U.S. Department of the Interior
Bureau of Land Management

Birch Creek Wild and Scenic River

Draft Comprehensive River Management Plan and Environmental Assessment

October 2023

Prepared by Bureau of Land Management
Eastern Interior Field Office

Mission Statement

The Bureau of Land Management sustains the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

Cover Photo

Birch Creek Wild and Scenic River by Craig McCaa

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For more Information

To request a copy of this publication please contact:

Bureau of Land Management
Eastern Interior Field Office
222 University Avenue
Fairbanks, AK 99709
907-474-2200

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1 Introduction

1.1 Summary of Proposed Project

The Birch Creek Wild and Scenic River (WSR) was designated by the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) on December 2, 1980 (**Figure 1-1**, Birch Creek Wild and Scenic River). The Bureau of Land Management (BLM) Eastern Interior Field Office (EIFO) manages the WSR according to the 1983 River Management Plan for the Birch Creek WSR (BLM 1983).

Federal agencies charged with the administration of the National Wild and Scenic Rivers System (NWSRS) are required to prepare a comprehensive river management plan (CRMP) for designated river segments under the Wild and Scenic Rivers Act of 1968 (WSRA), Section 3(d)(1). With this CRMP, the BLM EIFO is updating and superseding the 1983 River Management Plan. This update will incorporate the provisions of several federal regulations promulgated since the adoption of the 1983 River Management Plan. The CRMP will also consider conditions in the Birch Creek WSR Corridor that have changed since 1983. Finally, the CRMP will also address EIFO planning efforts since 1983 that relate to activity in the Birch Creek WSR Corridor.

The primary goal of this CRMP is to provide management direction for protecting and enhancing the river values for Birch Creek. The CRMP will more clearly document the river corridor boundary with enhanced mapping. It also will establish management direction, user capacities, monitoring, and other management practices necessary to protect and enhance the river values (the river's free-flowing condition, water quality, and outstandingly remarkable values [ORVs]).

The BLM prepared this environmental assessment (EA) to analyze and disclose the effects of adopting the proposed CRMP. By preparing this EA, the BLM fulfills agency policy and direction to comply with the National Environmental Policy Act (NEPA) and other relevant federal laws and regulations.

1.2 Background

The Birch Creek WSR is a 111.14-mile portion of the Ikhèenjik River. The name Birch Creek was given to the subject stream in the mid-1800s by traders of the Hudson's Bay Company at Fort Yukon. Birch Creek was the official name used by the US government for the entire river until 1980, when ANILCA established the Birch Creek WSR on a portion of the 341.93-mile-long stream. On March 9, 2017, the US Board on Geographic Names changed the official name of the entire stream to "Ikhèenjik River" in recognition of its Gwich'in name. That renaming of the stream did not change the name of the congressionally designated WSR. In this document, "Birch Creek WSR" is used to refer to the designated WSR, the surrounding corridor, and the watershed that drains into the corridor. "Ikhèenjik River" is used to refer to the stream as a whole and the watershed that drains into it.

The Birch Creek WSR was designated under ANILCA. The original estimate of its length in the 1983 River Management Plan was126 miles. More recently, using current geographic information system tools and the US Geological Survey (USGS) National Hydrography Dataset, the centerline for the Birch Creek WSR was determined to be 111.14 miles. This does not include all braided sections of the Birch Creek WSR.

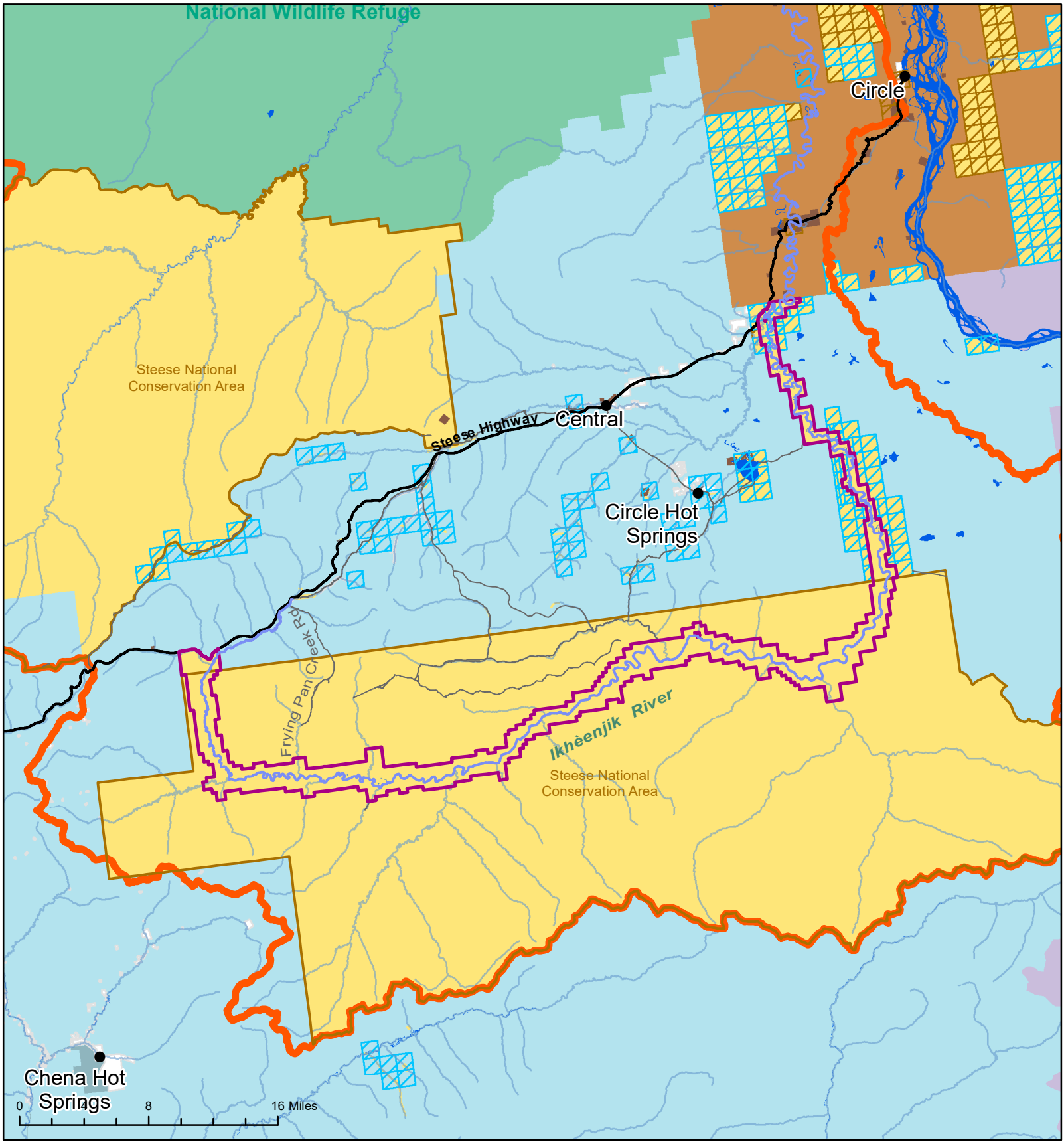
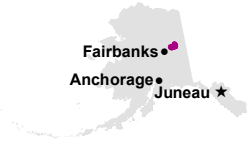


Figure 1-1. Birch Creek Wild and Scenic River

- Wild and scenic river corridor
- Ikhèenjik River
- Ikhèenjik River watershed boundary
- National Conservation Area
- State Selected
- Native Selected
- Bureau of Land Management
- Air Force (less than 1 acre)
- Fish and Wildlife Service
- National Park Service
- State
- Local Government
- Native Allotment
- Native Lands
- Private
- Water



Data Source: BLM GIS 2022
Print Date: 06/01/2023

The WSRA mandates that each component of the NWSRS be managed to protect and enhance the values that caused it to be included in the system. No explicit list of values is provided in the designating legislation for the Birch Creek WSR. However, the legislation was informed by a 1975 environmental impact statement (EIS; US Department of the Interior 1975). Excerpts from that EIS give a clear sense of why Birch Creek was included in the system, as well as what made it suitable for a wild classification rather than a scenic or recreational classification. While these are not binding for the CRMP, the description of the river values at the time and the assumptions made about management needed to protect those values provide informative context for the current CRMP development. Excerpts from the EIS (US Department of the Interior 1975) describing land uses and the environment are as follows:

- "The proposed river corridor is characterized by a primitive environment showing little evidence of man. No year-round habitation, farming, lumbering, grazing, mining, or similar activity exists in the river corridor. At present, primary land uses include canoeing, hunting, fishing, trapping, and other recreational pursuits. The only evidence of man in the corridor are several log cabins. At least one of these cabins is still being used part of the year for trapping purposes; the others appear to have been abandoned."
- "Several placer gold mining claims exist at 5 separate locations along the river – the confluences of North Fork, Harrington Creek, McLean Creek, Buckley Bark Creek, and South Fork. These have not been developed and assessment work within the last 5 years has been recorded for only one site – McLean Creek."
- "Although the Birch Creek proposal area is road accessible, there are no developed recreational facilities or designated recreational areas within the proposed Wild River corridor."
- "Birch Creek offers outstanding recreational opportunities for nonmotorized 'float boat' use for the experienced canoeist (canoeing, kayaking, rafting). It is one of the very few clearwater rivers in the State with road access at two points on an otherwise undisturbed river segment. The recreationist is offered a wilderness experience along the river without having to pay the high costs of aircraft transportation – a unique proposition in Alaska."

The following are assumptions and proposals taken from the EIS about management under a wild river classification:

- "Wild River management will be directed at protecting the values which make Birch Creek outstandingly remarkable while providing river-related outdoor recreation opportunities in a primitive setting."
- "The type and extent of controls on all land in the corridor necessary to preserve the existing integrity of the river would be determined in the preparation of the master plan. These controls which would restrict development and use of the land that would detract from the overall existing recreational, scenic, or fish and wildlife values of the area may take the form of zoning and scenic easements."
- "Such controls would include the prohibition of new commercial uses within the immediate environment of Birch Creek; and acreage, frontage, and setback requirements on new developments on private lands; and restrictions on aircraft landing and vehicular use in the corridor."
- "Consideration would also be given to developing design standards which assure structures, recreation facilities, or other necessary modifications of the existing

environment are harmonious with their setting (log rather than tarpaper siding, for example)."

- "Off-road vehicle use, aircraft landings, and use of boat motors will be strictly regulated to insure [*sic*] the safety of the river users and protect the primitive nature of the river area, fragile soils, vegetation, and wildlife, and to prevent conflicts with other recreational uses."

1.3 Purpose and Need

1.3.1 Purpose of the Birch Creek CRMP

The Birch Creek CRMP will establish the overall management direction for the Birch Creek WSR. It will establish management direction to protect and enhance the ORVs, free-flowing condition, and water quality for the designated WSR, leaving it unimpaired for future generations. The Birch Creek WSR has scenic, recreation, and fisheries ORVs. In addition, the Birch Creek WSR is designated as wild because it is free of impoundments; it is generally inaccessible, except by trail; and the watersheds and shorelines are essentially primitive with unpolluted waters.

The purpose of the Birch Creek CRMP is to implement the direction of the WSRA. The WSRA states each component of the NWSRS shall be administered in such a manner as to protect and enhance the values that caused it to be included in the NWSRS. Management plans for any such component may establish varying degrees of intensity for the protection and development, based on the special attributes of the area.

The CRMP will establish a detailed river corridor boundary and describe existing resource conditions, including a detailed description of the ORVs. It will define goals and desired conditions for protecting the river values, address resource protection and development of lands and facilities, address user capacities, and address water quality issues and instream flow requirements. CRMP development involves a collaborative approach that is coordinated with—and may be incorporated into—resource management planning for affected adjacent federal lands. The CRMP is prepared after consultation with tribes, state and local governments, and the interested public. Also, the CRMP will identify the regulatory authorities of other governmental agencies that assist in protecting river values, and it will include a monitoring strategy to maintain desired conditions.

1.3.2 Need for the Birch Creek CRMP

The Birch Creek CRMP is needed because of requirements established by the WSRA, ANILCA, Omnibus Public Lands Management Act of 2009, Steese Record of Decision (ROD) and Approved Resource Management Plan (RMP), and Steese Travel and Transportation Management Plan (TMP). The requirements are listed here:

- Federal agencies that are charged with the administration of the NWSRS, including the BLM, are required to prepare a CRMP for designated river segments to provide for the protection and enhancement of the river values and to achieve the purposes of the WSRA. The 1983 River Management Plan did not address ORVs.
- Under ANILCA Section 605(d), the Secretary of the Interior shall take such action as is provided for under Section 3(b) of the WSRA to establish detailed boundaries and to formulate a detailed development and management plan for the Birch Creek WSR.

- By adding the Birch Creek WSR to the National Landscape Conservation System (NLCS), the Omnibus Public Lands Management Act of 2009 made the WSR subject to BLM NLCS policy. The BLM policy for NLCS management emphasizes community partnerships; conserving, protecting, restoring, and interpreting the communities' natural and cultural heritage; collaboratively managing units as an integral part of the larger landscape; maintaining and promoting ecological connectivity and resilience; restoring disturbed areas; promoting stewardship through outreach, partnerships, interpretation, and volunteers; and promoting NLCS units as sites for scientific research. The 1983 River Management Plan did not address this direction because this direction did not exist at the time.
- WSR-3 in the Steese ROD and Approved RMP calls for the BLM to: "Revise or amend the existing Birch Creek River Management Plan to incorporate resource protection decisions from this ROD, and to address development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of the Wild and Scenic Rivers Act."
- The Steese TMP prohibits summer off-highway vehicle (OHV) use in the WSR Corridor. The 1983 River Management Plan does not account for this prohibition.

The need for the Birch Creek CRMP is also driven by the changing environment, including:

- An increase of average annual temperatures that have led to extensive permafrost thaw along the Birch Creek WSR. This has resulted in large-scale slope failures and erosion, which have negative effects on water quality. The current 1983 River Management Plan does not include a strategy for monitoring and responding to this situation.
- Projections for climate change scenarios in the Eastern Interior include increased temperatures, decreased water availability, and increased fire activity resulting in greater deciduous dominance on the landscape (Rupp and Springsteen 2009). The 1983 River Management Plan does not contemplate the likelihood of these future environmental conditions.
- A growing body of scientific publications that document ecosystem-scale vegetation composition changes in Interior Alaska; for example, see Orndahl et al. 2022, Macander et al. 2022, Frost et al. 2023, Berner and Goetz 2022, Baltzer et al. 2021, Juday et al. 2015, Beck et al. 2011, and Frost et al. 2023. The 1983 River Management Plan does not contemplate future environmental conditions representing these changes.

1.4 Decision to Be Made

The decision to be made is which management actions to include in the CRMP (as required by the WSRA) that will update the 1983 River Management Plan (as required by the Steese ROD). To help inform that decision, this EA analyzes the effects of a range of different management actions that may be included in the CRMP. Amendments to either the BLM Steese ROD (2016) for the Steese RMP or the Steese TMP (2022) are outside the scope of the CRMP. The range of management actions analyzed in this EA may add specificity to or prioritization within the Steese ROD and Steese TMP decisions; however, they may not change them. The BLM Authorized Officer will decide which management actions from within the range of analyzed alternatives to include in an update to the 1983 River Management Plan, as required by law and the Steese ROD. A CRMP will be the result of the BLM Authorized Officer's decision.

Although the Birch Creek WSR is a 111.14-mile portion of the Ikhèenjik River, CRMP management is only for areas within the Birch Creek WSR Corridor that are administered by the BLM. The Birch Creek WSR flows past 110.9 miles of BLM-administered lands. Of the 69,000 acres of land in the entire Birch Creek WSR Corridor, 66,600 acres are administered by the BLM (BLM GIS 2023).

1.5 Land Use Plan Conformance

The BLM completed the Steese ROD and Approved RMP, which covers the Steese Natural Conservation Area (NCA) and Birch Creek WSR, in 2016 (BLM 2016a) and the Steese TMP in 2022 (BLM 2022a). The Birch Creek WSR is within the Steese planning area, which includes BLM-administered lands within and near the Steese NCA. Part of the Birch Creek WSR Corridor is within the Steese NCA. The TMP includes the Birch Creek WSR Corridor, and it considers the WSRA and ANILCA requirements. The BLM is developing this CRMP/EA with consideration of the management actions and direction outlined in both management plans.

1.6 Regulatory Authorities

The BLM's management of WSRs is outlined in Manual 6400, Wild and Scenic Rivers–Policy and Program Direction for Identification, Evaluation, Planning, and Management. The manual contains the BLM's policy and program direction for the identification, evaluation, and management of eligible and suitable WSRs and the management of designated components of the NWSRS.

The BLM shares management responsibilities with the National Marine Fisheries Service and the US Fish and Wildlife Service for protecting Endangered Species Act-listed species and their associated habitat. Fisheries is an ORV for the Birch Creek WSR due to the presence of critical habitat for many fish species.

The Alaska Department of Fish and Game (ADF&G) is responsible for the sustainable management of fish and wildlife throughout Alaska regardless of landownership. ANILCA Section 1314 affirms the State's authority to manage fish and wildlife on public lands. The ADF&G's mission is grounded in the Alaska constitution and Alaska statutes; this mission is to protect, maintain, and improve the fish, game, and aquatic plant resources of the state and manage their use and development in the best interest of the economy and the well-being of the people of the state, consistent with the sustained-yield principle. The BLM coordinates with the ADF&G for the management of fish and wildlife.

The Environmental Protection Agency (EPA) develops and enforces regulations that implement environmental laws enacted by Congress, including those associated with the federal Clean Water Act. The EPA has the authority to implement pollution control programs. The BLM cooperates closely with the Alaska Department of Environmental Conservation (ADEC) and the EPA for the purpose of establishing water quality standards and for preventing, eliminating, or diminishing the pollution of state waters consistent with the federal Clean Water Act.

The Alaska Department of Environmental Conservation, Division of Water oversees the federal Clean Water Act for the state and is responsible for water quality standards, assessment, and regulation. As such, the Division of Water is responsible for identifying 303(d) streams (which means the water quality is limited). The Birch Creek WSR is a 303(d)-listed stream.

Approximately 1 mile of the Birch Creek WSR is listed as impaired. The EPA issued a total maximum daily load (TMDL) for total suspended solids to meet water quality standards for turbidity. The BLM coordinates with the ADEC on all proposed activities that involve discharges into surface waters to ensure BLM-authorized activities do not exceed State of Alaska water quality standards. Section 3.5, Water Resources, Quality, and Navigability, describes why the stream is listed.

The Alaska Department of Natural Resources, Division of Mining, Land and Water authorizes water rights. A water right is a legal right to use surface water or groundwater under the Alaska Water Use Act. A water right allows a specific amount of water from a specific water source to be diverted, impounded, or withdrawn for a specific use. In 2001, the BLM filed an instream flow water reservation application with the State of Alaska for the right to reserve recommended monthly average instream flows.

1.7 Relationship to Statutes, Regulations, and Other NEPA Documents

1.7.1 Wild and Scenic Rivers Act

The WSRA was passed in 1968 with the goal of preserving free-flowing rivers with outstanding natural, cultural, and recreational values. The WSRA is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. Section 3(d)(1) of the WSRA requires the federal agency overseeing the designated WSR to prepare a CRMP to provide protection for the river's values. The CRMP must address resource protection, development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of the WSRA. The CRMP must be coordinated with, and may be incorporated into, resource management planning for affected adjacent federal lands. In addition, the CRMP is prepared after consultation with tribes, state and local governments, and interested parties. Section 10(b) of the WSRA requires that the administering agency protect and enhance the values for which the river was designated (water quality, free flow, and outstandingly remarkable values).

1.7.2 Alaska National Interest Lands Conservation Act

The ANILCA designated 100 million acres of federal land in Alaska as new or expanded conservation system units. These conservation units include national parks and preserves, national wildlife refuges, designated wilderness areas, and WSRs. The ANILCA specifically designated the 1.2 million-acre Steese NCA to protect the area's special values within the framework of a program of multiple use and sustained yield and for the maintenance of environmental quality. It also classified a segment of Birch Creek as a wild river pursuant to the WSRA. According to the WSRA, a wild river is "a river or segment of a river that is free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America."

The ANILCA established the upper portion of Birch Creek as a component of the NWSRS to be administered by the Secretary of the Interior through the BLM. Subject to prior existing rights, the ANILCA designated Birch Creek as a WSR. The ANILCA also directed the Secretary of the Interior to establish detailed boundaries, prepare a management and development plan, and present this information to Congress by December 2, 1983. In response to this directive, the 1983

River Management Plan was developed, and it established the detailed boundaries and management policies for Birch Creek.

ANILCA, Title VIII, Section 810 (Public Law 96-487), subtitled Subsistence and Land Use Decisions, outlines the requirements for addressing impacts on subsistence uses of resources in the federal land use decision-making process in Alaska. An ANILCA Section 810 Evaluation is required for any decision to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands under any provision of law authorizing such actions.

1.7.3 Omnibus Public Lands Management Act

The Omnibus Public Lands Management Act of 2009 created the NLCS "to conserve, protect, and restore nationally significant landscapes with outstanding cultural, ecological, and scientific values for the benefit of current and future generations." It made all BLM-administered WSRs, including the Birch Creek WSR, components of the NLCS, and subject to policy in BLM Manual 6100, National Landscape Conservation System Management Manual, to the extent the policy is consistent with the ANILCA.

1.7.4 1983 River Management Plan for Birch Creek WSR

The 1983 River Management Plan is the original guiding management document for the Birch Creek WSR, as directed by the ANILCA. While ORVs were not identified through the 1983 River Management Plan, management actions included the WSR Corridor and provided a blanket level of protections to resources that contributed to the designation. Management objectives included protecting valid existing rights and future rights granted pursuant to appropriate federal and state laws; preserving the Birch Creek WSR and its immediate environment in a natural, primitive condition; preserving its free-flowing condition; protecting water quality; providing a high-quality primitive recreational opportunity; providing opportunities for interpretive, scientific, educational, and wildlands-oriented uses; assuring protection of historic and ecological values; and maintaining and improving fish and wildlife habitats.

This CRMP is intended to replace the 1983 River Management Plan and provide revised management objectives to protect and enhance the since-identified ORVs, wild classification, and free-flowing status from current and future impacts.

1.7.5 Steese Record of Decision and Approved Resource Management Plan

The Steese ROD and Approved RMP covers the Steese planning area, which includes approximately 1,267,000 acres of BLM-administered land in Alaska's Eastern Interior. This overarching RMP developed goals, objectives, land use allocations, and management actions for natural resources within the Steese NCA. The RMP included decisions on revising or amending the 1983 River Management Plan to better protect the Birch Creek WSR and achieve the goals of the WSRA. It also identified ORVs for the Birch Creek WSR. Scenery, recreation, and fisheries were determined to be the ORVs and thus were identified as the Birch Creek WSR's ORVs.

BLM special status species include species listed under the Endangered Species Act and species that are designated as BLM Alaska sensitive species by the BLM state director. BLM Manual 6840 outlines the management of these species and their habitats, where they are found on BLM-administered lands. The BLM's emphasis of special status species management is an ecosystem management approach that attempts to reduce the likelihood that any native species would be

elevated to BLM sensitive species status. Additionally, this approach initiates proactive conservation measures that reduce or eliminate threats to existing BLM Alaska sensitive species to minimize the likelihood of a species being listed under the Endangered Species Act. Listed species can be found in the 2016 Eastern Interior RMP and EIS.

1.7.6 Approved Travel Management Plan for the Steese Travel Management Area

As stated in the Steese TMP, the Steese Travel Management Area is north of Fairbanks, Alaska. It is situated both north and south of the Steese Highway. It is adjacent to the Yukon Flats National Wildlife Refuge, Yukon-Charley Rivers National Preserve, White Mountains National Recreation Area, and State lands.

The Steese NCA is a component of the BLM's NLCS. The mission of the NLCS is to conserve, protect, and restore nationally significant landscapes recognized for their outstanding cultural, ecological, and scientific values. The Birch Creek WSR starts and ends outside the Steese NCA. It is managed according to the WSRA with limits to access and transportation identified in the Steese TMP. During the summer, the Birch Creek WSR Corridor is closed to unpermitted OHVs (that is, no summer cross-country OHV use). During the winter, OHV cross-country travel is allowed for snowmobiles that are 1,000 pounds curb weight or less and a maximum of 50 inches in width. All other OHVs are limited to managed routes, if present (BLM 2022a). These limitations do not apply to the use of snowmobiles, motorboats, and airplanes for traditional activities and travel to and from villages and homesites, per Section 1110 of ANILCA and implemented through regulations at 43 Code of Federal Regulations (CFR) 36.

1.7.7 Federal Subsistence Management Program

The Federal Subsistence Board is the decision-making body that oversees the Federal Subsistence Management Program, which is a multi-agency effort to provide the opportunity for a subsistence way of life by rural Alaskans on federal public lands and waters while maintaining healthy populations of fish and wildlife. In accordance with 36 CFR 242.10(d)(6) and 50 CFR 100.10(d)(6), the Federal Subsistence Board "may delegate to agency field officials the authority to set harvest and possession limits, define harvest areas, specify methods or means of harvest, specify permit requirements, and open or close specific fish or wildlife harvest seasons within frameworks established by the board."

Currently, the BLM EIFO manager is delegated the authority (delegation letter from the Chair of the Federal Subsistence Board to the BLM EIFO Manager on December 1, 2020) "to modify or restrict harvest limits, including sex restrictions, season dates, and methods and means for caribou on Federal public lands in Units 20E, 20F and 25C," as well as "to close and reopen Federal public lands to nonsubsistence hunting." The delegation is to be exercised only when necessary to conserve caribou populations; to continue subsistence uses, for reasons of public safety; or to assure the continued viability of the populations. In practice, this means the BLM establishes season and bag limits for the Fortymile and White Mountains caribou herds. Those decisions are made in consultation with the ADF&G, as well as the National Park Service, the US Fish and Wildlife Service, and the Eastern Interior Subsistence Advisory Council.

The BLM is required by the ANILCA to consider the management alternatives' potential impacts on subsistence activities, subsistence resources, or access to subsistence activities. Section 810 of ANILCA outlines the requirements for addressing impacts on subsistence uses of resources in the decision-making process for federal land use in Alaska. Appendix J of the 2016

Eastern Interior RMP and EIS includes the evaluations and findings within the Steese Subunit of the planning area per Section 810(a) of ANILCA. This EA includes an analysis of alternatives for the subsistence uses of resources within the Birch Creek WSR Corridor.

1.8 Scoping and Issues Identified for Detailed Analysis

The formal public scoping process for the Birch Creek CRMP began on January 5, 2023, with notification through public radio and in a local newspaper. Also, on January 17, 2023, from 5:00 to 7:00 p.m., the BLM held a virtual scoping meeting that was open to the public to learn more about the CRMP and EA and to submit comments and information. **Chapter 4** further describes public scoping and the issue categories involving public outreach and cooperating agencies.

1.9 Issues Identified, but Eliminated from Further Analysis

The Council on Environmental Quality regulations direct the BLM to de-emphasize insignificant issues to narrow the scope of analysis. Resources that are not present in the area or that would not be affected by the action alternatives are not analyzed. These include the following:

- Wildland Fire Management—This issue has been eliminated from further consideration because any changes in wildland fire management would be considered over a broader area than the WSR. Also, the proposed management actions analyzed in this EA would not change the wildland fire management actions available for consideration.
- Geology and Mining—This issue has been eliminated from further consideration because there are no active or historic mining claims within the WSR corridor. The Birch Creek WSR is closed to fluid minerals and solid leasable minerals. It is also withdrawn from mineral entry pursuant to ANILCA and closed to salable minerals under the Steese ROD and Approved RMP. Impacts associated with mining outside the corridor will be considered in the context of the resources being affected.
- Public Health and Safety—This issue has been eliminated from further consideration because there were no concerns to public health and safety identified during the development of the action alternatives.
- Travel Management—This issue has been eliminated from further consideration because the 2022 TMP (BLM 2022a) provides management actions and an impacts analysis for the WSR corridor.

2 Alternatives

2.1 Introduction

The WSRA requires that a comprehensive management plan be developed for designated WSR segments to provide for the protection of river values. WSR-3 in the Steese ROD and Approved RMP directs the BLM to revise or amend the existing Birch Creek River Management Plan to incorporate resource protection decisions from the ROD. It also addresses development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of the WSRA.

Because there are different approaches to protecting and managing the WSR, the BLM planning team investigated a full range of reasonable management alternatives. NEPA and the BLM policies require that managers consider a full range of reasonable alternatives, including a No Action Alternative. Also, the alternatives must be consistent with the WSRA, consistent with the enabling legislation, reflect a full range of stakeholder interests, desirable of providing for a variety of river-related visitor experience, and fully consider the potential for environmental impacts.

This EA analyzes three alternatives: Alternative A (No Action), Alternative B (Wild Character and Ecological Resilience Emphasis), and Alternative C (Enhanced Visitor Services), as described below.

2.2 Common to All Alternatives

2.2.1 Instream Flow

One of the primary goals of the WSRA is to protect selected rivers in their free-flowing condition for the benefit of future generations. Section 13(c) of the WSRA recognizes the importance of instream flow protection through the establishment of a federal reserved water right for each designated river to accomplish the purposes of the WSRA. It is the BLM's policy to use the State's appropriate instream water rights process to protect the flow-dependent ORVs. The WSRA directs river managers to take steps within their authority to protect the instream flows necessary to protect and enhance the water quality and ORVs. The use of the term instream flows simply refers to the amount of water flowing in a river (Interagency Wild and Scenic Rivers Coordinating Council 2022).

Under Action 5.1 in the 1983 River Management Plan for Birch Creek WSR, a reservation of minimum water flows sufficient for public recreation use and to support the values for which the wild river was designated, would be determined in cooperation with the Alaska Department of Natural Resources, Division of Mining, Land, and Water. Also, the 7250 – Water Rights Manual (BLM 2013) establishes policy and guidance for the BLM in locating, perfecting, documenting, and protecting BLM-administered water rights, which are considered property rights, necessary to manage and conserve the economic and resource values of the public lands. The BLM's goal is to provide enough instream flow to protect and enhance the watershed resources, particularly fish, recreation activities, and scenery.

The Federal Land Policy and Management Act (FLPMA) provides the BLM with the authority to apply for and acquire water reservations for beneficial uses on public lands. This CRMP would

not impact any existing water rights or appropriation for Birch Creek. A study was conducted between 1989 and 1994 to document average monthly stream flow for six contiguous stream segments encompassing the Birch Creek WSR Corridor (BLM 1996). Findings from the study were used by an interdisciplinary team to develop recommended monthly average instream flows necessary for the protection of valued Birch Creek WSR resources. In 2001, the BLM filed an instream flow water reservation application with the State of Alaska for the right to reserve these recommended monthly average instream flows (BLM 2001). While the application has not yet been adjudicated, the application approval date (January 11, 2011) for Birch Creek WSR is the priority date for adjudication. Any subsequent water rights applications that may impact streamflow would be secondary to the 2001 application.

The requested monthly instream flows values, summarized in **Table 2-1**, are reported in cubic feet per second for each of the six stream segments included in the 2001 instream flow water reservation application (**Appendix I**, Chapter 2 Tables). The requested instream flows (**Table 2-1**) would continue under all alternatives. Furthermore, Alternatives B and C include additional management actions involving water quantity and flow to better understand how variations in streamflow may impact ORVs (see **Section 2.8**, Comparison of Alternatives).

Section 7 of the WSRA (16 U.S.C. 1278), as amended, provides for the protection of the free-flowing condition. The BLM follows WSRA Section 7 procedures to determine if projects above or below, within the Birch Creek WSR or on its tributary streams, would unreasonably diminish the free-flowing condition or ORVs in the WSR Corridor. If the project is found to have a direct and adverse effect on the values of the Birch Creek WSR, project redesign and resubmittal for a subsequent Section 7 determination is advised as part of adaptive management.

The current water quantity monitoring strategy for the Birch Creek WSR is to operate long-term stream gage stations, recording daily water level and discharge, at the beginning and end of the Birch Creek WSR. Additional discrete streamflow measurements are collected every 1-3 years during float trips at the confluence of major tributaries to monitor tributary flow contributions. Stream gage monitoring data are critical for acquiring and protecting state and/or federal reserved water rights, and they are essential to developing strategies that protect aquatic habitat, water-dependent ORVs, and riverine processes (channel maintenance). Streamflow monitoring is in cooperation with the US Geological Survey (USGS) and National Weather Service. Adaptive management involves understanding the baseline rates, volume, and timing of surface water flow that is an essential aspect of determining the extent to which future management actions may protect and/or enhance streamflow and water-dependent ORVs.

2.2.2 Water Quality

To protect river values, the current water quality monitoring strategy is to operate long-term stream gage stations equipped with automated water meters recording daily water temperature, specific conductivity, pH, and turbidity at the beginning and end of the Birch Creek WSR. Additional discrete water quality measurements are collected during float trips, every 1-3 years at the confluence of major tributaries, to monitor tributary water quality contributions to the Birch Creek WSR. Information about water quality is essential to developing a strategy that protects identified parameters of water quality, consistent with appropriate State of Alaska water quality standards and the Clean Water Act. Water quality monitoring is in cooperation with the USGS and the Alaska Department of Environmental Conservation. Adaptive management involves understanding the baseline values and variability of Birch Creek water quality

parameters that is an essential aspect of determining the extent to which future management actions may protect and/or enhance water quality and water-dependent ORVs. The BLM works closely with the ADEC to document water quality and remedy actions or incidents that may adversely impact water quality.

2.2.3 Monitoring

The WSRA does not explicitly require monitoring for designated rivers. However, BLM policy requires monitoring in BLM Manual 6400 (Wild and Scenic River Management) and Manual 6100 (National Landscape Conservation System Management). The BLM Manual 6400 instructs the BLM to develop a monitoring strategy to ensure desired conditions are maintained or that management activities are adapted accordingly for WSRs.

Monitoring is an important aspect of protecting and enhancing a river's values (free-flowing condition, water quality, water quantity, and ORVs). Monitoring is the periodic and ongoing measurement of specific variables related to a resource condition or river corridor experience. It proactively tracks conditions and trends and assesses the effectiveness of various management actions. The condition of river values and resources is currently monitored and managed in various ways.

The BLM planning regulations require the monitoring and evaluation of RMPs at appropriate intervals. The Steese ROD and Approved RMP were completed in 2016. After approval of the RMP and signing of the ROD, an implementation schedule was completed, and it incorporated monitoring plans. As a part of adaptive management, monitoring data is used to assess resource conditions, identify resource issues and conflicts, determine if resource objectives are met, determine trends for achievement of desired conditions, and periodically refine and update desired conditions and management strategy.

Monitoring provides essential information on the relative success of management strategies. The implementation of the RMP is monitored to ensure that management actions follow prescribed management direction (implementation monitoring), meet desired objectives (effectiveness monitoring) and are based on accurate assumptions (validation monitoring).

Monitoring is coordinated with other appropriate agencies and organizations to enhance the efficiency and usefulness of the results across a variety of administrative units. The approach builds on past and present monitoring work. In addition, specific monitoring protocols, criteria, goals, and reporting formats are developed.

The BLM would continue monitoring in accordance with the adaptive management strategy outlined in Appendix B, Fisheries and Aquatic Resources, of the Steese ROD and Approved RMP. The BLM would utilize the watershed matrix in Appendix B of the Steese ROD to assist in site-specific project impact analysis and mitigate impacts identified as potentially degrading to watersheds. Also, monitoring would continue to identify thresholds, triggers, or periods in which decisions made in the CRMP would be evaluated to determine whether they are still valid and what courses of action to take if they are not. **Table 2-2**, Birch Creek WSR Baseline Monitoring – All Alternatives, identifies base level monitoring to ensure compliance with the WSRA (**Appendix I**, Chapter 2 Tables). It should be noted that the BLM may decide to conduct additional monitoring than is outlined within, subject to resource availability.

The BLM's current monitoring for the Birch Creek WSR, beyond collecting water quality and flow data, involves an annual trip (usually mid-summer) on the Birch Creek WSR. Often,

additional monitoring is done on specific sections of the Birch Creek WSR. Monitoring is typically done by floating the Birch Creek WSR. At times, it is also conducted by air or remote sensing equipment. Monitoring is typically focused on ensuring the BLM is meeting requirements of the WSRA as well as the goals and objectives of the Steese RMP. Items observed during monitoring trips may include the following described below.

- Documenting both natural and human-made disturbances along the Birch Creek WSR; identifying natural disturbances that can help provide safety information to public users; and identifying human-made disturbances, such as trespass issues or campsite development, that can help initiate corrective agency actions.
- Conducting condition assessments of recreation, cultural, or other agency resources.
- Conducting visitor use surveys, which include level of use, group size, number of daily group encounters, and type of transportation.
- Monitoring compliance of authorized use, including special recreation permit (SRP), of the Birch Creek WSR and documenting any unauthorized use of the Birch Creek WSR.

Current use guidelines are provided through the semiprimitive RMZ designation as decided in the Steese RMP, which covers all of the WSR. The "semiprimitive" prescription includes managing average group size, not to exceed four people, and managing average group contacts per day as less than four. These guidelines should inform the BLM if it is nearing a use capacity threshold.

RMP designations and monitoring described above would continue under all alternatives. Furthermore, Alternatives B and C include additional monitoring.

2.2.4 River Boundary

The WSRA requires that each federally administered river in the NWSRS have a legally established boundary. Establishing a WSR boundary that includes identified river-related values is essential as a basis from which to provide necessary protection. The 1983 River Management Plan for Birch Creek WSR adheres to Section 606 of the ANILCA, which stipulates that boundaries shall include not more than 640 acres per mile on both sides of the river and boundary withdrawals are 0.5 mile from each bank of the river. This CRMP does not alter the boundary, but rather it more clearly documents the boundary using current mapping capabilities that were not available when the ANILCA designated the Birch Creek WSR.

2.2.5 Strategic Science Plan

The "Strategic Science Plan for the Steese National Conservation Area and White Mountains National Recreation Area" would continue to provide the base strategy for science activities in and around the WSR.[1] It provides strategic guidance and vision, not policy or constraints (Haddix et al. 2023). Action alternatives include management goals or actions that add specificity to supplement or enhance the base science strategy.

2.2.6 Navigability

On August 24, 2018, the State of Alaska provided notice of intent to the BLM to file a quiet title action to the submerged lands of the Birch Creek WSR. The State of Alaska is asserting that title

[1] https://www.blm.gov/sites/default/files/docs/2023-03/SteeseNationalConservationArea_ScienceStrategy_2023_508_Final.pdf

to these lands passed to Alaska at statehood based on the equal footing doctrine, the Submerged Lands Act, and the Alaska Statehood Act. Judicial navigability findings could have impacts on future management (BLM 2021).

> The notice of intent included the following submerged lands: Birch Creek from upstream of its confluence with South Fork Birch Creek downstream[2] to the put-in location at the confluence of North Fork Birch Creek and Birch Creek. This includes all lands between the ordinary high water lines of the left and right banks of Birch Creek upstream of the confluence of the South Fork Birch Creek within Section 34, T. 6 N., R. 16 E., FM., including the following townships: T. 6 N., R. 16 E., FM; 1.6 N., R. 15 E., FM.; T. 6 N, R. 14 E., FM; 1.6 N., R. 13 E., FM; T. 5 N., R. 13 E., FM; 1.5 N., R. 12 E., FM; T. 5 N., R. 11 E.,FM; T. 5 N., R. 10 E.,FM; T. 6N, R. 10 E., FM; and T. 7 N., R. 10 E., FM, to the put-in location at the confluence of North Fork Birch Creek and Birch Creek within Section 32, 1. 7 N., R. 10 E., FM.

In segments of the river that have been determined navigable, the BLM would pursue an agreement with the State with the goal of coordinating management to protect and enhance the values for which the river was added to the NWSRS.

2.3 Alternative A – No Action Alternative

Alternative A would continue to implement current planning direction in the Birch Creek WSR Corridor. The Steese ROD, Steese TMP, and 1983 River Management Plan would continue to direct management, as described in **Appendix A**, Birch Creek WSR Management Common to All Alternatives, and **Table 2-5**, Comparison of Alternatives in **Appendix I**, Chapter 2 Tables.

2.4 Common to All Action Alternatives (Alternatives B and C)

2.4.1 User Capacity

It is important to note that this CRMP uses the term "visitor capacity" to be synonymous with the term "user capacity" (a required component for CRMPs per the WSRA and interagency guidelines). Section 3(d)(1) of the WSRA directs agencies to address visitor capacities in a CRMP to ensure that use levels in the river area do not threaten river values or established desired conditions.

The primary uses that Birch Creek supports include both motorized and nonmotorized boating (most motorized boating occurring in the lower stretches of the river), camping, fishing and hunting. Overall, visitor use within the Birch Creek WSR area is quite low and it does not appear to be threatening river values. Commensurate with this there has not been a large degree of investment in data collection, monitoring, and analysis to support visitor capacity estimates.

General use levels and types of use have remained consistent since 1983. Use levels can vary from year to year based on floating conditions, wildfire conditions, and game availability for hunting. A very modest increase is trending in the number of users. Aerial surveys are conducted

[2] Disclaimer: This text is from a letter from the State of Alaska to the Secretary of the Interior, dated August 24, 2018, regarding Beaver Creek, Nome Creek, Birch Creek, Bettles River, Dietrich River, Middle Fork Koyukuk River, and South Fork Koyukuk River AGO No. AN2011103815. "Downstream" is likely incorrect. "Upstream" is likely accurate."

as resources are available and were conducted in 2003 and 2004 by the BLM for visitor use to determine baseline use. Surveys were very limited in 2004 due to significant fire activity, which also likely limited the number of river users. The weekly surveys conducted in 2003 showed around 200 annual river users for that summer. The peak use month was September followed by June, July, and August in that order. The largest user group was nonmotorized float boating with a small number of motorboats present in the lower section.

Currently, the use level of Birch Creek WSR is estimated between 300-400 users per year excluding short-term use of the put-in and take-out waysides and some isolated winter use, such as the Yukon Quest International Sled Dog Race. The BLM believes the use is nowhere near capacity, and does not believe the use trend would approach capacity, given the current rates for 20 years, if not longer.

Current interactions between recreation users are low, and evidence of recreation users is minimal. This situation has minimized potential user conflicts. No on-site recreation management controls are evident. Three commercial groups or other groups are authorized to operate on the Birch Creek WSR, but they typically do not conduct more than one annual trip between them. The only two developed recreation sites on the Birch Creek WSR continue to be the put-in site at the beginning and the take-out site near the end.

Desired conditions for river values and the wild classification are as follows.

- For a wild classification, recreation use including, but not limited to, hiking, fishing, and boating is encouraged in wild river areas to the extent consistent with the protection of the river environment. Public use and access may be regulated and distributed, where necessary, to protect and enhance the wild river value (BLM Manual 6400).
- Use of a national wild river must be managed to protect those values which caused the river to be designated as a component of the NWSRS.
- In December 2016, the ROD was signed for the Steese RMP. In the decision, the ORVs for the Birch Creek WSR were established, which are recreation, fisheries, and scenic.
- In the Steese RMP decision, the entire Steese NCA and the Birch Creek WSR were established as a special recreation management area (SRMA). The Birch Creek WSR was designated as a semiprimitive RMZ within that SRMA. Management goals are defined in the RMP for the Birch Creek RMZ.

The recreation focus for the Birch Creek RMZ is to provide high-quality, multiday recreational float boat opportunities for users who desire a recreation experience characterized by solitude, tranquility, self-reliance, challenges, and risk in a semiprimitive, Interior Alaska river setting. Some of the characteristics with which to manage this RMZ include:

- Manage for a very high probability of experiencing solitude, closeness to nature, tranquility, self-reliance, challenge, and risk.
- Provide a naturally appearing landscape with a low-level of noticeable modifications.
- Maintain rustic facilities that are generally constructed using natural materials and they are designed to blend with the surrounding landscape.
- Have an average number of contacts per day usually fewer than four groups.
- Manage for group sizes that usually average fewer than four people per group.

These characteristics, developed in the Eastern Interior RMP, provide for some management discretion while providing guidelines to help manage within the intended recreation experience.

Monitoring would typically consist of routine river patrols ensuring there is no significant disturbance and tracking the number of groups and group sizes. Occasional surveys would occur to ensure the BLM is meeting the RMZ objective as listed in the Steese RMP for the RMZ. It states that participants in visitor assessments report an average of 4.0 realization of the targeted experience and benefit outcomes as listed (above) on a probability scale where 1=not at all realized and 5=totally realized.

Currently, the BLM does not feel that any of these thresholds are at risk. Visitor capacity estimates recognize the likelihood that visitor capacity decisions may need to be reviewed and revised as more data becomes available. Adaptive management associated with this CRMP would determine if a re-examination of visitor capacities is needed. If in the future, events or actions begin to threaten these thresholds, the BLM would begin with initiating an educational campaign and/or more frequent river patrols to remedy the situation before attempting to take more formal actions. Adaptive management could include increased annual monitoring trips if issues or concerns were identified or if thresholds to meeting the WSRA or ORV of the Birch Creek WSR are being threatened.

2.4.2 Monitoring Strategy

Monitoring is essential to protecting river-related values. The monitoring strategy objective is to protect Birch Creek WSR's free-flowing condition, water quality and quantity; protect ORVs; and address visitor use. Ongoing studies and monitoring data would help the BLM determine if management actions are necessary to protect river values from degradation.

This section identifies activities that would be conducted to assess the progress and results of implementing the CRMP. Monitoring is important to ensure that changes stay within acceptable levels and would not compromise the protection and enhancement of the river values.

For each river value to be monitored, indicators are selected that inform managers about changes in the ecosystem or social setting. When possible, monitoring indicators already being collected for other management purposes were selected to help assure the attainability of this monitoring plan.

For each key indicator, a threshold (or standard to meet) is set. This threshold value indicates the point at which river management objectives are no longer met. Then, action would be taken to meet the standard. In most cases, the existing low use in Birch Creek WSR means that current conditions of many indicators are all far from needing action to meet standards. In cases where limited data is currently available, reaching a threshold could result in further investigation, monitoring, and evaluation. Monitoring for the action alternatives is listed in **Table 2-3**, Birch Creek WSR Monitoring – Alternative B and **Table 2-4**, Birch Creek WSR Monitoring – Alternative C (**Appendix I**, Chapter 2 Tables). Each action alternative has its own set of monitoring to address the management theme for each alternative, described below in **Section 2.5,** Alternative B – Wild Character and Ecological Resilience Emphasis, and **Section 2.6,** Alternative C – Enhanced Visitor Services. These monitoring actions would be in addition to those actions in the baseline monitoring (**Table 2-2**), which is common to all alternatives (**Appendix I**, Chapter 2 Tables).

2.5 Alternative B – Wild Character and Ecological Resilience Emphasis

Alternative B emphasizes the wild designation and ecological resilience when designing management strategies. Recreation and other uses would be accommodated consistent with law and policy, generally without increasing facilities or accommodations. Resource management actions would emphasize resource protection, connectivity, and ecological resilience. Enhanced and expanded monitoring programs would be designed to address anthropogenic and climate change driven resource issues and risks with a focus on holistic ecosystem resilience. These monitoring programs include an emphasis on partnering with cooperating stakeholders. Emphasis would be placed on the role of NLCS units as sites for scientific research. Management actions would emphasize the more primitive end of the semi-primitive recreation setting and the wild character of the Birch Creek WSR Corridor.

2.6 Alternative C – Enhanced Visitor Services

Alternative C would focus on enhanced visitor services, such as recreation and subsistence access. Management actions would emphasize providing an enhanced recreation experience around the Birch Creek WSR, including winter recreation, consistent with the wild river designation and semi-primitive designation in the RMP. Additional river access points and associated facilities may be included, consistent with WSR and NLCS policy and regulations. Resource management actions would emphasize monitoring issues associated with enhanced visitor use and mitigating impacts to accommodate those uses.

2.7 Alternatives Considered, but not Analyzed in Detail

Action alternatives were developed that would continue implementation of current law, policy, and planning decisions. After conducting internal and external scoping, as well as coordinating with cooperating agencies, only two action alternatives were developed that meet the purpose and need described in **Chapter 1**.

2.8 Comparison of Alternatives

2.8.1 Planning Issues and Opportunities

Planning issues are opportunities, conflicts, or problems regarding the use or management of public lands—in this case, management of the Birch Creek WSR. Issues are generated by the public and agencies to reflect their interests and concerns about current resources and management activities. The planning issues generally involve protection of significant resources, public access and opportunities, and corridor uses. The issues help focus the development of the alternatives. The results of public scoping are documented in Birch Creek Wild and Scenic River Comprehensive River Management Plan and Environmental Assessment: Scoping Summary Report (BLM 2023a).

The alternatives address issues that may adversely affect river values (outstandingly remarkable values [ORVs], water quantity, water quality, and free-flowing condition), as well as uncertain ecological transformations due to climate change or other anthropogenic changes. Climate change has been included because it is an emerging, long-term issue.

In addition to making decisions about the best management strategies for protecting and enhancing river values, the CRMP also makes decisions about recreational and other public use and associated user capacity for the river corridor, as well as the types, sizes, and suitable locations of facilities needed to support public use.

2.8.2 Description of Alternatives

This Birch Creek WSR CRMP would replace the 1983 River Management Plan. All existing management from the Steese ROD and Steese TMP would continue to be implemented. This Birch Creek WSR CRMP would implement (not replace or modify) existing management direction contained in the Steese ROD and Steese TMP.

Existing management direction under Alternative A in **Table 2-5**, Comparison of Alternatives, would still be applied to the Birch Creek WSR Corridor under Alternatives B and C (**Appendix I**, Chapter 2 Tables). Based on different management themes, Alternatives B and C simply provide different methods to implement the existing management direction under Alternative A.

It is important to note that **Table 2-5**, Comparison of Alternatives, does not contain all existing management direction (**Appendix I**, Chapter 2 Tables). The remaining existing management direction is in **Appendix A**, Birch Creek WSR Management Common to All Alternatives. The remaining existing management direction in **Appendix A**, Birch Creek WSR Management Common to All Alternatives, would continue to be applied to all alternatives.

Management actions to protect the scenic, recreation, and fisheries ORVs and river values are in **Table 2-5**, Comparison of Alternatives (**Appendix I**, Chapter 2 Tables). The following sections in **Chapter 3** specifically address the ORVs:

- **Section 3.4**, Wild and Scenic Rivers
- **Section 3.6**, Fisheries
- **Section 3.7**, Scenery and Visual Resources
- **Section 3.8**, Recreation and Visitor Services

Section 3.4, Wild and Scenic Rivers, addresses the wild classification, and **Section 3.5**, Water Resources, Quality, and Navigability, addresses free-flowing conditions and water quality.

