Appendix I

Wild and Scenic River Review

I. Wild and Scenic River Review

The Arctic National Wildlife Refuge (Arctic Refuge, Refuge) is completing a wild and scenic river review as part of this revision of the Comprehensive Conservation Plan (Plan, Revised Plan). The Wild and Scenic Rivers Act requires that such a study be completed whenever Federal agencies revise their land use plans. The process consists of several steps, including inventory, eligibility evaluation, suitability study, and potential congressional designation.

The first two steps are to inventory the Refuge's rivers, and then determine which of the rivers meet the criteria for eligibility (i.e., that they are free-flowing and contain one or more outstanding river-related values (as defined in the Wild and Scenic Rivers Act). The third step, the suitability study, determines whether each eligible river or river segment would be a worthy addition to the National Wild and Scenic Rivers System.

The findings of the eligibility and suitability studies are presented in this appendix, and preliminary suitability determinations are included for each river evaluated for suitability. The final decision on the suitability of a given river segment will be made in the record of decision for the Revised Plan.

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U.S. Fish & Wildlife Service

Wild and Scenic River Review

Arctic National Wildlife Refuge

Ivishak River - Photo by Larry Bartlett

Fall 2012

U.S. Department of the Interior
U.S. Fish and Wildlife Service
Arctic National Wildlife Refuge
Fairbanks, Alaska

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1. Introduction

The U.S. Fish and Wildlife Service (Service), Arctic National Wildlife Refuge (Arctic Refuge, Refuge), conducted a wild and scenic river review as part of the Revised Comprehensive Conservation Plan (Plan, Revised Plan) planning process. Wild and scenic river considerations are a required element of comprehensive conservation plans and are conducted in accordance with the refuge planning process outlined in 602 FW 3.4C(1)(c) and (d), including public involvement and National Environmental Policy Act (NEPA) compliance.

Section 5(d) of the Wild and Scenic Rivers Act (Public Law 90-542, as amended) establishes a method for providing Federal protection for certain free-flowing rivers and preserving them and their immediate environments for the use and enjoyment of present and future generations.

> *"In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss any such potential. The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all federal agencies as potential alternative uses of the water and related land resources involved."*

The purpose of the wild and scenic river review is to inventory and study the rivers and water bodies within the boundary of the Refuge to determine whether they merit inclusion in the National Wild and Scenic Rivers System (NWSRS). This report documents the wild and scenic river review for the Arctic Refuge Revised Plan.

1.1 Wild and Scenic Rivers Act of 1968

The Wild and Scenic Rivers Act (the Act) was enacted by Congress in 1968 with the realization that:

> "*…the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes*."

Section 16(b) of the Act states that rivers that fall under this designation have to meet criteria of being free-flowing, specifically:

> "*…existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway.*"

They must also possess at least one outstandingly remarkable value (ORV): scenic, recreational, geologic, fish, wildlife, historic, cultural, or other. The Act provides protection for designated river segments so that they are:

> "*…preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations*."

Rivers and river segments designated under the Act are protected and managed to maintain and enhance their free-flowing character and the characteristics that led to designation. Section 10 of the Act mandates:

> "*Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values*."

Protections put in place for designated rivers are intended to protect and/or enhance the river at its current state. If a river or segment is added to the NWSRS, a specific type of step down plan, a Comprehensive River Management Plan (CRMP) would be developed based on the characteristics of the river or segment corridor.

Under the authority of Section 5(a) of the Act, the Act has been amended numerous times to add rivers to the NWSRS and to require study of additional rivers and river segments for potential inclusion in the system. Enacted in 1980, the Alaska National Interest Lands Conservation Act (ANILCA) amended the Act to designate numerous rivers throughout Alaska as wild rivers, including the Ivishak, Sheenjek, and Wind Rivers within Arctic Refuge. ANILCA also required the Porcupine River be studied for potential designation. In 1985, the National Park Service completed an eligibility and suitability report for the Porcupine River and found that although the Porcupine River was eligible for the NWSRS, it was not suitable for inclusion (National Park Service 1984b).

1.2 Overview of the Wild and Scenic River Review Process

The study and designation of watercourses under the Act follows a multi-step process. The first step, evaluation of eligibility, is an objective inventory of river conditions. A river or stream segment must be free-flowing and have at least one outstandingly remarkable value (ORV) to be eligible. For this review, the river area evaluated for ORVs included one-half mile on each side of the river (ANILCA Sections 605 and 606). Eligible river segments are then tentatively classified as wild, scenic, or recreational based on the level of development and access along the river corridor. A "wild" classification denotes minimal access and development. All of the eligible rivers evaluated in this review are classified as wild.

Suitability is an assessment of factors to provide the basis for determining whether to recommend a river be added to the NWSRS. The suitability step considers the question, "Is it worthy to pursue a congressional designation?" The suitability study assesses management factors, social and political considerations, and public comments as part of the analysis process. The final determination of suitability and decision to recommend designation of a given river segment is made in the record of decision (ROD) for the Revised Plan. The recommendation is a preliminary administrative recommendation that will receive further review and possible modification by the Service Director, Secretary of the Interior, and President of the United States. Congress has reserved the authority to make final decisions on designation of rivers as part of the NWSRS.

1.3 Refuge Wild and Scenic Evaluation Team

The interdisciplinary study team is made up of specialists covering resources and programs under the Refuge's jurisdiction. This team compiled the initial inventory list, outlined resource concerns, determined and executed the evaluation process, and assessed ORVs based on knowledge of their assigned resource and/or program. For a list of contributors to the wild and scenic river review, see Appendix H in this review.

Table 1-1. Wild and scenic river review team

Team Member	Title
Heather Bartlett	Law Enforcement Officer/Pilot – Team Leader
Alan Brackney	Wildlife Biologist/GIS Specialist
Greta Burkart	Aquatic Ecologist
Donita Cotter	National Wild and Scenic Rivers Coordinator
Jennifer Reed	Park Ranger/Visitor Services Specialist
Sharon Seim	Natural Resource Planner

1.4 Scope and Methodology of the Wild and Scenic River Review for the Revised Plan

The wild and scenic river review for the Revised Plan does not include a comprehensive evaluation of all rivers in Arctic Refuge and does not represent the last opportunity for consideration for designation. The Wild and Scenic Rivers Act recognizes that river values are not static in time and therefore allows additional reviews to occur either at a particular site or across a conservation unit. Refuge rivers that were not included in the wild and scenic river review for the Revised Plan will be evaluated in future planning efforts as required by Service planning policy and Section 5(d)(1) of the Act. Similarly, additional assessment and study of rivers included in this wild and scenic river review could be incorporated in future planning efforts when new inventory data becomes available or suitability factors, such as public support for designation, become favorable.

The team identified a comprehensive list of all named Refuge rivers and river segments from the U.S. Geological Survey (USGS) Geographic Names Information System and the National Hydrography Dataset (USGS 2010). A total of 160 named rivers and creeks were identified, all of which are free-flowing. Because the lack of existing scientific information precluded a systematic and comprehensive inventory for all 160 of the Refuge's named waterways, the team decided to focus the wild and scenic river review on a subset of Refuge rivers.

A comprehensive conservation plan is a 15-year plan that outlines broad management guidelines for a refuge focused on important issues that require a management decision. Issues can be management opportunities, resource threats, use conflicts, or public concerns. The Wild and Scenic Rivers Act was established to protect free-flowing rivers against threats such as damming, water pollution, and natural resource extraction, but it also provides land managers mechanisms to protect river-related resources and values. Due to the isolated location of the Refuge and the difficulty in accessing the Refuge's lands and

waters, the issue with the greatest potential to affect Refuge's rivers over the 15-year life of the Revised Plan is visitor use.

The Refuge has no formal system to comprehensively track visitor use and recreation trends and no formal methods to document visitors who access the Refuge on their own without the commercial services of a guide or commercial air operator. An unknown number of visitors enter the Refuge each year by private planes and boats or by hiking. However, the Refuge does require permits for all commercial uses. Guides and commercial air operators (including air-taxis and air transporters) are required to submit client use reports as a condition of their permits. The commercial use database is used to estimate how many people use commercial services to access the Refuge each year and provides insights about categories of recreational activities, and visitor access, distribution, and group size. Data on commercially-supported visitor use was utilized, in combination with staff professional knowledge of non-commercially-supported visitor use, to narrow the scope of the review to those rivers with reliable flow, the highest river-related visitor use, and potentially significant management issues.

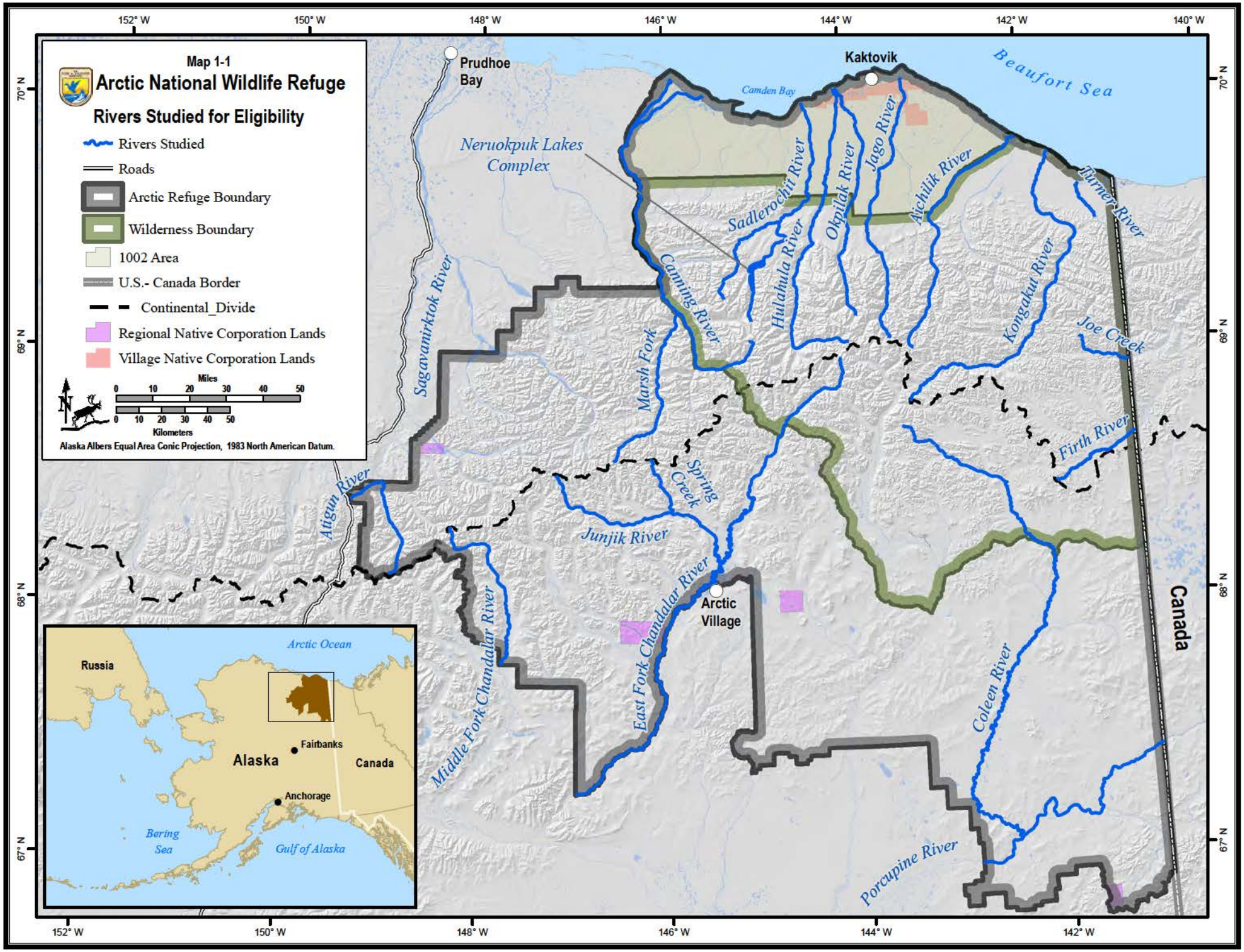
The data identified 32 waters with commercially-supported visitor use, but 12 of those 32 waters receive visitor use that is not river related (e.g., mountaineering access, hunting outside the river corridor, etc.). Because the Act is focused on protection of river-related values, the team decided not to evaluate eligibility for those 12 waters. The interdisciplinary team evaluated the eligibility of the 20 rivers listed in Table 1-2 (see also Map 1-1).

Table 1-2. Arctic Refuge rivers included in the wild and scenic river review

▪ Aichilik River	▪ Joe Creek
▪ Atigun River	▪ Junjik River
▪ Canning River	▪ Spring Creek
▪ Marsh Fork Canning River	▪ Kongakut River
▪ Coleen River	▪ Okpilak River
▪ East Fork Chandalar River	▪ Sadlerochit River
▪ Middle Fork Chandalar River	▪ Neruokpuk Lakes Complex
▪ Firth River	▪ Porcupine Rivers
▪ Hulahula River	▪ Sagavanirktok River
▪ Jago River	▪ Turner River

A river must be free-flowing and have at least one outstandingly remarkable value (ORV) to be eligible for further consideration. The team developed definitions and assessment criteria for each of the river-related values referenced in the Act: scenic, recreational, geologic, fish, wildlife, historic, and cultural. The eligibility criteria, eligibility evaluation process, and results are described in Sections 2 and 3 of this report.

The Refuge decided to proceed with suitability evaluations for eligible rivers because existing data and knowledge of visitor use patterns, resource threats, and potential user conflicts indicated the potential need for management decisions and guidelines over the 15-year life of the Revised Plan. The suitability study and river-specific suitability analyses are described in Sections 4 and 5 of this report.


Map 1-1
Arctic National Wildlife Refuge
Rivers Studied for Eligibility
Rivers Studied
Roads
Arctic Refuge Boundary
Wilderness Boundary
1002 Area
U.S.- Canada Border
Continental_Divide
Regional Native Corporation Lands
Village Native Corporation Lands
Miles
0 10 20 30 40 50
0 10 20 30 40 50
Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
152° W
150° W
148° W
146° W
144° W
142° W
140° W
70° N
69° N
68° N
67° N
Prudhoe Bay
Kaktovik
Beaufort Sea
Camden Bay
Neruokpuk Lakes Complex
Sadlerochit River
Okpilak River
Jago River
Aichilik River
Turner River
Hulahula River
Canning River
Kongakut River
Joe Creek
Sagavanirktok River
Marsh Fork
Firth River
Spring Creek
Atigun River
Junjik River
East Fork Chandalar River
Arctic Village
Middle Fork Chandalar River
Canada
Coleen River
Porcupine River
Arctic Ocean
Russia
Fairbanks
Alaska
Canada
Anchorage
Bering Sea
Gulf of Alaska

1.5 Management and Protection of Rivers Included in this Review

The protection afforded a river included in a review pursuant to Section 5(d)(1) of the Wild and Scenic Rivers Act depends on whether the identified river segment has been determined eligible or non-eligible, suitable or non-suitable through the Refuge planning process.

- River segments on Federal lands determined non-eligible or non-suitable will be managed as determined by the applicable underlying Minimal or Wilderness Management category prescribed in the Revised Plan (Chapter 2) and the ROD.
- Rivers determined suitable and recommended for wild and scenic designation in the Revised Plan would be managed to the extent possible under existing legal authorities (e.g., NEPA, the Clean Water Act, Endangered Species Act, and Archaeological Resources Protection Act) and underlying Minimal or Wilderness Management category to protect their free-flowing condition, water quality, wild classification, and any identified outstandingly remarkable values (ORVs) pending congressional action or for the duration of the Revised Plan. For more information, see Appendix F in this review.
- Congressionally designated rivers would be managed under the Wild River Management category (see Revised Plan, Chapter 2, Section 2.3.5) and specific guidance developed in a CRMP.
- For wild rivers within designated Wilderness, the more restrictive provisions of the Wild and Scenic Rivers Act and the Wilderness Act would apply.

1.6 Other Agency and Public Input

1.6.1 Eligibility Phase

The Refuge held a formal public comment period for the Revised Plan from April 7 through June 7, 2010. The Refuge received responses from 94,061 individuals and organizations consisting of 1,480 substantive original responses and 92,581 form letters. Of these, 54 mentioned wild and scenic rivers or the wild and scenic river review. A majority of comments regarding wild and scenic rivers expressed either support or opposition for the study of specific rivers. Multiple comments referred to specific rivers regarding their increased use, watershed and resource protection, physical impacts, experiential dimensions, development, and wilderness characteristics.

1.6.2 Suitability Phase

The Refuge held a 30-day comment period (October 10–November 12, 2010) focused on stakeholder input regarding the suitability criteria. For this purpose, a stakeholder was defined as:

> *"A person, group, or organization that has a direct or indirect stake in the results of the Arctic Refuge Wild and Scenic River review process because the stakeholder could affect or be affected by the actions, objectives, or management provisions associated with the findings of eligibility (including Outstandingly Remarkable Values and tentative classification), suitability and/or designation of wild rivers within Arctic Refuge."*

Key stakeholders in this process included the Environmental Protection Agency (EPA); Alaska Department of Fish and Game (ADFG); Alaska Department of Natural Resources (ADNR);

Federal agencies that border eligible rivers in the Refuge, such as the Bureau of Land Management (BLM) and National Park Service (NPS); special use permit holders such as commercial air operators and guides; the Federal Subsistence Board; tribal governments and Native corporations; Native allotees and private landowners in the Refuge; city and/or village governments (i.e., Arctic Village, Chalkyitsik, Fort Yukon, Kaktovik, and Venetie); and borough officials (North Slope boroughs and Fairbanks North Star). For more information regarding consultation and coordination with stakeholders, see Appendix C of this wild and scenic river review.

These stakeholders were sent a letter outlining the wild and scenic river process, summarizing the draft eligibility report, and a comment form regarding suitability criteria (Appendix D in this review). The responses from that inquiry were incorporated into the suitability analysis and are summarized for each river in Section 5. A summary of comments received on non-eligible rivers are included in Appendix E of this wild and scenic river review.

2. Eligibility Criteria and Evaluation

2.1 Determination of Free-Flowing

All the rivers and creeks in Arctic Refuge are free-flowing. The term "free-flowing" is defined by the Wild and Scenic Rivers Act as:

> *"Existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway…."*

2.2 Outstandingly Remarkable Values and Regions of Comparison

Section 1(b) of the Act identifies outstandingly remarkable values (ORVs) in the following manner:

> *"It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations."*

While the spectrum of resources that may be considered is broad, ORVs must be directly river related. They should:

1) be located in the river or on its immediate shore lands (within one-half mile on either side of the river);
2) contribute substantially to the functioning of the river ecosystem; and/or
3) owe their location or existence to the presence of the river.

2.2.1 Defining Outstandingly Remarkable Values

For a river to be eligible for designation to the NWSRS, the river, with its adjacent land area, must have one or more "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values." Since the Act does not further define outstandingly remarkable values, the determination that a river area contains outstanding values is a professional judgment on the part of the interdisciplinary review team.

The team clearly defined each ORV in advance of the eligibility evaluation to encourage an unbiased assessment. To provide consistency with other wild and scenic river reviews across the nation, the team reviewed ORV definitions developed by other agencies and guidance provided by the Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) (IWSRCC 1999a).

Both the USFS (U. S. Forest Service 2006) and the Bureau of Land Management (BLM et al. 1992) have developed a standard set of definitions for the seven ORVs identified by the Act. The BLM definitions sometimes reference its own agency policy, whereas definitions from the U.S. Forest Service are not tied to policy. In the State of Utah, Federal land managers took these definitions a step further (BLM et al. 1996) by developing sub-definitions (also called "components") for each ORV and explaining how each sub-definition would be rated.

For the Arctic Refuge eligibility evaluation, the team started with the work done by the State of Utah and developed definitions and assessment criteria (components) for each ORV specific to Alaska resources and Arctic Refuge. The ORV definitions are included in Appendix A of this review.

2.2.2 Defining Regions of Comparison

An iterative step in the process was to determine what regions of comparison (ROCs) would be used for the evaluation of river-related values. In order to be assessed as outstandingly remarkable, a river-related value must be a unique, rare, or exemplary feature that is important at a comparative regional or national scale. This comparative analysis requires that like rivers be measured against like rivers. The IWSRCC guidance says the ROC is not fixed and that it should provide for meaningful comparative analysis (IWSRCC 1999a). The ROC should not be so large that no river would be eligible or so small that every river would be eligible.

The guidance also says the ROC does not need to be the same for each ORV. For example, the scenery on the Refuge is very different on the north side (north of Continental Divide) versus the south side of the Brooks Range. Scenery north of the Brooks Range is extremely different in form, line, color, and texture from scenery south of the Brooks Range. Due to this dramatic variation, two ROCs were selected for the scenic ORV. Conversely, recreation occurs across the entire Refuge in generally the same manner (e.g., bush planes are required for access; there are no roads or trails directing travel to specific locations; the entire Refuge is extremely remote; commercial operators report visitation the same way across the Refuge). Therefore, the entire Refuge would serve as the ROC for the recreational ORV.

The interdisciplinary review team was responsible for delineating an appropriately scaled area of consideration for each ORV. Within each ROC, like rivers are assessed against each other to allow the comparison of similar types of river resources. Each ORV definition was reviewed separately and evaluated to determine a reasonable ROC. The ROCs for each ORV are described in Appendix A of this review. Please also refer to Map 2-1.

2.2.3 Outstandingly Remarkable Value Assessment Methodology

Each member of the team gathered information on each of the 20 rivers, whether narrative (qualitative), numerical (quantitative), or a combination thereof, and then presented their research to the full team. In many—if not all—cases, other team members identified additional resources and datasets. In the end, information and data were gathered from all possible known sources, which sometimes included institutional knowledge from other Refuge and agency staff.

The purpose of the eligibility evaluation is to compare and contrast each river to other waters in the ROC for each outstandingly remarkable value (ORV). In some instances, datasets were rejected or component definitions not analyzed because the available information did not allow the team to compare and contrast the rivers. It was not helpful to include a dataset that had the same result for all the rivers or a dataset that applied only to a subset of the rivers being evaluated.

Map 2-1

Arctic National Wildlife Refuge

Regions of Comparison for Wild & Scenic River Eligiblity Analysis

A

Arctic Refuge divided into North and South Slopes

North South

B

Interior Yukon River Basin

Yukon River Basin

C

Native Alaskan Language Groups on the Arctic Slope and Upper Yukon Basin

Inupiaq

Athapaskan

D

Arctic Slope of Alaska

Arctic Slope

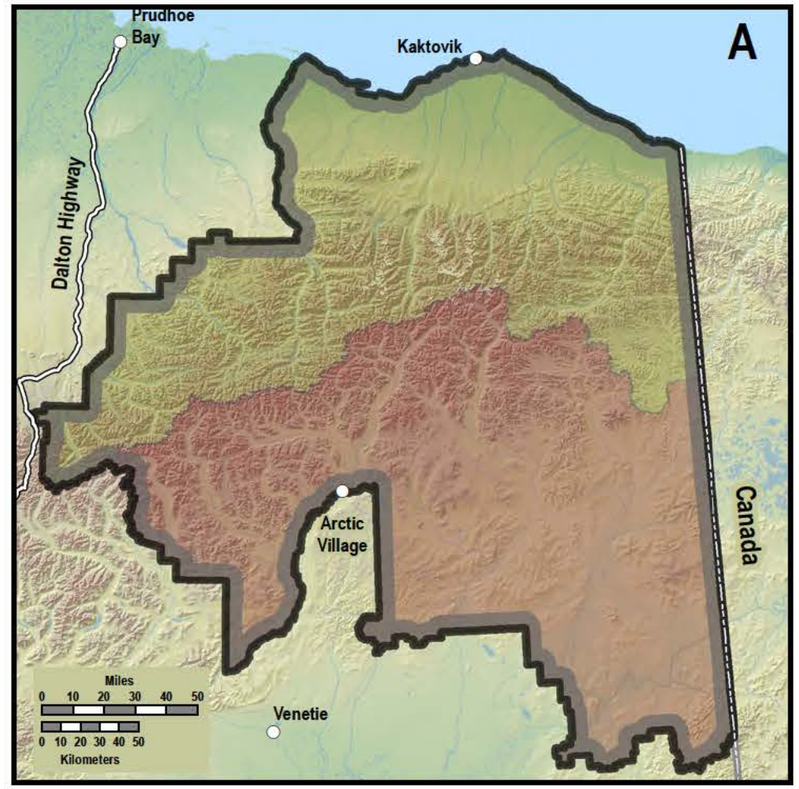
Other Features

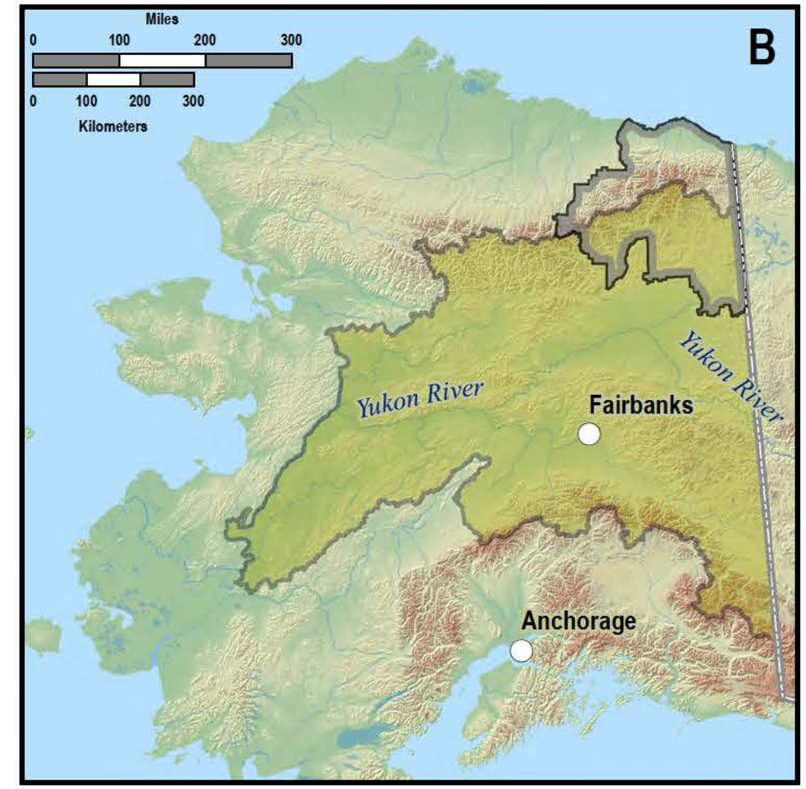
Arctic Refuge Boundary

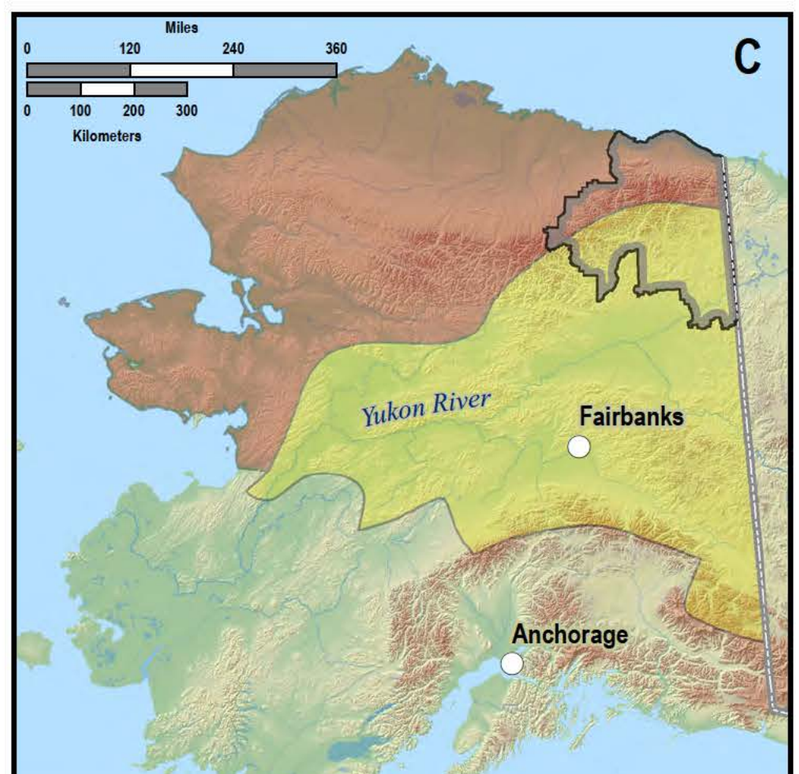
Roads

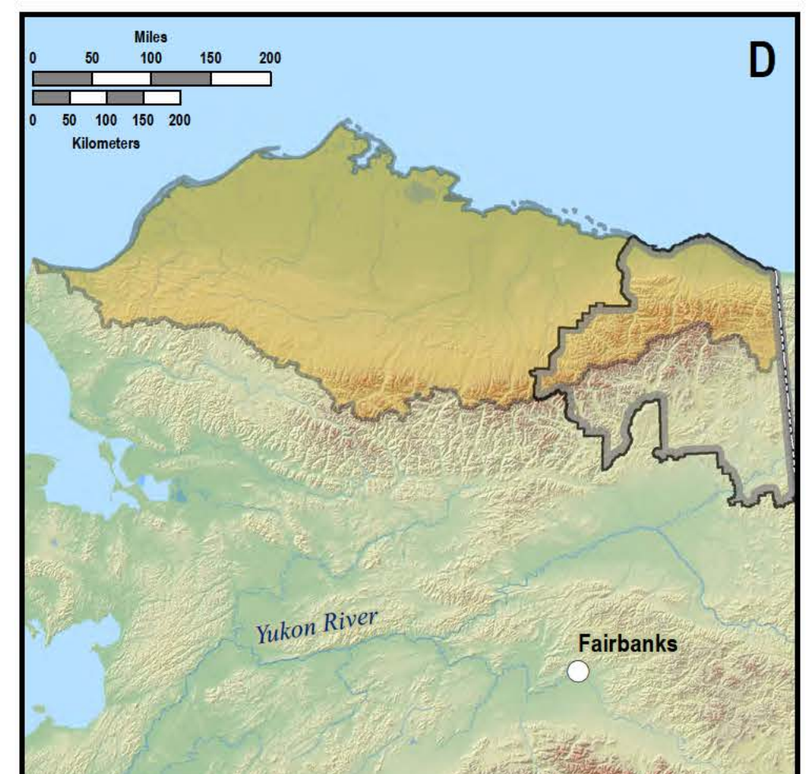
U.S.- Canada Border

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.









As a team, each definition and sub-definition was reviewed for each ORV to make a final determination of the appropriate data to use and how each information set would be analyzed to meet the requirements of the ORV definitions. A system was developed to rank the analytical results river-by-river for each ORV. While each of the ORVs and their components were evaluated separately using a distinct process, some commonalities exist for the assessment process:

1. All component scores were evaluated on a scale of zero to five, with five being the maximum number of points a component definition could score. This was to avoid weighting one component of an ORV over another.
2. The team used both single datasets and multiple datasets to fully evaluate each component. If multiple datasets were used, averages of the scores for each dataset were used so that the total component would score no higher than five.
3. A dataset was only used once across all ORVs. This was to avoid weighting certain data over others.
4. The team chose to use numeric (quantitative) data over narrative (qualitative) data whenever possible. For some datasets, only qualitative data were available.
5. The maximum number of points a river could score varied across ORVs based on the number of components. For example, there are five components for the recreational ORV for a maximum score of 25, while the scenic ORV has three components for a maximum score of 15.
6. According to Department of the Interior guidance (47 FR 39453-39461 1982), *"The determination of whether a river area contains 'outstandingly remarkable' values is a professional judgment on the part of the study team."* The study team decided to "grade" the rivers being reviewed by percent-of-total-score for each ORV. The team decided that a river value required a score of at least 70 percent of the total possible points to be deemed "outstandingly remarkable."

2.3 Classifications

After a river is determined to be eligible, it must be tentatively classified using the definitions in the Act. Classifications are based on the amount of development and access on and around the immediate shorelines of the river. Section 2(b) of the Act defines the classifications of wild and scenic rivers in the following manner:

> *"Every wild, scenic or recreational river in its free-flowing condition, or upon restoration to this condition, shall be considered eligible for inclusion in the National Wild and Scenic Rivers System and, if included, shall be classified, designated, and administered as one of the following:*
>
> *"1)* ***Wild river areas*** *– Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.*
>
> *"2)* ***Scenic river areas*** *– Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.*

> *"3)* ***Recreational river areas*** *– Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."*

The classification assigned at this stage in the review process is preliminary and can be changed during the suitability study. All of the rivers included in the Arctic Refuge wild and scenic river review were tentatively classified "wild."

2.4 Detailed Analyses for Each Outstandingly Remarkable Value

The outstandingly remarkable value (ORV) assessments for each of the 20 rivers included in the eligibility evaluation are in Appendix B of this review. The assessments describe the components and scoring guidelines for each ORV and the calculated composite scores for each river.

3. Eligibility Results

Of the 20 rivers studied for eligibility at this time, 10 rivers were identified as free-flowing and possessing at least one outstandingly remarkable value (ORV). Table 3-1 summarizes the eligibility findings for the Arctic Refuge wild and scenic river review. The locations of eligible rivers are shown in Map 3-1.

