland Fires	Effects of wildland fires burning on air	Snow-free months	Interior Alaska/planning area—effect is global	<p>In large portions of the planning area, wildland fires burn fairly naturally either as a cost-cutting measure or to allow for ecosystems to function where no threat to human infrastructure exists. Smoke from the fires adds to greenhouse gasses (GHGs) and black carbon, which effect polar ice melt and global climate change. Smoke is also a human health issue when it is dense.</p>
Volcanic Activity	Volcanic air and soil effects	Episodic	Alaska and global	<p>Volcanic activity, particularly in the Ring of Fire, including the notable Mount Redoubt, adds to air quality issues associated with wildland fires and development in the planning area. Depositions from volcanic episodes are also important for soil development.</p> <p>Further information is available at:  <a href="https://avo.alaska.edu/volcanoes/hazards.php">https://avo.alaska.edu/volcanoes/hazards.php</a>  <a href="https://www.sciencedirect.com/science/article/abs/pii/S0377027312003010?via%3Dihub">https://www.sciencedirect.com/science/article/abs/pii/S0377027312003010?via%3Dihub</a></p>



### **M.3.3 Actions Not Included in the Cumulative Analysis**

Developments for which a solid proposal has not been submitted or that seem unlikely to occur within the foreseeable future are considered speculative. These may include projects that are discussed in the public arena but are not currently authorized by law or for which there is no current proposal before an authorizing agency. Speculative developments are not considered reasonably foreseeable and are not evaluated as part of the cumulative impacts analysis.

## **M.4 RESOURCES DISMISSED FROM THE DETAILED ENVIRONMENTAL CONSEQUENCES ANALYSIS**

### **M.4.1 Energy and Minerals**

A quantitative impact assessment of fluid leasable minerals was considered nonessential and eliminated from detailed analysis. Fluid mineral potential in most of the planning area is very low to low. As detailed in the RFD scenario (**Appendix N**), areas of fluid mineral potential are limited to only a few locations in the planning area, and no development is expected to occur on BLM-managed lands or mineral estate during the life of the RMP. Currently, production occurs in the northern part of the planning area near Prudhoe Bay on State lands, and exploratory drilling occurs in one location near the town of Nenana on Native corporation lands. Fluid leasable minerals were not brought up during the public scoping process.

A quantitative impact assessment of non-energy solid leasable minerals was considered nonessential and eliminated from detailed analysis. No development of non-energy solid leasable minerals is anticipated to occur in the planning area. As discussed in the RFD scenario (**Appendix N**), no significant deposits of non-energy solid leasable minerals have been identified within reasonable distance from roads or other transportation corridors. Global demand for non-energy solid leasable minerals is well supplied by sources outside the planning area, and local market demand is very low to nonexistent. Non-energy solid leasable minerals were not brought up during the public scoping process.

### **M.4.2 Renewable Energy**

There are no existing renewable energy sites on BLM-managed lands in the planning area. The potential for commercial solar operations in the planning area is very low, as the solar resource criteria are not met anywhere in the planning area. Wind energy potential has been classed as fair to poor, and most lands in the planning area do not meet the criteria for proximity to transmission lines or roads. Biomass fuels may potentially be present as wood from wildland fire scars. Additional information is available in **Section 2.2.5, Renewable Energy**, at: [https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP\\_AMS\\_all\\_April\\_2016\\_Final.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP_AMS_all_April_2016_Final.pdf).

Renewable energy was removed from detailed analysis for the CYRMP/EIS due to the low potential for future utility-scale solar or wind energy development per the RFD scenario (**Appendix N**). The Eva Creek Wind Project outside the Central Yukon Field Office (FO) boundary shows there are sufficient wind resources to support a utility-scale wind energy development; however, communities in the planning area likely do not have the resources to support the high cost of transporting and installing wind turbines, or the projected energy demand to justify development. While small photovoltaic solar energy technology is minimally used in the planning area to supplement power generation, the RFD scenario suggests the potential for utility-scale solar development to be low. With the low resource potential, coupled with the low overall demand for power due to a limited population, it is unlikely a developer would seek a solar or wind ROW in the planning area. Given this information, it is unlikely the impacts from renewable energy, if any, would differ across the proposed alternatives.

### **M.4.3 Wilderness Study Area (WSA)**

The Central Arctic Management Area (CAMA) WSA will continue to be managed consistent with BLM Manual 6330, Management of BLM Wilderness Study Areas, and the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) until Congress determines otherwise. Additionally, the WSA is part of the BLM's National Landscape Conservation System. Additional information is available in **Section 2.3.2**, Central Arctic Wilderness Study Area, at: [https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP\\_AMS\\_all\\_April\\_2016\\_Final.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP_AMS_all_April_2016_Final.pdf).

A quantitative resource assessment of WSAs was considered nonessential and eliminated from detailed analysis. The BLM's management policy for WSAs, except in certain cases, is to continue resource uses on lands designated as WSAs in a manner that does not impair the area's suitability for preservation as wilderness. The CAMA WSA is and would remain closed to ROWs, mineral leasing, motorized or mechanical transport use off existing ways, and other uses that would negatively affect its suitability for wilderness designation under all alternatives. Because wilderness characteristics were found within the defined boundaries of the WSA, the existence of these activities outside the WSA does not affect suitability for preservation as wilderness.

In addition, due to the remoteness of the WSA, there is not a reasonably foreseeable likelihood of any activities (e.g., fluid mineral development) that would impair the WSA's wilderness characteristics. This is because there is very low to low potential for fluid mineral development (see **Section 3.3.3**, Energy and Minerals), and the WSA is remote and largely inaccessible. WSA lands would retain their wilderness characteristics due to remoteness, lack of access, and limited demand for ground-disturbing activities.

### **M.4.4 Back Country Byway**

There are no back country byways in the planning area. The Dalton Highway was designated a State Scenic Byway in 1998. Administered by the DOT&PF, the State Scenic Byways Program recognizes routes that provide access to the state's significant scenic, cultural, and recreational resources. The Dalton Highway Scenic Byway Corridor Partnership Plan was approved in 2010. Additional information is available in **Section 2.3.4**, Backcountry or Scenic Byways, at: [https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP\\_AMS\\_all\\_April\\_2016\\_Final.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP_AMS_all_April_2016_Final.pdf).

BLM back country byways may be designated in the future in the planning area, as deemed appropriate, with site-specific analysis. Because the DOT&PF administers the Dalton Highway State Scenic Byway, it is not subject to BLM management actions; as such, impacts associated with this special designation are not analyzed. Scenic quality and areas of visual sensitivity (such as the Dalton Highway State Scenic Byway) are discussed in **Section 3.2.11**, Visual Resources.

## **M.5 RESOURCE INDICATORS AND ASSUMPTIONS**

For organizational purposes, **Chapter 3** is divided into sections by subject area (such as water resources, terrestrial mammals, and recreation). Though they are described and analyzed in discrete sections, these subjects are dynamic and interrelated. A change in one resource can have cascading or synergistic impacts on other resources. For example, water quality affects fish populations, which in turn influence subsistence harvests, which can have implications for other human outcomes such as health and sociocultural systems. As a result, there is some overlap among the resource sections in **Chapter 3**, and the impacts described in one section may depend on the analysis from another section.

During the writing process, resource specialists shared data and discussed interrelated aspects of the analyses to better capture the interrelated nature of environmental resources. The indicators, analysis areas, and assumptions used for each resource analysis are detailed below.

**M.5.1 Air Quality and Climate**

***Air and Climate***

Resource-specific Legal and Regulatory Constraints
<p><b>Air</b></p> <ul style="list-style-type: none"> <li>• Clean Air Act of 1990, as amended (42 United States Code [U.S.C.] 7418)</li> <li>• Pollution Prevention Act of 1990 (42 U.S.C. 13101–13109)</li> <li>• Executive Order (EO) 11738: Providing for administration of the Clean Air Act and the Federal Water Pollution Control Act with respect to Federal contracts, grants, or loans (September 10, 1973)</li> <li>• EO 12088, Federal Compliance with Pollution Control Standards, October 13, 1978 (43 FR 47707)</li> <li>• 29 CFR 1910: Occupational Safety and Health Standards, special provisions for air contaminants</li> <li>• 40 CFR 50: Protection of the Environment: National Primary and Secondary Ambient Air Quality Standards</li> <li>• 40 CFR 61: National Emission Standards for Hazardous Air Pollutants</li> <li>• 43 CFR 3809: Surface Management Regulations</li> </ul> <p><b>Climate Change/GHG</b></p> <ul style="list-style-type: none"> <li>• Under various court decisions, climate change must be addressed in NEPA documents.</li> <li>• New highway vehicles must meet fuel mileage standards (40 CFR 86, 86.1818-12, and 86.1818-14) to minimize GHG emissions.</li> <li>• Certain stationary sources of GHGs (generally over 25,000 tons per year of carbon dioxide equivalent) must meet mandatory annual reporting requirements of 40 CFR 98.</li> </ul>

Resource Scoping Issues
<p><b>Air</b></p> <ul style="list-style-type: none"> <li>• Development effects on air quality and deposition of fine particulate matter, particularly in mineral extraction areas</li> <li>• The Draft RMP/EIS should provide a detailed discussion of ambient air conditions, National Ambient Air Quality Standards (NAAQS), and criteria pollutant non-attainment areas in the planning area. The analysis should estimate emissions of criteria pollutants and discuss the time frame for release of these emissions over the lifespan of the RMP. Also, the document should include analyses of the potential impacts on air quality (including cumulative and indirect impacts) from RMP projects, especially those involving construction activities. The Draft RMP/EIS should specify emissions sources and quantify these emissions. Such an evaluation is necessary to assure compliance with state and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality.</li> <li>• Impacts on air quality from oil and gas activities should be analyzed per the June 2011 interagency memorandum of understanding for air quality analyses and mitigation for federal oil and gas decisions.</li> </ul> <p><b>Climate Change/GHG</b></p> <ul style="list-style-type: none"> <li>• Climate change and its effects on the lands and resources are of great concern to many Alaskans. Many of the comments overlapped with other categories, reflecting the overarching nature of climate change. Many comments noted that climate change is not an issue and should not be given too much weight in the RMP/EIS. Other comments indicated that climate change is an issue, and the RMP/EIS should fully address it. Comments recommended that the RMP incorporate adaptive management to address the changing environment and mitigate RMP contributions to climate change.</li> <li>• Some comments noted that the RMP should prioritize existing subsistence use over new incompatible uses to minimize impacts from climate change.</li> <li>• The RMP should fully analyze the impacts of climate change even though some of these impacts are uncertain. Comments recommended that the BLM incorporate the best available science in addressing climate change impacts.</li> </ul>

Resource Scoping Issues	
<ul style="list-style-type: none"> <li>• The RMP should quantify and disclose anticipated GHG emissions from proposed planning decisions and discuss mitigation measures to reduce such emissions.</li> <li>• Internally generated scoping questions related to climate change include:                             <ul style="list-style-type: none"> <li>○ How should the RMP address the impacts of climate change?</li> <li>○ What land management strategies could be developed to reduce impacts and allow for adaptive management to respond to changes over time?</li> </ul> </li> </ul>	

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Surface disturbance caused by development and facilities <ul style="list-style-type: none"> <li>• Construction sites and sites with surface disturbance</li> <li>• Unpaved roads</li> </ul>	<ul style="list-style-type: none"> <li>• Particulate emissions</li> </ul>	<ul style="list-style-type: none"> <li>• NAAQS and Alaska Ambient Air Quality Standards (AAAQS) (qualitative analysis of how management actions would be likely to affect concentrations in the planning area)</li> <li>• Change in acres of disturbance</li> </ul>	Discuss the effects of fugitive dust on air quality in the planning area with special attention on the Dalton Highway and Ambler Road
Development and operation of gravel pits (mineral materials)	<ul style="list-style-type: none"> <li>• Particulate emissions</li> <li>• Fuel combustion-related emissions (criteria, hazardous, and GHG)</li> </ul>	<ul style="list-style-type: none"> <li>• NAAQS and AAAQS (qualitative analysis of how management actions would be likely to affect concentrations in the planning area)</li> <li>• Change in acres of disturbance</li> </ul>	Discuss the effects of emissions in the planning area  For GHG, discuss the potential change in emissions compared with state, national, and global scales
Exploration, development, and extraction of locatable mineral resources	<ul style="list-style-type: none"> <li>• Particulate emissions</li> <li>• Fuel combustion-related emissions (criteria, hazardous, and GHG)</li> </ul>	<ul style="list-style-type: none"> <li>• NAAQS and AAAQS (qualitative analysis of how management actions would be likely to affect concentrations in the planning area)</li> <li>• Change in acres of allowable development in high potential areas</li> </ul>	Discuss the effects of emissions for development in the planning area  For GHG, discuss the potential change in emissions compared with state, national, and global scales
Exploration, development, and extraction of fluid mineral resources	<ul style="list-style-type: none"> <li>• Particulate emissions</li> <li>• Fuel combustion-related emissions (criteria, hazardous, and GHG)</li> </ul>	<ul style="list-style-type: none"> <li>• NAAQS and AAAQS (qualitative analysis of how management actions would be likely to affect concentrations in the planning area)</li> <li>• Change in acres of allowable development in high potential areas</li> </ul>	Qualitative discussion about the types of impacts. Reference that there is little development projected over the life of the RMP based on the RFD scenario

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Prescribed fire	<ul style="list-style-type: none"> <li>Particulate emissions</li> <li>GHG emissions</li> </ul>	<ul style="list-style-type: none"> <li>NAAQS and AAAQS (qualitative comparison)</li> </ul>	<p>Discuss the effects of prescribed burns on air quality and on non-attainment in the Fairbanks area</p> <p>For GHG, discuss the potential change in emissions compared with state, national, and global scales</p>
ROW designations	<ul style="list-style-type: none"> <li>Indirectly affects the potential for road and utility development</li> </ul>	<ul style="list-style-type: none"> <li>Acres open or closed</li> </ul>	<p>Discuss how ROW designations and their locations may affect the potential for emissions-generating actions and the effect on local air quality</p>

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> CYRMP planning area, particularly areas adjacent to unpaved roads and areas with surface-disturbing activities in the CYRMP planning area</p> <p><b><u>CUMULATIVE</u></b> The CYRMP planning area, plus mineral activity outside the planning area such as the North Slope, including federally managed lands in the National Petroleum Reserve and the Coastal Plain area of the North Slope and on State lands between these two areas</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>Since the existing plans were completed, development pressures related to access and locatable mining activity have increased considerably, as has the demand for sand and gravel.</li> <li>The Ambler Road and natural gas pipeline will be built.</li> <li>Timber, recreation, and off-highway vehicle (OHV) use are not anticipated to occur at a large scale in the planning area and will not be included in the analysis.</li> <li>Based on the RFD scenario, there is low potential for wind, solar, or geothermal energy development; no potential for non-energy leasable minerals development; and no projected coal mining over the life of the RMP.</li> <li>Given the high quality of air and the low potential for emission-generating activity in the overall planning area, a qualitative analysis will be performed. The two activities with the highest potential for emissions would be sand and gravel pits and locatable mining activity. Data on the location and scale of such activities are not available at this planning-level stage to analyze quantitatively. A quantitative NEPA analysis will be performed as specific development plans are submitted to the BLM for approval.</li> <li>Climate-induced changes in benchmarks may reduce the degree of impact that permitted actions can cause before reaching adaptive management thresholds.</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>No maps</li> <li>Acres of high potential open to locatable minerals and fluid minerals</li> <li>Acres open to mineral materials</li> <li>Acres open to ROWs and corridors</li> </ul>

**M.5.2 Soil Resources**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• Classification and Multiple Use Act of 1964 (78 Statute 986, U.S.C. 1411–18), 43 CFR 1725.3-3(h) as of October 1, 1981</li> <li>• Soil Conservation and Domestic Allotment Act of 1935, as amended, April 27, 1935 (Public Law 74-46)</li> <li>• Soil and Water Resource Conservation Act of November 18, 1977 (16 U.S.C. 2001)</li> <li>• Soil Information Assistance for Community Planning and Resource Development Act of 1966, September 7, 1966 (42 U.S.C. 3271 et seq.)</li> <li>• Pollution Prevention Act of 1990 (42 U.S.C. 13101–13109)</li> <li>• Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.)</li> <li>• Watershed Protection and Flood Control Act of 1954, as amended, August 4, 1954</li> <li>• EO 11988, Floodplain Management, May 24, 1977 (42 FR 26951)</li> <li>• EO 11989, Off-road Vehicles, May 24, 1977 (42 FR 26959)</li> <li>• 40 CFR 1500–1508: Council on Environmental Quality — Regulations for Implementing NEPA</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• Locatable mining impacts on soils</li> <li>• OHV use and their impact on soils</li> <li>• Salable mineral extraction and its impact on soils</li> <li>• Location of ROWs and their impacts on soils</li> <li>• Appropriate mitigation should be used to reduce erosion while still allowing the motorized public to use the area.</li> <li>• Are any soils in the planning area in need of special protection?</li> <li>• What restrictions or best management practices (BMPs) should the BLM require for surface-disturbing activities to protect soils?</li> <li>• Several comments noted that the RMP should recognize the increased rate of thawing permafrost related to climate change; develop criteria for the design, engineering, and operation of infrastructure on permafrost; and develop a monitoring plan.</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Locatable minerals	<ul style="list-style-type: none"> <li>• Direct surface disturbance to soils</li> <li>• Topsoil removal</li> <li>• Damage and/or loss of the permafrost layer and the resultant changes in soil stability</li> <li>• Changes to soil composition</li> </ul>	<p>Acres of the planning area open to locatable minerals split by low, medium, and high potential by the soil resource indicators:</p> <ul style="list-style-type: none"> <li>• Steep slopes: greater than 35 percent</li> <li>• Thaw-sensitive permafrost: permafrost soils with temperatures near 32 degrees Fahrenheit during the growing season</li> <li>• Wetland soils</li> </ul>	<p>Describe the potential impacts (placer mining) of surface-disturbing activities on soils with an emphasis on sensitive soil types and areas with permafrost. Identify those sensitive/steep soils in areas of high potential.</p> <p>Discuss potential mining expansion due to revoking of withdrawals across the alternatives. Discuss BMPs that would minimize these effects.</p>



Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Fluid leasable minerals	<ul style="list-style-type: none"> <li>• Direct surface disturbance to soils</li> <li>• Topsoil removal</li> <li>• Damage and/or loss of the permafrost layer and the resultant changes in soil stability</li> <li>• Changes to soil composition</li> </ul>	<p>Acres of the planning area open to fluid leasable minerals split by low, medium, and high potential by the soil resource indicators:</p> <ul style="list-style-type: none"> <li>• Steep slopes: greater than 35 percent,</li> <li>• Thaw-sensitive permafrost</li> <li>• Wetland soils</li> </ul>	<p>Describe the potential impacts of oil and gas development's surface-disturbing activities on soils with an emphasis on sensitive soil types and areas with permafrost. Identify those sensitive/steep soils in areas of high potential.</p>
Transportation management—primarily OHV use	<ul style="list-style-type: none"> <li>• Direct surface disturbance to soils</li> <li>• Soil compression and alteration resulting in soil exposure and thermokarst activity</li> </ul>	<p>Acres of the planning area open and closed to OHV use in the key soil resource indicators:</p> <ul style="list-style-type: none"> <li>• Steep slopes: greater than 35 percent</li> <li>• Thaw-sensitive permafrost</li> <li>• Wetland soils</li> <li>• Sensitive soils in high-value watersheds</li> </ul>	<p>Describe the potential effects on soils with an emphasis on sensitive soil types, steep soils, and areas with permafrost.</p> <p>Include a discussion of OHV travel for permitted actions (placer mining, utilities, and more) outside the travel management plan.</p>
<p>ROWS</p> <p>New and existing gravel roads, culverts, and bridges</p>	<ul style="list-style-type: none"> <li>• Alteration and loss of soils</li> <li>• Damage and/or loss of the permafrost layer and resultant changes in soil stability</li> <li>• Changes to soil composition</li> </ul>	<p>Acres of the planning area subject to ROW exclusion and avoidance split by soil resource indicators:</p> <ul style="list-style-type: none"> <li>• Steep slopes: greater than 35 percent</li> <li>• Thaw-sensitive permafrost</li> <li>• Wetland soils</li> <li>• Sensitive soils in high-value watersheds</li> </ul> <p>Identify likely utility corridors and overlay on the key soil resource indicators:</p> <ul style="list-style-type: none"> <li>• Steep slopes: greater than 35 percent</li> <li>• Thaw-sensitive permafrost</li> <li>• Wetland soils</li> <li>• Sensitive soils in high-value watersheds</li> </ul>	<p>Include a table comparing ROW exclusion and avoidance areas with the soil resource indicators. Describe how and where the ROW exclusion and avoidance designations would help protect soil resources.</p> <p>Describe how construction and maintenance of gravel roads affect soil resources in the planning area. Describe how sensitive soil types in high-value watersheds and steep slope areas would be affected across alternatives.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Potential spills from transportation of hazardous waste (oil, diesel, and natural gas)  Potential spills from pipelines	<ul style="list-style-type: none"> <li>Alteration and loss of soils if a spill occurs and enters the soil</li> </ul>	Identify areas with high traffic volume and the potential for oil spills, primarily the Dalton Utility Corridor and TAPS. In cumulative, add discussion of potential spills along new pipelines: Alaska Stand Alone Pipeline Project and AKLNG.	Describe the potential effects on soils by spills of a variety of types, sizes, and spill locations.
Mineral materials	<ul style="list-style-type: none"> <li>Alteration and loss of soils</li> <li>Damage and/or loss of the permafrost layer and the resultant changes in soil stability</li> </ul>	Acres of the Dalton Utility Corridor and identified utility corridors within the soil resource indicators: <ul style="list-style-type: none"> <li>Steep slopes: greater than 35 percent</li> <li>Thaw-sensitive permafrost</li> <li>Wetland soils</li> <li>Sensitive soils in high-value watersheds</li> </ul>	Describe how gravel mining involves the loss and alteration of soil types. Identify BMPs that would minimize these effects.  Identify the areas likely for salable mineral extraction and how those affect the soil resource indicators: <ul style="list-style-type: none"> <li>Sensitive soils</li> <li>Greater than 35 percent slopes</li> <li>Sensitive soils in high-value watersheds</li> </ul>
Special designation areas (Areas of Critical Environmental Concern [ACECs], Wild and Scenic Rivers [WSRs], and WSAs)	<ul style="list-style-type: none"> <li>Protection of soil resources by restrictions associated with special designation areas</li> </ul>	Acres of special designations that intersect with soil resource indicators: <ul style="list-style-type: none"> <li>Steep slopes: greater than 35 percent</li> <li>Thaw-sensitive permafrost</li> <li>Wetland soils</li> <li>Sensitive soils in high-value watersheds</li> </ul>	Include a table of special designations overlapping the important soil resource indicators. Identify which specially designated areas protect soil resources that would otherwise be endangered by development, recreation, mining, or other surface-disturbing activities.
Forestry	<ul style="list-style-type: none"> <li>Alteration and loss of soils</li> <li>Damage and/or loss of the permafrost layer and the resultant changes in soil stability</li> </ul>	Acres of the planning area open to commercial forestry that intersect with sensitive soils in high-value watersheds	Discuss areas open to commercial forestry on sensitive soils in high-value watersheds, as they could disrupt soils and lead to sedimentation of sensitive waterways.



Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> BLM-managed lands in the planning area</p> <p><b><u>CUMULATIVE</u></b> All lands in the planning area</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>• Concentrated, open OHV use results in compaction, accelerated erosion, reduced ground cover, infiltration, nutrient cycling, and organic matter deposition (Bainbridge 2007), particularly in areas of highly erodible soils. OHV use on slopes greater than 25 percent would have a severe risk of accelerated water erosion (NRCS 1998). All surface-disturbing activities include mitigation, standard operating procedures, and BMPs to reduce effects on soil resources; these would be addressed at the site-specific project level.</li> <li>• It is impossible to predict when or where the surface disturbance would occur in the planning area; therefore, unless the surface use is not allowed, the assumption is that sensitive soils would be disturbed.</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• One figure with sensitive soils (minus steep slopes) and 35 percent slopes as separate polygons</li> <li>• GIS data calculations             <ul style="list-style-type: none"> <li>○ Locatable minerals—Use the potential for locatable minerals (high, medium, and low) and intersect with the following layers:                 <ul style="list-style-type: none"> <li>▪ Greater than 35 percent slopes</li> <li>▪ Thaw-sensitive permafrost</li> <li>▪ Wetland soils</li> </ul> </li> <li>○ Fluid leasable minerals—Use the potential for fluid leasable minerals (high, medium, and low) and intersect with the following layers:                 <ul style="list-style-type: none"> <li>▪ Greater than 35 percent slopes</li> <li>▪ Thaw-sensitive permafrost</li> <li>▪ Wetland soils</li> </ul> </li> <li>○ OHV travel—OHV management classifications intersected with the following layers:                 <ul style="list-style-type: none"> <li>▪ Greater than 35 percent slopes</li> <li>▪ Thaw-sensitive permafrost</li> <li>▪ Wetland soils</li> <li>▪ Sensitive soils in high-value watersheds</li> </ul> </li> <li>○ ROWs—Intersect ROW exclusion and avoidance areas with the following layers:                 <ul style="list-style-type: none"> <li>▪ Greater than 35 percent slopes</li> <li>▪ Thaw-sensitive permafrost</li> <li>▪ Wetland soils</li> <li>▪ Sensitive soils in high-value watersheds</li> </ul> </li> <li>○ Utility corridors—Intersect utility corridors with the following layers:                 <ul style="list-style-type: none"> <li>▪ Greater than 35 percent slopes</li> <li>▪ Thaw-sensitive permafrost</li> <li>▪ Wetland soils</li> <li>▪ Sensitive soils in high-value watersheds</li> </ul> </li> <li>○ Special designations—Intersect potential ACECs, WSAs, and WSRs with the following layers:                 <ul style="list-style-type: none"> <li>▪ Greater than 35 percent slopes</li> <li>▪ Thaw-sensitive permafrost</li> <li>▪ Wetland soils</li> <li>▪ Sensitive soils in high-value watersheds</li> </ul> </li> <li>○ Forestry—Acres of the planning area open to commercial forestry that intersect sensitive soils in high-value watersheds</li> </ul> </li> </ul>

**M.5.3 Water Resources**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• Federal Water Pollution Control Act (Clean Water Act) (33 U. S. C. 1151, 1251, 1254, 1323, 1324, 1329, 1342, 1344), as amended</li> <li>• State of Alaska water quality standards</li> <li>• Geothermal Steam Act of 1970, as amended (30 U.S.C. 1001)</li> <li>• Safe Drinking Water Act Amendments of 1977 (42 U.S.C. 210)</li> <li>• Pollution Prevention Act of 1990 (42 U.S.C. 13101–13109)</li> <li>• Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.)</li> <li>• Water Quality Act of 1987, as amended from the Federal Water Pollution Control Act of 1977 (33 U.S.C. 1271 et seq.)</li> <li>• EO 11644, Use of Off-road Vehicles on Public Lands, February 8, 1972 (37 FR 2877)</li> <li>• EO 11988, Floodplain Management, May 24, 1977 (42 FR 26951)</li> <li>• EO 11989, Off-road Vehicles, May 24, 1977 (42 FR 26959)</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• Mining affecting streams, riparian areas, and water quality and quantity</li> <li>• Hot springs protection or development</li> <li>• OHV impacts on water quality and riparian areas</li> <li>• ROW location and impacts in relation to water quality</li> <li>• Impacts on riparian vegetation and possible changes to bank stability and water quality</li> <li>• Comments recommended collection of baseline data and monitoring to allow for adaptive management that would protect water quality given decisions in the RMP and possible changes to the hydrologic regime due to climate change.</li> <li>• Are any watersheds in the planning area in need of special protection?</li> <li>• What actions should the BLM take to make sure that state and federal water quality requirements are met (including consideration of both point and non-point sources of pollution)?</li> <li>• Are there any watersheds that are currently not meeting desired conditions?</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Locatable minerals	<ul style="list-style-type: none"> <li>• Increased sediment input and turbidity resulting in degraded water quality</li> <li>• Alteration and loss of floodplain function</li> <li>• Changes in natural drainage patterns (e.g., water impoundment)</li> </ul>	<p>Acres of the planning area open to locatable minerals split by low, medium, and high potential intersected with the water resource indicators:</p> <ul style="list-style-type: none"> <li>• 100-year floodplains</li> <li>• High-value watersheds</li> <li>• One-fourth-mile buffer of lentic areas</li> <li>• 160-acre hot spring buffers</li> <li>• Watershed Condition Model for cumulative impacts</li> </ul>	<p>Describe the potential impacts of placer mining activities on floodplains, riparian vegetation and its function to maintain water quality and bank stability, and watersheds. Identify those areas with high mineral potential and focus the discussion on those areas.</p> <p>Discuss potential mining expansion due to revoking of withdrawals across the alternatives. Identify BMPs that would minimize these effects.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Fluid leasable minerals	<ul style="list-style-type: none"> <li>• Increased sediment input and turbidity resulting in degraded water quality</li> <li>• Alteration and loss of floodplain function</li> <li>• Changes in natural drainage patterns (e.g., water impoundment)</li> </ul>	<p>Acres of the planning area open to fluid leasable minerals split by low, medium, and high potential intersected with the water resource indicators:</p> <ul style="list-style-type: none"> <li>• 100-year floodplains</li> <li>• High-value watersheds</li> <li>• One-fourth-mile buffer of lentic areas</li> <li>• 160-acre hot spring buffers</li> <li>• Watershed Condition Model for cumulative impacts</li> </ul>	<p>Describe the potential impacts of oil and gas development on floodplains, riparian vegetation and its function to maintain water quality and bank stability, and watersheds. Identify those areas with high oil and gas potential and focus the discussion on those areas.</p>
Transportation management—primarily OHV use	<ul style="list-style-type: none"> <li>• Alteration of floodplains and watersheds</li> <li>• Increased sediment input and turbidity resulting in degraded water quality</li> <li>• Changes in natural drainage patterns (e.g., water impoundment)</li> </ul>	<p>Acres of the planning area open and closed to OHV use in the key water resource indicators:</p> <ul style="list-style-type: none"> <li>• 100-year floodplains</li> <li>• High-value watersheds</li> <li>• One-fourth-mile buffer of lentic areas</li> <li>• 160-acre hot spring buffers</li> <li>• Watershed Condition Model for cumulative impacts</li> </ul>	<p>Include a table comparing acres open and closed to OHV use for the water resource indicators. Highlight areas where OHV use would be concentrated (Dalton Highway). Note the potential effects of off-road traffic on sedimentation rates, the loss of riparian vegetation, and other water quality issues.</p> <p>Include a discussion of OHV travel for permitted actions (such as placer mining and utilities) outside of the travel management plan.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p>ROWs</p> <p>New and existing gravel roads, culverts, and bridges</p>	<ul style="list-style-type: none"> <li>• Indirect impacts on water quality from:               <ul style="list-style-type: none"> <li>○ Gravel dust and gravel spray</li> <li>○ Gravel placement, compaction, and grading</li> </ul> </li> <li>• Changes in natural drainage patterns (e.g., water impoundment)</li> <li>• Protections provided to areas from ROW exclusion and avoidance areas</li> </ul>	<p>Acres of the planning area subject to ROW exclusion and avoidance split by water resource indicators:</p> <ul style="list-style-type: none"> <li>• 100-year floodplains</li> <li>• 100-year floodplains in high-value watersheds</li> <li>• High-value watersheds</li> <li>• One-fourth-mile buffer of lentic areas</li> <li>• 160-acre hot spring buffers</li> <li>• Watershed Condition Model for cumulative impacts</li> </ul> <p>Identify likely utility corridors and overlay on the key water resource indicators:</p> <ul style="list-style-type: none"> <li>• 100-year floodplains</li> <li>• High-value watersheds</li> <li>• One-fourth-mile buffer of lentic areas</li> <li>• 160-acre hot spring buffer</li> <li>• Watershed Condition Model and its three categories for cumulative impacts</li> </ul>	<p>Include a table comparing ROW exclusion and avoidance areas with the water resource indicators. Describe how and where the ROW exclusion and avoidance designations would help protect water resources.</p> <p>Identify key utility corridors and the potential impacts on water resources using the water resource indicators to identify potential impacts on water quality and quantity and direct impacts on streams. Describe how construction and maintenance of gravel roads affects water resources, including riparian vegetation in the planning area.</p>
<p>Potential spills from transportation of hazardous waste (oil, diesel, and natural gas)</p> <p>Potential spills from pipelines</p>	<ul style="list-style-type: none"> <li>• Decrease in water quality</li> </ul>	<p>Identify areas with high traffic volume and the potential for oil spills, primarily the Dalton Highway and TAPS. In the cumulative analysis, add discussion of potential new pipelines: Alaska Stand Alone Pipeline Project and AKLNG.</p>	<p>Generally, describe potential effects on water quality and the likely locations for a spill.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Mineral materials	<ul style="list-style-type: none"> <li>Increased sediment input and turbidity resulting in degraded water quality</li> <li>Alteration and loss of floodplain function</li> <li>Changes in natural drainage patterns (e.g., water impoundment)</li> </ul>	Acres of the Dalton Utility Corridor and identified utility corridors within the water resource indicators: <ul style="list-style-type: none"> <li>100-year floodplains</li> <li>100-year floodplains in high-value watersheds</li> <li>High-value watersheds</li> <li>One-fourth-mile buffer of lentic areas</li> <li>160-acre hot spring buffers</li> <li>Watershed Condition Model for cumulative impacts</li> </ul>	Generally, describe the impacts of mineral materials sites on water resources, including riparian vegetation, and the large potential demand for these resources due to foreseeable development in the planning area. Identify the areas likely for salable mineral extraction and how those affect the water resource indicators.
Special designation areas (ACECs, WSRs, and WSAs)	<ul style="list-style-type: none"> <li>Protection of waterbodies</li> <li>Indirect protection to water quality</li> </ul>	Acres of special designations intersected with: <ul style="list-style-type: none"> <li>100-year floodplains</li> <li>High-value watersheds</li> <li>One-fourth-mile buffer of lentic areas</li> <li>160-acre hot spring buffers</li> <li>Watershed Condition Model for cumulative impacts</li> </ul>	Include a table of special designations overlapping the important water resource indicators. Identify which specially designated areas protect streams, riparian vegetation, or water quality that would otherwise be endangered by development, recreation, mining, and other surface-disturbing activities.
Hot springs	<ul style="list-style-type: none"> <li>Surface disturbance</li> <li>Indirect impact on the hot spring location</li> </ul>	Acres of 160-acre hot spring buffers open to locatable minerals and OHV use for Alternative D	Note: When addressing potential impacts on hot springs, note that the planning area has both developed (Melozitna, Tolovana, and Hutlinana) and undeveloped (Ray River, Kilo, Ishtalitna, Kanuti, and McQuesten) hot springs.

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> BLM-managed lands in the planning area</p> <p><b><u>CUMULATIVE</u></b> Use 8-digit hydrologic unit code watersheds to capture all waterbodies flowing into and out of the planning area</p>

Analysis Assumptions

- Water quality, quantity, and stream stability data are not available for the majority of waterbodies in the planning area. This makes interpreting trends difficult, if not impossible; however, the majority of streams and lakes in the planning area are undisturbed and have no anthropogenic impacts on water quantity, water quality, and stream stability, so it is assumed these waterbodies are trending in a positive direction.
- The degree of effect attributed to any one disturbance or series of disturbances would be influenced by several factors, including proximity to drainages and groundwater wells, location in the watershed, time and degree of disturbance, reclamation potential of the affected area, vegetation, precipitation, and mitigating actions applied to the disturbance.
- Riparian conditions and water quality are directly related, and improvements to riparian and wetland conditions will tend to improve water quality; conversely, detrimental effects on the riparian and wetlands conditions could degrade water quality.

GIS Maps and/or Calculations

- High-value watersheds figure
- Watershed condition figure
- 100-year floodplains, lentic areas, and hot springs (8) figure
- GIS data calculations
  - Locatable minerals—Use the potential for locatable minerals (high, medium, and low) and intersect with the following layers:
    - 100-year floodplains
    - 100-year floodplains in high-value watersheds
    - High-value watersheds
    - One-fourth-mile buffer of lentic areas
    - 160-acre hot spring buffers
    - Watershed Condition Model and its three categories
  - Fluid leasable minerals—Use the potential for fluid leasable minerals (high, medium, and low) and intersect with the following layers:
    - 100-year floodplains
    - 100-year floodplains in high-value watersheds
    - High-value watersheds
    - One-fourth-mile buffer of lentic areas
    - 160-acre hot spring buffers
    - Watershed Condition Model and its three categories
  - OHV travel—OHV management classifications intersected with the following layers:
    - 100-year floodplains
    - High-value watersheds
    - One-fourth-mile buffer of lentic areas
    - 160-acre hot spring buffers
    - Watershed Condition Model and its three categories
  - 160-acre hot spring buffers
  - ROWs—Intersect ROW exclusion and avoidance areas with the following layers:
    - 100-year floodplains
    - High-value watersheds
    - One-fourth-mile buffer of lentic areas
    - 160-acre hot spring buffers
    - Watershed Condition Model and its three categories
  - Utility corridors—Intersect utility corridors with the following layers:
    - 100-year floodplains
    - High-value watersheds
    - One-fourth-mile buffer of lentic areas
    - 160-acre hot spring buffers
  - Watershed Condition Model and its three categories

GIS Maps and/or Calculations
<p>Special designations—Intersect potential ACECs, WSAs, and WSRs with the following layers:</p> <ul style="list-style-type: none"> <li>▪ 100-year floodplains</li> <li>▪ High-value watersheds</li> <li>▪ One-fourth-mile buffer of lentic areas</li> <li>▪ 160-acre hot spring buffers</li> <li>▪ Watershed Condition Model and its three categories</li> </ul>

#### M.5.4 Vegetation Communities

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• CYRMP—Activities should be conducted in a manner that minimizes impacts on vegetation.</li> <li>• Federal guidance on invasive species</li> <li>• Federal and BLM guidance on special status plant species</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• Special consideration may be warranted for plant communities of limited extent, including lichen-rich communities and vegetation typical of pingos, steep bluffs, and alpine areas. These areas may be important for some wildlife species, and they may provide habitat for special status plants.</li> <li>• An important planning concern is the potential for management actions resulting in the introduction and spread of nonnative and invasive plant species (NNIS).</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Commercial timber harvest	Loss or fragmentation of forested vegetation types	Acres open or closed to commercial timber harvest	Timber harvest was not included in the RFD scenario for the planning area, so minimal discussion will be needed.
Locatable minerals	Loss of vegetation or changes to plant communities due to exploration or mining activities	Acres open or closed to locatable minerals	Compare acres open with locatable minerals in each alternative.
Mineral materials	Loss of vegetation or changes to plant communities due to exploration or mining activities	Acres open or closed to mineral materials	Compare acres open to mineral materials in each alternative.
Fluid minerals <ul style="list-style-type: none"> <li>• Open subject to no surface occupancy (NSO)</li> <li>• Open to controlled surface use</li> </ul>	Loss of vegetation or changes to plant communities due to exploration or mining activities, or potential spills	Acres open or closed to fluid minerals (NSO or controlled surface use)	The RFD scenario indicated that oil and gas development is not anticipated on BLM-managed lands. There is no need to discuss or compare alternatives.
Non-energy solid mineral leasing	Loss of vegetation or changes to plant communities due to exploration or mining activities	Acres open or closed to non-energy solid minerals	The RFD scenario indicated that mining of non-energy solid minerals is not anticipated on BLM-managed lands. There is no need to discuss or compare alternatives.



Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
ACEC or Research Natural Area (RNA) designation	Protection of plant communities due to restricted uses	Acres of ACECs or RNAs, or both	Compare acres of ACECs and RNAs in each alternative.
WSR designation	No impacts expected on vegetation communities		
Lands with wilderness characteristics (LWC)	Protection of plant communities due to restricted uses	Acres of LWC	Compare acres of LWC in each alternative and differences in uses that are allowed, avoided, or prohibited. ANILCA provisions allow motor vehicle access and infrastructure for subsistence purposes and remote access in all alternatives.
WSAs	The release of the CAMA WSA will change management for LWC.	Acres of the CAMA WSA released	Tie into the analysis for LWC.
Designated development nodes	Loss of vegetation or changes to plant communities due to development activities	Acres/areas of designated development nodes	Compare across alternatives
Administrative utility corridor designations	Loss of vegetation or changes to plant communities	Acres open to additional corridors (Ambler, Umiat, and Dalton Highway)	Discuss how the action alternatives will require, to the extent feasible, collocation. Compare acres open to new utility corridors.
ROW (linear and site type) • Transmission lines • Roads	Loss of vegetation or changes to plant communities	Acres open to ROW (by types); acres of ROW exclusion and avoidance	Compare acres open versus excluded across alternatives.
Recreation • Open to OHVs • Open to snowmobiles • Open to camping/hiking/horses	Loss of vegetation or changes to plant communities, especially the potential for introduction of NNIS	Acres designated as Special Recreation Management Areas (SRMAs), Extensive Recreation Management Areas (ERMAs), or Backcountry Conservation Areas (BCAs)	Analyze differences between alternatives in management areas and the associated intensity of impacts (i.e., open to OHV travel, primitive use, and snowmobile).

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> BLM-managed lands in the planning area</p> <p><b><u>CUMULATIVE</u></b> Planning area</p>



**Analysis Assumptions**

Specific development-related impacts cannot be quantified because no specific projects are proposed. Impacts can only be described qualitatively, both because resource and impact data are unavailable and because project details are unknown. Also, vegetation mapping information is coarse over the planning area, and habitat use data are lacking for most species. The BLM will compare alternatives in terms of acres open or closed to various resource extraction or other reasonably foreseeable future activities. The analysis of alternatives for vegetation resources will focus on the potential for introduction of NNIS, as well as possible effects on special status species or plant communities of limited extent.

The vegetation layers selected are a planning-area wide re-creation of a compilation of National Land Cover Database/Vegetation Map of Northern, Western, and Interior Alaska described in the Central Yukon Rapid Ecoregional Assessment.

The BLM Alaska special status species list is revised every several years. Because the list is expected to change over the life of the management plan, the BLM will address special status species broadly without specific references to individual species.

Any activity or disturbance (referred to above as “Action Affecting Resource”) that directly affects vegetation cover or plant communities may in turn affect plant communities of limited extent and rare plant species, and/or increase the risk of introduction and spread of NNIS. The BLM will consider each of the above “Actions Affecting Resources” in relation to vegetation cover, plant communities of limited extent, rare plant species, and NNIS.

**GIS Maps and/or Calculations**

Estimates of acres of each vegetation type

- in the planning area
- in BLM-managed lands in the planning area
- in BLM-managed lands closed to surface occupancy for each alternative
- in BLM-managed lands subject to controlled surface use for each alternative
- in BLM-managed lands of high mineral potential for each alternative
- in BLM-managed lands open and closed to timber harvest for each alternative
- in BLM-managed lands open and closed to locatable mineral extraction for each alternative
- in BLM-managed lands open and closed to mineral materials extraction for each alternative
- in BLM-managed lands open and closed to fluid minerals (NSO and controlled surface use) for each alternative
- in BLM-managed lands open to non-energy solid mineral leasing for each alternative
- in BLM-managed lands with an ACEC or RNA designation for each alternative
- in BLM-managed lands designated as LWC for each alternative
- in BLM-managed lands designated as development nodes for each alternative
- in BLM-managed lands open and closed to utility corridors for each alternative
- in BLM-managed lands open and closed to ROWs for each alternative
- in BLM-managed lands designated as SRMAs, ERMAAs, or BCAs for each alternative

**M.5.5 Wetland Resources**

**Resource-specific Legal and Regulatory Constraints**

- Section 404 of the Clean Water Act
- Section 303(d) of the Clean Water Act
- Section 10 of the Rivers and Harbors Act
- Emergency Wetlands Resources Act of 1986 (Public Law 99-645)
- North American Wetlands Conservation Act of 1989 (16 U.S.C. 4401–4413)
- EO 11990, Protection of Wetlands (42 FR 26961)

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• Broad-scale wetland mapping (National Wetland Inventory) is available for small portions of the planning area and is not extensive enough to use in this analysis. A draft version of the Alaska statewide vegetation map prepared by the Alaska Center for Conservation Science (Boggs et al. 2016) has an additional wetland attribute and covers the entire planning area; this map will be suitable for the wetland analyses proposed in this EIS (Flagstad et al. 2018).</li> <li>• The Waters of the U.S. rule is under review, and the definition of jurisdictional wetlands and waters may change before specific projects are developed. Permit requirements and mitigation compensation planning may change.</li> <li>• Fine-scale wetland mapping will be required for permitting new proposed projects.</li> <li>• Wetlands are widespread throughout the planning area, and most potential development projects will likely involve the permanent loss of wetlands due to placement of fill.</li> <li>• The RMP should discuss the loss of wetlands due to locatable mining, salable mineral extraction, and ROWs.</li> <li>• The RMP should discuss the degradation of wetlands due to OHV use.</li> <li>• The RMP should discuss the impact of climate change on wetlands and mitigation and monitoring measures.</li> <li>• The RMP should discuss the impact of the introduction of invasive plants to wetlands on wetland function and values.</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Commercial timber harvest	Alteration of hydrologic patterns resulting in amelioration or degradation of wetland function	Acres open (or closed as stated in the alternatives comparison table) to commercial timber harvest	Compare differences in acres open to timber harvest. Timber harvest may alter wetland function but does not result in permanent loss of wetlands due to placement of fill; it is not regulated through Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act.
Locatable minerals	Permanent loss of wetlands due to placement of fill or degradation of wetlands due to indirect impacts	Changes in acres of wetland habitats	Compare differences in acres open to locatable minerals between alternatives and differences in dominant wetland classes if possible.
Mineral materials	Permanent loss of wetlands due to placement of fill or degradation of wetlands due to indirect impacts	Changes in acres of wetland habitats	Compare differences in acres across alternatives.
Fluid minerals <ul style="list-style-type: none"> <li>• Open subject to NSO</li> <li>• Open to controlled surface use</li> </ul>	Permanent loss of wetlands due to placement of fill or degradation of wetlands due to indirect impacts, including potential oil spills	Acres open and closed for fluid mineral leasing (NSO and controlled surface use)	Having NSO stipulations would result in less impacts. Discuss plan components to reduce impacts. The RFD scenario states that there is little potential for fluid mineral leasing in the planning area, so there is no need for an in-depth analysis on this issue.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
ACEC or RNA designation	Beneficial wetland habitat protection from restricted uses	Comparison of the proportion of high-value wetlands in the ACEC or RNA areas	Alternative B would have the most designated acres with Alternative D having the least. Compare differences in allowed/prohibited/avoidance uses. ANILCA provisions still allow motor vehicle access and infrastructure for subsistence purposes and remote access; these are common to all alternatives.
LWC	Beneficial wetland habitat protection from restricted uses	Amount of LWC acres with wetland land cover classes	Alternative B would have the most designated acres with Alternative D having the least. Compare differences in allowed/prohibited/avoidance uses. ANILCA provisions still allow motor vehicle access and infrastructure for subsistence purposes and remote access; these are common to all alternatives.
Administrative utility corridor designations	Limited, permanent wetland loss due to fill in wetlands and degradation of wetland function due to clearing	Acres open to additional corridors (Ambler, Umiat, and Dalton Highway)	Discuss how action alternatives will require, to the extent feasible, collocation. Compare acres open to new utility corridors.
ROW (linear and site type) • Transmission lines and roads	Wetland loss due to fill in wetlands and degradation of wetland function due to clearing	Acres open to ROW (different types), acres of ROW exclusion, and acres of ROW avoidance	Compare open versus excluded by alternatives.
Recreation • Open to OHVs • Open to camping, hiking, equestrian, and dogsledding	Possible amelioration of wetland values due to increased access to remote wetlands	Acres designated as SRMAs, ERMAs, or BCA	Discuss the wetland types most likely to be affected and the specific function and value changes that may be associated.

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> BLM-managed lands in the planning area</p> <p><b><u>CUMULATIVE</u></b> The planning area</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>The analysis is largely a broad-scale overview of expected impacts relative to results of similar projects in the planning area. No quantitative analysis will be conducted beyond an inventory of wetland and water types that projected activities are likely to affect.</li> </ul>

GIS Maps and/or Calculations
<p>Figure with broad-scale wetland types throughout the planning area, using the wetland attribute associated with the Boggs et al. 2016 map.</p> <p>For the analysis, obtain from GIS estimates the total acres of each wetland type:</p> <ul style="list-style-type: none"> <li>• in the planning area</li> <li>• in BLM-managed lands in the planning area</li> <li>• in BLM-managed lands closed to surface occupancy for each alternative</li> <li>• In BLM-managed lands subject to controlled surface use for each alternative</li> <li>• in BLM-managed lands of high mineral potential for each alternative</li> <li>• open and closed to timber harvest for each alternative</li> <li>• open and closed to locatable mineral extraction by wetland type and alternative</li> <li>• open and closed to mineral materials extraction by wetland type and alternative</li> <li>• with an ACEC or RNA designation by vegetation type and alternative</li> <li>• of lands designated with wilderness characteristics by alternative</li> <li>• of designated development nodes by alternative</li> <li>• open to ROWs by alternative</li> <li>• designated as SRMAs, ERMAs, or BCA for each alternative</li> </ul>

### M.5.6 Fish and Aquatic Species

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• Clean Water Act (33 U.S.C. 1151, 1251, 1254, 1323, 1324, 1329, 1342, 1344), as amended</li> <li>• State of Alaska water quality standards</li> <li>• Geothermal Steam Act of 1970, as amended (30 U.S.C. 1001)</li> <li>• Safe Drinking Water Act Amendments of 1977 (42 U.S.C. 210)</li> <li>• Pollution Prevention Act of 1990 (42 U.S.C. 13101–13109)</li> <li>• Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.)</li> <li>• Water Quality Act of 1987, as amended from the Federal Water Pollution Control Act of 1977 (33 U.S.C. 1271 et seq.)</li> <li>• EO 11644, Use of Off-road Vehicles on Public Lands, February 8, 1972 (37 FR 2877)</li> <li>• EO 11988, Floodplain Management, May 24, 1977 (42 FR 26951)</li> <li>• EO 11989, Off-road Vehicles, May 24, 1977 (42 FR 26959)</li> <li>• EO 11990, Protection of Wetlands, May 25, 1977 (42 FR 26961)</li> <li>• Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265), as amended in 1996 <ul style="list-style-type: none"> <li>◦ Essential Fish Habitat consultation</li> </ul> </li> <li>• The Anadromous Fish Act (Alaska Statute 16.05.871-.901)</li> <li>• The Fishway (or Fish Passage) Act (Alaska Statute 16.05.841)</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• Mining affecting streams, riparian areas, water quality and quantity, fish, and fish spawning areas (stemming from narrow valley conditions, erosion, settling ponds, and elimination of riparian habitats)</li> <li>• Infrastructure development related to mining activities</li> <li>• Infrastructure and subsistence/recreation resulting from mining or other resource development</li> <li>• Hot springs protection or development</li> <li>• Maintaining water quality and quantity flowing into refuges (e.g., turbidity)</li> <li>• Maintaining aquatic habitat productivity to support fish assemblages, which are relied upon for subsistence needs</li> <li>• OHV impacts on water quality and riparian areas</li> <li>• ROW location and impacts in relation to salmon and whitefish spawning areas and water quality</li> </ul>

Specific issues discussed during the BLM breakout meeting on October 24, 2018:

- Infrastructure development related to non-mining activities (e.g., surface clearing for camps, roads, and timber harvests)
- Winter road development (e.g., Bettles and Anaktuvuk Pass)
- The potential for the road to Umiat
- Access off the Dalton Highway for gravel pits and other salable minerals
- The potential for Ambler Road
- The potential for the AKLNG line
- Fiber-optic lines
- Various inholdings between Coldfoot and Yukon Bridge to the west

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p>Surface disturbance caused by development and mining for locatable minerals (higher priority concern)</p> <p>Particularly foreseeable in the case of</p> <ul style="list-style-type: none"> <li>• Dalton Highway traffic and nearby inholdings</li> <li>• Ambler Road project development</li> </ul>	Direct loss of fish habitat	<ul style="list-style-type: none"> <li>• Acres (lake) or linear miles (stream) of fish habitat in areas open and closed to surface use</li> <li>• Overlay of fish and watershed ranking analysis (high, medium, and low)</li> <li>• Overlay of above by potential level for locatable minerals</li> </ul>	<p>Describe the potential impacts of surface-disturbing activities on fish habitat and spawning areas (by alternative). Discuss potential mining expansion due to revoking of withdrawals across the alternatives. Describe the potential for a decrease in habitat quality, including through mobilization of contaminants specific to the underlying geology.</p> <p>Use results from the Water Resources section for indirect impacts on water quality through sedimentation, impacts on floodplain function, and changes in drainage patterns and how these will affect aquatic species.</p> <p>Identify BMPs that would minimize these effects. Note that there is a separate EIS process underway for the Ambler Road project.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p>Extraction of gravel materials (higher priority concern)</p> <ul style="list-style-type: none"> <li>• Gravel mining/extraction for construction and maintenance of roads</li> <li>• New gravel sites will be required for utility and transportation corridors                             <ul style="list-style-type: none"> <li>○ Many potential gravel sites are in uplands, which reduces the impact on water quality; however, some lowland sites exist, resulting in greater impacts on water quality</li> </ul> </li> </ul>	<p>Direct loss of fish habitat</p>	<ul style="list-style-type: none"> <li>• Acres (lake) or linear miles (stream) of fish habitat in areas open and closed to surface use</li> <li>• Overlay of fish and watershed ranking analysis (high, medium, and low)</li> </ul>	<p>Generally describe the impacts of material sites on aquatic resources and the large potential demand for these resources due to foreseeable development in the planning area (by alternative).</p> <p>Use results from the Water Resources section for indirect impacts on water quality through sedimentation, impacts on floodplain function, and changes in drainage patterns and how these will affect aquatic species.</p>
<p>Fluid leasable minerals (lower priority concern)</p> <ul style="list-style-type: none"> <li>• Oil and gas development</li> </ul>	<p>Direct loss of riparian and fish habitat</p>	<p>Described on a qualitative level because this is a lower priority concern, due in large part to an unlikely RFD for this resource</p>	<p>Generally describe the impacts of fluid leasable mineral sites on aquatic resources.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p>Storage and impoundment of tailings and waste rock (lower priority concern)</p>	<ul style="list-style-type: none"> <li>• Direct loss of fish habitat</li> <li>• Decreasing habitat quality, including through mobilization of contaminants specific to the underlying geology</li> </ul>	<p>There is no measurable indicator at this time because there are no mining projects proposed at this time.</p>	<p>Describe the potential impacts of storage and impoundment activities on downstream waterbodies, fish habitat, and spawning areas. Describe the potential for a decrease in habitat quality, including through mobilization of contaminants specific to the underlying geology via seepage or from spills.</p> <p>Use results from the Water Resources section for indirect impacts on water quality through sedimentation, impacts on floodplain function, and changes in drainage patterns and how these will affect aquatic species.</p> <p>Identify BMPs that would minimize these effects.</p>
<p>Spills (higher priority concern)</p> <ul style="list-style-type: none"> <li>• Potential spills from transportation of hazardous waste (oil, diesel, and natural gas)</li> <li>• Potential spills from pipelines</li> </ul>	<ul style="list-style-type: none"> <li>• Fish habitat alteration if a spill enters waterbodies</li> <li>• Injury or mortality of fish from spilled material if it enters waterbodies</li> </ul>	<p>Described on a qualitative level by habitat type and species potentially affected</p>	<p>Generally describe potential impacts on fish and aquatic habitat by spills of a variety of types, sizes, and spill locations (by alternative). Discuss relative to Anadromous Waters Catalog, essential fish habitat, and ACECs (where practical).</p>



Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p>Winter road development (lower priority concern)</p> <ul style="list-style-type: none"> <li>Bettles to Dalton Highway</li> <li>Anaktuvuk Pass</li> </ul> <p>Potential spills and over-ice</p>	<ul style="list-style-type: none"> <li>Direct mortality to fish due to water withdrawal</li> </ul>	<p>Described on a qualitative level because this is a lower priority concern, unless specific waterbodies and distances/routes are described.</p>	<p>Include a general description of the use of winter roads for Bettles and Anaktuvuk Pass and the potential need for future ice roads should development increase. Focus on water withdrawal needs, ice compaction, the potential for direct mortality during withdrawal, and the potential for spills.</p>
<p>Pipeline development (higher priority concern)</p> <ul style="list-style-type: none"> <li>Potential spills</li> <li>Traffic</li> <li>Dust</li> <li>Stream crossings</li> <li>Pilings</li> </ul> <p>Fiber-optic lines</p>	<ul style="list-style-type: none"> <li>Fish habitat alteration if a spill enters waterbodies</li> <li>Injury or mortality of fish from spilled material if it enters waterbodies</li> <li>Direct mortality or injury to fish due to pile driving activities or bridge and culvert construction at stream crossings</li> </ul>	<p>Described on a qualitative level because this is being covered in another EIS</p>	<p>An EIS was completed for the AKLNG pipeline in March 2020. The footprint for this project includes the potential for spur lines and associated development.</p> <p>Use results from the Water Resources section for indirect impacts on water quality through sedimentation, impacts on floodplain function, and changes in drainage patterns and how these will affect aquatic species.</p>
<p>Man-camp construction on/near the Dalton Highway (lower to mid-priority concern)</p> <ul style="list-style-type: none"> <li>Potential spills</li> <li>Water sources required</li> <li>Dust</li> </ul> <p>Stream crossings</p>	<ul style="list-style-type: none"> <li>Direct mortality to fish due to water withdrawal</li> </ul>	<p>Described on a qualitative level because this is a lower priority concern</p>	<p>Describe, on a general basis, the potential impacts from creation of man-camps to support other activities listed above (by alternative). Discuss impacts on local stream and fish assemblages.</p>



Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p>Surface disturbance caused by logging activities (lower priority concern)</p> <ul style="list-style-type: none"> <li>• Harvest, salvage (e.g., beetle kill), or clearing for infrastructure development</li> </ul>	<ul style="list-style-type: none"> <li>• Direct loss of fish habitat</li> <li>• Loss of woody debris to streams</li> </ul>	<p>There is no measurable indicator at this time because there are no logging projects proposed at this time.</p>	<p>Describe the potential impacts of surface-disturbing logging activities on fish habitat and spawning areas (by alternative). Identify BMPs that would minimize these effects.</p> <p>This is considered a lower priority concern at this time.</p>
<p>Travel and transportation management (low to mid-priority concern)</p> <ul style="list-style-type: none"> <li>• Dalton Highway travel (higher priority concern) <ul style="list-style-type: none"> <li>○ Existing</li> <li>○ Potential increase</li> </ul> </li> <li>• OHV use (lower priority concern) <ul style="list-style-type: none"> <li>○ Most of the activity will take place on the Dalton Highway.</li> <li>○ Recreational users can't take OHVs off the Dalton Highway (according to state law, which the BLM follows now). If that law is feasible, then the BLM might need to respond to or reasonably foresee this.</li> <li>○ Some impacts due to permitted activities (such as gravel mines)</li> <li>○ Some use around the villages on BLM-managed lands, which is not currently regulated</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Alteration of fish habitat</li> </ul>	<p>There is no measurable indicator at this time because of a lack of specific projects at this time.</p> <p>Described on a qualitative level by habitat and species potentially affected</p>	<p>Note the potential effects of off-road traffic to sedimentation rates and other water quality issues (by alternative).</p> <p>Use results from the Water Resources section for indirect impacts on water quality through sedimentation, impacts on floodplain function, and changes in drainage patterns and how these will affect aquatic species.</p> <p>Most impacts will be on the Dalton Highway and will include increased traffic volume.</p> <p>OHV use is considered a lower priority concern at this time.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p>ROWs (higher priority concern)</p> <ul style="list-style-type: none"> <li>• Transmission lines</li> <li>• New and existing               <ul style="list-style-type: none"> <li>○ Roads</li> <li>○ Culverts</li> <li>○ Bridges</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Direct aquatic habitat loss</li> <li>• Indirect aquatic habitat alteration from:               <ul style="list-style-type: none"> <li>○ Gravel dust and gravel spray</li> <li>○ Culverts blocking fish passage</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Acres (lake) or linear miles (stream) of fish habitat in areas open and closed to a ROW</li> <li>• Overlay of fish and watershed ranking analysis (high, medium, and low)</li> </ul>	<p>Describe how construction and maintenance of gravel roads affect aquatic resources in the planning area (by alternative). Describe the most vulnerable or important waters and habitats (e.g., deep lakes, spawning and overwintering areas, and springs) likely to be affected.</p> <p>Describe direct and indirect effects by aquatic habitat types and their context on the landscape.</p> <p>Use results from the Water Resources section for indirect impacts on water quality through sedimentation, impacts on floodplain function, and changes in drainage patterns and how these will affect aquatic species.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p>Recreation/subsistence development (lower priority concern)</p> <ul style="list-style-type: none"> <li>• New opportunities created as a result of infrastructure development impacts (e.g., fishing, hunting, trapping, and backcountry adventure)</li> <li>• Secondary infrastructure development (e.g., lodges, splinter roads, and hot springs)</li> <li>• Existing hot spring developments and a usage increase (lower to medium priority concern)               <ul style="list-style-type: none"> <li>○ Development of additional hot springs. Access and increased infrastructure</li> <li>○ Open to OHVs</li> <li>○ Open to snowmobiles</li> </ul> </li> <li>• Trail development is likely and will continue to expand.               <ul style="list-style-type: none"> <li>○ OHV recreation use is closed due to state law in most areas. If laws are revoked, the BLM would likely create infrastructure (lower priority concern).</li> </ul> </li> <li>• Camping, hiking, equestrian, and dogsledding (lower priority concern)</li> <li>• Aquatic invasive species (potentially higher concern)</li> </ul>	<ul style="list-style-type: none"> <li>• Increased subsistence/recreational hunting and fishing activities may affect population assemblages of target species.</li> <li>• Changes in trophic dynamics</li> <li>• Decreased habitat quality due to more foot and vehicle traffic</li> <li>• Direct loss of habitat due to development of additional roads, lodges, etc.</li> <li>• Increased backcountry and hot spring usage due to increased traffic</li> <li>• Changes in water quality due to aquatic invasive species</li> </ul>	<p>Described on a qualitative level because this is a lower priority concern.</p>	<p>Describe the impacts of increased infrastructure and human activity in the analysis area (by alternative) as it relates to subsistence and recreational activities, particularly with relation to habitat degradation, fish (and wildlife) management concerns, and current regulatory considerations (e.g., OHV use).</p> <p>Although seemingly of lesser concern, there are more topic sub-headings to discuss here than in some of the other lower concern "actions."</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Management actions (higher priority concern) <ul style="list-style-type: none"> <li>• ACECs</li> <li>• RNAs</li> <li>• WSR designation</li> <li>• LWCs</li> <li>• WSAs</li> </ul>	<ul style="list-style-type: none"> <li>• Habitat protections due to restricted land and water use</li> <li>• Removal of some riverine habitat protections (to be determined) resulting in increased land use</li> </ul>	Provide acreage or stream miles of protections by management action.	Describe the potential impacts of various management restrictions by alternative.

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b>                      Direct and indirect impacts on aquatic resources would be in areas that have current or foreseeable surface-disturbing activities on BLM-managed lands in the planning area.</p> <p><b><u>CUMULATIVE</u></b>                      To be determined (further coordination with Water Resources section). Areas downstream, including wildlife refuges, of surface-disturbing activities may be affected with effects such as degraded water quality; the BLM will need to include them in the analysis area.</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>• Construction of the Ambler Road</li> <li>• Construction of the natural gas pipeline</li> <li>• Increased mining activity</li> <li>• Increased infrastructure development (e.g., roads, pads, and camps)</li> <li>• Revocation of PLO 5150 (transfer of lands to the State of Alaska)</li> <li>• Ongoing EISs being completed for Ambler Road and the pipeline</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• Water/fish habitat figure                             <ul style="list-style-type: none"> <li>○ Essential fish habitat</li> <li>○ Anadromous waters catalog (could be combined with above)</li> <li>○ High potential locatable minerals layer</li> <li>○ BLM Watershed Condition Model (high, medium, and low)</li> <li>○ BLM Aquatic Resource Value Model (high, medium, and low)</li> </ul> </li> <li>• NSO figure, including:                             <ul style="list-style-type: none"> <li>○ ACECs: Hogatza ACEC, Indian River ACEC, Tozitna River Watershed ACEC, Ivashak ACEC, and Jim River ACEC</li> <li>○ RNAs: Redlands Lake RNA and Arms Lake RNA</li> <li>○ LWC, WSRs, hot springs</li> </ul> </li> <li>• Figure showing stream order and floodplain width (could be combined with one of the figures above)</li> <li>• Tabular analysis: Stream miles and acres (lakes) for the two BLM models watershed ranking</li> <li>• Tabular analysis: Stream miles and acres (lakes) in occupancy and no occupancy zones</li> <li>• Tabular analysis: Stream miles and acres (lakes) of anadromous waters in occupancy and no occupancy zones</li> <li>• Tabular analysis: Stream miles and acres (lakes) of essential fish habitat in occupancy and no occupancy zones</li> <li>• Tabular analysis: Stream miles by stream order in occupancy and no occupancy zones</li> </ul>

**M.5.7 Wildlife**

**Birds**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• Migratory Bird Treaty Act</li> <li>• Endangered Species Act</li> <li>• Bald and Golden Eagle Protection Act</li> <li>• BLM Alaska Land Health Standards</li> </ul>

Resource Issues
<ul style="list-style-type: none"> <li>• Impacts on breeding areas may decrease population sizes of migratory birds.</li> <li>• Predation may increase near development facilities.</li> <li>• Hunting pressure on some species may increase with increased access routes.</li> <li>• Air and road traffic and noise may disturb wildlife, causing avoidance and reduced habitat quality.</li> <li>• Limitations to finer analyses are expected; species-specific habitat information is sparse; vegetation mapping information is coarse. Analyses will be nonquantitative but based on known and predicted effects of habitat loss and alteration, disturbance and displacement, and risks of injury and mortality.</li> <li>• Include threatened and endangered species and BLM special status species.</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Commercial timber harvest	<ul style="list-style-type: none"> <li>• Loss of nesting, roosting, and perching trees</li> <li>• Habitat loss, degradation, or fragmentation</li> </ul>	Acres open or closed (as stated in the alternatives comparison table) to commercial timber harvest	Compare differences in acres open to timber harvest. Discuss the potential for impacts.
Locatable minerals	Loss or degradation of habitat and disturbance and displacement of birds if locatable mineral exploration and development occur. Associated roads and infrastructure can potentially increase bird strikes with vehicles, buildings, and suspended lines.	<ul style="list-style-type: none"> <li>• Changes in acres of suitable bird habitat overlaid with open to locatable minerals</li> <li>• Stopover and breeding habitats will have a higher level of impacts if developed.</li> <li>• Acres of wetlands, marshes, riparian areas, and waterbodies</li> </ul>	<p>Compare differences in acres open to locatable minerals between alternatives.</p> <p>Discuss likelihood of RFD and potential for locatable minerals (high, medium, and low), even though open does not mean the impact will necessarily occur.</p> <p>Discuss plan components that will reduce negative impacts (e.g., prohibited in 100-year floodplain, setbacks from water, and stipulations and BMPs for BLM permittees).</p>
Mineral materials (salable minerals)	Habitat loss, degradation and disturbance, and displacement	Acres open to mineral materials with suitable bird habitat	Compare differences in acres across alternatives.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Fluid minerals <ul style="list-style-type: none"> <li>Open subject to NSO</li> <li>Open to controlled surface use</li> </ul>	<ul style="list-style-type: none"> <li>Habitat loss, degradation, and fragmentation</li> <li>Potential oil spills reduce reproductive success and survivorship.</li> </ul>	Acres open and closed for fluid mineral leasing (NSO and controlled surface use)	<p>Having NSO stipulations would result in less impacts.</p> <p>Discuss the plan components to reduce impacts.</p>
ACEC or RNA designation	Beneficial habitat protection from restricted uses	Amount of ACEC acres suitable to support bird breeding, stopover, and foraging sites by alternative	<p>Compare differences in allowed/prohibited/avoidance uses.</p> <p>ANILCA provisions still allow motor vehicle access and infrastructure for subsistence purposes and remote access; this is common to all alternatives.</p>
WSR designation	<ul style="list-style-type: none"> <li>Removal of interim management protections and determining rivers not suitable (Alternatives C1, C2, and D) will open 603 miles of eligible river segments to land uses and decrease river habitat protection important for birds.</li> <li>Impacts on fish prey species</li> </ul>	River miles either designated (Alternative B) or not designated (Alternatives C1, C2, and D) as WSRs.	Qualitative discussion of the removal of WSR protections, which can open 603 miles of river habitat to more uses that affect habitat and prey.
LWC	Beneficial habitat protection from restricted uses	Amount of LWC acres suitable to support bird breeding, stopover, and foraging sites by alternatives	<p>Compare the differences in acres and discuss allowed/prohibited/avoidance uses.</p> <p>ANILCA provisions still allow motor vehicle access and infrastructure for subsistence purposes and remote access; this is common to all alternatives.</p>
Administrative utility corridor designations	<ul style="list-style-type: none"> <li>Habitat loss and fragmentation</li> <li>Electrocution and bird strikes</li> </ul>	Acres open to additional corridors (Ambler, Umiat, and Dalton Highway)	Discuss how action alternatives will require, to the extent feasible, collocation.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
ROW (linear and site type) <ul style="list-style-type: none"> <li>• Transmission lines</li> <li>• Roads</li> </ul>	<ul style="list-style-type: none"> <li>• Habitat loss and degradation</li> <li>• Mortality due to bird strikes and perching for avian predators</li> <li>• Disturbance associated with roads, vehicles, and increased human activity</li> </ul>	Acres open to ROW (different types), acres of ROW exclusion, and acres of ROW avoidance	Compare open versus excluded by alternatives.
Recreation <ul style="list-style-type: none"> <li>• Open to OHVs</li> <li>• Open to snowmobiles</li> <li>• Open to camping, hiking, equestrian, and dogsledding</li> </ul>	Disturbance and displacement of birds, nest disturbance and reproductive failure, increased predation due to human food waste, increased access for hunting, and mortality from vehicle strikes	<ul style="list-style-type: none"> <li>• Acres open to OHVs</li> <li>• Acres designated as SRMAs, ERMAs, or BCA</li> </ul>	Analyze the difference of management areas and the associated intensity of impacts (i.e., open to OHV travel and primitive use).  Discuss plan components that reduce human disturbance to wildlife (e.g., seasonal limitations and OHV weight limits).

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Surface disturbance from infrastructure footprints (i.e., open pit mine sites, cleared facility sites, pipeline corridors, tailings reservoirs, waste rock dumps, and timber harvest)	<ul style="list-style-type: none"> <li>• Habitat loss and alteration, including altered successional patterns</li> <li>• With rehabilitation after abandonment, potential creation of avian habitats previously absent on that site for some species and actions</li> </ul>	Nonquantitative; locations of infrastructure uncertain	Discuss the types and extent of impacts associated with habitat loss and alteration.
Gravel placement for roads and pads	<ul style="list-style-type: none"> <li>• Habitat loss, habitat alteration, drifted snow, altered drainage, and dust fallout</li> <li>• Habitat alteration from drifted snow and altered drainage patterns</li> </ul>	Nonquantitative; locations of roads uncertain	Refer to table of acres open to development and compare the potential level of impact by alternative.  Discuss the types and extent of impacts
Road traffic on gravel roads	Habitat alteration from gravel spray and dust fallout	Nonquantitative; locations of roads uncertain	Discuss estimates of the extent of the effect beyond the edge of the gravel road/pad (dust fallout buffer).

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Road traffic, air traffic, noise, and human activities	<ul style="list-style-type: none"> <li>Disturbance and displacement of birds from affected areas</li> <li>Injury and mortality from accidental collisions</li> </ul>	Nonquantitative; locations of facilities uncertain	Discuss potential impacts on bird populations.
Towers, power lines, guy wires, and other aboveground structures	Injury and mortality from accidental collisions	Describe the potential for bird strikes	Discuss potential impacts on bird populations.
Use and storage of hazardous materials	<ul style="list-style-type: none"> <li>Injury and mortality from accidental releases/discharges or insecure containment</li> <li>Habitat loss or alteration</li> </ul>	Describe the potential for accidental exposure	Discuss potential impacts on bird populations.
Impoundments and reservoirs	<ul style="list-style-type: none"> <li>Habitat loss and alteration</li> <li>Creation of aquatic habitat</li> </ul>	Nonquantitative; locations uncertain	Discuss potential impacts.
Human activities and waste management	Attraction of predators/scavengers (including increased abundance of some birds) and the resulting decrease in survival and nesting success for prey species	Potential impacts on bird populations and predator/prey dynamics (nonquantitative)	Describe attraction of key scavenging and predatory species to human activity and the potential effects on prey populations.

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> The planning area</p> <p><b><u>CUMULATIVE</u></b> The planning area</p>

Analysis Assumptions
<p>Specific development-related impacts cannot be quantified because no specific projects are proposed. Impacts can only be described qualitatively both because resource and impact data are unavailable and because project details are unknown. Also, vegetation mapping information is coarse over the planning area, and habitat use data are lacking for most species.</p> <p>The BLM will compare the alternatives in terms of acres open or closed to various resource extraction or other reasonably foreseeable future activities. These acreages will not differ among resources. Additionally, the BLM will discuss broad groupings of birds that may be affected within these broadly defined vegetation types (based on very generalized knowledge of habitat use and distribution); the BLM will intersect the vegetation map with NSO areas and with areas of high mineral potential. From the RFD scenario, the most important potential actions in the planning area will be related to ROWs and associated gravel mines (mineral materials) and metals mining (locatable minerals). As no maps are available for ROWs, no quantification of related impacts is possible. Special emphasis will be placed on impacts on golden eagles.</p>



GIS Maps and/or Calculations
<p>Obtain from GIS estimates the total acres of each vegetation type:</p> <ul style="list-style-type: none"> <li>• in the planning area</li> <li>• in BLM-managed lands in the planning area</li> <li>• in BLM-managed lands closed to surface occupancy for each alternative</li> <li>• In BLM-managed lands subject to controlled surface use for each alternative</li> <li>• in BLM-managed lands of high mineral potential for each alternative</li> <li>• in BLM-managed lands open and closed to locatable mineral extraction for each alternative</li> <li>• in BLM-managed lands open and closed to mineral materials (salable minerals equals gravel) extraction for each alternative</li> <li>• in BLM-managed lands open and closed to fluid minerals (and controlled surface use) for each alternative</li> <li>• in BLM-managed forested lands open and closed to timber harvest for each alternative</li> <li>• in areas with an ACEC or RNA designation for each alternative</li> <li>• in BLM-managed lands designated with wilderness characteristics for each alternative</li> <li>• in BLM-managed lands open and closed to utility corridor development for each alternative</li> <li>• in BLM-managed lands open to ROWs for each alternative</li> <li>• in areas designated as SRMAs, ERMAs, or BCAs for each alternative</li> </ul> <p>Also, river miles with WSR designation for each alternative</p>

**Terrestrial Mammals**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• Federal Land Policy and Management Act of 1976 (FLPMA)</li> <li>• NEPA</li> <li>• ANILCA</li> <li>• 43 CFR 24 (Sikes Act)</li> <li>• The Endangered Species Act</li> <li>• Secretarial Order 3347, Conservation Stewardship and Outdoor Recreation</li> <li>• Secretarial Order 3356, Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories</li> <li>• Secretarial Order 3362, Improving Habitat Quality in Big-Game Winter Range and Migration Corridors</li> <li>• Secretarial Order 3366, Increasing Recreational Opportunities on Lands and Waters Managed by the U.S. Department of the Interior</li> <li>• BLM Manual 6500, Wildlife and Fisheries Management</li> <li>• BLM Manual 1730, Management of Domestic Sheep and Goats to Sustain Wild Sheep</li> <li>• BLM Instruction Memorandum AK-2004-023, Alaska Land Health Standards and Guidelines</li> <li>• Depiction of animal location point data is restricted under State of Alaska statute and regulations.</li> </ul>

Resource and Scoping Issues
<ul style="list-style-type: none"> <li>• Priority species (moose, caribou, beaver, and Dall sheep). Where are important habitats for these species located?</li> <li>• What are desired habitat conditions for priority wildlife species?</li> <li>• What specific actions or use restrictions should the BLM consider to protect wildlife habitats and achieve desired population levels?</li> <li>• What are the desired habitat conditions for major habitat types that support a wide variety of wildlife?</li> <li>• The BLM needs to identify wildlife movement corridors to provide for mitigation and connectivity between habitats in light of climate change and future development.</li> <li>• There are concerns about the potential for disease transmission between domestic livestock and Dall sheep.</li> <li>• The State of Alaska requested that the BLM recognize existing State authorities relative to wildlife management.</li> <li>• There are concerns about the impacts of OHVs and trail density on wildlife.</li> <li>• How will development affect population levels, reproductive success, habitat fragmentation, predation, migration, and habitat requirements of priority species?</li> <li>• The habitat type should match the Vegetation section (see Vegetation section).</li> <li>• The BLM should include the potential for threatened and endangered species in the future; though none are present in significant numbers now, the BLM should include them in discussions.</li> <li>• The BLM should include the potential for invasive species in the future; though none are present in significant numbers now, the BLM should include them in discussions.</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<b>Management Decisions</b>			
Commercial timber harvest	<ul style="list-style-type: none"> <li>• Habitat loss, degradation, or fragmentation</li> <li>• Change in successional stage and plant species composition (habitat alterations)</li> </ul>	Acres open or closed (as stated in the alternatives comparison table) to commercial timber harvest	Compare differences in acres open to timber harvest and the potential for actions to occur.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Locatable minerals	<ul style="list-style-type: none"> <li>• Direct loss or degradation of habitat and/or disturbance and displacement of mammals if locatable mineral exploration and development occur. Associated roads and infrastructure can potentially increase vehicle collisions and alteration of habitat.</li> <li>• Potential changes in access for hunting and recreation</li> </ul>	Changes in acres of suitable mammal habitat overlaid with acres open to locatable minerals. Break out by caribou ranges and Dall sheep habitat.	<p>Compare differences in acres open to locatable minerals between alternatives.</p> <p>Discuss the likelihood of the RFD scenario occurring.</p> <p>Discuss plan components that will reduce negative impacts.</p> <p>Refer to the potential for locatable minerals (high, medium, and low).</p>
Salable materials	<ul style="list-style-type: none"> <li>• Direct habitat loss, degradation of adjacent habitat, disturbance and displacement of mammals in the area</li> </ul>	Acres open to salable materials with suitable mammal habitat	Compare differences in land cover, caribou range, and Dall sheep layers across alternatives.
Fluid minerals	<ul style="list-style-type: none"> <li>• Direct habitat loss, degradation of adjacent habitat, fragmentation of habitat, and disruption of animal movements from roads and pipelines</li> <li>• Potential oil spills and contaminants</li> <li>• Potential changes in access for hunting and recreation</li> </ul>	Acres open and closed for fluid mineral leasing (NSO and controlled surface use)	<p>Having NSO stipulations would result in less impacts.</p> <p>Discuss plan components to reduce impacts.</p> <p>Discuss the likelihood of the RFD scenario occurring.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
ACEC or RNA designation	Beneficial habitat protection from restricted uses	Amount of caribou herd ranges and Dall sheep areas in ACECs or RNAs	Compare differences in allowed/prohibited/avoidance uses.  ANILCA provisions still allow motor vehicle access and infrastructure for subsistence purposes and remote access; this is common to all alternatives.
WSR designation	<ul style="list-style-type: none"> <li>Removal of interim management protections and determining rivers not suitable (Alternatives C1, C2, and D) will open 603 miles of eligible river segments to land uses and decrease river habitat protection.</li> <li>Impacts on aquatic furbearers and mammal species using riparian habitats</li> <li>Impacts on fish prey species</li> </ul>	River miles either designated (Alternative B) or not designated (Alternatives C1, C2, and D) as WSRs.	Analyze the removal of WSR protections, which can open 603 miles of river habitat to more uses, which would affect beaver and habitat and prey for other mammals.
LWC	Beneficial habitat protection from restricted uses	Amount of LWC by alternatives	Compare differences in allowed/prohibited/avoidance uses.  ANILCA provisions still allow motor vehicle access and infrastructure for subsistence purposes and remote access; this is common to all alternatives.
WSAs (similar across alternatives)	Release of the CAMA WSA will change to management for LWC.	Acres of the CAMA WSA released	Tie into LWC.
Administrative utility corridor designation	<ul style="list-style-type: none"> <li>Habitat loss and fragmentation</li> <li>Changes or delays in animal movements and distribution of predators</li> </ul>	Acres open to additional corridors (Ambler, Umiat, and Dalton Highway)	Discuss how action alternatives will require, to the extent feasible, collocation.  Compare open to new utility corridors.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
ROW (linear and site type) <ul style="list-style-type: none"> <li>• Transmission lines</li> <li>• Roads</li> </ul>	<ul style="list-style-type: none"> <li>• Direct habitat loss and degradation</li> <li>• Indirect disturbance or displacement</li> <li>• Changes or delays in animal movements and distribution of predators</li> <li>• Potential changes in access for hunting and recreation</li> </ul>	Acres open to ROW (different types), acres of ROW exclusion, and acres of ROW avoidance	Compare open versus excluded by alternatives.
Revocation of PLO 5150	Revocation of PLO 5150 is assumed to lead to land along the Dalton Highway being transferred to State ownership.	Qualitative assessment	Include a general description of impacts.
Recreation <ul style="list-style-type: none"> <li>• Open to OHVs</li> <li>• Open to snowmobiles</li> <li>• Open to camping, hiking, equestrian, and dogsledding</li> </ul>	<ul style="list-style-type: none"> <li>• The potential change in access for hunting and recreation could result in disturbance and displacement, increased predation due to human food waste, increased access for hunting, and mortality from vehicle collisions.</li> <li>• Habitat alteration</li> </ul>	Acres designated as SRMAs, ERMAs, or BCAs	Compare differences in acres between alternatives.  Analyze the difference of management areas and the associated intensity of impacts (i.e., open to OHV travel and primitive use).  Discuss plan components that reduce human disturbance to wildlife (seasonal limitations).
Open to reindeer grazing	<ul style="list-style-type: none"> <li>• Potential competition for forage with caribou, including overgrazing of lichen and a potential change in predator densities</li> <li>• Construction of corrals and disturbance from reindeer herding activities</li> </ul>	Qualitative assessment	Include a general description of impacts. This is unlikely to occur during the life of the plan.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<b>Direct Impacts</b>			
Tailings and waste rock storage sites and impoundments	<ul style="list-style-type: none"> <li>• Direct habitat loss</li> <li>• Potential for contamination</li> </ul>	Nonquantitative; locations uncertain	Include a general description of impacts.
Gravel placement for roads and pads	Direct habitat loss	Nonquantitative; locations uncertain	Include a general description of impacts.
Presence of roads and pipelines	<ul style="list-style-type: none"> <li>• Potential obstructions to caribou movements to and from insect-relief habitat or migratory movements</li> <li>• Habitat loss due to spills or leaks</li> </ul>	Nonquantitative; locations uncertain	Include a general description of impacts.
Traffic on gravel roads	<ul style="list-style-type: none"> <li>• Habitat alteration from gravel spray and dust fallout</li> <li>• Mortality due to vehicle collisions</li> <li>• Displacement or disturbance of mammal species, especially calving caribou</li> <li>• Injury and mortality from vehicle collisions</li> </ul>	Nonquantitative; locations uncertain	Include a general description of impacts.
Use and storage of hazardous materials	<ul style="list-style-type: none"> <li>• Injury and mortality from accidental releases/discharges or insecure containment</li> <li>• Habitat impacts from spills or contaminants, or both</li> </ul>	Nonquantitative; locations uncertain	Include a general description of impacts.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Anthropogenic food and waste management	<ul style="list-style-type: none"> <li>• Attraction or increased population density of predators/scavengers due to anthropogenic food sources and the potential defense of life and property and mortality of grizzly bears</li> <li>• Increase in red fox density</li> </ul>	Qualitative assessment	Include a general description of impacts.
Human activities; harvest and recreation	<ul style="list-style-type: none"> <li>• Increased hunting pressure by federal subsistence and non-subsistence users</li> <li>• Changes in accessibility for hunting and recreation due to new roads or trails</li> <li>• Potential for increased wildland fires</li> </ul>	Qualitative assessment	Discuss potential impacts on wildlife populations.
Air traffic supporting development or recreation	<ul style="list-style-type: none"> <li>• Disturbance, displacement, and rerouting of species from affected areas</li> <li>• Impacts of changes in subsistence hunting on species</li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative assessment</li> <li>• Discuss the likelihood of disturbance on different species</li> </ul>	Discuss potential impacts on wildlife populations.
Noise and light associated with development activities, traffic, and aircraft	Disturbance, displacement, and rerouting of species from affected areas	Qualitative assessment	<p>Discuss potential impacts on wildlife populations.</p> <p>Discuss current and projected activity level and noise level estimates.</p>
Indirect impacts of altered habitat use adjacent to BLM-managed lands as a result of activity on BLM-managed lands	Changes to movement patterns as a result of activity may alter the levels of habitat use on adjacent lands managed by other jurisdictions.	Qualitative assessment	Discuss the potential by species.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Climate change and fire management	<ul style="list-style-type: none"> <li>Change in vegetation composition and successional stage</li> <li>Changes in the range of terrestrial mammal species</li> </ul>	<ul style="list-style-type: none"> <li>Predictions of climate changes</li> <li>Discuss wildland fire impacts on wildlife</li> </ul>	Include a general description of impacts.

Impact Analysis Area
<p><b><u>DIRECT</u></b> Planning area</p> <p><b><u>INDIRECT</u></b> Planning area</p> <p><b><u>CUMULATIVE</u></b></p> <ul style="list-style-type: none"> <li>Planning area</li> <li>The annual ranges of overlapping caribou herds (Western Arctic, Teshekpuk, and Central Arctic herds)</li> <li>Lands within Game Management Units 24, 26B, 25, and 20F</li> </ul>

Analysis Assumptions
<p>Contractors' standard analysis assumptions for Alaska are likely sufficient. Additional assumptions include:</p> <ul style="list-style-type: none"> <li>The Alaska Board of Game and Federal Subsistence Board will address changing hunting pressure on BLM-managed lands in the planning area.</li> <li>Subsistence hunting will be allowed along roads.</li> <li>From the RFD scenario, the most important potential actions in the planning area will be related to ROWs and associated gravel mines (salable minerals) and metals mining (locatable minerals). Development of wind, solar, or geothermal energy, or mining of non-energy leasable minerals and coal are unlikely to occur.</li> </ul>

GIS Maps and/or Calculations
<ol style="list-style-type: none"> <li>Summary of land cover types land status (such as NSO and controlled use) under each alternative</li> <li>Summary of mineral potential by land status (such as NSO and controlled use) under each alternative</li> <li>Summary of caribou ranges by land status under each alternative</li> <li>Summary of Dall sheep mineral lick protection zones, movement corridors, and study areas by land status under each alternative</li> <li>Acres open and closed to timber harvest for each alternative</li> <li>Areas with an ACEC or RNA designation by vegetation type and alternative</li> <li>Areas open and closed to utility corridor development by alternative</li> <li>Areas open to ROWs by alternative</li> <li>Areas designated as SRMAs, ERMAs, or BCAs by alternative</li> </ol>



### M.5.8 Wildland Fire Ecology and Management

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• Clean Air Act of 1990, as amended (42 U.S.C. 7418)</li> <li>• Pollution Prevention Act of 1990 (42 U.S.C. 13101–13109)</li> <li>• 40 CFR 61: National Emission Standards for Hazardous Air Pollutants</li> <li>• Alaska interagency fire management plan</li> <li>• FNSB 2.5 non-attainment area</li> <li>• Interagency Red Book (Interagency Standards for Fire and Fire Aviation Operations Group 2020)</li> <li>• Alaska Department of Environmental Conservation</li> <li>• Alaska Enhanced Smoke Management Plan (DEQ 2015)</li> </ul>

Resource Scoping Issues
<p>Public scoping comments related to wildland fire included the following concerns (followed by internal notes):</p> <ul style="list-style-type: none"> <li>• Request to educate the public on the respiratory health consequences of increased fires, and monitor and mitigate impacts on human health             <ul style="list-style-type: none"> <li>○ Note that impacts of fire on public health would be addressed in the public health section, not the wildland fire management section</li> </ul> </li> <li>• Impacts of climate change on the need for fire suppression in boreal forests             <ul style="list-style-type: none"> <li>○ Climate change has already affected boreal forests. Impacts and trends from climate change would be included in the affected environment section. Impacts of climate change on proposed management would be discussed in the direct and indirect impacts analysis.</li> </ul> </li> <li>• Effects of fire on caribou habitat             <ul style="list-style-type: none"> <li>○ No wildland fire management is proposed specifically for caribou habitat. Impacts of fire management on caribou habitat would be addressed in the wildlife section.</li> </ul> </li> <li>• Importance of woody biomass (standing trees) to communities in the planning area and how it will affect wildland fire management plans             <ul style="list-style-type: none"> <li>○ This would be considered in the forestry section.</li> </ul> </li> <li>• Important ecological role of wildland fire in maintaining wildlife habitat             <ul style="list-style-type: none"> <li>○ Impacts of wildland fire on wildlife habitat would be addressed in the wildlife section.</li> </ul> </li> <li>• Firefighter safety             <ul style="list-style-type: none"> <li>○ Restricting tools (e.g., no retardant) can affect firefighter safety. This would be addressed in impacts where relevant.</li> </ul> </li> <li>• Update to “known [fire] sites” database             <ul style="list-style-type: none"> <li>○ Not applicable to this RMP analysis</li> </ul> </li> <li>• Impacts of managing for LWC on fire management             <ul style="list-style-type: none"> <li>○ This would be addressed in the wildland fire impacts analysis.</li> </ul> </li> <li>• Use of controlled burns for habitat enhancement             <ul style="list-style-type: none"> <li>○ Impacts of use of controlled burns and other fire management activities on habitat would be addressed in the vegetation or wildlife sections.</li> </ul> </li> <li>• Site-specific concerns, including Umiat road, Bettles Winter Road, and the area around Hughes             <ul style="list-style-type: none"> <li>○ Much of the noted site-specific management concerns are not appropriate to address in RMP-level management decisions.</li> <li>○ The area around communities is identified as a priority for fuel treatment and suppression efforts under all alternatives.</li> </ul> </li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Water</b> (See Water, Fish, Riparian Vegetation, and Soils Sections):</p> <ul style="list-style-type: none"> <li>• Restrictions on surface-disturbing activities in 100-year floodplains (require erosion control plan)</li> <li>• Potential restrictions on future surface-disturbing activities for areas not meeting functioning-at-risk thresholds following rehabilitation</li> <li>• Restrictions on surface-disturbing activities in lentic areas (0.25 miles)</li> <li>• Restrictions on timber harvest adjacent to waterbodies</li> <li>• Restriction on surface-disturbing activities around hot springs (160 acres)</li> <li>• Restriction on reclamation (must achieve Level 3 functionality)</li> <li>• Restriction on fire fuels management harvest within 50 to 100 feet of a waterbody</li> </ul>	<ul style="list-style-type: none"> <li>• Potential restrictions requiring erosion control plans may limit the size, timing, and location of fuels treatments on a site-specific basis.</li> <li>• Potential restrictions near stream bank and riparian areas and hot springs may limit the size, timing, and location of fuels treatments on a site-specific basis. In the long term, restrictions on treatment could affect the severity and/or size of wildland fires.</li> <li>• Restricting surface-disturbing activities in the 100-year floodplain or near waterbodies could affect fire management specifically around communities, where fuels treatment is a priority to reduce fire risks.</li> <li>• Restrictions on surface-disturbing activities following rehabilitation may result in future site-specific limitations on harvest.</li> </ul>	<ul style="list-style-type: none"> <li>• Areas open to fuels treatments, treatment priorities, and restrictions on treatments</li> <li>• Extent and severity of potential wildland fires</li> </ul>	<p>Describe how stipulations around water resources would limit the size, timing, and location of fuels treatments.</p> <p>Describe how stipulations around surface-disturbing activities would limit the size, timing, and location of fuels treatments.</p> <p>Discuss long-term impacts of decreased/increased treatment opportunities on fire behavior.</p>
<p><b>Soils</b></p> <ul style="list-style-type: none"> <li>• Restriction on fire fuels management harvest on sensitive soils</li> <li>• Restriction on surface-disturbing activities greater than 5 acres requiring soil surveys</li> </ul>	<ul style="list-style-type: none"> <li>• Restrictions on fire fuels management harvest on sensitive soils could affect fire management.</li> <li>• Potential restrictions requiring soil surveys may limit the size, timing, and location of fuels treatments on a site-specific basis.</li> </ul>	<p>Areas open to fuels treatments and restrictions on treatments</p>	<p>Describe how stipulations around surface-disturbing activities would limit the size, timing, and location of fuels treatments.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Wildlife</b></p> <ul style="list-style-type: none"> <li>Requirements to incorporate design features or stipulations to mitigate impacts on wildlife, wildlife habitat, and wildlife movement</li> <li>Seasonal restrictions on noise and disturbance in Dall sheep habitat areas, Dall sheep movement corridors, and/or Dall sheep study area</li> </ul>	<p>Habitat buffers and seasonal restrictions for special status species and sensitive wildlife habitat areas would restrict the size, timing, location, and cost of fuels treatments and may diminish effectiveness.</p>	<ul style="list-style-type: none"> <li>Areas open to fuels treatments, treatment priorities, and restrictions on treatments</li> <li>Treatment efficiency and costs</li> </ul>	<p>Describe how stipulations in wildlife habitat would affect the ability to perform treatments and the efficiency and costs of treatments.</p>
<p><b>Recreation and Visitor Service</b></p> <ul style="list-style-type: none"> <li>Restrictions on surface-disturbing activities within 2 miles of recreation and visitor services sites</li> </ul>	<p>Potential restrictions around these sites may limit the size, timing, and location of fuels treatments on a site-specific basis.</p>	<p>Areas open to fuels treatments, treatment priorities, and restrictions on treatments</p>	<p>Describe how stipulations around surface-disturbing activities would limit the size, timing, and location of fuels treatments.</p>
<p><b>LWC</b></p> <ul style="list-style-type: none"> <li>Restrictions in ACECs vary and would likely be limited and site specific in nature.</li> </ul>	<p>Lands managed for wilderness characteristics or specific ACECs may impose restrictions on access and vegetation management, which affects the ability to perform fuels treatments.</p>	<ul style="list-style-type: none"> <li>Areas open to fuels treatments, treatment priorities, and restrictions on treatments</li> <li>Treatment efficiency and costs</li> </ul>	<p>Describe how management would affect the ability to perform treatments and the efficiency and costs of treatments.</p>
<p><b>Visual Resource Management (VRM)</b></p>	<p>VRM Class I and II areas may result in restrictions on fuels treatment activities.</p>	<p>Areas open to fuels treatments, treatment priorities, and restrictions on treatments</p>	<p>Describe how VRM class restrictions could affect the ability to perform treatments. Minor impacts from VRM restrictions would be limited and site specific in nature.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Vegetation Management</b></p> <ul style="list-style-type: none"> <li>• Requirements to monitor vegetation communities for cumulative effects of wildland fire, suppression activities, and effects of excluding fire</li> <li>• BMPs to prevent the introduction and spread of NNIS</li> <li>• Requirements to conduct surveys for special status plants in known habitat prior to surface-disturbing activities</li> </ul>	<ul style="list-style-type: none"> <li>• Requirements to monitor vegetation communities for cumulative effects of wildland fire, suppression activities, and effects of excluding fire could influence the size, type, and location of fuels treatments. Impacts would be dependent on the vegetation objectives and current vegetation condition.</li> <li>• Requiring BMPs to prevent the introduction and spread of NNIS could affect treatment methods and costs.</li> <li>• Vegetation treatments could affect the potential for wildland fires in the long term, but the level of impacts may be limited at the landscape scale.</li> <li>• Potential restrictions around special status plant sites may limit the size, timing, and location of fuels treatments on a site-specific basis.</li> </ul>	<ul style="list-style-type: none"> <li>• Areas open to fuels treatments, treatment priorities, and restrictions on treatments</li> <li>• Extent and severity of potential wildland fires</li> <li>• Treatment efficiency and costs</li> </ul>	<p>Describe affected areas and how vegetation management and restrictions on management may affect changes to fire behavior.</p> <p>Include a qualitative discussion of efficiency and costs and/or reference the socioeconomic section.</p>
<p><b>Forestry</b></p>	<p>Commercial timber harvest and vegetation removal management actions may affect fuels levels and the related potential for changes to fire behavior in the long term.</p>	<p>Extent and severity of potential wildland fires</p>	<p>Describe how forestry actions could affect the fuels levels and fire behavior in the long term.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Wildland Fire</b> management actions:</p> <ul style="list-style-type: none"> <li>• Allow fire use for resource benefits throughout the planning area provided conditions are appropriate.</li> <li>• Use the principles of active management to facilitate wildland fire prevention, suppression, and recovery planning measures designed to protect people, communities, landscapes, and water quality, and to mitigate the severe flooding and erosion caused by wildland fire.</li> <li>• Use prescribed burning, and mechanical and manual fuels treatments to achieve resource objectives, in support of scientific research, or in support of BLM cooperators and partners.</li> </ul>	<ul style="list-style-type: none"> <li>• Allowing prescribed burning, and mechanical and manual fuels treatments to achieve resource objectives would affect the location and methods of treatment. In the long term, fuels treatments could reduce the extent and severity of wildland fires in treated vegetation communities.</li> <li>• Managing fire to minimize impacts on other resources would impose site-specific limits on fuels treatment and suppression.</li> <li>• Use of active management could reduce the extent and severity of wildland fires in treated vegetation communities in the long term.</li> <li>• Adjusting the fire response based on conditions also could result in an increased ability to control the size and extent of wildland fires, and potentially reduce treatment costs and improve efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>• Extent and severity of potential wildland fires</li> <li>• Areas open to fuels treatments, treatment priorities, and restrictions on treatments</li> <li>• Human activity areas open to fuels treatments</li> <li>• Treatment efficiency and costs</li> </ul>	<p>Describe how management actions could affect the short-term location of treatments and methods used, as well as long-term changes to fire behavior.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<ul style="list-style-type: none"> <li>Manage wildland fire in a manner that avoids damaging impacts on resources and other values, including the introduction and spread of NNIS, introduction of suppression chemicals into waterways, disturbances of erodible soils or ecologically sensitive systems, and the degradation of air quality. Use minimum impact suppression techniques wherever possible. Repair or mitigate damage that occurs.</li> <li>Work with adjacent landowners on fire management.</li> </ul>	(see above)	(see above)	(see above)
<p><b>Cultural and Paleontological</b></p> <ul style="list-style-type: none"> <li>For permitted activities, all operations will be conducted so as not to damage or disturb any historic or archeological sites.</li> <li>Prioritize fuels and vegetation management projects in areas with known vertebrate fossils or high Potential Fossil Yield Classification (PFYC) values for vertebrate fossils.</li> </ul>	<p>Fuels treatments may be prioritized in areas with known or a high probability of paleontological resources at risk for damage from wildland fire. All operations will be conducted so as not to damage or disturb historic or archaeological sites and artifacts. As a result, there could be site-specific restrictions on the size, type, and location of fuels treatments.</p>	<p>Areas open to fuels treatments, treatment priorities, and restrictions on treatments</p>	<p>Describe how stipulations in areas with cultural or paleontological resources could affect the ability to perform treatments. RMP management results in limited restrictions on treatment and may not need to be carried forward in analysis. Protection of cultural resources is addressed through other site-specific NEPA analyses.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Air Quality</b></p> <ul style="list-style-type: none"> <li>• Wildland fire smoke mitigation measures, per the Alaska Wildland Fire Coordinating Group, will be implemented.</li> <li>• Prescribed burns will adhere to smoke management requirements set by the Alaska Department of Environmental Conservation.</li> </ul>	<p>Air quality restrictions could affect the timing and location of prescribed burns.</p>	<p>Areas open to fuels treatments, treatment priorities, and restrictions on treatments</p>	<p>Describe how restrictions could affect the ability to perform treatments.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Human Use Activities</b></p> <ul style="list-style-type: none"> <li>• Forestry and woodland product management actions</li> <li>• Lands and realty management actions</li> <li>• Recreation and visitor services management actions (likely minor impact; may not be carried forward in analysis)</li> <li>• Transportation and travel management actions (i.e., summer OHV use)</li> <li>• Locatable, fluid, and salable minerals management actions (minimal potential for development of other energy and mineral resources based on the RFD scenario)</li> </ul>	<ul style="list-style-type: none"> <li>• Areas open to public land use, including but not limited to ROW corridors, areas open to forest product harvest, and recreation areas may be at a greater risk for human-caused fires. The increased potential would be a result of increased human presence, transport of chemicals or fuel, and use of vehicles and equipment. Proposed SRMAs and ERMAs could affect the potential for human-caused fires depending on the recreation emphasis.</li> <li>• Allowing development of locatable, fluid, and salable minerals could introduce ignition sources.</li> <li>• Motorized use may increase the potential for human-caused fires by increasing human presence. Requiring compliance with terms and conditions of BLM permits may reduce impacts from use by imposing regulations of exhaust systems or other BMPs to reduce the ignition potential.</li> </ul>	<p>Potential for human-caused fire</p>	<p>Describe the rationale for relating human presence with wildland fire.</p> <p>Describe how management actions could affect the potential for wildland fire.</p>

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> BLM-managed land in the planning area</p> <p><b><u>CUMULATIVE</u></b> The planning area</p>



Analysis Assumptions
<ul style="list-style-type: none"> <li>• Fire management activities, including fuels treatment, prescribed fire, and suppression efforts, are classified as surface-disturbing activities and would be limited by restrictions on surface-disturbing activities. Emergency response actions to protect human life and property would be excluded from these restrictions.</li> <li>• Increasing the number of people in the planning area would increase the potential for human-caused ignitions.</li> <li>• Impacts would be negligible for management actions for the following resources and resource uses: paleontology and special status species.</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• Fire regime condition class would not be used in the analysis, as it has been determined that fire regime condition class data are not informative for planning area fire management.</li> <li>• No map of potential fuels is needed, as potential fuels are described in the Vegetation section.</li> <li>• Acres of the human activity area (defined by areas within one-half mile of communities, Native allotments, rivers, roads, and trail access points) overlaid with restrictions on individual surface-disturbing activities (i.e., restrictions in 100-year floodplain and hot springs)</li> </ul>

**M.5.9 Cultural Resources**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• Antiquities Act</li> <li>• National Historic Preservation Act (NHPA)</li> <li>• Archaeological Resources Protection Act</li> <li>• Archeological and Historic Preservation Act</li> <li>• Native American Graves Protection and Repatriation Act</li> <li>• American Indian Religious Freedom Act</li> <li>• FLPMA</li> <li>• NEPA</li> <li>• Moving Ahead for Progress in the 21st Century Act (MAP-21): sections on historic bridges, national highway system, statewide transportation planning, and transportation alternatives</li> <li>• EO 13007, Indian Sacred Sites</li> <li>• EO 13287, Preserve America</li> <li>• Programmatic agreement among the BLM, Advisory Council on Historic Preservation, and National Conference of State Historic Preservation Officers “Regarding the manner in which the BLM will Meet its Responsibilities Under the National Historic Preservation Act (NHPA)”(signed in 2012) and the “Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management in Alaska” signed 2014 between BLM Alaska and the Alaska State Historic Preservation Officer (copies on file at the FO)</li> <li>• Programmatic agreement among BLM Alaska, ADNR, Alaska State Historic Preservation Officer, and the Advisory Council on Historic Preservation “Regarding Congressionally-authorized Land Transfers to the State of Alaska,” signed 2002 (copy on file at the FO)</li> <li>• BLM 8100 Series Handbook “The Foundations for Managing Cultural Resources”</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• Only a portion of BLM-managed lands in the FO have been inventoried for archaeological or cultural resources; more are needed.</li> <li>• Limited documentation of traditional ecological knowledge, traditional cultural properties, and place-names has occurred; continued consultation with tribes is needed.</li> <li>• Several areas receive heavy impacts from research (Toolik and Galbraith Lakes), recreation (Dalton Highway), development (Dalton Utility Corridor), and mining (federal mining claims and mineral leasing).</li> <li>• Destruction or deterioration to sites from melting permafrost or other environmentally based changes may be occurring.</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Ground-disturbing activities resulting from mining, infrastructure, and other development	Permanent destruction and loss of sites; deterioration through increased access, vandalism, and looting; auditory and visual impacts	Number of acres open to or subject to ground-disturbing activity	Quantify the number of acres protected from or open to ground-disturbing activity that may result in direct impacts on cultural resources.
Recreation	<ul style="list-style-type: none"> <li>Permanent destruction and loss of sites; deterioration through increased access, vandalism, and looting; or other impacts</li> <li>Increased awareness and interpretive opportunities for cultural resources</li> </ul>	Number of acres subject to recreation development or increased access and increased visitor numbers	<p>Increased access for visitors equals destruction, deterioration, vandalism, looting, and other direct and indirect impacts on cultural resources.</p> <p>Other impacts are possible through interpretation and educational opportunities for cultural resources.</p>
Climate change and fire management	Permanent destruction and loss of sites	<ul style="list-style-type: none"> <li>Number of acres subject to permafrost degradation or other climate-related landscape changes</li> <li>Number of acres or locations subject to fire management decisions, including protection of known cultural resources from active wildland fires</li> </ul>	Quantify known acres susceptible to climate change and fire management (e.g., areas of permafrost and places with a high prevalence of forest fire).
Revocation of PLO 5150	Revocation of PLO 5150 may lead to land becoming State owned along the Dalton Highway.	Number of known sites and acres in the inner and outer corridors of PLO 5150	Quantify the acres and known sites that may be transferred to the State, removing federal protections for cultural resources.
ACEC and other protective land designations	Impact by limiting allowable activities that may result in direct or indirect impacts on cultural resources	Number of acres included in protective designation areas	Quantify what would be protected by ACEC designations and limit ground disturbance.

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> The BLM decision area with emphasis on where ground-disturbing activities will be likely permitted or not allowed based on land management decisions.</p> <p><b><u>CUMULATIVE</u></b> The planning area and regions directly around the planning area where other actions may result in impacts on cultural resources in the BLM decision area.</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>• The BLM will follow existing regulatory procedures for the consideration of impacts on cultural resources (e.g., Section 106 of the NHPA or BLM and Alaska State Historic Preservation Officer agreement protocols).</li> <li>• Sites are nonrenewable resources, and damage to them typically results in permanent impacts.</li> <li>• Many more sites and resources exist in the FO than are currently inventoried; these include traditional cultural properties and other datasets outside the Alaska Heritage Resource Study (AHRS), including but not limited to knowledge of sites from communities in the planning area (e.g., Ruby and Allakaket) and the Traditional Land Use Inventory sites in the North Slope Borough (see GIS calculations below).</li> <li>• Due to the lack of inventory, it is assumed that sites exist across the planning area. This analysis does not involve a site-specific impact analysis; it only quantifies known sites in an area to demonstrate current knowledge of site location and distribution, particularly in areas that have been subject to more survey, such as the Dalton Highway.</li> <li>• Areas of high potential for cultural resource site location have not been modeled.</li> <li>• Many sites are significant to the regional and national history and prehistory, but have never been evaluated for the National Register of Historic Places. This analysis assumes all sites are eligible and subject to the impacts discussed.</li> <li>• The Dalton Highway must be treated as eligible for the analysis.</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• Use the following datasets to quantify known resources:               <ul style="list-style-type: none"> <li>○ AHRS dataset maintained by the Alaska Office of History and Archaeology (<a href="http://dnr.alaska.gov/parks/oha/ahrs/ahrs.htm">http://dnr.alaska.gov/parks/oha/ahrs/ahrs.htm</a>); it includes points, lines, and polygons of all documented resources.</li> <li>○ Traditional Land Use Inventory data from North Slope Borough (<a href="http://www.north-slope.org/assets/images/uploads/Form_600_Application_-_TLUI_Data_Request.pdf">http://www.north-slope.org/assets/images/uploads/Form_600_Application_-_TLUI_Data_Request.pdf</a>)</li> <li>○ Allakaket and Ambler traditional place-names and significant places; the GIS dataset was digitized by Barrett Ristroph based on information shared by Allakaket and Alatna Traditional Councils.</li> <li>○ Datasets from Dr. Annette Watson on traditional subsistence use areas and place-names in the Koyukuk River region.</li> </ul> </li> <li>• Total AHRS sites in the planning area</li> <li>• Total AHRS sites on BLM-managed lands in the planning area</li> <li>• Attribute table (from AHRS) for all the sites listed above so that the BLM can categorize them (historic, prehistoric, multi-component, etc.)</li> <li>• Total of known sites in the high potential areas for resource development; this is primarily for mineral development and mining.</li> </ul> <p><b>**Note that the locations of cultural and archaeological resources are confidential and should not be shared with the public. Maps showing the locations of sites and place-names should not be included in the RMP. The datasets listed above should only be used for quantification/analysis.**</b></p>

### M.5.10 Paleontological Resources

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• Paleontological Resources Protection Act</li> <li>• FLPMA</li> <li>• NEPA</li> <li>• BLM Instruction Memorandum No. 2016-124. PFYC System for Paleontological Resources on Public Lands</li> </ul>

Resource Scoping Issues			
<ul style="list-style-type: none"> <li>• Only a portion of BLM-managed lands in the FO have been inventoried for paleontological resources; more inventory is needed.</li> <li>• Several areas receive heavy impacts from research (Toolik and Galbraith Lakes), recreation (Dalton Highway), development (Dalton Utility Corridor), and mining (federal mining claims and mineral leasing).</li> <li>• The FO should have a PFYC model available to assess the need for further inventory.</li> <li>• A survey should be required in certain areas, based on the PFYC model.</li> </ul>			

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up <sup>2</sup>
Ground-disturbing activities resulting from mining, infrastructure, and development	Permanent destruction and loss of paleontological resources; deterioration through increased access, vandalism, or looting	PFYC values 3–5	Quantify the amount of PFYC values of 3–5 for areas that receive heavy user impacts (e.g., inner corridor, mining claims, gravel pits, proposed Alaska Liquefied Natural Gas, Alaska Stand Alone Pipeline, and Ambler projects).
Increased recreation opportunities and higher numbers of visitors	<ul style="list-style-type: none"> <li>• Permanent destruction or deterioration through increased access, vandalism, and theft</li> <li>• Opportunities for positive impacts through recreation opportunities focused on paleontological resources</li> </ul>	PFYC values 4–5	<p>Increased visitors can result in deterioration, vandalism, and theft of paleontological resources.</p> <p>Include positive impacts through interpretation and educational opportunities for paleontological resources.</p>
Climate change/weathering	Permanent destruction and loss of paleontological resources	PFYC values 4–5	Quantify the amount of PFYC values of 4–5 for areas susceptible to climate change (areas of permafrost, etc.). (No quantifiable data were available.)
Revocation of PLO 5150	Revocation of PLO 5150 may lead to land becoming State owned along the Dalton Highway.	PFYC values 4–5	Include the amount of PFYC 4-5 values in selected area and the potential loss of federally managed paleontological resources and locales.
Designations of ACECs	Positive impact by limiting allowable activities and reducing the chances resources may be disturbed and destroyed.	PFYC values 3–5	Include how many acres or percentage of 3–5 values would be protected by ACEC designations.