2.9 Birch Creek Wild and Scenic River Draft Comprehensive River Management Plan

The Birch Creek CRMP does not change the river corridor boundary. It will describe the existing resource conditions including a detailed description of the ORVs; define the goals and desired conditions for protecting river values; address development of lands and facilities; address user capacities; address water quality issues and instream flow requirements; and include a monitoring strategy to maintain desired conditions. **Appendix C** contains the Birch Creek Wild and Scenic River Draft Comprehensive River Management Plan, which will be populated with management and monitoring selected in the Decision Record after the Final CRMP/EA is completed.

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3 Affected Environment and Environmental Consequences

3.1 General Setting

This chapter describes the affected environment, specifically the existing or baseline conditions relevant to each issue, followed by a description of the environmental effects projected to result from each alternative.

The Birch Creek WSR begins approximately 1 mile upstream from the confluence of Twelvemile and Birch Creeks, near Mile 94 on the Steese Highway (see **Figure 1-1**). Current hydrography data and mapping technology indicate a distance of 111.14 river miles. Approximately 77 miles of Birch Creek WSR flows through the Steese National Conservation Area (NCA), which also was established by the ANILCA. The NCA is managed by the BLM, and it is managed pursuant to the applicable provisions of the Federal Land Policy and Management Act. Special values to consider in planning and management of the Steese NCA are caribou habitat and Birch Creek WSR (ANILCA Section 401) (BLM 2016a).

3.2 Methodology and Assumptions

To assess current conditions and potential impacts, the BLM gathered site-specific information from: geographic information system (GIS) datasets, photographs, historical data, and recent planning documents. Data on visitor use patterns and visitor preferences were gathered from visitor and field surveys and conversations with external organizations. The BLM used this background information to communicate its analysis of resource impacts.

For the purpose of this analysis, the BLM assumes the action alternatives would not substantially increase the frequency or intensity of visitor use. This assumption is based on the remote location, rugged terrain, and lack of accessibility within the Birch Creek WSR Corridor. Alternative C includes limited development of additional recreation facilities, and this lack of new infrastructure further reinforces the assumption that use would remain low.

All of the CRMP alternatives implement existing management decisions. Alternatives B and C introduce additional management themes, but they do not replace or remove existing laws and management decisions.

Cumulative effects are addressed for those resources directly or indirectly impacted by an alternative. If an alternative has no direct or indirect impacts, then there would be no contribution to cumulative impacts discussed. Similarly, if there are no reasonably foreseeable future actions that would contribute to similar direct or indirect impacts for a resource, then there would be no cumulative impacts. The effects of past and present actions on specific resources are described in the affected environment sections and they are considered in the environmental consequences sections. For example, this would include actions inside the corridor and actions in the watershed (such as mining) that affect Birch Creek WSR values. The effects of reasonably foreseeable future actions are typically considered in the environmental consequences sections under a discussion of cumulative effects. However, the only reasonably foreseeable future action identified by the BLM in the Birch Creek WSR Corridor is the potential for a trapper to restore a dilapidated cabin, but the likelihood of this occurring is speculative and restoration details are unknown. Because there are no reasonably foreseeable future actions, cumulative effects are not addressed further.

Monitoring is an important aspect of protecting and enhancing a river's values (free-flowing condition, water quality, and ORVs). Monitoring is the periodic and ongoing measurement of specific variables related to a resource condition or river corridor experience. It proactively tracks conditions and trends, and assesses the effectiveness of various management actions. The condition of river values and resources is already being monitored and managed in various ways under Alternative A. The action alternatives contain additional monitoring that would benefit river values. The following sections in this chapter specifically address the ORVs:

- **Section 3.4**, Wild and Scenic Rivers
- **Section 3.6**, Fisheries
- **Section 3.7**, Scenery and Visual Resources
- **Section 3.8**, Recreation and Visitor Services

Section 3.4, Wild and Scenic Rivers, addresses the wild classification, and **Section 3.5**, Water Resources, Quality, and Navigability, addresses free-flowing conditions and water quality.

3.3 Lands and Realty

3.3.1 Affected Environment

The Birch Creek WSR is primarily in very remote and undeveloped sections of the Steese NCA. However, portions of the Birch Creek WSR are adjacent to the Steese Highway, Native lands, and privately owned parcels in its lower reaches near Circle, Alaska.

The BLM administers 97 percent of the Birch Creek WSR Corridor. The remaining amount is water. Forty-one acres of inholdings are surrounded by the corridor. Approximately 37 acres of inholdings comprise one Alaska Native allotment. The remaining two inholdings are private and State lands. The inholdings were excluded from the Birch Creek WSR Corridor by the 1983 River Management Plan.

The Birch Creek WSR Corridor is located 0.5 miles from the nearest general privately owned lands. Scoping revealed that there are concerns about trespassing occurrences on privately owned lands near the Birch Creek WSR Corridor by those participating in activities related to the WSR.

In 1972, Public Land Order (PLO) 5179, as amended by PLO 5250, withdrew Birch Creek from all forms of appropriation under the public land laws, including State and regional corporation selection, location and entry under the mining laws, and leasing under the Mineral Leasing Act of 1920. The PLO reserved land for study and for possible recommendations to Congress as units of national park, forest, wildlife refuge, and wild and scenic rivers systems. Specifically, it segregated "all lands within the protracted survey sections which are wholly or in part within 1 mile of the mean high-water mark of the river's banks."

In 1980, Congress passed the ANILCA and the ANILCA Section 603 amended the WSRA Section 3(a) to include Birch Creek as a designated river. The ANILCA Section 606(a) also amended the WSRA, stating that the boundary of each river should not be more than 640 acres on both sides of the river and that lands are to be withdrawn from all forms of mining within a 1-half mile distance of the bank.

The 1983 River Management Plan (pages 10 and 11) proposed to modify PLO 5179 such that only those lands within the final WSR corridor would remain withdrawn. However, the proposed modification was never executed, so PLO 5179 remains in place. As a result, BLM-managed

lands adjacent to the WSR corridor and within the protracted survey sections, which are wholly or partially within one mile of the bank of Birch Creek National Wild River, remain withdrawn. However, they are not part of the WSR corridor.

3.3.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the Birch Creek WSR would continue to be managed under the: 2016 Steese RMP, 1983 River Management Plan, WSRA, and ANILCA. As stated under the 1983 River Management Plan, the two parcels of private land in the vicinity of the Birch Creek WSR would continue to be excluded from the Birch Creek WSR boundary and access would be maintained. Additionally, the Birch Creek WSR Corridor would continue to maintain a 1-mile withdrawal from the riverbank, as established by the 1983 River Management Plan. The BLM would continue to cooperate with numerous administrative bodies that manage the Birch Creek WSR watershed to maintain desired conditions. Under Alternative A, there would be no changes to deter trespass issues on private lands adjacent or in proximity to the Birch Creek WSR Corridor. As a result, trespass occurrences related to use of the Birch Creek WSR Corridor could continue.

3.3.3 Environmental Effects—Alternative B

Under Alternative B, impacts would be the same as those described above under Alternative A.

3.3.4 Environmental Effects—Alternative C

Under Alternative C, management would be similar to Alternative B, but the BLM would develop strategies to discourage trespassing on adjacent private lands. As a result, the BLM would coordinate with private landholders to stop visitors from unknowingly trespassing on private lands.

3.4 Wild and Scenic Rivers

WSRs are streams or segments of streams designated by Congress under the authority of the WSRA of 1968 (Public Law [PL] 90-542, as amended; 16 USC 1271–1287) for the purpose of preserving the stream or stream section in its free-flowing condition, preserving water quality, and protecting its ORVs. ORVs are defined by the WSRA as those characteristics that make the river worthy of special protection. ORVs are identified on a segment-specific basis, and they may include scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values. Segment corridors located in Alaska are defined as the area within a ½ mile boundary on either side of the riverbank through the ANILCA. There are three types of potential classifications for eligible river segments: wild, scenic, and recreational based on the built environment within the corridor with wild being the most primitive and recreational the most developed. The potential classifications are based on the degree of human development along a segment, and they are used as a guide for future management activities.

3.4.1 Affected Environment

Birch Creek WSR was designated in 1980 through the ANILCA. The Birch Creek WSR Corridor segment is defined as a 0.5-mile buffer from the ordinary high-waterline surrounding the length of the segment. Due to the limited levels of development within the Birch Creek WSR Corridor at the time of designation, the entire Birch Creek WSR Corridor was classified as wild due to its isolated, primitive nature.

ORVs are typically identified in a study prior to WSR designation, but Birch Creek WSR was designated by the ANILCA without these specific values identified by Congress. The 2016 Eastern Interior Proposed RMP/Final EIS, Appendix E Wild and Scenic Rivers Inventory (BLM 2016a) contains an assessment of ORVs for Birch Creek WSR, and the 2016 Steese ROD (BLM 2016b) established recreation, scenic, and fisheries as ORVs for Birch Creek WSR.

Recreational values include being recognized as a regionally and nationally accessible freshwater and whitewater river providing a multi-day, semi-primitive floating and camping experience, which is considered unique. The Birch Creek WSR provides an exceptional semi-primitive experience for floaters. It is one of the only places in the State where such a primitive segment of river is accessible by road. While canoeing, floating, and boating are among the most popular recreational activities, other summer opportunities range from: hunting, fishing, and trapping to hiking and camping. Winter activities include snowmobiling, dog mushing, trapping, cross-country skiing, and the Yukon Quest International Sled Dog Race (Interagency Wild and Scenic Rivers Coordinating Council 2023). (For more information on recreational opportunities and the recreation ORV, see **Section 3.8**, Recreation and Visitor Services.)

Scenic values include intermittent extruding bedrock and visual contrast with surrounding vegetation, gravel bars, and water. A mosaic backdrop of foreground hills, distant mountains, and broad flats is visible to recreationists as they float down the segment. The variety of vegetation types and the seasonal colors are an exemplary example for Interior Alaska (Interagency Wild and Scenic Rivers Coordinating Council 2023). (For more information on scenic values and the scenic ORV, see **Section 3.7**, Scenery and Visual Resources. For more information on vegetation, see **Section 3.17**, Vegetation [including Threatened and Endangered and Invasive Species].)

Fisheries supported by the Birch Creek WSR include critical habitat for a range of species, making it one of the most diverse watersheds in the region (Interagency Wild and Scenic Rivers Coordinating Council 2023). (For more information on fisheries, special status species, and the fisheries ORV, see **Section 3.6**, Fisheries.)

The Ikhèenjik River is a perennial clear-water stream that flows about 340 miles from its headwaters near Eagle Summit, through remote private, State, and federal land in Interior Alaska. Flows increase and decrease rapidly in response to rainfall or rapid snowmelt events; this is because the relatively steep slopes, thin soil cover, and permafrost in the watershed have a low capacity for retaining precipitation or meltwater (Kennedy and Langley 2007).

The Birch Creek WSR is free flowing along its entire length and does not contain any impoundments, diversions, or riprap that interfere with its free flow. There are no road crossings.

3.4.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, designated ORVs and the wild classification would remain the same and their conditions would not change. Management actions would continue to protect and enhance the identified recreation, scenic, and fisheries ORVs, water quality, free-flowing condition, and wild classification. Management direction would continue to stem from the 1983 River Management Plan (BLM 1983) and the 2016 Steese ROD (BLM 2016b).

The BLM would continue to identify and manage priority habitats. Priority habitats are those habitats that support any life stages of priority aquatic species, which includes both resident and

anadromous fish species. This would continue to maintain protections for the ORVs by prioritizing watersheds that contribute to the ORVs and wild classification.

3.4.3 Environmental Effects—Alternative B

Under Alternative B and subject to resource availability, the BLM would include a management action to pursue the exploration and application of relevant emerging science (e.g., environmental DNA, advanced remote sensing, habitat potential modeling, and climate impact modeling) to enhance monitoring strategies and maximize protection and enhancement of ORVs and water quality. While it is not yet known what impacts could occur from the application of such technologies, appropriate project-specific NEPA and mitigation measures would be included to not impact the ORVs or free-flowing status of the Birch Creek WSR. Also, the BLM would require VRM mitigation for all monitoring, science, and management activities to ensure sites meet VRM class objectives. The entirety of the WSR corridor is identified as VRM Class 1. VRM Class 1 primary management goals are for the preservation of the landscape and provide for natural ecological changes; they do not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

The BLM also would prioritize high-priority RCA and Restoration watersheds that flow into Birch Creek WSR to enhance and protect the identified ORVs. Compared with Alternative A, this would mean greater protections for the ORVs by prioritizing watersheds that contribute to the ORVs and wild classification.

Additionally, the BLM would include a management action to maximize protection of the wild river character and the scenic ORV. This includes working with the Department of Defense to seek solutions to aircraft flyovers and associated noise that could impact the solitude and primitive nature of the Birch Creek WSR Corridor. Compared with Alternative A, this would mean greater protections for the wild classification.

(See **Section 3.6**, Fisheries, **Section 3.7**, Scenery and Visual Resources; and **Section 3.8**, Recreation and Visitor Services for additional analyses of the ORVs.)

3.4.4 Environmental Effects—Alternative C

Under Alternative C, impacts on the wild classification could include increased recreational use and visitor services development. The BLM would require VRM mitigation for all recreation and visitor services' facilities to ensure sites meet VRM Class 1 objectives are met.

The BLM would continue to identify and manage priority habitats under Alternative C. Priority habitats are those habitats that support any life stages of priority aquatic species, which includes both resident and anadromous fish species. This would continue to maintain protections for the ORVs by prioritizing watersheds that contribute to the ORVs and wild classification.

Additionally, the BLM would include a management action to protect the wild river character and the scenic ORV, while allowing for additional developed recreation sites and facilities that contribute to the recreation ORV. This includes working with the Department of Defense to seek solutions to aircraft flyovers and associated noise that could impact the solitude and primitive nature of the corridor. Compared with Alternative A, this would mean greater protections for the wild classification.

(See **Section 3.6**, Fisheries, **Section 3.7**, Scenery and Visual Resources; and **Section 3.8**, Recreation and Visitor Services for additional analyses of the ORVs.)

3.5 Water Resources and Water Quality

3.5.1 Affected Environment

Birch Creek WSR is 111.14 miles long. Around 77 miles of the designated river flow through the Steese NCA, managed by the BLM. The lower 13 miles of the designated river, located upstream from the Steese Highway bridge, are on lands owned by Doyon, Limited and they are classified as wild, but they are not managed by the BLM (BLM 2016a). The BLM determined Birch Creek (Ikhèenjik River) is navigable from the Yukon River upstream to the confluence with the South Fork Birch Creek (multiple determinations with the final on May 11, 1983). The State of Alaska owns and manages the submerged lands in this portion of the river. The BLM and the State disagree about navigability upstream of the confluence with the South Fork Birch Creek. That stretch is subject to the notice of intent discussed in **Section 2.2.6**, Navigability.

Stream segments not meeting water quality standards for designated uses for one or more pollutants are placed on the Section 303(d) list of water quality-impaired waterbodies, as required by the Federal Clean Water Act. Approximately 1 mile of Birch Creek WSR is listed as impaired, Category 4A, for turbidity (BLM GIS 2023b).

Several tributaries in the Birch Creek WSR are on the Section 303(d) list of water quality-impaired waterbodies, because they exceed water quality standards (ADEC 2008). There are approximately 88 miles of streams listed as impaired, Category 4A, for turbidity, located upstream of the Birch Creek WSR Corridor (BLM GIS 2023b). Upper Birch Creek WSR is the only stream on BLM-administered lands on the 303(d) list. The EPA issued a TMDL for total suspended solids to meet water quality standards for turbidity (EPA 1996, BLM 2016a).

The Birch Creek WSR watershed has experienced major stream-disturbing activities, like placer mining, for over a century (Kennedy & Langley 2007). The BLM, in cooperation with the USGS, has been monitoring daily stream flow and periodic water quality measurements since 2008 on placer-mined streams including upper Birch Creek WSR and Nome Creek. The intent is to determine if water quality and water chemistry downstream of previously mined areas comply with Alaska water quality standards. Preliminary results indicate that at moderate to low stream flows, mined streams now typically meet Alaska water quality standards. Some sections of stream channel in the Birch Creek WSR and Nome Creek have ongoing reclamation efforts (BLM 2016a).

The State of Alaska regulates state mining claims in the watershed. State law requires miners to conduct mining operations in a manner that prevents unnecessary and undue degradation of the land and water resources, and to return the mined ground to a stable configuration to prevent erosional degradation and promote regrowth by native plant species. However, the ADEC website[3] specifically lists placer mining as the cause for impaired streams in the headwaters of Birch Creek. So, while conditions seem to be improving, the State's regulation of mining has not been sufficient to keep the impact within legal standards to date (EPA 1996).

Alaska has experienced a significant increase in annual average temperatures since the late 1970s, with temperatures rising at approximately 0.7 degrees Fahrenheit per decade (US Global Change Research Program 2018). Statewide temperatures have increased by about 3 degrees Fahrenheit since 1925, with accelerated warming observed since 2013 (National Oceanic and

[3] https://dec.alaska.gov/media/11013/2014-16-integrated-report-final.pdf

Atmospheric Administration 2023). As air temperatures rise, stream temperatures are predicted to increase due to glacial melt, loss of snowpack, thawing permafrost, and changes in stream flow (Sjöberg 2021; Blaskey 2023). Long-term monitoring activities could include collecting continuous water temperature readings to further evaluate changing stream conditions and water resources. (See **Section 3.15**, Climate Change for additional analyses.)

3.5.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, surface disturbances could occur from salvage logging and collecting special forest products. Surface disturbances indirectly and directly degrade water quality by increasing turbidity and sedimentation through increased soil erosion due to vegetation loss and soil compaction (Reid 1993). Management actions targeting vegetation and noxious and invasive species would indirectly maintain water quality long term by promoting native plant establishment in riparian areas, despite short-term impacts on water quality from surface disturbance and vegetation loss. These actions could maintain wetlands and riparian ecosystems, which act as buffers against sediment and contaminants and help preserve water quality (Dosskey et al. 2010). Recreation activities, including hiking, primitive camping, and ORV use, could result in vegetation loss, soil compaction, and erosion, which could indirectly degrade water quality by increasing sediment load and contamination (Cooke and Xia 2020).

Under Alternative A, BLM-administered surface-disturbing activities are not anticipated to substantially affect water resources and would continue to be designed to minimize soil erosion to mitigate potential impacts. Where permitted operations result in surface disturbance, efforts would be made to restore the land to its pre-disturbance condition as much as possible. This would continue to reduce impacts on water quality.

Under Alternative A, fire management would continue to promote the natural fire regime. Wildfires could directly degrade water quality due to the input of ash, debris, and other pollutants into the waterways (Emmerton et al. 2020, Hohner et al. 2019). Wildfires also could indirectly degrade water resources due to loss or damage to riparian vegetation and increased turbidity and sedimentation from erosion due to vegetation loss and extensive soil burning (Neary & Leonard 2021, Hohner et al. 2019). Under Alternative A, wildfire trends, described under **Section 3.15**, Climate Change, would continue increasing in severity and frequency, and would increase impacts to water resources.

There is no current management for monitoring and assessing permafrost conditions in the Birch Creek WSR Corridor. Near-surface permafrost is at risk of thawing due to projected warmer temperatures throughout the 21st century and increased fire frequency (Rupp and Springsteen 2009; Callaghan et al. 2011; US Global Change Research Program 2018). Under Alternative A, permafrost thawing trends, described under **Section 3.16**, Soils and Permafrost, would persist as temperatures rise, potentially affecting water resources. Permafrost thawing could lead to rockfall and rockslides on stream banks, increased sediment and nutrient loading from slumping and erosion into rivers and streams, higher winter flows and stream temperatures, and the release of heavy metals stored in permafrost, which could be transported to surface waters (Callaghan et al. 2011; Blaskey 2023; Perryman et al. 2020).

3.5.3 Environmental Effects—Alternative B

Impacts from surface disturbances would be similar to those described above under Alternative A. Also, under Alternative B, the collection of special forest products would be limited to

subsistence use, camp use, and personal use. The commercial collection of special forest products would not be permitted, and salvage timber harvest in the Birch Creek WSR Corridor would no longer be allowed. SRP management would include requirements for human waste removal. These measures would minimize surface disturbances that degrade water quality, and they would preserve water resources and the natural conditions of Birch Creek WSR. None of this would occur under Alternative A.

Under Alternative B, BLM-administered surface-disturbing activities would continue to be designed to minimize soil erosion to mitigate impacts on water resources. Where permitted operations result in surface disturbance, efforts would be made to restore the land to its pre-disturbance condition as much as possible. This would continue to reduce impacts on water quality. Other management activities, such as creating a structured inventory of sediment input and inventorying for opportunities to reclaim surface disturbances associated with abandoned mine sites in the upper waters of Birch Creek WSR, would allow the BLM to better understand and manage surface disturbances and potential impacts on water resources. This would increase opportunities to improve water resources compared with Alternative A.

The impacts on water resources from the management of fires would be the same as Alternative A.

Under Alternative B, the BLM would implement management strategies to address permafrost thaw in the Birch Creek WSR Corridor. These strategies include monitoring and assessing the rate of permafrost thaw and associated carbon emissions, passive stabilization of permafrost, and monitoring for increased pollutants from thawing. While thawing would still occur due to projected warmer temperatures, Alternative B would enable the BLM to predict areas of permafrost thaw and adjust surface-disturbing activities to minimize disturbances in these areas, thereby reducing indirect impacts to water resources associated with thawing seen under Alternative A.

3.5.4 Environmental Effects—Alternative C

Impacts from surface disturbances would be similar to those described above under Alternative A. Also, under Alternative C, the management actions would place an emphasis on enhancing recreation opportunities and improving visitor services. The development of additional recreation access sites, improved information kiosks, and increased visitor travel due to improved facilities could degrade water quality as a result of soil disturbance, soil compaction, and vegetation loss. These surface disturbances can lead to soil erosion and increased sediment flow into waterways, causing water quality degradation by increasing turbidity. However, enhanced recreation sites would be developed and designed to minimize new surface disturbances and mitigate erosion potential. SRP issuance would be subject to numerous SOPs, which would provide additional guidance for visitor use and behavior that protects water quality within the Birch Creek WSR Corridor (see **Appendix B**).

Under Alternative C, BLM-administered surface-disturbing activities would continue to be designed to minimize soil erosion to mitigate impacts on water resources. Where permitted operations result in surface disturbance, efforts would be made to restore the land to its pre-disturbance condition as much as possible. This would continue to reduce impacts on water quality. Other management activities, such as inventorying for opportunities to reclaim surface disturbances associated with enhanced recreation activities and pursue funding to implement reclamation, would allow the BLM to better understand and manage surface disturbances and

potential impacts on water resources. This would increase opportunities to improve water resources compared with Alternative A.

Under Alternative C, fire suppression would be prioritized in the Birch Creek WSR Corridor. Fire suppression efforts could prevent direct impacts on water quality by reducing the input of ash, debris, and other pollutants into the waterways (Emmerton et al. 2020). In addition, by maintaining the integrity of the vegetation cover, fire suppression can help prevent soil erosion and sedimentation as well as maintain water quality (Hohner et al. 2019). Conversely, fire suppression could increase fuel loads, leading to more intense fires if they do occur, causing severe damage to the landscape and water resources. Fire suppression also could alter vegetation density and composition (i.e., increasing stand density, favoring shade-tolerant species, and promoting encroachment of trees into grasslands and shrublands), which could affect the availability of shade and cover over the Birch Creek WSR (Hohner et al. 2019). Impacts from fire suppression would not occur under Alternative A.

Similar to Alternative A, no permafrost monitoring or assessment framework would exist under Alternative C. As described above under **Section 3.16**, Soils and Permafrost, current thawing trends would continue. The impacts on water resources from permafrost thawing would be the same as Alternative A.

3.6 Fisheries

3.6.1 Affected Environment

Birch Creek WSR supports 12 known species of fish. It has one of the highest diversity of fish in the region. This diversity makes fisheries an ORV for the Birch Creek WSR (BLM 2016a).

Birch Creek WSR supports anadromous populations of Chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*Oncorhynchus keta*), and coho salmon (*Oncorhynchus kisutch*). Although gathering population data for Chinook salmon is challenging due to environmental factors, the health of Birch Creek Chinook can be partially assessed by the health of Yukon River Chinook, which are experiencing below average returns (Volk et al. 2009). Given the below average returns in the Yukon River, all streams that support Chinook salmon spawning and rearing habitat, including Birch Creek WSR, are crucial both locally and regionally.

Birch Creek WSR also sustains healthy and viable populations of: Arctic grayling (*Thymallus arcticus*), round whitefish (*Prosopium cylindraceum*), humpback whitefish (*Coregonus pidschian*), sheefish (*Stenodus leucichthys*), least cisco (*Coregonus sardinella*), northern pike (*Esox lucius*), burbot (*Lota lota),* slimy sculpin (*Cottus cognatus*), and blackfish (*Dallia pectoralis)*.

The Birch Creek WSR watershed has experienced major stream-disturbing activities like placer mining for over a century (ADF&G 1985; BLM 2016a). While the extent of the impact on fish populations is unknown, Birch Creek WSR remains an important habitat for numerous fish species, contributing to its status as one of the most diverse watersheds in the region.

The Birch Creek WSR Corridor overlaps with 10 conservation watersheds identified in the Steese ROD and Approved RMP (BLM 2016a). These watersheds overlap with approximately 61,800 acres (90 percent) of the Birch Creek WSR Corridor, they contain essential fish habitat, and they are managed as priority habitats (BLM 2016a, BLM 2023). Priority habitats are those habitats that support any life stages of priority aquatic species, which includes both resident and

anadromous fish species. The Birch Creek WSR Corridor overlaps with four restoration watersheds, covering approximately 2,200 acres (3 percent of the Birch Creek WSR Corridor), identified by the Steese ROD and Approved RMP and they contain essential fish habitat (BLM 2016a, BLM 2023).

3.6.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the current management practices for Birch Creek WSR would continue. The management would be guided by the Steese ROD and Approved RMP (BLM 2016a), Steese TMP (BLM 2022a), and the existing 1983 River Management Plan (BLM 1983). The primary focus of management goals would be maintaining riparian and aquatic ecosystems and communities; identifying desired stream and riparian habitat conditions for fish and aquatic resources; and managing priority habitats to achieve future desired conditions. The current approach lacks specific actions to enhance fisheries as an ORV. Management actions would emphasize the protection of priority watersheds and riparian habitats. Improvements in riparian habitats indirectly improve or protect aquatic habitats and fisheries.

Under Alternative A, BLM-administered activities within the Birch Creek WSR Corridor, such as surface-disturbing activities, changes in vegetation, and recreational use, could impact aquatic habitat and fisheries' resources. Impacts could occur through mechanisms such as alterations of water chemistry due to pollutant discharges, removal of protective vegetation, and surface disturbance leading to increased erosion and sedimentation (Reid 1993).

Under Alternative A, fire management would continue to promote the natural fire regime. Wildfires and subsequent soil impacts could degrade fish and aquatic resources by causing habitat loss and reduced water quality due to loss or damage to riparian vegetation and increased soil erosion and sedimentation (Emmerton et al. 2020, Hohner et al. 2019).

3.6.3 Environmental Effects—Alternative B

Under Alternative B, management goals would focus on maintaining and enhancing Birch Creek WSR's wild character and ecological resilience. Management actions would be similar to Alternative A, plus increased inventory and monitoring activities. The BLM would prioritize maintaining riparian resources, channel conditions, and aquatic habitats. Management actions would protect fish and aquatic resources by minimizing surface disturbances; implementing active revegetation; and prioritizing riparian conservation areas, conservation watersheds, and restoration watersheds. This would provide greater opportunities to improve fish habitat and the fisheries ORV.

Compared with Alternative A, Alternative B includes restrictions, such as not allowing salvage timber harvesting in the Birch Creek WSR Corridor and limiting the collection of special forest products. By eliminating these activities, surface disturbances that can lead to soil erosion, sedimentation, decreased water quality, and fisheries and aquatic habitat degradation, would no longer occur. This reduction in surface disturbances would protect fish habitat and the fisheries ORV and it would not occur under Alternative A.

The impacts on fisheries from the management of fires would be the same as Alternative A.

3.6.4 Environmental Effects—Alternative C

Under Alternative C, management actions would emphasize enhancing recreation opportunities and improving visitor services. While the management goals would be similar to Alternative B,

priority would be given to important fish species and recreationally important species that are more susceptible to the impacts of recreational activities within the Birch Creek WSR. Improved monitoring would allow a better understanding of the relationship between fish populations and management practices compared with Alternative A. This would increase opportunities to improve fish habitat and the fisheries ORV compared with Alternative A.

Impacts on fish and aquatic resources under Alternative C would be similar to those described above under Alternative B. However, additional impacts would result from management activities that aim to enhance recreation and visitor services. For example, developing additional recreation access sites, improving information kiosks, and increasing visitor travel due to improving facilities could result in soil disturbance, soil compaction, and vegetation loss. These disturbances could lead to soil erosion and increased sediment flow into waterways, causing water quality degradation and loss of aquatic habitat. However, enhanced recreation sites would be developed and designed to minimize new surface disturbances and mitigate erosion potential.

Under Alternative C, fire suppression would be prioritized in the Birch Creek WSR Corridor. Fire suppression efforts could prevent impacts on fish and aquatic resources by reducing the input of ash, debris, and other pollutants into the waterways (Emmerton et al. 2020). Fire suppression could reduce habitat loss due to soil erosion, sedimentation, and vegetation loss as a result of extensive soil burning (Neary & Leonard 2021, Hohner et al. 2019). Conversely, fire suppression could increase fuel loads, leading to more intense fires if they do occur, causing severe damage to riparian and aquatic habitats. Fire suppression also could alter vegetation density and composition (i.e., increasing stand density, favoring shade-tolerant species, and promoting encroachment of trees into grasslands and shrublands), which could affect the availability of shade and cover for fish and aquatic organisms, altering their habitat preferences and potentially impacting their populations (Hohner et al. 2019). Impacts from fire suppression would not occur under Alternative A.

3.7 Scenery and Visual Resources

3.7.1 Affected Environment

The BLM manages visual resources through the BLM's VRM system. The VRM program provides a nationally consistent way of inventorying, planning, and managing public lands. Visual management objectives (classes) are developed through the RMP process for all BLM-administered lands. These VRM classes describe the limits of allowable visual change to the characteristic landscape (BLM 2022a). VRM classes are based on conditions such as scenic quality, viewing distance zones, and viewer sensitivity levels.

The Birch Creek WSR Corridor, which is classified as wild, lies within the Yukon-Tanana Uplands. It is VRM Class I and it has a scenic quality of “A”. The objective of VRM Class I is to preserve the existing character of the landscape. VRM Class I provides for natural ecological changes; however, it does not preclude very limited management activities. The level of change to the characteristic landscape should be very low and it should not attract attention (BLM 2016b).

The upper reach of Birch Creek WSR features a narrow and winding canyon, surrounded by birch and spruce upland and offering occasional glimpses of historical structures. At the confluence with Harrington Creek, the channel widens and reveals a backdrop of low rounded

hills and mountains. In this section of river, rapids over an 8-mile stretch, outcropping bedrock, diverse vegetation types, and gravel bars with shrubs and debris create visual contrast and provide points of interest. This section also offers more opportunities to catch glimpses of historical cabins and hike to higher elevations for stunning views of the river system. The lower section enters the Yukon Flats, where the river valley widens for miles and the river meanders with numerous channels with broad gravel bars and unique features like cliff areas and lodged trees. Varied vegetation and changing views add to the scenic experience (BLM 2016a).

Birch Creek WSR exhibits diverse topography, transitioning from a headwater stream to a mature river with meandering bends and braided systems. A segment of 8 miles showcases intermittent bedrock, rapids, and contrasting visuals with vegetation, gravel bars, and water. The changing views include foreground hills, middle distant mountains, and broad flats, providing a mosaic of backdrops for floaters. Few historic structures and cabins blend with the landscape, offering points of interest. The area has a variety of vegetation types and seasonal colors exemplary to Interior Alaska. Because of these characteristics, the scenic value of Birch Creek WSR was found to be outstandingly remarkable (BLM 2016a).

(Additional information is available in Section E.2.1., Outstanding Remarkable Values for Birch Creek of the Eastern Interior Proposed RMP/Final EIS, Appendix E Wild and Scenic Rivers Inventory [BLM 2016a]).

3.7.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the current management of Birch Creek WSR would continue and the 2016 Steese ROD and Approved RMP, 2022 Steese TMP, and existing 1983 River Management Plan would guide management practices. Existing management direction would continue to protect the scenic character of the Birch Creek WSR Corridor, as the Birch Creek WSR Corridor would continue to be maintained as a VRM Class I. This VRM Class I provides for natural ecological changes. While it would not prevent very limited management activity, any changes to the characteristic landscape would be minimal and it would not attract attention, following VRM Class I objectives.

Management decisions would continue to focus on protecting fish and wildlife habitat, vegetation communities, soil stability, water resources and water quality, and proper functioning condition of riparian and wetland areas. However, anthropogenic and climate change-driven resource issues would not be addressed. This could indirectly impact visual resources though decreasing vegetation diversity; degrading stream channel conditions; and threatening the proper function of riparian and wetland ecosystems, all of which contribute to the high scenic quality of the Birch Creek WSR Corridor.

Continued salvage logging and collecting special forest products could affect visual resources by removing natural features that provide visual contrast and points of interest. Evidence of these activities also could be seen and divert attention from an otherwise harmonious landscape. Noise from unmanaged aircraft flyovers would continue to affect visual resources by disrupting the semi-primitive qualities of the landscape.

3.7.3 Environmental Effects—Alternative B

Birch Creek WSR would continue to be maintained as a VRM Class I, same as Alternative A. In addition, management actions would require mitigation for all monitoring, science, and

management activities to ensure sites meet VRM class objectives, thereby preserving visual resources.

Management actions would emphasize increased inventory and monitoring activities. These activities would not occur under Alternative A. They could produce temporary impacts on visual resources, as evidence of inventory and monitoring activities may be seen; attract the attention of casual observers; and be disruptive to an otherwise harmonious landscape. However, impacts would be minimized through mitigation to meet VRM class objectives. Also, these management activities would create long-term impacts on visual resources by providing more information and opportunities to maintain vegetation and other components of the landscape.

Under Alternative B, the commercial collection of special forest products would not be permitted and salvage timber harvest in the Birch Creek WSR Corridor would no longer be allowed. This would prevent activities that remove natural features that provide visual contrast and points of interest. The BLM would coordinate with the Department of Defense to limit noise disturbance from aircraft flyovers, which would aid in preserving the semi-primitive qualities of the landscape.

3.7.4 Environmental Effects—Alternative C

Birch Creek WSR would be maintained as a VRM Class I, same as Alternative A. In addition, management actions would require mitigation for all recreation and visitor services' facilities to ensure sites meet VRM class objectives, thereby preserving visual resources.

Management actions would emphasize enhanced recreation opportunities and improved visitor services. These activities would not occur under Alternative A. The development of additional recreation access sites, improved information kiosks, and increased visitor travel due to improved facilities could result in soil disturbance and vegetation loss. Evidence of increased recreation could distract viewers' attention and create artificial points that are not in harmony with the surrounding natural landscape. However, impacts would be minimized through mitigation to meet VRM class objectives. Areas with improved recreation and visitor services' improvements may be subject to long-term changes to the landscape, but these would be dispersed throughout the Birch Creek WSR Corridor.

Under Alternative C, impacts on visual resources from the commercial collection of special forest products within the Birch Creek WSR Corridor would be the same as those under Alternative A. Impacts on visual resources from aircraft flyovers would be the same as those under Alternative B.

3.8 Recreation and Visitor Services

3.8.1 Affected Environment

Birch Creek was congressionally designated as a WSR in 1980 as part of the ANILCA. Recreation is one of the ORVs that supported WSR designation, along with scenic and fisheries. It also facilitates multiple recreational experiences within the Steese NCA in central Alaska (see **Section 3.4**, Wild and Scenic Rivers). The Steese ROD and Approved RMP designated the Birch Creek RMZ, with the goal of providing high quality, multi-day recreational float boat opportunities for users who desire a recreation experience characterized by solitude, tranquility, self-reliance, challenge, and risk in a semi-primitive Interior Alaska river setting (BLM 2016a).

Characteristics of the semi-primitive recreation setting classification are detailed in Tables 8, 9, and 10 in the Steese ROD. The Steese NCA is designated as OHV limited by the Steese TMP, and routes are opened on a seasonal basis. In the summer, there are 136 miles of managed routes open to motorized use, most of which are located north of the Birch Creek WSR Corridor (BLM 2022a). In the decision area there are 75 miles of OHV routes that primarily follow the Birch Creek WSR, however, the Steese TMP prohibits summer OHV use in the Birch Creek WSR Corridor.

Visitation to the Birch Creek WSR Corridor and surrounding Steese NCA has been increasing in recent years.

Gathering good visitor use data has been challenging for the BLM for many years, primarily due to limited staff and funding. The BLM has relied on estimates from information gathered from periodic river patrols, casual observance of put-in and take-out sites along the river, monitoring of special use permits, and occasional more focused use studies. Through the BLM's current monitoring, the BLM has remained confident it is meeting the guidance of maintaining a "semi-primitive/wild" river setting. There has been limited evidence of human impacts. Average group size and encounters have remained low. No significant user conflicts have occurred.

The 1975 Final Environmental Statement for the Birch Creek National Wild River estimated the number of users on the proposed Birch Creek WSR at around 2,700 user days or about 540 users. In 2003 and 2004, the BLM conducted weekly overflights of Birch Creek WSR to help determine baseline use for motorized and nonmotorized summer boat users. The 2004 data was invalid due to an excessive wildfire season and limited flight data. The 2003 survey identified 189 users of the river during those flights. Actual use of the river at that time was to be projected at between 200 to 300 users. This data did not include motorized and nonmotorized winter users or those other summer users who may have hiked or entered into the WSR corridor through some other means.

Annually, the BLM enters estimated visitor use into its Recreation Information Management System to track this use. **Table 3-1** shows the use that has been entered over the past 10 years, including the 1975 estimate. Higher estimates of the years 2018–2020 are likely explained by a high interest and availability of caribou during the hunting seasons those years. Use levels have tapered off as the caribou population and interest have leveled out.

Table 3-1. Reported Visitor Use of Birch Creek WSR Corridor

Year	1975	2012	2013	2014	2015	2018	2019	2020	2021	2022
Number of Users	540	730	669	602	751	1569	1569	1612	1258	1233

Source[4]

The BLM has continued to look at new developing technology to improve tracking visitor use. Some new equipment has been deployed recently to help improve tracking visitor use. Each year, innumerable variables can alter visitor use, including heavy rain and flood, wildfires, and, as noted earlier, an unprecedented increase in the caribou population and interest in hunting.

In the summer and fall, recreation activities in the Birch Creek WSR Corridor include motorized boat use; nonmotorized float boat use, such as canoeing, kayaking, and rafting; wildlife viewing; hunting; and fishing. Dog mushing, snow-machining, and cross-country skiing are popular

[4] Personal communication from Tim Hammond, Field Manager - Eastern Interior Field Office, BLM via email on July 31, 2023.

activities in the winter, when the Birch Creek WSR is frozen and there is ample snow cover. The Yukon Quest Sled Dog Race follows portions of the Birch Creek WSR Corridor in February (Bross 2022), and snow-machining and cross-country skiing on the lower Birch Creek WSR are popular activities in March and April.

The Birch Creek WSR Corridor presents a unique opportunity to recreators. It is one of the very few clearwater rivers in Interior Alaska with road access at two points on an otherwise undisturbed river segment. Motorized use is typical on many Alaskan rivers popular for recreation, but on the Birch Creek WSR, nonmotorized boats, including kayaks, canoes, and rafts, are more likely to be present. The recreational setting provides visitors with the opportunity to experience solitude, closeness to nature, and exploration of a pristine river system. Most floaters begin their trip at the Upper Birch Creek Wayside (mile 94 of the Steese Highway), and they travel downstream approximately 110 miles to the Lower Birch Creek Wayside (mile 140.5 of the Steese Highway).

Most trips take an average of 5 to 7 days. This portion of the Birch Creek WSR Corridor includes multiple river settings, including headwater streams, calm and meandering segments, and whitewater experiences. Depending on water levels, whitewater rapids can be Class II or Class III. Class II whitewater rapids are considered novice, and involve straightforward rapids with wide, clear channels that are evident without scouting. Class III whitewater rapids are considered intermediate, and require a moderate level of skill to handle irregular waves and complex maneuvers (American Whitewater 2005). A shorter river trip opportunity follows 16-miles from the Lower Birch Creek Wayside (mile 140.4 of the Steese Highway) to the Birch Creek Bridge (mile 147 of the Steese Highway). This trip typically takes 1 or 2 days to complete, and it is more popular with motorized watercraft users during hunting season. However, scoping revealed that there also may be increased motorized use throughout the Birch Creek WSR Corridor.

SRPs are authorizations, which allow specified recreational uses of public lands and related waters. They are issued to provide a mechanism to accommodate commercial recreational use; protect natural and cultural resources; and manage visitor use. There are four active SRPs in the Steese NCA. SRPs in the Birch Creek WSR Corridor are for outfitting and guided trips on the WSR and competitive dogsled racing. Permitted users commonly haul out any waste they produce. Overall, there is a relatively low number of permitted uses in the Birch Creek WSR Corridor.

Threats to the recreational ORV in the Birch Creek WSR Corridor include climate change, noise from OHV use and fighter jet training, and impacts from mining operations in the upper watershed. The region will see increased temperatures and, due to resulting evaporation outpacing projected increases in precipitation, reduced water availability over the next century, as well as more frequent and intense wildfires (Rupp and Springsteen 2009; Trainer et al. 2009). Climate impacts can lead to compromised recreational facilities, loss of biodiversity, impacts on fishing, and changes to viewing wildlife and the scenery in the Birch Creek WSR Corridor (see **Section 3.15**, Climate Change). Noise from fighter jets and OHV use were noted in scoping comments as issues decreasing the quality of the remote recreation setting. Mining operations that exist throughout the larger watershed and the tributaries that feed into the Birch Creek WSR could result in erosion, sediment loading, and pollution discharge (see **Section 3.5**, Water Resources and Water Quality), all of which have a negative impact on recreation experience and setting for river floaters.

3.8.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the Birch Creek WSR Corridor would continue to be managed under the 2022 Steese TMP, 2016 Steese RMP, and 1983 River Management Plan. The Birch Creek RMZ would continue to follow the outcome-focused objectives found in the Steese RMP. Under Alternative A, visitor use is expected to rise at around a 2 percent average annual rate based on no significant change to the current management. The occurrence of salvage logging in the Birch Creek WSR Corridor would continue to impact the scenic value and noise issues, depending on timing, location, and extent. SRPs would continue to be issued on a case-by-case basis, authorizations would be individually analyzed, and specific mitigation measures would be developed for each. Similarly, guidance for educational and interpretive resources would remain general for the NCA as a whole, rather than include measurable actions within the Birch Creek WSR Corridor. Noise issues related to fighter jets would continue to occur. Guidance found in the 1983 River Management Plan would provide specific guidance for the Birch Creek WSR, however, the plan itself is out of date, and it is missing critical context and considerations, such as climate change threats, for proper management of a WSR corridor. As a result, under Alternative A, these threats would not be addressed, which could degrade WSR values that are important to the recreation experience.

3.8.3 Environmental Effects—Alternative B

Under Alternative B, management of the Birch Creek WSR Corridor would be similar to what was described under Alternative A, but with additional management focused on resource protection. Alternative A visitor use is expected to rise at around a 2 percent average annual rate based on no significant change to the current management. SRP management would include requirements for all users, not just larger groups, to haul out waste. Because most people already haul out waste, this would not have a notable impact. However, these actions would still support the pristine quality of the Birch Creek WSR, which is important to the semi-primitive recreation setting and attracting visitors to the area. The restriction of salvage logging in the Birch Creek WSR Corridor would remove the impacts described above under Alternative A. One objective of WSR management is to provide a recreational experience defined by: solitude, tranquility, self-reliance, and challenge. Under Alternative B, the BLM would coordinate with the Department of Defense to limit noise disturbance from aircraft flyovers, which would better support the desired recreation setting. Additional actions under Alternative B would allow the updated 1983 River Management Plan to properly provide guidance and management actions, such as evaluating the feasibility of permafrost stabilization, that would better protect the Birch Creek WSR Corridor from climate impacts. These management actions would in turn preserve the recreational setting that is important to those that visit the Birch Creek WSR Corridor.

3.8.4 Environmental Effects—Alternative C

Under Alternative C, recreation management would be similar to what was described under Alternative A, but with additional management actions. These actions would focus more on recreation opportunities and engagement with the public. Under Alternative C, visitor use could be expected to rise somewhat faster at 4 percent to 5 percent based on proposed recreation enhancements, including new facilities, improved access, and enhanced interpretation and information outreach. SRP issuance would become more managed, with up to 10 river float trips (not permits) under SRPs on a yearly basis. The potential for additional trips beyond those 10 would require additional NEPA analysis prior to authorization to ensure the cumulative effects

would still maintain the semi-primitive characteristics directed under the Steese ROD. Sled dog races, outfitters and guides, and fishing and hunting commercial trips, for example, would still need an SRP but would not be part of the 10-trip limit and would still undergo NEPA review. SRP issuance would be subject to numerous SOPs, which would provide additional guidance for visitor use and behavior within the Birch Creek WSR Corridor (see **Appendix B**). Additional recreation facilities and informational resources would be implemented at the new access points (up to two) and along the Birch Creek WSR Corridor itself, increasing the amount of construction activity in the short-term and increasing recreation opportunities and corresponding use in the long term. Permanent installations, such as cabins along the river, would diminish the primitive character of the Birch Creek WSR Corridor in the long term. Increased actions to promote fishing opportunities would further popularize Birch Creek WSR for that specific type of recreation activity. The result of these actions would be to further increase visitation to the Birch Creek WSR Corridor and provide for a greater amount and wider range of opportunities for recreational activities. This increase in recreation use and development in the Birch Creek WSR Corridor would only be conducted in a manner that is compatible with the management objectives noted in the Steese RMP, which aims to provide a semi-primitive, remote, and tranquil recreation experience in the Birch Creek RMZ.

3.9 Subsistence Resources

3.9.1 Affected Environment

Passage of the ANILCA was directly responsible for designation of the Birch Creek WSR Corridor, as well as establishing federal policy regarding subsistence use and management. ANILCA Title VII provides provisions to ensure that public lands in Alaska are managed to provide the opportunity for continued subsistence uses on those lands. Subsistence uses are defined in the ANILCA, Title VIII, Section 803, as 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 byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing; and for customary trades." (BLM 2016c). The BLM ensures that rural residents engaged in subsistence uses have reasonable access to subsistence resources on public lands, including within WSR corridors.

Two nearby rural villages, Central and Circle, are most relevant to analysis of subsistence use under this Birch Creek WSR CRMP, since they have subsistence use areas present within the Birch Creek WSR Corridor and the larger Ikhèenjik River watershed surrounding it (Trainor et al. 2020).

Based on studies by the ADF&G, a wide variety of fish, wildlife, and vegetation are harvested by subsistence users in these communities for many purposes, including food, fuel, arts and crafts, tools, clothing, and traditional cultural practices. Of note is that the subsistence use areas developed in these studies represent subsistence use for a segment of the population at the time of the study; subsistence use is likely to occur outside of these mapped areas as well.

Subsistence resource use areas belonging to Central that directly overlap with the Birch Creek WSR Corridor include non-salmon fishing areas along much of the Birch Creek WSR Corridor and hunting areas for large and small land mammals as well as birds, present in the northeast end of the Birch Creek WSR Corridor. Land mammal and bird hunting areas also are documented

outside of the Birch Creek WSR Corridor in the surrounding Ikhèenjik River watershed. It is reported that berries and greens and firewood resource harvest areas are present at the northeast end of the Birch Creek WSR Corridor (Trainor et al. 2020, BLM GIS 2023).

The subsistence resource use areas belonging to Circle that directly overlap with the Birch Creek WSR Corridor include large land mammal and bird hunting areas present in the northeast end of the Birch Creek WSR Corridor. Large land mammal and bird hunting areas also are documented outside of the Birch Creek WSR Corridor in the surrounding Ikhèenjik River watershed. Berries and greens resource harvest areas are reported at the northeast end of the Birch Creek WSR Corridor (Trainor et al. 2020, BLM GIS 2023).

Potential effects on subsistence use are closely tied to potential effects on vegetation (**Section 3.17**), fisheries (**Section 3.6**), and wildlife (**Section 3.19**); resources that are commonly used for subsistence purposes. (For additional information, see the discussion in those sections.)

Impacts on subsistence use from increasing recreation and competition between subsistence users and recreational hunters was found to be an issue of concern during the scoping process, potentially impacting the abundance and availability of subsistence resources.

3.9.2 Environmental Effects

Per the BLM Instruction Memorandum No. AK-2011-008, the types of effects on subsistence uses and needs that could result from implementing the RMP would be from actions that: reduce the abundance of harvestable resources used for subsistence purposes; reduce the availability of resources used for subsistence; or change legal or physical limitations on access of subsistence users to harvestable resources, and whether there is a resulting increased competition for subsistence resources.

Rural residents engage in subsistence activities under Title VIII of ANILCA on federal public lands, as defined in 50 CFR 100, 100.4(1), and (2). Traditional subsistence activities also take place on lands owned by village and regional Native corporations, as well as State lands. However subsistence activities on other than federal public lands are subject to State regulation and landowner permission.

Existing laws (such as ANILCA, Title VIII) and regulatory guidance (such as the BLM Instruction Memorandum AK-2011-008, Compliance with ANILCA Section 810) that address subsistence and traditional use and access would be followed, protecting access and the ability to use public lands for subsistence and travel purposes.

It is likely that the community subsistence use areas extend beyond what has been documented in studies; subsistence studies capture only a 1-year period and only for a 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 actions affect access, availability, or abundance of subsistence resources and uses.

3.9.3 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the Birch Creek WSR would continue to be managed under the 2016 Steese RMP, 1983 River Management Plan, the WRSA, and the ANILCA. Under Alternative A, current levels of subsistence access would continue, maintained by the relevant laws and management plans. See **Appendix E**, Preliminary ANILCA Section 810 Evaluation and Finding for Birch Creek Comprehensive Management Plan and Environmental Assessment.

Designation of the Birch Creek WSR Corridor and the accompanying management intended to protect and enhance the identified ORVs, water quality, free-flowing condition, and wild classification would continue to offer protection to subsistence resource abundance by decreasing the likelihood of habitat degradation from activities such as road construction. Existing management regarding fish, vegetation, and wildlife, such as seasonal activity restrictions for the protection of wildlife habitat, would continue to protect abundance of subsistence resources. Examples of this are fish and wildlife through maintenance of healthy, functioning watersheds, ecosystems, riparian areas, and habitats.