Table 3-1. Eligible Rivers

River System	Description	River Length	*Segment Length	**Preliminary Classification	Remarkable Values
Atigun River	The Atigun River, which is a tributary of the Sagavanirktok River, flows into the Refuge from bordering lands with the State and Bureau of Land Management and can be accessed by the Dalton Highway. The Refuge's portion is often referred to as Atigun River Gorge (or Atigun Gorge).	43	11	Wild	Geologic, Recreational
Canning River	The Canning River is the longest north-flowing river in the Refuge. It forms the western boundary of the Refuge and flows through mountains, foothills, coastal plain, and empties into the Beaufort Sea.	125	125	Wild	Cultural, Wildlife, Fish, Recreational
Marsh Fork Canning River	The Marsh Fork is the Canning River's main tributary; it flows into the Canning River from the west as it cuts through the rugged, striking landscape of the Phillip Smith Mountains.	54	54	Wild	Recreational
East Fork Chandalar River	The East Fork Chandalar River is a major tributary of the Chandalar River and serves as a highway to subsistence hunting, fishing, and trapping areas. From approximately Arctic Village south, the eastern half of the river, including the eastern streambed, is not in the Refuge boundary.	223	204	Wild	Cultural
Hulahula River	The Hulahula River originates in the glaciers of the Romanzof Mountains, flows west for a ways, and then sharply turns to the north as it flows between Mt. Chamberlin and Mt. Michelson and out to Camden Bay.	97	97	Wild	Recreational, Cultural
Jago River	The Jago River is flanked by the Romanzof Mountains and is fed by the McCall Glacier on Mt. Itso. It flows through the mountains to the coastal plain and finally to the Beaufort Sea.	84	84	Wild	Wildlife
Kongakut River	The Kongakut is the only major, floatable North Slope river whose entire watershed is in designated Wilderness. Originating high in the mountains of the eastern Brooks Range, the river flows north through miles of rugged mountains to the coastal plain and empties into the Beaufort Sea.	116	116	Wild	Recreational, Scenic, Geologic

River System	Description	River Length	*Segment Length	**Preliminary Classification	Remarkable Values
Okpilak River	The silt-laden Okpilak River begins in the heart of the most active glacial area of the Refuge. Its rugged, steep terrain and melting icy masses create a torrent of water in the headwaters that is channeled through a vertical canyon and then abruptly flattens as it flows onto the coastal plain to the Beaufort Sea.	73	73	Wild	Scenic, Geologic
Neruokpuk Lakes complex* **	The Neruokpuk Lakes complex (which includes Carnivore Creek, Lake Peters, Lake Schrader, and the Kekiktuk River) includes the two largest and most northern arctic alpine lakes in North America. The connected lakes are surrounded by steep slopes rising to some of the highest peaks in the Brooks Range.	32	32	Wild	Scenic, Geologic, Fish
Porcupine River	The Porcupine is one of the largest tributaries of the Yukon River and is a historically important travel route. The Refuge portion begins at the United States-Canada border and flows downstream for approximately 85 miles.	476	85	Wild	Historic, Cultural, Geologic, Wildlife

* Segment length is approximate; it refers to the portion of the river that flows within the boundaries of Arctic Refuge. River length is the entire river. Both lengths are identified in miles.

** Preliminary classifications are interim classifications and can change through the suitability, recommendation, or designation phases of the review

*** The Neruokpuk Lakes complex includes Carnivore Creek, which is the inlet, and Kekiktuk River, which is the outlet. The entire length from the headwaters of Carnivore Creek to the confluence of Kekiktuk River with the Sadlerochit River was evaluated.

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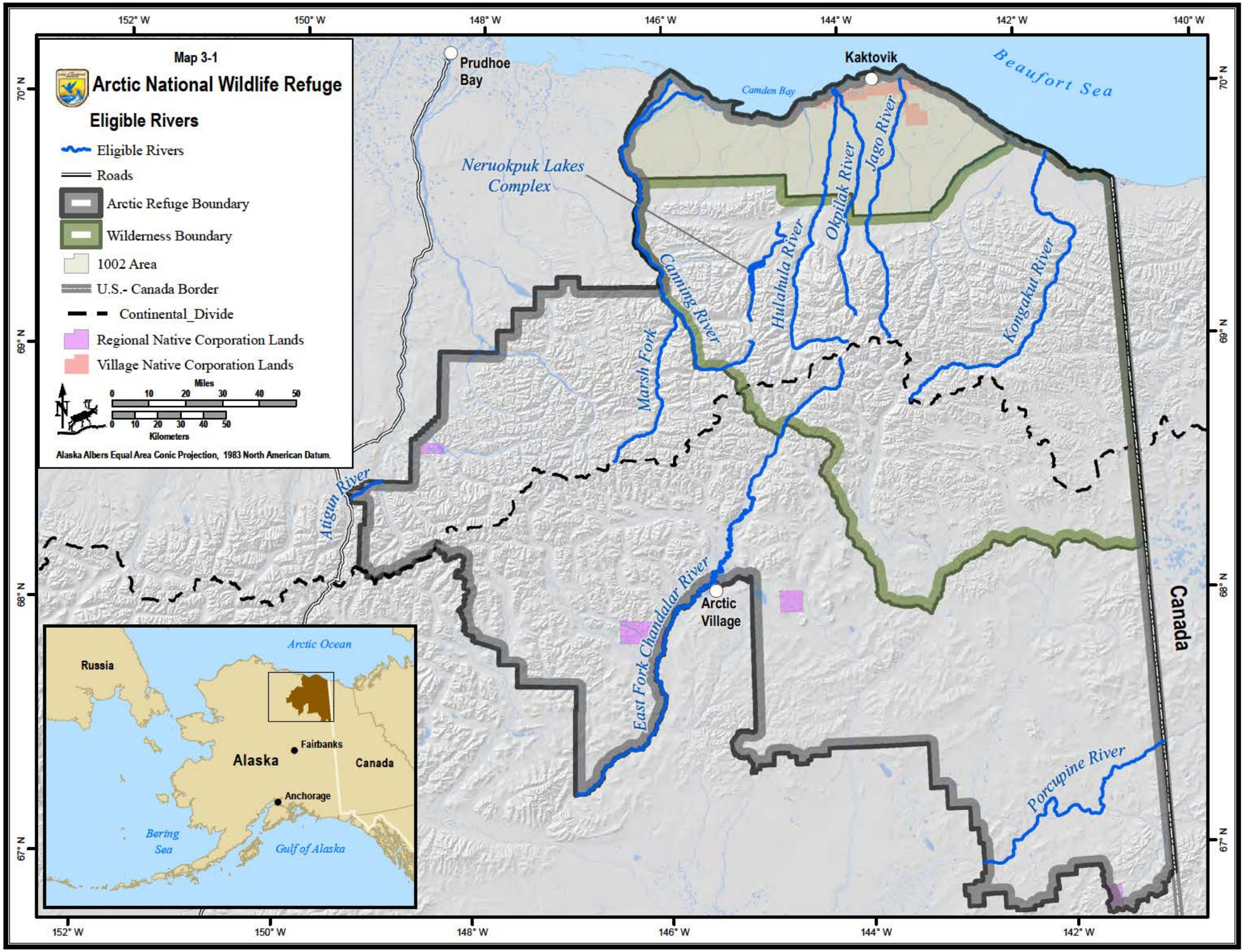

Map 3-1
Arctic National Wildlife Refuge
Eligible Rivers
Eligible Rivers
Roads
Arctic Refuge Boundary
Wilderness Boundary
1002 Area
U.S.- Canada Border
Continental_Divide
Regional Native Corporation Lands
Village Native Corporation Lands
Miles
0 10 20 30 40 50
0 10 20 30 40 50
Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
152° W
150° W
148° W
146° W
144° W
142° W
140° W
70° N
69° N
68° N
67° N
Prudhoe Bay
Kaktovik
Beaufort Sea
Camden Bay
Neruokpuk Lakes Complex
Jago River
Okpilak River
Hulahula River
Canning River
Marsh Fork
Kongakut River
Atigun River
East Fork Chandalar River
Arctic Village
Porcupine River
Canada
Arctic Ocean
Russia
Alaska
Fairbanks
Canada
Anchorage
Bering Sea
Gulf of Alaska

4. Suitability Study

4.1 Suitability Analysis Process

The purpose of the suitability phase is to determine whether eligible segments would be appropriate additions to the NWSRS by considering tradeoffs between development and protection. Suitability factors include the physical, social, and political environments; the economic consequences; and the manageability of rivers if they were to be designated. Guidance for analyzing the suitability of eligible rivers was derived from IWSRCC (1999a) and the Wild and Scenic Rivers Act of 1968.

Ten rivers were evaluated for their suitability as part of the Arctic Refuge wild and scenic river review (Map 4-1). Only Congress can designate a wild and scenic river. The Service cannot administratively designate a river as a component of the NWSRS through a planning decision or other agency decision; therefore, no segment studied is designated or will automatically be designated as part of the NWSRS. The planning determination of suitability provides the basis for a decision to recommend legislation.

4.2 Methodology and Suitability Criteria

A suitability study must address the following questions:

1. Should the river's free-flowing character, water quality, and ORVs be protected, or are one or more other uses important enough to warrant doing otherwise?
2. Will the river's free-flowing character, water quality, and ORVs be protected through designation? Is designation the best method for protecting the river corridor? In answering these questions, the benefits and impacts of the designation must be evaluated and alternative protection methods considered.
3. Is there a demonstrated commitment to protect the river by any non-Federal entities that may be partially responsible for implementing protective management?

In Sections 4(a), 5(c), and 6(c) of the Act, Congress identified the factors to be considered and documented as a basis for determining the suitability of a river, and in 1999, the IWSRCC produced a concise document outlining these factors (IWSRCC (1999a). The following criteria are used by Federal land managers to consistently evaluate the suitability of waters under their jurisdiction and to answer the three questions posed previously:

1. Characteristics which do or do not make the area a worthy addition to the NWSRS.
2. Status of land ownership, minerals (surface and subsurface), use in the area, including the amount of private land involved, and associated or incompatible uses.
3. Reasonably foreseeable potential uses of the land and related waters which would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRS.
4. Federal, public, State, tribal, local, or other interests in designation or non-designation of the river, including the extent to which the administration of the river, including the

costs thereof, may be shared by State, local, or other agencies and individuals. Also, the Federal agency that will administer the area should it be added to the NWSRS.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and administering the area if it is added to the NWSRS.
6. Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river, or other mechanisms (existing and potential) to protect identified values other than wild and scenic river designation.
7. Historical or existing rights which could be adversely affected.
8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.
9. Support or opposition of local and State governments and stakeholders for designation.
10. Consistency of designation with other agency plans, programs, or policies.
11. Contribution to a river system watershed or basin integrity.
12. Other issues and concerns, if any.

4.3 Data Sources

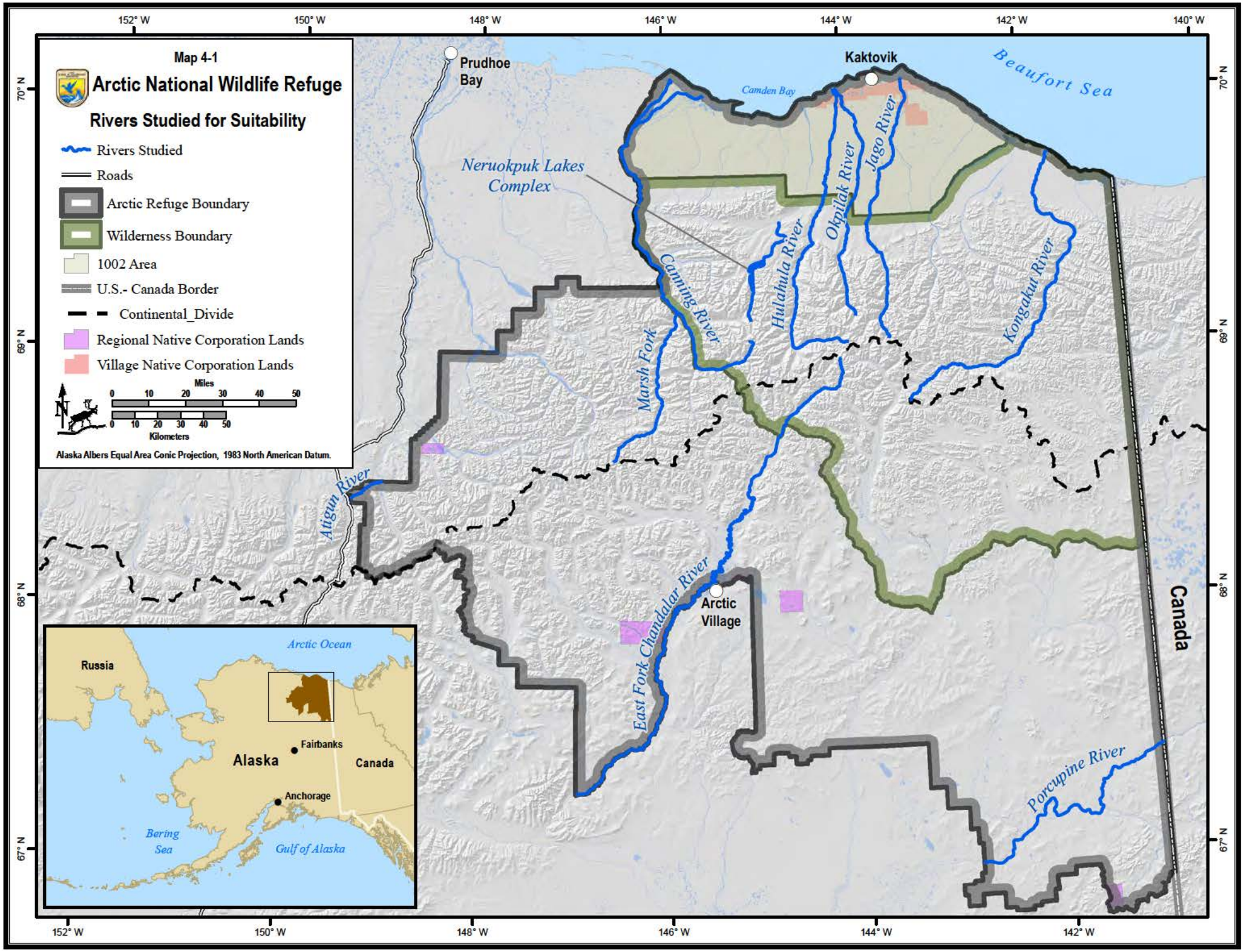
To evaluate the suitability criteria, the Service relied on various sources, including: Geographic Information Systems (GIS) data, unpublished agency literature, miscellaneous trip reports, environmental analyses for nearby development projects, Refuge resource specialists, other agencies, Native corporations, tribal governments, landowners, land status maps, published books, commercial service providers and guides, and public and stakeholder input.

4.4 Interim Management of Suitable/Recommended Rivers

Identifying a river as a candidate for wild and scenic river study under Section 5(d)(1) reflects the agency's determination that the river has the potential to be included in the NWSRS, but it does not trigger specific protection under the Act.

Interim management to adequately protect a candidate river's free flow, water quality, outstandingly remarkable values (ORVs), and preliminary or recommended classification is derived from an agency's existing authorities and is subject to existing private rights. The intent of interim protective management is to assure that a river maintains its suitable status while Congress reviews and considers a river for designation.

Pending release of the Revised Plan and final Environmental Impact Statement (EIS) and its associated ROD, the potential effects of proposed projects or Refuge uses on a suitable river's free flow, water quality, and ORVs will be evaluated on a site-specific basis, and adverse effects will be prevented to the extent of existing Service authorities. The goal is to manage suitable rivers to protect their preliminary classification (e.g., wild). For rivers identified as non-suitable in the Revised Plan, management reverts to the direction prescribed by the appropriate management category (Minimal Management or Wilderness Management).


Map 4-1
Arctic National Wildlife Refuge
Rivers Studied for Suitability
Rivers Studied
Roads
Arctic Refuge Boundary
Wilderness Boundary
1002 Area
U.S.- Canada Border
Continental_Divide
Regional Native Corporation Lands
Village Native Corporation Lands
Miles
0 10 20 30 40 50
Kilometers
0 10 20 30 40 50
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
152° W
150° W
148° W
146° W
144° W
142° W
140° W
70° N
69° N
68° N
67° N
Prudhoe Bay
Kaktovik
Beaufort Sea
Camden Bay
Neruokpuk Lakes Complex
Jago River
Okpilak River
Hulahula River
Canning River
Marsh Fork
Kongakut River
Atigun River
East Fork Chandalar River
Arctic Village
Porcupine River
Canada
Arctic Ocean
Russia
Alaska
Fairbanks
Canada
Anchorage
Bering Sea
Gulf of Alaska

The Revised Plan identifies rivers determined suitable and recommended for congressional designation (see Section 5 of this report). Appendix F of this wild and scenic river review identifies the interim management prescriptions that will be applied to suitable and recommended rivers to protect their recommended classification and the specific values that qualify them for inclusion in the NWSRS.

4.5 Management of Designated Wild and Scenic Rivers

This section describes the requirements and effects of managing a river as a component of the NWSRS, based on direction in the Wild and Scenic Rivers Act. These effects would occur if a river determined suitable and recommended in the Revised Plan is subsequently designated by Congress. The following text is from an IWSRCC (2002) technical report.

4.5.1 Purposes

Section 1(b) of the Act specifies that the purposes for which wild and scenic rivers are added to the NWSRS are to protect the river's free-flowing condition, water quality, and outstandingly remarkable values (ORVs). Sections 7(a) and 10(a) make reference to these collective "values" for which rivers are added to the National System.

Management Implications:

- Focus the Comprehensive River Management Plan (CRMP) and subsequent river management on protecting a river's free-flowing condition, water quality, and ORVs.
- Thoroughly define the ORVs to guide future management actions and to serve as the baseline for monitoring.

4.5.2 Classification

The classification system outlined in Section 2(b) of the Act describes the type and intensity of development in existence at the date of the river's designation. To be "administered" in a class means defining the river's initial landscape character and, through development of the CRMP, establishing standards relative to future in-corridor land uses. For example, administering a wild river will require more restrictive decisions to protect the river's character than for the administration of a scenic or recreational river.

Management Implications:

- Describe a river's classification and landscape character at the date of designation in the CRMP to serve as the basis for evaluating proposed land uses and monitoring.
- Use classification to provide a general framework for the type and intensity of land management activities that may take place in the future.
- Consider continuing to allow uses in existence at the date of designation that do not conform to the river's classification and that are not specifically addressed in the enabling legislation, so long as the river's free-flowing condition, water quality, and ORVs are protected.
- Apply the protections under Sections 7 (water resources projects) and 10(a) (nondegradation policy) independent of classification.

4.5.3 Establishment of Boundaries and Classification

Sections 3(b) and 3(c) of the Act require that each federally administered river in the NWSRS have a legally established boundary. Congress has, in a few instances, specified the boundaries for a river in the designating legislation, but generally this responsibility is left to the managing agency to be completed following designation. For the purposes of this analysis, commensurate with the direction in ANILCA and Section 15(1) of the Act, the Service would establish a detailed boundary of not more than 640 acres of land per river mile within one year of designation. This analysis also assumes that all designated rivers in Arctic Refuge would be classified "wild."

The notice of the availability of the boundaries and classification (if not specified in the designating legislation) must be published in the Federal Register and transmitted to Congress. Refer to IWSRCC (1998) for additional discussion of developing a boundary that provides necessary protection for identified values.

Management Implications:

- A bank-to-bank boundary is unacceptable (IWSRCC 1998).
- Use a river's ORVs as the basis for boundary establishment. They must be sufficiently described and properly referenced in establishing a detailed boundary for the river.
- The final boundary is not required to be posted or otherwise located on the ground.

4.5.4 Comprehensive River Management Plan

Section 3(d)(1) of the Act requires a "comprehensive management plan...to provide for protection of the river 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 Act (see IWSRCC 2010 for more information).

The CRMP is to be coordinated with, and incorporated into, a river-administering agency's resource management plan. The Act provides three full fiscal years after the date of designation for its completion and requires a notice of its completion and availability be published in the Federal Register.

Management Implications:

- A CRMP is required for all congressionally designated wild and scenic rivers. The CRMP must:
  - 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 (the types and amounts of public use the river area can sustain without adverse impact to other values);
  - Address water quality issues and instream flow requirements;
  - Reflect a collaborative approach with all stakeholders;
- Identify regulatory authorities of other governmental agencies that assist in protecting river values; and
- Include a monitoring strategy to maintain desired conditions.

- Prior to the completion of a CRMP, thoroughly analyze the effects of a proposed activity on the values for which the river was designated.

4.5.5 Acquisition Procedures and Limitations

Sections 6(a)(1) through 6(g)(3) of the Act describe procedures for acquisition of lands and interests in lands by Federal managers on congressionally designated wild and scenic rivers. Acquisition of lands (fee-simple) or interests in lands (easements) from willing sellers is an appropriate tool in select circumstances on some rivers.

Management Implications:

- Establish general principles for land acquisition in the CRMP (42 FR 39454), where appropriate. Consider acquisition of lands or interests in lands to provide resource protection and access and to facilitate appropriate recreation use.
- Lands owned by a State may be acquired only by donation or by exchange.

4.5.6 Restrictions on Hydroelectric and Water Resources Projects

Section 7(a) prohibits the Federal Energy Regulatory Commission from licensing the construction of hydroelectric facilities on a designated river. Further, the Act prohibits other Federal agencies from assisting in the construction of any water resources project that would have a direct and adverse effect on a designated river. The Act also includes a standard that governs water resources projects below, above, or on a stream tributary to a designated river or congressionally authorized study river. Determinations under Section 7(a) are made by the river-administering agency. Standards and procedures to evaluate the effects of proposed water resources projects are presented in IWSRCC (2004).

Management Implications:

- The river-administering agency is responsible for making determinations under Section 7.
- Evaluate a water resources project based on its effects on the values for which a river is added to the NWSRS, namely its free-flowing condition, water quality, and ORVs. The river's classification is not a factor in this evaluation.
- Federal Energy Regulatory Commission licensed facilities are prohibited within a designated river corridor. Other federally assisted water resources projects within a designated river corridor are evaluated as to their potential "direct and adverse effect" on the values for which the river was designated. Proposed water resources projects below, above, or on a stream tributary to a designated river are evaluated as to their potential to invade the designated river area or unreasonably diminish the scenic, recreational, fish or wildlife values of the designated river.
- Include direction in the CRMP to evaluate a water resources project under Section 7(a). It is also helpful to provide reference to, or include, the evaluation procedures in the CRMP (or appendix).

4.5.7 Limitations on Entry on Public Lands

Section 8(a) requires all public lands within a wild and scenic river corridor to be retained in Federal ownership, with allowances for exchange as conditioned in Section 6(d) and lease of Federal lands (as described in Section 14(A)).

Management Implications

- Consider the potential for exchange in establishing general principles for land acquisition in the CRMP.

4.5.8 Limitations on Mineral Entry

Section 9(a) affects the development of Federal minerals in several ways. First, subject to valid existing rights (i.e., subject to existing mining claims and mineral leases), the minerals located on Federal lands within the bed or banks or one-quarter mile of the banks of any designated wild river are withdrawn from all forms of appropriation under the mining laws and from the operation of the mineral leasing laws. Second, subject to valid existing rights (i.e., subject to mining claims where the claimant has filed a proper patent application and paid the required fees prior to the river's designation), mining claimants may only obtain title to the mineral deposits and such rights to the use of the surface and surface resources as are reasonably required for prospecting or mining. Third, the Act requires regulations be developed to govern mining and mineral leasing activities in wild and scenic river corridors. While the Secretaries of the Interior and Agriculture have not issued these regulations, the BLM and USFS use their existing regulations (43 CFR 3809 and 36 CFR 228, respectively) to meet, to the extent possible, the nondegradation standard of Section 10(a).

In areas where mineral activity is permissible, the CRMP should address locatable, leasable, and salable mineral materials. Locatable minerals are "valuable mineral deposits" located under the General Mining Law of 1872, as amended, and include, for example, gold, silver, copper, and lead. Leasable minerals are defined by statute (e.g., oil, gas, coal, geothermal); a lease must be obtained from the government for their extraction. Salable minerals are disposed of by permit and consist, for example, of common varieties of sand, stone, and gravel. Leasable and salable mineral activities are discretionary on the part of the administering agency.

Management Implications:

- Provide direction for discretionary mineral activity in the CRMP, as appropriate.

4.5.9 Management Direction

The IWSRCC (2002) guidelines interpret Section 10(a) as a "nondegradation and enhancement policy for all designated river areas, regardless of classification." Existing uses on Federal lands may continue where they do not conflict with river protection. Adverse effects to the values made explicit in Section 1(b) of the Act on Federal and non-Federal lands must be identified in development of the CRMP, with appropriate strategies detailed for their resolution. To achieve a nondegradation standard, the river-administering agency must document baseline resource conditions and monitor changes to these conditions.

Management Implications:

- This section is interpreted as a nondegradation and enhancement policy for all rivers, regardless of classification (Interagency Guidelines). The river manager must seek to protect existing river-related values and, to the greatest extent possible, enhance those values.
- Provide for public recreation and resource uses that do not adversely affect or degrade the values for which the river was designated (Interagency Guidelines).
- Protect rivers by documenting and eliminating adverse impacts on values (free flow, water quality, ORVs), including activities that were occurring on the date of designation. Enhance rivers by seeking opportunities to improve conditions.

4.5.10 Management of Wild and Scenic Rivers in Wilderness

Section 10(b) removes the potential for conflict on wild and scenic rivers flowing in designated Wilderness by applying the more restrictive provisions of the Wild and Scenic Rivers Act or the Wilderness Act in any situation of conflict. This section recognizes the importance of designating river systems by removing any potential for conflict in dual designations.

Management Implications:

- River managers must be familiar with provisions of both the Wild and Scenic Rivers Act and the Wilderness Act when developing the CRMP.

4.5.11 Cooperative Agreements

Section 10(e) of the Act encourages a Federal-State partnership in wild and scenic river administration. It recognizes the benefits from collaborative development and implementation of a CRMP and the role of State and local government in directing activities on non-Federal lands (e.g., water pollution abatement, zoning).

Management Implications:

- Identify opportunities in the CRMP for the river-administering agency to effect specific written cooperative agreements in administration of a wild and scenic river.

4.5.12 Federal Assistance to Others

Section 11(b)(1) authorizes the Secretary of the Interior to provide technical (i.e., non-monetary) assistance and the use of agency funds to states, their political subdivisions, private organizations, and individuals to "plan, protect, and manage river resources." This authority applies to projects and activities on non-Federal lands within and proximate to a wild and scenic river corridor. It provides a mechanism to effect partnerships for projects and activities distant from the designated wild and scenic river yet with the potential to affect designated wild and scenic river values. Opportunities for such partnerships should be identified in the CRMP and implemented through a properly documented written agreement to assure the public's interests and the private landowner's rights are protected.

Management Implications:

- Identify opportunities in the CRMP for the river-administering agency to effect specific written cooperative agreements in administration of a wild and scenic river.

4.5.13 Management Policies

Section 12(a) of the Act applies to activities conducted by a Federal department or agency that are within or proximate to a designated wild and scenic river. Through the language of this section, Congress directs other Federal agencies to protect river values in addition to meeting their agency mission. Refer to IWSRCC (1999b) for a description of the authorities of other Federal agencies in river protection.

Management Implications:

- In addition to preparing a CRMP for lands within the river corridor, the river-administering agency must consider actions on lands it administers adjacent to this area and make certain such actions protect wild and scenic river values.
- Other Federal agencies must protect wild and scenic river values in actions for which they are responsible within and adjacent to a wild and scenic river corridor.

4.5.14 Existing Rights

Section 12(b) qualifies that nothing in Section 12(a) is to be construed as eliminating existing rights or privileges affecting Federal lands without the owner's consent.

Management Implications:

- Consider existing rights or privileges affecting Federal lands when evaluating management actions on lands within or adjacent to the river corridor administered by the river-administering agency or other Federal agency.

4.5.15 Water Pollution

Section 12(c) directs the river-administering agency to cooperate with the EPA and State water quality agencies in addressing water quality concerns in wild and scenic rivers. Cooperation requires active participation by the river-administering agency in evaluation of existing water quality, identification of limitations, and development of the long-term strategies necessary to address water quality-related problems.

Management Implications:

- Seek enforcement of water quality laws through the EPA and State water-quality agencies.
- Work in cooperation with the EPA and State water quality agencies to establish baseline conditions, identify water-quality related issues, and develop a strategy to improve and protect water quality.

4.5.16 Jurisdiction and Responsibilities of State with Respect to Fish and Wildlife

Section 13(a) of the Act clarifies that the role of the States in management of fish and wildlife is unaffected by the Act. The river-administering agency remains responsible, however, for the evaluation of components of fish or wildlife restoration or enhancement projects that are also water resources projects and subject to Section 7(a) of the Act. In most instances, such projects would have a beneficial effect on wild and scenic river values; however, they must be designed to avoid adverse effects on free flow and other river-related values.

Management Implications:

- Develop an effective partnership with State fish and wildlife agencies to achieve mutual goals in river protection.

4.5.17 Federal Reservation of Water

Section 13(c) expressly reserves the quantity of water necessary to achieve the Act's purposes, including protecting the values for which a river is designated.

Management Implications:

- Describe the dependency of ORVs to flow in the CRMP.
- Establish baseline conditions, identify water-quantity related issues, and develop a strategy to protect flow-dependent ORVs.

4.5.18 Navigable Rivers

Section 13(f) clarifies that nothing in the Act affects a State's rights to navigable waterways. State ownership of the underlying river bed on navigable waterways does not, however, preclude the river-administering agency from regulating uses (e.g., private and commercial boating) on the water column as necessary to meet the purposes of the Act. The need to regulate on-water use includes providing a level of public safety, maintaining a desired recreation experience, and protecting biological and physical values. On-river limitations may include, for example, restrictions on the numbers of private and commercial boaters, timing of use, and type and size of craft.

Management Implications:

- Work in partnership with the State to assure the State's public trust interest in navigability and the purposes of the Act are met.

4.5.19 Easements and Rights-of-Way

Section 13(g) specifies that an easement or right-of-way may be granted within the boundary of a wild and scenic river, subject to conditions to protect values.

Management Implications:

- Evaluate any component of a project proposal requiring an easement or right-of-way that is a water resources project under Section 7(a) of the Act prior to further consideration of the easement or right-of-way.
- Grant an easement or right-of-way subject to the nondegradation policy of Section 10(a) and if it is in accordance with all laws applicable to the area.

4.6 Factors Common to Rivers in the Suitability Study

The information provided in this section provides a synopsis of some aspects of the suitability criteria that are common to most or all eligible rivers (see Section 4.2 of this report for a complete list of suitability criteria). River-specific data that are available and relevant are summarized under the suitability details of each river in Section 5 of this review.

4.6.1 Common Factors for Criterion 2

Criterion 2 – Status of land ownership, minerals (surface and subsurface), use in the area, including the amount of private land involved, and associated or incompatible uses.

4.6.1.1 Ownership of Submerged Lands and River Beds

Arctic Refuge was originally established as the Arctic National Wildlife Range (Range) by Public Land Order (PLO) 2214 in 1960. All lands within the boundaries of the original Range were withdrawn in 1957 pending a final Secretarial decision on the proposed reservation. Submerged lands within the boundaries of the original Arctic Range, including river beds, were retained in Federal ownership on the date Alaska was granted statehood. The Canning, Hulahula, Okpilak, Jago, and Kongakut Rivers are all within the boundaries of PLO 2214.

With the passage of ANILCA in 1980, the Range was incorporated into the Arctic National Wildlife Refuge, which is 19.64 million acres[1] in size (see Maps 1-1 and 1-4 in Chapter 1 of the Revised Plan). In those portions of the Refuge that were not part of the original Range, the submerged lands beneath navigable waters are owned by the State of Alaska.

The Atigun, Marsh Fork Canning, and Porcupine Rivers are located outside the boundary of PLO 2214. The portion of the East Fork Chandalar River that is in designated Wilderness is within the boundary of PLO 2214, while the non-designated portion is outside the PLO 2214 boundary. In 2005, the Department of the Interior disclaimed all Federal interest in the submerged lands beneath the Porcupine River. The navigable status of the other three rivers has not been determined.

4.6.1.2 Minerals

Pursuant to Section 304(c) of ANILCA, all public lands within the Refuge were withdrawn, subject to valid existing rights, from location, entry, and patent under the mining laws. There are no valid mining claims on Arctic Refuge. Section 1003 of ANILCA prohibits oil and gas leasing, development, and production anywhere on Arctic Refuge (including the 1002 Area) unless authorized by Congress. On national wildlife refuges, Section 16 of the Federal Coal Leasing Amendment Act of 1975 (Public Law 94-377) prohibits coal mining, and Section 1014(c) of the Geothermal Steam Act of 1970 prohibits geothermal leasing.

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[1] Acreages in this Plan are derived from many sources and may not agree with previously published values, including the draft Revised Plan. For more information, please refer to "A Note about Acreages" in the front pages of this volume.

4.6.1.3 Classification

All eligible rivers have a tentative wild river classification because they don't have road or trail access in the study corridor.

4.6.2 Common Factors for Criterion 3

Criterion 3 – Reasonably foreseeable potential uses of the land and related waters which would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRS.

4.6.2.1 Federally Assisted Water Resources Projects

There are no known proposed water resources projects on any of the 10 eligible rivers that might be foregone as a result of designation.