<sup>2</sup> The initial analysis will determine whether meaningful quantification is being generated for each action.

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b>                      All parts of the planning area where ground-disturbing activities will be permitted on BLM-managed land, except ACECs or other special designations that restrict ground-disturbing activities.</p> <p><b><u>CUMULATIVE</u></b>                      The planning area</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>• The contractor will develop surrogate PFYC data with the BLM regional paleontologist in lieu of waiting for a full review of 2018 PFYC data.</li> <li>• Paleontological resources are nonrenewable.</li> <li>• Many more resources and locales exist in the FO than are currently inventoried.</li> <li>• A survey will not be required in areas that have PFYC values of 1–2.</li> <li>• A survey will be required for PFYC values of 4–5.</li> <li>• Refer to Lindsey 1986 paleontological report (on file at the FO).</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• The PFYC will not be complete; the contractor will generate a list of geologic units and coordinate with the BLM regional paleontologist for provisional PFYC assignments.</li> <li>• Map showing PFYC values for the planning area</li> <li>• Map showing high PFYC values for areas that receive the heaviest impacts (inner corridor)</li> </ul>

**M.5.11 Visual Resources**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• The BLM is responsible for ensuring that the scenic values of public lands are considered when providing for various uses. BLM management of visual resources is guided by its VRM system.</li> <li>• FLPMA, 43 U.S.C. 1701 et. seq.             <ul style="list-style-type: none"> <li>○ Section 102(a)(8). States that “. . . the public lands be managed in a manner that will protect the quality of the . . . scenic . . . values . . .”</li> <li>○ Section 103(c). Identifies “scenic values” as one of the resources for which public land should be managed.</li> <li>○ Section 201(a). States that “The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including . . . scenic values) . . .”</li> <li>○ Section 505(a). Requires that “Each right-of-way shall contain terms and conditions which will . . . minimize damage to the scenic and esthetic values . . .”</li> </ul> </li> <li>• NEPA, 43 U.S.C. 4321 et. seq.             <ul style="list-style-type: none"> <li>○ Section 101(b). Requires measures be taken to “. . . assure for all American . . . esthetically pleasing surroundings . . .”</li> <li>○ Section 102. Requires agencies to “Utilize a systematic, interdisciplinary approach which will ensure the integrated use of . . . Environmental Design Arts in the planning and decision making...”</li> </ul> </li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• The BLM received comments on visual resources focused on selecting the appropriate VRM class and assessing the impact of roads and trails on visual resources. One comment recommended VRM Class I be applied to all proposed WSR corridors. Another noted the visual impacts of motorized and non-motorized trails are generally equal and trails should be considered a natural part of the landscape. A third comment stated the BLM needs to work closely with local communities when determining the VRM class for remote areas.</li> <li>• Internally generated scoping questions related to visual resources included:               <ul style="list-style-type: none"> <li>○ Are any of the visual values of a scarce nature?</li> <li>○ Are there locations where protection of visual resources should be a high priority?</li> <li>○ How can the BLM best reduce and mitigate impacts on visual resources?</li> <li>○ Given other resource uses, what VRM classes should be applied to establish land use allocation compatibility while protecting visual resource values?</li> </ul> </li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
VRM classes for each alternative	Changes to the existing visual resource values (visual resource inventory [VRI] classes)	VRI x VRM: Acres of VRI classes in VRM classes for each alternative	<p>Impacts on visual resources are assessed by comparing the VRI class of an area with the VRM class for the same area and assessing the potential for change to the existing visual resource values. VRM classes allowing changes that degrade visual resource values would result in, for example, changing an area from VRI Class II to VRI Class III in any future VRI.</p> <p>Include a table of VRI class acres compared with VRM class acres for each alternative.</p>

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> BLM-managed surface lands in the planning area</p> <p><b><u>CUMULATIVE</u></b> All lands in the planning area</p>

**Analysis Assumptions**

- Managing for a certain VRM class will cause that area to eventually inventory to that same VRI class.
- At the implementation level, appropriate design techniques will be applied to conform with the appropriate VRM class.
- Visual resources in the planning area will become more sensitive to visual change; in other words, they will increase in value over time.
- Visual resources will become increasingly important to residents of and visitors to the area.
- Residents of and visitors to the planning area are sensitive to changes in visual resources and to the overall scenic quality of the area that contributes to living conditions and the visitor experience.
- Activities that cause the most contrast and are the most noticeable to the viewer will have the greatest impact on scenic quality.
- As the number of acres of disturbance increases, the amount of impacts on visual resources also will increase.
- The severity of a visual impact depends on a variety of factors, including the size of a project (such as the area disturbed and physical size of structures); the location and design of structures, roads, and trails; and the overall visibility of disturbed areas and structures.
- The more protection that is associated with the management of other resources and special designations, the greater the benefit to the visual resources.
- VRM class objectives apply to all resources. Class objectives would be adhered to through BMPs, project design, avoidance, or mitigation.
- Due to the slow rate of recovery of vegetation and surface conditions, all impacts on visual resources from surface disturbances would be long term.
- The BLM VRM system visual resource contrast rating process (BLM Handbook H-8431-1) will be used for site-specific actions.

**GIS Maps and/or Calculations**

- VRM classes for each alternative
- VRI classes for each alternative

**M.5.12 Wilderness Characteristics**

**Resource-specific Legal and Regulatory Constraints**

- Section 201 of FLPMA
- BLM Manual 6310, Conducting Wilderness Characteristics Inventory on BLM Lands (BLM 2012a)
- BLM Manual 6320, Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process (BLM 2012b)

Resource Scoping Issues

Public Scoping

- The BLM should inventory LWC in the planning area and release the inventory to the public.
- The BLM received comments on the management and selection of LWC.
- The BLM received comments with general opposition to and support of LWC.
- The BLM received comments on the relationship of LWC to ANILCA.
- The BLM received comments on the activities on LWC, including building new structures; new structures should preserve or enhance wilderness characteristics.
- The BLM is not allowed to manage lands for the non-impairment standard because of exemptions in ANILCA Section 1320.
- LWC should not be managed more restrictively than ANILCA conservation units.
- When selecting lands to be managed for wilderness characteristics, the BLM needs to consider other factors that may affect manageability, such as land status, mineral ownership, valid existing rights, and access to nonfederal inholdings or adjacent lands.
- The BLM received comments on the access through BLM-managed lands to private land.
- The BLM received comments on the presence of LWC surrounding or adjacent to private lands.

Internal Scoping

- What areas should be managed to preserve wilderness characteristics? The decisions are necessary to accomplish this.
- Conditions of use are necessary to avoid or reduce impacts on wilderness characteristics.



Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
LWC	Protection or diminishment of wilderness characteristics	<p>Acres of LWC managed to protect, or not managed to protect, those characteristics as a priority over other multiple uses</p> <p>The indicator of impacts on LWC is degradation of wilderness characteristics to a level that their size, naturalness, opportunities for solitude or primitive and unconfined recreation, and supplemental values would no longer be present in the specific area:</p> <ul style="list-style-type: none"> <li>• Roadless areas of sufficient size—Impacts would result from building roads. Consider the Alaska Instruction Memorandum with exceptions for motorized use.</li> <li>• Naturalness (apparent naturalness, not ecological naturalness)—Impacts would result from developing facilities or manipulating vegetation, which make the area appear less natural.</li> <li>• Opportunities for solitude or primitive and unconfined recreation—Impacts would result from increases in visitation, development of facilities, increases in motorized or mechanical transport routes, or increases in management constraints on primitive recreational use; examples include placing restrictions on</li> </ul>	<p>Alternative B would manage LWC to protect those characteristics as a priority over other multiple uses.</p> <p>Alternatives A, C1, C2, and D would not manage LWC to protect those characteristics over other multiple uses.</p> <p>Quantitative impacts will be shown in a table (Acreage Impacts on LWC), which will display the acres of LWC that overlap key allocations that could either enhance or diminish wilderness characteristics, regardless of whether they would be managed for their protection. The “Acreage Impacts on LWC” table in the Environmental Consequences chapter will include rows for each of the following rows of this table.</p>

M. Approach and Summary to the Environmental Analysis

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
(see above)	(see above)	campfires, limiting camping to designated sites, and closing areas to camping. <ul style="list-style-type: none"> <li>Supplemental values—Impacts would result from any action that degrades the inventoried values.</li> </ul>	(see above)
Forestry: commercial timber development	Protection of wilderness characteristics	Acres of LWC in areas closed to commercial timber development	Closing areas limits activities that can diminish the appearance of naturalness.
Lands and realty: ROW avoidance and exclusion	ROW avoidance and exclusion influence changes to wilderness characteristics.	Acres of LWC in areas with ROW avoidance and exclusion	ROW exclusion areas prohibit, and ROW avoidance areas limit, facilities that make an area appear less natural, thereby preserving the appearance of naturalness. In ROW avoidance areas, authorizing access roads that bisect units so that they are no longer considered to be in a roadless area of adequate size would eliminate wilderness characteristics of the entire unit.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Lands and realty: administrative utility corridor designation	Utility corridors influence changes to wilderness characteristics.	Acres of LWC in utility corridors	Utility corridors would allow activities that can diminish the appearance of naturalness or can bisect units so that they are no longer considered to be in a roadless area of adequate size, which would eliminate wilderness characteristics of the entire unit. Within corridors where utilities are collocated, if they overlap the LWC unit, then they would affect characteristics; but, they would protect characteristics outside the corridor where the utility would not be placed.
Lands and realty: withdrawal	Protection of wilderness characteristics	Acres of LWC in withdrawal	Withdrawals limit activities that can diminish the appearance of naturalness.
Eligible or suitable WSR segments	Protection of wilderness characteristics	Acres of LWC in eligible or suitable segments/corridors	Protection of Outstandingly Remarkable Values (ORVs) would indirectly protect the naturalness of LWC where they overlap the WSR study corridor.
Locatable minerals (have GIS show by high, moderate, and low potential)	Protection of wilderness characteristics	Acres of LWC in areas withdrawn from locatable mineral entry and areas recommended for withdrawal from locatable mineral entry	Withdrawn areas and areas recommended for withdrawal limit activities that can diminish the appearance of naturalness.
Mineral materials/salable minerals (consider higher likelihood areas)	Protection of wilderness characteristics	Acres of LWC in areas closed to mineral materials	Closing areas limits activities that can diminish the appearance of naturalness.
Recreation and visitor services: SRMAs and ERMAs	SRMAs and ERMAs influence changes to wilderness characteristics.	Acres of LWC in SRMAs and ERMAs	SRMA and ERMA management can affect opportunities for solitude or primitive and unconfined recreation.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Travel, transportation management, and access	OHV class influences changes to wilderness characteristics.	Acres of LWC in OHV use areas	Building roads would affect the indicator of roadless areas of sufficient size; the perceived impact on naturalness, solitude, and opportunities for primitive recreation could be diminished during the time of use.
Visual resources	VRM class influences changes to wilderness characteristics.	Acres of LWC in VRM classes	Different VRM classes can limit activities that can diminish the appearance of naturalness.
ACECs	Protection of wilderness characteristics	Acres of LWC in ACECs	ACECs may provide complementary management and protection of wilderness characteristics.
WSAs	Protection of wilderness characteristics	Acres of LWC in WSAs	WSAs provide complementary management and protection of wilderness characteristics.

Impact Analysis Area
<p><b>DIRECT/INDIRECT</b> All BLM-managed lands in the planning area</p> <p><b>CUMULATIVE</b> All lands in the planning area, including the CAMA WSA</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>Management and activities outside of LWC would not affect those characteristics, so long as they are not pervasive and omnipresent.</li> <li>Any proposed action in an area to be managed to protect wilderness characteristics as a priority over other uses would be processed in accordance with the policies stated in BLM Manual 6320, Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process (BLM 2012b).</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>LWCs intersected with areas open and closed to resource uses, as listed in the "Impact Indicator(s) (include unit of measure)" column in the third table above</li> </ul>

**M.5.13 Forest and Woodland Products**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>Applicable federal and State guidance</li> <li>Alaska State Forest Practices Act</li> <li>ANILCA</li> </ul>

Resource Scoping Issues
<p>The following issues were identified in public scoping related to forestry and woodland products:</p> <ul style="list-style-type: none"> <li>• Desire of local communities for woody biomass use, an inventory of areas suitable for biomass, and potential impacts of biomass use on other resources</li> <li>• Harvest of wood from BLM-managed lands for local communities (subsistence use for firewood), specifically Hughes, Koyukuk Village, Galena, and Lake Minchumina</li> <li>• Authorization of commercial berry picking</li> <li>• Impacts of travel management decisions (i.e., closures to motorized access) on the ability to access forest and woodland products</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Water</b> (See Water, Fish, Riparian Vegetation, and Soils Sections):</p> <ul style="list-style-type: none"> <li>• Restrictions on surface-disturbing activities in 100-year floodplains (require erosion control plan)</li> <li>• Restrictions on surface-disturbing activities in lentic areas (0.25 miles)</li> <li>• Restriction on surface-disturbing activities around hot springs (160 acres)</li> <li>• Restrictions on disturbance in rehabilitation areas (Level 3 functionality)</li> <li>• Potential restrictions on future surface-disturbing activities for areas not meeting functioning-at-risk thresholds following rehabilitation</li> <li>• Restrictions on timber harvest and non-subsistence collection of vegetation within 50 to 100 feet of a waterbody</li> </ul>	<p>Limiting surface-disturbing activities or prohibiting harvest in specific areas for protection of other resources could limit the acres available for harvest and/or result in restrictions on the method, timing, or location of harvest. Restrictions on surface-disturbing activities following rehabilitation may result in future site-specific limitations on harvest.</p>	<p>Forested acres that are available and accessible for timber harvest and vegetation removal</p>	<p>Describe how management actions would affect areas available for timber harvest.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Soils</b></p> <ul style="list-style-type: none"> <li>• Prohibit timber harvest on sensitive soils in high-value watersheds (with exceptions)</li> <li>• For surface-disturbing activities greater than 5 acres, a soil survey would be required.</li> <li>• Restrictions on timber harvest and collection of non-subsistence live vegetation on sensitive soils</li> </ul>	<p>Soil management would result in site-specific limits on the area in which the harvest would occur.</p>	<p>Forested acres that are available and accessible for timber harvest and vegetation removal</p>	<p>Describe how management actions would limit acres available for harvest.</p>
<p><b>Wildlife</b> Seasonal restrictions on noise, travel, and disturbance in Dall sheep habitat (Dall sheep habitat area, Dall sheep movement corridor, and Dall sheep study area)</p>	<p>Wildlife management decisions would include seasonal limitations on disturbance and noise, which would result in seasonal, site-specific limits on forest product harvest.</p>	<p>Forested acres that are available and accessible for harvest</p>	<p>Describe how wildlife management would affect acres available for harvest of forest products.</p>
<p><b>Recreation and Visitor Services</b> Restrictions on surface-disturbing activities within 2 miles of recreation and visitor services sites</p>	<p>Recreation and visitor services management decisions would limit the area in which the harvest would occur.</p>	<p>Forested acres that are available and accessible for harvest</p>	<p>Describe how stipulations around surface-disturbing activities would affect acres available for harvest of forest products.</p>
<p><b>LWC</b> Management of LWC to protect those characteristics as a priority over other multiple uses</p>	<p>Managing LWC to protect those characteristics as a priority over other uses could result in site-specific limits on timber harvest and vegetation collection.</p>	<p>Forested acres that are available and accessible for timber harvest and vegetation removal</p>	<p>Describe how management actions would limit acres available for harvest. (Note: review wilderness guidelines for specific constraints)</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>WSR</b> Close wild segments to commercial timber development; prohibit non-subsistence collection of live vegetation (subsistence use still requires a permit)</p>	<p>Restrictions along WSRs would result in site-specific limits on the ability to harvest; however, WSRs north of the Brooks Range would not be affected because there are no woody forest products there.</p>	<p>Forested acres that are available and accessible for timber harvest and vegetation removal</p>	<p>Describe how management actions would limit acres available for harvest. Note areas where restrictions would have no practical impact.</p>
<p><b>VRM</b> Manage specific areas for protection of VRM class</p>	<p>Although VRM class restrictions may limit vegetation removal, impacts in the planning area would be limited and will not be carried forward. Generally, VRM Class I areas, such as the CAMA WSA and Denali National Park, would not be areas of commercial timber harvest.</p>	<p>N/A</p>	<p>N/A</p>
<p><b>WSA</b> The CAMA closed to commercial timber harvest</p>	<p>WSA management decisions would limit the area in which the harvest would occur.</p>	<p>Forested acres that are available and accessible for timber harvest and vegetation removal</p>	<p>Describe how management actions would limit acres available for harvest.</p>
<p><b>Vegetation</b></p> <ul style="list-style-type: none"> <li>• BMPs must be followed to prevent the introduction and spread of NNIS.</li> <li>• Vegetation management may be used to remedy or restore forest health damage.</li> <li>• Vegetation and special status plant surveys are required in known habitat for special status plant species.</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation management to prevent the spread of NNIS could result in limits or increased costs for timber harvest.</li> <li>• Use of vegetation management to restore forest health could improve or maintain vegetation types important for timber harvest or vegetation removal in the long term.</li> <li>• Limiting or prohibiting harvest in specific areas for protection of other resources could limit the acres available for harvest and/or result in restrictions on the method, timing, or location of harvest.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased cost for forest products (note that this is primarily a socioeconomic issue and environmental justice issue, as this generally wouldn't affect most people in the planning area and may not be carried forward in the Forestry section.)</li> <li>• Changes to vegetation cover types for species with timber harvest or vegetation removal use value</li> <li>• Forested acres that are available and accessible for timber harvest and vegetation removal</li> </ul>	<p>Describe how vegetation management for forest health could result in the long-term maintenance or improvement of forest product resources.</p> <p>Discuss the potential for site-specific limits on harvest activities.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Forestry</b></p> <ul style="list-style-type: none"> <li>• Any commercial harvest within the 100-year floodplain must demonstrate that it would meet aquatic, riparian, and floodplain objectives.</li> <li>• Unless specifically authorized, no green timber may be cut within 300 feet of a highway or public road.</li> <li>• If monitoring indicates any intensive firewood use areas, where demand may exceed supply, then develop a forestry activity management plan.</li> <li>• Permit the use of timber resources, such as firewood and house logs, on a case-by-case basis.</li> <li>• Prohibitions on timber harvest and vegetation removal in specific portions of the planning area (i.e., ACECs)</li> </ul>	<p>Woodland harvest management decisions would limit the area in which the harvest would occur. Restrictions to maintain a sustainable harvest level would promote the long-term maintenance of the resource.</p>	<p>Forested acres that are available and accessible for timber harvest and vegetation removal</p>	<p>Describe how management actions would limit acres available for harvest but would help maintain resources in the long term.</p>



Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Wildland Fire</b> Management actions that would prioritize fuels treatments to:</p> <ul style="list-style-type: none"> <li>• Reduce the risk to human life and inhabited property; the highest priority for fuel treatments would be those communities surrounded by hazardous fuels.</li> <li>• Reduce the risk and cost of wildland fire suppression in areas of hazardous fuels buildup</li> <li>• Achieve other resource objectives, such as habitat needs</li> </ul>	<p>Fuels treatments to minimize fire risk could result in site-specific changes in forest products; in the long term, they would help maintain vegetation for timber harvest and vegetation collection by reducing the potential for large-scale, high-intensity fire.</p>	<p>Changes to vegetation cover types for species with timber harvest or vegetation removal use value</p>	<p>Describe short- and long-term impacts from fuels treatment activities on vegetation important for timber harvest and vegetation collection.</p>
<p><b>Lands and Realty</b> Management of lands to meet public needs for use authorizations, such as ROWs.</p>	<p>ROWs created through forests may increase the amount of forest products created or available temporarily.</p>	<p>Forested acres that are available and accessible for timber harvest and vegetation removal</p>	<p>Discuss temporary changes in forestry products available through large ROW development projects where vegetation clearing would occur.</p>
<p><b>Travel Management</b></p> <ul style="list-style-type: none"> <li>• Restrictions on summer OHV use around ACECs, hot springs, and the Dalton Highway and Dalton Corridor travel management area (TMA)</li> <li>• Restrictions on winter OHV use in certain TMAs</li> </ul>	<p>Limiting or prohibiting OHV use may limit access to forest and woodland products.</p>	<p>Forested acres that are available and accessible for timber harvest and vegetation collection</p>	<p>Describe how management actions could limit access to forest products.</p>

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> BLM-managed lands in the planning area</p> <p><b><u>CUMULATIVE</u></b> Planning area</p> <ul style="list-style-type: none"> <li>Consider inclusion of Boreal Ecosystems Analysis for Conservation Networks Benchmark and landscape connectivity corridors in the discussion. The Boreal Ecosystems Analysis for Conservation Networks and Landscape Conservation Cooperatives would be addressed in a separate section to be referenced here.</li> </ul>

Analysis Assumptions
<ul style="list-style-type: none"> <li>Management actions related to protecting resources, such as water quality, riparian areas, soils, fisheries, wildlife, special status plants, and ACECs, can affect the number of acres and the output of forest products.</li> <li>Commercial timber harvest removes vegetation and therefore would be considered a surface-disturbing activity and subject to restrictions on surface-disturbing activities. Vegetation removal (e.g., collection of mushrooms and berries) would not be subject to these restrictions. Timber harvest for subsistence use would also be excepted from these restrictions, subject to permit requirements.</li> <li>Forest products that are available for harvest may be affected by factors outside BLM management decisions, including but not limited to, wildland fires and changes in vegetation due to shifts in vegetation cover type or precipitation levels.</li> <li>The levels of demand for forest products will remain relatively stable over the life of the RMP and consist primarily of subsistence use and sales associated with areas cleared for authorized ROWs.</li> <li>The BLM will continue to issue permits for the harvesting of forest products under sustained yields.</li> <li>There would be negligible impacts from the following resources: energy and mineral development, air quality management, hazardous materials, and recreation.</li> </ul>

GIS Maps and/or Calculations
<p><b>Discussed with the BLM:</b></p> <ul style="list-style-type: none"> <li>Acres of human activity areas (defined by areas within one-half mile of communities, Native allotments, rivers, roads, and trail access points) overlaid with restrictions on individual surface-disturbing activities (e.g., restrictions in 100-year floodplains, hot springs, and WSAs); this approach is suggested because the majority of forestry activities are limited by access and distance from communities rather than forestry resources.</li> <li>The RMP does not contain a forest management layer (i.e., specific area defined for harvest). White spruce vegetation would be mapped in the Vegetation section of the RMP and could be referenced in this section.</li> </ul>

**M.5.14 Lands and Realty and Utility Corridor**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>23 U.S.C. 107 and 317—ROW and Mineral Materials for Federal highway systems</li> <li>PL0 5150—Established Utility Corridor and made lands unavailable for selection through the Alaska Statehood Act by the State of Alaska</li> <li>ANILCA Section 1107—Defines how ROWs are to be managed. Used compatibly with conservation system, recreation area, or National Conservation Area. Requirements for restoration. Requirements that use of ROW will not violate air and water quality standards. Requirements to prevent damage to the environment.</li> <li>Alaska Statehood Act of 1958—Allows the State to select 103 million acres of federal land for State ownership</li> <li>FLPMA Section 503, Rights-of-Way Corridors</li> <li>BLM Land Use Planning Handbook</li> <li>1991 Utility Corridor RMP/Final EIS ROD</li> </ul>

Resource Scoping Issues
<p><b>Lands and Realty</b></p> <ul style="list-style-type: none"> <li>• If the BLM consents to a highway easement deed for materials, that site is no longer available to supply materials for any other purposes, such as natural gas pipelines. The material site moves from minerals oversight to realty.</li> <li>• Should the Alaska Native Claims Settlement Act of 1971 (ANCSA) 17(d)(1) withdrawals be retained, modified, or revoked?</li> <li>• Which lands should the BLM make available for sale or exchange?</li> <li>• Are there any lands the BLM should consider acquiring?</li> <li>• Where are the existing and potential ROW corridors?</li> <li>• Are there any areas that should be ROW avoidance or exclusion areas?</li> <li>• What terms and conditions or BMPs should apply to ROW corridors or land use permits?</li> </ul> <p><b>Utility Corridor</b></p> <ul style="list-style-type: none"> <li>• Should the BLM recommend modification of PLO 5150 to allow conveyance of lands in the Utility Corridor to the State?</li> <li>• If PLO 5150 is modified, what areas and how many acres of State top-filed lands should be included?</li> <li>• Where are the existing and potential ROW corridors?</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<b>Lands and Realty</b>			
Consent of highway easement deed removes interest in land or mineral materials from other public uses	Limiting materials to federal aid highway purposes only, eliminating access to those locations, and inhibiting other proponents' access to public resources	Availability or accessibility of mineral materials	Include introductory paragraph about the current use of mineral materials along federal aid highways and foreseeable other uses. Include a table that compares the acres of existing material sites with currently proposed future uses.
Revocation of any withdrawals that preclude State selection	See 43 CFR 2627.4(b). The lands that are top-filed become valid selections and 1) are removed from further federal mineral entry and 2) preclude priority subsistence access.	Acreage top-filed with State overlapped with acreage proposed for revocation of withdrawal	Discuss how lands top-filed by the State and subject to withdrawal would attach as selections for the State under the revocation of withdrawals.
ANCSA 17(d)(1) withdrawals	Open lands to all forms of appropriation under public laws	Acreage withdrawn under each alternative	Discuss potential appropriations under public laws for open lands.
Lands closed or open to leasing sales	Changing land status; overlaps with minerals	Lands and acreage closed and open under each alternative	Discuss the direct impacts resulting from potential leasing purposes.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
PLO withdrawals	Impacts on ROW access to and from recreation and subsistence areas  Open lands to mineral leasing	Acreage and location of land revoked under each alternative	Discuss lands affected by PLOs and describe withdrawals.
ROW exclusion and avoidance areas	Impacts on access to lands	Acreage of land for exclusion and avoidance under each alternative	Discuss actions and acreage up for exclusion or avoidance. Discuss potential impacts on prevention to access.
Landscape connectivity corridors	Avoidance zone for any activities that disrupt habitat connectivity, cause habitat fragmentation, or present barriers or deterrents to wildlife movement. Such activities would be authorized in the corridors only when no other feasible alternative exists.	Acres of landscape connectivity corridor	Discuss acreage where proponents of surface-disturbing activities would have to consider other feasible alternatives.
Development node actions	Impacts on infrastructure collocation and potential land transfers	Development node criteria	Identify development node criteria and provide a description of areas designated as potential development nodes under each alternative. Discuss how development may impede or support infrastructure collocation and land tenure.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<b>Utility Corridors</b>			
<p>Dalton Utility Corridor designation and the modification of PLO 5150</p> <p>Utility Corridor Proposed Action 12</p> <ul style="list-style-type: none"> <li>Encourage exchanges for federal ownership for multiple use management area</li> <li>Alternatives B–D: Acquire private parcels in Zone 1 lands</li> </ul>	<p>Lands in the Dalton Utility Corridor are top-filed by the State. Impacts on the Utility Corridor include reducing the size of Utility Corridor acreage and conveyance of lands in the corridor out of federal ownership.</p>	<p>Acres of Dalton inner and outer utility corridor</p> <p>Acreage of Utility Corridor top-filed by the State</p>	<p>Include introductory paragraph on the types of actions that are included in the direct loss of BLM-managed federal lands in the Utility Corridor. Discuss the State’s top-filed lands and how many would be transferred. Discuss proposed acreage to be transferred under each alternative, and location of that transfer. Discuss whether modifying PLO 5150 would prevent access to subsistence areas used by the city of Wiseman, or if Utility Corridor Proposed Action 12 would allow that.</p>
<p>Additional Utility Corridor designations</p>	<p>Management of utility corridors would provide the BLM and public with greater certainty on future infrastructure development. Also, it would protect the riverine environment connecting Arctic National Park to Colville River by collocating infrastructure.</p>	<p>Acres of designated utility corridors</p>	<p>Discuss potential opportunities for infrastructure collocation associated with corridor designations; overlay with ROW open, exclusion, and avoidance areas.</p>

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> BLM-managed lands in the planning area</p> <p><b><u>CUMULATIVE</u></b> The planning area</p> <ul style="list-style-type: none"> <li>Adaptive management: Within benchmarks, discretionary land uses would not be authorized if they would result in loss of hydrologic connectivity, size suitability, or reduction of intactness below 85 percent (see SOP BENCHMARK-1 in <b>Appendix F</b>). Thus, acres within benchmarks would become unavailable for discretionary realty actions if cumulative impacts reach those thresholds.</li> <li>Adaptive management: If long-term monitoring indicates that discretionary actions are causing a loss of the ecological representation value then discretionary actions would not be authorized until the trend reversed (see SOP BENCHMARK-2 in <b>Appendix F</b>). Thus, acres within benchmarks would become unavailable for discretionary realty actions if cumulative impacts reach those thresholds.</li> </ul>

Analysis Assumptions
<ul style="list-style-type: none"> <li>• There would be a partial or full withdrawal of lands under PLO 5150 and attachment of selection on lands top-filed by the State.</li> <li>• Designated utility corridors would be the preferred locations for future infrastructure development.</li> <li>• Continuous utility corridors are more effective than discontinuous corridors at accommodating new ROW development.</li> <li>• There would be no demand for wind and solar energy ROWs in the decision area during the life of the plan. Localized renewable energy development could occur in the planning area, but would not be on BLM-managed lands and would therefore not require BLM ROW authorization.</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• ANCSA land withdrawals</li> <li>• Calculations on potential PLO withdrawals</li> <li>• Maps of lands top-filed by the State of Alaska</li> <li>• ROW exclusion and avoidance areas by alternative: total and by category (100-year floodplain lands, caribou ranges, bluffs, pingos, asbestos sites, ACECs, hot springs, wetlands, lentic areas, slopes greater than 35 percent, alpine vegetation, lichen, Dalton Corridor BCA, Dall sheep movement corridor, Dall sheep study area, Dall sheep habitat area, etc.)</li> <li>• Verify acreage for land disposal</li> <li>• Acreage of Ambler Road and the road to Umiat by alternative</li> <li>• Miles of publicly available routes along Ambler Road and the road to Umiat</li> <li>• Acreage of PLO 5150 (total, inner corridor, and outer corridor)</li> <li>• Acreage of land top-filed by the State (acreage exclusively within the inner corridor and acreage exclusively within the outer corridor)</li> <li>• Acreage of ACECs open and closed for leasing sales</li> <li>• Acres of benchmarks open to discretionary realty actions that could potentially be closed under an adaptive management strategy</li> <li>• Acres in connectivity corridors that would be avoidance zones for activities that disrupt connectivity</li> </ul>

**M.5.15 Energy and Minerals**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• Interim conveyed lands and Native-selected lands</li> <li>• General Mining Act of 1872</li> <li>• Surface Mining Control and Reclamation Act</li> <li>• Hardrock Mining and Reclamation Act of 2009</li> <li>• Federal Mine Safety and Health Act of 1977</li> <li>• Mineral Leasing Act of 1920</li> <li>• Geothermal Steam Act of 1970</li> <li>• Mineral Materials Sale Act of 1947</li> <li>• 43 CFR 2(c)</li> <li>• ANCSA</li> <li>• ANILCA</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• Which lands should be open to mining/resource extraction?</li> <li>• Which lands should be closed to mining/resource extraction?</li> <li>• What terms, conditions, or other special considerations are needed to protect other resource values while conducting activities under the operation of the mining/resource extraction laws?</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p>Lands withdrawn or recommended for withdrawal from locatable mineral entry</p> <p>PLO 5150 is being withdrawn for all alternatives; the numbers are being revised.</p>	<p>Reduction in the acreage and potential production of locatable minerals</p>	<p>Acres of federal mineral estate withdrawn from locatable mineral entry</p>	<p>Include a table that compares the acres open or recommended for withdrawal from locatable mineral entry across the alternatives.</p> <p>Consider acres withdrawn by potential level.</p>
<p>Lands closed or restricted to fluid mineral leasing</p>	<p>Reduction in the acreage and production of fluid minerals and reduced possibility of discovery of new fluid mineral resources</p>	<p>Acres of federal mineral estate open, with controlled surface use, with timing limitations, with NSO, and closed from fluid mineral leasing</p>	<p>Discuss acreage closed, restricted, and open but note the low potential for development regardless of open acreage. Focus on areas with identified potential.</p> <p>Mention that there is no geothermal development expected.</p>
<p>Exclusion areas for location of pipelines and roads</p>	<p>Reduction in routing options for pipeline placement and the increase in pipeline cost</p> <p>ANILCA Title XI has a provision that conservation system units must consider transportation and utility lines. The BLM may not be able to implement ROW exclusions in many areas.</p>	<ul style="list-style-type: none"> <li>• Acres of pipeline ROW exclusions</li> <li>• Forcing ROWs onto conservation system units</li> </ul>	<p>ANILCA Title XI allows utility and transportation ROWs on public lands; this may supersede exclusions. Most development is expected in the inner corridor.</p> <p>Check for linear features closed to ROWs that could force long reroutes. Consider proposed new road corridors.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Lands closed to salable mineral (mineral materials) disposal	Reduction in the acreage and potential production of mineral materials	Acres of federal lands open or closed to mineral materials disposal	Areas closed to disposal could result in less development of mineral materials resources. Acreage may change under all alternatives (including Alternative A) due to PLO withdrawals changing.  Include primary activity in the Dalton Utility Corridor and the potential for additional activity in Ambler Road, Chandler Road, and road to Umiat corridors. Development nodes should be entirely open to salable disposal.
Lands closed to non-energy solid mineral leasing	Reduction in the acreage and potential production of non-energy leasable minerals	Acres of federal lands closed to non-energy solid mineral leasing	There is a very low potential; an in-depth discussion is not needed.

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> The planning area</p> <p><b><u>CUMULATIVE</u></b></p> <ul style="list-style-type: none"> <li>• Fluid minerals—The planning area and North Slope developments (fluid mineral development is unlikely to occur in the planning area while proven reserves exist in the North Slope; development north of the planning area is likely tied to the continued operation of TAPS)</li> <li>• Mineral materials—The planning area only (mineral materials can be transported about 10 miles before it becomes more cost effective to build a new pit)</li> <li>• Locatables—All of mainland Alaska (displaced mining if large areas are closed or opened)</li> <li>• Non-energy leasables—No projected activity means no cumulative impacts.</li> </ul>

Analysis Assumptions
<ul style="list-style-type: none"> <li>• Areas recommended for withdrawal in the RMP will be withdrawn.</li> <li>• Areas previously recommended for withdrawal but not withdrawn will remain open to locatable mineral entry.</li> <li>• Future coal development would have to go through the coal screening process and RMP amendment.</li> <li>• Lands previously recommended for withdrawal from locatable mineral entry but were not withdrawn are not considered to be withdrawn for the purposes of this analysis.</li> </ul>



GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• Acres withdrawn and recommended for withdrawal/open by potential level for locatable minerals, including the percentage of the decision area and planning area acres closed, controlled surface use, timing limitations, and NSO</li> <li>• Open by potential level for fluid minerals including the percentage of the decision area and planning area</li> <li>• Acres closed and open for mineral materials, including the percentage of the decision area and planning area, and in the inner corridor and other top ROW corridors (need GIS to identify top ROW corridors)</li> <li>• Acres of ROWs exclusion areas that are open to mineral materials</li> </ul>

**M.5.16 Recreation and Visitor Services**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• ANILCA 1323(b) grants access to non-federally owned land surrounded by BLM-managed land to secure to the owner “reasonable use and enjoyment,” subject to terms and conditions and the rules and regulations applicable to access across the public lands.</li> <li>• BLM Recreation Handbook (H-8320-1)</li> <li>• BLM Land Use Planning Handbook</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• The BLM received comments about conflicts between subsistence, local, and nonlocal hunters regarding the use of aircraft, competition for game, and degradation of the user experience.</li> <li>• The BLM received comments about conflicting development needs along the Dalton Highway.</li> <li>• Increased recreation use at sites like the Arctic Circle could negatively affect visitor experiences and outcomes.</li> <li>• What areas are important for recreation?</li> <li>• What types of recreation opportunities should the BLM provide?</li> <li>• Are more recreational facilities needed and where should they be located?</li> <li>• Does designating recreation management areas (RMAs) support desired recreation outcomes and experiences?</li> <li>• Should RMAs, or other areas, be available for motorized forms of recreation?</li> <li>• How can impacts from recreation be minimized?</li> <li>• What are the seasonal use impacts on current infrastructure and the capacity of the BLM to manage them?</li> <li>• How can the BLM best manage Special Recreation Permits?</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Utility Corridor designations	If corridors with travel routes would be open to the public, corridor designations would support motorized recreation and access along roadway corridors; they could inhibit, preclude, or decrease the quality of some forms of recreation. Travel routes along utility corridors provide unique recreational experiences for motorized travel in the planning area.	Acres of designated corridors by alternative	<p>Corridor designations would support motorized access to recreation opportunities but increase crowding, which would reduce the quality of those experiences.</p> <p>Administrative designations for Ambler Road and the road to Umiat, under various alternatives, would overlay on top of SRMAs.</p> <p>Routes within corridors would be open to the public.</p>
Routes (snow and industrial) proposals in Utility Corridor designations	Publicly available routes in utility and transportation corridors would facilitate access to BLM-managed lands.	<ul style="list-style-type: none"> <li>• Impacts on established remote recreation lodges</li> <li>• Increased use of BLM-managed lands by recreation users (i.e., skiers and fat tire bikes for winter recreation use)</li> </ul>	<p>Discuss recreation in the area related to game availability. Discuss how road development may interfere with game availability.</p> <p>Discuss how road development may improve access conditions for other recreationists.</p>
Transportation corridors (Ambler and Umiat)	Acres designated as Dalton Highway, Ambler Road, and Umiat	Acreage/mileage of transportation corridors	<p>Mostly discuss cumulative effects; however, roads supporting mineral development would not be publicly available for use but would be seasonally available for subsistence use.</p> <p>Furthermore, the transportation corridor designation is an action on lands and realty, but the availability of the transportation corridor opens new recreation opportunities.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Restrictions on OHV use	OHV restrictions, including seasonal restrictions, that limit access to recreation opportunities or preclude OHV recreation	Acreage where OHV access and use are precluded or limited	Discuss OHV and TMA restrictions on OHV usage. Discuss how they may increase or decrease access to certain recreational activities and how they could affect the quality of some activities. Also discuss recreational usage of OHVs.
SRMAs and ERMAs with associated VRM classification	<ul style="list-style-type: none"> <li>• Types of recreation usage</li> <li>• User conflict</li> <li>• Preclusion to access</li> <li>• Quality of recreational experiences</li> </ul>	<ul style="list-style-type: none"> <li>• Areas designated as SRMAs or ERMAs</li> <li>• VRM classification of designed RMAs</li> </ul>	<p>Discuss classification of each SRMA and ERMA under each alternative.</p> <p>Include a paragraph discussion on how VRM classifications can lead to improved or reduced experiences, or prevent or improve access for recreational usage or recreational quality.</p>
Aircraft use restrictions	<ul style="list-style-type: none"> <li>• Minimum altitude requirements may prevent certain recreational activities, such as wildlife viewing.</li> <li>• Aircraft use restrictions may affect small aircraft usage and unmanned aircraft systems.</li> </ul>	Acreage of ACECs under each alternative where aircraft flight restrictions would apply	<p>Include a paragraph discussion on the types of aircraft recreational uses (both manned and unmanned aircraft systems). Discuss what recreational uses exist during altitude restriction time limits and how they would be affected.</p> <p>Discuss management plan implications on unmanned aircraft system impacts on recreationists.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
BCAs	<ul style="list-style-type: none"> <li>Precluding access for certain types of recreation while enhancing the experiences of others through ROW designations and VRM</li> <li>Restricting the amount of time spent in BCAs could reduce opportunities and increase or decrease the potential for user conflicts.</li> </ul>	<ul style="list-style-type: none"> <li>Acres of BCAs</li> <li>Day stay limitation lengths</li> </ul>	Discuss recreation in BCAs and how different management actions under each alternative would affect recreation in the area, either by precluding some types of recreation, enhancing opportunities for others, or increasing or decreasing the potential for user conflicts.
Areas identified as LWC	<ul style="list-style-type: none"> <li>Precluding or preventing access and reducing time spent recreating in the area</li> <li>Limitations of activities that would conflict with recreation</li> <li>Enhancing other recreation experiences and setting</li> </ul>	Acres managed as LWC and associated management (such as using restrictions and limitations, and the types of recreation allowed and banned)	Discuss the types of recreation occurring on LWC and how management alternatives would improve or diminish the quality of recreation in these areas.
Infrastructure and minerals development	Increase or decrease in the potential for conflicts, especially with dispersed recreation	<ul style="list-style-type: none"> <li>Acres designated as ROW avoidance or exclusion areas</li> <li>Acres open or closed for mineral leasing and development (leasable, locatable, and mineral materials)</li> </ul>	Discuss the potential impacts on recreation from ROW and mineral development.
Forest resources	<ul style="list-style-type: none"> <li>Increase or decrease in the potential for commercial timber development and woodland harvest for biomass energy plants to conflict with recreation</li> <li>Change in the recreation setting (short and long term) from timber development and woodland harvest/biomass development activity</li> </ul>	Acres available for commercial timber development and woodland harvest	Discuss impacts on recreation opportunities and setting from commercial timber development and woodland harvest.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
ACEC designations	<ul style="list-style-type: none"> <li>Increase or decrease in opportunities for certain recreational activities</li> <li>Change in the level of conflict with uses</li> <li>Increase or decrease in the quality of the recreation setting and opportunities</li> </ul>	Acres of ACECs	Discuss impacts of ACEC designations on recreation opportunities and setting.
WSR designations	Change in the availability and quality of water-based and water-related recreation	Miles of designated WSRs, including segments with recreational ORVs	Discuss the potential for WSR designation or lack thereof to affect the quality of recreation, especially fishing, kayaking, and sight-seeing.
Water, fish, riparian, vegetation, and soils management	<ul style="list-style-type: none"> <li>Changes to the recreation setting from the management of resources that directly or indirectly contribute to that setting</li> <li>Increase or decrease in the number of opportunities for certain types of recreation</li> </ul>	Acres and locations, such as near riparian areas or hot springs, where surface disturbance would be precluded	<p>Discuss how managing resources would directly and indirectly affect the recreation setting.</p> <p>Discuss how resource protections would preclude some recreational activities while allowing others; discuss the potential for conflicts in these areas.</p>

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> The decision area (includes the Dalton Utility Corridor)</p> <p><b><u>CUMULATIVE</u></b> The planning area</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>Assume if there is a partial or full revocation of PLO 5150 that priority selected land would be transferred to the State.</li> <li>Current recreation in the planning area will continue.</li> <li>The potential for user interactions between all types of users will increase with increasing use.</li> <li>Increasing the access to BLM-managed lands would increase the demand for recreation on those lands.</li> <li>Restrictions on aircraft usage would affect recreation; however, the Federal Aviation Administration manages airspace, and regulations are outside the BLM's control.</li> <li>Initial State selections have included all wayside and campgrounds currently managed by the BLM.</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• Acres of RMAs by alternative</li> <li>• Acres of RMAs by alternative, with overlapping acreages of other land use allocations, as listed in the four-column table above</li> <li>• Acres of BCAs by alternative</li> </ul>

**M.5.17 Travel Management**

Resource-specific Legal and Regulatory Constraints
<p>ANILCA provides specific guidance on access for:</p> <ul style="list-style-type: none"> <li>• The use of snowmobiles, motorboats, and other means of surface transportation traditionally used for subsistence purposes by local residents on all federal public lands (Section 811). See ANILCA Section 102(3) for the definition of “public lands.”</li> <li>• The use of snowmobiles, motorboats, airplanes, and non-motorized surface transportation methods for traditional activities on conservation system units, national recreation areas, and national conservation areas (Section 1110).</li> <li>• ANCSA 17(b) easements—Access to public lands from most villages is provided by Section 17(b) easements reserved on or across lands conveyed to Native corporations under the ANCSA.</li> <li>• Alaska Statute sec. 19.40.210 prohibits the use of OHVs on land within 5 miles of the ROW of the Dalton Highway north of the Yukon River, except for persons who hold a mining claim near the highway and who must use land within 5 miles of the ROW to gain access to the mining claim.</li> <li>• The revised memorandum on snowmobile use in Dalton Utility Corridor dated October 29, 2004, allows an authorized officer to permit the use of vehicles and snowmobiles across lands.</li> <li>• Alaska Statue Sec 19.40.210 has also been amended to allow users to cross the inner corridor to access privately held property or homesteads outside the corridor.</li> <li>• BLM Manual 1626, Travel and Transportation Management</li> <li>• 43 CFR 8340 provides specific guidance on designating public lands for use of OHVs and establishing management controls for the use and operation of OHVs in these areas. This also provides designation criteria to minimize conflicts with other resources.</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• Is there a need for acquisition, termination, or relocation of 17(b) or other easements for access to public lands?</li> <li>• What opportunities exist for cooperation and coordination with Native corporations in 17(b) easement management?</li> <li>• What considerations are needed for management of existing and proposed ROWs, including the Dalton Highway, Bettles Winter Road, and the State’s Roads to Resources Program?</li> <li>• Where and how should the BLM limit OHV use?</li> <li>• What are the effects of OHV use on natural resources and how can these impacts be reduced?</li> <li>• Where are existing trails located and where are additional trails needed?</li> <li>• Where have existing trails resulted in resource damage and what are the options for avoiding further degradation?</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
OHV area designations	Areas open, limited, or closed for OHVs/motorized travel capable of, or designed for, travel on or immediately over land, water, or other natural terrain	Acres of OHV open, limited, and closed	Discuss how OHV areas affect the location and extent of OHV use in the decision area.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Revocation of PLO 5150	Revocation of PLO 5150 may lead to land becoming State owned along the Dalton Highway. State land along the Dalton Utility Corridor is exempt to the ANILCA provision.	<ul style="list-style-type: none"> <li>• Acreage transferred to State ownership</li> <li>• Mileage of road affected and whether that is paved or unpaved along the Dalton Highway</li> </ul>	Discuss the potential revocation of PLO 5150. Under each alternative, discuss how the revocation or partial revocation of PLO 5150 may change travel the BLM manages; but, Alaska Statute sec. 19.40.210 would still stand, resulting in no actual change in travel management.
Areas managed as TMAs	Areas managed as TMAs may prevent or impose limitations on OHV usage.	<ul style="list-style-type: none"> <li>• Limiting factors for OHV usage (vehicle weight in pounds, width, or type; seasonal use; or designated routes)</li> <li>• Acreage of TMA</li> </ul>	Include a paragraph discussion on potential TMAs and the acreage affected. Discuss limitations on certain modes of transport and benefits for other forms of transport. Discuss potential user conflicts. Discuss potential impacts of PLO 5150 revocation in the Dalton Utility Corridor.
Development nodes	Constructed along transportation routes and utility corridors to facilitate collocation of infrastructure, which may support travel	Areas identified for development nodes	<p>There are no transportation decisions relative to development nodes.</p> <p>Development nodes may help facilitate travel along transportation corridors.</p>

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> BLM-managed lands in the planning area</p> <p><b><u>CUMULATIVE</u></b> The planning area</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>• Assume if there is a partial or full revocation of PLO 5150 that priority selected land could be conveyed to the State at some point.</li> <li>• Assume there is partial ROW avoidance or exclusion.</li> <li>• Roads developed for private mineral development would not be available for public use but could be seasonally available for subsistence users.</li> <li>• Visitation to the planning area would continue to increase, thereby increasing demand for public access.</li> <li>• Those seeking access in the decision area have different and potentially conflicting ideas of what should constitute public access on public lands.</li> <li>• Assume the Dalton Utility Corridor would continue to have OHV use restrictions under Alaska Statute sec. 19.40.210 regardless of any changes under PLO 5150.</li> <li>• Aircraft is a common form of transportation to the planning area; however, the Federal Aviation Administration manages airspace, and regulation is outside the BLM's control.</li> <li>• The analysis does not apply to intervillage travel. The BLM acknowledges these travel systems, and decisions by the BLM are not going to affect those systems.</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• Acres open/closed/limited for OHV use</li> <li>• Miles of designated routes (e.g., non-motorized trails)</li> <li>• ROW avoidance and exclusion areas overlapping OHV areas, also for recreational purposes</li> <li>• TMA acreage (analysis on corresponding OHV management within those acres)</li> <li>• Mileage of routes within transportation and utility corridors open for public usage, closed for public usage, and seasonally available for subsistence usage</li> </ul>

**M.5.18 Areas of Critical Environmental Concern**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• 43 U.S.C. 1702(a)—Definitions</li> <li>• 43 U.S.C. 1712(c)(1)—Land Use Plans</li> <li>• 43 CFR 1610.7-2—Designation of Areas of Critical Environmental Concern</li> <li>• 43 CFR 3809—Surface Management</li> <li>• 43 CFR 8223—RNAs</li> <li>• BLM Handbook H-1601-1, Land Use Planning Handbook</li> <li>• BLM Manual 1613, Areas of Critical Environmental Concern (BLM 1998)</li> <li>• BLM Instruction Memorandum 2010-113, Areas of Critical Environmental Boundary Data Standards</li> <li>• Alaska Statutes Title 16, Fish and Game</li> <li>• Clean Water Act</li> <li>• Migratory Bird Treaty Act</li> <li>• Conservation system units under ANILCA</li> <li>• The cultural resource and fish legal and regulatory constraints also apply to ACECs and are incorporated by reference.</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• Are the current ACEC and RNA designations meaningful and of the proper size and location? Should they be maintained, modified, or dropped?</li> <li>• Are the ACEC and RNA boundaries appropriate in size?</li> <li>• Are there any other areas in the planning area that should be considered for ACEC or RNA designation?</li> <li>• Are the data used to determine ACECs adequate and up-to-date?</li> <li>• Does the BLM adequately justify ACEC determinations or provide enough information on management considerations for ACECs?</li> </ul>



Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
ACECs	Protection or diminishment of relevant and important values	<p>The indicator of impacts on ACECs is the following:</p> <p>Management actions that would fail to “prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards” (BLM 1988).</p>	<p>The discussion will focus on analyzing impacts on relevant and important values in potential ACECs or portions of ACECs that would <i>not</i> be designated. (“Potential ACECs” are those areas that meet relevance and importance criteria and thus were considered during alternatives development.)</p> <p>Quantitative impacts will be shown in a table (Acreage Impacts on Undesignated ACECs), which will display the acres of undesignated ACECs in each alternative that overlap key allocations that could affect (enhance or diminish) relevant and important values. The “Acreage Impacts on Undesignated ACECs” table in the Environmental Consequences chapter will include rows for each of the following rows of this table.</p>
Forestry: commercial timber development	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in areas closed to commercial timber development	Closing areas limits activities that can affect relevant and important values.
Lands and realty: ROW avoidance and exclusion	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in ROW avoidance and exclusion	ROW avoidance and exclusion areas can affect relevant and important values.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Lands and realty: utility corridors	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in utility corridors	Utility corridors would allow activities that can affect relevant and important values (in corridors where utilities are collocated; if they overlap potential ACECs, then they could affect relevant and important values; but they would protect relevant and important values outside the corridor where utilities would not be placed).
Lands and realty: minerals	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in valid State-selected areas (on the GIS layer), which are not available to federal mineral entry	Withdrawals limit activities that can affect relevant and important values.
Lands and realty: withdrawal	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in withdrawal	Withdrawals limit activities that can affect relevant and important values.
LWC	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in LWC where LWC are prioritized over other multiple uses	Protection of LWC can limit activities that can affect relevant and important values; it would indirectly protect relevant and important values where undesignated ACECs overlap LWC managed as a priority over other multiple uses.
Locatable minerals (by potential)	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in areas withdrawn from locatable mineral entry and areas recommended for withdrawal from locatable mineral entry	Withdrawn areas and areas recommended for withdrawal limit activities that can affect relevant and important values.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Mineral materials/salable minerals (by higher likelihood, where the inner Dalton Utility Corridor and Ambler Road are higher likelihood)	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in areas closed to mineral materials	Closing areas limits activities that can affect relevant and important values.
Recreation and visitor services: SRMAs and ERMAs	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in SRMAs and ERMAs	SRMA and ERMA management can affect relevant and important values.
Travel, transportation management, and access	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in OHV use areas	OHV use can affect relevant and important values.
Visual resources	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in VRM classes	VRM classes can affect relevant and important values.
WSRs	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in eligible or suitable segments/corridors	Protection of ORVs would indirectly protect relevant and important values where undesignated ACECs overlap the WSR study corridor.
WSAs	Impacts are specific to the ACEC and are based on the impact that management action(s) would have on the relevant and important values of an ACEC.	Acres of undesignated ACECs in WSAs	WSA management limits activities and would indirectly protect relevant and important values where undesignated ACECs overlap the WSA.

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b>                      The analysis area for ACECs and RNAs includes each ACEC and RNA in the Central Yukon decision area.</p> <p><b><u>CUMULATIVE</u></b>                      The cumulative impacts analysis area for ACECs and RNAs is the Central Yukon decision area.</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>• Although management actions for most resources and resource uses could have planning area-wide application, ACEC management prescriptions apply only to those lands in each specific ACEC, as outlined.</li> <li>• Permitted activities are assumed not to impair the relevant and important values for which an ACEC is designated. The exception is locatable minerals; until withdrawn from mineral entry, a mining claim can be filed, and subsequent mining could affect relevant and important values of the ACEC. Specific impacts on relevant and important values would depend on the type of mineral entry activity and the effectiveness of subsequent reclamation, and its interaction (both spatially and temporally) with that value.</li> <li>• Impacts resulting from locatable minerals would be subject to 43 CFR 3809, intended to (1) prevent unnecessary or undue degradation of the land and reclaimed disturbed areas, and (2) provide for maximum possible coordination with State agencies to avoid duplication and to ensure that operators prevent unnecessary or undue degradation of public lands.</li> <li>• ACEC designation provides protection and focused management for relevant values beyond those provided through general management of the parent resource (e.g., the cultural resource ACECs will receive greater recognition and protection than the general management action regarding cultural resources).</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>• ACEC summary report for BLM-managed lands in the planning area</li> <li>• GIS data of potential ACEC boundaries</li> <li>• Acres of lands not designated as an ACEC by alternative, with overlapping acreages of other land use allocations listed in the "Impact Indicator(s) (include unit of measure)" column in the third table above.</li> </ul>

**M.5.19 WSRs**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• WSRs Act of 1968</li> <li>• BLM Manual 6400, Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management</li> </ul>

## Resource Scoping Issues

- Some comments identified specific areas that should be closed to mining, such as the upper Chandalar River, the headwaters of the Dietrich and Atigun Rivers, ACECS, RNAs, WSAs, eligible WSRs, anadromous rivers, community drinking water aquifers, and lands upstream and adjacent to wildlife refuges.
- The BLM received approximately 28 comments about WSRs. These included comments supporting study and designation of new WSRs, and comments opposing any new study or designations. Those in opposition generally noted that there would already be enough WSRs, new designations contradict the ANILCA, and designation of rivers is unnecessary and would create too many restrictions on BLM-managed lands.
- The following rivers were mentioned in comments as being potentially eligible and suitable for inclusion in the National Wild and Scenic Rivers System (NWSR). Only a few comments identified ORVs for any of these rivers. The Melozitna River was identified for study by Section 604 of the ANILCA. The National Park Service completed a study report on the Melozitna River in 1982 and found that the river was not qualified because it lacked any ORVs. The Alatna and John Rivers within the Gates of the Arctic National Park are already designated as wild rivers.
  - Utility Corridor Subunit
    - South Fork Koyukuk
    - Jim River
    - Atigun River
    - Etivluk River
    - Colville River
    - Nigu River
    - Alatna River
  - Middle Yukon Drainages Subunit
    - Kanuti-Kilolitna River
    - Tozitna River
    - John River
    - Melozitna River
    - Hogatza River
    - Chitanana River
    - Dulbi River
  - Nulato Hills Subunit
    - Kateel River
    - Nulato River
    - Tagagawik River
    - Gisasa River
    - Honhosa River

## Analysis notes:

- The focus of the analysis would be on Alternatives C1, C2, and D where eligible rivers would not be found suitable. Analyze what would happen to the ORVs. Explain the de facto ORV protection that would happen without NWSR suitability or interim protection.
- ORVs would be protected under Alternatives A (eligible) and B (suitable) interim management.
- ORVs would be protected under both interim protection and NWSR designation. They would just be protected using different methods.
- Do not analyze impacts from fluid leasable minerals and non-energy solid leasable minerals, because there is no development potential.

M. Approach and Summary to the Environmental Analysis

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Rivers eligible or suitable for the NWSR	Protection of ORVs	Miles of eligible or suitable rivers for the NWSR	Alternative A would protect ORVs associated with eligible rivers. Alternative B would protect ORVs associated with suitable rivers. Alternatives C1, C2, and D would not protect ORVs; this is because rivers would not be suitable for inclusion in the NWSR and would be released from the interim management protections afforded eligible segments.
Forestry: commercial timber development	Protection of ORVs	Miles of eligible or suitable rivers in areas closed to commercial timber development	Closing areas limits activities that can affect ORVs.
Lands and realty: ROW avoidance and exclusion	ROW avoidance and exclusion influences on or changes to ORVs	Miles of eligible or suitable rivers in ROW avoidance and exclusion areas	Include a table comparing ROW avoidance and exclusion areas for each eligible or suitable river segment/corridor.
Lands and realty: utility corridors	Utility corridors influence changes to ORVs.	Miles of eligible or suitable rivers in utility corridors	Utility corridors would allow activities that can affect ORVs (in corridors where utilities are collocated, if they overlap WSR segments, then they could affect ORVs).
Lands and realty: withdrawal	Protection of ORVs	Miles of eligible or suitable rivers in withdrawal	Withdrawals limit activities that can affect ORVs.
LWC	Protection of ORVs	Miles of eligible or suitable rivers in LWC	Protection of LWC can limit activities that can affect ORVs.
Locatable minerals (have GIS show by high, moderate, and low potential)	Protection of ORVs	Miles of eligible or suitable rivers in areas withdrawn from locatable mineral entry and areas recommended for withdrawal from locatable mineral entry	Withdrawn areas and areas recommended for withdrawal limit activities that can affect ORVs.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Mineral materials/salable minerals (have GIS show by higher likelihood, where the inner Dalton Utility Corridor and Ambler Road are higher likelihood)	Protection of ORVs	Miles of eligible or suitable rivers in areas closed to mineral materials	Closing areas limits activities that can affect ORVs.
Recreation and visitor services: SRMAs and ERMAs	SRMAs and ERMAs influence changes to ORVs.	Miles of eligible or suitable rivers in SRMAs and ERMAs	Include a table comparing SRMAs and ERMAs for each eligible or suitable river segment/corridor.
Travel, transportation management, and access	OHV class influences changes to ORVs.	Miles of eligible or suitable rivers in OHV use areas	Include a table comparing OHV use areas for each eligible or suitable river segment/corridor.
Visual resources	VRM class influences changes to ORVs.	Miles of eligible or suitable rivers in VRM classes	Include a table comparing the VRM classes for each eligible or suitable river segment/corridor.
ACECs	Protection of ORVs	Miles of eligible or suitable rivers in ACECs	ACECs limit activities that can affect ORVs.
WSAs	Protection of ORVs	Miles of eligible or suitable rivers in WSAs	WSAs limit activities that can affect ORVs.

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b> Up to 4 miles of either side of the ordinary high-water mark of either the eligible or suitable rivers in the decision area.</p> <p><b><u>CUMULATIVE</u></b> Up to 4 miles of either side of the ordinary high-water mark of either the eligible or suitable rivers in the planning area.</p>

Analysis Assumptions

- All suitable stream segments under consideration for WSR designation will be managed under interim protective measures required by the WSR Act and BLM Manual 6400, Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management, until the ROD for this RMP is adopted. At that time, any stream segment not found suitable for inclusion in the NWSR would lose its interim protection. This procedure and the interim protective measures would ensure the values for which these river segments were found eligible and suitable are not compromised until Congress decides regarding designation.
- If designation is not provided (i.e., if segments are found not suitable and released from further study under the WSR Act), provisions could still remain to protect these river corridors under a combination of existing plans and policies and actions proposed under the action alternatives of this RMP. These provisions protect streamside and riparian habitats, riparian and aquatic wildlife, water quality, and cultural and visual resources. The major difference between designation and non-designation is the legislative and, thus, lasting protection afforded designated streams. Decisions in this RMP, however, affect suitability only. Once a segment is determined suitable, only Congress can formally designate it as part of the NWSR.
- The BLM would not permit any actions that would adversely affect the free-flowing condition, ORVs and adequate water quality to support those ORVs, or tentative classification of any of the segments, or that would result in the reduction of water quality to the extent that it would no longer support the ORVs. As such, implementing management actions in this RMP would not adversely affect eligible or suitable segments. As a result, there would not be impacts from other resources under alternatives with either eligible or suitable segments. Recognizing that, the analysis of impacts on eligible and suitable stream segments includes an evaluation of where management actions might be inconsistent with the tentative classification given to each suitable segment, as well as potential impacts on its ORVs or free-flowing condition. For Alternatives C1, C2, and D, in which segments are found not suitable and, thus, lose their interim protection, the impacts from other management prescriptions on the ORVs are analyzed. This is because the values for which the segments were found eligible would still be present.

GIS Maps and/or Calculations

- Eligible and suitable segments intersected with areas closed to resource uses, as listed in the “Impact Indicator(s) (include unit of measure)” column in the third table above.

**M.5.20 Iditarod National Historic Trail (INHT)**

Resource-specific Legal and Regulatory Constraints



Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• National Trails System Act of 1968, as amended (16 U.S.C. 1241–1251)</li> <li>• Omnibus Public Land Management Act of 2009 (16 U.S.C. 7201–7203)</li> <li>• NHPA of 1966, as amended (16 U.S.C. 470)</li> <li>• Alaska Historic Preservation Act (Alaska Statute 41.35.010–41.35.240)</li> <li>• Historic Sites Act of 1935, as amended (16 U.S.C. 461–467)</li> <li>• Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 460I-4 through 460I-11)</li> <li>• Federal Advisory Committee Act of 1972, as amended (5 U.S.C. Appendix 2 1–16)</li> <li>• Department of Transportation Act of 1966, as amended (49 U.S.C. 1653(f))</li> <li>• EO 13195, Trails for America in the 21st Century</li> <li>• Secretarial Order 3308, Management of the National Landscape Conservation System</li> <li>• Secretarial Order 3319, Establishment of a National Water Trails System</li> <li>• Departmental Manual, Part 710, National Rivers and Trails Systems</li> <li>• BLM Manual 1203, Delegation of Authority</li> <li>• BLM Manual 1601, Land Use Planning</li> <li>• BLM Manual 1626, Travel and Transportation Management</li> <li>• BLM Manual 6120, Congressionally Required Maps and Legal Boundary Descriptions for National Landscape Conservation System Designations</li> <li>• BLM Manual 6280, Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation</li> <li>• BLM Manual 8100, The Foundations for Managing Cultural Resources</li> <li>• BLM Manual 8320, Planning for Recreation and Visitor Services</li> <li>• BLM Manual 8353, Trail Management Areas – Secretarially Designated National Recreation, Water, and Connecting and Side Trails</li> <li>• BLM Manual 8400, VRM</li> <li>• BLM Handbook, 1283-1, Data Administration and Management</li> <li>• BLM Handbook 1601-1, Land Use Planning</li> <li>• BLM Handbook 1790-1, NEPA</li> <li>• BLM Handbook 8120-1, General Procedural Guidance for Native American Consultation</li> <li>• BLM Handbook 8342-1, Travel and Transportation Management</li> <li>• BLM Handbook 9114-1, Trails</li> <li>• Federal Geographic Data Committee, Federal Trail Data Standards, FGDC-STD-017-2011</li> <li>• The National Landscape Conservation System 15-Year Strategy, 2010–2025: The Geography of Hope</li> <li>• BLM National Scenic and Historic Trails Strategy and Work Plan, 2006</li> <li>• Trails for America: Report on the Nationwide Trails Study, 1966</li> <li>• The National Trails System Interagency Memorandum of Understanding</li> <li>• Applicable trail-wide comprehensive plans</li> </ul>

Resource Scoping Issues
<ul style="list-style-type: none"> <li>• How should the BLM manage the segments of the INHT that are located on BLM-managed lands in the planning area?</li> <li>• Should the BLM consider additional trail improvements on sections of the trail that cross BLM-managed lands (e.g., more trail signage markers or tripods, additional shelter cabins, and educational signage)?</li> </ul>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Forest resources	<ul style="list-style-type: none"> <li>• Potential degradation of INHT integrity</li> <li>• Direct impacts could result from actions that disturb the soil or alter characteristics of the surrounding environment. Impacts on characteristics of the surrounding environment are visual elements that are out of character with or alter the trail's setting. Erosion and downed trees along the trail and in the surrounding environment also would affect the trail.</li> </ul>	Miles of INHT National Trail Management Corridor (NTMC) closed to forestry or commercial timber development and woodland harvest	Closing areas limits activities that can affect the integrity (e.g., setting, feeling, and association) or destruction of physical remnants of the INHT.
Wildland fire	<ul style="list-style-type: none"> <li>• Potential degradation of INHT integrity</li> <li>• Direct impacts could result from actions that disturb the soil or alter characteristics of the surrounding environment. Impacts on characteristics of the surrounding environment are visual elements that are out of character with or alter the trail's setting. Erosion and downed trees along the trail and in the surrounding environment also would affect the trail.</li> </ul>	Miles of INHT NTMC with direct and/or indirect impacts resulting in the loss of integrity (e.g., setting, feeling, and association) or destruction of physical remnants of a trail, including ruts, swales, and associated sites or artifacts, whether that loss results from erosion due to increased use, looting, or vandalism, which in turn results in a loss of archaeological information	Fire management activities can affect the integrity (e.g., setting, feeling, and association) or destruction of physical remnants of the INHT by using ground-disturbing vehicles or techniques.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Lands and realty: ROW avoidance and exclusion	Protection of INHT integrity	Miles of INHT NTMC in ROW avoidance and exclusion areas	<ul style="list-style-type: none"> <li>• ROW exclusion and avoidance limit activities that can affect the integrity (e.g., setting, feeling, and association) or destruction of physical remnants of the INHT.</li> <li>• ROW authorizations in the trail's viewshed can change the visual or historic character of the trail and could contribute to a decrease in the overall trail quality.</li> </ul>
Lands and realty: withdrawals	Protection of INHT integrity	Miles of INHT NTMC in withdrawal	Withdrawals limit activities that can affect the INHT integrity.
Lands and realty: utility corridors	Utility corridors influence changes to INHT integrity.	Miles of INHT NTMC in utility corridors	Utility corridors would allow activities that can affect the INHT's integrity (in corridors where utilities are collocated, if they overlap the INHT, then they could affect the INHT's integrity; but, they would protect INHT integrity outside the corridor where utilities would not be placed).
LWC	Protection of INHT integrity	Acres of INHT NTMC in LWC managed as a priority over other multiple uses	Protection of LWC can limit activities that can affect the INHT's integrity; it would indirectly protect INHT integrity where the INHT overlaps LWC managed as a priority over other multiple uses.
Locatable minerals (by high, moderate, and low potential areas)	Potential degradation of INHT integrity	Miles of INHT NTMC in areas withdrawn from locatable mineral entry and areas recommended for withdrawal from locatable mineral entry	Withdrawn areas and areas recommended for withdrawal limit activities that can affect the INHT's integrity.
Mineral materials/salable minerals	Protection of INHT integrity	Miles of INHT NTMC in areas closed to mineral materials	Closing areas limits activities that can affect the INHT's integrity.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Travel, transportation management, and access	Audible, pollution, and visual effects can diminish the integrity of the INHT's historic character.	Miles of INHT NTMC in areas open/limited/closed to OHV use	OHV use can affect the INHT's integrity.
Visual resources	Audible and visual effects can diminish the integrity of the INHT's historic character.	Miles of INHT NTMC (and buffers) and connector trails located in different VRM classes	VRM classes allow or limit activities that can affect the INHT's integrity.
ACECs	Protection of INHT integrity	Miles of INHT NTMC in existing or proposed ACEC boundaries	Some ACEC designations limit activities that can affect the INHT's integrity.

Impact Analysis Area
<p><b>DIRECT/ INDIRECT</b> The analysis area is the INHT on BLM-managed lands in the decision area (2.7 miles)</p> <p><b>CUMULATIVE</b> The cumulative impacts analysis area is the INHT plus connector trails on all lands in the planning area (approximately 400 miles).</p>

Analysis Assumptions
<ul style="list-style-type: none"> <li>National trails and related sites are protected in accordance with federal laws, BLM regulations and policy, and interagency or partnership agreements. Specifically, BLM Manual 6280 states that the BLM may not permit proposed uses along national trails that would substantially interfere with the nature and purposes of the trail.</li> <li>The BLM will follow 36 CFR 800 and Section 106 of the NHPA when addressing federal undertakings; therefore, adverse impacts on the INHT would be appropriately mitigated.</li> <li>Degradation of the national trail from natural processes (e.g., erosion) will continue regardless of avoidance of human-caused impacts.</li> <li>Potential impacts on the INHT and its setting from subsequent undertakings (implementation of the planning decisions or site-specific project proposals) require separate compliance with NEPA and Section 106 of the NHPA.</li> </ul>

GIS Maps and/or Calculations
<ul style="list-style-type: none"> <li>GIS data for the INHT</li> <li>INHT NTMC viewshed</li> <li>Acres of INHT by alternative, with overlapping acreages of other land use allocations, as listed in the four-column table above</li> </ul>

**M.5.21 Environmental Justice**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>EO 12898 on environmental justice requires federal agencies to identify and address disproportionately high and adverse effects of its programs, policies, and activities on low-income and minority populations.</li> </ul>
Resource Scoping Issues
<p>Comments related to environmental justice included compliance with EO 12898; the potential for disproportionate impacts on Alaska Natives, particularly in light of the low salmon returns on the Yukon River; the complexity of the planning process; and the difficulty for the general public to engage in the planning process.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Actions that are described as having effects on subsistence (M.5.22) and social and economic conditions (M.5.23)	The types of effects listed in the subsistence and social and economic conditions sections.	The indicators listed in the subsistence and social and economic conditions sections.	Include a qualitative write-up based on the analyses of impacts described in the subsistence and social and economic conditions sections, to determine whether impacts are disproportionately negative for the environmental justice populations identified.
<b>Impact Analysis Area</b>			
<p><b><u>DIRECT/INDIRECT</u></b>                      This analysis utilizes the same impact analysis areas as described in the subsistence and social and economic conditions sections. The focus is on whether the 21 environmental justice communities identified are subject to disproportionate, negative impacts compared with other affected populations.</p> <p><b><u>CUMULATIVE</u></b>                      Same as direct/indirect analysis area.</p>			
<b>Analysis Assumptions</b>			
<ul style="list-style-type: none"> <li>• Eighteen of the 30 communities within the planning area, or that could be affected by the plan, are considered low-income; 17 of the communities are considered minority populations due to the proportion of Alaska Natives. When considering both criteria (minority and poverty status), only 9 of the 30 communities are not considered to be environmental justice populations: Wiseman, Coldfoot, Bettles, Anderson, North Pole, Big Delta, Delta Junction, Healy, and Fairbanks.</li> <li>• The goal of the environmental justice analysis is to determine whether impacts on low-income and minority populations are disproportionately negative. The primary impacts of concern are already identified in the subsistence and social and economic conditions sections. Therefore, the goal of the environmental justice analysis in this EIS is not to generate new impacts, but to assess whether the ones already identified are disproportionate and negative.</li> </ul>			

<b>GIS Maps and/or Calculations</b>
<p><b>GIS Analysis/Data Tables</b></p> <ul style="list-style-type: none"> <li>• The GIS analyses and data tables from the subsistence and social and economic conditions sections are applicable.</li> </ul>

**M.5.22 Subsistence****Resource-specific Legal and Regulatory Constraints**

- ANILCA, particularly Title VIII
- ANILCA section 810(a) requires an evaluation of the effects on subsistence uses of any federal determination to “withdraw, reserve, lease, or otherwise permit the use, occupancy or disposition of public lands.” As such, an evaluation of the potential impacts on subsistence under ANILCA section 810(a) must be evaluated for the CYRMP. ANILCA section 810(a) (16 U.S.C. 3120) requires that the evaluation include findings on the following three issues:
  - Effect of use, occupancy, or disposition on subsistence uses and needs
  - Availability of other lands for the purpose sought to be achieved
  - Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes
- ANILCA section 810—Determination if a significant restriction of subsistence uses and needs may result from any one of the alternatives, including their cumulative effects; the following factors in particular are considered in accordance with Instruction Manual 2011-008:
  - Abundance: The reduction in the availability of subsistence resources caused by a decline in the population or abundance of harvestable resources. This may include fish, wildlife, edible plants, house logs, firewood, or drinking water. Forces that might cause a reduction in abundance include adverse impacts on habitat, direct impacts on the resource, increased harvest, and increased competition from non-subsistence users.
  - Availability: Reductions in the availability of resources used for subsistence purposes caused by alteration of their distribution, migration patterns, or location
  - Access: Limitations on access to subsistence resources, including from increased competition for the resources, including physical and legal barriers
- ANILCA provides specific guidance on access for:
  - The use of snowmobiles, motorboats, and other means of surface transportation traditionally used for subsistence purposes by local residents on all federal public lands (Section 811). See ANILCA Section 102(3) for the definition of “public lands.”
  - The use of snowmobiles, motorboats, airplanes, and non-motorized surface transportation methods for traditional activities on conservation system units, national recreation areas, and national conservation areas (Section 1110)
  - The BLM does not have regulations implementing the 811 public process to close or restrict the allowed use; however, the ANILCA Access section identifies a closure process for the BLM to follow if the ROD for a plan includes proposed restrictions or closures to subsistence access.
- ANILCA Section 804 Federal Subsistence Board. Subsistence uses shall be accorded priority over the taking of fish and wildlife for other purposes. The Federal Subsistence Board determines if it is necessary to restrict the taking of populations of fish and wildlife for subsistence uses in order to protect the continued viability of such populations, or to continue such uses.
- NEPA
- In accordance with the provisions of 42 U.S.C. 4332(2)(F), salmon will be accorded recognition as an international subsistence resource pursuant to the provisions of the Pacific Salmon Treaty of 1985 and those of the Yukon River Salmon Act of 2000, Public Law 106–450, 16 U.S.C. 5727 et seq., November 7, 2000.
- BLM Instruction Memorandum AK-2004-023, Alaska Land Health Standards and Guidelines
- BLM Instruction Memorandum AK-2011-008, Compliance with ANILCA section 810
- State of Alaska, Alaska Statute 16, Title 16 and Alaska Administrative Code, Title 5
- Federal Subsistence Hunting and Fishing Regulations (36 CFR 242 and 50 CFR 100)
- ADNR, Division of Mining, Land and Water has authority over mining in the State of Alaska.

Resource Scoping Issues			
<ul style="list-style-type: none"> <li>• Which areas on BLM-managed lands in the planning area are important for subsistence use?</li> <li>• How can the BLM protect resources that are important to maintaining a subsistence lifestyle?</li> <li>• What are the effects on subsistence uses and needs when lands are conveyed to the State since there is no federal rural subsistence priority on State lands? This was of particular concern along the Dalton Highway near Wiseman.</li> <li>• Are land uses damaging subsistence resources or harvest areas? If so, how can the BLM reduce impacts on subsistence from the land use activities it permits?</li> <li>• How can the BLM ensure continued access to subsistence resources?</li> <li>• Where would the subsistence, personal, and commercial harvesting of timber products (house logs, firewood, and saw logs) be allowed and under what conditions?</li> <li>• Where would the subsistence, commercial, and personal harvest of special forest products (e.g., mushrooms, berries, and bark) be allowed and under what conditions?</li> <li>• Transportation management and access decisions in the plan could lead to increased access to remote National Wildlife Refuge lands, affecting subsistence resources and increasing habitat degradation.</li> <li>• How can the BLM protect subsistence resources from the effects of mining, roads, and infrastructure?</li> <li>• The BLM should address the impacts of climate change on subsistence resources and practices.</li> <li>• How can the BLM best manage competing recreational and subsistence uses of resources?</li> </ul>			

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Wildlife <ul style="list-style-type: none"> <li>• Caribou</li> <li>• Dall sheep</li> </ul>	Direct effect on habitat; indirect effect on the availability of wildlife for subsistence use	<ul style="list-style-type: none"> <li>• Acres and location of land that would be protected from invasive species or development</li> <li>• Acres of wildlife habitat in the planning area that would be protected by the requirement for mitigation</li> </ul>	Include an introductory paragraph describing the management actions proposed and the areas affected, which will be shown on a map also showing the location of subsistence harvest areas. A table will show the acres affected across the alternatives, followed by an explanation of how subsistence uses would be affected by the actions (changes in availability or location of wildlife populations).



Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Water, Fish, Riparian Vegetation, and Soils management actions	Direct effect on habitat; indirect effect on the availability of fish and wildlife for subsistence use	<ul style="list-style-type: none"> <li>• Linear feet of stream protected/acres of land that would be protected from invasive species or development</li> <li>• Streams protected by instream flow reservations</li> <li>• Wetlands managed as ROW avoidance areas</li> <li>• Streams protected by stream channel design requirements for reclamation</li> <li>• Acres of floodplain protected from surface disturbance, leasing and development, and ROWs</li> <li>• Acres of lentic habitat protected from surface disturbance, leasing and development, and ROWs</li> </ul>	Include an introductory paragraph describing the management actions proposed and the areas affected, which will be shown on a map. A table will show the streams/acres affected across the alternatives, followed by an explanation of how the actions would affect subsistence uses.
Forestry allocations	Direct effect on the availability of forestry products for subsistence use	Acres and location of land that would be under the prohibitions	Same as first row
LWC management	Indirect effect on the availability of subsistence resources	<ul style="list-style-type: none"> <li>• Acres and location of LWC that would be open or closed to surface occupancy or mineral entry</li> <li>• Existing subsistence use of LWC</li> </ul>	Same as first row
WSRs	Indirect effect on the availability of subsistence resources	Acres and location of land with existing, eligible, or suitable WSRs that would be open or closed to surface occupancy or mineral entry	Same as first row
ACECs	Indirect effect on the availability of subsistence resources	Acres and location of land in existing or proposed ACECs that would be open or closed to surface occupancy or mineral entry	Same as first row



Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
WSAs	Indirect effect on the availability of subsistence resources	<ul style="list-style-type: none"> <li>• Acres of WSAs that would be open or closed to surface occupancy or mineral entry</li> <li>• Existing subsistence use of existing or proposed WSA lands.</li> </ul>	Same as first row
Vegetation <ul style="list-style-type: none"> <li>• Forestry</li> </ul>	Indirect effect on the availability of subsistence resources	<ul style="list-style-type: none"> <li>• Acres of federal land in villages under each alternative that would be open to subsistence wood harvest activities</li> <li>• Existing use patterns for subsistence resources</li> <li>• Acres of land that would be open or closed to commercial or subsistence timber harvest</li> </ul>	Same as first row
Lands and Realty <ul style="list-style-type: none"> <li>• Utility corridors</li> <li>• Development nodes</li> <li>• Permits and ROWs</li> <li>• ROW provisions for wildlife/Source Water Assessment Resources</li> <li>• Leases</li> <li>• Withdrawals <ul style="list-style-type: none"> <li>○ Revocation of PLO 5150</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Indirect effect on the availability of subsistence resources</li> <li>• The BLM will analyze the effects of revoking PLO 5150 on subsistence. The federal subsistence priority and access provisions in ANILCA Title VIII will apply to any lands in the corridor that remain in federal ownership.</li> </ul>	<ul style="list-style-type: none"> <li>• Acres and location of land that would be open, restricted, or closed to surface disturbance</li> <li>• Location of proposed development nodes relative to subsistence resources</li> </ul>	Same as first row
Travel and Transportation Management <ul style="list-style-type: none"> <li>• ROWs</li> <li>• Summer OHV use</li> <li>• Over-snow travel limitations for BLM-permitted activities</li> <li>• Aircraft use</li> </ul>	Indirect effect on the availability of subsistence resources	<ul style="list-style-type: none"> <li>• Acres and location of land that would be restricted or unrestricted to travel or transportation use</li> <li>• Acres and location of land that would be open or closed to travel</li> <li>• Acres and location of area covered by aircraft use restrictions</li> </ul>	Same as first row except the narrative portion will explain that the management actions may not show much effect on subsistence resources.

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
Fluid leasable minerals	Indirect effect on the availability of subsistence resources	Acres and location of land with fluid leasable mineral potential that would be open, open with restrictions, or closed to fluid minerals	Same as first row
Non-energy solid leasable minerals	Indirect effect on the availability of subsistence resources	Acres and location of land with non-energy solid leasable minerals potential that would be open, open with restrictions, or closed to non-energy solid leasable minerals	Determine and describe any overlap of potential resources with subsistence uses. Show overlap on a figure and acres by alternative in a table.
Locatable minerals	Indirect effect on the availability of subsistence resources	Acres and location of land with moderate or high mineral potential that would be open or closed to mineral entry	Same as first row
Mineral materials (salable minerals)	Indirect effect on the availability of subsistence resources	Acres and location of land with material minerals potential that would be open, restricted, or closed for mineral materials	Same as first row
Soils	Indirect effect on the availability of subsistence resources	Acres and location of land that would be open or closed to surface disturbance	Same as first row

Impact Analysis Area
<p><b><u>DIRECT/INDIRECT</u></b>                      The analysis area for subsistence includes the entire planning area. It would include an evaluation of the management decisions that could affect subsistence resources and thereby potentially affect subsistence harvest practices (e.g., vegetation, fish, large mammals, and small furbearers).</p> <p><b><u>CUMULATIVE</u></b>                      The analysis area for cumulative impacts is the direct/indirect impact analysis area and also lands in the subsistence use areas of communities in the planning area.</p>

Analysis Assumptions

- The BLM would continue to have a major role in the management of subsistence resources on public lands over the life of the plan. Competition for resources would increase, especially those that receive high use from all resource users. This is because more lands would be private, and recreational use of BLM-managed lands would increase.
- The BLM will consider subsistence uses and minimize adverse impacts in accordance with ANILCA section 810.
- The BLM will consider Department of the Interior guidance, Alaska Department of Fish and Game and U.S. Fish and Wildlife Service objectives, and Federal Subsistence Board requirements and mandates in decisions related to wildlife management.
- As land conveyance to the State of Alaska and Native corporations is finalized, harvest of wildlife resources on State and Native corporation lands is regulated by general hunting regulations, and federal subsistence regulations would no longer be applicable.
- Tribal members use Native, village corporation, State lands, and BLM-managed lands for traditional subsistence activities, and they would continue to do so. Subsistence use by other federally qualified residents in the planning area would continue on federal public lands. Federal public lands for the purpose of subsistence use are defined in 50 CFR 100, 100.4(1), and (2).
- Subsistence harvest patterns and practices follow a seasonal round of harvest and would be expected to change and adapt over the course of the planning period based on management decisions. The analysis will be based on the most current rates of harvest data, seasonal round and areas of use, and traditional use areas.
- Management decisions regarding climate change, travel management, outfitter guides, illegal harvest, landownership, management, access, and use of ACECs would also be evaluated in the context of how subsistence resources and harvest practices, including competition for resources, would be affected (ANILCA section 810).

GIS Maps and/or Calculations

- Map 1. Central Yukon Subsistence Use Areas by community. Map all resources by community and distinguish overlapping communities. Add Venetie data and National Wildlife Refuges.
- Maps 2–4. Summary of Alaska Department of Fish and Game subsistence harvest areas and proposed management actions by alternative (mineral potential areas; locatable, leasable, and ROW avoidance areas; proposed withdrawals; and areas closed to non-subsistence use). Also add the Dalton Utility Corridor and Ambler Road corridor.
- Map 5. Map showing overlap of ACECs with Alaska Department of Fish and Game subsistence harvest areas
- Table 1. Acreage tables showing overlap of the layers in the subsistence harvest areas and management actions by alternative

**M.5.23 Social and Economic Conditions**

Resource-specific Legal and Regulatory Constraints
<ul style="list-style-type: none"> <li>• NEPA requires consideration of the effects of major federal activities on the human environment, including economic and social values.</li> <li>• FLPMA directs multiple use management in balancing environmental and social values. It requires integration of physical, biological, economic, and other sciences. Regulation requires consideration of social, economic, and institutional data.</li> <li>• BLM Land Management Planning Handbook, Appendix D</li> <li>• BLM Instruction Memorandum 31013-131 describes when and how to consider nonmarket values when preparing NEPA analyses for BLM resource management planning and other decision-making. The instruction memorandum directs BLM managers to use estimates of nonmarket environmental values in NEPA analysis supporting planning and other decision-making where relevant and feasible, and to include at least a qualitative description of the most relevant nonmarket values for the affected environment and the impacts of alternatives in NEPA analyses.</li> <li>• EO 12898 on environmental justice requires federal agencies to identify and address disproportionately high and adverse effects of its programs, policies, and activities on low-income and minority populations.</li> </ul>

Resource Scoping Issues
<p>The issue identified from scoping speaks to concerns about effects on specific resources and related uses; it does not identify any specific economic issues. Economic issues are addressed in respect to potential economic effects on environmental justice communities. This may be approached by considering effects on low-income households and communities, such as management actions that may affect the cost of living, jobs and labor income, and delivery of public services. The remote, rural nature of the planning area defines the economic structure of Alaska’s rural communities, who rely on a mixed-rural economy comprised of subsistence and cash incomes. While many of the metrics considered relate to impacts on the cash economy, it is important to understand the formal economy is highly limited in its development and provides an important but limited role in supporting rural livelihoods. This analysis, along with the subsistence analysis, would provide a basis for the consideration of effects on social values and sociocultural systems and to make a determination related to environmental justice communities.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Lands and Realty</b> ROW exclusion areas</p>	<p><b>Jobs and labor income</b> Management actions, such as ROW exclusions, that occur within close proximity to a community may increase the costs of infrastructure development and service delivery.</p>	<p>Acres of ROW exclusions within 20 miles of communities</p>	<p>Consider the ROW avoidance and exclusion areas within 20 miles of communities in the planning area that could require long reroutes; these could increase the cost of infrastructure development and discourage economic development.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Lands and Realty</b> Revoking of PLO 5150</p>	<p><b>Jobs and labor income from locatable mineral development</b> From locatable mineral development in the inner corridor of the Dalton Highway Corridor Management Area.</p>	<p>Acres of State-selected and top-filed land ranked as high mineral potential for locatable mineral developments identified as a number one priority for conveyance by the State where PLO 5150 would be revoked.</p>	<p>Highlight the greatest likelihood of economic development and impacts in the planning area by alternative.</p>
<p><b>Recreation</b> Effects on types of recreation opportunities and the quality of the recreation opportunity</p>	<p><b>Jobs and labor income due to tourism for sport hunting and fishing</b> Within the services sector, food services and accommodations account for the largest portion of jobs within the boroughs affiliated with Fairbanks. Management direction that may influence recreation visitation and distribution may affect the amount of jobs and labor income from recreation expenditures in the planning area.</p>	<p>Distribution of high-quality sport hunting and fishing recreation opportunities. Effects on large game species and fish habitat in the Dalton Utility Corridor.</p>	<p>Tier to the effects on large game and fish habitat within the Dalton Utility Corridor watershed. Where appropriate, identify which communities would likely be indirectly affected by changes in visitation or distribution of visitation. Only discuss communities associated with recreation opportunities where there may be a reasonably predictable change in the supply or demand for recreation opportunities. Discuss related economic impacts related to jobs and labor income.</p>

Action Affecting Resource	Type of Impact	Impact Indicator(s) (include unit of measure)	Analysis Write-up
<p><b>Travel Management</b> Restrictions on motorized travel (not for subsistence)</p>	<p><b>Subsistence livelihoods and costs of living due to effects on interregional trade and increased fuel needs</b> Restricting motorized travel within close proximity to communities or on traditional routes supporting intercommunity travel would increase the distance, time, and effort required to procure subsistence resources or redistribute such resources.</p>	<ul style="list-style-type: none"> <li>• Acres of summer OHV exclusion within 20 miles of communities and subsistence use areas</li> <li>• Acres of limited travel for OHV (May and June) within 20 miles of communities and subsistence use areas</li> </ul>	<p>Identify communities where travel restrictions may impede interregional trade or increase the distance and associated resources to support travel by impeding direct routes.</p>
<p><b>Lands and Realty</b> Revoking of PLO 5150</p>	<p><b>Subsistence livelihoods and cost of living</b> The revoking of PLO 5150 in the Dalton Utility Corridor would reduce motorized access for subsistence purposes and the use of firearms, increasing the burden of effort and time to procure subsistence resources; this would increase the cost of living.</p>	<p>Acres of priority subsistence access for Wiseman and Coldfoot in the Dalton Utility Corridor.</p>	<p>Describe how the revoking of PLO 5150 would affect household costs for Coldfoot and Wiseman residents.</p>
<p><b>Subsistence Abundance</b> Actions affecting access, abundance, and availability of subsistence resources</p>	<p><b>Subsistence livelihoods and cost of living</b> Management actions that may degrade habitat conditions for subsistence fish and game may affect the abundance of subsistence resources and, therefore, the effort, time, and fuel required to procure subsistence resources, or the need to secure resources through markets rather than subsistence.</p>	<ul style="list-style-type: none"> <li>• Effects on caribou and Dall sheep populations within the Dalton Utility Corridor (see <b>Appendix P</b>)</li> <li>• Subsistence report determinations for effects due to management actions related to lands and realty, and minerals</li> </ul>	<p>Further describe how effects on subsistence abundance would affect household costs.</p>

Impact Analysis Area

**DIRECT/INDIRECT**

This analysis considers the spatial distribution of direct and indirect effects on the economic character of communities in the planning area. The planning area overlaps portions of the Northwest Arctic Borough, the North Slope Borough, the Denali Borough, the FNSB, and the Southeast Fairbanks Census Area; the analysis considers effects across 24 subsistence use communities and 7 non-subsistence use communities, including Fairbanks, Ester, Healy, Big Delta, Delta Junction, McKinley Park, and North Pole. The 24 subsistence use communities are Alatna, Allakaket, Anaktuvuk Pass, Arctic Village, Bettles, Coldfoot, Evansville, Galena, Hughes, Huslia, Kaltag, Koyukuk, Lake Minchumina, Manley Hot Springs, Minto, Nenana, Nuiqsut, Nulato, Rampart, Ruby, Stevens Village, Tanana, Venetie, and Wiseman.

**CUMULATIVE**

Same as direct/indirect analysis area

Analysis Assumptions

- This analysis incorporates community descriptions, assumptions, and determinations described in the subsistence section, **Appendix Q**.
- The most intense community subsistence gathering pressure from rural residents radiates 20 miles from villages. There are also larger geographic regions where communities traditionally harvest subsistence resources when conditions permit access. Effects on access are considered in respect to how they may affect costs related to travel for subsistence purposes.
- Recreation visitation will be similar across all alternatives regardless of the designation of a BCA, ERMA, SRMA, or no designation.
- Personal use wood and biomass collection on conveyed lands would continue to be allowed by the State and Native corporations.
- Fuel prices are driven by national and international market trends, state distribution channels and related costs, and local retailer costs. A review of the literature on Alaska’s fuel markets (Szymoniak et al. 2010) did not reveal any market mechanisms on fuel prices that could be affected by the CYRMP management decisions.
- Short term in this context is 10 years. Ten years is the anticipated time frame for State top-filed lands identified as the State’s top priority to be conveyed to the State. The time frame for conveyance of State-selected lands identified as Priority 2, 3, or 4 is highly speculative and is assumed to be beyond the life of the plan.
- It is assumed that the State would facilitate mineral production on newly acquired State lands within the inner corridor during the life of the plan.

GIS Maps and/or Calculations

GIS Analysis/Data Tables

- Acres by community where seasonal and summer motorized travel are restricted within 20 miles of the planning area's 24 communities or within subsistence use areas
- Acres by community of lands closed to mineral materials entry within 20 miles of the planning area's 24 communities
- Acres of ROW exclusions within 20 miles of 24 communities in the planning area (by community)
- Acres of ROW avoidance areas within 20 miles of 24 communities in the planning area (by community)
- Acres of land where personal or subsistence wood and biomass collection are prohibited within 20 miles of communities
- Acres of land where mineral materials sales and disposals are prohibited within utility corridors
- Acres of land ranked as high or moderate potential for locatable minerals in the inner corridor identified by the State as the number one priority for conveyance, where PLO 5150 will be revoked
- Acres of priority subsistence access for residents of Wiseman and Coldfoot in the Dalton Utility Corridor

**M.6 REFERENCES**

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## M.7 GLOSSARY

**100-year floodplain.** The area inundated by the 100-year flood or the 1 percent annual exceedance probability flood. It is the flood that has a 1 percent chance of being equaled or exceeded in any single year. It is often mistakenly thought of as the flood that occurs once every 100 years. In actuality, if a project is within the 100-year floodplain and the project life is expected to be 30 years, it would have a 25 percent chance of experiencing flood damage due to a 100-year flood. For a project with an anticipated life of 15 years, the chance of incurring flood damage due to a 100-year flood would be 14 percent.

**17(d)(1) withdrawal.** A withdrawal made under the authority of Section 17(d)(1) of the Alaska Native Claims Settlement Act for study to determine the proper classification of the lands and to determine the public values of the lands that need protection.

**acquisition.** Acquisition of lands can be pursued to facilitate various resource management objectives. Acquisitions, including easements, can be completed through exchange, purchase, or donation.

**aircraft.** Fixed-wing and rotary wing aircraft.

**Alaska National Interest Lands Conservation Act (ANILCA).** A law passed in 1980 designating 104 million acres for conservation by establishing or expanding national parks, wildlife refuges, wild and scenic

rivers, wilderness areas, forest monuments, conservation areas, recreation areas, and wilderness study areas to preserve them for future generations.

**Alaska Native Claims Settlement Act (ANCSA).** A law passed by Congress in 1971 to settle aboriginal land claims in Alaska. Under the settlement, the Alaska Natives received title to a total of over 44 million acres, to be divided among some 220 Native villages and 12 regional corporations established by the act. The corporations shared in a payment of \$962,500,000.

**ambient air quality standard.** Air pollutant concentrations of the surrounding outside environment that cannot legally be exceeded during fixed time intervals and in a specific geographic area.

**analysis area.** Any lands, regardless of jurisdiction, for which the BLM synthesizes, analyzes, and interprets data and information that relates to planning for BLM-managed lands. Analyses that extend beyond the planning area boundary allow management decisions to be made within the context of overall resource conditions and trends within the surrounding area, considering local, state, other federal, and tribal plans. Examples of such information include the relative significance of BLM-managed lands for a certain resource (such as a threatened or endangered species), or the anticipated impacts on resources (such as air quality and socioeconomics) based on activities on BLM-managed lands. The analysis areas can be any size, can vary according to resource, and can be located anywhere within, around, partially outside, or completely outside the planning or decision areas.

**anthropogenic.** Effects, processes, objects, or materials that are derived from human activities, as opposed to those occurring in natural environments without human influences.

**Arctic Circle.** The invisible circle of latitude on the earth's surface at 66°33' north, marking the southern limit of the area where the sun does not rise on the winter solstice, December 21, or set on the summer solstice, June 21.

**areas of critical environmental concern (ACEC).** Special area designation established through the BLM's land use planning process (43 CFR 1610.7-2) where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes, or to protect life and safety from natural hazards. The collaborative planning process establishes the level of allowable use within an ACEC. Designation of an ACEC allows for resource use limitations in order to protect identified resources or values.

**artifact.** An object that was made, used, and/or transported by humans that provides information about human behavior in the past. Examples include pottery, stone tools, and bones with cut marks.

**baseline.** The preexisting condition of a resource, at all relevant scales, which can be quantified by an appropriate metric(s). During environmental reviews, the baseline is considered the affected environment that exists absent the project's implementation; it is used to compare predictions of the effects of the proposed action or a reasonable range of alternatives.

**BEACONS benchmark.** A benchmark derived using the Boreal Ecosystem Analysis for Conservation Networks model.

**benchmarks.** Benchmark areas are intact, hydrologically connected areas large enough to accommodate natural disturbance regimes.

**best management practices (BMPs).** A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes.

**bluff.** A high bank or bold headland, with a broad, precipitous, sometimes rounded cliff face overlooking a plain or body of water, especially on the outside of a stream meander; e.g., a river bluff.

**climate change.** Any significant and extended (over decades or longer) change in measures of climate (such as temperature, precipitation, or wind regimes). Climate change may result from natural factors, natural processes, and human activities that change the atmosphere's composition and the land surface.

**Code of Federal Regulations (CFR).** A codification of the general and permanent rules published in the *Federal Register* by the Executive Departments and agencies of the federal government. The Code is divided into 50 titles that represent broad areas subject to federal regulation. Each volume of the Code is revised at least once each year and issued on a quarterly basis.

**connectivity corridors.** Components of a landscape that facilitate the movement of matter, energy, and/or organisms between elements of the landscape.

**conservation system unit (CSU):** ANILCA defines a CSU as any Alaska unit of National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, or a National Forest Monument.

**conveyed.** Title to land transferred from one party to another. The United States conveys title to land to Native corporations by patent and interim conveyance and to the State of Alaska by patent and tentative approval.

**Dall sheep habitat area.** BLM-managed lands identified as having the highest habitat conservation value in relation to Dall sheep.

**Dall sheep movement corridor.** BLM-managed lands identified as having significant value to Dall sheep for accessing seasonal ranges, mineral sources, forage habitat, and escape terrain.

**Dall sheep study area.** The remainder of the planning area that is known to be inhabited by Dall sheep but is not identified as a Dall sheep habitat area or Dall sheep movement corridor.

**decision area.** The BLM-managed lands within the planning area where decisions will apply.

**dispersed recreation.** Recreational activities of an unstructured type that are not confined to specific locations such as recreation sites. Examples of these activities may be hunting, fishing, off-road vehicle use, hiking, and sight-seeing.

**disturbance.** Alteration of the vegetative cover or ground surface. Human disturbance is caused by human-initiated activities such as clearing, excavation, or introducing sources of invasive species. Natural disturbance is caused by natural events such as lightning-caused wildfires or windstorms.

**eligible river.** A river or river segment found to meet criteria in Sections 1(b) and 2(b) of the Wild and Scenic Rivers Act of being free flowing and possessing one or more Outstandingly Remarkable Value (BLM Manual 6400, Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management).

**endangered species.** An animal or plant species designated by the U.S. Fish and Wildlife Service to receive federal protection status because the species is in danger of extinction throughout all or a significant portion of its natural range.

**environmental impact statement (EIS).** A detailed statement of a given project's environmental consequences, including unavoidable adverse environmental effects, alternatives to the proposed action, the relationship between local short-term uses and long-term productivity, and any irreversible or irretrievable commitment of resources.

**environmental justice.** The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

**executive order (EO).** A rule or order issued by the President and having the force of the law.

**Federal Land Policy and Management Act (FLPMA).** A law passed in 1976 to establish public land policy and guidelines for its administration, and to provide for the management, protection, development, and enhancement of the public lands.

**Federal Register.** A daily publication that reports Presidential and federal agency documents.

**fire regime.** A description of the patterns of wildland fire occurrences, frequency, size, severity, and, sometimes, vegetation and fire effects, in a given area or ecosystem. A fire regime is a generalization based on wildland fire histories at individual sites. There are five standard fire regimes:

- Fire Regime I—with a fire frequency of 0–35 years, surface fire to mixed fire type
- Fire Regime II—with a fire frequency of 0–35 years frequency, stand replacement fire type
- Fire Regime III—with a fire frequency of 35–100+ years, with a mixed fire type
- Fire Regime IV—with a fire frequency of 35–100+ years, with a stand replacement fire type
- Fire Regime V—with a fire frequency of 100+ years, with a stand replacement fire type

**fugitive dust.** Particles suspended randomly in the air, usually from road travel, excavation, or rock loading operations.

**greenhouse gas (GHG).** A gas that absorbs and emits thermal radiation in the lowest layers of the atmosphere. This process is the fundamental cause of the greenhouse effect. The primary greenhouse gases that are considered air pollutants are carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons.

**habitat.** The physical space in which a plant or animal lives, and the abiotic and biotic entities (e.g., resources) it uses and selects in that space.

**harvest (with respect to timber and woody vegetation).** Removing vegetative material for the purpose of selling, bartering, or using the materials, or for manipulating the vegetative structure for an intended outcome. Harvest, as used herein, does not include stripping vegetation to develop an authorized mining operation or mineral materials site where overburden is required to be stockpiled and reused for reclamation. Harvest, as used herein, does not include wanton injury or destruction of plants, or taking of plant materials that are wasted.

**hazardous air pollutants.** Also known as toxic air pollutants, they are those that cause or may cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects. The Environmental Protection Agency is required to control 187 hazardous air pollutants, including volatile organic compounds, heavy metals, and persistent bio-accumulative toxins. The most widespread volatile organic compounds commonly analyzed are benzene, ethylbenzene, toluene, xylene, n-hexane, and formaldehyde.

**hydrologic regime.** Variations in the state and characteristics of a waterbody that are regularly repeated in time and space and that pass through phases (e.g., seasonal).

**landscape.** An entity with structural elements of patch, mosaic, and corridor, reflecting a mix of ecosystems, habitats, and land uses.

**landscape connectivity.** The degree to which landscape components facilitate or impede movement of matter, energy, and/or organisms within and between elements of the environment.

**lentic areas.** Wetlands or riparian areas with standing water habitat, such as lakes, ponds, seeps, bogs, and meadows.

**minimize.** To reduce harmful effects to a level that does not have significant adverse effects on wildlife populations or their habitat in the planning area or significantly reduces public opportunity for successful harvest and/or nonconsumptive use of wildlife.

**mitigation.** Includes avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

**National Ambient Air Quality Standards (NAAQS).** The Clean Air Act requires the U.S. Environmental Protection Agency to set national ambient air quality standards (codified in 40 CFR 50) for pollutants considered harmful to public health and the environment. The Clean Air Act identifies two types of national ambient air quality standards: Primary standards provide public health protection, including protecting the health of sensitive populations, such as asthmatics, children, and the elderly; secondary standards protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The EPA has set standards for six principal pollutants (see criteria air pollutants, above). Periodically, the standards are reviewed and may be revised.

**National Wild and Scenic Rivers System (NWSR).** A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams: (1) recreational—rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundments or diversion in the past; (2) scenic—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads; and (3) wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

**no surface occupancy (NSO).** A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the NSO area.

**objective.** A description of a desired outcome for a resource.

**outcome.** A clearly defined and measurable result that reflects the desired condition of a resource.

**outstandingly remarkable value (ORV).** Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act of 1968: “Scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values. . .” Other similar values that may be considered include ecological, biological, or botanical.

**paleontological resource.** Any fossilized remains or traces of organisms that are preserved in, or on, the earth’s crust, that are of scientific interest, and that provide information about the history of life.

**permafrost.** Soil, sand, gravel, or bedrock that has remained below 32 degrees Fahrenheit for two or more years.

**planning area.** The geographic area within which the BLM will make decisions during a planning effort. A planning area boundary includes all lands regardless of jurisdiction; however the BLM will only make decisions on lands that fall under the BLM’s jurisdiction (including subsurface minerals). Unless the State Director determines otherwise, the planning area for an RMP is the geographic area associated with a particular field office (43 CFR 1610.1(b)). State Directors may also establish regional planning areas that encompass several field offices or states, or both, as necessary.

**pollutant.** Any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.

**prescribed fire.** A fire purposefully ignited to meet specific objectives. Prior to ignition, a written, approved fire plan must exist, and legal requirements must be met. Also known as a prescribed burn.

**priority species.** Species in the planning area that are recognized as significant for at least one factor, such as density, diversity, size, public interest, remnant character, or age (BLM Handbook 1601).

**public land use.** The occupancy, use, development, or traversing of BLM-managed surface or mineral estate; may be BLM proposed or externally proposed.

**research natural area.** A land management status that reserves the area for uses that are compatible with the resource of interest and research for which the area was designated.

**resources (and their values, services, and/or functions).** Natural, social, or cultural objects or qualities; resource values are the importance, worth, or usefulness of resources; resource services are the benefits people derive from resources; and resource functions are the physical, chemical, and/or biological processes that involve resources.

**riparian.** Relating to or situated on the banks of a river.

**riparian vegetation.** Vegetation, habitats, or ecosystems that are associated with bodies of water (streams or lakes) or that depend on the existence of perennial, intermittent, or ephemeral surface or subsurface water drainage.

**scenic river.** Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

**sensitive soils.** Those mapped by the BLM to be in one of the following categories: steep slopes, thaw-sensitive permafrost, or wetland soils or those that are highly susceptible to erosion or that have high moisture content.

**snowmobile.** A motorized vehicle that is designed for use over snow that runs on a track or tracks and uses a ski or skis for steering, has a curb weight of 1,000 pounds or less and maximum width of 50 inches or less, is steered using handlebars, and has a seat designed to be straddled by the operator. A snowmobile does not include machinery used strictly for the grooming of non-motorized trails.

**special status species.** All species that are under status review, have small or declining populations, or live in unique habitats. May also be any species requiring special management. Sensitive species include threatened, endangered, or proposed species as classified by the U.S. Fish and Wildlife Service, or species designated by a State wildlife agency as needing special management (Instruction Memorandum AK 2004-23).

**subsistence uses.** The customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption; for barter or sharing for personal or family consumption; and for customary trade. This includes any use of surface use transportation as a means of access to subsistence resources as provided for under Alaska National Interest Lands Conservation Act (ANILCA) Section 811 and/or ANILCA Section 1110.

**suitable river.** An eligible river segment found through administrative study to meet the criteria for designation as a component of the National Wild and Scenic Rivers System, as specified in Section 4(a) of the Wild and Scenic Rivers Act (BLM Manual 6400, Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management).

**surface disturbance.** See surface-disturbing activities.

**thaw-sensitive permafrost.** Permafrost soils with temperatures near 32 degrees Fahrenheit during the growing season.

**thermokarst.** Land surface characterized by very irregular surfaces of marshy hollows and small hummocks formed as ice-rich permafrost thaws.

**threatened and endangered species.** Plant or animal species listed by the U.S. Fish and Wildlife Service pursuant to the Endangered Species Act as either in danger of becoming extinct or threatened to the degree that their continued existence as a species is in question.

**timber.** All woody vegetation 5 inches in diameter at breast height or larger shall be classified as timber. By industry convention, diameter at breast height is the diameter outside bark measured 4.5 feet above ground level. This convention will be the standard for timber size for this RMP.

**top-filed.** Section 906(e) of ANILCA gave the State of Alaska the right to make “top-filings” (future selection applications) for its land entitlement selections subject to valid existing rights and Native selection rights under ANSCA. Native selection rights could include individual Native allottees as well as Village and

regional corporations. A top-filing makes the State’s claim to land, “fourth in line” as a contingent selection. A valid existing right would also include any federal administrative withdrawals, such as the ANSCA PLOs being discussed herein. “Top-filings” prevent the land’s adjudication as a “first in line” entitlement selection since they are a future interest and not counted toward the State’s total land entitlements. However, once Native selection rights under ANSCA are finalized or the withdrawal is revoked, the State’s selection would automatically attach to the land as a selection and be ready for adjudication.

**unmanned aircraft systems.** Unmanned aircraft systems are an all-encompassing term for everything that makes a drone/unmanned aerial vehicle operate: the ground control station with pilot, communications, support equipment, etc.

**wild river.** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and unpolluted. These represent vestiges of primitive America.

**wilderness characteristics.** These include the area’s size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation and may also include supplemental values. Lands with wilderness characteristics are those that have been inventoried and determined by the BLM to possess wilderness characteristics, as defined in Section 2(c) of the Wilderness Act.

**wildland fire.** General term describing any non-structure fire in the wild. It is categorized into two distinct types: wildfires (unplanned ignitions or prescribed fires that are declared wildfires) and prescribed fires (planned ignitions).

**woody vegetation.** All perennial plant species characterized by structural support provided by secondary xylem and stems covered by a layer of bark, regardless of size. Woody vegetation includes timber, but also other vegetation that does not meet the size requirements to be classified as timber.