Under Alternative A, increasing demand for recreational use is anticipated, too (see **Section 3.8,** Recreation and Visitor Services), including demand for resources important for subsistence, such as fish and wildlife. Increased recreation could result in a reduction of abundance and availability of harvestable resources due to increased competition between federally qualified subsistence users and other resource users or changes in resource distribution caused by recreational use.

3.9.4 Environmental Effects—Alternative B

Under Alternative B, legal and regulatory impacts on access to subsistence resources would be identical to those discussed under Alternative A. See **Appendix E**, Preliminary ANILCA Section 810 Evaluation and Finding for Birch Creek Comprehensive Management Plan and Environmental Assessment.

Under Alternative B, impacts on subsistence resource abundance from management regarding protection of subsistence resources and increasing demand for recreation would include those discussed under Alternative A. Additional management actions under Alternative B focused on accelerating restoration activities and maintaining fish and wildlife habitats would provide greater protection to the abundance of subsistence resources than under Alternative A. Management prohibiting commercial timber salvage and commercial harvest of special forest products would be protective of subsistence resource availability and abundance.

Under Alternative B, impacts on subsistence resource availability and abundance from increasing demand for recreation would be identical to those described under Alternative A.

3.9.5 Environmental Effects—Alternative C

Under Alternative C, legal and regulatory impacts on access to subsistence resources would be identical to those discussed under Alternative A.

Under Alternative C, impacts on subsistence resource abundance from management regarding protection of subsistence resources and increasing demand for recreation would include those discussed under Alternative A.

Additional management actions under Alternative C, such as enhanced species and habitat monitoring targeted to identify impacts from increasing recreational use, would provide greater protection of subsistence resource abundance and availability than under Alternative A.

Under Alternative C, impacts on subsistence resource availability and abundance from increasing recreation would be greater than those described under Alternative A. This is due to additional management focused on creating more recreational opportunities; developing and maintaining recreational facilities; and engaging the public. Under Alternative C, SRP issuance would be subject to numerous SOPs, which would provide additional guidance for visitor use and behavior within the Birch Creek WSR Corridor (see **Appendix B**). These SOPs related to the protection of

natural resources, such as prohibiting disturbance of wildlife or limiting firewood collection to dead and down would be generally protective of subsistence-related resources.

3.10 Cultural Resources

3.10.1 Affected Environment

The term "cultural resources" is used to encompass the broad scope of resources that must be considered by the BLM as defined in more detail below. A cultural resource is a definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence (BLM Manual 8100). The term "cultural resources" is inclusive and it has been adopted and widely used to refer to the diverse human record found in sites, structures, objects, and places created and/or used by people. These may comprise archaeological, historical, or architectural sites, structures, objects, or places. They also may include locations for traditional cultural or religious importance to a particular social and/or cultural group, often referred to as traditional cultural properties (TCPs).

Cultural resources also include "archaeological resources," as defined in the Archaeological Resources Protection Act of 1979, and other sites, structures, objects, items, and places as addressed in other statutes and regulations (for example, American Indian Religious Freedom Act of 1978, Antiquities Act of 1906, NEPA, and Native America Graves Protection and Repatriation Act of 1990).

"Historic properties" as defined in the National Historic Preservation Act (NHPA) and its implementing regulations found at 36 Code of Federal Register (CFR) 800, are cultural resources determined to be eligible for listing in the National Register of Historic Places (NRHP). In addition to meeting at least one of the four main NRHP eligibility criteria (association with a significant event, person, distinctive architecture or construction style, or potential for information), cultural resources also must exhibit integrity of at least one of the following to be eligible: location, design, setting, materials, feeling, workmanship, or association.

Cultural resource-related research in the Interior of Alaska, a larger region within which the Birch Creek WSR and larger Ikhèenjik River watershed is situated, indicates that humans have inhabited the region for over 14,000 years (Holmes 1996, Holmes 2001), including some of the earliest dated archaeological sites in the Americas. Cultural resources in the region are diverse, with recorded site types including a wide range of material cultures and ages from prehistoric archaeological cultures as well as historical Athabaskan and Euroamerican sites (Bowers and Gannon 1998), such as the Circle to Fairbanks Historic Gold Rush Trail. This Circle to Fairbanks Historic Gold Rush Trail was previously submitted for nomination to the NRHP; it was noted in the 1983 River Management Plan (BLM 1983) as passing through the Birch Creek WSR Corridor. This was later determined not to be the case (BLM 2016a).

Based on up to date cultural resource data (BLM GIS 2023), the Birch Creek WSR Corridor contains 35 previously recorded archaeological resources: 19 historical period sites, 15 from the prehistoric period, and one of indeterminate age and cultural affiliation. Along or near the boundary of the Birch Creek WSR Corridor, there are four linear historical transportation sites. These comprise the North Fork Twelvemile Creek Bridge of the Steese Highway (previously Alaska Railroad Commission Route 16); two other segments of the Steese Highway; and the previously mentioned Circle to Fairbanks Historic Gold Rush Trail.

Known prehistoric era sites in the Birch Creek WSR Corridor consist of shallow or surficial lithic scatters, some of which may have been campsites or hunting lookouts. Known historical era sites in the Birch Creek WSR Corridor mostly consist of habitations and related structures; some built and occupied within the last 50 years, and many in varying states of collapse.

No potentially eligible cultural resources within the Birch Creek WSR Corridor have been determined eligible for inclusion in the NRHP. The known site types within the Birch Creek WSR Corridor are not as diverse as those found in the surrounding region. In particular, the majority of the known prehistoric sites within the Birch Creek WSR Corridor are surficial or shallowly buried sites (less than 8 centimeters [3.15 inches] in depth), and likely date to the late prehistoric Athabascan Tradition.

Of the sites for which condition information is available, most are observed to be in a natural state of weathering, undisturbed by vandalism, construction, or abnormal weathering such as flooding or earthquakes. Some previously documented cultural resources have eroded away with very little or no remaining traces of their existence. Sites that appear to have completely eroded away include an early 20th-century roadhouse and the suspected location of a historical Athabaskan village. Field notes for many archaeological sites in the Birch Creek WSR Corridor indicate they could harbor undisturbed cultural deposits, potentially making them eligible for inclusion in the NRHP.

As of May 2023, less than 1 percent of the Birch Creek WSR Corridor had been intensively pedestrian surveyed for cultural resources, and many additional unknown cultural resources are likely to be present. Of note is that the distribution of known sites favors highly visible historical-aged resources. The areas surveyed for cultural resources tend to be those that are most accessible, such as near river access and highways. While the known resources are not necessarily a representative sample of all the resources within the Birch Creek WSR Corridor, based on evaluation of the topography within the Birch Creek WSR Corridor, any as-yet undiscovered prehistoric sites located there are not likely to include site types that are unusual or rare in the region, such as caribou drives or long-term or winter village sites (BLM 2016a).

Both the historical and prehistoric cultural resources documented within and immediately around the Birch Creek WSR Corridor are fairly typical of cultural resources found in similar settings throughout the Eastern Interior planning area of Alaska (BLM 2016a, Section 3.2.3.3). Cultural and historical values are not determined to be one of the Birch Creek WSR ORVs (BLM 2016a, Appendix E, Section 2.1), though this could be reassessed in a future CRMP if cultural resources of a rare or unusual nature are discovered. There are no known TCPs within or adjacent to the Birch Creek WSR Corridor, but these resources are often not revealed outside of the affected communities.

Within the Birch Creek WSR Corridor, natural processes may be influenced by climate change. Processes such as permafrost thaw (see **Section 3.16**, Soils and Permafrost), river erosion, and wildfire may cause direct and indirect impacts on cultural resources. Physical degradation of sites due to natural processes, such as erosion, can result in exposure of previously unknown cultural resources, loss of artifacts and features, or potentially complete destruction.

3.10.2 Environmental Effects

The direct and indirect impact analysis area for cultural resources is the Birch Creek WSR Corridor. The effects of each alternative on cultural resources are assessed in terms of the

increased or decreased likelihood for actions that alter, degrade, or otherwise affect the integrity and condition of a cultural resource or its surrounding setting.

The BLM will follow existing regulatory procedures for the consideration of impacts on cultural resources (e.g., Section 106 of the NHPA or the BLM and Alaska State Historic Preservation Officer programmatic agreement protocols). Cultural resources are a nonrenewable resource and damage to them typically results in permanent impacts. Due to an incomplete inventory, it is assumed for this analysis that sites exist throughout the Birch Creek WSR Corridor. This analysis does not involve a site-specific impact analysis.

3.10.3 Environmental Effects—No Action Alternative (Alternative A)

The designation of the Birch Creek WSR Corridor itself and the accompanying management intended to protect and enhance the identified recreation, scenic, and fisheries ORVs, water quality, free-flowing condition, and wild classification would offer protection to cultural resources by decreasing the likelihood of surface-disturbing activities and changes to the setting under all alternatives.

Under Alternative A, BLM-administered activities would be designed to reduce erosion from surface disturbance, which would protect cultural resources from surface disturbance-related impacts. Under Alternative A, permitted operations would be required to return land to as close to its original condition as possible. This would be protective of the setting throughout the Birch Creek WSR Corridor. Ground disturbance from authorized activities potentially still could impact the condition of cultural resources.

Under Alternative A, the Birch Creek WSR Corridor and surrounding Birch Creek RMZ would continue to maintain a VRM Class I objective, greatly limiting the potential for surface-disturbing activities and large visual changes that could impact the site setting in these areas.

Under Alternative A, while commercial timber sales would continue to not be permitted within the Birch Creek WSR Corridor, salvage timber harvest would be permissible. Timber harvest related activities such as road construction, off-road travel, or heavy equipment use are likely to result in some amount of surface disturbance. There also would be at least temporary visual impacts from the removal of trees. Surface disturbance-related impacts from these activities would be minimized to some extent through management measures seeking to reduce erosion. Commercial collection of special forest products, such as berries or mushrooms, is not addressed in existing management, though commercial collection activities could potentially result in increased impacts on cultural resource conditions depending on the activity permitted; for example, increased visitation could result in increased inadvertent incremental damage or vandalism.

Under Alternative A, management actions facilitate use of the Birch Creek WSR for compatible recreation activities such as boating, fishing, or hunting. SRPs would continue to be issued on a case-by-case basis. No actions that present a particularly high potential for damaging cultural resources, such as increasing areas where OHV use is allowed or facility construction, are anticipated. Increasing recreation and visitation (see **Section 3.8**, Recreation and Visitor Services) increases the potential for casual collection of artifacts, inadvertent incremental damage, and vandalism. This would impact the integrity of known and unrecorded cultural resources.

3.10.4 Environmental Effects—Alternative B

Under Alternative B, impacts on cultural resources from Birch Creek WSR-related management would be identical to those described under Alternative A.

Under Alternative B, management direction exists regarding minimization of surface-disturbing activities in the Birch Creek WSR watersheds, and for active revegetation during reclamation work, decreasing the amount of time disturbed areas are exposed to erosion. Generally, these actions would be protective of cultural resources within the Birch Creek WSR Corridor. The use of active revegetation under Alternative B would result in fewer potential erosion related impacts compared with Alternative A.

Identical to Alternative A, under Alternative B the Birch Creek WSR Corridor and surrounding Birch Creek RMZ would continue to maintain a VRM Class I objective. Additionally, VRM mitigation for all monitoring, science, and management activities under Alternative B would be protective of the setting where these activities are carried out.

Under Alternative B, salvage timber harvest and commercial harvest of any special forest products would not be permitted within the Birch Creek WSR Corridor. This would result in reduced potential for surface disturbance-related impacts from these activities compared with Alternative A, thereby protecting cultural resources from disturbance.

Under Alternative B, recreation is anticipated to increase similar to that under Alternative A. Additionally, SRPs for guided hunts would not be permitted, and removal of human waste from the Birch Creek WSR Corridor would be required through the SRP program. Not permitting guided hunts would reduce the overall number of visitors for this activity. Alternative B would result in a reduction in potential for impacts compared with Alternative A.

3.10.5 Environmental Effects—Alternative C

Under Alternative C, impacts on cultural resources from Birch Creek WSR-related management would be identical to those described under Alternative A.

Under Alternative C, impacts on cultural resources from soil resource-related management would be identical to those described under Alternative A.

Identical to Alternative A, under Alternative C, the Birch Creek WSR Corridor and surrounding Birch Creek RMZ would continue to maintain a VRM Class I objective. Additionally, VRM mitigation for all recreation and visitor services' facilities under Alternative C would reduce potential impacts on the setting where construction of these facilities is carried out.

Under Alternative C, impacts on cultural resources from forest and woodland products-related management would be identical to those described under Alternative A.

Under Alternative C, impacts would be similar to those described under Alternative A, but they would include additional actions focused on increasing recreation opportunities and public engagement. Construction of additional recreation facilities, such as cabins and informational kiosks, could be implemented both at access points and along the river corridor itself, potentially impacting the condition of any cultural resources in these areas. Facility construction also may impact the setting of cultural resources in the vicinity. Under Alternative C, up to 10 trips under SRPs could be programmatically allowed on the river corridor in any given year, while additional SRPs could be considered. A result of these additional actions would be to further

increase visitation to the Birch Creek WSR and provide for a greater amount and wider range of opportunities for recreational activities. This increase in recreational use and development in the Birch Creek WSR over the other alternatives would increase the potential for casual collection of artifacts, inadvertent incremental damage, and vandalism.

Under Alternative C, SRP issuance would be subject to numerous SOPs, which would provide additional guidance for visitor use and behavior within the Birch Creek WSR Corridor (see **Appendix B**). In addition to the SOP specifically stating, "All operations shall be conducted in such a manner as not to cause damage or disturbance to any archaeological or paleontological resource, or places of cultural or religious significance….", SOPs related to the protection of natural resources, such as limiting firewood collection to dead and down, and use of campsites to those with human or naturally hardened sites would be generally protective of cultural resources.

3.11 Tribal Interests

3.11.1 Affected Environment

Occupied and utilized since time immemorial, the Birch Creek WSR Corridor (and the larger Ikhèenjik River watershed) historically has been occupied and utilized by Gwich'in Athabascans (Gwich'in Tribal Council 2023). The closest Gwich'in communities to the Birch Creek WSR are the Circle Native Community and the Birch Creek Tribe, located in the Yukon Flats downstream from the Birch Creek WSR Corridor.

The Alaska Native Allotment Act of 1906 allowed Alaskan Natives to receive the title for 160 acres of land in Alaska. The Native Allotment Act was repealed in 1971, when the Alaska Native Claims Settlement Act (ANCSA) became law. Under the ANCSA, in exchange for settling Alaskan Native land claims, land and money were distributed to the Alaska Native Corporations (ANCs) established by ANCSA.

Alaskan Native-owned lands and Native allotments are present throughout Alaska. In and immediately around the Birch Creek WSR Corridor, they border the northeast portion of the Birch Creek WSR Corridor, with one 37-acre Native allotment located at the confluence of Portage Creek and the Ikhèenjik River within the southeastern portion of the Birch Creek WSR Corridor.

The BLM conducts government-to-government consultation with federally recognized Tribes in accordance with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments; the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments; the Department of the Interior's Alaska Policy on Government-to-Government Relations with Alaska Native Tribes dated January 18, 2001; and BLM Manual 1780, Tribal Relations.

The BLM Eastern Interior Field Office reached out on December 28, 2022, regarding this land use planning effort. The BLM reached out to the Birch Creek Tribe, Circle Tribal Council, their associated community Native corporations (Tihteet'aii Inc. and Danzhit Hanlaii Corp), as well as the regional ANC Doyon, Limited in compliance with the previously described legal and regulatory framework. (See **Chapter 4** for a full description of the consultation completed for this project.)

Tribal entities that expressed interest in the current land use planning effort include:

- Council of Athabaskan Tribal Governments
- Doyon, Limited

The concerns regarding Tribal interests identified during the scoping process include:

- The CRMP could complicate access and use of ANC lands, including development of mineral resources by ANCs and their partners.
- The CRMP must address exclusion of Alaska Native-owned lands from the Birch Creek WSR Corridor.
- The BLM must consider the effects of the CRMP on access to and use of public lands, and of waterways for food, fuel, supplies, and transportation.
- The Council of Athabaskan Tribal Governments is working on a 5-year stewardship plan for the Yukon Flats area that will complement the mission of the Service and the BLM.

3.11.2 Environmental Effects

The direct and indirect impact analysis area for Tribal interests is the Birch Creek WSR Corridor and adjacent Alaskan Native lands and Native allotments. The effects of each alternative on Tribal interests are assessed in terms of management in the CRMP that is likely to impact the topics of concern discussed.

Existing laws (such as ANILCA sections 1110 and 1111) and regulatory guidance (such as 43 CFR 36.10) that address access to inholdings would be followed, protecting Tribal access and the ability to use Alaskan Native lands and Native allotments.

Existing laws (such as ANILCA sections 810, 811, and 1110) and regulatory guidance (such as the BLM Instruction Memorandum AK-2011-008, Compliance with ANILCA Section 810) that address subsistence and traditional use and access would be followed, protecting Tribal access and the ability to use public lands for subsistence and travel purposes.

3.11.3 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the Birch Creek WSR would continue to be managed under the 2016 Eastern Interior RMP, 1983 River Management Plan, WSRA, and ANILCA. The Native allotment within the Birch Creek WSR Corridor would continue to be excluded from the river boundary. Additionally, the Birch Creek WSR Corridor would continue to maintain a 1-half mile withdrawal, as established by Section 606 of ANILCA. See **Appendix E**, Preliminary ANILCA Section 810 Evaluation and Finding for Birch Creek Comprehensive Management Plan and Environmental Assessment.

Designation of the Birch Creek WSR Corridor and the accompanying management intended to protect and enhance the identified: ORVs, water quality, free-flowing condition, and wild classification would offer protection to subsistence resources of interest to Tribes by decreasing the likelihood of habitat degradation from activities such as road construction or commercial timber harvest. This same management meant to protect resource values also may complicate access and use of nearby Alaskan Native-owned lands or allotments. The BLM would continue to consult and cooperate with Tribal entities regarding current and future concerns over access and use of Native and public lands, and any other issues as they arise.

3.11.4 Environmental Effects—Alternative B

Under Alternative B, impacts related to existing management would be similar to those described under Alternative A. See **Appendix E**, Preliminary ANILCA Section 810 Evaluation and Finding for Birch Creek Comprehensive Management Plan and Environmental Assessment. Additionally, Alternative B includes management direction protective of water, wildlife, and other resources that could be of interest to Tribes. This includes management actions like inventorying opportunities for potential surface disturbance reclamation; disallowing salvage timber harvest; or pursuing opportunities for cooperative water quality monitoring with Tribes and other entities. This additional management would be more protective of Tribal interests, such as subsistence use, and it would further encourage cooperation between the BLM and Tribes.

3.11.5 Environmental Effects—Alternative C

Under Alternative C, impacts from management would be similar to those described under Alternative B. Additionally, Alternative C includes management actions intended to foster recreation opportunities and engagement with the public. Management actions are added that address impacts on other resources from increased recreation levels, such as taking active measures to mitigate impacts to and restore riparian areas affected by recreation activities.

Increased recreation levels within the Birch Creek WSR Corridor could impact Tribal interests, such as subsistence use, by increasing competition for resources to a greater degree than under Alternative A. Under Alternative C, SRP issuance would be subject to numerous SOPs, which would provide additional guidance for visitor use and behavior within the Birch Creek WSR Corridor (see **Appendix B**). In addition to the SOP specifically stating, "All operations shall be conducted in such a manner as not to cause damage or disturbance to … places of cultural or religious significance….", SOPs related to leaving no trace and the protection of natural resources, such prohibiting disturbance of wildlife and limiting use of campsites to those with human or naturally hardened sites would be generally protective of Tribal interests.

3.12 Socioeconomics

3.12.1 Affected Environment

The socioeconomic area of analysis is the Yukon–Koyukuk Census Area portion of the unorganized Borough of Alaska, within which the Birch Creek WSR is contained. Data on population demographics, employment, and economic activity were collected at this geographic level; State level data is provided for comparison. According to recently reported census data on racial and ethnic diversity, which measures diversity by the chance that two randomly chosen people in a state will share the same race and ethnicity (Brooks 2021), Alaska is the 12th-most diverse state in the country (US Census Bureau 2021) with a 62.8 percent chance of randomly selected individuals having different ethnicities, compared to the national percentage of 61.1.

In 2021, the most recent period for which comprehensive data is available, the Yukon–Koyukuk Census Area had a total population of 5,433, which was 0.7 percent of the total Alaska State population of 735,951 (US Census Bureau 2023). Employment in a single economic sector—education, health care, and social assistance—accounted for approximately a quarter of all employment at both the county and State level, followed by transport, warehousing, and utilities. Employment is a key economic indicator because patterns of growth and decline in a region's employment are largely driven by economic cycles and local economic activity. In 2021, the

average annual unemployment rate for the Yukon–Koyukuk Census Area was 12.4 percent, which was almost twice the State level of 6.4 percent (BLS 2023). In 2021, of the 2,685 total jobs in the Yukon–Koyukuk Census Area, services-related occupations accounted for approximately 885 jobs (BEA 2023), representing approximately a third of total employment (33 percent). In 2021, the sectors accounting for the greatest proportion of employment were health care and social assistance (198 jobs); other services (173 jobs); and retail (145 jobs) (BEA 2023).

Per capita income—an area's income divided by its population—can be used to compare incomes across geographies. In 2021, per capita income was $68,528 for the Yukon–Koyukuk Census Area, while per capita personal income for the State was $71,078 (BEA 2023).

3.12.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, there would be no direct changes to the socioeconomic conditions in the area of analysis. Continued management of the Birch Creek WSR under the 2016 Steese RMP, 1983 River Management Plan, WSRA, and the ANILCA would not create changes in local socioeconomic conditions. The BLM would continue to cooperate with numerous administrative bodies that make up the Birch Creek WSR watershed to maintain desired conditions. Although increasing demand for recreational use is anticipated, such an increase is not expected to notably contribute to local economies, either through direct spending or indirectly through increased employment in recreation-related supporting industries.

3.12.3 Environmental Effects—Alternative B

Under Alternative B, the implementation of WSR-3 in the Steese ROD and Approved RMP, which would revise or amend the existing 1983 River Management Plan to incorporate resource protection decisions from the ROD, would not result in direct effects on local economies. Actions to address development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of the WSRA, would not measurably impact employment, income, or workforce levels.

Effects on local economies from increasing demand for recreation would be identical to those described under Alternative A. Amending the current 1983 River Management Plan to include the prohibition of summer OHV use in the Birch Creek WSR Corridor subject to the Steese TMP also would contribute indirectly to the local economy through increases and decreases in local area spending associated with recreational use. However, such contributions are expected to be minimal. Similarly, minimal indirect effects on local economic activity would be expected from management that prohibits commercial timber salvage and commercial harvest of special forest products.

3.12.4 Environmental Effects—Alternative C

Under Alternative C, management would be the same as described under Alternative A, but with a focus on recreation and visitor services, which includes adding river access sites and improving and adding visitor services' facilities. Over the long term, as a result of these measures, enhanced visitor amenities would increase demand in visitation, which would in turn serve to support existing local and regional economic activities. Additionally, under Alternative C, special recreation permittees using the WSR would be subject to SOPs regarding use. These are described in detail in **Appendix B**. The degree to which such economic effects would directly result from the management action is expected to be minimal.

3.13 Environmental Justice

3.13.1 Affected Environment

Environmental Justice (EJ) refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies (CEQ 1997). Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations requires federal agencies to determine if proposed actions would have disproportionately high and adverse environmental impacts on minority, low-income, and American Indian populations of concern. The EJ area of analysis is the Yukon–Koyukuk Census Area, with reference information provided at the State level for comparison. Minority and low-income populations for further consideration were determined based on the following criteria as outlined in the BLM Instruction Memorandum 2022-059.

To identify potential EJ communities in the vicinity of the Birch Creek WSR Corridor, EJ screening was performed on an area that included the Birch Creek WSR Corridor and a 1-mile radius around the proposed river boundary. This search was conducted using the US Environmental Protection Agency (EPA) webtool EJSCREEN on May 23, 2022. Some potentially vulnerable EJ communities were identified in the surrounding area, based on US Census Bureau (Census Bureau) block group-level demographic data (see **Table 3-2**, Environmental Justice Screening Results).

Table 3-2. Environmental Justice Screening Results

Location	Low-Income	People of Color	Low Life Expectancy	Demographic Index
Block Group	48%	82%	23%	65%
Alaska	25%	40%	19%	33%

Source: EPA 2023c

3.13.2 Environmental Effects—No Action Alternative (Alternative A)

As stated above, there would be no direct changes to socioeconomic conditions in the Birch Creek WSR Corridor under Alternative A. Although increasing demand for recreational use is anticipated, such an increase is not expected to notably contribute to local economies, either through direct spending or indirectly through increased employment in recreation-related supporting industries. Communities identified as having EJ populations would not be adversely impacted.

3.13.3 Environmental Effects—Alternative B

Alternative B is administrative in nature, and it does not involve any ground-disturbing activities. Emphasis on ecological resilience and resource protection would not result in changes to the local area economies. Therefore, it would not have disproportionately high or adverse effects to EJ communities in this area compared to non-EJ communities.

Alternative B, including the emphasis on ecological resilience and resource protection to maintain the wild character of the river corridor, is not anticipated to have any adverse impacts on human health or the environment. It also is not anticipated to result in substantial environmental hazards, or effects to differential patterns of consumption of natural resources. All

interested parties will continue to be involved in commenting on the project and the decision-making process.

Increased recreation could result in a reduction of abundance and availability of harvestable resources due to increased competition between federally qualified subsistence users and other resource users, or changes in resource distribution caused by recreational use. (Refer to **Sections 3.9** and **3.11**, respectively, for more detailed analysis of effects on subsistence resources and Tribal interests.) Overall, there would be no disproportionate impacts to EJ communities in the area of analysis.

3.13.4 Environmental Effects—Alternative C

Under Alternative C, management focus would be on recreation and visitor services, which includes adding river access sites and improving and adding visitor services' facilities. Over the long term, enhanced visitor amenities would increase demand in visitation, which would in turn serve to support existing local and regional economic activities. However, the degree to which such economic effects would result directly from the management action is expected to be minimal. As a result, overall, there would be no disproportionate impacts to EJ communities in the area of analysis.

3.14 Air Quality

3.14.1 Affected Environment

Birch Creek WSR Corridor is located in a remote and largely undeveloped area in Interior Alaska, approximately 100 miles northeast of the Fairbanks-North Pole urban area. Although there are no long-term air quality monitoring stations in the Birch Creek WSR Corridor, based on regional monitoring and agency reports from Fairbanks, Denali National Park, as well as Whitehorse and Yukon Territory, existing air quality in the Birch Creek WSR Corridor is generally pristine. The primary source of pollution is periodic smoke and associated particulate matter during summer months when wildfires from lightning strikes are common (ADEC 2021).

Much of the anthropogenic pollution emissions in the Birch Creek WSR Corridor emanate from nearby small towns and villages and from vehicle emissions along the Steese Highway. The main contributors to human-caused air pollution in Interior Alaska are incomplete burning of fossil fuels from motor vehicles and heating, as well as smoke from wood stoves. In rural communities, seasonal dust from dirt roads also contributes to local air pollution. Substantial dust may originate from gravel roads, including portions of the Steese Highway and in communities without paved roads (ADEC and EPA 2018). These forms of human-caused and natural air pollution impair visibility and occasionally impact public health.

Other sources of air pollution in Interior Alaska include windblown dust from open riverbeds, and on rare instances, ash emissions from remote volcanic eruptions (Sassen et al. 2007; Schaefer and Nye 2008). Some glacial river floodplains regularly produce dust clouds, while others may do so only in unusually dry, windy conditions. High altitude Arctic haze persists in spring and originates as dust, smoke, and human-caused pollution from parts of Asia and Europe (Shaw 1995). Due to limited amounts of snow, rain, or turbulent air to displace pollutants from the polar air mass in spring, Arctic haze can linger for more than a month in the northern atmosphere.

The Clean Air Act, as amended in 1990, requires the EPA to set National Ambient Air Quality Standards (NAAQS) (40 CFR 50) for pollutants considered harmful to public health and the environment. The EPA established NAAQS for outdoor concentrations of the six criteria air pollutants, which include: carbon monoxide, lead, nitrogen oxides, ozone, two forms of particulate matter (particulate matter less than 2.5 microns in diameter [$PM_{2.5}$] and particulate matter less than 10 microns in diameter [PM_{10}]), and sulfur dioxide. (For more information on current NAAQS see the EPA webpage: https://www.epa.gov/criteria-air-pollutants/naaqs-table.)

NAAQS include primary standards established to protect public health, including sensitive populations (e.g., children, elderly, or asthmatics), and secondary standards to provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The ADEC Division of Air Quality is responsible for maintaining NAAQS. They may set standards that are equally or more stringent than the NAAQS.

Areas where air pollution levels persistently exceed the NAAQS are designated as "nonattainment" areas by the EPA. There are no nonattainment areas in the Birch Creek WSR Corridor; however, regional and local air quality is periodically affected by local, regional, and global natural events and anthropogenic activities. The nearest nonattainment area to the Birch Creek WSR Corridor is the Fairbanks-North Pole urban area (nonattainment for $PM_{2.5}$ and maintenance[5] for carbon monoxide[6]) (EPA 2023a), which is approximately 100 miles southwest of the Birch Creek WSR Corridor. In this area, $PM_{2.5}$ is primarily a concern during the winter months (October through March) when extremely strong temperature inversions are frequent and human-caused air pollution impacts increase. In winter, for example, strong inversions trap and concentrate air pollutants, such as carbon monoxide, sulfur compounds, and other chemicals from incomplete burning of petroleum fuels. Communities within the area use wood stoves for home heating, and strong winter inversions contribute to elevated concentrations of $PM_{2.5}$ from wood-burning in the stoves (Wendler and Nicpon 1975).

The air quality analysis area includes local (within 62 miles [EPA 1992]) and regional (between 62 and 125 miles [EPA 1992]) areas. This includes the surrounding Steese NCA land as well as some portions of the Fairbanks North Star Borough. The Birch Creek WSR Corridor is within the Yukon–Koyukuk Borough; however, due to the large area of this Koyukuk Borough and the proximity and relatively small size of the Fairbanks North Star Borough (which includes the Fairbanks-North Pole urban area), 2020 emission data for both geographic regions is shown in **Table 3-3**, Criteria Air Pollutant Emissions (1,000 Tons) – 2020, below.

Table 3-3. Criteria Air Pollutant Emissions (1,000 Tons) – 2020

Geographic Area	Carbon Monoxide	Nitrogen Oxides	PM_{10}	$PM_{2.5}$	Sulfur Dioxide	Volatile Organic Compounds
Fairbanks North Star Borough	1,299	17	131	110	9	323
Yukon-Koyukuk Borough	418	21	32	26	2	538
Alaska	2,883	150	290	222	21	2,227
US (including Alaska)	66,152	8,915	16,781	5,821	1,841	46,187

Source: EPA 2023b

[5] Maintenance areas refer to current attainment areas, which had been previously designated as nonattainment.
[6] 40 CFR Part 81.302: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-81/subpart-C/section-81.302.

According to the 2020 emission data (EPA 2023b), Fairbanks North Star Borough emissions accounted for approximately 50 percent of $PM_{2.5}$ emissions; 45 percent of carbon monoxide and PM_{10} emissions; and 43 percent of sulfur dioxide emissions in Alaska. However, volatile organic compound and nitrogen oxide emissions accounted for only 15 percent and 12 percent of total emissions in Alaska, respectively.

Emission data from 2020 indicates that nearly all prescribed fire emissions in Alaska were emitted from the Fairbanks North Star Borough. Prescribed fire was the primary source of most criteria pollutant emissions in the Fairbanks North Star Borough (90 percent of the carbon monoxide, 86 percent of particulate matter emissions [both PM_{10} and $PM_{2.5}$], 85 percent of volatile organic compounds, and 72 percent of sulfur dioxide). Although total prescribed fire emissions far exceeded the total wildfire emissions in the Fairbanks North Star Borough, prescribed fires produce proportionally fewer emissions on a per acre basis as they are carried out under controlled conditions (ADEC 2021).

Yukon–Koyukuk Borough emissions were a fraction of those reported in the Fairbanks North Star Borough. Prescribed fire emissions for each criteria pollutant accounted for approximately 9 percent to 16 percent of emissions in Alaska. In the Yukon–Koyukuk Borough, wildfires accounted for over 90 percent of the particulate matter and sulfur dioxide emissions and 74 percent of carbon monoxide emissions.

The Prevention of Significant Deterioration (PSD) program ensures that air quality in areas with clean air does not significantly deteriorate, while maintaining an allowable margin for future industrial growth. The PSD program protects air quality within VRM Class I areas by allowing only slight incremental increases in pollutant concentrations. VRM Class I air quality areas include national parks larger than 6,000 acres and wilderness areas larger than 5,000 acres that existed or were authorized as of August 7, 1977. They receive the highest degree of air quality protection under the Clean Air Act. The Birch Creek WSR Corridor is considered a VRM Class II area, where greater incremental increases in ambient pollutant concentrations are allowed (e.g., those from controlled industrial growth). The nearest VRM Class I area to the Birch Creek WSR Corridor is the Denali National Park, over 200 miles away, which is beyond the distance for which impacts may be expected on VRM Class I areas (62 miles) (EPA 1992).

3.14.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the current air quality conditions and trends in the Birch Creek WSR Corridor, which are generally pristine, would continue. Wildfires would continue to be the primary air quality issue in the area; the BLM would continue to implement measures adopted by the Alaska Wildland Fire Coordinating Group to mitigate the effects of wildland fire smoke. Current protective measures for natural resources, such as: requiring mitigation for soil erosion during surface-disturbing activities; continuing to manage the Birch Creek RMZ as VRM Class I, which limits management activity and allows for minimal change to landscape; prohibiting commercial timber sales; and managing recreation activities, would continue to minimize fugitive dust emissions from surface-disturbing activities within the Birch Creek WSR Corridor. Under Alternative A, minor air quality impacts would continue to result from recreational facility maintenance.

3.14.3 Environmental Effects—Alternative B

Under Alternative B, impacts on local and regional air quality in the Birch Creek WSR Corridor generally would be similar to impacts described under Alternative A. However, with the emphasis on ecological resilience, resource protection to maintain the wild character of the river corridor, and primitive recreation, Alternative B would offer increased potential for improved localized air quality from fugitive dust. Under Alternative B, the BLM would be required to minimize surface disturbance to a greater degree compared with Alternative A, implement active (instead of natural recovery) and accelerated revegetation of disturbed areas, and generally, not allow an increase of facilities and recreational accommodations. These actions would benefit local air quality, particularly where exposed surfaces can contribute to windblown fugitive dust emissions.

Under Alternative B, the BLM also would implement air quality monitoring (subject to resource availably) and enhanced water quality monitoring, which would provide baseline air quality and pollution data in the Birch Creek WSR Corridor to better guide future management of natural resources, including air quality.

3.14.4 Environmental Effects—Alternative C

Under Alternative C, impacts on local and regional air quality in the Birch Creek WSR Corridor would be greater than those described under Alternative A. Because there would be a focus on recreation and visitor services, which includes adding river access sites and improving and adding visitor services' facilities, Alternative C would result in minor air quality impacts. Impacts include increased fugitive dust emissions from disturbed surfaces or unpaved roads and increased criteria air pollutant emissions from construction equipment and increased travel to the area. Fugitive dust emissions from traveling vehicles and construction activities would be localized and short-term. Impacts would be minimized through active mitigation and restoration of surface disturbance associated with enhanced recreation activities. In addition to an increase in fugitive dust along unpaved roads, an increase in visitation and travel to the area under Alternative C (see **Section 3.8**, Recreation and Visitor Services) would result in an increase in criteria air pollutants from vehicle exhaust. However, any increase in concentration of pollutants from increased recreation in the area is expected to be minimal.

3.15 Climate Change

3.15.1 Affected Environment

Birch Creek WSR Corridor, located just below the Arctic Circle, experiences extreme seasonal solar radiation variability due to its high latitude environment. Daylight hours vary from a minimum of about 4 hours in winter to more than 20 hours in summer (University of Alaska Fairbanks 2023). The Birch Creek WSR Corridor is inland with a continental climate (cut off from moderating effects of the sea), which is characterized by large temperature variability; long and cold winters; warm and short summers; low humidity; and unpredictable precipitation. Summer maximum temperatures range from the upper 70 degrees Fahrenheit with extreme readings in the 90s. Winter temperatures may be minus 50 degrees Fahrenheit or lower for 2 or 3 weeks at a time. Lowlands experience frequent temperature inversions in winter (University of Alaska Fairbanks 2023). Fairbanks, which is approximately 100 miles southwest of the Birch Creek WSR Corridor, has some of the world's strongest inversions, sometimes 30 to 40 degrees

Fahrenheit colder at ground than at several hundred feet aboveground (Wendler and Philip Nicpon 1975). Annual precipitation usually varies from about 10 to 30 inches with upland areas receiving more precipitation than lower areas. The seasonal precipitation pattern is normally at a minimum in spring and at a maximum in late summer. Summer thunderstorms are common over the hills and upland areas. Climate also strongly influences fire severity and frequency, with the greatest aerial extent of burning occurring in the hottest, driest years.

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as "a change in the state of the climate that can be identified (for example, by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use" (IPCC 2018).

Annual average temperatures across Alaska increased at a rate of approximately 0.7 degrees Fahrenheit per decade between the late 1970s and 2016 (US Global Change Research Program 2018) and they have increased by about 3 degrees Fahrenheit since 1925 (National Oceanic and Atmospheric Administration 2023). Statewide average temperatures in Alaska have been increasing at an accelerated rate since 2013 with the warmest and second warmest years on record being 2019 and 2016, respectively (National Oceanic and Atmospheric Administration 2023). Most of the warming in Interior Alaska since 1976 has occurred in winter (approximately 7.7 degrees Fahrenheit), and spring (4.4 degrees Fahrenheit), with the least amount of change (2 degrees Fahrenheit) in the fall (University of Alaska Fairbanks 2023).

Interior Alaska is expected to see some of the greatest changes over the next 30-40 years and out to 2099. These changes include rising temperatures, decreased water availability, and increased fire activity resulting in greater deciduous dominance on the landscape. Warming temperatures pose serious threats to Interior Alaska, where average annual temperatures are just below freezing and a small increase in temperature can result in large impacts. Warmer temperatures and a longer growing season are expected to increase evaporation enough to outweigh a regional increase in precipitation resulting in drier conditions (Rupp and Springsteen 2009). By the end of the century, wildfires exasperated by hotter temperatures and drier conditions are projected to triple in Alaska under a moderate greenhouse gas emissions scenario, and to quadruple under a high emissions scenario (Trainer et al. 2009).

Ongoing scientific research has identified the potential impacts of greenhouse gas emissions (including carbon dioxide, methane, nitrous oxide, and several trace gases) on global climate. Through complex interactions on a regional and global scale, these greenhouse gas emissions cause a net warming effect in the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Carbon dioxide is by far the most abundant. More than two-thirds of human-caused carbon dioxide emissions in the US primarily come from the transportation and electricity production sectors. Methane from human activities accounts for approximately 10 percent of total US greenhouse gas emissions resulting primarily from agriculture, natural gas, and petroleum systems. Nitrous oxide emissions from agriculture, fuel combustion, and industrial sources account for approximately 7 percent of the total US greenhouse gas emissions. Although greenhouse gas levels have varied for millennia, recent

industrialization and burning of fossil carbon sources have caused carbon dioxide equivalent[7] (CO_2e) concentrations to increase dramatically, and they are likely to contribute to overall global climatic changes.

According to the 2020 National Emissions Inventory data (see **Table 3-4**, Greenhouse Gas Emissions - 2020), Fairbanks North Star Borough emissions account for approximately 52 percent of methane emissions, 35 percent of carbon dioxide emissions, and 26 percent of nitrous oxide in Alaska (EPA 2023b). The high proportion of methane and carbon dioxide emissions are primarily from wildland fire emissions (94 percent and 82 percent, respectively), which account for 57 percent of carbon dioxide and methane emissions from wildland fires in Alaska. In terms of CO_2e, Fairbanks North Star Borough greenhouse gas emissions account for 37 percent of total emissions in Alaska.

Table 3-4. Greenhouse Gas Emissions - 2020

Geographic Area	Carbon Dioxide (tons)	Methane (tons)	Nitrous Oxide (tons)	CO_2e^* (1,000 metric tons)
Fairbanks North Star Borough	11,639,874	61,283	30	12,224
Yukon–Koyukuk Borough	2,656,575	14,792	1	2,810
Alaska	32,957,987	117,337	115	33,099
US (including Alaska)	4,849,120,075	6,040,649	119,772	4,592,015

Source: EPA 2023b

* The 100-year time horizon global warming potential applied are carbon dioxide = 1; methane = 29.8; nitrogen dioxide = 273 (IPCC 2021). The global warming potential is a unit of measure that allows comparisons of the global warming impacts of different gases. The larger the global warming potential, the more the given gas warms the earth compared to carbon dioxide, over that time period (usually 100 years).

Compared with national emissions, the Fairbanks North Star Borough's emissions account for approximately: 0.2 percent of carbon dioxide emissions; 1.0 percent methane emissions; less than 0.1 percent of nitrous oxide emissions; and 0.3 percent of CO_2e. The Yukon–Koyukuk Borough emissions account for approximately 0.1 percent of carbon dioxide emissions, 0.2 percent methane emissions, less than 0.1 percent of nitrous oxide emissions, and 0.1 percent of CO_2e (see **Table 3-4**). Although overall Alaska emits a relatively small percentage of national greenhouse gas emissions (0.7 percent of carbon dioxide, 1.9 percent of methane, 0.1 percent of nitrous oxide, and 0.7 percent of CO_2e), on a per capita basis (ranked 41 among US states in 2019 [US Energy Information Administration 2019; Goodfellow and Birnbaum 2023]), Alaska ranks as the second highest greenhouse gas emitter in the nation. This is in part due to its small populations, harsh winters, and energy-intensive industries (EPA 2023b; Energy Information Administration2023).

Another indicator of climate change is the landscape's capacity for carbon sequestration. Permafrost stores carbon and it can act as a carbon sink. Warming temperatures due to climate change result in thawing of permafrost, which can result in the release of the stored carbon in permafrost into the atmosphere. (For more information on existing permafrost trends, see **Section 3.16**, Soils and Permafrost.)

[7] CO_2e is a common metric used to express overall greenhouse gas emissions from different types of greenhouse gases, which incorporates the relative contribution from each gas according to their radiative efficiency potential and how long they stay in the atmosphere. The CO_2e is the number of metric tons of carbon dioxide emissions with the same global warming potential as one metric ton of another greenhouse gas and it is calculated using Equation A-1 in 40 CFR 98.

3.15.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the current climate trends in the Birch Creek WSR Corridor, including higher temperatures, drier conditions, and larger wildfires, would continue. In addition, wildland fires, including prescribed fires, would continue to contribute the largest amount of greenhouse gas emissions in the Birch Creek WSR Corridor. As described in the affected environment, prescribed fires contribute the largest percentage of methane and carbon dioxide emissions in the Fairbanks North Star Borough to overall emissions. At approximately 3 percent, wildfires are the third and fourth[8] major contributor of carbon dioxide and methane emissions in Alaska, respectively. Due to warming temperatures and drier conditions, wildland fires would continue to be the largest contributor of greenhouse gas emissions in the Birch Creek WSR Corridor.

3.15.3 Environmental Effects—Alternative B

Under Alternative B, climate change impacts in the Birch Creek WSR Corridor generally would be similar to impacts described under Alternative A. However, with the emphasis on ecological resilience and resource protection, Alternative B would result in the least amount of greenhouse gas emissions and climate change impacts compared with the other alternatives. This is because Alternative B would improve carbon sequestration (from active recovery and accelerated revegetation) and minimize greenhouse gas emissions from construction activities, since new recreational facility and accommodations would likely not increase under this alternative.

Under Alternative B, the BLM also would work with permafrost researchers to identify the rate of permafrost thaw and associated carbon emissions within the Birch Creek WSR Corridor, which could guide future management that could address potential carbon release from future thawing of permafrost. The BLM would further evaluate the feasibility of passive permafrost stabilization in high emission areas, which if implemented and successful, could reduce the potential risk of the release of carbon contained within the permafrost.

3.15.4 Environmental Effects—Alternative C

Under Alternative C, climate change impacts in the Birch Creek WSR Corridor generally would be similar to impacts described under Alternative A. With a focus on recreation and visitor services, which includes adding river access sites and improving and adding visitor services' facilities, Alternative C would result in a higher, though minor, contribution to greenhouse gas emissions from construction and vehicular emissions. The increase in travel to the area resulting from increased visitations (see **Section 3.8**, Recreation and Visitor Services) also would result in an increase in greenhouse gas emissions, compared with Alternative A. Impacts would be minimal involving greenhouse gas emissions.

3.16 Soils and Permafrost

3.16.1 Affected Environment

Soils are living, dynamic resources that support all vegetation communities and ecosystems. Soils are formed from the interactions between parent materials, climate, organisms, and topography over time, and they have varying physical, chemical, and biological properties.

[8] After prescribed fires, the second highest contributor to carbon dioxide and methane emissions in the Fairbanks North Star Borough is from industrial processes that were not categorized elsewhere (12 percent and 6 percent, respectively), which may include an aggregate of several sources.

Spatial data from the Natural Resources Conservation Service (NRCS) for soils in the Birch Creek WSR Corridor currently are not available. This analysis uses common soil types associated with EPA Level III Ecoregions in Alaska, which are summarized by Gallant et al. (1995). The three ecoregions in the Birch Creek WSR Corridor and their common soil types are listed in **Table 3-5**, EPA Ecoregions and Common Soil Types in the Birch Creek WSR Corridor. Permafrost in these ecoregions is discontinuous (Gallant et al. 1995).

Table 3-5. EPA Ecoregions and Common Soil Types in the Birch Creek WSR Corridor

EPA Level III Ecoregion	Soil Types	Acres
104—Interior Forested Lowlands and Uplands	Cryaquepts, Haplocryepts[1], Humicryepts[2], Cryorthents	8,700
105—Interior Highlands	Cryaquepts, Haplocryepts[1], Humicryepts[2], Cryorthents, Haplocryods[3]	59,700
107—Yukon Flats	Cryaquepts, Haplocryepts[1]	700
Total	—	**69,000**

Sources: Gallant et al. 1995, EPA 2012, NRCS 2022, BLM GIS 2023
[1]Defined in NRCS 2022. The equivalent of "Cryochrepts" in Gallant et al. 1995.
[2]Defined in NRCS 2022.The equivalent of "Cryumbrepts" in Gallant et al. 1995.
[3]Defined in NRCS 2022. The equivalent of "Cryorthods" in Gallant et al. 1995.

All the soils listed in **Table 3-5** have a cryic soil temperature regime, meaning they have mean annual temperatures between 0 degrees and 8 degrees Celsius (NRCS 2022). Cryaquepts have undergone moderate degrees of weathering, and they have an aquic soil moisture regime, meaning they are saturated by water and generally poorly drained. Haplocryepts, Humicryepts, and Cryorthents have minimal soil horizon development. Humicryepts also have a characteristically thick, humus[9]-rich horizon. Haplocryods have an accumulation of organic matter and aluminum in the subsoil (NRCS 2022).

Some of these soils are further defined as: pergelic, aquic, lithic, or histic. Pergelic soils have a mean annual soil temperature of -4 degrees to -10 degrees Celsius, which is cold enough to form permafrost. Aquic soils are saturated with water for at least 20 consecutive days. Lithic soils have a shallow (within 50 centimeters [19.69 inches] of the soil surface) rock layer. Histic soils contain organic matter at or near the soil surface that is at least 20 centimeters (7.87 inches) thick (NRCS 2022).

Most soils in the Birch Creek WSR Corridor formed from silty alluvium[10] and loess[11] from the floodplains of the large rivers. Soils on flat areas are poorly drained, commonly overlain by peat[12], and they have a shallow permafrost table. The permafrost is often near the surface on north slopes, south-facing toe slopes, and valley bottoms. Gravelly soils immediately adjacent to the Birch Creek WSR and on natural levees are better drained and commonly free of shallow permafrost (BLM 1983). Permafrost is frozen soil (at soil temperatures less than 32 degrees Fahrenheit) that may or may not contain ice (Callaghan et al. 2011). Permafrost forms a barrier that prevents infiltration of surface water and maintains a saturated layer of surface soils (BLM 2009).

Water erosion is the detachment and movement of soil particles by rain or moving water (Weil and Brady 2019). Soils are naturally eroded by water and along riverbanks as the river stage

[9] Dark organic material.
[10] Sediment transported by water.
[11] Sediment, generally silt and very fine sand, transported by wind from exposed sediment deposits.
[12] Organic material with high concentrations of carbon.

recedes and advances. This water movement along the banks also can affect the thermal variation of permafrost and it can result in permafrost thawing (Callaghan et al. 2011). Removal or destruction of the surface organic layer overlying permafrost areas typically increases heat flow, causing permafrost thawing, and it can result in any combination of erosion, surface subsidence, or thermokarst[13] formation (BLM 2009). In some cases, particularly for well-drained soils, permafrost thawing can increase water infiltration (Brabets and Walvoord 2009).

Permafrost can either be a carbon sink (storing carbon) or a carbon source (releasing carbon). The global distribution of permafrost contains about twice as much carbon as is found in the global atmosphere (Edward et al. 2008). Near-surface permafrost is susceptible to thawing because of projected warmer annual average air and ground temperatures for the remainder of the twenty-first century and increased frequency of fires (Rupp and Springsteen 2009; Callaghan et al. 2011; US Global Change Research Program 2018). Since the late 1970s, permafrost thawing in Alaska, especially in areas with discontinuous permafrost like the Birch Creek WSR Corridor, has increased water infiltration rates, groundwater flow, surface dryness, and thermokarst terrain (Osterkamp 2007; Brabets and Walvoord 2009; Callaghan et al. 2011). Organic-rich soils with permafrost, such as those in the Birch Creek WSR Corridor, are particularly susceptible to ground subsidence[14], subsurface drainage, lower water tables, and thermokarst development (Pastick et al. 2015; Jorgenson et al. 2013). Surface peat that occurs above permafrost can buffer warmer temperatures that cause permafrost thawing; however, this functionality can decrease if the peat is lost to erosion from surface disturbance, such as from fire (Callaghan et al. 2011).

3.16.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, surface-disturbing activities would continue to be managed to minimize soil erosion. Commercial timber sales would continue not to be allowed in the Birch Creek WSR Corridor, which prevents surface disturbance and soil erosion from salvage equipment. Some surface disturbance may occur from salvage timber harvesting; however, the BLM would mitigate these impacts by requiring winter harvest, when frost and snow cover is sufficient, to minimize soil disturbance and compaction, and through implementation of the soils SOPs outlined in Appendix A of the Steese ROD and RMP (BLM 2016b).