4.6.3 Common Factors for Criterion 4

Criterion 4 – Federal, public, State, tribal, local, or other interests in designation or non-designation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals.

4.6.3.1 Administration (Management and Cost)

In all cases, the Service would administer the designated river area should it be added to the NWSRS. Where private, State, or tribal landowners are identified, the Service would work and coordinate with those landowners to ensure continued protection of river resources, either through interim Minimal Management or Wilderness Management (as applicable) pending designation or through a CRMP after designation.

4.6.3.2 State of Alaska

The State of Alaska is opposed to any recommendations for additional wild and scenic river designations in Arctic Refuge.

4.6.4 Common Factors for Criterion 6

Criterion 6 – Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river, or other mechanisms (existing and potential) to protect identified values other than wild and scenic river designation.

4.6.4.1 Water Rights, Water Quality, and Instream Flow Regimes

The Service holds unquantified Federal reserved water rights sufficient to achieve the purposes for which the Refuge was established. For the lands in the original Arctic National Wildlife Range, there are implied Federal reserved water rights with a priority date of

December 6, 1960. ANILCA established the Refuge and made the reservation of water explicit in the fourth purpose:

> *"to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge."*

These explicit Federal reserved water rights have a priority date of December 2, 1980. While the Refuge retains Federal reserved water rights, Service policy is to "comply with State laws, regulations, and procedures in obtaining and protecting water rights…except where application of State statutes and regulations does not permit Federal purposes to be achieved." Currently, the Service does not hold perfected State water rights for any of the rivers being studied for wild and scenic river designation.

Numerous laws and court cases provide the authorities under which the Service acquires, manages, and protects its waters and water rights, among them the National Wildlife Refuge System Improvement Act of 1997, the Fish and Wildlife Act of 1956, the Fish and Wildlife Coordination Act of 1934, the McCarran Amendment of 1952, and the Clean Water Act of 2002.

4.6.4.2 Recreation

The 1988 Plan (Service 1988) states that "the Service will manage for recreational use to avoid overcrowding conditions and minimize adverse impacts to historical and/or cultural, fish and wildlife, wilderness, and other special values." Management of the following issues is subject to Section 1110(a) of ANILCA: regulating access, limiting the size and number of recreational group visits, limiting commercial guiding activity, and educating users. The Revised Plan will provide a comprehensive framework for working with local villages, State agencies, and other Federal government agencies to protect against proposed activities that would be incompatible with protecting outstandingly remarkable values (ORVs).

In response to complaints made by private parties and recreational guides regarding the effect of encountering large groups, the Refuge decided to implement group size limits of 7 hikers or 10 floaters for commercial groups Refuge-wide. These same group size limits are recommended for private parties as well.

4.6.4.3 Recreation in Designated Wilderness

The Wilderness Act, Refuge establishing purposes, and ANILCA require the Service to manage designated Wilderness areas to maintain Wilderness resources and values; preserve the Wilderness character of the biological and physical features; and provide opportunities for research, subsistence, and wildlife-oriented recreation. Access by foot, aircraft, motorboat, and snowmachine are permitted for traditional subsistence use and traditional commercial recreational activities (e.g., commercial guide services) will continue. The Revised Plan provides a comprehensive framework for working with local villages, State agencies, and other Federal government agencies to protect against proposed activities in designated Wilderness that would be incompatible with protecting an outstandingly remarkable value (ORV).

4.6.4.4 Existing Protections

See Appendix G of the wild and scenic river review for existing applicable laws, regulations, acts, and other protections that apply to rivers in Arctic Refuge. This appendix also has information about how Wilderness and Minimal Management categories differ.

4.6.5 Common Factors for Criterion 9

Criterion 9 – Support or opposition of local and State governments and stakeholders for designation.

4.6.5.1 Support by State Government

The State of Alaska is opposed to any new wild and scenic river designations in Arctic Refuge.

4.6.5.2 Stakeholder Comments

During the 2010 stakeholder comment period, the Service received 55 comments regarding suitability criteria. Comments pertaining to a specific river are documented under that river (see Section 5 of this report). The following comments apply to all eligible rivers:

Comments supporting designation:

- All rivers in the Refuge are free-flowing, have pure, high quality water, contain one or more outstanding remarkable value (ORV), and provide diverse habitat in the arctic and subarctic.
- The list of eligible rivers was too short. All 160 rivers in the Refuge, rather than a subset, should have been evaluated for eligibility. The method in which rivers were excluded from eligibility was highly flawed, as it lacked necessary and pertinent information and showed a bias toward those rivers with a history of commercial use.
- The inventory, study, and recommendation of rivers for wild and scenic river designation would provide further protection of the rivers, their watersheds, and the integrity of their basins including the adjacent coastal ecosystem.
- The rivers should be considered in their entirety and not fragmented into management units, as they are essential and intact ecological parts the arctic and subarctic.
- The rivers' close proximity to mountain ranges, boreal forest, and the Beaufort Sea provides for dramatic scenery.
- Other relevant studies and contemporary writings about Refuge river values should be included in the wild and scenic river review.
- The draft Plan should include a number of alternatives that would recommend designating high priority eligible rivers.
- Each of the eligible rivers contains more ORVs than those identified.
- Comparing Refuge rivers to each other discounts their overall Refuge value.

Comments opposing designation:

- The State of Alaska and the Citizens' Advisory Commission question the Refuge's authority to conduct a wild and scenic river review. They assert that the Refuge does

not have authority under ANILCA to consider designating any more rivers. They also state that the rivers are already adequately protected, especially those that flow through designated Wilderness.

- The State of Alaska commented that designation could interfere with the State's ability to allocate water resources for on-shore development, which is a matter of national concern.
- The Refuge's rivers are protected; change is not necessary, and rivers should be protected through the Refuge's comprehensive management plan.
- There is a lack of stewardship for currently designated Arctic Refuge wild rivers, and unless those stewardship deficiencies are repaired, there is little to be gained by further designation of wild rivers.

Other concerns:

- What are the possible implications (positives and negatives) of wild and scenic river designation? Do the benefits outweigh the drawbacks?
- Would designation affect commercial industries, subsistence, hunting, fishing, and/or other visitor uses?
- Wild river designation is important, but is it the best thing for the Refuge, considering reduced budgets, and—more so—would designation detract from other more pressing Refuge priorities?
- Will designation attract more visitors?
- The Northern Alaska Environmental Center, Natural Resources Defense Council, Wilderness Society, Defenders of Wildlife, Friends of Alaska National Wildlife Refuges, Sierra Club, and Trustees for Alaska are concerned that conservation, environmental, and outdoor recreational non-profit organizations were not defined as stakeholders for the wild and scenic river review.
- Stakeholder comments reflect concerns regarding large rafting groups; hunters with poor etiquette; motorized hunting access that could negatively affect wildlife populations in non-protected areas; the lack of protection for river resources; and the potential for development, including oil and gas activities and infrastructure.
- Comments suggest the following protective mechanisms: maintain current restrictions on commercial operators; include private parties in group size limits; develop and implement an allocation system to regulate departure dates; require floaters to register with the Refuge before embarking on a trip; require minimum impact techniques, such as those promoted by the Leave No Trace Center for Outdoor Ethics; and prohibit oil and gas activities and infrastructure.

4.6.6 Common Factors for Criterion 10

Criterion 10 – Consistency of designation with other agency plans, programs, or policies.

4.6.6.1 Consistency of designation

The Refuge is required to consult with other divisions of the Service on actions they carry out, fund, or authorize that might affect species listed as threatened or endangered under Section 7 of the Endangered Species Act. Activities in areas designated as critical habitat under the

Endangered Species Act are also reviewed to ensure they are not likely to result in the adverse modification of critical habitat. For activities that may affect polar bears, other listed species, or designated critical habitat, the Refuge complies with both the Marine Mammal Protection Act and the requirement for consultation under Section 7 of the Endangered Species Act. Map 4-2 shows polar bear critical habitat areas in relationship to studied rivers.

Refuge staff has worked in concert with the Marine Mammals Management office polar bear biologists, the Fairbanks Fish and Wildlife Field Office endangered species biologists, the North Slope Borough Wildlife Department, and a wide array of Kaktovik community partners to optimize human safety and reduce disturbance to polar bears. Polar bear interaction guidelines for incidental encounters, as well as polar bear viewing guidelines for recreational polar bear viewing, have been developed to minimize the occurrence of human-polar bear conflicts.

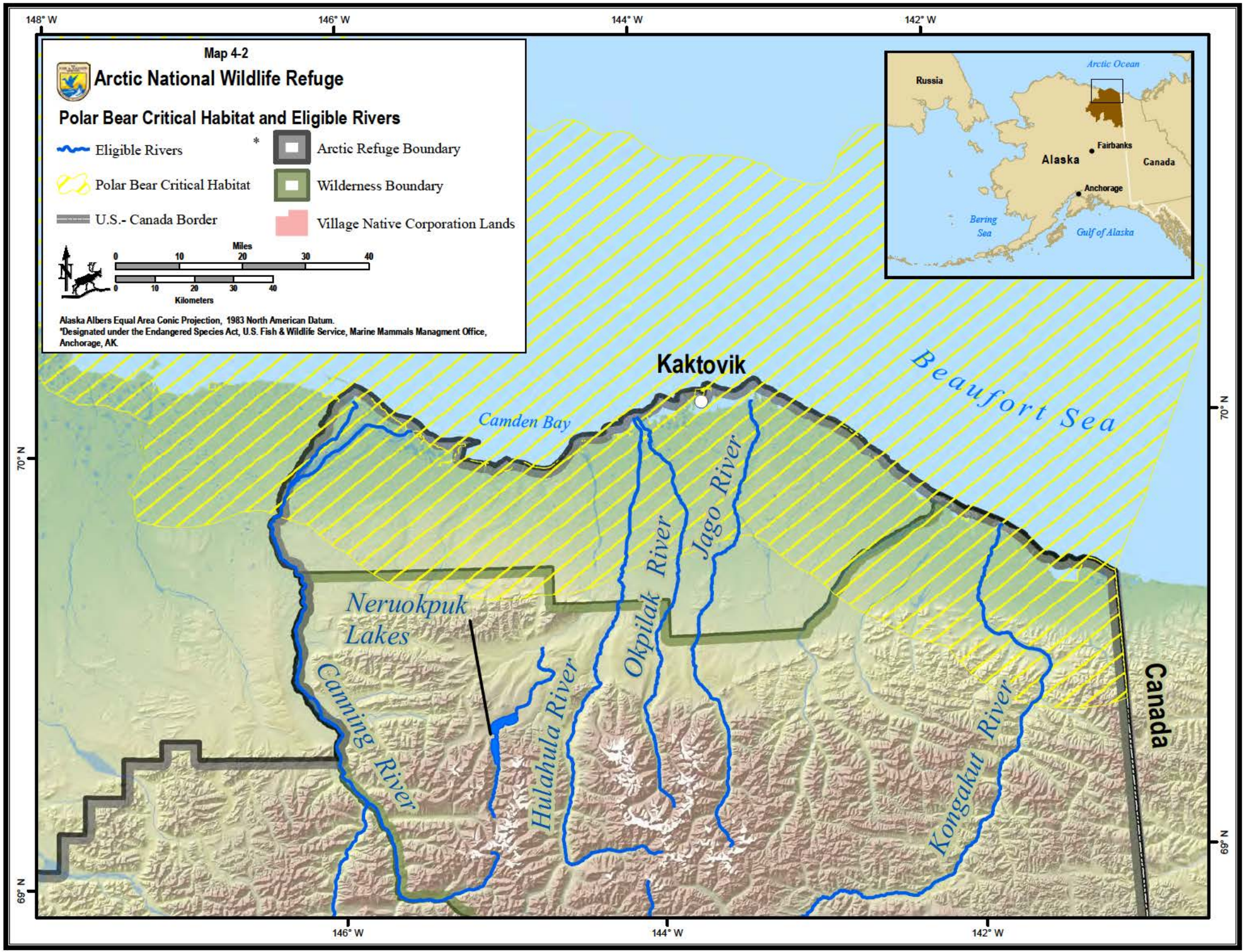
Wild river designation would not adversely affect current management efforts, plans, or policies regarding polar bears. Designation could increase the protections for polar bear critical habitat by foreclosing on oil and gas development and their associated infrastructure support mechanisms in the designated corridor.

4.6.7 Common Factors for Criterion 12

Criterion 12 – Other issues and concerns, if any.

4.6.7.1 Subsistence

Although subsistence users have concerns about how their traditional uses would be affected by wild and scenic river designation, ANILCA protects these uses. Designation would have no impact to federally qualified subsistence users. Increased education about the benefits of wild and scenic river designation and the protection of subsistence uses could diminish these concerns.


Map 4-2
Arctic National Wildlife Refuge
Polar Bear Critical Habitat and Eligible Rivers
Eligible Rivers
Polar Bear Critical Habitat
U.S.- Canada Border
Arctic Refuge Boundary
Wilderness Boundary
Village Native Corporation Lands
Miles
0 10 20 30 40
Kilometers
0 10 20 30 40
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
*Designated under the Endangered Species Act, U.S. Fish & Wildlife Service, Marine Mammals Managment Office, Anchorage, AK.
148° W
146° W
144° W
142° W
70° N
69° N
Kaktovik
Camden Bay
Beaufort Sea
Neruokpuk Lakes
Canning River
Hulahula River
Okpilak River
Jago River
Kongakut River
Canada
Russia
Arctic Ocean
Alaska
Fairbanks
Anchorage
Canada
Bering Sea
Gulf of Alaska

4.6.7.2 ANILCA

- ANILCA (PL 96-487) Section 1002 provided for a comprehensive and continuing inventory and assessment of the fish and wildlife resources of the coastal plain of the Refuge; an analysis of the impacts of oil and gas exploration, development, and production; and authorized exploratory activity within the coastal plain in a manner that avoided significant adverse effects on the fish and wildlife and other resources. Congressional authorization to conduct an exploration program in the 1002 Area expired on June 1, 1987, when the Department of the Interior provided Congress with a report on future management of the 1002 Area of the Refuge. The report and decision has remained with Congress ever since. Section 1002 applies to the segments of the Okpilak, Canning, Jago, and Hulahula Rivers that flow through the 1002 Area. When Congress makes a management decision regarding the 1002 Area, that action will be incorporated into the Revised Plan and implemented.
- ANILCA (Public Law 96-487) Section 1003 prohibits production of oil and gas, and other developments leading to the production of oil and gas, in Arctic Refuge unless authorized by Congress. Section 1003 applies to Refuge portions of the Atigun, Kongakut, Porcupine, Marsh Fork Canning, and East Fork Chandalar rivers, and the Neruokpuk Lakes complex. Section 1003 also applies to the segments of the Okpilak, Canning, Jago, and Hulahula rivers that are upstream of the 1002 Area.
- ANILCA set forth the purposes of the Refuge; defined objectives and provisions for planning and management; and authorized studies and programs related to wildlife and wildland resources, commodity resources, and recreational and economic uses.

5. River Specific Suitability Analysis

5.1 Atigun River

Reach: The Atigun River, which is a tributary of the Sagavanirktok River, flows into the Refuge from bordering lands managed by the State and BLM and can be accessed by the Dalton Highway. The Refuge's portion is often referred to as Atigun River Gorge (or Atigun Gorge).

Total River Length:	43 miles	**Primary Classification:**	Wild
Length on Refuge:	11.4 miles	**ORVs:**	Geologic, Recreational
Length in Wilderness:	0 miles		

5.1.1 Description/Overview

The portion of the Atigun River being considered for designation (downstream of the Refuge boundary) begins approximately 28 miles from its headwaters and is within three-quarters of a mile of the James Dalton Highway and the Trans-Alaska Pipeline System (Map 5-1). Road access, rather than aircraft access, makes the Atigun unique from other rivers in the Refuge. The river flows north-northeast through a one-mile-wide valley until it joins with the Sagavanirktok River. Combined with the Sagavanirktok, this waterway is the longest river access between the Brooks Range and the Beaufort Sea.

5.1.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

   Geologic Value: The headwaters of the Atigun are located in the glaciers of the Endicott Mountains and drop into Atigun Gorge, a chasm that is an eight-mile slice through the mountains, exposing about one hundred million years of the Earth's history. The many layers of limestone, chert, sandstone, shale, and conglomerate were deposited while this area was under the sea during the late Paleozoic and early Mesozoic. Abundant sea life fossils can be found throughout the layers. The gorge also displays the tremendous force exerted on these rocks as they were lifted up from the sea. The layers of rock bed were folded and faulted into many structures. Pleistocene glaciers and finally the draining of a glacial lake all helped form this 1,500- to 2,000-foot-deep gorge (Detterman et al. 1975). Annually, geology students from the University of Alaska Fairbanks visit Atigun Gorge to study its exemplary features.

   Recreational Value: In addition to its geologic values, compared to other Brooks Range rivers, the Atigun is a heavily used recreational river and has recreational values that affect the suitability of this segment. Atigun Gorge boasts some of the most challenging road-accessible whitewater in the northern portion of Alaska. Whether seeking whitewater boating adventures; riparian habitat for excellent roadside birding; a relatively rapid route to hunting grounds away from the road; access to more distant valleys during long expeditions; spring skiing, mushing, and ice climbing opportunities in an arctic setting; or

the visual drama of a scenic backdrop for a holistic wilderness backpacking or hiking experience—Atigun Gorge is clearly increasingly valued by an ever broadening range of visitors as a recreational treasure.

Other Values: There are characteristics of the Atigun River unrelated to geology and recreation that affect the suitability of this segment. The Atigun River's cultural, archaeological, and scientific resources are uniquely placed for easily accessible education and interpretation opportunities. Atigun Gorge has also been recognized as a location for educational studies, exploration of geologic features, and archaeological surveys. Atigun Gorge is in the Wiseman subsistence use area and is important for subsistence sheep hunting. The Atigun River supports rearing and feeding habitat for lake trout and burbot, as well as spawning and overwintering habitat for Dolly Varden, arctic grayling, round whitefish, ninespine stickleback, and slimy sculpin.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

   The Atigun River is located outside the boundary of PLO 2214 (the original Arctic Range). The ownership of the submerged lands beneath this river depends on its navigability for purposes of title. If determined navigable, the State would own the submerged lands beneath the navigable portion of the river to the ordinary high water mark. If determined non-navigable, the submerged lands belong to the owners of the adjacent uplands. The navigability status of the Atigun River is undetermined at this time.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

   Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the Atigun River were included in the NWSRS.

   The 1988 Plan identified the Atigun Gorge as an area that was experiencing minor adverse impacts on recreation due to increased visitor use. In 1995, the Dalton Highway was opened to the public; since that time, the Atigun River corridor has experienced steady increases in visitation (BLM 2005). The highway serves as an access corridor to the Refuge, which is located less than three-quarters of a mile away and easily accessible from the highway. Approximately seven percent of all Dalton Highway survey respondents named either the area between Atigun Pass and Toolik Field Station, or the Galbraith Lake area specifically, as primary destinations (BLM 2007). The Refuge's Visitor Study (Christensen and Christensen 2009) found that the Atigun River was one of the Refuge's top five most common entry (seven percent) and exit (eight percent) points.

   Wild river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use in the Atigun River Gorge. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

   The second potential use is oil and gas exploration, associated infrastructure development, and monitoring and maintenance of the Trans-Alaska Pipeline System. Currently, Alyeska flies over the Atigun River valley from the westerly Refuge boundary to the river's confluence with the Sagavanirktok River as an alternate weather route for aviation

surveillance trips. Also, Alyeska maintains a contingency spill containment site, as approved in the Trans-Alaska Pipeline System Oil Discharge Prevention and Contingency Plan, on BLM land just north of the Refuge boundary, approximately one mile from its confluence with the Sagavanirktok. Alyeska operations include conducting spill response training and exercises in the vicinity of the spill containment site on a one- to three-year cycle. However, these uses occur outside the study corridor, and the Service does not have jurisdiction over airspace.

A proposal exists to build a new natural gas pipeline in the BLM Utility and Trans-Alaska Pipeline System corridors. Noise, dust, and other disturbances associated with construction activities in close proximity to Atigun Gorge could impact recreational use inside the gorge. Although recreational experiences are not encompassed in the geologic ORV, use and enjoyment of the area's geology would be directly impacted.

Alaska Statute 19.40.210 prohibits the use of off-road vehicles on land within five miles of the right-of-way of the Dalton Highway north of the Yukon River. Legislation that would remove current restrictions on the use of snowmachines in the Dalton Highway Corridor Management Area was recently introduced in the Alaska Legislature. Also introduced was similar legislation that would remove the restriction on the use of all-terrain vehicles in the Dalton Highway Corridor Management Area. If the State restriction is removed, motorized activity would increase on lands adjacent to the Refuge. Illegal use of off-road vehicles on Refuge lands would likely occur, too, which could result in increased hunter harvest of Refuge wildlife and disturbance to sensitive wildlife populations; increased impacts to vegetation and soils; increased impacts to local subsistence opportunities; and increased fossil collection.

4. <u>The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.</u>

   All the land in the Atigun River corridor is owned by the Service; therefore, the Service would be responsible for administering the Atigun River corridor.

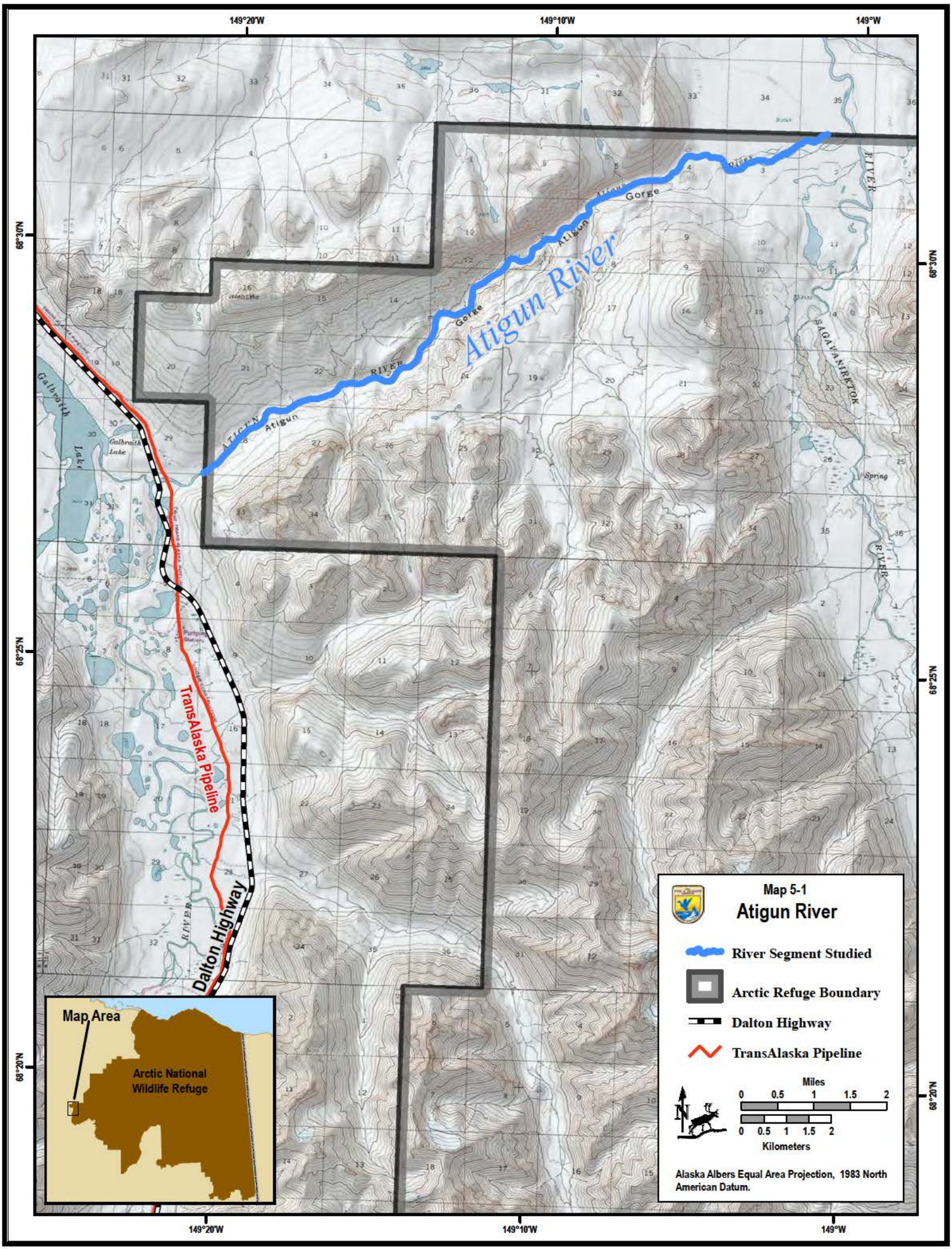
5. <u>Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.</u>

   Ownership of the Atigun River's submerged lands is undetermined at this time. The State has not filed a quiet title action or an application for a recordable disclaimer of interest. Additionally, since the headwaters of the Atigun are located outside the Refuge, it is possible that other entities could file water rights applications for water diversions, which could affect water quantity.

   The cost of CRMP development, related data needs, and any management actions resulting from the CRMP planning effort may be offset by increased funding and staffing associated with designation.

6. <u>Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.</u>

   The Arctic Refuge segment of the Atigun River (11.4 miles) flows through lands administered under Minimal Management provisions.


149°20'W
149°10'W
149°W
68°30'N
68°25'N
68°20'N
Atigun River
Atigun Gorge
Atigun RIVER
Galbraith Lake
Galbraith Lake
TransAlaska Pipeline
Dalton Highway
SAGAVANIRKTOK RIVER
Map Area
Arctic National Wildlife Refuge
Map 5-1
Atigun River
River Segment Studied
Arctic Refuge Boundary
Dalton Highway
TransAlaska Pipeline
Miles
0 0.5 1 1.5 2
0 0.5 1 1.5 2
Kilometers
Alaska Albers Equal Area Projection, 1983 North American Datum.

7. Historical or existing rights that could be adversely affected with designation.

   There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   There are no local zoning or other land use controls in the proposed corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period on the Revised Plan, the Service received one comment supporting designation for Atigun River and four comments suggesting the need for increased protection of the resource.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 12 comments for the Atigun River from commercial guides, recreational visitors, conservation organizations, the wild and scenic rivers coordinator for BLM in Fairbanks, and other unidentified commenters. Six comments supported designation of the Atigun River, and six comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, and fishing. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (11), recreational (8), scenic (10), geologic (8), cultural (3), fish (3), and historic (1). Additionally, stakeholders identified intact wilderness qualities, intact ecological systems, and subsistence as other Atigun River values. Specifically, comments noted that the Atigun River valley provides habitat for Dall's sheep and easy road access to whitewater, making it an important recreational river. Comments also noted that the river valley is a cultural site containing multiple prehistoric hearths. Stakeholder concerns for the Atigun River include oil spills and excessive sport hunting.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild river designation of the Atigun would provide a complimentary set of protections to other Refuge and Service policies and programs.

11. Contribution to a river system watershed or basin integrity.

    The Atigun River is a tributary of the Sagavanirktok River. These two rivers combine to create the longest river access between the Brooks Range and the Beaufort Sea. The Sagavanirktok River has one of the highest diversity of freshwater and anadromous fish species on the North Slope of Alaska, especially in its lower reaches. The Atigun River provides important hydrologic contributions to the Sagavanirktok, which in turn affects the fish habitat in this watershed. Designation could help protect this watershed.

12. Other issues and concerns, if any.

    There are no additional issues or concerns pertaining to the Atigun River.

5.1.3 Preliminary Suitability Determination

The Atigun River is preliminarily determined to be suitable with a wild river classification. The Wild and Scenic Rivers Act provides useful tools for managing and protecting the values in this river corridor. The Atigun River is the Refuge's only front country river due to its

proximity to and accessibility via the Dalton Highway. Because of this, the Atigun has unique management needs, and these needs can be addressed in a legally binding manner through the Act. The river valley is approximately one mile wide, allowing the provisions of the CRMP to apply to the entire valley, thereby avoiding potential displacement issues in the corridor. The Act provides useful, meaningful, and additional management tools to protect the geologic and recreational ORVs, the wildlife, and the scenic values of the Atigun River. The intent of the Act was to protect rivers whose waters are fragmented between different management agencies and/or private landowners and whose values are threatened by potential development. The Atigun River falls under this category, and the Service has the ability to protect the river corridor.

5.2 Canning River

Reach: The Canning River is the longest north-flowing river in the Refuge. It forms the western boundary of the Refuge and flows through mountains, foothills, coastal plain, and empties into the Beaufort Sea.

Total River Length:	125.5 miles	**Primary Classification:**	Wild
Length on Refuge:	125.5 miles	**ORVs:**	Cultural, Wildlife, Fish, Recreational
Length in Wilderness:	83.6 miles		

5.2.1 Description/Overview

The Canning River forms the western boundary of the Refuge north of the Brooks Range (Map 5-2). The entire length of Canning River and its headwaters, including the Marsh Fork (see Section 5.3), is being considered for designation. The Canning River starts in the Romanzof Mountains and flows in an arc to the south, west, and finally north through scenic, glaciated valleys near the Continental Divide. Within about 15 miles of the Beaufort Sea, the Canning becomes a three-mile-wide, heavily braided, shallow waterway. The river then creates a wide delta with multiple distributaries as it empties into the Beaufort Sea.

5.2.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

   Cultural Value: The Canning River has been used by multiple cultures for thousands of years, and numerous cultural and paleontological sites are located in the proposed wild and scenic river corridor. Many archaeological sites, including tent rings and open-air camps, have been located in the river corridor. The archaeological evidence suggests use by Paleoindian, Paleoarctic, Denbigh, Northern Archaic, ancestral Iñupiat and Athabascan groups, and historic and modern Iñupiat and Gwich'in. In general, Arctic Refuge is known as a cultural crossroads where Eskimo and pre-Eskimo coastal cultures interacted and traded with Indian and pre-Indian cultures from the interior, north, and south. Additionally, multiple Eskimo and pre-Eskimo cultures from Alaska and Canada traded with one another, west and east. The cultural exchange in both directions has national, if not global, importance (D. Corbett, Regional Archaeologist, pers. comm., June 9, 2010). The archaeological record from the Canning River indicates the river was used for these cross-cultural exchanges. Tribal members identify the Canning River as having important contemporary cultural value. Modern Iñupiat intensively use the river for subsistence purposes (Exxon Mobil Corporation 2009), including winter subsistence fishing in open water areas associated with the river's many springs. A multi-cultural archaeological record, combined with contemporary cultural values and uses, gives the Canning River outstandingly remarkable cultural values that are unique from other rivers in Alaska and those in the NWSRS.

   Wildlife Value: The Canning has outstandingly remarkable wildlife values. The vegetation diversity in the river corridor provides habitat for nesting migratory birds and waterfowl. Shorebirds (including plovers, sandpipers, and phalaropes) concentrate around the Canning River delta between mid-July and August in preparation for their fall migration.

High densities of nesting tundra swans and molting small geese, as well as the only known nesting sites of Sabine's gulls in the Refuge, are found on the Canning River delta (Revised Plan Chapter 4, Section 4.3.6.7).

Because polar bears are listed as a threatened species under the Endangered Species Act, special attention is paid to their habitat protection. Polar bear critical habitat is generally found within about 25 miles of the Beaufort Sea coast. The eligibility phase included evaluative criteria for polar bear critical habitat on all inventoried North Slope rivers. The Canning River was found to have over 50 miles of critical polar bear habitat and four confirmed polar bear den sites.

Small groups of muskoxen live along the Canning River and in adjacent areas between the Marsh Fork confluence and the Canning River delta. They are most often seen between Mount Cobblestone and Red Hill. These animals live year round on the coastal plain and foothills of the Refuge; on the Canning River, they can be seen on upland terraces or ridges.

A relatively high density of North Slope moose are found along Cache and Eagle creeks where these drainages enter the Canning River south of Shublik Springs. Moose browse on stands of dense willows found along these creeks. Large predators, including grizzly bears, wolves and wolverines, also live along the Canning River and in the adjacent mountains.

The Central Arctic caribou herd's calving activity usually is concentrated in two areas, one of which is the lower Canning River delta. Most years, as many as 1,000 cows calve on the river delta (U.S. Fish and Wildlife Service 1988). The majority of the herd moves east of the Canning to feed and seek insect relief from June through August, and about 20–30 percent of the herd winters along the river near the southern boundary of the 1002 Area. This herd provides important opportunities for subsistence and general hunting. The exceptional combination of pristine habitat and wildlife contribute substantially to the functioning and productivity of the river ecosystem.

Fish Value: The Canning also has outstandingly remarkable fish values. The river has the highest fish diversity on the north side of the Refuge. An extensive network of springs along the Canning River supports high invertebrate densities and overwintering, spawning, and rearing populations of Arctic grayling, Arctic char, round whitefish, burbot, and a population of anadromous Dolly Varden that is genetically distinct compared to populations from other nearby drainages (Crane et al. 2005). The Alaska Department of Fish and Game identified the Canning River as important habitat for anadromous fish (Alaska Statute 16.05.871). Anadromous broad whitefish, least cisco, Arctic cisco, chum, sockeye, and pink salmon have been documented in the river and delta habitats. Round whitefish have been observed in the mainstem of the Canning and in lakes near the river's mouth (Craig 1977, Smith and Glesne 1983). Glaciers in the headwaters and extensive aufeis fields that form in the mainstem Canning and Marsh Fork tributary melt much later in the season than snow and can be an important source of late season discharge to the Canning River, thus affecting fish habitat.