**M.8 SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

Resource, Resource Use, and Special Designation	Impact Summary
Air quality and climate	Over the life of the RMP, the air quality in the planning area is not expected to substantially change. There may be temporary effects from wildland fires and prescribed burns, which would continue as the primary air quality concern for most of the planning area. There would be additional localized impacts from mineral development and road and pipeline development in ROW corridors. Implementing standard operating procedures, required design features, and mitigation measures and adhering to air regulations and permit requirements would reduce the potential of any pollutants from BLM-authorized activities to violate the NAAQS or AAAQS. Air quality would be maintained over the life of the project under all action alternatives, with the greatest increases under Alternative B. That alternative also would likely have the fewest GHG emissions, because of its restrictions on mineral development and ROW location, followed by Alternative C1 and then Alternatives C2, A, and D.



Resource, Resource Use, and Special Designation	Impact Summary
Soil resources	<p>Surface mining, development, and OHV use along the Dalton Utility Corridor pose risks to soil resources in the planning area, including steep slopes, thaw sensitive permafrost, and wetland soils. Recreational and industrial OHV use would be focused along the Dalton Utility Corridor, with impacts on wetland soils and thaw-sensitive permafrost, where ground vegetation cover is removed. The proposed Amber and Umiat utility and transportation corridors could also increase impacts on soils resources in these areas. Overall, most of the planning area would remain in near undisturbed condition, with little to no anthropogenic impacts; 84 percent of BLM-managed lands in the planning area are outside of the Dalton Utility Corridor. Along the Dalton Utility Corridor, Alternative B would provide the most protection from surface mining, surface disturbance, and OHV use, while Alternatives A, C2, and D would provide the least protection.</p>
Water resources	<p>Surface mining, road crossings, and OHV use along the Dalton Utility Corridor pose the greatest risks to water resources, including floodplains, lentic areas, and high-value watersheds, in the planning area. The proposed Ambler and Umiat utility and transportation corridors and recreational and industrial OHV use would occur along the Dalton Utility Corridor. The impacts would be at stream crossings and on riparian vegetation. Overall, most of the planning area would remain in undisturbed condition, with little to no impacts from humans on water resources; 84 percent of BLM-managed lands in the planning area are outside of the Dalton Utility Corridor. Along the Dalton Utility Corridor, Alternative B would provide the most protection from surface mining, road crossings, and OHV use, while Alternatives A, C2, and D would provide the least protection to water resources.</p>
Vegetation communities	<p>BLM-authorized activities that pose risks for removal, degradation, and modification of vegetation communities in the planning area, as well as introduction and spread of nonnative, invasive species, are extraction of locatable minerals (primarily in areas of high mineral potential), mineral materials disposal, recreational access, and ROW location. Alternative B has the fewest acres open to these activities, as well as more plan components to preserve special status species (SSS) plants and unique ecosystems, compared with other alternatives. Alternative D has the greatest number of acres open to potential surface disturbance activities, with less stringent vegetation survey requirements and fewer restrictions on ROWs; therefore, it would be most likely to result in impacts on upland vegetation communities and SSS plant species. Alternative A has similar areas open to activities as Alternative D; however, it does not require SSS or vegetation surveys and does not contain plan direction to address the impact of nonnative invasive species. The potential impacts from Alternative C2 would be similar to those from Alternative D, except that ROW avoidance areas around pingos and hot springs might reduce impacts on rare vegetation communities and SSS upland species. Alternative C1 falls between Alternative B and Alternatives A and D with respect to potential impacts on upland vegetation communities and SSS plant species.</p>

<b>Resource, Resource Use, and Special Designation</b>	<b>Impact Summary</b>
Wetland resources	<p>Locatable mineral extraction, ROWs, and mineral materials disposal would potentially result in permanent loss of wetlands and waters of the U.S. and for degradation of function due to indirect effects. Jurisdictional wetlands and waters of the U.S. are estimated to comprise 17 percent of the decision area; thus, most development projects would be expected to have unavoidable wetland impacts. Avoidance and minimization strategies are required in project design to mitigate overall impacts. Most of the decision area remains remote and inaccessible by road, which remains the most important reason for wetlands remaining intact; nevertheless, the health and function of wetlands in the area is expected to slowly decline, primarily from climate change. Alternative A would have the fewest acres available for locatable mineral and ROW development, so it would be the least likely to have impacts on riparian-wetland resources, followed by Alternatives B, C1, and then Alternatives C2 and D.</p>
Fish and aquatic species	<p>There are varying numbers of stream miles that are designated as anadromous (Anadromous Waters Catalog) that could be affected by resource extraction opening as designated by alternative (e.g., fluid mineral, locatable mineral, or mineral material entry). The designation as anadromous waters or essential fish habitat waters would provide each alternative with equal state and federal regulatory oversight of potential impacts from development. Oversight would come under State of Alaska fish habitat protection and the federal government's Magnuson-Stevens Fishery Conservation and Management Act habitat protections. Alternatives C1, C2, and D would affect the largest overall proportion of anadromous waters in the planning area. Alternatives C2 and D would have the most impacts associated with locatable and fluid mineral extraction in the planning area. Alternative D would provide for the smallest percentage of acreage protected by ACEC/RNAs, followed by Alternatives C2, C1, A, and B. Alternative B ultimately would provide for the greatest level of protection for fish and aquatic resources due to the greatest area of ACECs/RNAs in fish and aquatic habitats. Additionally, only Alternative B would protect waterbodies associated with LWCs. Alternative B would open the fewest acres of lands to fluid mineral actions, locatable mineral actions, and material mineral disposal of high-value watersheds.</p>
Wildlife	<p>Much of the planning area is remote, with little development and relatively undisturbed wildlife habitat. This is likely to remain the case for most of the planning area under all alternatives, but climate change is likely to have large impacts on wildlife during the life of this plan. Combined impacts from climate change and development are difficult to predict and add considerable uncertainty to estimated impacts. Potential ROW projects could have large effects on the distribution of human activity, and large- and small-scale mining activity could affect wildlife on a local scale. The distribution of caribou and Dall sheep is limited in the planning area, and these species are sensitive to disturbance during at least part of the year; therefore, those two species may be most affected by the differing management regimes among alternatives. Alternative B would have the fewest acres available for mineral and ROW development and thus is least likely to have impacts on wildlife. It is followed by Alternative C1, which has protective measures specifically targeting areas important to Dall sheep. Alternative C2 has some protections for core caribou ranges but limited protections for Dall sheep habitat. Finally, Alternative D opens to development the most areas important to priority wildlife species of all alternatives.</p>

<b>Resource, Resource Use, and Special Designation</b>	<b>Impact Summary</b>
Wildland fire ecology and management	All alternatives would have management decisions around forestry that would follow existing BLM directives and would comply with EO 13855. There would be no acres where fuels treatments would be prohibited; the ability to use commercial timber harvest as a tool for fuels management is restricted in varying ways by the three action alternatives. Alternative B is the most restrictive regarding commercial timber sales, followed by Alternatives C1, C2, and D. The action alternatives would potentially slow development due to varying levels of increased restriction on human activity; thus, the potential for human-caused fires would likely grow at the slowest rate in Alternative B, then Alternative C, and then Alternative D.
Cultural resources	Overall, cultural resource review, compliance, and consultation procedures would continue under all alternatives. Proactive measures to assign scientific or experimental values to cultural resources would be expanded under Alternatives B, C1, C2, and D, when compared with Alternative A. Alternatives C1, C2, and D include management actions with the potential to expand areas open to ground-disturbing activities. Alternatives C2 and D pose the greatest potential for direct and indirect adverse effects on cultural resources.
Paleontological resources	Alternatives B, C1, C2, and D would provide additional specific proactive protection, research, and interpretive measures, when compared with Alternative A. Alternatives C2 and D would have the greatest potential for direct and indirect impacts on paleontological resources. To a lesser degree, Alternative C1 would also expand the potential for additional ground disturbance and conveyance that could affect paleontological resources. Of the action alternatives, Alternative B has the least potential for ground-disturbing impacts.
Visual resources	Potential impacts on visual resources are assessed by comparing the VRI class to the VRM class assigned for an area. Compared with Alternative A, all action alternatives would increase the acreage under VRM Class IV, which would allow for potential reductions in scenic quality through major landscape modifications. Alternative C2 represents the largest increase in acreage under VRM Class IV. By contrast, Alternative B allows for the largest increase in acreage under VRM Class I and VRM Class II, reflecting a greater sensitivity toward preserving the visual character of the landscape in specific portions of the planning area.
Wilderness characteristics	Opportunities for solitude, primitive recreation, and naturalness could be affected in various ways through the management actions and land allocations under all alternatives. The largest potential losses of wilderness characteristics would occur under Alternatives A and D, while Alternatives B and C1 would likely retain the largest amount, with Alternative C1 being the most protective. Alternative C2 would be less protective than Alternatives B and C1 but more protective than Alternatives A and D; however, because nearly the entire decision area contains wilderness characteristics and the demand for surface-disturbing opportunities is likely to remain low, impacts on LWCs under all alternatives would remain negligible for the foreseeable future.

<b>Resource, Resource Use, and Special Designation</b>	<b>Impact Summary</b>
Forest and woodland products	<p>Under all alternatives, impacts on forestry would be concentrated in the forested wildland-urban interface, which comprises less than 1 percent of the total forests in the planning area; as such, forest resources under all alternatives would remain relatively intact and undisturbed. Impacts on forestry would be the fewest under Alternatives A and D. This is because management actions would limit or prohibit the fewest areas. Impacts on forestry would be greatest under Alternative B, where management actions would prioritize other resources over forestry. Under Alternatives C1 and C2, management actions would balance resource development with resource protection; management actions would limit or prohibit more areas than Alternative D but fewer areas than Alternative B. Without specific directions and actions for BLM-permitted activities, wildland fire, use of weed-free material, and casual use, Alternative A would be less effective at accomplishing the vegetation management goals and objectives. The largest disturbance factor for forestry is wildland fire. As management actions for wildland fire would be the same across all alternatives, all impacts would also be the same.</p>
Lands and realty and utility corridors	<p>Total ROW exclusion areas over the course of the plan range from 2 percent to 18 percent of the decision area across all alternatives; ROW avoidance areas range from 0 to 40 percent of the decision area. Lands open to ROW entry cover from 42 percent to 98 percent of the decision area across the alternatives. All action alternatives would designate Ambler and Umiat utility and transportation corridors. Alternatives C2 and D would also designate the Dalton Utility Corridor in lieu of retaining the inner corridor of PLO 5150. Utility corridor designations range from 3 percent to 8 percent of the decision area across action alternatives. Landownership would change across the action alternatives based on a change in selected land status, and subsequent conveyance; these are concentrated in PLO 5150, which covers approximately 16 percent of the planning area. All action alternatives propose a revocation of the ANCSA 17(d)(1) withdrawals, which would allow selection as land allotments by Alaska Native Vietnam-era veterans under Section 1119 of the John D. Dingell, Jr. Conservation, Management, and Recreation Act of March 12, 2019.</p>

<b>Resource, Resource Use, and Special Designation</b>	<b>Impact Summary</b>
Energy and minerals	<p>The extraction of locatable minerals would reduce the available future reserves of locatable minerals. While the magnitude and intensity of impacts are not predictable, development is generally expected in high and moderate potential areas, near roads or other infrastructure that can provide easy access for locatable mineral exploration and development. Alternatives that reduce the acreages of high and moderate potential areas available for locatable mineral entry would affect the ultimate production of these minerals. Closing areas in the Dalton Utility Corridor would have a greater impact due to the loss of acreage near easy access to a transportation corridor.</p> <p>Mineral materials development would continue to occur under all alternatives in existing mines to supply road maintenance needs. Proponents of new projects requiring mineral materials would seek to use existing locations before opening new material pits. Road, pipeline, and other infrastructure projects would be the primary drivers of mineral material demand during the RMP timeline. Without knowledge of the exact material demands and locations of proposed projects, it is impossible to predict the exact impacts and their magnitude from withdrawing areas from mineral materials disposal.</p> <p>Under all alternatives, the acres of land open for locatable mineral entry would range from 52 to 100 percent. Acres of land not selected by the State and open to mineral material disposal range from 61 to 98 percent. The BLM considered a quantitative impact assessment of fluid leasable minerals and nonenergy solid leasables to be not essential and eliminated it from detailed analysis.</p>
Recreation and visitor services	<p>Dispersed recreation areas are available over the 13,302,000 BLM-managed acres, but access to them is limited by the geology and conditions of the Central Yukon area. Across all alternatives and given the rugged terrain of the planning area, linear ROWs, utility and transportation corridors, and co-located infrastructure could increase recreation access. The total acreage of designated RMAs would range from 0 percent of the decision area under Alternative D to 27 percent of the decision area under Alternative A. Alternative B would manage for targeted recreation settings and desired outcomes in recreation management zones in two designated SRMAs. It would also designate two ERMAs and a BCA. Alternative A would manage the most RMAs; however, Alternatives C1 and C2 would establish recreation management zones to provide more specific management for achieving desired recreational settings and user outcomes. This contributes to reduced user conflicts. Recreation management under these alternatives would provide for desired recreation settings and experiences. There would be no BCAs, SRMAs, or ERMAs under Alternative D. Without focused recreation management for desired settings and outcomes, other uses could displace visitors and diminish the quality of the recreation setting and experiences, compared with the other alternatives.</p>
Travel management	<p>Alternatives B, C1, and C2 are subject to summer OHV closures on 0.6 to 16 percent of the decision area. They also have timing limitations, from May 1 through June 30, on 6 to 9 percent of the decision area. Under these alternatives, in areas where no seasonal or timing limitations occur, cross-country travel is allowed for vehicles with a curb weight of 1,500 pounds or less.</p> <p>New infrastructure development could include trails or roadways along the rugged terrain of the Central Yukon that OHV operators and those on foot may use to access dispersed regions of the decision area. Compared with Alternative A, which would not designate any utility corridors, all other alternatives would increase the potential for improved access farther away from the currently developed areas along established highways.</p>

<b>Resource, Resource Use, and Special Designation</b>	<b>Impact Summary</b>
ACECs	Protection of relevant and important values across all ACECs would be greatest under Alternative B, given that at least some portion of each of the 31 potential ACECs that were found to have relevant and important values would be designated and would receive direct protection via ACEC-specific management actions. The potential for degradation of relevant and important values would be greatest under Alternative D, followed by Alternative C2. This is because no potential ACECs would be designated under Alternative D, and only one ACEC would be designated under Alternative C2.
WSRs	Under Alternatives A and B, interim protective management measures would protect ORVs along all 11 stream segments found either eligible for or suitable for inclusion in the NWSR. Consequently, ORVs would be the most protected under these two alternatives. Under Alternatives C1, C2, and D, the 11 stream segments would be found to be not suitable for inclusion in the NWSR, and these stream segments would not be directly protected under interim protective management. Between Alternatives C1, C2, and D, the potential degree of alteration would be greater under Alternative D, given that it would allow for fewer land use restrictions. This would result in greater impacts on ORVs and less indirect protection for ORVs. Conversely, under Alternative C1, and to a lesser degree under Alternative C2, the implementation of increased restrictions to protect sensitive resources, such as visual resources and LWCs, and the implementation of ROW avoidance and exclusion areas would result in fewer potential impacts on ORVs between these two alternatives.
INHT	Management actions and activities under all alternatives could alter the INHT's scenic, natural, and cultural features and integrity. The potential degree of alteration would be greatest under Alternative D because of fewer land use restrictions for protecting sensitive resources associated with the national trail. Conversely, under Alternative B, increased restrictions to protect sensitive resources, such as visual resources and LWCs, and the implementation of ROW avoidance and exclusion areas would result in the fewest potential impacts on the INHT. Alternatives A, C1, and C2 would have slightly less restriction and therefore slightly greater potential impacts than Alternative B.
Environmental Justice	The goal of the environmental justice analysis is to determine whether impacts on low-income and minority populations are disproportionately negative. The primary impacts of concern are already identified in the Subsistence and Social and Economic Conditions sections of this table. Alternatives A, B, and C1 do not have any disproportionate, negative effects on the 22 environmental justice communities identified. Alternative C2 is expected to have an impact on the communities of Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, and Stevens Village due to the revoking of PLO 5150 in the Dalton Utility Corridor, coupled with other impacts on subsistence resources and the associated increased cost-of-living and heightened risk of food insecurity. Alternative D is the most likely to facilitate resource development and any associated jobs and labor income. Any additional labor income would be expected to also support subsistence lifestyles in a mixed economy; however, Alternative D also poses the greatest risk to subsistence resources and access; therefore, the 22 environmental justice communities in the planning area would be at risk of experiencing disproportionate, negative impacts due to effects on subsistence access and abundance.

Resource, Resource Use, and Special Designation	Impact Summary
Subsistence	<p>Overall, Alternatives B and C1 are likely to provide more protections to subsistence resource abundance, availability, and access than Alternative A; Alternatives C2 and D would provide fewer protections. Alternative D would provide the fewest protections for fish and wildlife species and subsistence access. Alternative B would provide most protections for subsistence resources and uses; however, because Alternative C1 has specific protections for important Dall sheep habitat, it may provide a greater level of protection for this species. Alternative D would also designate no acreage as ACECs, RNAs, or RMAs, and therefore would provide the lowest level of protection for subsistence fish and wildlife species and their habitat. All action alternatives recommend a partial or full revocation of PLO 5150. The revocation of PLO 5150 would allow State of Alaska top-filed lands to become selected lands. Priority 1 selections are likely to be conveyed during the life of the plan, while Priority 2 or lower would likely remain encumbered until the selection is relinquished or rejected. Encumbered lands be unavailable for priority subsistence conducted under Title VIII. Conveyed lands would be managed by the State of Alaska's subsistence regulations, which do not have rural preference. Impacts on the residents of Coldfoot and Wiseman include the removal of federal subsistence priority motorized access for subsistence harvest activities. Other communities, such as Alatna, Allakaket, Bettles, and Evansville, whose residents use the Dalton Highway Corridor Management Area for subsistence hunting and have harvest methods allowed under federal subsistence priority, would also be affected. Shifting management of the corridor to the State of Alaska would eliminate the rural preference and would likely encourage more outside hunters into the area. This may result in increased competition for access to resources from non-federally qualified subsistence users, which could affect the abundance or availability of subsistence resources.</p>
Social and Economic Conditions	<p>Alternative A is likely to sustain existing economic contributions to the mixed economy and market contributions from tourism, mining, and construction industries. Alternative B, outside of limitations for subsistence access for Coldfoot and Wiseman, would decrease economic risks for rural subsistence communities due to positive effects on subsistence species abundance; however, it would constrain potential economic development opportunities leading to jobs and income in both rural subsistence and non-subsistence communities through ROW exclusions, mineral withdrawals, ACEC designations, and NSO stipulations for fluid minerals. Alternative C1 is similar to Alternative B, except it would be more favorable to development and hence support a greater degree of economic activity. Alternatives C2 and D open the largest percentage of lands to resource development.</p>

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# Appendix N

Reasonable Foreseeable Development  
Scenario for the Central Yukon Field  
Office Planning Area

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

APMA	application for permits to mine in Alaska
ARDF	Alaska resource data files
ASTAR	Arctic Strategic Transportation and Resources
BLM	Bureau of Land Management
CYFO	Central Yukon Field Office
REE	rare earth elements
ROW	right-of-way
TR50	Bureau of Land Management Technical Report 50
USGS	United States Geological Survey

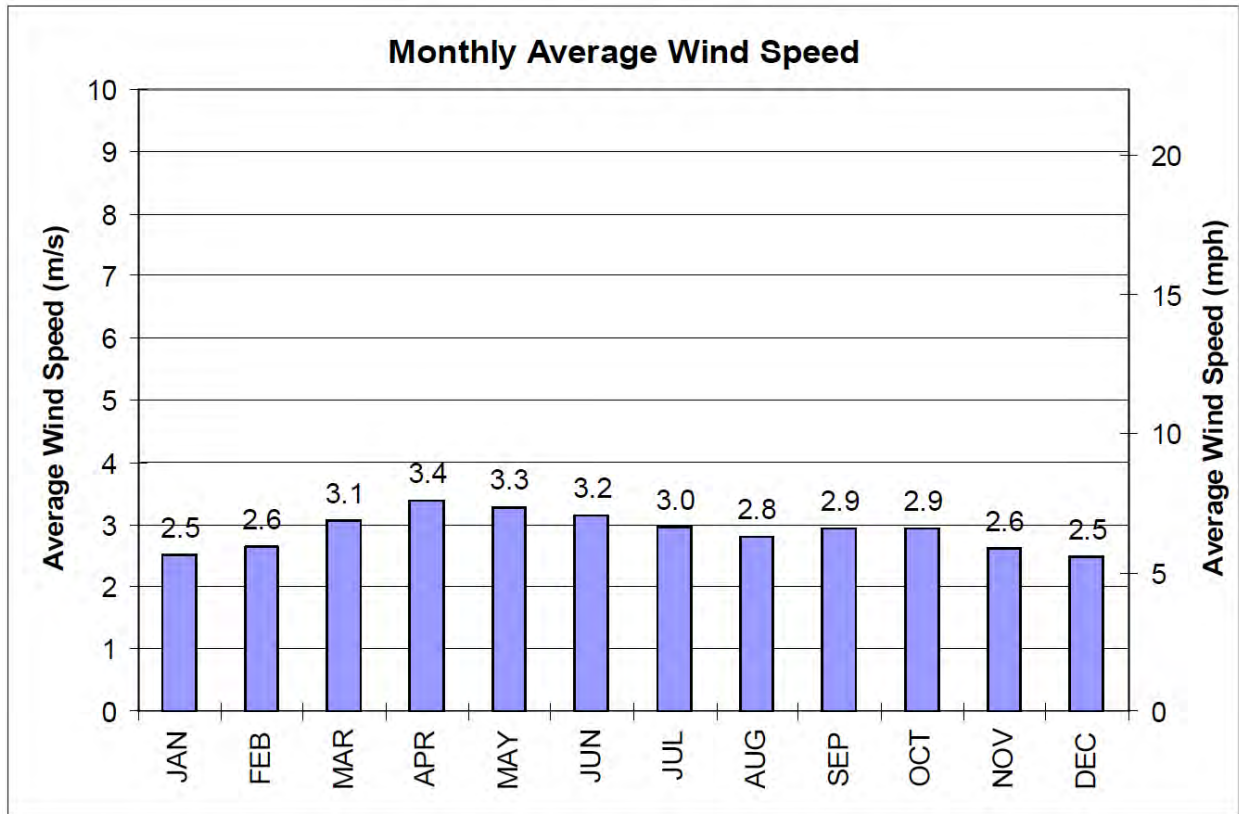
# Appendix N. Reasonable Foreseeable Development Scenario for the Central Yukon Field Office Planning Area

## N.1 WIND

The potential for wind development in the Central Yukon Field Office (CYFO) is low to very low. Wind resources are feasible for the development of wind energy facilities as demonstrated by the presence of the Eva Creek Wind Project. This project consists of a 24.6-megawatt facility constructed just outside of CYFO boundaries in 2013 at a total cost of \$93 million (GVEA 2018).

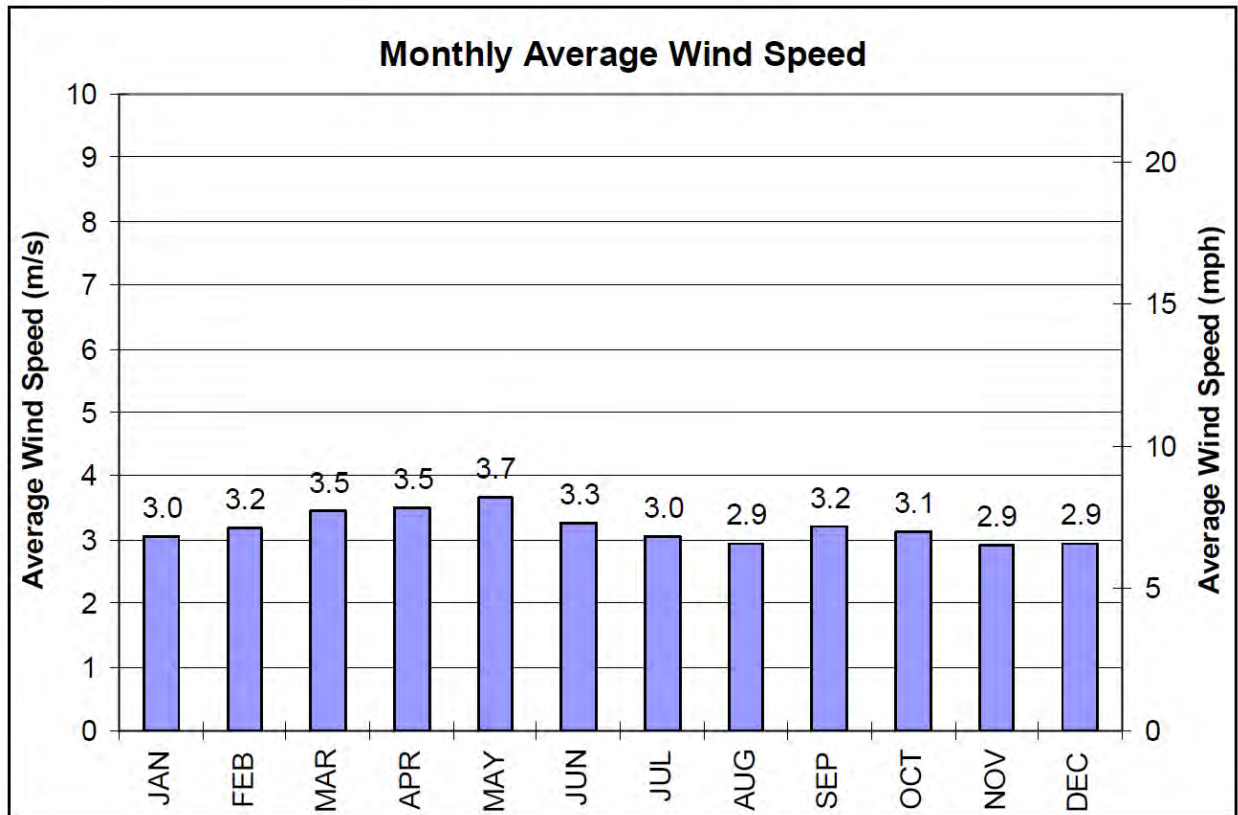
Within the CYFO, weather station reports from Bettles and Tanana show consistent average wind speeds of approximately 5 to 8 miles per hour, as shown in **Figure N-1** and **Figure N-2**, below; however, both locations receive a wind power rating of poor from the Alaska Energy Authority (2005a, 2005b). The Tanana site recorded 18.8 percent of days as calm, with a caveat that some of those days may have been due to frozen equipment (Alaska Energy Authority 2005c). The Fairbanks airport weather station recorded that approximately 23 percent of days were calm over a period from 1971 to 2000 (The Alaska Climate Research Center 2018). **Map N-1**, below, shows average wind power density at a 50-meter height. The high cost of transporting and installing wind turbine components in remote locations means it is unlikely that most towns within the CYFO would have the resources for a wind power installation of significant size, even in areas with high wind power density.

**Figure N-1**  
**Bettles Field Monthly Average Wind Speed**



Source: Alaska Energy Authority 2005a

**Figure N-2**  
**Tanana Monthly Average Wind Speed**



Source: Alaska Energy Authority 2005b

## **N.2 SOLAR**

Overall solar potential in the CYFO is low to very low. Solar energy has been employed in some areas in Alaska as a supplement to small-scale diesel- or oil-fueled generators and to reduce the overall costs of power generation in remote areas (Nash and Pike 2018). Locations within the CYFO where this could occur are not predictable, although solar development may be more likely in towns or villages using primarily or exclusively fossil fuel generators. Mining operations could also use solar power to run equipment and reduce their reliance on diesel fuel. Remote houses or cabins might also use a solar component as part of an ‘off-grid’ power system, but these would be located on private land. **Map N-2**, below, shows average daily solar energy received throughout the planning area.

## **N.3 FLUID LEASABLES**

The primary petroleum basins in the CYFO are the Colville River Basin, the Galena Basin, the Nenana Basin, and the Minchumina Basin. The Colville River Basin and the Nenana Basin have the highest potential for exploration and development; however, neither basin is expected to have any development activity on Bureau of Land Management (BLM)-managed land in the next 20 years. See **Map N-3**, below, for a fluid leasable potential map.

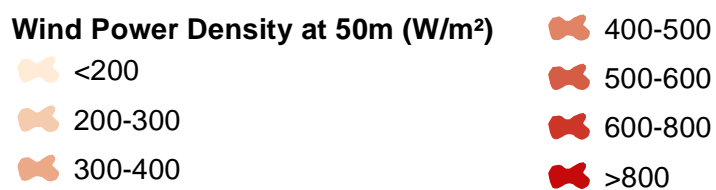
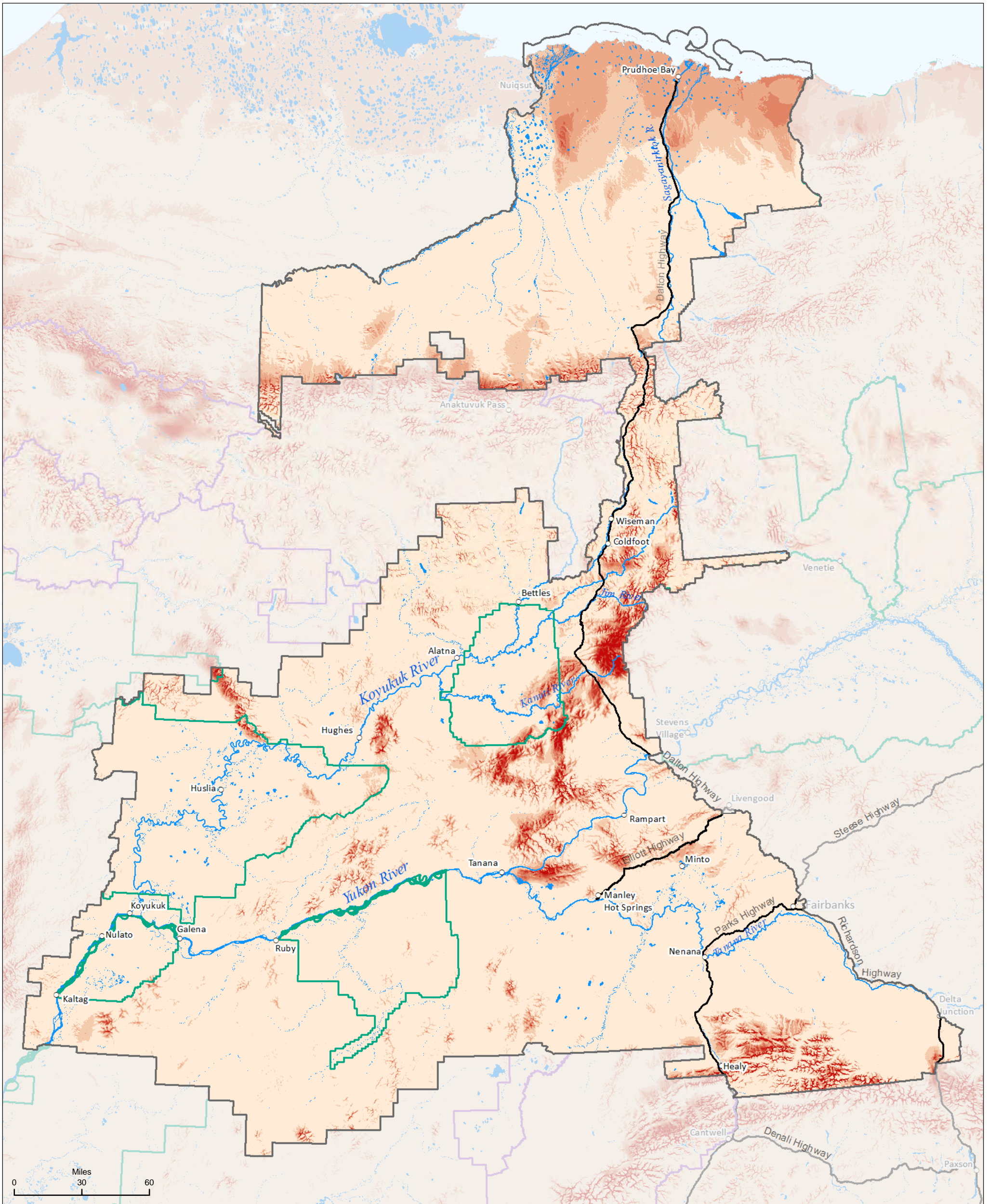
Federally managed lands in the southern areas of the Colville River Basin near the Brooks Range are unexplored and have an unknown potential for oil. Federally managed lands are covered by six U.S. Geological Survey (USGS)-defined oil and gas plays, as described in the 2020 report (Houseknecht et al. 2020). None are expected to produce economic quantities of oil and gas. It is possible that some of the same source and trap formations that occur in oil-producing areas of the North Slope are also present in this area. Only a small portion of the basin is in the planning area, and the proximity of this area to the Brooks Range may have reduced the thickness of petroleum-forming deposits or reduced the depth of burial. Additionally, some of the federally managed lands in the planning area around the Colville Basin are native patent subsurface (i.e., the BLM does not own the mineral rights). The remaining BLM surface and mineral estate is closed to fluid leasing per the Alaska Native Claims Settlement Act Public Land Orders.

A higher potential for development exists closer to infrastructure, such as the Dalton Utility Corridor. The Colville River Basin is a proven oil reservoir in the northern portion of the basin; however, at this time due to Alaska Native Claims Settlement Act withdrawals and native patents, there are no fluid minerals available for leasing within the CYFO planning area. The Colville River Basin has high potential for new discoveries of economically recoverable amounts of oil and gas. Exploration and development is expected to continue within the northern part of the basin; however, development would not occur on federal mineral estate.

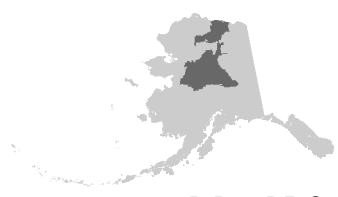
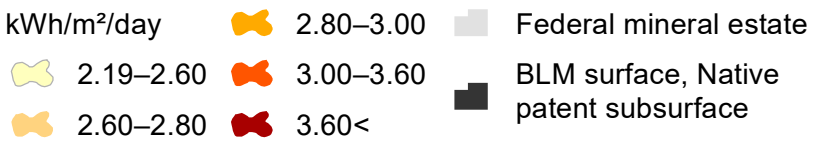
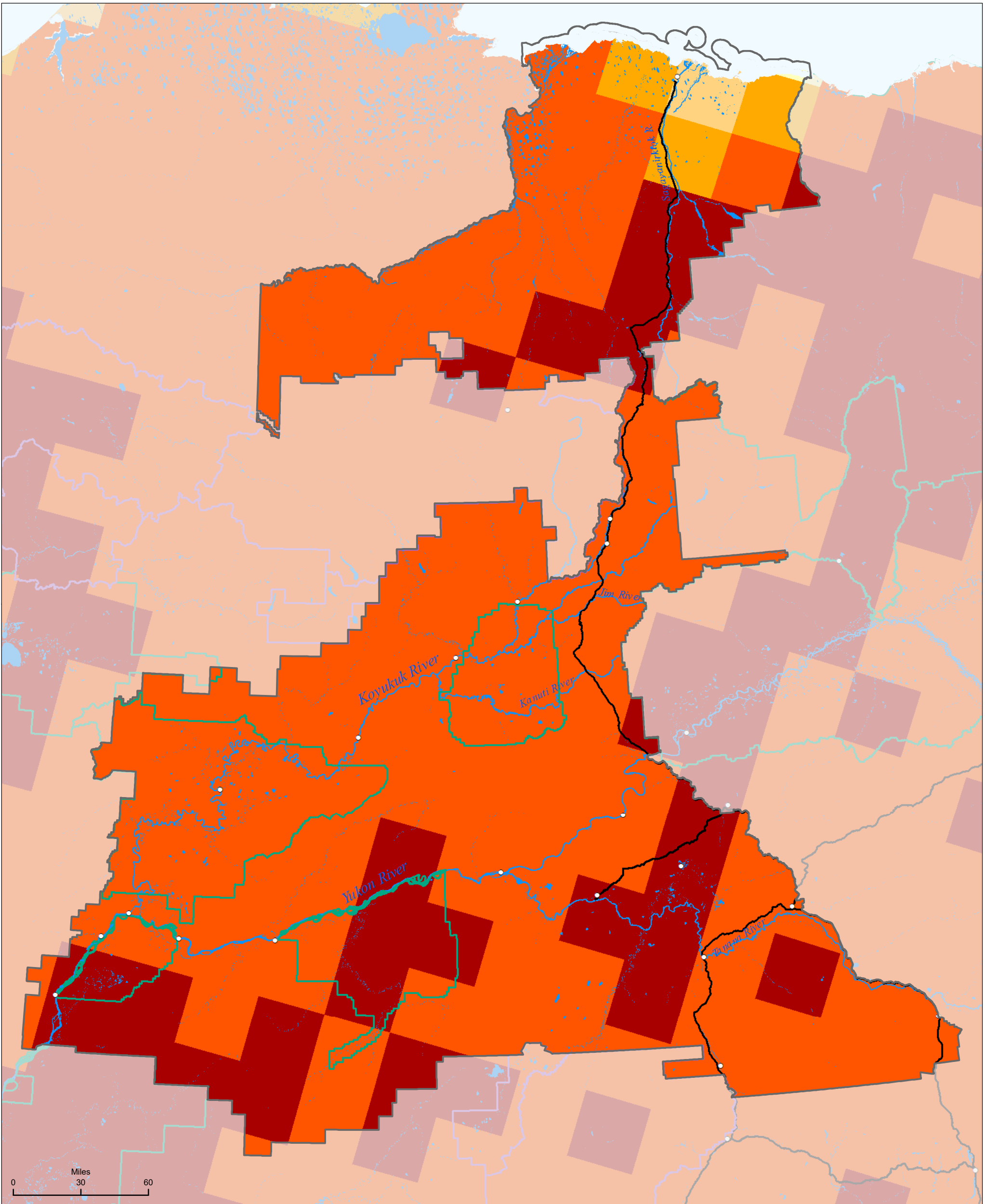
The Galena Basin is in the west and southwest corner of the planning area. Very little is known about the subsurface, but seismic survey suggests that the basin is likely too shallow to generate significant volumes of petroleum and there is very little evidence of any well-defined trap or reservoir rocks (Swensen et al. 2012).

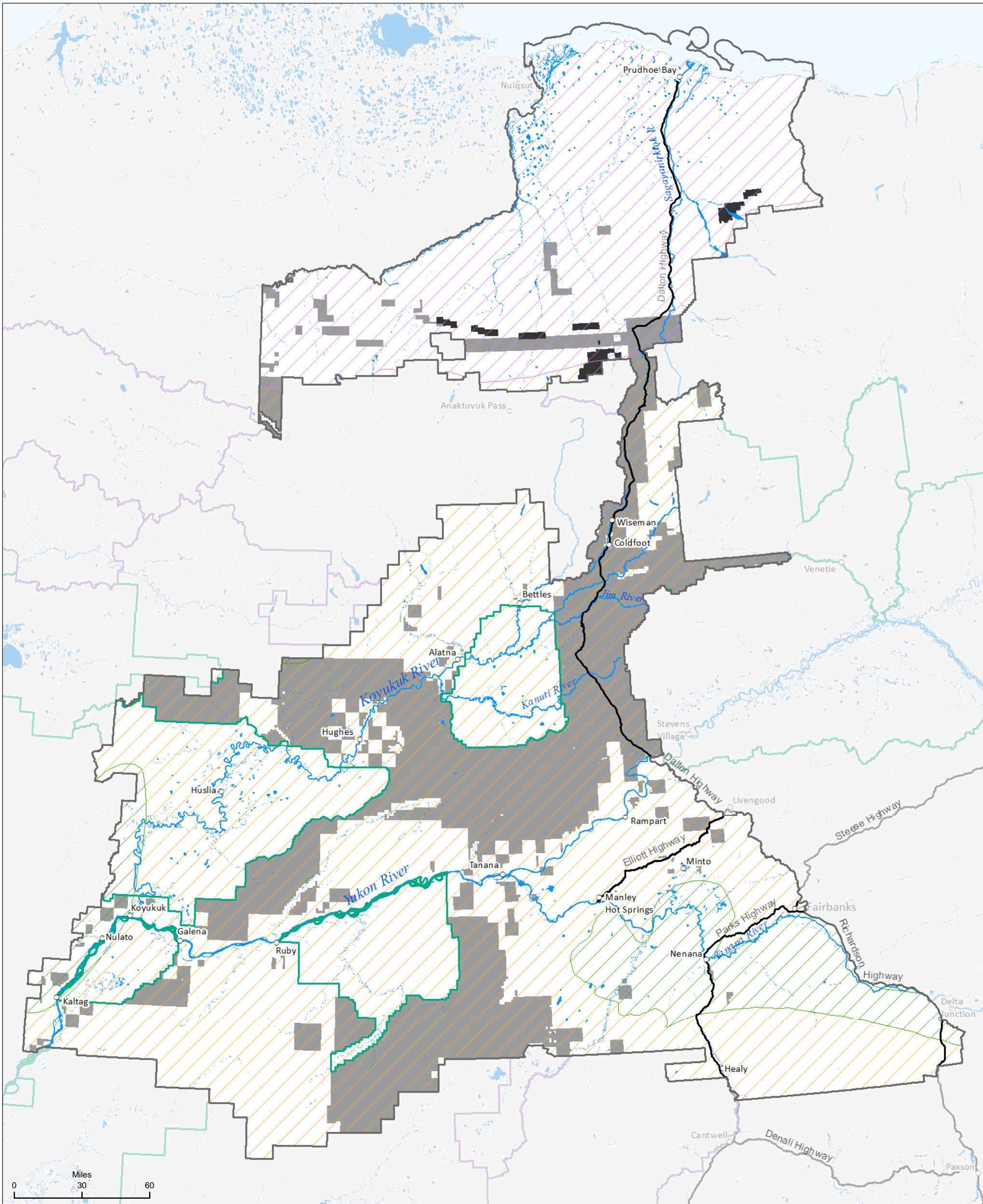
The Minchumina Basin is on the southern boundary of the planning area, south of Ruby. The basin is theorized to consist of intruded and deformed deep marine sedimentary rocks. The depth across most of the basin is not sufficient to generate conventional petroleum, and studies suggest that petroleum potential is likely limited to small gas prospects (Kirschner 1994).



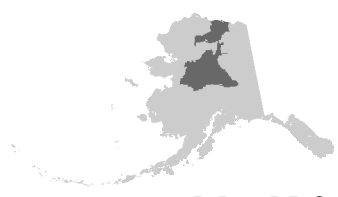








- |               |   |
|---------------|---|
| Oil Potential | ■ Federal mineral estate                |
| High          | ■ BLM surface, Native patent subsurface |
| Low           |   |
| Very Low      |   |



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The Nenana Basin is in the area surrounding the town of Nenana. Several exploration wells have been drilled in this basin, but no proven producible reserves are known to exist at this time. Gas is known to exist, as shown by exploratory wells, and light oil is theorized to exist (Doyon Limited 2017). Most of this basin is state or Native corporation lands, so development of federal minerals is not likely.

Data indicate that there are six historic exploration wells that have been plugged and abandoned and no production wells within the Nenana Basin (Data Basin 2008). Doyon Limited, a Native corporation, has been conducting exploration in the Nenana Basin, and a recent exploration well found a promising gas saturated sandstone; however, a trap failure had reduced gas saturation to below economically recoverable levels (Doyon Limited 2017).

Within the past 5 years, Doyon Limited has drilled and abandoned three exploration wells in the Nenana Basin, one of which included a side-track bore (AOGCC 2018). Doyon is planning to drill an additional well in a section of the basin with promising three-dimensional seismic survey results. The well is expected to primarily encounter gas, and possibly oil (Doyon Limited 2017).

Because the Nenana Basin is almost entirely owned by the State of Alaska and Doyon Limited, no oil and gas development in the basin is expected to occur on federal mineral estate. Based on historic and recent exploration in the area, the BLM anticipates that in the 20-year time frame covered by this document, up to five additional exploration and/or delineation wells will be drilled in the Nenana Basin; however, none are likely to be on BLM-managed land. Based on recent development, surface disturbance per well pad will be approximately 11 acres and access roads will disturb approximately 3.5 acres per mile. If an economically recoverable deposit of gas is discovered, the development of that resource will be determined by the availability and strength of nearby markets or the creation of new infrastructure to access national or international markets.

It is estimated that the Nenana Basin contains 989 billion cubic feet of natural gas (Dixit 2017). If oil is discovered in economically recoverable quantities, it could be transported to market via a connection to the Trans-Alaska Pipeline. Given current understanding of the Nenana Basin geology, with estimated total basin reserves of 250 million barrels (Dixit 2017), the likelihood of discovering a pool with economically recoverable quantities of oil in the basin is very low; however, the investment Doyon Limited is making in exploration wells suggests the possibility that proprietary data may show greater oil and gas potential.

#### **N.4 NON-ENERGY LEASABLE MINERALS**

##### ***Gilsonite***

Gilsonite (also known as Uintahite and asphaltum) is a form of bitumen characterized by a relatively high melting temperature. It is commonly used as an additive in asphalt, drilling fluids, well casing cement, inks, paints, and foundry sand (American Gilsonite Company 2018). Occurrence is distributed globally, but mining primarily occurs in the largest known deposits in the Uintah Basin of Utah.

The 2008 report of the Alaska Division of Geological and Geophysical Surveys mentions the existence of gilsonite in Alaska. No known historical mining of Gilsonite has occurred in the planning area, and no future mining is expected to occur.

##### ***Phosphate***

Phosphate is used in the formulation of fertilizer. In the United States it is mined in Florida, North Carolina, Idaho, and Utah. It occurs in igneous deposits as the mineral apatite and in sedimentary deposits from shallow marine environments. A study conducted in Upper Idaho Gulch in the Tanana quadrangle near the town of

Tofty noted the presence of two carbonate bodies containing up to 40 percent apatite (Warner et al. 1986). A study of phosphate content focusing on the Naval Petroleum Reserve north of the planning area reported sedimentary phosphate deposits in Mississippian and Triassic age formations along the foothills of the Brooks Range, some of which may be within the project area (Patton and Matzko 1959). No historic or current phosphate mining occurs in the CYFO planning area, and no future mining is expected to occur.

### **Potash (Potassium)**

Potash is a source of potassium used in fertilizer production. No potash mining occurs or is expected in the planning area, and there are no known significant potash deposits in Alaska (Orris et al. 2014).

### **Sulfur**

Sulfur is a common element that is primarily used in the manufacture of fertilizer. It occurs in volcanic environments and is produced as a byproduct of oil refining. Deposits of sulfide minerals occur in the Brooks Range in the northwest part of the planning area (USGS 1996). No past or present sulfur mining is occurring in the planning area, and no future mining is expected.

### **Sodium**

Sodium is a highly reactive metal, typically mined from sodium chloride or sodium bicarbonate deposits. No known significant sodium deposits exist in the planning area, and no mining is anticipated.

## **N.5 COAL**

The CYFO contains six coal areas: Northern Alaska-Slope Coal Province, Upper Koyukuk Basin, Lower Koyukuk Basin, Rampart Field, Nenana Basin, and the Tozitna Coal District. Coal mining is actively occurring at one location in the planning area: the Usibelli Coal Mine, in the Nenana Basin near the town of Healy. See **Map N-4** for development potential ranking and **Map N-5** for the location of known coal basins.

The Northern Alaska-Slope Coal Province is a large coal province in northern Alaska that partially overlaps the northern portion of planning area. Coal formations in this province are subbituminous and bituminous. No development is expected in this area, due to the difficulty and expense of operating in an arctic environment, a limited transportation network, and the distance to markets.

The Upper Koyukuk Basin is near the town of Coldfoot. Coal in this area is ranked as bituminous, and small-scale historic mining occurred at this location. No mining is anticipated to occur in this basin due to the distance to potential markets.

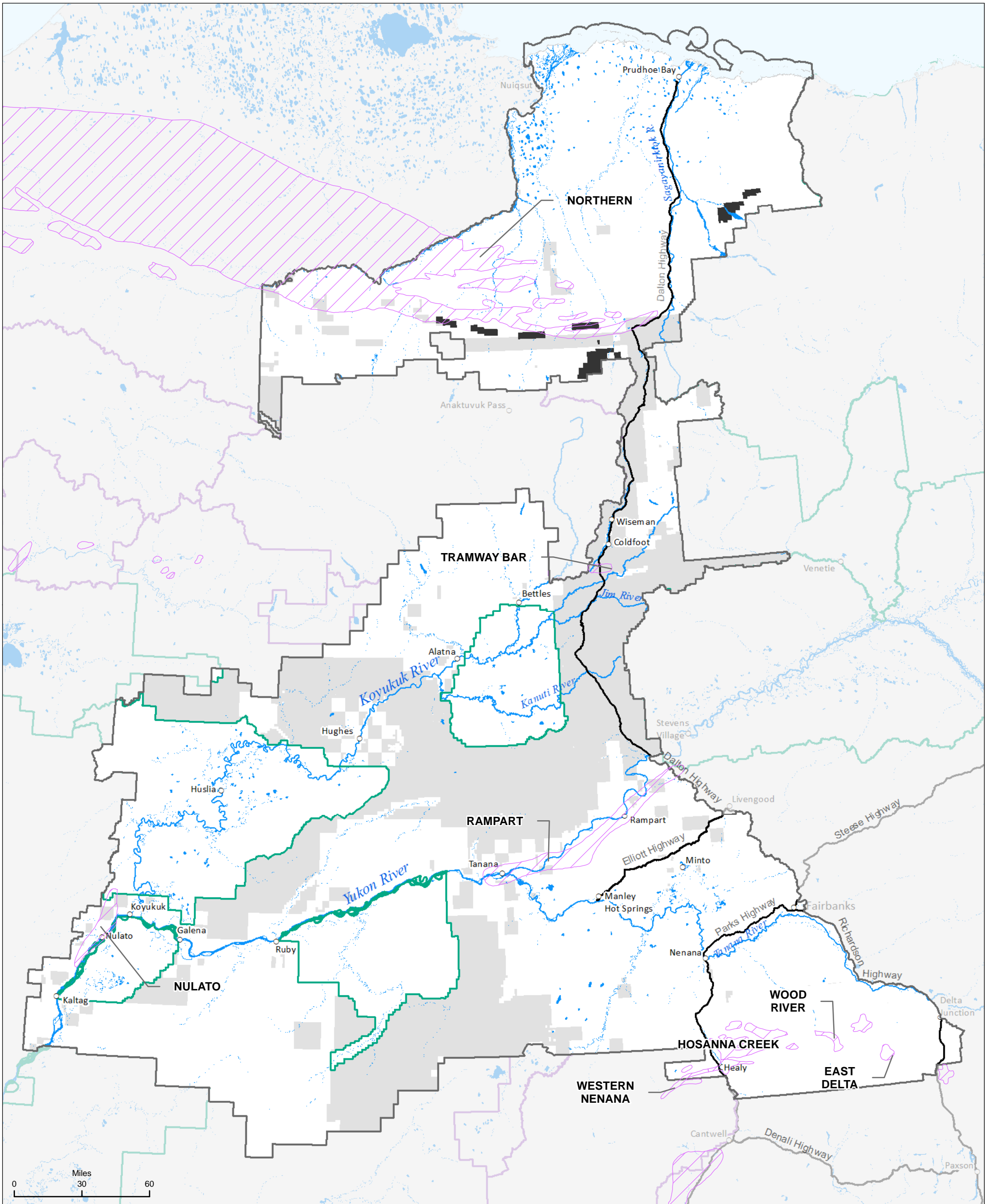
Lower Koyukuk Basin is a bituminous basin along the Yukon River. Historic mining occurred at the Nulato Field within this basin during the early 1890s to 1900s. The degree of folding and faulting in the field makes mining difficult. Coal is visible in isolated occurrences along the Yukon River. No future mining is expected to occur.

Rampart Field is a bituminous field near the town of Rampart. Coal beds are less than five feet thick and steeply dipping, which would make mining difficult. No mining is anticipated in this field.

Nenana Basin is a subbituminous basin near the town of Healy. Usibelli Coal Mine is actively mining in this field. Federal land ownership near the mine is small and in scattered parcels. Mining is expected to continue at Usibelli Coal Mine but is not expected to expand into any federal minerals.

Tozitna Coal District contains low-grade coal in sub-economic-sized deposits. No mining is anticipated.



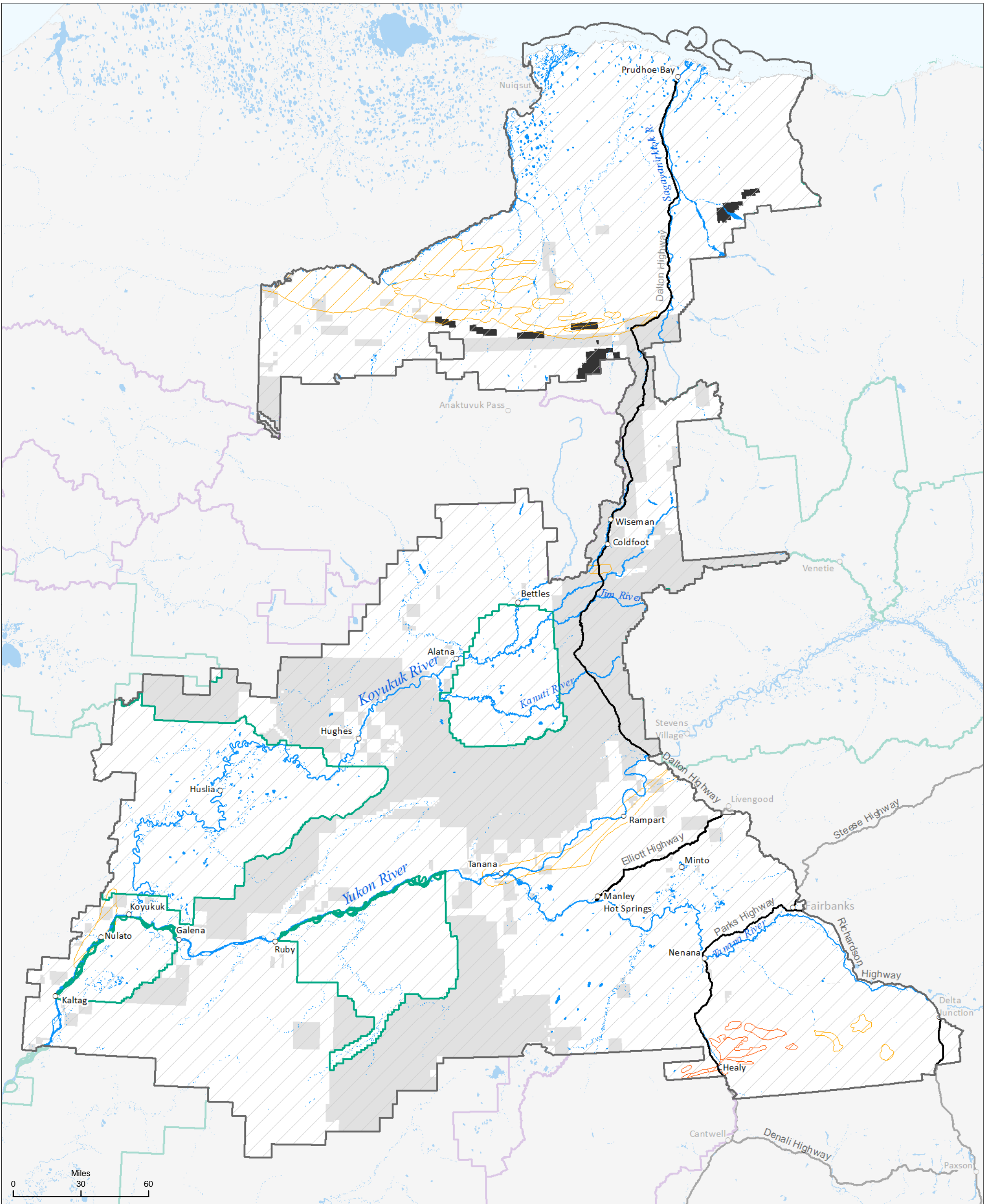


- Coal basin
- Federal mineral estate
- BLM surface, Native patent subsurface



Map N-4

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- Coal Potential
- Low
- Very low
- None
- Federal mineral estate
- BLM surface, Native patent subsurface



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## **N.6 RIGHTS-OF-WAY**

Within the CYFO planning area there are about 315 authorized long-term (20 years or more) rights-of-way (ROWs). The earliest ROWs date from about 1950. ROWs are classified as either destructive, meaning that the permit holder can modify the land and vegetation within the ROW, or nondestructive, meaning that the area within the ROW will not be significantly changed.

The 301 destructive ROWs are estimated to cover approximately 14,340 acres, based on information in case file abstracts, which are not always accurate. Many of the permitted ROWs originally covered more acres, but as lands have transferred to the State, jurisdiction has in many cases transferred. For example, only small pieces of the Parks and Richardson Highways remain under a BLM ROW; therefore, acres are assumed to not be accurate in many cases.

There are 13 permitted nondestructive research ROWs that cover 77,127 acres (most of this acreage is due to one ROW issued to Alaska Department of Fish and Game for snowmobile access to pick up radio collars on 76,000 acres).

The following are proposed major projects that would require ROWs on BLM-managed lands:

- The Alaska Stand Alone Pipeline is a proposed natural gas pipeline that would transport natural gas from the North Slope to communities in southern Alaska. The main pipeline would be 733 miles long with a 30-mile-long sidetrack connecting the main pipeline to Fairbanks. The ROW would range from a 120-foot easement at its narrowest point to a 350-foot easement at its widest point.
- The Alaska Liquid Natural Gas project is a proposed project to transport natural gas from the North Slope to an export terminal in southern Alaska. The proposed pipeline is 807 miles long, with a 120-foot ROW.
- Ambler Road is a proposed road to access the Ambler Mining District in the Brooks Range. The proposed road is 211 miles long, with a 250-foot wide ROW. The road will primarily run through state and native lands, with the BLM ROW limited to a few miles.
- The Arctic Strategic Transportation and Resources (ASTAR) network is a proposed transportation network that would provide road access to towns and villages across the North Slope. It is still in the conceptual stage, and no firm mileage estimates have been published.
- The Anaktuvuk Pass Winter Road is an ice road constructed between the Dalton Highway and the town of Anaktuvuk Pass to efficiently ship supplies to the town and to test a possible alignment for an ASTAR Road. The road is 101 miles long, with 27.6 miles on BLM-managed land. The ROW is 30 feet wide and is only used in the winter months when the ice road is open or being constructed.
- The Western Alaska Access Road (also known as the Road to Nome or Tanana Road) is a proposed road network with sections connecting towns and villages across western Alaska. The proposed Manley to Nome section totals approximately 548 miles of proposed variable-width ROW, with an average 500-foot easement width. The Nenana to Tanana/Totchaket Road section would be 150 miles long, with a 60-foot-wide ROW. This project no longer appears likely to happen (Anchorage Daily News 2016).

## **N.7 SALABLES**

Salable materials include gravel, rip-rap, sand, and common fill. They are typically used in pipeline and road construction and reinforcement. There are numerous salable material pits in the planning area; authorized, interim, and pending permits total approximately 40,502 acres on BLM-managed lands. Demand for salable

materials is driven primarily by construction projects. The ROW section above outlines planned or proposed projects in the vicinity of the CYFO, many of which may require significant amounts of salable materials from both existing and new pits. Estimates of material needs by project are provided below.

The Alaska Stand Alone Pipeline is projected to need approximately 25 million cubic yards of material and has proposed the construction of 18 new gravel pits on BLM-managed lands in addition to the use of 20 existing pits on BLM-managed lands.

The Alaska Liquid Natural Gas Pipeline does not have gravel estimates, but the pipeline is approximately 800 miles in length (37 miles longer than the proposed Alaska Stand Alone Pipeline). Gravel needs should be similar across the two projects. Alaska Liquid Natural Gas has identified 149 potential source pits along the route, 31 of which are on BLM-managed lands.

Preliminary planning for the Ambler Road ROW identified 40 new material sites and 8 alternate sites. In addition, two existing sites are proposed for use. Both existing sites and two of the proposed sites are on BLM-managed land; the proposed new sites would total 156 acres. It is estimated that at least 9.5 million cubic yards of gravel would be required for the road construction; however, only a very small portion would be sourced from pits on BLM-managed lands.

The final environmental impact statement for the oil and gas leasing program for the 1002 Area of the Coastal Plain was released in September 2019. The 1002 Area is on the eastern North Slope adjacent to the CYFO. If leases are developed in this area, gravel would be required for the construction of roads, well pads, and pads for storage and processing facilities. It is estimated that there are sufficient gravel resources within the 1002 Area such that imports from the CYFO planning area would not be required.

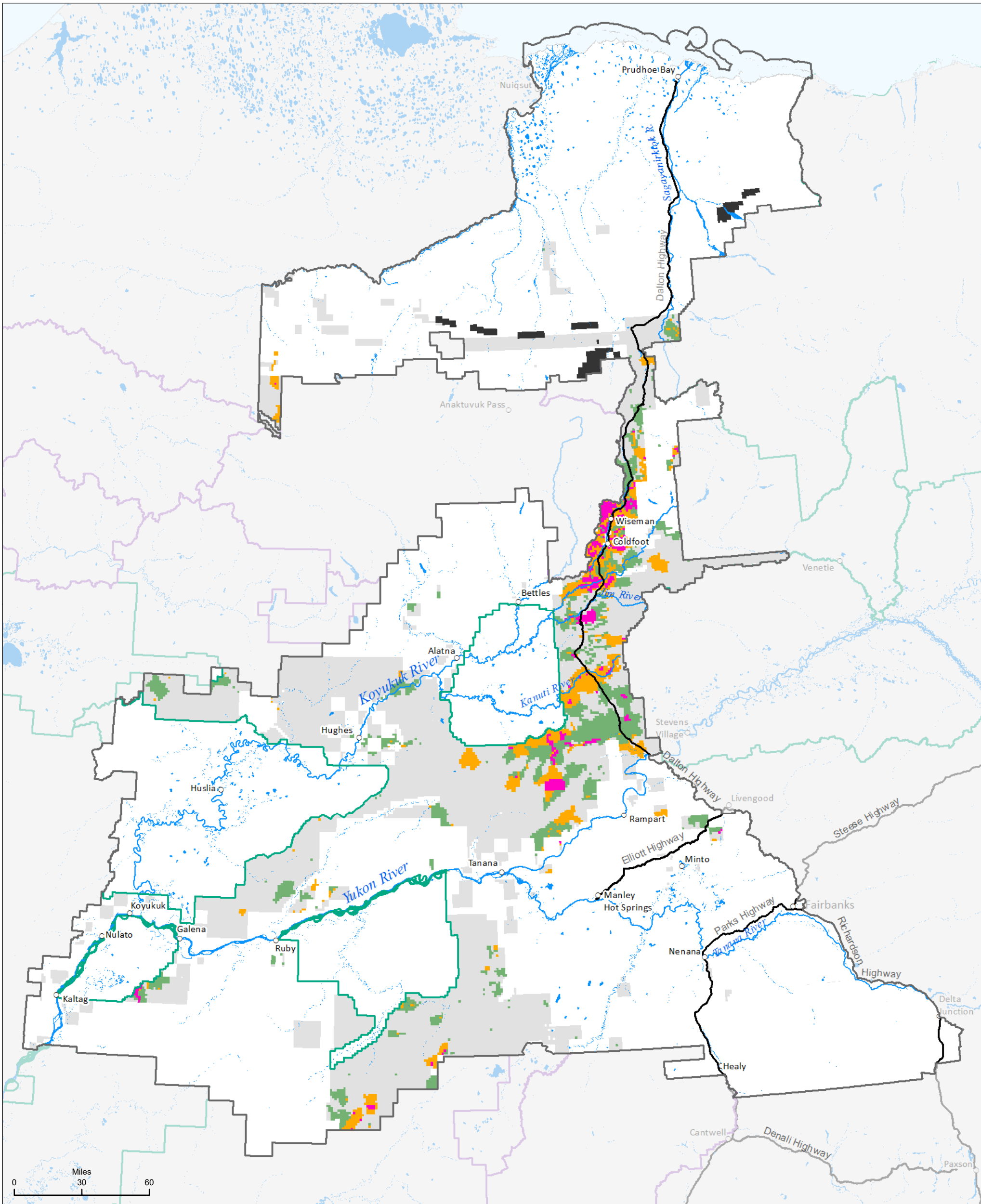
The ASTAR Network is a proposed transportation network providing road access to towns and villages across the North Slope. The network layout is still being determined, so the total amount of material that would be necessary for road construction and the number of pits that would be located on BLM-managed lands is unknown at this time.

## **N.8 LOCATABLE MINERALS**

### ***Locatable Mineral Potential and Projections***

The data and statistical methods described below were used to spatially rank locatable mineral potential and create a locatable mineral potential map shown in **Map N-6**, below.

On BLM-managed lands in the project area, 23,800 acres are ranked as high potential for locatable minerals, 781,800 acres are ranked as medium potential, 1,616,400 acres are ranked as low potential, and 10,661,200 acres are considered to have no potential.



Locatable Mineral Potential Total

- High (≥10)
- Medium (4-9)
- Low (1-3)
- Federal mineral estate
- BLM surface, Native patent subsurface



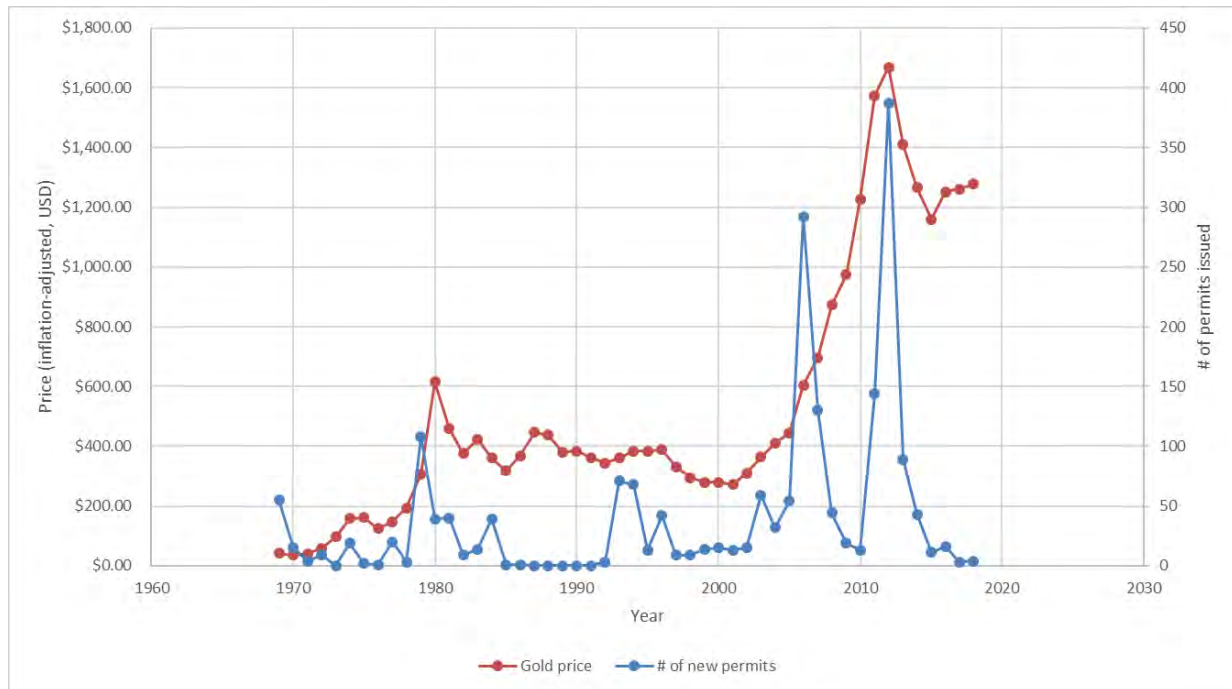
Map N-6

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Production of locatable minerals in the planning area is expected to continue into the foreseeable future. The rate and trend of locatable mineral production is closely tied to the price of gold and is very difficult to predict. This document uses the rate of federal locatable mineral mining permits issued in the planning area to estimate future production. Permit issuance peaked in 2012, with 387 permits issued as the average price of gold hit \$1,668.86 per troy ounce (Macrotrends.com 2018). Over the last 10 years an average of approximately 82 permits per year have been issued; however, in the past 5 years the average has declined to approximately 32 permits per year as the price of gold dropped. Since the price of gold was deregulated in 1971, an average of approximately 42 federal permits per year have been issued in the planning area. It is estimated that an average of 30 to 50 new federal permits will be issued per year. Most permits are issued for 20-acre tracts, but larger permits can be issued. **Figure N-3**, below, shows the average price of gold and new permits issued since 1969.

**Figure N-3. Average Annual Price of Gold and New Permits Issued Since 1969**



Source: Hoppe 2018, Macrotrends.com 2018

The primary locatable minerals in the planning area are gold, silver, copper, nickel, and chromite. Physiography, geology, and culture influence the exploration, development, and extraction of locatable mineral resources. Typically, gold is the driver of development in the planning area, and other minerals are produced when they co-occur in gold deposits. The amount of exploration, development, and extraction depends on worldwide demand, the geologic concentrations of needed minerals, and physiographic and geographic accessibility. The supply and demand of locatable minerals exists in a relatively global market, while costs to produce minerals are relatively local. Assessment of development potential for the planning area evaluates both the global value and local costs.

To estimate future mineral resources and create a development potential map a combination of mining claim locations, documented mineral occurrences, active mining and exploration operations, and high-potential mineral occurrence areas were examined. This potential map is shown in **Map N-6**, above. In the figure, areas with a rating of zero are considered to have no locatable mineral potential, areas with a score of 1 to 5 are

considered to have low potential, areas with a score of 6 to 9 are considered to have moderate potential, and areas with a score of 10 to 13 are considered to have high potential.

### ***Locatable Mineral Potential Determination***

The following information sources and categories were used to determine locatable mineral potential for the planning area. Potential was determined without consideration of current land status. See Hoppe (2018) for further details regarding the methods used in developing the locatable mineral potential layer.

### ***Mineral Occurrences***

For discovery locatable resources, explorers follow anomalous regional sample results to identify and isolate mineralized areas. Explorers stake mining claims over the identified areas and then conduct physical sampling to characterize any mineralized rock they may discover. If results are favorable, a mine may develop. If economic or other conditions are not favorable for development, sites are either reclaimed and abandoned, or held until conditions improve. Accordingly, mining claims are a good indicator of the location of known minerals and an indicator of future mineral activity, especially if metal prices rise.

Mineral potential reports, regional geology, and mineral occurrence databases predict trends and identify areas of mineral development potential. Results of the Koyokuk Mining District Assessment were published in BLM Technical Report 50 (TR50; Kurtak et al. 2002). This study conducted substantial physical investigations of individual mineral occurrences. The study also incorporated previously conducted investigations and studies by various state, federal, and Alaska Native corporation entities, along with some industry data. This study covered about 50 percent of the planning area. The identified areas of mineral potential were compared to the recent evaluations of mineral potential by the USGS. Many of the areas identified in TR50 were also identified as showing magnetic anomalies in recent USGS Geographic Information Systems-based assessments. The coincidence of the USGS and the TR50 area of anomalous minerals validates the USGS data outside of the TR50 study area.

The USGS incorporates the latest and best regional geochemical sampling information available from state and federal agencies. The USGS put the statistical emphasis on specific geochemical signatures and included data from recent digitally enabled geologic maps, regional scale geophysical data, and to a lesser extent data from the Alaska Resource Data Files (ARDF) database. The reevaluation of the geochemical databases and the publication of the digitally enabled Geologic Map of Alaska (Wilson et al. 2015) allowed for this type of statewide assessment for the first time.

Mineral occurrence locations were taken from two mineral inventory databases: the ARDF developed by the USGS, and the Mineral Inventory Location System developed by the United States Bureau of Mines. The ARDF dataset, being more up to date in this region, is used primarily to locate mines, prospects, and occurrences in the planning area. Importantly, the current ARDF data set incorporated the data from TR50. The Alaska Mineral Information System database is a reorganized and revised version of data from Mineral Inventory Location System with ARDF, referenced to affirm and supplement the ARDF data.

In TR50, Kurtak et al. (2002), identified various placer deposits in the general Wiseman area, including copper-gold skarns in a 15-mile trend in the Bettie River area with the Evelyn Lee prospect in the center. Anomalous base and precious metals in strata-bound massive sulfides were identified surrounding Ernie Lake in the northern corner of the planning area. Additionally, a 62-mile belt of ophiolitic (uplifted oceanic mantle) rock with anomalies of chromite and nickel extends northeast from the north side of the Ray Mountains. Other anomalies from the study include gold values at upper Indian River and around the Jim River Pluton.

### *Historical Mineral Development*

In the late nineteenth and early twentieth centuries, prospectors discovered gold in Coldfoot and Wiseman and then as far as the Hogatza River. The gold rush started to fade by 1910, and gold production waxed and waned in response to fluctuations in the rest of the economy, occasional new discoveries, and changes in technology like the initiation of mechanized mining.

Gold was set at \$20 per troy ounce for much of early years of Alaska's development. The price was increased by the government to \$35 per troy ounce in 1934 in response to the Great Depression. It remained set around \$35 to \$40 until the price was allowed to be based on market demand starting in 1971. The price then slowly climbed. By early 1980, in response to escalating monetary inflation, the price climbed to an unadjusted price of about \$600 per ounce. The withdrawals of certain lands from mineral development associated with Alaska Native Claims Settlement Act were implemented in 1971; these lands have been closed to mineral entry since the price of gold was \$40 per ounce (approximately \$249 per ounce in 2018 dollars). The average price of gold for the last 10 years has been \$1,265 per ounce (Kitco.com 2018). As a result, lands with pre-1971 mining claims are considered high potential for development should restrictions be revoked.

### *Mining Claims*

The USGS mineral potential layers and the ARDF mineral occurrence layers are independent of land status. Many of the known occurrences were located before the broad-scale withdrawals. The USGS data are based on individual geochemical samples collected regardless of land status, often before land tenure was established.

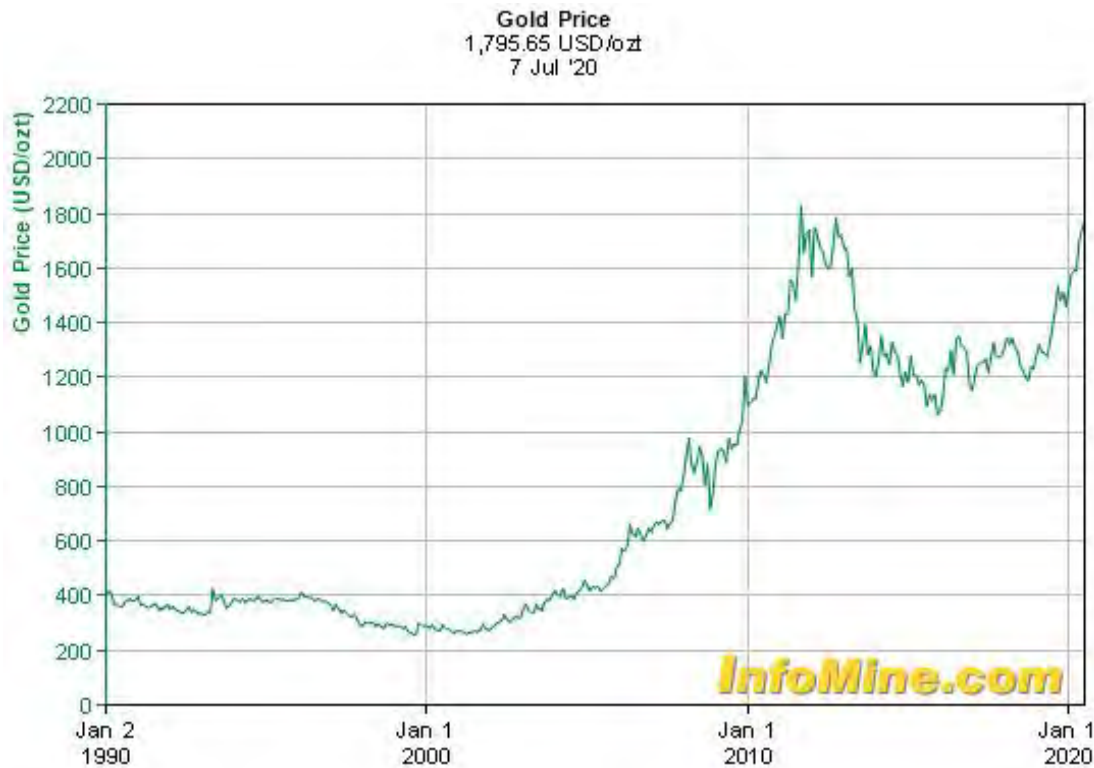
There are 4,967 state mining claims in the planning area, down from 5,685 in 2013. There are 41 state prospecting permits, down from 305. The number of federal claims is also reduced at 621 (down from 1,411 in 2013). The prevalence of mining claims acts as a surrogate for weighting and averaging gold and other commodity prices. Closed mining claims are given a statistical weight. This structure will give mining claims located in recent years a greater chance to influence future mineral potential. This structure also captures the dynamic nature of precious metal price variations; gold prices went from a low in 2003 to historic highs in 2011 and 2012, and through a substantial decline and recovery in recent years (**Figure N-4**). To incorporate and properly score the value of mining claims to future mineral potential, undigitized and closed mining claims are given a greater value when located on closed, selected, or Native corporation lands than on lands open to mineral entry, such as state lands or open federal lands.

Patented mining claims have a high potential for mineral development but are no longer BLM-managed land; however, there is a high likelihood that there would be mining activity on those and adjacent lands, so they are considered high potential.

### *Active Mining Operations*

The location of active mining operations based on the Application for Permits to Mine in Alaska (APMA) submitted in 2014 were used to indicate the level of mining activity in the planning area regardless of land status. All federal and state operations use the APMA application and its automated and multi-agency distribution system to facilitate permit processing. It is used for mechanical placer mining, hard rock exploration operations, suction dredges larger than 6 inches on state lands, and all dredges on federal lands. The year 2014 was selected because it most closely matches the average for commodity prices for the last 10 years. It is also average for the number of claims and operations.

**Figure N-4. Gold Price 1990 Through 2019**



Source: Infomine.com 2020

In the last 10 years there have been 1,270 APMAs filed, with a breakdown of types shown in **Table N-1**, below.

**Table N-1**  
**Applications for Permits to Mine in Alaska by Type**

Year	Exploration	Suction Dredge	Placer
2008-2017	85	43	954
2014	9	3	62

Source: Hoppe 2018

Of the 74 APMAs filed in 2014, 13 were federal, three were on private lands, 55 were on state land, one was on borough land, and two were on split estate. Review of the 2014 APMAs shows that an average exploration project has 10 employees, disturbs 0.75 acres of land, and processes or moves 3,173 yards of material. Exploration is not segregated into hard rock and placer in records. Placer exploration generally moves a larger volume of material than hard rock exploration.

In 2014, the average suction dredge operation employed 1.6 people, disturbed 0.8 acres, and processed 3,560 yards of material. This sample is too small to draw conclusions from because suction dredging is occasionally combined with mechanical mining as a final bedrock cleanup technique. An APMA is required for all BLM-authorized operations, but dredges with nozzles smaller than 6 inches are considered recreational and do not require an APMA on state lands.



The average mechanical placer mining operation has 3 workers, disturbs 5.3 acres of land, and excavates 18,000 cubic yards of material.

Exploration is occurring in the Ambler Mining District with a multimillion dollar investment in the Upper Kobuk Mineral Projects joint venture between South32 and Trilogy Metals. The projects have an estimated combined resource of 8 billion pounds of copper, 3 billion pounds of zinc, and 1 million ounces of gold equivalent (Jamasmie 2019).

#### *Land Status and Selected Lands*

Assessing the effect of land status in the planning area with various land management agencies and private landowners complicates the projection of locatable mineral development. It is assumed that all state land is open to location and entry under the mining laws except for fish and wildlife preserves and state parks.

The lands in the planning area are significantly remote by most standards, and any location of a mining claim is considered an act of significant mineral interest and the assertion of the existence of mineral development potential. Interim conveyed or patented Native corporations lands, now being private land, are closed to BLM mining claims; however, the Native corporations locally consider leases to develop mineral resources. The BLM has the recorded locations of pre-1968 mining claims on selected state and Native corporation lands to within the nearest section or quarter section of land.

Accordingly, closed mining claims on areas withdrawn since the early 1970s may be one of the best indications of mineral development potential. In the planning area there were 8,223 federal mining claims that all closed before the year 2000. There are also 185 closed federal mining claims that were excluded from earlier conveyances to the state. These lands will either be conveyed to the State of Alaska or they could become available for location of new mining claims if withdrawals are revoked.

#### *2016 USGS Strategic Mineral Evaluation*

The USGS Alaska Science Center described in Open-File Report 2016-1191 (Karl et al. 2016) the data-driven mineral evaluation of the potential for the occurrence of critical minerals associated with six mineral deposit models, with the assessment of gold and platinum placer deposits being of primary interest.

The USGS used publicly available regional-geochemistry sampling as a primary data set. These data were spatially compared to geophysical survey data, the ARDF dataset, and the digital “Geologic Map of Alaska” published by the USGS Alaska (Wilson et al. 2015). The evaluation assigned a mineral potential score to the geographic extent of each local watershed (an area averaging about 39 square miles). The analysis not only systematically determined the relative potential for unknown mineral occurrences but also scored relative confidence based on attributes of the datasets. The assessment emphasis was on regional soil, stream, and representative rock samples, with some emphasis on geophysical data.

This assessment for strategic minerals provides an objective assessment of undiscovered mineral potential in Alaska, but only for strategic minerals. Of the six deposit types evaluated in this study, only placer gold is produced in a significant way in the planning area. **Figure N-5**, from the Alaska’s Mineral Industry 2015 Report (Athey et al. 2016), shows that the money spent on strategic and critical minerals was only a small fraction of exploration expenditures. Accordingly, the strategic mineral evaluation was currently given very little statistical weight in determining mineral development potential.

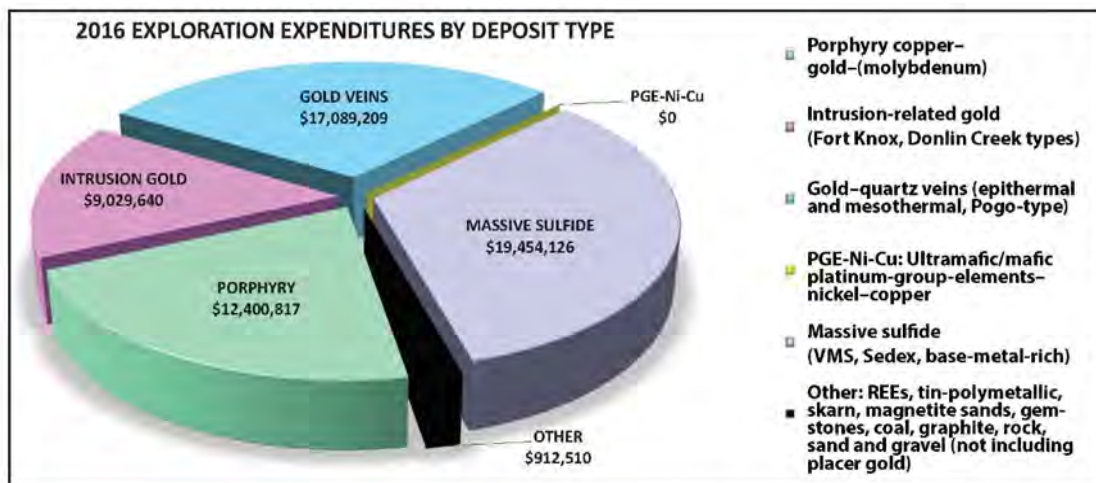
### 2018 USGS Lode Gold Evaluations

Starting in the latter half of 2016 and continuing through spring 2018, the USGS Alaska Minerals group has been evaluating three lode gold deposit types: orogenic lode gold, intrusive hosted gold, and epithermal lode gold deposit types. Their evaluation is identical to the 2016 assessment but with criteria specific for lode gold deposit types. Their separate lode gold model evaluations are combined into a single lode gold potential data layer. In their evaluation they found that the epithermal lode gold anomalies were spatially related to porphyry deposits.

Gold-bearing epithermal lode gold anomalies are known to radiate above and around porphyry intrusives. The epithermal gold may be used as a crude indicator of porphyry deposits if supplemented with ARDF and Alaska Mineral Information System data. The data were shared with the BLM in the summer of 2018, accompanied by the draft Open-file Report (Karl et al. 2016).

This evaluation is significant because exploration for lode gold deposit types in 2016 consumed most exploration expenditures (**Figure N-5**). Placer exploration comprised only about 6 percent of exploration (Freeman et al. 2015). Significant future exploration expenditure is expected to be dedicated to lode gold deposits.

**Figure N-5. Mineral Industry Report – 2016**



Source: Athey et al. 2016

### N.9 GEOTHERMAL

Numerous hot springs exist in the planning area, and studies suggest that some would be suitable for geothermal electric generation; however, most hot springs are in remote areas, often far from any utility connections or electricity markets. Additionally, the upfront costs of geothermal development are generally much greater than the costs associated with biomass generations systems, which are generally the favored replacement or supplement for diesel generators in remote Alaska towns and villages. No geothermal development is expected to occur on BLM-managed lands in the CYFO in the next 20 years.

### N.10 RARE EARTH ELEMENTS

USGS recently completed a study assessing mineral potential in the planning area. The study assessed the potential for rare earth element (REE) deposits associated with Peralkaline to Carbonatitic Igneous Rocks. The study pointed to two key areas, the Ruby Batholith and the Tofty mining district (Jones et al. 2015). Lands in both these areas are a mix of federal, state, and native lands.

The Ruby Batholith is north of the Yukon River, extending across much of the planning area in a southwest to northeast orientation. The Ruby Batholith is characterized by a discontinuous sheet of alluvial deposits rich in REEs, with a thickness of up to 325 feet in some areas. Rare earth mining company Ucore holds mining claims in the Ruby Batholith on either side of the Dalton Highway; material from the claims would be transportable via barge on the Yukon River during the summer season. Sampling is ongoing, but Ucore has not yet identified areas with REE concentrations high enough to be viable under current market conditions (Brehmer 2018). Ucore is working on plans to build an REE separation plant in Ketchikan, expected to be completed in 2020 (Brehmer 2018). Initially material will be supplied from other sites, but the plant location would be accessible by barge for any potential future operation in the Ruby Batholith.

The Tofty Ridge prospect near Manley Hot Springs has been extensively explored, including core drilling conducted by the U.S. Bureau of Mines and industry. Results from the exploration are 30 feet of trench rock sampling that average more than one percent REE (as cerium and lanthanum) and 0.15 percent niobium (Szumigala and Werdon 2011). The area has nearby road access and established placer gold mining, which could provide additional incentive for operators.

China controls almost all the current worldwide REE production capacity and can strategically influence prices by controlling the REE supply. REE pricing spiked in 2010 and 2011 due to export restrictions put in place by China; prices then crashed in 2015 due to a drastic increase in illegal exports by small-scale Chinese operators and production increases at non-Chinese operations (Home 2017; Treadgold 2015). These factors make the capital investment needed for new mining risky for operators. Overall development potential in the planning area is difficult to predict but is expected to be limited to continued exploration. The development of an operation in the Ruby Batholith is possible if Ucore exploration determines a favorable location and REE demand remains strong. A development in Tofty Ridge is unlikely, as no operators have yet filed an REE claim in the area.

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## **N.12 GLOSSARY**

**fluid minerals.** Oil, gas, coal bed natural gas, and geothermal resources.

**geothermal energy.** Natural heat from within the Earth, captured for production of electric power, space heating, or industrial steam.

**leasable minerals.** Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. They include coal, phosphate, asphalt, sulfur, potassium, and sodium minerals, and oil and gas. Geothermal resources are also leasable under the Geothermal Steam Act of 1970.

**locatable minerals.** Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

**mineral.** Any naturally formed inorganic material, solid, or fluid inorganic substance that can be extracted from the earth, any of various naturally occurring homogeneous substances (as stone, coal, salt, sulfur, sand, petroleum, water, or natural gas) obtained usually from the ground, under federal laws considered as locatable (subject to the general mining laws), leasable (subject to the Mineral Leasing Act of 1920), and salable (subject to the Materials Act of 1947).

**mineral estate.** The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

**mining claim.** A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, millsite, and tunnel site.

**Mining Law of 1872.** Provides for claiming and gaining title to locatable minerals on public lands. Also referred to as the “General Mining Laws” or “Mining Laws.”

**rare earth elements.** A group of seventeen chemical elements that occur together in the periodic table. The group consists of yttrium and the 15 lanthanide elements (lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium).

**reasonably foreseeable development scenario.** The prediction of the type and amount of development activity that would occur in a given area. The prediction is based on availability of resource, history of extraction or production, projected demand for the resource, and industry interest.

**right-of-way (ROW).** Public lands authorized to be used or occupied for specific purposes pursuant to a right-of-way grant, which are in the public interest and which require ROWs over, on, under, or through such lands.

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# Appendix O

Vegetation Communities and  
Wetland Resources

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

BLM	Bureau of Land Management
CY REA	Central Yukon Rapid Ecological Assessment
CYRMP	Central Yukon Resource Management Plan
FO	Field Office
NLCD	National Land Cover Database
REA	rapid ecological assessment
U.S.	United States

# Appendix O. Vegetation Communities and Wetland Resources

The following text describes the methods employed by the Bureau of Land Management (BLM) Central Yukon Field Office (FO) in developing a land cover map to cover the entire Central Yukon planning area to support the impacts analyses for the Central Yukon Resource Management Plan (CYRMP). The final product is a combination of the output of a model developed for the Central Yukon Rapid Ecoregional Assessment (CY REA, **Appendix G**) and the 2011 National Land Cover Database (NLCD) data. The final product to be used for the CYRMP resource impact analyses requiring a land-cover dataset was created using a multistep process as described below:

## **O.1 STEP 1—BASELINE LAND COVER TYPE SELECTION**

The primary component of the land cover map to be utilized for the CYRMP was developed to expand the boundaries of the CY REA mapping to the full planning area. The details of this work may be found in Section G of the Final CY REA report (<https://accscatalog.uaa.alaska.edu/dataset/central-yukon-rapid-ecoregional-assessment>).

The decision to rely primarily on the CY REA product is in keeping with the intention of the rapid ecological assessment (REA) to “collect and in some cases develop new distribution maps for key resource values.” Affiliates with the University of Alaska Fairbanks, the Alaska Center for Conservation Science (formerly known as the Alaska Heritage Program) conducted the CY REA, which resulted in the creation of seven terrestrial coarse filter conservation elements. The conservation elements (or land cover types) are defined as regionally important habitat types that share similar vegetation and biophysical site characteristics, such as permafrost characteristics, surficial deposit, disturbance, and succession.

The rationale for using the CY REA model and the resulting habitat types is that the BLM Central Yukon FO regards this information as the best available for the planning area. Furthermore, it is the policy of the BLM to use [this] REA information and similar information from other large-scale assessments to help prepare land use plans and plan amendments; conduct cumulative impact analyses; establish development, restoration, and conservation priorities; develop best management practices; and authorize public land uses (<https://www.blm.gov/policy/im-2013-082>).

The CY REA involved the selection and modelling of seven habitat types. The types were derived using a combination of several existing datasets, including the Vegetation Map of Northern, Western and Interior Alaska; the NLCD; the Northern Alaska Subsections; the Circumboreal Vegetation Map; and the National Hydrography Dataset Flowlines. Section G of the REA Final Report (link provided above), entitled Terrestrial Coarse-filter Conservation Elements, provides the details of model development for seven habitat types.

The land cover types modeled for the CY REA and subsequently used for the CYRMP are as follows:

1. Floodplain forest and shrub (hereafter referred to as Riparian)
2. Lowland woody wetland
3. Upland mesic spruce-hardwood forest

4. Upland mesic spruce forest
5. Upland low and tall shrub
6. Alpine and Arctic tussock tundra
7. Alpine dwarf shrub tundra

These seven baseline land cover types accounted for 86 percent of the CY REA area; the remaining 14 percent of the REA study area was not accounted for as a part of the REA exercise.

## **O.2 STEP 2—EXPANDING THE REA BOUNDARIES TO THE ENTIRE CENTRAL YUKON FO PLANNING AREA**

The CYRMP planning area is not entirely congruous with the CY REA study area. Therefore, the BLM conducted an in-house effort to apply the conservation elements models to the entirety of the planning area in 2018/2019 using the methodology described in Appendix G of the CY REA. The BLM re-created the seven REA classes for the entirety of the CYRMP area and merged them together into one raster dataset (values of greater than 100 assigned).

## **O.3 STEP 3—ACCOUNTING FOR AREAS NOT CLASSIFIED BY THE REA MODEL USING NLCD**

The decision was made that where the REA-modeled data had left blank pixels (17 percent of the planning area), those would be filled in with NLCD values (values 0–95 in the attribute table). As a result, an additional 11 of the following 13 NLCD classes were incorporated into the CYRMP land cover map for a total of 20 land cover types:

1. Unclassified (hereafter referred to as Off-shore/Ocean)
2. Perennial ice/snow
3. Developed
4. Barren land
5. Open water
6. Emergent herbaceous wetland
7. Grassland/herbaceous
8. Sedge/herbaceous
9. Moss
10. Cultivated crops
11. Pasture/hay
12. Evergreen forest
13. Dwarf shrub

## **O.4 STEP 4—COMBINED CLASSIFICATIONS**

The two NLCD classes not incorporated into the CYRMP land cover map as stand-alone land cover types are Evergreen forest and Dwarf shrub. These two types were incorporated into the seven baseline REA types. The rationale for this is as follows:

The Evergreen forest type was analyzed, and it was determined that the remnant evergreen forest areas had not been classified under the primary REA conservation element. Upland mesic spruce forest under Step 1

occurred only in or near waterways. Therefore, the NLCD Evergreen forest type was combined under the REA Floodplain forest and shrub type.

The Dwarf shrub type was analyzed, and it was determined that the remnant dwarf shrub areas that had not been classified only occurred in areas with significant topographic relief. Therefore, the NLCD Dwarf shrub type was combined under the REA Alpine dwarf shrub tundra type.

The final dataset provided by the BLM for the entire Central Yukon FO planning area consists of 18 distinct land cover types.

#### **O.5 STEP 5—LAND COVER NAMING CONVENTIONS AND COMBINATIONS**

The NLCD Unclassified areas were analyzed, and it was determined that these areas are actually not land cover types; they are offshore (ocean-covered) areas. Therefore, the NLCD class Unclassified has been renamed for the purposes of the resource management plan.

The four NLCD Developed types (Developed, Open Space; Developed, Low Intensity; Developed, Medium Intensity; Developed, High Intensity) were combined and are referred to as Developed.

The REA Floodplain forest and shrub type (including the NLCD Evergreen class incorporated into that type) will be referred to as Riparian to avoid terminology confusion in the CYRMP document. The term “floodplain” is used in different contexts in other sections of the document.

#### **O.6 STEP 6—CROSSWALK TO JURISDICTIONAL WETLAND CLASSES**

To support the wetland resource impact analysis, the BLM used a crosswalk from the CYRMP land cover types to probable jurisdictional wetland and waters classes. The crosswalk was developed by the wetland resource specialist for the Central Yukon FO project using a process described in Attachments 1 through 7 (below). The attachments also include a table of acreages, classification scheme, and broad-scale wetland type descriptions. The crosswalking effort conservatively included some land cover classes, which may include some upland areas but are likely to be wetlands in most cases.

## Attachment 1. Vegetation Classes Mapped in the Central Yukon Planning Area

Vegetation Class Wetland Type	Source	Description	Typical Species
<b>Open Water</b> Waters of the United States (U.S.)	NLCD	Areas of open water, including marine nearshore water, estuarine waters, freshwater lakes and ponds, and permanently flooded riverine channels. Nearshore waters occur on a limited basis along the Beaufort Sea Coast; freshwaters occur throughout the planning area.	N/A
<b>Emergent Herbaceous Wetlands</b> Freshwater Emergent Wetlands	NLCD	Areas where perennial herbaceous vegetation accounts for greater than 80 percent of the total vegetative cover, and the soil or substrate is periodically saturated or covered with water. Includes aquatic marshes and wet sedge meadows. Aquatic marshes are associated with lacustrine fringe areas throughout the planning area, and wet sedge meadows are typical of North Slope tundra.	<b>Sedges:</b> <i>Carex aquatilis</i> , <i>Eriophorum angustifolium</i> <b>Other Herbaceous:</b> <i>Arctophila fulva</i>
<b>Sedge/Herbaceous</b> Freshwater Emergent Wetlands	NLCD	Areas dominated by sedges and forbs, including tussock tundra and other sedge-dominated tundra types. Most commonly occurring in tundra areas north of the Brooks Range. Typically, a saturated hydrologic regime.	<b>Sedges:</b> <i>Eriophorum vaginatum</i> , <i>Carex bigelowii</i> <b>Shrubs:</b> <i>Betula nana</i> , <i>Ledum decumbens</i> , <i>Vaccinium vitis-idaea</i> , <i>Rubus chamaemorus</i> , <i>Salix pulchra</i> , <i>V. uliginosum</i> , <i>B. glandulosa</i> , <i>Empetrum nigrum</i> , <i>Cassiope tetragona</i> <b>Mosses:</b> <i>Sphagnum</i> spp., <i>Aulacomnium</i> spp., <i>Hylocomium splendens</i> <b>Lichens:</b> <i>Cladina</i> spp., <i>Flavocetraria</i> spp.
<b>Grassland/Herbaceous</b> Freshwater Emergent Wetlands	NLCD	Areas dominated by graminoid or herbaceous vegetation. Within the planning area, they may be common in old fire scars in early stages of revegetation. Likely includes a range of hydrologic regimes, from dry, well-drained meadows to seasonally flooded riparian areas.	<b>Other Herbaceous:</b> <i>Calamagrostis canadensis</i>
<b>Alpine-Arctic Tussock Tundra</b> Freshwater Emergent Wetlands	CY REA	Occurs in arctic Alaska, and on gentle slopes near or above treeline in the boreal region. This vegetation class is defined by the presence of tussock-forming sedges. Dwarf and low shrubs are often also important components of the community. Soils are typically poorly drained and acidic, with a poorly decomposed surface organic horizon.	<b>Sedges:</b> <i>Eriophorum vaginatum</i> , <i>Carex bigelowii</i> <b>Shrubs:</b> <i>Betula nana</i> , <i>Ledum decumbens</i> , <i>Vaccinium vitis-idaea</i> , <i>Rubus chamaemorus</i> , <i>Salix pulchra</i> , <i>V. uliginosum</i> , <i>B. glandulosa</i> , <i>Empetrum nigrum</i> , <i>Cassiope tetragona</i> <b>Mosses:</b> <i>Sphagnum</i> spp., <i>Aulacomnium</i> spp., <i>Hylocomium splendens</i> <b>Lichens:</b> <i>Cladina</i> spp., <i>Flavocetraria</i> spp.



Vegetation Class Wetland Type	Source	Description	Typical Species
<b>Lowland Woody Wetland</b> Freshwater Shrub Wetlands	CY REA	Occurs throughout the boreal region on lowland sites, including flat to gently sloping valley bottoms and abandoned floodplains. Soils are poorly drained and acidic, and a well-developed peat layer is often present. Permafrost is typically discontinuous. This vegetation class includes wetlands with needle-leaved tree species as well as sedge-shrub bogs and fens.	<b>Trees:</b> <i>Picea mariana</i> , <i>P. glauca</i> <b>Shrubs:</b> <i>Ledum groenlandicum</i> , <i>L. decumbens</i> , <i>Betula nana</i> , <i>B. glandulosa</i> , <i>Vaccinium uliginosum</i> , <i>V. vitis-idaea</i> , <i>Empetrum nigrum</i> , <i>Dasiphora fruticosa</i> <b>Sedges:</b> <i>Eriophorum vaginatum</i> , <i>E. angustifolium</i> , <i>Carex bigelowii</i> <b>Other Herbaceous:</b> <i>Calamagrostis canadensis</i> , <i>Equisetum</i> spp. <b>Mosses:</b> <i>Sphagnum</i> spp., <i>Hylocomium splendens</i> , <i>Pleurozium schreberi</i>
<b>Riparian Forest and Shrub</b> Freshwater Shrub Wetlands	CY REA	Occurs on floodplains throughout the boreal region; strongly influenced by fluvial processes. This vegetation class includes a mix of successional stages from pioneer communities on active floodplains to white spruce forests in late seral stages.	<b>Trees:</b> <i>Picea glauca</i> , <i>Populus balsamifera</i> <b>Shrubs:</b> <i>Salix</i> spp. (especially <i>S. alaxensis</i> ), <i>Alnus</i> spp., <i>Rosa acicularis</i> , <i>Viburnum edule</i> , <i>Shepherdia canadensis</i> <b>Other Herbaceous:</b> <i>Calamagrostis canadensis</i> , <i>Equisetum arvense</i> , <i>Chamerion latifolium</i> , <i>Hedysarum alpinum</i> , <i>Mertensia paniculata</i> <b>Mosses:</b> <i>Hylocomium splendens</i>
<b>Alpine Dwarf Shrub Tundra</b> Uplands	CY REA	Widespread above tree line on ridges, summits, and side slopes, and in snowbeds and high-elevation valleys. This vegetation class is dominated by dwarf and prostrate shrubs, with cover ranging from continuous on protected sites to sparse in exposed areas. Soils are typically thin, stony, and well-drained. Permafrost may be present.	<b>Shrubs:</b> <i>Dryas octopetala</i> , <i>Vaccinium uliginosum</i> , <i>V. vitis-idaea</i> , <i>Ledum decumbens</i> , <i>Kalmia procumbens</i> , <i>Empetrum nigrum</i> , <i>Diapensia lapponica</i> , <i>Cassiope tetragona</i> , <i>Betula nana</i> , <i>Salix arctica</i> , <i>S. phlebophylla</i> , <i>S. rotundifolia</i> , <i>S. reticulata</i> , <i>Arctous rubra</i> , <i>A. alpina</i> <b>Sedges:</b> <i>Carex bigelowii</i> , <i>C. microchaeta</i> <b>Other Herbaceous:</b> <i>Anthoxanthum monticola</i> , <i>Festuca altaica</i> , numerous forb species <b>Mosses:</b> <i>Hylocomium splendens</i> , <i>Racomitrium lanuginosum</i> , <i>Rhytidium rugosum</i> , <i>Dicranum</i> spp., <i>Polytrichum</i> spp. <b>Lichens:</b> <i>Cladina</i> spp., <i>Flavocetraria</i> spp., <i>Alectoria</i> spp., <i>Stereocaulon</i> spp., <i>Thamnoia vermicularis</i>

Vegetation Class Wetland Type	Source	Description	Typical Species
<b>Upland Low and Tall Shrub Uplands</b>	CY REA	Occurs throughout the boreal region. Includes low shrub tundra dominated by birch and low willows, as well as tall shrub thickets of alders and/or willows. Soils are usually well-drained to mesic, with shallow organic layer. Permafrost is often present.	<b>Tall Shrubs:</b> <i>Alnus</i> spp., <i>Salix pulchra</i> , <i>S. glauca</i> , <i>S. bebbiana</i> <b>Low Shrubs:</b> <i>Betula glandulosa</i> , <i>B. nana</i> , <i>Ledum groenlandicum</i> , <i>L. decumbens</i> , <i>Vaccinium uliginosum</i> , <i>V. vitis-idaea</i> , <i>Empetrum nigrum</i> <b>Other Herbaceous:</b> <i>Calamagrostis canadensis</i> , <i>Chamerion angustifolium</i> , <i>Equisetum arvense</i> , <i>Sanguisorba canadensis</i> <b>Mosses:</b> <i>Hylocomium splendens</i> , <i>Pleurozium schreberi</i> <b>Lichens:</b> <i>Cladina</i> spp.
<b>Upland Mesic Spruce Forest Uplands</b>	CY REA	Occurs throughout boreal Alaska from the south slopes of the Brooks Range to the north slopes of the Alaska Range. Soils are cold and well-drained with minimal peat layer. Canopy is typically open to woodland, with well-developed understory of low and dwarf shrubs.	<b>Trees:</b> <i>Picea glauca</i> , <i>P. mariana</i> <b>Shrubs:</b> <i>Alnus</i> spp., <i>Betula nana</i> , <i>B. glandulosa</i> , <i>Vaccinium uliginosum</i> , <i>Ledum groenlandicum</i> , <i>L. decumbens</i> , <i>Salix pulchra</i> , <i>Rosa acicularis</i> , <i>Empetrum nigrum</i> , <i>Spiraea steveni</i> <b>Other Herbaceous:</b> <i>Calamagrostis canadensis</i> , <i>Cornus canadensis</i> , <i>Equisetum sylvaticum</i> <b>Mosses:</b> <i>Hylocomium splendens</i> , <i>Pleurozium schreberi</i> <b>Lichens:</b> <i>Cladina</i> spp.
<b>Upland Mesic Spruce-Hardwood Forest Uplands</b>	CY REA	Occurs on upland terrain from the south slopes of the Brooks Range to south-central Alaska. Soils are well-drained, and permafrost is discontinuous. This class contains all postfire seral stages, including needle-leaved evergreen, broad-leaved deciduous, and mixed forests. Mature stands often have an open canopy with a well-developed shrub layer.	<b>Trees:</b> <i>Picea glauca</i> , <i>Betula neoalaskana</i> , <i>Populus tremuloides</i> <b>Shrubs:</b> <i>Alnus</i> spp., <i>B. glandulosa</i> , <i>Rosa acicularis</i> , <i>Ledum decumbens</i> , <i>L. groenlandicum</i> , <i>Salix glauca</i> , <i>Vaccinium uliginosum</i> , <i>V. vitis-idaea</i> , <i>Linnaea borealis</i> <b>Other Herbaceous:</b> <i>Calamagrostis canadensis</i> , <i>Equisetum arvense</i> , <i>E. sylvaticum</i> , <i>Gymnocarpium dryopteris</i> <b>Mosses:</b> <i>Hylocomium splendens</i>
<b>Barren Land Uplands</b>	NLCD	Areas of bare soil or rock, generally with less than 15 percent total vegetation cover. Where vegetation occurs, it typically consists of dwarf shrub, lichens, and mosses that are tolerant of dry hydrologic conditions	N/A
<b>Developed Uplands</b>	NLCD	Areas with a mixture of constructed materials and vegetation (includes all four levels of development intensity from the NLCD)	N/A

<b>Vegetation Class</b> Wetland Type	<b>Source</b>	<b>Description</b>	<b>Typical Species</b>
<b>Perennial Ice/Snow</b> Uplands	NLCD	Areas characterized by a perennial cover of ice or snow, or both, generally greater than 25 percent of the total cover. This class is typically a mixture of rocky barrens, and ice and snow.	N/A

**Attachment 2. Areas Open to Locatable Mineral Entry under Each Management Alternative,  
by Vegetation Class and Wetland Type**

Vegetation Class Wetland Type	Total on BLM- managed Lands		Open to Locatable Mineral Entry <sup>a</sup>									
			Alternative A (No Action)		Alternative B		Alternative C1		Alternative C2 (Preferred Alternative)		Alternative D	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
<b>Open Water</b> Waters of the U.S.	60,000	<1	24,000	<1	43,000	<1	50,000	<1	56,000	<1	56,000	<1
<b>Emergent Herbaceous Wetlands</b> Freshwater Emergent Wetlands	34,000	<1	13,000	<1	27,000	<1	30,000	<1	31,000	<1	31,000	<1
<b>Sedge/Herbaceous</b> Freshwater Emergent Wetlands	110,000	1	29,000	<1	79,000	1	87,000	1	99,000	1	99,000	1
<b>Grassland/Herbaceous</b> Freshwater Emergent Wetlands	396,000	3	230,000	3	331,000	3	377,000	3	396,000	3	396,000	3
<b>Alpine-Arctic Tussock Tundra</b> Freshwater Emergent Wetlands	632,000	5	88,000	1	442,000	4	468,000	4	557,000	4	557,000	4
<b>Lowland Woody Wetland</b> Freshwater Shrub Wetlands	468,000	4	266,000	4	385,000	4	448,000	4	461,000	4	461,000	4
<b>Riparian Forest and Shrub</b> Freshwater Shrub Wetlands	471,000	4	260,000	4	340,000	3	415,000	3	446,000	3	446,000	3
<b>Alpine Dwarf Shrub Tundra</b> Uplands	1,535,000	12	503,000	8	1,135,000	10	1,239,000	10	1,435,000	11	1,435,000	11
<b>Upland Low and Tall Shrub</b> Uplands	5,103,000	38	2,826,000	42	4,204,000	39	4,781,000	39	5,116,000	39	5,116,000	39
<b>Upland Mesic Spruce Forest</b> Uplands	3,081,000	23	1,818,000	27	2,689,000	25	2,979,000	24	3,087,000	24	3,087,000	24
<b>Upland Mesic Spruce-Hardwood Forest</b> Uplands	1,122,000	8	621,000	9	986,000	9	1,073,000	9	1,104,000	8	1,104,000	8
<b>Barren Land</b> Uplands	277,000	2	88,000	1	191,000	2	213,000	2	259,000	2	259,000	2
<b>Developed</b> Uplands	7,000	<1	0	0	0	0	0	0	7,000	<1	7,000	<1
<b>Perennial Ice/Snow</b> Uplands	4,000	<1	1,000	<0	1,000	<1	1,000	<1	3,000	<1	3,000	<1
<b>Totals</b>	<b>13,300,000</b>	<b>100</b>	<b>6,767,000</b>	<b>100</b>	<b>10,853,000</b>	<b>100</b>	<b>12,161,000</b>	<b>100</b>	<b>13,057,000</b>	<b>100</b>	<b>13,057,000</b>	<b>100</b>

Note: Due to rounding of acreages displayed for ease of interpretation, percentages when summed do not totally exactly 100.