Surface disturbance would continue to occur from recreation activities, including human traffic and unauthorized ORV use and fires. Human trampling and unauthorized ORV use (summer ORV use is not allowed in the Birch Creek WSR Corridor) can compact soils, which decreases soil porosity and water infiltration and makes the soil more susceptible to water runoff and erosion (Monz et al. 2010). Use of light vehicles, under 1,500 pounds, causes less severe compaction than heavier vehicles. However, repeated vehicle use over the same area also can cause severe compaction (Weil and Brady 2019). Poorly drained soils (for example, Cryaquepts and other aquic soils), which have reduced water infiltration capacity, and silty soils are easily transported by water and they would be the most susceptible to compaction and water erosion. Soils with high concentrations of organic matter (for example, Humicryepts and histic soils) have a greater water holding capacity than soils with lower concentrations, and they would be less susceptible to erosion from surface water (Weil and Brady 2019). Surface disturbance from human uses, such as trampling, unauthorized ORV use, or development activities, also can

[13] Hallows or mounds on the land surface that form after permafrost thaws.
[14] Gradual sinking of an area of land.

contribute to permafrost thawing in and upslope from the Birch Creek WSR Corridor. This can result in subsidence or thermokarst, creating thaw lakes, ponds, or gully erosion channels. Erosion impacts from ORVs would continue to be minimized through the BLM's travel management decisions; for example, the BLM can close areas to vehicles that have degraded soils (BLM 2016b).

Fire management under Alternative A would continue to promote the natural fire regime. Fire return intervals are expected to increase for the remainder of the twenty-first century (US Global Change Research Program 2018). The degree of effects from fires on soils without permafrost depends on the intensity and duration of the fire. Generally, soils will recover within a year after a fire occurs, but recently burned soils can become water-repellent (hydrophobic), which makes them more susceptible to erosion from precipitation events (Neary and Leonard 2021). Fires that occur on permafrost would immediately thaw near-surface permafrost (Callaghan et al. 2011).

There is no current management for monitoring and assessment of permafrost conditions in the Birch Creek WSR Corridor. Permafrost thawing trends, as described above under the Affected Environment section, would continue to occur as temperatures warm. Permafrost degradation from thawing can occur over decades for soils with low organic matter or moisture content (for example, Cryorthents, Haplocryepts and Haplocryods) and over decades to centuries for soils with high organic matter and moisture content (for example, Cryaquepts and Humicryepts; Jorgensen et al. 2013). The release of carbon as atmospheric carbon dioxide from permafrost thawing is dependent upon site-specific moisture and temperature conditions that control decomposition rates. Enhanced decomposition in aerobic[15] soils, such as soils that are well drained or not saturated where the water table drops, and from thaw in discontinuous permafrost could increase carbon dioxide emissions. In contrast, carbon dioxide emissions from permafrost thawing would likely decrease in poorly drained soils and where decomposition is diminished due to anerobic[16] conditions (Edward et al. 2008; Callaghan et al. 2011).

Permafrost thawing may indirectly improve disturbed soils by breaking up compacted soils near the surface (Weil and Brady 2019). Permafrost thawing also can result in indirect effects on water and cultural resources. Thawing can increase the potential for rockfall and rockslides on stream banks; increase sediment and nutrient loading and winter peak flows in rivers and streams; and it can expose heavy metals previously stored in the permafrost that can be transported to surface waters (Callaghan et al. 2011; Perryman et al. 2020). Previously unidentified cultural resources also may be exposed; however, as described in **Section 3.10**, Cultural Resources, this is not expected to occur in the Birch Creek WSR Corridor.

3.16.3 Environmental Effects—Alternative B

Impacts from recreation and fire on soils and permafrost under Alternative B would be the same as those described under Alternative A. However, the BLM would not allow salvage timber harvesting and they would limit the collection of special forest products, such as berries and mushrooms, which would not result in surface disturbances that cause soil erosion or permafrost thaw that would occur under Alternative A.

Alternative B would provide management for the BLM to monitor and assess the rate of permafrost thaw and associated carbon emissions; passively stabilize permafrost; and monitor for

[15] Conditions under which oxygen is present.
[16] Conditions under which no oxygen is present.

increased pollutants from permafrost thaw. While thawing would still occur from the projected warmer temperatures, this may allow the BLM to predict where permafrost thawing is occurring. In turn, the BLM would be able to better manage surface-disturbing actions to minimize disturbance on these areas and reduce the direct and indirect impacts to the Birch Creek WSR Corridor associated with thawing, as described under Alternative A.

3.16.4 Environmental Effects—Alternative C

Impacts from salvage timber harvesting on soils under Alternative C would be the same as those described above under Alternative A. Similar to Alternative A, there would be no permafrost monitoring or assessment framework. Current thawing trends, as described above under the Affected Environment section, would continue. The impacts from permafrost thawing would be the same as those described above under Alternative A.

The recreation management actions proposed under Alternative C would promote increased visitor use in the Birch Creek WSR Corridor. Increased visitor use would increase the potential for surface disturbance from recreation activities, which can cause permafrost thawing and erosion, as described above under Alternative A.

Under Alternative C, the BLM would prioritize fire suppression in the Birch Creek WSR Corridor. Compared with Alternative A, which emphasizes maintaining the natural fire regime (suppressing fires only when human life or property are threatened), this fire management would reduce extensive soil burning that makes soils more susceptible to water erosion and permafrost thawing, as described above under Alternative A.

3.17 Vegetation (including Threatened and Endangered and Invasive Species)

3.17.1 Affected Environment

The Birch Creek Watershed contains a wide variety of habitats and conditions that allows an abundance of vegetation to thrive. However, only hardy species can survive in the extreme cold of winter and high heat of summer within the Birch Creek Watershed. The presence of permafrost, found discontinuously throughout the Birch Creek Watershed, also heavily impacts the type of species that can grow in certain parts of the Birch Creek Watershed. Permafrost can dictate the water availability in the region; therefore, it has a substantial influence on the types of vegetation that can grow. Warmer weather due to climate change has accelerated the permafrost thawing. These rapid thawing events also can lead to large erosion events, particularly along the riparian corridor, thereby affecting vegetation conditions (BLM 2021).

Lower in the Birch Creek Watershed, the valley bottoms widen and create a large range of conditions leading to a mosaic of habitats. Loamy soils with shallow layers of permafrost tend to drain poorly and they can lead to vegetation dominated by sedge tussocks (*Carex stricta*), low shrubs, and stunted black spruce (*Picea mariana*) woodlands. Better draining soils can support open forests of spruce (*Picea* spp.), white birch (*Betula neoalaskana*), and aspen (*Populus tremuloides*). Riparian corridors tend to be free of permafrost and they can support a wide range of tree species, including white spruce (*Picea glauca*), aspen, balsam poplar (*Populus balsamifera L.*), alder (*Alnus* spp.), and willow (*Salix* spp.) (BLM 2016b).

The Steese ROD and Approved RMP identified the following priority species and vegetation communities: aspen/steppe bluffs, riparian communities, wetlands (other than widespread mesic black spruce, tussock, and shrub tussock), tall shrub communities, sparsely plant-covered calcareous substrate (limestone), and lichen-rich habitat (BLM 2016b). **Table 3-6**, Vegetation Communities in the Project Area, lists the vegetation communities' acres within the Birch Creek WSR Corridor.

Table 3-6. Vegetation Communities in the Project Area

Vegetation Communities	Acres
Bare ground	1,300
Deciduous Forest (Open-Closed)	2,600
Dwarf Shrub	600
Fire Scar	1,800
Herbaceous (Aquatic)	0
Herbaceous (Mesic) (Interior Alaska, Cook Inlet Basin)	1,000
Herbaceous (Wet) (Interior Alaska, Cook Inlet Basin)	0
Low Shrub	3,100
Low Shrub/Lichen	200
Tall Shrub (Open-Closed)	1,900
Tussock Tundra (Low shrub or Herbaceous)	1,300
Urban, Agriculture, Road	400
White Spruce or Black Spruce (Open-Closed)	32,600
White Spruce or Black Spruce (Woodland)	12,000
White Spruce or Black Spruce/Lichen (Woodland-Open)	1,100
White Spruce or Black Spruce-Deciduous (Open-Closed)	7,300
Grand Total	67,300

Source: BLM GIS 2023
Nonvegetation acres have been removed from this table.
Acres are rounded to the nearest hundred.

3.17.1.1 Threatened and Endangered Plant Species

The Information for Planning and Consultation (IPaC) website does not list any threatened, endangered, or proposed species, or designated or proposed critical habitat within the proposed project location. Should any threatened, or endangered species be found, formal measures would be made to protect the habitat (BLM 1983). The proposed management objectives focus on habitat conservation and ensuring that approved activities do not contribute to the need to list any special status species.

3.17.1.2 Nonnative Invasive Plant Species

Nonnative invasive species or noxious weeds can alter vegetation communities by outcompeting native species for resources. Invasive species threaten biodiversity in habitats, and they can cause economic or environmental harm or harm to human health (ADFG 2023). A survey of nonnative invasive species was conducted across 54 sites within the Birch Creek WSR Corridor. Of the 54 sites, foxtail barley (*Hordeum jubatum L*) was found at two sites and white sweetclover (*Melilotus albus Medik.*) was found at two other sites (BLM GIS 2023).

3.17.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the Birch Creek WSR would continue to be managed in compliance with Decisions Veg-11 through Veg-19 under the Steese ROD. The current conditions within Birch Creek WSR would be maintained and riparian and wetland areas would continue to be managed

to achieve proper functioning condition. In areas with potentially sensitive habitats as well as for nonnative invasive species, the BLM would continue inventorying and mapping sensitive and invasive species and allow development of mitigation. As a result of these management actions, vegetation communities would continue to be maintained and improved.

Management actions would continue to support populations of well-distributed native plants and vertebrate and invertebrate populations that contribute to the viability of riparian-dependent communities. With little potential for commercial forestry and strict management of mining, the vegetation in the Birch Creek Watershed would be relatively safe from direct human impacts (BLM 2016b). Only minimal direct human impacts (i.e., mining and forestry) would affect the vegetation communities within the Birch Creek Watershed. Disturbances from mining tend to be historical or on land already leased or privately owned. These disturbances could occur near riparian areas and wetlands with priority vegetation communities. The Steese ROD and Approved RMP outlined restoration guidelines for disturbances in these areas, including establishing native vegetation; returning the sites to pre-disturbance conditions; designing to result in rehabilitation of habitats within an accelerated time frame; and removing any invasive species during the disturbance, which would help improve vegetation conditions in areas affected by disturbances. Routine analysis for permit issuance would continue compliance with Executive Order 11990, Protection of Wetlands.

Climate change and the associated increases in wildfires and permafrost thawing represent the greatest threats to vegetation communities in the Birch Creek Watershed. Under Alternative A, climate change would continue producing hotter, drier conditions, which would lead to early and faster thawing of snow and ice. This change would result in altered hydrographs, and it could lead to a shift in vegetation types along riparian corridors (USFWS 2021a). There is no current management for monitoring and assessment of permafrost conditions in the Birch Creek WSR Corridor. Under Alternative A, permafrost thawing could have drastic impacts on vegetation communities through many different processes. Permafrost thawing could lead to deeper groundwater levels and a reduction in water availability, especially in the winter months. This could have negative impacts on species that require high groundwater inputs, such as sedges and low shrubs; however, it could have positive impacts on species that thrive in environments with lower groundwater, such as some native tree species (USFWS 2021a). (See **Section 3.16**, Soils and Permafrost, for more details.)

Climate change also could increase the frequency and magnitude of wildfires, which would lead to larger impacts on watersheds and vegetation communities. A large fire has the potential to impact native vegetation communities and could increase the likelihood for invasive species to establish. If a wildfire is intense enough, it would create such impacts on vegetation and soils that recovery of pre-fire ecosystems is infeasible, and a new stable state or novel ecosystem can establish. Increasing wildfire frequency in boreal forests can lead to the impairment or extirpation of black spruce trees from the burn area and shift from black spruce to deciduous forest or even shrub or grassland. This can happen in young and mature stands. The Steese ROD and Approved RMP outlines decisions for wildland fire ecology and management to reduce fire intensity; these decisions are incorporated by reference (BLM 2016b). Reducing fire intensity would allow natural forest decomposition, creating open areas for new plants to grow and persist.

3.17.3 Environmental Effects—Alternative B

Under this alternative, resource management actions would emphasize resource protection, connectivity, and ecological resilience. Management actions within the Birch Creek WSR Corridor would monitor resource conditions and trends relative to landscape conditions. Sensitive plant species would be monitored and protected. Surveys would be conducted for both sensitive and invasive plant species. Inventory and monitoring of vegetation communities would allow the BLM to improve the understanding of current conditions as well as be able to detect any early changes within the environment.

Impacts from this alternative on vegetation communities, including nonnative invasive species would be similar to those described under Alternative A. The results from the management actions may result in a diverse species makeup that is largely undisturbed except by natural disturbance. Human disturbances would be minimal, as described under Alternative A. Therefore, Alternative B would result in fewer impacts on vegetation communities.

3.17.4 Environmental Effects—Alternative C

Under this alternative, recreation activities and visitor use would be promoted within the Birch Creek WSR Corridor. The management actions include taking inventory and monitoring sites for specific impacts around recreation areas and implementing active measures to mitigate and restore riparian impacts due to recreation activities. The BLM would conduct surveys on sensitive and invasive plant species and develop an invasive species mitigation and prevention plan to manage invasive species in areas impacted by recreation activities. The impacts from this alternative would be similar to those described under Alternative A. Recreational activities may introduce the spread of invasive species and disturb the landscape, resulting in mechanical damage to plants and changes in soil structure; however, the implementation of the above management actions would reduce the severity of those disturbances (Douglass et al. 1999).

Under this alternative, there are several SOPs, such as those described above, to help minimize impacts from visitor use in the Birch Creek WSR Corridor that are obtained by special use permits. These include group size restrictions, discontinued use of felt or fibrous footwear, and the cleaning of all equipment (e.g., boot soles, rafts, tents, etc.) to ensure it is free of nonnative seeds and plant parts. See **Appendix B** for more information.

3.18 Forestry

3.18.1 Affected Environment

The majority of forestland in Alaska is classified as “boreal forest,” which is primarily made up of coniferous trees (e.g., spruce). White spruce occurs on warm, south-facing slopes with well-drained soils and along rivers and hillsides without permafrost. Black spruce forests are located on floodplain terraces in areas ranging from well-drained to poorly drained soils. Deciduous forests are made up of balsam poplar (*Populus balsamifera*), cottonwood (*Populus* spp.), or a mix of the two that is found on floodplains of meandering rivers. Mixed forests are dominated by different combinations of spruce, birch, and aspen (ADFG 2015). **Table 3-5** lists the vegetation communities’ acres within the Birch Creek WSR Corridor (see **Section 3.17**, Vegetation). There is a low potential for commercial development in the Birch Creek WSR Corridor because of difficult access to potential harvest sites and the far distance to the market (BLM 1983).

Natural disturbances, such as wildfires and climate change, continue to be the greatest threat to forestry and native vegetation. Climate change is producing hotter and drier conditions, which can lead to permafrost thawing and higher frequency and intensity of wildfires.

3.18.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, the Birch Creek WSR would continue to be managed in compliance with Decision Forest-5 under the Steese ROD. The BLM would maintain and restore the health, productivity, and biological diversity of forest and woodland ecosystems, which would improve the forestry resource.

Climate change and the associated increases in wildfires and permafrost thawing represent the greatest threats to forest vegetation in the Birch Creek Watershed. Under Alternative A, climate change would continue producing hotter, drier conditions, which would lead to early and faster snow and ice melting. This change would result in altered hydrographs and it could lead to a shift in vegetation types within forested habitats along riparian corridors (USFWS 2021b). Increased temperatures also may lead to more insects and disease that could infest forested vegetation types. Over the past several years, spruce bark beetle outbreaks have risen across southcentral Alaska due to climate change. Longer and warmer summers would increase the beetle's reproductive capacity, while milder winters would increase over-winter survival rates (Thoman and Walsh 2019). Therefore, the threat of insects would worsen without management actions to maintain and support biological diversity.

The frequency and magnitude of wildfires would increase due to climate change, and they would lead to larger impacts on watersheds and vegetation communities within forest habitats. A large high-intensity fire has the potential to impact native vegetation communities and it could allow invasive species to establish. If a wildfire is intense enough, it would create such impacts on vegetation and soils that recovery of pre-fire ecosystems could be infeasible, and a new stable state or novel ecosystem could establish. The Steese ROD and Approved RMP outlines decisions for wildland fire ecology and management to reduce fire intensity; these decisions are incorporated by reference (BLM 2016b).

3.18.3 Environmental Effects—Alternative B

Forests would continue to be affected by climate change, as described under Alternative A. Under this alternative, resource management actions would emphasize resource protection, connectivity, and ecological resilience. In this alternative, management actions would limit the collection of special forest products to subsistence use, camp use, and personal use (i.e., berries, mushrooms, etc.). By prohibiting the commercial collection of special forest products and salvage timber harvest in the Birch Creek WSR Corridor, opportunities for forest products disposal would be reduced relative to Alternative A, which does not allow commercial timber sales (non-salvage) within the Birch Creek WSR Corridor. However, while subsistence and casual harvest occur, there is no known commercial demand for these in the corridor.

Impacts on forest habitats, including vegetation communities, would be similar to those described under Alternative A. Since there would be no timber harvest or commercial collection of special forest products in the Birch Creek WSR Corridor, the impacts on opportunities for forestry would be greater under this alternative. The Steese ROD and Approved RMP calls for prescribed fires to be used to improve wildlife habitat and to manage fuel loads. The prescribed fires would have temporary negative impacts on vegetation communities, but they would aid in

the reduction of more destructive wildfires (BLM 2016b), which would maintain or improve forest health and the availability of special forest products.

3.18.4 Environmental Effects—Alternative C

Impacts on forestry under Alternative C would be the same as described for Alternative A.

3.19 Wildlife (including Threatened and Endangered and Invasive Species)

3.19.1 Affected Environment

3.19.1.1 Migratory Birds

Birch Creek WSR is often surrounded by riparian vegetation, which is an important habitat for many: songbirds, waterfowl, migratory birds, and raptors. Common migrants include Arctic loon (*Gavia arctica*), red-throated loon (*Gavia stellata*), common loon (*Gavia immer*), grebe (*Podicipedidae* spp.), and sandhill crane (*Grus canadensis*). Other species such as: hawks, owls, grouse, woodpeckers, gray jays (*Perisoreus* spp.), and common ravens (*Corvus corax*) will stay during the winter. The USFWS IPaC database search (see **Appendix D**, Special Status Species Lists) identified one bird of conservation concern (BCC) and bald eagle that may occur in the Birch Creek WSR Corridor vicinity. The bald eagle is not a BCC in this area; however, it warrants attention because of the Eagle Act or for potential susceptibilities in riparian habitat or other waterways from certain types of development or activities. **Table 3-7**, Birds of Particular Concern, shows the two birds identified by the USFWS IPaC; their breeding status in the region; and their habitat requirements. These birds of particular concern are discussed in additional detail below.

Table 3-7. Birds of Particular Concern

Common Name	Scientific Name	Breeding Status	Habitat Requirements
Bald eagle	*Haliaeetus leucocephalus*	B	Breeding habitat most commonly includes areas close to coastal areas, bays, rivers, lakes, reservoirs, or other bodies of water that reflect the general availability of primary food sources. The food sources include fish, waterfowl, or seabirds. Nests usually are in tall trees or on pinnacles or cliffs near water. Tree species used for nesting vary regionally, and they may include pine, spruce, fir, cottonwood, poplar, willow, sycamore, oak, beech, or others. The same nest may be used year after year, or a pair may use alternate nest sites in successive years.
Olive-sided flycatcher	*Contopus cooperi*	B	Olive-sided flycatchers breed in various forest and woodland habitats including taiga, subalpine coniferous forest, mixed coniferous-deciduous forest, burned-over forest, spruce or tamarack bogs, and other forested wetlands. In addition, they could be found along the forested edges of lakes, ponds, and streams. Most nesting sites contain dead standing trees, which are used as singing and feeding perches. Nests are placed most often in conifers, on horizontal limbs 2-15 meters from the ground. During the northern winter, this species occurs in a variety of forest, woodland, and open situations with scattered trees, especially where tall dead snags are present.

Source USFWS 2023, NatureServe Explorer 2023
B: Breeding

3.19.1.2 Raptors

Raptors serve as important indicators of overall ecosystem health because they are keystone species at the top of the food web. Along Birch Creek WSR and in adjacent cliffs and bluffs, there are populations of nesting raptors such as: peregrine falcon (*Falco peregrinus*), gyrfalcon (*Falco rusticolus*), merlin (*Falco columbarius*), bald eagle, golden eagle (*Aquila chrysaetos*), and osprey (*Pandion haliaetus*) (BLM 2023b). Other raptors include rough-legged hawk (*Buteo lagopus*), northern goshawk (*Accipiter gentilis*), red-tailed or Harlan's hawk (*Buteo jamaicensis*), *s*harp-shinned hawk (*Accipiter striatus*), and northern harrier (*Circus cyaneus*) (ADFG 2015). The numerous songbirds and small mammal populations provide the primary prey base for raptors during the breeding and nonbreeding seasons.

3.19.1.3 Mammals

Common small mammal species that are widely distributed throughout the Birch Creek WSR Corridor and central Alaska include: snowshoe hare (*Lepus americanus*), brown lemming (*Lemmus trimucronatus*), red-backed vole (*Myodes rutilus*), meadow vole (*Microtus pennsylvanicus*), shrews (*Sorex* spp.), and little brown myotis (*Myotis lucifugus*) (ADFG 2015). The megafauna found along Birch Creek WSR include moose (*Alces alces*), caribou (*Rangifer tarandus granti*), Dall sheep (*Ovis dalli dalli*), black bear (*Ursus americanus*), brown or grizzly bear (*Ursus arctos*), and gray wolf (*Canis lupus*) (BLM 2023a). These large mammal species are supported by the diversity of habitat and the availability of essential resources throughout the Birch Creek WSR Corridor. The success of species can be attributed to habitat conditions, availability of resources, and level of human disturbance activities.

There are critical periods during an animal's life cycle when they are particularly vulnerable to disturbances related to human activities. Degradation or unavailability of certain habitats will lead to significant declines in carrying capacity and/or numbers of wildlife species in question. An example of this is winter range where big game migrate to lower elevations to forage. Oftentimes they compete with other species for limited resources. Winter range and available resources can be limiting factors for population dynamics.

Big game species, such as moose and caribou, also are vulnerable during fawning and calving periods, as mothers tend to their young by providing food resources and protection from predators. Loss of winter range and fawning/calving habitat throughout the Birch Creek WSR Corridor could prevent the big game herds from achieving management objectives. While data is limited for many big game species, there is data available for caribou within the Birch Creek WSR Corridor. (See **Table 3-8**, Caribou Distribution Across the Birch Creek WSR Corridor, below, for acres of important wintering and calving habitat.)

Table 3-8. Caribou Distribution Across the Birch Creek WSR Corridor

Habitat Type	Acres
Known Calving Areas, Known Winter Use Areas	45,500
Known Winter Use Areas	22,300
Herd Ranges	54,800

Source: ADFG GIS 1985
Acres are rounded to the nearest 100.
There are 67,800 acres of known winter use areas. A total of 45,500 acres of the 67,800 acres are also known calving areas.

3.19.1.4 Threatened and Endangered Species, including Special Status Wildlife

The USFWS IPaC website does not list any threatened, endangered, or proposed species or designated or proposed critical habitat within the proposed project location.

Special status species include federally-listed, State-listed, and the BLM sensitive species. Management objectives include conservation of habitat and ensuring that approved activities do not contribute to the need to list any special status species. The BLM Alaska special status species list (BLM 2019) was developed from State lists, expert input (BLM, ADFG, or other partners), and the NatureServe global ranking system (see **Appendix D**, Special Status Species Lists**)**. Most habitat for special status plant species is currently undisturbed and largely intact. The potential for impacts on special status plant species is expected to increase as development and other ground-disturbing activities are expected to increase in the planning area (see **Section 3.17**, Vegetation for more details). Important habitat for special status animals includes wetland and riparian areas and bluffs, which provide food, water, and cover necessary for many species. Species of concern in the Birch Creek WSR Corridor include bald and golden eagles that are protected by the Bald and Golden Eagle Protection Act. Other sensitive species found in the Birch Creek Watershed are peregrine falcon, gyrfalcon, trumpeter swan (*Cygnus buccinator*), olive-sided flycatcher, blackpoll warbler (*Setophaga striata*), rusty blackbird (*Euphagus carolinus*), short-eared owl, Osgood's Arctic ground squirrel (*Urocitellus parryii*), Alaska tiny shrew (*Sorex yukonicus*), and Alaska endemic mayfly (*Acentrella feropagus*).

3.19.1.5 Invasive Species

A species is considered to be an "invasive species" under Presidential Executive Order 13112 if it meets two criteria: 1) it is not native to the ecosystem in question and 2) its introduction has caused or is expected to cause harm to the economy, environment, or human health. Species are considered invasive in a new environment when the natural predators, diseases, or other biological mechanisms that kept the species in check in the previous habitat are absent in the new environment. Because this biological balance is lacking, an invasive species effectively changes the biodiversity of an area (ADFG 2023).

While the invasive species that are most likely to affect wildlife populations in central Alaska are plant species such as *Elodea* spp., the following are invasive wildlife species that may occur in the Birch Creek WSR Corridor including the gypsy moth (*Lymantria dispar*), Norway rat (*Rattus norvegicus*), and rock dove (*Columba livia*) (ADFG 2015; ADFG 2023).

Although the Birch Creek WSR Corridor's physical environment hinders the establishment of many possible invasive species, the low biodiversity also raises the possibility that the spread of an invasive species population may lead to the decline or eradication of native species. Climate related changes to the landscape, such as warming and drying, may enable invasive plant and animal species to become established in the ecosystem. Invasive species on the landscape pose a significant threat to native wildlife, such as: conversion to nonnative forage, competition for resources, predation, and disease (ADFG 2015).

3.19.2 Environmental Effects—No Action Alternative (Alternative A)

Under Alternative A, management actions would continue as in previous years in compliance with Decision Wild-13, and Wild-18 under the Steese ROD. Surface disturbance would continue to occur from noncommercial timber harvest, recreation activities, including human traffic and ORV use, and wildfire. Disturbance from human-related activities may result in habitat

avoidance or displacement by wildlife and it also may attract wildlife, such as scavengers and predators.

While impacts from forestry and recreation on wildlife and their habitat are minimal, due to the restrictions outlined under the Steese ROD, climate change and the associated factors represent the greatest threats to wildlife and wildlife habitat in the Birch Creek watershed. Alaska has been more severely affected by climate change than any other area of the United States during the past 50 years, with the most rapid temperature rises and a warming rate double that of the rest of the country (Haufler et al. 2010). In the Birch Creek WSR Corridor, changes in vegetation communities, species' ranges, and species composition influence wildlife behavior through longer snow-free periods, shifting precipitation patterns, and a rise in rain-on-snow occurrences. The development of plant phenology[17] in seasonal settings has affected a variety of taxonomic groupings, including plants, invertebrates, and birds (BLM 2020).

Alternative A focuses on maintaining the natural fire regime, which promotes browsing conditions for moose and enhances natural ecological functionality. Natural fire regimes often enhance ecological services for wildlife; for example, moose benefit from increased wildfire because it provides more foraging opportunities (MacCracken and Viereck 1990). Other species like caribou are greatly affected by increased wildfire because the amount of lichen is greatly reduced. Continued warming may trigger accompanying ecological changes in unpredictable ways, making adaptation and impact assessments more difficult (BLM 2020). High intensity fires can severely burn the soil, which prevents the ability of vegetation communities to recover (see **Section 3.16**, Soils and Permafrost, for more details). Another impact of fire includes a narrowing of the fire return interval, which can lead to the impairment or extirpation of black spruce trees, leading to a shift from black spruce to deciduous forest. This may also occur in shrubland and grasslands (see **Section 3.17.2**, Environmental Effects - No Action Alternative, for more details). Loss of shrub cover and structural diversity from increased fire frequency, would reduce or fragment habitat for wildlife populations that favor or are dependent on shrub habitats for: breeding, nesting, hiding, thermal cover, and foraging.

3.19.3 Environmental Effects—Alternative B

Under this alternative, there would be an increased emphasis on conservation habitat connectivity and ecological resilience. Management actions under this alternative would be to conduct inventories and monitor the wildlife and sensitive wildlife species within the corridor to identify potential conflicts and implement management action to minimize identified conflicts. The inventories and monitoring would provide a better understanding of wildlife and habitat conditions, and they would allow the BLM to assess changes more accurately and in a timely manner.

Impacts on wildlife would be similar to those described under Alternative A. However, there would be no salvage logging and there would be a limit on the collection of special forest products, such as berries and mushrooms, in the Birch Creek WSR Corridor. Hence, impacts from surface disturbances on wildlife and their supporting habitat would be less under this alternative.

[17] The earlier seasonal timing of recurring events in a species' life cycle.

3.19.4Environmental Effects—Alternative C

Under this alternative, recreation activities and visitor use would be promoted in the Birch Creek WSR Corridor. This alternative poses the greatest impacts to wildlife and their habitat because potentially there would be increased disturbance to wildlife and their habitat from increased human uses. Road and air traffic, noise, light, and human presence or activity are all examples of activities that might disrupt or displace animals. According to Reimers and Colman (2006) and Uher-Koch et al. (2015), the behavioral responses of animals might range from brief alert reactions and evading behaviors to flush, flight, and escape or long-term abandonment of an area. Nest success also may be impacted from human disturbance (Stein and Ims 2015). Other impacts from visitor use include the spread of invasive species and wildlife habituation from improper food storage, feeding wildlife, and trash left behind.

Under this alternative, there are several SOPs to help minimize impacts from visitor use in the Birch Creek WSR Corridor, such as those described above, that are obtained by special use permits. These include group size restrictions, discontinued use of felt or fibrous footwear, no camping within 500 yards of eagle and raptor nests, and other wildlife SOPs. See **Appendix B** for more details.

Under this alternative, the BLM also would prioritize fire suppression in the Birch Creek WSR Corridor. Fire management under this alternative would reduce likelihood for high intensity fires that create hydrophobic soils and that inhibits vegetation growth and recovery, as described under Alternative A. In general, wildfire suppression protects wildlife and their habitats by reducing potential habitat loss, but it also leads to altered habitat conditions by increasing fuel loads; stand density; favoring shade-tolerant species; and promoting encroachment of trees into grasslands and shrublands. Ultimately, fire suppression techniques under this alternative provide immediate short-term benefits for wildlife species and their habitat, but they may pose a threat in the long term.

Long-term impacts from fire suppression could include more severe wildfire due to the unnatural buildup of fuel loads, increased sedimentation and erosion following wildfires, and the spread of nonnative vegetation from fire suppression tactics such as fire lines. Fire lines can be especially harmful in areas where there is permafrost because the insulating vegetation cover is removed, exposing soil to sunlight which increases the thawing rate (Backer et al. 2004). More severe wildfires further degrade and fragment wildlife habitat, as well as potentially cause direct displacement, mortality, or injury to wildlife (Smith and Lyon 2000). Degraded habitats may also result in competition for resources. An increase in sedimentation and erosion into stream and waterways following wildfire or through fire suppression tactics such as fire lines, may degrade water quality for aquatic species, which may lead to population declines in aquatic species. Reduction of canopy cover over rivers or streams from wildfire may also increase water temperatures that affect aquatic wildlife species (Backer et al. 2004). Often, invasion of nonnative vegetation occurs throughout a disturbed area, such as a burn area, or fire line. This may impact wildlife by reducing native forage with nonnative vegetation. Further, thawing permafrost from climate change affects wildlife by altering habitat conditions (Backer et al 2004).

4 Consultation and Coordination

4.1 Summary of Consultation and Coordination

During the NEPA process for this CRMP/EA, the BLM formally and informally coordinated and consulted with other federal agencies, State and local governments, Native American Tribes, and the interested public.

The federal government works on a government-to-government basis with federally recognized Tribes and ANCSA Corporations because they are recognized as separate governments. As a matter of practice, the BLM coordinates with all Tribal governments, associated Native communities, Native organizations, and Tribal individuals whose interests might be directly and substantially affected by activities on public lands.

In addition, Section 106 of the NHPA requires federal agencies to consult with Native American Tribes for undertakings on Tribal lands and for historic properties of significance to the Tribes that may be affected by an undertaking (36 CFR 800.2(c)(2)). The BLM Manual 1780, Tribal Relations, and BLM Handbook H-1780-1, Improving and Sustaining BLM-Tribal Relations, provide guidance for Native American consultations. EO 13175 stipulates that during the NEPA process, federal agencies must consult with Tribes identified as being directly and substantially affected.

Consultation with the State Historic Preservation Office (SHPO) was not necessary for the CRMP, according to the "Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management in Alaska" (signed February 2014). It states each field office responsible for preparing or amending a land use plan/RMP or an EIS will, when beginning its planning effort, invite the SHPO to participate for the purpose of identifying issues that should be addressed. The BLM will invite the SHPO to comment on any proposed cultural resource use allocations, whether these are made in regional, local, or project plans. Field offices will send all draft and final RMPs, plan amendments, EISs, and activity plans that involve or affect cultural resources to the SHPO for review and comment. Because cultural resources were not going to be affected in any way by the CRMP, let alone assigned use allocations to any of them, the BLM concluded that consultation with this particular planning effort was not required.

Cooperating agencies, Tribes, and ANCSA Corporations work with the BLM by sharing knowledge and resources to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks. The BLM invited Tribes to a government-to-government consultation for the CRMP/EA in a letter dated December 28, 2022. Tribes invited included the Birch Creek Tribe; Circle Tribal Council; Danzhit Hanlaii Corporation; Doyon, Limited; and Tiheet' aii, Incorporated. None of the Tribes elected to participate.

A cooperating agency is any federal, state, or local government agency or Native American Tribe that enters into formal agreement with the lead federal agency to help develop an environmental analysis. The BLM invited the State of Alaska, Yukon Flats National Wildlife Refuge, US Fish and Wildlife Service, Yukon-Charley Rivers National Preserve, Chalkyitsik Village, Chalkyitsik Native Corporation, Native Village of Fort Yukon, and Gwitchyaa Zhee Corporation to be cooperating agencies in a letter dated December 28, 2022. Agencies that signed memoranda of understanding to participate as a cooperating agency were the National Park Service, the State of Alaska, and the US Fish and Wildlife Service. The BLM solicited cooperating agencies to

provide input and feedback on the purpose and need statements and alternatives. Specifically, the BLM:

- Conducted a meeting on January 26, 2023, with potential cooperating agencies to describe the CRMP process.
- Provided cooperating agencies with the draft purpose and need statements, draft themes for the alternatives, draft alternatives, and draft scoping summary report for the CRMP/EA on March 20, 2023, to review and provide input and feedback.
- Conducted a meeting on April 26, 2023, to describe how the BLM addressed input and feedback on the draft purpose and need statements, draft themes for the alternatives, and draft alternatives.
- Conducted a meeting on May 4, 2023, to describe how the BLM addressed input and feedback on the alternatives.
- Provided cooperating agencies with an internal review Draft EA on June 23, 2023, to review and provide input and feedback.

4.2 Summary of Public Participation

In developing the CRMP/EA, the BLM solicited public input during the public scoping period. The BLM's public outreach and collaboration are ongoing, and they will continue throughout the development of the CRMP/EA.

Scoping is an open and early step in the NEPA process that helps the BLM to determine the scope of issues to address and to identify significant issues related to the proposed program. Information collected during scoping also may be used to develop the alternatives to analyze in a NEPA document.

Scoping is a collaborative public involvement process to identify planning issues to address in the planning process. Planning issues are disputes or controversies about existing and potential land and resource allocations, levels of resource use, production, and related management practices. Issues include resource use, development, and protection opportunities. These issues may stem from new information or changed circumstances, and the need to reassess the appropriate mix of allowable uses. Planning issues are addressed, and they provide a major focus for the development of alternatives.

Through the CRMP project ePlanning website, the BLM announced that the scoping period would occur from January 5, 2023, to February 4, 2023. Also, on January 17, 2023, from 5:00 to 7:00 p.m., the BLM held a virtual scoping meeting that was open to the public to learn more about the CRMP/EA. Comments and information could be submitted. The meeting began with a presentation by the BLM about the Birch Creek WSR and CRMP process. It was followed by a question-and-answer period and then a comment submission period.

Comments were received from individuals; ANILCA Implementation Program; Council of Athabascan Tribal Governments; and Doyon, Limited during the public scoping period. The BLM received 14 unique written submissions during the public scoping period; the number of substantive comments extracted from these submissions varied between all submissions. Two individuals submitted both verbal and written comments, bringing the total to 16 submissions.

Overall, 69 substantive comments were identified. **Table 4-1**, Number of Substantive Comments by Issue Category, shows 69 substantive comments were categorized into 20 issue categories (BLM 2023a).

Table 4-1. Number of Substantive Comments by Issue Category

Issue Category	Number of Substantive Comments*
Best available information and baseline data	3
Climate change	2
Direct and indirect impacts	1
Fire	1
General WSR comments	4
Hunting (or recreation)	6
Land use and trespass	7
Mining	8
Navigable waters	4
Noise	2
Other laws	9
Public outreach	5
Range of alternatives	1
Request cooperating status	1
Right-of-way	2
Special designations	2
Transportation and access	4
Vegetation	1
Water quantity and flow	2
Wild classification	4
Total	69

*All numbers are approximate.

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5 List of Appendixes

Appendix A—Birch Creek WSR Management Common to All Alternatives

Appendix B—Standard Operating Procedures for Special Recreation Permits

Appendix C—Birch Creek Wild and Scenic River Draft Comprehensive River Management Plan

Appendix D—Special Status Species Lists

Appendix E—Preliminary ANILCA Section 810 Evaluation and Finding for Birch Creek Comprehensive Management Plan and Environmental Assessment

Appendix F—List of Preparers

Appendix G—Acronyms and Abbreviations

Appendix H—List of References

Appendix I—Chapter 2 Tables

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6 Appendix A: Birch Creek WSR Management Common to All Alternatives

Existing management direction (from the Steese ROD, Steese Travel Management Plan, and 1983 River Management Plan) that is not described in **Section 2.2**, Common to All Alternatives, or listed under Alternative A in **Table 2-5**, Comparison of Alternatives (**Appendix I**, Chapter 2 Tables), is consolidated below. This management direction would continue under all alternatives.

Steese ROD – Fish and Aquatic Species

Goal: Maintain water quality that satisfies state standards and provides for stable and productive riparian and aquatic ecosystems.

Goal: Manage instream flows to support healthy riparian and aquatic habitats, which promote the stability and effective function of stream channels, and the ability to effectively route flood discharges.

Goal: Maintain natural timing and variability of the water table elevation in meadows and wetlands. Manage for diversity and productivity of native plant communities in riparian zones.

Goal: Manage riparian vegetation to:

- Provide an amount and distribution of large woody debris characteristic of intact natural aquatic and riparian ecosystems;
- Provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and,
- Help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

Decision Fish-5: Identified the following watersheds as Riparian Conservation Areas:

- Birch Creek (HUC # 190804010207)
- Birch Creek (HUC # 190804010212)
- Birch Creek (HUC # 190804010601)
- Birch Creek (HUC # 190804010606)
- George Creek-Birch Creek (HUC # 190804010903)
- McLean Creek-Birch Creek (HUC # 190804010401)
- Thomas Creek-Birch Creek (HUC # 190804010403)

The management goal in RCAs is to: maintain and provide stream channel integrity, ensure riparian proper functioning condition, and achieve desired future conditions for the high-value fish and aquatic resources, and yet allow for surface-disturbing activities.

To increase the likelihood of fisheries habitat rehabilitation within these watersheds, which represent the highest value fisheries resources within the planning area, additional baseline data pursuant to 43 CFR 3809.401 (c) (1) will be required. Within these areas baseline hydrological data that is adequate to characterize seasonal flow patterns and discharge will be required from the operator. The BLM will be available to advise operators on the exact type of baseline data and detail needed to meet this requirement. In addition reclamation requirements in site-specific reclamation plans, will be designed to result in rehabilitation of habitats within an accelerated

time frame (e.g., less than 5 years). To achieve fisheries habitat rehabilitation within five years, rigorous revegetation and streambank stabilization techniques and a high level of monitoring and maintenance will be required.

Where priority species are present, manage and monitor habitats to promote self-sustaining populations. Priority aquatic species are those species utilized for subsistence, designated as the BLM sensitive, federally listed under the Endangered Species Act, and/or recreationally important species. Cooperate and coordinate with state agencies, federal agencies, Native organizations, and other groups to ensure efficient and effective program implementation toward conservation of native and desired, non-native aquatic species.

Develop and implement appropriate management practices to maintain the following desired future conditions for aquatic species:

- Maintain habitats historically occupied by native aquatic species (fish, invertebrates, plants and other aquatic-associated species) to promote continued occupation.
- Develop and implement habitat management plans and strategies for special status fish and aquatic species that include specific habitat and population management objectives designed for conservation, as well as management strategies necessary to meet those objectives.
- Monitor spatial extents of habitat disturbances to ensure disturbances are less than the area occupied by priority species, in order to preserve population structure and life history strategies.

Cooperate to ensure aquatic habitats are managed consistently with federal, State and Native fish population goals.

Provide and coordinate hydrologic data with the State to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitats.

Steese ROD – Non-Native Invasive Species

Goal: Prevent the introduction and spread of noxious and non-native invasive species on and adjacent to BLM-administered lands.

Decision NIS-3: Complete inventory and mapping for noxious and nonnative invasive plants at disturbed sites, along trails, and within the Birch Creek WSR corridor within 5 years of signing the ROD or by management direction.

Steese ROD – Soil Resources

Goal: Ensure that watersheds are in (or are making significant progress toward) a properly functioning physical condition that includes their upland, riparian, wetland, and aquatic areas. The infiltration and permeability rates, moisture storage, and stability of upland soils are appropriate to the watershed's soil, climate, and landform.

- Protect the soil surface from erosion; avoid detention of overland flow; maintain infiltration and permeability consistent with the potential/capability of the site.
- Promote moisture storage by soil and plant conditions consistent with the potential/capability of the site.

- Hydrologic, vegetative, and erosion/depositional processes support physical functioning, consistent with the potential or capability of the site.
- Stream channel, lake bed, shoreline characteristics are appropriate for the landscape position.

Goal: Ensure that water and nutrient cycling and energy flow support healthy, productive, and diverse natural communities. Water and nutrient cycling and energy flow occur effectively to support healthy, productive, diverse communities at levels appropriate to the potential/capability of the site.

Goal: Minimize soil erosion and sedimentation associated with storm water discharge from disturbed sites, particularly where soils and overburden are stripped and stockpiled for an extended period of time.

Steese ROD – Vegetation Resources

Goal: Ensure that watersheds (including their upland, riparian, wetland, and aquatic areas) are making significant progress toward or are in proper functioning condition.

Goal: Ensure that water and nutrient cycling, and energy flow support healthy, productive, and diverse natural communities.

Goal: Ensure that habitats support healthy, productive, and diverse populations and communities of native plants and animals.

Decision Soil-1: Manage riparian and wetland areas to achieve proper functioning condition, or if not at proper functioning condition, to enhance condition rating. Management strategies to achieve proper functioning condition.

Steese ROD – Visual Resources

Goal: Maintain and manage visual resource values in accordance with Visual Resource Management (VRM) Classes.

Steese ROD – Water Resources, Wetlands, and Floodplains

Goals: Watersheds: Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian, wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

Goals: Water Quality: Protect, restore, and maintain the natural chemical, physical, and biological quality of surface and ground waters, wetlands, and floodplains influenced by the BLM resource management activities. Ensure full compliance with applicable federal and state laws and executive orders.

Goals: Water Quantity: Protect, restore, and maintain the natural flow regime, water levels, and integrity of surface and ground waters influenced by the BLM resource management activities.

Goals: Water Rights: Ensure availability of surface and ground water for public land management purposes by acquiring and protecting federal reserved water rights and water rights obtained through state-based administrative and judicial systems. Ensure full compliance with applicable federal and state laws.

Goals: Wild and Scenic Rivers: Each Wild and Scenic River component will be managed to protect and enhance the values for which the river was designated with protection of water quality and quantity as a principal goal.

Goals: Science-based Adaptive Management: Coordinate, cooperate, and consult with federal, tribal, state, and local agencies, private landowners, and stakeholder organizations in order to foster a unified, science-based adaptive management approach to water resource management.

Goals: Assessment and Monitoring: Provide a unified framework for the BLM's science-based watershed approach to management of natural and developed water systems consistent with federal and state water quality and quantity assessment methods, including monitoring, sampling, and reporting protocols.

Decision Water-4: Compile summary reports on a rotational basis (every three or four years, or more frequently as necessary) for inventory and monitoring data collected to support Birch Creek WSR instream flow water rights and water quality.

Decision Water-5: Consistent with the Antidegradation Policy in the Alaska Water Quality Standards (18 AAC 70.015) all segments of Birch Creek are nominated as Tier 3 waters, also referred to as Outstanding National Resource Waters. See 18 AAC 70.015(a)(3).

Decision Water-7: Within five years of signing the ROD or by management direction, undertake development of a step-down Watershed Management Plan (WMP) for Birch Creek Wild and Scenic River watershed, Steese South National Conservation Area, and Preacher Creek watershed, Steese North National Conservation Area. Watershed planning helps address water quality problems in a holistic manner by fully assessing the potential contributing causes and sources of pollution including uplands, then prioritizing restoration and protection strategies to address these problems. Watersheds vary widely in physical, chemical, and biological characteristics, resource conditions, and local use impacts. Therefore, the objectives and management designed for an area shall be tailored to the conditions, conflicts, capability and improvement potential, and land use considerations on a watershed-specific basis. Site specific soil and water management determinations (e.g., watershed, floodplain-wetland, or riparian rehabilitation techniques, monitoring techniques and schedule, and the design and placement of improvements) will be developed in the interdisciplinary Watershed Management Planning phase for resource programs. The "Watershed Assessment Matrix" (Table B.5), depicting range of desired conditions for aquatic habitats would be incorporated in the Watershed Management Plan as well as other science-based watershed assessment tools. Relevant new science and new empirical water resource data would also be incorporated in the WMPs. Additional SOPs and Fluid Mineral Leasing Stipulations for land uses may be developed through the step-down WMP.

Decision Water-12: Approach restoration and enhancement of floodplain areas through management of the entire watershed rather than just focusing on a narrow floodplain-riparian zone. Prior to initiating restoration measures, a determination must be made of site potential and the primary causes of a degraded ecological condition. The natural recovery processes operating in an area should be evaluated prior to considering structural measures. While stream systems

and watersheds are undergoing major geomorphic or hydrological adjustment, structural measures should not be initiated. Consider implementing structural measures only if (1) proper management prescriptions will not achieve management objectives within the desired time frame, (2) costs incurred to achieve accelerated rehabilitation are justified by the benefits to be achieved, and (3) natural recovery has not progressed to a point that will stabilize stream banks and/or wetlands basins.

Decision Water-13: In setting reclamation priorities for floodplain-wetland areas, consider the extent to which the floodplain-wetland may deteriorate if restoration or improvement action is not immediately implemented. Floodplain-wetland areas that may suffer substantial further degradation and have high potential for improvement should be given top priority. Those that have been degraded but appear stable may be given lower priority for restoration and improvement. Other factors, such as special status species, water quality, competing water uses, fisheries, and recreation values should also be considered when establishing priorities.

Decision Water-14: To the extent it is economically and operationally feasible the BLM and/or cooperating agencies will operate and maintain long-term daily stream gage(s) near the beginning and/or end of the…Birch Creek Wild River Segment, consistent with the latest USGS Standards and Methods. The gage should have satellite telemetry capability reporting hourly stage, discharge, water temperature, water turbidity, air temperature, and precipitation with data available on a public website.

Birch Creek CRMP (1983) – Water Resources

Action 4.1: All use authorizations will include measures to control water pollution.

Action 5.1: A reservation of minimum water flows sufficient for public recreation use and to support the values for which the wild river was designated will be determined in cooperation with the Alaska Department of Natural Resources, Division of Land and Water Management.

Action 15.1: A system for the transportation of water, such as a canal, ditch, pipeline, diversion, may be allowed, provided certain conditions are met (ANILCA Section 1107).

Action 15.2: Dams, reservoirs, power houses, flood control dams, levees, and similar developments are prohibited (WSRA Section 7).

Steese ROD – Wilderness Characteristics

Goals: In areas identified for minimization of impacts to wilderness characteristics, retain wilderness characteristics including naturalness, solitude, and outstanding opportunities for primitive and unconfined recreation to the extent possible while allowing for other multiple use activities.

Decision LWC-4: Do not manage any lands to protect wilderness characteristics as a priority over other resource values and multiple uses.

Steese ROD – Wildlife Resources

Goals: Maintain natural ecosystem functions and the quality and quantity of habitat to support healthy populations of wildlife

Goals: In cooperation with ADF&G, monitor wildlife populations and habitats and manage BLM lands to conserve and enhance fish and wildlife populations. Ensure optimum, self-sustaining populations and a natural abundance and diversity of wildlife resources.

Goals: Maintain and protect subsistence resources and opportunities. Determine how management actions, guidelines, and allowable uses prescribed in response to the other issues will affect subsistence opportunities and resources. Monitor populations and habitats to ensure opportunities for subsistence harvest of wildlife.

Goals: Minimize impacts to wildlife species and their habitats from BLM-administered activities on BLM-administered lands.

Goals: Protect habitats important to wildlife population maintenance by the avoidance of possible adverse effects of land use activities, through mitigation and by reserving specific areas from certain land use activities.

Goals: Maintain a diversity and abundance of wildlife habitat that will provide resilience in adaptation to changing climate.

Goals: Ensure opportunities for wildlife viewing, fishing, hunting, and trapping.

Goal: Locate trails and recreational development to avoid conflicts with important and priority wildlife habitat and environmentally sensitive areas.

Goal: Maintain and restore riparian and wetland areas so that they provide habitat diversity and healthy riparian and aquatic conditions for riparian and wetland dependent species and other wildlife species.

Decision Wild-14: Avoid or minimize impacts from projects that could degrade riparian areas and promote restoration of riparian areas to achieve Proper Functioning Condition.

Steese ROD – Forest and Woodland Products

Goals: Maintain and restore the health, productivity, and biological diversity of forest and woodland ecosystems.

Steese ROD – Lands and Realty

Goals: Retain public lands with high resource values. Adjust land to consolidate public land holdings, acquire lands with high public resource values, and meet public and community needs.

Decision Lands-3: Retain lands within the Steese National Conservation Area in accordance with Section 402(b) of ANILCA; Retain Birch Creek WSR Corridor.