The Canning River is an important migratory corridor for anadromous Dolly Varden returning to spawning and overwintering habitat in the Canning River and its tributaries. Smith and Glesne (1983) documented 39,000 Dolly Varden in the Canning and Marsh Fork, which is the highest Dolly Varden abundance reported for any drainage on the North Slope of Alaska. Most spawning redds were observed in the mainstem of the Canning

Map 5-2
Canning River
LAND STATUS
Selected
Conveyed
Native Allotment
Other Features
River Segment Studied
Arctic Refuge Boundary
Wilderness Boundary
0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0140
Russia
Arctic Ocean
Alaska
Canada
Fairbanks
Anchorage
Bering Sea
Gulf of Alaska
Canning River
147°W
146°30'W
146°W
145°30'W
70°N
69°30'N
69°N

above the Marsh Fork confluence. An isolated population of resident Arctic char has been found in Shublik Springs (Craig 1977).

As the only North Slope river in the Refuge with round whitefish and burbot populations, the Canning River is particularly important to Kaktovik subsistence users (Jacobson and Wentworth 1982). A 10-mile stretch downriver from Shublik springs is used for burbot, Arctic grayling, and Dolly Varden fishing; another 10-mile braided section just above the confluence with the Staines River is noted for the presence of numerous winter fishing holes.

Recreational Value: The Canning River is the longest north-flowing river on Arctic Refuge. It is a well-used recreational river that offers visitors the opportunity to explore the mountains, the coast, and everything in between. The Canning River flows through extensive aufeis fields, past Shublik Springs, and through incredibly abundant waterfowl habitat. There are reliable air drop-off and pick-up locations along the upper, middle, and lower reaches of the drainage, which offers diversity to the overall experience. Many floaters start their trip on the Marsh Fork Canning River (see Section 5.3) and continue their trip onto the mainstem, while others start in the upper mainstem Canning. As a primarily Class I river with some Class II water, the Canning offers a safe experience for less experienced boaters without sacrificing the true arctic experience. The river provides opportunities for solitude and enjoyment of natural river sounds; primitive and unconfined recreation in a natural, undisturbed environment; and opportunities for wildlife viewing, fishing, hunting, trapping, hiking, and photography.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The entire Canning River is located within the boundaries of PLO 2214 (the original Arctic Range). The western boundary of PLO 2214 follows the ordinary high water mark along the western bank of the Canning River for nearly its entire length. In the Canning River corridor, the Service owns all lands, including submerged lands, except for two Native allotments totaling 75.97 acres that border the river.

The Service has explicit but unquantified Federal reserved water rights for water quality and necessary water quantity to achieve the purposes of Arctic Refuge established by ANILCA (Public Law 96-487). The Service has not obtained any State-based water rights for the Canning River. Other entities could file water rights applications for water diversions that could affect water quantity.

State lands adjacent to the Refuge boundary have been leased for oil and gas development, providing an opportunity for incompatible uses to occur in a potential wild and scenic river corridor.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Two foreseeable uses of lands in the Canning River corridor that could cause negative impacts are visitor use and oil and gas exploration and development. Recreational uses in the Canning River corridor include hiking, backpacking, floating, hunting, fishing, dog mushing, caribou viewing, and bird watching. General hunting, especially for non-Alaska residents, has become more popular since the opening of the Dalton Highway to the public. The Canning and its Marsh Fork define the boundary between Game Management Units 26B on the west side of the river and 26C on the east side of the river.

An inventory of water resources completed in 1985 (Tweten 1985) identified the top five rivers in the 1002 Area whose watersheds were threatened by potential water and mineral resource development and non-consumptive uses. There are two forms of non-consumptive use: 1) those related to socioeconomics, such as general and subsistence hunting and fishing, river floating, recreational uses, aircraft landings, and historical and present-day travel; and 2) those related to construction or maintenance, such as gravel extraction from streambeds to build roads and other infrastructure, and some forms of dredge mining. The Canning River was rated second in this study and was identified: 1) for potential mineral or oil and gas development; 2) as a navigable transportation route; and 3) as having important resource values, including habitat for threatened species; habitat for overwintering, spawning, and smolting fish; wetlands dependent on water flow; historical and cultural values; and subsistence and general fishing values.

Potential threats to the Canning River valley from oil and gas development include the expansion of the Point Thomson Project to within two miles of the river corridor; the 2011 ADNR Notice of Sale of State leases to allow for possible oil and gas exploration and development in the Beaufort Sea, the North Slope, and the North Slope Foothills areas, including areas adjacent to Arctic Refuge and adjacent to the Canning River; and the "Proposed Consistency Determination – Beaufort Sea Area-wide Oil and Gas Lease Sales, 2009–2018" (ADNR 2009). This determination includes waters north of and adjacent to the northern boundary of the Refuge. It requires gravel mining sites for exploration and development activities. According to the lease agreement, activities will be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Where practicable, gravel sites would be designed and constructed to function as water reservoirs for future use. Gravel mine sites required for exploration activities would not be located in an active floodplain of a water course unless the ADNR Division of Mining, Land and Water, after consultation with ADFG, determines that there is no practicable alternative or that a floodplain site would enhance fish and wildlife habitat after mining operations are completed and the site is closed.

Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use in the Canning River corridor. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

4. <u>The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.</u>

   The Service would work with the two private landowners and the State to administer the Canning River corridor.

5. <u>Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.</u>

   Excluding the two Native allotments, the entire length of the Canning is in Federal ownership and is managed by the Refuge. Therefore, acquiring lands and interest in lands would not be necessary.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

   The upper 83.5 miles of the Canning River flow through lands administered under Wilderness Management provisions. The lower 42 miles of the Canning River flow through lands administered under Minimal Management provisions.

   Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 29 miles of the lower Canning River is in polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

   There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   From the Beaufort Sea to the junction with the Marsh Fork, the Canning River is in the coastal zone of the North Slope Borough. Under Section 307(c) of the Coastal Zone Management Act of 1972, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. The Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs to prevent incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period for the Revised Plan, the Service received 13 comments supporting designation for the Canning, 5 comments requesting increased resource protection, 3 comments relating personal travel experiences on the Canning River to the coast and the abrupt interruption of their overall experience due to the number of oil drums and oil derricks seen from the river, and 1 comment stating that further designations of the Canning River would hinder oil and gas development and therefore threaten the country's ability to produce its own oil.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 20 comments for the Canning River from commercial guides, recreational visitors, conservation organizations, a commercial air-taxi operator, the Native Village of Kaktovik tribal president, and other unidentified commenters. Eight comments support wild and scenic river designation of the Canning River, and 12 comments did not clearly mention support or opposition to designation. Stakeholder comments indicated that river uses include commercial and non-commercial recreation, hunting, fishing, rafting, and subsistence. One comment mentioned that the stakeholder's family historically used the river for herding reindeer. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (16), recreational (17), scenic (16), geologic (17), cultural (5), fish (11), and historic (7). Additionally, stakeholders identified intact

wilderness qualities and subsistence as other values of the Canning River. Specifically, comments noted the Canning River is important for fish, birds, muskoxen, land-denning polar bears, and caribou from both the Porcupine and Central Arctic herds. Comments also noted that Federal ownership of most of the river, its beds, and banks makes it feasible to consider the Canning River for designation and that all its tributaries should be considered for review. Comments emphasize how lakes in the Canning River's delta are vital to providing adequate and clean water for bird and fish habitats. Stakeholders also commented that the Canning flows through scenic glaciated valleys; has rich historical significance from early explorers such as Leffingwell; and is one of the most floated and hiked rivers on the Refuge. Stakeholder concerns include high visitor use and part of the river's location in the 1002 Area. One comment noted that because the Canning River marks the western boundary of the Refuge's coastal plain, it is among the most threatened rivers due to active oil and gas leasing on adjacent State lands.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild river designation of the Canning River would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

    The Canning River watershed drains approximately 2,900 square miles. The Canning River, in conjunction with the Marsh Fork, has a notable and extensive spring system that, when compared to other river systems on the North Slope of Alaska, may export the largest volume of spring water (Childers et al. 1977). During winter, some of this water remains unfrozen and provides overwintering habitat for fish. Downstream from spring-fed areas, overflow water freezes and forms extensive areas of aufeis that can extend upwards into the mainstem of the Canning, the upper reaches of the Marsh Fork, and down the mainstem of the Canning River. Aufeis melts much later in the season than snow and can be an important source of late season discharge to the Canning River. The lakes in the Canning River delta contain the largest winter water volume in the Refuge.

    Designating the entire length of the Canning River would aid in protecting the integrity of the Canning River watershed, which serves as an important migratory corridor for the most diverse fish community on the north side of the Refuge. Designation would protect the river and its delta while maintaining the uniqueness of the river corridor by providing visitors exposure to extraordinary wilderness characteristics, historic structures, paleontological resources, the Canning Forest, and pristine streams and springs.

12. Other issues and concerns, if any.

    There are no additional issues or concerns pertaining to the Canning River.

5.2.3 Preliminary Suitability Determination

The Canning River is preliminarily determined to be not suitable. Although it has several outstandingly remarkable values, it would be extremely difficult for the Service to manage the Canning River as part of the NWSRS because of its boundary with State land that has high potential for oil and gas exploration and development. Permanent protection and enhancement of the Canning River's ORVs would require the active involvement and commitment of the State of Alaska to develop and implement resource protection strategies commensurate with

the mandate of the Wild and Scenic Rivers Act. The State of Alaska is opposed to any new wild and scenic river designations in Arctic Refuge and would not be willing to work with the Service to manage the Canning River as a wild river.

The Service considered whether the ordinary high water mark on the west side of the river could be used as a wild river boundary for the Canning River. Section 10(a) of the Act mandates administration of designated rivers to protect and enhance the values that led to designation, and establishing a wild and scenic river boundary that encompasses the identified ORVs is essential. The boundary delineates the area within which the Service would work with landowners and local communities to develop effective protections and management strategies, but it does not give the Service the authority to regulate non-Federal lands. While surface disturbing activities would be prohibited within the river bed, incompatible land uses immediately adjacent to the river and outside the river boundary could have a high potential for affecting water quality and the fish and wildlife ORVs. For these reasons, the Service would not be able to ensure protection and management of all the Canning River's ORVs if the west boundary of the designated wild river were located along the ordinary high water mark.

The Service also considered whether the river could be segmented and a portion of the river recommended as suitable. The fish, wildlife, and cultural ORVs of the Canning River primarily exist in the lower river where it borders State land and in the river's delta, which is managed by the Service. Therefore, it would not be possible to segment the river above its border with State land and determine it suitable.

We preliminarily determined that wild river designation would not be the best way to manage the values associated with the Canning River. The Refuge's natural resource management strategies are applied at a Refuge-wide or ecosystem level; thus, Refuge-wide protections that encompass the Canning River already exist. The entire Canning River flows in the original Arctic Range, and most of it flows through designated Wilderness. Therefore, the Canning is already afforded a high level of protection, and its visitor use could be managed through a Refuge-wide Visitor Use Management Plan, which is the highest priority step-down plan identified in the Revised Plan. The Service will continue to comment on proposed activities outside the Refuge and to partner and cooperate with adjacent landowners to protect water quality and river values associated with the Canning River.

5.3 Marsh Fork Canning River

Reach: The Marsh Fork is the Canning River's main tributary; it flows into the Canning River from the west as it cuts through the rugged, striking landscape of the Phillip Smith Mountains.

Total River Length:	54.3 miles	**Primary Classification:**	Wild
Length on Refuge:	54.3 miles	**ORVs:**	Recreational
Length in Wilderness:	0 miles		

5.3.1 Description/Overview

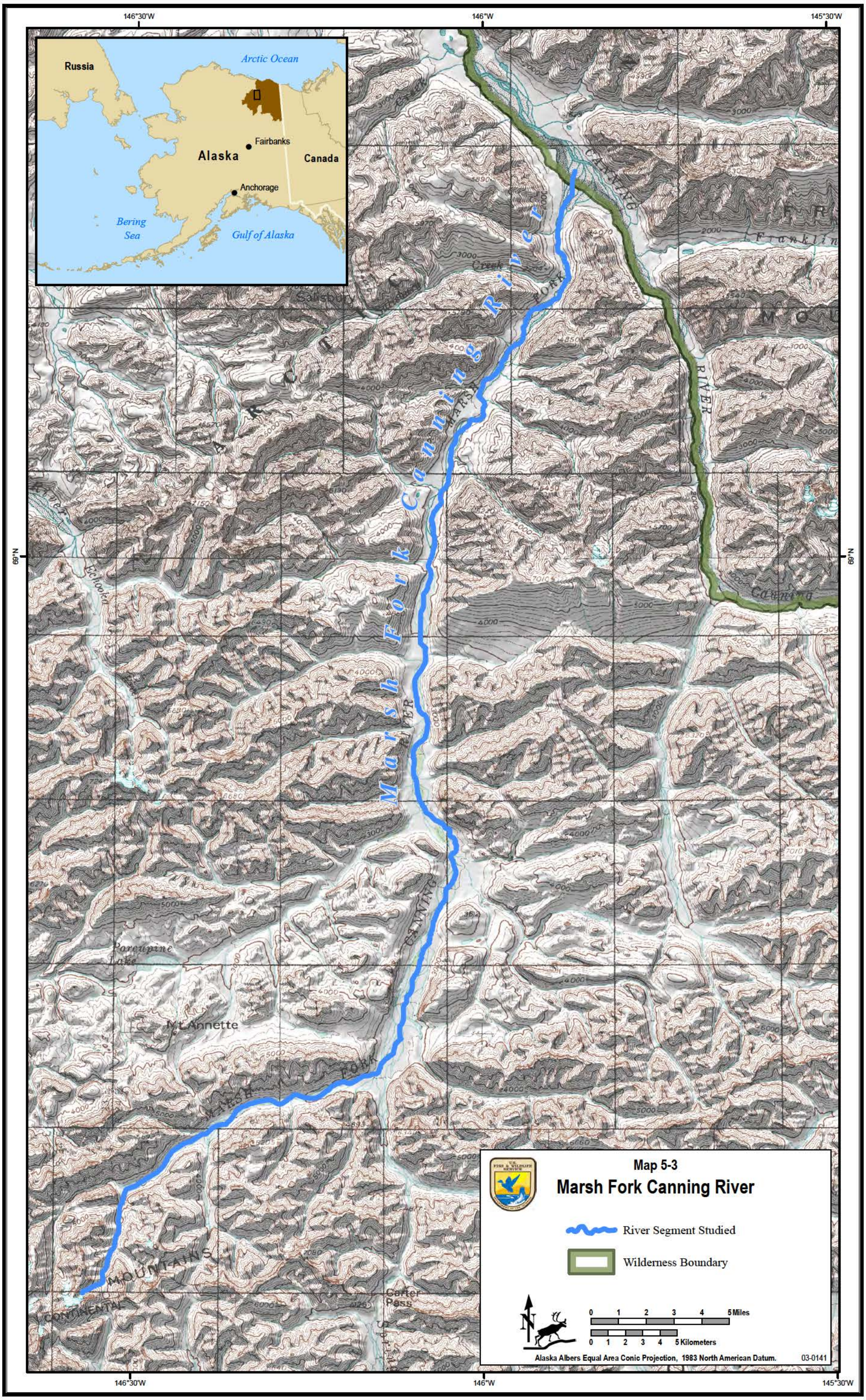
The Marsh Fork is the largest tributary of the Canning River, and it cuts a narrow valley through the Philip Smith Mountains (Map 5-3). From its origin in the Philip Smith Mountains, the river flows more than 54 miles through steep-sided valleys with mountains exceeding 6,500 feet (Alaska Division of Geological and Geophysical Surveys 1987). Where the Marsh Fork meets the main Canning River, it abruptly exits the mountains as the adjoining waters continue to flow north through the coastal plain.

5.3.2 Suitability Factors

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Recreational Value: The Marsh Fork Canning River has outstandingly remarkable recreational values that are unique from other rivers in Alaska and those in the NWSRS. The Marsh Fork provides an opportunity to float or hike through a primitive, essentially untouched portion of the Brooks Range with some of the highest, most precipitous arctic mountains. This relatively short stretch of crystal clear river offers a phenomenal holistic recreational experience, including impressive mountain scenery, an abundance of wildflowers and other plant species, waterfalls and springs that pour down steep slopes into the river, productive fishing holes, and relatively dry uplands that provide a fairly easy substrate for hiking. Wildlife-viewing opportunities abound along the Marsh Fork. Dall's sheep concentrate at several mineral licks near the river and on adjacent mountain slopes. Wolves travel along the river between natal den sites and rendezvous sites, and brown bears frequent the area. Small numbers of moose and caribou use the river seasonally. Carter Pass, on the Continental Divide between the north-flowing Marsh Fork and the south-flowing Spring Creek, is one of the lowest passes through the Brooks Range in this region of Arctic Refuge.

Recreationists also come to fish and bird watch. There are several large grayling and Arctic char spawning areas, and a miniature subspecies of char that reaches about eight inches in maturity occurs in this river. Birders come for the opportunity to view gray-headed chickadees and Smith's longspurs, and lucky birders may even catch a glimpse of a bluethroat (Steve Kendall, U.S. Fish and Wildlife Service, pers. comm. 2010). Other birds that are commonly viewed include golden eagles, gyrfalcons, peregrine falcons, long-tailed and parasitic jaegers, yellow wagtails, Arctic warblers, Say's phoebes, and horned larks.


146°30'W
146°W
145°30'W
69°N
Russia
Arctic Ocean
Fairbanks
Alaska
Canada
Anchorage
Bering Sea
Gulf of Alaska
Marsh Fork Canning River
Porcupine Lake
Mt Annette
Carter Pass
Map 5-3
Marsh Fork Canning River
River Segment Studied
Wilderness Boundary
0 1 2 3 4 5 Miles
0 1 2 3 4 5 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0141

With normal water levels, the Marsh Fork travels at about 5–6 miles per hour, and waters are generally class I and II. While the river can be floated in 4–5 days, the average trip length is 8.6 days, which usually includes boating to lower reaches of the Canning River near Shublik Springs. The trip could be extended to 12–14 days by floating to the ocean.

Other Values: There are characteristics of the Marsh Fork Canning River unrelated to recreation that affect the suitability of this segment. The Marsh Fork has a high density of spring-fed overwintering habitats used by round whitefish, Arctic grayling, and anadromous Dolly Varden. Smith and Glesne (1983) reported that 39,000 Dolly Varden overwintered in the Canning and Marsh Fork, which is the highest Dolly Varden abundance reported for any drainage on the North Slope of Alaska. High densities of benthic invertebrates in spring-fed habitats provide an important food source for juvenile and resident fish. Dolly Varden spawning and overwintering in the Marsh Fork are part of the Canning River population, which is genetically distinct when compared to other North Slope populations (Crane et al. 2005).

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

   The Marsh Fork Canning River is located outside the boundary of PLO 2214 (the original Arctic Range). The ownership of the submerged lands beneath this river depends on its navigability for purposes of title. If determined navigable, the State would own the submerged lands beneath the navigable portion of the river to the ordinary high water mark; if non-navigable, the submerged lands belong to the owners of the adjacent uplands. The navigability status of the Marsh Fork Canning River is undetermined at this time.

   The Service has not obtained any State-based water rights for the Marsh Fork. However, since the headwaters of the Marsh Fork are located in the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

   Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use in the Marsh Fork Canning River corridor. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

   All the land in the Marsh Fork Canning River corridor is managed by the Service; therefore, the Service would be responsible for administering the Marsh Fork Canning River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

   The ownership of the submerged lands is undetermined at this time. The State has not filed a quiet title action or an application for a recordable disclaimer of interest.

The cost of CRMP development, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

   The entire length of the Marsh Fork Canning River flows through lands administered under Minimal Management provisions.

7. Historical or existing rights that could be adversely affected with designation.

   There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   Under Section 307(c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. The Marsh Fork is in the coastal zone of the North Slope Borough, but the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs by preventing incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designate under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period for the Revised Plan, the Service received six comments supporting designation of the Marsh Fork Canning River and two requesting increased resource protection.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 18 comments for the Marsh Fork Canning River from commercial guides, recreational visitors, conservation organizations, a commercial air-taxi operator, and other unidentified commenters. Eight comments supported designation of the Marsh Fork Canning, and 10 comments did not clearly mention support for or opposition to designation. Stakeholder comments indicated that river uses include commercial and non-commercial recreation, hunting, fishing, and rafting. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (15), recreational (15), scenic (17), geologic (14), cultural (4), fish (7), and historic (2). Additionally, stakeholders identified intact wilderness qualities, intact ecological systems, and hunting as other Marsh Fork Canning River values. Specifically, comments noted that the open, shale-dominated basin of the upper Marsh Fork allows for unusual scenic views, and the nutrient rich soils and resulting plant life provide forage for Dall's sheep. Comments further noted that the river provides fun and challenging whitewater through a scenic canyon of geological interest and that there are rugged peaks, erratic boulders, and fossilized marine rock along the river. Gray-headed chickadees are also known to nest in the area.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild and scenic river designation of the Marsh Fork would provide a complimentary set of protections to other Refuge and Service policies and programs and ANILCA.

11. Contribution to a river system watershed or basin integrity.

    The Marsh Fork is the largest tributary of the Canning River. This watershed drains approximately 2,900 square miles. Designating the Marsh Fork would afford continued protection of this important river system and would help maintain the integrity and the uniqueness of Carter Pass by providing easy access for people and wildlife over the Continental Divide.

    The Marsh Fork Canning River, in conjunction with the Canning River, has a notable and extensive spring system that, when compared to other river systems on the North Slope of Alaska, may export the largest volume of spring water (Childers et al. 1977). During winter, some of this water remains unfrozen and provides overwintering habitat for fish. Downstream from spring-fed areas, overflow water freezes and forms extensive areas of aufeis that can extend into the upper reaches of the Marsh Fork and down the mainstem of the Canning River. Aufeis melts much later in the season than snow and can be an important source of late season discharge to the Canning River.

12. Other issues and concerns, if any.

    There are no additional issues or concerns pertaining to the Marsh Fork Canning River.

5.3.3 Preliminary Suitability Determination

The Marsh Fork Canning River is preliminarily determined to be suitable with a wild river classification. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. To determine a river suitable, Refuge staff believed it was imperative to: 1) gain additional management tools through potential designation, and 2) avoid creating new management issues by displacing visitor use to other highly desirable and visited river corridors. Determining the Marsh Fork Canning River as suitable, along with the Kongakut and Hulahula Rivers, achieves these goals. The intent driving this determination is to avoid displacing visitor use to similarly desirable river corridors and to promote holistic, ecosystem-wide, effective management strategies.

The Marsh Fork Canning River is the third most visited river on the Refuge's North Slope, and its popularity has been increasing steadily. Visitor use data reflects that recreational use of the Kongakut River is being displaced to the Marsh Fork. The Wild and Scenic Rivers Act provides useful management tools to protect the recreational outstandingly remarkable value and the scenic, geologic, fish, and wildlife values of the Marsh Fork. Most of the Marsh Fork flows through a narrow river valley, allowing the provisions of the CRMP to apply to most of the valley, thereby avoiding potential displacement issues in the corridor. The entire length of the Marsh Fork Canning River flows outside of the original Arctic Range and outside designated Wilderness. Wild river designation would increase the protection and Service's manageability of the Marsh Fork Canning River.

5.4 East Fork Chandalar River

Reach: The East Fork Chandalar River is a major tributary of the Chandalar River and serves as a highway to subsistence hunting, fishing, and trapping areas. From approximately Arctic Village south, the eastern half of the river, including the eastern streambed, is not in the Refuge boundary.

Total River Length:	223.3 miles	**Primary Classification:**	Wild
Length on Refuge:	203.7 miles	**ORVs:**	Cultural
Length in Wilderness:	32.9 miles		

5.4.1 Description/Overview

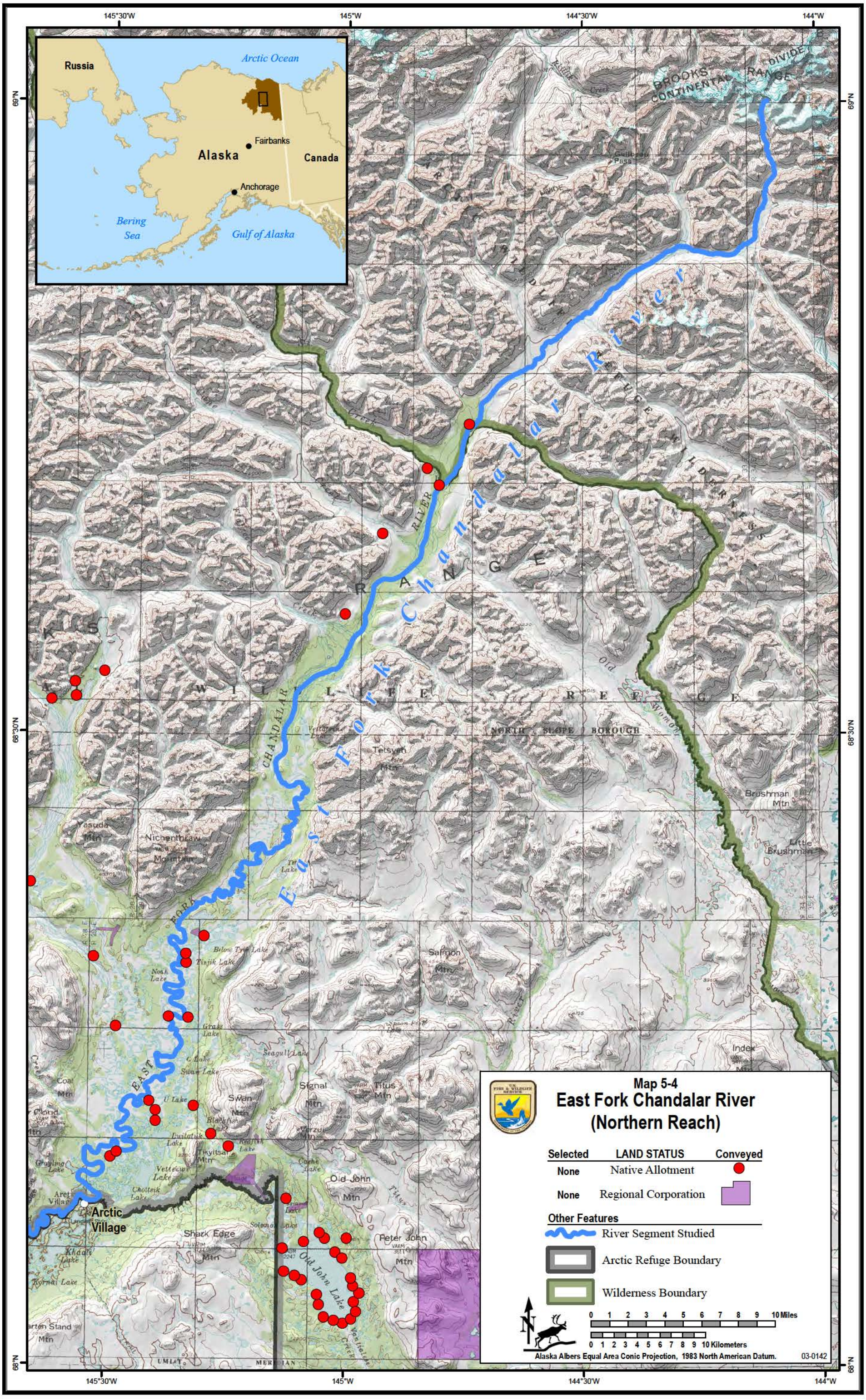
The Chandalar River is a major tributary of the Yukon River. The East Fork Chandalar River flows swiftly south nearly 60 miles from its high mountainous headwaters through a wide, mountain-rimmed valley, and then it meanders slowly through a forested, lake-dotted valley as it passes Arctic Village (Maps 5-4 and 5-5). The East Fork serves as a highway to access subsistence hunting, fishing, and trapping areas around Arctic Village. Many villages have economies that revolve around subsistence uses and opportunities.

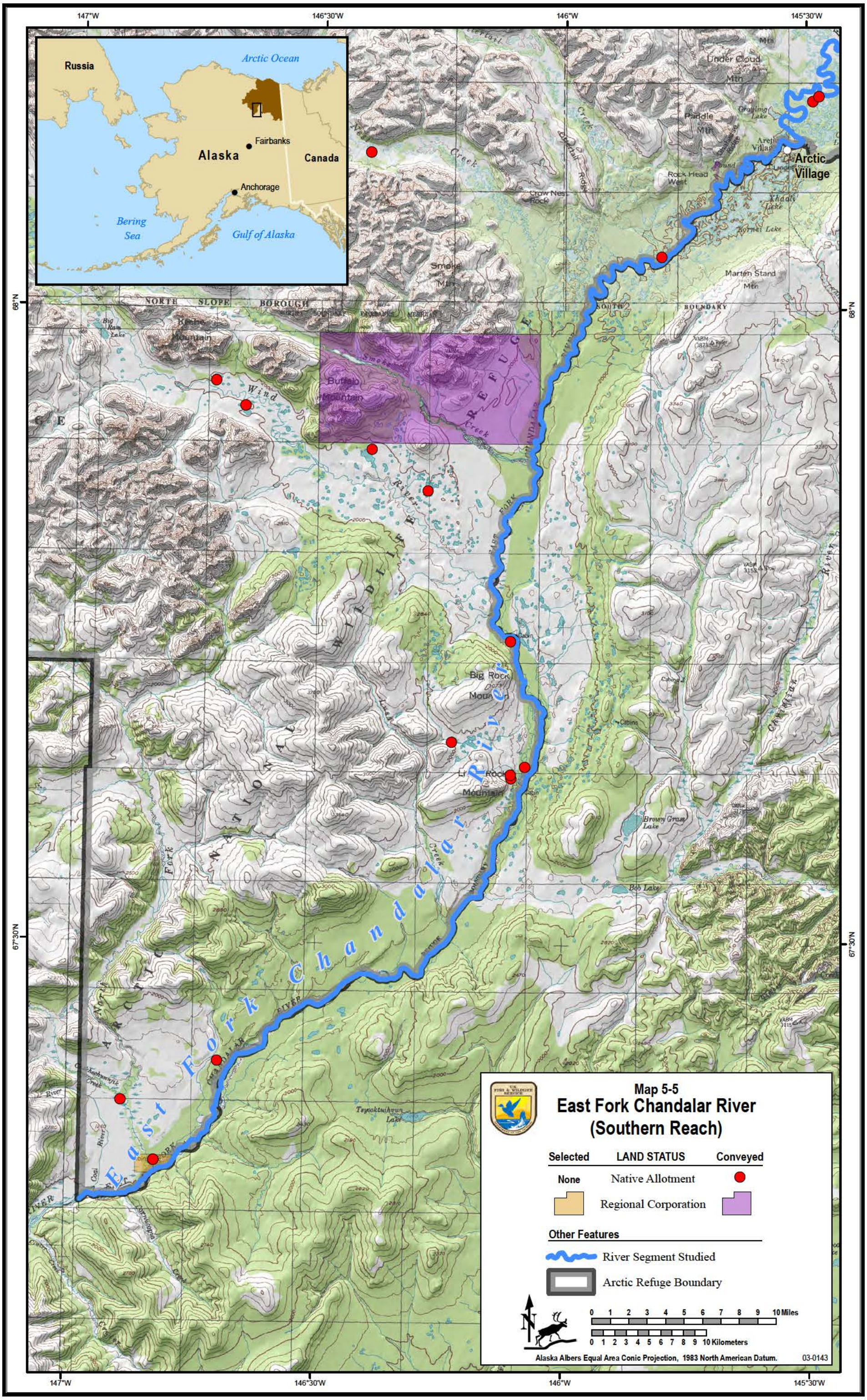
5.4.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

   Cultural Value: The East Fork Chandalar River has outstandingly remarkable cultural values that are unique from other rivers in Alaska and those in the NWSRS. The East Fork provides an opportunity to experience a community whose economic basis is subsistence use of diverse wildlife and plant populations on the south side of the Brooks Range. The East Fork travels from the mountain-rimmed headwaters in the Romanzof Mountains past Arctic Village, along the Refuge boundary, and further on to its confluence with the mainstem Chandalar River. This drainage then continues past the village of Venetie for 100 miles before it enters the Yukon River. The Chandalar drainage's large expanse and relatively predictable water flow allow it to serve as a highway to subsistence hunting, fishing, and trapping areas, primarily for the villages of Arctic Village and Venetie, but also for other villages along the Yukon River. The only year-round access to Venetie and Arctic Village is via airplane.

   Until the 1950s, the Neets'aii Gwich'in ("those who dwell to the north") lived a highly nomadic life. They traditionally used seasonal camps and semi-permanent settlements, such as Arctic Village, Christian, Venetie, and Sheenjek, in pursuit of fish and game. They traded with Iñupiat Eskimos on the Arctic coast. There is archaeological evidence the Arctic Village area was populated as early as 4,500 BC (Alaska Department of Commerce 2010). Remnants of caribou fences and corral structures used by the Gwich'in people can be found throughout much of the current southern range of the Porcupine caribou herd (Warbelow et al. 1975). In the proposed East Fork Chandalar wild river corridor, there are multiple caribou fences, cemeteries, and other examples of subsistence use.