<sup>a</sup>Percentages for each alternative are the percentages of the total open area occupied by each vegetation class/wetland type.

**Attachment 3. Areas with High Potential Open to Locatable Mineral Entry under Each Management Alternative,  
by Vegetation Class and Wetland Type**

Vegetation Class Wetland Type	Total on BLM- managed Lands		Open to Locatable Mineral Entry <sup>a,b</sup>									
			Alternative A (No Action)		Alternative B		Alternative C1		Alternative C2 (Preferred Alternative)		Alternative D	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
<b>Open Water</b> Waters of the U.S.	60,000	<1	1,000	1	1,000	<1	1,000	<1	1,000	<1	1,000	<1
<b>Emergent Herbaceous Wetlands</b> Freshwater Emergent Wetlands	34,000	<1	0	0	0	0	0	0	0	0	0	0
<b>Sedge/Herbaceous</b> Freshwater Emergent Wetlands	110,000	1	0	0	1,000	<1	1,000	<1	1,000	<1	1,000	<1
<b>Grassland/Herbaceous</b> Freshwater Emergent Wetlands	396,000	3	1,000	1	2,000	<1	2,000	1	3,000	1	3,000	1
<b>Alpine-Arctic Tussock Tundra</b> Freshwater Emergent Wetlands	632,000	5	2,000	1	4,000	2	4,000	2	4,000	1	4,000	1
<b>Lowland Woody Wetland</b> Freshwater Shrub Wetlands	468,000	4	3,000	2	4,000	2	4,000	2	5,000	2	5,000	2
<b>Riparian Forest and Shrub</b> Freshwater Shrub Wetlands	471,000	4	7,000	4	14,000	6	14,000	6	19,000	7	19,000	7
<b>Alpine Dwarf Shrub Tundra</b> Uplands	1,535,000	12	33,000	19	38,000	17	39,000	17	40,000	15	40,000	15
<b>Upland Low and Tall Shrub</b> Uplands	5,103,000	38	93,000	54	115,000	52	117,000	52	140,000	52	140,000	52
<b>Upland Mesic Spruce Forest</b> Uplands	3,081,000	23	19,000	11	27,000	12	27,000	12	36,000	13	36,000	13
<b>Upland Mesic Spruce-Hardwood Forest</b> Uplands	1,122,000	8	8,000	5	11,000	5	11,000	5	13,000	5	13,000	5
<b>Barren Land</b> Uplands	277,000	2	5,000	3	6,000	3	6,000	3	6,000	2	6,000	2
<b>Developed</b> Uplands	7,000	<1	0	0	0	0	0	0	1,000	<1	1,000	<1
<b>Perennial Ice/Snow</b> Uplands	4,000	<1	0	0	0	0	0	0	0	0	0	0
<b>Totals</b>	<b>13,300,000</b>	<b>100</b>	<b>172,000</b>	<b>100</b>	<b>223,000</b>	<b>100</b>	<b>226,000</b>	<b>100</b>	<b>269,000</b>	<b>100</b>	<b>269,000</b>	<b>100</b>

Note: Due to rounding of acreages displayed for ease of interpretation, percentages when summed do not totally exactly 100.

<sup>a</sup>Percentages for each alternative are the percentages of the total open area occupied by each vegetation class/wetland type.

<sup>b</sup>It should be noted that mineral development generally occurs in valley bottoms where upland vegetation is not present.

**Attachment 4. Areas Open to Right-of-Way Location under Each Management Alternative,  
by Vegetation Class and Wetland Type**

Vegetation Class Wetland Type	Total on BLM- managed Lands		Open to Rights-of-Way with Standard Restrictions <sup>a</sup>									
			Alternative A (No Action)		Alternative B		Alternative C1		Alternative C2 (Preferred Alternative)		Alternative D	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
<b>Open Water</b> Waters of the U.S.	60,000	0	58,000	1	24,000	0	40,000	0	56,000	0	58,000	0
<b>Emergent Herbaceous Wetlands</b> Freshwater Emergent Wetlands	34,000	0	31,000	0	16,000	0	25,000	0	31,000	0	31,000	0
<b>Sedge/Herbaceous</b> Freshwater Emergent Wetlands	110,000	1	104,000	1	40,000	1	79,000	1	100,000	1	104,000	1
<b>Grassland/Herbaceous</b> Freshwater Emergent Wetlands	396,000	3	396,000	3	211,000	4	356,000	4	387,000	3	396,000	3
<b>Alpine-Arctic Tussock Tundra</b> Freshwater Emergent Wetlands	632,000	4	535,000	4	266,000	5	442,000	5	502,000	4	535,000	4
<b>Lowland Woody Wetland</b> Freshwater Shrub Wetlands	468,000	4	468,000	4	261,000	5	412,000	4	458,000	4	468,000	4
<b>Riparian Forest and Shrub</b> Freshwater Shrub Wetlands	471,000	4	465,000	4	162,000	3	263,000	3	440,000	4	465,000	4
<b>Alpine Dwarf Shrub Tundra</b> Uplands	1,535,000	11	1,429,000	12	342,000	6	702,000	7	1,258,000	10	1,429,000	11
<b>Upland Low and Tall Shrub</b> Uplands	5,103,000	39	5,094,000	41	2,033,000	36	3,842,000	39	4,668,000	38	5,094,000	39
<b>Upland Mesic Spruce Forest</b> Uplands	3,081,000	24	3,081,000	25	1,619,000	29	2,659,000	27	2,949,000	24	3,081,000	24
<b>Upland Mesic Spruce-Hardwood Forest</b> Uplands	1,122,000	9	1,122,000	9	598,000	11	914,000	9	1,050,000	9	1,122,000	9
<b>Barren Land</b> Uplands	277,000	2	248,000	2	17,000	0	41,000	0	228,000	2	248,000	2
<b>Developed</b> Uplands	7,000	0	7,000	0	4,000	0	6,000	0	7,000	0	7,000	0
<b>Perennial Ice/Snow</b> Uplands	4,000	0	4,000	0	1,000	0	2,000	0	4,000	0	4,000	0
<b>Totals</b>	<b>13,300,000</b>	<b>100</b>	<b>13,042,000</b>	<b>100</b>	<b>5,594,000</b>	<b>100</b>	<b>9,783,000</b>	<b>100</b>	<b>12,138,000</b>	<b>100</b>	<b>13,042,000</b>	<b>100</b>

Note: Due to rounding of acreages displayed for ease of interpretation, percentages when summed do not totally exactly 100.

<sup>a</sup>Percentages for each alternative are the percentages of the total open area occupied by each vegetation class/wetland type.

**Attachment 5. Areas Open to Mineral Materials Disposal under Each Management Alternative,  
by Vegetation Class and Wetland Type**

Vegetation Class Wetland Type	Total on BLM- managed Lands		Open to Mineral Materials Disposal <sup>a</sup>									
			Alternative A (No Action)		Alternative B		Alternative C1		Alternative C2 (Preferred Alternative)		Alternative D	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
<b>Open Water</b> Waters of the U.S.	60,000	0	56,000	0	30,000	0	51,000	0	56,000	0	56,000	0
<b>Emergent Herbaceous Wetlands</b> Freshwater Emergent Wetlands	34,000	0	30,000	0	21,000	0	29,000	0	30,000	0	30,000	0
<b>Sedge/Herbaceous</b> Freshwater Emergent Wetlands	110,000	1	96,000	1	43,000	1	86,000	1	92,000	1	96,000	1
<b>Grassland/Herbaceous</b> Freshwater Emergent Wetlands	396,000	3	396,000	3	296,000	4	386,000	3	387,000	3	396,000	3
<b>Alpine-Arctic Tussock Tundra</b> Freshwater Emergent Wetlands	632,000	5	460,000	4	257,000	3	369,000	3	428,000	4	460,000	4
<b>Lowland Woody Wetland</b> Freshwater Shrub Wetlands	468,000	4	468,000	4	325,000	4	458,000	4	463,000	4	468,000	4
<b>Riparian Forest and Shrub</b> Freshwater Shrub Wetlands	471,000	4	456,000	4	206,000	3	396,000	3	435,000	4	456,000	4
<b>Alpine Dwarf Shrub Tundra</b> Uplands	1,535,000	12	1,340,000	10	646,000	8	1,005,000	9	1,189,000	10	1,341,000	10
<b>Upland Low and Tall Shrub</b> Uplands	5,103,000	38	5,072,000	40	3,017,000	38	4,582,000	39	4,724,000	39	5,077,000	40
<b>Upland Mesic Spruce Forest</b> Uplands	3,081,000	23	3,081,000	24	2,221,000	28	2,932,000	25	2,968,000	25	3,081,000	24
<b>Upland Mesic Spruce-Hardwood Forest</b> Uplands	1,122,000	8	1,122,000	9	861,000	11	1,075,000	9	1,083,000	9	1,122,000	9
<b>Barren Land</b> Uplands	277,000	2	228,000	2	114,000	1	194,000	2	214,000	2	228,000	2
<b>Developed</b> Uplands	7,000	0	7,000	0	4,000	0	6,000	0	7,000	0	7,000	0
<b>Perennial Ice/Snow</b> Uplands	4,000	0	3,000	0	0	0	1,000	0	3,000	0	3,000	0
<b>Totals</b>	<b>13,300,000</b>	<b>100</b>	<b>12,815,000</b>	<b>100</b>	<b>8,041,000</b>	<b>100</b>	<b>11,570,000</b>	<b>100</b>	<b>12,079,000</b>	<b>100</b>	<b>12,821,000</b>	<b>100</b>

Note: Due to rounding of acreages displayed for ease of interpretation, percentages when summed do not totally exactly 100.

<sup>a</sup>Percentages for each alternative are the percentages of the total open area occupied by each vegetation class/wetland type.

**Attachment 6. Areas Open to Forest Harvest under Each Management Alternative,  
by Vegetation Class and Wetland Type**

Vegetation Class Wetland Type	Total on BLM- managed Lands		Open to Forest Harvest <sup>a</sup>									
			Alternative A (No Action)		Alternative B		Alternative C1		Alternative C2 (Preferred Alternative)		Alternative D	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
<b>Open Water</b> Waters of the U.S.	60,000	0	58,000	0	38,000	0	45,000	0	58,000	0	58,000	0
<b>Emergent Herbaceous Wetlands</b> Freshwater Emergent Wetlands	34,000	0	31,000	0	23,000	0	27,000	0	31,000	0	31,000	0
<b>Sedge/Herbaceous</b> Freshwater Emergent Wetlands	110,000	1	104,000	1	74,000	1	96,000	1	104,000	1	104,000	1
<b>Grassland/Herbaceous</b> Freshwater Emergent Wetlands	396,000	3	396,000	3	363,000	3	391,000	3	396,000	3	396,000	3
<b>Alpine-Arctic Tussock Tundra</b> Freshwater Emergent Wetlands	632,000	5	535,000	4	456,000	4	527,000	4	535,000	4	535,000	4
<b>Lowland Woody Wetland</b> Freshwater Shrub Wetlands	468,000	4	468,000	4	375,000	4	443,000	3	468,000	4	468,000	4
<b>Riparian Forest and Shrub</b> Freshwater Shrub Wetlands	471,000	4	465,000	4	244,000	2	347,000	3	465,000	4	465,000	4
<b>Alpine Dwarf Shrub Tundra</b> Uplands	1,535,000	12	1,429,000	11	1,104,000	11	1,416,000	11	1,429,000	11	1,429,000	11
<b>Upland Low and Tall Shrub</b> Uplands	5,103,000	38	5,094,000	39	4,050,000	39	5,025,000	40	5,095,000	39	5,094,000	39
<b>Upland Mesic Spruce Forest</b> Uplands	3,081,000	23	3,081,000	24	2,527,000	24	3,024,000	24	3,081,000	24	3,081,000	24
<b>Upland Mesic Spruce-Hardwood Forest</b> Uplands	1,122,000	8	1,122,000	9	948,000	9	1,100,000	9	1,122,000	9	1,122,000	9
<b>Barren Land</b> Uplands	277,000	2	248,000	2	188,000	2	246,000	2	248,000	2	248,000	2
<b>Developed</b> Uplands	7,000	0	7,000	0	5,000	0	7,000	0	7,000	0	7,000	0
<b>Perennial Ice/Snow</b> Uplands	4,000	0	4,000	0	3,000	0	4,000	0	4,000	0	4,000	0
<b>Totals</b>	<b>13,300,000</b>	<b>100</b>	<b>13,042,000</b>	<b>100</b>	<b>10,398,000</b>	<b>100</b>	<b>12,698,000</b>	<b>100</b>	<b>13,043,000</b>	<b>100</b>	<b>13,042,000</b>	<b>100</b>

Note: Due to rounding of acreages displayed for ease of interpretation, percentages when summed do not totally exactly 100.

<sup>a</sup>Percentages for each alternative are the percentages of the total open area occupied by each vegetation class/wetland type.



**Attachment 7. Areas of Critical Environmental Concern and Research Natural Areas,  
by Vegetation Class and Wetland Type<sup>a</sup>**

Vegetation Class Wetland Type	Total on BLM- managed Lands		Areas of Critical Environmental Concern <sup>b</sup>							
			Alternative A (No Action)		Alternative B		Alternative C1		Alternative C2 (Preferred Alternative)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
<b>Open Water</b> Waters of the U.S.	60,000	0	6,000	0	17,000	0	6,000	1	1,000	1
<b>Emergent Herbaceous Wetlands</b> Freshwater Emergent Wetlands	34,000	0	2,000	0	6,000	0	1,000	0	0	0
<b>Sedge/Herbaceous</b> Freshwater Emergent Wetlands	110,000	1	22,000	1	39,000	1	7,000	2	2,000	3
<b>Grassland/Herbaceous</b> Freshwater Emergent Wetlands	396,000	3	66,000	4	87,000	2	1,000	0		0
<b>Alpine-Arctic Tussock Tundra</b> Freshwater Emergent Wetlands	632,000	5	98,000	6	174,000	4	64,000	15	38,000	49
<b>Lowland Woody Wetland</b> Freshwater Shrub Wetlands	468,000	4	56,000	3	114,000	3	4,000	1		0
<b>Riparian Forest and Shrub</b> Freshwater Shrub Wetlands	471,000	4	49,000	3	174,000	4	39,000	9		0
<b>Alpine Dwarf Shrub Tundra</b> Freshwater Shrub Wetlands	1,535,000	12	315,000	18	613,000	15	136,000	32	27,000	35
<b>Upland Low and Tall Shrub</b> Uplands	5,103,000	38	768,000	44	1,733,000	43	98,000	23	6,000	8
<b>Upland Mesic Spruce Forest</b> Uplands	3,081,000	23	239,000	14	756,000	19	32,000	8		0
<b>Upland Mesic Spruce-Hardwood Forest</b> Uplands	1,122,000	8	88,000	5	222,000	5	7,000	2		0
<b>Barren Land</b> Uplands	277,000	2	37,000	2	100,000	2	22,000	5	1,000	1
<b>Developed</b> Uplands	7,000	0	0	0	2,000	0	1,000	0	0	0
<b>Perennial Ice/Snow</b> Uplands	4,000	0	2,000	0	2,000	0	2,000	0	2,000	3
<b>Totals</b>	<b>13,300,000</b>	<b>100</b>	<b>1,748,000</b>	<b>100</b>	<b>4,039,000</b>	<b>100</b>	<b>420,000</b>	<b>100</b>	<b>77,000</b>	<b>100</b>

Note: Due to rounding of acreages displayed for ease of interpretation, percentages when summed do not totally exactly 100.

<sup>a</sup>There are no areas of critical environmental concern under Alternative D.

<sup>b</sup>Percentages for each alternative are the percentages of the total area in ACECs occupied by each vegetation class/wetland type.

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# Appendix P

Wildlife

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

ACEC	areas of critical environmental concern
ERMA	extensive recreation management area
NSO	no surface occupancy
ROW	right-of-way
SRMA	special recreation management area

# Appendix P. Wildlife

**Table P-1**  
**Percentages of Beaver Habitat by Management Action under the Alternatives**

Management Action	Alternative (percent)				
	A	B	C1	C2	D
Areas of critical environmental concern (ACECs)	15.9	33.3	2.3	0.0	0.0
ACEC/research natural area	0.6	1.0	0.0	0.0	0.0
Research natural area	0.0	0.1	1.0	0.6	0.0
Corridor—Open <sup>1</sup>	0.0	0.8	0.8	7.4	7.5
Closed to fluid minerals leasing	0.4	34.9	3.9	0.0	0.0
Withdrawn from fluid minerals leasing	56.8	6.8	6.8	0.0	0.0
Open to fluid minerals leasing	42.9	58.3	89.4	100	100
Open, subject to no surface occupancy (NSO) stipulation	0.0	4.9	4.6	0.0	0.0
Open, subject to controlled surface use stipulation	0.0	0.0	7.0	0.0	0.0
Open for mineral materials sales	100.0	56.7	91.6	94.8	100.0
Currently withdrawn from locatable mineral entry	33.8	6.8	6.8	0.0	0.0
Currently withdrawn but open to metalliferous	8.2	0.0	0.0	0.0	0.0
Recommended for withdrawal from locatable mineral entry	3.9	16.2	1.0	0.0	0.0
Open to locatable mineral entry	54.1	77.0	92.3	100.0	100.0
Open, State or Native selection, segregated	19.5	46.3	46.3	53.1	53.1
Right-of-way (ROW) avoidance area	0.0	40.6	23.0	6.8	0.0
ROW exclusion area	0.0	20.1	0.0	0.0	0.0
Open to ROW	100.0	39.3	77.0	93.2	100.0
Backcountry conservation Areas	0.0	12.6	0.0	0	0.0
Extensive recreation management area (ERMA)	0.3	0.0	0.0	11.4	0.0
Special recreation management area (SRMA)	25.0	5.2	20.7	5.2	0.0

Source: Reimer et al. 2016 (Note: Does not cover the entire planning area)

<sup>1</sup>Open to development of Umiat, Ambler, or Inner Dalton Corridors

**Table P-2**  
**Percentages of Caribou Herd Ranges (Galena Mountain, Ray Mountain, and Hodzana Hills Herds) by Management Action under the Alternatives**

Area	Management Action	Alternative (percent)				
		A	B	C1	C2	D
Galena Mountain Herd	ACEC	3.4	35.6	0.0	0.0	0.0
	Closed to fluid minerals leasing	0.0	37.9	0.0	0.0	0.0
	Withdrawn from fluid minerals leasing	100.0	0.0	0.0	0.0	0.0
	Open to fluid minerals leasing	0.0	62.1	100.0	100.0	100.0
	Open, subject to controlled surface use stipulation	0.0	0.0	10.0	0.0	0.0
	Open, subject to NSO stipulation	0.0	14.0	0.0	0.0	0.0
	Open for mineral materials sales	100.0	62.1	0.0	0.0	100.0
	Closed to non-energy solids	0.0	38.5	0.0	0.0	0.0
	Open to non-energy solids	0.0	60.9	100.0	100.0	100.0
	Withdrawn for non-energy solids	100.0	0.0	0.0	0.0	0.0

Area	Management Action	Alternative (percent)				
		A	B	C1	C2	D
Galena Mountain Herd (cont.)	Currently withdrawn from locatable mineral entry	9.2	0.0	0.0	0.0	0.0
	Currently withdrawn, but open to metalliferous	46.0	0.0	0.0	0.0	0.0
	Recommended for withdrawal from locatable mineral entry	0.0	26.4	0.0	0.0	0.0
	Open to locatable mineral entry	44.0	74.1	100.0	100.0	100.0
	Open, State or Native-selection, segregated	44.0	53.5	53.5	53.5	53.5
	ROW avoidance area	0.0	16.1	100	100	0.0
	ROW exclusion area	0.0	37.9	0.0	0.0	0.0
	Open to ROW	100.0	46.0	0.0	0.0	100.0
Ray Mountain Herd	ACEC	54.7	70.5	0.0	0.0	0.0
	Research natural area	1.9	1.7	0.0	0.0	0.0
	ERMA	0.0	1.6	1.6	0.0	0.0
	Closed to fluid minerals leasing	1.9	73.1	100.0	0.0	0.0
	Withdrawn from fluid minerals leasing	19.9	0.0	0.0	0.0	0.0
	Open to fluid minerals leasing	78.0	26.9	0.0	100.0	100.0
	Open, subject to NSO stipulation	0.0	16.0	0.0	0.0	0.0
	Open for mineral materials sales	100.0	26.6	0.0	0.0	100.0
	Closed to non-energy solids	1.9	76.9	100.0	0.0	0.0
	Open to non-energy solids	78.0	23.1	0.0	100.0	100.0
	Withdrawn for non-energy solids	19.9	0.0	0.0	0.0	0.0
	Currently withdrawn from locatable mineral entry	19.9	0.0	0.0	0.0	0.0
	Recommended for withdrawal from locatable mineral entry	15.6	19.4	27.1	0.0	0.0
	Open to locatable mineral entry	64.5	80.4	72.7	100.0	100.0
	Open, State or Native-selection, segregated	55.6	72.7	72.7	72.7	72.7
	ROW avoidance area	0.0	83.7	99.8	10.00.0	0.0
	ROW exclusion area	0.0	5.1	0.2	0.0	0.0
Open to ROW	100.0	11.2	0.0	0.0	100.0	
Hodzana Hills Herd	ACEC	16.1	30.3	0.9	0.0	0.0
	ERMA	0.0	0.0	0.0	45.5	0.0
	SRMA	100.0	7.2	64.0	7.2	0.0
	Closed to fluid minerals leasing	0.0	29.7	0.0	0.0	0.0
	Withdrawn from fluid minerals leasing	100.0	7.2	7.2	0.0	0.0
	Open to fluid minerals leasing	0.0	63.1	92.5	100.0	100.0
	Open, subject to controlled surface use stipulation	0.0	0.0	16.0	0.0	0.0
	Open, subject to NSO stipulation	0.0	27.0	47.0	0.0	0.0
	Open for mineral materials sales	100.0	46.7	99.1	100.0	100.0
	Closed to non-energy solids	0.0	66.0	0.0	0.0	0.0
	Open to non-energy solids	0.0	26.5	92.5	100.0	100.0
	Withdrawn for non-energy solids	100.0	7.2	7.2	0.0	0.0
	Currently withdrawn from locatable mineral entry	56.5	7.2	7.2	0.0	0.0
	Recommended for withdrawal from locatable mineral entry	2.3	16.7	0	0.0	0
	Open to locatable mineral entry	41.2	75.8	92.5	100.0	100.0
Open, State or Native selection, segregated	41.2	68.6	68.6	76.1	76.1	



Area	Management Action	Alternative (percent)				
		A	B	C1	C2	D
Hodzana Hills Herd (cont.)	ROW avoidance area	0.0	92.8	48.1	0.0	0.0
	ROW exclusion area	0.0	0.9	0.0	0.0	0.0
	Open to ROW	100.0	6.3	51.6	100.0	100.0

**Table P-3**  
**Percentages of Dall Sheep Critical Areas by Management Action under the Alternatives**

Area	Management Action	Alternative (percent)				
		A	B	C1	C2	D
Dall Sheep Habitat Area	ACEC	40.0	80.0	40.0	0.0	0.0
	ERMA	0.0	0.0	0.0	60.0	0.0
	SRMA	100.0	40.0	100.0	40.0	0.0
	Closed to fluid minerals leasing	0.0	40.0	0.0	0.0	0.0
	Withdrawn from fluid minerals leasing	100.0	40.0	40.0	0.0	0.0
	Open to fluid minerals leasing	0.0	20.0	60.0	100.0	100.0
	Open, subject to controlled surface use stipulation	0.0	0.0	20.0	0.0	0.0
	Open, subject to NSO stipulation	0.0	0.0	60.0	0.0	0.0
	Open for mineral materials sales	100.0	0.0	0.0	100.0	100.0
	Closed to non-energy solids	0.0	60.0	60.0	0.0	0.0
	Open to non-energy solids	0.0	0.0	0.0	100.0	100.0
	Withdrawn for non-energy solids	100.0	40.0	40.0	0.0	0.0
	Currently withdrawn from locatable mineral entry	60.0	40.0	40.0	0.0	0.0
	Recommended for withdrawal from locatable mineral entry	0.0	0.0	0.0	0.0	0.0
	Open to locatable mineral entry	40.0	60.0	60.0	100.0	100.0
	Open, State or Native selection, segregated	0.0	60.0	60.0	100.0	100.0
	ROW avoidance area	0.0	80.0	0.0	0.0	0.0
ROW exclusion area	0.0	0.0	100.0	0.0	0.0	
Open to ROW	100.0	20.0	0.0	100.0	100.0	
Dall Sheep Movement Corridor	ACEC	20.2	61.3	43.6	0.0	0.0
	ERMA	0.0	0.0	0.0	81.0	0.0
	SRMA	100.0	19.0	99.4	19.0	0.0
	Closed to fluid minerals leasing	0.0	52.8	0.0	0.0	0.0
	Withdrawn from fluid minerals leasing	100.0	19.0	19.0	0.0	0.0
	Open to fluid minerals leasing	0.0	28.8	81.6	100.0	100.0
	Open, subject to controlled surface use stipulation	0.0	0.0	24.0	0.0	0.0
	Open, subject to NSO stipulation	0.0	15.0	82.0	0.0	0.0
	Open for mineral materials sales	98.8	27.0	0.0	100.0	100.0
	Closed to non-energy solids	0.0	81.0	0.6	0.0	0.0
	Open to non-energy solids	0.0	0.6	81.0	100.0	100.0
	Withdrawn for non-energy solids	100.0	19.0	19.0	0.0	0.0

Area	Management Action	Alternative (percent)				
		A	B	C1	C2	D
Dall Sheep Movement Corridor (cont.)	Currently withdrawn from locatable mineral entry	19.0	19.0	19.0	0.0	0.0
	Recommended for withdrawal from locatable mineral entry	0.0	0.0	0.0	0.0	0.0
	Open to locatable mineral entry	81.5	81.5	81.5	100.0	100.0
	Open, State or Native selection, segregated	0.0	81.5	81.5	100.0	100.0
	ROW avoidance area	0.0	91.4	98.8	0.0	0.0
	ROW exclusion area	0.0	3.7	1.8	0.0	0.0
	Open to ROW	100.0	4.9	0.0	100.0	100.0
Dall Sheep Study Area	ACEC	8.4	19.4	10.5	0.0	0.0
	ERMA	0.0	0.0	0.0	68.2	0.0
	SRMA	98.4	11.3	79.2	11.3	0.0
	Closed to fluid minerals leasing	0.0	10.2	0.0	0.0	0.0
	Withdrawn from fluid minerals leasing	98.9	35.3	35.3	0.0	0.0
	Open to fluid minerals leasing	1.3	54.4	65.0	100.0	100.0
	Open, subject to controlled surface use stipulation	0.0	0.0	6.0	0.0	0.0
	Open, subject to NSO stipulation	0.0	11.0	10.0	0.0	0.0
	Open for mineral materials sales	100.0	69.8	94.9	100.0	100.0
	Closed to non-energy solids	0.0	43.9	0.3	0.0	0.0
	Open to non-energy solids	1.3	20.8	64.4	100.0	100.0
	Withdrawn for non-energy solids	98.9	35.3	35.3	0.0	0.0
	Currently withdrawn from locatable mineral entry	41.5	35.3	35.3	0.0	0.0
	Currently withdrawn but open to metalliferous	12.4	0.0	0.0	0.0	0.0
	Open to locatable mineral entry	46.1	65.0	65.0	100.0	100.0
	Open, State or Native selection, segregated	6.2	52.3	52.3	87.6	87.6
	ROW avoidance area	0.0	86.5	67.9	0.0	0.0
	ROW exclusion area	0.0	1.1	0.5	0.0	0.0
	Open to ROW	100.0	12.4	31.5	100.0	100.0
All Sheep Habitat	Closed to fluid minerals leasing	0.0	43.4	0.0	0.0	0.0
	Withdrawn from fluid minerals leasing	99.7	31.0	31.0	31.0	0.0
	Open to fluid minerals leasing	0.3	25.3	69.0	69	100.0
	Open, subject to controlled surface use stipulation	0.0	0.0	11.0	0.0	0.0
	Open, subject to NSO stipulation	0.0	12.0	32.0	0.0	0.0
	Open for mineral materials sales	99.8	27.7	73.4	100.0	100.0
	Closed to non-energy solids	0.0	58.7	0.2	0.0	0.0
	Open to non-energy solids	0.3	10.3	68.8	100.0	100.0
Withdrawn for non-energy solids	99.7	31.0	31.0	0.0	0.0	

Area	Management Action	Alternative (percent)				
		A	B	C1	C2	D
All Sheep Habitat (cont.)	Currently withdrawn from locatable mineral entry	34.6	30.3	30.3	0.0	0.0
	Currently withdrawn but open to metalliferous	8.6	0.0	0.0	0.0	0.0
	Recommended for withdrawal from locatable mineral entry	0.0	0.0	0.0	0.0	0.0
	Open to locatable mineral entry	56.8	69.8	69.8	100.0	100.0
	Open, State or Native selection, segregated	4.5	60.9	60.9	91.2	91.2

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## P.1 REFERENCES

Reimer, J.P., T. Nawrocki, M. Aisu, and T. Gotthardt. 2016. “Terrestrial fine-filter conservation elements.” In: Central Yukon Rapid Ecoregional Assessment (E. J. Trammell, T. Boucher, M. L. Carlson, N. Fresco, J. R. Fulkerson, M. L. McTeague, J. Reimer, and J. Schmidt, editors). 2016. Prepared for the Bureau of Land Management, U.S. Department of the Interior, Anchorage, Alaska.

## P.2 GLOSSARY

**areas of critical environmental concern (ACEC).** Special area designation established through the BLM’s land use planning process (43 CFR 1610.7-2) where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes, or to protect life and safety from natural hazards. The collaborative planning process establishes the level of allowable use within an ACEC. Designation of an ACEC allows for resource use limitations to protect identified resources or values.

**controlled surface use.** Areas open to fluid mineral leasing that allow surface-disturbing activities, subject to special operational constraints to protect the specified resource or value.

**Dall sheep habitat area.** BLM-managed lands identified as having the highest habitat conservation value in relation to Dall sheep.

**Dall sheep movement corridor.** BLM-managed lands identified as having significant value to Dall sheep for accessing seasonal ranges, mineral sources, forage habitat, and escape terrain.

**Dall sheep study area.** The remainder of the planning area that is known to be inhabited by Dall sheep but is not identified as a Dall sheep habitat area or Dall sheep movement corridor.

**extensive recreation management area (ERMA).** A public lands unit identified in land use plans containing all acreage not identified as an SRMA. Recreation management actions within an ERMA are limited to only those of a custodial nature.

**no surface occupancy (NSO).** A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the NSO area.

**research natural area.** A land management status that reserves the area for uses that are compatible with the resource of interest and research for which the area was designated.

**right-of-way (ROW).** A ROW grant is an authorization to use a specific piece of public land for a specific project, such as electric transmission lines, communication sites, roads, trails, fiber-optic lines, canals, flumes, pipelines, and reservoirs. The BLM’s policy is to authorize all ROW applications, at the Authorized Officer’s discretion, as efficiently and economically as possible. Generally, a ROW is granted for a term appropriate for the life of the project.

**special recreation management area (SRMA).** A public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities. Both land use plan decisions and subsequent implementing actions for recreation in each SRMA are geared to a strategically identified primary market—destination, community, or undeveloped.

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# Appendix Q

## Subsistence Uses and Resources

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**ACRONYMS AND ABBREVIATIONS**

## Full Phrase

ACEC	areas of critical environmental concern
ADFG	Alaska Department of Fish and Game
AMS	analysis of the management situation
ANCSA	Alaska Native Claims Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
ATV	all-terrain vehicle
AWC	Anadromous Waters Catalog
BCA	backcountry conservation area
BLM	Bureau of Land Management
BMP	best management practice
CFR	Code of Federal Regulations
CSIS	Community Subsistence Information System
DCCED	Alaska Department of Commerce, Community, and Economic Development
DHCMA	Dalton Highway Corridor Management Area
DSHA	Dall sheep habitat area
DSMC	Dall sheep movement corridor
DSSA	Dall sheep study area
EFH	essential fish habitat
ERMA	extensive recreation management area
GMH	Galena Mountain Caribou Herd
GMU	Game Management Unit
HHH	Hodzana Hills Caribou Herd
NNIS	nonnative invasive species
NSO	no surface occupancy
OHV	off-highway vehicle
ORV	outstandingly remarkable value
PLO	public land order
RMH	Ray Mountain Caribou Herd
RMZ	recreation management zone
RNA	research natural area
ROW	right-of-way
SOP	standard operating procedure
SRMA	special recreation management area
SRP	special recreation permit
TMA	travel management area

WSA

Wild and Scenic River

# Appendix Q. Subsistence Uses and Resources

## Q.1 SUMMARY

This section describes potential effects of the proposed management actions on subsistence uses in the planning area. As described in the analysis of the management situation (AMS), the planning area contains rural communities with mixed subsistence-cash economies whose residents live a subsistence-based lifestyle. This type of lifestyle is characterized by sharing, bartering, and cash exchanges associated with the customary traditional harvest of natural resources, combined with a wage labor economic system (Wolfe and Walker 1987).

Within the borders of the planning area, the Fairbanks North Star Borough was determined to be a predominantly nonrural area and residents do not qualify as subsistence users. Residents of all other areas and communities are designated as federally qualified subsistence users. Twenty-four recognized villages in or next to the planning area qualify as rural and are included in the impact analysis. These communities have subsistence use areas that overlap the planning area or rely on resources that pass through or depend on habitat in the planning area. The 24 communities are grouped into three regions, as follows:

- North Slope—Anaktuvuk Pass and Nuiqsut
- Yukon River—Alatna, Allakaket, Bettles, Coldfoot, Evansville, Stevens Village, Rampart, and Wiseman
- Upper Interior—Arctic Village, Galena, Hughes, Huslia, Kaltag, Koyukuk, Lake Minchumina, Manley Hot Springs, Minto, Nenana, Nuiqsut, Nulato, Ruby, Tanana, and Venetie

A wide variety of fish, wildlife, and vegetation are harvested by subsistence users for myriad purposes, including food, fuel, arts and crafts, tools, clothing, and traditional cultural practices. Additional information is available in AMS Section 2.4.2, Subsistence, at [https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP\\_AMS\\_all\\_April\\_2016\\_Final.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP_AMS_all_April_2016_Final.pdf). Note that layered protections for subsistence practices currently exist (see Appendix N in Title VIII of the Alaska National Interest Lands Conservation Act [ANILCA]). Federal and state regulations and are described further in **Chapter 1**.

Overall, Alternatives B and C1 are likely to provide more protections than Alternative A, and Alternatives C2 and D will provide fewer protections. Alternative D would provide the fewest protections for fish and wildlife species. Alternative B is likely to have the most protections, but because Alternative C1 has specific protections for important Dall sheep habitat, it may provide a greater level of protection for this species. Alternative D would not designate acreage as Areas of Critical Environmental Concern (ACECs) or Research Natural Areas (RNAs), so it provides the fewest protections for subsistence fish and wildlife species and their habitat.

Public Land Order (PLO) 5150 would be partially revoked under Alternatives B and C1. Under Alternatives C2 and D, the full revocation of PLO 5150 would allow State of Alaska top-filed lands to become valid selections. Priority 1 selections are likely to be conveyed during the life of the plan, which would provide the greatest potential for impacts on subsistence access and practices for communities in the area under these two

alternatives. The full or partial revocation of PLO 5150 would have the practical effect of removing the federal subsistence priority for residents of Coldfoot and Wiseman. This is because provisions that currently allow federally qualified subsistence users to use firearms to harvest wildlife and to use snowmachines to access subsistence hunting and trapping areas would be removed, if the area were to revert to management by the State of Alaska.

All action alternatives also propose revoking the Alaska Native Claims and Settlement Act (ANCSA) 17(d)(1) withdrawals. These withdrawals have been historically modified in many cases to allow for mineral entry or selection, so the impacts of these revocations are limited to areas where mineral entry was not open, and potential is high, and access is feasible. Under Alternative B, many of these areas are proposed to be closed to mineral entry, leasing, and other surface-disturbing activities. Under Alternative C1 and Alternative C2, the Ray Mountains core caribou habitat area is one such location. In this area some impacts on caribou habitat is identified and management actions are proposed and analyzed in the wildlife section of this RMP/EIS.

Alternative B would provide the most protections to subsistence uses and resources from new surface-disturbing activities, as there would be the fewest acres managed as open to fluid mineral leasing and open to locatable mineral development. Alternative B also would result in the most acres of right-of-way (ROW) avoidance and exclusion areas. Conversely, Alternatives C2 and D would manage the most areas as open to fluid mineral leasing and open to locatable mineral development, which would result in the most demand for new ROWs.

Management actions that would benefit subsistence would further the purposes of Title VIII of the ANILCA and align with the U.S. Department of the Interior's strategy of providing stewardship of land, surface water, streams, and shorelines and its goal of supporting tribal self-determination, self-governance, and sovereignty.

## **Q.2 RESOURCES HARVESTED AND SUBSISTENCE HARVEST LEVELS**

Several important subsistence resources are found in the planning area, most notably caribou, moose, Dall sheep, Chinook, and chum salmon, and sheefish. Many other resources, such as wood, berries, bears, and furbearers, are also important. Current subsistence harvest levels of wildlife, fish, and other resources in the planning area are sustainable. Although it is difficult to measure, based on discussions at Western Interior Alaska Subsistence Regional Advisory Council and other meetings, subsistence needs by rural residents in the planning area are not being met, particularly for salmon, moose, and Dall sheep. The Dalton Highway Corridor Management Area (DHCMA) is accessible by non-subsistence bow hunters from the Dalton Highway.

Harvest pressure on the most accessible areas can be very high from subsistence users and other hunters. The Bureau of Land Management (BLM) would continue to work with the Alaska Department of Fish and Game (ADFG) to monitor caribou and moose populations in the planning area. It would make recommendations to the Federal Subsistence Board, which would determine whether to take management action, based on results of caribou and moose population assessments. Data presented in **Table Q-1**, below, show harvest information by community in the planning area.

## **Q.3 SUBSISTENCE RESOURCE AVAILABILITY**

Subsistence users harvest a variety of terrestrial, avian, marine, and freshwater game resources, as well as other non-game resources, such as plants, berries, and wood, in and near the planning area. Successful subsistence harvests depend on the continued availability of healthy populations of wild resources in traditional use areas. Resource availability and condition are affected by weather, wildlife population trends,

natural variation, human disturbance, changes to habitat, federal, state, and tribal management practices, and contamination, such as that from invasive species, dust, and parasites.

BLM-managed lands are in large tracts in Game Management Units (GMUs) 24, 21, and 20 (**Map Q-1**). GMUs each have a specific set of regulations governing the harvest limit and timing of hunts for the wildlife species in that unit. There are subunits that may have additional regulations. Alaska does not regulate the harvest of nongame resources.

#### **Q.4 SUBSISTENCE USE PATTERNS**

The communities discussed below use large portions of the planning area and beyond to harvest resources for subsistence uses, often with overlapping use areas between communities. **Map Q-1** shows identified subsistence use areas. It is important to note that these areas represent snapshots and are likely to have been historically much larger or were in different areas. There could be areas not included in the community subsistence use areas that are still culturally important to various communities.

Hunting and gathering of subsistence resources, including fish, terrestrial wildlife, marine mammals, birds, and vegetation, follows a seasonal round. It varies from year to year by community, based on traditional knowledge, river and weather conditions, and migratory patterns. Searching for and harvesting subsistence resources typically follows a general pattern during specific seasons. State and federal hunting regulations have contributed to changes in seasonal rounds by creating open and closed seasons for harvesting resources.

The Yukon River region communities listed above tend to report higher levels of fish and moose as comprising a larger part of the overall subsistence harvest than communities in the Upper Interior region. Over the last decade, the weak salmon runs in the Yukon River have led communities to increase the harvest of other fish species (Harkness et al. 2012). In the Upper Interior region communities, a large percentage of the wild food harvest is from large land mammals instead of fish.

Sharing subsistence foods among individuals and households is an important part of the subsistence cultural of communities in the planning area. In some communities, there are residents who hunt for multiple people besides themselves. Sharing between villages is also common (Holen et al. 2012; Bacon et al. 2011).

**Table Q-1**  
**Central Yukon Subsistence Communities, Estimated Pounds of Resources Harvested by Household**

Community	Reference Year	Estimated Total Pounds Harvested	Salmon	Non-Salmon Fish	Large Land Mammals	Small Land Mammals	Marine Mammals	Marine Invertebrates	Birds and Eggs	Vegetation
Alatna	2011	9,428	861	676	6,885	320	—	—	571	116
Allakaket	2011	76,994	22,254	25,604	24,989	1,371	—	—	1,904	872
Anaktuvuk Pass	2014	124,269	226	10,222	111,302	35	0	0	807	1,677
Arctic Village*	2002	18,416	—	18,416	—	—	—	—	—	—
Bettles	2011	2,104	51	93	1,860	—	—	—	29	71
Coldfoot	2011	381	—	—	325	—	—	—	—	56
Evansville	2011	1,056	147	110	540	—	—	—	31	228
Galena	2010	107,644	50,416	13,234	38,314	2,514	0	69	1,381	1,715
Hughes	2014	32,448	14,178	5,400	11,351	804	0	0	501	214
Huslia	1983	208,165	106,674	17,454	72,838	3,604	—	—	6,359	1,235
Kaltag*	1985, 2002, 2006	—	173,670 (1985)	4,779 (2006)	19,986 (2002)	—	—	—	—	—
Koyukuk*	2002	7,395	—	7,395	—	—	—	—	—	—
Lake Minchumina	2002	7,907	35	4,564	2,693	367	0	0	46	202
Manley Hot Springs	2012	52,438	43,021	3,894	2,628	116	0	0	280	2,498
Minto	2012	39,772	17,075	3,651	15,255	371	—	<1	1,787	1,633
Nenana	2015	64,965	26,722	7,796	21,656	1,327	0	36	3,951	3,477
Nuiqsut	2014	371,992	3,889	85,106	108,359	0	169,367	0	4,857	414
Nulato	2010	62,140	28,211	6,696	22,264	2,423	0	0	634	1,913
Rampart	2014	14,754	8,992	1,221	4,011	169	0	0	336	26
Ruby	2010	54,107	32,075	4,305	15,194	966	0	22	505	1,040
Stevens Village	2014	3,748	3,073	460	0	133	0	0	45	38
Tanana	2014	197,715	141,140	34,312	19,121	296	0	2	1,546	1,298
Venetie <sup>1</sup>	2009	74,602	20,775	6,745	36,977	3,126	—	—	5,619	1,360
Wiseman	2011	3,819	151	172	2,888	18	—	—	312	278

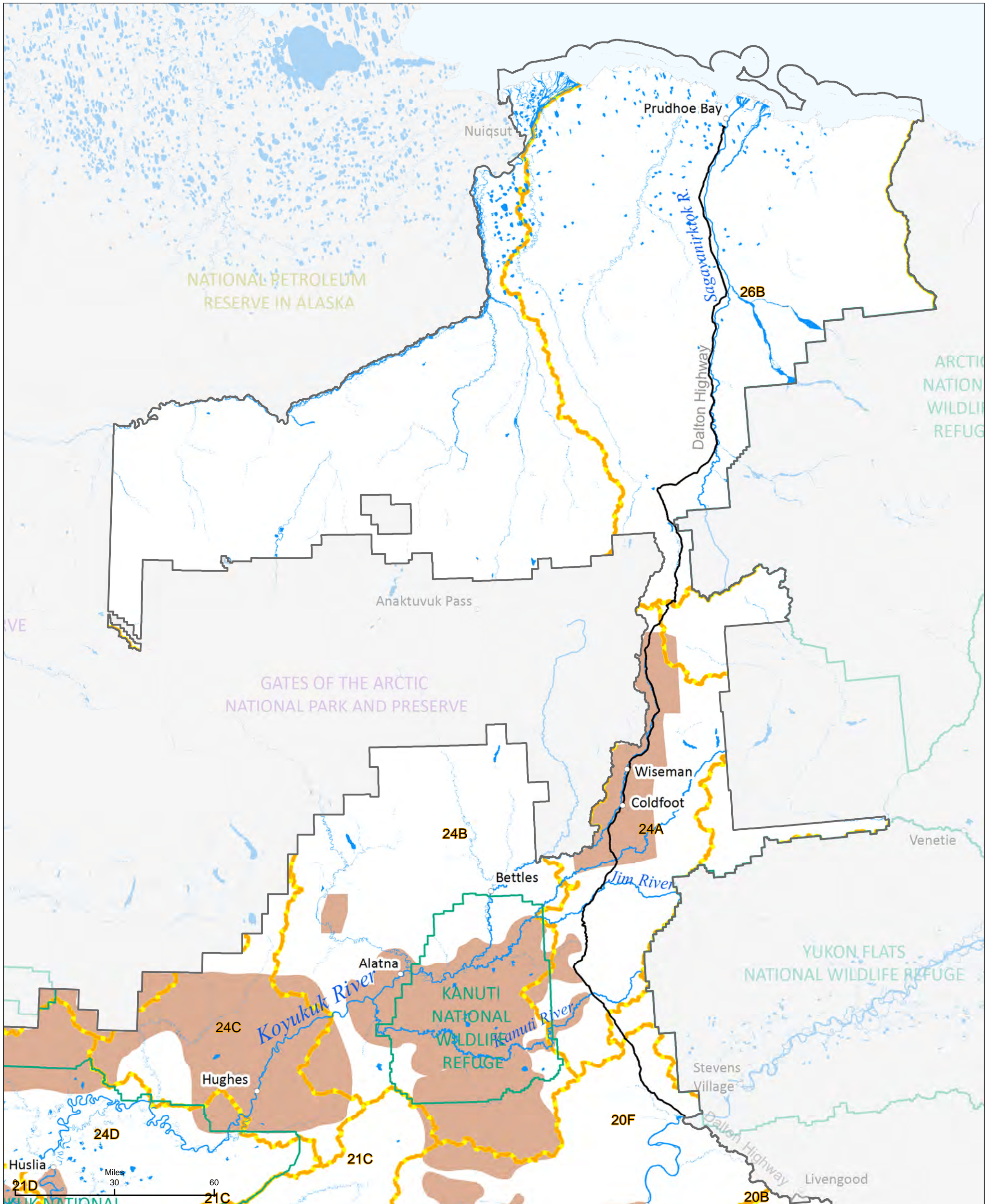
Source: ADFG 2020

<sup>1</sup>Source: Kofinas et al. 2016

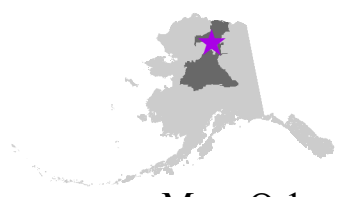
— Denotes that no data was provided for the category.

\*Community has not had a comprehensive subsistence survey completed.





- Community subsistence use area
- Game management subunit



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Data Source: BLM GIS 2017, ADF&G GIS 2018

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## Q.5 SUBSISTENCE USE

The following sections discuss subsistence use areas for communities in and next to the planning area. There is limited data available for places or areas significant to and for subsistence use in the planning area. Studies investigating patterns of use, such as seasonal cycles, use areas, and resources harvested, have been conducted by ADFG Division of Subsistence and other agencies and organizations. Available data are primarily included in technical reports by the ADFG's Division of Subsistence and the Community Subsistence Information System (CSIS) (ADFG 2020); however, they are limited in scope and may reflect only area use during a specific time or may represent historical use areas. Not all surveys for planning area communities were comprehensive; however, all planning area communities do have some sort of subsistence harvest data available.

The discussions in the following sections are supplemented by information available from more recent ADFG technical papers and publicly available information. Additionally, the BLM has included specific concerns identified through conversations with local stakeholders for some communities. Note that the lack of data for a community is not an indication that subsistence uses, and resources lack importance in the area.

### ***Alatna***

Alatna is on the north bank of the upper Koyukuk River, southwest of its junction with the Alatna River, approximately 190 air miles northwest of Fairbanks. Alatna lies just west of the municipal boundaries of the City of Allakaket. The two communities share an airport and school, which are in Allakaket, resulting in daily interactions between residents of the two communities. According to the 2010 Census, Alatna had 37 residents; however, a household survey conducted by ADF&G in 2011 found an estimated population of 32 residents (Holen et al. 2012). The 2018 Alaska Department of Commerce, Community, and Economic Development (DCCED) certified population was 25 (DCCED 2020).

### ***Subsistence Harvest Patterns***

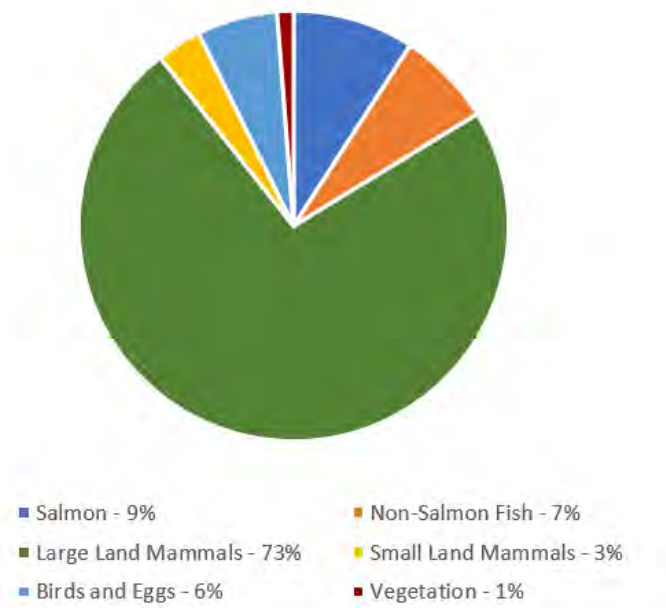
The total estimated harvest for all subsistence resources during 2011 for Alatna was 9,428 pounds, or 299 pounds per capita. In terms of estimated pounds harvested, large land mammals made up the largest portion of the subsistence harvest at 73 percent (**Figure Q-1**), which totaled 6,885 pounds, or 219 pounds per capita. Caribou (117 pounds per capita), moose (77 pounds), black bears (23 pounds), and chum salmon (23 pounds) represented the highest harvest amounts in pounds per capita in Alatna, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

There was an estimated average of 1,047 pounds of wild resources harvested per household (ADFG 2020). Alatna households harvested 16 kinds of resources and used an average of 24 kinds of resources. The maximum number of resources used by any household was 38 (Holen et al. 2012). Large land mammals, birds and eggs, and vegetation were used by 100 percent of the households, even though birds and eggs contributed only 6 percent of the harvest by weight, and vegetation contributed 1 percent of the harvest by weight. Whale was received by 100 percent of households from friends and family in Alaska coastal villages (Holen et al. 2012).

In 2011, 33 percent of households reported harvesting salmon, while 50 percent of households reported using salmon. The salmon harvest totaled 27 pounds per capita. The most harvested salmon species per capita were chum salmon (24 pounds) and sockeye salmon (3 pounds). Additionally, 50 percent of households reported harvesting non-salmon fish, compared with 83 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 21 pounds per capita. The most harvested non-salmon fish per capita were whitefish (12 pounds), sheefish (6 pounds), and pike (2 pounds) (ADFG 2020).

The harvest of large land mammals totaled 219 pounds per capita. The most harvested large land mammal species per capita were caribou (117 pounds), moose (77 pounds), and black bear (23 pounds). More than half of Alatna’s households (67 percent) participated in small land mammal harvesting in 2011. Most small land mammal hunting or trapping took place during the winter, and the harvest of small land mammals totaled 10 pounds per capita. The most harvested species in terms of pounds per capita were beaver (9 pounds), snowshoe hare (1 pound), and porcupines (0.4 pounds) (ADFG 2020).

**Figure Q-1. Composition of Harvest by Category, Alatna**



Source: ADFG 2020

There were 100 percent of Alatna households that reported using birds and eggs, and 83 percent harvested them. The bird and egg harvest totaled 18 pounds per capita. The most harvested bird species in pounds per capita were geese (11 pounds) and ducks (5 pounds) (ADFG 2020). No bird eggs were gathered during the survey year (Holen et al. 2012).

Although vegetation harvest contributes only 1 percent by weight of the total harvest for Alatna residents, 100 percent of households reported harvesting and using vegetation, particularly berries. Firewood is also considered a vegetation resource, which was harvested and used by 100 percent of households as well (ADFG 2020). The harvest of vegetation totaled 4 pounds per capita. The most harvested vegetation in pounds per capita was highbush cranberry (3 pounds) and blueberry (1 pound) (ADFG 2020).

**Subsistence Use Areas**

Alatna search and harvest areas for all resources are focused around the Alatna and Koyukuk Rivers. Residents typically use motorized vehicles, such as skiffs, snowmachines, and all-terrain vehicles (ATVs) to access their hunting, fishing, and gathering areas (Holen et al. 2012). Use areas for salmon and non-salmon fish are on the Koyukuk River and throughout the river drainage. Land surrounding the Alatna River north of the village and the Koyukuk River south of the village are commonly used for harvesting large land mammals; however, residents have also reported traveling more than 100 miles to harvest large land mammals, such as caribou. Large land mammal hunting is a traditional and popular fall activity that often stretches into winter (Holen et al. 2012)

The harvest and search areas for small land mammals in 2011 included the Buzodoc Slough area, the land just north of Alatna on the Alatna River, and the area immediately south and southeast of Allakaket. Residents harvested migratory waterfowl near Alatna and Allakaket and north of the two communities on the Alatna River, east on the Koyukuk River, and northeast toward Double Point Mountain. Upland game birds were harvested by Alatna residents along the Koyukuk River northwest of Alatna throughout the year. Each household has preferred harvest areas for vegetation.

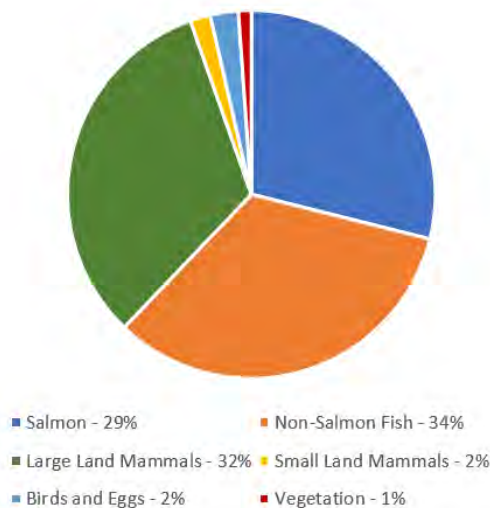
**Allakaket**

Allakaket is on the south bank of the upper Koyukuk River, less than 1 river mile below its junction with the Alatna River, near the community of Alatna. Allakaket is approximately 190 air miles northwest of Fairbanks. According to the 2010 Census, Allakaket (which consists of Allakaket City and New Allakaket) had 171 residents; however, a household survey conducted by ADFG in 2011 found an estimated population of 147 residents (Holen et al. 2012). The 2018 DCCED-certified population of Allakaket was 164 (DCCED 2020).

**Subsistence Harvest Patterns**

The subsistence harvest for Allakaket was reported at 76,994 pounds, or 525 pounds per capita of wild resources during 2011. In terms of estimated pounds harvested, non-salmon fish made up the largest portion of the subsistence harvest at 34 percent (**Figure Q-2**), which totaled 18,866 pounds, or 175 pounds per capita (ADFG 2020). Chum salmon (124 pounds per capita), caribou (84 pounds), whitefish (75 pounds), sheefish (71 pounds) represented the highest harvest amounts in Allakaket, based on the estimated pounds per capita of usable weight harvested.

**Figure Q-2. Composition of Harvest by Category, Allakaket**



Source: ADFG 2020

There was an estimated average of 1,351 pounds of wild resources harvested per household (ADFG 2020). Allakaket households harvested 13 kinds of resources and used an average of 18 different kinds of resources. The maximum number of resources used by any household was 51 (Holen et al. 2012). Large land mammals (used by 90 percent of households), vegetation (88 percent), and non-salmon fish (81 percent) had the highest percentages of household use, even though vegetation contributed only 1 percent of the total harvest by weight. Marine mammals were not harvested by Allakaket households; however, 55 percent of households reported receiving and using marine mammal resources from friends and relatives in coastal areas.

In 2011, 36 percent of households reported harvesting salmon, while 66 percent of households reported using salmon. Salmon harvest totaled 152 pounds per capita. The most harvested salmon species per capita were chum salmon (124 pounds), Chinook salmon (11 pounds), and coho salmon (9 pounds). Additionally, 60 percent of households reported harvesting non-salmon fish, compared with 81 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 175 pounds per capita. The most harvested non-salmon fish per capita were whitefish (75 pounds), sheefish (71 pounds), and pike (24 pounds) (ADFG 2020).

The harvest of large land mammals totaled 170 pounds per capita. The most harvested large land mammal species per capita were caribou (84 pounds), moose (70 pounds), and black bear (12 pounds). In 2011, 43 percent of households participated in large land mammal harvesting, and 90 percent of households used large land mammals, primarily moose (88 percent) and caribou (76 percent). Dall sheep hunting is a longstanding activity by Allakaket hunters. In 2011, five percent of Allakaket households harvested Dall sheep, and 14 percent of households used Dall sheep, or 3 pounds per capita.

Only 33 percent of households participated in small land mammals harvesting in 2011. The harvest of small land mammals totaled 9 pounds per capita. Most small land mammal hunting or trapping took place during the winter, and the most harvested species in terms of pounds per capita were beaver (8 pounds), snowshoe hare (1 pound), and porcupine (1 pound) (ADFG 2020).

There were 74 percent of Allakaket's households that reported using birds and eggs, and 60 percent harvested them. The harvest of birds and eggs totaled 13 pounds per capita. The most harvested bird species in pounds per capita were geese (6 pounds) and ducks (4 pounds) (ADFG 2020). No bird eggs were gathered during the survey year (Holen et al. 2012).

Although vegetation harvest contributed only 1 percent by weight of the total harvest for Allakaket residents, 83 percent of households reported harvesting vegetation and 88 percent reported using vegetation. The harvest of vegetation totaled 6 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (2 pounds) and highbush cranberry (2 pounds) (ADFG 2020).

### *Subsistence Use Areas*

Allakaket search and harvest areas for all resources are typically within 20 miles of the community and along area river corridors, including the Alatna, Koyukuk, South Fork Koyukuk, and Kanuti Rivers. Transportation for subsistence harvest is generally done by outboard motor-powered skiffs or ATVs during the summer months, and with the use of snowmachines, dog teams, or snowshoes during the winter months (Holen et al. 2012). Most salmon fishing locations for Allakaket residents during 2011 were between Allakaket and the mouth of the Kanuti River. Non-salmon fish are typically harvested from the Alatna River and the main channel of the Koyukuk River. Large land mammals typically are hunted along the river corridors noted above; however, hunts for moose and caribou sometimes involve trips of 100 miles or more. The headwaters of the Alatna River drainage and the headwaters of the John River drainage are important hunting areas for Dall sheep (Holen et al. 2012).

### **Anaktuvuk Pass**

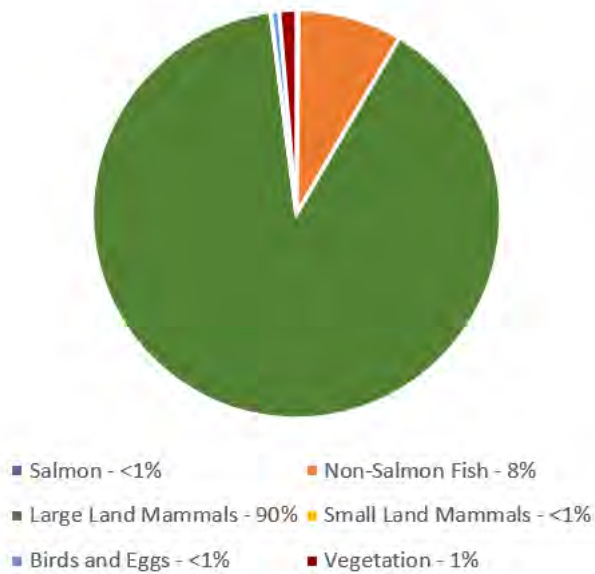
Anaktuvuk Pass is in a wide valley of the Brooks Mountain Range on the divide between the Anaktuvuk and John Rivers about 60 miles west of the Dalton Highway. According to the 2010 Census, Anaktuvuk Pass had 324 residents; however, a household survey conducted by ADFG in 2011 found an estimated population of 310 residents (Holen et al. 2012). The 2018 DCCED certified population of Anaktuvuk Pass was 376 (DCCED 2020).

**Subsistence Harvest Patterns**

The total estimated harvest for all subsistence resources during 2014 for Anaktuvuk Pass was 124,269 pounds, or 391 pounds per capita. In terms of estimated pounds harvested, large land mammals made up the largest portion of the subsistence harvest, at 90 percent (**Figure Q-3**), which totaled 59,586 pounds, or 351 pounds per capita. Caribou (330 pounds per capita), char (24 pounds), Dall sheep (10 pounds), and moose (9 pounds) represented the highest harvest amounts in pounds per capita in Anaktuvuk Pass, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

There was an estimated average of 1,255 pounds of wild resources harvested per household (ADFG 2020). Anaktuvuk Pass households harvested an average of 7 kinds of resources and used an average of 11 kinds of resources. The maximum number of resources uses by any household was 30 (Holen et al. 2012).

**Figure Q-3. Composition of Harvest by Category, Anaktuvuk Pass**



Source: ADFG 2020

Large land mammals (used by 89 percent of households), non-salmon fish (89 percent), and vegetation (75 percent) had the highest percentages of household use used by the most households. Non-salmon fish (77 percent of households), vegetation (69 percent), and large land mammals (40 percent) had the highest percentages of household harvest in Anaktuvuk Pass, even though non-salmon fish contributed only 8 percent of the harvest by weight. Marine mammals and marine invertebrates were not actually harvested by Anaktuvuk Pass households; however, 60 percent of households reported receiving and using marine mammal resources from friends and relatives in coastal areas (ADFG 2020).

In 2014, only 1 percent of Anaktuvuk Pass households reported harvesting salmon, while 41 percent of households reported using salmon. Salmon harvest totaled 1 pound per capita. The most harvested salmon species in pounds per capita was sockeye salmon (1 pound). A wide variety of non-salmon fish are harvested effectively year-round by Anaktuvuk Pass households. Seventy-seven percent of households reported harvesting non-salmon fish, compared with 89 percent that reported using non-salmon fish. Non-salmon fish

harvest totaled 32 pounds per capita. The most harvested non-salmon fish in pounds per capita were char (24 pounds), lake trout (12 pounds), and grayline (7 pounds) (ADFG 2020).

The harvest of large land mammals totaled 351 pounds per capita. The most harvested large land mammal species in pounds per capita were caribou (330 pounds), Dall sheep (10 pounds), and moose (9 pounds) (ADFG 2020). In 2014, 40 percent of households participated in large land mammal harvesting, and 89 percent of households used large land mammals, primarily caribou (89 percent) and Dall sheep (40 percent).

Only 19 percent of households harvested small land mammals in 2014. Most small land mammal hunting or trapping took place during the winter, and the harvest of small land mammals totaled less than 1 pound per capita (ADFG 2020).

There were 45 percent of Anaktuvuk Pass' households that reported using birds and eggs, and 25 percent harvested them. The harvest of birds and eggs totaled 3 pounds per capita. The most harvested bird species in pounds per capita were geese (1 pound), ducks (1 pound), and upland game birds (1 pound) (ADFG 2020). No bird eggs were gathered during the survey year (Holen et al. 2012).

Although vegetation harvest contributed only 1 percent by weight of the total harvest for Anaktuvuk Pass residents, 70 percent of households reported harvesting vegetation and 75 percent reported using vegetation. The harvest of vegetation totaled 5 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (2 pounds). Plants, greens, and mushrooms, salmonberry, and Eskimo potato also each contributed 1 pound per capita to the vegetation subsistence harvest in 2014.

### *Subsistence Use Areas*

Subsistence users from Anaktuvuk Pass harvest resources to the west, beyond the Noatak River to Ambler and to the east near the Dalton Highway, east of Galbraith Lake. A large area surrounding the Killik, Chandler, Anaktuvuk, and John River drainages is also part of the subsistence use area (Brown et al. 2016). Anaktuvuk Pass residents typically utilize motorized vehicles such as trucks, snowmachines, ATVs, or Argos<sup>1</sup> to reach their subsistence use areas (Holen et al. 2012).

Residents of Anaktuvuk Pass travel throughout the Brooks Range, as well as the northern foothills and the transition zone to the coastal plain to hunt, fish, and gather; subsistence activities are typically highest in late summer and early fall. Anaktuvuk Pass residents were concerned declining caribou numbers and changing migration patterns; they felt that nonlocal hunters could be diverting the caribou migration by hunting the initial wave of the migrating herd, rather than allowing them to pass through the valley, as residents do (Holen et al. 2012).

### **Arctic Village**

Arctic Village is on the south side of the Brooks Range, along the east fork of the Chandalar River, 100 miles north of Fort Yukon and 290 miles north of Fairbanks. According to the 2010 Census, Arctic Village had 152 residents. The 2018 DCCED certified population of Arctic Village was 194 (DCCED 2020).

### *Subsistence Harvest Patterns*

Arctic Village has not had a comprehensive household harvest survey completed for the community; however, based on statements from community members during public meetings and elsewhere, the assumption is that Arctic Village residents consider caribou to be a primary food source and central to their cultural identity

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<sup>1</sup>An Argo is an amphibious all-terrain vehicle.

(BLM 2019; Kofinas et al. 2016). Participation in large land mammal hunting among Arctic Village households is high despite lacking data or low survey response rates from residents.

The Council of Athabascan Governments (2003) reported 44 moose harvested by Arctic Village households; however, these data are not estimated for the entire community, so is not comparable to more comprehensive surveys. The U.S. Fish and Wildlife Service notes that, based on reported harvests alone and not community-wide estimates, moose and caribou comprised more than 90 percent of the harvest by weight during the 1990s and early 2000s (USFWS 2015).

A study in 2002 of non-salmon fish found residents of Arctic Village harvested an estimated 18,416 pounds of non-salmon fish, or 67 pounds per capita. Grayling had the highest percentages of household harvest (29 percent of households), followed by whitefish, which was harvested by 25 percent of households. There were 80 percent of households in Arctic Village that reported using non-salmon fish. The most harvested non-salmon fish in pounds per capita were whitefish (56 pounds), pike (7 pounds), and grayling (3 pounds) (ADFG 2020).

Even though data on sharing subsistence resources are limited to fish, there is documentation of the strong sharing relationship between Arctic Village and its sister village of Venetie, with whom it shares ownership of tribal lands (Brown et al. 2017).

#### *Subsistence Use Areas*

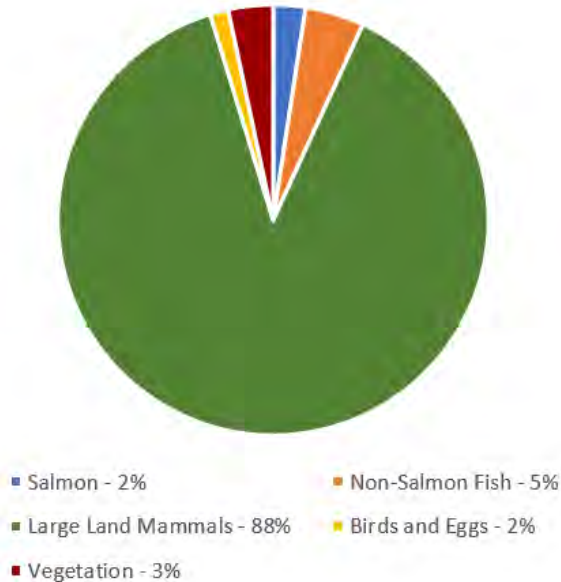
Subsistence harvesting of caribou generally occurs on lands to the north of the community in the Arctic National Wildlife Refuge. Key harvesting locations are Old John Lake, the Chandalar, Sheenjek, Junjik, and Wind Rivers, and Red Sheep Creek (USFWS 2015).

#### **Bettles**

Bettles is about 180 air miles northwest of Fairbanks, immediately to the west of the community of Evansville. It lies just north of the Kanuti National Wildlife Refuge and just south of the Brooks Range and the Gates of the Arctic National Park and Preserve. Because Bettles is surrounded by corporation-owned lands of Evansville, there is overlap in their histories and subsistence practices. Bettles is a separate census designated place. According to the 2010 Census, Bettles had 12 residents. In 2011, the ADFG recorded 8 households, consisting of 12 individuals, none of whom were Alaska Natives (Holen et al. 2012). The 2018 DCCED certified population of Bettles was 11 (DCCED 2020).

#### *Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2011 for Bettles was 2,104 pounds, or 175 pounds per capita. In terms of estimated pounds harvested, large land mammals made up the largest portion of the subsistence harvest, at 88 percent (**Figure Q-4**), which totaled 1,860 pounds, or 155 pounds per capita. Moose (90 pounds per capita), caribou (65 pounds), pike (6 pounds), and berries (5 pounds) represented the highest harvest amounts in pounds per capita in Bettles, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-4. Composition of Harvest by Category, Bettles**

Source: ADFG 2020

There was an estimated average of 263 pounds of wild resources harvested per household (ADFG 2020). Bettles households harvested an average of 8 kinds of resources and used an average of 11 kinds of resources. The maximum number of resources uses by any household was 20 (Holen et al. 2012). Vegetation (used by 100 percent of households), large land mammals (88 percent), and small land mammals (63 percent) had the highest percentages of household use. Vegetation (88 percent of households), small land mammals (50 percent), and large land mammals (38 percent) had the highest percentages of household harvest in Bettles, even though vegetation contributed only 3 percent of the harvest by weight (ADFG 2020).

In 2011, 13 percent of households reported harvesting salmon, while 38 percent of households reported using salmon. Salmon harvest totaled 4 pounds per capita; the only salmon species harvested was chum salmon. Additionally, 77 percent of households reported harvesting non-salmon fish, compared with 50 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 8 pounds per capita. The most harvested non-salmon fish in pounds per capita were pike (6 pounds), char (1 pound), lake trout (1 pound), and grayling (1 pound) (ADFG 2020).

The harvest of large land mammals totaled 155 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (90 pounds) and caribou (65 pounds). In 2011, 38 percent of households successfully harvested large land mammals, and 88 percent of households used large land mammals, primarily moose (75 percent of households using) and caribou (63 percent).

Fifty percent of Bettles households harvested small land mammals in 2011. The most harvested small land mammal species were marten, which were harvested for their fur (38 percent of households harvesting), lynx (25 percent), wolf (25 percent), and wolverine (25 percent) (ADFG 2020). None of the small land mammals were consumed by Bettles residents.



There were 38 percent of Bettles households that reported using birds and eggs, and 25 percent harvested them. The harvest of birds and eggs totaled 2 pounds per capita. The most harvested bird species in pounds per capita were grouse (1 pound) and ptarmigan (1 pound) (ADFG 2020). No eggs were harvested in 2011 (Holen et al. 2012).

Although vegetation harvest contributed only 3 percent by weight of the total harvest for Bettles residents, 88 percent of households reported harvesting vegetation and 100 percent reported using vegetation. The harvest of vegetation totaled 6 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (3 pounds), lowbush cranberry (2 pounds), and plants, greens, and mushrooms (1 pound) (ADFG 2020).

### *Subsistence Use Areas*

Some Bettles residents use motorized vehicles, such as trucks, snowmachines, and ATVs to access subsistence use areas; however, many residents tend to travel by foot (Holen et al. 2012). Salmon was harvested by Bettles residents in 2011 at locations far from the community. The Koyukuk River salmon populations in the vicinity of the community are very low and typically of poor quality (Holen et al. 2012); however, Bettles residents concentrated their non-salmon fish harvests on the John River close to the community and at Wild River and Colorado Creek. Residents search for large land mammals north along the John River, but there is a much greater search area for caribou than for moose along the John River Malamute Fork, Mettenpherg Creek, and areas farther west.

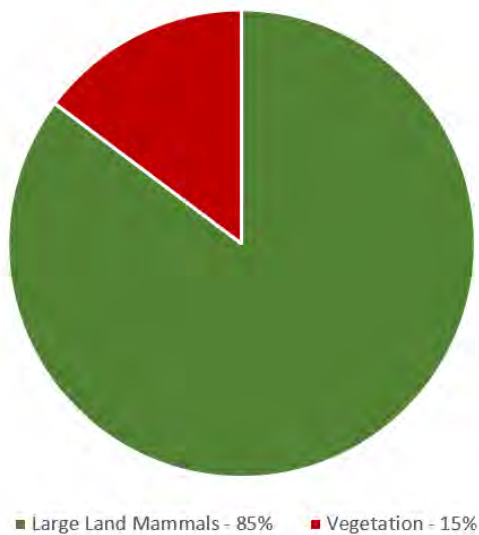
Small mammals and birds were trapped and harvested in the vicinity of Bettles and Evansville, along and between the Koyukuk River and its tributaries and northeast from Bettles along the Alatna River Malamute Fork and at Iniakuk Lake. Much of the berry and firewood harvests occurred to the west of Bettles, along the Koyukuk River, as well as to the north in the Ninemile Hills (Holen et al. 2012).

### **Coldfoot**

Coldfoot is at the mouth of Slate Creek on the east bank of the Middle Fork Koyukuk River. It lies at mile 175 of the Dalton Highway, formerly known as the North Slope Haul Road. Coldfoot is about 11 miles downstream of and to the south of the community of Wiseman, also along the Koyukuk River. According to the Census, Coldfoot had 10 residents in 6 households in 2010. The household survey conducted by ADFG for the study year 2011 found an estimated population of 10 residents (Holen et al. 2012). The 2018 DCCED certified population of Coldfoot was 8 (DCCED 2020).

### *Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2011 for Coldfoot was 381 pounds, or 38 pounds per capita. In terms of estimated pounds harvested, large land mammals (caribou) made up the largest portion of the subsistence harvest, at 85 percent (**Figure Q-5**), which totaled 325 pounds, or 33 pounds per capita.

**Figure Q-5. Composition of Harvest by Category, Coldfoot**

Source: ADFG 2020

There was an estimated average of 76 pounds of wild resources harvested per household (ADFG 2020). Coldfoot households harvested an average of two kinds of resources and used an average of three kinds of resources. The maximum number of resources used by any household was five (Holen et al. 2012). Caribou and blueberries had the highest percentages of household use (100 percent of households) in Coldfoot in 2011. Vegetation (100 percent of households) and large land mammals (25 percent) had the highest percentages of household harvest, even though vegetation contributed only 15 percent of the harvest by weight (ADFG 2020).

In 2011, there were no Coldfoot households that reported harvesting salmon or non-salmon fish; however, 25 percent of households reported receiving and using coho and sockeye salmon. There were no households that reported using non-salmon fish (Holen et al. 2012).

The harvest of large land mammals (caribou) totaled 33 pounds per capita. In 2011, 25 percent of households successfully harvested large land mammals (caribou), and 100 percent of households used large land mammals, primarily moose (75 percent of households using) and caribou (25 percent). No households reported using small land mammals in 2011.

There were 25 percent of Coldfoot households that reported receiving and using ptarmigan in 2011, even though no birds or eggs were directly harvested by the community that year (Holen et al. 2012).

Although vegetation harvest contributed only 15 percent by weight of the total harvest for Coldfoot residents, 100 percent of households reported harvesting and using vegetation. All households used blueberries, which accounted for an average of 11 pounds per household harvested in 2011. The harvest of vegetation totaled 6 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (4 pounds) and lowbush cranberry (2 pounds) (ADFG 2020).

### *Subsistence Use Areas*

Because there were no permanent residents in Coldfoot in 1980 when ANILCA was signed into law, the National Park Service does not recognize that Coldfoot has customary and traditional subsistence use areas in the Gates of the Arctic National Park; as a result, Coldfoot is not one of the designated communities that have special privileges to practice subsistence activities within the park boundaries. Without this, Coldfoot residents' hunting areas are significantly limited, compared with other communities in the region. Many residents use motorized vehicles such as airplanes and highway vehicles to reach their subsistence use areas (Holen et al. 2012). Residents used local areas for hunting and searching for large land mammals in 2011. Some residents feel current regulations severely limit their access to large mammal hunting and searching areas (Holen et al. 2012).

### *Evansville*

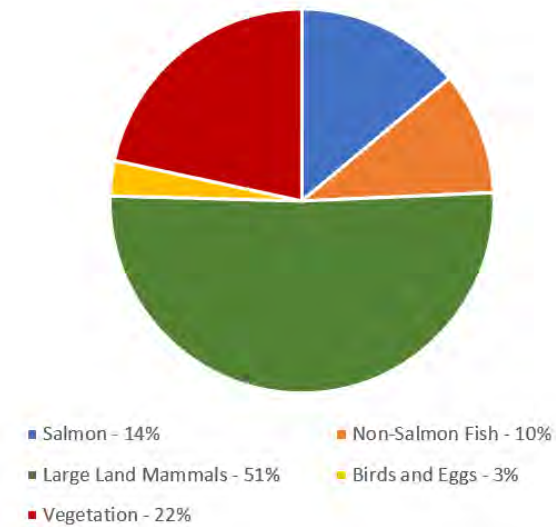
Evansville is on the south bank of the Koyukuk River, between the confluences of the John and Wild Rivers and immediately to the east of the community of Bettles. Evansville is about 40 air miles to the northeast of Alatna and Allakaket, and 180 air miles northwest of Fairbanks. The 2010 Census recorded 15 individuals living in Evansville, 8 of whom were Alaska Natives. In 2011, the ADFG recorded 13 households consisting of 20 individuals, 9 of whom were Alaska Natives (Holen et al. 2012). The 2018 DCCED certified population of Evansville was 8 (DCCED 2020).

### *Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2011 for Evansville was 1,056 pounds, or 53 pounds per capita. In terms of estimated pounds harvested, large land mammals (moose) made up the largest portion of the subsistence harvest at 51 percent (**Figure Q-6**), which totaled 540 pounds, or 27 pounds per capita. Moose (27 pounds per capita), sockeye salmon (5 pounds), lowbush cranberries (4 pounds), and blueberries (4 pounds) represented the highest harvest amounts in pounds per capita in Evansville, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

There was an estimated average of 81 pounds of wild resources harvested per household (ADFG 2020). Evansville households harvested an average of 5 kinds of resources and used an average of 12 kinds of resources. The maximum number of resources used by any household was 28 (Holen et al. 2012). Vegetation (used by 100 percent of households), large land mammals (92 percent), salmon (62 percent), and birds and eggs (62 percent) had the highest percentages of household use in Evansville. Vegetation (100 percent of households), birds and eggs (38 percent), and non-salmon fish (38 percent) had the highest percentages of household harvest, even though birds and eggs contributed only 3 percent of the harvest by weight (ADFG 2020).

In 2011, 8 percent of households reported harvesting salmon, while 62 percent of households reported using salmon. Salmon harvest totaled 7 pounds per capita. The most harvested salmon species in pounds per capita were sockeye salmon (5 pounds) and Chinook salmon (3 pounds). Additionally, 38 percent of households reported harvesting non-salmon fish, compared with 77 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 5 pounds per capita. The most harvested non-salmon fish in pounds per capita were char (2 pounds), sheefish (2 pounds), and trout (1 pound) (ADFG 2020).

**Figure Q-6. Composition of Harvest by Category, Evansville**

Source: ADFG 2020

The harvest of large land mammals (moose) totaled 27 pounds per capita. In 2011, only 8 percent of households successfully harvested large land mammals, and 92 percent of households used large land mammals, primarily moose (85 percent of households using) and caribou (77 percent).

Additionally, only 8 percent of Evansville households harvested small land mammals in 2011, with marten being the only small land mammal harvested. Martens were harvested for their fur and were not consumed by Evansville residents. Most small land mammal hunting or trapping took place during the winter, and the most used species by household were marten (15 percent of households used), lynx (8 percent), fox (8 percent), and beaver (8 percent) (ADFG 2020).

Sixty-two percent of Evansville households reported using birds and eggs, and 38 percent harvested them, even though they contributed only 3 percent to the total composition of harvest by weight. The harvest of birds and eggs totaled 2 pounds per capita. The most harvested bird species in pounds per capita were grouse (1 pound) and ptarmigan (1 pound) (ADFG 2020). No bird eggs were harvested by Evansville households during the 2011 study year (ADFG 2020).

One hundred percent of Evansville residents reported harvesting and using vegetation. Blueberries (85 percent of households harvested), low bush cranberries (69 percent), and wood (54 percent) were harvested by the most households. The harvest of vegetation totaled 11 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (4 pounds), lowbush cranberry (4 pounds), highbush cranberry (1 pound), raspberry (1 pound), and salmonberry (1 pound) (ADFG 2020).

### *Subsistence Use Areas*

Evansville residents tend to favor subsistence use areas in the immediate vicinity of the community. Some residents use motorized vehicles such as trucks, snowmachines, and ATVs to hunt, fish, and gather, while others travel on foot (Holen et al. 2012). However, salmon was harvested by Evansville residents in 2011 at locations far from the community; the Koyukuk River salmon populations in the vicinity of the community

are very low and typically of poor quality (Holen et al. 2012). Evansville residents concentrated their non-salmon fish harvests on the Koyukuk River, close to the community, and at Wild and Iniakuk Lakes.

A large radius surrounding the community is typically used for hunting large land mammals. Small land mammals (all of which were martens in 2011) were trapped and upland game birds were harvested east from Evansville, along the Koyukuk River and north along the John and Wild Rivers. Most wild plants and berries were harvested close to the community of Evansville and about a mile to the west of Bettles past the floatplane pond (Holen et al. 2012).

Some community members feel that the quality and availability of salmon and non-salmon resources, once important components of Evansville harvests, have declined dramatically since the 1980s, due to warmer river temperatures and high levels of debris and silt in the water (Holen et al. 2012). Residents also reported that large land mammal resources have been extremely scarce in the area.

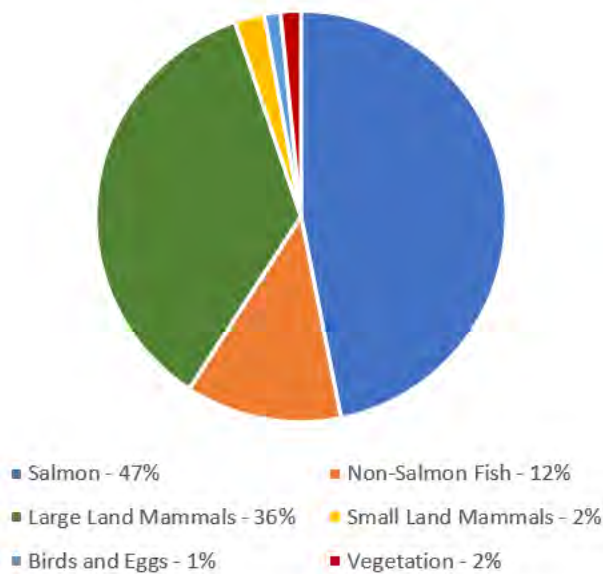
**Galena**

Galena is on the north bank of the Yukon River, 45 miles east of Nulato and 270 air miles west of Fairbanks. It lies northeast of the Innoko National Wildlife Refuge. The 2010 Census estimated a total population of 470 residents for Galena. The 2018 DCCED certified population of Galena was 460 (DCCED 2020).

*Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2010 for Galena was 107,644 pounds, or 254 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest at 47 percent (**Figure Q-7**), which totaled 50,416 pounds, or 119 pounds per capita. Moose (85 pounds per capita), chum salmon (64 pounds), chinook salmon (37 pounds), and whitefish (914 pounds) represented the highest harvest amounts in pounds per capita in Galena, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-7. Composition of Harvest by Category, Galena**



Source: ADFG 2020

There was an average of 683 pounds of wild resources harvested per household in 2010 (ADFG 2020). Galena households harvested an average of 7 kinds of resources and used an average of 10 kinds of resources. The maximum number of resources used by any household was 37 (Brown et al. 2015). Moose (used 85 percent of households), Chinook salmon (68 percent), blueberries (54 percent), and chum salmon (35 percent) had the highest percentages of household use in Galena in 2010. Moose (41 percent of households), Chinook salmon (39 percent), and chum salmon (26 percent) had the highest percentages of household's harvest (ADFG 2020).

In 2010, 46 percent of households reported harvesting salmon, while 75 percent of households reported using salmon. Salmon harvest totaled 119 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (64 pounds), Chinook salmon (38 pounds) and coho salmon (14 pounds). Additionally, 39 percent of households reported harvesting non-salmon fish, compared with 63 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 31 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (14 pounds), sheefish (7 pounds), and northern pike (4 pounds) (ADFG 2020).

The harvest of large land mammals totaled 90 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (85 pounds), black bear (2 pounds), and caribou (2 pounds). Moose were harvested by 41 percent of households and used by 85 percent. Black bears were the second-most harvested large land mammal in 2010, harvested by 5 percent of households and used by 13 percent.

Galena households harvested small land mammals for both food and for fur in 2010. Snowshoe hares were the most widely harvested (18 percent) and the most used (20 percent) small mammal by household. The harvest of small land mammals totaled 6 pounds per capita. The most harvested small mammal species in terms of pounds per capita were beavers (4 pounds), snowshoe hare (1 pound), and lynx (1 pound) (ADFG 2020).

Fifty-six percent of Galena households reported using birds and eggs in 2010, and 50 percent harvested them, even though they contributed only 1 percent to the total estimated pounds of harvest. The harvest of birds and eggs totaled 3 pounds per capita. The most harvested bird species in pounds per capita were grouse (2 pounds) and geese (1 pound) (ADFG 2020). No bird eggs were gathered during the 2010 study year (ADFG 2020).

In 2010, 76 percent of Galena households reported harvesting vegetation, and 80 percent of households reported using vegetation. Wood was harvested by 59 percent of households and used by 63 percent, mainly for firewood and smoking fish (Brown et al. 2015). The harvest of vegetation totaled 4 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (1 pound), lowbush cranberry (1 pound), and highbush cranberry (1 pound) (ADFG 2020).

### *Subsistence Use Areas*

Salmon was harvested by Galena residents in 2010 along approximately 20 miles of the Yukon River, from as far downstream as the community of Nulato to as far upstream as 5 miles above Fish Island. Non-salmon fish species were harvested primarily within a 5-mile stretch of the Yukon River upstream and downstream from Galena, as well as in Jimmy Slough, Bear Creek, and the Koyukuk drainage at the Bitzia River. All of Galena's search and harvest areas for moose in 2010 were in GMU 21D, with search and harvest areas extending along the Koyukuk, Yukon, and Yuki Rivers and into their drainages.

Galena households used a large area north of the community, along the Koyukuk River to the Kateel River toward the community of Huslia, to search for and harvest small mammals. Areas along the Yuki River were also targeted for small mammal search and harvest; however, the Kala Slough, immediately upriver of Galena,

was the most accessible area used in 2010 for small mammal search and harvest. Ptarmigan and grouse were mostly harvested in and around Galena, while residents were pursuing other subsistence resources. Berries and greens were harvested in a variety of locations, including both sides of the Yukon River close to the community, Bear Creek, and Beaver Creek.

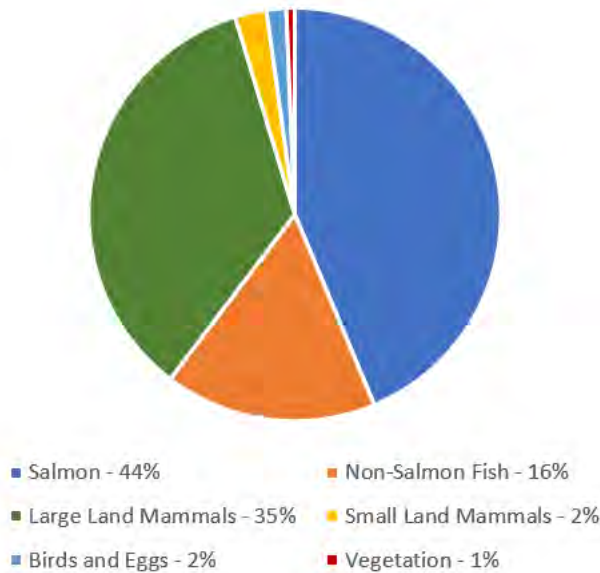
**Hughes**

Hughes is on a 500-foot bluff on the east bank of the Koyukuk River, about 115 air miles northeast of Galena and 210 air miles northwest of Fairbanks. The 2010 Census estimated the population of Hughes to be 77. The estimate provided by ADFG associated with the 2014 study year was 90 (Wilson and Kostick 2016). The 2018 DCCED certified population of Hughes was 104 (DCCED 2020).

**Subsistence Harvest Patterns**

The total estimated harvest for all subsistence resources during 2014 for Hughes was 32,448 pounds, or 360 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest at 44 percent (**Figure Q-8**), which totaled an estimated 14,178 pounds, or 157 pounds per capita. Chum salmon (156 pounds per capita), moose (78 pounds), whitefish (44 pounds), and caribou (30 pounds) represented the highest harvest amounts in pounds per capita in Hughes, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-8. Composition of Harvest by Category, Hughes**



Source: ADFG 2020

There was an average of 954 pounds of wild resources harvested per household (ADFG 2020). Hughes households harvested an average of 7 kinds of resources and used an average of 10. The maximum number of resources used by any household was 26 (Wilson and Kostick 2016).

In 2014, 19 percent of households reported harvesting salmon, while 58 percent of households reported using salmon. Salmon harvest totaled 157 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (155 pounds) and Chinook salmon (2 pounds). Additionally, 39 percent of

households reported harvesting non-salmon fish, compared with 73 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 60 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (44 pounds), sheefish (10 pounds), and northern pike (4 pounds) (ADFG 2020).

The harvest of large land mammals totaled 126 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (78 pounds), caribou (30 pounds), and black bear (17 pounds). Moose were harvested by 35 percent of households and used by 96 percent of households, which indicates a high degree of resource sharing (Brown and Kostick 2017). Black bears were the second-most harvested large land mammal in 2014, harvested by 27 percent of households and used by 54 percent. Caribou were also reported as used by 12 percent of Hughes households and harvested by 31 percent.

Hughes households did not report harvesting any marine mammals; however, 31 percent of households reported receiving and using whales and seals via sharing networks with friends and families from coastal areas (ADFG 2020).

Hughes households harvested small land mammals for both food and fur in 2014. The harvest of small land mammals (beavers) totaled 9 pounds per capita (ADFG 2020). Beavers were the most widely harvested (19 percent of households) and used (31 percent) small mammal. Martens and wolverines were the next most widely harvested and used small mammals (12 percent of households each). Muskrats and lynx were also reported both harvested and used by 12 percent of households.

There were 62 percent of Hughes households that reported using birds and eggs in 2014 and 50 percent harvested them. The harvest of birds and eggs totaled 6 pounds per capita. The most harvested bird species in pounds per capita were geese (3 pounds), ducks (2 pounds), and grouse (1 pound) (ADFG 2020). Geese (48 percent of households harvested), ducks (39 percent), and grouse (39 percent) were the most harvested birds by Hughes households. Geese (58 percent of households using), ducks (42 percent), and grouse (42 percent) were the most used. No Hughes households reported harvesting or using bird eggs in 2014 (ADFG 2020).

In 2014, 39 percent of Hughes households reported harvesting vegetation, and 46 percent of households reported using vegetation. The harvest of vegetation totaled 2 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (1 pound), and plants, greens, and mushrooms (1 pound) (ADFG 2020). Blueberries (15 percent of households harvested), cloudberries (12 percent), and chaga (a fungus commonly used for tea) (12 percent) were harvested by the most households in Hughes. Wood was harvested and used by 4 percent of households, mainly for heating homes (Wilson and Kostick 2016).

### *Subsistence Use Areas*

Hughes residents typically harvested salmon and non-salmon along the mainstem of the Koyukuk River, around the mouth of Hughes Creek or downstream of the Batza River. Hughes is in GMU 24C; large land mammals, primarily moose and black bears, were hunted by Hughes residents along the Koyukuk River, between Huslia and Allakaket. Small land mammals were typically harvested in the flats between the Little Indian River and the Koyukuk River. Trapping took place close to the community along Hughes Creek and in the Indian Mountains in 2014. Ducks and geese were harvested along the Koyukuk River; Huggins Island was a primary search and harvest area. Grouse were reportedly harvested only around the communities of Hughes and Huslia (Wilson and Kostick 2016).



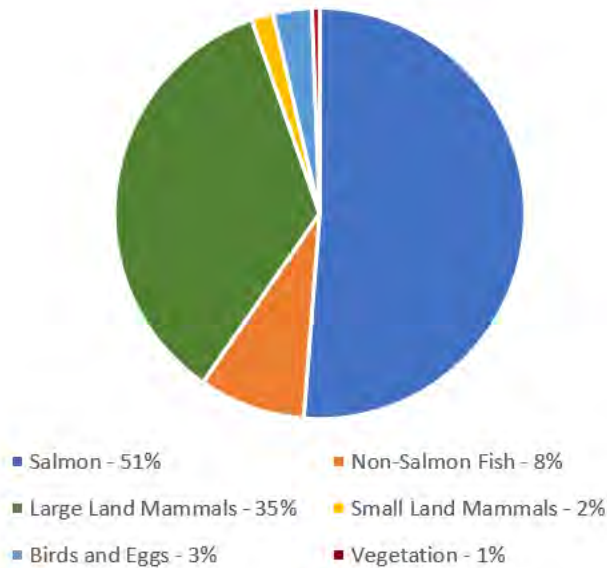
**Huslia**

Huslia is on the north bank of the Koyukuk River, about 170 river miles northwest of Galena and 290 air miles west of Fairbanks, in the Koyukuk National Wildlife Refuge. According to the 2010 Census, Huslia had 275 residents. The 2018 DCCED certified population of Huslia was 310 (DCCED 2020).

**Subsistence Harvest Patterns**

Limited data are available for Huslia in the ADFG CSIS, with 1983 being the representative year. The total estimated harvest for all subsistence resources that year for Huslia was 208,165 pounds, or 1,082 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest in 1983 at 51 percent (**Figure Q-9**), which totaled an estimated 106,674 pounds harvested, or 555 pounds per capita. Chum salmon (533 pounds per capita), moose (311 pounds), caribou (36 pounds), sheefish (32 pounds), and black bear (32 pounds) represented the highest harvest amounts in pounds per capita in Huslia, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-9. Composition of Harvest by Category, Huslia**



Source: ADFG 2020

There was an average of 3,652 pounds of wild resources harvested per household (ADFG 2020). Hughes households harvested an average of 10 kinds of resources and used 29 of 43 distinct resource types for food. The maximum number of resources used by any household was 31 (Marcotte 1986).

In 1983, 45 percent of households reported harvesting salmon, while 66 percent of households reported harvesting non-salmon fish. Data is not available on the percent of households using salmon and non-salmon fish from 1983 (ADFG 2020). Salmon harvest totaled 555 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (533 pounds) and Chinook salmon (21 pounds). Non-salmon fish harvest totaled 91 pounds per capita. The most harvested non-salmon fish in pounds per capita were sheefish (32 pounds), pike (29 pounds), and whitefish (22 pounds) (ADFG 2020).

The harvest of large land mammals totaled 379 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (311 pounds), caribou (36 pounds), and black bear (32 pounds). Moose was the most harvested large land mammal by Huslia households in 1983, harvested by 77 percent of households. The 1983 harvest of moose represents an average of 1.5 moose per household (Marcotte 1986).

The harvest of small land mammals totaled 19 pounds per capita. The most harvested small mammal species in terms of pounds per capita were beavers (13 pounds), snowshoe hare (3 pounds), and muskrat (2 pounds) (ADFG 2020). Martens were reported as the most used small land mammal, with 52 percent of households using, followed by fox (50 percent).

There were 75 percent of Huslia households that reported harvesting birds and eggs in 1983. The harvest of birds and eggs totaled 33 pounds per capita. The most harvested bird species in pounds per capita were geese (24 pounds), ducks (8 pounds), and grouse (1 pound) (ADFG 2020). Ducks (70 percent of households harvested), geese (64 percent), and upland game birds (52 percent) were the most harvested birds by Huslia households. There were no Huslia households that reported harvesting or using bird eggs in 1983 (ADFG 2020).

In 1983, 96 percent of Huslia households reported harvesting vegetation. There were 75 percent of all Huslia households that reported using edible plants (Marcotte 1986). Wood was harvested by 84 percent of households and was mainly used for smoking fish and heating homes (Marcotte 1986). The harvest of vegetation (berries) totaled 6 pounds per capita (ADFG 2020).

### ***Subsistence Use Areas***

Fish harvest areas in 1983 were reported along the Koyukuk River from the Dulbi River to Cutoff Slough. The Huslia River and Huntington Slough were also used for non-salmon fish harvest. Residents searched for and harvested large land mammal as far up the Koyukuuk River as the mouth of the Hogatza River, along the Huslia and Dulbi Rivers, and the Dulbi Slough. Small land mammal trapping areas in 1983 were linked closely to kinship and family history.

Search and harvest locations were identified along the Dakli River, Cutoff Slough, Holitnakakatina Creek, Natlaratlen River, and along the North Fork of the Huslia River. Small game and waterfowl were typically harvested in the same general areas identified for large land mammal search and harvest, including Cutoff Slough and Huntington Slough. Vegetation and wood were gathered within 8 miles of the community, along local trails and in areas accessible by the river.

### ***Kaltag***

Kaltag is on the west bank of the Yukon River, 75 miles west of Galena and 335 miles west of Fairbanks. It is situated on a 35-foot bluff at the base of the Nulato Hills, west of the Innoko National Wildlife Refuge. According to the 2010 Census, Kaltag had 190 residents. The 2018 DCCED certified population of Kaltag was 169 (DCCED 2020).

Limited data are available for Kaltag in the ADFG CSIS. In 1985, a study was conducted focusing specifically on salmon harvest (Wheeler 1987). Kaltag's total estimated harvest in 1985 for salmon was 173,670 pounds, or 665 pounds per capita. In terms of pounds harvested, chum salmon made up the largest portion of the subsistence harvest, at an estimated 163,665 pounds harvested, or 627 pounds per capita (ADFG 2020).

In 2006, a study was conducted that focused on non-salmon fish (ADFG 2020). The total estimated harvest of non-salmon fish in 2006 for Kaltag was 4,779 pounds, or 23 pounds per capita. Whitefish made up the largest portion of the subsistence harvest, with 1,734 pounds harvested, or 8 pounds per capita (ADFG 2020).

Grayling (49 percent of households) and sheefish (43 percent) had the highest percentages of household's harvest in Kaltag in 2006. Sheefish and grayling had the highest percentages of household use, used by 62 and 61 percent, respectively (ADFG 2020). The most harvested non-salmon fish in pounds per capita were whitefish (8 pounds), sheefish (6 pounds), pike (5 pounds), and grayling (3 pounds) (ADFG 2020).

During the 1985 study year, salmon were harvested from areas along the east bank of the Yukon River, either slightly upriver or downriver from the community (Wheeler 1987).

### ***Koyukuk***

Koyukuk is on the Yukon River near the mouth of the Koyukuk River, 30 miles west of Galena and 290 air miles west of Fairbanks. It is next to the Koyukuk National Wildlife Refuge and the Innoko National Wildlife Refuge. According to the 2010 Census, Koyukuk had 96 residents. The 2018 DCCED certified population of Koyukuk was 86 (DCCED 2020).

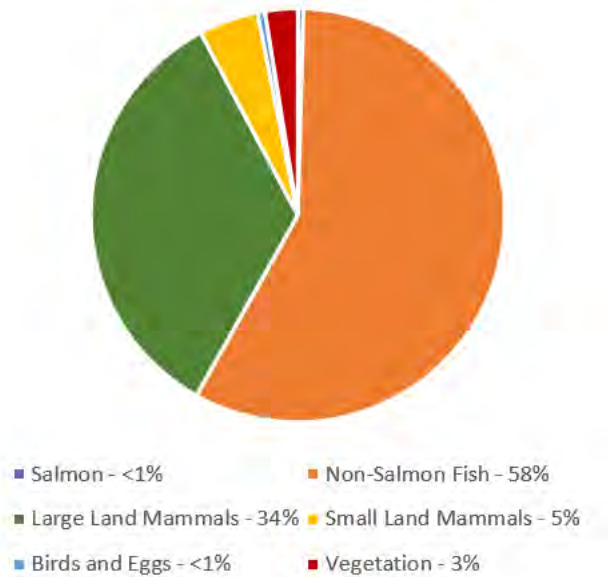
Limited data are available for this community in the ADFG CSIS. In 2002, a study was conducted that focused on non-salmon fish (Brown et al. 2005). The total estimated harvest of non-salmon fish in 2002 for Koyukuk was 7,395 pounds, or 71 pounds per capita. Of that amount, 56 percent was whitefish and 31 percent was sheefish. Whitefish made up the largest portion of the subsistence harvest with an estimated 4,140 pounds harvested, or 40 pounds per capita (ADFG 2020). Sheefish contributed an estimated 2,304 pounds to the total harvest, or 22 pounds per capita. Sheefish (48 percent of households) and whitefish (41 percent) had the highest percentages of household's harvest in 2006. Sheefish and whitefish had the highest percentages of household use, used by 66 and 64 percent, respectively (ADFG 2020).

### ***Lake Minchumina***

Lake Minchumina is north of Denali (Mt. McKinley) in Interior Alaska, at the headwaters of the Tanana-Yukon drainage. The 2010 Census counted 13 residents in Lake Minchumina. The 2018 DCCED certified population of Lake Minchumina was 9 (DCCED 2020).

#### ***Subsistence Harvest Patterns***

The total estimated harvest for all subsistence resources during 2002 for Lake Minchumina was 7,907 pounds, or 296 pounds per capita. In terms of estimated pounds harvested, non-salmon fish made up the largest portion of the subsistence harvest at 58 percent (**Figure Q-10**), which totaled an estimated 4,564 pounds, or 171 pounds per capita. Moose (93 pounds per capita), whitefish (90 pounds), and pike (43 pounds) represented the highest harvest amounts in pounds per capita in Lake Minchumina, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-10. Composition of Harvest by Category, Lake Minchumina**

Source: ADFG 2020

There was an average of 791 pounds of wild resources harvested per household (ADFG 2020). Lake Minchumina households harvested an average of 11 kinds of resources and used an average of 13 kinds of resources. The maximum number of resources used by any household was 23 (Holen et al. 2006).

In 2002, 17 percent of households reported harvesting salmon, while 83 percent of households reported using salmon. Salmon harvest totaled 1 pound per capita; the only salmon species reported harvested was chum salmon. Additionally, 100 percent of households reported harvesting non-salmon fish, and 100 percent reported using non-salmon fish. Non-salmon fish harvest totaled 171 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (91 pounds), pike (43 pounds), and burbot (22 pounds) (ADFG 2020).

The harvest of large land mammals totaled 101 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (94 pounds) and black bear (7 pounds). Moose was the most used large land mammal by Lake Minchumina households in 2002, harvested by 50 percent of households and used by 100 percent; it was the only large land mammal reported as harvested that year. There were 17 percent of Lake Minchumina households that reported using both black bear and caribou in 2002.

Lake Minchumina households harvested small land mammals mostly for fur in 2002. The harvest of small land mammals totaled 14 pounds per capita. The most harvested small mammal species in terms of pounds per capita were beavers (8 pounds), porcupine (5 pounds), and snowshoe hare (1 pound) (ADFG 2020). Martens were the most used (67 percent) small mammal by household, followed by beaver (50 percent), and lynx (50 percent).

There were 83 percent of Lake Minchumina households that reported both using and harvesting birds and eggs in 2002. The harvest of birds and eggs totaled 2 pounds per capita; upland game birds like grouse (1 pound) and ptarmigan (less than 1 pound) accounted for the most pounds per capita of the harvest. (ADFG 2020). Grouse (83 percent of households), ducks (17 percent), and ptarmigan (17 percent) were the most used birds by Lake Minchumina households. There were no households that reported harvesting bird eggs in 2002 (ADFG 2020).

In 2002, 83 percent of Lake Minchumina households reported harvesting vegetation, and 100 percent of households reported using vegetation. Berries were harvested by the most households (50 percent) and used by the most households (67 percent). Wood was harvested by 83 percent of households and used by 100 percent. The harvest of vegetation (berries) totaled 8 pounds per capita in 2002 (ADFG 2020).

**Subsistence Use Areas**

The subsistence search and harvest area used by the community is localized to the area including the lake itself or within 30 to 40 miles of the community. Non-salmon fish search and harvest areas focus in and around Lake Minchumina and associated river systems. Most large land mammal hunting is done by Lake Minchumina residents in GMU 20C and to the east, by heading down the Muddy River (Holen et al. 2006).

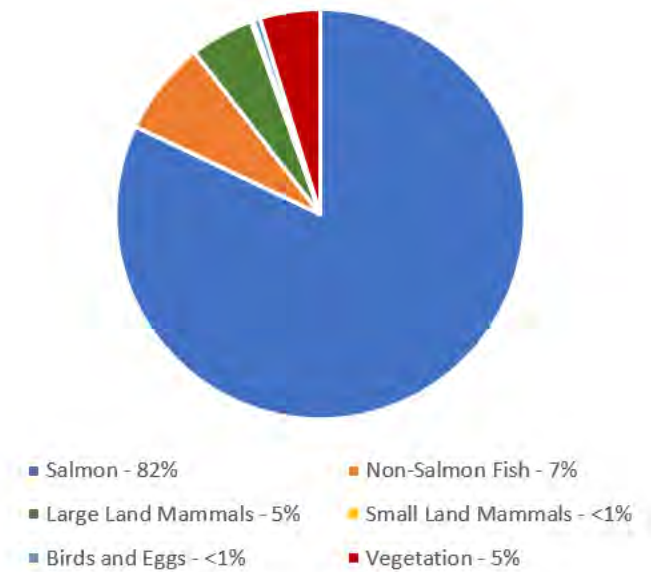
**Manley Hot Springs**

Manley Hot Springs is about 5 miles north of the Tanana River on Hot Springs Slough, at the end of the Elliott Highway, 160 road miles west of Fairbanks. According to the 2010 Census, Manley Hot Springs had 89 residents. In 2013, the ADFG conducted a study of the harvest and use of subsistence resources in 2012 by Manley Hot Springs residents (Brown et al. 2014). It estimated that the 2013 population of Manley Hot Springs was 123 individuals living in 58 households. The 2018 DCCED certified population of Manley Hot Springs was 114 (DCCED 2020).

**Subsistence Harvest Patterns**

The total estimated harvest for all subsistence resources during 2012 for Manley Hot Springs was 52,438 pounds, or 426 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest at 82 percent (Figure Q-11), which totaled an estimated 43,021 pounds, or 350 pounds per capita. Chinook salmon (105 pounds per capita), coho salmon (96 pounds), and moose (21 pounds) represented the highest harvest amounts in pounds per capita in Manley Hot Springs, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-11. Composition of Harvest by Category, Manley Hot Springs**



Source: ADFG 2020

There was an average of 904 pounds of wild resources harvested per household (ADFG 2020). Manley Hot Springs households harvested an average of 9 kinds of resources and used an average of 14. The maximum number of resources used by any household was 30 (Brown et al. 2014).

In 2012, 27 percent of households reported harvesting salmon, while 93 percent of households reported using salmon. Salmon harvest totaled 350 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (146 pounds), Chinook salmon (105 pounds), and coho salmon (96 pounds). Additionally, 39 percent of households reported harvesting non-salmon fish, compared with 80 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 32 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (16 pounds), northern pike (8 pounds), and sheefish (4 pounds) (ADFG 2020).

The harvest of large land mammals totaled 21 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (21 pounds) and black bear (1 pound). Moose was the most used large land mammal by Manley Hot Springs households in 2012. Moose were harvested by 10 percent of households and used by 68 percent of households, which indicates a high degree of resource sharing (Brown et al. 2014). Black bears were the only other harvested large land mammal in 2012, harvested by 2 percent of households and used by 12 percent. Caribou and deer were also reported as used by 24 percent and 5 percent, respectively, of Manley Hot Springs households.

Manley Hot Springs households harvested small land mammals for both food and fur in 2012. The harvest of small land mammals totaled 1 pound per capita. The most harvested small mammal species in terms of pounds per capita were beaver (less than 1 pound) and snowshoe hare (less than 1 pound) (ADFG 2020). Martens were the most widely used (22 percent) small mammal by household, followed by lynx (17 percent) and red fox (15 percent).

There were 54 percent of Manley Hot Springs households that reported using birds and eggs in 2012, and 41 percent harvested them. The harvest of birds and eggs totaled 2 pounds per capita. The most harvested bird species in pounds per capita were grouse (2 pounds) and ducks (less than 1 pound) (ADFG 2020). Grouse (46 percent of households using) and ducks (22 percent) were the most used birds by Manley Hot Springs households. Five percent of Manley Hot Springs households reported harvesting bird eggs, and 10 percent of households reported using them in 2012ADFG, representing less than 1 pound per capita of the 2012 subsistence harvest (ADFG 2020).

In 2012, 95 percent of Manley Hot Springs households reported harvesting vegetation, and 100 percent of households reported using vegetation. The harvest of vegetation totaled 20 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (8 pounds), lowbush cranberry (5 pounds), raspberry (2 pounds), and unknown mushrooms (1 pound) (ADFG 2020). Wood was harvested by 76 percent of households and used by 83 percent, mainly for heating homes (Brown et al. 2014).

### *Subsistence Use Areas*

Subsistence search and harvest areas for residents of Manley Hot Springs fall between the communities of Tanana in the west, and Minto in the east and are concentrated north and south of the Elliott Highway. The northernmost extent of the subsistence use areas is along the Yukon River, just south of the Dalton Highway (Brown et al. 2014).