Decision Lands-19: Authorization of structures within the Steese National Conservation Area and Birch Creek WSR Corridor will be issued in accordance with Sections 1310, 1303(b) and 1316 of ANILCA.

Decision Lands-24: Rights-of-way located within the Steese National Conservation Area, and Birch Creek Wild and Scenic River, must be consistent with purposes for which the areas were designated.

Decision Lands-29: The following National Conservation Lands are not available for large-scale wind energy site testing, monitoring, and development: Birch Creek WSR Corridor. Should a

Title XI application be received for large-scale wind energy projects in these areas, the BLM will consider alternative locations consistent with the Title XI process.

Notwithstanding any decision in this plan and in accordance with ANILCA Title XI, rights-of-way for Transportation or Utility Systems will be considered throughout the National Wild and Scenic Rivers System including NLCS units excluded from wind energy uses.

Small-scale renewable energy facilities will be considered in these areas if consistent with protecting the values for which the areas were designated. Small-scale facilities considered could include projects that provide energy to: BLM-administered sites, the BLM recreation sites, private land inholdings, mine sites, and small communities (less than 250 residents). These projects would consist of a few solar panels, a wood-fired boiler, or a few wind turbines and would not affect more than 100 acres per NLCS unit over the life of the RMP.

Decision Lands-32: Recommend to the Secretary of the Interior that new withdrawals under the authority of FLPMA be established on 24,000 acres in the following areas for the purposes of protecting sensitive resources, and that existing ANCSA 17(d)(1) withdrawals be partially revoked for the respective areas upon establishment of new FLPMA withdrawals. Recommended new withdrawals under FLPMA would only withdraw lands from locatable mineral entry and location. These withdrawals would not affect conveyance of validly selected lands. (Appendix C of Steese ROD)

Approximately 17,000 acres on upper and lower Birch Creek including all lands that are within the Birch Creek WSR Corridor, but outside of the one-half mile withdrawn by the Wild and Scenic Rivers Act pursuant to ANILCA and areas of lower Birch Creek outside the WSR Corridor.

Decision Lands-35: Recommend to the Secretary of the Interior to modify or partially revoke ANCSA 17(d)(1) withdrawals to open isolated federal mining claims (federal mining claims surrounded by State land that cannot be conveyed) located outside of the Steese National Conservation Area, Birch Creek WSR Corridor, crucial caribou and Dall sheep habitats, and riparian conservation areas to mineral location and entry.

Birch Creek CRMP (1983) – Electrical Transmission Lines

Action 16.1: New pipelines, electrical transmission lines, and similar transmission, distribution, or transportation systems may be permitted within or across the river corridor (ANILCA Sections 1102 - 1107)

Birch Creek CRMP (1983) – Non-Federal Land

Action 8.1: The area manager shall cooperate with non-Federal landowners to ensure that the purposes for which the river was designated are met to the greatest extent feasible and to ensure that non-Federal land owners are not unduly encumbered.

Action 8.3: The area manager shall cooperate with non-Federal landowners to ensure adequate and feasible access to their lands, subject to reasonable regulations to protect the natural and other values of the national wild river.

Action 8.4: Condemnations may not be used to acquire fee title to lands. Non-Federal lands and interests in lands adjacent to the river corridor boundary may be acquired through mutually acceptable and agreed upon exchanges, sales or donations (WSRA Section 6).

Steese ROD - Minerals

Goals: When authorizing fluid leasable minerals actions, to the extent possible, ensure that goals to protect other resource values in the planning area are met.

Goal: Maintain or enhance opportunities for mineral exploration and development, while maintaining other resource values.

Goal: When authorizing salable minerals actions, to the extent possible, ensure that goals to protect other resource values in the planning area are met.

Decision FL Min-1: Close approximately 1,237,000 acres in the Steese National Conservation Area, Birch Creek WSR, and riparian conservation areas to fluid leasable minerals.

Decision SL Min-1: Close approximately 1,237,000 acres in the Steese National Conservation Area, Birch Creek WSR, and riparian conservation areas to solid leasable minerals, including coal.

Decision L Min-1: The Steese National Conservation Area and Birch Creek WSR are withdrawn from mineral entry pursuant to ANILCA. Recommend to the Secretary of the Interior approximately 24,800 acres in riparian conservation areas and the Steese SRMA, which are outside of existing ANILCA withdrawals for the Steese National Conservation Area and Birch Creek WSR, be withdrawn from locatable mineral entry.

Decision L Min-6: Isolated federal mining claims located outside of the Steese National Conservation Area, Birch Creek wild and scenic river corridor, and riparian conservation areas are recommended open to locatable minerals.

Decision Min Mat-1: Close approximately 69,000 acres in the Birch Creek WSR Corridor to salable minerals.

Birch Creek CRMP (1983) - Minerals

Action 3.1: Mining claims properly located and maintained prior to inclusion in the Wild and Scenic Rivers System will be managed under the mining laws and 43 CFR 3809. Plans of operations required under 43 CFR 3809 will address a logical sequence of mineral development and extraction. Changes may be made at any time subject to approval of an amended plan of operations.

Action 3.2: Minerals rights-of-way applications will be administered as described in 43 CFR 2880.

Action 3.3: Improperly located mining claims will be adjudicated in a timely fashion.

Action 3.5: Mineral collection for personal recreation using only a gold pan, shovel, or other nonmotorized means is allowed in areas where there are no existing claims or private lands.

Steese ROD – Recreation

Goals: Provide for multiple recreational uses of the public lands. This includes facilitating a wide range of beneficial outcomes by managing for desired recreational activities, settings and experiences. This helps support local economic stability, while sustaining recreation resources and other sensitive resource values.

Decision Rec-1: Designate 1,246,000 acres of lands including the Steese National Conservation Area, the Birch Creek WSR Corridor and lands adjacent to the WSR corridor and the conservation area as the Steese Special Recreation Management Area (SRMA) and manage each recreation management zone (RMZ) to protect and enhance the activities, experiences, benefits and desired recreational setting characteristics.

Decision Rec-3: Develop a recreation area management plan for the Steese SRMA which includes monitoring and evaluation of visitor satisfaction, niche decisions, targeted outcomes, and setting character decisions, based on recreation management zone (RMZ) objectives and prescriptions.

Decision Rec-12: Birch Creek RMZ = 100,000 acres [some of these acres are outside of the Birch Creek WSR], semi-primitive recreation setting character, and limited off-highway vehicle area designation

Steese SRMA - RMZ 1 – Birch Creek RMZ:

- *Recreation management zone description:* The focus this zone would be to provide high quality, multi-day recreational float boat opportunities for users who desire a recreation experience characterized by solitude, tranquility, self-reliance, challenge, and risk in a semi-primitive Interior Alaska river setting, on one of America's nationally designated wild rivers.
- *Objective:* Participants in visitor assessments report an average 4.0 realization of the targeted experience and benefit outcomes listed in Table 12 (4.0 on a probability scale where: 1= not at all realized and 5= totally realized).
- Recreation setting character is Semi-Primitive. See Tables 8, 9, and 10 of Steese ROD and Approved RMP for a description of semi-primitive.

Table 12. Primary Targeted Experience and Benefit Outcomes in the Birch Creek Recreation Management Zone

Recreation Attribute	Outcomes
Activities	Primary: Float boating, river camping
Experiences	Primary: Escaping crowds; experiencing solitude; experiencing adventure; enjoying the sights, sounds, and smells of nature Secondary: Testing your abilities
Benefits	Personal: More exercise-oriented lifestyle; Greater connection with nature; Greater sense of adventure; Enhanced sense of competence Community/Social: Greater awareness of minimal impact recreation; Greater opportunities for youth Environmental: Heightened awareness of the natural world; Greater protection of fish and wildlife habitat Economic: Increased local tourism revenue

Source: Steese ROD and Approved RMP (2016)

Table 13. Implementation Framework Decision for Birch Creek Recreation Management Zone

Implementation Actions	Description
Management	The rivers and creeks within this zone would be managed to protect and enhance the qualities and characteristics that are found within a Semi-Primitive classification. The primary focus would be to manage this zone for non-motorized float-boating and river camping opportunities. Emphasis would be placed on providing semi-primitive recreation experiences by maintaining the naturally-appearing landscape, and by providing minimal facility development and visitor services, infrequent social encounters, restricted mechanized/motorized use, and minimal administrative presence.
Information and Education	Provide outreach to national, state and local float-boaters seeking a Semi-Primitive river recreation experience. Establish a relationship with stakeholders to reduce negative environmental impacts by promoting the principles of the Leave No Trace program.
Monitoring	Monitor and evaluate visitor satisfaction including niche decisions, targeted outcomes, and setting character decisions, based on Recreation Management Zone objectives and prescriptions.
Administrative	Apply administrative actions as needed to create and maintain semi-primitive recreation opportunities, targeted outcomes and setting character. OHV area designation: Limited. Specific limitations on OHVs to be developed through travel management planning. Travel management plan will be completed within five years of the ROD. General: Special Recreation Permits could be issued in conformance with the BLM guidance. New restrictions and/or facilities could be developed for the purposes of site protection, visitor safety, and/or enhancing targeted outcomes and setting character.

Source: Steese ROD and Approved RMP (2016)

Birch Creek CRMP (1983) – Visitor Management

Action 7.3: Permits are required for all commercial river guides and outfitters operating within the river corridor.

Birch Creek CRMP (1983) - Facilities

Action 6.2: The construction of new cabins or temporary structures such as for trapping may be authorized pursuant to a nontransferable, five-year special use permit issued by the Area Manager.

Steese ROD – Travel Management

Goals: Provide opportunities for a range of motorized and non-motorized uses on public lands while protecting resources and minimizing conflicts among various users

Decision TM-1: Designate all lands in the planning area as Limited to motorized travel activities (43 CFR 8340.0-5(f), (g) and (h)). Develop specific limitations through transportation and travel management planning.

Decision TM-2: The following would be exempt from OHV decisions: any fire, military, emergency, or law enforcement vehicle used for emergency purposes; and any vehicle whose use is expressly authorized by the Authorized Officer, or otherwise officially approved (43 CFR 8340.0–5).

Decision TM-4: Where off-road vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historic resources, threatened

or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. (43 CFR 8341.2)

Decision TM-8: Establish interim management prescriptions until completion of the Travel Management Plan: including the addition of the following limitations:

- Implement a 1,000 pound curb weight and 50 inch width limitation for snowmobiles to replace 1,500 pound GVWR limitation in the Steese National Conservation Area and Birch Creek WSR corridor.
- Implement a 1,000 pound curb weight limitation and 50 inch width for summer OHVs to replace 1,500 pound GVWR limitation in the Steese National Conservation Area.

Birch Creek WSR: Allow use of motorboats, hovercraft, and airboats without specific authorization.

Steese Approved Travel Management Plan – Travel Decisions

Goal: Provide and improve sustainable access for public needs and experiences

Goal: Protect natural and cultural resources and settings

Goal: Promote the safety of public land users

Goal: Minimize conflicts among the various users of public lands

Goal: Improve information on the nature, timing, and location of resource and safety concerns to improve preventive strategies and result in more effective and timely law enforcement response.

Goal: Increase the presence of non-BLM law enforcement, including the Alaska State Troopers and Alaska Wildlife Troopers, as well as the Service Law Enforcement Office.

Goal: Improve and expand interagency cooperation in the area.

Goal: Increase law enforcement capacity, including the use of new technology, modelling, and specific strategies.

Goal: Encourage educational and monitoring efforts by volunteer user groups and citizen-based education groups, which can increase law enforcement educational efforts.

Goal: Staffing with personnel trained to answer the phones, speak to the public, and conduct on-site public outreach. Staff will be supplied with information regarding the TMP, implementation strategy, and implementation status. This information could include talking points regarding travel management decision-making so that visitors will receive consistent messages.

Decision: Designated Travel Management Zone 1:

- Summer: OHV Closed (i.e., no summer cross-country or managed routes).
- Winter: OHV cross-country travel is allowed for snowmobiles 1,000 pounds curb weight or less and a maximum of 50 inches in width. All other OHVs are limited to managed routes, if present.

Birch Creek CRMP (1983) – Transportation

Action 1.1: Overland transportation systems within or across the river corridor may be authorized if it is determined that there are no economically feasible and prudent alternative routes.

Action 1.2: Access to mining claims located prior to ANILCA and with acceptable proof of discovery will be managed under existing regulations in 43 CFR 3809.

Action 1.4: A program will be established to monitor the effects of vehicle use within the river corridor boundary.

Action 1.5: The Bureau will work cooperatively with the State of Alaska to identify all rights-of-way claimed pursuant to RS2477 within the river boundaries for administrative purposes.

Action 2.1: Construction of new public landing strips within the river corridor may be allowed if there is an identified and significant public need.

Action 2.2: Landing of fixed-wing or rotary wing aircraft is permitted in the river corridor without specific authorization.

Steese ROD – Wild and Scenic Rivers

Goals: Protect outstandingly remarkable river-related values, water quality, and free-flowing condition of rivers designated as components of the National Wild and Scenic Rivers System.

Decision WSR-1: Manage Birch Creek according to the BLM Manual 6400 – Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation and Management and ANILCA.

Decision WSR-2: Manage Birch Creek to protect and enhance the Outstandingly Remarkable Values, water quality and free-flowing condition, and maintain the river's classification.

Decision WSR-3: Revise or amend the existing Birch Creek River Management Plan to incorporate resource protection decisions from this ROD, and to address development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of the Wild and Scenic Rivers Act.

Birch Creek CRMP (1983) – Historic and Archaeological Resources

Action 13.1: Prepare and maintain an inventory of historic and archaeological values within the river corridor.

Action 13.2: Protect significant cultural resources and mitigate impacts on sites which may adversely be affected by activities within the river corridor.

7 Appendix B: Alternative C Standard Operating Procedures for Special Recreation Permits

Under Alternative C, all SRPs would be subject to the following standard operating procedures:

- Limit the group size to 12 persons.
- Clean all equipment, including boot soles, rafts, and tents, to assure they are free of nonnative seeds and plant parts before beginning the trips. Also, be reminded that all footwear with felt or fibrous soles is no longer allowed for sport fishing or hunting in Alaska's waters (http://www.adfg.alaska.gov/static/species/nonnative/invasive/pdfs/felt_soled_waders_faq.pdf).
- Retrieve or deal with all trash and human waste accordingly using established facilities or by "Leave No Trace" guidance. Use a portable toilet system.
- Use campsites with human or naturally hardened sites. Clean camp areas of all litter before departure.
- Respect wildlife: Do not feed animals and avoid disturbing them from natural activities. Take all reasonable precautions to avoid attracting wildlife to food and garbage. Remove garbage and properly dispose of it to prevent habituation of wildlife or alteration of populations. The BLM also recommends the use of bear-proof and/or odor-proof containers to prevent habituation of bears and other wildlife.
- Limit firewood collection to dead and down wood. Scatter all dead ashes, preferably on the gravel bars or rocky areas. Likewise, scatter all leftover wood around the area.
- Avoid camping in areas that result in disturbance of nesting birds of prey (raptors). Some nesting raptors (such as peregrine falcons and bald eagles) will often indicate disturbance by vocalizing loudly, and they often circle above people; however, gyrfalcons and golden eagles typically will not. Minimize human activity and avoid camping within 500 yards of nests for bald and golden eagles, peregrine falcons, and gyrfalcons. Nesting season is April 15 through August 15 for bald and golden eagles and March 15 through July 20 for gyrfalcons.
- Conduct all operations in such a manner as not to cause damage or disturbance to any archaeological or paleontological resource, or places of cultural or religious significance. The Antiquities Act (1906), National Historic Preservation Act (1966), Federal Land Policy and Management Act (1976), Archaeological Resources Protection Act (1979), Paleontological Resources Preservation Act (2009), and general United States property laws and regulations all prohibit the appropriation, excavation, collection, sale, or destruction of any historic properties or objects, or vertebrate fossils situated on lands owned or controlled by the federal government (54 USC 320302, 54 USC 300101 et seq., 43 USC 1701 et seq., 16 USC 470aa–470mm, 16 USC 470aaa, 43 USC 1733(a), 18 USC 1361, 18 USC 641, and 43 CFR 8365.1). These include both prehistoric and historic archaeological sites and associated artifacts, including, but not limited to, stone tools, modified bone, antler, ivory, or wood material; campfire rings; stone cairns; cabins, other structures, and their ruins; mining equipment; refuse dumps; and vertebrate fossils (the bones of prehistoric animals). Should any such site be discovered during the course of field operations, avoid impacting the location and materials, immediately notify the BLM Authorized Officer, and provide the global positioning system coordinates and photographs of the identified resource(s).

- BLM Alaska Standard Stipulations for Invasive Plant Species Management:
    - Ensure all equipment, vehicles (for example, trucks, trailers, watercraft, and aircraft), and gear are free of visible soil, seeds, and vegetative parts before deploying to the project site and before moving from areas of known noxious invasive plant infestations.
    - For operations in waterbodies, when moving equipment or personnel through waterbodies on the way to the project site or before transporting watercraft and aquatic gear (that is, hip boots, waders, and bait containers) to the authorized use area:
        - Remove any aquatic plants, animals, and mud attached to the watercraft and equipment.
        - Drain water from the boat, motor, bilge, live wells, and bait containers, and spray all watercraft and equipment with high-pressure water or dry them for at least 5 days.
        - Report the species, location, and size of infestation (number of plants/area of infestation) of any nonnative or invasive plants that are incidentally observed to the BLM Authorized Officer.

8 Appendix C: Birch Creek Wild and Scenic River Draft Comprehensive River Management Plan

NATIONAL CONSERVATION LANDS

October 2023

Birch Creek Wild and Scenic River

Draft Comprehensive River Management Plan

Introduction

Background

The Birch Creek Wild and Scenic River (WSR) was designated by the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) on December 2, 1980. The Bureau of Land Management (BLM) Eastern Interior Field Office (EIFO) managed the WSR according to the 1983 River Management Plan for the Birch Creek WSR (BLM 1983).

Federal agencies charged with the administration of the National Wild and Scenic Rivers System (NWSRS) are required to prepare a comprehensive river management plan (CRMP) for designated river segments under the Wild and Scenic Rivers Act of 1968 (WSRA), Section 3(d)(1). With this CRMP, the BLM EIFO is updating and superseding the 1983 River Management Plan. This update incorporates the provisions of several federal regulations promulgated since the adoption of the 1983 River Management Plan. The CRMP also considers conditions in the Birch Creek WSR Corridor that have changed since 1983. Finally, the CRMP also address EIFO planning efforts since 1983 that relate to activity in the Birch Creek WSR Corridor.

The primary goal of this CRMP is to provide management direction for protecting and enhancing the river values for Birch Creek. The CRMP will more clearly document the river corridor boundary with enhanced mapping. It also will establish management direction, user capacities, monitoring, and other management practices necessary to protect and enhance the river values (the river's free-flowing condition, water quality, and outstandingly remarkable values [ORVs]).

The Birch Creek WSR is a 111.14-mile portion of the Ikhèenjik River. The name Birch Creek was given to the subject stream in the mid-1800s by traders of the Hudson's Bay Company at Fort Yukon. Birch Creek was the official name used by the US government for the entire river until 1980, when ANILCA established the Birch Creek WSR on a portion of the 341.93-mile-long stream. On March 9, 2017, the US Board on Geographic Names changed the official name of the entire stream to "Ikhèenjik River" in recognition of its Gwich'in name. That renaming of the stream did not change the name of the congressionally designated WSR. In this document, "Birch Creek WSR" is used to refer to the designated WSR, the surrounding corridor, and the watershed that drains into the corridor. "Ikhèenjik River" is used to refer to the stream as a whole and the watershed that drains into it.

The Birch Creek WSR was designated under ANILCA. The original estimate of its length in the 1983 River Management Plan was126 miles. More recently, using current geographic information system tools and the US Geological Survey (USGS) National Hydrography Dataset, the centerline for the Birch Creek WSR was determined to be 111.14 miles. This does not include all braided sections of the Birch Creek WSR.

The WSRA mandates that each component of the NWSRS be managed to protect and enhance the values that caused it to be included in the system. No explicit list of values is provided in the designating legislation for the Birch Creek WSR. However, the legislation was informed by a 1975 environmental impact statement (EIS; US Department of the Interior 1975). Excerpts from that EIS give a clear sense of why Birch Creek was included in the system, as well as what made it suitable for a wild classification rather than a scenic or recreational classification. While these are not binding for the CRMP, the description of the river values at the time and the assumptions

made about management needed to protect those values provide informative context for the current CRMP development.

Purpose of the Birch Creek CRMP

The Birch Creek CRMP will establish the overall management direction for the Birch Creek WSR. It will establish management direction to protect and enhance the ORVs, free-flowing condition, and water quality for the designated WSR, leaving it unimpaired for future generations. The Birch Creek WSR has scenic, recreation, and fisheries ORVs. In addition, the Birch Creek WSR is designated as wild because it is free of impoundments; it is generally inaccessible, except by trail; and the watersheds and shorelines are essentially primitive with unpolluted waters.

The purpose of the Birch Creek CRMP is to implement the direction of the WSRA. The WSRA states each component of the NWSRS shall be administered in such a manner as to protect and enhance the values that caused it to be included in the NWSRS. Management plans for any such component may establish varying degrees of intensity for the protection and development, based on the special attributes of the area.

The CRMP will establish a detailed river corridor boundary and describe existing resource conditions, including a detailed description of the ORVs. It will define goals and desired conditions for protecting the river values, address resource protection and development of lands and facilities, address user capacities, and address water quality issues and instream flow requirements. CRMP development involves a collaborative approach that is coordinated with—and may be incorporated into—resource management planning for affected adjacent federal lands. The CRMP is prepared after consultation with Tribes, state and local governments, and the interested public. Also, the CRMP will identify the regulatory authorities of other governmental agencies that assist in protecting river values, and it will include a monitoring strategy to maintain desired conditions. If managers determine that action is needed to maintain or enhance these values, additional environmental review may be required at that time.

The documentation and analysis that support and expand on the information contained in this management plan include:

- Birch Creek Wild and Scenic River Comprehensive River Management Plan and Environmental Assessment Scoping Summary Report (October 2023)
- Final Comprehensive River Management Plan and Environmental Assessment
- Finding of No Significant Impact Statement for Birch Creek Comprehensive River Management Plan

Planning Context

Wild and Scenic Rivers Act

The WSRA was passed in 1968 with the goal of preserving free-flowing rivers with outstanding natural, cultural, and recreational values. The WSRA is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. Section 3(d)(1) of the WSRA requires the federal agency overseeing the designated WSR to prepare a CRMP to provide protection for the river's values. The CRMP must address resource protection, development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of the WSRA. The CRMP

must be coordinated with, and may be incorporated into, resource management planning for affected adjacent federal lands. In addition, the CRMP is prepared after consultation with Tribes, state and local governments, and interested parties. Section 10(b) of the WSRA requires that the administering agency protect and enhance the values for which the river was designated (water quality, free flow, and outstandingly remarkable values).

Alaska National Interest Lands Conservation Act

The ANILCA designated 100 million acres of federal land in Alaska as new or expanded conservation system units. These conservation units include national parks and preserves, national wildlife refuges, designated wilderness areas, and WSRs. The ANILCA specifically designated the 1.2 million-acre Steese National Conservation Area (NCA) to protect the area's special values within the framework of a program of multiple use and sustained yield and for the maintenance of environmental quality. It also classified a segment of Birch Creek as a wild river pursuant to the WSRA. According to the WSRA, a wild river is "a river or segment of a river that is free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America."

The ANILCA established the upper portion of Birch Creek as a component of the NWSRS to be administered by the Secretary of the Interior through the BLM. Subject to prior existing rights, the ANILCA designated Birch Creek as a WSR. The ANILCA also directed the Secretary of the Interior to establish detailed boundaries, prepare a management and development plan, and present this information to Congress by December 2, 1983. In response to this directive, the 1983 River Management Plan was developed, and it established the detailed boundaries and management policies for Birch Creek.

ANILCA, Title VIII, Section 810 (Public Law 96-487), subtitled Subsistence and Land Use Decisions, outlines the requirements for addressing impacts on subsistence uses of resources in the federal land use decision-making process in Alaska. An ANILCA Section 810 Evaluation is required for any decision to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands under any provision of law authorizing such actions.

Omnibus Public Lands Management Act

The Omnibus Public Lands Management Act of 2009 created the National Landscape Conservation System (NLCS) "to conserve, protect, and restore nationally significant landscapes with outstanding cultural, ecological, and scientific values for the benefit of current and future generations." It made all BLM-administered WSRs, including the Birch Creek WSR, components of the NLCS, and subject to policy in BLM Manual 6100, NLCS Management Manual, to the extent the policy is consistent with the ANILCA.

1983 River Management Plan for Birch Creek WSR

The 1983 River Management Plan is the original guiding management document for the Birch Creek WSR, as directed by the ANILCA. While ORVs were not identified through the 1983 River Management Plan, management actions included the WSR corridor and provided a blanket level of protections to resources that contributed to the designation. Management objectives included protecting valid existing rights and future rights granted pursuant to appropriate federal and state laws; preserving the Birch Creek WSR and its immediate environment in a natural, primitive condition; preserving its free-flowing condition; protecting water quality; providing a

high-quality primitive recreational opportunity; providing opportunities for interpretive, scientific, educational, and wildlands-oriented uses; assuring protection of historic and ecological values; and maintaining and improving fish and wildlife habitats.

This CRMP is intended to replace the 1983 River Management Plan and provide revised management objectives to protect and enhance the since-identified ORVs, wild classification, and free-flowing status from current and future impacts.

Steese Record of Decision and Approved Resource Management Plan

The Steese Record of Decision (ROD) and Approved Resource Management Plan (RMP) covers the Steese planning area, which includes approximately 1,267,000 acres of BLM-administered land in Alaska's Eastern Interior. This overarching RMP developed goals, objectives, land use allocations, and management actions for natural resources within the Steese NCA. The RMP included decisions on revising or amending the 1983 River Management Plan to better protect the Birch Creek WSR and achieve the goals of the WSRA. It also identified ORVs for the Birch Creek WSR. Scenery, recreation, and fisheries were determined to be the ORVs and thus were identified as the Birch Creek WSR's ORVs.

BLM special status species include species listed under the Endangered Species Act and species that are designated as BLM Alaska sensitive species by the BLM state director. BLM Manual 6840 outlines the management of these species and their habitats, where they are found on BLM-administered lands. The BLM's emphasis of special status species management is an ecosystem management approach that attempts to reduce the likelihood that any native species would be elevated to BLM sensitive species status. Additionally, this approach initiates proactive conservation measures that reduce or eliminate threats to existing BLM Alaska sensitive species to minimize the likelihood of a species being listed under the Endangered Species Act. Listed species can be found in the 2016 Eastern Interior RMP and EIS.

Approved Travel Management Plan for the Steese Travel Management Area

As stated in the Steese Travel Management Plan (TMP), the Steese Travel Management Area is north of Fairbanks, Alaska. It is situated both north and south of the Steese Highway. It is adjacent to the Yukon Flats National Wildlife Refuge, Yukon-Charley Rivers National Preserve, White Mountains National Recreation Area, and State lands.

The Steese NCA is a component of the BLM's NLCS. The mission of the NLCS is to conserve, protect, and restore nationally significant landscapes recognized for their outstanding cultural, ecological, and scientific values. The Birch Creek WSR starts and ends outside the Steese NCA. It is managed according to the WSRA with limits to access and transportation identified in the Steese TMP. During the summer, the Birch Creek WSR Corridor is closed to unpermitted OHVs (that is, no summer cross-country OHV use). During the winter, OHV cross-country travel is allowed for snowmobiles that are 1,000 pounds curb weight or less and a maximum of 50 inches in width. All other OHVs are limited to managed routes, if present (BLM 2022a). These limitations do not apply to the use of snowmobiles, motorboats, and airplanes for traditional activities and travel to and from villages and homesites, per Section 1110 of ANILCA and implemented through regulations at 43 Code of Federal Regulations (CFR) 36.

Federal Subsistence Management Program

The Federal Subsistence Board is the decision-making body that oversees the Federal Subsistence Management Program, which is a multi-agency effort to provide the opportunity for a subsistence way of life by rural Alaskans on federal public lands and waters while maintaining healthy populations of fish and wildlife. In accordance with 36 CFR 242.10(d)(6) and 50 CFR 100.10(d)(6), the Federal Subsistence Board "may delegate to agency field officials the authority to set harvest and possession limits, define harvest areas, specify methods or means of harvest, specify permit requirements, and open or close specific fish or wildlife harvest seasons within frameworks established by the board."

Currently, the BLM EIFO manager is delegated the authority (delegation letter from the Chair of the Federal Subsistence Board to the BLM EIFO Manager on December 1, 2020) "to modify or restrict harvest limits, including sex restrictions, season dates, and methods and means for caribou on Federal public lands in Units 20E, 20F and 25C," as well as "to close and reopen Federal public lands to nonsubsistence hunting." The delegation is to be exercised only when necessary to conserve caribou populations; to continue subsistence uses, for reasons of public safety; or to assure the continued viability of the populations. In practice, this means the BLM establishes season and bag limits for the Fortymile and White Mountains caribou herds. Those decisions are made in consultation with the Alaska Department of Fish and Game (ADF&G), as well as the National Park Service, the US Fish and Wildlife Service, and the Eastern Interior Subsistence Advisory Council.

The BLM is required by the ANILCA to consider the management alternatives' potential impacts on subsistence activities, subsistence resources, or access to subsistence activities. Section 810 of ANILCA outlines the requirements for addressing impacts on subsistence uses of resources in the decision-making process for federal land use in Alaska. Appendix J of the 2016 Eastern Interior RMP and EIS includes the evaluations and findings within the Steese Subunit of the planning area per Section 810(a) of ANILCA. The EA included an analysis of alternatives for the subsistence uses of resources within the Birch Creek WSR corridor.

Summary of Consultation and Coordination

The BLM formally and informally coordinated and consulted with other federal agencies, State and local governments, Native American Tribes, and the interested public.

The federal government works on a government-to-government basis with federally recognized Tribes and ANCSA Corporations because they are recognized as separate governments. As a matter of practice, the BLM coordinates with all Tribal governments, associated Native communities, Native organizations, and Tribal individuals whose interests might be directly and substantially affected by activities on public lands.

In addition, Section 106 of the NHPA requires federal agencies to consult with Native American Tribes for undertakings on Tribal lands and for historic properties of significance to the Tribes that may be affected by an undertaking (36 CFR 800.2(c)(2)). The BLM Manual 1780, Tribal Relations, and BLM Handbook H-1780-1, Improving and Sustaining BLM-Tribal Relations, provide guidance for Native American consultations. EO 13175 stipulates that during the National Environmental Policy (NEPA) process, federal agencies must consult with Tribes identified as being directly and substantially affected.

Consultation with the State Historic Preservation Office (SHPO) was not necessary for the CRMP, according to the "Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management in Alaska" (signed February 2014). It states each field office responsible for preparing or amending a land use plan/RMP or an EIS will, when beginning its planning effort, invite the SHPO to participate for the purpose of identifying issues that should be addressed. The BLM will invite the SHPO to comment on any proposed cultural resource use allocations, whether these are made in regional, local, or project plans. Field offices will send all draft and final RMPs, plan amendments, EISs, and activity plans that involve or affect cultural resources to the SHPO for review and comment. Because cultural resources were not going to be affected in any way by the CRMP, let alone assigned use allocations to any of them, the BLM concluded that consultation with this particular planning effort was not required.

Cooperating agencies, Tribes, and ANCSA Corporations work with the BLM by sharing knowledge and resources to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks. The BLM invited Tribes to a government-to-government consultation for the CRMP/EA in a letter dated December 28, 2022. Tribes invited included the Birch Creek Tribe; Circle Tribal Council; Danzhit Hanlaii Corporation; Doyon, Limited; and Tiheet' aii, Incorporated. None of the Tribes elected to participate.

A cooperating agency is any federal, state, or local government agency or Native American Tribe that enters into formal agreement with the lead federal agency to help develop an environmental analysis. The BLM invited the State of Alaska, Yukon Flats National Wildlife Refuge, US Fish and Wildlife Service, Yukon-Charley Rivers National Preserve, Chalkyitsik Village, Chalkyitsik Native Corporation, Native Village of Fort Yukon, and Gwitchyaa Zhee Corporation to be cooperating agencies in a letter dated December 28, 2022. Agencies that signed memoranda of understanding to participate as a cooperating agency were the National Park Service, the State of Alaska, and the US Fish and Wildlife Service. The BLM solicited cooperating agencies to provide input and feedback on the purpose and need statements and alternatives. Specifically, the BLM:

- Conducted a meeting on January 26, 2023, with potential cooperating agencies to describe the CRMP process.
- Provided cooperating agencies with the draft purpose and need statements, draft themes for the alternatives, draft alternatives, and draft scoping summary report for the CRMP/EA on March 20, 2023, to review and provide input and feedback.
- Conducted a meeting on April 26, 2023, to describe how the BLM addressed input and feedback on the draft purpose and need statements, draft themes for the alternatives, and draft alternatives.
- Conducted a meeting on May 4, 2023, to describe how the BLM addressed input and feedback on the alternatives.
- Provided cooperating agencies with an internal review Draft EA on June 23, 2023, to review and provide input and feedback.

Summary of Public Participation

In developing the CRMP/EA, the BLM solicited public input during the public scoping period. The BLM's public outreach and collaboration are ongoing, and they will continue throughout the development of the CRMP/EA.

Through the CRMP project ePlanning website, the BLM announced that the scoping period would occur from January 5, 2023, to February 4, 2023. Also, on January 17, 2023, from 5:00 to 7:00 p.m., the BLM held a virtual scoping meeting that was open to the public to learn more about the CRMP/EA. Comments and information could be submitted. The meeting began with a presentation by the BLM about the Birch Creek WSR and CRMP process. It was followed by a question-and-answer period and then a comment submission period.

All comment submissions received on or before February 4, 2023, were evaluated and considered in the scoping summary report. However, the BLM still considered comments received after this date in developing the CRMP and EA. The report provides an overall summary of the types of comments received during the 30-day comment period related to each issue.

Comments were received from individuals; ANILCA Implementation Program; Council of Athabascan Tribal Governments; and Doyon, Limited during the public scoping period. Substantive comments were entered into the comment application and response application database for analysis. Substantive comments were categorized into 20 issue categories.

Regional Setting and River Values

This section establishes the baseline conditions of the river values that contributed to Birch Creek's designation within the NWSRS. The river values for each creek include free flow, water quality, and ORVs.

River Setting Description

Birch Creek WSR was designated in 1980 through the ANILCA. The Birch Creek WSR begins approximately 1 mile upstream from the confluence of Twelvemile and Birch Creeks, near mile 94 on the Steese Highway (**Figure C-1**, Birch Creek Wild and Scenic River). Current hydrography data and mapping technology indicate a distance of 111.14 river miles. Approximately 77 miles of the Birch Creek WSR flow through the Steese NCA, which also was established by the ANILCA.

The Birch Creek WSR Corridor segment is defined as a 0.5-mile buffer from the ordinary high-waterline surrounding the length of the segment. Due to the limited levels of development within the Birch Creek WSR Corridor at the time of designation, the entire Birch Creek WSR Corridor was classified as wild due to its isolated, primitive nature.

The Birch Creek WSR is primarily in very remote and undeveloped sections of the Steese NCA. However, portions of the Birch Creek WSR are adjacent to the Steese Highway, Native lands, and privately owned parcels in its lower reaches near Circle, Alaska. Approximately 97 percent of the Birch Creek WSR Corridor is administered by the BLM.

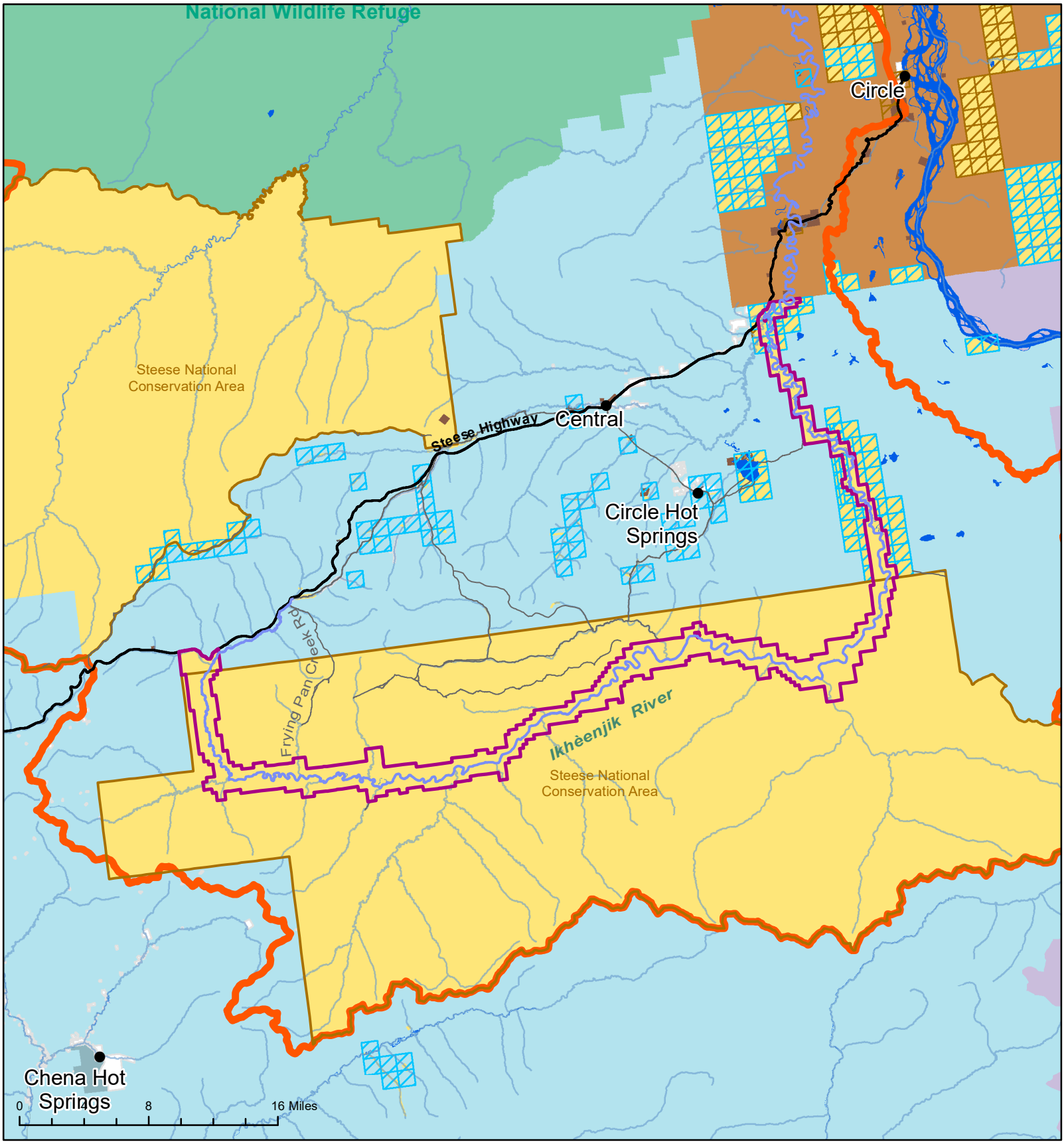

Figure C-1. Birch Creek Wild and Scenic River

- Wild and scenic river corridor
- Ikhèenjik River
- Ikhèenjik River watershed boundary
- National Conservation Area
- State Selected
- Native Selected
- Bureau of Land Management
- Air Force (less than 1 acre)
- Fish and Wildlife Service
- National Park Service
- State
- Local Government
- Native Allotment
- Native Lands
- Private
- Water

Data Source: BLM GIS 2022
Print Date: 06/01/2023

Free-Flowing Condition

The Ikhèenjik River is a perennial clear-water stream that flows about 340 miles from its headwaters near Eagle Summit, through remote private, State, and federal land in Interior Alaska. Flows increase and decrease rapidly in response to rainfall or rapid snowmelt events; this is because the relatively steep slopes, thin soil cover, and permafrost in the watershed have a low capacity for retaining precipitation or meltwater (Kennedy and Langley 2007).

The Birch Creek WSR is free flowing along its entire length and does not contain any impoundments, diversions, or riprap that interfere with its free flow. There are no road crossings.

The Birch Creek WSR watershed has experienced major stream-disturbing activities, like placer mining, for over a century (Kennedy and Langley 2007). The BLM, in cooperation with the USGS, has been monitoring daily stream flow and periodic water quality measurements since 2008 on placer-mined streams including upper Birch Creek WSR and Nome Creek. The intent is to determine if water quality and water chemistry downstream of previously mined areas comply with Alaska water quality standards. Preliminary results indicate that at moderate to low stream flows, mined streams now typically meet Alaska water quality standards. Some sections of stream channel in the Birch Creek WSR and Nome Creek have ongoing reclamation efforts (BLM 2016a).

Alaska has experienced a significant increase in annual average temperatures since the late 1970s, with temperatures rising at approximately 0.7 degrees Fahrenheit per decade (US Global Change Research Program 2018). Statewide temperatures have increased by about 3 degrees Fahrenheit since 1925, with accelerated warming observed since 2013 (National Oceanic and Atmospheric Administration 2023). As air temperatures rise, stream temperatures are predicted to increase due to glacial melt, loss of snowpack, thawing permafrost, and changes in stream flow (Sjöberg 2021; Blaskey 2023).

Water Quality

Stream segments not meeting water quality standards for designated uses for one or more pollutants are placed on the Section 303(d) list of water quality-impaired waterbodies, as required by the federal Clean Water Act. Approximately 1 mile of Birch Creek WSR is listed as impaired, Category 4A, for turbidity (BLM GIS 2023b).

Several tributaries in the Birch Creek WSR are on the Section 303(d) list of water quality-impaired waterbodies, because they exceed water quality standards (ADEC 2008). There are approximately 88 miles of streams listed as impaired, Category 4A, for turbidity, located upstream of the Birch Creek WSR Corridor (BLM GIS 2023b). Upper Birch Creek WSR is the only stream on BLM-administered lands on the 303(d) list. The Environmental Protection Agency (EPA) issued a TMDL for total suspended solids to meet water quality standards for turbidity (EPA 1996; BLM 2016a).

The Birch Creek WSR watershed has experienced major stream-disturbing activities, like placer mining, for over a century (Kennedy and Langley 2007). The State of Alaska regulates state mining claims in the watershed. State law requires miners to conduct mining operations in a manner that prevents unnecessary and undue degradation of the land and water resources, and to return the mined ground to a stable configuration to prevent erosional degradation and promote

regrowth by native plant species. However, the ADEC website[18] specifically lists placer mining as the cause for impaired streams in the headwaters of Birch Creek. So, while conditions seem to be improving, the State's regulation of mining has not been sufficient to keep the impact within legal standards to date (EPA 1996).

Instream Flow Requirements

One of the primary goals of the WSRA is to protect selected rivers in their free-flowing condition for the benefit of future generations. Section 13(c) of the WSRA recognizes the importance of instream flow protection through the establishment of a federal reserved water right for each designated river to accomplish the purposes of the WSRA. It is the BLM's policy to use the State's appropriate instream water rights process to protect the flow-dependent ORVs. The WSRA directs river managers to take steps within their authority to protect the instream flows necessary to protect and enhance the water quality and ORVs. The use of the term instream flows simply refers to the amount of water flowing in a river (Interagency Wild and Scenic Rivers Coordinating Council 2022).

Under Action 5.1 in the 1983 River Management Plan for Birch Creek WSR, a reservation of minimum water flows sufficient for public recreation use and to support the values for which the wild river was designated, would be determined in cooperation with the Alaska Department of Natural Resources, Division of Mining, Land, and Water. Also, the 7250 – Water Rights Manual (BLM 2013) establishes policy and guidance for the BLM in locating, perfecting, documenting, and protecting BLM-administered water rights, which are considered property rights, necessary to manage and conserve the economic and resource values of the public lands. The BLM's goal is to provide enough instream flow to protect and enhance the watershed resources, particularly fish, recreation activities, and scenery.

The Federal Land Policy and Management Act provides the BLM with the authority to apply for and acquire water reservations for beneficial uses on public lands. This CRMP would not impact any existing water rights or appropriation for Birch Creek. A study was conducted between 1989 and 1994 to document average monthly stream flow for six contiguous stream segments encompassing the Birch Creek WSR Corridor (BLM 1996). Findings from the study were used by an interdisciplinary team to develop recommended monthly average instream flows necessary for the protection of valued Birch Creek WSR resources. In 2001, the BLM filed an instream flow water reservation application with the State of Alaska for the right to reserve these recommended monthly average instream flows (BLM 2001). While the application has not yet been adjudicated, the application approval date (January 11, 2011) for Birch Creek WSR is the priority date for adjudication. Any subsequent water rights applications that may impact streamflow would be secondary to the 2001 application.

The requested monthly instream flows values, summarized in **Table C-1**, are reported in cubic feet per second for each of the six stream segments included in the 2001 instream flow water reservation application. The requested instream flows would continue.

[18] https://dec.alaska.gov/media/11013/2014-16-integrated-report-final.pdf

Table C-1. Recommended Instream Flow Values by Month for Six Locations, Birch Creek WSR (discharge in cubic feet per second)

Month	Above Twelvemile Creek	Below Twelvemile Creek	Above Clums Fork	Above Harrison Creek	Below South Fork	Steese Highway Bridge
January	1	2	2	5	8	15
February	1	2	2	5	8	15
March	1	2	2	5	8	15
April	15	25	40	80	120	200
May	180	300	400	800	2,000	2,000
June	130	250	400	800	1,500	2,000
July	45	130	200	400	600	500
August	45	130	200	400	600	500
September	45	130	200	400	600	500
October	15	25	40	80	120	200
November	10	25	40	80	120	200
December	1	2	2	5	8	15

Source: BLM 2001

Section 7 of the WSRA (16 U.S.C. 1278), as amended, provides for the protection of the free-flowing condition. The BLM follows WSRA Section 7 procedures to determine if projects above or below, within the Birch Creek WSR or on its tributary streams, would unreasonably diminish the free-flowing condition or ORVs in the WSR Corridor. If the project is found to have a direct and adverse effect on the values of the Birch Creek WSR, project redesign and resubmittal for a subsequent Section 7 determination is advised as part of adaptive management.

The current water quantity monitoring strategy for the Birch Creek WSR is to operate long-term stream gage stations, recording daily water level and discharge, at the beginning and end of the Birch Creek WSR. Additional discrete streamflow measurements are collected every 1-3 years during float trips at the confluence of major tributaries to monitor tributary flow contributions. Stream gage monitoring data are critical for acquiring and protecting state and/or federal reserved water rights, and they are essential to developing strategies that protect aquatic habitat, water-dependent ORVs, and riverine processes (channel maintenance). Streamflow monitoring is in cooperation with the US Geological Survey (USGS) and National Weather Service. Adaptive management involves understanding the baseline rates, volume, and timing of surface water flow that is an essential aspect of determining the extent to which future management actions may protect and/or enhance streamflow and water-dependent ORVs.

Outstandingly Remarkable Values

ORVs are typically identified in a study prior to WSR designation, but Birch Creek WSR was designated by the ANILCA without these specific values identified by Congress. The 2016 Eastern Interior Proposed RMP/Final EIS, Appendix E Wild and Scenic Rivers Inventory (BLM 2016a) contains an assessment of ORVs for Birch Creek WSR, and the 2016 Steese ROD (BLM 2016b) established recreation, scenic, and fisheries as ORVs for Birch Creek WSR.

Scenery

The BLM manages visual resources through the BLM's VRM system. The VRM program provides a nationally consistent way of inventorying, planning, and managing public lands. Visual management objectives (classes) are developed through the RMP process for all BLM-

administered lands. These VRM classes describe the limits of allowable visual change to the characteristic landscape (BLM 2022b). VRM classes are based on conditions such as scenic quality, viewing distance zones, and viewer sensitivity levels.

The Birch Creek WSR Corridor, which is classified as wild, lies within the Yukon-Tanana Uplands. It is VRM Class I and it has a scenic quality of "A." The objective of VRM Class I is to preserve the existing character of the landscape. VRM Class I provides for natural ecological changes; however, it does not preclude very limited management activities. The level of change to the characteristic landscape should be very low and it should not attract attention (BLM 2016b).

The upper reach of Birch Creek WSR features a narrow and winding canyon, surrounded by birch and spruce upland and offering occasional glimpses of historic structures. At the confluence with Harrington Creek, the channel widens and reveals a backdrop of low rounded hills and mountains. In this section of river, rapids over an 8-mile stretch, outcropping bedrock, diverse vegetation types, and gravel bars with shrubs and debris create visual contrast and provide points of interest. This section also offers more opportunities to catch glimpses of historic cabins and hike to higher elevations for stunning views of the river system. The lower section enters the Yukon Flats, where the river valley widens for miles and the river meanders with numerous channels with broad gravel bars and unique features like cliff areas and lodged trees. Varied vegetation and changing views add to the scenic experience (BLM 2016a).

Birch Creek WSR exhibits diverse topography, transitioning from a headwater stream to a mature river with meandering bends and braided systems. A segment of 8 miles showcases intermittent bedrock, rapids, and contrasting visuals with vegetation, gravel bars, and water. The changing views include foreground hills, middle distant mountains, and broad flats, providing a mosaic of backdrops for floaters. Few historic structures and cabins blend with the landscape, offering points of interest. The area has a variety of vegetation types and seasonal colors exemplary to Interior Alaska. Because of these characteristics, the scenic value of Birch Creek WSR was found to be outstandingly remarkable (BLM 2016a).

(Additional information is available in Section E.2.1., Outstanding Remarkable Values for Birch Creek of the Eastern Interior Proposed RMP/Final EIS, Appendix E Wild and Scenic Rivers Inventory [BLM 2016a]).

Recreation

Birch Creek was congressionally designated as a WSR in 1980 as part of the ANILCA. Recreation is one of the ORVs that supported WSR designation, along with scenic and fisheries. It also facilitates multiple recreational experiences within the Steese NCA in central Alaska. The Steese ROD and Approved RMP designated the Birch Creek recreation management zone (RMZ), with the goal of providing high quality, multi-day recreational float boat opportunities for users who desire a recreation experience characterized by solitude, tranquility, self-reliance, challenge, and risk in a semiprimitive Interior Alaska river setting (BLM 2016a). Characteristics of the semiprimitive recreation setting classification are detailed in Tables 8, 9, and 10 in the Steese ROD. The Steese NCA is designated as OHV limited by the Steese TMP, and routes are opened on a seasonal basis. In the summer, there are 136 miles of managed routes open to motorized use, most of which are located north of the Birch Creek WSR Corridor (BLM 2022a). In the decision area there are 75 miles of OHV routes that primarily follow the Birch Creek WSR, however, the Steese TMP prohibits summer OHV use in the Birch Creek WSR Corridor.