Map 5-4
East Fork Chandalar River
(Northern Reach)
Selected
LAND STATUS
Conveyed
None
Native Allotment
None
Regional Corporation
Other Features
River Segment Studied
Arctic Refuge Boundary
Wilderness Boundary
0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0142
Russia
Arctic Ocean
Alaska
Fairbanks
Canada
Anchorage
Bering Sea
Gulf of Alaska
145°30'W
145°W
144°30'W
144°W
69°N
68°30'N
68°N
East Fork Chandalar
Chandalar River
Arctic Village
Old John Lake
Old John Mtn
Peter John Mtn
Shark Edge Mtn
Salmon Mtn
Signal Mtn
Titus Mtn
Swan Mtn
Tetsyen Mtn
Brushman Mtn
Little Brushman
Nichenthkaw Mountain
Yasuda Mtn
Coal Mtn
Index
NORTH SLOPE BOROUGH
BROOKS CONTINENTAL DIVIDE
CHANDALAR RANGE
ARCTIC NATIONAL WILDLIFE REFUGE


Map 5-5
East Fork Chandalar River
(Southern Reach)
Selected
LAND STATUS
Conveyed
None
Native Allotment
Regional Corporation
Other Features
River Segment Studied
Arctic Refuge Boundary
0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0143
East Fork Chandalar River
Arctic Village
Russia
Arctic Ocean
Alaska
Fairbanks
Canada
Anchorage
Bering Sea
Gulf of Alaska
147°W
146°30'W
146°W
145°30'W
68°N
67°30'N

In 1863, Archdeacon McDonald of Fort Yukon observed that the Chandalar Gwich'in were important providers of caribou meat for the residents of Fort Yukon. Currently, residents of various Native villages trade their area's subsistence resources for those found in other areas. For example, residents of Fort Yukon may give salmon to residents of Arctic Village in exchange for caribou. Before trading occurred, Reverend Albert Tritt, a Neets'aii Gwich'in born in 1880, wrote that his people led a nomadic life, traveling to the Arctic coast, Rampart, Old Crow, the Coleen River, and Fort Yukon in the 1880s and 1890s. With the introduction of firearms in the early 1900s, family groups began to gather more permanently at several locations; there was no longer a need to disperse into small groups to hunt caribou. The first permanent resident at the present village site was Chief Christian in 1909. In 1943, the Venetie Indian Reservation was established due to the efforts of several area villagers to protect their land for subsistence use. When the Alaska Native Claims Settlement Act (ANCSA) was passed in 1971, Venetie and Arctic Village opted for title to the 1.8 million acres of land in the former reservation (Alaska Department of Commerce 2010).

Residents continue to use the community as a base of operations from which they pursue seasonal subsistence activities (Alaska Department of Commerce 2010). Certain communities, especially Arctic Village and Fort Yukon, serve as regional providers of localized resources. Caribou, moose, sheep, porcupine, rabbit, and ptarmigan are hunted. Freshwater fish, waterfowl, furbearers, firewood, and berries are also harvested. The school, clinic, village council, and stores are the primary employers. Seasonal employment includes construction, firefighting, and guiding. Some residents trap furbearers or sell firewood for income.

Other Values: There are characteristics of the East Fork Chandalar River unrelated to the river's cultural value that affect the suitability of this segment. The river has a relatively high diversity of fish species and an extensive network of floodplain lakes that provide overwintering habitat to important subsistence fish. The lower portion of the river provides spawning habitat for chum and Chinook salmon. From 2001 to 2003, 40 percent of the fish harvested by the residents of Arctic Village were from this river.

The East Fork Chandalar River corridor is also frequented by caribou from the Porcupine caribou herd and, to a lesser degree, the Central Arctic caribou herd. They use the main river corridor and surrounding watersheds for both wintering and migratory events. While other river corridors in the area are also important, the Porcupine caribou herd has considerably used portions of the East Fork Chandalar corridor during the last few winters. This could be due to habitat quality within the corridor and its size or proximity to the boreal transition zone to the south, which provides additional wintering habitat for caribou (Eric Wald, Wildlife Biologist at Arctic Refuge, pers. comm., June 13, 2012).

2. <u>The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.</u>

Approximately 32 miles of the East Fork Chandalar River are located within the boundary of PLO 2214 (the original Arctic Range), while the remaining 171 river miles are located in Refuge lands established by ANILCA. From approximately Arctic Village south, the boundary of the Arctic Refuge follows the thread of the East Fork of the Chandalar. For purposes of title, ownership of the submerged lands (the river bed) beneath the waters of this section of the East Fork depends on a determination of navigability. The navigability status of the East Fork Chandalar River has not been determined. If determined navigable, the State would own the submerged lands beneath the navigable portion of the river to the ordinary high water mark on either side of the river with Arctic Refuge ownership of

uplands on the west bank and the Native Village of Venetie tribal government ownership of uplands on the east bank. If determined non-navigable, the Federal government holds title to the underlying submerged lands adjacent to Arctic Refuge from the thread of the East Fork Chandalar River west, and the Native Village of Venetie tribal government holds title to the underlying submerged lands from the thread of river east.

The Service has not obtained any State-based water rights for the East Fork Chandalar River. Since the headwaters of the East Fork Chandalar are located in the Refuge, it is unlikely that other entities would file for diversionary water rights on upper reaches of this river. On the lower 171 miles, other entities could file water rights applications for water diversions that could affect water quantity.

The Native Village of Venetie tribal government also holds title to the subsurface estate within the former reservation including to the middle of the channel in the East Fork Chandalar River where the former reservation shares the border with the Refuge.

Fifteen Native allotments (totaling 1,172 acres) are within the river study corridor. These are private lands over which the Service has no management authority or property right.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

   There are no reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

   The Service would work with private landowners, the Native Village of Venetie tribal government, the Arctic Village and Venetie village councils, and the communities of Venetie and Arctic Village to administer the East Fork Chandalar River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

   There are no village corporation lands (conveyed or selected) in the East Fork Chandalar corridor. The Service has acquired allotments along the East Fork and plans to continue to acquire allotments from willing sellers in cooperation with The Conservation Fund.

   There are six conveyed and one selected ANCSA 14(h)(1) sites in or near the corridor, and these sites have restrictions contained in the patent that prohibit their development or sale. Therefore, these sites will not be acquired by the Service.

   The cost of CRMP development, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with the designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

   The upper 32.9 miles of the East Fork Chandalar River flow through lands administered under Wilderness Management provisions. The lower 170.8 miles of the Refuge segment

of the East Fork Chandalar flow through lands administered under Minimal Management provisions.

7. Historical or existing rights that could be adversely affected with designation.

   There are no historical or existing rights that could be adversely affected with designation. There are 16 known sites that have historical or cultural significance, including caribou fences with associated settlements, historically used camps, clusters of storage caches, kill sites, graves, and prehistoric camps and sites. These sites would not be adversely affected by designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   There are no land use controls or local zoning controls to protect the river's ORVs from incompatible development.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period for the Revised Plan, the Refuge received three comments supporting designation of the East Fork Chandalar River and four comments suggesting the need for increased protection of subsistence resources and traditional village uses against general hunters' sometimes unethical hunting practices.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 25 comments for the East Fork Chandalar River from commercial guides, recreational visitors, conservation organizations, a commercial air taxi operator, Arctic Village residents and council members, Native Village of Venetie council members, a member of the Gwich'in tribal government, and other unidentified commenters. Seven comments supported designation of the East Fork Chandalar River, and 18 comments do not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, trapping, and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (18), recreational (13), scenic (15), geologic (7), cultural (13), fish (11), and historic (7). Stakeholders identified travel, sacred sites, private land ownership, intact wilderness, intact ecological system, and subsistence—both current and historical—as other East Fork Chandalar River values. Specifically, comments noted that the East Fork Chandalar River is, and historically has been, important for subsistence harvest of Dall's sheep, moose, grizzly bear, caribou, wolf, wolverine, red fox, ground squirrel, ptarmigan, porcupine, grayling, whitefish, and waterfowl. It was further noted that the river was a historical trade route between the Gwich'in and the Iñupiat. Stakeholder concerns included cleanliness and sport hunting. Another stakeholder expressed concerns about whether designation would mean additional regulations that could negatively affect a subsistence lifestyle. Stakeholders recommended increasing law enforcement presence.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild and scenic river designation of the East Fork Chandalar River would provide a complimentary set of protections to: other Refuge and Service policies and programs; the Wilderness Act; ANILCA; the National Historic Preservation Act of 1966, as amended; the Antiquities Act of 1906, 16 U.S.C. § 433 et seq.; the Native American Graves Protection and

Repatriation Act, 25 U.S.C.§ 3001 et seq.; the Archaeological Resources Protection Act, 16 U.S.C. § 470aa et seq.; and, Section 106 of the National Historic Preservation Act of 1966.

11. Contribution to a river system watershed or basin integrity.

    The East Fork Chandalar River is an integral part of the Chandalar and Yukon River watersheds. It is part of an intact ecosystem that supports the subsistence and cultural values held by Alaska Natives. This river is unique by supporting the economic basis for Arctic Village and providing subsistence opportunities for the entire Chandalar region. Protecting this river is essential to protecting fish and wildlife populations and their crucial role in subsistence uses and traditional cultures.

12. Other issues and concerns, if any.

    There are no additional issues or concerns pertaining to the East Fork Chandalar River.

5.4.3 Preliminary Suitability Determination

The East Fork Chandalar River is preliminarily determined to be not suitable. There are many private parcels along the river, and below Arctic Village, the boundary between the Refuge and lands owned by the Native Village of Venetie tribal government is along the thread of the river. These land ownership patterns make it difficult for the Service to manage use in the river corridor. Where tribal lands are involved, sovereign tribes retain authority over the lands; however, river-administering agencies can seek opportunities to collaborate in protecting values of joint concern (IWSRCC 2011). Permanent protection and enhancement of the East Fork Chandalar River's cultural ORV would require the active involvement and commitment of the Native Village of Venetie tribal government to develop and implement resource protection strategies commensurate with the mandate of the Wild and Scenic Rivers Act. While the tribe has expressed some interest in partnering with the Service, joint management cannot be guaranteed at this time.

Section 10(a) of the Act mandates administration of designated rivers to protect and enhance the values that led to designation, and establishing a wild and scenic river boundary that encompasses the identified ORVs is essential. The boundary delineates the area within which the Service would work with landowners and local communities to develop effective protections and management strategies but does not give the Service the authority to regulate non-Federal lands. Establishing a boundary from the thread of the river westward would not ensure protection and management of the East Fork Chandalar River's cultural outstandingly remarkable value. The Service also considered whether the river could be segmented and a portion of the river recommended as suitable. The cultural ORV of the East Fork Chandalar River exists along its entire extent and particularly in the lower half of the river from its confluence with the Junjik River and south where it borders tribal land. Therefore, it would not be possible to segment the river above its border with tribal land and determine it suitable.

The river valley is wider than one mile for the majority of its length, meaning that a CRMP that protects one-half mile on either side of the river would not be the best management approach to the East Fork Chandalar River and would not be consistent with the Refuge's overarching goals to apply ecosystem- and Refuge-wide management strategies. Other acts and regulations, including ANILCA, provide protections for the cultural ORV that are more restrictive and comprehensive than the Wild and Scenic Rivers Act. Also, the cultural values could be protected more thoroughly through a step-down plan such as a Refuge-wide

Integrated Cultural Resources Management Plan (see Chapter 2, Section 2.1.8 in the Revised Plan). Visitor use could be managed through a Refuge-wide Visitor Use Management Plan (see Chapter 2, Section 2.1.5), the highest priority step-down plan identified in the Revised Plan. Nothing in the wild and scenic river review prevents or prohibits a reexamination of this river. It is quite possible that through continued communication and consultation with the tribe, a partnership will develop that would eventually allow the East Fork Chandalar River to be effectively managed as a wild river.

5.5 Hulahula River

Reach: The Hulahula River originates in the glaciers of the Romanzof Mountains, flows west for a ways, and then sharply turns to the north as it flows between Mt. Chamberlin and Mt. Michelson and out to Camden Bay.

Total River Length:	96.6 miles	**Primary Classification:**	Wild
Length on Refuge:	96.6 miles	**ORVs:**	Recreational, Cultural
Length in Wilderness:	66 miles		

5.5.1 Description/Overview

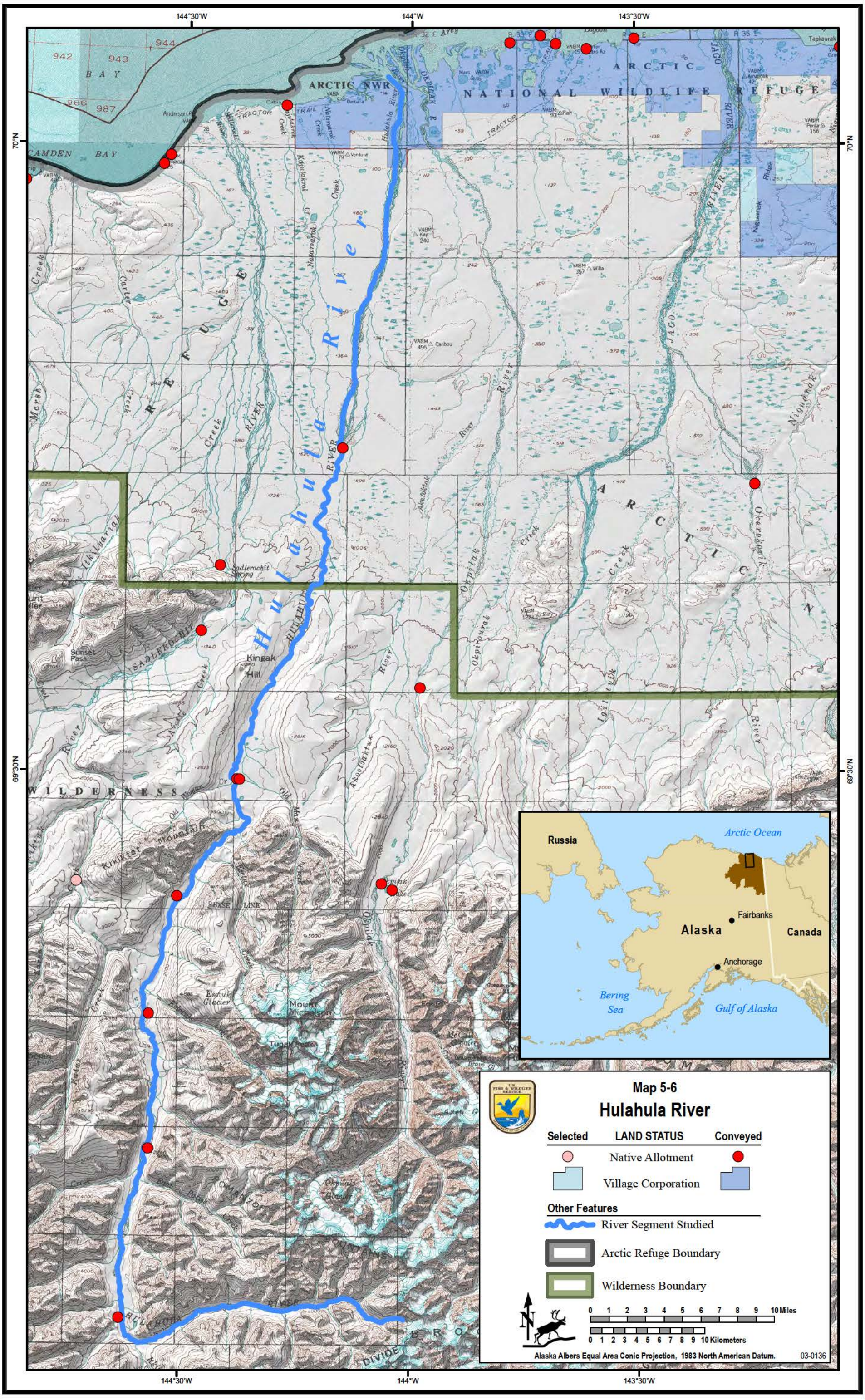
The Hulahula River originates in the highest peaks of the Brooks Range, flows about 40 miles north through steep-walled glacial valleys, and then abruptly breaks out onto the coastal plain (Map 5-6). Swift and turbid with glacial silt in the summer, the river is the most technically challenging of the regularly run north-side rivers. A narrow twisting pass across the Continental Divide between the headwaters of the Hulahula and East Fork Chandalar Rivers provides a natural hiking route and flight path. Due to its scenery, accessibility, and floatability, the Hulahula attracts 10 percent of Refuge visitors.

5.5.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

   Cultural Value: The Hulahula River has outstandingly remarkable cultural values that are unique from other rivers in Alaska and those in the NWSRS. Arctic Refuge is known as a cultural crossroads where Eskimo and pre-Eskimo coastal cultures interacted and traded with Indian and pre-Indian cultures from the interior, north, and south. The cultural exchange in both directions has national importance (D. Corbett, Regional Archaeologist, pers. comm., June 9, 2010). Interviews conducted with tribal council members and elders in the Gwich'in community of Arctic Village described their families and ancestors traveling north along the Hulahula River to trade and barter with Iñupiat people. Similarly, interviews conducted with tribal council members in the Iñupiat community of Kaktovik described families and ancestors trading and bartering with the Gwich'in along the Hulahula River. The interviewees also described the river as having numerous Indian place names associated with travel and trade routes.

   Additionally, the entire river corridor is intensively used by the Iñupiat people for a variety of subsistence purposes (Exxon Mobil Corporation 2009), there are numerous Native allotments along the corridor, and the river was identified as having important cultural values by both the Iñupiat and Gwich'in. While there are few known archaeological sites along the Hulahula River, there has been little to no survey effort. Given the bicultural importance of the river, it is highly likely the river contains numerous archaeological sites (D. Corbett, Regional Archaeologist, pers. comm., January 11, 2011). Multi-cultural exchange and contemporary cultural values and uses combine to give the Hulahula River outstandingly remarkable cultural values.


Map 5-6
Hulahula River
Selected
LAND STATUS
Conveyed
Native Allotment
Village Corporation
Other Features
River Segment Studied
Arctic Refuge Boundary
Wilderness Boundary
0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0136
Russia
Arctic Ocean
Fairbanks
Alaska
Canada
Anchorage
Bering Sea
Gulf of Alaska
144°30'W
144°W
143°30'W
70°N
69°30'N
ARCTIC NWR
ARCTIC NATIONAL WILDLIFE REFUGE
CAMDEN BAY
Hulahula River
Kingak Hill
Sunset Pass
Sadlerochit Mtns
Mount Michelson
Tupik Peak
Esduk Glacier
WILDERNESS
BASE LINE
DIVIDE

Recreational Value: The Hulahula River has outstandingly remarkable recreational values (ORVs) and is unique from other rivers in Alaska and those in the NWSRS. It provides an opportunity to float through a steep-walled, wide glacial valley of the Brooks Ranges that offers challenging whitewater before exploding out onto the coastal plain, where the water character subdues, but the challenge of navigating rapids is exchanged for proper channel selection as the river winds through fields of deceptively dangerous aufeis. This river offers an unparalleled northern arctic recreational experience.

Because of its remoteness and lack of roads, the area's wildness in the upper reaches is virtually untouched, except for a few landing zones and evidence of previously used campsites. The northern stretches of the river are dotted with culturally important areas, evidenced by historic and subsistence use cabins and associated structures. Many of these cabins continue to be used as shelter for rural residents who subsistence fish in the winter.

The river is fast and challenging with multiple braided channels and rocky rapids, dropping 2,300 feet over its 100 miles. At average flow rates, the waters are generally class I and II with multiple stretches of class III. Rafters, kayakers, hunters, and hikers from around the world pursue adventure trips on the Hulahula. The average group size is 4.6, and the average trip length is 8.6 days. River trips pass the glaciated peaks of Mt. Michelson and Mt. Chamberlin and often include day hiking trips up side valleys and canyons. Some guide companies also offer winter trips that include winter camping and cross-country skiing.

Recreationists also seek the Hulahula for its wildlife-viewing opportunities. Caribou, grizzly bear, muskoxen, wolves, Dall's sheep, a variety of bird species, and many other wildlife species inhabit this dramatically scenic river corridor.

Other Values: Other characteristics unrelated to the cultural and recreational ORVs also affect the suitability of this river. The Hulahula River is one of the most important subsistence rivers on the north side of the Refuge, particularly for fishing and Dall's sheep hunting by Kaktovik residents.

The Hulahula River has a large run of anadromous Dolly Varden. This population is genetically distinct compared to other North Slope populations (Crane et al. 2005) and is the most comprehensively studied population on the North Slope of Alaska (Nolan et al. 2011). Groundwater-fed overwintering and spawning habitats used by Arctic grayling and anadromous Dolly Varden support high invertebrate densities and are widely dispersed along the river from the coastal plain to mountainous areas in the Brooks Range. In addition to flow from groundwater sources, glacial melt water provides major contributions to the Hulahula's summer flows (Nolan et al 2011). These contributions may be particularly important during late summer when anadromous and resident fish are returning to spawning and overwintering habitat. During 2000 to 2002, all early winter fishing by residents of Kaktovik was at Second Fish Hole on the Hulahula River (Pedersen and Linn 2005).

2. <u>The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.</u>

   The entire length of the Hulahula River is located within the boundary of PLO 2214 (the original Arctic Range). The Kaktovik Iñupiat Corporation (KIC) owns both the uplands and submerged lands along the lower 5.5 miles of the Hulahula River. The Arctic Slope Regional Corporation owns the subsurface beneath KIC lands and may remove sand and

gravel from these lands, provided they follow the stipulations in the 1983 Chandler Lake Exchange agreement that specify how and where sand and gravel pits are located and developed. Oil and gas development on or below KIC lands requires congressional authorization. Under Section 22(g) of ANCSA, development of KIC and ASRC lands will be evaluated for impacts to adjacent Refuge land; these stipulations remain with the land even if it is sold or exchanged. The submerged lands beneath inland coastal waters (bays, estuaries, and lagoons) remain in Federal ownership. With the exception of seven Native allotments totaling 322.05 acres, the Service owns the lands and submerged lands along the remaining 91.2 river miles. The four most northern allotments have oil and gas reserved to the United States.

A 17(b) easement provides legally reserved public access across Kaktovik Iñupiat Corporation lands between the Hulahula and Okpilak Rivers. This easement totals 0.7 miles of trail and a one-acre parcel designated for use by all-terrain vehicles weighing less than 3,000 pounds; snowmobiles; and all non-motorized travel and access on the delta between the two rivers.

The Service has not obtained any State-based water rights for the Hulahula River. Since the entire river is located in the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. <u>Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.</u>

   Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Recreational uses in the Hulahula River corridor include hiking, backpacking, floating, hunting, fishing, and wildlife and bird viewing.

   Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use in the Hulahula River corridor. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

   An inventory of water resources completed in 1985 (Tweten 1985) identified the top five rivers in the 1002 Area whose watersheds were threatened by potential water and mineral resource development and non-consumptive uses. There are two forms of non-consumptive use: 1) those related to socioeconomics, such as general and subsistence hunting and fishing, river floating, recreational uses, aircraft landings, and historical and present-day travel; and 2) those related to construction or maintenance, such as gravel extraction from streambeds to build road and other infrastructure, and some forms of dredge mining. The Hulahula River was rated first in this study and was identified: 1) for potential mineral or oil and gas development; 2) as a source of gravel for road development and other uses; 3) as a source of domestic water; 4) as a navigable transportation route; and 5) as having important resource values, including habitat for threatened species; habitat for overwintering, spawning, and smolting fish; wetlands dependent on water flow; historical and cultural values; and subsistence and general fishing values.

Potential threats to the Hulahula River delta from oil and gas development include the "Proposed Consistency Determination – Beaufort Sea Area wide Oil and Gas Lease Sales, 2009–2018," (Alaska Department of Natural Resources 2009), which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the situating of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities (including roads, pump stations, landing areas, and storage facilities) in the Hulahula River watershed could have adverse impacts to the recreational values, including adverse impacts on visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness and solitude currently available on the Refuge.

Oil and gas exploration and development in the Hulahula River corridor could be impacted as a result of designation. The Hulahula River is tentatively classified as wild and, as such, would be withdrawn from appropriation under the mining and mineral leasing laws by Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act.

4. <u>The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.</u>

   The Service would work with private landowners, the Native Village of Kaktovik tribal government, KIC, and the community of Kaktovik to administer the Hulahula River.

5. <u>Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.</u>

   There are 2,824.98 acres of KIC lands and allotments in the river corridor. The lands are used by Kaktovik residents for subsistence purposes, and acquisition of such lands would not be necessary to protect the recreational and cultural ORVs on the Hulahula.

   The cost of CRMP development, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with the designation.

6. <u>Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.</u>

   The upper 66 miles of the Hulahula River flow through lands administered under Wilderness Management provisions. From the 1002 boundary to the KIC boundary (25.1 miles), the Hulahula River flows through lands administered under Minimal Management provisions. The lower 5.5 miles of the Hulahula River are owned and administered by KIC.

   Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 25 miles of the lower Hulahula River is in polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. <u>Historical or existing rights that could be adversely affected with designation.</u>

   There are no historical or existing rights that would be adversely affected with designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   Under Section 307(c) of the Coastal Zone Management Act of 1972, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. From the Beaufort Sea to 22 miles inland, the Hulahula River is in the coastal zone of the North Slope Borough; however, the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs or preventing incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period for the Revised Plan, the Refuge received nine comments supporting designation of the Hulahula River and one comment saying that the Native allotments and associated structures would preclude the Hulahula from designation.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 21 comments for the Hulahula River from commercial guides, recreational visitors, conservation organizations, Native Village of Kaktovik tribal council members, a resident of Arctic Village, and other unidentified commenters. Nine comments supported designation of the Hulahula, and 12 comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (16), recreational (15), scenic (17), geologic (11), cultural (8), fish (11), and historic (2). Additionally, stakeholders identified intact wilderness qualities, intact ecological systems, subsistence, historic trade, private land ownership, and birds as other Hulahula River values. Specifically, comments noted that the Hulahula's scenery includes some of the highest peaks in the Brooks Range, and the river valley supports a high density of Dall's sheep. Comments further noted that the river valley funnels wind in a way that causes snow to melt earlier in the spring, thus creating a longer growing season for plants, including sheep forage. Comments also mentioned that the river's springs provide important overwintering fish habitat, and there are several places with Gwich'in names in the Hulahula River drainage associated with travel and trade routes. Stakeholders are concerned that too many people visit the Hulahula River and that a portion of the river flows through the 1002 Area.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild and scenic river designation of the Hulahula would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

    The Hulahula River is the main water body in this northern watershed. By protecting it, protections will likely spread to its tributaries. This river is integral to North Slope ecosystems and residents in Arctic Refuge. In addition to flow from groundwater sources, glacial melt water provides major contributions to the Hulahula's summer flows (Nolan et

al 2011). These contributions may be particularly important during late summer when anadromous and resident fish are returning to spawning and overwintering habitat.

12. Other issues and concerns, if any.

    There are no additional issues or concerns pertaining to the Hulahula River.

5.5.3 Preliminary Suitability Determination

The Hulahula River is preliminarily determined to be suitable with a wild river classification. There are three segmentation possibilities: 1) do not segment (include the entire river from its headwaters to the Beaufort Sea); 2) segment the river at the 1002 Area boundary (include the river from its headwaters to the 1002 Area boundary); or 3) segment the river at the KIC land boundary (include the river from its headwaters to the KIC boundary). These three segmentation possibilities consider manageability (landowner status) and potential development issues.

The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. To determine a river suitable, Refuge staff believed it was imperative to: 1) gain additional management tools through potential designation, and 2) avoid creating new management issues by displacing visitor use to other highly desirable and visited river corridors. Determining the Hulahula River as suitable, along with the Kongakut and Marsh Fork Canning Rivers, achieves these goals. The intent driving this determination is to avoid displacing visitor use to similarly desirable river corridors and to promote holistic, ecosystem-wide, effective management strategies. The Hulahula River is the second most visited river on the Refuge's North Slope, and its popularity has been increasing. The Wild and Scenic Rivers Act provides useful management tools to protect the recreational and cultural ORVs and the scenic, wildlife, and fish values of the Hulahula. Airplane access (the primary mode of access to the Hulahula River) occurs almost exclusively within one-half mile of the river; therefore, access could be regulated by the provisions of a CRMP. Wild river designation would increase the protection and Service's manageability of the Hulahula River corridor.

5.6 Jago River

Reach: The Jago River is flanked by the Romanzof Mountains and is fed by the McCall Glacier on Mt. Itso. It flows through the mountains to the coastal plain and finally to the Beaufort Sea.

Total River Length:	83.8 miles	**Primary Classification:**	Wild
Length on Refuge:	83.8 miles	**ORVs:**	Wildlife
Length in Wilderness:	39.7 miles		

5.6.1 Description/Overview

The Jago River is fed by the McCall Glacier on Mt. Itso. It flows through the Romanzof Mountains to the coastal plain and finally to the Beaufort Sea (Map 5-7). The Jago River valley has multiple high flanking lateral moraines, recessional moraines, outwash terraces, and glacial lake deposits. Its U-shaped profile was produced by the Hubley, McCall, and Schwanda glaciers flowing onto the Arctic lowland from the Continental Divide. The Jago River valley clearly illustrates the natural forces of permafrost in various forms of icing mounds, pingos, and polygons. Visitors are often surprised to also find sand dunes as the river pours out of the mountains onto the coastal plain. Because of its remoteness and lack of roads, the area feels virtually untouched other than a few discernible landing areas.

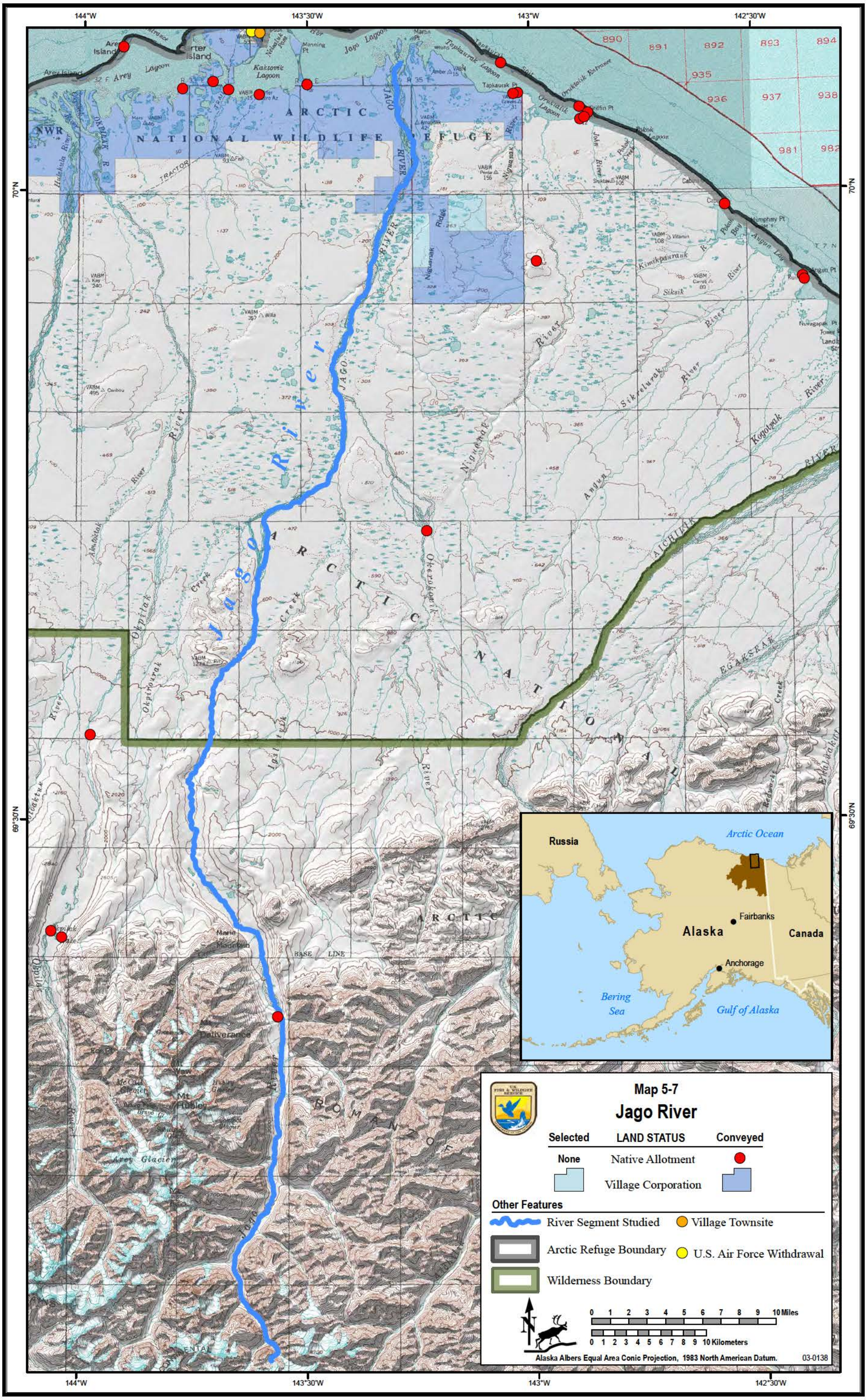
5.6.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

   Wildlife Value: The Jago River has outstandingly remarkable wildlife values. The Jago River valley contains many string bogs and seepage areas laced with fens and floodplains. This diversity of vascular flora supports heavy seasonal use by wildlife, including the Porcupine and Central Arctic caribou herds, wolves, muskoxen, and bears. These animals provide a variety of wildlife-viewing and photographic opportunities. The Jago River is one of two rivers in the 2010 suitability study that has been a high density calving area (50 percent of calving) in almost all (13) of the 17 years of a long-term research project (Griffith et al. 2002). Also, the Jago boasts the longest segment (61.8 miles) of polar bear denning habitat on the Refuge.