Manley Hot Springs households harvested salmon and non-salmon fish from multiple locations along the Yukon and Tanana Rivers, Hot Springs Slough, and various lakes and streams around the community.

Chinook salmon were harvested primarily from an area on the Yukon River known as the Rapids. In 2012, Manley Hot Springs households used the existing road system, old mining roads, and waterways to access search and harvest areas for large land mammals, primarily moose. The main area extended south of the Tanana River, between Manley Hot Springs and Cosna Bluffs. The primary search and harvest areas for small land mammals and birds was in the same area as moose. Additional search and harvest areas for small land mammals and birds were reported along the Elliott Highway, between Manley Hot Springs and Baker Lake. Most search and harvest areas for vegetation are found close to the community, along road corridors, along the Tanana River, and around the Rapids (Brown et al. 2014).

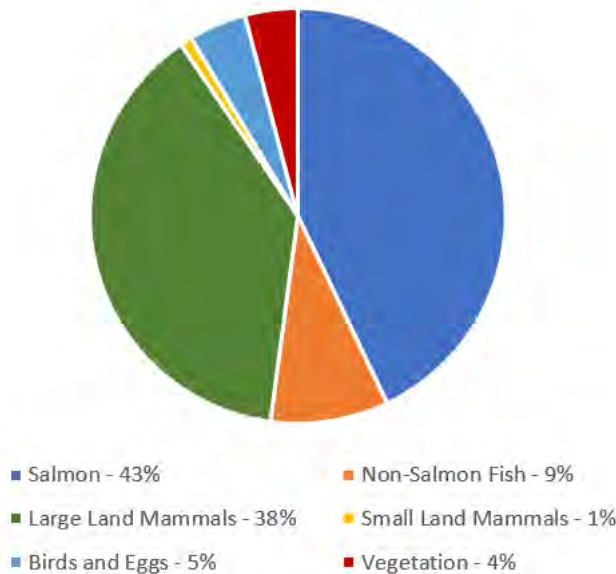
**Minto**

Minto is on the west bank of the Tolovana River, 130 miles northwest of Fairbanks. The community can be reached from the Elliot Highway via the 11-mile Minto Spur Road. According to the 2010 Census, Minto had 210 residents. In 2013, the ADFG conducted a study of the harvest and use of subsistence resources by Minto residents and estimated that the 2013 population consisted of 176 individuals living in 61 households; 95 residents were Alaska Natives (Brown et al. 2014). The 2018 DCCED certified population of Minto was 208 (DCCED 2020).

**Subsistence Harvest Patterns**

The total estimated harvest for all subsistence resources during 2012 for Minto was 39,772 pounds, or 226 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest, at 43 percent (**Figure Q-12**), which totaled an estimated 17,075 pounds, or 97 pounds per capita. Moose (85 pounds per capita), chum salmon (42 pounds), and coho salmon (25 pounds) represented the highest harvest amounts in pounds per capita in Minto, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-12. Composition of Harvest by Category, Minto**



Source: ADFG 2020

There was an average of 652 pounds of wild resources harvested per household (ADFG 2020). Minto households harvested an average of 8 kinds of resources and used an average of 12 kinds of resources. The maximum number of resources used by any household was 32 (Brown et al. 2014).

In 2012, 30 percent of Minto households reported harvesting salmon, while 91 percent of households reported using salmon. Salmon harvest totaled 97 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (42 pounds), coho salmon (25 pounds), and Chinook salmon (20 pounds). Additionally, 39 percent of Minto households reported harvesting non-salmon fish, compared with 65 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 21 pounds per capita. The most harvested non-salmon fish in pounds per capita were northern pike (9 pounds), whitefish (8 pounds), and sheefish (3 pounds) (ADFG 2020).

The harvest of large land mammals totaled 86 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (85 pounds), black bear (1 pound), and Dall sheep (1 pound). Moose were harvested by 37 percent of Minto households and used by 96 percent of households, which indicates a high degree of resource sharing (Brown et al. 2014). Black bears were the only other harvested large land mammal in 2012, harvested by 7 percent of households and used by 11 percent. Dall sheep were also reported as used and harvested by 2 percent of Minto households.

Minto households harvested small land mammals for both food and fur in 2012. The harvest of small land mammals totaled 2 pounds per capita. The most harvested small mammal species in terms of pounds per capita were beavers (2 pounds), snowshoe hare (less than 1 pound), and muskrat (less than 1 pound) (ADFG 2020). Beavers were the most widely harvested (9 percent of households) and used (33 percent) small mammal. Snowshoe hares were used by 13 percent of households, and martens were used by 7 percent.

There were 78 percent of Minto households that reported using birds and eggs in 2012, and 59 percent harvested them. The harvest of birds and eggs totaled 10 pounds per capita. The most harvested bird species in pounds per capita were ducks (5 pounds), geese (4 pounds), and grouse (1 pound) (ADFG 2020). Geese (48 percent of households harvested) and ducks (52 percent) were the most harvested birds by Minto households. Ducks (76 percent of households using) and geese (72 percent) were also the most used birds by Minto households. Two percent of Minto households reported harvesting and using bird eggs in 2012 ADFG, representing less than 1 pound per capita of the subsistence harvest (ADFG 2020).

In 2012, 91 percent of Minto households reported harvesting vegetation, and 98 percent of households reported using vegetation. The harvest of vegetation totaled 9 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (5 pounds), lowbush cranberry (2 pounds), highbush cranberry (1 pound), and plants, greens, and mushrooms (1 pound) (ADFG 2020). Wood was harvested by 74 percent and used by 87 percent of households in Minto and was mainly used for heating homes (Brown et al. 2014).

### *Subsistence Use Areas*

Subsistence search and harvest areas for residents of Minto generally centered on the Minto Flats State Game Refuge, extending between the communities of Tanana to the west, Stevens Village to the north, and Fairbanks to the east; the southernmost use area was along the Kantishna River. Salmon search and harvest areas were focused along the Tanana and Tolovana Rivers. Swanneck Slough was also identified as an important salmon harvest area for Minto residents. Non-salmon fish search and harvest are concentrated in lakes, sloughs, and rivers surrounding the community and include areas along the Tanana and Tolovana Rivers.



Large land mammals, specifically moose and black bears, were hunted along portions of the Elliot Highway, the Tanana, Tolovana, and Catanika Rivers, as well as multiple smaller lakes and waterways. Small land mammals were primarily searched for and harvested from areas surrounding the Tolovana and Chatanika Rivers. Minto residents harvested ducks and geese along the upper Tolovana River and other lakes near the community. The Minto Spur Road and Elliot Highway were also used to hunt for ptarmigan and grouse and to harvest vegetation.

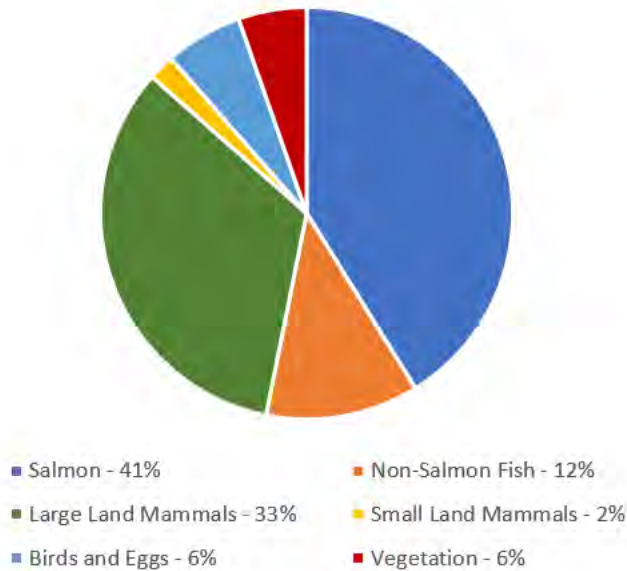
**Nenana**

Nenana is in Interior Alaska, 55 road miles southwest of Fairbanks on the George Parks Highway. Nenana is on the south bank of the Tanana River, just east of the mouth of the Nenana River. According to the 2010 Census, Nenana had 378 residents. In 2016, the ADFG conducted a study of the harvest and use of subsistence resources in 2015 by Nenana residents (Brown and Kostick 2017) and estimated that the 2015 population of Nenana consisted of 583 individuals living in 243 households; 203 residents were Alaska Natives. The 2018 DCCED certified population of Nenana was 363 (DCCED 2020).

*Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2015 for Nenana was 64,965 pounds, or 111 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest, at 41 percent (**Figure Q-13**), which totaled an estimated 26,722 pounds, or 46 pounds per capita. Moose (35 pounds per capita), coho salmon (16 pounds), and Chinook salmon (13 pounds) represented the highest harvest amounts in pounds per capita in Nenana, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-13. Composition of Harvest by Category, Nenana**



Source: ADFG 2020

There was an average of 267 pounds of wild resources harvested per household (ADFG 2020). Nenana households harvested an average of 5 kinds of resources and used an average of 9. The maximum number of resources used by any household was 41 (Brown and Kostick 2017).

In 2015, 26 percent of households reported harvesting salmon, while 76 percent of households reported using salmon. Salmon harvest totaled 46 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (25 pounds), coho salmon (16 pounds), and Chinook salmon (8 pounds). Additionally, 37 percent of households reported harvesting non-salmon fish, compared with 65 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 13 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (5 pounds) and grayling (2 pounds) (ADFG 2020).

The harvest of large land mammals totaled 37 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (35 pounds) and caribou (2 pounds). Moose was the most used large land mammal by Nenana households in 2015. They were harvested by 10 percent of households and used by 80 percent, which indicates a high degree of resource sharing (Brown and Kostick 2017). Caribou were the second-most harvested large land mammal in 2015 by household, harvested by 3 percent of households and used by 14 percent.

Nenana households did not report the harvest of any marine mammals; however, 11 percent of households reported receiving and using whales, and 5 percent reported receiving and using seals via sharing networks with friends and families from coastal areas (ADFG 2020).

Nenana households harvested small land mammals primarily for fur in 2015. The harvest of small land mammals (beavers) totaled 2 pounds per capita (ADFG 2020). Beavers were the most widely harvested (9 percent of households) and the most used (14 percent) small mammal by household; snowshoe hares and martens that were also used by 5 percent of households.

There were 43 percent of Nenana households that reported using birds and eggs in 2015, and 36 percent harvested them. The harvest of birds and eggs totaled 7 pounds per capita. The most harvested bird species in pounds per capita were ducks (3 pounds), geese (2 pounds), and grouse (1 pound) (ADFG 2020). Grouse (28 percent of households harvested) and ducks (12 percent) were the most harvested birds by Nenana households. Grouse (31 percent of households using) and ducks (18 percent) were also the most used birds by Nenana households. Two percent of Nenana households reported harvesting and using bird eggs, representing less than 1 pound per capita of the 2015 subsistence harvest (ADFG 2020).

In 2015, 63 percent of Nenana households reported harvesting vegetation, and 87 percent of households reported using vegetation. The harvest of vegetation totaled 6 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (3 pounds), lowbush cranberry (1 pounds), highbush cranberry (1 pound), and raspberry (1 pound) (ADFG 2020). Wood was harvested by 52 percent of households and used by 66 percent, mainly for heating homes and smoking fish (Brown and Kostick 2017).

### *Subsistence Use Areas*

In 2015, Nenana residents used search and harvest areas along the Tanana River near Nenana and the Yukon River, upriver of the Dalton Highway and at the Rapids, a historical spot for fish wheels near Rampart; this area is also used by residents of Tanana and Manley Hot Springs (Brown and Kostick 2017). Non-salmon fish were harvested on the Tanana, Nenana, and Teklanika rivers.

Nenana is in GMU 20, at the nexus of GMUs 20A, 20B, and 20C. Residents hunted for large land mammals (primarily moose) along the Tanana and Tolovana Rivers and into the Minto Flats area, as well as along the Parks Highway. Caribou were searched for in areas along the Denali and Steese Highways. Search and harvest areas for small mammals focused on locations close to the community, as well as areas along the Tanana and Kantishna Rivers. Ducks and geese were searched for and harvested by Nenana residents along the Tanana

River into the Minto Flats. The areas used for gathering vegetation in 2015 were found along the Parks highway and along the Nenana River into the Minto Flats.

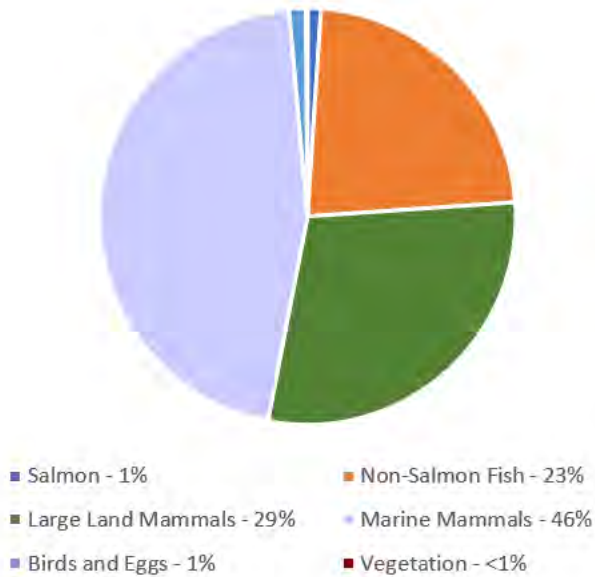
**Nuiqsut**

Nuiqsut is on the west bank of the Nigliq Channel of the Colville River, about 20 miles inland from the Beaufort Sea coast and approximately 136 miles southeast of Utqiagvik. The Census recorded 402 residents in Nuiqsut. During the 2014 study year, the ADFG estimated that 415 people resided in Nuiqsut; 96 percent of the population was Alaska Native (Brown et al. 2016). The 2018 DCCED certified population of Nuiqsut was 481 (DCCED 2020).

**Subsistence Harvest Patterns**

The total estimated harvest for all subsistence resources during 2014 for Nuiqsut was 371,992 pounds, or 896 pounds per capita. In terms of estimated pounds harvested, marine mammals made up the largest portion of the subsistence harvest at 46 percent (**Figure Q-14**), which totaled an estimated 169,367 pounds, or 408 pounds per capita. Bowhead whale (357 pounds per capita), caribou (253 pounds), and whitefish (189 pounds) represented the highest harvest amounts in pounds per capita in Nuiqsut, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-14. Composition of Harvest by Category, Nuiqsut**



Source: ADFG 2020

There was an average of 3,444 pounds of wild resources harvested per household (ADFG 2020). Nuiqsut households harvested an average of 8 kinds of resources and used an average of 13 kinds. The maximum number of resources used by any household was 29 (Brown et al. 2016).

In 2014, 40 percent of households reported harvesting salmon, while 64 percent of households reported using salmon. Salmon harvest totaled 9 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (8 pounds) and pink salmon (1 pound). Additionally, 70 percent of households reported harvesting non-salmon fish, compared with 93 percent that reported using non-salmon fish. Non-salmon fish

harvest totaled 205 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (189 pounds), char (5 pounds), burbot (4 pounds), and grayling (4 pounds) (ADFG 2020).

The harvest of large land mammals totaled 261 pounds per capita. The most harvested large land mammal species in pounds per capita were caribou (253 pounds) and moose (7 pounds). Caribou was the large land mammal used by the most Nuiqsut households in 2014. Caribou were harvested by 64 percent of households and used by 90 percent. Moose was harvested by 5 percent of Nuiqsut households and used by 43 percent. Dall sheep were not harvested by Nuiqsut households in 2014, but they were used by 5 percent of households (ADFG 2020).

Marine mammals made up 46 percent of Nuiqsut's subsistence harvest in 2014 due to the successful harvest of 5 bowhead whales (Brown et al. 2016). They were harvested by 40 percent of households and were used by 95 percent, which indicates a high degree of resource sharing (Brown et al. 2016). Bowhead whales were the most widely harvested marine mammal (21 percent of households) and the most widely used marine mammal by 93 percent of households. Ringed seals (35 percent of households) and bearded seals (22 percent) were the next most harvested resources; they were used by 67 percent and 52 percent of households, respectively. In 2014, marine mammal harvest totaled 408 pounds per capita. The most harvested marine mammal species in pounds per capita were bowhead whale (357 pounds) and ringed seal (15 pounds) (ADFG 2020).

Nuiqsut households harvested small land mammals solely for fur in 2014 (Brown et al. 2016). Wolverines were the most widely harvested small land mammal (9 percent of households), followed by wolf (7 percent) and fox (5 percent). Both wolves and wolverines were used by 12 percent of Nuiqsut households.

There were 79 percent of Nuiqsut households that reported using birds and eggs in 2014, and 67 percent harvested them, even though they contributed only 1 percent to the total estimated pounds of harvest. The harvest of birds and eggs totaled 12 pounds per capita. The most harvested bird species in pounds per capita were geese (10 pounds) and ducks (1 pound) (ADFG 2020). Geese were harvested by (60 percent) and used by the most households (78 percent). Ducks were the next most harvested (24 percent of households) and used (40 percent) resource by Nuiqsut households. Bird eggs were harvested by 3 percent of households and used by 5 percent of households in 2014, representing less than 1 pound per capita of the subsistence harvest (ADFG 2020).

In 2014, 53 percent of Nuiqsut households reported harvesting vegetation, and 67 percent of households reported using vegetation. The harvest of vegetation totaled 1 pound per capita, consisting primarily of cloudberry (1 pound per capita) and blueberry (less than 1 pound) (ADFG 2020).

### *Subsistence Use Areas*

Marine mammal search and harvest areas for Nuiqsut in 2014 were concentrated in Harrison Bay and an area east of the delta between Prudhoe and Foggy Island Bays in the Beaufort Sea. Nuiqsut households base their whaling activities from Cross Island. Hunters travel to the Beaufort Sea during open water season using the Nigliik Channel and other routes through the Colville River Delta (Bacon et al. 2011). Seal hunting search areas also included an area between the Colville and Kuparuk Rivers, near Simpson Lagoon and Jones Islands (Brown et al. 2016). The caribou search and harvest area extended over 150 miles north to south, from the Beaufort Sea coast to the foothills of the Brooks Range. Moose hunting was primarily concentrated along the Colville River for approximately 120 miles, extending beyond Umiat.

Search and harvest areas for small land mammals in 2014 covered the same general area as for large land mammals, extending beyond the Brooks Range foothills and into the mountains near Anaktuvuk Pass, as well as areas in the Titaluk and Kigalik River drainages. Salmon fishing by Nuiqsut households was concentrated along the Nigliq Channel. Non-salmon fish search and harvest were also primarily along the Nigliq Channel, but they were also harvested from other locations along the Colville River. Duck, geese, and bird egg searches and harvests were concentrated in Harrison Bay and the Colville River delta. The lower Colville River corridor was targeted for search and harvest of berries and greens (Brown et al. 2016).

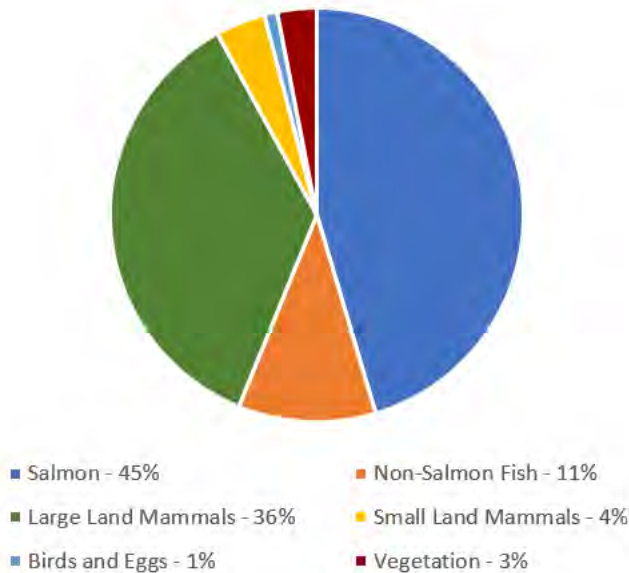
**Nulato**

Nulato is on the west bank of the Yukon River, 35 miles west of Galena and 310 air miles west of Fairbanks. It lies in the Nulato Hills, across the river from the Innoko National Wildlife Refuge. According to the 2010 Census, Nulato had 264 residents. The 2018 DCCED certified population of Nulato was 206 (DCCED 2020).

**Subsistence Harvest Patterns**

The total estimated harvest for all subsistence resources during 2010 for Nulato was 62,140 pounds, or 239 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest, at 45 percent (**Figure Q-15**), which totaled an estimated 28,211 pounds, or 108 pounds per capita. Moose (82 pounds per capita), Chinook salmon (72 pounds), chum salmon (19 pounds), and coho salmon (16 pounds) represented the highest harvest amounts in pounds per capita in Nulato, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-15. Composition of Harvest by Category, Nulato**



Source: ADFG 2020

There was an average of 688 pounds of wild resources harvested per household (ADFG 2020). Nulato households harvested an average of 8 kinds of resources and used an average of 14 kinds of resources. The maximum number of resources used by any household was 58 (Brown et al. 2015).

In 2010, 74 percent of households reported harvesting salmon, while 90 percent of households reported using salmon. Salmon harvest totaled 108 pounds per capita. The most harvested salmon species in pounds per capita were Chinook salmon (73 pounds), chum salmon (19 pounds), and coho salmon (16 pounds). Additionally, 63 percent of households reported harvesting non-salmon fish, compared with 81 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 26 pounds per capita. The most harvested non-salmon fish in pounds per capita were sheefish (9 pounds), whitefish (5 pounds), and grayling (5 pounds) (ADFG 2020).

The harvest of large land mammals totaled 86 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (82 pounds) and black bear (3 pounds). Moose was the most used subsistence resource and the most used large land mammal by Nulato households in 2010. Moose were harvested by 39 percent of households and used by 89 percent of households, which indicates a high degree of resource sharing (Brown et al. 2015). Black bears were the second-most harvested large land mammal in 2010, harvested by 10 percent of households and used by 17 percent.

Nulato households did not report the harvest of any marine mammals; however, 27 percent of households reported receiving and using seals and beluga whales via sharing networks with friends and families from coastal areas (Brown et al. 2015).

Nulato households harvested small land mammals for both food and for fur in 2010. The harvest of small land mammals totaled 9 pounds per capita. The most harvested small mammal species in terms of pounds per capita were beavers (9 pounds) and snowshoe hare (less than 1 pound) (ADFG 2020). Beavers were the used (35 percent) small mammal by household in Nulato, followed by snowshoe hares (9 percent) and martens (8 percent).

There were 70 percent of Nulato households that reported using birds and eggs in 2010, and 49 percent harvested them, even though they contributed only 1 percent to the total estimated pounds of harvest. The harvest of birds and eggs totaled 2 pounds per capita. The most harvested bird species in pounds per capita were grouse (1 pound) and geese (1 pound) (ADFG 2020). Canada geese (45 percent of households using) and spruce grouse (43 percent) were the most used birds by Nulato households in 2010. One percent of Nulato households reported using eggs; however, all of those were received from other households, and no household attempted to gather eggs (Brown et al. 2015).

In 2010, 81 percent of Nulato households reported harvesting vegetation, and 95 percent of households reported using vegetation. Wood was harvested by 48 percent of households and used by 85 percent of households, mainly for firewood and smoking fish (Brown et al. 2015). The harvest of vegetation totaled 7 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (3 pounds), lowbush cranberry (1 pound), highbush cranberry (1 pound), salmonberry (1 pound), plants, greens and mushrooms (1 pound), and Hudson Bay tea (1 pound) (ADFG 2020).

### *Subsistence Use Areas*

Most subsistence activities for Nulato residents in 2010 focused around the mainstem of the Yukon River and the Koyukuk River to the north of Koyukuk, as well as the lakes and sloughs of the Kaiyuh Flats across the Yukon River from the community. Salmon were harvested along the mainstem of the Yukon River, as far north as Koyukuk and as far south as the northern end of Halfway Island. Non-salmon fish species were harvested primarily in the immediate vicinity of Nulato on the mainstem of the Yukon River and on the Nulato River.

The Kaiyuh Flats has historically been an important location for Nulato subsistence practices, particularly fishing for non-salmon fish species and trapping small land mammal species (Brown et al. 2015). Nulato is in GMU 21D, with search and harvest areas for large land mammals along the Koyukuk River and Kaiyuh Slough. Households also reported hunting and trapping for small land mammals close to the community, on the mainstem and north fork of the Nulato River, and on Mukluk Creek. The Kaiyuh Flats was also a destination for Nulato households to harvest migratory birds, such as geese. Harvest and search areas for grouse and ptarmigan are close to the community and along the Nulato River. Nulato residents often harvested vegetation while participating in other subsistence activities, typically along the Koyukuk River, the Nulato River, and the Kaiyuh Flats.

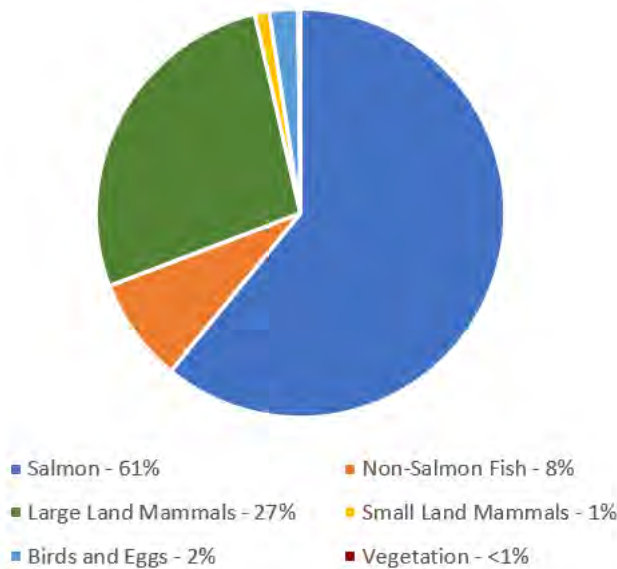
**Rampart**

Rampart is on the south bank of the Yukon River, approximately 75 miles upstream of its junction with the Tanana River, 100 miles northwest of Fairbanks. Rampart is a predominantly Alaska Native community. According to the 2010 Census, Rampart had 24 residents. In 2015, the ADFG conducted a study of the harvest and use of subsistence resources harvested in 2014 by Rampart residents. The ADFG estimated that the 2014 population of Rampart consisted of 39 individuals, all of whom were Alaska Natives living in 13 households (Brown et al. 2016). The 2018 DCCED certified population of Rampart was 86 (DCCED 2020).

*Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2014 for Rampart was 14,754 pounds, or 378 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest, at 61 percent (**Figure Q-16**), which totaled an estimated 8,992 pounds, or 231 pounds per capita. Chum salmon (120 pounds per capita), coho salmon (111 pounds), and moose (102 pounds) represented the highest harvest amounts in pounds per capita in Rampart, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-16. Composition of Harvest by Category, Rampart**



Source: ADFG 2020

There was an average of 1,135 pounds of wild resources harvested per household (ADFG 2020). Rampart households harvested an average of 8 kinds of resources and used an average of 11 kinds of resources. The maximum number of resources used by any household was 22 (Brown et al. 2016).

In 2014, 71 percent of households reported harvesting salmon, and 100 percent of households reported using salmon. Salmon harvest totaled 231 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (120 pounds) and coho salmon (111 pounds). Additionally, 86 percent of households reported harvesting non-salmon fish, and with 100 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 31 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (18 pounds), burbot (6 pounds), sheefish (4 pounds), and grayling (3 pounds) (ADFG 2020). Salmon species provided over twice as much edible weight per capita as large land mammals did (231 pounds versus 103 pounds), which suggests that access to salmon is greater than access to large land mammals (Brown et al. 2016).

Moose was the only large land mammal species harvested in 2014, equating to 103 pounds per capita. Moose were harvested by 57 percent of households and used by 86 percent of households, which indicates a high degree of resource sharing (Brown et al. 2016). There were no other large land mammals harvested by Rampart households; however, caribou was used by 14 percent of Rampart households (ADFG 2020).

Rampart households did not report the harvest of any marine mammals; however, 57 percent of households reported receiving and using seals via sharing networks with friends and families from coastal areas (Brown et al. 2016).

Rampart households harvested small land mammals for both food and for fur in 2014. The harvest of small land mammals totaled 4 pounds per capita. The most harvested small mammal species in terms of pounds per capita were beavers (4 pounds) and snowshoe hare (1 pound) (ADFG 2020). Snowshoe hares and beavers were the most used resources by Rampart households (29 percent), followed by martens (14 percent).

There were 57 percent of Rampart households that reported using birds and eggs in 2014, and 43 percent harvested them, even though they contributed only 2 percent to the total estimated pounds of harvest. The harvest of birds and eggs totaled 9 pounds per capita. The most harvested bird species in pounds per capita were geese (6 pounds), ducks (2 pounds), and grouse (1 pound) (ADFG 2020). Geese (57 percent of households using) were the most used birds by Rampart households, followed by grouse and ducks (43 percent each). No bird eggs gathered during the 2014 study year by Rampart households (ADFG 2020).

In 2014, 29 percent of Rampart households reported harvesting vegetation, and 100 percent of households reported using vegetation. Wood was harvested by 57 percent of households and used by 100 percent of households, mainly for home heating (Brown et al. 2016). The harvest of vegetation totaled 1 pound per capita, consisting primarily of blueberry (ADFG 2020).

### *Subsistence Use Areas*

Search and harvest areas for salmon species during the 2014 study year were in two areas along the Yukon River, most within less than 10 miles of the community stretching from Squaw Creek (1 mile upriver of Rampart) to 5 miles downriver of Rampart. The other area was approximately 1 mile south of the mouth of Little Dall River near Stevens Village (Brown et al. 2016). Non-salmon fish were harvested in the Yukon River along a 2- to 3-mile stretch both upriver and downriver of the community. Fishing also took place in the Yukon River near the community of Stevens Village.



Rampart residents often search for moose as they travel along the Yukon River by boat; however, their search and harvest locations in 2014 covered a broad geographic range, including locations along the Yukon River, near Hess Creek, and near the west fork of the Tolovana River. The area in and around Rampart was used for search and harvest of small land mammals, as was the area around the mouth of Squaw Creek. Likewise, birds, plants, and berries were all searched for in areas close to the community itself. There has been a shift in search and harvest locations closer to Stevens Village for several subsistence resources over the recent years, which could be influenced by strong family connections and friendships between the two communities (Brown et al. 2016).

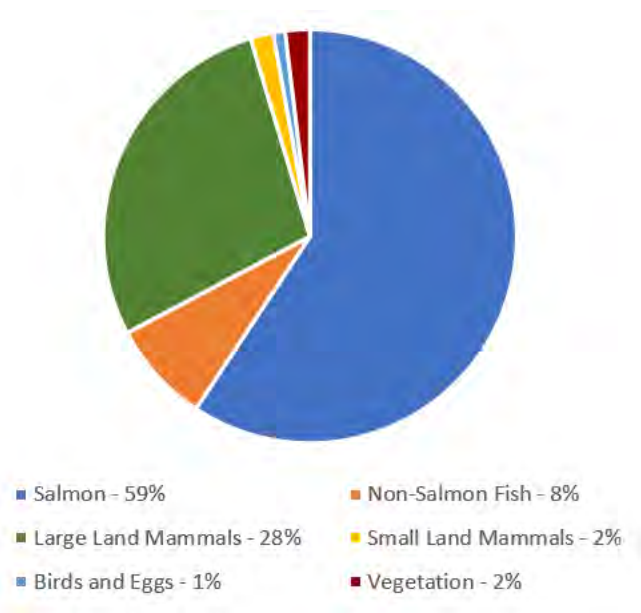
**Ruby**

Ruby is on the south bank of the Yukon River, in the Kilbuck-Kuskokwim Mountains. It is about 50 air miles east of Galena and 230 air miles west of Fairbanks. Ruby is next to the Nowitna National Wildlife Refuge. The 2010 Census estimated that 166 people lived in Ruby, including an Alaska Native population of 138. The 2018 DCCED certified population of Ruby was 168 (DCCED 2020).

*Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2010 for Ruby was 54,107 pounds, or 301 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest, at 59 percent (**Figure Q-17**), which totaled an estimated 32,075 pounds, or 178 pounds per capita. Moose (80 pounds per capita), Chinook salmon (80 pounds), and chum salmon (77 pounds) represented the highest harvest amounts in pounds per capita in Ruby, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-17. Composition of Harvest by Category, Ruby**



Source: ADFG 2020

There was an average of 820 pounds of wild resources harvested per household (ADFG 2020). Ruby households harvested an average of 8 kinds of resources and used an average of 11 kinds of resources. The maximum number of resources used by any household was 44 (Brown et al. 2015).

In 2010, 45 percent of households reported harvesting salmon, while 85 percent of households reported using salmon. Salmon harvest totaled 178 pounds per capita. The most harvested salmon species in pounds per capita were Chinook salmon (80 pounds), chum salmon (77 pounds), and coho salmon (21 pounds). Additionally, 45 percent of households reported harvesting non-salmon fish, compared with 79 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 24 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (13 pounds), northern pike (5 pounds), sheefish (4 pounds), and halibut (1 pound) (ADFG 2020).

The harvest of large land mammals totaled 85 pounds per capita in 2010. The most harvested large land mammal species in pounds per capita were moose (80 pounds), caribou (2 pounds), and black bear (2 pounds). Moose was the most used subsistence resource and the most used large land mammal by Ruby households in 2010. Moose were harvested by 36 percent of households and used by 89 percent of households, which indicates a high degree of resource sharing (Brown et al. 2015). Black bears were the second-most harvested large land mammal in 2010, harvested by 6 percent of households and used by 19 percent.

Ruby households did not report the harvest of any marine mammals; however, 2 percent of households reported receiving and using seals via sharing networks with friends and families from coastal areas (Brown et al. 2015).

Ruby households harvested small land mammals for both food and for fur in 2010. The harvest of small land mammals totaled 5 pounds per capita. The most harvested small mammal species in terms of pounds per capita were beavers (5 pounds), hare (less than 1 pound), and mink (less than 1 pound) (ADFG 2020). Martens and beavers were the most used small land mammal by Ruby households (28 percent). Minks, hares, and wolverines were each used by 6 percent of households in Ruby.

There were 60 percent of Ruby households that reported using birds and eggs in 2010, and 43 percent harvested them, even though they contributed only 1 percent to the total estimated pounds of harvest. The harvest of birds and eggs totaled 3 pounds per capita. The most harvested bird species in pounds per capita were grouse (1 pound) and ducks (1 pound) (ADFG 2020). Spruce grouse (49 percent of households using) and ducks (23 percent) were also the most used birds by Ruby households. No bird eggs were gathered during the 2010 study year by Ruby households (ADFG 2020).

In 2010, 87 percent of Ruby households reported harvesting vegetation, and 91 percent of households reported using vegetation. Wood was harvested by 53 percent of households and used by 70 percent of households, mainly for firewood and smoking fish (Brown et al. 2015). The harvest of vegetation totaled 6 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (3 pounds), spruce tips (3 pounds), and lowbush cranberry (1 pound) (ADFG 2020).

### *Subsistence Use Areas*

The subsistence use areas for Ruby residents focused on nearby waterways, primarily the Yukon River, downriver to the mouth of the Yuki River and as far upriver as the Klatsuta River. Salmon and non-salmon fish were typically harvested from the Yukon River; residents also searched for non-salmon fish on Deep Creek. Many residents used the Ruby-Poorman Road as an access route to land south of Ruby to search for moose. Boat travel also allowed residents to access Junekaket Creek, Twin Slough, Big Creek, and the Melozitna River for moose search and harvest areas.

There were two primary areas used for Ruby residents for harvesting small land mammals, one along the Melozitna River and the other along Ruby Slough. The Yukon River, Melozitna River, and the mouth of Ruby

Slough were identified as bird search and harvest areas. Grouse and ptarmigan were searched for along the Ruby-Poorman Road, and along Ruby Slough and the mouth of the Yuki River. The Ruby-Poorman Road, the Kokrines Hills, and along Deep Creek were areas identified for berry and plant harvesting by Ruby households.

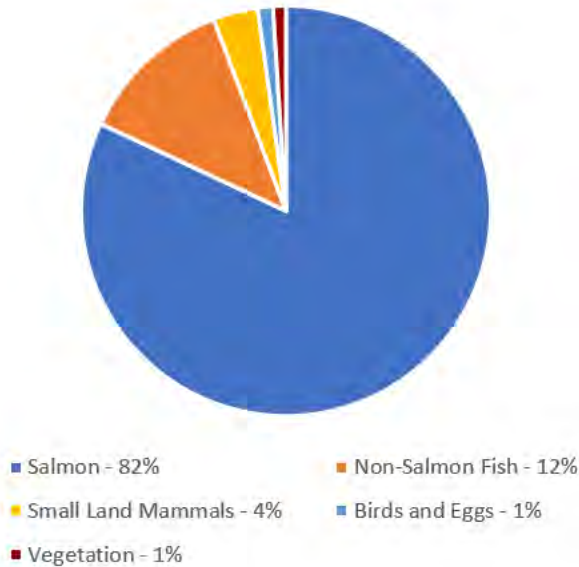
**Stevens Village**

Stevens Village is a predominantly Koyukon Athabascan community on the north bank of the Yukon River. It is 17 miles upstream of the Dalton Highway bridge across the Yukon River, 46 air miles to the northeast of the community of Rampart, and 90 air miles northwest of Fairbanks. The 2010 Census recorded a population of 78 for Stevens Village. The ADFG estimated that the 2014 population of Stevens Village consisted of 10 individuals, all of whom were Alaska Natives, living in 4 households (Brown et al. 2016). The 2018 DCCED certified population of Stevens Village was 45 (DCCED 2020).

*Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2014 for Stevens Village was 3,748 pounds, or 375 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest, at 82 percent (**Figure Q-18**), which totaled an estimated 3,073 pounds, or 307 pounds per capita. Chum salmon (296 pounds per capita), whitefish (31 pounds), and sheefish (13 pounds) represented the highest harvest amounts in pounds per capita in Stevens Village, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-18. Composition of Harvest by Category, Stevens Village**



Source: ADFG 2020

There was an average of 937 pounds of wild resources harvested per household (ADFG 2020). Stevens Village households harvested an average of 7 kinds of resources and used an average of 9 kinds of resources. The maximum number of resources used by any household was 15 (Brown et al. 2016).

In 2014, 50 percent of households reported harvesting salmon, and 50 percent of households reported using salmon. Salmon harvest totaled 307 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (297 pounds) and Chinook salmon (10 pounds). Additionally, 50 percent of households reported harvesting non-salmon fish, and 50 percent reported using non-salmon fish. Non-salmon fish harvest totaled 46 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (31 pounds), sheefish (13 pounds), and northern pike (2 pounds) (ADFG 2020).

Stevens Village households did not report harvesting any large land mammals in 2014; however, 75 percent of households used moose, and 75 percent hunted moose (Brown et al. 2016).

Stevens Village households also did not report the harvest of any marine mammals; however, 25 percent of households reported receiving and using seals via sharing networks with friends and families from coastal areas (Brown et al. 2016).

In 2014, Stevens Village households harvested small land mammals for both food and for fur. The harvest of small land mammals totaled 13 pounds per capita. The most harvested small mammal species in terms of pounds per capita were beaver (8 pounds), muskrat (4 pounds), and snowshoe hare (2 pounds) (ADFG 2020). Muskrats were the most used (75 percent of households) small mammal by Stevens Village households, followed by beavers (50 percent). Snowshoe hares, martens, and wolverines were each used by 25 percent of Stevens Village households.

There were 75 percent of Stevens Village households that reported using birds and eggs in 2014, and 75 percent harvested them, even though they contributed only 1 percent to the total estimated pounds of harvest. The harvest of birds and eggs totaled 5 pounds per capita. The most harvested bird species in pounds per capita were geese (2 pounds), ducks (2 pounds), and grouse (less than 1 pound) (ADFG 2020). Ducks and geese were also both used by 75 percent of households. Grouse were used by 25 percent of Stevens Village households. No bird eggs were gathered during the 2014 study year by Stevens Village households (ADFG 2020).

In 2014, 25 percent of Stevens Village households reported harvesting vegetation, and 75 percent of households reported using vegetation. Wood was harvested by 50 percent of households and used by 75 percent of households, mainly for heating homes and smoking fish (Brown et al. 2016). The harvest of vegetation totaled 4 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (2 pounds), plants, greens, and mushrooms (1 pound), fungus (1 pound), and chaga (1 pound) (ADFG 2020).

### *Subsistence Use Areas*

There were no subsistence use areas identified for the community of Stevens Village during the 2014 survey, due to confidentiality concerns (Brown et al. 2016); however, the Dall River has been noted as an area of great importance to residents in terms of culture and subsistence (Brown et al. 2016).

### **Tanana**

Tanana is in Interior Alaska, approximately 3 miles downstream of the junction of the Tanana and Yukon Rivers and 130 air miles west of Fairbanks. In 2010, the Census counted 246 residents in Tanana. In 2015, the ADFG conducted a study of the harvest and use of subsistence resources in 2014 by Tanana residents. The ADFG estimated that the 2014 population of Tanana consisted of 204 individuals living in 91 households. The 2018 DCCED certified population of Tanana was 204 (DCCED 2020).

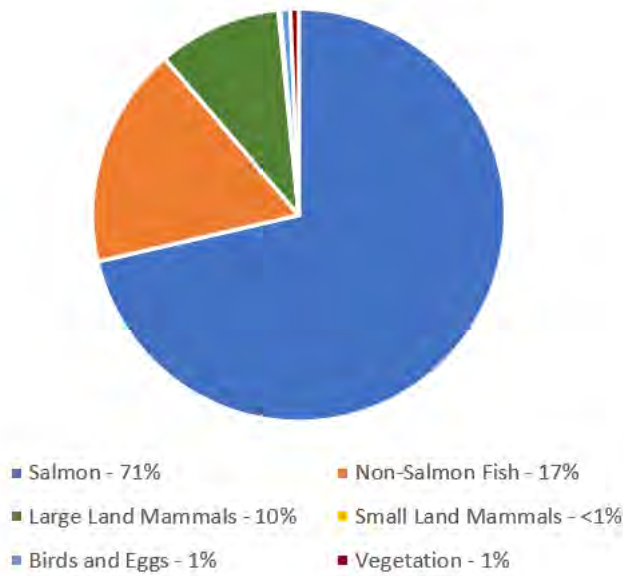
**Subsistence Harvest Patterns**

The total estimated harvest for all subsistence resources during 2014 for Tanana was 197,715 pounds, or 969 pounds per capita. In terms of estimated pounds harvested, salmon made up the largest portion of the subsistence harvest, at 71 percent (**Figure Q-19**), which totaled an estimated 141,140 pounds, or 692 pounds per capita. Chum salmon (622 pounds per capita), whitefish (113 pounds), and moose (87 pounds) represented the highest harvest amounts in pounds per capita in Tanana, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

There was an average of 2,172 pounds of wild resources harvested per household (ADFG 2020). Tanana households harvested an average of 7 kinds of resources and used an average of 11 kinds of resources. The maximum number of resources used by any household was 40 (Brown et al. 2016).

In 2014, 32 percent of households reported harvesting salmon, while 85 percent of households reported using salmon. Salmon harvest totaled 692 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (623 pounds), coho salmon (60 pounds), and Chinook salmon (6 pounds). Additionally, 38 percent of households reported harvesting non-salmon fish, compared with 68 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 168 pounds per capita. The most harvested non-salmon fish in pounds per capita were whitefish (114 pounds), sheefish (46 pounds), and northern pike (5 pounds) (ADFG 2020). Salmon species provided approximately seven times as much edible weight per capita as large land mammals did (692 pounds versus 94 pounds, respectively), which suggests that access to salmon is greater than access to land mammals (Brown et al. 2016).

**Figure Q-19. Composition of Harvest by Category, Tanana**



Source: ADFG 2020

The most harvested large land mammal species in pounds per capita were moose (88 pounds), caribou (3 pounds), and black bear (3 pounds). Moose was the most used subsistence resource and the most used large land mammal by Tanana households in 2010. Moose were harvested by 27 percent of households and used by 86 percent of households, which indicates a high degree of resource sharing (Brown et al. 2016). Black

bears were the second-most harvested large land mammal in 2014, harvested by 6 percent of households and used by 15 percent (ADFG 2020).

Tanana households did not report the harvest of any marine mammals; however, 15 percent of households reported receiving and using seals, walrus, and whale via sharing networks with friends and families from coastal areas (Brown et al. 2016).

Tanana households harvested small land mammals for both food and for fur in 2014. The harvest of small land mammals totaled 1 pound per capita. The most harvested small mammal species in terms of pounds per capita were beaver (1 pound) and snowshoe hare (less than 1 pound) (ADFG 2020). Beavers were the most widely used small land mammal by Tanana households (15 percent), followed by marten (14 percent), and snowshoe hares (12 percent).

There were 64 percent of Tanana households that reported using birds and eggs in 2014, and 50 percent harvested them even though they contributed only 1 percent to the total estimated pounds of harvest. The harvest of birds and eggs totaled 1 pound per capita. The most harvested bird species in pounds per capita were geese (less than 1 pound) and grouse (less than 1 pound) (ADFG 2020). Spruce grouse (30 percent of households harvested) and geese (24 percent) were the most harvested birds by Tanana households. Geese (41 percent of households using) and spruce grouse (33 percent) were also the most used birds by Tanana households. Three percent of households reported harvesting bird eggs, and 5 percent of households reporting using them; bird eggs represented less than 1 pound per capita of the 2014 subsistence harvest (ADFG 2020).

In 2014, 71 percent of Tanana households reported harvesting vegetation, and 94 percent of households reported using vegetation. Wood was harvested by 64 percent of households and used by 89 percent of households, mainly for home heating (Brown et al. 2016). The harvest of vegetation totaled 1 pound per capita, consisting primarily of blueberry (less than 1 pound) and plants, greens, and mushrooms (less than 1 pound) (ADFG 2020).

### *Subsistence Use Areas*

The Tanana subsistence use areas center on the Yukon and Tanana Rivers and smaller tributaries, as well as inland areas to the north and south of the community. Use areas were reported as far west as Ruby, south along the Nowitna River, east beyond Rampart along the Yukon River, and past the Ray Mountains in the north (Brown et al. 2016). Salmon and non-salmon fish were commonly harvested within approximately 4 miles of the community, either up or downstream on the Yukon River. Tanana residents also have a history of fishing for salmon in a narrow stretch of the Yukon River known locally as the Rapids.

Residents also harvest non-salmon fish around the confluence of the Tanana and Yukon Rivers. Search and harvest areas for large land mammals typically cover the Yukon, Tanana, and Nowitna Rivers, as well as an area along the Koyukuk River. Tanana residents also hunt near Fish Lake for moose. They searched and harvested small land mammals, following the Tanana-Allakaket Winter Trail north of the community, near the Tozitna River, and along the Tanana River. Tanana residents searched for birds and eggs primarily north of the community along the Tanana and Yukon Rivers. Vegetation was often harvested in the immediate vicinity of the community; however smaller search areas were also used along the Tanana and Yukon Rivers.

### **Venetie**

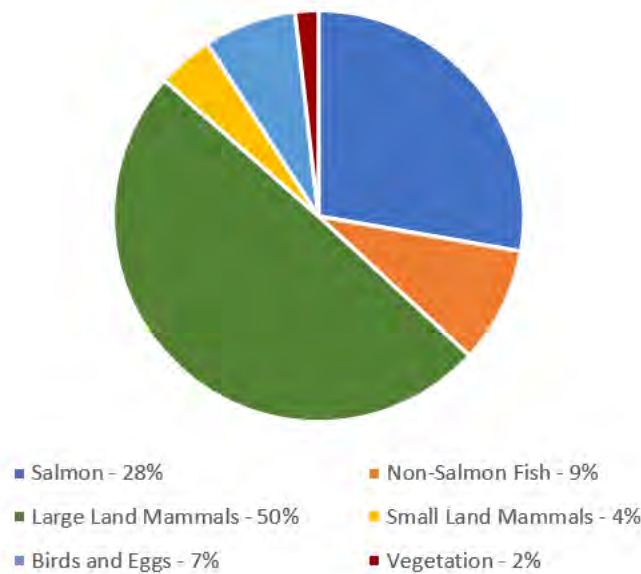
Venetie is on the north side of the Chandalar River, south of Arctic Village and 45 miles northwest of Fort Yukon. Venetie is a traditional community in that it chose not to have an ANCSA corporation; as a result, it

is truly dependent on the land and resources for subsistence. According to the 2010 Census, Venetie had 166 residents. The 2018 DCCED certified population of Venetie was 174 (DCCED 2020).

*Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2009 for Venetie was 74,602 pounds, or 274 pounds per capita. In terms of estimated pounds harvested per household, large land mammals made up the largest portion of the subsistence harvest, at 50 percent (**Figure Q-20**), which totaled an estimated 36,977 pounds, or 136 pounds per capita. Moose (79 pounds per capita), caribou (52 pounds), and chum salmon (46 pounds) represented the highest harvest amounts in pounds per capita in Venetie, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-20. Composition of Harvest by Category, Venetie**



Source: 2009 (Kofinas et al. 2016)

In 2009, 32 percent of households reported harvesting salmon, while 76 percent of households reported using salmon. Salmon harvest totaled 76 pounds per capita. The most harvested salmon species in pounds per capita were chum salmon (46 pounds) and Chinook salmon (31 pounds). Additionally, 63 percent of households reported harvesting non-salmon fish, compared with 81 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 25 pounds per capita. The most harvested non-salmon fish in pounds per capita were grayling (18 pounds) and whitefish (7 pounds) (ADFG 2020).

The harvest of large land mammals totaled 136 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (79 pounds), caribou (52 pounds), and black bear (3 pounds). Moose was the most used subsistence resource and the most used large land mammal by Venetie households in 2009. Moose were harvested by 30 percent of households and used by 93 percent of households, which indicates a high degree of resource sharing (Kofinas et al. 2016). Caribou were the second-most harvested large land mammal in 2009, harvested by 14 percent of households and used by 86 percent. Close kinship ties between Venetie and Arctic Village are extremely important and are seen as a source of resiliency: caribou harvested

in Arctic Village are often shared with Venetie, sometimes in exchange for resources, such as salmon, which are less available in Arctic Village (Kofinas et al. 2016).

Venetie households did not report the harvest of any marine mammals; however, 18 percent of households reported receiving and using seals and whale via sharing networks with friends and families from coastal areas (Kofinas et al. 2016).

Venetie households harvested small land mammals for both food and for fur in 2009. The harvest of small land mammals totaled 11 pounds per capita. The most harvested small mammal species in terms of pounds per capita were beaver (5 pounds), snowshoe hare (4 pounds), muskrat (1 pound), and squirrel (1 pound) (ADFG 2020). Snowshoe hares were the most widely used small land mammal by Venetie households (43 percent of households). Beavers were used by 26 percent of households, followed by muskrat (18 percent) and squirrel (17 percent).

There were 81 percent of Venetie households that reported using birds and eggs in 2009, and 58 percent harvested them. The harvest of birds and eggs totaled 21 pounds per capita. The most harvested bird species in pounds per capita were geese (12 pounds) and ducks (8 pounds) (ADFG 2020). Ducks (70 percent of households) and geese (68 percent) were the most used birds by Venetie households. Upland game birds were used by 20 percent of households. There were no households that reported harvesting bird eggs in 2009 (Kofinas et al. 2016).

In 2009, 43 percent of Venetie households reported harvesting vegetation, and 67 percent of households reported using vegetation. The harvest of vegetation totaled 5 pounds per capita. The most harvested vegetation in pounds per capita was blueberry (3 pounds) and lowbush cranberry (2 pounds) (ADFG 2020).

### *Subsistence Use Areas*

Subsistence harvesting by Venetie residents generally occurs on tribal lands surrounding their community, surrounding the Chandalar (including the East and Middle Forks), Yukon, Christian, and Hadweenzic Rivers, and the foothills of the Brooks Range (Van Lanen et al. 2012). Residents often have to travel approximately 60 miles north of the community to search for and harvest caribou; most moose camps are 20 to 80 miles from the community. Residents currently use RS 2477 trails for subsistence access. Venetie residents are concerned that access routes off the Dalton Highway increase competition for subsistence resources from non-local hunters.

### *Wiseman*

Wiseman is on the middle fork of the Koyukuk River, at the junction of Wiseman Creek in the Brooks Range. It is about 19 miles upstream and northeast of the point at which the Dalton Highway reaches the Koyukuk River and about 8 miles upstream and north of the community of Coldfoot, also along the Koyukuk River. According to the 2010 Census, Wiseman had 14 residents. In 2011, the ADFG recorded a population of 13 individuals, none of whom were Alaska Natives (Holen et al. 2012). The 2018 DCCED certified population of Wiseman was 11 (DCCED 2020).

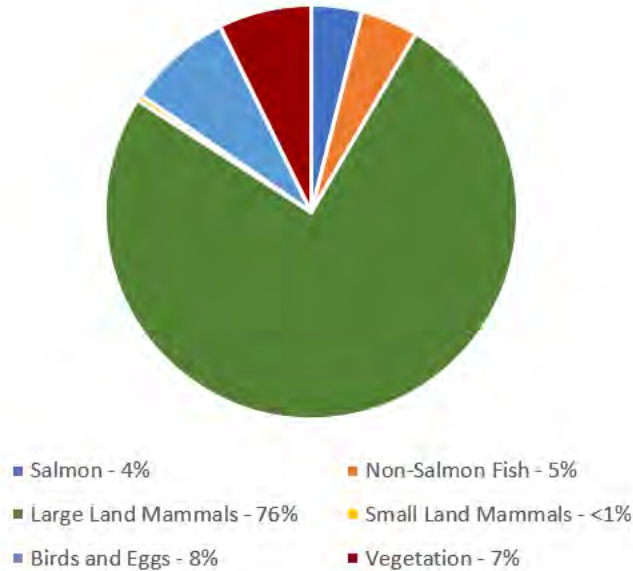
### *Subsistence Harvest Patterns*

The total estimated harvest for all subsistence resources during 2011 for Wiseman was 3,819 pounds, or 294 pounds per capita. In terms of estimated pounds harvested, large land mammals made up the largest portion of the subsistence harvest at 76 percent (**Figure Q-21**), which totaled 2,888 pounds, or 222 pounds per capita. Moose (166 pounds per capita), caribou (40 pounds), ptarmigan (18 pounds), and Dall sheep (16 pounds)



represented the highest harvest amounts in pounds per capita in Wiseman, based on the estimated pounds per capita of usable weight harvested (ADFG 2020).

**Figure Q-21. Composition of Harvest by Category, Wiseman**



Source: ADFG 2020

There was an estimated average of 764 pounds of wild resources harvested per household (ADFG 2020). Wiseman households harvested an average of 17 kinds of resources and used an average of 22 kinds of resources. The maximum number of resources used by any household was 37 (Holen et al. 2012). Vegetation (100 percent), non-salmon fish (80 percent), birds and eggs (80 percent), and large land mammals (60 percent) had the highest percentages of households' harvest. Salmon, non-salmon fish, large land mammals, birds and eggs, and vegetation were all used by 100 percent of Wiseman households in 2011. Bearded seals and whales were received from friends and family in Alaska coastal villages by 20 percent of households in 2011 (Holen et al. 2012).

In 2011, 20 percent of households reported harvesting salmon, while 100 percent of households reported using salmon. Salmon harvest totaled 12 pounds per capita, consisting solely of sockeye salmon. Additionally, 80 percent of households reported harvesting non-salmon fish, compared with 100 percent that reported using non-salmon fish. Non-salmon fish harvest totaled 13 pounds per capita. The most harvested non-salmon fish in pounds per capita were grayling (6 pounds), burbot (2 pounds), sucker (2 pounds), char (1 pound), and lake trout (1 pound) (ADFG 2020).

The harvest of large land mammals totaled 222 pounds per capita. The most harvested large land mammal species in pounds per capita were moose (166 pounds), caribou (40 pounds), and Dall sheep (16 pounds). Large land mammals made up 76 percent of the total harvest by weight. In 2011, 60 percent of households successfully harvested large land mammals, and 100 percent of households used large land mammals, primarily moose (100 percent of households using), Dall sheep (80 percent), and caribou (80 percent).

Tanana households harvested small land mammals for both food and for fur in 2011. The harvest of small land mammals totaled 1 pound per capita, consisting entirely of snowshoe hare. The most harvested small

mammal species in terms of pounds per capita were beaver (1 pound) and snowshoe hare (less than 1 pound) (ADFG 2020). Lynx and marten were the most widely used small land mammal by Tanana households, used by 60 percent of households each, followed by fox (40 percent) and snowshoe hare (40 percent).

There were 100 percent of Wiseman households that reported using birds and eggs. The harvest of birds and eggs totaled 24 pounds per capita. The most harvested bird species in pounds per capita were ptarmigan (18 pounds), grouse (3 pounds), and geese (2 pounds) (ADFG 2020). Upland game birds, specifically spruce grouse (80 percent of households harvested) and ptarmigan (80 percent) were the most harvested and most used birds by Wiseman households. No bird eggs were gathered during the 2011 study year (ADFG 2020).

One hundred percent of Wiseman residents reported harvesting and using vegetation. Blueberries (100 percent of households harvested), lowbush cranberries (100 percent), raspberries (80 percent), and wood (80 percent) were harvested by the most Wiseman households. The harvest of vegetation totaled 21 pounds per capita. The most harvested vegetation in pounds per capita was lowbush cranberry (13 pounds), blueberry (5 pounds), and raspberry (3 pounds) (ADFG 2020).

### *Subsistence Use Areas*

Wiseman residents are highly mobile and travel around the area to harvest resources, following cyclic harvest patterns. They typically utilized motorized vehicles, such as highway vehicles and snowmachines to access their subsistence use areas (Holen et al. 2012). Wiseman residents harvest their salmon primarily from the Copper and Yukon Rivers. Non-salmon fish such as Arctic grayling and whitefish are often harvested in the vicinity of Wiseman or Coldfoot, but they have also been harvested from more remote locations, like Bob Johnson and Chandalar Lakes.

Residents use Gates of the Arctic National Park and select areas of GMUs 24A, 26B, and 25A for searching for and hunting large land mammals. Wiseman residents also hunt along the Dalton Highway in the DHCMA (Holen et al. 2012). Under current regulations, hunting in the DHCMA is limited to areas 5 miles from each side of the highway, and the use of motorized vehicles in the area is very limited. Hunters are permitted to use only aircraft, boats, and licensed highway vehicles, on designated roads only. The use of snowmachines in the DHCMA is allowed only for subsistence taking of wildlife by residents living in the DHCMA. The use of firearms for hunting in the DHCMA is also very limited, but Wiseman residents can use firearms for subsistence hunting of large game. Any other harvesting of large land mammals in the DHCMA requires use of a bow and arrow.

During the 2011 study year, hunting areas for moose and Dall sheep mostly followed the DHCMA, north from Wiseman toward Atigun Pass and south from Wiseman past Coldfoot. Chandalar Lake was also used for moose hunting. Dall sheep hunting areas often extend farther north to the Galbraith Lake area and stop around Coldfoot to the south. Caribou hunting areas follow the DHCMA north to Galbraith and Toolik Lakes. Typically, moose and Dall sheep hunting are done on foot in the fall; snowmachines are used to access Gates of the Arctic National Park for hunting moose and caribou in the spring. Most residents trap to the east of the DHCMA.<sup>2</sup>

Small land mammals and furbearers were harvested along the Middle Fork Koyukuk River south of Coldfoot, and the northern-most area extended close to the Dietrich Camp landing strip. There were also areas used for

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<sup>2</sup>Ute Hicker (planning area resident), and Michelle Ethun (BLM Project Manager), personal communication with Ute Hicker, July 25, 2019.

small land mammal harvest, waterfowl, and upland game bird harvest east of Coldfoot toward South Fork Flats and another northeast of Wiseman toward Bob Johnson Lake. Wiseman residents also harvested waterfowl, berries, and firewood along the DHCMA in the vicinity of Wiseman. Wiseman residents have expressed concerns over the mounting hunting pressure by non-local hunters on local resources, particularly caribou and Dall sheep (Holen et al. 2012).

## **Q.6 METHODS OF ANALYSIS**

The analysis area for subsistence is the planning area, which includes all or portions of GMUs 26, 25, 24, 22, 21, 20, and 19. Most BLM-managed lands in the planning area are in GMUs 26B, 24, 21, and 20 (see **Map Q-1**). The analysis consists of an evaluation of the BLM management decisions that could affect subsistence resources, such as vegetation, fish, large land mammals, small furbearers, and thereby subsistence harvest practices. This analysis uses mostly qualitative and where possible quantitative information to describe impacts of the proposed management alternatives on subsistence. Professional judgment is used in evaluating effects on subsistence resources.

### ***Nature and Types of Effects***

Per BLM Instruction Memorandum No. AK-2011-008, the types of effects on subsistence uses and needs that could result from implementing the resource management plan would be from actions that reduce the abundance of harvestable resources used for subsistence purposes, reduce the availability of resources used for subsistence, or legal or physical limitations on access of subsistence users to harvestable resources, and whether there is a resulting increased competition for subsistence resources. The nature of effects would generally be impacts on subsistence use areas, resource availability, user access, changes in competition (which would impact resource abundance or availability), changes to costs and time associated with subsistence activities, and impacts on the subsistence culture.

Management actions could change the number of acres directly managed by the BLM in the planning area. Lands that are disposed of would no longer be subject to BLM management, removing federal management of those resources. The creation of new withdrawals could have implications on subsistence resource protections in areas that are withdrawn. As discussed in Magdanz et al. (2016, herein incorporated by reference), the development of new roads near or through communities that have previously been remote have historically created adverse impacts on subsistence resource abundance and availability. Adopting best management practices (BMPs) or other stipulations and requirements, such as those related to travel management, are also management actions that affect subsistence. The types of impacts on subsistence that could result from management actions and the indicators used to evaluate them are shown in **Table Q-2**.

The nature and types of potential effects on subsistence is closely tied to potential effects on vegetation communities (**Section 3.2.4 in Chapter 3**), fish and aquatic species (**Section 3.2.6 in Chapter 3**), and wildlife (**Section 3.2.7 in Chapter 3**) resources that are used for subsistence purposes. For additional information, see the discussion of effects in those sections of the environmental impact statement.

**Table Q-2  
Summary of Potential Impacts on Subsistence from Resource Management Actions**

Type of Impacts	Management Actions	Indicators
Direct impact on habitat, indirect impact on availability and abundance of subsistence resources	Water, wildlife, fish, riparian vegetation, and soils	Acres and location of land that would be protected from invasive species or development. Linear feet of stream and acres of land that would be protected from invasive species or development.
Direct impact on availability and abundance of forestry products for subsistence use	Forestry allocations	Acres of land that would be open or closed to commercial timber harvest.
Direct impacts on access on subsistence resources; indirect impact on availability and abundance of subsistence resources; indirect impacts on resource competition	<ul style="list-style-type: none"> <li>• Lands with wilderness characteristics management</li> <li>• Wild and scenic rivers (WSRs)</li> <li>• ACECs/RNAs</li> <li>• Wilderness study area lands</li> <li>• Travel and transportation management</li> <li>• Fluid leasable minerals</li> <li>• Nonenergy solid leasable minerals locatable minerals</li> <li>• Mineral materials (salable minerals)</li> </ul>	<p>Acres and location of land protected from development.</p> <p>Acres and location of land with existing, eligible, or suitable WSRs that would be open or closed to surface occupancy or mineral entry.</p> <p>Acres of and location of land in existing or proposed ACECs that would be open or closed to surface occupancy or mineral entry.</p> <p>Acres of wilderness study areas that would be open or closed to surface occupancy or mineral entry.</p> <p>Acres and location of land that would be restricted or unrestricted to travel or transportation use.</p> <p>Acres and location of land that would be open or closed to travel.</p> <p>Acres and location of area covered by aircraft use restrictions.</p> <p>Acres and location of land with salable mineral potential that would be open, restricted, or closed for salable minerals.</p> <p>Acres and location of land with moderate or high mineral potential that would be open or closed to mineral entry.</p> <p>Acres and location of land with nonenergy solid leasable potential that would be open, open with restrictions, or closed to nonenergy solid leasable minerals.</p> <p>Acres and location of land with fluid leasable mineral potential that would be open, open with restrictions, or closed to fluid minerals.</p>

Type of Impacts	Management Actions	Indicators
Direct impact on availability and abundance of subsistence resources; direct impacts on access to subsistence resources; indirect impacts on resource competition	<ul style="list-style-type: none"> <li>• Lands and realty</li> <li>• Utility corridors</li> <li>• Development nodes</li> <li>• Permits and ROWs</li> <li>• ROW provisions for wildlife/SWA resources</li> <li>• Leases</li> <li>• Proposed withdrawals</li> <li>• Revocation of withdrawals including PLO 5150 and ANCSA 17(d)(1)</li> </ul>	<p>Acres and location of land that would be open, restricted, or closed to surface disturbance.</p> <p>Location of proposed development nodes relative to subsistence resources.</p>

**Assumptions**

The following assumptions were used to assess impacts on subsistence.

- The BLM will consider Department of the Interior guidance, ADFG and U.S. Fish and Wildlife Service objectives, and Federal Subsistence Management requirements and mandates in decisions related to wildlife and fisheries management.
- As land conveyance to the State of Alaska and ANCSA corporations is finalized, harvesting wildlife resources on State and ANCSA corporation lands will be regulated by general hunting regulations, and federal subsistence regulations would no longer be applicable.
- PLO 5150 will be partially or fully revoked under all action alternatives, which will make top-filed lands eligible for State selection. Nearly half (46 percent) of these lands have been identified by the State as high priority and will likely be conveyed during the life of the plan. Once conveyed, these lands will no longer be managed by the BLM, and standard operating procedures (SOPs) will no longer apply.
- Tribal members use Native, village corporation, State lands, other federal lands, and BLM-managed lands for traditional subsistence activities and will continue to do so. Subsistence use by federally qualified subsistence users in the planning area will continue on federal public lands. For the purpose of subsistence use, federal public lands are defined in 50 Code of Federal Regulations (CFR) Part 100, Section 100.4(1) and (2).
- Subsistence harvest patterns and practices follow a seasonal round of harvest and will be expected to change and adapt over the course of the planning period, based on some management decisions and climate change. Analysis is based on the most current rates of harvest data, seasonal round<sup>3</sup> and areas of use, and traditional use areas.
- Management decisions regarding travel management, outfitter guides, illegal harvest, landownership, management, access, and use of ACECs will also be evaluated in an ANILCA Section 810 analysis in the context of how subsistence resources, and harvest practices, including competition for resources, will be affected.
- It is likely that the community subsistence use areas extend beyond what has been documented in studies and is shown in **Map Q-1**; subsistence studies capture only 1-year period and only for a

<sup>3</sup>The seasonal round is the yearly process or cycle by which subsistence users exploit different resources at different times as seasons change, and different resources become available.

portion of the population. Management actions outside community subsistence use areas are generally less likely to affect subsistence use, compared with actions in these areas; however, effects could occur if outside actions affect access, availability, or abundance of subsistence resources and uses.

***Incomplete or Unavailable Information***

There are limited data available documenting subsistence use and places important for subsistence in the planning area. Studies of patterns of use such as seasonal cycles, use areas, and resources harvested have been conducted by ADFG Division of Subsistence and other agencies and organizations. Available data are primarily in technical reports by the ADFG Division of Subsistence but may reflect only use areas when the data were collected or may represent historical use areas. The lack of data for a community does not indicate that subsistence harvests lack importance there. Not all surveys for planning area communities were comprehensive; however, all planning area communities do have some sort of subsistence harvest data available.

The discussion of harvest information in the following sections is supplemented by information that is available from recent ADFG technical papers and from publicly available information. Because resource distribution and subsistence use areas change over time, information on subsistence use areas that was gathered during the scoping period, alternatives outreach, and ACEC nominations are important supplements.

**Q.7 IMPACTS ANALYSIS**

The effects analysis considers the SOPs and BMPs that the BLM could implement, which are included in **Appendix F**. Management actions proposed for the following resources would not affect subsistence and were therefore not analyzed:

- Air quality
- Paleontological resources
- Visual resources
- Hazardous materials and health and human safety
- Special status species

Management actions for resources that may affect subsistence are discussed in the following sections.

***Impacts from Water, Fish, and Riparian-Wetland Vegetation Management Decisions on Subsistence***

In addition to the management actions common to all the action alternatives, potential impacts from the following management topics were considered:

- Instream flow reservations on high value streams
- Nonnative invasive species (NNIS) plan requirement
- Stream channel design requirements
- Wetland management as ROW avoidance areas
- Timber harvest next to waterbodies
- ACEC designations in watersheds with high aquatic resource values

*Impacts under Alternative A (No Action)*

Under Alternative A, water needs would be inventoried and federal reserved water rights would be secured where needed to support BLM programs; however, there are no streams identified under Alternative for which instream flow reservations would immediately be secured which could affect fish species used for subsistence. Under Alternative A, wetlands would not be managed as ROW avoidance areas, which could affect wildlife and fish species used as subsistence resources.

Stream reclamation requirements would not be implemented under Alternative A, which could allow impacts on habitat for fish species used for subsistence. Alternative A would prohibit cutting trees within 50 feet of either side of a stream unless the trees are a danger to human safety or are adversely affecting stream flow. This prohibition would protect subsistence resources, including timber and habitat for moose, waterfowl, and fish.

Under Alternative A there would be no measures in place that specifically address NNIS, their introduction and spread is the most likely impact on vegetation communities in the decision area in future management scenarios. NNIS establishment and spread could be caused by surface disturbance activities and transport of seeds by vehicles, such as cars, heavy equipment, snowmachines, boats, and aircraft, and could cause habitat degradation for subsistence species.

Alternative A does not include the requirement for an erosion control plan for all surface-disturbing activities within the 100-year floodplain, it would not result in a total land disturbance of 1 acre or greater, and it would not close the 100-year floodplain of high-value watersheds to nonenergy solid mineral leasing and development or fluid mineral leasing and development.

There are also no restrictions on ROW locations under Alternative A, which could cause impacts on subsistence species through wildlife disturbance and displacement. This lack of protection could affect subsistence species, such as fish, beaver, moose, and waterfowl. Alternative A provides no exclusion or avoidance areas along the Dalton Utility Corridor, where development is most likely. Riparian vegetation and waterways along the Dalton Utility Corridor would continue to be susceptible to vegetation removal, changes to channel and floodplain morphology, and water quality impacts.

There would be 27 miles of Anadromous Waters Catalog<sup>4</sup> (AWC)-listed streams, including 12 miles of Pacific salmon habitat (essential fish habitat [EFH]) overlapping areas open to mineral development or in areas with high mineral potential. If resource extraction is permitted near these waterbodies, fish and aquatic species could experience such impacts as habitat degradation or potential injury or mortality.

*Impacts Common to All Action Alternatives*

Under all the action alternatives subsistence resources would benefit from management actions to protect water, fish, and riparian vegetation. Maintenance of healthy watersheds, riparian areas, and associated fish habitats would support continued harvests of subsistence resources, including fish, terrestrial mammals, and waterfowl. Implementation of BMPs and mitigation measures would also protect aquatic resources and their habitat important to subsistence users.

Subsistence resources and habitat would be protected from invasive species under all action alternatives by requiring project proponents to develop a plan within 1 year of documentation of a NNIS. The plan would be for eradicating or controlling the spread of the invasive species. All action alternatives would prohibit

<sup>4</sup>The Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes, known as the Anadromous Waters Catalog, is maintained by the Alaska Department of Fish and Game.

nonenergy solid mineral leasing and mineral materials disposal within a 160-acre area centered on hot springs. This would provide additional benefits for subsistence resources through habitat protections and decreased opportunities for disturbance and displacement of wildlife species.

Under all the action alternatives the availability and abundance of subsistence fish species would be protected by actions to preserve stream flows. Such flows are necessary to protect fish and wildlife habitat, fish migration, and propagation and to maintain and improve recreational and subsistence fisheries. It would apply to the State of Alaska for instream flow reservations on high value streams in the planning area: Accomplishment Creek, Billy Hawk Creek, Indian River, Kanuti-Kilolitna River, Klikhtentotzna Creek, Prospect Creek, Ray River, Section Creek, Sethkokna River, and Sulukna River.

The areas of greatest concern in the planning area are those where vegetation next to waterbodies would be removed or degraded. Removing riparian vegetation decreases bank stability and leads to bank erosion, excessive sediment in the stream, stream morphology changes, and loss of pools and other wildlife and fishery habitat features. For fish and aquatic species, the primary potential direct and indirect impacts of management allocation decisions relate to habitat loss and alteration, disturbance and displacement, and injury and mortality. Direct habitat loss would occur in the footprints of any type of development activity. Fill and vegetation clearing for project infrastructure could permanently remove aquatic habitat within these footprints.

#### *Impacts under Alternative B*

The proposed management actions under Alternative B would protect the availability and abundance of subsistence resources by protecting habitat important to all wildlife, including fish, moose, beaver, and waterfowl.

Wetlands would be managed as ROW avoidance areas. Alternative B would prohibit surface-disturbing activities in the 160-acre area centered on hot springs, would recommend the area for withdrawal from locatable mineral entry, would close it to fluid mineral leasing and development, would manage it as ROW avoidance, and would prohibit summer off-highway vehicle (OHV) use on it. Increasing surface disturbance restrictions under Alternative B would reduce the nature and type of impacts on subsistence resources discussed under *Impacts Common to All Action Alternatives*.

Additional management actions and stipulations would be applied under Alternative B within the 100-year floodplain and within 0.25 miles of lentic areas to restrict or prohibit surface-disturbing activities. This would protect subsistence resources and habitat in these areas. Timber harvest within 100 feet of a waterbody (subsistence harvest is excluded from this restriction) would also promote the availability and abundance of subsistence resources by protecting habitat important to such wildlife species as fish, moose, beaver, and waterfowl.

There would be 92 miles of AWC-listed streams, including 10 miles of Pacific salmon EFH overlapping areas open to mineral development or in areas with high mineral potential. This would result in greater management protections for fish and aquatic subsistence species and their habitats than under Alternative A. Overall, Alternative B would result in fewer potential impacts on subsistence uses and resources than Alternative A.

#### *Impacts under Alternative C1*

The management actions proposed under Alternative C1 provide similar protections to those discussed under Alternative B; however, Alternative C1 has a greater potential to affect water, fish, and riparian vegetation. This is due to fewer exclusions to surface-disturbing activities in or around streams or waterbodies than



Alternative B. The ROW avoidance areas identified under Alternative C1 include portions of the Dalton Utility Corridor north of Coldfoot, which would allow the BLM discretion when approving ROWs. This would minimize impacts on riparian vegetation and habitats important to subsistence resources.

There would be 201 miles of AWC-listed streams, including 33 miles of Pacific salmon EFH overlapping areas open to mineral development or in areas with high mineral potential. This would result in greater management protections to fish and aquatic subsistence species and their habitats than Alternative A. Overall, Alternative C1 would result in fewer potential impacts on subsistence uses and resources than Alternative A.

*Impacts under Alternative C2 (Preferred Alternative)*

The management actions proposed under Alternative C2 provide similar protections to those discussed under Alternative B and C1; however, Alternative C2 has a greater potential to affect water, fish, and riparian vegetation. This is due to there being fewer exclusions to surface-disturbing activities in or around streams or waterbodies than Alternative C1.

Under Alternative C2, 158,000 acres of the Venetie Arm would be managed as ROW avoidance to mitigate impacts on subsistence resources, specifically moose habitat and fish spawning areas. Alternative C2 would not identify any of the Dalton Utility Corridor as ROW avoidance, which would increase the likelihood of surface-disturbing activities in this area. There would be 0 miles of AWC-listed streams overlapping areas open to mineral development or in areas with high mineral potential. This would provide additional protections for fish and aquatic subsistence species and their habitats. Overall, Alternative C2 would result in greater potential impacts on subsistence uses and resources than Alternative A.

*Impacts under Alternative D*

The ROW exclusions under Alternative D for floodplains, lentic areas, and high value watersheds would be identical to those under Alternative A. Alternative D would not designate ROW avoidance areas associated with sensitive water resources.

There would be 239 miles of AWC-listed streams, including 40 miles of Pacific salmon EFH overlapping areas open to mineral development or in areas with high mineral potential. This alternative would provide the fewest additional protections for fish and aquatic subsistence species and their habitats of all alternatives. Alternative D proposes the least protection for water, fish, and riparian vegetation than any of the alternatives, which means the least protection for subsistence resources. Overall, Alternative D would result in greater potential impacts on subsistence uses and resources than Alternative A.

***Impacts from Vegetation Communities Management Decisions on Subsistence***

In addition to the management actions common to all the action alternatives, potential impacts from the following management topic were considered:

- Restoration—Uplands, non-riparian
- ROWs—Avoidance
- Surface-disturbing activities—Reclamation standards

Most of the decision area is characterized by upland vegetation communities, so these vegetation communities are open to the highest proportion of potential impacts across the landscape. Sensitive and rare plant communities, such as pingos, bluffs, and special status plant habitat, may be affected to a greater extent from even minor disturbances. This is due to their small-scale locations, reduced recovery abilities, and small prevalence in the region, compared with widespread and abundant vegetation communities.

Potential impacts on vegetation communities in the decision area include direct loss or degradation of vegetated areas, including habitat for special status species; changes in plant community diversity and structure; and introduction and spread of NNIS. Direct impacts would result from surface disturbances or removal of vegetation. Indirect impacts could include modification of vegetation communities through dust accumulation, erosion, soil compaction, hazardous material spills, hydrology modification, water quality changes, permafrost dynamics, grazing animal population alterations, and NNIS spread or introduction.

*Impacts under Alternative A (No Action)*

Alternative A provides some protections for floodplains, wetlands, riparian areas, and caribou habitat. It provides guidance for sustainable yield of forest resources, which would benefit vegetation communities that are important for subsistence resources. Alternative A does not have management direction specific to reclamation of surface-disturbing activities for vegetation.

There would be no management actions to specifically address the introduction and spread of NNIS. This could be caused by surface-disturbing activities and transport of seeds by vehicles, ROW development and maintenance, and new accessibility into remote areas. Without management protections in place, there is a higher potential that NNIS species could affect the health and abundance of subsistence resources.

There would be no restrictions on ROW location for alpine vegetation, lichen, or pingos under Alternative A, which are important caribou habitat areas. This lack of protection could cause impacts from the loss of habitat and resource availability in these areas.

*Impacts Common to All Action Alternatives*

Most current infestations of invasive plants in the decision area are in the Dalton Utility Corridor. The predicted increase in traffic along the Dalton Highway is expected to contribute to the spread of invasive plants under all alternatives. Increased surface-disturbing activities, particularly in more remote portions of the decision area, would result in new areas becoming accessible to NNIS. This could change the plant community species composition and affect subsistence harvest practices.

All action alternatives identify vegetation management actions that would benefit subsistence resources by ensuring that habitats support healthy, productive, and diverse populations of native plants and animals. Actions to minimize the footprint of BLM-permitted surface-disturbing activities, to limit the magnitude or duration of impacts, and to preserve native vegetation would benefit subsistence users and use areas in the development areas. This would come about by their potentially reducing associated habitat loss and fragmentation.

All action alternatives would be subject to the same reclamation standards for surface-disturbing activities. This would protect subsistence uses and resources by limiting disturbance, displacement, and direct impacts on subsistence species and habitats.

*Impacts under Alternative B*

Under Alternative B, the natural revegetation of upland disturbed sites would be required unless it could be demonstrated that it is unlikely to be successful or it would not meet resource objectives. This would benefit subsistence harvest practices by maintaining natural plant species composition when possible. The management of alpine vegetation, lichen, and pingos as ROW avoidance areas would help maintain the distribution and abundance of subsistence resources and habitat in the planning area.

*Impacts under Alternative C1*

Under Alternative C1 protections related to revegetation of upland disturbed sites would be the same as those discussed under Alternative B; however, lichen and alpine vegetation ecosystems, which are important caribou habitat, would not be managed as ROW avoidance. This could cause impacts from loss of subsistence habitat and resource availability in these areas. Pingos would be managed as ROW avoidance areas.

*Impacts under Alternative C2 (Preferred Alternative)*

The revegetation of upland disturbed sites under Alternative C2 would focus on rapid revegetation methods, such as seeding with native vegetation or importing topsoil. The pingo cluster south of Lake Todatonten and next to Kanuti Hot Springs would be managed as ROW avoidance; there would be no other unique vegetation ecosystems managed as ROW avoidance under Alternative C2. As discussed under Alternative C1, the lack of management protections for sensitive lichen and alpine vegetation ecosystems under Alternative C2 could cause impacts from the loss of subsistence habitat and resource availability in these areas.

*Impacts under Alternative D*

Under Alternative D, there would be no restrictions on ROWs in unique vegetation ecosystems; impacts would be the same as discussed under Alternative A. Rapid revegetation methods, such as seeding with natural vegetation or importing topsoil, would be allowed, which would be more protective of natural plant species composition than under Alternative A.

***Impacts from Wildlife Management Decisions on Subsistence***

In addition to the management actions common to all the action alternatives, potential impacts from the management of caribou and Dall sheep were considered as they relate to subsistence resources; however, as discussed below, all action alternatives would designate moose, caribou, Dall sheep, and beaver as priority species.

*Impacts under Alternative A (No Action)*

Under Alternative A and all action alternatives, the land management allocations that are most likely to negatively affect wildlife are locatable mineral allocations, ROW allocations, and mineral materials allocations. Development activities associated with locatable minerals include ROWs, which would include associated mineral materials disposal; therefore, these activities are linked, and impacts on wildlife would be cumulative.

For all wildlife resources, the primary direct and indirect impacts of development allowed by management allocation decisions are habitat loss and alteration, physiological or behavioral disturbances (including those resulting in habitat avoidance or displacement), attraction of some species, particularly, scavengers and predators, to human activity or to structures, and direct mortality and injury from such events as vehicle and tower strikes, contaminant exposure, and increased hunter access. See **Section 3.2.7** in **Chapter 3** for additional discussion of impacts on priority wildlife species.

For locatable minerals, ROWs, and mineral materials, direct impacts on wildlife habitats would occur in the footprint of disturbance, whether excavations, tailings and waste rock storage sites, roads, or fill or surface disturbance; indirect impacts on habitat would occur at varying distances and would result from fugitive dust, gravel spray, thermokarsting, snow drifting, impoundment, and altered drainage patterns. Wildlife could be disturbed and displaced over a larger area, depending on the source of disturbance and the different behavioral reactions of the wildlife (Monda et al. 1994; Livezey et al. 2016). Forest product harvesting, such as logging, can destroy habitat for some species, but over time it can create additional forage for some species, such as moose.

Activities that disturb or displace wildlife may be from road and air traffic, noise, light, and human presence. The behavior of wildlife can vary from temporary alert reactions and concealment to flush, flight, and escape or long-term abandonment of an area (Reimers and Colman 2006; Uher-Koch et al. 2015; Stien and Ims 2015).

Predators and scavenger species could be attracted to sites with human activity, which could decrease productivity and increase mortality of nesting birds. Changes in hunter and trapper access and the distribution of trapping activity could have impacts on game species; however, changes to Federal Subsistence Management regulations are predominantly driven by proposals submitted by individuals and not government agencies, so adjustments to hunter access or harvest would be user driven.

Potential changes in access could limit or make access to areas currently used for subsistence more difficult, or new roads or trails could make access easier for non-local hunters and trappers, which would increase competition for subsistence resources. Exposure to contaminants from accidental releases could directly affect wildlife, contaminate habitat, or lead to concerns over the health of subsistence resources.

Under Alternative A, the BLM would continue to follow all laws, regulations, and policies that pertain predominantly to subsistence wildlife. The BLM would consider impacts on subsistence wildlife when evaluating actions in the planning area that could affect them. It would implement mitigation as needed on a case-by-case basis. Under Alternative A, the BLM would consider caribou and moose in its management of resource uses although no specific management actions are identified. There would not be a requirement for BLM-authorized projects to incorporate design features to mitigate impacts on wildlife or wildlife habitat. As a result, Alternative A is not as protective of subsistence species as the other alternatives.

#### *Impacts Common to All Action Alternatives*

Under all action alternatives, management of wildlife resources and mitigation of impacts on wildlife would benefit subsistence users. This would come about by maintaining ecosystem functions and the quantity and quality of habitat to support healthy populations of wildlife. All action alternatives would designate moose, caribou, Dall sheep, and beaver as priority species.

BLM-authorized projects would be required to incorporate design features or stipulations to mitigate impacts on wildlife, their habitat, and their movement, including collocating land-disturbing activities. BLM management actions would maintain high value habitats and would allow for unimpeded wildlife movement on the landscape. This would come about by using effective mitigation measures and BMPs to protect wildlife and its habitat, while fulfilling the multiple use sustained yield mandate on BLM-managed lands.

Additionally, BMPs and SOPs to protect fish and wildlife and other natural resources would help reduce long-term impacts on their habitats in the planning area. Specifically, these actions would minimize mineral development and extraction in stream and river channels, deltas, wetlands, riparian zones, active floodplains, lakes, and habitat essential to local fish and wildlife populations. This would help prevent impacts on associated fish and wildlife that are subsistence resources. BMPs and SOPs would also include measures to minimize degradation of these habitats and expedite reclamation of disturbed areas. These measures would help reduce the level of impact on wildlife habitats in areas that remain open to locatable and salable mineral development.

**Dall sheep.** All the action alternatives would require maintaining effective separation between domestic animals and Dall sheep. Domestic sheep and goats are prohibited in Dall sheep habitat. The use of camelids (such as alpacas and llamas) as pack animals would be authorized as appropriate through the normal permitting process. Dall sheep are an important subsistence resource in the Central Brooks Range (GMUs

24A and 26B) (see **Map Q-1**), especially for the communities in the vicinity of the Dalton Highway. These protections would benefit subsistence users of Dall sheep by reducing the risks to the species' health.

Under all action alternatives, the nature and type of impacts on Dall sheep would be as described under Alternative A for wildlife in general. Similar to Alternative A, SOPs for Dall sheep would reduce or minimize impacts of some activities on Dall sheep. This would come about by implementing low-profile road and facility designs and ROW avoidance and traffic controls, by clustering facilities as close together as possible, and by locating worker camps outside of identified Dall sheep habitat areas (DSHAs).

**Caribou.** Under all action alternatives, the nature and type of impacts on caribou would be as described for wildlife under Alternative A (see **Section 3.2.7** in **Chapter 3**).

**Moose.** Under all action alternatives, the nature and type of impacts on caribou would be as described for wildlife under Alternative A (see **Section 3.2.7** in **Chapter 3**).

**Beaver.** Under all action alternatives, the direct and indirect impacts on beaver would be as described under Alternative A, but they would vary according to the activities allowed (see **Section 3.2.7** in **Chapter 3**). Because of their close association with waterbodies, beavers would be affected by direct and indirect habitat loss. This includes degradation of water quality from surface-disturbing activities within any floodplain, from such activities as placer mining, that may occur in waterbodies and wetlands.

#### *Impacts under Alternative B*

The impacts under Alternative B from wildlife management actions on subsistence resources would be the same as those under Alternative A.

#### *Impacts under Alternative C1*

Under Alternative C1, no ACECs would be designated for caribou or for Dall sheep habitat protection; however, the Ray Mountains Herd (RMH) and Galena Mountain Herd (GMH) ranges would be managed as core caribou habitat (see **Map 2.1** in **Appendix A**). Aircraft operators would be required to maintain an altitude of 2,000 feet above ground level, and landings would be prohibited over core caribou ranges from May 1 to June 30. Alternative C1 would designate 100 percent of the GMH range and 48.1 percent of the Hodzana Hills Herd (HHH) range as ROW avoidance areas; 51.6 percent of the HHH range would be open to ROW development. All the RMH would be recommended for closure to mining, but all the GMH range and 92.8 percent of the HHH range would be open to locatable mineral entry.

The RMH core caribou range would be closed to fluid mineral leasing and development. It also would be closed for withdrawal from locatable mineral entry, closed to mineral material disposal, and closed to nonenergy solid mineral leasing and development. It would be designated as a ROW avoidance area. Subsistence hunters who rely on RMH routinely travel greater than 70 miles across the Kanuti Flats to hunt caribou in the spring, particularly when moose harvest is low and when the Western Arctic Herd is not accessible from the villages.

Mineral potential and the occurrence of rare earth elements is high in the Ray Mountains, and many of the lands within the range of the RMH are selected by the State of Alaska. There is a large block of State mining claims in Spooky Valley and along the Kilolitna and Big Salt Rivers that will likely be developed once conveyance is completed. Impacts on caribou from rare earth element mines (large open pit mines) would be difficult to mitigate, and it is likely that they would simply be displaced where extensive development occurs. Lands that remain federally managed after conveyance would be critical to maintain for continued use by the RMH.

Under Alternative C1, protections through management actions for wildlife that are important subsistence resources would be of slightly lower magnitude and smaller geographic extent than those under Alternative B; however, it would include areas important for the RMH. Alternative C1 provides additional limits on development on BLM-managed land for the RMH, compared with Alternative A. Impacts on moose under Alternative C1 would largely depend on the location of development and shifts in distribution of sport hunters. Beavers and bird species would experience disturbance or displacement impacts associated with a larger number of riparian habitats open to locatable minerals under Alternative C1, compared with Alternative A.

Alternative C1 removes the five ACECs designated for Dall sheep under Alternative A but replaces them with protections for DSHA, Dall sheep movement corridors (DSMC), and Dall sheep study areas (DSSA). Restrictions on activities include those on seasonal noise and helicopters, no surface occupancy (NSO) on fluid mineral leases, areas closed to new mineral material disposal, restriction or avoidance zones for new ROWs, and removal of infrastructure that is no longer in use. Overall, these targeted restrictions would reduce potential Dall sheep disturbance and displacement and preserve DSHA and DSMC, compared with Alternative A.

#### *Impacts under Alternative C2 (Preferred Alternative)*

Under Alternative C2, the GMH and RMH ranges would be managed as core caribou ranges (see **Map 2.1** in **Appendix A**), as described for Alternative C1. Aircraft operators would be required to maintain an altitude of 2,000 feet above ground level, and landings would be prohibited in core caribou ranges from May 1 to June 30. Core caribou ranges would be closed for mineral material disposal and would be designated as ROW avoidance, but they would be open to fluid mineral leasing and nonenergy solids; however, under Alternative C2, the RMH would not be provided with additional protections from surface-disturbing activities, as discussed under Alternative C1.

Alternative C2 would remove the five ACECs designated with Dall sheep as a key resource under Alternative A, and there would be no requisite plan of operations required for surface-disturbing activities. Alternative C2 also would not provide the new protections to DSHA, DSMC, or DSSA that are required under Alternative C1. Loss of these protections for Dall sheep could negatively affect important habitat areas and increase the potential for disturbance and displacement under this alternative more than under Alternative A.

Under Alternative C2, 158,000 acres of the Venetie Arm (1 percent of the decision area) would be managed as ROW avoidance. This would be done to mitigate impacts on subsistence resources, specifically moose habitat and fish spawning areas.

Overall, the impacts under Alternative C2 from wildlife management actions on subsistence resources would be like those described under Alternative C1 but with decreased direct protections for the RMH, similar to Alternative A. This would in turn affect subsistence users of this herd, and there would be decreased protections for Dall sheep. The additional protections to subsistence habitat in the Venetie Arm would also reduce potential impacts on subsistence resources from surface-disturbing activities.

#### *Impacts under Alternative D*

Under Alternative D there would be no new land use designations to protect caribou and Dall sheep. Alternative D would be less protective of these subsistence species and their habitat than Alternative A.

Impacts on caribou under Alternative D would be similar to those described for Alternative C2, but the core ranges for the GMH and RMH would no longer have ROW avoidance, and they would no longer be closed to mineral materials disposal, similar to Alternative A.

Alternative D would result in impacts on Dall sheep like those described for Alternative C2. Loss of important habitat and potential disturbance of Dall sheep from development could increase with their displacement from important mineral licks and movement corridors. This could have subsequent impacts on productivity or survival.

***Impacts from Lands with Wilderness Characteristics Management Decisions on Subsistence***

In addition to the management actions common to all the action alternatives, the BLM considered the potential impacts from the following management topics:

- Acres managed to protect wilderness characteristics as a priority over multiple uses
- Acres managed to emphasize multiple uses, while applying management restrictions to reduce impacts on wilderness characteristics
- Acres managed to emphasize other multiple uses as a priority over protecting wilderness characteristics

The categories of managing lands with wilderness characteristics would be more or less protective of subsistence resources; that is, protecting wilderness character as a priority would be most protective of subsistence uses, and emphasizing other multiple uses as a priority would be the least protective. This is because maintaining areas of more than 5,000 contiguous acres for wilderness characteristics also makes these acres beneficial habitat for subsistence resources, such as caribou, moose, and Dall sheep.

The BLM considers several subsistence activities specified in ANILCA to be compatible with lands with wilderness characteristics in Alaska: the use of public cabins and shelters, snowmachine use with adequate snow cover, airplane use and primitive landing areas, motorboat use, and building temporary structures for hunting, fishing, or trapping.

***Impacts under Alternative A (No Action)***

Under Alternative A, all lands with wilderness characteristics in the planning area would be managed to emphasize other uses. This would create impacts on subsistence wildlife species habitat and increase potential impacts on subsistence users through abundance and availability of resources.

***Impacts Common to All Action Alternatives***

Under all action alternatives, on lands managed to protect wilderness characteristics as a priority over other multiple uses, the BLM would retain lands unencumbered by State and Native selections and those not conveyed under the Alaskan Statehood Act and ANCSA in federal ownership.

On lands managed to protect wilderness characteristics as a priority over other multiple uses, the following management actions would be applied; these actions would provide protections for subsistence uses and resources through decreased levels of disturbance of subsistence species, decreased opportunities for user conflicts, and protection of subsistence species habitat:

- Visual Resource Management Class I
- ROW exclusion areas
- Closed to construction of new all-season roads
- Closed to commercial timber development and non-subsistence collection of live vegetation (subsistence use still requires a permit), except on ROWs

- Closed to mineral material disposal
- Closed to nonenergy solid mineral leasing
- Closed to fluid mineral leasing
- Recommended to the Secretary of the Interior withdrawal from locatable mineral entry

Vegetation treatments and prescribed fire would be allowed to maintain or improve naturalness in the long term. Prescribed fire would be emphasized over mechanical treatment.

#### *Impacts under Alternative B*

Under Alternative B, 14,000 acres (0.3 percent) of community subsistence use areas of the decision area would be managed to protect wilderness characteristics as a priority resource. There would be 1,867,000 (42 percent) of community subsistence use areas of the decision area. They would be managed to emphasize other multiple uses, while applying management restrictions to reduce impacts on wilderness characteristics. Additionally, 2,416,000 acres (55 percent) of community subsistence use areas of the decision area would be managed to emphasize other multiple uses as a priority over protecting wilderness characteristics.

Through these management actions for lands with wilderness characteristics, Alternative B would be more protective of subsistence uses and resources than Alternative A. It would do this by decreasing the potential for disturbing subsistence species and opportunities for user conflicts and by protecting subsistence species habitat.

#### *Impacts under Alternative C1*

There would be no lands managed to protect wilderness characteristics as a priority over other multiple uses under Alternative C1. There would be 104,000 acres (2 percent) of community subsistence use areas of the decision area managed to emphasize other multiple uses, while applying management restrictions to reduce impacts on wilderness characteristics. Wilderness characteristics would be protected through overlapping management restrictions for other resources.

A total of 4,193,000 acres (95 percent) of community subsistence use areas of the decision area would be managed to emphasize other multiple uses. Emphasizing other multiple uses can diminish wilderness characteristics and in turn affect subsistence uses and resources. This would come about by increasing the potential for disturbing subsistence species and opportunities for user conflicts and by providing fewer protections for subsistence species habitat. Alternative C1 would provide more protections for subsistence resources than Alternative A, but it would provide fewer protections than Alternative B.

#### *Impacts under Alternative C2 (Preferred Alternative)*

The impacts under Alternative C2 would be the same as those described under Alternative A.

#### *Impacts under Alternative D*

The impacts under Alternative D would be the same as those described under Alternative A.

#### ***Impacts from Forestry Management Decisions on Subsistence***

In addition to the management actions common to all action alternatives, the BLM considered the potential impacts from areas open or closed to commercial harvesting of forest products. Removing both living and dead forest products from the decision area can reduce the components of wildlife physical habitat for subsistence resources and remove such food sources as berries, seeds, and lichens. The magnitude and extent of the impact on subsistence resources would depend on the amount of habitat that was removed and the availability of these habitat components in nearby areas.



*Impacts under Alternative A (No Action)*

Under Alternative A, all 4,406,000 acres (100 percent) of community subsistence use areas of the decision area would be open to commercial harvest of forest and woodland products. Commercial harvest is limited but could increase with increasing demand. Subsistence harvest would continue to be common in areas around communities. Forests and woodlands over the entire planning area would continue to be open to personal use and subsistence woodland harvest, except in crucial wildlife habitat and RNAs. Timber may be harvested on subsistence study/exchange withdrawals under a subsistence or personal use permit.

Under current management, impacts on subsistence would be limited to areas where forest and woodland products are being removed and where wildlife habitat important to subsistence use would be protected.

Additional protections for fish and wildlife habitat under Alternative A include implementing the provisions in the Alaska Forest Practices Act (Alaska Statute 41.17), requiring stream buffers (50 feet) in the utility corridor, and not disturbing vegetation within 300 feet of the Jim River. Cutting trees within 50 feet of either side of a stream would be prohibited unless the trees are a danger to human safety or are adversely affecting stream flow. These actions would protect subsistence uses. This is because they would protect wildlife habitat and increase the availability and abundance of forest products for subsistence use. Access to subsistence use areas would continue to follow current practices under Alternative A.

*Impacts Common to All Action Alternatives*

Under all the action alternatives, management actions and BMPs and SOPs (**Appendix F**) would include requiring harvests to be in compliance with the State Forest Practices Act BMPs, Alaska Statute 41.17.119: Minimum Riparian Standards For Other Public Land, and any other applicable regulations established by the State Forester, pursuant to Alaska Statute 41.17.115. Commercial harvesters within the 100-year floodplain must demonstrate that they would meet aquatic, riparian, and floodplain objectives. Cutting green timber would be prohibited within 300 feet of a highway or public road. If monitoring indicates any intensive firewood use areas where demand may exceed supply, then the BLM would develop a forestry activity management plan.

*Impacts under Alternative B*

Management decisions that limit or prohibit timber harvest to protect other resources would be increased under Alternative B, compared with Alternative A. Under Alternative B, commercial timber harvest and non-subsistence collecting of live vegetation would be prohibited on 952,000 acres (22 percent) of community subsistence use areas of the decision area, the largest area of all the alternatives. The prohibition would reduce any competition between subsistence and commercial users in the identified areas. The closest communities to lands where non-subsistence collection of live vegetation is prohibited are Bettles, Venetie, Hughes, Wiseman, and Coldfoot; however, it is possible that subsistence users from other communities could frequent these areas as well. Subsistence use would still require a permit.

*Impacts under Alternative C1*

Under Alternative C1, commercial timber harvest and non-subsistence collecting of live vegetation would be prohibited on 157,000 acres (4 percent) of community subsistence use areas of the decision area. The prohibition would reduce competition between subsistence and commercial users in these areas. Under Alternative C1, access to subsistence harvest of timber and woody vegetation may be affected by a prohibition on timber and woody vegetation harvesting in the Sukapak/Snowden Mountain ACEC. Exceptions would be allowed for transportation and utility corridors and federal administrative sites. Even though Alternative C1 provides more protections to subsistence users through prohibitions on more acres than Alternative A,

Alternative C2 lacks the additional streambank protections afforded by Alternative A that protect wildlife habitat and the availability of forest products for subsistence use.

*Impacts under Alternative C2 (Preferred Alternative)*

Similar to Alternative A, all 4,406,000 acres (100 percent) of community subsistence use areas of the decision area would be open to commercial harvest of forest and woodland products under Alternative C2. The alternative also lacks the additional streambank protections afforded by Alternative A, so it would provide fewer protections for fish and other subsistence resources than Alternative A.

*Impacts under Alternative D*

Impacts under Alternative D would be the same as those under Alternative C2.

**Impacts from Energy and Mineral Management Decisions on Subsistence**

In addition to management actions common to all action alternatives, the BLM considered the potential impacts from the following:

- Locatable mineral withdrawals
- Areas closed to salable minerals
- Areas open and closed to mineral material leasing
- Areas open, closed, and NSO for fluid leasable minerals

*Impacts under Alternative A (No Action)*

Under Alternative A, 1,742,000 acres (40 percent) of the community subsistence use areas of the decision area would be withdrawn from locatable minerals, including metalliferous minerals. A total of 2,537,000 acres (58 percent) of the community subsistence use areas of the decision area would continue to be open to metalliferous minerals locating and would be closed to non-metalliferous minerals locating. Under this alternative, an additional 117,000 acres (31 percent) of community subsistence use areas of the decision area would be recommended for withdrawal from locatable mineral entry.

There are 121,000 acres (3 percent) of community subsistence use areas in the decision area that correspond to high mineral development potential and that would be open to locatable mineral entry under Alternative A. Of these, 19,000 acres are selected lands that fall under Priority 1 classification. These lands would be segregated from mineral potential until they are conveyed, relinquished, or rejected, and they are expected to be conveyed within 10 years of a record of decision.

Casual use is limited to areas listed in Dalton Highway Recreation Area Management Plan, and mitigation is required for all activities that may accelerate soil erosion.

Impacts on subsistence resources could occur if there is the following:

- Temporary displacement in areas
- Temporary and long-term loss of habitat
- Degradation of habitat
- Direct mortality of small mammals or nestlings and brooding birds

There may be reduced or constrained access to use areas and to users and an increased competition for the resources by non-residents. BMPs and SOPs would reduce these potential impacts and would minimize the

those on subsistence users. There would also be specific mitigation measures to reduce the impact-causing actions.

The BLM-managed lands potentially affected by locatable mineral development under Alternative A are primarily upland low and tall shrub and upland mesic spruce forest (**Appendix O**); therefore, subsistence species using those habitats would be primarily affected; however, the areas with high potential for locatable minerals that are open to locatable entry contain 13 percent alpine dwarf shrub tundra. This suggests that subsistence wildlife species in tundra habitats, such as Dall sheep, could also be affected.

Locatable mineral development could result in habitat loss, degradation, and habitat fragmentation of caribou herds, as well as displacement and disturbance. Most of the areas with medium to high locatable mineral potential are in the vicinity of Wiseman and Coldfoot.

Alternative A would include the highest number of acres in community subsistence use areas of the decision area that would be either withdrawn from locatable mineral entry or recommended for withdrawal.

Under Alternative A, 4,399,000 acres (over 99 percent) of the community subsistence use areas of the decision area would continue to be open to salable mineral material sales; 7,000 acres (0.2 percent) in the community subsistence use areas of the decision area would continue to be closed to mineral material sales.

A total of 17,000 acres (0.4 percent) of community subsistence use areas in the decision area would be closed to fluid mineral leasing, and 2,527,000 acres (57 percent) would be withdrawn. A total of 1,861,000 acres (42 percent) of community subsistence use areas in the decision area would be open to fluid leasable minerals; this is the smallest area among all the alternatives. Several areas of high fluid leasable potential north of Anaktuvuk Pass would continue to be withdrawn from fluid leasable entry and development under this alternative. This would protect subsistence resources in this area from impacts associated with surface-disturbing activities, as discussed under *Impacts Common to All Action Alternatives*.

Under Alternative A, NSO stipulations would apply to the inner corridor, eight identified mineral licks, and the Ivishak River and Kanuti Hot Springs ACECs. They would also apply to streams closed to mineral location, which are the floodplains of the Jim River and Prospect Creek downstream of the eastern boundary of the inner corridor and the Kanuti River downstream of the western boundary of the inner corridor. Rodo River, Kateel River, South Fork Huslia River, Ray River, and the three tributaries of Squaw Creek (northwest of Rampart) would be subject to a 300-foot NSO setback zone along either side of the water. This would provide additional protections for subsistence resources in these areas.

#### *Impacts Common to All Action Alternatives*

Locatable and salable minerals management impacts fish and wildlife that are important to subsistence. This is because developing mineral sites results in a loss of wildlife habitat, there is the potential for loss of subsistence access, and there are generally long-term surface disturbance, noise, and human activity at these sites for as long as they remain open and active. Associated access roads may result in loss and fragmentation of fish and wildlife habitat. Energy and mineral activities may cause local degradation of important fish and wildlife habitat through contamination of air quality, water, and soil.

Salable minerals and material disposal could have direct and indirect impacts on subsistence resources and harvest areas. Mineral activity could also affect access and increase competition for use of resources that are important to subsistence. Impacts on subsistence from salable minerals may be low under the action alternatives. This is because there are sufficient material sources that have already been identified that can meet the needs of the communities, and there are few mineral materials disposal actions anticipated. BMPs

and SOPs would minimize the potential impacts on subsistence users. Salable mineral extraction would be prioritized along the utility corridor, where there are existing or previous salable mineral authorizations, and potential areas would be identified that could be used to meet future needs of mineral materials along the Utility Corridor, where existing authorizations do not exist.

Activities associated with fluid leasable minerals could affect fish, wildlife, and vegetation that is important to subsistence resources and users through habitat loss and degradation and disturbance of resources. Exploration could harm small mammals and nesting birds and could temporarily displace larger mammals, such as caribou and moose, that are an important subsistence resource. Since there is a low development potential for fluid leasable mineral resources in the decision area, impacts on subsistence resources and users is likely to be low, although demand could change.

### *Impacts under Alternative B*

Under Alternative B, 3,686,000 acres (84 percent) of community subsistence use areas in the decision area would be open to location of metalliferous minerals and closed to location of non-metalliferous minerals. No areas of high potential locatable minerals would be open to locatable mineral entry under Alternative B; however, some high potential areas are segregated from locatable mineral entry and could be transferred to State ownership under this alternative.

A total of 189,000 acres (4 percent) of the community subsistence use areas in the decision area would continue to be withdrawn from locatable minerals, including metalliferous minerals, per ANCSA PLOs and PLO 5150 (Dalton Utility Corridor). Under Alternative B, an additional 532,000 acres (12 percent) of community subsistence use areas in the decision area would be recommended for withdrawal from locatable mineral entry.

There would be 138,000 acres (3 percent) of high potential locatable minerals open to locatable mineral entry in community subsistence use areas under Alternative B. All of this is selected lands that would become available for locatable mineral entry when those lands are conveyed, relinquished, or rejected. Of these, 130,000 acres are State of Alaska Priority 1 lands that are likely to be conveyed and would leave federal management within 10 years of a record of decision. Some areas of medium locatable mineral potential north of Tanana would not be withdrawn from mineral entry under this alternative, which could affect subsistence uses and resources in the area through surface disturbance and potential changes to subsistence access.

Alternative B would identify more acres of community subsistence use areas in the decision area as open to locatable mineral entry than Alternative A, and fewer acres would be withdrawn or recommended for withdrawal from locatable mineral entry than under Alternative A. The nature and type of negative impacts on subsistence resources described under *Impacts Common to All Action Alternatives* would occur over a larger geographic area than under Alternative A.

Under Alternative B, 2,697,000 acres (61 percent) of the community subsistence use areas in the decision area would be open to mineral material sales, and 1,709,000 acres (39 percent) of them would be closed to mineral material sales. The protections for subsistence access and resources resulting from acres closed to mineral material development are greater under Alternative B than under Alternative A.

Under Alternative B, 1,505,000 acres (34 percent) of community subsistence use areas in the decision area would be closed to fluid mineral leasing, and 189,000 acres (4 percent) would be withdrawn. A total of 2,713,000 acres (62 percent) of these areas in the decision area would be open to fluid leasable minerals, and 868,000 acres (20 percent) would be open to fluid minerals, subject to NSO.

In the high potential fluid leasable area north of Anaktuvuk Pass, several river corridors would be closed to fluid mineral leasing and development. This would protect subsistence resources from potential impacts associated with these activities; however, the current demand for fluid leasable minerals is low in these areas.

Compared with Alternative A, the area that is open to locatable mineral entry and mineral materials would decrease under Alternative B for all sheep habitat, DSHA, DSMC, and DSSA. The percent open to mineral ROWs decreases for DSHA, DSMC, and DSSA. The higher level of protection for the important DSHA would decrease impacts, relative to Alternative A.

For the GMH and RMH, Alternative B would increase the area open to locatable minerals, but it would decrease the area open to mineral materials and ROWs, compared with Alternative A. This would reduce impacts from mineral materials mining (habitat disturbance and displacement) and ROW developments (habitat fragmentation and not creating new access for hunting). For the HHH, Alternative B would decrease the area open to locatable minerals, fluid minerals, mineral materials, and ROWs, compared with Alternative A. This would reduce potential impacts associated with these types of development on the HHH caribou.

### *Impacts under Alternative C1*

Under Alternative C1, 4,200,000 acres (95 percent) of the community subsistence use areas in the decision area would be open to location of metalliferous minerals and closed to location of non-metalliferous minerals; this is more acreage than under Alternative A. No areas of high potential locatable minerals would be open to locatable mineral entry under Alternative C1; however, some high potential areas are segregated from locatable mineral entry and could be transferred to State ownership under this alternative. There would be 138,000 acres (3 percent) of high potential locatable minerals open to locatable mineral entry in community subsistence use areas under Alternative C1. All of this is selected lands that would become available for locatable mineral entry when those lands are conveyed, relinquished, or rejected. Of these lands, 130,000 acres are State of Alaska Priority 1 lands that are likely to be conveyed and would leave federal management within 10 years of a record of decision.

A total of 189,000 acres (4 percent) of the community subsistence use areas in the decision area would continue to be withdrawn from locatable minerals, including metalliferous minerals, per ANCSA PLOs and PLO 5150 (Dalton Utility Corridor); this is less acreage than under Alternative A. An additional 18,000 acres (less than 1 percent) of community subsistence use areas in the decision area would be recommended for withdrawal from locatable mineral entry; this is also less acreage than recommended under Alternative A.