Visitation to the Birch Creek WSR Corridor and surrounding Steese NCA has been increasing in recent years.

Gathering good visitor use data has been challenging for the BLM for many years, primarily due to limited staff and funding. The BLM has relied on estimates from information gathered from periodic river patrols, casual observance of put-in and take-out sites along the river, monitoring of special use permits, and occasional more focused use studies. Through the BLM's current monitoring, the BLM has remained confident it is meeting the guidance of maintaining a "semiprimitive/wild" river setting. There has been limited evidence of human impacts. Average group size and encounters have remained low. No significant user conflicts have occurred.

The 1975 Final Environmental Statement for the Birch Creek National Wild River estimated the number of users on the proposed Birch Creek WSR at around 2,700 user days or about 540 users. In 2003 and 2004, the BLM conducted weekly overflights of Birch Creek WSR to help determine baseline use for motorized and nonmotorized summer boat users. The 2004 data was invalid due to an excessive wildfire season and limited flight data. The 2003 survey identified 189 users of the river during those flights. Actual use of the river at that time was to be projected at between 200 to 300 users. This data did not include motorized and nonmotorized winter users or those other summer users who may have hiked or entered into the WSR corridor through some other means.

Annually, the BLM enters estimated visitor use into its Recreation Information Management System to track this use. **Table C-2** shows the use that has been entered over the past 10 years, including the 1975 estimate. Higher estimates of the years 2018–2020 are likely explained by a high interest and availability of caribou during the hunting seasons those years. Use levels have tapered off as the caribou population and interest have leveled out.

Table C-2. Reported Visitor Use of Birch Creek WSR Corridor

Year	1975	2012	2013	2014	2015	2018	2019	2020	2021	2022
Number of Users	540	730	669	602	751	1569	1569	1612	1258	1233

Source[19]

The BLM has continued to look at new developing technology to improve tracking visitor use. Some new equipment has been deployed recently to help improve tracking visitor use. Each year, innumerable variables can alter visitor use, including heavy rain and flood, wildfires, and, as noted earlier, an unprecedented increase in the caribou population and interest in hunting.

In the summer and fall, recreation activities in the Birch Creek WSR Corridor include motorized boat use; nonmotorized float boat use, such as canoeing, kayaking, and rafting; wildlife viewing; hunting; and fishing. Dog mushing, snow-machining, and cross-country skiing are popular activities in the winter, when the Birch Creek WSR is frozen and there is ample snow cover. The Yukon Quest Sled Dog Race follows portions of the Birch Creek WSR Corridor in February (Bross 2022), and snow-machining and cross-country skiing on the lower Birch Creek WSR are popular activities in March and April.

The Birch Creek WSR Corridor presents a unique opportunity for recreationists. It is one of the very few clear-water rivers in Interior Alaska with road access at two points on an otherwise undisturbed river segment. Motorized use is typical on many Alaskan rivers popular for

[19] Personal communication from Tim Hammond, Field Manager - Eastern Interior Field Office, BLM via email on July 31, 2023.

recreation, but on the Birch Creek WSR, nonmotorized boats, including kayaks, canoes, and rafts, are more likely to be present. The recreational setting provides visitors with the opportunity to experience solitude, closeness to nature, and exploration of a pristine river system. Most floaters begin their trip at the Upper Birch Creek Wayside (mile 94 of the Steese Highway), and they travel downstream approximately 110 miles to the Lower Birch Creek Wayside (mile 140.5 of the Steese Highway).

Most trips take an average of 5 to 7 days. This portion of the Birch Creek WSR Corridor includes multiple river settings, including headwater streams, calm and meandering segments, and whitewater experiences. Depending on water levels, whitewater rapids can be Class II or Class III. Class II whitewater rapids are considered novice, and involve straightforward rapids with wide, clear channels that are evident without scouting. Class III whitewater rapids are considered intermediate, and require a moderate level of skill to handle irregular waves and complex maneuvers (American Whitewater 2005). A shorter river trip opportunity follows 16-miles from the Lower Birch Creek Wayside (mile 140.4 of the Steese Highway) to the Birch Creek Bridge (mile 147 of the Steese Highway). This trip typically takes 1 or 2 days to complete, and it is more popular with motorized watercraft users during hunting season. However, scoping revealed that there also may be increased motorized use throughout the Birch Creek WSR Corridor.

SRPs are authorizations, which allow specified recreational uses of public lands and related waters. They are issued to provide a mechanism to accommodate commercial recreational use; protect natural and cultural resources; and manage visitor use. There are four active SRPs in the Steese NCA. SRPs in the Birch Creek WSR Corridor are for outfitting and guided trips on the WSR and competitive dogsled racing. Permitted users commonly haul out any waste they produce. Overall, there is a relatively low number of permitted uses in the Birch Creek WSR Corridor.

Threats to the recreational ORV in the Birch Creek WSR Corridor include climate change, noise from OHV use and fighter jet training, and impacts from mining operations in the upper watershed. The region will see increased temperatures and, due to resulting evaporation outpacing projected increases in precipitation, reduced water availability over the next century, as well as more frequent and intense wildfires (Rupp and Springsteen 2009; Trainer et al. 2009). Climate impacts can lead to compromised recreational facilities, loss of biodiversity, impacts on fishing, and changes to viewing wildlife and the scenery in the Birch Creek WSR Corridor. Noise from fighter jets and OHV use were noted in scoping comments as issues decreasing the quality of the remote recreation setting. Mining operations that exist throughout the larger watershed and the tributaries that feed into the Birch Creek WSR could result in erosion, sediment loading, and pollution discharge, all of which have a negative impact on recreation experience and setting for river floaters.

Fisheries

Birch Creek WSR supports 12 known species of fish. It has one of the highest diversity of fish in the region. This diversity makes fisheries an ORV for the Birch Creek WSR (BLM 2016a).

Birch Creek WSR supports anadromous populations of Chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*Oncorhynchus keta*), and coho salmon (*Oncorhynchus kisutch*). Although gathering population data for Chinook salmon is challenging due to environmental

factors, the health of Birch Creek Chinook can be partially assessed by the health of Yukon River Chinook, which are experiencing below average returns (Volk et al. 2009). Given the below average returns in the Yukon River, all streams that support Chinook salmon spawning and rearing habitat, including Birch Creek WSR, are crucial both locally and regionally.

Birch Creek WSR also sustains healthy and viable populations of Arctic grayling (*Thymallus arcticus*), round whitefish (*Prosopium cylindraceum*), humpback whitefish (*Coregonus pidschian*), sheefish (*Stenodus leucichthys*), least cisco (*Coregonus sardinella*), northern pike (*Esox lucius*), burbot (*Lota lota*), slimy sculpin (*Cottus cognatus*), and blackfish (*Dallia pectoralis*).

The Birch Creek WSR watershed has experienced major stream-disturbing activities like placer mining for over a century (ADF&G 1985; BLM 2016a). While the extent of the impact on fish populations is unknown, Birch Creek WSR remains an important habitat for numerous fish species, contributing to its status as one of the most diverse watersheds in the region.

The Birch Creek WSR Corridor overlaps with 10 conservation watersheds identified in the Steese ROD and Approved RMP (BLM 2016a). These watersheds overlap with approximately 61,800 acres (90 percent) of the Birch Creek WSR Corridor, they contain essential fish habitat, and they are managed as priority habitats (BLM 2016a, BLM 2023). Priority habitats are those habitats that support any life stages of priority aquatic species, which includes both resident and anadromous fish species. The Birch Creek WSR Corridor overlaps with four restoration watersheds, covering approximately 2,200 acres (3 percent of the Birch Creek WSR Corridor), identified by the Steese ROD and Approved RMP and they contain essential fish habitat (BLM 2016a, BLM 2023).

Existing Conditions of Resources Other than Outstandingly Remarkable Values

Subsistence Resources

Passage of the ANILCA was directly responsible for designation of the Birch Creek WSR Corridor, as well as establishing federal policy regarding subsistence use and management. ANILCA Title VII provides provisions to ensure that public lands in Alaska are managed to provide the opportunity for continued subsistence uses on those lands. Subsistence uses are defined in the ANILCA, Title VIII, Section 803, as 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 byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing; and for customary trades." (BLM 2016c). The BLM ensures that rural residents engaged in subsistence uses have reasonable access to subsistence resources on public lands, including within WSR corridors.

Two nearby rural villages, Central and Circle, are most relevant to analysis of subsistence use under this Birch Creek WSR CRMP, since they have subsistence use areas present within the Birch Creek WSR Corridor and the larger Ikhèenjik River watershed surrounding it (Trainor et al. 2020).

Based on studies by the ADF&G, a wide variety of fish, wildlife, and vegetation are harvested by subsistence users in these communities for many purposes, including food, fuel, arts and crafts, tools, clothing, and traditional cultural practices. Of note is that the subsistence use areas

developed in these studies represent subsistence use for a segment of the population at the time of the study; subsistence use is likely to occur outside of these mapped areas as well.

Subsistence resource use areas belonging to Central that directly overlap with the Birch Creek WSR Corridor include non-salmon fishing areas along much of the Birch Creek WSR Corridor and hunting areas for large and small land mammals as well as birds, present in the northeast end of the Birch Creek WSR Corridor. Land mammal and bird hunting areas also are documented outside of the Birch Creek WSR Corridor in the surrounding Ikhèenjik River watershed. It is reported that berries and greens and firewood resource harvest areas are present at the northeast end of the Birch Creek WSR Corridor (Trainor et al. 2020, BLM GIS 2023).

The subsistence resource use areas belonging to Circle that directly overlap with the Birch Creek WSR Corridor include large land mammal and bird hunting areas present in the northeast end of the Birch Creek WSR Corridor. Large land mammal and bird hunting areas also are documented outside of the Birch Creek WSR Corridor in the surrounding Ikhèenjik River watershed. Berries and greens resource harvest areas are reported at the northeast end of the Birch Creek WSR Corridor (Trainor et al. 2020, BLM GIS 2023).

Impacts on subsistence use from increasing recreation and competition between subsistence users and recreational hunters was found to be an issue of concern during the scoping process, potentially impacting the abundance and availability of subsistence resources.

Cultural Resources

The term “cultural resources” is used to encompass the broad scope of resources that must be considered by the BLM as defined in more detail below. A cultural resource is a definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence (BLM Manual 8100). The term “cultural resources” is inclusive and it has been adopted and widely used to refer to the diverse human record found in sites, structures, objects, and places created and/or used by people. These may comprise archaeological, historic, or architectural sites, structures, objects, or places. They also may include locations for traditional cultural or religious importance to a particular social and/or cultural group, often referred to as traditional cultural properties (TCPs).

Cultural resources also include “archaeological resources,” as defined in the Archaeological Resources Protection Act of 1979, and other sites, structures, objects, items, and places as addressed in other statutes and regulations (for example, American Indian Religious Freedom Act of 1978, Antiquities Act of 1906, NEPA, and Native America Graves Protection and Repatriation Act of 1990).

“Historic properties,” as defined in the National Historic Preservation Act and its implementing regulations found at 36 CFR 800, are cultural resources determined to be eligible for listing in the National Register of Historic Places (NRHP). In addition to meeting at least one of the four main NRHP eligibility criteria (association with a significant event, person, distinctive architecture or construction style, or potential for information), cultural resources also must exhibit integrity of at least one of the following to be eligible: location, design, setting, materials, feeling, workmanship, or association.

Cultural resource-related research in the Interior of Alaska, a larger region within which the Birch Creek WSR and larger Ikhèenjik River watershed are situated, indicates that humans have inhabited the region for over 14,000 years (Holmes 1996; Holmes 2001), including some of the

earliest dated archaeological sites in the Americas. Cultural resources in the region are diverse, with recorded site types including a wide range of material cultures and ages from prehistoric archaeological cultures as well as historic Athabaskan and Euro-American sites (Bowers and Gannon 1998), such as the Circle to Fairbanks Historic Gold Rush Trail. This Circle to Fairbanks Historic Gold Rush Trail was previously submitted for nomination to the NRHP; it was noted in the 1983 River Management Plan (BLM 1983) as passing through the Birch Creek WSR Corridor. This was later determined not to be the case (BLM 2016a).

Based on up to date cultural resource data (BLM GIS 2023), the Birch Creek WSR Corridor contains 35 previously recorded archaeological resources: 19 historic-period sites, 15 from the prehistoric period, and one of indeterminate age and cultural affiliation. Along or near the boundary of the Birch Creek WSR Corridor, there are four linear historic transportation sites. These comprise the North Fork Twelvemile Creek Bridge of the Steese Highway (previously Alaska Railroad Commission Route 16); two other segments of the Steese Highway; and the previously mentioned Circle to Fairbanks Historic Gold Rush Trail.

Known prehistoric era sites in the Birch Creek WSR Corridor consist of shallow or surficial lithic scatters, some of which may have been campsites or hunting lookouts. Known historic-era sites in the Birch Creek WSR Corridor mostly consist of habitations and related structures; some built and occupied within the last 50 years, and many in varying states of collapse.

No potentially eligible cultural resources within the Birch Creek WSR Corridor have been determined eligible for inclusion in the NRHP. The known site types within the Birch Creek WSR Corridor are not as diverse as those found in the surrounding region. In particular, the majority of the known prehistoric sites within the Birch Creek WSR Corridor are surficial or shallowly buried sites (less than 8 centimeters [3.15 inches] in depth), and likely date to the late prehistoric Athabascan Tradition.

Of the sites for which condition information is available, most are observed to be in a natural state of weathering, undisturbed by vandalism, construction, or abnormal weathering such as flooding or earthquakes. Some previously documented cultural resources have eroded away with very little or no remaining traces of their existence. Sites that appear to have completely eroded away include an early twentieth-century roadhouse and the suspected location of a historic Athabaskan village. Field notes for many archaeological sites in the Birch Creek WSR Corridor indicate they could harbor undisturbed cultural deposits, potentially making them eligible for inclusion in the NRHP.

As of May 2023, less than 1 percent of the Birch Creek WSR Corridor had been intensively pedestrian surveyed for cultural resources, and many additional unknown cultural resources are likely to be present. Of note is that the distribution of known sites favors highly visible historic-aged resources. The areas surveyed for cultural resources tend to be those that are most accessible, such as near river access and highways. While the known resources are not necessarily a representative sample of all the resources within the Birch Creek WSR Corridor, based on evaluation of the topography within the Birch Creek WSR Corridor, any as-yet undiscovered prehistoric sites located there are not likely to include site types that are unusual or rare in the region, such as caribou drives or long-term or winter village sites (BLM 2016a).

Both the historic and prehistoric cultural resources documented within and immediately around the Birch Creek WSR Corridor are fairly typical of cultural resources found in similar settings throughout the Eastern Interior planning area of Alaska (BLM 2016a, Section 3.2.3.3). Cultural

and historical values are not determined to be one of the Birch Creek WSR ORVs (BLM 2016a, Appendix E, Section 2.1), though this could be reassessed in a future CRMP if cultural resources of a rare or unusual nature are discovered. There are no known TCPs within or adjacent to the Birch Creek WSR Corridor, but these resources are often not revealed outside of the affected communities.

Within the Birch Creek WSR Corridor, natural processes may be influenced by climate change. Processes such as permafrost thaw, river erosion, and wildfire may cause direct and indirect impacts on cultural resources. Physical degradation of sites due to natural processes, such as erosion, can result in exposure of previously unknown cultural resources, loss of artifacts and features, or potentially complete destruction.

Tribal Interests

Occupied and utilized since time immemorial, the Birch Creek WSR Corridor (and the larger Ikhèenjik River watershed) historically has been occupied and utilized by Gwich'in Athabascans (Gwich'in Tribal Council 2023). The closest Gwich'in communities to the Birch Creek WSR are the Circle Native Community and the Birch Creek Tribe, located in the Yukon Flats downstream from the Birch Creek WSR Corridor.

The Alaska Native Allotment Act of 1906 allowed Alaskan Natives to receive the title for 160 acres of land in Alaska. The Native Allotment Act was repealed in 1971, when the ANCSA became law. Under the ANCSA, in exchange for settling Alaskan Native land claims, land and money were distributed to the Alaska Native Corporations (ANCs) established by ANCSA.

Alaskan Native-owned lands and Native allotments are present throughout Alaska. In and immediately around the Birch Creek WSR Corridor, they border the northeast portion of the Birch Creek WSR Corridor, with one 37-acre Native allotment located at the confluence of Portage Creek and the Ikhèenjik River within the southeastern portion of the Birch Creek WSR Corridor.

The BLM conducts government-to-government consultation with federally recognized Tribes in accordance with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments; the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments; the Department of the Interior's Alaska Policy on Government-to-Government Relations with Alaska Native Tribes dated January 18, 2001; and BLM Manual 1780, Tribal Relations.

The BLM EIFO reached out on December 28, 2022, regarding this land use planning effort. The BLM reached out to the Birch Creek Tribe, Circle Tribal Council, their associated community Native corporations (Tihteet'aii Inc. and Danzhit Hanlaii Corp), as well as the regional ANC Doyon, Limited in compliance with the previously described legal and regulatory framework.

Tribal entities that expressed interest in the current land use planning effort include:

- Council of Athabaskan Tribal Governments
- Doyon, Limited

The concerns regarding Tribal interests identified during the scoping process include:

- The CRMP could complicate access and use of ANC lands, including development of mineral resources by ANCs and their partners.

- The CRMP must address exclusion of Alaska Native-owned lands from the Birch Creek WSR Corridor.
- The BLM must consider the effects of the CRMP on access to and use of public lands, and of waterways for food, fuel, supplies, and transportation.
- The Council of Athabaskan Tribal Governments is working on a 5-year stewardship plan for the Yukon Flats area that will complement the mission of the Service and the BLM.

Soils and Permafrost

Soils are living, dynamic resources that support all vegetation communities and ecosystems. Soils are formed from the interactions between parent materials, climate, organisms, and topography over time, and they have varying physical, chemical, and biological properties. Spatial data from the Natural Resources Conservation Service (NRCS) for soils in the Birch Creek WSR Corridor currently are not available. This analysis uses common soil types associated with EPA Level III Ecoregions in Alaska, which are summarized by Gallant et al. (1995). The three ecoregions in the Birch Creek WSR Corridor and their common soil types are listed in **Table C-3**, EPA Ecoregions and Common Soil Types in the Birch Creek WSR Corridor. Permafrost in these ecoregions is discontinuous (Gallant et al. 1995).

Table C-3. EPA Ecoregions and Common Soil Types in the Birch Creek WSR Corridor

EPA Level III Ecoregion	Soil Types	Acres
104—Interior Forested Lowlands and Uplands	Cryaquepts, Haplocryepts,[1] Humicryepts,[2] Cryorthents	8,700
105—Interior Highlands	Cryaquepts, Haplocryepts,[1] Humicryepts,[2] Cryorthents, Haplocryods[3]	59,700
107—Yukon Flats	Cryaquepts, Haplocryepts[1]	700
Total	—	**69,000**

Sources: Gallant et al. 1995, EPA 2012, NRCS 2022, BLM GIS 2023
[1]Defined in NRCS 2022. The equivalent of "Cryochrepts" in Gallant et al. 1995.
[2]Defined in NRCS 2022. The equivalent of "Cryumbrepts" in Gallant et al. 1995.
[3]Defined in NRCS 2022. The equivalent of "Cryorthods" in Gallant et al. 1995.

All the soils listed in **Table C-3** have a cryic soil temperature regime, meaning they have mean annual temperatures between 0 degrees and 8 degrees Celsius (NRCS 2022). Cryaquepts have undergone moderate degrees of weathering, and they have an aquic soil moisture regime, meaning they are saturated by water and generally poorly drained. Haplocryepts, Humicryepts, and Cryorthents have minimal soil horizon development. Humicryepts also have a characteristically thick, humus[20]-rich horizon. Haplocryods have an accumulation of organic matter and aluminum in the subsoil (NRCS 2022).

Some of these soils are further defined as pergelic, aquic, lithic, or histic. Pergelic soils have a mean annual soil temperature of -4 degrees to -10 degrees Celsius, which is cold enough to form permafrost. Aquic soils are saturated with water for at least 20 consecutive days. Lithic soils have a shallow (within 50 centimeters [19.69 inches] of the soil surface) rock layer. Histic soils contain organic matter at or near the soil surface that is at least 20 centimeters (7.87 inches) thick (NRCS 2022).

[20] Dark organic material.

Most soils in the Birch Creek WSR Corridor formed from silty alluvium[21] and loess[22] from the floodplains of the large rivers. Soils on flat areas are poorly drained, commonly overlain by peat,[23] and they have a shallow permafrost table. The permafrost is often near the surface on north slopes, south-facing toe slopes, and valley bottoms. Gravelly soils immediately adjacent to the Birch Creek WSR and on natural levees are better drained and commonly free of shallow permafrost (BLM 1983). Permafrost is frozen soil (at soil temperatures less than 32 degrees Fahrenheit) that may or may not contain ice (Callaghan et al. 2011). Permafrost forms a barrier that prevents infiltration of surface water and maintains a saturated layer of surface soils (BLM 2009).

Water erosion is the detachment and movement of soil particles by rain or moving water (Weil and Brady 2019). Soils are naturally eroded by water and along riverbanks as the river stage recedes and advances. This water movement along the banks also can affect the thermal variation of permafrost and it can result in permafrost thawing (Callaghan et al. 2011). Removal or destruction of the surface organic layer overlying permafrost areas typically increases heat flow, causing permafrost thawing, and it can result in any combination of erosion, surface subsidence, or thermokarst[24] formation (BLM 2009). In some cases, particularly for well-drained soils, permafrost thawing can increase water infiltration (Brabets and Walvoord 2009).

Permafrost can either be a carbon sink (storing carbon) or a carbon source (releasing carbon). The global distribution of permafrost contains about twice as much carbon as is found in the global atmosphere (Edward et al. 2008). Near-surface permafrost is susceptible to thawing because of projected warmer annual average air and ground temperatures for the remainder of the twenty-first century and increased frequency of fires (Rupp and Springsteen 2009; Callaghan et al. 2011; US Global Change Research Program 2018). Since the late 1970s, permafrost thawing in Alaska, especially in areas with discontinuous permafrost like the Birch Creek WSR Corridor, has increased water infiltration rates, groundwater flow, surface dryness, and thermokarst terrain (Osterkamp 2007; Brabets and Walvoord 2009; Callaghan et al. 2011). Organic-rich soils with permafrost, such as those in the Birch Creek WSR Corridor, are particularly susceptible to ground subsidence[25], subsurface drainage, lower water tables, and thermokarst development (Pastick et al. 2015; Jorgenson et al. 2013). Surface peat that occurs above permafrost can buffer warmer temperatures that cause permafrost thawing; however, this functionality can decrease if the peat is lost to erosion from surface disturbance, such as from fire (Callaghan et al. 2011).

Vegetation

The Birch Creek Watershed contains a wide variety of habitats and conditions that allows an abundance of vegetation to thrive. However, only hardy species can survive in the extreme cold of winter and high heat of summer within the Birch Creek Watershed. The presence of permafrost, found discontinuously throughout the Birch Creek Watershed, also heavily impacts the type of species that can grow in certain parts of the Birch Creek Watershed. Permafrost can dictate the water availability in the region; therefore, it has a substantial influence on the types of vegetation that can grow. Warmer weather due to climate change has accelerated the permafrost

[21] Sediment transported by water.
[22] Sediment, generally silt and very fine sand, transported by wind from exposed sediment deposits.
[23] Organic material with high concentrations of carbon.
[24] Hallows or mounds on the land surface that form after permafrost thaws.
[25] Gradual sinking of an area of land.

thawing. These rapid thawing events also can lead to large erosion events, particularly along the riparian corridor, thereby affecting vegetation conditions (BLM 2021).

Lower in the Birch Creek Watershed, the valley bottoms widen and create a large range of conditions leading to a mosaic of habitats. Loamy soils with shallow layers of permafrost tend to drain poorly and they can lead to vegetation dominated by sedge tussocks (*Carex stricta*), low shrubs, and stunted black spruce (*Picea mariana*) woodlands. Better draining soils can support open forests of spruce (*Picea* spp.), white birch (*Betula neoalaskana*), and aspen (*Populus tremuloides*). Riparian corridors tend to be free of permafrost and they can support a wide range of tree species, including white spruce (*Picea glauca*), aspen, balsam poplar (*Populus balsamifera L.*), alder (*Alnus* spp.), and willow (*Salix* spp.) (BLM 2016b).

The Steese ROD and Approved RMP identified the following priority species and vegetation communities: aspen/steppe bluffs, riparian communities, wetlands (other than widespread mesic black spruce, tussock, and shrub tussock), tall shrub communities, sparsely plant-covered calcareous substrate (limestone), and lichen-rich habitat (BLM 2016b). **Table C-4**, Vegetation Communities in the Project Area, lists the vegetation communities' acres within the Birch Creek WSR Corridor.

Table C-4. Vegetation Communities in the Project Area

Vegetation Communities	Acres
Bare ground	1,300
Deciduous Forest (Open-Closed)	2,600
Dwarf Shrub	600
Fire Scar	1,800
Herbaceous (Aquatic)	0
Herbaceous (Mesic) (Interior Alaska, Cook Inlet Basin)	1,000
Herbaceous (Wet) (Interior Alaska, Cook Inlet Basin)	0
Low Shrub	3,100
Low Shrub/Lichen	200
Tall Shrub (Open-Closed)	1,900
Tussock Tundra (Low shrub or Herbaceous)	1,300
Urban, Agriculture, Road	400
White Spruce or Black Spruce (Open-Closed)	32,600
White Spruce or Black Spruce (Woodland)	12,000
White Spruce or Black Spruce/Lichen (Woodland-Open)	1,100
White Spruce or Black Spruce-Deciduous (Open-Closed)	7,300
Grand Total	67,300

Source: BLM GIS 2023
Non-vegetation acres have been removed from this table.
Acres are rounded to the nearest hundred.

Threatened and Endangered Plant Species

The Information for Planning and Consultation (IPaC) website does not list any threatened, endangered, or proposed species, or designated or proposed critical habitat within the proposed project location. Should any threatened, or endangered species be found, formal measures would be made to protect the habitat (BLM 1983). The proposed management objectives focus on habitat conservation and ensuring that approved activities do not contribute to the need to list any special status species.

Nonnative Invasive Plant Species

Nonnative invasive species or noxious weeds can alter vegetation communities by outcompeting native species for resources. Invasive species threaten biodiversity in habitats, and they can cause economic or environmental harm or harm to human health (ADFG 2023). A survey of nonnative invasive species was conducted across 54 sites within the Birch Creek WSR Corridor. Of the 54 sites, foxtail barley (*Hordeum jubatum L*) was found at two sites and white sweetclover (*Melilotus albus Medik*.) was found at two other sites (BLM GIS 2023).

Wildlife

Migratory Birds

Birch Creek WSR is often surrounded by riparian vegetation, which is an important habitat for many songbirds, waterfowl, migratory birds, and raptors. Common migrants include Arctic loon (*Gavia arctica*), red-throated loon (*Gavia stellata*), common loon (*Gavia immer*), grebe (*Podicipedidae* spp.), and sandhill crane (*Grus canadensis*). Other species, such as hawks, owls, grouse, woodpeckers, gray jays (*Perisoreus* spp.), and common ravens (*Corvus corax*), stay during the winter. The United States Fish and Wildlife Service (USFWS) IPaC database search identified one bird of conservation concern (BCC) and bald eagle that may occur in the Birch Creek WSR Corridor vicinity. The bald eagle is not a BCC in this area; however, it warrants attention because of the Eagle Act or for potential susceptibilities in riparian habitat or other waterways from certain types of development or activities. **Table C-5**, Birds of Particular Concern, shows the two birds identified by the USFWS IPaC; their breeding status in the region; and their habitat requirements. These birds of particular concern are discussed in additional detail below.

Table C-5. Birds of Particular Concern

Common Name	Scientific Name	Breeding Status	Habitat Requirements
Bald eagle	*Haliaeetus leucocephalus*	B	Breeding habitat most commonly includes areas close to coastal areas, bays, rivers, lakes, reservoirs, or other bodies of water that reflect the general availability of primary food sources. The food sources include fish, waterfowl, or seabirds. Nests usually are in tall trees or on pinnacles or cliffs near water. Tree species used for nesting vary regionally, and they may include pine, spruce, fir, cottonwood, poplar, willow, sycamore, oak, beech, or others. The same nest may be used year after year, or a pair may use alternate nest sites in successive years.
Olive-sided flycatcher	*Contopus cooperi*	B	Olive-sided flycatchers breed in various forest and woodland habitats including taiga, subalpine coniferous forest, mixed coniferous-deciduous forest, burned-over forest, spruce or tamarack bogs, and other forested wetlands. In addition, they could be found along the forested edges of lakes, ponds, and streams. Most nesting sites contain dead standing trees, which are used as singing and feeding perches. Nests are placed most often in conifers, on horizontal limbs 2-15 meters from the ground. During the northern winter, this species occurs in a variety of forest, woodland, and open situations with scattered trees, especially where tall dead snags are present.

Source USFWS 2023, NatureServe Explorer 2023
B: Breeding

Raptors

Raptors serve as important indicators of overall ecosystem health because they are keystone species at the top of the food web. Along Birch Creek WSR and in adjacent cliffs and bluffs, there are populations of nesting raptors, such as peregrine falcon (*Falco peregrinus*), gyrfalcon (*Falco rusticolus*), merlin (*Falco columbarius*), bald eagle, golden eagle (*Aquila chrysaetos*), and osprey (*Pandion haliaetus*) (BLM 2023b). Other raptors include rough-legged hawk (*Buteo lagopus*), northern goshawk (*Accipiter gentilis*), red-tailed or Harlan's hawk (*Buteo jamaicensis*), *s*harp-shinned hawk (*Accipiter striatus*), and northern harrier (*Circus cyaneus*) (ADFG 2015). The numerous songbirds and small mammal populations provide the primary prey base for raptors during the breeding and nonbreeding seasons.

Mammals

Common small mammal species that are widely distributed throughout the Birch Creek WSR Corridor and central Alaska include snowshoe hare (*Lepus americanus*), brown lemming (*Lemmus trimucronatus*), red-backed vole (*Myodes rutilus*), meadow vole (*Microtus pennsylvanicus*), shrews (*Sorex* spp.), and little brown myotis (*Myotis lucifugus*) (ADFG 2015). The megafauna found along Birch Creek WSR include moose (*Alces alces*), caribou (*Rangifer tarandus granti*), Dall sheep (*Ovis dalli dalli*), black bear (*Ursus americanus*), brown or grizzly bear (*Ursus arctos*), and gray wolf (*Canis lupus*) (BLM 2023a). These large mammal species are supported by the diversity of habitat and the availability of essential resources throughout the Birch Creek WSR Corridor. The success of species can be attributed to habitat conditions, availability of resources, and level of human disturbance activities.

There are critical periods during an animal's life cycle when they are particularly vulnerable to disturbances related to human activities. Degradation or unavailability of certain habitats will lead to significant declines in carrying capacity and/or numbers of wildlife species in question. An example of this is winter range where big game migrate to lower elevations to forage. Oftentimes they compete with other species for limited resources. Winter range and available resources can be limiting factors for population dynamics.

Big game species, such as moose and caribou, also are vulnerable during fawning and calving periods, as mothers tend to their young by providing food resources and protection from predators. Loss of winter range and fawning/calving habitat throughout the Birch Creek WSR Corridor could prevent the big game herds from achieving management objectives. While data is limited for many big game species, there is data available for caribou within the Birch Creek WSR Corridor. (See **Table C-6**, Caribou Distribution across the Birch Creek WSR Corridor, below, for acres of important wintering and calving habitat.)

Table C-6. Caribou Distribution across the Birch Creek WSR Corridor

Habitat Type	Acres
Known Calving Areas, Known Winter Use Areas	45,500
Known Winter Use Areas	22,300
Herd Ranges	54,800

Source: ADFG GIS 1985
Acres are rounded to the nearest 100.
There are 67,800 acres of known winter use areas. A total of 45,500 acres of the 67,800 acres are also known calving areas.

Threatened and Endangered Species, including Special Status Wildlife

The USFWS IPaC website does not list any threatened, endangered, or proposed species or designated or proposed critical habitat within the proposed project location.

Special status species include federally listed, State-listed, and BLM sensitive species. Management objectives include conservation of habitat and ensuring that approved activities do not contribute to the need to list any special status species. The BLM Alaska special status species list (BLM 2019) was developed from State lists, expert input (BLM, ADFG, or other partners), and the NatureServe global ranking system. Most habitat for special status plant species is currently undisturbed and largely intact. The potential for impacts on special status plant species is expected to increase as development and other ground-disturbing activities are expected to increase in the planning area. Important habitat for special status animals includes wetland and riparian areas and bluffs, which provide food, water, and cover necessary for many species. Species of concern in the Birch Creek WSR Corridor include bald and golden eagles that are protected by the Bald and Golden Eagle Protection Act. Other sensitive species found in the Birch Creek Watershed are peregrine falcon, gyrfalcon, trumpeter swan (*Cygnus buccinator*), olive-sided flycatcher, blackpoll warbler (*Setophaga striata*), rusty blackbird (*Euphagus carolinus*), short-eared owl, Osgood's Arctic ground squirrel (*Urocitellus parryii*), Alaska tiny shrew (*Sorex yukonicus*), and Alaska endemic mayfly (*Acentrella feropagus*).

Invasive Species

A species is considered to be an "invasive species" under Presidential Executive Order 13112 if it meets two criteria: 1) it is not native to the ecosystem in question and 2) its introduction has caused or is expected to cause harm to the economy, environment, or human health. Species are considered invasive in a new environment when the natural predators, diseases, or other biological mechanisms that kept the species in check in the previous habitat are absent in the new environment. Because this biological balance is lacking, an invasive species effectively changes the biodiversity of an area (ADFG 2023).

While the invasive species that are most likely to affect wildlife populations in central Alaska are plant species such as *Elodea* spp., the following are invasive wildlife species that may occur in the Birch Creek WSR Corridor including the gypsy moth (*Lymantria dispar*), Norway rat (*Rattus norvegicus*), and rock dove (*Columba livia*) (ADFG 2015; ADFG 2023).

Although the Birch Creek WSR Corridor's physical environment hinders the establishment of many possible invasive species, the low biodiversity also raises the possibility that the spread of an invasive species population may lead to the decline or eradication of native species. Climate related changes to the landscape, such as warming and drying, may enable invasive plant and animal species to become established in the ecosystem. Invasive species on the landscape pose a significant threat to native wildlife, such as conversion to nonnative forage, competition for resources, predation, and disease (ADFG 2015).

Land Uses and Infrastructure

This section presents information about the current uses along each river.

Landownership within the River Corridor

The Birch Creek WSR is primarily in very remote and undeveloped sections of the Steese NCA. However, portions of the Birch Creek WSR are adjacent to the Steese Highway, Native lands, and privately owned parcels in its lower reaches near Circle, Alaska.

The BLM administers 97 percent of the Birch Creek WSR Corridor. The remaining amount is water. Forty-one acres of inholdings are surrounded by the corridor. Approximately 37 acres of inholdings comprise one Alaska Native allotment. The remaining two inholdings are private and State lands. The inholdings were excluded from the Birch Creek WSR Corridor by the 1983 River Management Plan.

The Birch Creek WSR Corridor is located 0.5 miles from the nearest general privately owned lands. Scoping revealed that there are concerns about trespassing occurrences on privately owned lands near the Birch Creek WSR Corridor by those participating in activities related to the WSR.

In 1972, Public Land Order (PLO) 5179, as amended by PLO 5250, withdrew Birch Creek from all forms of appropriation under the public land laws, including State and regional corporation selection, location and entry under the mining laws, and leasing under the Mineral Leasing Act of 1920. The PLO reserved land for study and for possible recommendations to Congress as units of national park, forest, wildlife refuge, and wild and scenic rivers systems. Specifically, it segregated "all lands within the protracted survey sections which are wholly or in part within 1 mile of the mean high-water mark of the river's banks."

In 1980, Congress passed the ANILCA and the ANILCA Section 603 amended the WSRA Section 3(a) to include Birch Creek as a designated river. The ANILCA Section 606(a) also amended the WSRA, stating that the boundary of each river should not be more than 640 acres on both sides of the river and that lands are to be withdrawn from all forms of mining within a 1-half mile distance of the bank.

The 1983 River Management Plan (pages 10 and 11) proposed to modify PLO 5179 such that only those lands within the final WSR corridor would remain withdrawn. However, the proposed modification was never executed, so PLO 5179 remains in place. As a result, BLM-managed lands adjacent to the WSR corridor and within the protracted survey sections, which are wholly or partially within one mile of the bank of Birch Creek National Wild River, remain withdrawn. However, they are not part of the WSR corridor.

Access and Infrastructure

The Steese NCA is designated as OHV limited by the Steese TMP, and routes are opened on a seasonal basis. In the summer, there are 136 miles of managed routes open to motorized use, most of which are located north of the Birch Creek WSR Corridor (BLM 2022a). In the Birch Creek WSR Corridor, there are 75 miles of OHV routes that primarily follow the Birch Creek WSR, however, the Steese TMP prohibits summer OHV use in the Birch Creek WSR Corridor.

Most floaters begin their trip at the Upper Birch Creek Wayside (mile 94 of the Steese Highway), and they travel downstream approximately 110 miles to the Lower Birch Creek Wayside (mile 140.5 of the Steese Highway). Lower Birch Creek Wayside is at mile 140.4 of the Steese Highway.

Few historic structures and cabins blend with the landscape, offering points of interest. The upper reach of Birch Creek WSR offers opportunities to catch glimpses of historic cabins and hike to higher elevations for stunning views of the river system.

Management Direction

Wild and Scenic River Management

This Birch Creek WSR CRMP would replace the 1983 River Management Plan. All existing management (including goals, desired conditions, management actions) from the Steese ROD and Steese TMP would continue to be implemented. This Birch Creek WSR CRMP would implement (not replace or modify) existing management direction contained in the Steese ROD and Steese TMP.

Existing management direction in **Table C-7**, Existing Management Direction and Implementation Management, would still be applied to the Birch Creek WSR Corridor. Implementation of existing management direction is also listed in **Table C-7**.

It is important to note that **Table C-7** does not contain all existing management direction. The remaining existing management direction is in **Appendix 1**, Existing Management Direction from Steese ROD and Steese TMP. The remaining existing management direction in **Appendix 1** would continue to be applied.

The "Strategic Science Plan for the Steese National Conservation Area and White Mountains National Recreation Area" would continue to provide the base strategy for science activities in and around the WSR.[26] It provides strategic guidance and vision, not policy or constraints (Haddix et al. 2023). Implementation management include management goals or actions that add specificity to supplement or enhance the base science strategy.

Table C-7. Existing Management Direction and Implementation Management

Steese ROD – Resource Name	
Existing Management Direction	**Implementation Management**
Table will be populated with the management selected in the Decision Record after the Final EA is completed.	

Recreation User Capacity

It is important to note that this CRMP uses the term "visitor capacity" to be synonymous with the term "user capacity" (a required component for CRMPs per the WSRA and interagency guidelines). Section 3(d)(1) of the WSRA directs agencies to address visitor capacities in a CRMP to ensure that use levels in the river area do not threaten river values or established desired conditions.

The primary uses that Birch Creek supports include both motorized and nonmotorized boating (most motorized boating occurring in the lower stretches of the river), camping, fishing and

[26] https://www.blm.gov/sites/default/files/docs/2023-03/SteeseNationalConservationArea_ScienceStrategy_2023_508_Final.pdf

hunting. Overall, visitor use within the Birch Creek WSR area is quite low and it does not appear to be threatening river values. Commensurate with this there has not been a large degree of investment in data collection, monitoring, and analysis to support visitor capacity estimates.

General use levels and types of use have remained consistent since 1983. Use levels can vary from year to year based on floating conditions, wildfire conditions, and game availability for hunting. A very modest increase is trending in the number of users. Aerial surveys are conducted as resources are available and were conducted in 2003 and 2004 by the BLM for visitor use to determine baseline use. Surveys were very limited in 2004 due to significant fire activity, which also likely limited the number of river users. The weekly surveys conducted in 2003 showed around 200 annual river users for that summer. The peak use month was September followed by June, July, and August in that order. The largest user group was nonmotorized float boating with a small number of motorboats present in the lower section.

Currently, the use level of Birch Creek WSR is estimated between 300-400 users per year excluding short-term use of the put-in and take-out waysides and some isolated winter use, such as the Yukon Quest International Sled Dog Race. The BLM believes the use is nowhere near capacity, and does not believe the use trend would approach capacity, given the current rates for 20 years, if not longer.

Current interactions between recreation users are low, and evidence of recreation users is minimal. This situation has minimized potential user conflicts. No on-site recreation management controls are evident. Three commercial groups or other groups are authorized to operate on the Birch Creek WSR, but they typically do not conduct more than one annual trip between them. The only two developed recreation sites on the Birch Creek WSR continue to be the put-in site at the beginning and the take-out site near the end.

Desired conditions for river values and the wild classification are as follows.

- For a wild classification, recreation use including, but not limited to, hiking, fishing, and boating is encouraged in wild river areas to the extent consistent with the protection of the river environment. Public use and access may be regulated and distributed, where necessary, to protect and enhance the wild river value (BLM Manual 6400).
- Use of a national wild river must be managed to protect those values which caused the river to be designated as a component of the NWSRS.
- In December 2016, the ROD was signed for the Steese RMP. In the decision, the ORVs for the Birch Creek WSR were established, which are recreation, fisheries, and scenic.
- In the Steese RMP decision, the entire Steese NCA and the Birch Creek WSR were established as a special recreation management area (SRMA). The Birch Creek WSR was designated as a semiprimitive RMZ within that SRMA. Management goals are defined in the RMP for the Birch Creek RMZ.

The recreation focus for the Birch Creek RMZ is to provide high-quality, multiday recreational float boat opportunities for users who desire a recreation experience characterized by solitude, tranquility, self-reliance, challenges, and risk in a semiprimitive, Interior Alaska river setting. Some of the characteristics with which to manage this RMZ include:

- Manage for a very high probability of experiencing solitude, closeness to nature, tranquility, self-reliance, challenge, and risk.
- Provide a naturally appearing landscape with a low-level of noticeable modifications.

- Maintain rustic facilities that are generally constructed using natural materials and they are designed to blend with the surrounding landscape.
- Have an average number of contacts per day usually fewer than four groups.
- Manage for group sizes that usually average fewer than four people per group.

These characteristics, developed in the Eastern Interior RMP, provide for some management discretion while providing guidelines to help manage within the intended recreation experience.

Monitoring would typically consist of routine river patrols ensuring there is no significant disturbance and tracking the number of groups and group sizes. Occasional surveys would occur to ensure the BLM is meeting the RMZ objective as listed in the Steese RMP for the RMZ. It states that participants in visitor assessments report an average of 4.0 realization of the targeted experience and benefit outcomes as listed (above) on a probability scale where 1=not at all realized and 5=totally realized.

Currently, the BLM does not feel that any of these thresholds are at risk. Visitor capacity estimates recognize the likelihood that visitor capacity decisions may need to be reviewed and revised as more data becomes available. Adaptive management associated with this CRMP would determine if a re-examination of visitor capacities is needed. If in the future, events or actions begin to threaten these thresholds, the BLM would begin with initiating an educational campaign and/or more frequent river patrols to remedy the situation before attempting to take more formal actions. Adaptive management could include increased annual monitoring trips if issues or concerns were identified or if thresholds to meeting the WSRA or ORV of the Birch Creek WSR are being threatened.

Monitoring and Implementation

Baseline Monitoring

The WSRA does not explicitly require monitoring for designated rivers. However, BLM policy requires monitoring in BLM Manual 6400 (Wild and Scenic River Management) and Manual 6100 (National Landscape Conservation System Management). The BLM Manual 6400 instructs the BLM to develop a monitoring strategy to ensure desired conditions are maintained or that management activities are adapted accordingly for WSRs.

Monitoring is an important aspect of protecting and enhancing a river's values (free-flowing condition, water quality, water quantity, and ORVs). Monitoring is the periodic and ongoing measurement of specific variables related to a resource condition or river corridor experience. It proactively tracks conditions and trends and assesses the effectiveness of various management actions. The condition of river values and resources is currently monitored and managed in various ways.

The BLM planning regulations require the monitoring and evaluation of RMPs at appropriate intervals. The Steese ROD and Approved RMP were completed in 2016. After approval of the RMP and signing of the ROD, an implementation schedule was completed, and it incorporated monitoring plans. As a part of adaptive management, monitoring data is used to assess resource conditions, identify resource issues and conflicts, determine if resource objectives are met, determine trends for achievement of desired conditions, and periodically refine and update desired conditions and management strategy.

Monitoring provides essential information on the relative success of management strategies. The implementation of the RMP is monitored to ensure that management actions follow prescribed management direction (implementation monitoring), meet desired objectives (effectiveness monitoring) and are based on accurate assumptions (validation monitoring).

Monitoring is coordinated with other appropriate agencies and organizations to enhance the efficiency and usefulness of the results across a variety of administrative units. The approach builds on past and present monitoring work. In addition, specific monitoring protocols, criteria, goals, and reporting formats are developed.

The BLM would continue monitoring in accordance with the adaptive management strategy outlined in Appendix B, Fisheries and Aquatic Resources, of the Steese ROD and Approved RMP. The BLM would utilize the watershed matrix in Appendix B of the Steese ROD to assist in site-specific project impact analysis and mitigate impacts identified as potentially degrading to watersheds. Also, monitoring would continue to identify thresholds, triggers, or periods in which decisions made in the CRMP would be evaluated to determine whether they are still valid and what courses of action to take if they are not. **Table C-8**, Birch Creek WSR Baseline Monitoring, identifies base level monitoring to ensure compliance with the WSRA. It should be noted that the BLM may decide to conduct additional monitoring than is outlined within, subject to resource availability.

Table C-8. Birch Creek WSR Baseline Monitoring

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Fisheries ORV	Habitat connectivity (including fish passage)	Native fishes can access historically occupied habitats. Levels of large, woody debris (amount and size) are near-natural levels for in-channel, along stream banks and floodplains. Maintain and protect habitat access by ensuring no human-made or natural barriers impede upstream and downstream fish passage at all flow regimes.	Identify cause of inaccessibility (e.g., woody debris levels and barriers) and mitigate impacts (e.g., barrier removals), restoring connectivity. If any of these scenarios are observed during float trips, a fish biologist would conduct further assessment of the areas where these conditions are present.	While conducting annual floats, the BLM staff would visually monitor for any obstructions of passage, including woody debris levels and barriers within the river. If these conditions are observed, BLM staff may take height measurements of the barrier. The BLM would also measure and GPS any glaring woody debris piles.	Steese ROD Fish-7 and Fish-9

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Fisheries ORV	Streambank stability (including quality and quantity of vegetation in riparian habitat)	Streambank stability greater than 95 percent for Rosgen channel types A, B, and E; greater than 90 percent for Rosgen channel type C within 80 percent of any stream reach. Percentage of riparian vegetation into the green line dominated by late-seral community types or anchored rocks/logs is more than 80 percent (good-excellent ecological condition).	Identify cause for bank instability and mitigate impacts, restoring bank stability and reducing sediment degradation. Revegetation may be required to maximize streambank stability. Determine cause of riparian vegetation decline and assess whether impacts can be mitigated. Enact reestablishment efforts to recover vital vegetation necessary for high bank stability. Alternatively, rocks and logs may serve as temporary mitigation methods. If any of these scenarios are observed during float trips, an ecologist and hydrologist would conduct further assessment of the areas where these conditions are present. Implement BLM multiple indicators monitoring technique or other appropriate methodology to ensure streambank stability.	While conducting annual floats, BLM staff would visually monitor for any observations of streambank instability and gaps in vegetation quantity or quality along the river.	Steese ROD Fish-7 and Fish-9

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Fisheries ORV	Fish population – species presence and health	Maintain the variety of species within the river and maintain the river's quality to support continued habitation.	The BLM would consult with the ADF&G to determine appropriate action and seek funding to implement corrective actions.	Subject to resource availability, coordinate with ADF&G to conduct periodic surveys of fish population status.	
Recreation ORV	Semiprimitive recreation classification	Average number of contacts per day usually fewer than four groups. Majority of group sizes average fewer than four people per group. Only minimal evidence of human impact.	If the standards of maintaining a "semiprimitive" setting are not being met, the BLM would consider adaptive management options, including promoting educational measures, increasing enforcement actions, requiring removal of all human waste, and limiting or adding additional requirements to commercial/permitted use on the river.	At least one annual river recreation survey would be conducted on the river to document and ensure the BLM is maintaining the standards for semiprimitive management of those resources. The BLM would also monitor and collect casual observation at the put-in and take-out sites and use remote sensing devices, such as motion cameras and counting devices, to collect and determine use levels. While on river patrol, the BLM would collect data on group sizes, the number of other groups encountered, established camping sites, and evidence of trash and human waste. When thresholds may be close to exceeding the standards or the BLM deems it necessary, a more comprehensive visitor use and experience received study may be conducted.	

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Scenic ORV	Natural landscape	Preserve the Natural Landscape and maintain a Class I VRM quality, as outlined in the BLM's H-8410-1, Visual Resource Inventory.	If the standards of maintaining Class I VRM are not being met, the BLM would identify those actions impacting the visual quality and develop mitigation actions to correct it.	At least one annual VRM survey would be conducted on the river to document any changes to Scenic Quality.	

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Free-Flowing Condition[27]	Streamflow magnitude, frequency, duration, and timing are consistent with climate and natural watershed features.	The BLM follows WSRA Section 7 procedures to determine whether projects above or below, or within the Birch Creek WSR Corridor or on its tributary streams, would unreasonably diminish the free-flowing condition or unreasonably diminish one or more of the designated Birch Creek WSR ORVs—Scenic, Recreation, and Fisheries.	If a proposed project is found to have a direct and adverse effect on the Birch Creek WSR free-flowing condition or on any of the ORVs, the project would not be approved. Project redesign and resubmittal for a subsequent Section 7 determination would be required. If previously approved projects are determined to be unreasonably diminishing free-flowing conditions or one or more of the ORVs, the BLM would use existing authorities to modify approval terms and conditions to implement mitigation measures. If unapproved projects or activities are determined to be unreasonably diminishing free-flowing conditions or one or more of the ORVs, the BLM would use existing authorities to remedy the issue.	Monitor daily streamflow at the upstream (RM 0) and downstream (RM 126) extent of the 126-mile Birch Creek WSR. Annually monitor existing projects and activities for unexpected or unplanned diminishment of the free-flowing condition or unreasonably diminishment of one or more of the designated Birch Creek WSR ORVs.	Goal: Maintain and enhance the free-flowing condition of Birch Creek There are no reservoirs or diversions in the watershed that would reduce flood flows or increase/decrease base flows. Birch Creek streamflow records, from the late 1980s to present, document variability of streamflow magnitude, frequency, duration, and timing are consistent with adjacent watersheds.