   Small groups of muskoxen are occasionally seen along the Jago River. These animals live year-round in the coastal plain and foothills of the Arctic Refuge. In summer, they forage on willows and other vegetation along river drainages and move into adjacent uplands where they forage on wind-swept ridges in winter.

   Another opportunity available on the lower Jago is bird watching. Snow geese begin arriving from their nesting grounds in Canada to the coastal plain in late August, peak in early to mid-September, and begin their migration south to Mexico and California in late September (Brackney 1990). When snow geese feed on the Refuge's coastal plain, the majority of activity is between the Okpilak and Aichilik rivers, an area that includes the Jago River corridor. At this crucial time of year, snow geese rely on thermokarst pits with


Map 5-7
Jago River
Selected
LAND STATUS
Conveyed
None
Native Allotment
Village Corporation
Other Features
River Segment Studied
Village Townsite
Arctic Refuge Boundary
U.S. Air Force Withdrawal
Wilderness Boundary
0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0138
Russia
Arctic Ocean
Alaska
Fairbanks
Canada
Anchorage
Bering Sea
Gulf of Alaska
144°W
143°30'W
143°W
142°30'W
70°N
69°30'N
ARCTIC NATIONAL WILDLIFE REFUGE
JAGO RIVER
Jago River
Kaktovik Lagoon
Tapkaurak Lagoon
Oriktok Lagoon
Pokok Lagoon
Angun Lagoon
Kimikpaurauk River
Siksik River
Sikeluruk River
Kogotpak River
Angun River
Niguanak River
Okerokovik Creek
Okpilak River
Okpilak Creek
Okpitourak River
Egaksrak River
Aichilik River
Arey Island
Arey Lagoon
Griffin Pt
Humphrey Pt
Angun Pt
Manning Pt
Tapkaurak Pt
Mt Hubley
Arey Glacier
BASE LINE

healthy stands of tall cottongrass for feeding and building fat reserves for migration. These important feeding sites, known as staging areas, make up only three percent of the Refuge's coastal plain, and they primarily occur near the Jago River. After a flock of snow geese feed on a stand of cottongrass, it takes at least four years for the stand to recover (Hupp and Robertson 1998).

Other Values: Characteristics unrelated to the wildlife ORV also affect the suitability of the Jago River. Rare plant taxa, including *Mielichhoferia mielichhoferi*, *Lobaria kurokawae*, *Nephroma isidiosum*, and *Stereocaulon apocalypticum*, occur in the Jago River Valley. Recreational interest and visitation from hikers, backpackers, hunters, birders, and wildlife viewers has increased during the past decade. For most of the ice-free season, the water volume in the Jago is not adequate for floating. People who do float the river typically do so in small, individual size watercraft, such as inflatable kayaks or packrafts. The Jago is also one of the starting points for traverses up the Okpilak and Hulahula River valleys. This river attracts recreationists from around the world who wish to visit the Refuge.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

   The entire length of the Jago River is located within the boundary of PLO 2214 (the original Arctic Range). KIC owns both the uplands and submerged lands along the lower 9.5 miles of the Jago River. The Arctic Slope Regional Corporation owns the subsurface beneath KIC lands and may remove sand and gravel from these lands, provided they follow the stipulations in the 1983 Chandler Lake Exchange agreement that specify how and where sand and gravel pits are located and developed. Oil and gas development on or below KIC lands requires congressional authorization. Under Section 22(g) of ANCSA, development of KIC and ASRC lands will be evaluated for impacts to adjacent Refuge lands; these stipulations remain with the land even if it is sold or exchanged. The submerged lands beneath inland coastal waters (bays, estuaries, and lagoons) remain in Federal ownership. With the exception of one 38.75-acre Native allotment, the Service owns the lands and submerged lands along the remaining 74.8 river miles.

   Two 17(b) easements provide legally-reserved public access across KIC lands along the Jago River and its delta. These easements include 14.4 miles of trail and a one-acre parcel designated for parking and camping at the mouth of the river.

   The Service has not obtained any State-based water rights for the Jago River. Since the entire river is located within the boundaries of the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

   Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the Jago were included in the NWSRS.

   Potential threats to the Jago River delta from oil and gas development include the "Proposed Consistency Determination – Beaufort Sea Area wide Oil and Gas Lease Sales, 2009–2018," (Alaska Department of Natural Resources 2009), which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the situating of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential

for oil and gas development and the associated gravel pits and facilities, including roads, pump stations, landing areas, and storage facilities, in the Jago River watershed could have adverse impacts to the recreational values, including adverse impacts on visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness, solitude, and wildlife-viewing opportunities currently available on the Jago River.

Oil and gas exploration and development in the Jago River corridor could be impacted as a result of designation. The Jago River is tentatively classified as a wild river and, as such, would be withdrawn from appropriation under the mining and mineral leasing laws by Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act.

Recreational uses in the Jago River corridor include hiking, backpacking, floating, hunting, fishing, and wildlife and bird viewing. Wild and scenic river designation and subsequent protection of the wildlife ORV likely would not affect recreational use of the river corridor.

4. <u>The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.</u>

   The Service would work with private landowners, the Native Village of Kaktovik tribal government, KIC, and the community of Kaktovik to administer the Jago River.

5. <u>Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.</u>

   The entire length of the Jago River, excluding KIC lands and the one Native allotment, is managed by the Service. The Service has acquired allotments in the Refuge and plans to continue to acquire allotments from willing sellers in consultation with the Refuge manager and in cooperation with The Conservation Fund. However, acquisition of lands along the Jago would not be necessary to manage it as a wild river.

   The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. <u>Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.</u>

   The upper 39.7 miles of the Jago River flow through lands administered under Wilderness Management provisions. From the 1002 boundary to the KIC boundary (33.6 miles), the Jago River flows through lands administered under Minimal Management provisions. The lower 9.5 miles of the Jago River are administered by KIC.

   Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 25 miles of the Jago is in designated polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

   There are three historical cabins located on the Jago River delta in Native corporation lands. These would not be adversely affected by designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   Under Section 307(c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. From the Beaufort Sea to 41.8 miles inland, the Jago River is in the Coastal Management Zone of the North Slope Borough; however, the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs by preventing incompatible development.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period for the Revised Plan, the Service received three comments supporting designation of the Jago River.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 13 comments for the Jago River from commercial guides, recreational visitors, conservation organizations, and other unidentified commenters. Seven comments supported designation of the Jago River, and six comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, rafting, hunting, and fishing. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (13), recreational (10), scenic (13), geologic (7), cultural (3), fish (5), and historic (2). Additionally, stakeholders identified intact wilderness qualities and intact ecological systems as Jago River values. Specifically, comments noted that the McCall Glacier is within hiking distance of the river, and the scenery includes mountains Hubley and Waw. Comments also mentioned that the foothills and coastal plain along the Jago are part of the traditional calving grounds of the Porcupine caribou herd and that the river provides wonderful and challenging whitewater.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild and scenic river designation of the Jago River would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

    The Jago River is the main water body in this northern watershed. By protecting it, protections would likely spread to its tributaries. The river is integral to North Slope ecosystems and residents of Kaktovik. Glacial melt water contributes to summer flows and has been studied intermittently since 1956.

12. Other issues and concerns, if any.

    There are no additional issues or concerns pertaining to the Jago River.

5.6.3 Preliminary Suitability Determination

The Jago River is preliminarily determined to be not suitable. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. For the Jago River, this is especially true given its location in Arctic Refuge, its low level of visitor use, and its wildlife outstandingly remarkable value. A CRMP would only apply a one-mile wide corridor along the Jago. The Refuge has always taken a holistic approach to wildlife management; therefore, in this situation, the Wild and Scenic Rivers Act does not provide the most appropriate management tool. Protection of the Jago River's wildlife ORV is afforded through other legislation, such as the Endangered Species Act, the Refuge's Revised Plan, and through step-down plans, such as the Inventory and Monitoring Plan (see Chapter 2, Section 2.1.1 and Chapter 6, Section 6.3.3 of the Revised Plan).

5.7 Kongakut River

Reach: The Kongakut River is the only major, floatable North Slope river whose entire watershed is in designated Wilderness. Originating high in the mountains of the eastern Brooks Range, the river flows north through miles of rugged mountains to the coastal plain and empties into the Beaufort Sea.

Total River Length:	116.3 miles	**Primary Classification:**	Wild
Length on Refuge:	116.3 miles	**ORVs:**	Recreational, Scenic, Geologic
Length in Wilderness:	116.3 miles		

5.7.1 Description/Overview

The Kongakut River has outstandingly remarkable recreational, scenic, and geologic values that are unique from other rivers in Alaska and those in the NWSRS. The Kongakut River attracts one-quarter of the Refuge's visitors—around 240 people annually. Visitation is driven by two main events: the Porcupine caribou herd migration and the Dall's sheep hunting season. The river provides the longest stretch of floatable water in the Brooks Range before breaking out onto the coastal plain (Map 5-8). The river valley is narrow, and the mountains begin close to the river's banks. Many inviting side valleys create innumerable opportunities for day hikes or multiple-day treks. Because of its remoteness and lack of roads, the area is virtually untouched other than a few landing areas, visible camping sites, and emerging trails.

5.7.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

   Recreational Value: The Kongakut River is the most heavily used recreational river in the Refuge, attracting people from around the world who wish to recreate in a stunning viewshed. Nearly one-quarter (24 percent) of the commercially-supported visitors to the Refuge visit the Kongakut River. Group sizes average five people, and trip lengths average 9.3 days. At average flow rates, the waters are generally class I and II, but there are stretches of class III where the river narrows into a canyon section.

   Water levels and weather patterns are not sufficient to permit water-based recreation year-round; therefore, intense use occurs between mid-June and early September. In those months, most use is concentrated in two key time periods—the weeks that offer the highest likelihood of viewing the Porcupine caribou herd migration and the earlier weeks of the Dall's sheep hunting season. Backpacking trips make up at least 12 percent of the commercially-supported use of the Kongakut River, with many visitors focusing on the opportunity to observe the Porcupine caribou herd's migration.

   Other recreational opportunities also attract visitors. The Kongakut's terminus at the Beaufort Lagoon allows a boater the unique opportunity to journey along Icy Reef, an approximately 20-mile-long barrier reef in the Beaufort Sea. Visitors come to the Kongakut River for hiking, backpacking, floating, hunting, dog mushing, and wildlife viewing. As a secondary summer activity, many people fish the Kongakut for its healthy

population of Arctic grayling and char. Birders seek out two particular species: the gray-headed chickadee and Smith's longspur. They also hope to catch a glimpse of a bluethroat (Steve Kendall, Refuge Ornithologist, pers. comm. 2010). Wildlife viewers hope to see caribou, muskox, wolves, and brown and polar bears. Recreation on the Kongakut allows visitors to experience many of these activities in a single trip.

Scenic Value: The Kongakut River provides spectacular views throughout its entire length as it travels by steep-walled canyons, landslide features, side canyons, and contorted rock formations. Bathtub Ridge and Dar Hill are two particularly stunning formations. The river offers expansive views from the mountains to the coastal plains to the Beaufort Sea. The Kongakut estuary forms a distinct habitat of extensive mud flats, polygonal ground, and aeolian landforms that add to the visual diversity of the area. The extensive lagoon system (known as the Beaufort Lagoon), delta, perennial aufeis field, and Icy Reef also add to the viewshed. Photographic opportunities with the combination of landforms and wildlife are limitless.

Geologic Value: The Kongakut River Valley consists of steep canyons littered with contorted rock formations; the coastal plain alluvial delta; 12-foot high canyons of aufeis; a spectacular landslide near Drain Creek that removed half of an unnamed mountain; and the unusual topography of Bathtub Ridge; these are just a few of the geologic features found in the Kongakut River corridor. Several faults expose thousands of years of geologic processes.

Other Values: Characteristics unrelated to the recreational, scenic, and geologic ORVs also affect the suitability of the Kongakut River. The Kongakut River has a moderate diversity of fish species. The anadromous Dolly Varden population in the Kongakut River is genetically distinct compared to other North Slope populations (Crane et al 2005) and has two distinct life history strategies; their abundance is likely high. Known spawning habitats are widely dispersed along the river from the delta to mountainous sites in the Brooks Range, and two spring-fed spawning and overwintering sites in the river delta are used by anadromous Dolly Varden. There are high densities of invertebrates in groundwater-fed habitats along this river.

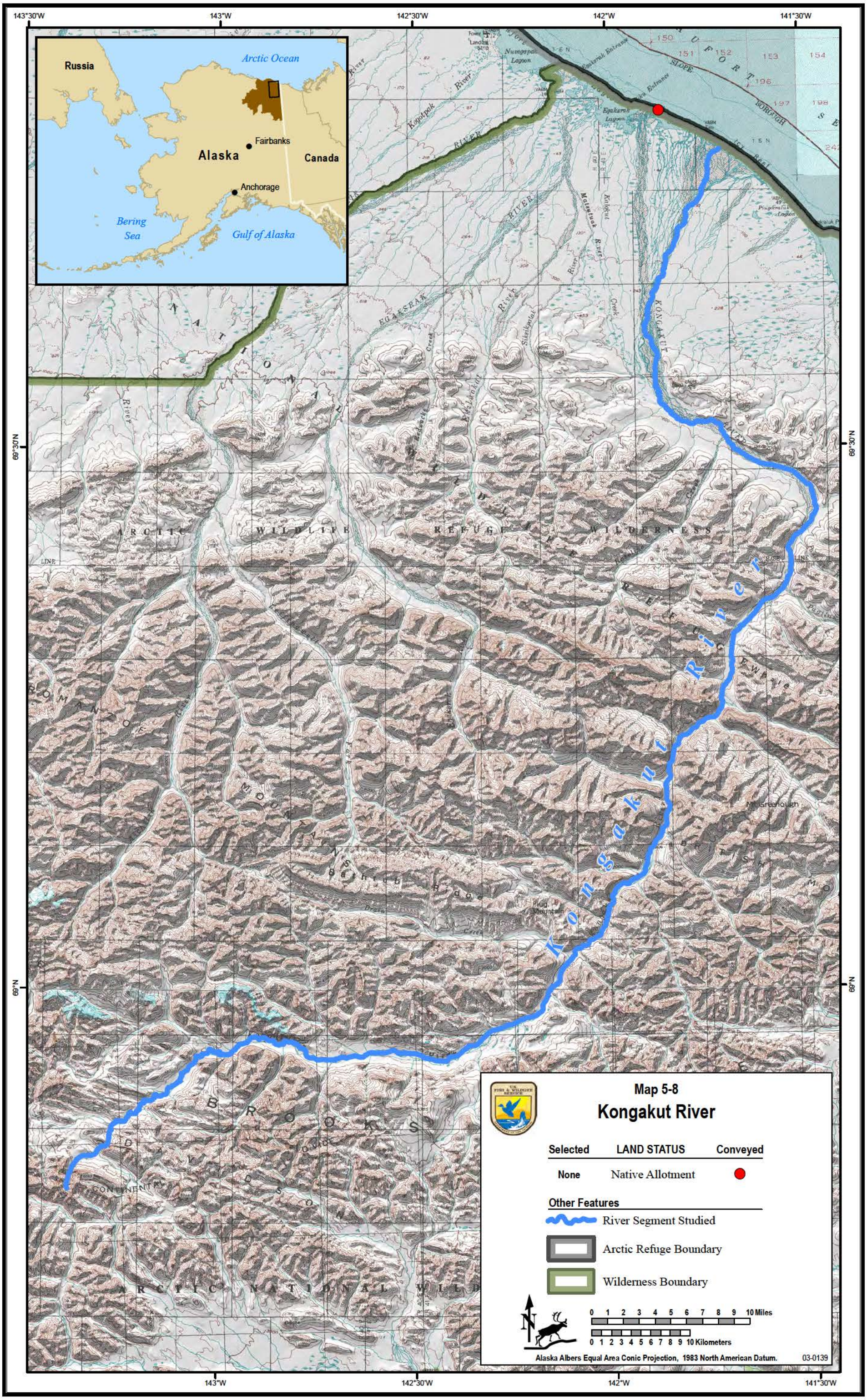
2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Kongakut River is the only major, floatable North Slope river whose entire course is in designated Wilderness and is managed exclusively by the Refuge. The entire length of the Kongakut is within the boundary of PLO 2214 (the original Arctic Range). There are no inholdings, Native corporation lands, or Native allotment lands in the river corridor.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development of the Kongakut River have the highest potential to be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Recreational uses include hiking, backpacking, floating, hunting, fishing, and wildlife and bird viewing.

The 1988 Plan identified the Kongakut River as an area experiencing minor adverse impacts on recreational and wilderness values due to increased visitor use. More recent evaluations reveal these impacts are now major. Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management


Russia
Arctic Ocean
Alaska
Fairbanks
Canada
Anchorage
Bering Sea
Gulf of Alaska
Kongakut River
Map 5-8
Kongakut River
Selected
LAND STATUS
Conveyed
None
Native Allotment
Other Features
River Segment Studied
Arctic Refuge Boundary
Wilderness Boundary
0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0139
143°30'W
143°W
142°30'W
142°W
141°30'W
69°30'N
69°N

prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use of the Kongakut River. The quality of recreational experiences could be enhanced by limiting or restructuring use.Simultaneously, management structure and perceived controls could detract from the overall experience.

Wild and scenic river designation would have no impacts on water developments (to date, no water developments or diversions have been proposed). The Service completed a reservation order for water rights under PLO 2214 on December 6, 1960, and has unquantified water rights for habitat protection. The State of Alaska does not have any water rights on the Kongakut River. Designation would not affect the annual mean flow or water quality as defined in Childers et al. 1977 or Tweten 1985.

Potential threats to the Kongakut River delta from oil and gas development include the "Proposed Consistency Determination – Beaufort Sea Area wide Oil and Gas Lease Sales, 2009–2018," (ADNR 2009), which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the situating of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities, including roads, pump stations, landing areas and storage facilities, in the Kongakut River watershed could have adverse impacts to the recreational values, including visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness and solitude currently available on the Refuge.

4. <u>The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.</u>

   All the land in the Kongakut River corridor is managed by the Service; therefore, the Service would be responsible for administering the Kongakut River corridor.

5. <u>Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.</u>

   Regardless of designation, the Refuge would have costs associated with managing this river, including increased costs for monitoring impacts and implementing visitor use surveys. However, the costs associated with a CRMP are likely to be notably higher. New regulations, permit conditions, and potential visitor restrictions could require extensive outreach, education, and enforcement. The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

   There are no lands or interests in lands or waters that need to be acquired by the agency to effectively manage the Kongakut as a designated wild and scenic river.

6. <u>Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.</u>

   The entire 116.3 miles of the Kongakut River flows through lands administered under Wilderness Management provisions.

In 2004, the Refuge began requiring all commercial air operators to restrict landings to barren soils or gravel bars in the Kongakut River corridor. Public comments indicate that the current regulations on commercial operators are not sufficient to protect the river from overuse or to provide opportunities for solitude.

The Service currently does not have a visual resource management program or other mechanism to protect the scenic values along this segment. However, protection of visual resources would likely be derived from the Revised Plan and other management authorities.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 42 miles of the Kongakut is in designated polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

   There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   Under Section 307(c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. From the coast to about 18.5 miles south, the Kongakut is in the Coastal Management Zone of the North Slope Borough; however, the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs to prevent incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period for the Revised Plan, the Refuge received 13 comments supporting designation of the Kongakut River, 2 asking for increased resource protection, and 13 expressing concern about human impacts on the Kongakut river corridor and its related resources.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 18 comments for the Kongakut River from commercial guides, recreational visitors, conservation organizations, a Native Village of Kaktovik tribal council member, and other unidentified commenters. Nine comments supported designation of the Kongakut River, and nine comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, and rafting. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (16), recreational (15), scenic (16), geologic (13), cultural (7), fish (13), and historic (5). Additionally, stakeholders identified intact Wilderness character, intact ecological systems, birds, and subsistence as other Kongakut River values. Specifically, comments noted that caribou heavily use the lands along the Kongakut River for migration, calving, and post-calving, and the river's springs provide overwintering fish habitat. Comments also mentioned that aufeis fields on the river bars provide mineral salts for Dall's sheep, and there are old sod house sites along the delta's coast. One stakeholder wrote, "To me,

this experience is the quintessential Arctic Refuge; to experience mountains, alpine tundra, coastal plain, coastal estuary, and barrier islands." One stakeholder suggested restricting activity at Caribou Pass while the first 1,000 caribou migrate through to avoid interfering with the start of their migration across the river. Stakeholder concerns for the Kongakut River include too many visitors and a warming climate, evidenced by the intrusion of balsam poplar on the Kongakut and its side tributaries.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild and scenic river designation of the Kongakut would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

    Wild river designation of the Kongakut would aid in protecting a watershed important to the Porcupine caribou herd while also providing recreational access to the area. The headwaters of the Kongakut nearly touch the Sheenjek River—a designated wild river—at a meadow pass that defines the continental divide of the Brooks Range. This presents a rare opportunity to tie two unique and interrelated river systems together under the Wild and Scenic Rivers Act.

12. Other issues and concerns, if any.

    There are no additional issues or concerns pertaining to the Kongakut River.

5.7.3 Preliminary Suitability Determination

The Kongakut River is preliminarily determined to be suitable with a wild river classification. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. To determine a river suitable, Refuge staff believed it was imperative to: 1) gain additional management tools through potential designation, and 2) avoid creating new management issues by displacing visitor use to other highly desirable and visited river corridors. Determining the Kongakut River suitable, along with the Hulahula, Marsh Fork Canning, and Atigun rivers, achieves these goals. The intent driving this determination is to avoid displacing visitor use to similarly desirable river corridors and to promote holistic, ecosystem-wide, effective management strategies. The Kongakut River is by far the Refuge's most visited river, and the high levels of visitation have visibly affected the land, thus affecting the river's recreational and scenic ORVs. The Wild and Scenic Rivers Act provides useful, meaningful, and additional legally binding management tools to protect the Kongakut's ORVs. In its mountainous stretches (where most visitation occurs), the river valley is narrow, and access and camping locations are within one-half mile of the river. Therefore, a CRMP is an appropriate and necessary tool to ensure that the Kongakut's ORVs are protected. Wild river designation would increase the protection and Service's manageability of the Kongakut River corridor.

5.8 Okpilak River

Reach: The silt-laden Okpilak River begins in the heart of the most active glacial area of the Refuge. Its rugged, steep terrain and melting icy masses create a torrent of water in the headwaters that is channeled through a vertical canyon and then abruptly flattens as it flows onto the coastal plain to the Beaufort Sea.

Total River Length:	73.3 miles	**Primary Classification:**	Wild
Length on Refuge:	73.3 miles	**ORVs:**	Scenic, Geologic
Length in Wilderness:	36.5 miles		

5.8.1 Description/Overview

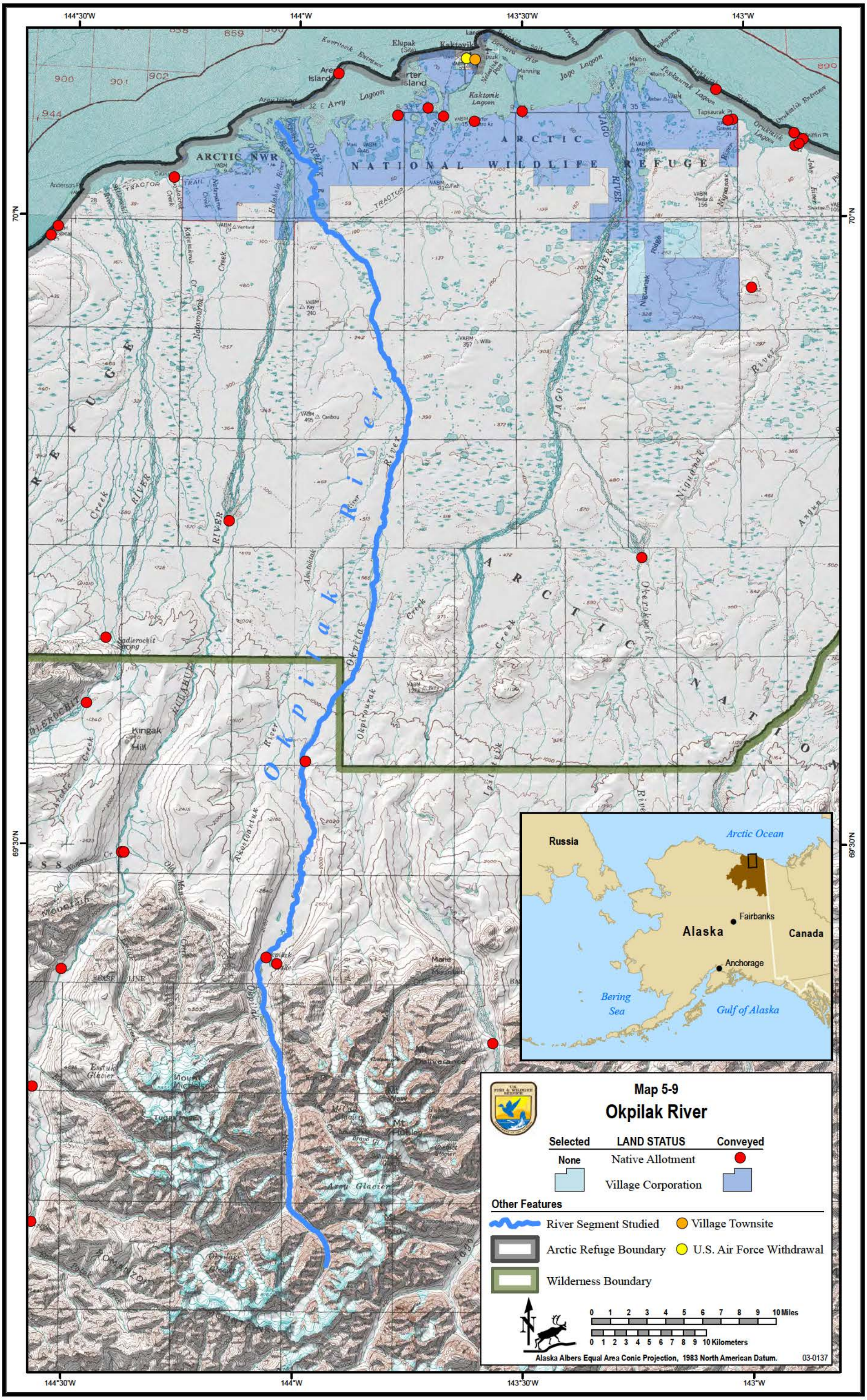
The Okpilak River has outstandingly remarkable scenic and geologic values that are distinctly different from other rivers in Alaska and those in the NWSRS. The Okpilak River flows north through a classic U-shaped valley in the heart of the most active glacial area of the Refuge (Map 5-9). The silt-laden river was recommended as a national landmark because of its prominent moraines, fans, sand dunes, outwashes, and other glacial features. The upper river is too wild and dangerous for almost all river floaters, and the terrain precludes aircraft access. Only the most adventurous boaters willing to carry their boats upstream would attempt this section of river. These factors, however, offer hikers and backpackers an uncommonly tranquil and scenic experience.

5.8.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

   Geologic Value: Compared to other rivers in the Refuge, the Okpilak contains the largest amount of glacial features, including moraines, fans, kames, sand dunes, and outwashes. The river is fed by hanging glaciers that appear precariously attached to stark, steep, rocky mountain sides. Located in the Romanzof Mountains of the eastern Brooks Range, the river's headwaters are found in two different glaciers in two different valleys. The river's flow is then supplemented by melting ice of the Split, Arey, and Leffingwell glaciers downstream of the headwaters. The glacially fed streams join to form the Okpilak River, which then cuts a 10- to 40-foot-deep postglacial canyon for a distance of roughly 4.4 miles. In the mountains, the valley walls are covered with massive lateral moraines that rise to over 980 feet and postglacial alluvial-colluvial cones or fans that rise above the broad valley floor upwards of 490 feet. Further northward, the valley is mantled by a series of end, recessional, ground, terminal, and lateral moraines, kames, and glaciofluvial outwash.

   Scenic Value: Where vegetated, the high mountainous terrain is blanketed with lichens and mosses; otherwise it's full of frost-shattered bedrock and fell-field. The Okpilak is located on the east flank of snow-capped Mt. Michelson, where multiple-crested lateral moraines emerge from tributary valleys with visible cirques. The lower river corridor contains small lakes, including the east and west Okpilak lake systems. The coastal plain offers beautiful expansive views in all directions. The hot springs allow soakers to watch Dall's sheep and caribou while looking over the floodplain.


Map 5-9
Okpilak River
Selected
LAND STATUS
Conveyed
None
Native Allotment
Village Corporation
Other Features
River Segment Studied
Village Townsite
Arctic Refuge Boundary
U.S. Air Force Withdrawal
Wilderness Boundary
0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0137
Russia
Arctic Ocean
Fairbanks
Alaska
Canada
Anchorage
Bering Sea
Gulf of Alaska
ARCTIC NWR
ARCTIC NATIONAL WILDLIFE REFUGE
Okpilak River
Kingak Hill
144°30'W
144°W
143°30'W
143°W
70°N
69°30'N

Other Values: Characteristics unrelated to the scenic and geologic ORVs also affect the suitability of the Okpilak River. Visitors usually access the Okpilak by portaging from the Hulahula or Jago River or by flying to the mid-valley landing area. Exploring the upperriver valley feels like retreating to the prehistoric age due to the pure lack of human presence. Because the river flows from some of the highest mountains, this valley is rarely used as a flight path, and the only landing area is where the mountains abruptly meet the coastal plain; therefore, noise pollution is kept to an absolute minimum. Also, recreationists visiting one of Alaska's "best kept secret" valleys may treat themselves to a soak in one of the North Slope's only true hot springs. The wildness and supreme, stark beauty of the area is unmatched by other Refuge river valleys.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

   The entire length of the Okpilak River is located within the boundary of PLO 2214 (the original Arctic Range). KIC owns both the uplands and submerged lands along the lower 7.1 miles of the Okpilak River. The Arctic Slope Regional Corporation owns the subsurface beneath KIC lands and may remove sand and gravel, from these lands, provided they follow the stipulations in the 1983 Chandler Lake Exchange agreement that specify how and where sand and gravel pits are located and developed. Oil and gas development on or below KIC lands requires congressional authorization. Under Section 22(g) of ANCSA, development of KIC and ASRC lands will be evaluated for impacts to adjacent Refuge lands; these stipulations remain with the land even if it is sold or exchanged. The submerged lands beneath inland coastal waters (bays, estuaries, and lagoons) remain in Federal ownership. With the exception of two[2] Native allotments totaling 117.64 acres, the Service manages the lands and submerged lands along the remaining 66.2 river miles. The United States reserved oil and gas on all three allotments.

   Two 17(b) easements provide legally reserved public access across KIC lands along the Okpilak River. These easements—7.36 miles of trail and a one-acre parcel—were designated for use by all-terrain vehicles weighing less than 3,000 pounds, snowmobiles, and all non-motorized travel and access located on the delta between the Hulahula and Okpilak Rivers.

   The Service has not obtained any State-based water rights for the Okpilak River. Since the entire river is located within the boundaries of the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

   Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the Okpilak were included in the NWSRS.

   Potential threats to the Okpilak River delta from oil and gas development include the "Proposed Consistency Determination – Beaufort Sea Areawide Oil and Gas Lease Sales, 2009–2018" (Alaska Department of Natural Resources 2009) which includes waters north

[2] While there are three Native allotments along the Okpilak River, only two are inside the review area boundary.

of and adjacent to the northern boundary of the Refuge. To the extent feasible, the situating of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities, including roads, pump stations, landing areas, and storage facilities, in the Okpilak River watershed could have adverse impacts to the scenic values and would likely have an impact on visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence will have an adverse impact on the sense of remoteness and solitude currently available in the Okpilak River valley.

An inventory of water resources completed in 1985 (Tweten 1985) identified the top five rivers in the 1002 Area whose watersheds were threatened by potential water and mineral resource development and non-consumptive uses. There are two forms of non-consumptive use: 1) those related to socioeconomics, such as general and subsistence hunting and fishing, river floating, recreational uses, aircraft landings, and historical and present-day travel; and 2) those related to construction or maintenance, such as gravel extraction from streambeds to build road and other infrastructure, and some forms of dredge mining. The Okpilak River was rated third in this study and was identified: 1) for potential mineral or oil and gas development; 2) as a source of gravel; and 3) as having important resource values, including habitat for overwintering, spawning, and smolting fish, and wetlands dependent on water flow.

The Okpilak River is tentatively classified as a wild river and, as such, would be withdrawn from appropriation under the mining and mineral leasing laws by Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act. Designating the Okpilak as a wild river would foreclose all oil and gas development, mineral exploration, dredge mining, and the removal of gravel from the river bed and surrounding delta in the river corridor.

Recreational uses in the Okpilak River corridor include hiking, backpacking, hunting, and wildlife and bird viewing. Wild and scenic river designation and subsequent protection of the scenic and geologic ORVs likely would not affect recreational use of the river corridor.

4. <u>The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.</u>

   The Service would work with private landowners, the Native Village of Kaktovik tribal government, KIC, and the community of Kaktovik to administer the Okpilak River.