As discussed under Alternative B, there would be areas of medium locatable mineral potential north of Tanana that would not be withdrawn from mineral entry under Alternative C1. This could affect subsistence uses and resources in the area as a result of mineral activities. Sheep Creek and the South Fork Koyukuk would also be recommended for withdrawal as recreational (casual use) areas. The nature and type of negative impacts on subsistence resources described under *Impacts Common to All Action Alternatives* would occur over a larger geographic area than under Alternative A.

Under Alternative C1, 3,778,000 acres (86 percent) of the community subsistence use areas in the decision area would be open to mineral material sales, and 629,000 acres (14 percent) would be closed to mineral material sales. Alternative C1 would close a larger geographic area to mineral material sales than Alternative A, providing additional beneficial impacts on subsistence resources and users by limiting surface-disturbing activities.

Under Alternative C1, the area designated as NSO leasable (262,000 acres [6 percent]), and closed to leasing (319,000 acres [7 percent]) in the community subsistence use areas of the decision area would be greater than Alternative A. The acreage in these areas open to fluid leasable minerals (3,899,000 acres, or 88 percent) would be larger than under Alternative A; the area withdrawn (189,000 acres [4 percent]) would be smaller than under Alternative A. Additionally, under Alternative C1 there would be 551,000 acres (13 percent) designated as open to fluid leasable mineral development, subject to controlled surface use.

More area would be segregated from locatable mineral entry, compared with Alternative A, but non-segregated land in the DSHA would be withdrawn or recommended for closure to mineral entry. Overall, these targeted restrictions should reduce potential Dall sheep disturbance and displacement and preserve use of DSHA and DSMC, compared with Alternative A.

Alternative C1 manages the GMH and the RMH as core caribou ranges. The RMH range would be closed to fluid mineral leasing and withdrawn from locatable mineral entry, mineral material disposal, and nonenergy solid mineral leasing and development.

#### *Impacts under Alternative C2 (Preferred Alternative)*

Under Alternative C2, 4,406,000 acres (100 percent) of the community subsistence use areas of the decision area would be open to location of metalliferous minerals and closed to location of non-metalliferous minerals; this is more acreage than under Alternative A. There would be 0 acres recommended for locatable mineral withdrawal. Because all PLOs would be revoked under Alternative C2, no acreage would remain withdrawn.

The BLM-managed lands around Coldfoot and Wiseman contain the greatest concentrations of areas with medium to high locatable mineral potential; the abundance, availability, and access to subsistence users and resources could be affected by mineral development through disturbance, displacement, changes to subsistence access, and competition for resources. There would be 167,000 acres (4 percent) of high potential locatable minerals open to locatable mineral entry under Alternative C2. All of this is selected lands that would become available for locatable mineral entry when those lands are conveyed, relinquished, or rejected. Of these, 159,000 acres of these lands are State of Alaska Priority 1 lands that are likely to be conveyed and would leave federal management within 10 years of a record of decision.

Under Alternative C2, 4,007,000 acres (91 percent) of the community subsistence use areas of the decision area would be open to mineral material sales, and 399,000 acres (9 percent) would be closed to mineral material sales.

While fluid mineral potential in most of the decision area is low to very low, under Alternative C2 4,406,000 acres (100 percent) of the community subsistence use areas of the decision area would be open to fluid mineral leasing. Additionally, 4,406,000 acres (100 percent) of the areas would be open to nonenergy solid mineral leasing.

Alternative C2 would not protect DSHA, DSMC, or DSSA, as would Alternative C1. Alternative C2 would allow full revocation of PLO 5150 lands. It would not withdraw DSHA from mineral entry or provide NSO designations for fluid mineral leases; no stipulations on mineral materials extraction, plans of operation for surface-disturbing activities, or aircraft height restrictions would be included. Loss of important habitat and potential disturbance of Dall sheep from these activities could increase with the potential for displacement from important mineral licks and movement corridors; there could be impacts on productivity or survival, but the degree would depend on the location and type of activity.

The GMH and RMH ranges would be managed as core caribou ranges under Alternative C2. These ranges would be provided some protections through timing limitations and aircraft height restrictions; however, Alternative C2 would affect a greater area of caribou ranges through the increased areas available for potential surface disturbance and development. Specifically, additional development under Alternative C2 could further lower the probability of maintaining a viable GMH population. Alternative C2 would make more area available for locatable mineral entry, fluid mineral leasing, and nonenergy solid mineral leasing, as compared with Alternative A.

#### *Impacts under Alternative D*

Alternative D emphasizes management to facilitate resource development more than the other alternatives. Under Alternative D, the entire 4,406,000 acres (100 percent) of the community subsistence use areas in the decision area would be open to locatable minerals, fluid leasable minerals, mineral material sales, and nonenergy leasable mineral development. No areas would be withdrawn from the mining laws or recommended for withdrawal from locatable mineral entry. The BLM-managed lands around Coldfoot and Wiseman contain the greatest concentrations of areas with medium to high locatable mineral potential; the abundance, availability, and access to subsistence users and resources could be affected by mineral development through disturbance, displacement, changes to subsistence access, and competition for resources.

There would be 167,000 acres (4 percent) of high potential locatable minerals open to locatable mineral entry under Alternative D. All of this is selected lands that would become available for locatable mineral entry when those lands are conveyed, relinquished, or rejected. Of these, 159,000 acres are State of Alaska Priority 1 lands that are likely to be conveyed and would leave federal management within 10 years of a record of decision.

Alternative D would result in impacts on Dall sheep like those described for Alternative C2. Loss of important habitat and potential disturbance of Dall sheep from development could increase with the displacement from important mineral licks and movement corridors. This could have subsequent impacts on productivity or survival. Impacts on caribou would be like those described under Alternative C2; however, the core ranges for the GMH and RMH would no longer have ROW avoidance or be closed to mineral materials disposal, which is similar to Alternative A.

With all community subsistence use areas in the decision area open to these development activities that may affect subsistence users, the potential for impacts on subsistence resources would be highest under this alternative.

#### ***Impacts from Lands and Realty and Utility Corridor Management Decisions on Subsistence***

In addition to the management actions common to all the action alternatives, potential impacts from the following management topics were considered:

- Permits and ROW open
- Revocation of withdrawals, including PLO 5150 and ANCSA 17(d)(1)
- Utility corridors

Potential impacts on subsistence resources from lands and realty management would include habitat loss, fragmentation, and degradation; disturbance of or direct mortality to resources; loss of species diversity from ROW development and other permitted facilities; and changes in ownership that might result in different standards for managing subsistence resources. Concerns were raised during scoping regarding the impacts of

linear ROWs on caribou movement. While the Dalton Highway and Dalton Utility Corridor bisect the range of the HHH, these caribou cross the road, Trans-Alaska Pipeline System, and other linear features yearly and do not appear to be restricted in their movements. It appears standard stipulations regarding linear infrastructure sufficiently mitigate impacts on caribou movement.

Permits and leases are often associated with human uses that increase human presence. This may increase stress on wildlife resources during breeding, migration, and wintering periods, and potentially interfere with subsistence harvest activities. Land acquisitions could benefit fish, wildlife, and vegetation that are subsistence resources. This would come about by increasing the acres of wildlife habitat in the planning area, including sensitive or key habitats, and by creating more contiguous blocks of habitat for management. Conversely, land disposals would reduce the amount of habitat for subsistence resources under BLM management. Land withdrawals could benefit subsistence fish, wildlife, and vegetation if the BLM closed BLM-managed lands to activities with the potential to affect species and their habitat.

*Impacts under Alternative A (No Action)*

Under Alternative A, all 4,406,000 acres (100 percent) of community subsistence use areas in the decision area would be open to ROWs with standard restrictions; 0 acres would be designated as avoidance or exclusions areas.

Subsistence management under Alternative A on the 2,595,000 acres of community subsistence use areas that overlap with PLOs in the decision area would remain the same, consistent with Federal Subsistence Board hunting regulations (36 CFR 242.26 and 50 CFR 100.26). This alternative includes a recommendation to modify PLO 5150 to change the boundary of the inner corridor to conform to current and future needs for energy transportation.

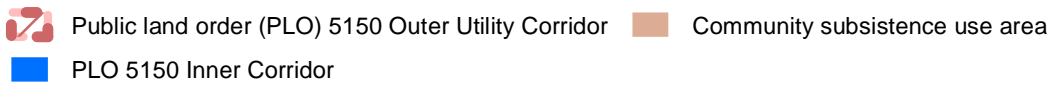
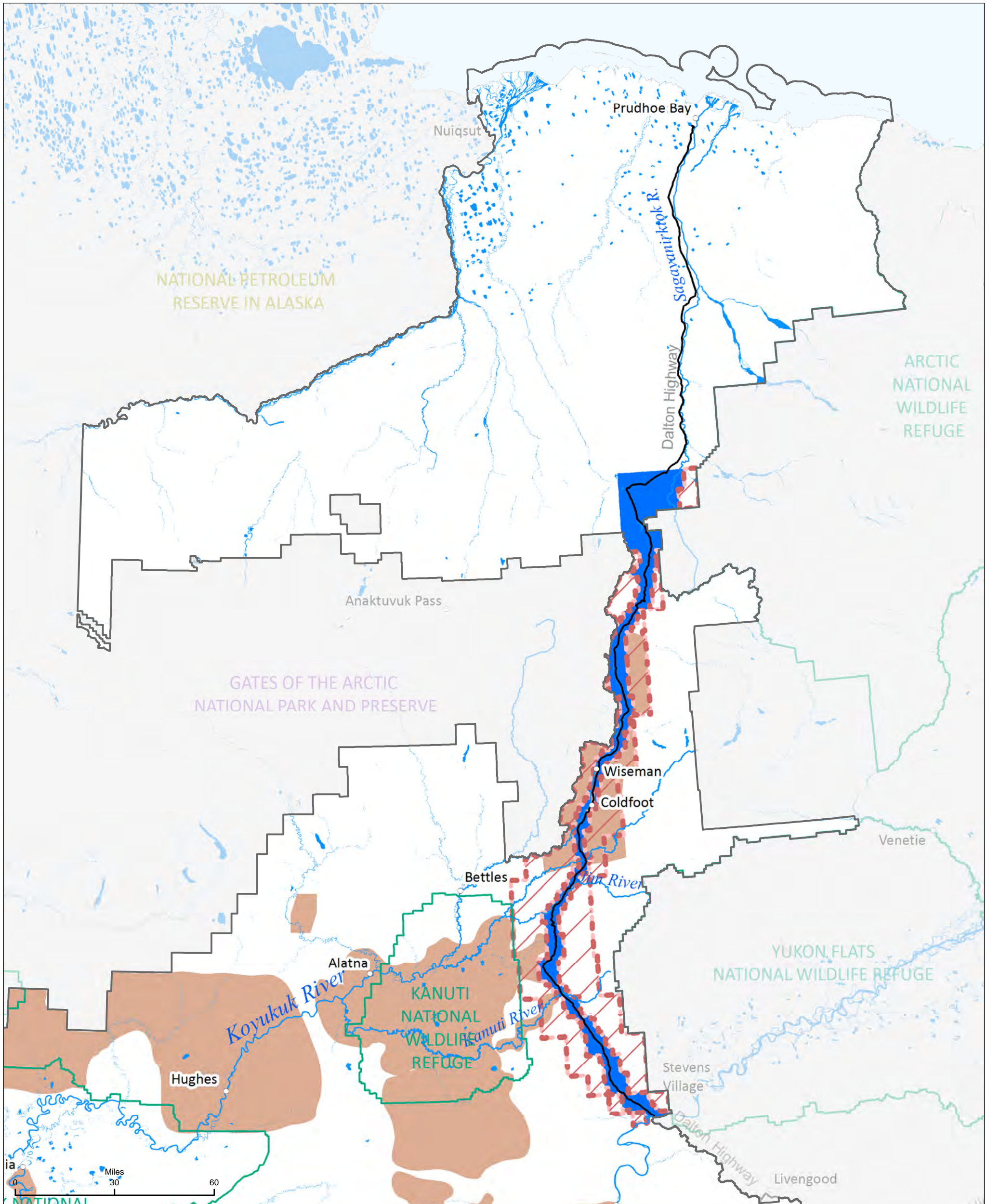
Under Alternative A, the PLO 5150 withdrawal that designates the inner and outer utility corridors and the segregation from ANCSA corporation selection would remain in place. In addition, the inner corridor would remain segregated from all forms of mineral entry. As a result, there would be no change in the management of wildlife or anadromous waters within the Dalton Utility Corridor in terms of their availability for mineral development under Alternative A. Of the 4,406,000 acres of community subsistence use areas in the decision area, 651,000 acres (15 percent) fall within PLO 5150 (see **Table Q-3**). **Map Q-2** shows the overlap of PLO 5150 and community subsistence use areas around the communities of Coldfoot and Wiseman.

**Table Q-3  
Acres of Community Subsistence Use Areas within PLO 5150 by Alternative**

<b>PLO 5150</b>	<b>Alternative A (Acres)</b>	<b>Alternative B (Acres)</b>	<b>Alternative C1 (Acres)</b>	<b>Alternative C2 (Acres)</b>	<b>Alternative D (Acres)</b>
Retain inner corridor	189,000	189,000	189,000	—	—
Retain outer corridor	463,000	—	—	—	—
Revoke inner corridor	—	—	—	189,000	189,000
Revoke outer corridor	—	463,000	463,000	463,000	463,000

Source: BLM GIS 2017





No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Data Source: BLM GIS 2017, ADF&G GIS 2018



Map Q.2

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Under 50 CFR 100.26, residents living in the DHCMA may use snowmachines. Residents of Coldfoot and Wiseman use the corridor and the Nolan Road for motorized access to fuelwood collection areas.<sup>5</sup> Such access would be maintained under Alternative A. This same regulation also allows for the residents Coldfoot, Wiseman, Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, and Stevens Village to use firearms in the DHCMA for the taking of wildlife. Retaining PLO 5150 would continue to allow residents of Coldfoot and Wiseman access to subsistence resources. Other communities would also continue to be able to use firearms for subsistence hunting under Alternative A.

The area that is selected by PLO 5150 is important to subsistence users for Dall sheep hunting and access to sheep hunting in Gates of the Arctic National Park and Preserve, specifically residents of Wiseman and Coldfoot. These sheep populations are accessible from the Dalton Highway by non-subsistence bow hunters in the DHCMA and rifle hunters outside the DHCMA. Road-accessible sheep populations in the state are rare, making this area popular for sheep hunting because access is relatively inexpensive. Hunting guides also use this area for commercial guiding of nonresident sheep hunters. This activity has resulted in user conflict in recent years as non-subsistence hunting in the area has increased. Rural residents who are subsistence users have expressed frustration over low hunter success rates for sheep in the DHCMA. They cite guided hunting activity and non-subsistence hunting as causes for difficulty procuring sheep. User conflict would continue to be a problem under this alternative if non-subsistence sheep hunting increases.

State of Alaska Statute Sec. 19.40.210 prohibits the use of OHVs on land within 5 miles of the Dalton Highway north of the Yukon River. The exception is for persons who hold a mining claim near the highway and who must use land within 5 miles of the ROW to gain access to the mining claim. ANILCA Title VII Section 811 supersedes the State statute on federal lands in the corridor, thereby enabling federally-qualified rural residents to use traditional means of travel to access subsistence resources. As a result, residents of Wiseman and Coldfoot can use OHVs in the DHCMA to access traplines; this access would remain in place under Alternative A.

Also, under Alternative A, there would be no new utility corridors that could affect subsistence uses and resources in the planning area.

#### *Impacts Common to All Action Alternatives*

All action alternatives include the designation of additional utility corridors. Additionally, all action alternatives include the requirement that ROWs for linear projects are required to incorporate design features or stipulations to mitigate impacts on caribou passage in migration corridors for all priority wildlife species. Applicants must demonstrate that the design features or stipulations are able to effectively mitigate impacts using scientifically verified construction techniques and design features. This requirement would benefit subsistence uses by maintaining caribou migration corridors and mitigating potential impacts on resource availability.

Under all action alternatives, the full or partial revocation of PLO 5150 (for the outer corridor only under Alternatives B and C1 and full revocation under Alternatives C2 and D) enables top-filings to become valid selections. This would affect subsistence access and harvest provisions provided under federal subsistence management regulations for the communities of Allakaket, Anaktuvuk Pass, Bettles, Coldfoot, Evansville, Rampart, Stevens Village, and Wiseman.

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<sup>5</sup>Jack Reakoff (planning area resident), and Michelle Ethun (BLM Project Manager), personal communication with Jack Reakoff, July 31, 2019.

Forty-six percent of lands in PLO 5150 are identified by the State as Priority 1 top-filed lands for conveyance, and they are likely to be conveyed during the life of the plan. These lands would no longer be under BLM management nor subject to SOPs. Because the selected lands would no longer be considered public lands as defined by ANILCA Section 102, local residents would not retain priority subsistence access. The full or partial revocation of PLO 5150 would have the practical effect of removing the federal subsistence priority for residents of Coldfoot and Wiseman.

The loss of federal priority subsistence status for these communities would create increased competition for harvest of moose, caribou, and Dall sheep. It also removes federal subsistence management regulations that provide for a method of harvest (firearms), which was determined to be needed for residents of Coldfoot and Wiseman. Residents would not be able to use firearms within 5 miles of the Dalton Highway in the outer corridor, which substantially inhibits their ability to harvest moose, Dall sheep, and other big game. Dall sheep habitat is primarily on lands selected by PLO 5150; therefore, a partial or full revocation of the PLO could negatively affect this important subsistence species through loss of habitat if other protective mitigation measures are not enacted.

Residents of Coldfoot and Wiseman would not retain legal federal motorized access for subsistence purposes, which would create increased competition from sport hunters for harvest of moose, caribou, and Dall sheep in the area and impact subsistence resource abundance and availability. Residents of Coldfoot and Wiseman would experience significant restrictions to subsistence access, as these communities typically harvest resources in the outer corridor of PLO 5150. Residents would not be able to use snowmachines along most of Nolan Road, in the Wiseman Creek and Hammond River drainages, or in other overland areas next to the PLO 5150 corridor. This would prevent residents from accessing traplines and important hunting and fishing areas and from collecting firewood, both in the outer corridor and (for Wiseman) in traditionally used areas in Gates of the Arctic National Park and Preserve. Residents of Coldfoot and Wiseman would also not be able to use an OHV on Nolan Road and other roads to access traditional moose, Dall sheep, and other subsistence use areas. That is because doing so would violate Alaska State Statute 19.40.210.

Additionally, under all action alternatives, residents would not be able to hunt or fish under federal regulations on selected lands. Though species-specific regulations vary, bag limits, legal requirements, and seasons are often more liberal under federal regulations. Hunting or fishing under State regulations may reduce residents' ability to harvest sufficient quantities of subsistence resources.

All action alternatives designate the Ambler and Umiat utility and transportation corridors, which are likely to increase the potential for future road construction in these areas. The communities of Anaktuvuk Pass, Allakaket, Alatna, Bettles, Evansville, Wiseman, and Coldfoot would have the highest potential to experience impacts associated with the designation of these corridors. Potential development could directly affect subsistence resources and uses through habitat fragmentation and increased pressure on subsistence hunting through increased access via new corridors. Potential development could also impact the availability of subsistence resources if wildlife species such as caribou are deterred from typical migration patterns or habits.

#### *Impacts under Alternative B*

Under Alternative B, 1,723,000 acres (39 percent) of community subsistence use areas in the decision area would be open to ROWs, with standard restrictions; 1,991,000 acres (45 percent) would be designated as ROW avoidance and 692,000 acres (16 percent) would be designated as ROW exclusion. This is the most restrictive and therefore most protective of subsistence uses of all the alternatives.



Under Alternative B, 2,407,000 acres (93 percent) of the community subsistence use areas in the decision area would have their segregations from selection removed, and these lands would be available for selection. A portion of these lands (689,000, or 26 percent, of the community subsistence use areas under this designation in the decision area) have a top-filing from the State of Alaska that would become a valid selection on the modification of the PLO. Once the lands have a valid selection, they would no longer be considered public under the definition of ANILCA and would no longer be available for priority federal subsistence.

Conveying valid selected lands to the State would change how subsistence is managed. The State of Alaska would manage the area according to its subsistence laws, which require the Board of Game and Board of Fisheries to provide a reasonable opportunity for subsistence uses first, before providing for other uses of any harvestable surplus of a fish or game population (Alaska Statute 16.05.258 (b)). While no changes are expected in the abundance or availability of subsistence resources, it is expected that the change in management in this area may increase competition for access to resources from other subsistence users and non-subsistence users.

Alternative B recommends a partial revocation of the PLO 5150 withdrawal outer corridor lands, citing that the outer corridor is not currently used for or foreseeably used for utilities and transportation. As a result of the partial revocation, motorized use (including snowmachines) would not be allowed for subsistence purposes (due to their State-selected status upon revocation of PLO 5150) in 463,000 acres the outer corridor lands. At its widest point, which is east of Bettles, the outer corridor is approximately 14 miles wide. Loss of priority subsistence access to these lands would eliminate legal motorized access for subsistence purposes to the communities of Coldfoot and Wiseman. As a result, residents of Wiseman would not be able to use snowmachines to cross BLM-managed lands within the DHCMA to access Gates of the Arctic National Park and Preserve managed lands to the west of Wiseman; this is where residents do much of their Dall sheep hunting.<sup>6</sup>

Areas where residents of Wiseman have customary and traditional use determinations in GMUs 24A, 26B, and 25A would also become inaccessible. Residents of Coldfoot do not have a customary and traditional use determination for Gates of the Arctic National Park and Preserve lands; they are not allowed to hunt on National Park Service lands under Federal Subsistence Management regulations. As a result, Coldfoot residents primarily hunt in the DHCMA. Alternative B would limit access to subsistence resources for these residents.

The partial revocation of the outer corridor of PLO 5150 under Alternative B would restrict their subsistence access. The partial revocation of PLO 5150 would have the practical effect of removing the federal subsistence priority for residents of Coldfoot and Wiseman, and would eliminate legal motorized access for subsistence purposes for these communities. In addition, residents of Allakaket, Anaktuvuk Pass, Bettles, Evansville, Rampart, and Stevens Village would no longer be afforded the use of firearms for subsistence hunting on these same lands. Limitations on firearm use may be considered a legal restriction to access consistent with BLM interpretation for Section 810 (BLM AK-2011-008).

Two utility and transportation corridors would be designated under Alternative B, the Ambler Road (Dalton East-West Corridor) 5-mile corridor and the Road to Umiat Corridor (North Slope East-West Corridor; the block of State-selected lands to the west of the Toolik Lake Research Natural Area). There are 43,000 acres (1 percent) of Community Subsistence Use Areas in the decision area that overlap with the proposed Ambler

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<sup>6</sup>Jack Reakoff (planning area resident), and Michelle Ethun (BLM Project Manager), personal communication with Jack Reakoff, July 31, 2019.

Road Corridor. The designation of these corridors may affect subsistence abundance, availability, and access for residents of Anaktuvuk Pass, Allakaket, Alatna, Bettles, Evansville, Wiseman, and Coldfoot. This would come about through the potential for increased mineral exploration, increased recreation, increased competition for resources, or, if their use affects resource abundance, availability, or access.

#### *Impacts under Alternative C1*

Under Alternative C1, 3,158,000 acres (72 percent) of community subsistence use areas in the decision area would be open to ROWs with standard restrictions; 1,243,000 acres (28 percent) would be designated as ROW avoidance, and 5,000 acres (less than 1 percent) would be designated as ROW exclusion. This is more restrictive than Alternative A and therefore is most protective of subsistence uses.

Under Alternative C1, 2,407,000 acres (93 percent) of community subsistence use areas under this designation would be available for selection by the State of Alaska, which is the same as discussed under Alternative B. Alternative C1 also recommends a partial revocation of the PLO 5150 withdrawal outer corridor lands. The impacts of these lands and realty management actions on subsistence uses and resources would be the same as described under Alternative B.

Potential impacts on subsistence uses and resources associated with the two utility corridors described under Alternative B would be the same under Alternative C1.

#### *Impacts under Alternative C2 (Preferred Alternative)*

Under Alternative C2, 4,007,000 acres (91 percent) of community subsistence use areas in the decision area would be open to ROWs with standard restrictions; 339,000 acres (8 percent) would be designated as ROW avoidance. This alternative would be more protective of subsistence resources than Alternative A through the designation of ROW avoidance areas.

Alternative C2 recommends a full revocation of the PLO 5150 withdrawal and a replacement with an administrative designation of the Dalton Utility and Transportation Corridor in place of the inner corridor, which overlaps with 221,000 acres (5 percent) of community subsistence use areas in the decision area (**Map Q-2**). The full revocation would entail 651,000 acres (15 percent) of community subsistence use areas in the decision area automatically becoming valid selections for the State of Alaska. This change in management within PLO 5150 may result in increased competition for access to resources from non-subsistence users, which could affect the abundance or availability of subsistence resources. Increased competition would also cause adverse impacts on subsistence resource abundance, as more competition means fewer resources overall available for harvest. Similarly, increased competition may impact resource availability as subsistence resources may become sparser within the planning area, or subsistence users may choose to expend a greater effort to harvest in a different location to avoid sport hunters. Lands transferred to the State of Alaska would be unavailable for subsistence activities conducted under Title VIII of ANILCA.

The residents of Coldfoot and Wiseman would likely be most affected by the full revocation of the PLO 5150 withdrawal, due to the proximity and their current use of the area for subsistence practices. Residents of these communities use snowmachines to access subsistence resources in the fall, winter, and spring. Revocation of the PLO 5150 withdrawal would no longer permit this use within the DHCMA, and there would be no way for subsistence users to access Gates of the Arctic National Park.<sup>7</sup> Other communities, such as Alatna, Allakaket, Bettles, and Evansville, whose residents use the DHCMA for subsistence hunting, would also be

<sup>7</sup>Jack Reakoff (planning area resident), and Michelle Ethun (BLM Project Manager), personal communication with Jack Reakoff, July 31, 2019.

affected; shifting management of the corridor to the State of Alaska would eliminate the rural preference and would likely encourage more outside hunters into the area.

Alternative C2 includes the same designation of the same two utility corridors as Alternatives B and C1. This is in addition to the designation of a Dalton Utility Corridor in place of the inner corridor previously selected by PLO 5150. These corridors could affect subsistence uses for the communities of Anaktuvuk Pass, Hughes, Allakaket, Alatna, Bettles, Evansville, Wiseman, and Coldfoot. This would be the result of the potential for increased mineral exploration, recreation, and competition for resources or, if their use affects resource abundance, availability, or access. Alternative C2 would therefore have the greatest impact on subsistence through restrictions to subsistence access and current subsistence uses of the DHCMA.

#### *Impacts under Alternative D*

Impacts on subsistence resources under Alternative D from the designation of ROW avoidance and exclusion areas would be the same as those under Alternative A.

The recommendation to fully revoke PLO 5150 and the designation of the Ambler, Umiat, and Dalton Highway utility and transportation corridors would result in the same impacts on subsistence resources as discussed under Alternative C2.

#### ***Impacts from Recreation and Visitor Services Management Actions on Subsistence***

In addition to the management actions common to all the action alternatives, potential impacts from the following management topics were considered:

- Special Recreation Management Areas (SMRAs)
- Extensive Recreation Management Areas (ERMAs)
- Backcountry Conservation Areas (BCAs)

#### *Impacts under Alternative A (No Action)*

Under Alternative A, 671,000 acres (15 percent) of the community subsistence use areas in the decision area would be managed as SRMAs at two locations: the Dalton Highway Corridor SRMA and the Dalton Highway SRMA. These areas would maintain the targeted recreation objectives of sightseeing and wildlife viewing. Management actions in these areas would likely lessen the potential for any conflicts between recreationists and subsistence users. There would be no ERMAs that overlap with community subsistence use areas under this alternative. There are no BCAs designated under Alternative A.

There would continue to be dispersed recreation opportunities in a primitive setting outside the SRMAs and ERMAs, including traditional activities, with the primary users being local villagers, community members, and recreationists engaged in backcountry trips. Special recreation permits (SRPs) would be considered on a case-by-case basis; the nature and type of impacts associated with the SRPs would be based on the type and location of the permitted activity. Continuing to issue SRPs on a case-by-case basis would allow outfitters to accommodate demand for guided hunting and fishing, which could conflict with subsistence activities and compete for resources, and other specially permitted activities. These impacts on subsistence would be greatest in areas of high recreation use, such as along the Dalton Highway. Over time, as recreation demand is expected to increase along the Dalton Highway, the potential for conflicts between recreationists and subsistence users would also increase. Wiseman residents have expressed concerns over the mounting hunting pressure by non-local hunters on local resources, particularly caribou and Dall sheep (Holen et al. 2012).

### *Impacts Common to All Action Alternatives*

Recreation can affect subsistence resources and local users in the planning area by introducing humans into remote areas, potentially interfering with subsistence activities and competing for subsistence resources. The presence of motorized vehicles, aircraft, and humans can disturb fish and wildlife resources, potentially increasing energy expenditure as they move away from the activity for the short term and long term.

The movement of wildlife in turn can affect subsistence harvests and result in hunters having to travel farther and expend more fuel and time to hunt and harvest resources. Recreation activities during breeding periods can reduce reproductive success of subsistence resources. Wildlife can also habituate to human presence, which can increase the risk of injury or mortality from human-wildlife interactions.

Recreation can also result in degradation or loss of habitat, although there are no existing or proposed recreation facilities in the planning area where concentrated recreation use is likely to occur. Most recreation in the planning area is along the Dalton Highway. Fish, wildlife, and vegetation that are important to subsistence users in this area are the most likely resources to be affected by increased use by recreationists and visitors. Recreational hunting and fishing have a direct impact on wildlife and subsistence resources through mortality and reduction in prey species; however, because game populations are managed by the ADFG, these impacts are not the focus of this analysis.

Impacts on subsistence users from recreation are generally the result of conflicts between recreational uses, such as motorized versus nonmotorized use, sport hunting, and fishing. The frequency and intensity of user conflicts are seasonal, localized, and occur only when users perceive the uses to be incompatible. Conflicts increase over time as an increasing number of visitors seek recreation on BLM-managed land. The potential for impacts is greatest where visitors' expectations are for a remote setting. Developing new recreation facilities would expand recreation opportunities but would also attract more visitors to the decision area. Increased visitation could result in more conflicts between recreationists and subsistence users, particularly in high-use areas, such as along the Dalton Highway.

Under all action alternatives, limitations on domestic sheep and pack goats in Dall sheep habitats would enable an effective separation to avoid disease risk to this important subsistence resource. The use of camelids as pack animals would be considered on a case-by-case basis. Under all action alternatives, SRPs also would be considered on a case-by-case basis; the nature and type of impacts associated with the SRPs would be based on the type and location of the permitted activity. This additional review could reduce potential conflicts between recreationists and casual and subsistence users in certain areas or during specific times of the year.

### *Impacts under Alternative B*

Under Alternative B, 189,000 acres (4 percent) of community subsistence use areas in the decision area would be managed as SRMAs. The Central Dalton SRMA overlaps 56,000 acres (1 percent) and the Sukakpak Region SRMA overlaps 133,000 acres (3 percent) of community subsistence use areas in the decision area. These SRMAs would continue to concentrate recreation in the areas next to the Dalton Highway.

Under Alternative B, 5,000 acres (0.1 percent) of community subsistence use areas in the decision area would be managed as part of the Spooky Valley ERMA. Management includes a limitation on the duration of overnight camping stays and designation for seasonal, nonmotorized use requiring access by foot or, in winter, by snowmachine. These protections would benefit subsistence uses along the Dalton Highway.

Under Alternative B, 463,000 acres (10 percent) of community subsistence use areas in the decision area would be managed as the Dalton Highway Corridor BCA. This BCA would be managed to protect the intact



and undeveloped character and to manage habitats to support migration/movement corridors for recreationally important species of fish and wildlife; big game winter range, summer range, parturition areas, migration corridors and associated stopover areas; and migratory bird habitats. New ROWs would be collocated in existing disturbances or at existing sites. Subsistence users in this area would benefit from this protection of subsistence resources; conversely, the designation could bring more attention to recreational hunting and could increase pressure on subsistence resources.

#### *Impacts under Alternative C1*

The Dalton Highway Corridor SRMA designated under Alternative C1 would overlap 688,000 acres (16 percent) of community subsistence use areas in the decision area. There are nine recreation management zones (RMZs) in the SRMA (**Appendix K**). Dall sheep hunting is an activity that draws visitors to the SRMA. Permit demand is high for the Coldfoot RMZ, which includes the communities of Wiseman and Coldfoot. Management actions in the Coldfoot RMZ would increase opportunities for developed or trail-based recreation, as compared with Alternative A. By Alaska statute, the SRMA is closed to OHVs and off-road vehicles, unless otherwise authorized. Under Alaska Statute 17.05.789, Prohibition on Hunting Adjacent to Highway Between Yukon River and Arctic Ocean, hunting with firearms is prohibited north of the Yukon River. This applies to the area within 5 miles of either side of the highway between the Yukon River and the Arctic Ocean. Management actions would provide for increased summer recreation and could also increase conflicts between recreational, casual, and subsistence users.

Additionally, 5,000 acres (0.1 percent) of community subsistence use areas in the decision area would be managed as the Spooky Valley ERMA; impacts would be the same as described under Alternative B. There are no BCAs proposed under Alternative C1; impacts would be the same as those described under Alternative A.

#### *Impacts under Alternative C2 (Preferred Alternative)*

The Dalton SRMA under Alternative C2 covers the same area as the Sukakpak Region SRMA and the Central Dalton SRMA under Alternative B. The Dalton SRMA under Alternative C2 would also be comprised of the four RMZs that correspond with the Sukakpak Region SRMA and the Central Dalton SRMA. The Coldfoot RMZ would be a developed recreational area managed by the BLM under Alternative C2; the potential for conflicts among recreational, casual, and subsistence users in the area would be greater than under Alternative A.

#### *Impacts under Alternative D*

Alternative D recreation management actions would provide the fewest protections for subsistence resources. Under Alternative D, there would be no SRMAs, ERMAs, or designated BCAs.

#### ***Impacts from Travel and Transportation Management Decisions on Subsistence***

In addition to the management actions common to all the action alternatives, the BLM considered the potential impacts on subsistence resources from the following management topics:

- Summer OHV use
- Over snow travel limitations for BLM-permitted activities
- Aircraft use

#### *Impacts under Alternative A (No Action)*

Under Alternative A, OHV travel would be managed as limited to existing routes. Weight limitations enforced by a gross vehicle weight of 1,500 pounds for summer OHV use would limit the ability for OHVs to tow or

carry heavy equipment across the decision area, but it would help prevent long-term degradation on existing trail ways that would diminish future access.

At the Dalton Highway Travel Management Area (TMA) (473,000 acres of which overlap with community subsistence use areas), requiring permits for casual and commercial use during the summer season and restricting Trans-Alaska Pipeline System crossings at designated points would reduce travel use conflicts with commercial vehicles using the Dalton Utility Corridor for drill-related activities. Despite specific access limits associated with Alaska Statute section 19.40.210, a BLM Authorized Officer would continue to permit property owners to cross inner corridor lands via OHV to access privately held properties or homesteads outside the corridor, allowing for subsistence use travel in the area.

Alternative A includes the requirement that aircraft associated with all BLM-authorized land use activities will be required to fly a minimum of 2,000 feet above ground level, from May 1 to August 31, unless doing so would endanger human life or be an unsafe flying practice in the Nugget Creek, Poss Mountain, Snowden Mountain and West Fork Atigun ACECs (42,000 acres, or less than 1 percent of community subsistence use areas in the decision area). This management action would decrease potential disturbance impacts on caribou and other subsistence species in the area.

#### *Impacts Common to All Action Alternatives*

Under all action alternatives, new or expanded ROWs would provide opportunities for improved access and reduced potential for impacts from cross-country travel. Under all action alternatives, curb weight restrictions would limit travel opportunities for heavier vehicles. Limiting cross-country travel along the Dalton Corridor TMA to subsistence use only would preclude other forms of travel. Use of OHVs can degrade wildlife habitats and subsistence use areas through ground disturbance, particularly when soils are not frozen. They can also crush nests and small terrestrial species and can lead to the creation of new trails, which can increase the amount of disturbed area and provide access to competing harvest of fish, wildlife, and vegetation. Except for the priority subsistence access determination for the residents of Wiseman, there are no management actions that differ for casual use versus subsistence use.

#### *Impacts under Alternative B*

Under Alternative B, summer OHV restrictions would protect the largest geographic area from competition between casual and subsistence OHV users. Under Alternative B, OHV travel would be limited on 3,136,000 acres (71 percent) of community subsistence use areas in the decision area, summer closures would be in place on 615,000 acres (14 percent), and seasonal limitations (closed May 1 through June 30) would be in place on 655,000 acres (15 percent). This seasonal travel restriction may impede overland travel between Tanana and Alatna/Allakaket, which could disrupt patterns of subsistence use for these communities. While the restrictions may impede some subsistence activities, they would also minimize impacts on subsistence resources and reduce competition between casual and subsistence users by providing more access to more of the planning area for subsistence uses.

Under Alternative B, several ACECs would have summer OHV use timing restrictions and a prohibition of summer OHV use. The prohibition would affect 615,000 acres (14 percent) of community subsistence use areas in the decision area that overlap these ACECs. Those areas would not be available for OHV access, which could impede access to subsistence resources.

The transfer of management responsibilities for transportation actions to the State of Alaska through the partial revocation of PLO 5150 would affect areas currently accessible for both summer OHV casual use and qualified subsistence winter OHV use. This would affect approximately 1,395,000 acres, or 10 percent of the

decision area. State land along the Dalton Highway would be exempt from associated ANILCA provisions; Alaska Statute 19.40.210 would remain in effect (DOI 2004).

Alternative B includes the requirement that aircraft associated with all BLM-authorized land use activities would be required to fly a minimum of 2,000 feet above ground level in caribou calving areas associated with the GMH and the RMH from May 1 through June 30, in Dall sheep habitat from May 1 through August 31, and in 10 different ACECs during various times. This would be done to reduce the potential impacts on caribou and Dall sheep.

Additionally, normal aircraft landings, except in certain instances, would be prohibited from May 1 through June 30 in the Galena Mountains, Jim River, Tozitna, Sulukna River, and Upper Kanuti River ACECs. These actions would benefit subsistence users of these species by reducing wildlife disturbance associated with aircraft noise during this time. This restriction covers the largest geographic area among the alternatives.

#### *Impacts under Alternative C1*

Under Alternative C1, OHV travel would be limited to existing routes on 4,007,000 acres (91 percent) of community subsistence use areas in the decision area. Approximately 399,000 of these acres (9 percent) would be subject to summer seasonal limitations, as compared with no summer restrictions under Alternative A. Summer OHV travel is limited in core caribou habitat for the GMH and RMH, and summer OHV use is restricted in the Toolik Lake RNA. The restrictions may impede some subsistence activities during specific periods and specific areas; however, they would also minimize impacts on subsistence resources. They would also reduce competition between casual and subsistence users by providing more access to more of the planning area for subsistence uses.

Alternative C1 includes the requirement that aircraft associated with all BLM-authorized land use activities be required to fly a minimum of 2,000 feet above ground level from May 1 through June 30 in caribou calving areas and in Dall sheep priority habitat. This would benefit users of these subsistence resources by reducing wildlife disturbance associated with aircraft noise.

#### *Impacts under Alternative C2 (Preferred Alternative)*

Impacts on subsistence resources from OHV management restrictions under Alternative C2 would be the same as described under Alternative C1. Alternative C2 does not include any aircraft altitude restrictions associated with BLM-authorized land use activities. Potential impacts on subsistence wildlife species from aircraft noise would be greater under this alternative than under Alternative A.

#### *Impacts under Alternative D*

Impacts from OHV designations and not applying seasonal limitations for OHV use under Alternative D would be the same as described under Alternative A. Alternative D does not include any aircraft altitude restrictions associated with BLM-authorized land use activities. Potential impacts on subsistence wildlife species from aircraft noise would be greater under this alternative than under Alternative A.

### **Impacts from ACEC Management Decisions on Subsistence**

#### *Impacts under Alternative A (no Action)*

Under Alternative A, 777,000 acres (18 percent) of community subsistence use areas in the decision area would be managed as ACECs or RNAs. This would protect subsistence resources and resource availability in those areas. Alternative A designates the Tozitna Subunits North and South ACEC to protect caribou habitat for the RMH (211,000 acres; 0.4 percent of the planning area).

All Dall sheep habitat in the planning area is open to locatable mineral entry under Alternative A. In the West Fork Atigun River, Snowden Mountain, Poss Mountain, Nugget Creek, and Galbraith Lake ACECs, totaling 104,000 acres (0.2 percent of the planning area), there are some additional restrictions on development in Dall sheep habitat.

#### *Impacts Common to All Action Alternatives*

All action alternatives would require surface-disturbing mineral exploration and development to be conducted under an approved plan of operations (43 CFR 3809). Casual uses are exempt from this requirement.

#### *Impacts under Alternative B*

Alternative B would be the most protective of subsistence resources. Under Alternative B, 1,502,000 acres (34 percent) of community subsistence use areas in the decision area would be managed as ACECs or RNAs. This would provide the most benefit to subsistence by protecting subsistence resources on the largest geographic area. Alternative B provides protections through ACEC or RNA designations on 725,000 more acres (15 percent more) of community subsistence areas than Alternative A. This would reduce the potential for surface-disturbing activities and associated visual and noise disruptions that could affect subsistence species.

Two additional ACECs would be designated for caribou: the Spooky Valley ACEC for the RMH and Upper Kanuti River ACEC for the HHH. Subsistence users would benefit from the protections put in place for caribou OHV. Also, surface-disturbing activities would be prohibited in the Upper Kanuti River ACEC from May 1 to June 30 to avoid disturbance during the caribou calving period. Under Alternative B, 1,164,000 acres (11 percent of the decision area) would be designated to protect caribou habitat through ACECs or RNA designation. This would provide additional subsistence resource protection for the communities that harvest caribou in these locations.

Dall sheep habitat under Alternative B would be protected by adding the Midnight Dome/Kalhabuk ACEC (10,000 acres) to those designated under Alternative A. This increase would limit development, as compared with non-designated areas, and would provide more protections from surface-disturbing activities for subsistence wildlife species and their habitats than under Alternative A. Adding the Midnight Dome/Kalhabuk would provide additional protections for subsistence use areas frequented by the residents of Wiseman and Coldfoot.

Five of the ACECs would include restrictions within 0.5 miles of mineral licks under Alternative B. Alternative B would reduce disturbance to wildlife and would protect these key habitats by reducing the potential for habitat loss, degradation, and fragmentation. This, in turn, would provide additional protections for a wide range of species important to subsistence activities to a greater extent than under Alternative A.

Under Alternative B, access to subsistence harvest of timber and woody vegetation may be affected by prohibitions. The harvest of timber and woody vegetation in the Sukapak/Snowden Mountain ACEC would be prohibited, except for transportation and utility corridors and federal administrative sites. Subsistence harvest of timber and woody vegetation would be prohibited in the Kanuti Hot Springs ACEC.

#### *Impacts under Alternative C1*

Under Alternative C1, 141,000 acres (3 percent) of community subsistence use areas in the decision area would be managed as ACECs. This would benefit subsistence users by protecting subsistence resources. Alternative C1 provides protections through ACEC or RNA designations on 636,000 fewer acres (16 percent

less) of community subsistence areas than Alternative A. This would increase the potential for impacts on subsistence resources through surface-disturbing activities.

#### *Impacts under Alternative C2 (Preferred Alternative)*

Alternative C2 would provide the least amount of protections for subsistence resources out of all alternatives. This is because there would be no acres of community subsistence use areas in the decision area that overlap ACECs or RNAs.

Alternative C2 would remove the five ACECs with Dall sheep that are designated as a key resource under Alternative A. Furthermore, there would be no requisite plan of operations for surface-disturbing activities, as are currently required for ACECs designated with Dall sheep as a key resource.

#### *Impacts under Alternative D*

Impacts under Alternative D would be the same as those described under Alternative C2.

#### **Subsistence: Impacts from WSRs Management Decisions**

WSR corridors provide habitat for subsistence resources and users who use stream and riparian habitats. Management to preserve the outstanding natural, cultural, and recreational values in a free-flowing condition promotes fish and wildlife habitat health in these areas; however, recreationists in these areas may disturb fish, wildlife, and vegetation and therefore disturb subsistence resources and users.

#### *Impacts under Alternative A (No Action)*

Under Alternative A, 603 miles of 11 different rivers would be managed as eligible for inclusion in the National Wild and Scenic Rivers System. Seven of these rivers overlap community subsistence use areas, providing 83,000 acres (2 percent) of management protections. Rivers are an important source for multiple subsistence resources and valuable transportation networks for inter-village travel. Interim protective management guidelines for all eligible segments (pending congressional action) include a prohibition of actions that would result in the following:

- Alter the free-flowing nature of the eligible segments through impoundments
- Construct diversions that have the effect of impounding water, channeling, or riprapping
- Have an adverse impact on an eligible segment's identified outstandingly remarkable values (ORVs)
- Modify an eligible segment or its corridor to the degree that its eligibility or preliminary classification would be affected
- Diminish water quality to the point that the water would no longer support the ORVs

Identified ORVs would be enhanced to the extent practicable. Management of these rivers would likely improve habitat conditions for subsistence species, such as fish, beaver, moose, and waterfowl, by providing additional protections from surface-disturbing activities and potential pollutants.

#### *Impacts Common to All Action Alternatives*

There are no impacts common to all action alternatives. The nature and type of impacts from WSR management actions on subsistence resources would vary, based on the level of proposed management of identified rivers.

#### *Impacts under Alternative B*

Under Alternative B, 603 miles of 11 different rivers would be managed as suitable for inclusion in the National Wild and Scenic Rivers System. Seven of these rivers overlap community subsistence use areas,

providing 83,000 acres (2 percent) of management protections. Alternative B would include the same management as described under Alternative A, with additional protections of the rivers through visual resource management classes, ROW avoidance, NSO for fluid mineral leasing and development (wild segments), and controlled surface use for fluid mineral leasing and development (recreation segments). Wild segments would be closed to mineral material disposal and nonenergy solid mineral leasing. Additional protections include closing wild segments to commercial timber harvest and prohibiting non-subsistence collection of live vegetation, acquiring land from willing sellers to maintain ORVs and free-flowing nature, and recommending that the Secretary of the Interior withdraw wild segments from locatable mineral entry.

Since Alternative B provides additional protections for the 603 miles of rivers recommended as suitable, Alternative B would have a greater potential to reduce impacts on wildlife from resource uses in these areas, compared with Alternative A.

Additionally, this alternative's protective management would limit development within the segments. This would reduce the associated disturbance and habitat degradation. These protections would benefit subsistence resources in these segments, such as fish, beaver, moose, and waterfowl.

#### *Impacts under Alternative C1*

Under Alternative C1, all seven eligible rivers that overlap community subsistence use areas in the decision area would be determined as not suitable for inclusion in the National Wild and Scenic Rivers System; they would be released from interim management protections afforded eligible segments. Management direction that does not preserve these river segments could cause adverse impacts on subsistence resources. This would be the result of habitat degradation and subsistence resources displacement from surface-disturbing activities.

#### *Impacts under Alternative C2 (Preferred Alternative)*

Impacts under Alternative C2 would be the same as those under Alternative C1.

#### *Impacts under Alternative D*

Impacts under Alternative D would be the same as those under Alternative C1.

#### **Cumulative Impacts**

Past and present land uses in the planning area can all affect subsistence. Examples of these uses are resource exploration and extraction, community infrastructure, military activities, research and monitoring, and recreation (including non-subsistence hunting and fishing). Impacts from such actions include ROW establishment, lease sales, and surface occupancy.

Land use for all lands in the planning area, including lands not managed by the BLM, has influenced the current condition of subsistence resources in the planning area. Past and present recreation, sport hunting and fishing, and traditional subsistence practices have affected the availability and abundance of subsistence resources; these activities are expected to continue.

Land use for recreation, subsistence, and tourism is expected to increase, as local, state, and national populations grow and the rate of international visitors to the Arctic increases. Current subsistence harvest levels of wildlife, fish, and other resources in the planning area are sustainable; however, the subsistence needs of rural residents in the planning area are not being met, particularly for salmon, moose, and sheep. Competition for resources is expected to continue between subsistence and other user groups in the planning area.

The potential development of transportation corridors and trails, mineral exploration and development on State and Native lands, and the potential for increased recreational activities in or next to the planning area, would all contribute to cumulative impacts on subsistence resources (Magdanz et al. 2016). Depending on the location, extent, intensity, and duration of development, these impacts could include the following:

- Increased competition for subsistence resources
- Habitat degradation or fragmentation
- Increased disturbance to wildlife through increased access into wildlife habitats
- Unauthorized or uncontrolled OHV use
- Increased potential for road kills
- Possible alteration of behavior or movement patterns and seasonal habitat use of wildlife

Impacts on subsistence may result in any reasonably foreseeable or significant restriction of subsistence use for some rural communities in the planning area. This would be the result if significant activities occur with utility and transportation corridor development, mineral exploration, increased recreation in or next to the planning area, or unforeseen events in climate change that affect resource abundance, change harvest patterns, limit access to resources, or increase competition.

Under all alternatives, large ROW projects would affect travel patterns and uses for subsistence community residents who use these areas (Magdanz et al. 2016). The development of ancillary facilities and temporary access roads may result in unintended development along this corridor, which affects subsistence gathering regions. Designations that protect aquatic and terrestrial habitats, such as ACECs, WSRs, and areas managed to preserve wilderness characteristics, would reduce the risk to sensitive areas important for subsistence.

Impacts on subsistence resource availability, abundance, and access would likely result if smaller communities were linked to new transportation corridors, as non-resident and non-local hunters would be able to access the area with little effort. This may also increase tourist traffic and recreation in the area, resulting in additional impacts on wildlife.

The communities of Nuiqsut and Anaktuvuk Pass may experience compounded significant restrictions of subsistence use. This would be due to a potential decrease in caribou availability associated with the development of the Alaska Liquified Natural Gas Project (FERC 2020). Continued expansion of industrial activity on the North Slope could displace caribou of Western Arctic Herd from their normal migratory routes, could increase the area considered to be undesirable by subsistence users, and could cause subsistence users to travel farther to harvest subsistence foods.

The communities of Alatna, Alakaket, Anaktuvuk Pass, Bettles, Coldfoot, and Wiseman may experience compounded significant restrictions of subsistence use. This would be due to a potential abundance and availability of caribou, fish, and vegetation associated with the development of the Ambler Road (BLM 2020). Direct mortality of caribou from the Western Arctic Herd could occur along this route from vehicle-caribou strikes. Caribou may also see new linear features across the landscape as barriers that could shift their behaviors or migratory patterns, potentially affecting herd population and resource availability. Road traffic and construction could also cause behavioral and migratory changes in caribou, which, in turn, could impact subsistence hunting success.

Impacts on subsistence access would occur in the vicinity of the road corridor, particularly when usable hunting areas have been removed. Because subsistence activities occur year-round, and local subsistence users would be prohibited from using the road, it is likely that subsistence users would experience access-related

impacts. Construction of Ambler Road would require multiple bridges, culverts, and bank modifications that could indirectly impact fish species through loss of habitat and lower spawning success. Lower abundance may lead to lower availability of both salmon and non-salmon fish in subsistence use areas. Suitable vegetation harvest areas would also be removed from the Ambler Road corridor and access to the historical use area would be hindered. Vegetation harvesting is a high value resource to most communities in the planning area, which would increase the intensity of this reduction in the availability of resources.

The construction of the utility and transportation corridors and the associated increase in fuel and facilities needs could also result in a population increase in adjacent communities when access is increased. Once established, new residents would be eligible to hunt and fish under Federal Subsistence Regulations, which would likely increase the pressure on the area's subsistence resources.

Future changes in demand and unpredictable fluctuations in populations or distribution of subsistence resources make it difficult to predict the sustainability of subsistence opportunities in many areas. Random events, such as severe winters and climate shifts, and changes in demand for allowable land uses, such as increased gold mining spurred by favorable gold prices, can affect resource distribution and availability.

The price of fuel affects the level of participation in subsistence activities, as gas prices influence how far rural residents can afford to travel to harvest resources; however, it also increases the cost of bringing groceries and other resources to remote communities. Rural residents may concentrate pressure in areas to reduce fuel usage, while continuing to offset the cost of importing groceries to the communities, especially those not connected by road. Fuel prices can be several dollars per gallon higher in rural areas than in Fairbanks and along major highways.

In comparison to the other alternatives, Alternative B would provide most protection for subsistence resources indirectly affected by present and future activities in the planning area; Alternative D would provide the least protection.

The impacts of climate change could influence the rate or degree of the potential cumulative impacts. Management actions that relate to subsistence would not counteract climate change impacts on subsistence resources. Changes in snowfall patterns and frequency, forest type, and overall shifting cliomes<sup>8</sup> would likely drive changes in subsistence resource distribution related to fish, wildlife, and vegetation, including timber. Such changes may increase economic insecurity of communities in the planning area that rely on subsistence incomes. This would be due to increased time and fuel costs to locate resources or to cultivate new methods to secure subsistence livelihoods closer to their villages. Climate-driven changes in access, when combined with restrictions on OHV travel, such as limiting to existing routes, timing restrictions, and no summer OHV use, may adversely affect subsistence users.

When the impacts of the alternatives are considered in context with the cumulative impacts of climate change, measures to reduce direct and indirect stressors on ecological systems that support important subsistence species may lead to a higher level of ecological resilience in responding to changing climate. Decisions that mitigate erosion, soil compaction, and habitat fragmentation may increase ecological resilience to climate change. This could lessen the risk to households and communities that rely on subsistence resources.

The results of the cumulative impacts analysis for subsistence are presented in **Table Q-4**.

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<sup>8</sup> Cliomes are broadly defined regions of temperature and precipitation patterns that reflect assemblies of species and vegetation communities (biomes) that occur or might be expected to occur based on links with climate conditions.



**Table Q-4  
Cumulative Impacts Analysis for Subsistence**

Trends and Forecasts of Subsistence in Consideration of Past, Present, and Reasonably Foreseeable Future Actions (Alternative A)	Trends and Forecasts of Subsistence in Consideration of Past, Present, and Reasonably Foreseeable Future Actions (Alternative B)	Trends and Forecasts of Subsistence in Consideration of Past, Present, and Reasonably Foreseeable Future Actions (Alternative C1)	Trends and Forecasts of Subsistence in Consideration of Past, Present, and Reasonably Foreseeable Future Actions (Alternative C2)	Trends and Forecasts of Subsistence in Consideration of Past, Present, and Reasonably Foreseeable Future Actions (Alternative D)
<p>Current subsistence harvest levels of wildlife, fish, and other resources in the planning area are sustainable; however, the subsistence needs of rural residents in the planning area are not being met, particularly for salmon, moose, and sheep. Past and present activities have disturbed and displaced subsistence resources and activities, but harvest levels and practices would likely continue.</p> <p><b>Trend:</b> User conflict would continue to be a problem if non-subsistence sheep hunting increases. There would be no change overall for subsistence resource but degrading for some species and improving for others.</p>	<p>With the trends of continued natural resource development and increased casual and recreation use in the planning area, subsistence resources would continue to degrade, and subsistence users could face increased competition for resources.</p> <p><b>Trend:</b> Improving. Implementing Alternative B would result in an improved trend for most fish and wildlife that are subsistence resources. For species with habitat or populations that are degrading, this alternative would lessen the rate of degradation or stabilize or counter the existing trend. For species with habitat or populations that are improving, improvement would continue at a similar or greater rate.</p>	<p>With the trends of continued natural resource development and increased casual and recreation use in the planning area, subsistence resources would continue to degrade, and subsistence users could face increased competition for resources.</p> <p><b>Trend:</b> Varies between species important to subsistence. Implementing Alternative C1 would result in an improved trend for most fish and wildlife that are subsistence resources. For species with habitat or populations that are degrading, the degradation may continue, but at a lesser rate and could be stabilized. For species with habitat or populations that are improving, improvement would continue at a similar or greater rate.</p>	<p>With the trends of continued natural resource development and increased casual and recreation use in the planning area, subsistence resources would continue to degrade, and subsistence users could face increased competition for resources.</p> <p><b>Trend:</b> Degrading. Implementing Alternative C2 would result in a degrading trend for most subsistence resources. For species with habitat or populations that are degrading, the degradation may continue, or it may worsen. For species with habitat or populations that are improving, improvement may cease.</p>	<p>With the trends of continued natural resource development and increased casual and recreation use in the planning area, subsistence resources would continue to degrade, and subsistence users could face increased competition for resources.</p> <p><b>Trend:</b> Degrading. Implementing Alternative D would result in a degrading trend for most subsistence resources. For species with habitat or populations that are degrading, the degradation may continue or worsen. For species with habitat or populations that are improving, improvement may cease.</p>

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# Appendix R

ANILCA Section 810 Preliminary Evaluation

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

AAC	Alaska Administrative Code
ACEC	areas of critical environmental concern
ANILCA	Alaska National Interest Lands Conservation Act
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CYRMP	Central Yukon Resource Management Plan
DEIS	draft environmental impact statement
DHCMA	Dalton Highway Corridor Management Area
EIS	environmental impact statement
EO	Executive Order
OHV	off-highway vehicle
PLO	Public Land Order
RNA	research natural area
ROW	right-of-way
SRMA	special recreation management area



# Appendix R. ANILCA Section 810 Preliminary Evaluation

## R.1 SUBSISTENCE EVALUATION FACTORS

The Alaska National Interest Lands Conservation Act (ANILCA) Section 810(a), 16 United States Code Section 3120(a), requires that an evaluation of subsistence uses and needs be completed for any federal determination to “withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands.” As such, an evaluation of potential impacts on subsistence under ANILCA Section 810(a) must be completed for the Central Yukon Resource Management Plan Draft Environmental Impact Statement (CYRMP DEIS). ANILCA requires that this evaluation include findings on the following:

- The effect of use, occupancy, or disposition of public lands on subsistence uses and needs
- The availability of other lands for the purposes sought to be achieved
- Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes

Per Bureau of Land Management (BLM) Instruction Memorandum No. AK-2011-008 (BLM 2011), three factors are considered when determining if a significant restriction of subsistence uses and needs may result from the proposed action, alternatives, or in the cumulative case, as follows:

- **Abundance:** The reduction in the availability of subsistence resources caused by a decline in the population or abundance of harvestable resources. This may include fish, wildlife, edible plants, house logs, firewood or drinking water, for example. Forces that might cause a reduction in abundance include adverse impacts on habitat, direct impacts on the resource, increased harvest, and increased competition from non-subsistence users.
- **Availability:** Reductions in the availability of resources used for subsistence purposes caused by alteration of their distribution, migration patterns, or location, and
- **Access:** Limitations on access to subsistence resources, including from increased competition for the resources, including physical and legal barriers.

ANILCA Section 810 also requires that cumulative impacts be analyzed. This approach helps the reader separate subsistence restrictions that could potentially be caused by activities proposed under the five alternatives from those that could potentially be caused by past, present, and future activities that have occurred or could occur in the surrounding area.

An alternative would significantly restrict subsistence uses if, after consideration of stipulations or protection measures (e.g. Standard Operating Procedures), it can be expected to result in a substantial reduction in the opportunity to continue subsistence use of resources (BLM 2011). Substantial reductions are generally caused by large reductions in resource abundance, a major redistribution of resources, extensive interference with access, or major increases in the use of those resources by non-subsistence users.

If the analysis determines that the proposed action, alternatives, or the cumulative case may significantly restrict subsistence uses, the BLM must notify the State of Alaska, Fish and Game Advisory Committees,

and Subsistence Regional Advisory Councils and must conduct ANILCA Section 810 hearings in potentially affected communities.

It is possible that the finding may be revised to “will not significantly restrict subsistence uses” based on changes to alternatives, new information, or new mitigation measures resulting from the hearing(s). If the significant restriction remains, the BLM may prohibit the action or finalize the Evaluation by making the following determinations, as required by ANILCA Section 810(a)(3):

- A significant restriction of subsistence uses is necessary, consistent with sound management principles for the use of public lands,
- The proposed activity will involve the minimal amount of public land necessary to accomplish the purpose of the use, occupancy, or other disposition, and,
- Reasonable steps will be taken to minimize adverse effects upon subsistence uses and resources resulting from such actions.

The BLM can then authorize use of the public lands.

### ***Environmental Justice***

In addition to ANILCA, Executive Order (EO) 12898, Environmental Justice for Low Income and Minority Populations, calls for an analysis of the effects of federal actions on minority populations with regard to subsistence. Environmental Justice is defined as follows:

*The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development of environmental laws, regulations, and policies (U.S. Environmental Protection Agency).*

Fair treatment is defined as follows:

*The principle that no group of people, including racial, ethnic, or socioeconomic groups should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and Tribal programs and policies (U.S. Environmental Protection Agency).*

EO 12898 Section 4-4, Subsistence Consumption of Fish and Wildlife, requires federal agencies to collect, maintain, and analyze information on the consumption patterns of populations that principally rely on fish and wildlife for subsistence. The EO also requires federal agencies to communicate to the public any risks associated with the consumption patterns from proposed activities. The following were reviewed and comply with EO 12898:

- Description of subsistence use in CYRMP DEIS Chapter 3, Affected Environment and Environmental Consequences, and Appendix Q, Subsistence Uses and Resources
- Analyses of the impacts of Alternatives A, B, C1, C2, D, and the Cumulative Case in CYRMP DEIS Chapter 3, Affected Environment and Environmental Consequences

## **R.2 ANILCA SECTION 810(A) EVALUATIONS AND FINDINGS FOR ALL ALTERNATIVES AND THE CUMULATIVE CASE**

This evaluation relies on the information contained in the CYRMP DEIS. **Appendix Q** provides information on areas and resources important for subsistence and describes individual communities’ degree of dependence on specific fish and wildlife populations. **Chapter 3** analyzes impacts on subsistence

resources and resource use. Information in these sections is used to determine whether each alternative and the cumulative case would cause a significant restriction to subsistence uses.

The CYRMP DEIS does not authorize specific actions or projects, nor are specific details regarding future proposals for use of public lands in the planning area known at this time. As a result, most impacts are described qualitatively in this evaluation. Future authorizations for use of public lands in the planning area would be subject to site- or activity-specific ANILCA Section 810 evaluations, as appropriate, which would identify and address impacts on subsistence in detail.

The preliminary evaluation discussion is focused on the communities within the planning area because they have the most potential to be directly and indirectly impacted by land use allocations. The cumulative analysis includes consideration of past, present, and reasonably foreseeable future authorized uses both within and around the planning area, and considers impacts on qualified subsistence users residing in northern Alaska.

## **R.2.1 Evaluation and Finding for Alternative A: No Action**

### ***R.2.1.1 Evaluation of the effect of use, occupancy, or disposition on subsistence uses and needs***

Management decisions associated with the following resources or designations do not impact or negligibly impact subsistence, and are not discussed further in the preliminary evaluation:

- Air quality
- Paleontological resources
- Visual resources
- Hazardous materials and health and human safety
- Special status species
- Soils
- Forestry

Management decisions associated with the following resources or designations positively impact subsistence:

- Water, fish, and riparian-wetland vegetation
- Vegetation
- Wildlife
- Lands with wilderness characteristics
- Cultural resources
- Wild and Scenic Rivers

#### ***Effects from energy and mineral management decisions***

Fluid mineral potential in most of the planning area is very low to low and, as such, potential impacts are not analyzed in detail in the environmental impact statement (EIS). Development of nonenergy solid leasable resources is not anticipated in the planning area and is also not analyzed in detail in the EIS. As a result, neither will impact the abundance, availability, or access to subsistence resources across all alternatives.

Under Alternative A, 1,280,000 acres (30 percent) of community subsistence use areas in the planning area would continue to be withdrawn from locatable minerals including metalliferous minerals. A total of 462,000 acres (10 percent) of subsistence use areas would continue to be open to location of metalliferous minerals and closed to location of non-metalliferous minerals. A total of 4,399,300 acres (99 percent) of subsistence use areas in the planning area would continue to be open to mineral material sales, and 7,000 acres (< 1 percent) would continue to be closed to mineral material sales (see **Chapter 3, Section 3.5.2**).

Locatable and salable minerals development can affect fish and wildlife that are important to subsistence through loss, fragmentation, and degradation of habitat, and displacement of species. Human activity at developed sites can also discourage subsistence users from harvesting at these locations and potentially limit access to subsistence resources. High and moderate potential mining areas and waterbodies immediately downstream of mining activity are areas where localized impacts on fish and wildlife abundance and availability are most likely to occur.

To mitigate these impacts, locatable mineral and mineral material exploration and development include mining and reclamation plans that are expected to comply with laws, regulations, and BLM policy with the intent to maintain functionality of nearby soils, vegetation, wetlands, riparian areas, wildlife habitat and fisheries. Additionally, mitigation measures and best management practices designed to protect fish, wildlife and plant resources that are incorporated into current plans and permits are expected to reduce long term impacts on subsistence resources by minimizing development in key habitats and expediting habitat reclamation.

Impacts on the availability and abundance of fish and wildlife; including large mammals, furbearers, small game, and waterfowl; are expected to be minor. Given the small footprint of mining projects, local displacement of resources may occur, but subsistence users harvest these resources over broad areas and/or at a distance downstream whereby harvest is not anticipated to be adversely impacted. Access to important subsistence use areas is not blocked or prohibited at authorized mining operations; therefore, impacts on access would be negligible.

#### *Effects from lands, realty, and utility corridor management decisions*

Public Land Order (PLO) 5150 withdrawal would remain in place under Alternative A. The Dalton Highway inner and outer corridor lands would continue to be managed as unencumbered federal land in the context of federal subsistence access. Access to traditional hunting, fishing, and gathering areas would be maintained.

Under Alternative A, 4,406,000 acres in subsistence use areas are open to right-of-way (ROW) location. Development of infrastructure within the Ambler and Dalton utility ROWs is foreseeable within the life of the plan for all alternatives. ROW development could cause habitat degradation and fragmentation and increase competition for resources if those ROWs were used to build structures, utilities, or transportation corridors. This may impact moose, caribou, and fish resources as these resources are typically the most heavily harvested resources in the planning area communities; however, impacts on the abundance or availability of fish, wildlife, or other subsistence resources on BLM-managed lands from ROW development on BLM-managed lands in the planning areas would be negligible. Existing lands, realty, and utility corridor management does not impact the abundance or availability of subsistence resources.

#### *Effects from recreation and visitor services management*

Under current management, most recreation and accompanying visitor services in the planning area occur along the Dalton Highway. There is dispersed recreational activity outside of the Dalton Highway area.

Examples include primitive recreational opportunities undertaken by recreational users engaged in backcountry trips and commercially guided hunting.

Wildlife, fish, and other resources that are important to subsistence users of Wiseman and Coldfoot have the potential to be affected by use of the Dalton Highway area by recreational users and visitors. Currently, the frequency and intensity of use in the Dalton Highway area by recreational users is seasonal and localized. As a result, impacts on the abundance and availability of wildlife, aquatic and other subsistence resources due to competition with recreation users is minor for residents of these two communities. Impacts on subsistence resources and availability outside of the Dalton Highway area are negligible.

Access to important subsistence use areas is not impeded or prohibited under current management. Therefore, impacts on access would be negligible.

*Effects from travel and transportation management*

Travel and transportation management would not affect the abundance or availability of fish, wildlife, or other subsistence resources under Alternative A.

Seasonal or summer closures are not proposed under Alternative A (see **Map 2.42**, **Map 2.43**, and **Map 2.44**, **Appendix A**); therefore, travel and transportation management would not affect access to subsistence resources under Alternative A.

*Effects from Areas of Critical Environmental Concern management decisions*

Under Alternative A, 777,000 acres (18 percent) of community subsistence areas would be managed as areas of critical environmental concern (ACECs) or research natural areas (RNAs).

Existing ACECs and RNAs with Habitat Management Plans would protect subsistence fish and wildlife resources through protection of terrestrial, vegetation, water, floodplains, wetlands, and riparian habitat. These plans provide specific program actions, stipulations and monitoring guidance that maintain the integrity of the environment while allowing public use. All alternatives include the requirement that surface-disturbing activities associated with mineral exploration and development in ACECs be conducted under an approved plan of operations (43 Code of Federal Regulations [CFR], Part 3809). This requirement allows additional assessment of potential impacts on resources, some of which may be harvested by subsistence users.

The abundance or availability of subsistence resources would not be impacted under current ACEC management. Similarly, access to subsistence resources would not be impacted by ACEC management decisions.

**R.2.1.2 Evaluation of the availability of other lands for the purpose sought to be achieved**

Consideration of other lands would not meet the purpose and need of this resource management planning process. Other BLM-managed lands in Alaska are being managed under existing resource management plans or are currently undergoing new planning processes. BLM does not have the authority to make or implement land management planning decisions on federal land managed by other agencies, State land, Native corporation land, Native allotments, or private land.

**R.2.1.3 Evaluation of other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes**

Alternatives that would eliminate the use, occupancy, or disposition of public lands needed for subsistence would not allow or permit activities that conflict with subsistence. This would conflict with the Federal Land Policy and Management Act multiple use mandate (U.S. Department of the Interior 2001).

None of the action alternatives presented and analyzed within the CYRMP DEIS would reduce or eliminate the use of public lands needed for subsistence. The action alternatives were created to represent a wide range of land use decisions that could occur on BLM-managed lands, along with management actions that serve to protect specific resource values.

Additional alternatives considered but eliminated from detailed analysis are discussed in **Section 2.3**. These alternatives would reduce or eliminate the use of public lands needed for subsistence by 1) retaining ANILCA 17(d)(1) withdrawals, 2) recommending wilderness designation by Congress, and 3) maintaining wilderness characteristics in the Utility Corridor. Retaining ANILCA 17(d)(1) withdrawals would, in some cases, reduce the use of lands (for mining or mineral leasing) used for subsistence. The purpose of the 17(d)(1) withdrawals has been fulfilled and is thus not considered within the range of alternatives. Recommending wilderness designation by Congress would reduce the use of lands used for subsistence, but it is beyond the scope of the resource management plan. Maintaining wilderness characteristics in the corridor would reduce the use of lands used for subsistence, but maintaining or protecting wilderness characteristics in this area is not commensurate with PLO 5150.

**R.2.1.4 Findings**

This evaluation concludes that Alternative A will not result in a significant restriction in subsistence uses. A positive determination pursuant to ANILCA Section 810 is not required.

**R.2.2 Evaluation and Finding for Alternative B**

**R.2.2.1 Evaluation of the effect of use, occupancy, or disposition on subsistence uses and needs**

*Effects from energy and mineral management decisions*

Under Alternative B, 3,686,000 acres (84 percent) of subsistence use areas would be open to locatable mineral entry. 2,697,000 acres (61 percent) of subsistence use areas in the planning area would be open to mineral material sales. The geographic extent of the areas recommended for withdrawal from locatable mineral entry and proposed mineral material sales closure are the largest of any of the alternatives. There are areas of medium locatable mineral potential north of Tanana open to mineral entry under this alternative, which has the potential to impact subsistence uses and resources if developed.

Management actions prescribed under this alternative emphasize protection for subsistence access and resources. The combination of closures and protection of resources reduce the potential for impacts on subsistence uses and resources over a larger geographic extent than current management and other action alternatives. As a result, impacts on the availability and abundance of fish and wildlife, including large mammals, furbearers, small game, and waterfowl, are expected to be less than those described in Alternative A. Impacts would be minor. Access to important subsistence use areas is not blocked or prohibited at authorized mining operations; therefore, impacts on access would be negligible.

*Effects from lands, realty, and utility corridor management decisions*

Under Alternative B the BLM would recommend the partial revocation of PLO 5150, which would include only lands within the outer corridor (see **Appendix Q, Map Q-2**). If the recommendations for revocation are acted on, top-filings by the State of Alaska would become effective selections, resulting in a total of 463,000 acres (11 percent) of state-selected lands in the planning area. Communities potentially impacted by these selections are Allakaket, Anaktuvuk Pass, Bettles, Coldfoot, Evansville, Rampart, Stevens Village, and Wiseman. The revocation of PLO 5150 lands in the outer corridor would impact residents of these communities in three ways, as follows:

- Qualified subsistence users would no longer be able to hunt and fish under federal regulations in the outer corridor. They would be subject to seasons, bag limits, and harvest set under State hunting and fishing regulations.
- The firearm use exemption for qualified federal subsistence users under 50 CFR 100.26(n)(20)(ii)(c)<sup>1</sup> does not apply on State-selected lands. Subsistence users would be prohibited from using a firearm for hunting within 5 miles of the Dalton Highway under State law.<sup>2</sup>
- Subsistence users would also be subject to restrictions on use of off-highway vehicles (OHVs) within 5 miles of the Dalton Highway<sup>3</sup> and a State regulatory prohibition on the use of certain vehicles for transporting hunters, game, or gear.<sup>4</sup>

Revocation of PLO 5150 in the outer corridor would result in no or minimal impacts on residents of Anaktuvuk Pass, Allakaket, Alatna, Bettles, and Evansville. Residents of Anaktuvuk Pass do not subsist on lands in the outer corridor and would therefore not be impacted by the revocation under Alternative B. Small portions (< 5 percent) of the Allakaket, Alatna, Bettles, and Evansville subsistence use areas overlap the outer corridor, but the core subsistence use areas for these communities would not be impacted by revocation of PLO 5150 under Alternative B and impacts on these communities' access to subsistence resources would be minimal.

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<sup>1</sup> You may not use firearms, snowmachines, licensed highway vehicles or motorized vehicles, except aircraft and boats, in the Dalton Highway Corridor Management Area (DHCMA), which consists of those portions of Units 20, 24, 25, and 26 extending 5 miles from each side of the Dalton Highway from the Yukon River to milepost 300 of the Dalton Highway, except as follows: Residents living within the DHCMA may use snowmachines only for the subsistence taking of wildlife. You may use licensed highway vehicles only on designated roads within the DHCMA. The residents of Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, Stevens Village, and residents living within the Corridor may use firearms within the Corridor only for subsistence taking of wildlife.

<sup>2</sup> Under Alaska statute, “[h]unting with firearms is prohibited north of the Yukon River in the area within five miles on either side of the [Dalton Highway] between the Yukon River and the Arctic Ocean” (Alaska Stat. Ann. § 16.05.789). The state regulatory code includes a similar prohibition that the DHCMA . . . “[is] closed to hunting; however, big game, small game, and fur animals may be taken in the area by bow and arrow only; (C) no motorized vehicle may be used to transport hunters, hunting gear, or parts of game within the DHCMA, except (i) licensed highway vehicles [may be used on designated roads]” (5 Alaska Administrative Code (AAC) 92.530(7)(B)).

<sup>3</sup> Off-road vehicles are prohibited on land within five miles of the right-of-way of the highway; however, this prohibition does not apply to (1) off-road vehicles necessary for oil and gas exploration, production, or transportation, (2) a person who holds a mining claim . . . ; or (3) the use of a snow machine to travel across the highway corridor from land outside the corridor to access land outside the other side of the corridor. . . (Alaska Stat. Ann. § 19.40.210).

<sup>4</sup> Within the DHCMA . . . no motorized vehicle may be used to transport hunters, hunting gear, or parts of game within the DHCMA, except (i) licensed highway vehicles [may be used on designated roads]” (5 AAC 92.530(7)(C)).

Revocation of PLO 5150 in the outer corridor could result in minor impacts on residents of Stevens Village. The community's moose and furbearer subsistence use areas overlap the outer corridor (Brown et al. 2016). Less than 55 percent of the moose subsistence use area overlaps the outer corridor, and the core moose hunting area, as well as river-accessible areas, would not be impacted by revocation of PLO 5150 in the outer corridor. Impacts on Stevens Village residents' ability to harvest moose would likely be minor. A portion of Stevens Village's furbearer subsistence use area overlaps the outer corridor between the Yukon and Ray rivers and in the vicinity of the Kanuti River. Revocation of PLO 5150 in the outer corridor would not impact residents' access to furbearers because 1) use of snowmachines under 50 CFR 100.26(n)(20)(ii)(c) does not apply to residents of Stevens Village and therefore their authorized means of access would not change, and 2) harvest of furbearer species with a rifle is permitted under State trapping regulations, and therefore their authorized means of take would not change.

Revocation of PLO 5150 in the outer corridor would result in major impacts on residents of Coldfoot and Wiseman. Harvest of at least a portion of all resources occurs within the outer corridor, but it comprises a large percentage of the areas used to harvest moose, sheep, upland birds, furbearers, snowshoe hare, berries, and wood. Most of these resources are harvested along the Wiseman, Nolan, and Hammond roads. Wiseman is a Gates of the Arctic National Park and Preserve Resident Zone Community. Their primary means of accessing National Park and Preserve lands is via the Wiseman Creek and Hammond River drainages (BLM 2020). Traditional means of accessing, harvesting, and transporting these resources would remain intact in the inner corridor, but the following impacts would significantly impact hunting, fishing, and gathering practices:

- Coldfoot and Wiseman residents would not be able to use snowmachines along the majority of the Nolan Road, in the Wiseman Creek and Hammond River drainages, or within other overland areas adjacent to the corridor (see **Appendix Q, Map Q-2**). This would prevent them from accessing traplines, important hunting and fishing areas, and collecting firewood and berries both within the outer corridor and, for Wiseman, in traditionally used areas in Gates of the Arctic National Park and Preserve (BLM 2020). Such a limitation would constitute extensive interference with access.
- Coldfoot and Wiseman residents would not be able to use highway vehicles on the Nolan, Wiseman, or other roads to access ("transport hunters, game, or gear") traditional moose, sheep, and other subsistence use areas because doing so would violate 5 AAC 92.530. Residents would not be able to access subsistence resources or transport harvested resources from the Dalton Highway to their homes in Wiseman. Such a limitation would constitute extensive interference with access.
- State of Alaska Statute Sec. 16.05.789 would prohibit residents from using firearms within 5 miles of the Dalton Highway within the outer corridor. As a result, their ability to harvest moose, sheep, and other big game would be substantially inhibited. Such a limitation would constitute extensive interference with access.
- Coldfoot and Wiseman residents would not be able to hunt or fish under federal regulations on State-selected lands in the outer corridor. Though species-specific regulations vary, bag limits, legal requirements, and seasons are often more liberal under federal regulations. Hunting or fishing under State regulations may reduce residents' ability to harvest enough subsistence resources. Such a limitation could constitute extensive interference with availability.

ROW exclusion (692,000 acres) and avoidance (1,991,000 acres) designated in subsistence use areas under Alternative B would minimize habitat fragmentation and degradation in these areas. Alternative B would include the Ambler, Dalton utility, and Umiat utility and transportation corridors. Designating these



administrative corridors allows the BLM to collocate ROW, access, and utility infrastructure. This would reduce dispersed impacts from multiple transportation and utility corridors and reduce overall surface disturbance. The 1,723,000 acres open to ROW location in Alternative B could cause habitat degradation and fragmentation and increase competition for resources if those ROWs were used to build structures, utilities, or transportation corridors. This may impact moose, caribou, and fish resources as these resources are typically the most heavily harvested resources in the planning area communities; however, impacts on the abundance or availability of fish, wildlife, or other subsistence resources on BLM-managed lands from ROW development on BLM-managed lands in the planning area would be negligible. Existing lands, realty, and utility corridor management does not impact the abundance or availability of subsistence resources.

#### *Effects from recreation and visitor services management*

Alternative B would increase the targeted recreation opportunities available in the planning area and provide more managed recreational variety relative to Alternative A. As with Alternative A, most recreation and accompanying visitor services in the planning area would be focused along the Dalton Highway. In addition, 463,000 acres (10 percent) of the subsistence use areas would be managed as the Dalton Corridor Backcountry Conservation Area. This area, though potentially attracting more recreational users, would be managed to retain resource habitat in its current state.

Impacts on subsistence resources would be similar to Alternative A. Impacts of recreation and visitor services management on abundance or availability of fish, wildlife, or other subsistence resources would be minor under Alternative B. Access to important subsistence use areas would not be impeded or prohibited by recreation and visitor services management under Alternative B.

#### *Effects from travel and transportation management*

Travel and transportation management would not affect the abundance or availability of fish, wildlife, or other subsistence resources under Alternative B.

Access to subsistence resources could be impacted by OHV travel restrictions under Alternative B. Seasonal limitations (May 1–June 30) and summer closures would prohibit the use of OHVs in the areas outlined in **Maps 2.45-2.47 (Appendix A)** during these time frames. Legal restrictions would limit the ability to access portions of these subsistence use areas during seasonal time frames (summer and May 1–June 30).

Summer and seasonal closures would constitute 14 and 15 percent of subsistence use areas, respectively. These include subsistence use areas for the communities of Tanana, Wiseman and Coldfoot, Wiseman, Venetie, Hughes, Huslia, and Ruby. Access to these areas is predominately by river during summer or via snowmachine in the winter (Brown et al. 2016, Holen et al. 2012). Overland access via OHV in summer and fall is uncommon and access to most these communities' subsistence resources would be maintained.

#### *Effects from ACEC management decisions*

Under Alternative B, 1,502,000 acres (34 percent) of community subsistence areas would be managed as ACECs or RNAs. This alternative provides the largest geographic area of ACECs. Protection of habitat would benefit fish, wildlife and vegetation species harvested by subsistence users to a broader extent than Alternative A. For example, OHV use would be prohibited in the Upper Kanuti River ACEC from May 1 to June 30 to avoid disturbance during the caribou calving period. Conversely, access to subsistence resources could be affected by seasonal limitations on OHV travel under management actions formulated for specific ACECs under Alternative B. Overall, OHV restrictions are expected to have a minor effect on subsistence. In addition, harvest of timber and woody vegetation would be prohibited in the Kanuti Hot Springs and the

Sukakpak/Snowden ACECs which could potentially impact subsistence users. These sites are not important subsistence vegetation harvest areas so the impact would be negligible.

**R.2.2.2 Evaluation of the availability of other lands for the purpose sought to be achieved**

The evaluation of the availability of other lands is identical to that described under Alternative A (see R.2.1.2 above).

**R.2.2.3 Evaluation of other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes**

Alternative A would reduce the use of public lands needed for subsistence. PLO 5150 would not be lifted under Alternative A, thereby maintaining the disposition of public lands needed for subsistence purposes.

**R.2.2.4 Findings**

Alternative B will not significantly restrict subsistence uses for the communities of Alatna, Allakaket, Anaktuvuk Pass, Arctic Village, Bettles, Evansville, Galena, Hughes, Huslia, Kaltag, Koyukuk, Lake Minchumina, Manley Hot Springs, Minto, Nenana, Nuiqsut, Nulato, Rampart, Ruby, Stevens Village, Tanana, and Venetie.

Alternative B may significantly restrict subsistence uses for the communities of Coldfoot and Wiseman due to potential reductions in the availability of and access to large mammals, fish, furbearers, firewood, and berries. A positive determination pursuant to ANILCA Section 810 is required.

**R.2.3 Evaluation and Finding for Alternative C1**

**R.2.3.1 Evaluation of the effect of use, occupancy, or disposition on subsistence uses and needs**

*Effects from energy and mineral management decisions*

Under this alternative, 4,200,000 acres (95percent) of the subsistence use areas would be open to location of metalliferous minerals and closed to location of non-metalliferous minerals. This is an increase in acreage from Alternatives A and B. Similar to Alternative B, there are areas of medium locatable mineral potential north of Tanana open to mineral entry. 3,778,000 acres (86 percent) of subsistence use areas would be open to mineral material disposal, an increase of 23 percent from Alternative B. The area closed to mineral material sales constitutes the second largest geographic area unavailable for mineral sales of all the alternatives.

Alternative C1 represents a combination of resource protection and resource uses. Less land would be open to salable minerals than in Alternative A but more than in Alternative B. The area open to location of metalliferous minerals is an increase in acreage from Alternatives A and B.

As discussed under Alternative A, to mitigate impacts, locatable mineral and mineral material exploration and development including mining and reclamation plans are expected to comply with laws, regulations, and BLM policy with the intent to maintain functionality of nearby soils, vegetation, wetlands, riparian areas, wildlife habitat and fisheries. Additionally, mitigation measures and best management practices designed to protect fish, wildlife and plant resources that are incorporated into current plans and permits and incorporated into this EIS under this alternative are expected to reduce long term impacts on subsistence resources by minimizing development in key habitats and expediting habitat reclamation.

Impacts on the availability and abundance of fish and wildlife; including large mammals, furbearers, small game, and waterfowl; are expected to be similar to those described in Alternative A. These impacts are minor and not anticipated to significantly limit or reduce fish and wildlife availability or abundance. Access to important subsistence use areas is not blocked or prohibited at authorized mining operations; therefore, impacts on access would be negligible.

#### *Effects from lands, realty, and utility corridor management decisions*

PLO 5150 would be partially revoked under Alternative C1. The revocation of outer corridor lands and consequent effects on subsistence user access would be identical to that under Alternative B (see **Section R.2.2.1**). Revocation of PLO 5150 within the outer corridor would significantly impede access to subsistence resources for residents of Coldfoot and Wiseman. The revocation could also significantly impede residents' ability to harvest sufficient quantities of subsistence resources because they would be subject to State hunting and fishing regulations on lands in the outer corridor. Such limitations on the access and availability of subsistence resources would have a large impact on subsistence users.

In Alternative C1, ROW exclusion and avoidance designations would apply to 1,243,000 acres (28 percent) of subsistence use areas. Habitat fragmentation and degradation would be minimized in these areas. As in Alternative B, Alternative C1 would include the Ambler, Dalton utility, and Umiat utility and transportation corridors. Designating these administrative corridors allows the BLM to collocate ROW, access, and utility infrastructure. This would reduce dispersed impacts from multiple transportation and utility corridors and reduce overall surface disturbance; however, in the 3,158,000 acres open to ROW location in subsistence use areas it could cause habitat degradation and fragmentation and increase competition for resources if those ROWs were used to build structures, utilities, or transportation corridors. This may impact moose, caribou, and fish resources as these resources are typically the most heavily harvested resources in the planning area communities; however, impacts on the abundance or availability of fish, wildlife, or other subsistence resources on BLM-managed lands in the planning area from ROW development would be negligible. Existing lands, realty, and utility corridor management does not impact the abundance or availability of subsistence resources.

#### *Effects from recreation and visitor services management*

Extensive recreation management areas and special recreation management areas (SRMAs) would be used as management tools under Alternative C1. The Dalton Corridor Backcountry Conservation Area proposed in Alternative B would be replaced with a SRMA. Potential impacts on wildlife, fish, and other subsistence resources, and potential impacts on subsistence user access are similar to those described in Alternative B.

#### *Effects from travel and transportation management*

Access to subsistence resources could be impacted by OHV travel restrictions under Alternative C1. Seasonal limitations (May 1–June 30) and summer closures would prohibit the use of OHVs in the Toolik RNA and portions of the Ray and Kokrine Mountains (see **Map 2.48**, **Map 2.49**, and **Map 2.50**, **Appendix A**) during these time frames. Legal restrictions would limit the ability to access portions of these subsistence use areas during seasonal time frames (summer and May 1–June 30).

These areas overlap subsistence use areas for residents of Ruby, Tanana, Allakaket, Wiseman, and Coldfoot. As described under Alternative B, access to these areas is predominately by river during summer or via snowmachine in the winter (Brown et al. 2016, Holen et al. 2012). Overland access via OHV in summer and fall is uncommon and access to the majority of these communities' subsistence resources would not be restricted.

*Effects from ACEC management decisions*

Under Alternative C1, 141,000 acres (3 percent) of subsistence areas would be managed as ACECs or RNAs. This alternative manages for a smaller geographic area of ACECs than Alternatives A or B. The effects under Alternative C are similar to those described under Alternative B, though to a lesser degree, because of the decrease in acreage designated for ACEC management. The reduction in acres under Alternative C1 from Alternative B, requiring that surface-disturbing activities associated with mineral exploration and development in ACECs be conducted under an approved plan of operations (43 CF 3809), has the potential to negatively impact subsistence resources. These potential impacts would be most pronounced in ACECs designated in areas with salmon spawning under Alternative B but not under Alternative C1. These negative impacts are anticipated to be localized and not to substantially impact abundance or availability of subsistence resources.

Important habitat for caribou and sheep would not be designated as ACECs under this alternative; however, these areas would be delineated and stipulations applied that would effectively mitigate potential impacts on these species; as a result, the abundance or availability of these subsistence resources would not be impacted.

**R.2.3.2 Evaluation of the availability of other lands for the purpose sought to be achieved**

The evaluation of the availability of other lands is identical to that described under Alternative A (see R.2.1.2 above).

**R.2.3.3 Evaluation of other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes**

The evaluation of other alternatives is similar to that described under Alternative A (see R.2.1.3 above).

**R.2.3.4 Findings**

Alternative C1 will not result in a significant restriction to subsistence uses for the communities of Alatna, Allakaket, Anaktuvuk Pass, Arctic Village, Bettles, Evansville, Galena, Hughes, Huslia, Kaltag, Koyukuk, Lake Minchumina, Manley Hot Springs, Minto, Nenana, Nuiqsut, Nulato, Rampart, Ruby, Stevens Village, Tanana, and Venetie.

Alternative C1 may significantly restrict subsistence uses for the communities of Coldfoot and Wiseman due to potential reductions in the availability of and access to large mammals, fish, furbearers, firewood, and berries. A positive determination pursuant to ANILCA Section 810 is required.

**R.2.4 Evaluation and Finding for Alternative C2: Preferred Alternative****R.2.4.1 Evaluation of the effect of use, occupancy, or disposition on subsistence uses and needs**

Alternative C2 emphasizes a blend of resource protection and resource uses. Connectivity corridors, adaptability to climate change, and priority species would be considered in the context of allowing for more minerals development and other resource uses.

*Effects from energy and mineral management decisions*

Alternative C2 focuses management on resource development. Under Alternative C2, 4,406,000 acres (100 percent) of the subsistence use areas would be open to locatable minerals and mineral material sales. Under this alternative, 0 acres of subsistence use areas would be withdrawn from the mining laws or recommended for withdrawal from locatable mineral entry. In the Community Subsistence Use Areas in the decision area,

2,385,000 acres (54 percent) would remain segregated from locatable mineral entry until the selection is conveyed or released.

With no areas withdrawn from mining, the potential for impacts on subsistence resources would be greater under this alternative. Opening areas to mining in the vicinity of the Dalton Highway would also increase the potential for impacts on subsistence resources and users. This is due to the availability of land accessible to a transportation corridor coupled with the fact that there are areas of medium to high locatable mineral potential in the region. The communities of Coldfoot and Wiseman have the greatest potential to be affected.

If mining were to occur in waterbodies where salmon are harvested for subsistence purposes—the Middle and South Fork Koyukuk rivers and Jim River—the residents of Coldfoot, Wiseman, and other communities downriver on the Koyukuk River could experience impacts on the abundance and availability of fish. This would result from fragmentation, degradation, or elimination of habitat and displacement of species.

To mitigate these impacts on BLM-managed lands, locatable mineral and mineral material exploration and development would include mining and reclamation plans. These plans would comply with laws, regulations, and BLM policy with the intent to maintain functionality of nearby soils, vegetation, wetlands, riparian areas, wildlife habitat and fisheries. **Table 2-24: Locatable Minerals** and **Table 2-25: Mineral Materials (Chapter 2,)** and Aquatic and Riparian Resource Desired Conditions and Objectives (**Appendix H**) provide detailed management actions required of notice and plan level operations and salable minerals permits.

On lands conveyed to the State of Alaska after the revocation of PLO 5150, locatable and mineral material exploration and development would not have to adhere to BLM policy or Desired Conditions and Objectives in **Appendix H**; however, on these lands, they would be expected to comply with State and federal laws and regulations. This would maintain fish and wildlife habitat similarly to those on BLM-managed lands. Given this mitigation, impacts are anticipated to be minor and would not significantly limit or reduce fish and wildlife availability or abundance. Access to important subsistence use areas is not blocked or prohibited at authorized mining operations; therefore, impacts on access would be negligible.

#### *Effects from lands, realty, and utility corridor management decisions*

Alternative C2 recommends full revocation of PLO 5150. Under full revocation, 651,000 acres (26 percent) of top-filed lands in subsistence use areas would become state-selected lands. As described in **Section R.2.2.1**, if these lands were conveyed, which the BLM believes is likely to occur within 10 years for the 203,000 acres of Priority 1 lands, subsistence users, no longer able to hunt and fish under federal regulations, would be subject to statutory and regulatory restrictions under State law. This would include prohibitions on using firearms within 5 miles of the Dalton Utility Corridor and restrictions on use of vehicles for hunting and game retrieval on State lands. Lower priority selections are not expected to be conveyed during the life of this plan; instead they are expected to remain selected through the life of the plan, resulting in the same net effect in the context of subsistence uses.

Revocation of PLO 5150 would result in no or minimal impacts on residents of Anaktuvuk Pass, Allakaket, Alatna, Bettles, and Evansville. As described in **R.2.2.1**, these communities' use of lands in the inner and outer corridors is minimal. Revocation of PLO 5150 would not impact their ability to access subsistence resources.

Revocation of PLO 5150 would result in minor impacts on residents of Stevens Village. These impacts are identical to those described in section **R.2.2.1**.

Revocation of PLO 5150 would result in major impacts on residents of Coldfoot and Wiseman. Traditional means of accessing, harvesting, and transporting subsistence resources would be eliminated under Alternative C2, as both the inner and outer corridor would be subject to Alaska State Statutes 19.40.210 and 16.05.78, and State regulations 5 AAC 92.530(7)(B) and (C). Impacts described in **R.2.2.1** items 1) through 4) would be exacerbated under Alternative C2, as follows:

- Coldfoot and Wiseman residents **would not be able to use snowmachines on all lands adjacent to their communities**, including along the Nolan Road, in the Wiseman Creek and Hammond River drainages, or within other overland areas adjacent to the corridor. Residents would not be able to use off-road vehicles to access traplines or important hunting and fishing areas or collect firewood in traditionally used areas. Such a limitation would constitute extensive interference with access.
- Coldfoot and Wiseman residents **would not be able to use highway vehicles on the Nolan, Wiseman, or other roads** to access traditional moose, sheep, and other subsistence use areas. Wiseman residents would be legally prohibited from transporting harvested resources to their homes in Wiseman. Such a limitation would constitute extensive interference with access.
- Residents **would not be able to use firearms within 5 miles of the Dalton Highway**. Their ability to harvest moose, sheep, and other big game would be substantially inhibited. Such a limitation would constitute extensive interference with access.
- Coldfoot and Wiseman residents would not be able to hunt or fish under federal regulations on **all lands adjacent to their communities**. Such a limitation could constitute extensive interference with access.

Under Alternative C2, 399,000 acres in subsistence use areas would be designated ROW avoidance areas. As in the other action Alternatives, Alternative C2 would include the Ambler, Dalton utility, and Umiat utility and transportation corridors. Designating these administrative corridors allows the BLM to collocate ROW, access, and utility infrastructure. This would reduce dispersed impacts from multiple transportation and utility corridors and reduce overall surface disturbance; however, the 4,007,000 acres in subsistence use areas open to ROW location could cause habitat degradation and fragmentation and increase competition for resources if those ROWs were used to build structures, utilities, or transportation corridors. This may impact moose, caribou, and fish resources as these resources are typically the most heavily harvested resources in the planning area communities; however, impacts on the abundance or availability of fish, wildlife, or other subsistence resources on BLM-managed lands in the planning areas from ROW development would be negligible. Existing lands, realty, and utility corridor management does not impact the abundance or availability of subsistence resources.

#### *Effects from recreation and visitor services management*

The Dalton SRMA under Alternative C2 includes the same area as the Sukakpak Region SRMA and the Central Dalton SRMA under Alternative B. Impacts on subsistence would be the same as described in **Section R.2.2.1**.

#### *Effects from travel and transportation management*

Effects from recreation and visitor services on subsistence are the same as discussed in Alternative C1.

*Effects from ACEC management decisions*

Under Alternative C2, 77,000 acres of subsistence use areas would be managed as an RNA. This alternative manages for a smaller geographic area of ACECs and RNAs than Alternatives B or C1.

The effects under Alternative C2 are greater than those described under Alternatives B and C1. This is because of the decrease in acreage designated for ACEC or RNA management. The reduction in acres under Alternative C2 from Alternatives B and C1, requiring that surface-disturbing activities associated with mineral exploration and development in ACECs be conducted under an approved plan of operations (43 CFR 3809), could negatively impact subsistence resources. These potential impacts would be most pronounced in ACECs designated in areas with salmon and sheefish spawning under Alternatives B or C1 but not under Alternative C2. These negative impacts are anticipated to be localized and would not substantially impact abundance or availability of subsistence resources.

Important habitat for caribou and sheep would not be designated as ACECs under this alternative. Important caribou habitat would be delineated, and stipulations would be applied that would effectively mitigate potential impacts on this species; as a result, the abundance or availability of caribou would not be impacted. Important sheep habitat would not be delineated under Alternative C2; however, potential impacts on sheep would likely be effectively addressed and mitigated through site-specific National Environmental Policy Act analysis and would not impact sheep populations to the extent that the abundance, availability, or access to sheep would be significantly impacted.

**R.2.4.2 Evaluation of the availability of other lands for the purpose sought to be achieved**

The evaluation of the availability of other lands is identical to that described under Alternative A (see R.2.1.2 above).

**R.2.4.3 Evaluation of other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes**

The evaluation of other alternatives is similar to that described under Alternative A (see R.2.1.3 above); however, of the alternatives analyzed in the CYRMP DEIS, Alternatives A, B, and C1 would reduce or eliminate the use of public lands needed for subsistence as compared to Alternative C2. PLO 5150 would not be lifted under Alternative A, thereby maintaining the disposition of public lands needed for subsistence purposes. PLO 5150 would not be lifted in the inner corridor under Alternatives B and C, thereby maintaining the disposition of a portion of public lands needed for subsistence purposes.

**R.2.4.4 Findings**

This evaluation concludes that C2 will not significantly restrict subsistence uses for the communities of Alatna, Allakaket, Anaktuvuk Pass, Arctic Village, Bettles, Evansville, Galena, Hughes, Huslia, Kaltag, Koyukuk, Lake Minchumina, Manley Hot Springs, Minto, Nenana, Nuiqsut, Nulato, Rampart, Ruby, Stevens Village, Tanana, and Venetie.

This evaluation concludes that C2 may significantly restrict subsistence uses for the communities of Coldfoot and Wiseman due to potential reductions in the availability of and access to large mammals, fish, furbearers, firewood, and berries. A positive determination pursuant to ANILCA Section 810 is required.

## R.2.5 Evaluation and Finding for Alternative D

### R.2.5.1 Evaluation of the effect of use, occupancy, or disposition on subsistence uses and needs

#### *Effects from energy and mineral management decisions*

Alternative D focuses management on resource development. 100 percent of the subsistence use areas would be open to locatable minerals and mineral material sales. Under this alternative, 0 acres of subsistence use areas would be withdrawn from the mining laws or recommended for withdrawal from locatable mineral entry.

With all areas open to mining, the potential for impacts on subsistence resources would be highest under this alternative. Opening areas to mining in the vicinity of the Dalton Highway would increase the potential for impacts on subsistence resources and users. This is due to the availability of land accessible to a transportation corridor coupled with the fact that there are areas of medium to high locatable mineral potential in the region. The communities of Coldfoot and Wiseman, located in the Dalton Utility Corridor, have the greatest potential to be affected.

The abundance and availability of fish would be impacted for residents of Coldfoot and Wiseman and communities downriver on the Koyukuk River. Habitat would be fragmented, degraded, or eliminated and species would be displaced if mining were to occur in waterbodies that produce salmon harvested for subsistence purposes: the Middle and South Fork Koyukuk rivers and Jim River. To mitigate these impacts, locatable mineral and mineral material exploration and development on BLM-managed lands include mining and reclamation plans that would comply with laws, regulations, and BLM policy. The intent is to maintain functionality of nearby soils, vegetation, wetlands, riparian areas, wildlife habitat, and fisheries. **Table 2-24: Locatable Minerals**, and **Table 2-25: Mineral Materials (Chapter 2)**, and **Aquatic and Riparian Resource Desired Conditions and Objectives (Appendix H)** provide detailed management actions required of notice and plan level operations and salable minerals permits.

On lands conveyed to the State of Alaska after the revocation of PLO 5150, locatable and mineral material exploration and development would not have to adhere to BLM policy or Desired Conditions and Objectives in **Appendix H**; however, on these lands, they would be expected to comply with state and federal laws and regulations which would maintain fish and wildlife habitat similarly to those on BLM-managed lands. Given this mitigation, impacts are anticipated to be minor and not significantly limit or reduce fish and wildlife availability or abundance. Access to important subsistence use areas is not blocked or prohibited at authorized mining operations; therefore, impacts on access would be negligible.

#### *Effects from lands, realty, and utility corridor management decisions*

Alternative D recommends full revocation of PLO 5150, which would result in similar impacts on subsistence as described under Alternative C2.

ROW impacts in Alternative D would be the same as described in Alternative C2.

#### *Effects from recreation and visitor services management*

Under Alternative D, there would be no backcountry conservation areas, extensive recreation management areas, or SRMAs. Established recreational sites such as campgrounds, waysides and visitor contact stations would exist but would not be managed as intensively for recreational activity. Potential impacts on wildlife, fish, and other subsistence resources, and potential impacts on subsistence user access, are similar to those described in Alternative A; therefore, impacts of recreation and visitor services management on subsistence would be minor under Alternative D. The revocation of PLO 5150 would allow State of Alaska top-filed



lands to become valid selections. Lands conveyed during the life of the plan would change the pattern of land status and recreation and subsistence management in the Dalton Utility Corridor.

*Effects from travel and transportation management*

Travel and transportation management would not affect the abundance or availability of fish, wildlife, or other subsistence resources under Alternative D.

Seasonal or summer closures are not proposed under Alternative D (see **Maps 2.54-2.55, Appendix A**). Travel and transportation management would not affect access to subsistence resources under Alternative D.

*Effects from ACEC management decisions*

Under Alternative D, no areas would be managed as an RNA or ACEC. The effects under Alternative D are greater than those described under Alternatives B, C1, and C2, because of the lack of acreage designated for ACEC or RNA management. The elimination of ACECs and RNAs requiring that surface-disturbing activities associated with mineral exploration and development in ACECs be conducted under an approved plan of operations (43 CFR, Part 3809) has the potential to negatively impact subsistence resources. These potential impacts would be most pronounced in ACECs designated in areas with salmon and sheefish spawning included in Alternative B or C1 but not in Alternative C2 or D. These negative impacts are anticipated to be localized and not substantially impact abundance or availability of subsistence resources. Important habitat for caribou and sheep would not be designated as ACECs under this alternative. Important sheep and habitat would not be delineated under Alternative D; however, potential impacts on sheep and caribou would likely be effectively addressed and mitigated through site specific National Environmental Policy Act and would not impact sheep or caribou populations to the extent that the abundance, availability, or access to these game species would be significantly impacted.

**R.2.5.2 Evaluation of the availability of other lands for the purpose sought to be achieved**

The evaluation of the availability of other lands is identical to that described under Alternative A (see **R.2.1.2** above).

**R.2.5.3 Evaluation of other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes**

The evaluation of other alternatives is similar to that described under Alternative A (see **R.2.1.3** above); however, of the alternatives analyzed in the CYRMP DEIS, Alternatives A, B, C1, and C2 would reduce or eliminate the use of public lands needed for subsistence as compared to Alternatives D. PLO 5150 would not be lifted under Alternative A, thereby maintaining the disposition of public lands needed for subsistence purposes. PLO 5150 would not be lifted in the inner corridor under Alternatives B, C1, and C2, thereby maintaining the disposition of a portion of public lands needed for subsistence purposes.

**R.2.5.4 Findings**

This evaluation concludes that Alternative D will not significantly restrict subsistence uses for the communities of Alatna, Allakaket, Anaktuvuk Pass, Arctic Village, Bettles, Evansville, Galena, Hughes, Huslia, Kaltag, Koyukuk, Lake Minchumina, Manley Hot Springs, Minto, Nenana, Nuiqsut, Nulato, Rampart, Ruby, Stevens Village, Tanana, and Venetie.

This evaluation concludes that Alternative D may significantly restrict subsistence uses for the communities of Coldfoot and Wiseman to potential reductions in the availability of and access to large mammals, fish, furbearers, firewood, and berries. A positive determination pursuant to ANILCA Section 810 is required.

## **R.2.6 Evaluation and Finding for the Cumulative Case**

### ***R.2.6.1 Evaluation of the effect of use, occupancy, or disposition on subsistence uses and needs***

#### *Effects from energy and mineral management decisions*

Locatable and saleable mining is anticipated to continue in the planning area over the life of the plan. The extent of mining activity for locatable minerals is difficult to predict because exploration and development is dependent on precious metal prices. Development is most likely to occur in high and moderate potential areas near road systems. Planning area communities with the greatest potential to be impacted would include those with subsistence use areas in the Dalton Utility Corridor and downstream communities. Mineral material development will continue to support road and ROW maintenance needs. New projects requiring mineral materials would likely use existing pits where economically feasible. As with locatable minerals, mining is expected to occur along existing road systems. ROW projects located outside the Dalton Highway would require opening new pits. Cumulative impacts on fisheries and wildlife resources are described in **Chapter 3, Section 3.2.7** and **Section 3.2.6**. Additional mining activity could impact fish and wildlife through direct habitat loss, displacement, and increased human activity, including hunting and trapping. Potential rare earth mining in the Ray Mountains region could impact the Ray Mountain caribou herd range use. Current and future mining activity may lead to increased degradation of habitat and water quality through run-off, changes in nutrient and macroinvertebrate abundance and reduced spawning/rearing habitat for fish.

An increase in mining activities on non-BLM-managed lands or adjacent to the planning area could contribute to cumulative impacts on subsistence resources and users to varying degrees. The Ambler Road EIS ANILCA 810 Evaluation found that the reasonably foreseeable future action of mine development in the Ambler Mining District could negatively impact subsistence resources. This included direct and indirect effects from mining to fish, vegetation, and wildlife which may result in a significant restriction to subsistence resources and may significantly reduce or limit the abundance, availability, or access to subsistence resources.

#### *Effects from lands, realty, and utility corridor management decisions*

Current and future lands, realty, and utility corridor management decisions that could impact subsistence users and resources in the planning area include development of additional utility or transportation corridors and revocation of PLO 5150.

Effects from lands, realty, and utility corridor management decisions due to partial or full revocation of PLO 5150 proposed under Alternatives B, C1, C2, and D would substantially interfere with access to subsistence resources as described in **Sections R.2.2.1, R.2.3.1, and R.2.4.1** above.

Development of infrastructure within authorized ROWs in the planning area are expected to continue or increase over the life of the plan. Development is most likely to occur in designated ROWs and in areas with energy, locatable, and mineral material development. Cumulative impacts on fisheries and wildlife resources are described in **Chapter 3, Section 3.2.7** and **Section 3.2.6**. These include habitat loss, fragmentation, and degradation, and disturbance of or direct mortality to resources. The Ambler Road ROW intersects the proposed hunting areas of Alatna, Allakaket, Anaktuvuk Pass, Bettles, Coldfoot, Evansville, and Wiseman on non-BLM-managed lands. The ROW also crosses subsistence fishing areas of Evansville and Bettles on non-BLM-managed lands. The Ambler Road EIS ANILCA 810 Evaluation found that road construction and operations may significantly restrict subsistence uses for Alatna, Allakaket, Anaktuvuk Pass, Bettles,

Coldfoot, Evansville, and Wiseman due to a potential decrease in abundance and availability of caribou, fish, and vegetation.

*Effects from recreation and visitor services management*

The demand for recreation opportunities is expected to increase as the number of visitors travelling to Alaska grows. Recreational use will continue to increase along established routes, particularly the Dalton Highway. Demand for remote recreational access will increase to a lesser extent. An increase in recreational activities in or adjacent to the planning area would contribute to cumulative impacts on subsistence resources and users to varying degrees. Planning area communities with the greatest potential to be impacted would include those with subsistence use areas in the Dalton Utility Corridor. Wiseman and Coldfoot would be most affected since they are road accessible.

Given past and current recreation management and future management scenarios presented in this plan, their location in relation to subsistence use, and management actions and mitigation measures proposed in this plan, recreation management is not expected to substantially reduce the opportunity to use subsistence resources. Impacts from recreation and visitor services management would not significantly reduce or limit the abundance, availability, or access to subsistence resources for communities assessed in this evaluation.

*Effects from travel and transportation management*

Current and future travel and transportation actions would primarily consist of highway (Elliott and Dalton) and infrastructure improvements in and around the planning area. These activities would not significantly reduce or limit the abundance, availability, or access to subsistence resources.

*Effects from ACEC management decisions*

Under the Cumulative Case, a variable number of acres would be designated and managed as RNAs or ACECs depending on alternative. All ACECs and RNAs include the requirement that surface-disturbing activities associated with mineral exploration and development in ACECs be conducted under an approved plan of operations (43 CFR, Part 3809). This requirement allows additional assessment of potential impacts on resources, some of which may be harvested by subsistence users. Alternatives A and B, with large acreages under ACEC or RNA management, would have the most acres with these protections. Alternatives C1, C2 and D, would have 418,000, 77,000, and 0 acres respectively designated as ACECs/RNAs.

**R.2.6.2 Evaluation of the availability of other lands for the purpose sought to be achieved**

See R.2.1.2.

**R.2.6.3 Evaluation of other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes**

See R.2.1.3.

**R.2.6.4 Findings**

The cumulative case, when taken in conjunction with Alternatives B, C1, C2, and D, will not significantly restrict subsistence uses for the communities of Arctic Village, Galena, Hughes, Huslia, Kaltag, Koyukuk, Lake Minchumina, Manley Hot Springs, Minto, Nenana, Nulato, Rampart, Ruby, Stevens Village, Tanana, and Venetie.