[27] All hydrological related monitoring would benefit the fisheries ORV.

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Water Quantity	Average monthly flow rates (discharge) in cubic feet per second (cfs)	The WSRA directs that each component of the NWSRS shall be administered to protect and enhance the values that caused it to be included in said system. Section 13(c) of the WSRA includes implicit language that establishes a federal reserved water right for WSRs. Recommended monthly average water reservations for selected locations on Birch Creek are outlined in **Table C-1** above.	If evidence suggests a federal reserved water right is being injured by water uses by other parties, the BLM shall consult with the state water engineer, Office of the Solicitor and Department of Justice to determine how the federal reserved water right claim can be asserted and protected. It is the BLM's policy to use the state's appropriate instream flow water right process for protecting instream flows quantities. Protect the natural flow regime through water reservations, as outlined in **Table C-1** above.	Monitor daily streamflow at the upstream (RM 0) and downstream (RM 126) extent of the 126-mile Birch Creek WSR. Continue monitoring streamflow in support of the 2001 Birch Creek Instream Flow Water Reservation application with the State of Alaska DNR.	Goal: Secure adequate instream flow quantities to protect and enhance watershed resources including the ORVs of recreation, scenic, and fisheries. Understanding the baseline rates, volume, and timing of surface water flow is an essential aspect of determining the extent to which future management actions may protect and/or enhance streamflow and water-dependent ORVs.
Water Quality	State of Alaska Water Quality Standards (18 AAC 70)	WSRA: Each component of the NWSRS shall be administered to protect and enhance the values that caused it to be included in said system…, Criteria parameters are State of Alaska Water Quality Standards for Turbidity, Specific Conductance, pH, and Temperature.	The BLM works closely with the ADEC to document water quality and remedy actions or incidents that may adversely impact water quality and ORVs.	Current water quality monitoring strategy is to operate two (2) long-term stream gage stations equipped with automated multi-parameter water quality meters recording daily water temperature, specific conductivity, pH, and turbidity at the beginning and end of the 126-mile Birch Creek WSR. Additional discrete water quality measurements are collected during float trips, every 1 to 3 years at the confluence of major tributaries.	Goal: Protect and enhance water quality and water related features of scenic, recreation, and fisheries ORVs. Monitoring water quality conditions proactively tracks Monitoring water quality conditions proactively tracks conditions and trends and helps assess the effectiveness of various management actions.

The BLM's current monitoring for the Birch Creek WSR, beyond collecting water quality and flow data, involves an annual trip (usually mid-summer) on the Birch Creek WSR. Often, additional monitoring is done on specific sections of the Birch Creek WSR. Monitoring is typically done by floating the Birch Creek WSR. At times, it is also conducted by air or remote sensing equipment. Monitoring is typically focused on ensuring the BLM is meeting requirements of the WSRA as well as the goals and objectives of the Steese RMP. Items observed during monitoring trips may include the following described below.

- Documenting both natural and human-made disturbances along the Birch Creek WSR; identifying natural disturbances that can help provide safety information to public users; and identifying human-made disturbances, such as trespass issues or campsite development, that can help initiate corrective agency actions.
- Conducting condition assessments of recreation, cultural, or other agency resources.
- Conducting visitor use surveys, which include level of use, group size, number of daily group encounters, and type of transportation.
- Monitoring compliance of authorized use, including special recreation permit (SRP), of the Birch Creek WSR and documenting any unauthorized use of the Birch Creek WSR.

Current use guidelines are provided through the semiprimitive RMZ designation as decided in the Steese RMP, which covers all of the WSR. The "semiprimitive" prescription includes managing average group size, not to exceed four people, and managing average group contacts per day as less than four. These guidelines should inform the BLM if it is nearing a use capacity threshold.

CRMP Monitoring Strategy

Monitoring is essential to protecting river-related values. The monitoring strategy objective is to protect Birch Creek WSR's free-flowing condition, water quality and quantity; protect ORVs; and address visitor use. Ongoing studies and monitoring data would help the BLM determine if management actions are necessary to protect river values from degradation.

This section identifies activities that would be conducted to assess the progress and results of implementing the CRMP. Monitoring is important to ensure that changes stay within acceptable levels and would not compromise the protection and enhancement of the river values.

For each river value to be monitored, indicators are selected that inform managers about changes in the ecosystem or social setting. When possible, monitoring indicators already being collected for other management purposes were selected to help assure the attainability of this monitoring plan.

For each key indicator, a threshold (or standard to meet) is set. This threshold value indicates the point at which river management objectives are no longer met. Then, action would be taken to meet the standard. In most cases, the existing low use in Birch Creek WSR means that current conditions of many indicators are all far from needing action to meet standards. In cases where limited data is currently available, reaching a threshold could result in further investigation, monitoring, and evaluation. Monitoring is listed in **Table C-9**, Birch Creek WSR Monitoring Strategy. These monitoring actions would be in addition to those actions in the baseline monitoring above in **Table C-8**, Birch Creek WSR Baseline Monitoring.

Table C-9. Birch Creek WSR Monitoring Strategy

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Table will be populated with the monitoring selected in the Decision Record after the Final EA is completed.					

Implementation

Regulatory Authorities

The following summarizes responsibilities and authorities of various agencies relative to activities within the WSR corridor.

The BLM's management of WSRs is outlined in Manual 6400, Wild and Scenic Rivers–Policy and Program Direction for Identification, Evaluation, Planning, and Management. The manual contains the BLM's policy and program direction for the identification, evaluation, and management of eligible and suitable WSRs and the management of designated components of the NWSRS.

The BLM shares management responsibilities with the National Marine Fisheries Service and the US Fish and Wildlife Service for protecting Endangered Species Act-listed species and their associated habitat. Fisheries is an ORV for the Birch Creek WSR due to the presence of critical habitat for many fish species.

The ADF&G is responsible for the sustainable management of fish and wildlife throughout Alaska regardless of landownership. ANILCA Section 1314 affirms the State's authority to manage fish and wildlife on public lands. The ADF&G's mission is grounded in the Alaska constitution and Alaska statutes; this mission is to protect, maintain, and improve the fish, game, and aquatic plant resources of the state and manage their use and development in the best interest of the economy and the well-being of the people of the state, consistent with the sustained-yield principle. The BLM coordinates with the ADF&G for the management of fish and wildlife.

The EPA develops and enforces regulations that implement environmental laws enacted by Congress, including those associated with the federal Clean Water Act. The EPA has the authority to implement pollution control programs. The BLM cooperates closely with the ADEC and the EPA for the purpose of establishing water quality standards and for preventing, eliminating, or diminishing the pollution of state waters consistent with the federal Clean Water Act.

The ADEC, Division of Water oversees the federal Clean Water Act for the state and is responsible for water quality standards, assessment, and regulation. As such, the Division of Water is responsible for identifying 303(d) streams (which means the water quality is limited).

The Birch Creek WSR is a 303(d)-listed stream. Approximately 1 mile of the Birch Creek WSR is listed as impaired. The EPA issued a total maximum daily load for total suspended solids to meet water quality standards for turbidity. The BLM coordinates with the ADEC on all proposed activities that involve discharges into surface waters to ensure BLM-authorized activities do not exceed State of Alaska water quality standards. Section 3.5, Water Resources, Quality, and Navigability, describes why the stream is listed.

The Alaska Department of Natural Resources, Division of Mining, Land and Water authorizes water rights. A water right is a legal right to use surface water or groundwater under the Alaska Water Use Act. A water right allows a specific amount of water from a specific water source to be diverted, impounded, or withdrawn for a specific use. In 2001, the BLM filed an instream flow water reservation application with the State of Alaska for the right to reserve recommended monthly average instream flows.

Management Actions to Protect and Enhance

Section 10(a) of the WSRA requires that river-administering agencies protect and enhance the river values for which a segment was designated. Currently, the BLM is unaware of any conditions within the river corridor that are adversely impacting the ORVs. However, to ensure this requirement is met, the CRMP includes proposed non-ground-disturbing inventory actions. The CRMP also includes potential management actions to ensure the river values are protected and enhanced into the future. The potential management actions may require additional site-specific review prior to implementation.

Evaluation of Water Resource Projects

Section 7 of the WSRA directs federal agencies to evaluate federally assisted or permitted water resource projects to ensure existing conditions of designated river values (for example, free-flowing condition, water quality, and ORVs) are not diminished. No Section 7 water resource projects have been identified at this time. If water resource projects are identified later, they will meet the requirements of Section 7 of the WSRA and NEPA prior to implementation.

Wild and Scenic River Corridor Boundary

The WSRA requires that each federally administered river in the NWSRS have a legally established boundary. Establishing a WSR boundary that includes identified river-related values is essential as a basis from which to provide necessary protection. The 1983 River Management Plan for Birch Creek WSR adheres to Section 606 of the ANILCA, which stipulates that boundaries shall include not more than 640 acres per mile on both sides of the river and boundary withdrawals are 0.5 miles from each bank of the river. This CRMP does not alter the boundary, but rather it more clearly documents the boundary using current mapping capabilities that were not available when the ANILCA designated the Birch Creek WSR.

Appendix 1: Birch Creek WSR Management

Existing management direction (from the Steese ROD, Steese Travel Management Plan, and 1983 River Management Plan) that is not described in **Sections 4 and 5** is consolidated below. This management direction would continue under the Birch Creek WSR CRMP.

Steese ROD – Fish and Aquatic Species

Goal: Maintain water quality that satisfies state standards and provides for stable and productive riparian and aquatic ecosystems.

Goal: Manage instream flows to support healthy riparian and aquatic habitats, which promote the stability and effective function of stream channels, and the ability to effectively route flood discharges.

Goal: Maintain natural timing and variability of the water table elevation in meadows and wetlands. Manage for diversity and productivity of native plant communities in riparian zones.

Goal: Manage riparian vegetation to:

- Provide an amount and distribution of large woody debris characteristic of intact natural aquatic and riparian ecosystems;
- Provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and,
- Help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

Decision Fish-5: Identified the following watersheds as Riparian Conservation Areas:

- Birch Creek (HUC # 190804010207)
- Birch Creek (HUC # 190804010212)
- Birch Creek (HUC # 190804010601)
- Birch Creek (HUC # 190804010606)
- George Creek-Birch Creek (HUC # 190804010903)
- McLean Creek-Birch Creek (HUC # 190804010401)
- Thomas Creek-Birch Creek (HUC # 190804010403)

The management goal in RCAs is to: maintain and provide stream channel integrity, ensure riparian proper functioning condition, and achieve desired future conditions for the high-value fish and aquatic resources, and yet allow for surface-disturbing activities.

To increase the likelihood of fisheries habitat rehabilitation within these watersheds, which represent the highest value fisheries resources within the planning area, additional baseline data pursuant to 43 CFR 3809.401 (c) (1) will be required. Within these areas baseline hydrological data that is adequate to characterize seasonal flow patterns and discharge will be required from the operator. The BLM will be available to advise operators on the exact type of baseline data and detail needed to meet this requirement. In addition reclamation requirements in site-specific reclamation plans, will be designed to result in rehabilitation of habitats within an accelerated time frame (e.g., less than 5 years). To achieve fisheries habitat rehabilitation within five years, rigorous revegetation and streambank stabilization techniques and a high level of monitoring and maintenance will be required.

Where priority species are present, manage and monitor habitats to promote self-sustaining populations. Priority aquatic species are those species utilized for subsistence, designated as the BLM sensitive, federally listed under the Endangered Species Act, and/or recreationally important species. Cooperate and coordinate with state agencies, federal agencies, Native organizations, and other groups to ensure efficient and effective program implementation toward conservation of native and desired, non-native aquatic species.

Develop and implement appropriate management practices to maintain the following desired future conditions for aquatic species:

- Maintain habitats historically occupied by native aquatic species (fish, invertebrates, plants and other aquatic-associated species) to promote continued occupation.
- Develop and implement habitat management plans and strategies for special status fish and aquatic species that include specific habitat and population management objectives designed for conservation, as well as management strategies necessary to meet those objectives.
- Monitor spatial extents of habitat disturbances to ensure disturbances are less than the area occupied by priority species, in order to preserve population structure and life history strategies.

Cooperate to ensure aquatic habitats are managed consistently with federal, State and Native fish population goals.

Provide and coordinate hydrologic data with the State to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitats.

Steese ROD – Non-Native Invasive Species

Goal: Prevent the introduction and spread of noxious and non-native invasive species on and adjacent to BLM-administered lands.

Decision NIS-3: Complete inventory and mapping for noxious and nonnative invasive plants at disturbed sites, along trails, and within the Birch Creek WSR corridor within 5 years of signing the ROD or by management direction.

Steese ROD – Soil Resources

Goal: Ensure that watersheds are in (or are making significant progress toward) a properly functioning physical condition that includes their upland, riparian, wetland, and aquatic areas. The infiltration and permeability rates, moisture storage, and stability of upland soils are appropriate to the watershed's soil, climate, and landform.

- Protect the soil surface from erosion; avoid detention of overland flow; maintain infiltration and permeability consistent with the potential/capability of the site.
- Promote moisture storage by soil and plant conditions consistent with the potential/capability of the site.
- Hydrologic, vegetative, and erosion/depositional processes support physical functioning, consistent with the potential or capability of the site.
- Stream channel, lake bed, shoreline characteristics are appropriate for the landscape position.

Goal: Ensure that water and nutrient cycling and energy flow support healthy, productive, and diverse natural communities. Water and nutrient cycling and energy flow occur effectively to support healthy, productive, diverse communities at levels appropriate to the potential/capability of the site.

Goal: Minimize soil erosion and sedimentation associated with storm water discharge from disturbed sites, particularly where soils and overburden are stripped and stockpiled for an extended period of time.

Steese ROD – Vegetation Resources

Goal: Ensure that watersheds (including their upland, riparian, wetland, and aquatic areas) are making significant progress toward or are in proper functioning condition.

Goal: Ensure that water and nutrient cycling, and energy flow support healthy, productive, and diverse natural communities.

Goal: Ensure that habitats support healthy, productive, and diverse populations and communities of native plants and animals.

Decision Soil-1: Manage riparian and wetland areas to achieve proper functioning condition, or if not at proper functioning condition, to enhance condition rating. Management strategies to achieve proper functioning condition.

Steese ROD – Visual Resources

Goal: Maintain and manage visual resource values in accordance with Visual Resource Management (VRM) Classes.

Steese ROD – Water Resources, Wetlands, and Floodplains

Goals: Watersheds: Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian, wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

Goals: Water Quality: Protect, restore, and maintain the natural chemical, physical, and biological quality of surface and ground waters, wetlands, and floodplains influenced by the BLM resource management activities. Ensure full compliance with applicable federal and state laws and executive orders.

Goals: Water Quantity: Protect, restore, and maintain the natural flow regime, water levels, and integrity of surface and ground waters influenced by the BLM resource management activities.

Goals: Water Rights: Ensure availability of surface and ground water for public land management purposes by acquiring and protecting federal reserved water rights and water rights obtained through state-based administrative and judicial systems. Ensure full compliance with applicable federal and state laws.

Goals: Wild and Scenic Rivers: Each Wild and Scenic River component will be managed to protect and enhance the values for which the river was designated with protection of water quality and quantity as a principal goal.

Goals: Science-based Adaptive Management: Coordinate, cooperate, and consult with federal, tribal, state, and local agencies, private landowners, and stakeholder organizations in order to foster a unified, science-based adaptive management approach to water resource management.

Goals: Assessment and Monitoring: Provide a unified framework for the BLM's science-based watershed approach to management of natural and developed water systems consistent with federal and state water quality and quantity assessment methods, including monitoring, sampling, and reporting protocols.

Decision Water-4: Compile summary reports on a rotational basis (every three or four years, or more frequently as necessary) for inventory and monitoring data collected to support Birch Creek WSR instream flow water rights and water quality.

Decision Water-5: Consistent with the Antidegradation Policy in the Alaska Water Quality Standards (18 AAC 70.015) all segments of Birch Creek are nominated as Tier 3 waters, also referred to as Outstanding National Resource Waters. See 18 AAC 70.015(a)(3).

Decision Water-7: Within five years of signing the ROD or by management direction, undertake development of a step-down Watershed Management Plan (WMP) for Birch Creek Wild and Scenic River watershed, Steese South National Conservation Area, and Preacher Creek watershed, Steese North National Conservation Area. Watershed planning helps address water quality problems in a holistic manner by fully assessing the potential contributing causes and sources of pollution including uplands, then prioritizing restoration and protection strategies to address these problems. Watersheds vary widely in physical, chemical, and biological characteristics, resource conditions, and local use impacts. Therefore, the objectives and management designed for an area shall be tailored to the conditions, conflicts, capability and improvement potential, and land use considerations on a watershed-specific basis. Site specific soil and water management determinations (e.g., watershed, floodplain-wetland, or riparian rehabilitation techniques, monitoring techniques and schedule, and the design and placement of improvements) will be developed in the interdisciplinary Watershed Management Planning phase for resource programs. The "Watershed Assessment Matrix" (Table B.5), depicting range of desired conditions for aquatic habitats would be incorporated in the Watershed Management Plan as well as other science-based watershed assessment tools. Relevant new science and new empirical water resource data would also be incorporated in the WMPs. Additional SOPs and Fluid Mineral Leasing Stipulations for land uses may be developed through the step-down WMP.

Decision Water-12: Approach restoration and enhancement of floodplain areas through management of the entire watershed rather than just focusing on a narrow floodplain-riparian zone. Prior to initiating restoration measures, a determination must be made of site potential and the primary causes of a degraded ecological condition. The natural recovery processes operating in an area should be evaluated prior to considering structural measures. While stream systems and watersheds are undergoing major geomorphic or hydrological adjustment, structural measures should not be initiated. Consider implementing structural measures only if (1) proper management prescriptions will not achieve management objectives within the desired time frame, (2) costs incurred to achieve accelerated rehabilitation are justified by the benefits to be achieved, and (3) natural recovery has not progressed to a point that will stabilize stream banks and/or wetlands basins.

Decision Water-13: In setting reclamation priorities for floodplain-wetland areas, consider the extent to which the floodplain-wetland may deteriorate if restoration or improvement action is

not immediately implemented. Floodplain-wetland areas that may suffer substantial further degradation and have high potential for improvement should be given top priority. Those that have been degraded but appear stable may be given lower priority for restoration and improvement. Other factors, such as special status species, water quality, competing water uses, fisheries, and recreation values should also be considered when establishing priorities.

Decision Water-14: To the extent it is economically and operationally feasible the BLM and/or cooperating agencies will operate and maintain long-term daily stream gage(s) near the beginning and/or end of the…Birch Creek Wild River Segment, consistent with the latest USGS Standards and Methods. The gage should have satellite telemetry capability reporting hourly stage, discharge, water temperature, water turbidity, air temperature, and precipitation with data available on a public website.

Birch Creek CRMP (1983) – Water Resources

Action 4.1: All use authorizations will include measures to control water pollution.

Action 5.1: A reservation of minimum water flows sufficient for public recreation use and to support the values for which the wild river was designated will be determined in cooperation with the Alaska Department of Natural Resources, Division of Land and Water Management.

Action 15.1: A system for the transportation of water, such as a canal, ditch, pipeline, diversion, may be allowed, provided certain conditions are met (ANILCA Section 1107).

Action 15.2: Dams, reservoirs, power houses, flood control dams, levees, and similar developments are prohibited (WSRA Section 7).

Steese ROD – Wilderness Characteristics

Goals: In areas identified for minimization of impacts to wilderness characteristics, retain wilderness characteristics including naturalness, solitude, and outstanding opportunities for primitive and unconfined recreation to the extent possible while allowing for other multiple use activities.

Decision LWC-4: Do not manage any lands to protect wilderness characteristics as a priority over other resource values and multiple uses.

Steese ROD – Wildlife Resources

Goals: Maintain natural ecosystem functions and the quality and quantity of habitat to support healthy populations of wildlife

Goals: In cooperation with ADF&G, monitor wildlife populations and habitats and manage BLM lands to conserve and enhance fish and wildlife populations. Ensure optimum, self-sustaining populations and a natural abundance and diversity of wildlife resources.

Goals: Maintain and protect subsistence resources and opportunities. Determine how management actions, guidelines, and allowable uses prescribed in response to the other issues will affect subsistence opportunities and resources. Monitor populations and habitats to ensure opportunities for subsistence harvest of wildlife.

Goals: Minimize impacts to wildlife species and their habitats from BLM-administered activities on BLM-administered lands.

Goals: Protect habitats important to wildlife population maintenance by the avoidance of possible adverse effects of land use activities, through mitigation and by reserving specific areas from certain land use activities.

Goals: Maintain a diversity and abundance of wildlife habitat that will provide resilience in adaptation to changing climate.

Goals: Ensure opportunities for wildlife viewing, fishing, hunting, and trapping.

Goal: Locate trails and recreational development to avoid conflicts with important and priority wildlife habitat and environmentally sensitive areas.

Goal: Maintain and restore riparian and wetland areas so that they provide habitat diversity and healthy riparian and aquatic conditions for riparian and wetland dependent species and other wildlife species.

Decision Wild-14: Avoid or minimize impacts from projects that could degrade riparian areas and promote restoration of riparian areas to achieve Proper Functioning Condition.

Steese ROD – Forest and Woodland Products

Goals: Maintain and restore the health, productivity, and biological diversity of forest and woodland ecosystems.

Steese ROD – Lands and Realty

Goals: Retain public lands with high resource values. Adjust land to consolidate public land holdings, acquire lands with high public resource values, and meet public and community needs.

Decision Lands-3: Retain lands within the Steese National Conservation Area in accordance with Section 402(b) of ANILCA; Retain Birch Creek WSR Corridor.

Decision Lands-19: Authorization of structures within the Steese National Conservation Area and Birch Creek WSR Corridor will be issued in accordance with Sections 1310, 1303(b) and 1316 of ANILCA.

Decision Lands-24: Rights-of-way located within the Steese National Conservation Area, and Birch Creek Wild and Scenic River, must be consistent with purposes for which the areas were designated.

Decision Lands-29: The following National Conservation Lands are not available for large-scale wind energy site testing, monitoring, and development: Birch Creek WSR Corridor. Should a Title XI application be received for large-scale wind energy projects in these areas, the BLM will consider alternative locations consistent with the Title XI process.

Notwithstanding any decision in this plan and in accordance with ANILCA Title XI, rights-of-way for Transportation or Utility Systems will be considered throughout the National Wild and Scenic Rivers System including NLCS units excluded from wind energy uses.

Small-scale renewable energy facilities will be considered in these areas if consistent with protecting the values for which the areas were designated. Small-scale facilities considered could include projects that provide energy to: BLM-administered sites, the BLM recreation sites, private land inholdings, mine sites, and small communities (less than 250 residents). These projects would consist of a few solar panels, a wood-fired boiler, or a few wind turbines and would not affect more than 100 acres per NLCS unit over the life of the RMP.

Decision Lands-32: Recommend to the Secretary of the Interior that new withdrawals under the authority of FLPMA be established on 24,000 acres in the following areas for the purposes of protecting sensitive resources, and that existing ANCSA 17(d)(1) withdrawals be partially revoked for the respective areas upon establishment of new FLPMA withdrawals. Recommended new withdrawals under FLPMA would only withdraw lands from locatable mineral entry and location. These withdrawals would not affect conveyance of validly selected lands. (Appendix C of Steese ROD)

Approximately 17,000 acres on upper and lower Birch Creek including all lands that are within the Birch Creek WSR Corridor, but outside of the one-half mile withdrawn by the Wild and Scenic Rivers Act pursuant to ANILCA and areas of lower Birch Creek outside the WSR Corridor.

Decision Lands-35: Recommend to the Secretary of the Interior to modify or partially revoke ANCSA 17(d)(1) withdrawals to open isolated federal mining claims (federal mining claims surrounded by State land that cannot be conveyed) located outside of the Steese National Conservation Area, Birch Creek WSR Corridor, crucial caribou and Dall sheep habitats, and riparian conservation areas to mineral location and entry.

Birch Creek CRMP (1983) – Electrical Transmission Lines

Action 16.1: New pipelines, electrical transmission lines, and similar transmission, distribution, or transportation systems may be permitted within or across the river corridor (ANILCA Sections 1102 - 1107)

Birch Creek CRMP (1983) – Non-Federal Land

Action 8.1: The area manager shall cooperate with non-Federal landowners to ensure that the purposes for which the river was designated are met to the greatest extent feasible and to ensure that non-Federal land owners are not unduly encumbered.

Action 8.3: The area manager shall cooperate with non-Federal landowners to ensure adequate and feasible access to their lands, subject to reasonable regulations to protect the natural and other values of the national wild river.

Action 8.4: Condemnations may not be used to acquire fee title to lands. Non-Federal lands and interests in lands adjacent to the river corridor boundary may be acquired through mutually acceptable and agreed upon exchanges, sales or donations (WSRA Section 6).

Steese ROD - Minerals

Goals: When authorizing fluid leasable minerals actions, to the extent possible, ensure that goals to protect other resource values in the planning area are met.

Goal: Maintain or enhance opportunities for mineral exploration and development, while maintaining other resource values.

Goal: When authorizing salable minerals actions, to the extent possible, ensure that goals to protect other resource values in the planning area are met.

Decision FL Min-1: Close approximately 1,237,000 acres in the Steese National Conservation Area, Birch Creek WSR, and riparian conservation areas to fluid leasable minerals.

Decision SL Min-1: Close approximately 1,237,000 acres in the Steese National Conservation Area, Birch Creek WSR, and riparian conservation areas to solid leasable minerals, including coal.

Decision L Min-1: The Steese National Conservation Area and Birch Creek WSR are withdrawn from mineral entry pursuant to ANILCA. Recommend to the Secretary of the Interior approximately 24,800 acres in riparian conservation areas and the Steese SRMA, which are outside of existing ANILCA withdrawals for the Steese National Conservation Area and Birch Creek WSR, be withdrawn from locatable mineral entry.

Decision L Min-6: Isolated federal mining claims located outside of the Steese National Conservation Area, Birch Creek wild and scenic river corridor, and riparian conservation areas are recommended open to locatable minerals.

Decision Min Mat-1: Close approximately 69,000 acres in the Birch Creek WSR Corridor to salable minerals.

Birch Creek CRMP (1983) - Minerals

Action 3.1: Mining claims properly located and maintained prior to inclusion in the Wild and Scenic Rivers System will be managed under the mining laws and 43 CFR 3809. Plans of operations required under 43 CFR 3809 will address a logical sequence of mineral development and extraction. Changes may be made at any time subject to approval of an amended plan of operations.

Action 3.2: Minerals rights-of-way applications will be administered as described in 43 CFR 2880.

Action 3.3: Improperly located mining claims will be adjudicated in a timely fashion.

Action 3.5: Mineral collection for personal recreation using only a gold pan, shovel, or other nonmotorized means is allowed in areas where there are no existing claims or private lands.

Steese ROD – Recreation

Goals: Provide for multiple recreational uses of the public lands. This includes facilitating a wide range of beneficial outcomes by managing for desired recreational activities, settings and experiences. This helps support local economic stability, while sustaining recreation resources and other sensitive resource values.

Decision Rec-1: Designate 1,246,000 acres of lands including the Steese National Conservation Area, the Birch Creek WSR Corridor and lands adjacent to the WSR corridor and the conservation area as the Steese Special Recreation Management Area (SRMA) and manage each recreation management zone (RMZ) to protect and enhance the activities, experiences, benefits and desired recreational setting characteristics.

Decision Rec-3: Develop a recreation area management plan for the Steese SRMA which includes monitoring and evaluation of visitor satisfaction, niche decisions, targeted outcomes, and setting character decisions, based on recreation management zone (RMZ) objectives and prescriptions.

Decision Rec-12: Birch Creek RMZ = 100,000 acres [some of these acres are outside of the Birch Creek WSR], semi-primitive recreation setting character, and limited off-highway vehicle area designation

Steese SRMA - RMZ 1 – Birch Creek RMZ:

- *Recreation management zone description:* The focus this zone would be to provide high quality, multi-day recreational float boat opportunities for users who desire a recreation experience characterized by solitude, tranquility, self-reliance, challenge, and risk in a semi-primitive Interior Alaska river setting, on one of America's nationally designated wild rivers.
- *Objective:* Participants in visitor assessments report an average 4.0 realization of the targeted experience and benefit outcomes listed in Table 12 (4.0 on a probability scale where: 1= not at all realized and 5= totally realized).
- Recreation setting character is Semi-Primitive. See Tables 8, 9, and 10 of Steese ROD and Approved RMP for a description of semi-primitive.

Table 12. Primary Targeted Experience and Benefit Outcomes in the Birch Creek Recreation Management Zone

Recreation Attribute	Outcomes
Activities	Primary: Float boating, river camping
Experiences	Primary: Escaping crowds; experiencing solitude; experiencing adventure; enjoying the sights, sounds, and smells of nature Secondary: Testing your abilities
Benefits	Personal: More exercise-oriented lifestyle; Greater connection with nature; Greater sense of adventure; Enhanced sense of competence Community/Social: Greater awareness of minimal impact recreation; Greater opportunities for youth Environmental: Heightened awareness of the natural world; Greater protection of fish and wildlife habitat Economic: Increased local tourism revenue

Source: Steese ROD and Approved RMP (2016)

Table 13. Implementation Framework Decision for Birch Creek Recreation Management Zone

Implementation Actions	Description
Management	The rivers and creeks within this zone would be managed to protect and enhance the qualities and characteristics that are found within a Semi-Primitive classification. The primary focus would be to manage this zone for non-motorized float-boating and river camping opportunities. Emphasis would be placed on providing semi-primitive recreation experiences by maintaining the naturally-appearing landscape, and by providing minimal facility development and visitor services, infrequent social encounters, restricted mechanized/motorized use, and minimal administrative presence.
Information and Education	Provide outreach to national, state and local float-boaters seeking a Semi-Primitive river recreation experience. Establish a relationship with stakeholders to reduce negative environmental impacts by promoting the principles of the Leave No Trace program.
Monitoring	Monitor and evaluate visitor satisfaction including niche decisions, targeted outcomes, and setting character decisions, based on Recreation Management Zone objectives and prescriptions.

Implementation Actions	Description
Administrative	Apply administrative actions as needed to create and maintain semi-primitive recreation opportunities, targeted outcomes and setting character. OHV area designation: Limited. Specific limitations on OHVs to be developed through travel management planning. Travel management plan will be completed within five years of the ROD. General: Special Recreation Permits could be issued in conformance with the BLM guidance. New restrictions and/or facilities could be developed for the purposes of site protection, visitor safety, and/or enhancing targeted outcomes and setting character.

Source: Steese ROD and Approved RMP (2016)

Birch Creek CRMP (1983) – Visitor Management

Action 7.3: Permits are required for all commercial river guides and outfitters operating within the river corridor.

Birch Creek CRMP (1983) - Facilities

Action 6.2: The construction of new cabins or temporary structures such as for trapping may be authorized pursuant to a nontransferable, five-year special use permit issued by the Area Manager.

Steese ROD – Travel Management

Goals: Provide opportunities for a range of motorized and non-motorized uses on public lands while protecting resources and minimizing conflicts among various users

Decision TM-1: Designate all lands in the planning area as Limited to motorized travel activities (43 CFR 8340.0-5(f), (g) and (h)). Develop specific limitations through transportation and travel management planning.

Decision TM-2: The following would be exempt from OHV decisions: any fire, military, emergency, or law enforcement vehicle used for emergency purposes; and any vehicle whose use is expressly authorized by the Authorized Officer, or otherwise officially approved (43 CFR 8340.0–5).

Decision TM-4: Where off-road vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historic resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. (43 CFR 8341.2)

Decision TM-8: Establish interim management prescriptions until completion of the Travel Management Plan: including the addition of the following limitations:

- Implement a 1,000 pound curb weight and 50 inch width limitation for snowmobiles to replace 1,500 pound GVWR limitation in the Steese National Conservation Area and Birch Creek WSR corridor.
- Implement a 1,000 pound curb weight limitation and 50 inch width for summer OHVs to replace 1,500 pound GVWR limitation in the Steese National Conservation Area.

Birch Creek WSR: Allow use of motorboats, hovercraft, and airboats without specific authorization.

Steese Approved Travel Management Plan – Travel Decisions

Goal: Provide and improve sustainable access for public needs and experiences

Goal: Protect natural and cultural resources and settings

Goal: Promote the safety of public land users

Goal: Minimize conflicts among the various users of public lands

Goal: Improve information on the nature, timing, and location of resource and safety concerns to improve preventive strategies and result in more effective and timely law enforcement response.

Goal: Increase the presence of non-BLM law enforcement, including the Alaska State Troopers and Alaska Wildlife Troopers, as well as the Service Law Enforcement Office.

Goal: Improve and expand interagency cooperation in the area.

Goal: Increase law enforcement capacity, including the use of new technology, modelling, and specific strategies.

Goal: Encourage educational and monitoring efforts by volunteer user groups and citizen-based education groups, which can increase law enforcement educational efforts.

Goal: Staffing with personnel trained to answer the phones, speak to the public, and conduct on-site public outreach. Staff will be supplied with information regarding the TMP, implementation strategy, and implementation status. This information could include talking points regarding travel management decision-making so that visitors will receive consistent messages.

Decision: Designated Travel Management Zone 1:

- Summer: OHV Closed (i.e., no summer cross-country or managed routes).
- Winter: OHV cross-country travel is allowed for snowmobiles 1,000 pounds curb weight or less and a maximum of 50 inches in width. All other OHVs are limited to managed routes, if present.

Birch Creek CRMP (1983) – Transportation

Action 1.1: Overland transportation systems within or across the river corridor may be authorized if it is determined that there are no economically feasible and prudent alternative routes.

Action 1.2: Access to mining claims located prior to ANILCA and with acceptable proof of discovery will be managed under existing regulations in 43 CFR 3809.

Action 1.4: A program will be established to monitor the effects of vehicle use within the river corridor boundary.

Action 1.5: The Bureau will work cooperatively with the State of Alaska to identify all rights-of-way claimed pursuant to RS2477 within the river boundaries for administrative purposes.

Action 2.1: Construction of new public landing strips within the river corridor may be allowed if there is an identified and significant public need.

Action 2.2: Landing of fixed-wing or rotary wing aircraft is permitted in the river corridor without specific authorization.

Steese ROD – Wild and Scenic Rivers

Goals: Protect outstandingly remarkable river-related values, water quality, and free-flowing condition of rivers designated as components of the National Wild and Scenic Rivers System.

Decision WSR-1: Manage Birch Creek according to the BLM Manual 6400 – Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation and Management and ANILCA.

Decision WSR-2: Manage Birch Creek to protect and enhance the Outstandingly Remarkable Values, water quality and free-flowing condition, and maintain the river's classification.

Decision WSR-3: Revise or amend the existing Birch Creek River Management Plan to incorporate resource protection decisions from this ROD, and to address development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of the Wild and Scenic Rivers Act.

Birch Creek CRMP (1983) – Historic and Archaeological Resources

Action 13.1: Prepare and maintain an inventory of historic and archaeological values within the river corridor.

Action 13.2: Protect significant cultural resources and mitigate impacts on sites which may adversely be affected by activities within the river corridor.

Appendix 2: Acronyms and Abbreviations

Acronym/Abbreviation	Definition
ADF&G	Alaska Department of Fish and Game
ANCSA	Alaska Native Claims Settlement Act
ANC	Alaska Native Corporations
ANILCA	Alaska National Interest Lands Conservation Act of 1980
BCC	bird of conservation concern
BLM	Bureau of Land Management United States Department of the Interior
CFR	Code of Federal Register
CRMP	comprehensive river management plan
EA	Environmental Assessment
EIFO	Eastern Interior Field Office
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
IPaC	Information for Planning and Consultation
NCA	National Conservation Area
NEPA	National Environmental Policy Act of 1969
NHD	National Hydrographical Survey
NHPA	National Historic Preservation Act
NLCS	National Landscape Conservation System
NRCS	Natural Resources Conservation Service
NWSRS	National Wild and Scenic Rivers System
PLO	Public Land Order
ORV	outstandingly remarkable values
RMP	Resource Management Plan
RMZ	Recreation Management Zone
ROD	Record of Decision
TCPs	traditional cultural properties
TMP	Travel Management Plan
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WSRA	Wild and Scenic Rivers Act of 1968
WSR	Wild and Scenic River
WSRS	Wild and Scenic Rivers Systems

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Appendix 3: References

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9 Appendix D: Special Status Species Lists

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IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specifc (e.g., vegetation/species surveys) and project-specifc (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Yukon-Koyukuk County, Alaska

Local office

Northern Alaska Fish & Wildlife Field Office

(907) 456-0203

(907) 456-0208

MAILING ADDRESS

101 12th Avenue

101 12th Avenue
Room 110
Fairbanks, AK 99701-6237

PHYSICAL ADDRESS

101 12th Avenue, Room 110
Fairbanks, AK 99701-6237

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specfic information is often required.

Section 7 of the Endangered Species Act requires Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local feld

office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are not shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

There are no listed species or critical habitats expected to occur at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

There are migratory birds in your project area. Please refer to Alaska's Bird Nesting Season for recommendations to minimize impacts to migratory birds, including eagles.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default//files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your

list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offhore areas from certain types of development or activities.	Breeds Feb 1 to Sep 30
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence ( )

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ( )

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

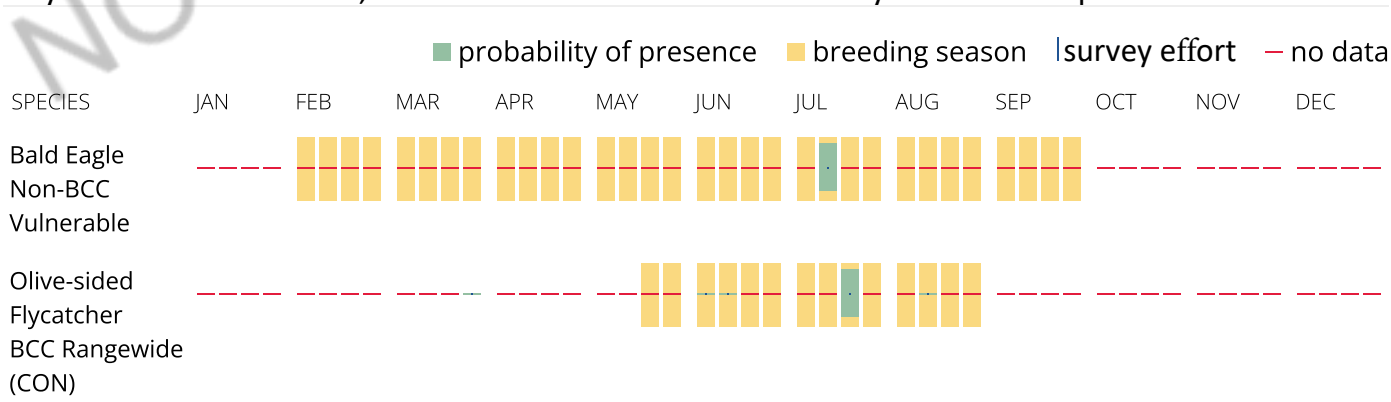
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data ( )

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);

2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no sh hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.
For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modfications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

BLM Alaska Special Status Species List - 2019

Eligibility Criteria from BLM 6840 - Special Status Species Manual (2008)

6840.06.2(A) Species designated as Bureau sensitive must be native species that occur on BLM lands, and for which BLM has significant management capability to affect their conservation status. In addition, one of the following two criteria must also apply:

(1) 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
(2) 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.

Standardized Formula for Inclusion on Special Status Species List

A standardized formula for determining the BLM Special Status Species (SSS) list inclusion was used to increase transparency and repeatability of the process. However, not all information is published on species status population, trend, and geographic distribution, so some expert input through personal communication was used in situations where information is lacking and specialized knowledge is harbored by a BLM biologist, Alaska Department of Fish and Game (ADFG), or other partner.

SSS LIST CANDIDATE SCREENING FOR ANIMALS AND PLANTS: Does the species occur on BLM-managed land in a way BLM could have "*significant management capability to affect their conservation status*" either positively or negatively AND is the species in a downward trend OR does it rely on threatened unique habitats? If "yes", the species is a candidate and it goes to the review process below, if "no", end consideration of the species.

The process for candidate animals is as follows:

1. If the species is an Endangered Species Act Endangered, Threatened, Proposed, or Candidate species, or a species that has been delisted in the last five years, it is automatically on the BLM SSS List as a special status species
2. NatureServe G4 + S3 or G5 + S2 or higher = "Sensitive"
3. (G5 + S4) + (2 or more of the following: FWS Birds of Conservation Concern or ADFG Stewardship Species or Partners in Flight or Audubon Alaska or Yukon or Weiser 2018) = "Sensitive"
4. (G5 + S4) + Expert input = "Sensitive"
5. G5 + S4 = "Watchlist"
6. (G5 + S5) + other lists and known threats or declines (expert input) = "Watchlist".

The process for candidate plants is as follows:

1. G1 or G2 or G3 = "Sensitive", if not, then;
2. S1 = "Sensitive", if not, then;
3. S2 or S3 = "Watchlist", if not, then;
4. G3G4 = "Watchlist".

Note that only "Sensitive" has official BLM status under 6840 policy. The "Watchlist" is a list of species that were candidates for "Sensitive" and did not warrant inclusion, but are recorded to document that process, raise awareness, and retain them for the next Special Status Species List review process. Note that unless otherwise specified, species with a range ranking (e.g. S1S2, G2G3) are rounded to the lower number, following BLM national practices.

BIRDS (22)

Scientific Name	Common Name
Brachyramphus brevirostris	Kittlitz's Murrelet
Branta canadensis occidentalis	Dusky Canada Goose
Calcarius pictus	Smith's Longspur
Calidris alpina arcticola	Dunlin *arcticola*
Calidris canutus roselaari	Red Knot
Calidris ptilocnemis ptilocnemis	Bering Sea (Pribilof Island) Rock Sandpiper
Calidris subruficollis	Buff-breasted Sandpiper
Contopus cooperi	Olive-sided Flycatcher
Euphagus carolinus	Rusty Blackbird
Gavia adamsii	Yellow-billed Loon
Gavia stellata	Red-throated Loon
Limosa fedoa beringiae	Marbled Godwit
Limosa haemastica	Hudsonian Godwit
Limosa lapponica	Bar-tailed Godwit
Numenius phaeopus rufiventris	Whimbrel
Numenius borealis	Eskimo Curlew (ESA E – presumed extinct)
Numenius tahitiensis	Bristle-thighed Curlew
Onychoprion aleuticus	Aleutian Tern
Plectrophenax hyperboreus	McKay's Bunting
Poecile cinctus lathami	Gray-headed Chickadee
Polysticta stelleri	Steller's Eider (ESA T)
Somateria fischeri	Spectacled Eider (ESA T)

MAMMALS[1] (4)

Scientific Name	Common Name
Bison bison athabascae	Wood Bison (ESA T, 10(j))
Enhydra lutris kenyoni	Northern Sea Otter (ESA T)
Odobenus rosmarus divergens	Pacific Walrus
Ursus maritimus	Polar Bear (ESA T, CH)

INVERTEBRATES (8)

Scientific Name	Common Name
Acentrella feropagus	Mayfly (no common name)
Alaskaperla ovibovis	Alaska Sallfly
Bombus bohemicus	Ashton Cuckoo Bumble Bee, Gypsy Cuckoo Bumble Bee
Bombus distinguendus	Northern Yellow Bumble Bee, Great Yellow Bumble Bee
Bombus kluanensis	Bumble Bee (no common name)
Bombus perplexus	Confusing Bumble Bee
Bombus suckleyi	Suckley's Cuckoo Bumble Bee
Rhithrogena ingalik	Alaska Endemic Mayfly

FISH (3)

Scientific Name	Common Name
Lampetra alaskensis	Alaskan Brook Lamprey
Onchorhynchus mykiss	Steelhead (Gulkana River)
Salvelinus alpinus	Arctic Char (Kigluaik Mtns)

ESA – Endangered Species Act, E – Endangered, T – Threatened, 10(j) – ESA section 10(j) experimental population, CH – ESA Critical Habitat

[1] Note that numerous ESA and MMPA marine mammal species may occur in areas where BLM has management authority of marine areas or may be impacted by offsite effects related to BLM actions (e.g. marine vessel traffic). These species are not included on this list, but would necessitate additional BLM impacts analysis.

Scientific Name	Common Name	Family
Antennaria densifolia	Denseleaf Pussytoes	Asteraceae
Arnica lonchophylla ssp. lonchophylla (A. lonchophylla)	Longleaf Arnica	Asteraceae
Artemisia globularia var. lutea	Purple Wormwood	Asteraceae
Artemisia senjavinensis	Arctic Wormwood	Asteraceae
Botrychium spathulatum	Spoon-leaf Moonwort	Ophioglossaceae
Carex laxa	Weak Sedge	Cyperaceae
Carex parryana	Parry Sedge	Cyperaceae
Claytonia ogilviensis	Ogilvie Mountain Springbeauty	Montiaceae
Cochlearia sessilifolia	Sessileleaf Scurvygrass	Brassicaceae
Cryptantha shackletteana	Shacklette's Cryptantha	Boraginaceae
Douglasia arctica (Androsace americana)	Mackenzie's River Douglasia	Primulaceae
Douglasia beringensis (Androsace beringensis)	Arctic Dwarf-Primrose	Primulaceae
Draba micropetala	Small-flowered Draba	Brassicaceae
Draba murrayi	Kathul Mountain Draba	Brassicaceae
Draba ogilviensis	Ogilvie Range Draba	Brassicaceae
Draba pauciflora	Fewflower Draba	Brassicaceae
Erigeron muirii	Muir's fleabane	Asteraceae
Gentianopsis richardsonii	no common name	Gentianaceae
Juncus articulatus	Jointed Rush	Juncaceae
Mertensia drummondii	Drummond's Bluebells	Boraginaceae
Micranthes nelsoniana ssp. insularis	no common name	Saxifragaceae
Micranthes porsildiana (M. nelsoniana var. porsildiana)	Porsild's Saxifrage	Saxifragaceae
Montia vassilievii ssp. vassilievii	Bostock's Minerslettuce	Montiaceae
Orobanche uniflora	Naked Broom-rape	Orobanchaceae
Oxytropis kokrinensis	Kokrines Locoweed	Fabaceae
Papaver gorodkovii	Arctic Poppy	Papaveraceae
Parrya nauruaq	Naked-stemmed Wallflower	Brassicaceae
Pedicularis hirsuta	Hairy Lousewort	Orobanchaceae
Phacelia mollis	Soft Phacelia	Hydrophyllaceae
Physaria calderi	Calder's Bladderpod	Brassicaceae
Pleuropogon sabinei	False Semaphoregrass	Poaceae
Poa hartzii ssp. alaskana	Alaskan Bluegrass	Poaceae
Poa macrantha	Seashore Bluegrass	Poaceae
Poa porsildii	Porsild's Bluegrass	Poaceae
Poa sublanata	no common name	Poaceae
Podistera yukonensis	Yukon Podistera	Apiaceae
Potentilla fragiformis	Strawberry Cinquefoil	Rosaceae
Primula tschuktschorum	Chukchi Primrose	Primulaceae
Puccinellia banksiensis	no common name	Poaceae
Puccinellia vaginata	Sheathed Alkaligrass	Poaceae
Ranunculus pacificus	Pacific Buttercup	Ranunculaceae
Ranunculus ponojensis	no common name	Ranunculaceae
Ranunculus turneri ssp. turneri	no common name	Ranunculaceae
Romanzoffia unalaschcensis	Alaska Mistmaiden	Hydrophyllaceae
Rumex aureostigmaticus	no common name	Polygonaceae

Scientific Name	Common Name	Family
Rumex beringensis	Bering Sea Dock	Polygonaceae
Rumex krausei	Krause's Sorrel	Polygonaceae
Smelowskia johnsonii	no common name	Brassicaceae
Smelowskia pyriformis	Pearshaped Smelowskias	Brassicaceae
Symphyotrichum pygmaeum	Pygmy Aster	Asteraceae
Symphyotrichum yukonense	Yukon Aster	Asteraceae

Plant species scientific names follow Alaska Center for Conservation Science (ACCS), and include synonyms from Integrated Taxonomic Information System (ITIS). Common names from ITIS and NatureServe.

Note that the entire species is included on the list unless there is a subspecies or variety specifically noted in the scientific name or a run (for fish) noted in the common name. The taxonomy of species and subspecies varies by taxa and was recommended by various Alaska-based taxa experts.

The BLM SSS list is used for BLM planning purposes in order to avoid and minimize potential negative impacts of a proposed project on SSS, and to prevent the need to list these species under the Endangered Species Act. The BLM also uses the list to raise awareness of rare and under-surveyed species and to prompt BLM staff to collect more data, which helps better understand the status and distribution of these species.

Birds (12)

Scientific Name	Common Name
Asio flammeus	Short-eared Owl
Aquila chrysaetos	Golden Eagle
Chen canagica	Emperor Goose
Cygnus buccinator	Trumpeter Swan
Dendragopus obscurus	Blue (Sooty) Grouse
Dendroica striata	Blackpoll Warbler
Dendroica townsendi	Townsend's Warbler
Falco rusticolus	Gyrfalcon
Limnodromus griseus	Short-billed Dowitcher
Pluvialis dominica	American Golden Plover
Riparia riparia	Bank Swallow
Selasphorus rufus	Rufous Hummingbird

Mammals (5)

Scientific Name	Common Name
Lepus othus	Alaska Hare
Mustela americana	American Marten (Kenai subspecies)
Myotis lucifugus	Little Brown Bat
Spermophilus parryii[2] *(Urocitellus parrii)*	Arctic Ground Squirrel[2]
Synaptomys borealis	Northern Bog Lemming

Invertebrates (9)

Scientific Name	Common Name
Oeneis alpina	Eskimo Arctic
Bombus bifarius	Two Form Bumble Bee
Bombus centralis	Central Bumble Bee
Bombus insularis	Indiscriminate Cuckoo Bumble Bee
Bombus neoboreus	Active Bumble Bee
Bombus occidentalis	Western Bumble Bee
Bombus sitkensis	Sitka Bumble Bee
Callophrys augustinus	Brown Elfin
Callophrys polios	Hoary Elfin

Any of the 374 Alaska endemic invertebrates when found on BLM-managed lands[3]

Fish (4)

Scientific Name	Common Name
Oncorhynchus keta	Chum Salmon (Clear Creek)
Oncorhynchus tshawytscha	Chinook Salmon (Beaver Creek)
Oncorhynchus tshawytscha	Chinook Salmon (Norton Sound)
Oncorhynchus tshawytscha	Chinook Salmon (Yukon Riv.)

[2] The 2010 BLM list had Osgood's Arctic Ground Squirrel (*Spermophilus parryii osgoodi)* listed as Sensitive. Due to uncertain subspecies taxonomy and range differentiation, the entire species has been shifted to the Watchlist and should be reviewed as more information becomes available.