5. <u>Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.</u>

   The entire length of the Okpilak River, excluding KIC lands and the two Native allotments, is managed by the Service. KIC owns both the uplands and submerged lands along the lower 7.1 miles of the Okpilak River. Allotment owners own a portion of the submerged lands.

   The Service has acquired allotments in the Refuge and plans to continue to acquire allotments from willing sellers in consultation with the Refuge manager and in cooperation with The Conservation Fund. However, acquisition of lands in the Okpilak River corridor would not be necessary to manage it as a designated wild and scenic river.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

   The upper 36.5 miles of the Okpilak River flow through lands administered under Wilderness Management provisions. From the 1002 Area boundary to the KIC boundary (29.65 miles), the Okpilak River flows through lands administered under Minimal Management provisions. The lower 7.1 miles of the Okpilak River are owned and administered by KIC.

   The Service currently does not have a visual resource management program or other mechanism to protect the scenic values along this segment. However, protection of visual resources would likely be derived from the Revised Plan and other management authorities.

   Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 27 miles of the Okpilak is in designated polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

   There are no historical or existing rights that would be adversely affected with designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   Under Section 307(c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. From the Beaufort Sea to 30.9 miles inland, the Okpilak River is in the Coastal Management Zone of the North Slope Borough; however, the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs by preventing incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period for the Revised Plan, the Refuge received four comments supporting wild river designation for the Okpilak River.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 11 comments for the Okpilak River from conservation organizations, commercial guides, recreational visitors, and other unidentified commenters. Seven comments supported designation of the Okpilak River, and four comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and rafting. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (10), recreational (7), scenic (10), geologic (7), cultural (4), fish (4), and historic (1).

Additionally, stakeholders identified intact wilderness qualities and intact ecological systems as other Okpilak River values. Specifically, comments noted that the foothills and coastal plain along the Okpilak are important calving and post-calving grounds for the Porcupine caribou herd, and that subsistence use occurs along the Okpilak delta. Comments also mentioned that the coastal plain is an important staging area for white-fronted snow geese, and the river provides challenging whitewater. One stakeholder mentions that the Okpilak contains "the most beautiful view from a hot springs anywhere in North America," and it should be nominated for a National Natural Landmark.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild river designation of the Okpilak would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

    The Okpilak River is the main water body in this northern watershed. By protecting it, protections would likely spread to its tributaries. The river is integral to North Slope ecosystems and residents of Kaktovik.

12. Other issues and concerns, if any.

    There are no additional issues or concerns pertaining to the Okpilak River.

5.8.3 Preliminary Suitability Determination

The Okpilak River is preliminarily determined to be not suitable. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. For the Okpilak River, this is especially true given its location in Arctic Refuge, its extremely low level of visitor use, and its scenic and geological ORVs. The Okpilak's scenery and geology are already protected through other mechanisms, and their continued protection would be addressed more adequately through the Revised Plan and its associated step-down plans, such as a the Wilderness Stewardship Plan and Visitor Use Management Plan (see Chapter 6, Sections 6.3.1 and 6.3.2 of the Revised Plan). These two plans have the highest priority of all step-down plans identified in the Revised Plan.

5.9 Neruokpuk Lakes Complex

Reach: The Neruokpuk Lakes complex (which includes Carnivore Creek, Lake Peters, Lake Schrader, and the Kekiktuk River) includes the two largest and most northern arctic alpine lakes in North America. These connected lakes are surrounded by steep slopes rising to some of the highest peaks in the Brooks Range.

Total River Length:	32.2 miles	**Primary Classification:**	Wild
Length on Refuge:	32.2 miles	**ORVs:**	Scenic, Geologic, Fish
Length in Wilderness:	32.2 miles		

5.9.1 Description/Overview

The Neruokpuk Lakes complex has outstandingly remarkable scenic, geologic, and fish values that are unique from other waters in Alaska and those in the NWSRS. Lake Peters and Lake Schrader are the two largest, deepest, most northern arctic alpine lakes in North America, are exceptionally long, and are part of a water system that connects the headwaters of Carnivore Creek above the lakes to the Kekiktuk River and other downstream rivers (Map 5-10). They lie north of the Brooks Range between the Canning and Hulahula Rivers. Their stunning beauty and central location for many recreational activities, including hiking, mountain climbing, wildlife viewing, fishing, and hunting, have attracted visitors from around the world.

5.9.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

   Geologic Value: Lakes Peters and Schrader are the two largest, deepest, and most northern arctic alpine lakes in North America and have been recognized for their ecological uniqueness and significance by many scientists. Lakes Peters and Schrader were named for William John Peters (1863–1942), a USGS topographer, and Frank Charles Schrader (1860–1944), a USGS geologist, who explored this region in 1901 on a reconnaissance led by Peters. The significance of the lakes was first recognized in 1968 by Dr. Frederick C. Dean, who recommended Lakes Peters and Schrader for designation as a National Natural Landmark. Bliss and Gustafson (1981) identified the site as having a high degree of national significance and recommended it a second time as a National Natural Landmark.

   The Neruokpuk Lakes are surrounded by some of the highest peaks in the Brooks Range. Lake Schrader is roughly five miles long and one mile wide and is confined by the Itkillik terminal and lateral moraine remnants. It is fed primarily by Whistler and Coke creeks and Lake Peters. Glacial features dominate the valley scenery. Large boulder fields on rolling tundra, the Chamberlin glacial drift sheet with visible lateral moraines, coalescing alluvial fans, and fresh talus slopes can all be seen from the lakes' shores. A delta has formed between the two lakes where they drain into the Kekiktuk River basin.

   Lake Peters, located at the foot of the tallest mountain in the Refuge (Mt. Chamberlin), is 3.85 miles long and is connected to the south end of Lake Schrader by a narrow channel approximately 1.2 miles long. Lake Peters is naturally dammed—in part by till and outwash

and in part by the broad delta of Whistler Creek. Lake Peters is fed primarily by Carnivore and Chamberlin Creeks, and the valley is predominantly in low-grade metamorphic rocks of the Neruokpuk Formation.

Scenic Value: The scenic value of the Neruokpuk Lakes and river complex is the highest of any of the waterways evaluated on the north side of the Refuge. The complex has rich flora and fauna and textbook geologic features associated with glaciers and permafrost (Murray 1979). The lakes and surrounding area were designated by the Service as the Neruokpuk Lakes Public Use Natural Area in 1977, and Gordon and Shaine (1978) listed the area as one of the State's outstanding scenic complexes. The two turquoise-colored, arctic alpine lakes in this complex lie in a narrow, U-shaped valley with ridges and peaks rising over 4,900 feet on either side. The lakes complex is surrounded by prominent glacial features, including Chamberlin Glacier, aretes, hanging glacial valleys, cirque glaciers, and surficial glacial deposits.

The scenery in this complex is highly varied, ranging from the high alpine fell-fields and rock deserts above Lake Peters to the low rolling expanses of tussocks on the hillsides surrounding Lake Schrader and the Kekiktuk River. The two glacially-fed lakes have distinct scenic differences, including the water itself: Lake Peters is turbid, while Lake Schrader is exceptionally clear. With steep mountain views to the north, expansive views to the south, turquoise waters, a historical research facility, and diverse flora and fauna, this complex of headwater tributaries, lakes, and rivers provides an unforgettable scenic experience.

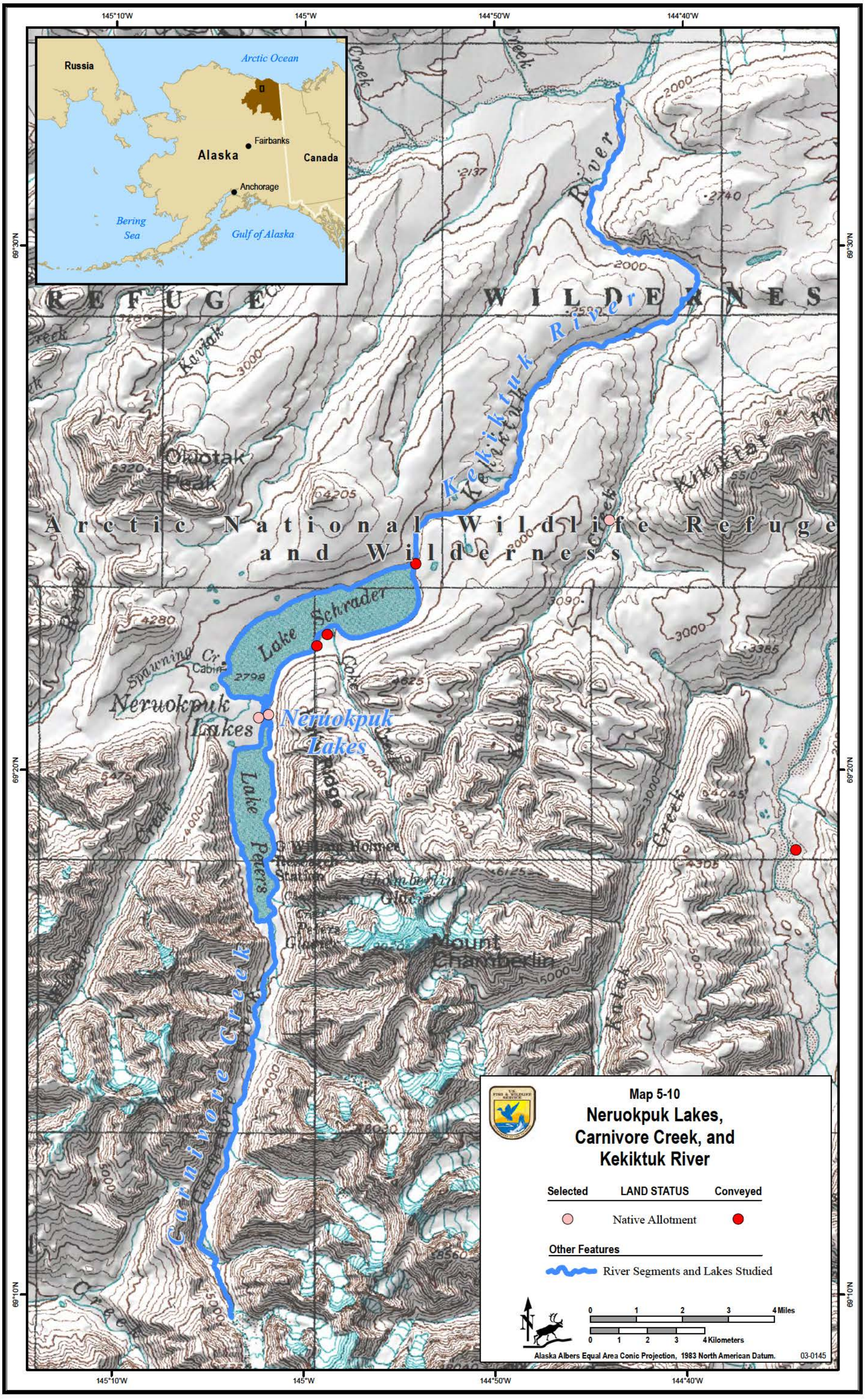
Fish Value: The exceptionally large, nearly 200-feet-deep, connected lakes support the largest population of lake trout north of the Brooks Range. These fish are lake residents and have been isolated from other populations for several centuries. The Neruokpuk Lakes' lake trout population and lower trophic levels in the complex are relatively well studied. Available data suggest the population has a high weight-to-length ratio relative to populations in three other lakes on the North Slope of the Brooks Range.

Lake Peters, Lake Schrader, and the Kekiktuk River support Arctic grayling. Both the lakes support Arctic char, and the lakes are also a known wintering site for Dolly Varden. Availability of overwintering habitat is considered the major limiting factor for populations of Arctic fishes (Craig 1989). On the North Slope of Alaska, including Arctic Refuge, freshwater spawning and overwintering sites are few in number and restricted in area. The Neruokpuk Lakes complex provides the largest volume of overwintering habitat on the Refuge and possibly the largest in the region of comparison.

Other Values: The Neruokpuk Lakes complex was an International Polar Year site in the 1950s and has historical value as a place of scientific research.

2. <u>The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.</u>

The Neruokpuk Lake complex is located within the boundary of PLO 2214 (the original Arctic Range). Title to the submerged lands beneath the Neruokpuk Lake complex is apportioned between the Service and three patented allotments. There are two allotments totaling 79.99 acres on the south side and one allotment of 159.98 acres on the northeast shore of Lake Schrader. There is one application for an 80-acre allotment that, if conveyed, would occupy both sides of the stream that connects Lake Peters with Lake Schrader. In the event the allotment is conveyed, the submerged land bordering the allotment would be owned by the


Map 5-10
Neruokpuk Lakes, Carnivore Creek, and Kekiktuk River
Selected
LAND STATUS
Conveyed
Native Allotment
Other Features
River Segments and Lakes Studied
0 1 2 3 4 Miles
0 1 2 3 4 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0145
Russia
Arctic Ocean
Alaska
Fairbanks
Canada
Anchorage
Bering Sea
Gulf of Alaska
Arctic National Wildlife Refuge and Wilderness
Kekiktuk River
Lake Schrader
Neruokpuk Lakes
Lake Peters
Carnivore Creek
Mount Chamberlin
145°10'W
145°W
144°50'W
144°40'W
69°30'N
69°20'N
69°10'N

allotment owner. If patented, this parcel would have ownership of the submerged lands in the segment of stream bordered by the allotment.

The Service has not obtained any State-based water rights for the water bodies in the Neruokpuk Lake complex.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

   Intensive winter subsistence fishing and caribou hunting occur in and around this lake complex. Inclusion in the NWSRS could enhance the protections of these traditional uses.

   Recreational use also has the potential to be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Recreational uses include hiking, backpacking, mountain climbing, hunting, and fishing.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

   The Service would work with private landowners to administer the Neruokpuk Lake complex.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

   Excluding the three Native allotments, the entire Neruokpuk Lake complex is managed by the Service. The Service has acquired allotments in the Refuge and plans to continue to acquire allotments from willing sellers in consultation with the Refuge manager and in cooperation with The Conservation Fund. However, acquisition of lands around the Neruokpuk Lakes complex would not be necessary to manage it as a designated wild and scenic river.

   The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

   The entire 32.2 miles of the Neruokpuk Lakes complex lies in lands administered under Wilderness Management provisions. The Neruokpuk Lakes Public Use Natural Area was established on May 2, 1977, and encompasses 212,000 acres surrounding the lake complex; its purpose is to preserve essentially unmodified natural areas free of human impacts for public use and research.

   The Service currently does not have a visual resource management program or other mechanism to protect the scenic values along this segment. However, protection of visual resources would likely be derived from the Revised Plan and other management authorities.

7. Historical or existing rights that could be adversely affected with designation.

   There are no historical or existing rights that could be adversely affected with designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   There are no local zoning or other land use controls in place that would protect the lake complex's ORVs or prevent incompatible development on Native allotments.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period for the Revised Plan, the Refuge did not receive any comments supporting designation of the Neruokpuk Lakes complex. However, we received seven comments supporting or opposing the need to manage the area as designated Wilderness, and requests to remove the administrative buildings on the shores of Lake Peters.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 11 comments for the Neruokpuk Lakes complex from commercial guides, recreational visitors, conservation organizations, the State of Alaska, the Citizens' Advisory Commission on Federal Areas, the Native Village of Kaktovik tribal president, and other unidentified commenters. Seven comments supported, two comments opposed, and two comments did not clearly mention support or opposition to designation of the Neruokpuk Lakes complex. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, rafting, and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (4), recreational (6), scenic (7), geologic (5), cultural (1), fish (6), and historic (1). Additionally, stakeholders identified intact Wilderness character, intact ecological systems, and subsistence as Neruokpuk Lakes complex values. Specifically, comments supporting designation noted that the lakes are an outstanding example of post-glacial scenery, including views of Mt. Chamberlin. Comments also mentioned that the lakes are important to waterfowl and are part of a designated Public Use Natural Area. Comments opposing designation questioned whether the Neruokpuk Lakes complex qualifies to be considered under the Wild and Scenic Rivers Act because Section 16(a) defines the term "river" as "[…] small lakes," but the Service describes the Neruokpuk Lakes as "the two largest and most northern alpine lakes in North America." One stakeholder recommended removing any structures on the lakes.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild and scenic river designation of the Neruokpuk Lakes complex would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

    As one of the key overwintering sites on the North Slope for Arctic grayling, Arctic char, and lake trout, protection of the Neruokpuk Lakes complex is essential to the health and integrity of Arctic fish populations across the North Slope. The Neruokpuk Lakes complex is integral to the entire Arctic coastal plain; the complex connects to the Sadlerochit River, which flows through the Refuge before emptying into the Arctic Ocean.

12. Other issues and concerns, if any.

    Refuge facilities located on the eastern shore of Lake Peters were established by the Department of the Navy as a substation of the Naval Arctic Research Laboratory in 1959 and consisted of six buildings. The facility now consists of three buildings and an outhouse and is utilized for wildlife surveys, research projects, field visits by agency leaders and others, and

law enforcement. These buildings may qualify for the National Register of Historic Places. The presence of historical or administrative buildings does not preclude designation.

5.9.3 Preliminary Suitability Determination

The Neruokpuk Lakes complex is preliminarily determined to be not suitable. The waters in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. The fish, scenic, and geologic ORVs of the Neruokpuk Lakes complex are already adequately protected through existing provisions and through Public Use Natural Area and designated Wilderness status. Continued protection of the Neruokpuk Lakes complex's ORVs would be ensured through the Revised Plan and its prescribed step-down plans, such as a Wilderness Stewardship Plan and a Visitor Use Management Plan (see Chapter 6, Sections 6.3.1 and 6.3.2 of the Revised Plan). These two plans have the highest priority of all step-down plans identified in the Revised Plan. A Refuge-wide approach to visitor use, natural resource, and fish and wildlife management would be more effective than wild river designation for managing this lake complex.

5.10 Porcupine River

Reach: The Porcupine River is one of the largest tributaries of the Yukon River and is a historically important travel route. The Refuge portion begins at the United States-Canada border and flows downstream for approximately 85 miles.

Total River Length:	476 miles	**Primary Classification:**	Wild
Length on Refuge:	85 miles	**ORVs:**	Historic, Cultural, Geologic, Wildlife
Length in Wilderness:	0 miles		

5.10.1 Description/Overview

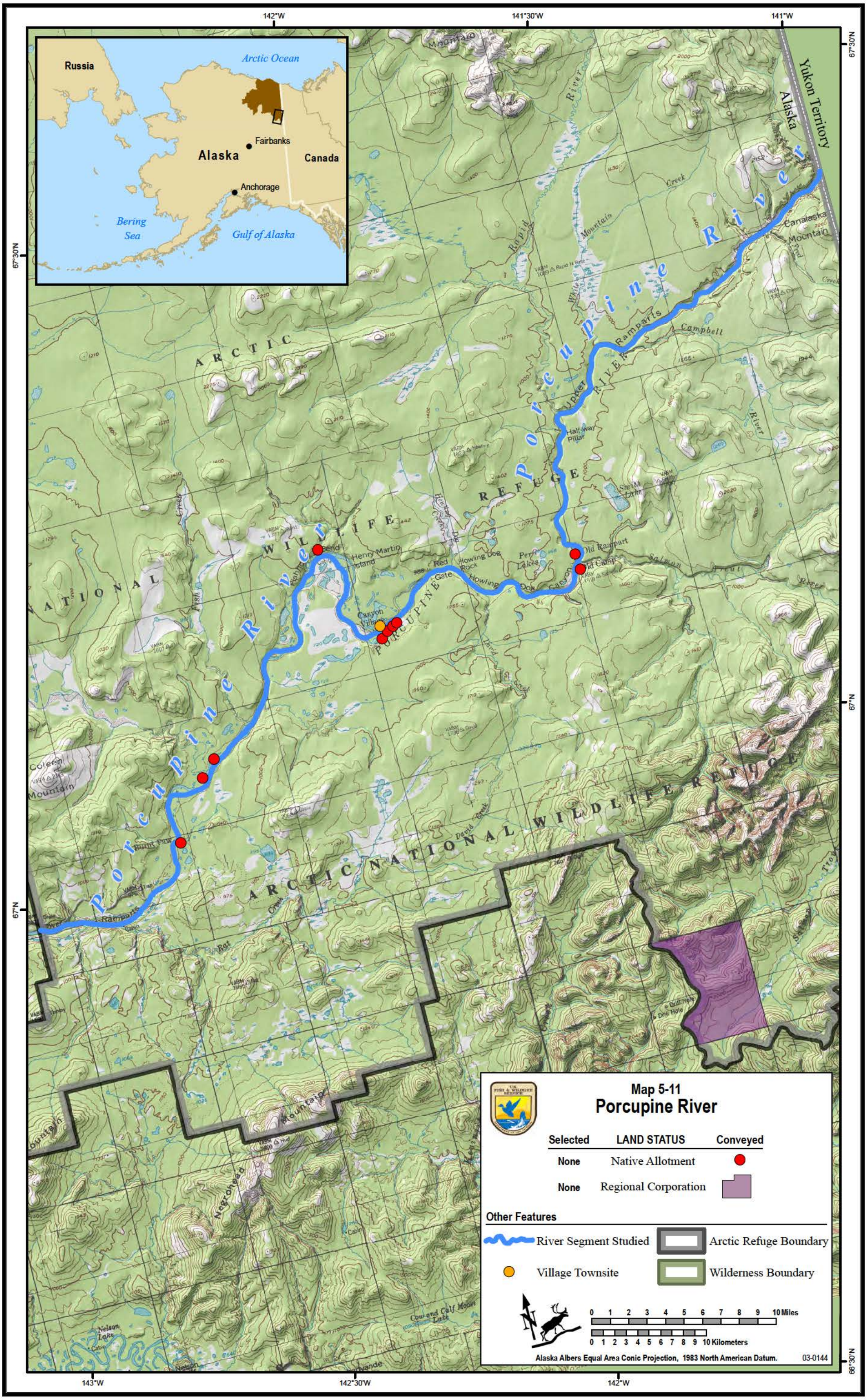
ANILCA (1980) mandated that the Porcupine River (Map 5-11) be evaluated for its eligibility and suitability for inclusion in the National Wild and Scenic Rivers System. The National Park Service (1984b) concluded with an eligible but non-suitable determination for two main reasons. First, the Porcupine River serves as an essential water highway for local travel and commerce, and there was concern that designation might constrain uses of the river for transportation purposes. Second, there was no support for designation from either the State of Alaska, who owns the river bed from bank to bank at ordinary high water, or from private landowners, who have extensive inholdings along the river, particularly along its lower reaches.

The Porcupine River has outstandingly remarkable historic, cultural, geologic, and wildlife values; the combination of values is similar to other major river segments in Alaska that have been designated into the NWSRS. The entire study area possesses these ORVs, but they are more prevalent, or at least more universally recognized, in and between the upper and lower Ramparts. Because of its remoteness and lack of roads, the river's wildness is virtually untouched despite the presence of some small cabin developments. Much of the following description was taken from the National Park Service suitability study of the Porcupine River (National Park Service 1984a).

5.10.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

   Historic Value: As an important travel route, the Porcupine River filled a chapter in the history of Alaska and the Yukon Territory. Most notable was its role during the heyday of trapping and the activities of the Hudson's Bay Company. Today, the river is important to local people who rely on it as a means for travel and for pursuing a more traditional way of life. The river provides a traveler the opportunity to experience the voyages of the explorers and fur traders of the mid-1800s, when the Porcupine River was the main corridor to Alaska's interior. Old Rampart and Burnt Paw were once Hudson's Bay Company trading posts. Other settlements, including Seventeen-Mile, Rampart House, Old Village, and 25 to 30 trapper cabin sites scattered along the banks, represent a period when the river was heavily traveled and these areas were frequented as stopover sites. In 1890, J.H. Turner of the U.S. Coast and Geodetic Survey travelled up the Porcupine River and onto the Arctic coastal plain via the Firth River. The Porcupine River is the point of British incursion into Alaska.


Map 5-11
Porcupine River
Selected
LAND STATUS
Conveyed
None
Native Allotment
None
Regional Corporation
Other Features
River Segment Studied
Arctic Refuge Boundary
Village Townsite
Wilderness Boundary
0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
03-0144
Russia
Arctic Ocean
Alaska
Fairbanks
Canada
Anchorage
Bering Sea
Gulf of Alaska
Yukon Territory
Alaska
Porcupine River
ARCTIC NATIONAL WILDLIFE REFUGE
Canaleska Mountain
Ramparts
Campbell
Half Way Pillar
Old Rampart
Henry Martin Island
Red Rock
Howling Dog Canyon
Canyon Village
Coleen Mountain
Negrohead Mountain
Nelson Lake
Cow and Calf Moose Lake
142°W
141°30'W
141°W
143°W
142°30'W
67°30'N
67°N
66°30'N

As recorded in a geological survey in 1940, the Porcupine River historically was a focus for tourists to access the area using canoes or folding boats. Also, freight for settlements on the Porcupine was brought down the Yukon by river steamer to Fort Yukon. It was then reshipped up the Porcupine River using shallow-draft launches pushing 30 to 40 foot scows carrying 80 tons or more of cargo. The first steamer travelled up the Porcupine River above the Ramparts in 1889.

Cultural Value: The Porcupine River possesses cultural importance and notable archeological resources. The river was ice-free during the late Pleistocene, making it a focus of research into the earliest peoples of the New World. Archeological sites range in age from relatively modern historic sites to those reaching at least 9,000 years into the past. Stratified sites are extremely rare in interior Alaska; several sites along the Porcupine hold a unique record of human cultural change and adaptation in the region.

Wildlife Value: The Porcupine River provides wildlife habitat for many species, including large mammals (moose, caribou, brown and black bears, wolf, and wolverine), smaller mammals (furbearing species) and birds (waterfowl, birds of prey, and upland game birds). The winter range of the Porcupine caribou herd extends into the upper Porcupine River drainage. All or part of the herd occasionally crosses the river during spring and fall migrations, often near the Canadian border. Brown bears are common along the river corridor. Wolves roam the Porcupine drainage and use the river as a travel corridor, especially in winter. Waterfowl and other water birds nest, feed, and raise broods in habitat provided by oxbow lakes, ponds, and quiet stretches of the river. The river is also an important waterfowl migration route in the spring and fall. The cliffs in the upper Ramparts are considered important habitat for peregrine falcons, which nest there. Raptor nesting density along that portion of the Porcupine River in Arctic Refuge is among the highest known in the State (Payer et al. 2009).

Geologic Value: The Porcupine River can be divided into five well-defined areas, each with distinctive physiography, bedrock geology, and surficial sediments. Geological studies suggest an interesting pattern of geological events in the Porcupine River valley and northern Yukon Territory. There are terraces in the valley that exhibit characteristics of a fast, deep, turbulent river. These characteristics are unlike those created by a broad, relatively placid river, which is what the Porcupine resembles today.

Other Values: Characteristics unrelated to the historic, cultural, wildlife, and geologic ORVs also affect the suitability of the Porcupine River. The Porcupine River has a high diversity species of fish species. Chum and Chinook salmon may spawn in the main channel inside the Refuge near the international border. The Porcupine River is an important migratory corridor for anadromous salmon and whitefish en route to Old Crow Basin in Canada. Maintaining this corridor is important for fulfilling international treaty obligations, specifically the Yukon River Salmon Agreement.

2. <u>The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.</u>

   The Porcupine River is located outside the boundary of PLO 2214 (the original Arctic Range). It was determined navigable to the Canadian Border in 2005, confirming the State's title to the submerged lands beneath that portion of the river. There are no Native corporation lands in the Refuge river corridor; there are 11 allotments totaling 733 acres.

If any marketable deposits of oil and gas or other mineral resources were found on private land, these could be developed. Depending upon future discoveries of resources, pipelines might be constructed across or along the river corridor. Additional land-based support facilities would probably be contained on private lands.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

   Access to the river corridor is currently by aircraft, snowmobile, or boat. The river serves as an essential water highway for local travel and commerce. Land use for recreational and subsistence activities, access to seasonal residences, and resource exploration is characterized as occasional and intermittent. Outside the concentrations of residential, service, and industrial land use by residents of Arctic Village, Chalkyitsik, Fort Yukon, and Venetie, few families and individuals reside year round. Designation would likely not affect local travel, commerce, or boating activities.

   The Porcupine River is an integral part of the land and water resource base for the subsistence economy of residents of the Yukon Flats, particularly those of Fort Yukon and Chalkyitsik. Portions of the river, especially near its mouth, are extensively used by local people for travel, trapping, hunting, wood gathering, and other uses.

   There are no proposed water resource developments, such as dams or diversions. Wild river designation would preclude any future oil and gas leasing or development on Federal lands along this section of river.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

   The Service would work with private landowners, the State of Alaska, and subsistence communities and their governments to administer the Porcupine River.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

   Most of the uplands in the study area are managed by the Service. The submerged lands beneath the navigable portions of the Porcupine River (all lands located between the ordinary high water marks of the river) are owned by the State of Alaska (Alaska Statehood Act, Public Law 85-508; Federal Submerged Lands Act of 1953, PL 83-31).

   Land or scenic easement acquisition would not be required to manage the study area as a designated wild and scenic river. However, private and State lands along the river could be acquired with the consent of the owner through the purchase of fee title or easements or through trade.

   The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The entire 85-mile Arctic Refuge segment of the Porcupine River flows through lands administered under Minimal Management provisions.

State ownership of the bed of the Porcupine River may restrict the ability of the Service to effectively manage the Porcupine River as a wild and scenic river. Section 13(f) of the Wild

and Scenic Rivers Act says that a State's existing rights, including the right of access with respect to the beds of navigable streams and rivers, shall not be affected by designation.

7. Historical or existing rights that could be adversely affected with designation.

   The Porcupine River divides the RS 2477 Rampart House-Demarcation Point and Nation River-Rampart House trail claims, which traverse the Canada-Alaska border.

   All historic or existing rights associated with subsistence, travel, and access would be protected under other authorities (ANILCA, Alaska Statehood Act, and Submerged Land Act) and would not be adversely affected by designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

   Infrastructure associated with mineral extraction or oil exploration is an incompatible development that could affect the river's ORVs. However, no developments have been made or proposed, and exploration has been sparse.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

   During the 2010 public scoping period for the Revised Plan, the Refuge received two comments supporting designation of the Porcupine River and five comments indicating the importance of and need for protection of wildlife, fish, and subsistence resources in the Porcupine River area. The comments also included several references to the importance of the Porcupine River for cultural, scenic, geologic, and historical resources.

   During the 2010 stakeholder comment period regarding suitability criteria, the Service received 27 comments for the Porcupine River from commercial guides, recreational visitors, the State of Alaska, the Citizens' Advisory Council for Federal Areas, a member of the Gwich'in tribal government, and other unidentified commenters. Six comments supported, 3 comments opposed, and 18 comments did not clearly mention support or opposition to designation. Stakeholder comments indicated that river uses include commercial and non-commercial recreation, hunting, fishing and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (22), recreational (16), scenic (18), geologic (7), cultural (17), fish (21), and historic (17). Additionally, stakeholders identified intact wilderness qualities, intact ecological systems, private land ownership, travel, sacred sites, subsistence, trapping, and hunting as other Porcupine River values.

   Specifically, comments supporting designation noted that the ramparts of the Porcupine River provide a scenic setting for river travelers. The State of Alaska commented that they oppose designation of the Porcupine River because it was previously studied and found eligible but not suitable due to the river being legally defined as navigable. As such, the lands comprising the river bed and both banks below the ordinary high water mark are owned by the State of Alaska. The State also commented that the BLM filed a recordable disclaimer of interest for the Porcupine River, disclaiming all Federal property interest in the river's submerged lands.

The Citizens' Advisory Commission on Federal Areas echoed the comments of the State and added that because the National Park Service already completed the study of the Porcupine River, the Service exceeded its authority under both ANILCA and the Wild and Scenic Rivers Act by reviewing the river for designation as part of the Revised Plan. Regardless of designation, the State of Alaska's jurisdiction and management of fish and wildlife, water quality, and similar river resources would not be affected.

Several comments expressed how important the Porcupine River is for people dependent on subsistence and that subsistence rights need to be protected. Stakeholder concerns for the Porcupine River included sport hunting, illegal hunters and trappers, oil drilling, and cleanliness. Several stakeholders mentioned concerns about how forest fires around the Porcupine River are allowed to burn out naturally rather than be actively extinguished. Another commenter urged the Service to keep the Porcupine River wild and allow for recreational uses. Stakeholders suggested increasing law enforcement presence, closing the river to sport hunting and oil drilling, protecting traditional hunting grounds, and regulating trash backhaul.

10. Consistency of designation with other agency plans, programs, or policies.

    Wild and scenic river designation of the Porcupine would provide a complimentary set of protections to other Refuge and Service policies and programs; ANILCA, the National Historic Preservation Act of 1966, as amended; the Antiquities Act of 1906, 16 U.S.C. § 433 et seq.; the Native American Graves Protection and Repatriation Act, 25 U.S.C.§ 3001 et seq.; the Archaeological Resources Protection Act, 16 U.S.C. § 470aa et seq.; and Section 106 of the National Historic Preservation Act.

11. Contribution to a river system watershed or basin integrity.

    The entire Porcupine River, including the portion in Canada, drains an area of about 46,000 square miles (Selkregg 1976). The Porcupine River is one of the two largest tributaries in the Yukon River basin. It is joined by the Coleen and Sheenjek rivers and supplies nearly 10 percent of the flow to the Yukon River. It is an integral part of the Yukon River watershed and holds extreme cultural and subsistence values by the Alaskan Native and Canadian First Nation communities. Protecting this river is essential to protecting fish and wildlife populations and the biological diversity of the region.