The cumulative case, when taken in conjunction with Alternatives B, C1, C2, and D, may significantly restrict subsistence uses for the communities of Alatna, Allakaket, Anaktuvuk Pass, Bettles, Coldfoot,

Evansville, and Wiseman due to potential reductions in the abundance, availability, and access to large mammals, fish, furbearers, firewood, and berries. A positive determination pursuant to ANILCA Section 810 is required.

### **R.3 NOTICE AND HEARINGS**

ANILCA Section 810(a) provides that no “withdrawal, reservation, lease, permit, or other use, occupancy, or disposition of the public lands which would significantly restrict subsistence uses shall be effected” until the federal agency gives the required notice and holds a hearing in accordance with ANILCA Section 810(a)(1) and (2). The BLM will provide notice in the *Federal Register* that it made positive findings pursuant to ANILCA Section 810 that Alternatives B, C1, C2, D, and the Cumulative Case presented in the CYRMP DEIS meet the “may significantly restrict” threshold. ANILCA Section 810 hearings, with an opportunity for public testimony, will be held in Allakaket, Alatna, Anaktuvuk Pass, Evansville, and Wiseman and will include opportunity for testimony by residents of the potentially affected communities of Alatna, Allakaket, Anaktuvuk Pass, Bettles, Coldfoot, Evansville, and Wiseman. Hearing notices will be provided in the *Federal Register* and by way of local media. Meeting dates and times will be posted on BLM’s website at <https://www.blm.gov/programs/planning-and-nepa/plans-in-development/alaska/central-yukon-rmp>.

### **R.4 SUBSISTENCE DETERMINATIONS UNDER THE ANILCA SECTION 810(A)(3)(A), (B), AND (C)**

BLM finds that Alternatives B, C1, C2, and D, and the cumulative case may significantly restrict subsistence uses. BLM will undertake the notice and hearing procedures required by ANILCA Section 810 (a)(1) and (2) in conjunction with releasing of the Draft RMP/EIS to solicit public comment from the potentially affected communities of Alatna, Allakaket, Anaktuvuk Pass, Bettles, Coldfoot, Evansville, and Wiseman.

Should the preferred alternative have a positive finding, public testimony from potentially affected communities will be incorporated and final determinations made in the Final ANILCA Section 810 Evaluation in accordance with ANILCA Section 810(a)(3)(A), (B), and (C).

### **R.5 REFERENCES**

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# Appendix S

## Social and Economic Conditions

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

ACEC	areas of critical environmental concern
ADFG	Alaska Department of Fish and Game
AMS	analysis of the management situation
BLM	Bureau of Land Management
EIS	environmental impact statement
OHV	off-highway vehicle
PLO	public land order
RFDS	reasonably foreseeable development scenario
RMP	resource management plan
ROW	right-of-way

# Appendix S. Social and Economic Conditions

## S.1 SUMMARY

This appendix describes the potential impacts and methodology for assessing impacts from proposed management actions on social and economic conditions in the planning area. As described in the analysis of management situation (AMS), the planning area contains non-subsistence use communities and subsistence use rural communities as defined by the Joint Board of Fisheries and Game. The geography, topography, geology, climate, flora, fauna, history, and cultural systems of the planning area influence the economic character of planning area communities in combination with applicable law, policy, regulation, and land management planning decisions. Management decisions under consideration concerning the status of public land orders (PLOS) that affect the amount and distribution of federal lands subject to federal subsistence regulations, the guidance on utility and transportation corridors, and travel management decisions that may limit or restrict access to particular areas may influence the distribution, magnitude, and intensity of economic impacts on communities in the planning area. Additional information is available in AMS Section 2.4, Social and Economic Conditions, at: [https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP\\_AMS\\_all\\_April\\_2016\\_Final.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP_AMS_all_April_2016_Final.pdf).

## S.2 METHODS OF ANALYSIS

This analysis considers the spatial distribution of impacts on the social and economic character of communities in the planning area. The planning area overlaps portions of the Northwest Arctic Borough, the North Slope Borough, the Denali Borough, the Fairbanks North Star Borough, and the Southeast Fairbanks Census Area. The analysis considers impacts across 24 subsistence use communities and seven non-subsistence use communities, including Fairbanks, Ester, Healy, Big Delta, Delta Junction, McKinley Park, and North Pole. The analysis consists of an evaluation of the management decisions that could affect both market values (i.e., mineral development, infrastructure and transportation, and recreation and tourism) that affect jobs and labor income and nonmarket values (i.e., subsistence patterns) that affect the cost of living for households in the planning area.

### ***Climate Change***

Climate change may affect the rural economy by increasing uncertainty and risk related to participation in subsistence practices. As described in the subsistence analysis of this environmental impact statement (EIS), climate change has created unpredictable ice conditions on rivers and lakes, and across the tundra. This has increased the risk from travel to subsistence practitioners due to unpredictable river breakup and freeze-ups, changing rainy seasons, permafrost thaw, and erosion. As noted in the wildlife section of this EIS, climate change may result in changes to vegetation communities, species ranges, and species composition, many of which are important to subsistence livelihoods. The increased uncertainty and risk in procuring subsistence resources may result in increased costs related to time, effort, and fuel needed to procure subsistence needs.

### ***Nature and Types of Impacts***

Eighteen of the 24 communities described in the AMS exceeded the national poverty rate. Average costs of living in rural Alaska are much higher than the nation's due to high transportation costs; therefore, poverty rates may not be a fair reflection of economic well-being. In addition, the market economy is highly limited

in its size and diversity in rural communities in the planning area. While jobs and labor income provide an important role, it is a limited role in respect to the role subsistence provisioning plays in supporting rural Alaskan livelihoods. The analysis here considers how management decisions may influence the economic well-being of residents in the planning area in respect to the distribution, intensity, and magnitude of change in terms of economic development by industry, jobs, and labor income and the impacts on the cost of living in response to impacts on subsistence practices.

The remote rural nature of the majority of the planning area substantially influences the size and structure of the communities' economies. Rural Alaska communities rely on a mixed economy that is comprised of a hunting, fishing, and gathering component and a cash component. Cash is used not only to complement subsistence harvests through the purchase of food, clothing, and shelter, but it also is used to support participation in the subsistence economy. Purchases of fuel, equipment, and tools, such as snowmachines, all-terrain vehicles, fishing nets, guns, and rain gear, are used to support subsistence activities (ADFG Division of Subsistence 2019). Therefore, economic impacts are not limited to jobs and income; they also include the subsistence economy and lifestyle.

The Alaska Department of Fish and Game (ADFG) Division of Subsistence reports that households with higher cash incomes also have greater subsistence harvests (ADFG Division of Subsistence 2019). Wolfe et al. (2010) termed these high-income households with high subsistence productivity "super-households." Super-households produce more than their household needs and often distribute the excess to low-income households and individuals in need, typically single mothers and elders (Wolfe et al. 2010). Sharing is a key component of the subsistence economy that guards against risks of economic insecurity within the community (Wolfe et al. 2010). Therefore, management decisions that affect when and where motorized travel is allowed, such as travel management limitations and restrictions and decisions affecting where federal subsistence regulations apply, may affect patterns of sharing and trade. These impacts may, in turn, affect the cost of living among the most economically disadvantaged households in the communities of Wiseman, Coldfoot, Allakaket, Alatna, Bettles, Evansville, Stevens Village, Rampart, Tanana, and Ruby.

Food security is of interest when considering socioeconomic well-being. Food security is defined as "when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life" (Pinstrup-Andersen 2009). A 2010 study (Brown et al. 2010), the first study assessing species collected and measuring food security levels through voluntary community household surveys in five western Interior Alaska communities, was developed to gain a greater understanding of regional subsistence patterns. The study found that there are varying levels of food security among communities. Between 11 and 44 percent of households in the five communities surveyed experienced low to very low food security levels and were classified as food insecure. Conditions related to food insecurity were typically seasonal. The redistribution of household resources through sharing networks was one of the main strategies employed to guard against risks of food insecurity due to fluctuating subsistence harvests and other pressures. Management decisions that affect subsistence harvest, distribution patterns, and the overall cost of living, such as in respect to fuel costs, which may reduce monetary resources for purchasing food, may influence conditions related to food security in the Western Interior rural Alaska communities.

Management decisions that would require increased distances traveled to procure subsistence resources would increase the household cost of living. Such management decisions are those that affect the abundance of subsistence resources by community and those that affect where and when motorized travel is allowed. These interactions are more fully described in the two following paragraphs.

Fuel costs are a pivotal influence to well-being in mixed cash-subsistence economies. Fuel costs affect the cost of participating in both the subsistence and cash components of the economy. The high cost of fuel in rural communities also contributes to high costs for food and heat purchased in markets. High fuel prices also influence subsistence harvest patterns by encouraging subsistence harvests to occur in greater proximity to communities. One study on fuel costs' impacts on Alaska subsistence communities found that reducing the number of trips they took, using more fuel-efficient vehicles, sharing fuel costs, and making subsistence trips multipurpose were other adaptation strategies communities used (Brinkman et al. 2014). The study also found that of the 178 people from 8 communities surveyed, 85 percent reported not paying bills or foregoing the purchase of basic supplies so they could purchase fuel (Brinkman et al. 2014). Fuel costs affect the economic well-being of households by limiting their ability to participate in the subsistence economy or their ability to cover the cost of basic household needs. Management decisions that result in restrictions on where and when motorized travel is allowed may increase distances traveled to access subsistence resources, which increases the fuel cost burden and household cost of living.

The subsistence lifestyle is an integral part of the ecology, culture, and identity of the people and communities in the planning area. For rural Alaska communities in the planning area, subsistence resources provide the primary basis for well-being for which there is no reasonable market substitute (Wolfe 2004). Actions that may influence habitat for fish and wildlife populations, or affect pressure on subsistence resources may also increase the cost of living and social pressures on subsistence households and those who depend on shared resources. Management decisions that affect participation and success rates associated with the subsistence sector are designations that may affect wildlife and fish habitat, and may affect the amount of hunting and fishing competition for wildlife and fish. Such decisions would include the designation of areas of critical environmental concern (ACECs), travel restrictions, right-of-way (ROW) exclusion areas, plan direction on development related to utility and transportation corridors, and the status of PLO 5150 in the Dalton Utility Corridor.

While jobs and labor income provide an important role, it is a limited role in respect to the role subsistence provisioning plays in supporting rural Alaskan livelihoods. Because jobs and labor income in private sectors are very limited in rural villages, potential economic development opportunities, such as mining, tourism, and supporting industries, including construction, infrastructure, and transportation, are valued. However, there is typically conflict associated with these opportunities because of their potential to affect subsistence resources and access. The diverse viewpoints of community residents are reflected in public comments received during the preparation of this resource management plan (RMP). They are exemplified by comments provided below taken from the preliminary alternative summary (BLM 2017) and the scoping report (BLM 2015):

Our kids/grandkids need jobs. If resources can be properly developed and still protect resources, then we are all for it. Creating jobs and making sure there is a way to keep people employed. Most of our interior villages are a dying commodity. We need to be aware of that and make decisions now not to close up those potential opportunities.

The area under consideration in this resource management plan surrounds many rural communities. Resource development in the area could provide economic benefits to the region where well-paying jobs are scarce, as well as improved or added infrastructure and access to areas for multiple use.

Both Alaska Natives and surrounding communities depend upon the bounty of the lands and waters for their livelihoods as commercial fisherman, and for subsistence, cultural and traditional practices.

Development projects including mines, roads and associated infrastructure could pose significant negative impacts on surrounding communities, including water degradation and reduced access to subsistence resources.

Changes in the availability of subsistence resources has a profound impact on the sharing of resources from village to village. Throughout history, tribes in the Central Yukon have established a complex social network of sharing resources. Further impacts to the availability of resources will undoubtedly change the character for these networks and relationship between tribes throughout the region.

One of the questions describing the subsistence issue in pre-planning documents is “How can the Bureau of Land Management [BLM] protect resources that are important to maintaining a subsistence lifestyle?” This implies that resources are currently not protected or are being damaged. The more appropriate question for the RMP is: “Are subsistence resources being damaged and is additional protection needed?” This is a resource management concern, not solely a subsistence concern.

The subsistence way of life in many Alaska Native villages is augmented with activities supporting cash economy transactions. Alaska Native villages, in partnership with Alaska Native corporations and other business interests, are considering a variety of economic development opportunities. Most Alaska Native villages have decided for themselves that large-scale hard rock mining is not the direction they would like to go and are, primarily, concerned with the long-term sustainability of their communities.

Contrary to data provided in the AMS from the Alaska Department of Labor Statistics, information accrued in the preparation of this environmental analysis suggests that employment in gravel mining for residents of Wiseman and Coldfoot is not a steady source of employment. This means mineral material sales may currently have a limited effect on household incomes for communities located along the Dalton Highway. These data also suggest that trapping provides between 15 to 60 percent of household income depending on the year (ADFG Division of Subsistence 2019). This suggests that for residents living along the Dalton Highway, access to subsistence use areas, which is afforded through their subsistence priority status, indirectly affects economic opportunities for these communities.

Only seven<sup>1</sup> of the 31 communities considered in this analysis are designated as non-subsistence use area communities by the Joint Board of Fisheries and Game. Non-subsistence use areas are defined based on 12 criteria used to determine whether subsistence is a principal characteristic of the economy, culture, and way of life (ADFG Joint Fish and Game Board 2019). Non-subsistence use areas are not open for subsistence activities under state law; however, management decisions may affect nonmarket values for non-subsistence communities. Such impacts may be experienced in the form of impacts on recreation opportunities, such as sport hunting and fishing, or impacts on interregional trade facilitated through kinship networks. In particular, low-income households in non-subsistence communities may be vulnerable to indirect impacts on subsistence redistribution (Wolfe 2010) that could result from direct impacts on subsistence abundance.

Potential economic development opportunities for both subsistence and non-subsistence use communities that may be affected include mining and tourism industries, as well as supporting industries, including

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<sup>1</sup>Designated non-subsistence use area communities within the planning area include Fairbanks, Ester, Healy, Big Delta, Delta Junction, McKinley Park, and North Pole.

construction, infrastructure, and transportation. Management decisions may influence the likelihood of existing industries and reasonably foreseeable projects to contribute to jobs and labor income over the life of the plan. Economic impacts are described as direct, indirect, and induced. Direct impacts are those that occur to a primary industry that is directly affected by a change. Because of the direct impacts on the primary business, indirect impacts occur to secondary businesses that provide goods or services to the primary business. Induced impacts are due to the expenditure of wages and proprietor incomes of people employed in the primary and secondary businesses affected.

As described in the reasonably foreseeable development scenario (RFDS), there are few mineral interests on Bureau of Land Management (BLM)-managed lands within the planning area that are likely to be developed over the life of the plan. The majority of the planning area would not be affected by direct economic impacts related to mineral development. As described in the RFDS, existing coal mining operations are not located on federal lands, nor are new or existing operations expected to expand onto any federal minerals. In respect to other mineral resources evaluated in the RFDS, there are no known historical, active, or planned mining of nonenergy leasable minerals in the planning area. In addition, mineral exploration in the planning area has not identified economically recoverable deposits of fluid leasables from the federal mineral estate. Hence, fluid leasables are anticipated to have a low likelihood of development over the 20-year planning period.

Conversely, there is current production and identified potential new demand for mineral material sales and disposal, and locatable mineral production on BLM-managed lands in the planning area. In particular, gravel, riprap, and common fill used for construction and maintenance of roads and pipelines are produced under mineral materials authorizations on BLM-managed lands.

Locatable minerals in the planning area include gold, silver, copper, nickel, and chromite. The planning area contains approximately 268,000 acres ranked as high potential for locatable development, and roughly 950,000 acres ranked as medium potential. The number of annual new permit applications is closely tied to the price of gold and has fluctuated greatly over the past 50 years. The global value of gold is beyond the scope of the RMP's influence; however, management actions in the RMP may influence local development costs. For more information on potential mineral development, see the RFDS. Potential economic impacts by alternative are considered in respect to how management actions may result in economic impacts related to locatable minerals and mineral materials and disposal in the short and long term.

Management decisions on and adjacent to lands identified as high and moderate mineral potential lands in the RFDS may affect local development costs, which would influence the development of mineral claims and supporting industries such as construction, utilities, and transportation. Such decisions include the status of PLO 5150, ROWs, and withdrawals or segregations that may sustain, reduce, or grow existing contributions, or preclude or create new mineral production opportunities related to locatable metalliferous mining, such as gold, and mineral materials, such as gravel, sand, common fill, and riprap. PLOs related to Alaska Native Claims Settlement Act 17(d)(1), or Native-selected lands, have some high and moderate mineral potential lands; therefore, the PLOs may have economic development potential related to mineral production.

Management decisions that may affect recreation and tourism in the Dalton Utility Corridor are limited. As described in the AMS, recreation and tourism visitation are driven by factors beyond the influence of local or regional conditions, such as global and domestic market growth or recession. Management actions are not anticipated to measurably affect recreation visitation; however, management actions may affect the

distribution of economic impacts of some segments of the recreation and tourism industry, such as recreation and tourism patterns related to big game hunting and sportfishing, sightseeing, and wildlife viewing.

Should the quality of sport-hunting and fishing opportunities decline due to a decrease in the abundance of these resources within a close range of the Dalton Highway, recreationists are likely to seek more remote hunting and fishing opportunities. This may result in a greater distribution of indirect and induced economic impacts on remote communities that are accessible by roads that may be developed over the life of the plan or by air. This, in turn, may result in impacts on subsistence resources and the social and cultural environment in these communities. Given the challenges associated with accessing remote communities by ground transportation, the demand for flight services is likely to increase if recreational hunters and anglers opt for more remote recreation opportunities. Industries potentially affected include the transportation and warehousing sector (NAICS 2017), which is the largest employment sector for Fairbanks and North Pole and one of the largest employment sectors for Ester and Delta Junction (Alaska DOL 2019). Hence, opportunities for proprietors and wage earners in rural communities with air service, such as Bettles, Anaktuvuk Pass, and Galena, in the leisure and hospitality industry may be indirectly affected by shifting recreation patterns in respect to recreational hunting and fishing in the Dalton Utility Corridor.

The development of new transportation corridors may also influence recreation patterns by allowing for greater access to regions currently inaccessible by wheeled vehicles. Communities in proximity to these transportation include Bettles, Evansville, and Anaktuvuk Pass. These communities may experience indirect economic and social impacts associated with changes in recreation patterns influenced by the increasing ease of access to these communities.

The nature and types of potential impacts on economic resources are closely tied to potential impacts on subsistence resources, recreation and tourism, and mineral resources. For additional information, see the discussion of impacts in those sections of the EIS.

**Table S-1  
Nature of Potential Impacts on Social and Economic Well-Being by Management Action and Indicator**

<b>Type of Potential Impacts</b>	<b>Management Actions</b>	<b>Indicators and Measures</b>
<p><b>Direct and Indirect impacts on jobs and labor income</b>                      Management decisions may affect economic development related to recreation and tourism, minerals, construction, utility and transportation, and supporting industries. Actions that may affect these industries include decisions affecting the status of PLOs, ROWs, and utility and transportation corridors. Management direction on lands ranked with high to moderate locatable mineral potential that are located close to the Dalton Highway are of particular interest to economic development opportunities and potential contributions to jobs and labor income.</p>		



Type of Potential Impacts	Management Actions	Indicators and Measures
Lands and Realty	<p>Management actions, such as ROW exclusion or avoidance areas or ACEC designations, that occur within close proximity to a community may increase costs of infrastructure development and service delivery.</p> <p>Management direction on infrastructure development related to utility and transportation corridors</p>	<ul style="list-style-type: none"> <li>• Acres of ROW exclusions within 20 miles of communities</li> </ul>
Minerals	<p>Management actions that may affect short- and long-term economic activity related to mineral materials and locatable mineral exploration and production</p>	<ul style="list-style-type: none"> <li>• Acres of BLM-managed lands closed to mineral material sales and disposal</li> <li>• Acres and percentage of high or moderate mineral potential lands open for metalliferous mining</li> <li>• Acres and percentage of high or moderate mineral potential lands open for metalliferous mining—<b>All selections/top-filing</b></li> <li>• Acres and percentage of high or moderate mineral potential lands open for metalliferous mining—<b>Selected by Native corporations</b></li> <li>• Acres and percentage of high or moderate mineral potential lands open for metalliferous mining that are <b>Priority 1 State-selected/top-filed lands (encumbered up to 10 years; conveyed to State by year 10)</b></li> <li>• Acres and percentage of high or moderate mineral potential lands open for metalliferous mining that are <b>Priority 2–4 State-selected/top-filed lands and Native-selected lands</b> (encumbered; conveyance timeline uncertain)</li> </ul>

<b>Type of Potential Impacts</b>	<b>Management Actions</b>	<b>Indicators and Measures</b>
Recreation and Tourism	<p>Management actions that affect the quality of sport-hunting opportunities along the Dalton Utility Corridor may increase competition between sport and subsistence hunters in the Dalton Highway Corridor Management Area, affecting recreation patterns and distribution of economic impacts by visitors.</p> <p>Management actions that increase the ease of access to rural communities, including designation of new transportation corridors, may affect recreation patterns and the distribution of visitors along with associated economic impacts.</p>	<ul style="list-style-type: none"> <li>• Impacts on caribou and Dall sheep populations within the Dalton Utility Corridor (see <b>Appendix P</b>)</li> <li>• Communities within 30 miles of proposed utility and transportation corridors</li> </ul>
<p><b>Indirect impacts on cost of living</b></p> <p>Management decisions that may indirectly affect the cost of living, due to the potential impacts on subsistence harvest amount and patterns, include the status of lands and realty decisions on PLOs and ROWs, designation of ACECs, and travel restrictions.</p>		
Travel Management	<p>Restricting motorized travel within close proximity to communities or on traditional routes supporting intercommunity travel would increase the distance, time, and effort required to procure subsistence resources or redistribute such resources.</p>	<ul style="list-style-type: none"> <li>• Acres of summer off-highway vehicle (OHV) exclusion within 20 miles of communities and subsistence use areas</li> <li>• Acres of limited travel for OHVs (May and June) within 20 miles of communities and subsistence use areas</li> </ul>

Type of Potential Impacts	Management Actions	Indicators and Measures
Lands and Realty	Recommendation to revoke PLO 5150 in the Dalton Utility Corridor would reduce motorized access for subsistence purposes and the use of firearms, increasing the burden of effort and time to procure subsistence resources. Hence, this would increase the cost of living.	<ul style="list-style-type: none"> <li>• Acres of subsistence access for Wiseman and Coldfoot in the Dalton Utility Corridor</li> </ul>
Subsistence	Management actions that may degrade habitat conditions for subsistence fish and game may affect the abundance of subsistence resources and, therefore, the effort, time, and fuel required to procure subsistence resources.	<ul style="list-style-type: none"> <li>• Impacts on caribou and Dall sheep populations within the Dalton Utility Corridor (see <b>Appendix P</b>)</li> <li>• Subsistence report determinations for impacts due to management actions related to lands and realty, and minerals</li> </ul>

### S.3 ASSUMPTIONS

The following assumptions were used to assess impacts on the economic environment:

- This analysis incorporates community descriptions, assumptions, and determinations described in the subsistence section and **Appendix Q**.
- The most intense community subsistence gathering pressure from rural residents radiates 20 miles from villages. There are also larger geographic regions where communities traditionally harvest subsistence resources when conditions permit access. Impacts on access are considered in respect to how this may affect costs related to travel for subsistence purposes.
- Recreation visitation will be similar across all alternatives regardless of the designation of a backcountry conservation area, extensive recreation management area, special recreation management area, or no designation.
- Personal use wood and biomass collection on conveyed lands would continue to be allowed by the State and Native corporations.
- Fuel prices are driven by national and international market trends, state distribution channels and related costs, and local retailer costs. A review of the literature on Alaska's fuel markets (Szymoniak et al. 2010) did not reveal any market mechanisms on fuel prices that could be affected by the Central Yukon RMP management decisions.
- Short term in this context is 10 years. Ten years is the anticipated time frame for State top-filed lands identified as the State's top priority to be conveyed to the State. The time frame for

conveyance of State-selected lands identified as Priority 2, 3, or 4 is highly speculative and is assumed to be beyond the life of the plan.

- It is assumed that the State would facilitate mineral production on newly acquired State lands within the Inner Corridor during the life of the plan.

### ***Incomplete or Unavailable Information***

Studies of patterns of use, such as seasonal cycles, use areas, and resources harvested, have been conducted by ADFG Division of Subsistence and other agencies and organizations. Available data are primarily in technical reports by the ADFG Division of Subsistence's Community Subsistence Information System; but they may only reflect the use areas when the data were collected, or may represent historical use areas. Consultation on the anticipated impacts on the community with representatives of some local villages and BLM staff assists in refining the assessment of impacts. The lack of data for a community does not indicate that subsistence harvests lack importance in an area. Only a few communities in the state are surveyed each year.

The discussion of harvest information in the following sections is supplemented by information that is available from recent ADFG technical papers and from publicly available information. Subsistence harvest areas vary seasonally and annually over a subsistence use area due to changes in resource distribution and regulatory restrictions. Information on subsistence use areas that was gathered during the scoping period, alternatives outreach, ACEC nominations, and interviews conducted with residents in the preparation of this EIS are important supplements.

### ***Standard Operating Procedures and Best Management Practices***

The impact analysis considers the standard operating procedures and best management practices that the BLM could implement; these are included in **Appendix F**.

## **S.4 IMPACTS ANALYSIS**

The preliminary analysis found that management actions proposed for the following resources would not meaningfully affect social and economic conditions and were therefore not analyzed further:

- Air quality
- Paleontological resources
- Visual resources
- Hazardous materials and health and human safety
- Special status species
- Commercial timber management

In respect to commercial timber management, there are currently no existing or planned commercial timber operations on BLM-managed lands within the planning area. Considering timber market trends and current conditions related to the planning area, management actions considered within the alternatives are unlikely to affect the development potential of commercial wood product industries, such as logging, milling, or other forest products manufacturing. Therefore, there are no economic impacts related to commercial timber from any of the action alternatives or Alternative A. Restrictions on the collection of wood products for subsistence purposes are limited to the Kanuti Hot Springs proposed ACEC and would not result in measurable impacts on the availability of subsistence resources that influence the cost of living in rural

communities in the planning area; therefore, commercial timber management is not considered further in this analysis.

Impacts on subsistence resources described in the subsistence analysis and located in **Appendix Q** of this EIS inform the consideration of impacts on economic conditions in the planning area. **Table S-2** displays the results of the quantitative socioeconomic indicators and measures used in the assessment of impacts by alternative. Other calculations referenced in the socioeconomic analysis are based on calculations in **Chapter 2**, other resource analyses presented in this EIS, or spatial analyses conducted to help display the relative impacts on a particular alternative under consideration.

***Alternative A (No Action)***

*Economic Development, Jobs, and Labor Income*

Lands and Realty

Alternative A has only one ROW exclusion area, the Central Arctic Management Area Wilderness Study Area, which totals 1.9 percent of the planning area. Alternative A does not propose any ROW avoidance zones. Alternative A would continue to provide a favorable environment for development by maintaining 98 percent of the planning area open for ROW entry to accommodate access and development on State and private lands as needed. In addition, ancillary development would not be limited to designated development nodes, lending to a flexible management approach that would adapt to unforeseen development opportunities and changing market conditions.

Under Alternative A, PLO Alaska Native Claims Settlement Act 17(d)(I) lands, totaling 5,253,000 acres, and PLO 5150 lands, totaling 2,138,000 acres, would be maintained.

Under Alternative A, lands within 5 miles of the Dalton Highway would continue to be managed per federal subsistence regulations, which supersedes State law that restricts motorized access to these lands. Alternative A would not affect opportunities to trap and related household incomes. This is because motorized access for residents of Wiseman and Coldfoot would be maintained under Alternative A.

**Table S-2  
Socioeconomic Indicator Results**

	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<b>Economic Development</b>					
<u>Lands and Realty</u> Acres of ROW exclusions within 20 miles of communities	0	455,609	1,777	0	0
<u>Minerals—Materials</u> Acres of BLM-managed land closed to mineral material sales and disposal	266,000	5,041,000	1,465,000	1,004,000	259,000
<u>Minerals—Locatables</u> Acres and percentage of high or moderate mineral potential lands open for metalliferous mining	652,711 (54%)	602,003 (50%)	906,418 (75%)	1,216,949 (100%)	1,216,949 (100%)
<u>Minerals—Locatables</u> Acres and percentage of high or moderate mineral potential lands open for metalliferous mining— <b>All selections/top-filing</b>	145,019 (12%)	494,763 (41%)	758,711 (62%)	1,053,886 (87%)	1,053,886 (87%)
<u>Minerals—Locatables</u> Acres and percentage of high or moderate mineral potential lands open for metalliferous mining— <b>Selected by Native corporations</b>	8,212	59,679	81,193	95,077	95,077

	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<u>Minerals—Locatables</u> Acres and percentage of high or moderate mineral potential lands open for metalliferous mining that are <b>Priority 1 State-selected/top-filed lands (encumbered up to 10 years; conveyed to the State by year 10)</b>	78,160 (6%)	267,882 (22%)	407,276 (34%)	645,331 (53%)	645,331 (53%)
<u>Minerals—Locatables</u> Acres and percentage of high or moderate mineral potential lands open for metalliferous mining that are <b>Priority 2–4 State-selected/top-filed lands and Native-selected lands (encumbered; conveyance timeline uncertain)</b>	58,647 (5%)	167,202 (14%)	270,242 (22%)	313,478 (26%)	313,478 (26%)

	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<p><u>Recreation and Tourism</u>                      Impacts on Dall sheep populations within the Dalton Highway Corridor Management Area, a popular and easily accessible destination for sport hunting. (Determinations from the Subsistence Report—Wildlife Management Actions)</p>	<p><b>Dall Sheep</b>                      “. . . development activities (locatable minerals, ROWs, and mineral materials) in Dall sheep habitat on BLM-managed lands would result in direct loss and degradation of sheep habitat. Linear ROWs could disrupt sheep movements and result in habitat fragmentation.”</p>	<p><b>Dall Sheep</b>                      “The higher level of protection for the important Dall sheep habitat area and Dall sheep movement corridor should decrease adverse impacts to Dall sheep populations relative to Alternative A.”</p>	<p><b>Dall Sheep</b>                      “These targeted restrictions should reduce potential Dall sheep disturbance and displacement and preserve use of Dall sheep habitat area and Dall sheep movement corridor compared with Alternative A.”</p>	<p><b>Dall Sheep</b>                      “Loss of important habitat and potential disturbance of Dall sheep from these activities could increase with the potential for displacement from important mineral licks and movement corridors with potential impacts on productivity or survival.”</p>	<p><b>Dall Sheep</b>                      “Alternative D would result in similar impacts on Dall sheep to those described for Alternative C2.”</p>



	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<p><u>Recreation and Tourism</u>                      Impacts on caribou populations within the Dalton Highway Corridor Management Area, a popular and easily accessible destination for sport hunting. (Determinations from the Wildlife Analysis)</p>	<p><b>Caribou</b>                      “The Central Arctic Herd already interacts with oilfield infrastructure, the Dalton Highway, and Trans-Alaska Pipeline System extensively but could be exposed to additional fluid mineral activity as well as additional ROWs and locatable mineral development in the future.” “Within the Hodzana Hills Herd range, 41.2 is percent open to locatable entry under Alternative A and small-scale placer mining is ongoing, but it is unlikely that extensive mineral development will occur.”</p>	<p><b>Caribou</b>                      “. . . would decrease the area open to locatable minerals, fluid minerals, mineral materials, and ROWs compared with Alternative A . . . which would reduce potential impacts associated with these types of development to the HHH caribou. Two additional ACECs would be designated for caribou.”</p>	<p><b>Caribou</b>                      “. . . would designate . . . 48 percent of the HHH as ROW avoidance or exclusion areas.”                      “A total of 4,000 acres of PLO 5150 lands are within the calving core area, are top filed as Priority 1 by the State of Alaska and are likely to be transferred to the State under Alternative C1.”</p>	<p><b>Caribou</b>                      “. . . additional areas of HHH open to potential surface disturbance and development compared with Alternative A and could impact Central Arctic Herd caribou movements during migratory periods.”</p>	<p><b>Caribou</b>                      “Impacts to caribou under Alternative D would be similar to those described for Alternative C2.”</p>

	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<u>Recreation and Tourism</u> Indirect/cumulative impacts on recreation and tourism patterns to communities within 30 miles of the utility and transportation corridors, or retaining PLO 5150 lands	Coldfoot and Wiseman	Coldfoot, Wiseman, Bettles, Evansville, and Anaktuvuk Pass	Coldfoot, Wiseman, Bettles, Evansville, and Anaktuvuk Pass	Coldfoot, Wiseman, Bettles, Evansville, and Anaktuvuk Pass	Coldfoot, Wiseman, Bettles, Evansville, and Anaktuvuk Pass
<b><u>Summary of Economic Impacts on Recreation and Tourism</u></b>	May affect distribution of economic impacts by changing recreation and tourism patterns; there is the potential for greater distribution of recreation and tourism impacts. Indirect economic impacts on Wiseman, Coldfoot, Bettles, Ambler, Anaktuvuk Pass, Galena, Healy, and Fairbanks.	May preserve recreation and tourism patterns in the Dalton Utility Corridor and related economic impacts. Indirect economic impacts on Wiseman, Coldfoot, Healy, and Fairbanks.	May preserve recreation and tourism patterns in the Dalton Utility Corridor and related economic impacts. Indirect economic impacts on Wiseman, Coldfoot, Healy, and Fairbanks.	Greatest likelihood to affect distribution of economic impacts by changing recreation and tourism patterns; there is the potential for greater distribution of recreation and tourism impacts. Indirect economic impacts on Wiseman, Coldfoot, Bettles, Ambler, Anaktuvuk Pass, Galena, Healy, and Fairbanks.	Greatest likelihood to affect distribution of economic impacts by changing recreation and tourism patterns; there is the potential for greater distribution of recreation and tourism impacts. Indirect economic impacts on Wiseman, Coldfoot, Bettles, Ambler, Anaktuvuk Pass, Galena, Healy, and Fairbanks.
<b><u>Cost of Living</u></b>					
<u>Lands and Realty</u> Acres of subsistence access for Wiseman and Coldfoot in the Inner Corridor of the Dalton Utility Corridor	743,000	743,000	743,000	0	0

	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<u>Lands and Realty</u> Acres of subsistence access for Wiseman and Coldfoot in the Outer Corridor of the Dalton Utility Corridor	1,395,460	69,460	69,460	69,460	69,460
<b><u>Lands and Realty</u></b> <b>Total Acres of subsistence access for Wiseman and Coldfoot in the Dalton Utility Corridor</b>	<b>2,138,460</b>	<b>812,460</b>	<b>812,460</b>	<b>69,460</b>	<b>69,460</b>
<u>Travel Management</u> Acres of summer OHV exclusion within 20 miles of communities	0	386,432	0	0	0
<u>Travel Management</u> Acres of summer OHV exclusion within subsistence use areas	0	424,103	0	0	0
<b><u>Travel Management</u></b> <b>Total acres of summer OHV exclusion in subsistence zones</b>	<b>0</b>	<b>810,535</b>	<b>0</b>	<b>0</b>	<b>0</b>
<u>Travel Management</u> Acres of limited travel for OHV (May and June) within 20 miles of communities	0	144,139	124,015	124,015	0

	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<u>Travel Management</u> Acres of limited travel for OHV (May and June) within subsistence use areas, not including lands within 20 miles of communities	0	544,362	1,171	1,171	0
<b><u>Travel Management</u> Total acres of limited travel for OHV in subsistence zones</b>	<b>0</b>	<b>788,501</b>	<b>125,186</b>	<b>125,186</b>	<b>0</b>
<u>Subsistence</u> Subsistence report determinations for impacts due to management actions on <b>minerals</b>	<u>Minerals Management</u> “There would be no impacts on fish or wildlife and no associated impacts on subsistence access from mineral development in these areas and therefore no impacts on subsistence.”	<u>Minerals Management</u> “. . . would reduce the potential for impacts on subsistence uses and resources over a larger geographic extent than current management . . .”	<u>Minerals Management</u> “. . . would be less likely to reduce impacts on the abundance of wildlife and subsistence resources . . . than Alternative A or B.”	<u>Minerals Management</u> “. . . potential for impacts on subsistence resources would be highest.”	<u>Minerals Management</u> “. . . potential for impacts on subsistence resources would be highest.”
<u>Subsistence</u> Subsistence report determinations for impacts due to management actions on <b>lands and realty</b>	“Subsistence management on 100 percent of Community Subsistence Use areas within this designation would remain as it is currently.”	“This is the most restrictive, and therefore most protective of subsistence uses, of all the alternatives.”	“The impacts of this on subsistence uses would be the same as described under Alternative B.”	“It is expected that the change in management in this area may result in increased competition for access to resources from non-subsistence users.”	“It is expected that the change in management in this area may result in increased competition for access to resources from non-subsistence users.”

	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C1</b>	<b>Alternative C2 (Preferred Alternative)</b>	<b>Alternative D</b>
<p><u>Subsistence</u> Subsistence report determinations for impacts due to management actions affecting <b>wildlife</b></p>	<p>“Alternative A is not as protective of subsistence species as the other alternatives.”</p>	<p>“ . . . would reduce disturbance to wildlife and provide protection to these key habitats by reducing the potential for habitat loss, degradation, and fragmentation. Therefore, the management actions under Alternative B would benefit a wide range of species important to subsistence activities.”</p>	<p>“ . . . protections for wildlife that are important subsistence resources from management actions would be of slightly lower magnitude and smaller geographic extent than those under Alternative B, but would include areas important for the Ray Mountain Herd.”</p>	<p>“ . . . would be less protective of habitat for these subsistence resources than Alternatives A, B, and C1.”</p>	<p>“ . . . would be less protective of habitat for these subsistence resources than Alternatives A, B, and C1.”</p>

## Minerals

### *Mineral Materials*

Under Alternative A, approximately 5.2 million cubic yards of mineral materials deposits, currently authorized and permitted under contract, would continue to support mineral material production. Mineral materials authorized through existing free use mineral material permits to the Alaska Department of Transportation and the Alyeska Pipeline Service Company would be sufficient to maintain infrastructure in the Dalton Utility Corridor, including the Dalton Highway and the Trans-Alaska Pipeline, over the life of the plan. Authorization for new mineral material sites and expansion of existing sites would continue to be processed so as to meet demand.

Alternative A would continue to provide economic contributions that support jobs and labor income in the mining industry and would continue to contribute indirectly to other industries affected by the mineral materials production. These industries include construction and transportation, which require mineral material resources to support their systems of production or to drive demand for services. Other industries affected through indirect and induced spending include financial services, information technology, retail, real estate, and entertainment. The economic impacts of Alternative A would result in continued support of the existing size and structure of the regional economy.

Alternative A is not expected to change existing employment opportunities related to mineral material mining for residents of the Dalton Utility Corridor.

### *Locatables*

Under Alternative A, approximately 652,710 acres of high and moderate potential lands are open for metalliferous mineral entry; however, only lands that are not selected by the State or Native corporations would support the development of new federal mineral claims and development, of which Alternative A has 507,690 acres. Under Alternative A, 145,020 acres are selected and would hence be precluded from any new encumbrances for mineral production. The majority of these lands, approximately 136,800 acres, are selected by the State. Of these State-selected lands, 78,160 acres are identified as Priority 1 by the State and are expected to be conveyed to the State within 10 years of the RMP decision.

Approximately 58,650 acres of State-selected lands are identified as Priority 2 through 4. The timeline for conveyance of these lands is unknown but anticipated to be beyond the life of the plan; hence, these lands are not expected to contribute to economic development opportunities through direct, indirect, or cumulative impacts. There are 8,212 acres selected by Native corporations, which represents an economic development opportunity related to locatable minerals.

The production of locatable minerals, as described in the RFDS, is largely driven by the price of gold. Permit issuance has fluctuated greatly with the price of gold. The BLM anticipates that past trends of production would persist under Alternative A. According to BLM records, an average of 20 applications for permits to mine in Alaska are filed annually with the Central Yukon Field Office. On average, two new permits are filed per year, while the majority (18) are applications for preexisting mineral exploration and operations. Jobs and labor income generated from placer and lode mining would directly affect mining industries. The indirect impacts on secondary businesses are not as closely tied to construction and transportation, as they are with mineral materials.

### Recreation and Tourism

The Galbraith ACEC and the Dalton Highway Special Recreation Management Area offer one of the few opportunities for developed camping; they also offer supports for other recreation, such as an entry point for dog mushing or skiing. Recognition of the value of the recreation opportunities and the conservation of infrastructure and recreation opportunities in this area would continue to support the recreation and tourism industry. Visits to Dalton Highway Special Recreation Management Area are largely day-use visits. The majority of the economic contributions, jobs, and labor and proprietor income would benefit the community of Fairbanks and Healy given the existing size of the economy or specialization in tourism industries; however, residents of Coldfoot and Wiseman would continue to benefit from tourism-related economic contributions to household incomes through expenditures on lodging, guiding, and food services.

Maintaining PLO 5150 in the Inner Corridor of the Dalton Utility Corridor would limit mineral development opportunities, allow for cohesive recreation management, and maintain federal subsistence regulations that provide for subsistence access and hunting regulations. Competition between recreational and subsistence hunters may increase with the predicted increase in recreation visitation (see [https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP\\_AMS\\_all\\_April\\_2016\\_Final.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP_AMS_all_April_2016_Final.pdf)). Potential impacts from mineral, linear infrastructure, and ROW development may affect habitat for caribou and Dall sheep within proximity to the Dalton Highway Corridor Management Area. Dall sheep may be more sensitive to such development, while impacts on caribou are not anticipated in this region.

Increased competition for big game species and potential impacts on Dall sheep populations may influence sport-hunting patterns, as sport hunters may elect to hunt in more remote locations. Communities with flight service, including Bettles, Ambler, Anaktuvuk Pass, and Galena, may receive indirect economic impacts from increased visitation and economic contributions from recreational hunters, should a change in sport-hunting patterns arise.

### *Cost of Living*

#### Travel Management

Alternative A does not propose travel restrictions or limitations; therefore, Alternative A would have no direct effect because of travel management on household transportation costs, existing customary trade patterns, and subsistence harvest distribution to low-income households.

Under Alternative A, indirect impacts of having no travel restrictions in core caribou calving may result in risks to the Ray Mountain Herd from human disturbance. The communities that may be indirectly affected include Rampart, Tanana, Allakaket, Alatna, Bettles, and Evansville. Should travel increase due to mineral exploration or increased recreational hunting during breeding season within core caribou habitat, the indirect impacts of no travel restrictions may result in increased household fuel costs that may result from a lower abundance of subsistence resources.

#### Lands and Realty

Alternative A fully retains PLO 5150. As such, subsistence access would be maintained, and motorized access would be allowed for the communities of Coldfoot and Wiseman on 1,376,834 acres. The use of firearms by residents of Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, and Stevens Village within the Dalton Utility Corridor only for the taking of wildlife would continue to be allowed. There would be no change from current conditions for the cost of living due to the status of PLOs under Alternative A.

Alternative A would not affect the cost of living for participating in subsistence harvest practices, in terms of time, effort, and fuel to secure household needs.

### Subsistence

Given the importance of subsistence in supporting rural livelihoods, from food, shelter, heating, and cultural systems, the ability to procure subsistence resources would have consequential impacts on communities in the planning area, which would affect the cost of living and risks to food security. Under Alternative A, subsistence access is greatest compared with all other alternatives. While Alternative A does not provide a high level of protection to subsistence resources through ROW exclusions, ACEC designations, or no surface occupancy stipulations, it does present a lower risk of habitat disturbance to subsistence species in the Dalton Utility Corridor.

Lands in the Inner Corridor ranked as high and moderate for locatable mineral potential have the greatest likelihood for development; however, the maintenance of PLO 5150 considered in Alternative A maintains the locatable mineral withdrawal in the Inner Corridor. This would mitigate risks to subsistence habitat that would be present should these lands be open to locatable mineral development. Lands located in the Outer Corridor, however, are open to locatable mineral development. Given the lack of protective measures, Alternative A does present some risk to communities reliant upon subsistence resources in the Dalton Utility Corridor.

In summary, risks to subsistence resources persist under Alternative A from the potential impacts should locatable mineral development occur in the Dalton Utility Corridor. This may increase the cost of living and increase risk to food security for households in Coldfoot, Wiseman, Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, and Stevens Village.

### ***Impacts Common to All Action Alternatives***

#### *Economic Development, Jobs, Income, and Cost of Living*

#### Wood and Biomass Harvest

There are existing contributions to socioeconomic conditions in the planning area related to wood and biomass collected from BLM-managed lands. Wood and biomass provide fuel for households, public facilities, and businesses in the communities of Tanana and Galena; create opportunities for wood vendors; and reduce household heating costs and municipal fuel costs (Schmidt et al. 2019). The total amount of BLM-managed lands within 20 miles of villages and available for biomass collection may be reduced; however, it is assumed that biomass collection on conveyed lands would continue to be allowed by the State and Native corporations. Most villages in the planning area are primarily surrounded by Native corporation patented lands. Anecdotal evidence suggests that most of the biomass harvest by villages in the planning area is harvested from Native corporation lands. Therefore, all action alternatives would continue to support the supply of biomass, supporting economic development opportunities and reducing heating and energy costs for rural municipalities and households.

Households across the planning area would be indirectly affected related to customary trade. Success rates of subsistence harvesters would in part drive subsistence sharing and redistribution to households across the planning area.

### Lands and Realty

Under all action alternatives, the Road to Umiat and Ambler Road utility and transportation corridors would be designated. While an administrative utility and transportation corridor designation may not directly create public recreational access opportunities, the rugged terrain of the planning area is difficult to navigate;



routes created by developers for construction activities may be used by recreationists to access dispersed opportunities. The designation of utility and transportation corridors influences where infrastructure development would occur. Utility and transportation corridors under the action alternatives have the potential to improve access for recreation, such as camping, hunting, sightseeing, or float boating, in the planning area. As was identified in the AMS Section 2.2.6, recreation visitation is expected to increase access for hunting, fishing, and gathering, which may increase competition for wild resources among user groups. Subsistence harvests for communities whose subsistence use areas overlap with utility and transportation corridors may be adversely affected by the redistribution of recreationists. This redistribution may indirectly affect how far hunters and harvesters travel or how much time is required to acquire subsistence resources.

### Recreation and Tourism

The BLM anticipates that recreation opportunities related to scenic viewing and unique geographic or celestial features associated with the Arctic Circle would attract visitors and continue to sustain visitation to the Dalton Highway Special Recreation Management Area regardless of decisions in the RMP. Economic development opportunities for the communities of Wiseman and Coldfoot for lodging, food services, and guiding would persist regardless of the recreation management emphasis selected. Designation of the Ambler and Umiat utility and transportation corridors may indirectly affect recreation and tourism patterns by increasing overland access. Under all action alternatives, communities, including Bettles, Evansville, and Anaktuvuk Pass, within proximity of these corridors are likely to see an increase in economic activity in the tourism sector.

### **Impacts under Alternative B**

#### *Economic Development, Jobs, and Labor Income*

#### Lands and Realty

Alternative B recommends the revocation of all withdrawals made in response to Alaska Native Claims Settlement Act Section 17(d)(1). Alternative B would maintain 5.6 million acres of land open for ROW entry, and include 2.1 million acres of ROW exclusion areas and 5.3 million acres of ROW avoidance areas within the planning area. Alternative B is the most restrictive to ROW entry, which would reduce the amount of land open for ROWs from 98.1 percent under Alternative A to 42 percent. Alternative B further restricts development of ancillary facilities to two development nodes at Yukon Crossing and Chandalar; it also requires that linear infrastructure be located within designated utility and transportation corridors. Alternative B may inhibit economic development by increasing the risks to economic viability of projects. This is because these restrictions may increase the planning and construction costs.

Under Alternative B, the Outer Corridor of PLO 5150 would be recommended for revocation. Lands that are top-filed would then become valid State selections. Lands that remain selected and lands that are conveyed to the State within 5 miles of the Dalton Highway would no longer be subject to Federal Subsistence Board regulations. Under Alternative B, State law would restrict motorized access on these lands, which would functionally restrict access to subsistence use areas for residents of Wiseman and Coldfoot. Motorized access to subsistence use areas would be substantially reduced under Alternative B due to the revocation of PLO 5150. Hence, opportunities for generating household income from trapping may be adversely affected for residents of Wiseman and Coldfoot under Alternative B.

Other economic impacts related to the PLO are described under the following minerals section.

## Minerals

### *Mineral Materials*

Compared with Alternative A, Alternative B would greatly reduce the amount of land available to support the direct and indirect impacts related to mineral materials production. However, lands where mineral material development is restricted are not located in any transportation corridors where demand would be anticipated. In cases where demand cannot be satisfied from BLM-managed lands, the BLM anticipates that production would shift off BLM-managed lands in some areas.

Ninety-two percent of permits currently authorized for mineral materials production are located within the Inner Corridor. Mineral materials production would continue to be allowed for authorized and permitted mineral materials sites within the Inner Corridor. In addition, pending and new permit applications for mineral materials production in the Inner Corridor would continue to be processed. Three percent of lands, or 480 acres, currently contracted for mineral materials production are in the Outer Corridor.

Given that over 90 percent of the existing mineral materials contracted are located in the Inner Corridor and that new permit applications would be authorized, the BLM anticipates that Alternative B would meet existing demand for mineral materials production for the life of the plan, as described under Alternative A. In addition, given that lands within utility and transportation corridors would be open to mineral materials development, the BLM anticipates that Alternative B would meet future demand and support the development of jobs and labor income in mining, construction, and supporting industries in the planning area.

### *Locatables*

Alternative B may result in a lower level of locatable minerals production than Alternative A. Under Alternative B, 602,000 acres of high and moderate locatable mineral potential are designated as open; however, only 107,240 acres would allow for new federal mineral claims, as most of these lands would be encumbered by State and Native selections. Mineral exploration and operations would continue to be allowed on lands with active existing mineral claims in the Outer Corridor.

While the amount of lands ranked as high and moderate locatable mineral potential that are open is similar to Alternative A, the impacts of revoking PLO 5150 in the outer Dalton Utility Corridor, would result in increasing the acres of selected lands in the planning area. Lands in the Outer Corridor that are top-filed by the State would become valid State selections and therefore would no longer be open to new federal mineral claims; however, existing claimants, at the time State selection attaches, would be allowed to conduct exploration and mining operations. As such, 435,080 acres of high or moderate mineral potential lands would be closed to new federal mineral claims due the State selection status. Of these State-selected lands, 267,880 are identified as a Priority 1 by the State and are expected to be conveyed to the State within 10 years of the RMP decision. Approximately 170,915 acres of State-selected lands are identified as Priority 2 through 4. The timeline for conveyance of these lands is unknown but anticipated to be beyond the life of the plan; hence, they are not expected to contribute to economic development opportunities through direct, indirect, or cumulative impacts.

Under Alternative B, there are 59,679 acres of land ranked as high or moderate locatable mineral potential selected by Native corporations. Under Alternative B, economic development opportunities for Native corporations would exceed those of Alternative A.

In addition, federal lands open to mineral entry and located outside the Dalton Utility Corridor would also be available for locatable mineral production. Compared with the other alternatives, Alternative B would provide for the least amount of flexibility in accessing and developing locatable mineral interests. While the BLM is required to allow reasonable access to federal mineral claims, federal law does not require that claimants are afforded their preferred access.

The Secretary of the Interior is authorized to take action necessary to prevent unnecessary or undue degradation of lands (43 United States Code 1732 (2001), originally enacted as part of the Federal Land Policy and Management Act of 1976, Public Law 94-579). Accordingly, management actions such as ROW exclusion or avoidance areas may elevate the consideration of natural and cultural resource values at risk in the planning area and influence how access routes are delineated. Additionally, Alternative B has the most ACEC designations. ACEC designations require a plan of operation to be developed, which may increase planning and development costs associated with locatable minerals. Alternative B may therefore be the least conducive to facilitate economic development opportunities related to locatable minerals.

### Recreation and Tourism

Recreation visitation and tourism are expected to be similar to Alternative A; however, actions in Alternative B may create more favorable conditions for recreational hunters within and near the Dalton Highway Corridor Management Area. This is because of the protective measures that would conserve Dall sheep and caribou habitat in the region.

The recreation and visitor services would be maintained and managed as frontcountry and rural recreation settings near the Dalton Highway. The change in management approaches is not expected to drive a change in recreation visitation or recreation opportunities offered near the Dalton Highway. Restrictions and seasonal limitations on OHV use during sensitive breeding times in ACECs and right-of-exclusions may benefit caribou and Dall sheep populations, which would indirectly benefit recreational hunting opportunities. Restrictions and seasonal limitations on OHV use may also reduce recreational access to more remote areas of the planning area. Protective measures, such as visual quality management, ROW avoidance, and stay limitations, would help maintain semi-primitive experiences of the Dalton Corridor Back Country Area and improve desired primitive and semi-primitive recreation opportunities in the Dalton Corridor Backcountry Conservation Area.

With the revocation of PLO 5150 in the Outer Corridor, residents along the Dalton Highway living in Wiseman and Coldfoot would lose motorized access to Outer Corridor lands within 5 miles of the Dalton Highway; the communities of Wiseman, Coldfoot, Alatna, Allakaket, Anaktuvuk Pass, Evansville, and Stevens Village would lose the authority to subsistence hunt using rifles within 5 miles of the Dalton Highway. This may result in less subsistence hunting pressure on large mammals in the Dalton Highway Corridor Management Area. Therefore, this may indirectly improve recreational hunting opportunities in areas near the Dalton Highway and hence result in sustained support for tourism-related jobs and labor income for residents of Wiseman and Coldfoot.

Should primitive and semi-primitive recreation opportunities improve as described, tourists seeking such recreational experiences, including sport hunters, may opt to recreate near the Dalton Highway rather than travel to more remote regions of the planning area. Hence, more remote communities are less likely to be indirectly affected by tourism and related economic development from Alternative B. As such, Alternative B may maintain existing demand and potentially result in an increased demand for guiding, lodging, and food services in the communities of Coldfoot and Wiseman. Remote communities with existing air service

would continue to receive the economic impacts related to shifting recreation hunting patterns but not to the extent as under Alternative A.

### *Cost of Living*

#### Travel Restrictions

Alternative B includes 810,535 acres of lands that are restricted for summer (May through October) OHV use within subsistence use areas and within 20 miles of communities. Alternative B also includes 788,501 acres of travel restrictions from May through June within subsistence use areas and within 20 miles of planning area communities.

Summer travel restrictions may reduce direct access to other communities or areas where subsistence is practiced. Communities potentially affected by the summer travel restrictions include Tanana, Allakaket, Alatna, Bettles, Evansville, Ruby, and Rampart.

Travel restrictions from May through June may disrupt travel patterns between Allakaket, Alatna, and Tanana. The seasonal travel restriction may impede overland travel on an unimproved historical travel route between Tanana and Allakaket or Alatna. This may result in increased summer travel costs and limit summer travel between Allakaket and Tanana to air and river travel. Other communities that may be directly affected by travel restrictions include Wiseman, Coldfoot, Bettles, Evansville, and Hughes.

While the travel restrictions under Alternative B are the most extensive and may have the greatest direct impacts related to travel patterns, the conservation measures for wildlife afforded under Alternative B may improve subsistence hunter success in subsistence use areas or close to communities. Therefore, it is difficult to determine how travel restrictions may indirectly affect travel patterns associated with subsistence hunting and related fuel costs. Alternative B does, however, have the greatest likelihood of disrupting travel patterns between communities and may result in increased household fuel costs related to travel between communities. Disadvantaged, low-income, single head of households would be most vulnerable to negative impacts due to the disruption of intercommunity subsistence distribution.

#### Lands and Realty

Alternative B recommends revoking PLO 5150 in the Outer Corridor. Under Alternative B, there would be 1,112,664 acres within the Dalton Utility Corridor subject to federal subsistence priority designations. Federal subsistence priority would no longer apply on 264,170 acres of top-filed lands that would become valid State selections. State restrictions that prohibit the use of snowmachines within 5 miles of the Dalton Highway would fragment ownership patterns and eliminate motorized access to lands in the Outer Corridor for the communities of Wiseman and Coldfoot. The use of snowmachines would continue to be allowed for subsistence purposes in the Inner Corridor.

In addition, the communities of Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, and Stevens Village would no longer be afforded the use of firearms for subsistence hunting purposes on lands in the Outer Corridor within 5 miles of the Dalton Highway. Loss of motorized access and loss of the use of firearms on these lands would increase the cost of living in these communities by increasing the time and effort spent hunting, increasing the distances traveled to access lands available for subsistence activities, increasing the household costs for fuel to participate in subsistence practices, or increasing the need to secure household food and goods through markets rather than through subsistence practices.

The communities of Coldfoot and Wiseman would be most acutely affected by the change in motorized access. The elimination of subsistence access would substantially limit access to much of their subsistence use areas relied upon for their livelihoods.

The increased costs associated with subsistence harvest may result in decreased subsistence harvest for super-households. This may translate into indirect impacts on low-income households in the planning area who may receive a reduced share of subsistence goods facilitated through interregional community distribution and trade. This may result in an increased cost of living for low-income households reliant upon the redistribution of subsistence resources.

### Subsistence

As described in the subsistence analysis of this EIS, Alternative B may reduce subsistence access for some communities (Wiseman and Coldfoot) in the planning area; however, it would improve habitat for subsistence species compared with Alternative A. Given the importance of subsistence in supporting rural livelihoods, from food, shelter, heating, and cultural systems, the ability to procure subsistence resources would have consequential impacts on communities in the planning area, which would affect the cost of living and risks to food security.

For the communities of Coldfoot and Wiseman, decreased access for subsistence hunting would result in an increased reliance on markets to secure these resources. Substituting market goods for subsistence resources may increase the households' cash burden (in other words, the cost of living) and may not be a feasible strategy for some households with limited incomes or limited access to markets. Many households go without household necessities when they are unable to acquire subsistence resources. (Brinkman et al. 2014). Hence, rural subsistence communities (Coldfoot and Wiseman) may experience an increased cost of living and a heightened risk of food insecurity due to impacts on subsistence access, compared with Alternative A.

Other communities in the planning area, however, may benefit from Alternative B. This is because it provides protection for habitat important to subsistence species. Hence, Alternative B may reduce risks to subsistence abundance. It has a lower likelihood than Alternative A of contributing to an increased cost of living and a higher likelihood of reducing food insecurity in rural subsistence communities in the planning area. In addition, creation of ACECs, including those nominated by local communities and tribes, demonstrates support for community values and traditional knowledge, although there are local residents and entities who also question the need for ACECs and are concerned about impacts on subsistence travel and economic development.

### **Impacts under Alternative C1**

#### *Economic Development, Jobs, and Labor Income*

#### Lands and Realty

Alternative C1 would be similar to Alternative B in impacts related to lands and realty decisions; however, Alternative C1 would provide a more favorable economic development environment to benefit the growth of jobs and labor income. This is because Alternative C1 is less restrictive to development than Alternative B; Alternative C1 only proposes ROW avoidance areas, whereas Alternative B proposes ROW exclusion areas. Alternative C1 encourages infrastructure development within utility and transportation corridors and development nodes; however, it does not require that infrastructure and industrial development be collocated in these areas. Compared with Alternative A, Alternative C1 may increase development costs by

increasing planning and administrative costs associated with evaluating the feasibility and cost effectiveness of alternative routes, or increase costs for routing infrastructure to avoid these areas.

## Minerals

### *Mineral Materials*

Contributions to jobs and labor income due to mineral materials production would be greater under Alternative C1 than alternative A. This is because the designation of the Umiat Corridor would support road construction, which would accommodate demand for mineral materials in this region. Alternative C1 would facilitate the growth of this industry in response to externally driven demand that is anticipated over the life of the plan. Therefore, it may be that jobs and labor income for residents of Wiseman, Coldfoot, and other communities located in proximity of the Umiat Corridor may increase in regularity and become a reliable form of employment and labor income over the life of the plan.

### *Locatables*

Compared with Alternative A, Alternative C1 designates more acres of land ranked as high and moderate locatable mineral potential as open to locatable mineral development; however, it may result in less economic activity from federal mineral development. This is because only 147,707 acres would be unencumbered due to State or Native selection and available for new federal mineral claims. This is similar to Alternative B in respect to the amount of economic activity that may result from new and existing federal mineral claims. Under Alternative C1, 677,518 acres would be State-selected, of which 407,276 acres are identified as Priority 1 expected to be conveyed to the State within 10 years of the RMP decision. The remaining 270,242 acres would remain encumbered and not open for new federal mineral claims; they are not expected to contribute to economic development over the life of the plan.

Under Alternative C1, there are 81,193 acres of high and moderate ranked locatable mineral potential lands selected by Native corporations. Compared with Alternative A, this is roughly a tenfold increase for Native corporations, representing a large increase in economic development potential related to locatable mineral development. In addition, given that the Native-selected lands are located outside the Dalton Utility Corridor, Alternative C1 is slightly more conducive than Alternative B to promoting economic development. This is because it is less restrictive than Alternative B, as there are fewer management actions that may increase costs for mineral development. For example, there are no ROW exclusions and fewer ACEC designations.

## Recreation and Tourism

Recreational patterns and tourism are expected to be similar to conditions under Alternative B. Given the conservation measures afforded to caribou and Dall sheep habitat, along with the decreased competition from subsistence hunters in the Dalton Utility Corridor, the BLM anticipates that wildlife viewing and recreational hunting opportunities under Alternative C1 would improve compared with Alternative A. Alternative C1 is not as protective of primitive recreation opportunities, however, near the Dalton Highway. Hence, jobs and labor income opportunities in Wiseman and Coldfoot, and businesses directly or indirectly supported by recreation and tourism located in non-subsistence communities, such as Fairbanks and Healy, would continue to be receive economic contributions from recreation and tourism near the Dalton Highway. Remote communities with existing air service would continue to receive the economic impacts related to shifting recreational hunting patterns, but not to the extent as under Alternative A.

*Cost of Living*

Travel Restrictions

Like Alternative A, Alternative C1 does not have summer travel restrictions (May through October). However, unlike Alternative A, Alternative C1 does have 125,186 acres of land within subsistence use areas or within 20 miles of communities subject to travel restrictions from May through June. The communities that may be directly affected by the travel restrictions include Rampart, Tanana, Allakaket, and Alatna.

The protective measures offered by the travel restrictions in core caribou habitat may reduce impacts on subsistence resources and thereby reduce the amount of effort expended for subsistence hunting. Potential direct impacts may increase travel distances and related fuel costs for subsistence purposes, but they may be countered by the indirect impacts related to the increased abundance of subsistence resources.

Overall, Alternative C1 has more direct impacts on potentially increasing household fuel costs than Alternative A, but less than Alternative B. When the direct impacts and indirect impacts are considered in tandem, then Alternative C1 may result in increased subsistence abundance. This may reduce household fuel costs for travel compared with Alternative A.

The impacts on household fuel costs related to travel due to the status of PLO are addressed in the following section under lands and realty.

Lands and Realty

The impacts of Alternative C1 on the cost of living in Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, and Stevens Village would be the same as those described in Alternative B in respect to the revocation of PLO 5150 in the Outer Corridor.

Subsistence

Alternative C1 would have similar impacts as Alternative B.

***Impacts under Alternative C2 (Preferred Alternative)***

*Economic Development, Jobs, and Labor Income*

Lands and Realty

Like Alternative A, Alternative C2 has only one ROW exclusion area, the Central Arctic Management Area Wilderness Study Area, which totals 1.9 percent of the planning area; however, unlike Alternative A, Alternative C2 proposes ROW avoidance areas, similar to Alternative B and C1. However, Alternative C2 would provide a more favorable economic development environment to benefit the growth of jobs and labor income than Alternatives B and C1. This is because Alternative C2 only proposes 750,000 acres of ROW avoidance areas near Venetie. Alternative C2 encourages infrastructure development within utility and transportation corridors and development nodes; however, it does not require that infrastructure and industrial development be collocated in these areas. Compared with Alternative A, Alternative C2 may increase development costs by increasing planning and administrative costs associated with evaluating the feasibility and cost effectiveness of alternative routes, or increase costs for routing infrastructure to accommodate the avoidance area.

Alternative C2 would continue to provide a favorable environment for economic development by maintaining 98 percent of the planning area open for ROW entry to accommodate access and development on State and private lands, as needed. In addition, ancillary development would not be limited to designated development nodes. This would lend to a flexible management approach that would adapt to unforeseen development opportunities and changing market conditions.

Similar to Alternative A, Alternative C2 maintains 98 percent of BLM-managed lands in the planning area as open to ROWs and maintains the Central Arctic Management Area Wilderness Study Area ROW exclusion area. Alternative C2 does not propose any new ROW exclusion areas or development nodes. While utility and transportation corridors are designated under Alternative C2, development is only encouraged and not required in these areas. Compared with Alternative A, Alternative C2 is generally less restrictive to economic development interests. Except for the Toolik Lake Research Natural Area, there are no ACEC designations, which require that a plan of operation be completed prior to developing locatable mineral interests.

## Minerals

### *Mineral Materials*

Under Alternative C2, economic activity generated from mineral materials development could be less than or greater than Alternative A. This is because Alternative A has more lands open to mineral materials development than Alternative C2. This could support more mineral materials development; however, Alternative C2 has several plan elements that could support a greater level of industrial development. These plan elements of Alternative C2 include no ROW exclusion zones, the full revocation of PLO 5150, limited designations of ACECs, and the lack of limitations on utility and transportation development, as compared with Alternative A. As such, demand for mineral materials may be more or less than would occur under Alternative A. Hence, jobs and labor income in businesses directly and indirectly affected by mineral materials development would be similarly affected under Alternative C2.

### *Locatables*

While Alternative C2 has limited economic development opportunities related to locatable mineral development, revoking PLO 5150 in the Inner Corridor may lead to greater economic impacts in the short term (defined as within 10 years of the RMP decision) than Alternative A. This is because Alternative C2 has more lands ranked as high and moderate potential open to metalliferous mining without the encumbrance of State and Native selections.

While Alternative C2 has 1.2 million acres, almost twice that of Alternative A, of high and moderate ranked locatable mineral lands open to metalliferous mining, over 1 million acres of these lands would be State- or Native-selected, which would constrain federal mineral development and related economic contributions. However, Alternative C2 would lift PLO 5150 not only in the Outer Corridor but also in the Inner Corridor. Most lands within the Inner Corridor would be selected by the State and would not allow for new federal mineral claims; but they would allow for mineral exploration and operation within existing claims.

There are currently 80 active mineral claims in the Inner Corridor that encompass 1,772 acres. Locatable mineral claims in the Inner Corridor have not been open for development since PLO 5150 was established in 1971. Since this time, the price of gold has increased significantly. Given the close proximity of these lands to the Dalton Highway and the relative high value of gold since these lands were last open to mineral development, revoking PLO 5150 would signify an economic development opportunity that has yet to be explored in this market context. Hence, revoking PLO 5150, which would allow for federal mineral development within existing claims, may result in the development of these mineral resources and related economic activity in mining and supporting industries in the short term. While Alternative C2 would provide for more economic development opportunities in the Inner Corridor than all other alternatives, these development opportunities would be constrained to exploration and operations within existing claims until conveyed.



There are 645,331 acres of State-selected land that are identified by the State as Priority 1 for conveyance, which is anticipated to occur within 10 years on the RMP decision. In addition, there are 313,478 acres of State-selected lands that are Priority 2 through 4, whose timeline for conveyance to the State is unknown. Outside of mineral exploration and operations within existing claims, there are no anticipated economic impacts from these lands over the life of the plan. Upon conveyance to the State, locatable mineral production would be subject to the State's authority and beyond the scope of the RMP.

On the 163,063 acres on lands ranked as high or moderate mineral potential that are open to locatable mineral development, Alternative C2 would provide more flexibility than Alternative A. Alternative C2 does not include any withdrawals from locatable mineral entry, nor does it have ACECs that would require a plan of operation. Opportunities for long-term economic development related to locatable minerals are greater under Alternative C2 than Alternative A.

### Recreation and Tourism

In the long term, Alternative C2 may result in a greater distribution of recreational hunting and associated economic impacts in remote communities with air service within the planning area. This is because big game populations popular for sport hunting may not be as robust as under Alternative C2 due to potential impacts on important habitat for Dall sheep and caribou in the Dalton Utility Corridor from locatable mineral development. These are important sport-hunting species that attract recreational hunters and contribute to recreation and tourism expenditures. Should recreational hunting opportunities near the Dalton Highway degrade, or visual quality decline due to mineral development, the BLM anticipates that Alternative C2 may result in a redistribution of recreational hunters to more remote areas of the planning area where sport-hunting game species are more robust, and primitive and semi-primitive recreation opportunities persist. Therefore, Alternative C2 may result in a more diffuse distribution of economic impacts. This means less economic contributions to the communities of Wiseman and Coldfoot and the possibility of an increase in economic contributions, jobs, and labor income to rural communities with air service. These communities currently include Bettles, Ambler, Anaktuvuk Pass, and Galena.

### *Cost of Living*

#### Travel Restrictions

Like Alternative A, Alternative C2 does not have summer travel restrictions (May through October) within subsistence use areas or within 20 miles of communities. However, unlike Alternative A, Alternative C2 does have 125,186 acres of land within subsistence use areas or within 20 miles of communities subject to travel restrictions from May through June. The communities that may be directly affected by the travel restrictions include Rampart, Tanana, Allakaket, and Alatna.

The protective measures offered by the travel restrictions in core caribou habitat may reduce impacts on subsistence resources and thereby reduce the amount of effort expended for subsistence hunting. Potential direct impacts may increase travel distances and related fuel costs for subsistence purposes; however, they may be countered by the indirect impacts related to an increased abundance of subsistence resources.

Overall, Alternative C2 has more direct impacts on potentially increasing household fuel costs than Alternative A, but less than Alternative B. When the direct impacts and indirect impacts are considered in tandem, then Alternative C2 may result in increased subsistence abundance. Compared with Alternative A, this may reduce household fuel costs for travel.

The impacts on household fuel costs related to travel due to the status of PLOs are addressed in the following section under lands and realty.

### Lands and Realty

Alternative C2 recommends revoking PLO 5150 in the Outer Corridor. Under Alternative C2, there would be 1,112,664 acres within the Dalton Utility Corridor subject to federal subsistence priority designations. Federal subsistence priority would no longer apply on 264,170 acres of top-filed lands that would become valid State selections. State restrictions that prohibit the use of snowmachines within 5 miles of the Dalton Highway would fragment ownership patterns and eliminate motorized access to lands in the Outer Corridor for the communities of Wiseman and Coldfoot. The use of snow machines would continue to be allowed for subsistence purposes in the Inner Corridor.

In addition, the communities of Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, and Stevens Village would no longer be afforded the use of firearms for subsistence hunting purposes on lands in the Outer Corridor within 5 miles of the Dalton Highway. Loss of motorized access and loss of the use of firearms on these lands would increase the cost of living in these communities by increasing the time and effort spent hunting, increasing the distances traveled to access lands available for subsistence activities, increasing the household costs for fuel to participate in subsistence practices, or increasing the need to secure household food and goods through markets rather than through subsistence practices.

The communities of Coldfoot and Wiseman would be most acutely affected by the change in motorized access. The elimination of subsistence access would substantially limit access to much of their subsistence use areas relied upon for their livelihoods.

The increased costs associated with subsistence harvest may result in decreased subsistence harvest for super-households. This may translate into indirect impacts on low-income households in the planning area who may receive a reduced share of subsistence goods facilitated through interregional community distribution and trade. This may result in an increased cost of living for low-income households reliant upon the redistribution of subsistence resources.

### Subsistence

As described in the subsistence analysis of this EIS, Alternative C2 may affect subsistence access and abundance for communities in the planning area. Given the importance of subsistence in supporting rural livelihoods, from food, shelter, heating, and cultural systems, decreased access and abundance of subsistence would result in an increased reliance on markets to secure these resources, where there may be no suitable substitute. However, given the limited number of jobs and labor income and the high cost of goods in rural communities, substituting market goods for the loss of subsistence resources may not be feasible for many households. Many households report going without household necessities when they are unable to acquire subsistence resources (Brinkman et al. 2014). Hence, compared with Alternative A, rural subsistence communities in the planning area, including Coldfoot, Wiseman, Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, and Stevens Village, may experience an increased cost of living and a heightened risk of food insecurity due to impacts on subsistence resources.

The lack of designation of any ACECs will be seen by some as a rejection of local concerns about protection of important subsistence species and habitat, as well as a failure to be responsive to local values and knowledge. However, as reflected in comments in the ACEC report, others have commented that ACECs are unnecessary, larger than needed to protect key resources, pose unwarranted restrictions on mineral and other development, or restrict travel.

## ***Impacts under Alternative D***

### *Economic Development, Jobs, and Labor Income*

#### Lands and Realty

Similar to Alternatives A and C2, Alternative D maintains 98 percent of BLM-managed lands in the planning area as open to ROWs and maintains the Central Arctic Management Area Wilderness Study Area ROW exclusion area. However, Alternative D differs from Alternative C2 in that it does not propose any new ROW avoidance areas. Alternative D is generally more conducive to economic development compared with Alternative A. Given that there are no new mineral withdrawals, no new ROW exclusion or avoidance areas, and no ACEC designations, which require that a plan of operation be completed prior to developing mineral interests, Alternative D provides the most favorable environment for economic development.

#### Minerals

##### *Mineral Materials*

Economic activity generated from mineral materials development under Alternative D may be greater than that generated under Alternative A. This is because with only 259,000 acres closed to mineral materials development, there are more lands open under Alternative D than under Alternative A. In addition, Alternative D has a number of plan elements that support industrial development, such as no ROW avoidance or exclusion zones, the full revocation of PLO 5150, limited designations of ACECs, and the lack of limitation on utility and transportation development. As such, demand for mineral materials may exceed that which may occur under Alternative A. Hence, jobs and labor income in businesses directly and indirectly affected by mineral materials development could increase under Alternative D.

##### *Locatables*

Under Alternative D, the economic impacts would be similar to those under Alternative C2 for locatable mineral entry. Compared with all other alternatives, Alternative D would provide the most flexibility for locatable mineral development. Alternative D does not include any withdrawals from locatable mineral entry or ROW avoidance zones, nor does it have ACECs (except for Toolik Lake Research Natural Area), which would require a plan of operation. Alternative D is the least restrictive alternative for locatable mineral development. The costs for accessing and developing locatable minerals production may be less than under all other alternatives. Opportunities for economic development related to locatable minerals are greatest under Alternative D.

#### Recreation and Tourism

Economic development impacts related to recreation and tourism under Alternative D would be similar to those under Alternative C2.

##### *Cost of Living*

#### Travel Restrictions

Alternative D does not have travel restrictions. The impacts of Alternative D are similar to those under Alternative A in respect to travel restrictions. The impacts on the cost of living from the loss of priority subsistence access in the Dalton Utility Corridor due to the revocation of PLO 5150 are addressed in the following section under lands and realty.

#### Lands and Realty

Like Alternative C2, Alternative D revokes PLO 5150 in the Dalton Utility Corridor. The impacts of this action are similar to those described under Alternative C2, *Cost of Living, Lands and Realty*.

### Subsistence

The impacts of Alternative D are similar to the impacts of Alternative C2. The lack of designation of any ACECs will be seen by some as a rejection of local concerns about protection of important subsistence species and habitat, as well as a failure to be responsive to local values and knowledge. However, as reflected in comments in the ACEC report, others have commented that ACECs are unnecessary, larger than needed to protect key resources, pose unwarranted restrictions on mineral and other development, or restrict travel.

### **Conclusion**

In summary, there are unlikely to be direct economic impacts that would result in measurable changes to the economic structure or model in the majority of planning area communities. However, decisions in the plan that may affect the development of mineral resources over the life of the plan may result in changes to the economic composition or the ways people in rural subsistence communities secure their livelihoods and economic well-being. Communities in the planning area that are most likely to experience indirect economic impacts include rural subsistence communities, including, Coldfoot, Wiseman, Alatna, Allakaket, Anaktuvuk Pass, Bettles, Evansville, and Stevens Village, and non-subsistence communities, including Fairbanks, Healy, and North Pole.

In general, Alternative A is likely to sustain existing economic contributions to the mixed economy and market contributions from tourism, mining, and construction industries. Alternative B, outside of limitations for subsistence access for Coldfoot and Wiseman, would decrease economic risks for rural subsistence communities due to impacts on subsistence abundance; however, it would constrain development and potential economic development opportunities in both rural subsistence and non-subsistence communities through ROW exclusions, mineral withdrawals, ACEC designations, and no surface occupancy stipulation opportunities. Alternative C1 is similar to Alternative B, except that it would be more favorable to development and hence support a greater degree of economic activity. Alternatives C2 and D would increase economic risk for rural subsistence communities due to impacts on subsistence access and abundance, and support economic development in the planning area in the mining and construction industries. This may contribute to limited economic development in rural subsistence communities, and may result in shifting recreation and tourism patterns to more remote communities; hence, they may result in increased market contributions to remote rural subsistence communities.

### ***Economics: Cumulative Impacts***

Economic activity in the planning area may increase due to increased demand for mineral materials needed for the development of roads and pipelines over the life of the plan (described in the RFDS). Projects in the planning stage that may require sand, gravel, riprap, and common fill from BLM-managed lands in the planning area include the Alaska Stand Alone Pipeline Project, the Alaska Liquid Natural Gas pipeline, the Ambler Road, and the Arctic Strategic Transportation and Resources transportation network. The estimated materials needed for these projects are 59.9 million cubic yards. This amount does not include the Arctic Strategic Transportation and Resources transportation network because the estimated gravel need is unknown currently. There are 5.2 million cubic yards of gravel authorized for mineral materials production on BLM-managed lands in the planning area that currently accommodate maintenance needs for the Dalton Highway and the Trans-Alaska Pipeline.

All alternatives would allow for new mineral materials permits to be authorized in response to demand created by these projects. Alternative A would allow the BLM to accommodate an increase in demand for mineral materials. Hence, Alternative A would support the development of jobs and labor income in mining,

construction, transportation, and utilities in response to increased demand that would result from large utility and transportation construction projects in the planning area.

Businesses with economic linkages to mining, construction, transportation, and utility industries in non-subsistence use communities, such as Fairbanks, Ester, North Pole, Big Delta, and Delta Junction, may experience direct, indirect, and induced economic impacts in the form of increased jobs and labor income, should construction activities supported by the authorization of mineral materials increase.

Contrary to data provided by the Alaska Department of Labor Statistics identified in the AMS, information gathered from residents of Coldfoot and Wiseman suggests there are few residents who receive a regular income from mineral material sales; rather, work in mineral materials offers irregular employment (ADFG Division of Subsistence 2019). Hence, mineral materials production may not be considered a reliable and consistent source of employment and labor income for residents living in proximity to the Dalton Highway. Given the concentration of existing mineral materials sites within the Dalton Utility Corridor and the anticipated increased demand for mineral materials, it may be that jobs and labor income for residents of Wiseman and Coldfoot may increase in regularity and become a reliable form of employment and labor income over the life of the plan.

All alternatives would continue to provide an opportunity to develop locatable federal mineral claims. The lands with the greatest potential locatable mineral production and related economic impacts are those lands ranked high and medium potential in the Dalton Utility Corridor. It is unknown what mineral development projects may evolve over the life of the plan, where specifically these may occur, or to what extent. This is because there are many factors that would influence development of mineral resources in the global market place, such as the price of mineral commodities and trade policy. Non-subsistence use communities in the planning area would be most likely to be affected by the direct expenditures to develop these mineral interests. This is because most of the existing businesses that may be directly affected and supporting industries are in urban communities. The communities of Wiseman and Coldfoot may be indirectly affected through indirect and induced spending related to placer and lode mining, but they are not likely to be directly employed in locatable mining operations.

Lands ranked as high and moderate potential for locatable mineral development occur in the Ray Mountain area, where there are known deposits of rare earth minerals. The majority of these lands are either selected or top-filed, which would limit mineral exploration and operation to existing mining claims. No new mineral claims would be authorized until the lands are conveyed to the State or Native corporations or the lands are released from selection. The relatively large portion of lands selected or top-filed by the State limits the extent of exploration and operations regardless of mineral potential ranking or market conditions for the foreseeable future on these lands.

For high and medium potential ranked lands that are not selected in this area, development of these mineral deposits is unlikely over the life of the plan. While interest in developing these mineral resources in this region is high, there are currently no roads, nor existing transportation plans under development that would provide access to this area. For the aforementioned reasons, it is unlikely that these minerals in the Ray Mountain area would be developed over the life of the plan under any of the alternatives. Hence, development of high and moderate potential mineralized lands in the Ray Mountain area is not expected to contribute to jobs and labor incomes for communities in the planning area.

For Alternatives B and C1, locatable mineral development may be relatively unresponsive to global market demand in the short term for the following reasons. Lands ranked as high and moderate potential located in

the Inner Corridor are withdrawn from mineral location and entry due to the retention of PLO 5150; therefore, these lands are not open for mineral production. The development of lands ranked as high and moderate locatable mineral potential that are selected in the Outer Corridor (264,170 acres) would be constrained to existing claims until such time that State-selected lands are conveyed to the State or released from selection, regardless of global market demand or the value of gold. Upon such time that Priority 1 lands in the Outer Corridor (165,228 acres) are conveyed to the State, it is likely that mineral development and the related economic impacts would be similar to those under Alternative A. For this analysis, this time is assumed to be after year 10 following revocation of PLO 5150 for lands identified as Priority 1 by the State. The change in landownership and mineral administration may not affect the amount or distribution of economic impacts, as described under Alternative A.

Alternatives C2 and D may result in a greater level of mineral production in the long term (over 10 years) than Alternative A; hence, they may have the larger economic impact due to revoking PLO 5150 in the Inner Corridor. This is because in the long term, Alternatives C2 and D would create more economically feasible mineral development opportunities with relatively lower costs, given the proximity of Inner Corridor lands to the Dalton Highway. The economic impacts would be similar in distribution to Alternative A because Alternatives C2 and D would support the same industries and related communities as described under Alternative A; however, the magnitude of the economic impacts may be greater under Alternatives C2 and D. Private industry may respond to relatively new mineral opportunities provided by revoking PLO 5150 in the Inner Corridor, increasing economic activity in the short term on existing claims, and given favorable market conditions. This may increase the economic activity, jobs, and labor income in the long term upon the conveyance of lands ranked as high and moderate locatable mineral potential.

Given the anticipated level of mineral development in the Inner Corridor that may arise under State ownership, potential impacts on the sport-hunting opportunities and scenic character of the Inner Corridor may degrade the existing recreation opportunities related to primitive and semi-primitive recreation opportunities. Hence, existing recreation and tourist patterns may be disrupted. Recreationists seeking these types of experiences may opt to recreate in communities that can be more easily accessed via new roads that may be constructed in the planning area or by air service. Under Alternatives C2 and D, it is anticipated that a greater portion of recreationists would opt to visit communities in more remote location than under Alternatives A, B, and C1. Therefore, Alternatives C2 and D may result in a greater degree of economic development in recreation and tourism industries in communities such as Tanana, Bettles, Anaktuvuk Pass, Galena, Alatna, Allakaket, Stevens Village, and Venetie or Arctic Village, to the extent these communities have the ability to capitalize on this potential source of revenue.

Recreation visitation and tourism would be largely driven by national and global economic conditions. Roads that may be developed across BLM-managed lands may increase the distribution of visitation to other communities in the planning area relatively close to new roads. This may result in new economic development opportunities in rural communities due to increased visitation from recreationists. In the long term, the roads that may be developed within the Ambler and Umiat utility and transportation corridors may result in a change in recreation and tourism patterns, as overland access to Bettles, Evansville, and Anaktuvuk Pass may be more accessible to a larger visiting population. Related economic development opportunities for guiding, lodging, and food services may arise from such developments in these communities.

The high cost of fuel combined with the long distance to markets also contribute to higher food and fuel prices in rural markets. Fuel prices affect the financial burden of households and influence the availability of

financial resources to purchase other essential goods and services. Fuel prices also affect subsistence harvesters' access to subsistence resource by influencing cost of travel per unit of distance. Fuel prices are driven by market conditions that are beyond the scope of this decision; however, actions in the planning area that may drive down rural fuel prices include the development of roads, such as the road to Ambler and the road to Umiat. One study of the components of delivered fuels costs in Alaska (Fay et al. 2009) found that rural communities that were connected by road, pipeline, or railway to refineries had the lower costs per unit of fuel as compared with communities who relied on fuel supplies being delivered by air service. An analysis of factors driving rural fuel prices in western Alaska found that one of the factors influencing the cost of fuel in rural communities was over-road access to allow for year-round delivery.

Jobs and labor income related to mineral materials production from BLM-managed lands are expected to increase over the life of the plan due to increased demand for gravel, common fill, and riprap for new roads proposed for development within the planning area.

Under Alternatives C2 and D, upon conveyance of lands top-filed and selected by the State, lands underlain by high and moderate potential mineralized lands in the Inner Corridor may have a high likelihood of being developed given their proximity to the Dalton Highway. Habitat conditions that support the continued abundance of subsistence resources in the Inner Corridor may be at a heightened risk of degradation due to mineral development. Hence, there could be a reduction in the availability of subsistence resources. In addition, under State management, recreational hunting in the Dalton Highway Corridor Management Area may be encouraged, which may further increase competition between subsistence and recreational hunters. Lastly, loss of priority subsistence access due to State selection of these lands would inhibit access to subsistence regions, increasing costs to secure subsistence resources. Compared with Alternative A, these pressures may result in an increase in the cost of living for subsistence use communities by increasing the time and distance traveled to harvest subsistence resources.

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# Appendix T

Areas of Critical Environmental Concern

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## ACRONYMS AND ABBREVIATIONS

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Full Phrase

ACEC	area of critical environmental concern
BLM	Bureau of Land Management
BMP	best management practice
CFR	Code of Federal Regulations
DSHA	Dall sheep habitat area
DSMC	Dall sheep movement corridor
DSSA	Dall sheep study area
GMH	Galena Mountain Herd
NSO	no surface occupancy
NWSRS	National Wild and Scenic Rivers System
OHV	off-highway vehicle
ORV	outstandingly remarkable value
PLO	Public Land Order
R&I	relevant and important
RMH	Ray Mountains Herd
RMP	resource management plan
RNA	research natural area
ROW	right-of-way
VRM	visual resource management
WSR	wild and scenic river

# Appendix T. Areas of Critical Environmental Concern

Areas of critical environmental concern (ACECs) are defined in the Federal Land Policy and Management Act, Section 103(a), as an area on Bureau of Land Management (BLM) lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes, or to protect life and ensure safety from natural hazards. BLM regulations for implementing the ACEC provisions of the Federal Land Policy and Management Act are found in 43 Code of Federal Regulations (CFR) 1610.7-2(b).

A research natural area (RNA) is “an area that is established and maintained for the primary purpose of research and education” (43 CFR 8223). The land must have at least one of the following characteristics:

- A typical representation of a common plant or animal association
- An unusual plant or animal association
- A threatened or endangered plant or animal species
- A typical representation of common geologic, soil, or water features, outstanding or unusual geologic, soil, or water features
- A sufficient number and size to adequately provide for scientific study, research, and demonstration purposes

Special management attention refers to management prescriptions developed during preparation of a resource management plan (RMP) or RMP amendment expressly to protect the important and relevant values of an area from the potential effects of actions the RMP permits, including proposed actions deemed to be in conformance with the terms, conditions, and decisions of the RMP (BLM Manual 1613, Areas of Critical Environmental Concern [BLM 1988]). Such management measures would not be necessary or prescribed if the critical and important features were not present.

To be designated as an ACEC, the area must meet criteria of relevance and importance found in 43 CFR 1610-7-2(a)(b), and as defined in BLM Manual 1613, Areas of Critical Environmental Concern (BLM 1988). To be eligible for designation as an ACEC, an area must meet criteria for both relevance and importance. An ACEC possesses significant historic, cultural, or scenic values; fish or wildlife resources, including habitat, communities, or species; natural processes or systems; or natural hazards. In addition, the significance of these values and resources must be substantial to satisfy the importance criteria.

ACECs differ from some other special management designations in that designation by itself does not automatically prohibit or restrict other uses in the area. The special management attention is designed specifically for the relevant and important (R&I) values; therefore, it varies from area to area. Restrictions that arise from an ACEC designation are determined at the time the designation is made, and are designed to protect the values or serve the purposes for which the designation was made.

Goals, standards, and objectives for each proposed ACEC will be identified, as well as general management practices and uses, including necessary constraints and mitigation measures. The RMP will identify a reasonable range of alternatives that will include current management for existing ACECs, as well as

management for proposed ACECs. In addition, ACECs are protected by the provisions of 43 CFR 3809.1-4(b)(3), which require an approved plan of operations for activities resulting in more than 5 acres of disturbance under the mining laws.

### **T.1 CURRENT CONDITIONS**

The BLM currently manages 18 ACECs in the planning area, which contain 1,751,000 acres collectively. The planning area also contains an additional six ACECs that are also designated as RNAs, which contain 104,000 acres collectively; these areas are referred to as ACEC/RNAs. ACECs and ACEC/RNAs are herein collectively referred to as “ACECs.” Additional information is available in Section 2.3.1, Areas of Critical Environmental Concern, at: [https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP\\_AMS\\_all\\_April\\_2016\\_Final.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/35315/72940/80089/CYRMP_AMS_all_April_2016_Final.pdf). These ACECs were reevaluated as part of the RMP revision process to determine whether the R&I values of each ACEC were still present and required continued management attention, whether threats of irreparable damage to the values had been identified, and whether current management is sufficient to protect the values.

In accordance with BLM Manual 1613, Areas of Critical Environmental Concern (BLM 1988), the Central Yukon Field Office interdisciplinary team reviewed all BLM-managed lands in the planning area, including existing ACECs, to determine whether any areas should be considered for designation as ACECs. The BLM review included both internal and external nominations, as well as areas identified through inventory and monitoring, and adjacent designations of other federal and state agencies. Forty-six areas were nominated for special designation as ACECs. The results of the evaluation were used in this analysis and are described in the Areas of Critical Environmental Concern Report on the Application and Relevance Criteria (BLM 2015). Those ACECs for which nominated values were determined to be both R&I are referred to as “potential ACECs” and are considered for designation. In some cases, potential ACECs encompass existing ACECs. As shown in **Table T-1**, 31 areas encompassing approximately 4,253,000 acres were determined to be potential ACECs. The BLM conducted a comprehensive evaluation of impacts on undesignated potential ACECs and the BLM’s ability to protect R&I values from proposed management of other resources and resource uses.

Changes to potential ACECs and R&I values could occur as a result of climate change. Specifically, climate change could affect potential ACECs’ various R&I values, namely soil, water, fish/riparian, wildlife, geologic, and vegetation values. General warming of the Arctic could result in increased erosion rates and thawing of permafrost, affecting soil, geologic, and vegetation R&I values. Additionally, the retreat of arctic sea ice, the melting of glaciers, and decreased snowpack caused by climate change could also result in depleted water resources, degrading water and vegetation R&I values. These impacts from climate change could also degrade or destroy wildlife habitat, adversely affecting wildlife and special status species R&I values. Further, a warming climate is likely to change the fire regime, potentially changing the type and extent of wildlife habitat, resulting in the degradation of soils, vegetation, and wildlife habitat throughout the Arctic (Markon et al. 2018).

**Table T-1  
Summary Evaluation of Potential ACECs**

#	Potential ACEC (total potential acres)	Alternative					R&I Value								
		A	B	C1	C2	D	Soil	Water	Geologic	Fish/ Riparian	Wildlife	Vegetation	Special Species Status	Cultural	Scenic
1	Accomplishment Creek (41,000)	0	41,000	7,000	0	0	•	•		•					
2	Alatna River (5,000)	0	5,000	4,000	0	0	•	•		•					
3	Arms Lake RNA (11,000)	11,000	11,000	0	0	0	•				•				
4	Galbraith Lake (52,000)	52,000	52,000	52,000	0	0				•					
5	Galena Mountain (75,000)	19,000	62,000	0	0	0				•					
6	Hogatza River Tributaries (221,000)	5,000	221,000	0	0	0	•	•		•					
7	Huslia River (73,000)	0	73,000	0	0	0	•	•		•					
8	Indian River (175,000)	155,000	173,000	0	0	0	•	•		•					
9	Ishtalitna Creek Hot Springs RNA (1,000)	1,000	1,000	0	0	0	•	•			•				
	Jim River (304,000)	203,000	303,000	30,000	0	0	•	•		•	•			•	
11	Kanut Hot Springs (150)	40	150	0	0	0	•	•							
12	Klikhtentotzna Creek (108,000)	0	108,000	0	0	0	•	•		•					
	Lake Todatonten Pingos RNA (1,000)	1,000	1,000	0	0	0	•	•			•				
14	McQuesten Creek RNA (4,000)	4,000	4,000	0	0	0	•	•			•				
15	Mentanontli River/Lake Todatonten (20,000)	0	20,000	0	0	0				•					
16	Midnight Dome/Kalhabuk (10,000)	0	10,000	0	0	0	•				•				
17	Nugget Creek (3,000)	3,000	3,000	0	0	0	•				•				

#	Potential ACEC (total potential acres)	Alternative					R&I Value									
		A	B	C1	C2	D	Soil	Water	Geologic	Fish/ Riparian	Wildlife	Vegetation	Special Species Status	Cultural	Scenic	
18	Poss Mountain (25,000)	9,000	25,000	0	0	0	•					•				
19	Redlands Lake RNA (4,000)	4,000	4,000	0	0	0	•					•				
20	Sethkokna River (299,000)	0	299,000	0	0	0	•	•			•					
21	South Fork Koyukuk River (415,000)	0	415,000	44,000	0	0	•	•			•					
22	South Todatonten Summit RNA (1,000)	1,000	1,000	0	0	0	•	•				•				
23	Spooky Valley RNA (9,000)	10,000	9,000	0	0	0					•	•				
24	Sukakpak/ Snowden Mountain (124,000)	3,000	124,000	124,000	0	0				•					•	
25	Sulukna River (399,000)	25,000	398,000	51,000	0	0	•	•			•	•				
26	Toolik Lake RNA (106,000)	77,000	106,000	106,000	77,000	0						•	•			
27	Tozitna (1,043,000)	0	1,043,000	0	0	0	•	•			•					
	Tozitna River (82,000)	842,000	0	0	0	0	•	•			•					
	Tozitna Subunits North and South (23,000)	192,000	0	0	0	0	•	•			•					
28	Upper Kanuti River (50,000)	0	50,000	0	0	0						•		•		
29	Upper Teedriinjik (Chandalar) River (295,000)	0	295,000	0	0	0	•	•			•					
30	West Fork Atigun River (34,000)	9,000	34,000	0	0	0	•					•				
31	Wheeler Creek (145,000)	0	145,000	0	0	0	•	•			•					

Source: BLM 2015; BLM GIS 2017

Note: Each • above indicates that a R&I value was identified for that potential ACEC.



## **T.2 DIRECT AND INDIRECT IMPACTS**

See **Chapter 2** for the analytical issues related to ACECs and the analytical methods used in this analysis.

Direct impacts on potential ACECs are those that either impair or enhance the R&I values for which the potential ACEC was proposed for designation. As such, this analysis focuses on relevance and importance criteria for each potential ACEC and impacts on these values from either the special management derived from ACEC designation or, under alternatives where an ACEC is not proposed for designation, the management actions for other resources. All impacts discussed are direct impacts, though some may not occur immediately after implementation of management actions.

The effects of climate change described in the affected environment, above, could influence the rate or degree of the potential direct and indirect impacts.

## **T.3 METHODS AND ASSUMPTIONS**

The analysis area used to analyze impacts on ACECs includes each ACEC within the Central Yukon RMP decision area. Impacts identified for ACECs are specific to the area and are based on the impact that management actions would have on the R&I values of an ACEC.

### **Indicators**

The indicator of impacts on potential ACECs is the following: management actions that would fail to “prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards” (BLM 1988).

### **Assumptions**

This analysis assumes the following:

- Although management actions for most resources and resource uses could have decision area-wide application, ACEC management prescriptions apply only to those lands in each specific ACEC.
- Any management actions affecting less than 1,000 acres were not evaluated in this analysis, given the margin of error for the geographic information system data.
- ACEC designation provides protection and focused management for relevant values beyond that provided through general management of the parent resource (e.g., the cultural resource ACECs will receive greater recognition and protection than the general management action regarding cultural resources).
- Permitted activities are assumed to have mitigations proposed so as not to impair the R&I values for which an ACEC is designated. The exception is locatable minerals; until withdrawn from mineral entry, a mining claim can be filed, and subsequent mining could affect R&I values of the ACEC. Specific impacts on R&I values would depend on the type of mineral entry activity and the effectiveness of subsequent reclamation, and the mineral entry’s interaction (both spatially and temporally) with that value.
- Impacts resulting from locatable minerals would be subject to 43 CFR 3809, intended to (1) prevent unnecessary or undue degradation of the land and reclaimed disturbed areas, and (2) provide for maximum possible coordination with state agencies to avoid duplication and to ensure that operators prevent unnecessary or undue degradation of public lands.

#### **T.4 IMPACTS COMMON TO ALL ACTION ALTERNATIVES**

Designated ACECs are those acres of potential ACECs that would be designated under a given alternative, while undesignated ACECs are those acres of potential ACECs that would not be designated under a given alternative. Under alternatives where ACECs are proposed for designation, special management for ACECs provides a more focused approach to protecting R&I values; therefore, ACEC designation would be the most protective of R&I values. Under alternatives where ACECs are not proposed for designation, protection of R&I values relies on the management under other resources or resource uses and management requirements under law, policy, and regulation. Incidental protections would usually be in a more generalized manner.

In general, management actions that protect resources—such as improvements in water quality and quantity, surface disturbance restrictions, management for desired plant communities and habitats, travel restrictions and closures, and recreation restrictions—would help maintain and improve R&I values within undesignated ACECs. Likewise, management actions that create the potential for resource degradation—such as mineral and infrastructure development—could lead to impacts on R&I values within undesignated ACECs. However, implementing various restrictions, policies, stipulations, and best management practices (BMPs) could help reduce these impacts on R&I values.

#### **T.5 ALTERNATIVES COMPARISON ANALYSIS**

This section discusses impacts on undesignated potential ACECs, and the BLM's ability to protect R&I values from proposed management of other resources and resource uses. This section is structured by ACEC, then by alternative within the ACEC. ACEC designation is considered in Alternatives A, B, C1, and C2. Alternative D would not designate ACECs.

#### **T.6 ACCOMPLISHMENT CREEK**

##### **Alternative A (No Action)**

Under Alternative A, the entire potential ACEC (41,000 acres) is not designated. The area where Dolly Varden trout can overwinter is limited. The Dolly Varden trout overwintering habitat identified as a fish R&I value in the potential ACEC is threatened by impacts on subsurface flow and streamflow from river crossings and activities within the floodplain. The area is easily accessed by the Sagavanirktok River drainage via the Dalton Highway. Additionally, because this area's watershed is adjacent to the Dalton Highway, the water R&I value is also threatened, given that the potential for disturbance to water is high if permitted motorized access increases under this RMP. Consequently, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC would help prevent further threat to these R&I values.

Additionally, all 41,000 undesignated acres are encumbered under Public Land Order (PLO) 5150, of which 7,000 acres (17 percent of the undesignated area) would continue to be withdrawn from locatable mineral entry and fluid mineral entry. This would help protect R&I values by prohibiting surface-disturbing activities on these acres. However, 34,000 undesignated acres (83 percent of the undesignated area) would continue to be available for locatable mineral entry, and the entire undesignated area would continue to be open to mineral material sales. The R&I values in open areas could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff.

Limiting off-highway vehicle (OHV) travel to existing routes on all undesignated acres would reduce impacts on R&I values from motorized and mechanized travel by limiting surface disturbance and vegetation destruction.

### **Alternative B**

The entire potential ACEC (41,000 acres) would be designated to protect crucial Dolly Varden trout overwintering habitat, resulting in the most protection of R&I values of all the alternatives. The management prescriptions identified in **Chapter 2** would help protect R&I values within this designated ACEC and reduce threats to R&I values.

For top-filed lands in the undesignated acres under PLO 5150, when the PLO is revoked, those lands become valid selections and are no longer open to further federal mineral entry. The 41,000 undesignated acres in the outer PLO 5150 corridor could be closed to mineral entry in the interim (until conveyance to the State of Alaska or until the State determines to remove the selection).

### **Alternative C1**

Under this alternative, 17 percent (7,000 acres) of the potential ACEC would be designated to protect crucial Dolly Varden trout overwintering habitat, concentrating on the streams and streambeds. The management prescriptions identified in **Chapter 2** would help protect R&I values within the 7,000 acres of the ACEC and reduce threats to R&I values.

However, PLOs would be recommended for revocation for 28,000 acres (82 percent of the undesignated area), all of which are in the outer corridor and would continue to be available for locatable mineral entry and fluid mineral entry. Impacts would be the same as those described under Alternative A, but they would occur over a smaller area (13,000 fewer acres and 6,000 fewer acres, respectively). This would result in fewer impacts than those described under Alternative A for this management action. All 28,000 acres available for locatable mineral entry would be top-filed. For top-filed lands in the undesignated acres retained under PLO 5150, when the PLO is revoked, those lands become valid selections and are no longer open to further federal mineral entry. In addition, all 34,000 acres in the undesignated potential ACEC would be open to mineral material sales. Impacts would be the same type as those described under Alternative A, but they would occur over a smaller area (7,000 fewer acres). This would result in fewer impacts than those described under Alternative A.

Only 6,000 acres (18 percent of the undesignated area) would be encumbered under the PLO and would be withdrawn from locatable mineral entry and fluid mineral entry. This would help to protect soil and water R&I values by prohibiting surface-disturbing activities in these acres; however, there would be 35,000 fewer acres than under Alternative A.

Limiting OHV travel on all 34,000 undesignated acres would have the same impacts as those described under Alternative A, but they would be limited to a smaller area (7,000 acres less than Alternative A).

All of the undesignated acres overlap with lands with wilderness characteristics that are managed to emphasize other resource values and multiple uses while applying management restrictions to reduce impacts on wilderness characteristics. These areas would provide protections, right-of-way (ROW) avoidance, and no surface occupancy (NSO) stipulations for fluid mineral entry. Additionally, the BLM would retain non-State-selected BLM-managed lands and those not conveyed under the Alaska Statehood Act and Alaska Native Claims Settlement Act in federal ownership in these areas. As a result, these restrictions and closures would indirectly protect R&I values. However, allowing some mineral material

sales vegetation treatment, and prescribed fire could also degrade R&I values in this area. Compared with Alternative A, which does not designate any acres as lands with wilderness characteristics, Alternative C1 would provide more protection for R&I values from this management action.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (41,000 acres) would not be designated. The entire undesignated area (41,000 acres) would overlap with proposed utility corridors, which replace a withdrawal for the same purpose.

Additionally, PLO 5150 would be recommended for revocation on these 41,000 acres. These acres would be open to locatable mineral entry, fluid mineral entry, and mineral material sales, which would result in the same impacts as those described under Alternative A (but on 7,000 more acres for locatable mineral entry). All 41,000 of the acres open for locatable mineral entry would be top-filed.

Limiting OHV travel on all undesignated acres would have the same impacts as those described under Alternative A.

### **Alternative D**

The entire potential ACEC (41,000 acres) would not be designated. Within the undesignated area, 7,000 acres (17 percent) would overlap with an administrative designation for a utility corridor to replace the current withdrawal for the same purpose.

PLOs would be recommended for revocation for all 41,000 acres of the undesignated acres. These acres would be open to mineral material sales, which would result in the same impacts as those described under Alternative A. However, 7,000 more acres would be available for locatable mineral entry, resulting in more impacts on R&I values than Alternative A for this management action.

Lastly, limiting OHV travel to existing routes on all undesignated acres would have the same impacts as those described under Alternative A.

## **T.7 ALATNA RIVER**

### **Alternative A (No Action)**

Under Alternative A, the entire potential ACEC (5,000 acres) is not designated. The Alatna River provides a spawning ground for sheefish, an important subsistence fish for interior residents. Because the area is surrounded by non-BLM-managed land, any changes in landownership could decrease access to this area for subsistence users. Consequently, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC would help prevent further threat to these R&I values. Additionally, these 5,000 undesignated acres would continue to be retained under an Alaska Native Claims Settlement Act 17(d)(1) withdrawal and would continue to be withdrawn from locatable mineral entry and fluid mineral entry. These actions would prohibit surface-disturbing activities associated with minerals development, helping to protect the already threatened R&I values in this area. However, these 5,000 undesignated acres would also continue to be open to mineral material sales, which could affect R&I values by allowing for more mineral development.

### **Alternative B**

The entire potential ACEC (5,000 acres) would be designated to protect crucial whitefish spawning habitat, supporting the main subsistence fishery resources for villages in the Upper Koyukuk River. This would result in the greatest protection of R&I values of the alternatives. The management prescriptions identified in **Chapter 2** would help protect R&I values within this designated ACEC and reduce threats to R&I values.

**Alternative C1**

Under this alternative, 80 percent (4,000 acres) of the potential ACEC would be designated to protect crucial whitefish spawning habitat, supporting the main subsistence fishery resources for villages in the Upper Koyukuk River. Designating these acres would result in greater protections for R&I values than under Alternative A, which does not designate any acres. The management prescriptions identified in **Chapter 2** would help protect R&I values within this designated portion of the ACEC and reduce threats to R&I values.

In the remaining 20 percent of the potential ACEC (1,000 acres), outside of the designated area, all acres would be available for locatable mineral entry and fluid mineral entry, and would be open to mineral material sales. Of the acres open for locatable mineral entry, 1,000 would be State-selected, segregated from mineral entry. While the mineral potential is low, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff. This area is remote, and access is limited for development. Compared with Alternative A, which retains all 5,000 acres and withdraws these acres from fluid mineral entry, Alternative C1 could cause more impacts on R&I values from this management action.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC (5,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C1.

**Alternative D**

The entire potential ACEC (5,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C1.

**T.8 ARMS LAKE RNA****Alternative A (No Action)**

The entire potential ACEC/RNA would continue to be designated (11,000 acres) to protect the sand dune complex and associated vegetation and limnological characteristics. The management prescriptions identified in **Chapter 2** would help protect R&I values and reduce the threats to R&I values.

**Alternative B**

The entire potential ACEC/RNA would be designated (11,000 acres). Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

**Alternative C1**

The entire potential ACEC/RNA (11,000 acres) would not be designated. The sand dunes in this area do not currently have immediate access; however, OHVs or other surface-disturbing activities could potentially affect sand dunes. Consequently, any direct or indirect protections from management actions on undesignated acres could help preserve the soil and vegetation R&I values in the area.

All 11,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, and would be open to mineral material sales. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of vegetation and erosion that could degrade soils; however, mineral potential here is low.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC/RNA (11,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C1.

**Alternative D**

The entire potential ACEC/RNA (11,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C1.

**T.9 GALBRAITH LAKE**

**Alternative A (No Action)**

The entire potential ACEC (52,000 acres) would continue to be designated to protect cultural resources, rare or sensitive plants, high scenic values, and crucial Dall sheep lambing areas. The management prescriptions identified in **Chapter 2** would help protect the wildlife R&I value and reduce threats to this value.

**Alternative B**

The entire potential ACEC (52,000 acres) would be designated to protect cultural resources, high scenic values, and crucial Dall sheep habitat, including mineral licks. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

**Alternative C1**

The entire potential ACEC (52,000 acres) would be designated to protect wildlife. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC (52,000 acres) would not be designated. The R&I value of the wildlife has increased pressure on the resource due to immediate access from the Dalton Highway, which increases access to Dall Sheep habitat. Additionally, noise from truck and air transportation used to support utility projects associated with the utility corridor could affect Dall sheep habitat. Additional ROW permits stemming from the utility corridor in high ground areas may cross Dall sheep habitat, which could affect this species. Consequently, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help preserve the soil and vegetation R&I values related to the habitat.

Limiting OHV travel to existing routes on all 52,000 undesignated acres would reduce impacts on the wildlife R&I value from motorized and mechanized travel by limiting wildlife disturbance and habitat fragmentation. However, the entire undesignated area would overlap with proposed utility corridors, which replace a withdrawal for the same purpose. Construction within utility corridors could degrade R&I values due to impacts from surface disturbance and infrastructure associated with this development, including destroying wildlife habitat and disturbing wildlife; without a designation, the likelihood of mitigation measures for permitted development projects to protect the R&I value is low.

PLOs would be recommended for revocation on these 52,000 acres. These acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. As a result, the wildlife R&I value could be degraded due to impacts from surface disturbance and infrastructure associated with this development, including destroying wildlife habitat and disturbing wildlife. All 52,000 acres of the acres open for locatable mineral entry would be top-filed. The area would be managed as a visual resource management (VRM) Class III, which could impair the scenic R&I values. Managing the

ACEC as VRM Class III would require fewer mitigation measures to meet visual resource objectives, compared with VRM Class II.

Compared with Alternative A, Alternative C2 would cause more adverse impacts on R&I values from all of the above management actions.

### **Alternative D**

The entire potential ACEC (52,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2.

## **T.10 GALENA MOUNTAIN**

### **Alternative A (No Action)**

Under this alternative, 19,000 acres of the 75,000 total acres in the potential ACEC (25 percent) would continue to be designated to protect the calving grounds of the Galena Mountain Herd (GMH). The management prescriptions identified in **Chapter 2** would help protect the wildlife R&I value and reduce threats to this value.

The herd size is approximately 125 individuals and is in decline due to low recruitment from other herds and low calf survival. Consequently, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values.

Of the remaining 56,000 undesignated acres, 16,000 acres (29 percent of the undesignated ACEC) would be open to locatable mineral entry. This could affect the wildlife R&I value due to surface disturbance and infrastructure development. These 16,000 acres would be State-selected, segregated from mineral entry.