[3] These species have been identified by experts at University of Alaska Fairbanks and have been recommended for inclusion by ADFG. Further coordination with experts will work to reduce this list to species potentially impacted by BLM actions. For the species list, see the Arctos Database.

Scientific Name	Common Name	Family
Agoseris glauca	Pale Dandelion	Asteraceae
Alyssum obovatum	American Madwort	Brassicaceae
Ambrosia chamissonis	Silver Bur Ragweed	Asteraceae
Arenaria longipedunculata	Longstem Sandwort	Caryophyllaceae
Artemisia tanacetifolia	no common name	Asteraceae
Astragalus robbinsii var. harringtonii	Harold's Milkvetch	Fabaceae
Botrychium alaskense	Alaska Moonwort	Ophioglossaceae
Cardamine blaisdellii	Small-leaf Bittercres	Brassicaceae
Carex deflexa var. deflexa	Northern Sedge	Cyperaceae
Carex peckii	Peck's Sedge	Cyperaceae
Carex phaeocephala	Dunehead Sedge	Cyperaceae
Castilleja hyetophila	Coastal Red Indian Paintbrush	Orobanchaceae
Cypripedium parviflorum var. exiliens	no common name	Orchidaceae
Draba densifolia	Denseleaf Draba	Brassicaceae
Draba macounii	Macoun's Draba	Brassicaceae
Draba mulliganii	Mulligan's Draba	Brassicaceae
Erigeron porsildii	Largeflower Fleabane	Asteraceae
Eriogonum flavum var. aquilinum	Alpine Golden Buckwheat	Polygonaceae
Erysimum angustatum (Erysimum capitatum var. capitatum)	Dawson Wallflower	Brassicaceae
Gentianella propinqua ssp. aleutica	Fourpart Dwarf Gentian	Gentianaceae
Gentianopsis barbata ssp. barbata	no common name	Gentianaceae
Juncus tenuis	Field Rush	Juncaceae
Koeleria asiatica	Eurasian Junegrass	Poaceae
Micranthes nudicaulis ssp. nudicaulis	no common name	Saxifragaceae
Oxygraphis glacialis	Kamchatka Buttercup	Ranunculaceae
Oxytropis arctica var. barnebyana	Barneby's Locoweed	Fabaceae
Phyllospadix serrulatus	Toothed Surfgrass	Zosteraceae
Plagiobothrys orientalis	Oriental Popcornflower	Boraginaceae
Potamogeton subsibiricus	Yenisei River Pondweed	Potamogetonaceae
Potentilla drummondii	Drummond's Cinquefoil	Rosaceae
Potentilla stipularis	Stipulated Cinquefoil	Rosaceae
Puccinellia vahliana	Vahl's Alkaligrass	Poaceae
Puccinellia wrightii ssp. wrightii	no common name	Poaceae
Ranunculus camissonis (R. glacialis var. camissonis)	Glacier Buttercup	Ranunculaceae
Rosa woodsii ssp. woodsii	Woods' Rose	Rosaceae
Salix planifolia	Tea-leaf Willow	Salicaceae
Saxifraga adscendens ssp. oregonensis	Wedgeleaf Saxifrage	Saxifragaceae
Saxifraga rivularis ssp. arctolitoralis	Weak Saxifrage	Saxifragaceae
Vicia americana	American Vetch	Fabaceae

Plant species scientific names follow Alaska Center for Conservation Science (ACCS), and include synonyms from Integrated Taxonomic Information System (ITIS). Common names from ITIS and NatureServe.

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10 Appendix E: Preliminary ANILCA Section 810 Evaluation and Finding for Birch Creek Comprehensive Management Plan and Environmental Assessment

Affected Environment

Subsistence resources and uses were described in Chapter 3.5.3 of the Eastern Interior Proposed Resource Management Plan and EIS (EIPRMP/EIS) and in the Affected Environment section of this Birch Creek Comprehensive Management Plan EA (CRMP).

BLM manages nearly all lands within Birch Creek Corridor and those lands are all classified as Federal public lands and available for subsistence use by qualified rural residents. In a larger context, Birch Creek corridor is within Game Management Unit 25C. BLM is the primary Federal land manager in Game Management Unit 25C, managing 86.5% of the Federal public lands, primarily in the Steese National Conservation Area and adjacent White Mountains National Recreation Area.

The communities most likely to depend on the resources available in Birch Creek corridor are those located nearby and include Circle and Central, although rural residents from throughout Alaska utilize subsistence resources in the area, under either Federal subsistence regulations or under State regulations.

ADFG has published community harvest studies for the communities of Circle and Central (Trainor et al. 2020). Salmon was the primary food resource harvested by interviewed residents of Circle (79% of reported harvest by usable weight), followed by large land mammals (14%), non-salmon fish (2%) and vegetation (2%). In Central, large mammals were the primary food resource harvested (45%), non-salmon fish was 24% of harvest, Salmon was 13%, and vegetation 12%. A high proportion of households harvested firewood. Moose was the primary land mammal harvested in Central. With salmon population declines and harvest restrictions and complete season closures in recent years, residents have likely increased harvest of non-salmon subsistence food resources since 2016 and 2017 when these interviews were conducted. Residents of each community expressed concerns that hunters from outside the community interfered with their hunting opportunities. Similar comments were received from the public during scoping for this CRMP.

The CRMP/EA (Section 3.9) summarizes the subsistence use areas mapped by Central and Circle residents and reported in ADFG subsistence studies. Maps for each community included areas within the Birch Creek corridor and surrounding Ikhèenjik watershed (Trainor et al. 2020). These maps are based on interviews with a subset of residents at the time of the study and so they do not complete a full picture of community harvest at that time or over longer timeframes. Central residents reported non-salmon fishing within the Birch Creek corridor as far as the Clum's Fork confluence.

Salmon runs in the Yukon River drainage have recently been some of the worst on record, which resulted in closures and restrictions to salmon harvest the past six years. This has made alternate sources of subsistence foods more important, which could increase reliance on resources in the Birch Creek corridor.

Hunt participation and harvest information for moose in Game Management Unit 25C indicates that participation by nearby communities is small relative to total participation, however harvest reporting for this and other general hunts is likely low among rural residents. From 2003-2014 (12 years), a total of 65 moose were reported harvested by residents of 25C, an average of 5.4 moose/year (Hollis 2018). Total reported harvest for Game Management Unit 25C was 895, an average of 74.6/year. In 2011, the subsistence season for moose was lengthened from September 1-15 to August 20-September 30, while the state season remained at September 1-15. Preliminary ADFG harvest reports for the five-year period from 2016-2020 show only 3 moose reported harvested by qualified rural residents during the days outside of the state season, whereas 372 were harvested during the 15-day state season (by both) subsistence and non-subsistence hunters.

Summary of Alternatives

The management alternatives are described in the CRMP and EA, Section 2. The following are very generalized descriptions focused on primary aspects relevant to subsistence use.

Alternative A: No Action Alternative

Alternative A reflects a continuation of current management. It would continue to implement current planning direction in the Birch Creek WSR Corridor--the Steese ROD, Steese TMP, and 1983 River Management Plan would continue to direct management.

Alternative B: Wild Character and Ecological Resilience Emphasis

Alternative B emphasizes the wild designation and ecological resilience when designing management strategies. Recreation and other uses would be accommodated consistent with law and policy, generally without increasing facilities or accommodations. Resource management actions would emphasize resource protection, connectivity, and ecological resilience. Enhanced and expanded monitoring programs would be designed to address anthropogenic and climate change driven resource issues and risks with a focus on holistic ecosystem resilience. These monitoring programs include an emphasis on partnering with cooperating stakeholders. Emphasis would be placed on the role of NLCS units as sites for scientific research. Management actions would emphasize the more primitive end of the semi-primitive recreation setting and the wild character of the Birch Creek WSR Corridor.

Alternative C: Enhanced Visitor Services

Alternative C would focus on enhanced visitor services, such as recreation and subsistence access. Management actions would emphasize providing an enhanced recreation experience around the Birch Creek WSR, including winter recreation, consistent with the wild river designation and semi-primitive designation in the RMP. Additional river access points and associated facilities may be included, consistent with WSR and NLCS policy and regulations. This alternative proposes up to two additional river access points to be permitted, construction of a public use cabin, and enhancements to existing recreational facilities. Resource management actions would emphasize monitoring of natural resources for potential impacts from enhanced visitor use and mitigating those impacts.

Effects on Subsistence Resources, Availability, and Access

Alternative A

This Alternative represents current management.

Available information on subsistence uses are limited, but it indicates that the level of use by local Federal subsistence users of the Birch Creek corridor likely represents a small portion of overall subsistence use and harvest. Current management of the Birch Creek Corridor provides Federal subsistence opportunities and minimizes impacts to habitats.

This evaluation concludes that Alternative A will not result in a significant reduction in subsistence uses for the communities of Circle and Central.

Alternative B

Relative to Alternative A, the additional management actions under Alternative B are focused on accelerating restoration activities and maintaining fish and wildlife habitats would provide greater protection to the abundance of subsistence resources than under Alternative A. This alternative would emphasize resource monitoring and therefore improve the potential for early corrective action. Management prohibiting commercial timber salvage and commercial harvest of special forest products would be generally protective of subsistence resource availability and abundance.

Under Alternative B, impacts on subsistence resource availability and abundance from increasing demand for recreation would be the same as those described under Alternative A.

This evaluation concludes that Alternative B will not result in a significant reduction in subsistence uses for the communities of Circle and Central.

Alternative C

Impacts on subsistence resource availability and abundance from increasing recreation would likely be somewhat greater than those described under Alternative A. This is due to additional management focused on creating more recreational opportunities; developing and maintaining recreational facilities and developing more access; and engaging the public. This will result in greater overall general recreational use of the Birch Creek corridor. The direct effects of this greater use on resources will be partially offset by increased resource monitoring at recreation sites and the inclusion of numerous Standard Operating Procedures to guide the use and behaviors of Special Recreation Permit holders, such commercial float trips. Greater recreational use may discourage subsistence use. Subsistence users may avoid areas with numerous other users (to avoid competition for either space or resources). This potential increased or improved access could have some benefits for subsistence users as well as well as recreationists, but those benefits would likely not balance the negative effects of increased recreational use and the resulting increase in competition for subsistence resources. The changes proposed in facility and access development in this Alternative are small and management of such changes will continue to be guided and limited by the Steese RMP and the Steese Travel Management Plan, as well as the NLCS and Wild and Scenic Rivers policies. Therefore, little change in impacts on subsistence use patterns are expected.

This evaluation concludes that Alternative C will not result in a significant reduction in subsistence uses for the communities of Circle and Central.

Evaluate the Availability of Other Lands for the Purposes Sought to be Achieved

The Birch Creek CRMP considers options to management of lands currently designated as a National Wild and Scenic River, included in the Steese NCA, and managed for the purposes of ANILCA. As such, it is presumed for the purposes of the CRMP/EA that the lands will remain under this management.

Evaluate Other Alternatives That Would Reduce or Eliminate the Proposed Action(s) from Lands Needed for Subsistence Purposes

No alternative can reduce or eliminate the proposed actions from the lands because the proposed action is a management plan for those lands. A range of alternatives have been proposed for assessing effects on resources and uses, including subsistence uses, and for gathering public input to these proposed actions.

Cumulative Case

Recreational use and subsistence and non-subsistence use in the Birch Creek corridor is likely to increase in general and as access to other land in the state is increasingly restricted. Resource development may result in reductions in fish or wildlife populations outside the Birch Creek corridor. For various reasons, some of the resources outside of Birch Creek corridor and currently relied upon by local rural communities could become scarce, increasing reliance on subsistence resources on federal lands. These potential changes could increase the importance of the Birch Creek Corridor to subsistence communities. If non-subsistence use of the Birch Creek Corridor increased markedly, increased competition for resources may result. But based on current reported use of the Birch Creek corridor by subsistence users and the small changes in visitor use and other management expected, cumulative effects are expected to be minor.

If necessary, other management could be implemented that may be effective in reducing competition. For example, the Federal Subsistence Board may adjust regulations to decrease competition and increase subsistence harvest opportunities, such as lengthened seasons.

This evaluation concludes that, in cumulative case, no alternatives result in significant restrictions to subsistence uses for the communities of Circle and Central.

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11 Appendix F: List of Preparers

An interdisciplinary team of staff from the BLM and Environmental Management and Planning Solutions, Inc. prepared this CRMP/EA. The following is a list of people who prepared or contributed to the development of this CRMP/EA.

DOI, BLM

Team	Name	Role/Responsibility
Management	Tim Hammond	Project Manager, Field Office Manager
	Zach Million	COR, Recreation
	Levi Llewellyn	Assistant Field Manager
	John Haddix	Assistant Field Manager
Interdisciplinary	Collin Cogley	Outdoor Recreation Planner
	Ben Kennedy	Air Quality, Soils and Permafrost, Water Resources, Quality, and Navigability
	Chris Matter	Mineral Resources
	Christopher Clark	Fish and Aquatic Habitat
	Jim Herriges	ACEC, Invasive, Nonnative Species, Subsistence, Threatened or Endangered Species, Veg Resources, Wildlife (Terrestrial)
	Teri Balser	Public Affairs Specialist
	Mckenzie Huso	Hazardous materials, abandoned mine lands
	Robin Mills	Cultural Resources, Native American Religious Concerns, Paleontological, Tribal Consultation,

Consultant: Environmental Management and Planning Solutions, Inc.

Team	Name	Role/Responsibility
Management	Derek Holmgren	Project Manager
	Alli Yamnitsky	Assistant Project Manager, Wild and Scenic Rivers Lead, Public Involvement Lead
Interdisciplinary	Amy Cordle	Air Quality and Climate Change Lead
	Meredith Zaccherio	Wildlife, Vegetation, and Fisheries Lead
	Kevin Doyle	Cultural, Tribal, and Subsistence Lead
	Shine Roshan	Air Quality and Climate Change Specialist
	Theresa O'Halloran	GIS Specialist, Visual Resources, Water Resources, and Fisheries Specialist
	Kirsti Davis	Soils and Permafrost Specialist
	David Jaeger	Lands and Realty and Recreation Specialist
	Rachel Redding	Wildlife Specialist
	Nicole Morris	Vegetation and Forestry Specialist
	Josh Schnabel	Socioeconomics and Environmental Justice Lead
	Perry Lown	Cultural, Tribal, and Subsistence Specialist
	Jessie Olson	Quality Control
	Andy Spellmeyer	Section 508 Compliance
	Cindy Schad	Word Processing
	Vicki Kraus	Technical Editor

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12 Appendix G: Acronyms and Abbreviations

Acronym/Abbreviation	Definition
ADEC	Alaska Department of Environmental Conservation
AIM	Assessment, Inventory, and Monitoring
ANC	Alaska Native Corporation
ANCSA	Alaska Native Claim Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
BCC	bird of conservation concern
BLM	United States Department of the Interior Bureau of Land Management
CEQ	Council on Environmental Quality
CO2e	carbon dioxide equivalent
CRMP	comprehensive river management plan
EIFO	BLM Eastern Interior Field Office
EA	environmental assessment
EIS	environmental impact statement
EPA	Environmental Protection Agency
FLPMA	Federal Land Policy and Management Act
GIS	Geographic Information System
IPaC	Information for Planning and Consultation
IPCC	Intergovernmental Panel on Climate Change
NAAQS	National Ambient Air Quality Standards
NCA	National Conservation Area
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLCS	National Landscape Conservation System
NRCS	USDA, Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWSRS	National Wild and Scenic Rivers System
ORV	outstandingly remarkable value
PLO	Public Land Order
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
PSD	Prevention of Significant Deterioration
RCA	riparian conservation area
RMP	resource management plan
RMZ	recreation management zone
ROD	Record of Decision
SHPO	State Historic Preservation Office
SOP	standard operating procedure
SRP	special recreation permit
TCP	Traditional Cultural Property
TMDL	total maximum daily load
TMP	Travel and Transportation Management Plan

Acronym/Abbreviation	Definition
USFWS	United States Fish and Wildlife Service
USGS	US Geological Survey
VRM	visual resource management
WMP	watershed management plan
WSR	Wild and Scenic River
WSRA	Wild and Scenic Rivers Act

13 Appendix H: List of References

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14 Appendix I: Chapter 2 Tables

Table 2-1. Recommended Instream Flow Values by Month for Six Locations, Birch Creek WSR (discharge in cubic feet per second)

Month	Above Twelvemile Creek	Below Twelvemile Creek	Above Clums Fork	Above Harrison Creek	Below South Fork	Steese Highway Bridge
January	1	2	2	5	8	15
February	1	2	2	5	8	15
March	1	2	2	5	8	15
April	15	25	40	80	120	200
May	180	300	400	800	2,000	2,000
June	130	250	400	800	1,500	2,000
July	45	130	200	400	600	500
August	45	130	200	400	600	500
September	45	130	200	400	600	500
October	15	25	40	80	120	200
November	10	25	40	80	120	200
December	1	2	2	5	8	15

Source: BLM 2001

Table 2-2. Birch Creek WSR Baseline Monitoring – All Alternatives

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Fisheries ORV	Habitat connectivity (including fish passage)	Native fishes can access historically occupied habitats. Levels of large, woody debris (amount and size) are near-natural levels for in-channel, along stream banks and floodplains. Maintain and protect habitat access by ensuring no human-made or natural barriers impede upstream and downstream fish passage at all flow regimes.	Identify cause of inaccessibility (e.g., woody debris levels and barriers) and mitigate impacts (e.g., barrier removals), restoring connectivity. If any of these scenarios are observed during float trips, a fish biologist would conduct further assessment of the areas where these conditions are present.	While conducting annual floats, the BLM staff would visually monitor for any obstructions of passage, including woody debris levels and barriers within the river. If these conditions are observed, BLM staff may take height measurements of the barrier. The BLM would also measure and GPS any glaring woody debris piles.	Steese ROD Fish-7 and Fish-9

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Fisheries ORV	Streambank stability (including quality and quantity of vegetation in riparian habitat)	Streambank stability greater than 95 percent for Rosgen channel types A, B, and E; greater than 90 percent for Rosgen channel type C within 80 percent of any stream reach. Percentage of riparian vegetation into the green line dominated by late-seral community types or anchored rocks/logs is more than 80 percent (good-excellent ecological condition).	Identify cause for bank instability and mitigate impacts, restoring bank stability and reducing sediment degradation. Revegetation may be required to maximize streambank stability. Determine cause of riparian vegetation decline and assess whether impacts can be mitigated. Enact reestablishment efforts to recover vital vegetation necessary for high bank stability. Alternatively, rocks and logs may serve as temporary mitigation methods. If any of these scenarios are observed during float trips, an ecologist and hydrologist would conduct further assessment of the areas where these conditions are present. Implement BLM multiple indicators monitoring technique or other appropriate methodology to ensure streambank stability.	While conducting annual floats, BLM staff would visually monitor for any observations of streambank instability and gaps in vegetation quantity or quality along the river.	Steese ROD Fish-7 and Fish-9
Fisheries ORV	Fish population – species presence and health	Maintain the variety of species within the river and maintain the river's quality to support continued habitation.	The BLM would consult with the ADF&G to determine appropriate action and seek funding to implement corrective actions.	Subject to resource availability, coordinate with ADF&G to conduct periodic surveys of fish population status.	N/A

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Recreation ORV	Semiprimitive recreation classification	Average number of contacts per day usually fewer than four groups. Majority of group sizes average fewer than four people per group. Only minimal evidence of human impact.	If the standards of maintaining a "semiprimitive" setting are not being met, the BLM would consider adaptive management options, including promoting educational measures, increasing enforcement actions, requiring removal of all human waste, and limiting or adding additional requirements to commercial/permitted use on the river.	At least one annual river recreation survey would be conducted on the river to document and ensure the BLM is maintaining the standards for semiprimitive management of those resources. The BLM would also monitor and collect casual observation at the put-in and take-out sites and use remote sensing devices, such as motion cameras and counting devices, to collect and determine use levels. While on river patrol, the BLM would collect data on group sizes, the number of other groups encountered, established camping sites, and evidence of trash and human waste. When thresholds may be close to exceeding the standards or the BLM deems it necessary, a more comprehensive visitor use and experience received study may be conducted.	N/A
Scenic ORV	Natural landscape	Preserve the Natural Landscape and maintain a Class I VRM quality, as outlined in the BLM's H-8410-1, Visual Resource Inventory.	If the standards of maintaining Class I VRM are not being met, the BLM would identify those actions impacting the visual quality and develop mitigation actions to correct it.	At least one annual VRM survey would be conducted on the river to document any changes to Scenic Quality.	N/A

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Free-Flowing Condition[28] Same for all Alternatives	Streamflow magnitude, frequency, duration, and timing are consistent with climate and natural watershed features.	The BLM follows WSRA Section 7 procedures to determine whether projects above or below, or within the Birch Creek WSR Corridor or on its tributary streams, would unreasonably diminish the free-flowing condition or unreasonably diminish one or more of the designated Birch Creek WSR ORVs—Scenic, Recreation, and Fisheries.	If a proposed project is found to have a direct and adverse effect on the Birch Creek WSR free-flowing condition or on any of the ORVs, the project would not be approved. Project redesign and resubmittal for a subsequent Section 7 determination would be required. If previously approved projects are determined to be unreasonably diminishing free-flowing conditions or one or more of the ORVs, the BLM would use existing authorities to modify approval terms and conditions to implement mitigation measures. If unapproved projects or activities are determined to be unreasonably diminishing free-flowing conditions or one or more of the ORVs, the BLM would use existing authorities to remedy the issue.	Monitor daily streamflow at the upstream (RM 0) and downstream (RM 126) extent of the 126-mile Birch Creek WSR. Annually monitor existing projects and activities for unexpected or unplanned diminishment of the free-flowing condition or unreasonably diminishment of one or more of the designated Birch Creek WSR ORVs.	Goal: Maintain and enhance the free-flowing condition of Birch Creek There are no reservoirs or diversions in the watershed that would reduce flood flows or increase/decrease base flows. Birch Creek streamflow records, from the late 1980s to present, document variability of streamflow magnitude, frequency, duration, and timing are consistent with adjacent watersheds.

[28] All hydrological related monitoring would benefit the fisheries ORV.

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Water Quantity	Average monthly flow rates (discharge) in cubic feet per second (cfs)	The WSRA directs that each component of the NWSRS shall be administered to protect and enhance the values that caused it to be included in said system. Section 13(c) of the WSRA includes implicit language that establishes a federal reserved water right for WSRs. Recommended monthly average water reservations for selected locations on Birch Creek are outlined in **Table 2-1** above.	If evidence suggests a federal reserved water right is being injured by water uses by other parties, the BLM shall consult with the state water engineer, Office of the Solicitor and Department of Justice to determine how the federal reserved water right claim can be asserted and protected. It is the BLM's policy to use the state's appropriate instream flow water right process for protecting instream flows quantities. Protect the natural flow regime through water reservations, as outlined in **Table 2-1** above.	Monitor daily streamflow at the upstream (RM 0) and downstream (RM 126) extent of the 126-mile Birch Creek WSR. Continue monitoring streamflow in support of the 2001 Birch Creek Instream Flow Water Reservation application with the State of Alaska DNR.	Goal: Secure adequate instream flow quantities to protect and enhance watershed resources including the ORVs of recreation, scenic, and fisheries. Understanding the baseline rates, volume, and timing of surface water flow is an essential aspect of determining the extent to which future management actions may protect and/or enhance streamflow and water-dependent ORVs.
Water Quality	State of Alaska Water Quality Standards (18 AAC 70)	WSRA: Each component of the NWSRS shall be administered to protect and enhance the values that caused it to be included in said system. Criteria parameters are State of Alaska Water Quality Standards for Turbidity, Specific Conductance, pH, and Temperature.	The BLM works closely with the ADEC to document water quality and remedy actions or incidents that may adversely impact water quality and ORVs.	Current water quality monitoring strategy is to operate two (2) long-term stream gage stations equipped with automated multi-parameter water quality meters recording daily water temperature, specific conductivity, pH, and turbidity at the beginning and end of the 126-mile Birch Creek WSR. Additional discrete water quality measurements are collected during float trips, every 1 to 3 years at the confluence of major tributaries.	Goal: Protect and enhance water quality and water related features of scenic, recreation, and fisheries ORVs. Monitoring water quality conditions proactively tracks Monitoring water quality conditions proactively tracks conditions and trends and helps assess the effectiveness of various management actions.

Table 2-3. Birch Creek WSR Monitoring – Alternative B

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Fisheries ORV	Refugium	Maintain or exceed baseline condition for refugia within watershed.	Determine cause in baseline conditions and mitigate impacts. Refugia conditions coincide with other indicators listed here and should be used to assess the condition of refugia.	Conduct qualitative analysis counting available refugium Note: Indicators listed here denote aspects of refugia considered valuable for fisheries.	N/A
Water Quality	State of Alaska Water Quality Standards (18 AAC 70)	WSRA: Each component of the national Wild and Scenic Rivers System shall be administered to protect and enhance the values that caused it to be included in said system. Criteria parameters are State of Alaska Water Quality Standards for Turbidity, Specific Conductance, pH, and Temperature.	The BLM works closely with the ADEC to document water quality and remedy actions or incidents that may adversely impact water quality and ORVs.	Under Alternative B, in addition to continuing water quality monitoring at two (2) long-term streamgage stations, the monitoring program would be expanded to include continuous monitoring of three (3) legacy placer-mined tributaries identified by the BLM as high-priority restoration watersheds: Twelvemile Creek, Clums Fork, and Harrison Creek. Where turbidity levels persistently exceed water quality standards, restoration would be undertaken as funding allows.	Goal: Enhance and expand water quality monitoring program to address anthropogenic driven resource issues and risks with a focus on holistic ecosystem resilience. Goal: Protect and enhance water quality and water related features of scenic, recreation, and fisheries ORVs.

Table 2-4. Birch Creek WSR Monitoring – Alternative C

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Fisheries ORV	Fish community	Ensure adequate populations of sport fish species exist in sufficient abundance to support sport fishing levels.	Emphasize habitat improvement projects specific to species not meeting standards. Coordinate with ADF&G to evaluate sport fishing management strategies that may help address the issues.	Coordinate with ADF&G to conduct biannual fish surveys to evaluate the population status of sport fish species.	N/A
Fisheries ORV	Angling	Ensure the angling experience meets public demands (i.e., high catch rates and trophy-sized fish).	Identify cause(s) resulting in poor angling experience and determine if fishery can be improved; coordinate with ADF&G, as appropriate.	Coordinate with ADF&G to conduct angler satisfaction surveys, creel surveys, or similar surveys that would help evaluate angler satisfaction.	N/A
Recreation ORV	Semi-primitive recreation classification	Same as Alternative A	Same as Alternative A	With an expected rise in visitor use, increase to two or three annual river recreation surveys conducted on the river to document and ensure the BLM is maintaining the standards for semi-primitive management of those resources. Monitoring methods, same as Alternative A. Every five years, conduct a more comprehensive visitor use and experience received study (using the Benefits Based Management or a similar model).	N/A

Value	Key Indicator	Standard to Meet	Action if Not Met	Monitoring Method and Frequency	Notes
Water Quality	State of Alaska Water Quality Standards (18 AAC 70)	WSRA: Each component of the national Wild and Scenic Rivers System shall be administered to protect and enhance the values that caused it to be included in said system. Criteria parameters are State of Alaska Water Quality Standards for Turbidity, Specific Conductance, pH, and Temperature.	The BLM works closely with the ADEC to document water quality and remedy actions or incidents that may adversely impact water quality and ORVs.	Under Alternative C, in addition to continuing water quality monitoring at two (2) long-term streamgage stations, the water quality monitoring program would be expanded to include discrete sampling for fecal coliform levels, nutrients, and potential increased soils erosion from new designated camp sites and launch sites.	Goal: Water quality monitoring would emphasize monitoring issues associated with increased visitor use including fecal coliform levels, nutrients, and potential increased soils erosion from new designated camp sites and launch sites. Goal: Protect and enhance water quality and water related features of scenic, recreation, and fisheries ORVs.

Table 2-5. Comparison of Alternatives

Steese ROD – Fish and Aquatic Species		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Goal: Maintain stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed.	Management Action: Minimize surface disturbance activities in the Birch Creek WSR watersheds, which have been shown to degrade water quality, to support aquatic vertebrate and invertebrate populations. Management Action: Required active revegetation during reclamation instead of natural recovery.	No additional management
Goal: Manage habitat to support populations of well - distributed native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.	Goal: Improve knowledge and understanding of aquatic ecosystems and communities. Management Action: Seek funding and work with the ADF&G and other interested partners to design and implement appropriate aquatic ecological studies. Management Action: Improve monitoring of fish demographics in relation to the "Strategic Science Plan for the Steese NCA and White Mountains National Recreation Area". Management Action: Based on results of base level monitoring, identify needs for targeted monitoring relevant to local species or ecological functions. Pursue funding and partnerships to address those needs.	Goal: Same as Alternative B, but with priority given to important fish species and recreationally important species more susceptible to recreational activities in Birch Creek WSR. Management Action: Improve monitoring of fish demographics in relation to the "Strategic Science Plan for the Steese NCA and White Mountains National Recreation Area".

Alternative A (No Action Alternative)	Alternative B (Wild Character and Ecological Resilience Emphasis)	Alternative C (Enhanced Visitor Services)
Decision Fish-4: Identify and manage priority habitats. Priority habitats are those habitats that support any life stages of priority aquatic species, which includes both resident and anadromous fish species. The following watersheds were identified in the Steese Approved Plan and the step-down Ikhèenjik River Watershed: Management plan was drafted. Birch Creek (HUC # 190804010207) Birch Creek (HUC # 190804010212) Birch Creek (HUC # 190804010601) Birch Creek (HUC # 190804010606) George Creek-Birch Creek (HUC # 190804010903) McLean Creek-Birch Creek (HUC # 190804010401) Pitkas Bar (HUC ending in 0408) Puzzle Gulch (HUC ending in 0506) Sheep Creek (HUC ending in 0407) Thomas Creek-Birch Creek (HUC # 190804010403) [See Map 2 in the Steese ROD: https://eplanning.blm.gov/public_projects/lup/110092367/111276/Steese_map02_conservation_ws.pdf]	Management Action: Prioritize the high-priority riparian conservation area (RCA) watersheds that flow into Birch Creek WSR to enhance and protect the identified ORVs.	No additional management

Alternative A (No Action Alternative)	Alternative B (Wild Character and Ecological Resilience Emphasis)	Alternative C (Enhanced Visitor Services)
Decision Fish-7: Identify desired future habitat conditions for fish and aquatic resources. The desired future conditions for aquatic habitats and species must consider an integrated suite of aquatic (including both abiotic and biotic components), riparian (including riparian-associated terrestrial species), and hydrologic (including uplands) conditions. It is desirable that most watersheds, generally should be in or making progress toward a High Condition Rating, as described in Appendix B.3.1, Table B-5 [of Steese ROD]. Management Action: Use desired future condition metrics for aquatic habitats (below) in conjunction with BLM's Assessment, Inventory, and Monitoring (AIM) Strategy. Decision Fish-9: Within all watersheds the desired condition is to provide aquatic habitat to support native vertebrate and invertebrate populations at natural levels. Stream channel conditions are stable and consistent with the surrounding landform and watershed. Desired stream and riparian habitat conditions are listed below. Many of these values are interim goals based on professional judgment; however, future monitoring of reference aquatic systems would be integrated to refine desired condition targets based on the Adaptive Management and Implementation and Effectiveness Monitoring Processes (Section B.2.1, "Monitoring and Evaluation of the RMP" [in the Steese ROD]). The refined targets would be established based upon the upper percentile of values, and stratified by channel type and other factors, such as aspect and elevation. 1. Habitat Connectivity: Native fish species have access to historically occupied habitats. 2. Water Temperature: Cold Water Biota: Habitat complexity provides daily, seasonally, annually and	Management Action: The BLM uses the Assessment, Inventory, and Monitoring Strategy to inform management decisions at multiple spatial scales, and it allows data comparisons across disturbed and reference stream segments to determine if the BLM is meeting aquatic habitat management goals. The Assessment, Inventory, and Monitoring Strategy data can guide adaptive management decisions.	No additional management

Alternative A (No Action Alternative)	Alternative B (Wild Character and Ecological Resilience Emphasis)	Alternative C (Enhanced Visitor Services)
spatially variable water temperatures within expected normal ranges. Consistent with Alaska Water Quality Standards (18 AAC 70) temperatures may not exceed 20 degrees Celsius at any time. The following maximum temperatures are not exceeded: a. Migration routes 15 degrees Celsius. b. Spawning areas 13 degrees Celsius. c. Rearing areas 15 degrees Celsius. d. Egg and fry incubation 13 degrees C. 3. Turbidity: Stream stability levels facilitate balanced sediment aggradation and degradation within the watershed, thereby maintaining seasonally consistent turbidity levels. Turbidity levels would not exceed those outlined in the Alaska Water Quality Standards (18 AAC70). 4. Pool Frequency: Pool frequency would approximate Rosgen (1996) estimates based on channel type. 5. Width to Depth Ratio: Less than or equal to 12:1 for confined channel types (Rosgen channel types A, E and G); less than 20:1 for moderately confined channel types (Rosgen channel type B); and less than 40:1 for unconfined channel types (Rosgen channel types C and F). 6. Channel Substrate Condition: Spawning gravel surface fines (<0.06 mm) in pool tails <5 percent (Bryce et al. 2008). 7. Large Woody Debris (applies to forested systems): Near-natural patterns in size and amount of in-channel, large woody debris and potential wood on stream banks and floodplain. 8. Streambank Stability: Streambank stability greater than 95 percent for A and B and E channel types; greater than 90 percent for C channel types within 80 percent of any stream reach. Streambank stability would be evaluated using the BLM Multiple Indicator Monitoring technique or other appropriate methodology.	*(See above)*	*(See above)*

Alternative A (No Action Alternative)	Alternative B (Wild Character and Ecological Resilience Emphasis)	Alternative C (Enhanced Visitor Services)
9. Riparian and Riparian Conservation Area Vegetation: Riparian and wetland areas in proper functioning condition. Conditions reflect natural disturbances processes. Desired conditions generally mature to late-seral community types as outlined in Winward 2000. Percent of riparian vegetation in the greenline dominated by late-seral community types or anchored rocks/logs is greater than 80 percent (good-excellent ecological condition). Over 80 percent of the plant community type along the streambank provides high bank stability, deep fibrous roots, good resistance to streambank erosion or is comprised of anchored rocks/logs. The riparian vegetation provides adequate shade, large wood debris recruitment, and connectivity.	*(See above)*	*(See above)*
Decision Fish-17: The management goal in RCAs is to: maintain and provide stream channel integrity, ensure riparian proper functioning condition, and achieve desired future conditions for the high-value fish and aquatic resources, and yet allow for surface-disturbing activities. To increase the likelihood of fisheries habitat rehabilitation within these watersheds, which represent the highest value fisheries resources within the planning area, additional baseline data pursuant to 43 CFR 3809.401 (c) (1) would be required. Within these areas baseline hydrological data that is adequate to characterize seasonal flow patterns and discharge would be required from the operator. The BLM would be available to advise operators on the exact type of baseline data and detail needed to meet this requirement. In addition reclamation requirements in site-specific reclamation plans, would be designed to result in rehabilitation of habitats within an accelerated time frame (e.g., less than five years). To achieve fisheries habitat rehabilitation within five years, rigorous revegetation and streambank stabilization techniques and a high level of monitoring and maintenance would be required.	Management Action: Subject to funding availability, prioritize and accelerate restoration actions in RCAs that contribute to the Birch Creek WSR. Management Action: The BLM would seek annual stream restoration funding to accomplish stream restoration work.	Management Action: The BLM would seek annual stream restoration funding to accomplish stream restoration work.

Alternative A (No Action Alternative)	Alternative B (Wild Character and Ecological Resilience Emphasis)	Alternative C (Enhanced Visitor Services)
Decision Fish-10: Provide and coordinate hydrologic data with the State to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.	Management Action: Maintain instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.	Management Action: Maintain instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.
Decision Fish-11: Implement the standard operating procedures (SOPs) in Appendix A [of Steese ROD] on a project specific basis to achieve the goals, meet the Desired Future Conditions for aquatic habitats and species, and maintain a thriving natural ecological balance and multiple-use relationship. Decision Fish-12: Locate water removal sites to minimize impacts on priority species and provide for attainment of desired conditions for aquatic habitats and species. Decision Fish-13: Utilize the watershed matrix to assist in site-specific project impact analysis (Appendix B, "Fisheries and Aquatic Resources") [of Steese ROD] and mitigate impacts identified as potentially degrading to the watershed Condition Rating. Decision Fish-14: Complete watershed assessments described in Section B.5, "Watershed Assessment Process" [of Steese ROD], as necessary for management.	No additional management	No additional management
Steese ROD – Non-Native Invasive Species		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Decision NIS-3: Complete inventory and mapping for noxious and non-native invasive plants at disturbed sites, along trails, and within the Birch Creek WSR corridor within five years of signing the ROD or by management direction.	Management Action: Develop an invasive species mitigation plan with a focus on watershed-scale ecological health and biodiversity.	Management Action: Develop an invasive species mitigation plan with priority on managing invasive species in areas impacted by enhanced recreation and visitor services' opportunities.

Steese ROD – Soil Resources		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Decision Soil-1: Design all BLM-authorized surface-disturbing activities to reduce soil erosion and minimize impacts to soil profiles. Where permitted operations result in surface disturbance, return land to its pre-disturbance condition to the extent possible. Implement SOPs (Appendix A, "Standard Operating Procedures and Fluid Mineral Leasing Stipulations") [of Steese ROD] to reduce soil impacts from surface-disturbing activities.	Management Action: Work with interested partners to develop and implement a coordinated holistic watershed condition monitoring strategy for the Ikhèenjik River watershed. (See corresponding management action in Water Resources, Wetlands, and Floodplains section.) Management Action: Create a structured inventory of sediment input in Birch Creek in coordination with interested partners. Management Action: Inventory for opportunities to reclaim surface disturbances associated with abandoned mine sites in the upper waters of Birch Creek and pursue funding to implement reclamation. Management Action: Pursue a formal water quality monitoring cooperative agreement with the ADEC. Management Action: Pursue opportunities for cooperative water quality monitoring with tribes, other government agencies, nongovernmental organizations (NGO), and citizen-science organizations. (See Water Quality for monitoring of turbidity and erosion.)	Management Action: Continue current level of water quality monitoring for sediment. Management Action: Enhanced recreation sites would be developed and designed to minimize new surface disturbances and mitigate erosion potential. Management Action: Inventory for opportunities to reclaim surface disturbances associated with enhanced recreation activities and pursue funding to implement reclamation. Management Action: Pursue a formal water quality monitoring cooperative agreement with the ADEC. Management Action: Pursue opportunities for cooperative water quality monitoring with tribes, other government agencies, NGOs, and citizen-science organizations. (See Water Quality for monitoring of turbidity and erosion.)

Steese ROD – Vegetation Resources		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Decision Veg-11: Manage riparian and wetland areas to achieve proper functioning condition, or if not at proper functioning condition, to enhance condition rating. Management strategies to achieve proper functioning condition are described in Section 2.2.6, "Fish and Aquatic Species" [of Steese ROD].	Management Action: Accelerated vegetation methods used in disturbed areas in the WSR Corridor or contributing areas. Management Action: Establish targeted Assessment, Inventory, and Monitoring Strategy monitoring sites in the WSR Corridor to monitor resource conditions and trends relative to landscape conditions. Management Action: Use Interior Alaska Stream Quantification Tool to characterize riparian vegetation conditions. Management Action: Inventory for opportunities to reclaim surface disturbances in the upper waters of Birch Creek and pursue funding to implement reclamation.	Management Action: Take active measures to mitigate and restore riparian impacts due to recreation activities. Management Action: Monitor site-specific impacts around recreation areas. Management Action: Inventory for opportunities to reclaim surface disturbances associated with enhanced recreation activities and pursue funding to implement reclamation.
Decision Veg-19: In areas of potentially sensitive habitats, prepare and utilize ecological mapping to identify unique, rare, or high-value plant species, communities, and habitats and to allow development of mitigation.	Management Action: Use enhanced LIDAR and similar technologies to monitor upper watershed vegetation and permafrost conditions and trends. Management Action: Inventory, monitor, and protect sensitive plant species. Conduct sensitive plant species and invasive plant species' surveys.	Management Action: Inventory, monitor, and protect sensitive plant species. Conduct sensitive plant species and invasive plant species' surveys with a priority on enhanced recreation areas.
Steese ROD – Visual Resources		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Decision VRM-1: Maintain Birch Creek RMZ (includes WSR) as a VRM Class I (Preservation of the landscape is the primary management goal. This class provides for natural ecological changes; it does not, however, preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.)	Management Action: Require VRM mitigation for all monitoring, science, and management activities to ensure sites meet VRM objectives.	Management Action: Require VRM mitigation for all recreation and visitor services' facilities to ensure sites meet objectives.

Steese ROD – Water Resources, Wetlands, and Floodplains		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Decision Water-2: Develop regional scale water quantity and water quality monitoring strategies in cooperation with other federal and State agencies consistent with science-based adaptive management.	Management Action: Work with interested partners to develop and implement a coordinated holistic watershed condition monitoring strategy for the Ikhèenjik River watershed. Management Action: Pursue funding for research focused on ecological connectivity and resilience in the Birch Creek and Ikhèenjik River watersheds, consistent with the "Strategic Science Plan for the Steese NCA and White Mountains National Recreation Area".	Management Action: Work with interested partners to develop and implement a coordinated holistic watershed condition monitoring strategy for the Birch Creek WSR Corridor.
Decision Water-3: Focus management on entire watersheds using an ecosystem approach involving all interested landowners and affected parties when feasible.	Management Action: Host ecological connectivity and resilience workshops and listening sessions centered around the Birch Creek and Ikhèenjik River watershed.	No similar management
Decision Water-8: Systematically inventory, model, analyze, and monitor water resources on an established schedule in order to evaluate conditions and trends and their potential impacts on and from BLM-administered activities consistent with science-based adaptive management principles.	Management Action: Pursue opportunities for coordinated monitoring and conservation within the Birch Creek WSR contributing watershed and the Ikhèenjik River watershed. Management Action: Establish long-term and continuous water quality monitoring to inform the BLM for pursuing water rights and enhancing water quality.	Management Action: Establish long-term and continuous water quality monitoring to inform pursuing water rights and enhancing water quality and make water flow data readily available for public use. Establish satellite telemetry data and web camera for up to three sites subject to funding.
Steese ROD – Wilderness Characteristics		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Goal: In areas identified for minimization of impacts to wilderness characteristics (Map 4) [of Steese ROD], retain wilderness characteristics including naturalness, solitude, and outstanding opportunities for primitive and unconfined recreation to the extent possible while allowing for multiple-use activities.	Management Action: Maximize protection of the wild river character and the scenic ORV. Management Action: Work with the Department of Defense to seek solutions to aircraft flyovers and associated noise (see public comments in draft scoping report).	Management Action: Protect the wild river character and the scenic ORV, while allowing for additional developed recreation sites and facilities that contribute to the recreation ORV. Management Action: Work with the Department of Defense to seek solutions to aircraft flyovers and associated noise (see public comments in draft scoping report).

Steese ROD – Wildlife Resources		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Decision Wild-13: Protect important wildlife habitats through special restrictions where necessary, including yearlong or seasonal activity restrictions and minimum altitudes for aircraft use (Appendix A, "Standard Operating Procedures and Fluid Mineral Leasing Stipulations") [of Steese ROD].	Management Action: Inventory and monitor to identify potential conflicts and implement management action to minimize identified conflicts.	Management Action: Same as Alternative B with targeted monitoring in areas potentially affected by enhanced recreation activities.
Decision Wild-18: Monitor populations of priority and subsistence wildlife species in cooperation with ADF&G and US Fish and Wildlife Service. Identify important habitats for priority species and monitor changes. Work toward development of adaptive management plans that would identify levels of change at which management actions would be implemented. Other important species and habitats include denning and seasonal high use areas for bears and furbearers, nesting habitats for other raptors, waterfowl, and shorebirds, and winter concentration areas for small game.	No additional management	Management Action: Monitor impacts of enhanced winter recreation on wildlife movements. Management Action: Monitor for sensitive wildlife species in the corridor and use adaptive management to address identified concerns, with targeted monitoring in areas potentially affected by enhanced recreation activities.
Steese ROD – Forest and Woodland Products		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Decision Forest-5: Do not allow commercial timber sales (non-salvage) within the Birch Creek WSR Corridor.	Management Action: Limit collection of special forest products to subsistence use, camp use, and personal use (i.e., berries, mushrooms, etc.). No commercial collection of special forest products would be permitted. Management Action: Disallow salvage timber harvest in the WSR Corridor.	No additional management

Steese ROD – Lands and Realty		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Goal: Acquire and maintain access to public lands, where needed, to improve management efficiency and facilitate multiple use and the public's enjoyment of these lands in coordination with other federal agencies, state and local governments, and private landowners.	Already covered by: WSRA, ANILCA, policy, and RMP decisions.	Already covered by: WSRA, ANILCA, policy, and RMP decisions. Management Action: Engage adjacent private landowners to develop strategies to discourage trespassing on private lands associated with use of BLM-administered lands in the WSR Corridor.
Steese ROD – Recreation		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Decision Rec-2: Manage SRMAs/RMZs for measurable outcome-focused objectives. Supporting management actions and allowable use decisions are required to 1) sustain or enhance recreation objectives, 2) protect the desired recreation setting characteristics, and 3) constrain uses, including non-compatible recreation activities that are detrimental to meeting recreation or other critical recourse objectives.	No additional management	Management Action: Conduct benefits-based management survey, VRM inventory, and wilderness characteristics inventory every 10 years.
Decision Rec-5: Issue SRPs on a case-by-case basis when consistent with other resource uses and restrictions. [SRPs required for commercial, group, and competitive outfitters.]	Management Action: Require human waste removal through the SRP program. Management Action: Prohibit authorizing SRPs for guided hunting trips within the river corridor.	Management Action: Programmatically allow up to 10 trips under SRPs of any type on the Birch Creek WSR Corridor in any given year. Existing SRPs would be included in the 10-trip limit. All SRPs would be subject to **Appendix B**. SRPs in excess of 10 per year would require proposal-specific analysis to address incremental cumulative effects.

Alternative A (No Action Alternative)	Alternative B (Wild Character and Ecological Resilience Emphasis)	Alternative C (Enhanced Visitor Services)
Decision Rec-7: Establish and maintain information kiosks with site maps, brochures, interpretive and educational information, important contacts, and site regulations. Develop and maintain a website of BLM recreation sites and areas that provide access information and available opportunities.	No additional management	Management Action: Develop enhanced interpretive materials to assist the public with planning recreation activities on the Birch Creek WSR (see public comment regarding need for such materials). Management Action: Utilize information from fisheries' studies to develop education and outreach materials that improve sport fishing opportunities. Management Action: Provide a mechanism to capture river changes reported to the BLM by the public that affect Birch Creek WSR uses and make the information publicly accessible; for example, website with river conditions, social media posts, etc. Management Action: Subject to availability of resources, increase river monitoring trips to three times per year.

Alternative A (No Action Alternative)	Alternative B (Wild Character and Ecological Resilience Emphasis)	Alternative C (Enhanced Visitor Services)
Decision Rec-9: Conduct periodic accessibility, safety, and condition assessments at developed recreation sites, and resolve deferred and corrective maintenance needs.	No additional management	Management Action: Clear woody debris and float hazards from the Birch Creek WSR. Management Action: Improve or add facilities at existing access sites consistent with NLCS policy and wild classification. Management Action: Evaluate up to two additional river access sites to be developed consistent with NLCS policy and wild classification. Management Action: Establish one public use cabin in the Birch Creek WSR Corridor consistent with corridor management available for year-round reservation (reservation system like the White Mountains public use cabins).
Decision Rec-10: Establish, maintain and/or expand partnership agreements that are mutually beneficial to the BLM and to the public to enhance comprehensive planning, collaborative management, and funding.	No additional management	Management Action: Explore opportunities to build partnerships in Central and Circle to promote and enhance user experiences in the Birch Creek WSR. Also, foster appreciation of the natural and cultural heritage of the WSR. Management Action: Emphasize utilization of youth and veteran resources in developing and maintaining enhanced visitor services. Management Action: Pursue partnerships to enhance sport fishing outreach and education specific to Birch Creek WSR.
No similar management	Management Action: Ensure adequate instream flows to accommodate recreational opportunities.	Management Action: Ensure adequate instream flows to accommodate recreational opportunities.

Birch Creek CRMP (1983) – Visitor Management		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Action 7.1: The Birch Creek WSR Corridor would be managed to be essentially free from evidence of recreation management induced restriction or activities, such as permit systems or signs.	No additional management	Same as Alternative A, except as necessary at developed Birch Creek WSR access facilities.
Steese ROD – Wild and Scenic Rivers		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
No similar management	Subject to resource availability, pursue exploration and application of relevant emerging science (such as, but not limited to, environmental DNA, advanced remote sensing, habitat potential modeling, and climate impact modeling) to enhance monitoring strategies and maximize protection and enhancement of ORVs and water quality.	No similar management
Birch Creek CRMP (1983) – Fire Management		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Action 12.1: Protecting human life and property and restoring the natural fire regime to the river area shall be the principal fire management considerations in the river corridor.	Management Action: Agency Administrator approval is required for suppression-related vegetation manipulations (such as burn-outs or hand line) within the Birch Creek WSR Corridor.	Management Action: Attempt to suppress human-caused fires in the Birch Creek WSR Corridor.
Steese ROD – Air and Atmospheric Values		
Alternative A (No Action Alternative)	**Alternative B (Wild Character and Ecological Resilience Emphasis)**	**Alternative C (Enhanced Visitor Services)**
Decision Air-1**:** Implement interagency wildland fire smoke effects mitigation measures adopted by the Alaska Wildland Fire Coordinating Group. Consider smoke effects on human health, communities, recreation, and tourism in all wildland and prescribed fire management activities	Management Action: Subject to resource availability, implement air quality monitoring to document conditions in the Birch Creek WSR Corridor.	No additional management

Alternative A (No Action Alternative)	Alternative B (Wild Character and Ecological Resilience Emphasis)	Alternative C (Enhanced Visitor Services)
No similar management	Management Action: Work with permafrost researchers to characterize carbon content of permafrost in the Birch Creek WSR Corridor, rate of permafrost thaw, and associated carbon emissions. Management Action: Evaluate feasibility of passive permafrost stabilization (such as, but not limited to, thermosyphons with VRM mitigation) in high-emission areas.	No additional management
No similar management	Management Action: Enhance water quality monitoring to detect additional pollutants (such as heavy metals, petroleum components, etc.), particularly those that may result from permafrost thaw.	No similar management