The undesignated acres (55,000 acres, or 73 percent of the entire potential ACEC) would continue to be withdrawn from fluid mineral entry, but 40,000 acres (73 percent of the undesignated ACEC) would be open to metalliferous mining. If these activities were to occur, this could result in the degradation of the wildlife R&I value due to wildlife habitat destruction and wildlife disturbance.

### **Alternative B**

Under this alternative, 62,000 acres of the entire potential ACEC (83 percent) would be designated to protect the calving grounds of the GMH. This would result in greater protections for R&I values than Alternative A, as 43,000 more acres would be designated than under Alternative A. The management prescriptions identified in **Chapter 2** would help protect R&I values and reduce threats to R&I values.

### **Alternative C1**

Under this alternative, 62,000 acres would not be designated (83 percent of the entire potential ACEC), resulting in less protections for R&I values than under Alternative A. These 62,000 undesignated acres would be available for locatable mineral entry, and 46,000 acres would be open to fluid mineral leasing (74 percent of the undesignated area); however, the mineral potential is low. Of the acres open for locatable mineral entry, 29,000 would be State-selected, segregated from mineral entry. Compared with Alternative A, which withdraws 55,000 acres from fluid mineral entry, Alternative C1 would result in greater degradation to R&I values.

However, 62,000 acres would be closed to mineral material sales. This could result in more protections for the wildlife R&I by limiting wildlife disturbance and wildlife habitat destruction, compared with Alternative A, which opens 56,000 acres to mineral material sales.

Limiting 62,000 undesignated acres to a timing limitation for OHV use during core caribou calving from May 1 to June 30 would be more protective of the wildlife R&I value than Alternative A, helping to reduce impacts on the GMH.

The 62,000 undesignated acres would overlap with ROW avoidance areas. R&I values could be degraded if development requiring a ROW permit were to occur in the area; however, prohibiting commercial energy development and allowing only minor land use authorizations would continue to help protect ACEC values by minimizing or eliminating surface disturbance associated with development. Compared with Alternative A, which does not overlap with any ROW avoidance areas, Alternative C1 would result in greater protections for R&I values (specifically for the GMH).

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (75,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A.

There would be 75,000 acres open to locatable mineral entry and fluid mineral entry, and 13,000 acres (17 percent of the undesignated area) would be open to mineral material sales, resulting in more impacts on R&I values than Alternative A. Of the acres open to locatable mineral entry, 29,000 would be State-selected, segregated from mineral entry. There would be 62,000 acres (83 percent of the undesignated area) closed to mineral material sales, which could help protect R&I values.

There would be 62,000 undesignated acres (83 percent of the undesignated area) that would overlap with ROW avoidance areas to protect core habitat for the GMH. This would result in the same type of impacts as those described under Alternative C1.

### **Alternative D**

The entire potential ACEC (75,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. The entire undesignated area would be available for locatable mineral entry and fluid mineral entry, resulting in the same impacts as those described under Alternative C2. However, 46,000 acres (61 percent of the undesignated area) would also be open to mineral material sales, which could affect R&I values by allowing for more mineral development. It should be noted that there are no caribou habitat management allocations specific to Galena Mountain under this alternative.

Additionally, all 75,000 undesignated acres would be open to commercial timber development, which could degrade the wildlife R&I value by causing surface disturbance and affecting wildlife habitat. Compared with Alternative A, Alternative D would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

## **T.11 HOGATZA RIVER TRIBUTARIES**

### **Alternative A (No Action)**

Only 2 percent (5,000 acres) of the entire potential ACEC (221,000 acres) would continue to be designated to protect crucial salmon spawning habitat. The management prescriptions identified in **Chapter 2** would help protect R&I values and reduce threats to R&I values.

Mining development opportunities in several of the Hogatza River's tributaries (Clear and Caribou Creeks) have the potential to affect water resources, aquatic habitat, and fisheries. Additionally, chum salmon spawning habitat in the Clear Creek drainage is on the watch list for BLM special status species.



Consequently, any direct or indirect protections from management actions for other resources within the undesignated potential ACEC would help protect these values.

For example, of the remaining undesignated acres (217,000 acres, or 98 percent of the entire potential ACEC), 41,000 acres (19 percent of the undesignated area) overlap with rivers identified as eligible or suitable for inclusion in the National Wild and Scenic River System (NWSRS). The acres that overlap or are adjacent to these eligible or suitable segments would receive some indirect protection from wild and scenic river (WSR) management, especially for the fish/riparian and water R&I values. Consequently, this indirect protection would likely include protection for crucial salmon spawning habitat and riparian vegetation within the Hogatza River tributaries. This is because the BLM would take no action that would adversely affect the free-flowing condition, outstandingly remarkable values (ORVs) and adequate water quality to support ORVs, or tentative classification of the eligible or suitable segments.

Additionally, 29 percent of the undesignated area (64,000 acres) would continue to be retained under the PLOs. This area would continue to be withdrawn from locatable mineral entry and closed to fluid mineral leasing, which would prohibit surface-disturbing activities associated with minerals development and protect R&I values.

However, 152,000 acres (70 percent of the undesignated area) would continue to be available for locatable mineral entry and open to fluid mineral leasing, and all 217,000 undesignated acres would continue to be open to mineral material sales. Of the acres open for locatable mineral entry, 1,000 would be State-selected, segregated from mineral entry. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff.

### **Alternative B**

The entire potential ACEC (221,000 acres) would be designated to protect crucial chum salmon summer spawning habitat. This would result in greater protections for R&I values than Alternative A. The management prescriptions identified in **Chapter 2** would help protect R&I values and reduce threats to R&I values.

### **Alternative C1**

The entire potential ACEC (221,000 acres) would not be designated, resulting in less protections for R&I values than Alternative A. Withdrawals would be recommended for revocation for 67,000 acres (30 percent of the undesignated area). All 221,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry (69,000 more acres than Alternative A) and open to mineral material sales (5,000 more acres than Alternative A). This would result in the same type of impacts as those described under Alternative A, but over a larger area. Of the acres open to locatable mineral entry, 26,000 would be State-selected, segregated from mineral entry. However, 112,000 acres (51 percent of the undesignated area) would be subject to controlled surface use stipulations for fluid mineral entry, while 1,000 acres (less than 1 percent of the undesignated area) would be subject to NSO stipulations. These would reduce impacts on R&I values by limiting surface disturbance.

A total of 55,000 undesignated acres (25 percent of the undesignated area) would overlap with areas closed to commercial timber development. Making this area unavailable for commercial timber development would preclude timber infrastructure development and surface disturbance. This would result in greater protection of R&I values from this management action than Alternative A, which does not overlap with any

acres closed to commercial timber development. However, 166,000 acres (75 percent of the undesignated area) would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (221,000 acres) would not be designated, resulting in less protections for R&I values than Alternative A. However, of the undesignated acres, 41,000 acres (19 percent of the undesignated area) overlap with rivers identified as eligible or suitable for inclusion in the NWSRS. This would result in the same type of impacts as those described under Alternative A.

All 221,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry (69,000 more acres than Alternative A) and open to mineral material sales (5,000 more acres than Alternative A). This would result in the same type of impacts as those described under Alternative A, but over a larger area. Of the acres open to locatable mineral entry, 26,000 would be State-selected, segregated from mineral entry.

All 221,000 undesignated acres be open to commercial timber development, which could degrade the R&I values by causing surface disturbance and affecting wildlife habitat. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

### **Alternative D**

The entire potential ACEC (221,000 acres) would not be designated, resulting in less protections for R&I values than Alternative A. Withdrawals would be recommended for revocation for 67,000 acres (30 percent of the undesignated portion of the ACEC). All 221,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same impacts as those described under Alternative C1, except no acres would be subject to controlled surface use or NSO stipulations.

Additionally, 221,000 acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative D would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

## **T.12 HUSLIA RIVER TRIBUTARIES**

### **Alternative A (No Action)**

Under Alternative A, the entire potential ACEC (73,000 acres) is not designated. Currently, there are no threats to the R&I values. However, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values. For example, under this alternative, all 73,000 undesignated acres would continue to be retained under withdrawals and be withdrawn from locatable mineral entry and fluid mineral entry. These actions would prohibit surface-disturbing activities associated with minerals development and protect the R&I values. Additionally, limiting OHV travel on all 73,000 acres to existing routes would reduce impacts on R&I values from motorized and mechanized travel by limiting surface disturbance and vegetation destruction.

However, the 73,000 acres would continue to be open to mineral material sales, which could affect R&I values by allowing for more mineral development.

### **Alternative B**

The entire potential ACEC (73,000 acres) would be designated to protect Chinook, chum, coho, and sockeye salmon and whitefish spawning habitat, resulting in the greatest protection for R&I values of the alternatives. The management prescriptions identified in **Chapter 2** would help protect R&I values.

### **Alternative C1**

The entire potential ACEC (73,000 acres) would not be designated. Withdrawals would be recommended for revocation for these 73,000 undesignated acres. These acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. Of the acres open to locatable mineral entry, 59,000 would be State-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 2,000 would be top-filed. Compared with Alternative A, Alternative C1 would cause more adverse impacts on R&I values, as Alternative A retains these acres under a withdrawal from locatable mineral entry. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff. However, 9,000 acres (12 percent of the undesignated area) would be subject to controlled surface use stipulations, which would reduce impacts on R&I values by limiting surface disturbance.

There would be 66,000 undesignated acres (90 percent of the undesignated area) open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A. There would be 7,000 undesignated acres (10 percent of the undesignated area) that would overlap with areas closed to commercial timber development. Making these acres unavailable for commercial timber development would help protect R&I values by precluding timber infrastructure development, surface disturbance, and riparian habitat damage.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (73,000 acres) would not be designated. Withdrawals would be recommended for revocation for these 73,000 undesignated acres. These acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative C1, except no acres would be subject to controlled surface use stipulations, resulting in potentially greater impacts. Of the acres open to locatable mineral entry, 59,000 would be State-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 2,000 would be top-filed.

Further, all 73,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

### **Alternative D**

The entire potential ACEC (73,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C1, except no acres

would overlap with areas closed to commercial timber development. Additionally, there would be no acres for fluid mineral entry subject to controlled surface use stipulations.

Further, all 73,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative D would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

### **T.13 INDIAN RIVER**

#### **Alternative A (No Action)**

Under this alternative, 155,000 acres (89 percent) of this potential ACEC would continue to be designated to protect crucial salmon spawning habitat. The management prescriptions identified in **Chapter 2** would help protect R&I values.

Currently, there are no threats to the R&I values in this area. However, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values.

The remaining 20,000 undesignated acres (11 percent of the total potential ACEC) would continue to be available for locatable mineral entry and fluid mineral entry, and would be open to mineral material sales. Of the acres open for locatable mineral entry, 10,000 would be State-selected, segregated from mineral entry. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff.

#### **Alternative B**

Under this alternative, 99 percent of the entire potential ACEC (173,000 acres) would be designated to protect crucial Chinook and chum salmon summer spawning habitat. This would result in greater protections for R&I values than Alternative A, as 18,000 more acres would be designated. The management prescriptions identified in **Chapter 2** would help protect R&I values within this designated portion of the ACEC.

However, the 2,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A, but on a smaller area (18,000 less acres). These 2,000 acres would be managed according to VRM Class IV objectives, which would allow modifications to the landscape that have noticeable or dominant visual contrasts. This may result in greater impacts on R&I values than under Alternative A, which manages the undesignated area as VRM unclassified.

Additionally, these 2,000 acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative B would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

#### **Alternative C1**

The entire potential ACEC (175,000 acres) would not be designated, resulting in less protections for R&I values than Alternative A. Of the undesignated area, 10,000 acres (6 percent) would overlap with areas

closed to commercial timber development. Making these acres unavailable for commercial timber development would preclude timber infrastructure development, surface disturbance, vegetation removal, weed spread, and riparian habitat damage. This would result in greater protection for R&I values than Alternative A, which does not overlap with any areas closed to commercial timber development.

Withdrawals would be recommended for revocation for 31,000 acres (18 percent) of the undesignated area. Additionally, all of the 175,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A, except over 155,000 more acres. Of the acres available for locatable mineral entry, 4,000 would be top-filed. However, 40,000 acres would be subject to controlled surface use stipulations for fluid mineral entry, which could help protect R&I values by limiting surface disturbance.

There would be 165,000 acres (94 percent of the undesignated area) open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

#### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (175,000 acres) would not be designated, resulting in less protections for R&I values than Alternative A.

All of the 175,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A, except over 155,000 more acres. Of the acres open to locatable mineral entry, 21,000 would be State-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 4,000 would be top-filed.

Additionally, all 175,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

#### **Alternative D**

The entire potential ACEC (175,000 acres) would not be designated, resulting in less protections for R&I values than Alternative A. Management actions for other resources and impacts on R&I values would be the similar to those described under Alternative C1, except that no acres overlap with areas closed to commercial timber development. Additionally, there would be no acres for fluid mineral entry subject to controlled surface use stipulations.

### **T.14 ISHTALITNA CREEK HOT SPRINGS RNA**

#### **Alternative A (No Action)**

The entire potential ACEC/RNA (1,000 acres) would continue to be designated to protect the low-gradient hot springs system and unique assemblages of plants associated with the system. The management prescriptions identified in **Chapter 2** would protect R&I values.

### **Alternative B**

The entire potential ACEC/RNA (1,000 acres) would be designated to protect the low-gradient hot springs systems and associated vegetation and soils. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

### **Alternative C1**

The entire potential ACEC/RNA (1,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. The hot springs are currently threatened by potential access by OHVs, and other surface-disturbing activities, which could adversely affect the hot springs due to increased erosion, sedimentation, and runoff. Consequently, any direct or indirect protections from management actions for other resources within the undesignated potential ACEC could help preserve the soil and vegetation R&I values. For example, all 1,000 undesignated acres overlap with ROW exclusion areas. Managing these acres as ROW exclusion makes them unavailable for ROW location, thereby protecting R&I values by eliminating surface disturbance associated with development.

The 1,000 undesignated acres would be closed to mineral material sales and fluid mineral entry. This could help protect R&I values by precluding surface-disturbing activities, infrastructure development, vegetation removal, and weed spread. However, 1,000 acres would be open to locatable mineral entry. These acres would be State-selected, segregated from mineral entry. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff.

These 1,000 undesignated acres also would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

The 1,000 undesignated acres overlap with lands with wilderness characteristics that are managed to emphasize other resource values and multiple uses while applying management restrictions to reduce impacts on wilderness characteristics. This would result in impacts as described under *Accomplishment Creek – Alternative C1*.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC/RNA (1,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. These 1,000 acres would be available for locatable mineral entry and fluid mineral entry. As a result, R&I values could be degraded due to impacts from infrastructure and surface disturbance associated with mineral development, including destruction of soils and vegetation and contamination of surface water from wastewater spills and runoff. These acres would be State-selected, segregated from mineral entry. However, these 1,000 acres would be closed to mineral material sales, which could help protect R&I values by precluding surface-disturbing activities, infrastructure development, vegetation removal, and weed spread.

These 1,000 undesignated acres, however, would be open to commercial timber development. This would result in the same type of impacts as those described under Alternative C1.

## Alternative D

The entire potential ACEC/RNA (1,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. These 1,000 acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. As a result, R&I values could be degraded due to impacts from infrastructure and surface disturbance associated with mineral development, including destruction of soils and vegetation and contamination of surface water from wastewater spills and runoff.

Additionally, these 1,000 acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils. Compared with Alternative A, Alternative D would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

## T.15 JIM RIVER

### Alternative A (No Action)

Under this alternative, 67 percent (203,000 acres) of the entire potential ACEC (304,000 acres) would be designated to protect crucial salmon spawning habitat, recreational fisheries, cultural resources, and high scenic values. The management prescriptions identified in **Chapter 2** would protect R&I values.

The proximity of the Jim River/Prospect Creek watershed to the Dalton Highway continues to attract economically feasible roads and mining development opportunities, which threaten aquatic habitat and fisheries in this area. Additionally, several prehistoric sites in this potential ACEC are likely to meet the criteria for inclusion on the National Register of Historic Places. Lastly, there are approximately 30 Dall sheep located south of Brookes Range. Therefore, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values. For example, of the 101,000 acres of the undesignated area, all would be retained under withdrawals and closed to fluid mineral leasing, while 43,000 acres (43 percent of the undesignated area) would be withdrawn from locatable mineral entry. This would prohibit surface-disturbing activities associated with minerals development and protect the R&I values.

Additionally, of this undesignated area, 11,000 acres (11 percent) would continue to overlap with rivers identified as eligible or suitable for inclusion in the NWSRS. These acres of the ACEC that overlap or are adjacent to these eligible or suitable WSRs would receive some indirect protection from WSR management. This is because the BLM would take no action that would adversely affect the free-flowing condition, ORVs, and adequate water quality to support ORVs or tentative classification of the eligible or suitable segments.

Limiting OHV travel to existing routes on all 101,000 undesignated acres would reduce impacts on R&I values from motorized and mechanized travel by limiting surface disturbance, wildlife disturbance, and habitat fragmentation.

However, 59,000 acres (58 percent of the undesignated area) would continue to be available for locatable mineral entry, while all 101,000 undesignated acres would continue to be open to mineral material sales. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development. These impacts include destruction of soils and fish habitat, degradation of cultural values and resources, erosion that could degrade aquatic habitats, destruction of wildlife habitat, disturbance to wildlife, and contamination of surface water from wastewater spills and runoff.

The entire undesignated area would continue to be managed according to VRM Class III or Class IV objectives, which allow modifications to the landscape that have noticeable or dominant visual contrasts. This could impair R&I values in this area by allowing surface-disturbing activities.

### **Alternative B**

Almost the entire potential ACEC would be designated (99 percent, or 303,000 acres) to protect Dall sheep, crucial Chinook and chum salmon spawning habitat and overwintering habitat for resident fish, soils, water, cultural resources, and scenic values. This would result in greater protection of R&I values than Alternative A, as 100,000 more acres would be designated. The management prescriptions identified in **Chapter 2** would protect R&I values within this designated portion of the ACEC.

The remaining 1,000 undesignated acres (less than 1 percent of the entire potential ACEC) of the Jim River ACEC overlap with ROW avoidance areas. R&I values could be degraded if development requiring a ROW permit were to occur in the area; however, prohibiting commercial energy development and allowing only minor land use authorizations would continue to help protect ACEC values by minimizing or eliminating surface disturbance associated with development. Compared with Alternative A, which does not overlap with any ROW avoidance areas, Alternative B would result in greater protections for R&I values.

However, these 1,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, resulting in the same type of impacts as those described under Alternative A, but over a smaller area (58,000 fewer acres). Managing these 1,000 acres as VRM Class II would result in greater protection for R&I values from most impacts associated with management activities with large-scale, ground-disturbing activities. It would, however, allow activities that modify the landscape but have low visual contrast and do not attract attention.

Additionally, these 1,000 acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat, degradation of cultural values and resources, erosion that could degrade aquatic habitats, destruction of wildlife habitat, and disturbance to wildlife. Compared with Alternative A, Alternative B would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

### **Alternative C1**

Under this alternative, 10 percent of the entire potential ACEC (30,000 acres) would be designated to protect Chinook and chum salmon spawning habitat and overwintering habitat for resident fish, soils, water, cultural resources, and scenic values, resulting in less protections for R&I values than Alternative A. The management prescriptions identified in **Chapter 2** would protect R&I values.

Of the remaining 274,000 acres (90 percent) of the potential ACEC, withdrawals would be recommended for revocation for 240,000 acres (88 percent of the undesignated area), while 34,000 acres (12 percent of the undesignated area) would remain in lands withdrawn by PLO 5150. Additionally, 240,000 acres (89 percent of the undesignated area) would be available for locatable mineral entry (181,000 more acres than Alternative A) and fluid mineral entry (1,000 acres would be available for fluid mineral entry under Alternative A). There would be 273,000 acres (99 percent of the undesignated area) open to mineral material sales (171,000 more acres than Alternative A), resulting in the same type of impacts as those described under Alternative A. Of the acres open for locatable mineral entry, 58,000 would be State-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 91,000 would be top-filed.



However, 34,000 acres (11 percent of the undesignated area) would be withdrawn from locatable mineral entry (9,000 fewer acres than Alternative A) and fluid mineral entry (68,000 fewer acres than Alternative A). This would prohibit surface-disturbing activities associated with minerals development and protect the R&I values. Additionally, 89,000 acres (32 percent of the undesignated area) would be subject to controlled surface use stipulations for fluid mineral entry, while 72,000 acres (26 percent of the undesignated area) would be subject to NSO stipulations. These would reduce impacts on R&I values by limiting surface disturbance.

All 274,000 undesignated acres would be open to commercial timber development, resulting in the same type of impacts as those described under Alternative B. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

Managing 254,000 acres (93 percent of the undesignated area) as VRM Class II would protect R&I values from most impacts associated with management activities with large-scale, ground-disturbing activities. This would result in greater protection for R&I values than under Alternative A. It would, however, allow activities that modify the landscape but have low visual contrast and do not attract attention. This could diminish R&I values by allowing surface-disturbing activities. Additionally, 20,000 acres (7 percent of the undesignated area) would be managed according to VRM Class III objectives. This would result in the same impacts as those described under Alternative A, except over a smaller area (30,000 fewer acres).

Limiting OHV travel to existing routes on all 274,000 undesignated acres would result in the same impacts as those described under Alternative A, except over a larger area (172,000 more acres).

Within the undesignated acres, 56,000 acres (20 percent) overlap with the Dall Sheep study area (DSSA). This overlap would indirectly protect R&I values because effects minimization and mitigation requirements, namely BMPs, would be implemented in these areas to protect Dall sheep habitat. Additionally, other restrictions, such as travel management restrictions and recreation permit limitations, would be enforced in the DSSA, protecting the R&I values by limiting disturbance. However, allowing some development for recreational purposes and managing for ROWs could potentially degrade R&I values by causing some surface disturbance and affecting vegetation and wildlife habitat.

Lastly, allowing for fluid mineral, locatable mineral, and mineral materials entry and development in the DSSA could degrade R&I values due to surface disturbance and infrastructure development. However, applying NSO stipulations could help mitigate impacts.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (304,000 acres) would not be designated.

There would be 42,000 acres (14 percent of the undesignated area) that would overlap with utility corridors. Construction within utility corridors could degrade R&I values due to impacts from surface disturbance and infrastructure associated with this development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff. Compared with Alternative A, which does not overlap with any utility corridors, Alternative D would result in greater degradation to R&I values from this management action.

PLOs would be recommended for revocation for the entire undesignated area, and all undesignated acres would be available for locatable mineral entry and fluid mineral entry. They also would be open to mineral material sales, resulting in the same type of impacts as those described under Alternative A, except over a

larger area (245,000 more acres for locatable mineral entry; 304,000 more acres for fluid mineral entry). This would result in greater impacts on R&I values. Of the acres open to locatable mineral entry, 64,000 would be State-selected. Of the acres open to locatable mineral entry, 145,000 would be top-filed.

The entire undesignated area would continue to be managed according to VRM Class III or Class IV objectives, resulting in the same impacts as those described under Alternative A, except over a larger area (202,000 more acres).

Additionally, all 304,000 undesignated acres would be open to commercial timber development. This would result in the same type of impacts as those described under Alternative C1, but over a larger area.

### **Alternative D**

The entire potential ACEC (304,000 acres) would not be designated. All withdrawals, including PLOs would be recommended for revocation for the entire undesignated area. All undesignated acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A, except over a larger area (245,000 more acres for locatable mineral entry; 304,000 more acres for fluid mineral entry), resulting in greater impacts on R&I values.

The entire undesignated area would continue to be managed according to VRM Class III or Class IV objectives, resulting in the same impacts as those described under Alternative C2.

There would be 42,000 acres (14 percent of the undesignated area) that would overlap with utility corridors, resulting in the same type of impacts as those described under Alternative C2.

Additionally, all 304,000 undesignated acres would be open to commercial timber development, resulting in the same type of impacts as those described under Alternative B. Compared with Alternative A, Alternative D would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

Limiting OHV travel to existing routes on all 304,000 undesignated acres would result in the same types of impacts as those described under Alternative A, except over a larger area (202,000 more acres).

## **T.16 KANUTI HOT SPRINGS**

### **Alternative A (No Action)**

Under this alternative, 27 percent of the entire potential ACEC acres would be designated (40 acres) to protect the hot springs system. The management prescriptions identified in **Chapter 2** would protect R&I values.

Currently, there is an immediate need for special management attention to protect this undeveloped spring from any development actions that could damage R&I values; consequently, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC would help protect the soil and water R&I values.

### **Alternative B**

Under this alternative, the entire potential ACEC (150 acres) would be designated to protect the hot springs system, resulting in greater protection for R&I values than Alternative A.

**Alternative C1**

Under this alternative, the entire potential ACEC (150 acres) would not be designated. This would result in greater impacts than Alternative A, which would designate 40 acres of the ACEC. All impacts would be equal to or less than 150 acres. Under this alternative, a portion of the entire potential ACEC would be open to timber development, which could degrade R&I values due to surface disturbance, including destruction of soils. Additionally, withdrawals would be recommended for revocation on a portion of the 150 total acres, and these acres would be open to locatable mineral entry and mineral material development. Consequently, R&I values could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and contamination of surface water from wastewater spills and runoff. A portion of the 150 total acres would be withdrawn from locatable mineral entry, however, which could protect R&I values by limiting surface disturbance on these acres.

**Alternative C2 (Preferred Alternative)**

Under this alternative, the entire potential ACEC (150 acres) would not be designated. Impacts would be the same as those described under Alternative C1.

**Alternative D**

Under this alternative, the entire potential ACEC (150 acres) would not be designated. Impacts would be the same as those described under Alternative C1.

**T.17 KLIKHTENTOTZNA CREEK****Alternative A (No Action)**

The entire potential ACEC (108,000 acres) would not be designated. Currently, there are no threats to the R&I values. However, any direct or indirect protections from management actions for other resources within the undesignated potential ACEC would help protect the R&I values.

The entire undesignated potential ACEC would continue to be available for locatable mineral entry and fluid mineral entry, and open to mineral material sales. Consequently, the R&I values could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development. These impacts include destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff.

**Alternative B**

The entire potential ACEC (108,000 acres) would be designated to protect crucial chum salmon summer spawning habitat. The management prescriptions identified in **Chapter 2** would protect R&I values.

**Alternative C1**

The entire potential ACEC (108,000 acres) would not be designated. This entire area would be available for locatable mineral entry and fluid mineral entry, and it would be open to mineral material sales. This would result in the same impacts as those described under Alternative A. However, 25,000 acres (23 percent of the undesignated area) would be subject to controlled surface use stipulations for fluid mineral entry, which would reduce impacts on R&I values by limiting surface disturbance.

There would be 13,000 acres (12 percent of the undesignated potential ACEC) that would overlap with areas closed to commercial timber development. This management action would offer protection for R&I values by precluding timber infrastructure development, surface disturbance, and riparian habitat damage. However, 95,000 acres (88 percent of the undesignated area) would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and

fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC (108,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C1.

**Alternative D**

The entire potential ACEC (108,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C1.

**T.18 LAKE TODATONTEN PINGOS RNA**

**Alternative A (No Action)**

The entire potential ACEC/RNA (1,000 acres) would continue to be designated to protect open system pingos. The management prescriptions identified in **Chapter 2** would protect R&I values.

**Alternative B**

The entire potential ACEC/RNA (1,000 acres) would be designated to protect the soil, hydrologic processes, and vegetation associated with the pingos system. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

**Alternative C1**

The entire potential ACEC/RNA (1,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. The soil, water, and vegetation R&I values are all threatened due to warming associated with climate change, which could alter this area and, in some cases, eliminate pingos due to thawing permafrost. Consequently, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC/RNA would help prevent further threat to these R&I values.

All 1,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This could degrade R&I values due to impacts from infrastructure and surface disturbance associated with mineral development, including destruction of soils and vegetation and contamination of surface water from wastewater spills and runoff. All of these 1,000 acres open to locatable mineral entry would be State-selected, segregated from mineral entry. Additionally, these 1,000 acres would be managed according to VRM Class IV objectives, which could also affect R&I values by allowing surface-disturbing activities.

Additionally, these 1,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and vegetation. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC/RNA (1,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C1.

**Alternative D**

The entire potential ACEC/RNA (1,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C1.

**T.19 MCQUESTEN CREEK RNA****Alternative A (No Action)**

The entire potential ACEC/RNA (4,000 acres) would continue to be designated to protect the low-gradient hot springs system and unique assemblages of plants associated with the system. The management prescriptions identified in **Chapter 2** would protect R&I values.

**Alternative B**

The entire potential ACEC/RNA (4,000 acres) would be designated to protect the low-gradient hot springs systems and associated vegetation and soils. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

**Alternative C1**

The entire potential ACEC/RNA (4,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. Currently, there are no threats to the R&I values. Any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values.

These 4,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. These 4,000 acres open for locatable mineral entry would be State-selected, segregated from mineral entry. As a result, R&I values could be degraded due to impacts from infrastructure and surface disturbance associated with mineral development, including destruction of soils and vegetation and contamination of surface water from wastewater spills and runoff.

Additionally, these 4,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and vegetation. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

The 4,000 undesignated acres also overlap with lands with wilderness characteristics that are managed to emphasize other resource values and multiple uses while applying management restrictions to reduce impacts on wilderness characteristics. The impacts would be as described under *Accomplishment Creek – Alternative C1*.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC/RNA (4,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C1, except there would be no overlap with any lands with wilderness characteristics.

**Alternative D**

The entire potential ACEC/RNA (4,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2.

## **T.20 MENTANONTLI RIVER/LAKE TODATONTEN**

### **Alternative A (No Action)**

The entire potential ACEC (20,000 acres) would not be designated. Currently, there are no threats to the R&I values. Any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values.

Of the undesignated area, all 20,000 undesignated acres would continue to be available for locatable mineral entry, open to fluid mineral leasing, and open to mineral material sales. 14,000 of the acres open for locatable mineral entry would be State-selected, segregated from mineral entry. As a result, the fish/riparian R&I value could be degraded due to impacts from infrastructure and surface disturbance associated with mineral development, including destruction of fish habitat, and erosion or contamination that could degrade the quality of aquatic habitats. Additionally, under this alternative, the entire potential ACEC is open to cross country travel, which could impact R&I values by allowing surface disturbance.

### **Alternative B**

The entire potential ACEC (20,000 acres) would be designated as an ACEC to protect crucial feeding habitat for humpback whitefish and whitefish migration route, resulting the greatest amount of protection for R&I values of the alternatives. The management prescriptions identified in **Chapter 2** would protect ACEC values. Under this alternative, there is no summer OHV restriction.

### **Alternative C1**

The entire potential ACEC (20,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative A. The exception is that the 20,000 undesignated acres would be managed according to VRM Class IV objectives, rather than VRM unclassified as under Alternative A. Consequently, compared with Alternative A, this management action could result in greater impacts on R&I values by allowing surface-disturbing activities.

The 20,000 undesignated acres would be open to locatable mineral entry, resulting in the same type of impacts as those described under Alternative A. Of the acres open for locatable mineral entry, 14,000 would be State-selected, segregated from mineral entry.

Additionally, these 20,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of fish habitat and erosion that could degrade the quality of aquatic habitats. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Impacts on R&I values from OHV management would be the same as those described under Alternative A.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (20,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C1.

### **Alternative D**

The entire potential ACEC (20,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative A. Additionally, the 20,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of fish habitat and erosion that could degrade the

quality of aquatic habitats. Compared with Alternative A, Alternative D would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

## **T.21 MIDNIGHT DOME/KALHABUK**

### **Alternative A (No Action)**

Under Alternative A, the entire potential ACEC (10,000 acres) is not designated. Recreation and other human activities currently threaten the wildlife R&I value of this potential ACEC, as human disturbance can disrupt Dall sheep movement and use of the area. Therefore, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect R&I values. For example, limiting OHV travel to existing routes on all 10,000 undesignated acres would reduce impacts on R&I values from motorized and mechanized travel by limiting surface disturbance, vegetation destruction, wildlife disturbance, and habitat fragmentation.

All 10,000 acres would be encumbered by PLOs and would be withdrawn from fluid mineral entry. However, 90 percent of the undesignated area (9,000 acres) would continue to be available for locatable mineral entry, and all undesignated acres would continue to be open to mineral material sales. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and wildlife habitat, as well as wildlife disturbance. However, 1,000 acres (10 percent) of the undesignated area would continue to be withdrawn from locatable mineral entry, which would prohibit surface-disturbing activities associated with minerals development, helping to protect R&I values.

The entire undesignated area would continue to be managed according to VRM Class III or Class IV objectives, which allow modifications to the landscape that have noticeable or dominant visual contrasts. This could impair R&I values in this area by allowing surface-disturbing activities.

### **Alternative B**

The Midnight Dome/Kalhabuk ACEC would be designated (10,000 acres) to protect Dall sheep habitat and mineral lick protection zones, resulting in greater protection for R&I values than under Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values.

### **Alternative C1**

The entire potential ACEC (10,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative A, except that PLOs would be recommended for revocation on 9,000 acres (90 percent) of the undesignated area. These acres would be open to fluid mineral leasing, leaving 1,000 acres (10 percent) withdrawn from fluid mineral leasing. Compared with Alternative A, these management actions would result in greater impacts on R&I values. This is because all 10,000 acres would be withdrawn from fluid mineral leasing under Alternative A, and 9,000 acres would be open to locatable mineral entry (resulting in the same impacts as those described under Alternative A). Any selected lands in the area would prevent new mineral entry; however, those selections could be relinquished or rejected, and the lands would then be open to locatable minerals under those conditions.

The 10,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and wildlife habitat, as well as wildlife disturbance. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Within the undesignated acres, 1,000 acres (10 percent) would continue to overlap with the DSSA, while 9,000 acres (90 percent) would overlap with Dall sheep movement corridors (DSMCs). This overlap would indirectly protect R&I values, as various effects minimization and mitigation requirements, including BMPs and disturbance limits for DSMCs, would be implemented to protect Dall sheep habitat. Additionally, various restrictions, such as travel management restrictions and recreation permit limitations, would be enforced, protecting R&I values by limiting disturbance to the area.

Allowing some development for recreational purposes and managing for ROWs could affect and degrade R&I values by allowing surface disturbance. For DSMCs, allowing some development for recreational purposes, communication towers, transmission lines and pipelines, and ROW and corridor development could degrade R&I values by allowing surface disturbance and infrastructure development.

Lastly, allowing for fluid mineral, locatable mineral, and mineral material entry and development in the DSSA could degrade R&I values due to surface disturbance and infrastructure development.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (10,000 acres) would not be designated. PLO 5150 would be recommended for revocation on these 10,000 acres. This would result in greater impacts on R&I values than Alternative A, which retains all these acres under the PLO. Further, these acres would be available for locatable mineral entry and top-filed, and would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A, but on 1,000 more acres for locatable mineral entry. Additionally, 10,000 acres would be open to fluid mineral leasing and development, while Alternative A withdraws these 10,000 acres. Of the undesignated acres (90 percent), 9,000 would be managed according to VRM Class III objectives, resulting in the same impacts as those described under Alternative A, except over 1,000 less acres.

Additionally, the 10,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and wildlife habitat, as well as wildlife disturbance. Compared with Alternative A, Alternative D would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Further, 1,000 acres (10 percent of the undesignated area) would overlap with utility corridors. Construction within utility corridors could degrade R&I values due to impacts from surface disturbance and infrastructure associated with this development, including destruction of soils and wildlife habitat, as well as disturbance to wildlife. Compared with Alternative A, which does not overlap with utility corridors, Alternative C2 would result in more impacts on R&I values. Limiting OHV travel to existing routes on 10,000 acres would result in the same impacts as those described under Alternative A.

### **Alternative D**

The entire potential ACEC (10,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2.

## **T.22 NUGGET CREEK**

### **Alternative A (No Action)**

The entire potential ACEC (3,000 acres) would continue to be designated to protect crucial Dall sheep lambing areas and mineral licks. The management prescriptions identified in **Chapter 2** would protect the R&I values.



### **Alternative B**

The entire potential ACEC (3,000 acres) would be designated to protect priority Dall sheep habitat (including mineral licks). Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

### **Alternative C1**

The entire potential ACEC (3,000 acres) would not be designated, resulting in greater impacts on R&I values than under Alternative A. A significant number of hunters use the Dalton Highway for easy access to hunt Dall sheep. Additionally, this potential ACEC contains natural mineral licks, which provide essential minerals to ungulates in the area, and are critical for maintaining healthy Dall sheep populations in the vicinity. Therefore, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values. For example, the 3,000 undesignated acres would be encumbered under PLOs and would be withdrawn from locatable mineral entry, and 2,000 acres would be closed to mineral material sales. These would prohibit surface-disturbing activities associated with minerals development, helping to protect R&I values. Additionally, 3,000 acres (100 percent of the undesignated area) would be withdrawn from fluid mineral leasing reducing impacts on R&I values by restricting surface disturbance.

Managing these 3,000 acres as VRM Class II would require that development be constructed in a manner that maintains the existing character of the landscape. This would protect R&I values from most impacts associated with management activities with large-scale, ground-disturbing activities. It would, however, allow activities that modify the landscape but have low visual contrast and do not attract attention. Additionally, limiting OHV travel to existing routes on 3,000 acres would reduce impacts from motorized and mechanized travel by limiting surface disturbance, wildlife disturbance, and habitat fragmentation.

However, the 3,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and wildlife habitat, as well as wildlife disturbance. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Under this alternative, 1,000 acres (33 percent of the undesignated area) overlap with the DSSA, while 2,000 acres (66 percent of the undesignated area) overlap with a DSMC. This overlap would provide indirect protections to R&I values. This is because various effects minimization and mitigation requirements, including BMPs and disturbance limits for DSMCs, would be implemented in these areas to protect Dall sheep habitat. Additionally, various restrictions, such as travel management restrictions and recreation permit limitations, would be enforced, protecting R&I values by limiting disturbance.

However, allowing some development for recreational purposes and managing for ROWs could affect and degrade R&I values by allowing surface disturbance. For DSMCs, allowing some development for recreational purposes, communication towers, transmission lines and pipelines, and ROW and corridor development could degrade R&I value by allowing surface disturbance and infrastructure development.

Lastly, allowing for fluid mineral leasing, locatable mineral entry, and mineral material disposal and development in the DSSA could degrade R&I values due to surface disturbance and infrastructure development. Applying NSO stipulations could help mitigate impacts.

The entire undesignated area overlaps with lands with wilderness characteristics that are managed to emphasize other resource values and multiple uses while applying management restrictions to reduce

impacts on wilderness characteristics. The impacts would be as described under *Accomplishment Creek – Alternative C1*.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (3,000 acres) would not be designated, resulting in greater impacts on R&I values than under Alternative A. These 3,000 undesignated acres would overlap with utility corridors. Construction within utility corridors could degrade R&I values due to impacts from surface disturbance and infrastructure associated with this development, including destruction of soils and wildlife habitat, as well as disturbance to wildlife.

Further, PLOs would be recommended for revocation for these 3,000 undesignated acres. These acres would be available for locatable mineral entry and fluid mineral development, and they would be open to mineral material sales. These 3,000 acres would also be top-filed. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and wildlife habitat, as well as wildlife disturbance. These 3,000 undesignated acres would be managed according to VRM Class III objectives, which would allow modifications to the landscape that attract the attention of the casual observer. This could impair R&I values by allowing surface-disturbing activities. Managing the ACEC as Class III would require fewer mitigation measures to meet visual resource objectives, compared with VRM Class II.

The 3,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and wildlife habitat, as well as wildlife disturbance. Compared with Alternative A, Alternative D would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Limiting OHV travel to existing routes on 3,000 acres would result in the same impacts as those described under Alternative C1.

### **Alternative D**

The entire potential ACEC (3,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2. However, managing the 3,000 acres as Class III (as opposed to Class II under Alternative C2) would require fewer mitigation measures to meet visual resource objectives, compared with VRM Class II.

## **T.23 POSS MOUNTAIN**

### **Alternative A (No Action)**

Only 36 percent (9,000 acres) of the entire potential ACEC would continue to be designated to protect crucial Dall sheep lambing areas and mineral licks. The management prescriptions identified in **Chapter 2** would protect the R&I values.

The Poss Mountain Dall sheep herd is an isolated subpopulation that is currently under threat due to reduced lamb production in recent years. Additionally, this subpopulation depends on a known mineral lick within the perimeter of the current Poss Mountain ACEC, as well as a mineral lick located to the north of the ACEC on an embankment in Gold Creek. The Gold Creek mineral lick is located near an area of human activity. Additionally, a large mineral site has been established to the west of this mineral lick to support road construction, and mining is currently being conducted to the east of this mineral lick. As a result, this high level of human activity could greatly increase the potential for disturbance to sheep that use this mineral lick. Further, additional development in the area would likely compound disturbance to this isolated

subpopulation. Therefore, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the wildlife and soil R&I values.

For example, of the 16,000 undesignated acres (64 percent of the entire potential ACEC), all would be encumbered by PLOs, and 2,000 acres (13 percent of the undesignated area) would continue to be withdrawn from locatable mineral entry. This would prohibit surface-disturbing activities associated with minerals development and protect R&I values. Additionally, limiting OHV travel to existing routes on all 16,000 acres would reduce impacts from motorized and mechanized travel by limiting surface disturbance, wildlife disturbance, and habitat fragmentation.

However, 15,000 acres (58 percent of the undesignated area) would continue to be available for locatable mineral entry, and 17,000 acres would be open to mineral material sales. Of the acres open to locatable mineral entry, 9,000 would be top-filed. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and wildlife habitat, as well as wildlife disturbance.

The entire undesignated area would continue to be managed according to VRM Class III or Class IV objectives, which allow modifications to the landscape that have noticeable or dominant visual contrasts. This could impair R&I values in this area by allowing surface-disturbing activities.

Of the undesignated acres, 9,000 acres (36 percent of the undesignated area) would continue to overlap with DSMCs. This overlap would indirectly protect R&I values, as various effects minimization and mitigation requirements would be implemented in these areas to protect Dall sheep habitat, including disturbance limits and BMPs. Additionally, restrictions, such as travel management restrictions and recreation permit limitations, would be enforced, protecting R&I values by limiting disturbance.

However, allowing for some development for recreational purposes and communication towers and managing for ROWs in these areas could also degrade R&I values. Some road ROW and corridor development would be allowed, which could diminish R&I values. Allowing for transmission lines and pipelines in the DSMC could degrade R&I values by allowing for ground disturbance and infrastructure development.

Lastly, allowing for fluid mineral, locatable mineral, and mineral material entry and development could degrade R&I values due to surface disturbance and infrastructure development. Applying NSO stipulations could help mitigate impacts.

### **Alternative B**

The entire potential ACEC (25,000 acres) would be designated to protect priority Dall sheep habitat (including mineral licks), resulting in more protection for R&I values than under Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values.

### **Alternative C1**

The entire potential ACEC would not be designated (25,000 acres). Of this undesignated area, PLOs would be recommended for revocation for 23,000 acres (92 percent). There would be 24,000 acres (96 percent) available for locatable mineral entry (9,000 more acres than Alternative A) and fluid mineral entry (no acres would be available for fluid mineral entry under Alternative A). The 24,000 acres open to locatable mineral entry would be top-filed. There would be 8,000 acres (32 percent) open to mineral material sales, resulting in the same type of impacts as those described under Alternative A, except over a smaller area (7,000 fewer acres). There would be 18,000 acres (72 percent of the undesignated area) closed to mineral material sales,

resulting in greater protection for R&I values than Alternative A. Additionally, 2,000 acres (8 percent of the undesignated area) would be remain closed to locatable mineral entry under PLOs (15,000 fewer acres than under Alternative A), resulting in the same impacts as those described under Alternative A. These 2,000 acres would also be withdrawn from fluid mineral leasing (15,000 fewer acres than Alternative A).

Managing all 25,000 undesignated acres as VRM Class II would protect R&I values from most impacts associated with management activities with large-scale, ground-disturbing activities. It would, however, allow activities that modify the landscape but have low visual contrast and do not attract attention. Compared with Alternative A, this management action would result in greater protection for R&I values.

Of this undesignated area, 1,000 acres (4 percent) overlap with ROW exclusion areas, thereby protecting R&I values by eliminating surface disturbance associated with development. Compared with Alternative A, this management action would result in greater protection for R&I values. Managing any remaining undesignated acres as open to ROWs could, where ROWs were developed, degrade R&I values due to surface disturbance associated with development.

The 25,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and wildlife habitat, as well as wildlife disturbance. However, this potential ACEC is in a high alpine environment and has no commercially viable timber. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Limiting OHV travel to existing routes on all 25,000 undesignated acres would result in the same type of impacts as those described under Alternative A, except over a larger area (8,000 more acres).

Of the undesignated acres, 1,000 acres (4 percent) overlap with Dall Sheep Habitat Area (DSHA). This overlap would indirectly protect R&I values, as various effects minimization and mitigation requirements, including disturbance limits, noise restrictions, and BMPs, would be implemented in these areas to protect Dall sheep habitat. Additionally, DSHA would be prioritized for vegetation management and conservation, with vegetation removal prohibited, helping to protect the vegetation R&I value. Other restrictions, including aircraft restrictions, recreation permit limitations, and road ROW prohibitions, would be enforced, protecting R&I values. Prohibiting new recreational facilities and communication towers from being built in these areas would help protect R&I values. Prohibiting transmission lines and pipelines in these areas could indirectly protect R&I values by limiting ground disturbance and infrastructure development. Limiting or restricting these areas to fluid mineral, locatable mineral, and mineral material entry and development could protect R&I values by prohibiting or limiting surface disturbance. Compared with Alternative A, this management action would result in greater protection for R&I values.

Further, 18,000 acres (72 percent of the undesignated area) overlap with DSMCs, resulting in the same type of impacts as those described under Alternative A, except over a larger area (9,000 more acres).

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC would not be designated (25,000 acres). PLOs would be revoked for these 25,000 acres. These acres would be available for locatable mineral entry and fluid mineral development, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A, but over a larger area (10,000 more acres for locatable mineral entry; Alternative A does not open any acres to fluid mineral entry; 9,000 more acres for mineral material sales). Of the acres open to locatable mineral entry, 25,000 would be top-filed. These 25,000 acres would be

managed according to VRM Class III objectives, resulting in the same impacts as those described under Alternative A.

Additionally, 2,000 acres (8 percent of the undesignated area) would overlap with utility corridors. Compared with Alternative A, this overlap would result in greater impacts on R&I values. This is because construction within utility corridors could degrade R&I values due to impacts from surface disturbance and infrastructure associated with this development, including soils and wildlife habitat destruction and wildlife disturbance.

Further, the 25,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and wildlife habitat, as well as wildlife disturbance. However, this potential ACEC is in a high alpine environment and has no commercially viable timber. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Limiting OHV travel to existing routes on all 25,000 undesignated acres would result in the same type of impacts as those described under Alternative A, except over a larger area (9,000 more acres).

#### **Alternative D**

The entire potential ACEC would not be designated (25,000 acres). Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2.

### **T.24 REDLANDS LAKE RNA**

#### **Alternative A (No Action)**

The entire potential ACEC/RNA (4,000 acres) would continue to be designated to protect the remnant lake and sand dunes complex. The management prescriptions identified in **Chapter 2** would protect the R&I values.

#### **Alternative B**

The entire potential ACEC/RNA (4,000 acres) would be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

#### **Alternative C1**

The entire potential ACEC/RNA (4,000 acres) would not be designated, resulting in less protection for R&I values than Alternative A. Redlands Lake may be the last large lake on or associated with the dune fields south of the Tanana and Yukon Rivers that has not experienced shoreline development. Consequently, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC would help protect Redlands Lake and its R&I values.

Withdrawals would be recommended for revocation for all 4,000 undesignated acres. These acres would be available for locatable mineral entry and fluid mineral development, and they would be open to mineral material sales. Consequently, the R&I values could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of vegetation and erosion that could degrade soils. However, managing these 4,000 acres as VRM Class II would protect R&I values from most impacts associated with management activities with large-scale, ground-disturbing activities. It would, however, allow activities that modify the landscape but have low visual contrast and do not attract attention.

Further, the 4,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of vegetation and erosion that could degrade soils. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

All of the undesignated area overlaps with lands with wilderness characteristics that are managed to emphasize other resource values and multiple uses while applying management restrictions to reduce impacts on wilderness characteristics. The impacts would be as described under *Accomplishment Creek – Alternative C1*.

#### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC/RNA (4,000 acres) would not be designated, resulting in less protection for R&I values than Alternative A. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C1, except that no acres would overlap with lands with wilderness characteristics, and no acres would be managed as VRM Class II. Instead, the 4,000 undesignated acres would be managed according to VRM Class IV objectives, which could affect R&I values by allowing surface-disturbing activities.

#### **Alternative D**

The entire potential ACEC/RNA (4,000 acres) would not be designated, resulting in less protection for R&I values than Alternative A. Management actions for other resources and impacts on R&I values would result in the same impacts as those described under Alternative C2.

### **T.25 SETHKOKNA RIVER**

#### **Alternative A (No Action)**

The entire potential ACEC (299,000 acres) would be not be designated. There are no current threats to ACEC values. Any direct or indirect protections from management actions for other resources within the undesignated potential ACEC would help protect these R&I values.

There would be 59,000 acres (20 percent of the undesignated area) that would continue to be withdrawn from locatable mineral entry; 178,000 acres would be withdrawn from fluid mineral leasing (60 percent of the undesignated area), which would prohibit surface-disturbing activities associated with minerals development and protect the R&I values. However, 23,000 acres (8 percent of the undesignated area) would continue to be withdrawn from locatable mineral entry but open to metalliferous mining, which could result in the degradation of R&I values if these activities occurred.

Further, 82,000 acres (27 percent of the undesignated area) would continue to be encumbered under withdrawals. However, 217,000 acres (73 percent of the undesignated area) would continue to be available for locatable mineral entry, while 121,000 acres (40 percent of the undesignated area) would be open to fluid mineral leasing. The 217,000 acres open to locatable mineral entry would be State-selected, segregated from mineral entry. All 299,000 undesignated acres would continue to be open to mineral material sales. Consequently, the R&I values in these areas could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development. These impacts include destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff.

**Alternative B**

The entire potential ACEC (299,000 acres) would be designated to protect crucial Chinook salmon spawning habitat, soil, and water, resulting in greater protection of R&I values than under Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values.

**Alternative C1**

The entire potential ACEC (299,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative A, except that 17,000 acres (6 percent of the undesignated area) would overlap with areas closed to commercial timber development. By precluding timber infrastructure development, surface disturbance, and riparian habitat damage, this would result in greater protection for R&I values than under Alternative A.

The types of impacts from all 299,000 undesignated acres being available for locatable mineral entry and fluid mineral entry and open to mineral material sales would be the same as those described under Alternative A, except they would occur over a larger area (82,000 more acres for locatable minerals and 178,000 more acres for fluid minerals). However, 1,000 acres (less than 1 percent of the undesignated area) would be subject to controlled surface use stipulations for fluid mineral entry, which would reduce impacts on R&I values by limiting surface disturbance. Of the acres open for locatable mineral entry, 272,000 would be State-selected, segregated from mineral entry; 3,000 acres would be Native-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 3,000 would be top-filed. All 299,000 undesignated acres would continue to be open to mineral material sales.

There would be 282,000 undesignated acres (94 percent of the undesignated area) open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC (299,000 acres) would not be designated. Withdrawals would be recommended for revocation on 82,000 acres (27 percent of the undesignated area), which is the same as under Alternative A. However, all 299,000 undesignated acres would be available for locatable mineral entry and open to fluid mineral leasing, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A, but over a larger area (82,000 more acres for locatable mineral entry and 178,000 more acres for fluid minerals). Of the acres open to locatable mineral entry, 272,000 would be State-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 3,000 would be top-filed.

All 299,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

**Alternative D**

The entire potential ACEC (299,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would result in the same impacts as those described under Alternative C2.

## T.26 SOUTH FORK KOYUKUK RIVER

### Alternative A (No Action)

The entire potential ACEC (415,000 acres) would not be designated. The proximity of the South Fork Koyukuk River watershed to the Dalton Highway continues to attract economically feasible roads and mining development opportunities. These threaten the watershed's soil and water resources, aquatic habitat, and fisheries. Any direct or indirect protections from management actions for other resources within the undesignated potential ACEC would help protect these R&I values.

Under this alternative, 414,000 acres (99 percent of the undesignated area) would continue to be encumbered under PLOs and withdrawn from fluid mineral leasing. Additionally, 259,000 acres (62 percent of the undesignated area) would continue to be withdrawn from locatable mineral entry, which would prohibit surface-disturbing activities associated with minerals development and protect R&I values.

Limiting OHV travel to existing routes on all 415,000 undesignated acres would reduce impacts on R&I values from motorized and mechanized travel by limiting surface disturbance.

However, 155,000 acres (37 percent of the undesignated area) would continue to be available for locatable mineral entry, and all of the 415,000 undesignated acres would continue to be open to mineral material sales. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff.

The entire undesignated area would continue to be managed according to VRM Class III or Class IV objectives, which allow modifications to the landscape that have noticeable or dominant visual contrasts. This could impair R&I values in this area by allowing surface-disturbing activities.

### Alternative B

The entire potential ACEC (415,000 acres) would be designated to protect crucial Chinook salmon and chum salmon spawning habitat, resulting in greater protection for R&I values than under Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values.

### Alternative C1

Only 11 percent of the entire potential ACEC (44,000 acres) would be designated to protect crucial Chinook salmon and chum salmon spawning habitat, resulting in greater protections for R&I values than under Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values within this designated portion.

Of the 371,000 undesignated acres (89 percent of the entire potential ACEC), PLOs would be recommended for revocation for 358,000 acres (96 percent of the undesignated portion of the ACEC), while 12,000 acres (3 percent of the undesignated area) would be retained under PLO 5150 (402,000 fewer acres than Alternative A). Additionally, 359,000 acres (97 percent of the undesignated area) would be available for locatable mineral entry (204,000 more acres than Alternative A) and fluid mineral entry (no acres would be available for fluid mineral entry under Alternative A). All 371,000 undesignated acres would be open to mineral material sales (44,000 fewer acres than Alternative A). These would result in the same type of impacts as those described under Alternative A. Of the acres open to locatable mineral entry, 63,000 would be Native-selected, segregated from mineral entry; 22,000 acres would be State-selected, segregated from mineral entry. There would be 156,000 acres that would be top-filed.



However, 12,000 acres (3 percent of the undesignated area) would be withdrawn from locatable mineral entry (247,000 fewer acres than Alternative A) and fluid mineral entry (402,000 fewer acres than Alternative A). This would prohibit surface-disturbing activities associated with minerals development and protect R&I values. Additionally, 28,000 acres (8 percent of the undesignated area) would be subject to controlled surface use stipulations, while 111,000 acres (30 percent of the undesignated area) would be subject to NSO stipulations for fluid mineral entry. This could reduce impacts on R&I values by limiting surface disturbance.

The 371,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats; however, timber values for the predominantly black spruce are low. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Limiting OHV travel to existing routes on all 371,000 undesignated acres would result in the same type of impacts as those described under Alternative A, but over a smaller area (44,000 fewer acres). However, 23,000 acres (6 percent of the undesignated area) would also overlap with utility corridors. Construction within utility corridors could degrade R&I values due to impacts from surface disturbance and infrastructure associated with this development, including destruction of soils. Compared with Alternative A, which does not overlap with any utility corridors, Alternative C1 would result in greater impacts on R&I values.

#### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (415,000 acres) would not be designated. PLOs would be recommended for revocation for all 415,000 undesignated acres. These acres would be available for locatable mineral entry (260,000 more acres than Alternative A) and fluid mineral entry (415,000 more acres than Alternative A, which does not allow fluid mineral entry), and open to mineral material sales (same as Alternative A). These would result in the same type of impacts as those described under Alternative A. Of the acres open to locatable mineral entry, 24,000 would be Native-selected, segregated from mineral entry; 69,000 acres would be State-selected, segregated from mineral entry. There would be 193,000 acres that would be top-filed. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values, given that Alternative A withdraws 259,000 acres from locatable mineral entry and 415,000 acres from fluid mineral entry.

There would be 36,000 acres of this ACEC that would overlap with utility corridors, resulting in the same type of impacts as those described under Alternative C1, but over a larger area (13,000 more acres).

Further, all 415,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

Limiting OHV travel to existing routes on all 415,000 undesignated acres would result in the same impacts as those described under Alternative A.

**Alternative D**

The entire potential ACEC (415,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would result in the same impacts as those described under Alternative C2.

**T.27 SOUTH TODATONTEN SUMMIT RNA****Alternative A (No Action)**

The entire potential ACEC/RNA (1,000 acres) would continue to be designated to protect open system pingos. The management prescriptions identified in **Chapter 2** would protect the R&I values.

**Alternative B**

The entire potential ACEC/RNA (1,000 acres) would be designated to protect the soil, hydrologic processes, and vegetation associated with the pingos system. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

**Alternative C1**

The entire potential ACEC/RNA (1,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. Currently, there are no threats to the R&I values. Any direct or indirect protections from management actions for other resources within the undesignated potential ACEC/RNA would help protect these R&I values.

All 1,000 undesignated acres would be available for locatable mineral entry and fluid mineral development, and they would be open to mineral material sales. All 1,000 of the acres open for locatable mineral entry would be State-selected, segregated from mineral entry. As a result, R&I values could be degraded due to impacts from infrastructure and surface disturbance associated with mineral development, including destruction of soils and vegetation and contamination of surface water from wastewater spills and runoff.

Further, all 1,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and vegetation. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

All of the undesignated area overlaps with lands with wilderness characteristics that are managed to emphasize other resource values and multiple uses while applying management restrictions to reduce impacts on wilderness characteristics. The impacts would be as described under *Accomplishment Creek – Alternative C1*.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC/RNA (1,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. However, the 1,000 undesignated acres would overlap with ROW avoidance areas. Compared with Alternative A, which does not overlap with any ROW avoidance areas, Alternative C2 would result in greater protection for R&I values. While not as protective as ROW exclusion, managing these areas as ROW avoidance make them available for ROW location on a case-by-case basis. R&I values could be degraded if development requiring a ROW permit were to occur in the area; however, prohibiting commercial energy development and allowing only minor land use authorizations would continue to help protect R&I values by minimizing or eliminating surface disturbance associated with development.

Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C1.

### **Alternative D**

The entire potential ACEC/RNA (1,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C1, except that no acres would overlap with lands with wilderness characteristics.

## **T.28 SPOOKY VALLEY RNA**

### **Alternative A (No Action)**

The entire potential ACEC/RNA (9,000 acres) would continue to be designated to protect geological, physiographic, vegetation, and scenic values. The management prescriptions identified in **Chapter 2** would protect the R&I values.

### **Alternative B**

The entire potential ACEC/RNA (9,000 acres) would be designated to protect vegetation, special status vegetation, scenery, and caribou habitat. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative A.

### **Alternative C1**

The entire potential ACEC/RNA (9,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. Currently, there are no threats to the R&I values. Any direct or indirect protections from management actions for other resources within the undesignated potential ACEC/RNA would help protect R&I values. For example, managing these 9,000 undesignated acres as VRM Class I would protect scenic values by managing for preservation of the landscape and providing for natural ecological changes. Managing to meet VRM Class I objectives does not preclude very limited management activity, but it could preclude surface-disturbing activities, such as mineral development, ROW location, and recreation facilities, if they are not able to meet the visual resource objectives. Where these types of activities are able to be mitigated in order to meet VRM objectives, it is likely that the associated mitigation, such as surface reclamation, revegetation techniques, and minimizing cuts and fills, would also minimize impacts on wildlife species and vegetation over the long term.

Allowing recreation and development for recreation uses on the 9,000 undesignated acres would disturb the area's surface and could affect R&I values by flattening or destroying vegetation, degrading and fragmenting wildlife habitat, and disturbing wildlife. However, impacts would be reduced where recreation is restricted to designated areas or prohibited and where travel is closed. Additionally, recreation facility development would be designed to avoid affecting R&I values. Managing the 9,000 acres as an extensive recreation management area would help protect and retain R&I values by limiting the impacts of widespread recreation.

The 9,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry. All 9,000 of the acres open for locatable mineral entry would be State-selected, segregated from mineral entry. Consequently, the R&I values could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of wildlife habitat and vegetation.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC/RNA (9,000 acres) would not be designated, resulting in more impacts on R&I values than under Alternative A. These 9,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry. Consequently, the R&I values could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of wildlife habitat and vegetation. No acres would be open to mineral material sales. Of the acres open to locatable mineral entry, 9,000 would be State-selected, segregated from mineral entry.

These 9,000 undesignated acres would be managed according to VRM Class IV objectives, which could also affect R&I values by allowing surface-disturbing activities.

**Alternative D**

The entire potential ACEC/RNA (9,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C2, except all 9,000 undesignated acres would be open to mineral material sales. Consequently, the R&I values could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of wildlife habitat and vegetation.

**T.29 SUKAKPAK/SNOWDEN MOUNTAIN****Alternative A (No Action)**

Only 2 percent of the potential Sukakpak/Snowden Mountain ACEC (3,000 acres of 124,000 acres total) would be designated to protect high scenic values and geology. The management prescriptions identified in **Chapter 2** would protect the R&I values within this designated area.

This area is easily accessible from the Dalton Highway for many groups, including tour groups, hikers, hunters, and tourists, with tour group numbers increasing. Additionally, this area is within the utility corridor, which contains a pipeline and various ROWs. The area also contains natural mineral licks, which provide essential minerals to ungulates and are essential for maintaining healthy populations of Dall sheep populations in the vicinity. Consequently, any direct or indirect protections from management actions for other resources within the undesignated potential ACEC would help protect these R&I values.

For example, of the remaining 121,000 undesignated acres (98 percent of the entire potential ACEC acres), 4,000 acres (3 percent of the undesignated area) would continue to overlap with rivers identified as eligible or suitable for inclusion in the NWSRS. The areas that overlap or are adjacent to these eligible or suitable segments would receive some indirect protection from WSR management.

Of the undesignated area, 91,000 acres (75 percent) would be encumbered under PLOs and withdrawn from fluid mineral leasing. However, 65,000 acres (54 percent of the undesignated area) would continue to be available for locatable mineral entry, while 91,000 acres (75 percent of the undesignated area) would continue to be open to mineral material sales. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of geologic features and scenic values. Of the acres open to locatable mineral entry, 13,000 would be top-filed. There would be 26,000 acres (22 percent of the undesignated area) that would continue to be withdrawn from locatable mineral entry, which would prohibit surface-disturbing activities associated with minerals development and protect the R&I values in this area.

Limiting OHV travel to existing routes on 91,000 acres (75 percent of the undesignated area) would reduce impacts on R&I values from motorized and mechanized travel by limiting surface disturbance.

Of the undesignated acres, 1,000 acres (less than 1 percent) would continue to overlap with priority DSHA. This overlap would indirectly protect R&I values, as various effects minimization and mitigation requirements, including disturbance limits, noise restrictions, and BMPs, would be implemented to protect Dall sheep habitat. Additionally, the DSHA would be prioritized for vegetation management and conservation, with vegetation removal prohibited. This would help to protect vegetation ACEC values. Other restrictions, including aircraft restrictions, recreation permit limitations, and road ROW prohibitions, would be enforced, protecting R&I values. Prohibiting construction of new recreational facilities and communication towers would help protect R&I values. Further, prohibiting transmission lines and pipelines could indirectly protect R&I values by limiting ground disturbance and infrastructure development. Lastly, limiting or restricting these areas to fluid mineral, locatable mineral, and mineral materials entry and development could protect R&I values by prohibiting or limiting surface disturbance.

Of the undesignated acres, 18,000 acres (15 percent) would continue to overlap with the DSSA, while 49,000 acres (41 percent) would continue to overlap with DSMCs. This overlap would provide indirect protections to R&I values, as effects minimization and mitigation requirements, including BMPs and disturbance limits (for DSMC), would be implemented in these areas to protect Dall sheep habitat. Additionally, various restrictions, such as travel management restrictions and recreation permit limitations, would be enforced, protecting R&I values by limiting disturbance.

Allowing some development for recreational purposes and managing ROWs could also affect and degrade R&I values. Lastly, allowing for fluid mineral, locatable mineral, and mineral materials entry and development in the DSSA could degrade R&I values due to surface disturbance and infrastructure development. However, applying NSO stipulations could help mitigate impacts.

### **Alternative B**

The entire potential ACEC (124,000 acres) would be designated to protect priority Dall sheep habitat (including mineral licks), high scenic values, and geology. This would result in greater protections for R&I values than Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values.

### **Alternative C1**

The entire potential ACEC (124,000 acres) would be designated to protect high scenic values and geology, resulting in greater protections for R&I values than Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (124,000 acres) would not be designated. Under this alternative, 46,000 acres (37 percent of the undesignated area) would overlap with utility corridors. Construction within utility corridors could degrade R&I values due to impacts from surface disturbance and infrastructure associated with this development, including destruction of geological features. Compared with Alternative A, which does not overlap with utility corridors, Alternative C2 would result in greater degradation of R&I values from this management action.

Additionally, PLOs would be revoked for all 124,000 undesignated acres. These acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. These could affect R&I values due to surface disturbance and infrastructure associated with this development, potentially resulting in the destruction of geologic or scenic features. All 124,000 of the acres open to locatable mineral entry would be top-filed. Compared with Alternative A, which retains 91,000 acres under

PLOs and withdraws 91,000 acres from fluid mineral entry, Alternative C2 could result in greater degradation of R&I values from this management action.

There would be 46,000 acres (37 percent of the undesignated area) managed according to VRM Class II objectives; 78,000 acres (63 percent of the undesignated area) would be managed according to Class III objectives, which allow modifications to the landscape that have noticeable or dominant visual contrasts. This could impair R&I values in this area by allowing surface-disturbing activities.

Further, all 124,000 acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, potentially resulting in the destruction of scenic features. However, this potential ACEC is in a high alpine environment and has no commercially viable timber.

Limiting OHV travel to existing routes on these 124,000 acres would result in the same type of impacts as those described under Alternative A, except over a larger area (33,000 more acres).

### **Alternative D**

The entire potential ACEC (124,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C2, except all 124,000 acres would be managed according to Class III objectives. This would result in greater impacts than Alternative C2.

## **T.30 SULUKNA RIVER**

### **Alternative A (No Action)**

Only 6 percent of the entire potential ACEC (25,000 acres of 399,000 acres total) would be designated to protect crucial salmon and sheefish (inconnu) spawning habitat. The management prescriptions identified in **Chapter 2** would protect the R&I values within this designated area.

The Sunshine Mountain Caribou Herd is potentially vulnerable to adverse change, such as from habitat fragmentation or development. Consequently, any direct or indirect protections from management actions for other resources within the remaining undesignated potential ACEC (374,000 acres of the entire potential ACEC) would help protect this species. For example, 10,000 acres (3 percent of the undesignated area) would continue to overlap with rivers identified as eligible or suitable for inclusion in the NWSRS. The areas that overlap or are adjacent to these eligible or suitable segments would receive some indirect protection from WSR management. This indirect protection would likely include protection for crucial salmon and sheefish spawning habitat, and riparian vegetation. Additionally, limiting OHV travel to existing routes on all 374,000 undesignated acres would reduce impacts from motorized and mechanized travel in the undesignated area by limiting surface disturbance, vegetation destruction, wildlife disturbance, and habitat fragmentation.

Under this alternative, 149,000 acres (40 percent of the undesignated area) would continue to be encumbered under withdrawals. Additionally, 141,000 acres (38 percent of the undesignated area) would continue to be withdrawn from locatable mineral entry and fluid mineral entry, which would prohibit surface-disturbing activities associated with minerals development and protect the R&I values.

However, 233,000 acres (62 percent of the undesignated area) would continue to be available for locatable mineral entry and fluid mineral entry, while all 374,000 undesignated acres would continue to be open to mineral material sales. Of the acres open for locatable mineral entry, 208,000 would be State-selected, segregated from mineral entry. Consequently, the R&I values in this area could be degraded due to impacts

from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, destruction of wildlife habitat, disturbance to wildlife, and contamination of surface water from wastewater spills and runoff.

### **Alternative B**

The entire potential ACEC (399,000 acres) would be designated to protect crucial spawning and rearing habitat for sheefish (inconnu) and other whitefish and salmon species. This would result in more protection for R&I values than Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values within this designated portion of the ACEC.

### **Alternative C1**

Only 13 percent (51,000 acres) of the entire potential ACEC acres would be designated to protect crucial spawning and rearing habitat for sheefish (inconnu) and other whitefish and salmon species. Compared with Alternative A, Alternative C1 would result in greater protection for R&I values, given that Alternative C1 designates 26,000 more acres. The management prescriptions identified in **Chapter 2** would protect the R&I values within this designated portion of the ACEC.

Of the remaining 348,000 undesignated acres (87 percent of the entire potential ACEC acres), withdrawals would be recommended for revocation for 132,000 acres (38 percent of the undesignated portion of the ACEC). This would result in greater impacts than under Alternative A, which retains 149,000 acres under withdrawals. However, all 348,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. Of these acres, 73,000 would be top-filed. These actions would result in the same type of impacts as those described under Alternative A, except over a larger area for locatable mineral entry and fluid mineral entry (114,000 more acres). However, 1,000 acres (less than 1 percent of the undesignated area) would be subject to controlled surface use stipulations for fluid mineral entry, helping to reduce impacts on R&I values by reducing surface disturbance.

These 348,000 undesignated acres would be managed according to VRM Class IV objectives, which could diminish R&I values by allowing surface-disturbing activities.

Further, the 348,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, destruction of wildlife habitat, and disturbance to wildlife. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (399,000 acres) would not be designated, resulting in less protection for R&I values than under Alternative A. Withdrawals would be recommended for revocation on 149,000 acres (37 percent of the undesignated area), resulting in greater impacts than under Alternative A. Additionally, all 399,000 undesignated acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A, but over a greater area than Alternative A (166,000 more acres for locatable mineral entry and fluid mineral entry). Of the acres open to locatable mineral entry, 87,000 would be Native-selected, segregated from mineral entry; 270,000 acres would be State-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 82,000 would be top-filed.

These 399,000 acres would be managed according to VRM Class IV objectives, which could also diminish R&I values by allowing surface-disturbing activities. Compared with Alternative A, which manages 374,000 acres as VRM unclassified, Alternative C2 could result in greater impacts on R&I values.

Further, the 399,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, destruction of wildlife habitat, and disturbance to wildlife. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A.

### **Alternative D**

The entire potential ACEC (399,000 acres) would not be designated, resulting in less protection for R&I values than under Alternative A. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2.

## **T.31 TOOLIK LAKE RNA**

### **Alternative A (No Action)**

Under this alternative, 73 percent of the potential ACEC/RNA (77,000 acres of 106,000 acres total) would continue to be designated to protect research activities at the Toolik Field Station. The management prescriptions identified in **Chapter 2** would protect the R&I values within this designated area. The Toolik Lake Field Station is one of the premier Arctic field stations in the United States. Any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values. For example, limiting OHV travel to existing routes on the 29,000 undesignated acres (27 percent of the entire potential ACEC/RNA) would reduce impacts from motorized and mechanized travel by limiting surface disturbance, vegetation destruction, wildlife disturbance, and habitat fragmentation. This would help to protect special status plant species.

Additionally, these 29,000 acres would continue to be encumbered under PLOs and would be withdrawn from locatable mineral entry and fluid mineral leasing. This would prohibit surface-disturbing activities associated with minerals development and protect R&I values, especially special status species. However, these acres would be open to mineral material disposal, which could diminish R&I values. Additionally, these 29,000 undesignated areas would continue to be managed according to VRM Class IV objectives, which could diminish R&I values by allowing surface-disturbing activities. Fewer mitigation measures would be needed to meet visual resource objectives, compared with VRM Class II.

### **Alternative B**

The entire potential ACEC/RNA (106,000 acres) would be designated to protect the high-value Toolik Field Station. The management prescriptions identified in **Chapter 2** would protect the R&I values.

### **Alternative C1**

The entire potential ACEC/RNA (106,000 acres) would be designated. The designated area and management prescriptions under this alternative would be the same as those described under Alternative B.

### **Alternative C2 (Preferred Alternative)**

Under this alternative, 73 percent of the potential ACEC/RNA (77,000 acres of 106,000 acres total) would continue to be designated. Management prescriptions under this alternative would be the same as those described under Alternative A, except no acres would be withdrawn from locatable mineral entry or fluid



mineral leasing, resulting in greater impacts on R&I values. All of the acres open to locatable mineral entry would be top-filed.

### **Alternative D**

The Toolik Lake ACEC/RNA would not be designated under this alternative (106,000 acres). All 106,000 undesignated acres would be open for locatable mineral entry and open to mineral material sales. PLOs would be recommended for revocation for all 106,000 undesignated acres. The location along the Dalton Highway with easy access would increase the probability of development and infrastructure that, without mitigations for soils and vegetation conditions, would affect the values of the RNA and existing research infrastructure. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development. These impacts include disturbance to vegetation and wildlife and destruction of wildlife habitat and existing research infrastructure and projects.

## **T.32 TOZITNA, TOZITNA RIVER, AND TOZITNA SUBUNITS NORTH AND SOUTH**

### **Alternative A (No Action)**

Under this alternative, 842,000 acres of the Tozitna River ACEC would continue to be designated to protect crucial salmon spawning habitat. Additionally, 192,000 acres of the Tozitna Subunits North and South would continue to be designated as an ACEC to protect the Ray Mountains Herd (RMH) core habitat (crucial caribou calving habitat). The management prescriptions identified in **Chapter 2** would help protect the R&I values within this designated ACEC area. However, 112,000 acres of the Tozitna ACEC would be undesignated. Any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values.

The upper portion of this potential ACEC has high mineral potential and contains rare earth minerals. If this area is opened for development, disturbance to soil and water in the Tozitna River is likely. Additionally, there is a nonmigratory caribou herd in this area that uses the uplands in an area that has high mineral potential and rare earth minerals in the upper third of this area.

Under this alternative, 55,000 acres of the undesignated area of the Tozitna ACEC would continue to be encumbered under a withdrawal. These 55,000 undesignated acres would continue to be withdrawn from locatable mineral entry and fluid mineral leasing, which would prohibit surface-disturbing activities associated with minerals development and protect the R&I values within this ACEC. However, 58,000 undesignated acres of the Tozitna ACEC would continue to be available for locatable mineral entry and fluid mineral leasing; 112,000 acres of the Tozitna ACEC would continue to be open to mineral material sales. Of the acres open for locatable mineral entry for the Tozitna ACEC, 53,000 would be State-selected, segregated from mineral entry. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development. These impacts include destruction of soils and fish habitat, erosion that could degrade aquatic habitats, destruction of wildlife habitat, disturbance to wildlife, and contamination of surface water from wastewater spills and runoff.

Under this alternative, 3,000 acres of the undesignated area of the Tozitna ACEC would continue to overlap with rivers identified as eligible or suitable for inclusion in the NWSRS. The ACEC acres that overlap or are adjacent to these eligible or suitable segments would receive some indirect protection from WSR management. This indirect protection would likely include protection for crucial salmon spawning habitat within the Tozitna River. This is because the BLM would take no action that would adversely affect the

free-flowing condition, ORVs and adequate water quality to support ORVs, or tentative classification of the eligible or suitable WSR segments.

Limiting OHV travel to existing routes on 112,000 undesignated acres of the Tozitna ACEC would reduce impacts from motorized and mechanized travel in the undesignated area by limiting surface disturbance, vegetation destruction, wildlife disturbance, and habitat fragmentation.

Of the undesignated acres, 106,000 acres of the Tozitna ACEC would continue to overlap with the DSSA (calving areas). This overlap would provide indirect protections to R&I values, as effects minimization and mitigation requirements (namely BMPs) would be implemented in these areas to protect Dall sheep habitat. Additionally, other restrictions, such as travel management restrictions and recreation permit limitations, would be enforced in the DSSA, protecting R&I values by limiting disturbance.

However, allowing some development for recreational purposes and managing for ROWs could potentially degrade R&I values by causing some surface disturbance and affecting vegetation and wildlife habitat.

Lastly, allowing for fluid mineral, locatable mineral, and mineral material entry and development in the DSSA could degrade R&I values due to surface disturbance and infrastructure development. Applying NSO stipulations could help mitigate impacts on R&I values.

### **Alternative B**

Under this alternative, all 1,043,000 acres of the Tozitna ACEC would be designated to protect caribou habitat, soils, water, and crucial salmon spawning habitat. The management prescriptions identified in **Chapter 2** would help protect the R&I values within this designated area. However, 82,000 acres of the Tozitna River ACEC and 23,000 acres of the Tozitna River Subunits North and South would be undesignated. Any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values.

Withdrawals would be recommended for revocation for 73,000 undesignated acres of the Tozitna River ACEC and 1,000 undesignated acres for Tozitna Subunits North and South (no acres would be recommended for revocation under Alternative A). Additionally, 82,000 undesignated acres of the Tozitna River ACEC would be available for locatable mineral entry, while 23,000 undesignated acres of the Tozitna River Subunits North and South would be available. This would result in the same type of impacts as those described under Alternative A for the Tozitna ACEC, but over a greater area. Of the acres open for locatable mineral entry for the Tozitna River ACEC, 47,000 would be State-selected, segregated from mineral entry; 14,000 acres would be Native-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 11,000 would be top-filed. Of the acres open for locatable mineral entry for Tozitna Subunits North and South, 12,000 would be State-selected, segregated from mineral entry.

There would be 79,000 acres of the Tozitna River ACEC open to fluid mineral leasing while 22,000 acres of the Tozitna River Subunits North and South would be open to fluid mineral leasing. This could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, destruction of wildlife habitat, disturbance to wildlife, and contamination of surface water from wastewater spills and runoff. However, 10,000 acres of the Tozitna River ACEC would be subject to NSO stipulations for fluid mineral development, which could help protect R&I values by limiting surface disturbance.

Of the undesignated area, 3,000 acres of the Tozitna River ACEC would be closed to mineral material sales and closed to fluid mineral leasing. This would provide some protection for R&I values, compared with

Alternative A, which does not close any acres to mineral material sales. However, 79,000 undesignated acres of the Tozitna River ACEC and 22,000 acres of the Tozitna River Subunits North and South would be open to mineral material sales, which could degrade R&I values by allowing surface disturbance and infrastructure development. Compared with Alternative A, which does not open any acres for mineral material sales for the Tozitna River ACEC or Tozitna Subunits North and South, Alternative B would result in greater impacts on R&I values.

Additionally, 81,000 undesignated acres of the Tozitna River ACEC and 22,000 undesignated acres of Tozitna River Subunits North and South would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, destruction of wildlife habitat, and disturbance to wildlife. Compared with Alternative A, which does not overlap with any acres open to commercial timber development, Alternative B would result in greater impacts on R&I values.

Of the undesignated area for the Tozitna River ACEC, 3,000 acres overlap with ROW exclusion areas. Managing this area as ROW exclusion makes it unavailable for ROW location, thereby protecting R&I values by eliminating surface disturbance associated with development. Compared with Alternative A, which does not overlap with any ROW exclusion areas, Alternative B would result in greater protection for R&I values. Managing potential ACECs as open to ROWs could, where ROWs were developed, degrade R&I values due to surface disturbance associated with development.

Additionally, 42,000 undesignated acres of the Tozitna River ACEC and 8,000 acres of the Subunits North and South overlap with ROW avoidance areas. Again, compared with Alternative A, which does not overlap with any ROW avoidance areas, Alternative B would result in greater protection for R&I values. While not as protective as ROW exclusion, managing these areas as ROW avoidance make them available for ROW location on a case-by-case basis. R&I values could be degraded if development requiring a ROW permit were to occur in the area; however, prohibiting commercial energy development and allowing only minor land use authorizations would continue to help protect R&I values by minimizing or eliminating surface disturbance associated with development.

Limiting OHV travel to existing routes on 82,000 undesignated acres of the Tozitna River ACEC and 23,000 acres of Tozitna Subunits North and South would result in the similar type of impacts as those described under Alternative A for the Tozitna River ACEC.

Within the undesignated acres within this area, 2,000 acres of the Tozitna River ACEC overlap with the DSSA, while 15,000 acres of the Tozitna River Subunits North and South overlap with these study areas. Impacts would be the same type of impacts as those described under Alternative A for the Tozitna River ACEC.

### **Alternative C1**

The Tozitna ACEC (1,043,000 acres) and the Tozitna River ACEC (82,000 acres, this is the portion of the Tozitna River ACEC not covered by the Tozitna ACEC) would not be designated under this alternative. Additionally, the Tozitna River Subunits North and South would not be designated (23,000 acres, this is the portion of the Tozitna River Subunits North and South not covered by Tozitna ACEC not Tozitna River ACEC). Withdrawals would be recommended for revocation for 121,000 undesignated acres for the Tozitna ACEC (12 percent of the undesignated area, 66,000 more acres than Alternative A), 73,000 acres for the Tozitna River ACEC (89 percent of the undesignated area), and 1,000 acres of Tozitna River Subunits North

and South (4 percent of the undesignated area; no acres would be recommended for revocation for the Tozitna River ACEC or Tozitna Subunits North and South under Alternative A).

Of the undesignated area, 80,000 acres of the Tozitna River ACEC would be available for locatable mineral entry and open to mineral material sales (98 percent of the undesignated area), while 8,000 acres of the Tozitna River Subunits North and South would be open for locatable mineral entry and open to mineral sales (35 percent of the undesignated area). There would be 640,000 acres of the Tozitna ACEC open to mineral material sales and locatable mineral entry (61 percent of the undesignated area [582,000 more acres than under Alternative A]). This would result in the same type of impacts as those described under Alternative A for the Tozitna ACEC (no acres would be limited for the Tozitna River ACEC or Tozitna Subunits North and South under Alternative A). Of the acres open for locatable mineral entry for the Tozitna ACEC, 688,000 would be State-selected, segregated from mineral entry; 14,000 acres would be Native-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 3,000 would be top-filed. Of the acres open for locatable mineral entry for the Tozitna River ACEC, 47,000 would be State-selected, segregated from mineral entry; 14,000 acres would be Native-selected, segregated from mineral entry. Of the acres open to locatable mineral entry, 11,000 would be top-filed. Lastly, 12,000 of the acres open for locatable mineral entry for the Tozitna Subunits North and South would be State-selected, segregated from mineral entry.

Under this alternative, 403,000 undesignated acres of the Tozitna ACEC (39 percent of the undesignated area [no acres recommended for closure under Alternative A]) and 2,000 undesignated acres of the Tozitna River ACEC (2 percent of the undesignated area [no acres recommended for closure under Alternative A]) would be recommended for closure (withdrawal) from locatable mineral entry. There would be 2,000 undesignated acres of the Tozitna River ACEC closed to mineral material sales (1,000 fewer acres than Alternative A). Additionally, 15,000 acres of Tozitna Subunits North and South (65 percent of the undesignated area) would be recommended for closure (no acres recommended for closure under Alternative A) and would be closed to mineral material sales (no acres closed under Alternative A). There would be 403,000 undesignated acres of the Tozitna ACEC closed to mineral material sales (39 percent of the undesignated area; no acres would be closed under Alternative A). These actions could help protect R&I values by precluding surface-disturbing activities, infrastructure development, visual impacts, vegetation removal, weed spread, wildlife disturbance, riparian habitat damage, and habitat degradation and fragmentation.

There would be 640,000 acres of the Tozitna ACEC (61 percent of the undesignated area), 80,000 acres of the Tozitna River ACEC (97 percent of the undesignated area), and 8,000 acres of the Tozitna River Subunits North and South (35 percent of the undesignated area) open to fluid mineral leasing, resulting in the same type of impacts as those described under Alternative A for the Tozitna River ACEC. However, 21,000 acres of the Tozitna ACEC (2 percent of the undesignated area) and 1,000 acres of the Tozitna River ACEC (1 percent of the undesignated area) would be subject to controlled surface use stipulations for fluid mineral entry, which could help protect R&I values by limiting surface disturbance.

Under this alternative, the RMH core habitat would be closed to fluid mineral leasing. Therefore, 403,000 acres of the Tozitna ACEC, 2,000 acres of the Tozitna River ACEC, and 15,000 acres of the Tozitna Subunits North and South would be closed to fluid mineral leasing, which would help reduce impacts on the RMH core habitat.

Additionally, 27,000 undesignated acres of the Tozitna ACEC (3 percent of the undesignated area) would overlap with areas closed to commercial timber development. Making this area unavailable for commercial

timber development would help protect R&I values by precluding timber infrastructure development, surface disturbance, visual impacts, vegetation removal, weed spread, wildlife disturbance, riparian habitat damage, and habitat degradation and fragmentation.

However, 1,016,000 undesignated acres of the Tozitna ACEC (97 percent of the undesignated area), all 82,000 undesignated acres of the Tozitna River ACEC, and all 23,000 undesignated acres of the Tozitna River Subunits North and South would be open to commercial timber development, resulting in the same type of impacts as those described under Alternative A. Compared with Alternative A, Alternative C1 could result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

All 82,000 undesignated acres of the Tozitna River ACEC and all 23,000 acres of the Tozitna Subunits North and South overlap with lands with wilderness characteristics that are managed to emphasize other resource values and multiple uses while applying management restrictions to reduce impacts on wilderness characteristics. The impacts would be as described under *Accomplishment Creek – Alternative C1*.

Alternative C1 would propose a ROW avoidance area (477,000 acres for the Tozitna ACEC, 6,000 acres for the Tozitna River ACEC, and 16,000 acres for Tozitna Subunits North and South) in the RMH core habitat, helping to protect this core habitat. Additionally, limiting OHV travel to existing routes on 640,000 acres of the Tozitna ACEC (61 percent of the undesignated area), 80,000 undesignated acres of the Tozitna River ACEC (97 percent of the undesignated area), and 8,000 undesignated acres of the Tozitna Subunits North and South (35 percent of the undesignated area) would result in the same impacts as those described under Alternative A, except over a slightly larger area for the Tozitna ACEC (528,000 more acres; no acres would be limited for the Tozitna River ACEC or Tozitna Subunits North and South for Alternative A). Additionally, limiting 403,000 acres of the Tozitna ACEC (39 percent of the undesignated area), 2,000 undesignated acres of the Tozitna River ACEC (2 percent of the undesignated area), and 15,000 undesignated acres of the Tozitna Subunits North and South (65 percent of the undesignated area) to winter OHV travel only would be more protective of R&I values. This is because no OHVs would be allowed from May 1 to June 30, resulting in reduced impacts on these values. These timing limitations for OHVs would help minimize impacts on the RMH during core calving periods.

Within the undesignated acres within this area, 403,000 acres of the Tozitna ACEC (39 percent of the undesignated area), 2,000 acres of the Tozitna River ACEC (2 percent of the undesignated area), and 15,000 acres of the Tozitna River Subunits North and South ACEC (65 percent of the undesignated area) overlap with the DSSA, resulting in the same impacts as those described under Alternative A, except over a larger area for the Tozitna ACEC (297,000 acres; no acres would overlap for the Tozitna River ACEC or Tozitna Subunits North and South under Alternative A).

### **Alternative C2 (Preferred Alternative)**

The Tozitna ACEC (1,043,000 acres) and the Tozitna River ACEC (82,000 acres) would not be designated under this alternative. Additionally, the Tozitna River Subunits North and South would not be designated (23,000 acres).

Withdrawals would be recommended for revocation for 121,000 undesignated acres for the Tozitna ACEC (12 percent of the undesignated area [66,000 more acres than Alternative A]), 73,000 acres for the Tozitna River ACEC (89 percent of the undesignated area), and 1,000 acres of the Tozitna River Subunits North and South ACEC (4 percent of the undesignated area; no acres would be recommended for revocation for the Tozitna River ACEC or Tozitna Subunits North and South under Alternative A).

All 1,043,000 acres would be open to mineral material sales for the Tozitna ACEC (931,000 acres more than Alternative A). Additionally, all 1,043,000 undesignated acres of the Tozitna ACEC (985,00 acres more than Alternative A) and all 82,000 undesignated acres of the Tozitna River ACEC would be available for locatable mineral entry and fluid mineral entry, and open to mineral material sales. Of the acres open to locatable mineral entry for the Tozitna ACEC, 3,000 acres would be top-filed. Of the acres open to locatable mineral entry for the Tozitna River ACEC, 11,000 would be top-filed. Further, all 23,000 acres of the Tozitna River Subunits North and South would be available for locatable mineral entry and fluid mineral entry, and open to mineral material sales. These management actions would result in the same type of impacts as those described under Alternative A for the Tozitna ACEC (no acres would be open to locatable mineral entry or mineral material sales for the Tozitna River ACEC or Tozitna Subunits North and South under Alternative A). Of the acres open to locatable mineral entry for the Tozitna ACEC, 688,000 would be State-selected, segregated from mineral entry; 14,000 acres would be Native-selected, segregated from mineral entry. Of the acres open to locatable mineral entry for the Tozitna River ACEC, 47,000 would be State-selected, segregated from mineral entry; 14,000 acres would be Native-selected, segregated from mineral entry. Lastly, 12,000 of the acres open to locatable mineral entry for the Tozitna Subunits North and South ACEC would be State-selected, segregated from mineral entry.

Additionally, 1,043,000 undesignated acres of the Tozitna ACEC, 82,000 undesignated acres of the Tozitna River ACEC, and 23,000 undesignated acres of Tozitna River Subunits North and South would be open to commercial timber development, which could degrade R&I values in the same manner as described under Alternative B. Compared with Alternative A, which does not overlap with any areas open to commercial timber development, Alternative C2 could result in greater impacts on R&I values.

All 1,043,000 undesignated acres of the Tozitna ACEC and 82,000 undesignated acres of the Tozitna River ACEC would be managed according to VRM Class IV objectives. This would allow modifications to the landscape that have noticeable or dominant visual contrasts, which may also affect R&I values. Additionally, all 23,000 undesignated acres of the Tozitna River Subunits North and South would be managed according to VRM Class IV objectives.

Alternative C2 would propose the same acres of ROW avoidance areas as Alternative C1 in the RMH core habitat to help protect this core habitat. Limiting OHV travel to existing routes on 640,000 acres of the Tozitna ACEC (61 percent of the undesignated area), 80,000 undesignated acres of the Tozitna River ACEC (97 percent of the undesignated area), and 8,000 undesignated acres of the Tozitna Subunits North and South (35 percent of the undesignated area) would result in the same impacts as those described under Alternative C1. Additionally, limiting 403,000 acres of the Tozitna ACEC (39 percent of the undesignated area), 2,000 undesignated acres of Tozitna River ACEC (2 percent of the undesignated area), and 15,000 undesignated acres of Tozitna Subunits North and South (65 percent of the undesignated area) to winter OHV travel only would be more protective of R&I values. This is because no OHVs would be allowed from May 1 to June 30, resulting in reduced impacts on these values. These timing limitations for OHVs would help minimize impacts on the RMH during core calving periods.

#### **Alternative D**

The entire Tozitna ACEC (1,040,000 acres; the Tozitna River ACEC [82,000 acres] and Tozitna River Subunits North and South [23,000 acres]) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C2. The exception would be that limiting OHV travel to existing routes on all 1,043,000 undesignated acres of the Tozitna ACEC, 82,000 undesignated acres of the Tozitna River ACEC, and 23,000 undesignated acres of the Tozitna

Subunits North and South would result in the same type of impacts as those described under Alternative A for the Tozitna ACEC (no acres would be limited for the Tozitna River ACEC or Tozitna Subunits North and South under Alternative A).

### **T.33 UPPER KANUTI RIVER**

#### **Alternative A (No Action)**

The entire potential ACEC (50,000 acres) would not be designated. This area is likely to yield significant archaeological information, high site densities, and a number of archaeological sites that are eligible for inclusion on the National Register of Historic Places. Additionally, the Hodzana Hills Caribou Herd, a small, nonmigratory caribou herd that inhabits the headwaters of the Upper Kanuti River, is a genetically distinct herd that contributes to the ecological diversity of the planning area. Consequently, any direct or indirect protection from management actions for other resources within this undesignated potential ACEC would help protect these threatened R&I values.

For example, 4,000 acres (8 percent of the undesignated area) would continue to overlap with rivers identified as eligible or suitable for inclusion in the NWSRS. The areas that overlap or are adjacent to these eligible or suitable segments would receive some indirect protection for R&I values from WSR management. This indirect protection would likely include protection for riparian vegetation. Additionally, limiting OHV travel to existing routes on all 50,000 undesignated acres would reduce impacts from motorized and mechanized travel in the undesignated area by limiting surface disturbance, vegetation destruction, wildlife disturbance, and habitat fragmentation.

Additionally, all 50,000 undesignated acres would continue to be encumbered under PLOs and would be withdrawn from fluid mineral leasing. However, 26,000 acres (52 percent of the undesignated area) would continue to be available for locatable mineral entry, while all 50,000 undesignated acres would continue to be open to mineral material sales. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including disturbance to wildlife, destruction of wildlife habitat, and degradation of cultural resources and values. However, 24,000 acres (48 percent of the undesignated area) would continue to be withdrawn from locatable mineral entry, which would prohibit surface-disturbing activities associated with minerals development and protect the R&I values.

All 50,000 undesignated acres would continue to be managed according to VRM Class III objectives, which could affect the sacred or historic setting of the cultural resources within the potential ACEC by allowing surface-disturbing activities that impair this R&I value. Fewer mitigation measures would be needed to meet visual resource objectives, compared with VRM Class II.

Of the undesignated acres, 47,000 acres (94 percent) would continue to overlap with the DSSA. This overlap would indirectly protect R&I values, as various effects minimization and mitigation requirements, including BMPs, would be implemented in these areas to protect Dall sheep habitat. Additionally, various restrictions, such as travel management restrictions and recreation permit limitations, would be enforced, protecting R&I values by limiting disturbance. However, allowing some development for recreational purposes and managing for ROWs in these areas could degrade R&I values.

Lastly, allowing for fluid mineral, locatable mineral, and mineral materials entry and development in the DSSA could degrade R&I values due to surface disturbance and infrastructure development. Applying NSO stipulations could help mitigate impacts.

**Alternative B**

The entire potential ACEC (50,000 acres) would be designated to protect cultural resources and Hodzana caribou habitat, resulting in greater protection for R&I values than under Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values.

**Alternative C1**

The entire potential ACEC (50,000 acres) would not be designated. PLOs would be recommended for revocation for all 50,000 undesignated acres, which could result in greater impacts than under Alternative A. All 50,000 acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A, except 24,000 more acres would be available for locatable mineral entry. There would be 24,000 acres (48 percent of the undesignated area) subject to NSO stipulations for fluid mineral entry. This would help reduce impacts on R&I values by reducing surface disturbance. Additionally, 26,000 of the acres available for locatable mineral entry would be top-filed.

The 50,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including disturbance to wildlife, destruction of wildlife habitat, and degradation of cultural resources and values. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Managing these 50,000 undesignated acres as VRM Class II would protect R&I values from most impacts associated with management activities with large-scale, ground-disturbing activities; however, it would allow activities that modify the landscape but have low visual contrast and do not attract attention. Compared with Alternative A, which manages these acres according to VRM Class III, Alternative C1 would provide more protection for R&I values.

Limiting OHV travel to existing routes on all 50,000 undesignated acres would result in the same impacts as those described under Alternative A.

Of the undesignated acres, 47,000 acres (94 percent) overlap with the DSSA, resulting in the same impacts as those described under Alternative A.

Of the undesignated area, 24,000 acres (48 percent) overlap with lands with wilderness characteristics that would be managed to maintain wilderness characteristics. Impacts would be as described under *Hogatza River – Alternative C1*. Additionally, 26,000 acres (52 percent) overlap with lands with wilderness characteristics that are managed to emphasize other resource values and multiple uses while applying management restrictions to reduce impacts on wilderness characteristics. The impacts would be as described under *Accomplishment Creek – Alternative C1*. Compared with Alternative A, which does not designate any acres as lands with wilderness characteristics, Alternative C1 would provide more protection for R&I values from this management action.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC (50,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C1, except that no acres would overlap with lands with wilderness characteristics. This would result in less protections for R&I values. Additionally, there would be no acres for fluid mineral entry subject to NSO stipulations.



The entire undesignated area would continue to be managed according to VRM Class III or Class IV objectives, resulting in the same type of impacts as those described under Alternative A.

**Alternative D**

The entire potential ACEC (50,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2.

**T.34 UPPER TEEDRIINJIK (CHANDALAR) RIVER**

**Alternative A (No Action)**

The entire potential ACEC (295,000 acres) would not be designated. Currently, there are no threats to the R&I values. Any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values.

All 295,000 acres would continue to be encumbered under withdrawals and would continue to be withdrawn from locatable mineral entry and fluid mineral leasing. This would prohibit surface-disturbing activities associated with minerals development, helping to protect R&I values. However, these acres would be open to mineral material sales, which could degrade R&I values by allowing for access to mineral materials.

These 295,000 undesignated acres would continue to be managed according to VRM Class III objectives, which could lead to impacts on R&I values by allowing surface-disturbing activities. Fewer mitigation measures would be needed to meet visual resource objectives, compared with VRM Class II.

Limiting OHV travel to existing routes on these 295,000 acres would reduce impacts from motorized and mechanized travel in the undesignated area by limiting surface disturbance and vegetation destruction.

**Alternative B**

The entire potential ACEC (295,000 acres) would be designated to protect crucial habitat for Chinook salmon, and summer and fall habitat for chum salmon, coho salmon, whitefish, and cisco. Of the alternatives, this would result in the greatest amount of protection for R&I values. The management prescriptions identified in **Chapter 2** would protect the R&I values.

**Alternative C1**

The entire potential ACEC (295,000 acres) would not be designated. Withdrawals would be recommended for revocation for all 295,000 acres, and these 295,000 acres would be available for locatable mineral entry and fluid mineral entry. They also would be open to mineral material sales. Consequently, the R&I values in this area could be degraded due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of surface water from wastewater spills and runoff. Compared with Alternative A, Alternative C1 would result in greater degradation of R&I values from these management actions. However, 215,000 acres (76 percent of the undesignated area) would be subject to NSO stipulations; 73,000 acres (25 percent of the undesignated area) would be subject to controlled surface use stipulations for fluid mineral entry, which would reduce impacts on R&I values by limiting surface disturbance. Of the acres open to locatable mineral entry, 80,000 would be State-selected, segregated from mineral entry.

There would be 285,000 undesignated acres (97 percent of the undesignated area) open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A,

Alternative C1 would result in greater impacts on R&I values. This is because no acres would be open to commercial timber development under Alternative A. Only 3 percent (10,000 acres) of the undesignated area would overlap with areas closed to commercial timber development, which would help protect R&I values by precluding timber infrastructure development, surface disturbance, and riparian habitat damage.

**Alternative C2 (Preferred Alternative)**

The entire potential ACEC (295,000 acres) would not be designated. Withdrawals would be recommended for revocation on all 295,000 acres. These acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same impacts as those described under Alternative C1, except no acres would be subject to NSO stipulations for fluid mineral entry. Of the acres open to locatable mineral entry, 80,000 would be State-selected, segregated from mineral entry.

All 295,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

**Alternative D**

The entire potential ACEC (295,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2.

**T.35 WEST FORK ATIGUN RIVER**

**Alternative A (No Action)**

Under this alternative, 26 percent of the entire potential ACEC (9,000 acres of 34,000 total acres) would continue to be designated to protect crucial Dall sheep lambing areas and mineral licks. The management prescriptions identified in **Chapter 2** would protect the R&I values within this designated portion of the ACEC.

A significant number of hunters use the Dalton Highway for easy access to hunt Dall Sheep. Additionally, this potential ACEC contains natural mineral licks, which provide essential minerals to ungulates in the area and are critical for maintaining healthy Dall sheep populations in the vicinity. Therefore, any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values. For example, of the remaining 25,000 acres of undesignated area (74 percent of the entire potential ACEC acres), approximately 8 percent, or 2,000 acres, would overlap with rivers identified as eligible or suitable for inclusion in the NWSRS. The areas that overlap or are adjacent to these eligible or suitable rivers would receive some indirect protection from WSR management. These actions would indirectly help protect the soil R&I value in this area.

Limiting OHV travel to existing routes on all 25,000 undesignated acres would reduce impacts from motorized and mechanized travel by limiting surface disturbance, wildlife disturbance, and habitat fragmentation.

All 25,000 undesignated acres are encumbered by PLOs, which withdraws the area from fluid mineral entry. This would reduce the degradation to R&I values by restricting surface disturbance and infrastructure development. However, 44 percent of the undesignated area (11,000 acres) would continue to be available for locatable mineral entry, while all 25,000 undesignated acres would continue to be open to mineral material sales. Consequently, the R&I values in this area could be degraded due to impacts from

infrastructure development and surface disturbance associated with mineral development, including destruction of soils and wildlife habitat, as well as wildlife disturbance. Of the acres open to locatable mineral entry, 6,000 would be top-filed. However, 14,000 acres (56 percent of the undesignated area) would continue to be withdrawn from locatable mineral entry, which would prohibit surface-disturbing activities associated with minerals development and help protect R&I values.

Allowing some development for recreational purposes and managing for ROWs could degrade R&I values by causing some surface disturbance and damage to wildlife habitat.

### **Alternative B**

Under this alternative, 97 percent (33,000 acres) of the entire potential ACEC would be designated to protect priority Dall sheep habitat (including mineral licks), resulting in more protections for R&I values than under Alternative A. The management prescriptions identified in **Chapter 2** would protect the R&I values within this designated portion of the ACEC.

### **Alternative C1**

The entire potential ACEC (34,000 acres) would not be designated. PLOs would be recommended for revocation for 21,000 acres (62 percent of the undesignated area). Additionally, 19,000 acres (56 percent of the undesignated area) would be available for locatable mineral entry (8,000 acres more than Alternative A) and fluid mineral entry; 14,000 acres (41 percent of undesignated area) would be open to mineral material sales (11,000 acres less than Alternative A), resulting in the same type of impacts as those described under Alternative A. Of the acres open for locatable mineral entry, 2,000 would be State-selected, segregated from mineral entry. Of the acres available for locatable mineral entry, 17,000 would be top-filed. However, 21,000 acres (62 percent of the undesignated area) would be retained under PLOs (4,000 fewer acres than Alternative A), 14,000 acres would be withdrawn from locatable mineral entry (same as Alternative A), and 14,000 acres for fluid mineral leasing (11,000 fewer acres than Alternative A). All of these management actions would prohibit surface-disturbing activities associated with minerals development and protect R&I values.

The 34,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and wildlife habitat, as well as wildlife disturbance. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Of the undesignated acres, 32,000 acres (94 percent) overlap with the DSSA, resulting in the same type of impacts as those described under Alternative A, except over a larger area (9,000 more acres).

Limiting OHV travel to existing routes on all 34,000 undesignated acres would result in the same type of impacts as those described under Alternative A, except over a larger area (9,000 more acres).

### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (34,000 acres) would not be designated. PLOs would be recommended for revocation for all 34,000 undesignated acres. These acres would be available for locatable mineral entry and fluid mineral entry, and they would be open to mineral material sales. This would result in the same type of impacts as those described under Alternative A. However, compared with Alternative A, Alternative C2 would result in more impacts on R&I values for these management actions, as 23,000 more acres would be available for locatable mineral entry and 9,000 more acres would be available for mineral material sales. Alternative A does not open any acres to fluid mineral entry, but instead withdraws 25,000 from fluid

mineral entry. Of the acres open to locatable mineral entry, 2,000 would be State-selected, segregated from mineral entry. Of the acres open for locatable mineral entry, 32,000 would be top-filed.

Of the undesignated area, 14,000 acres (41 percent) would overlap with utility corridors. Construction within utility corridors could degrade R&I values due to impacts from surface disturbance and infrastructure associated with this development, including destruction of soils and damage to wildlife habitat. Compared with Alternative A, this management action would result in more impacts on R&I values. This is because Alternative A does not overlap with any utility corridor areas.

The 34,000 undesignated acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and wildlife habitat, as well as wildlife disturbance. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

Lastly, limiting OHV travel to existing routes on all 34,000 undesignated acres would result in the same type of impacts as those described under Alternative A, except over a larger area (9,000 more acres).

### **Alternative D**

The entire potential ACEC (34,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2.

## **T.36 WHEELER CREEK**

### **Alternative A (No Action)**

The entire potential ACEC (145,000 acres) would not be designated. Currently, there are no threats to the R&I values. Any direct or indirect protection from management actions for other resources within the undesignated potential ACEC could help protect the R&I values. For example, these 145,000 acres would continue to be encumbered under withdrawals and would continue to be withdrawn from locatable mineral entry and fluid mineral leasing. This would prohibit surface-disturbing activities associated with minerals development, helping to protect R&I values. However, these acres would be open to mineral material sales, which could potentially diminish R&I values.

Limiting OHV travel to existing routes on all 145,000 undesignated acres would continue to reduce impacts from motorized and mechanized travel on R&I values by limiting surface disturbance.

### **Alternative B**

The entire potential ACEC (145,000 acres) would be designated to protect crucial chum salmon summer spawning habitat, resulting in the greatest amount of protection for R&I values of the alternatives. The management prescriptions identified in **Chapter 2** would protect the R&I values.

### **Alternative C1**

The entire potential ACEC (145,000 acres) would not be designated. Withdrawals would be recommended for revocation for these 145,000 acres. They would be available for locatable mineral entry and fluid mineral entry, and would be open to mineral material sales. Of the acres open to locatable mineral entry, 115,000 would be State-selected, segregated from mineral entry. Compared with Alternative A, which retains these acres under lands with a withdrawal and are closed to locatable mineral entry, this alternative would result in greater degradation of R&I values for this management action. This is due to impacts from infrastructure development and surface disturbance associated with mineral development, including destruction of soils and fish habitat, erosion that could degrade aquatic habitats, and contamination of

surface water from wastewater spills and runoff. However, 8,000 acres (6 percent of the undesignated area) would be subject to controlled surface use stipulations, which would reduce impacts on R&I values by limiting surface disturbance.

There would be 132,000 undesignated acres (91 percent of the undesignated area) open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C1 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A. There would be 14,000 undesignated acres (10 percent of the undesignated area) that would overlap with areas closed to commercial timber development, which would help protect R&I values by precluding timber infrastructure development, surface disturbance, vegetation removal, weed spread, and riparian habitat damage caused by erosion.

Limiting OHV travel to existing routes on 145,000 acres would result in the same impacts as those described under Alternative A.

The undesignated area overlaps with 145,000 acres of lands with wilderness characteristics that are managed to emphasize other resource values and multiple uses while applying management restrictions to reduce impacts on wilderness characteristics. The impacts would be as described under *Accomplishment Creek – Alternative C1*. Compared with Alternative A, which does not overlap with any lands with wilderness characteristics, Alternative C1 would result in greater protection for R&I values from this management action.

#### **Alternative C2 (Preferred Alternative)**

The entire potential ACEC (145,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be similar to those described under Alternative C1, except that no acres would overlap with lands with wilderness characteristics or areas closed to commercial timber development. Additionally, there would be no acres for fluid mineral entry subject to controlled surface use stipulations.

All 145,000 acres would be open to commercial timber development, which could degrade R&I values due to surface disturbance, including destruction of soils and fish habitat and erosion that could degrade aquatic habitats. Compared with Alternative A, Alternative C2 would result in greater impacts on R&I values, as no acres would be open to commercial timber development under Alternative A.

#### **Alternative D**

The entire potential ACEC (145,000 acres) would not be designated. Management actions for other resources and impacts on R&I values would be the same as those described under Alternative C2.

### **T.37 CONCLUSION**

In general, under all alternatives, management actions that protect resources would help maintain or improve the R&I values within undesignated ACECs; management actions that create the potential for resource degradation could diminish R&I values within undesignated ACECs. Designating ACECs would protect the R&I values in those areas, while not designating ACECs could degrade R&I values. Any potential projects would include mitigation measures to protect R&I values.

Protection of R&I values across all ACECs would be greatest under Alternative B. This is because at least some portion of each of the 31 potential ACECs would be designated, and would receive direct protection

via ACEC-specific management actions. The potential for degradation of R&I values would be greatest under Alternative D, followed by Alternative C2. This is because no potential ACECs would be designated under Alternative D, and only one ACEC/RNA would be designated under Alternative C2. Alternative A would provide greater protection for R&I values than Alternatives C1 and C2, given that more potential ACECs would be designated and would thus receive more direct protection via ACEC-specific management actions.

### **T.38 CUMULATIVE IMPACTS**

The cumulative impacts analysis area for ACECs is the Central Yukon RMP decision area. Past, present, and reasonably foreseeable future actions and conditions within the cumulative impact analysis area that have affected and would likely continue to affect ACECs are mining, oil and gas development, transportation and infrastructure construction and development, utility corridor and ROW development, increased tourism and recreation, increased access to remote areas, wildland fires and fire suppression, flooding, and soil and permafrost changes. The direct and indirect impacts of the alternatives described above would cumulatively contribute to the impacts of these reasonably foreseeable future actions. However, the BLM would adaptively manage to protect R&I values and minimize impacts on these values, where applicable and feasible.

Cumulative impacts on R&I values could also result from non-BLM actions and decisions on lands adjacent to the potential ACECs. Development and growth throughout the planning area could, over time, encroach on these areas. Activities such as unauthorized off-route travel and increased noise, air, and light pollution could degrade R&I values.

Other impacts include species displacement, habitat fragmentation, and visual landscape changes that could affect R&I values. Visual disturbances, including any structures or resource developments noticeable in the viewshed of ACECs with cultural values, can affect the cultural setting. Impacts would be greater where recreation areas or development were next to an ACEC. Additionally, the effects of climate change, described under the affected environment, above, could influence the rate or degree of the potential cumulative impacts.

### **T.39 REFERENCES**

BLM (U.S. Department of the Interior, Bureau of Land Management). 1988. BLM Manual 1613—Areas of Critical Environmental Concern. Rel. 1-1541. BLM, Washington, DC. September 29, 1988.

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