12. Other concerns, if any.

    There are no additional issues or concerns pertaining to the Porcupine River.

5.10.3 Preliminary Suitability Determination

The Porcupine River is preliminarily determined to be not suitable. The extensive review of the Porcupine River conducted between 1981 and 1984 concluded that the Porcupine River was not suitable for designation under the Wild and Scenic Rivers Act. The situation in 2012 does not differ enough from 1984 to warrant an opposing conclusion. The Porcupine River is a navigable river, and as such, the State of Alaska owns the submerged lands under the river. Permanent protection and enhancement of the Porcupine River's ORVs would benefit from the active involvement and commitment of the State of Alaska to develop and implement resource protection strategies commensurate with the mandate of the Wild and Scenic Rivers Act. The State of Alaska is opposed to any new wild and scenic river designations in Arctic Refuge and would not be willing to work with the Service to manage the Porcupine River as a wild river.

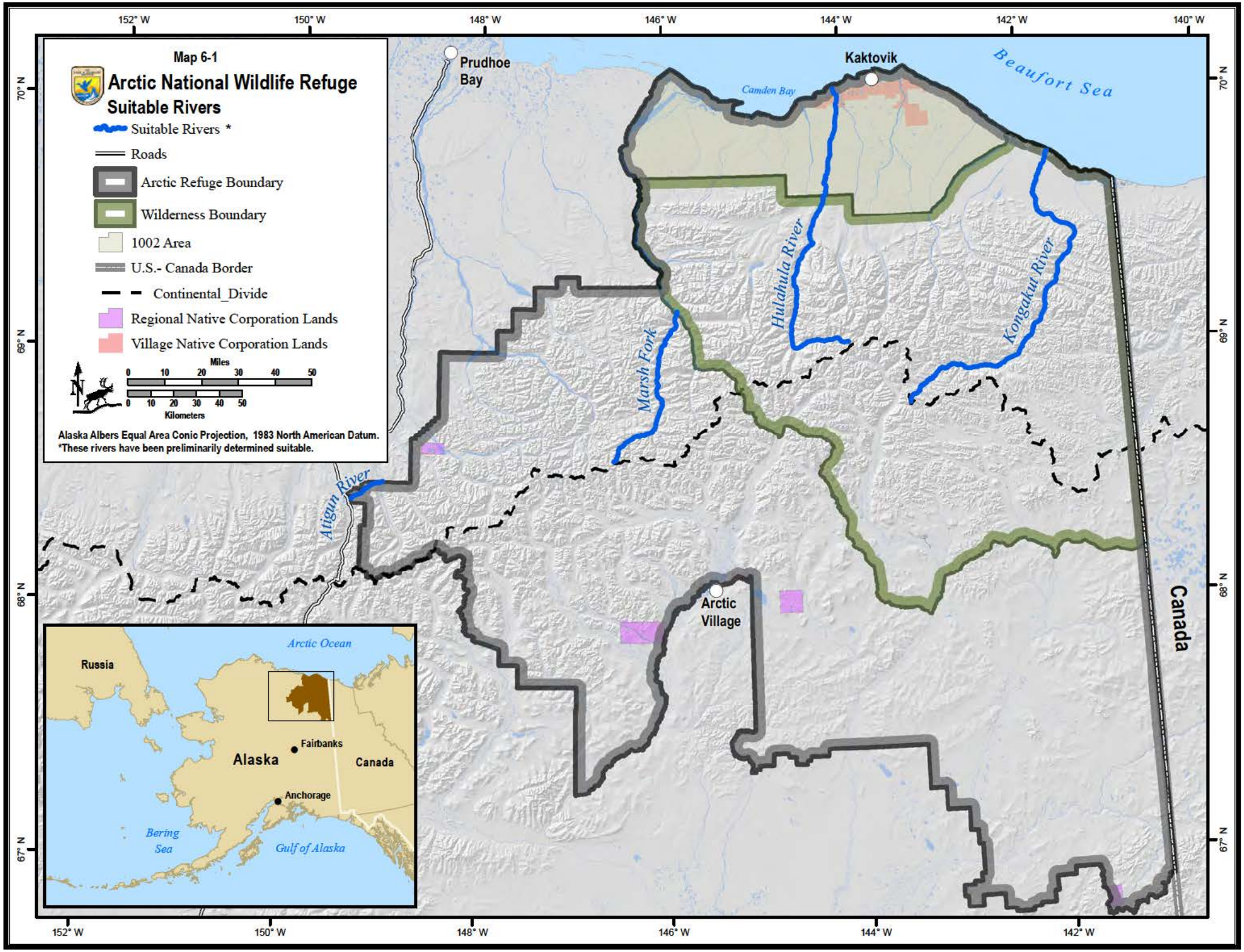
Section 13(f) of the Wild and Scenic Rivers Act states that nothing in the Act affects the existing rights of any State, including the right of access with respect to the beds of navigable waterways. Further, State ownership of submerged lands on navigable waterways does not preclude a river-administering agency from regulating uses on the water column as necessary to meet the purposes of the Act (IWSRCC 2011). However, the Porcupine River's status as navigable would make it difficult for the Service, without cooperation from the State of Alaska, to develop and execute an effective management plan that would protect all the river's values.

Currently available mechanisms are sufficient to protect the Porcupine River's historic, geologic, cultural, and wildlife ORVs. The continued protection of these values will be addressed more adequately through the Revised Plan and its proposed step-down plans, such as an Inventory and Monitoring Plan, Fire Management Plan, and Integrated Cultural Resources Management Plan (see Chapter 6, Sections 6.2.1, 6.3.3, and 6.3.5).

6. Conclusions

Preliminary suitability determinations considered all 12 criteria for each river and the full analysis presented earlier in this report. However, three factors heavily influenced our determinations. First, we considered whether designation would result in a useful suite of management tools that would help the Refuge better manage a river corridor. Second, we considered whether designation might create new management issues, such as displacing visitor use to other rivers or areas of the Refuge. Third, we considered our ability to manage the river as a wild and scenic river in light of land ownership patterns and the willingness of other land owners to cooperate with and participate in wild and scenic river management.

Preliminarily, four Refuge rivers were determined suitable: Atigun, Marsh Fork Canning, Hulahula, and Kongakut (Map 6-1). Suitability determinations will be finalized with the record of decision on the Revised Plan.


Map 6-1
Arctic National Wildlife Refuge
Suitable Rivers
Suitable Rivers *
Roads
Arctic Refuge Boundary
Wilderness Boundary
1002 Area
U.S.- Canada Border
Continental_Divide
Regional Native Corporation Lands
Village Native Corporation Lands
Miles
0 10 20 30 40 50
Kilometers
0 10 20 30 40 50
Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
*These rivers have been preliminarily determined suitable.
152° W
150° W
148° W
146° W
144° W
142° W
140° W
70° N
69° N
68° N
67° N
Prudhoe Bay
Kaktovik
Beaufort Sea
Camden Bay
Hulahula River
Kongakut River
Marsh Fork
Atigun River
Arctic Village
Canada
Arctic Ocean
Russia
Fairbanks
Alaska
Canada
Anchorage
Bering Sea
Gulf of Alaska

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Appendix A. Definitions for Outstandingly Remarkable Values

SCENIC

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors such as scale and diversity of view, special features, seasonal variations in vegetation, and cultural modifications may be considered. Scenic and visual attractions may be highly diverse over the majority of the river or river segment. Highly scenic, pristine rivers are of higher value compared to rivers that are visually monotonous or developed.

Region of Comparison

In Arctic Refuge, rivers north of the Continental Divide were compared to each other (with one exception—the Firth River was grouped with south side rivers because of the spruce trees), and rivers south of the Continental Divide were compared to each other.

Diversity of View

Consider the presence of high relief; severe surface variation; rich color combinations (i.e., high variety, vivid colors); pleasing contrast in soil, rock, vegetation, and water; views that greatly enhance visual quality; and still or cascading water that is dominant in the landscape. River corridors with the greatest diversity and variety of views and those providing a sense of vastness of scale are of higher value.

Special Features

Consider outstanding natural features; landforms with unusual or outstanding topographic features (e.g., gorges, high relief, rock outcrops, canyons, falls, rapids, springs, color, vegetation, plains, permafrost, wetlands, rolling hills, ridges, mountains, tundra, glaciers, flats, tundra benches, vast valleys, pingos, aufeis, etc.). River corridors with high relief and focal points that are visually striking, particularly memorable, or rare in the region are of higher value.

Seasonal Variations

Consider diversity of vegetation types in interesting patterns, textures, color, and contrast. River corridors with the greatest seasonal variation and diversity are of higher value.

RECREATIONAL

Arctic Refuge rivers offer nationally- and internationally- renowned recreational opportunities that are unique enough to attract visitors from outside of the geographic region. Visitors travel long distances to use the river resources for recreational purposes, including but not limited to wildlife observation, photography, hiking, fishing, hunting, and boating.

Region of Comparison:

Recreation values were evaluated across the entire Arctic National Wildlife Refuge.

Flow

Consider the reliability of flow during runnable seasons. Rivers with enough flow to be reliably runnable are of higher value.

Character of Run

Consider the level to which the run maintains interest and provides challenge to the boater by evaluating the diversity of channel structure (braiding, canyons, rapids, etc.), river bed materials, and characteristics of the current. Rivers with more interesting and challenging runs are of higher value.

Access

Consider ease and reliability of access to, and use of, the river corridor. Rivers with the most reliable and easiest access are of higher value.

Level of Use

Consider the number of people using the river corridor. Rivers with the most use are of higher value.

Associated Superlative Opportunities

Consider rivers with superlative recreational opportunities. Rivers with the greatest variety, frequency, and quality of opportunities are of higher value.

Attraction

Consider the ability to attract visitors from outside the geographic region. Rivers that attract a variety of users who are willing to travel some distance with their primary intent to use the river for water-oriented recreation and rivers that provide a setting for nationally- and internationally-renowned opportunities are of higher value.

GEOLOGIC

The river corridor contains geologic features, processes, or phenomena that are unique, rare, or representative in the region of comparison (ROC). The feature(s) may be in an unusually active stage of development and/or represent a unique, rare, or representative combination of geologic or hydrologic features.

Region of Comparison

Geology values were evaluated across the entire Refuge.

Feature Abundance

Consider landforms with unusual or outstanding geologic or hydrologic features (e.g., caves, relic shoreline, waterfalls, canyons, springs, pingos, active glaciers, rare fossils, unique rock formations, and outcrops). River corridors with an abundance of unusual, unique, and distinctive geologic features are of higher value.

Diversity of Features

Consider the number and variety of special geologic or hydrologic features and the value of these features to the ROC. Consider the unique or rare combination of geologic or hydrologic features (e.g., erosional, volcanic, and glacial). River corridors with the greatest diversity of geologic or hydrologic features are of higher value.

Educational/Scientific

Geologic and/or hydrologic features clearly and graphically reveal interesting and/or unique educational or scientific aspects of Earth's history. River corridors that contain rare, one-of-a-kind, or common features that are the best representative example of a geologic feature in the ROC are of higher value.

FISH

Fish populations on the Refuge remain wild and retain their natural population dynamics and cycles. In that context, fish values will be judged on the relative merits of fish populations and habitat. The river contains internationally, nationally, or regionally important populations of resident and/or anadromous species of indigenous fish. Of particular significance is the presence of rare species (federally listed, State-listed, or candidate threatened or endangered species). Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Region of Comparison

Fish values were evaluated in two sub-regions in the State of Alaska: the North Slope of the Brooks Range and the Yukon River Basin.

Habitat

The river provides exceptionally high quality habitat for fish of national or regional significance, or may provide unique or particularly valuable habitat for rare species (federally listed, State-listed, or candidate threatened or endangered species). Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Habitat Quality

Consider the presence, extent, and carrying capacity of spawning areas, rearing areas, and adult habitat; and habitat for wild stocks and rare species (federally listed, State-listed, sensitive species, or candidate species). Areas with the greatest amount and best habitat, especially for wild stock and rare species, are of higher value.

Diversity of Species

Consider the number of species present and the value of these species. Rivers with greater diversity of species, including wild stocks and rare species, are of higher value.

Abundance of Fish

Rivers with more fish are of higher value.

WILDLIFE

Wildlife populations on the Refuge retain their natural interactions, population dynamics, and cycles. In that context, values shall be judged on the relative merits of populations and habitat.

Populations

The river corridor contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique or rare (federally listed, State-listed, or candidate threatened or endangered species). Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Habitat

The river corridor provides exceptionally high-quality habitat for wildlife of national or regional significance, or may provide unique habitat or a critical link in habitat conditions for rare species (federally listed, State-listed, or candidate threatened or endangered species). Contiguous habitat conditions are such that the biological need of the species are met.

Region of Comparison

Wildlife values were evaluated in two sub-regions in the State of Alaska: the North Slope of the Brooks Range and the Yukon River Basin.

Habitat Quality

Consider the presence, extent, and carrying capacity of a variety of wildlife habitats, including winter range, summer range, transition zones, travel corridors, and calving, denning, or nesting areas. Consider unique habitats or critical links in habitat for rare species (federally listed, State-listed, sensitive species, or candidate species). Areas with the greatest and best habitat, contiguous habitat, and habitat for rare species are of higher value.

Species Diversity

Consider the number and variety of species present and the value of these species. Rivers with the greatest diversity of species, including rare species, are of higher value.

Species Abundance

Rivers with the greatest number of wildlife in the river corridor are of higher value.

HISTORIC

The river corridor contains a site(s) or feature(s) associated with a notable event, an important person, or a cultural activity of the past that was rare; one-of-a-kind; or common but the best representative example in the ROC. Many such sites are listed on the Alaska Heritage Resources Survey or on the National Register of Historic Places. A historic site(s) and/or features(s) is 50 years old or older in most cases.

Region of Comparison

Historic values were evaluated across the State of Alaska.

Historical Importance

Consider river corridors that contain a site or feature associated with a historically important event, person, or activity of the past. Rare, unique, or unusual sites or features in the ROC are of higher value.

Site Integrity

Consider the presence of exceptional examples of historic sites that are unmodified and retain their original character. River corridors that contain exceptional sites in exceptional condition are of higher value.

Listing/Eligibility

Consider sites or features that are currently listed in, or are eligible for, the National Register of Historic Places or that have been nominated for or designated as National Historic Landmarks. Rivers with such features, particularly in abundance, are of higher value.

Educational/Interpretation

Consider sites that have regional or national importance for interpreting notable historic events, sites, or people; sites that clearly and graphically reveal an interesting or unique history; and/or sites that have the ability to attract visitors. River corridors that contain the best representative examples of historic events in the ROC are of higher value.

CULTURAL

The river, or area in the river corridor, contains a site(s) with evidence of occupation or use by Alaska Natives. Sites must have unique or rare characteristics or exceptional human interest value(s). Sites may have national or regional importance for interpreting prehistory; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; may have been used by cultural groups for rare or sacred purposes; and/or may have exceptional subsistence value. Sites may be listed in the Alaska Heritage Resources Survey or the National Register of Historic Places.

Region of Comparison

Athabascan cultural values were evaluated in the Athapaskan language region in Alaska, north of the Alaska Range. Iñupiat cultural values were evaluated in the Iñupiaq language region in Alaska.

Notable Occupation

Consider evidence of important occupation and use by Alaska Natives or other prehistoric cultures (i.e., Iñupiat or Athabascan prehistory sites, prehistoric sites, ceremonial areas, fishing areas, sacred religious sites). Consider sites that are notable in the archaeological record, are rare, or represent an area where a culture was first identified. Rare, notable, unique, or unusual sites or features in the Region are of higher value.

Cultural/Subsistence Importance

Consider areas of exceptional human interest values. River corridors with notable quality, quantity, or variety of cultural or subsistence uses; or river corridors used for rare or sacred purposes are of higher value.

Number of Cultures

River corridors that represent more than one culture or cultural period that may have been used concurrently by more than two culture groups are of higher value.

Site Integrity

Consider the presence of exceptional examples of Alaska Native or prehistoric features or remains from an important period in history; sites that are unmodified and retain their original character; and features in excellent condition that provide an exceptional example in the ROC. River corridors containing exceptional sites in excellent condition are of higher value.

Listing/Eligibility

Consider corridors that contain sites or features that are currently listed in, or are eligible for, the National Register of Historic Places of National Historic Landmarks. Rivers with such features, particularly in abundance, are of higher value.

Educational/Interpretation

Consider sites that have regional or national importance for interpreting important prehistoric events, sites, or people; sites that clearly and graphically reveal an interesting or unique history; and/or sites that have the ability to attract visitors. River corridors that contain the best representative examples of Alaska Native or other prehistoric culture in the ROC are of higher value.

Appendix B. Detailed Analyses of Each Outstandingly Remarkable Value

B.1 Scenic Outstandingly Remarkable Value

The Scenic ORV has three components: diversity of view, special features, and seasonal variations. Data were gathered for each component, and each component was analyzed separately. For each component, north-side rivers were evaluated separately from south-side rivers to reflect the ROC for the Scenic ORV.

Diversity of View: The sub-definition for Diversity of View identifies that river corridors with the greatest diversity and variety of views have the highest value. The team gathered narrative descriptions for each river from a variety of published literature and agency reports. Institutional knowledge was solicited from staff members by interviewing those who have worked for the Refuge for more than 10 years or those who have a great deal of on-the-ground experience in the Refuge, especially on its rivers. Individual team members then ranked each river on a scale of zero (no scenic diversity) to five (outstanding scenic diversity) based on the overall sense of diversity of view from literature, staff descriptions, and the personal knowledge of team members. The final ranks were averaged across the team. If a staff member had mentioned one or more of the rivers as their choice for most scenically diverse, then those mentions were included in the final average.

Special Features: The sub-definition for Special Features states that corridors with high relief and focal points that are visually striking, particularly memorable, or rare in the region have the highest value. This component of the Scenic ORV was interpreted to be the superlative scenic features in each river corridor, especially the types of features identified in the component definition. Examples of features included in the component definition have been used as a guide for the type of features to include in the list.

Once the list was compiled, the number of superlative features was totaled. For north-side rivers, the number of special features ranged from one to nine. The number of features was ranked according to the following scale: five points for nine or more features; four points for seven to eight features; three points for five to six features; two points for three to four features; one point for one to two features; and zero points for zero features. For south-side rivers, the number of special features ranged from zero to 15. However, 15 was considered an outlier—it was magnitudes higher than the next highest number. The ranking used for south-side rivers was equal to the number of special features in each river corridor: rivers with five or more features received five points, rivers with four features received four points, etc.

Seasonal Variations: The component definition for Seasonal Variations explains that river corridors with the greatest seasonal variation and diversity are of higher value. The number of vegetation and habitat types provided insight as to the visual diversity afforded by seasonal changes—the more vegetation types in a corridor and the greater diversity among the plant communities, the more diverse the seasonal changes of color and pattern would likely be in the corridor. Because the number of vegetation and habitat types is highly correlated with the length of each river, the number of types was divided by river miles to have a more reliable measure of vegetational variety.

The number of habitat or vegetation types per river mile ranged from a low of 0.07 to a high of 1.26. Rivers received five points for one or more habitat types per mile; four points for 0.75 to

0.99 habitat types per mile; three points for 0.5 to 0.74 types per mile; two points for 0.25 to 0.49 types per mile; one point for 0.1 to 0.24 types per mile; and zero points for less than 0.1 habitat or vegetation types per river mile.

Final Score: Once all three components had been ranked, the scores for the components were compiled for each river. From this point forward, the analysis encompassed all 20 rivers, rather than looking at north-side rivers separately from south-side rivers.

Total scores for the Scenic ORV ranged from 4 to 13 points. The highest possible score for the Scenic ORV was 15 points, and 70 percent of 15 is 10.5. Thus, any river with a score greater than 10.5 was considered to have the Scenic ORV. While other evaluated waters certainly have scenic value, the results of the analysis using currently available data identify the following as having the Scenic ORV.

Table B-1. Scores by river for the Scenic outstandingly remarkable value

Scenic Outstandingly Remarkable Value (ORV) Results				
River	Components			
	Diversity of View	Special Features	Seasonal Variations	ORV Score
Aichilik River	2.0	1	1	**4.0**
Atigun River	2.8	2	5	**9.8**
Canning River	3.4	3	1	**7.4**
Marsh Fork Canning River	4.6	2	2	**8.6**
Coleen River	3.6	1	0	**4.6**
East Fork Chandalar River	3.2	1	0	**4.2**
Middle Fork Chandalar River	4.0	1	2	**7.0**
Firth River	3.3	2	2	**7.3**
Hulahula River	4.4	2	1	**7.4**
Jago River	2.1	1	1	**4.1**
Joe Creek	2.8	1	3	**6.8**
Junjik River	2.6	1	1	**4.6**
Spring Creek	2.3	0	4	**6.3**
Kongakut River	5.0	5	1	**11.0**
Okpilak River	4.6	5	1	**10.6**
Sadlerochit River	2.8	2	1	**5.8**
Neruokpuk Lakes complex	5.0	3	5	**13.0**
Porcupine River	3.0	5	1	**9.0**
Sagavanirktok River	3.5	1	2	**6.5**
Turner River	1.3	1	4	**6.3**

B.2 Recreational Outstandingly Remarkable Value

The Recreational outstandingly remarkable value has six components: flow, character of run, access, level of use, associated superlative opportunities, and attraction. Data were gathered and analyzed for each component separately. Recreational values were evaluated across the Refuge for each component, reflecting the ROC for the Recreational value.

Flow: The component definition for Flow indicates that rivers with enough flow to be reliably runnable are of higher value. One information set was analyzed for this component: a qualitative description of the reliability of each river's flow within the open water season. Consideration was given to aufeis, seasonal ice, dry channels, and too much flow. Using best professional judgment, the team ranked each river as having high, medium, or low reliability of flow. A river with high reliability of flow was given five points, a river with medium reliability of flow was given three points, and a river with low reliability of flow was given one point. The scores for this component ranged from one to five points.

Character of Run: The component definition for Character of Run directed the team to consider the level to which a run maintains interest and provides challenge to a boater. Rivers with more interesting and challenging runs are of higher value. Two information sets were used to evaluate this component: 1) the highest whitewater classification on the river, capturing the challenge of the run, and 2) a qualitative description characterizing the overall interest of the run.

To evaluate the challenge of the run, the team considered the highest whitewater classification of each river. These were then ranked according to the following scale: five points for whitewater class V, four points for whitewater class IV, three points for class III, two points for class II, and one point for whitewater class I. Only the runnable portions of rivers were ranked; class VI (unrunnable) portions of rivers were not ranked.

To evaluate interest of the run, the team considered: how incised or braided a river is; whether there are variations to the whitewater class or whether the river is much the same along its length; whether the river is straight, curving, or highly sinuous; and whether there are features such as canyons, aufeis fields, or boulders that increase interest and/or affect the current. The team then used their best professional judgment to rank interest of the run from one to five points based on a low, medium-low, medium, medium-high, and high scale. Scores for this component ranged from one to five points.

The points from the two information sets were averaged to come up with a component score for Character of Run. Component scores ranged from 1 to 4.5.

Access: This component definition considers ease and reliability of access to the river corridor. Rivers with the most reliable and easiest access are of higher value. One information set was analyzed for this component: a qualitative description of the condition and reliability of access sites; drop-off and pick-up options; and the accessible portion of the season.

The primary mode of access for all rivers in the Refuge is via bush plane. However, the condition of landing areas (e.g., wet, dry, length, etc.) and accessibility (e.g., covered in aufeis, free of obstruction), and the availability of drop-off and pick-up locations along the extent of the river corridor affects the accessibility of some of the rivers in Arctic Refuge. One of the rivers evaluated (Atigun River) can be accessed by dirt road, about one-quarter mile off the Refuge. While the Atigun is eight hours north of the nearest city (Fairbanks), this river is considered to be the most accessible river on the Refuge, year round. The team used their best

professional judgment to evaluate the narrative descriptions of access and assigned each river a rank of high, medium to high, medium, medium to low, or low accessibility. These ranks were then converted to a one to five point scale for the score of the Access component: five points were assigned to the most accessible rivers, and one point was assigned to the least accessible rivers. Component scores ranged from one to five points.

Level of Use: The component definition says to consider the number of people using the river corridor and that rivers with the most use are of higher value. The team considered two information sets for this component: 1) the number of commercially-supported visitors to each river, and 2) independent, non-commercially-supported use of each river corridor.

Refuge staff tracks all commercially-supported use of Arctic Refuge by issuing special use permits and requiring detailed annual reports on those permits. The first information set we used for Level of Use is the number of people using the river corridor for river-related activities each year, averaged over a nine-year period (2001–2009). Rivers used by an average of 81 or more people each year received five points. Rivers with an average of 61–80 people received four points; rivers with an average of 41–60 people received three points; rivers with an average of 21–40 users were given two points; and rivers with 1–20 visitors received one point.

The Refuge does not have the ability to track the total number people who access the Refuge completely on their own without the benefit of a commercial air operator and/or a guide. Therefore, the team provided a narrative description of what we know about independent use for each river, including known independent visitation where documented. We then used our best professional judgment to rank the descriptive information into high, medium to high, medium, medium to low, and low level of independent river-related use. If the level of independent use is somewhat low but trending upwards, that river was given a medium rank. Ranks were then converted to a value between one and five points, with five points assigned to high independent use and one point assigned to low independent use.

To score the component, the team compared the ranks assigned to commercially-supported and independent use, and then selected the higher of the two ranks for each river. Component scores for Level of Use ranged from one to five points.

Associated Superlative Opportunities: The team considered the types of activities recreationists engage in while in the river corridors. Activities such as hiking, hunting, and floating are available on nearly all of the Refuge's rivers. However, there are certain activities that are available on only a select few of the evaluated rivers. These activities were deemed "superlative"—specific reasons why people come to Arctic Refuge. Four superlative opportunities associated with rivers were identified by Refuge staff: viewing the Porcupine caribou herd, float hunting, a visit to "see the Refuge before oil development occurs," and unique birding activities (gray-headed chickadees and Smith's longspurs—the premier bird species associated with the Refuge). The number of opportunities was tallied and component scores were assigned: five points for four opportunities, three points for three opportunities, one point for one to two opportunities, and zero points for zero opportunities.

Attraction: This component definition considers a river's ability to attract visitors from outside the geographic region. Rivers that attract a variety of users who are willing to travel some distance with their primary intent to use the river for water-oriented recreation and rivers that provide a setting for nationally- and internationally-renowned opportunities are of higher value.

Two types of information were researched for use in the analysis of the Attraction component: 1) the most commonly requested rivers, and 2) the percent of users from distant locations.

Detailed river-specific information about where visitors originate from was unavailable. However, through interviews with three of our longest-serving permittees, general visitation patterns are available: 1–10 percent of the Refuge's users are international residents, 35–75 percent come from areas of the United States outside of Alaska, and 15–60 percent of Refuge users are Alaska residents. The ranges are broad because different permittees cater to different clientele. he Arctic Interagency Visitor Center survey (BLM 2005) says two percent of use is international, 61 percent is from the United States outside of Alaska, and 37 percent of users are Alaska residents. Although the Refuge is an international destination and the Refuge's rivers attract people from outside the Refuge's geographic region, specific visitor surveys would need to be completed to determine visitor use origination patterns river by river.

In addition to asking about the geographic origin of visitors, the team asked the three permittees which five rivers visitors most commonly request. Ultimately, the team decided that a sample of three permittees was not sufficient to rank this part of the component.

Therefore, we did not score the Attraction component. Attraction was not included in any of our computations and is not included in the final score for any river.

Final Score: The scores of the five evaluated components were totaled for each river. Total scores for the Recreational outstandingly remarkable value ranged from 4.5–23 points. The highest possible score for Recreational value was 25 points (five points for each of five scored components), and 70 percent of 25 is 17.5. Thus, any river with an overall score greater than 17.5 was considered to have outstandingly remarkable Recreational value. The Atigun, Canning, Hulahula, Kongakut, and Marsh Fork Canning rivers were determined to be outstandingly remarkable, with scores of 20.5, 18, 21, 23, and 18, respectively. While other Refuge rivers have recreational values, these five rivers were determined to have outstandingly remarkable recreational values.

Table B-2. Scores by river for the Recreational outstandingly remarkable value

Recreational Outstandingly Remarkable Value (ORV) Results							
River	Components						
	Flow	Character of Run	Access	Level of Use	Associated Opportunities	Attraction	ORV Score
Aichilik River	1.0	1.5	3.0	3.0	1.0	--	**9.5**
Atigun River	5.0	4.5	5.0	5.0	1.0	--	**20.5**
Canning River	5.0	2.0	4.0	4.0	3.0	--	**18.0**
Marsh Fork Canning River	5.0	3.0	4.0	5.0	1.0	--	**18.0**
Coleen River	5.0	1.5	4.0	3.0	1.0	--	**14.5**
East Fork Chandalar River	5.0	2.0	3.0	4.0	0.0	--	**14.0**
Middle Fork Chandalar River	3.0	3.0	2.0	1.0	0.0	--	**9.0**
Firth River	1.0	1.5	1.0	1.0	0.0	--	**4.5**
Hulahula River	5.0	4.0	4.0	5.0	3.0	--	**21.0**
Jago River	5.0	3.5	3.0	3.0	1.0	--	**15.5**
Joe Creek	1.0	1.5	1.0	1.0	0.0	--	**4.5**
Junjik River	3.0	2.0	4.0	1.0	0.0	--	**10.0**
Spring Creek	1.0	2.0	3.0	3.0	0.0	--	**9.0**
Kongakut River	5.0	4.0	4.0	5.0	5.0	--	**23.0**
Okpilak River	3.0	4.5	2.0	1.0	1.0	--	**11.5**
Sadlerochit River	1.0	2.5	1.0	1.0	1.0	--	**6.5**
Neruokpuk Lakes complex	3.0	2.0	3.0	1.0	0.0	--	**9.0**
Porcupine River	5.0	1.0	4.0	1.0	0.0	--	**11.0**
Sagavanirktok River	3.0	3.0	4.0	4.0	1.0	--	**15.0**
Turner River	1.0	1.5	1.0	1.0	1.0	--	**5.5**

B.3 Geologic Outstandingly Remarkable Value

The Geologic ORV has three components: feature abundance, diversity of features, and educational and/or scientific importance. Both quantitative and qualitative data were used to evaluate geology in the river corridors. Data were gathered for each component, and each component was analyzed separately. Geologic values were evaluated across the Refuge for each component, reflecting the ROC for the Geologic ORV.

Feature Abundance: The component definition considers landforms with unusual or outstanding geologic or hydrologic features and river corridors with an abundance of unusual, unique, and distinctive geologic features to be of higher value. Sufficient data is not available to analyze both the abundance and diversity of features in each river corridor. The ability to identify the types of features in or near each river (e.g., pingos, springs, etc.) but not the total number of each feature type for each river (e.g., two pingos, five springs, etc.) limits Feature Abundance to the number of feature types rather than the true abundance of these features.

Using narrative descriptions of river geology and hydrology from published literature and unpublished agency reports, along with institutional knowledge, the types of unusual, unique, and distinctive geologic and hydrologic features in each river corridor were identified. Five points were assigned for 10 or more feature types; four points for 8–9 feature types; three points for 6–7 feature types; two points for 4–5 feature types; one point for 2–3 feature types; and zero points for 0–1 feature types.

Diversity of Features: Sufficient data to analyze both the diversity and abundance of geologic and hydrologic features in each river corridor is not available, so bedrock data as depicted in the Generalized Geologic Map of the Arctic National Wildlife Refuge (Imm et al. 1993) was analyzed. The rivers evaluated originate in the Brooks Range, cutting through steep, mountainous areas with minimal vegetation. Bedrock is frequently exposed. Further, vegetation that is present is highly correlated with the underlying geology in the river corridor, including the lower reaches of rivers that extend outside the Brooks Range.

The number of different bedrock types occurring in each corridor was identified as one measure of geologic diversity. Because patchiness also provides a measure of diversity, the number of bedrock patches was also identified. However, the number of patches was divided by river miles to remove any correlation between the number of bedrock patches and the length of each river.

The number of bedrock types ranged from 1 to 12 per river. Rivers with 11 or more bedrock types were given five points; rivers with 9–10 types received four points; 7–8 types received three points; 5–6 types got two points; 3–4 bedrock types were given one point; and 0–2 types received zero points. The number of bedrock patches per mile ranged from 0.05–0.59. Rivers with 0.36 or more patches per mile received five points; rivers with 0.29–0.35 patches per mile received four points; 0.22–0.28 patches per mile received three points; 0.15–0.21 patches per mile received two points; 0.08–0.14 patches per mile received one point; and rivers with 0.07 or fewer patches per mile received zero points.

The scores for number of bedrock types and the number of bedrock patches per mile were averaged to obtain a final score for the Diversity of Features component. Scores ranged from zero to 4.5 for this component.

Educational/Scientific: The component definition considers geologic and hydrologic features that clearly and graphically reveal interesting or unique educational or scientific aspects of earth's history. River corridors that contain rare, one-of-a-kind, or common but representative examples of a geologic feature in the region of comparison are of higher value. The team used the narrative information evaluated under the Feature Abundance component to extract superlative or exceptional geologic values. The team then collectively ranked the rivers' educational and scientific merits using best professional judgment. Those rivers with truly exceptional, rare, one-of-a-kind, or representatively common geologic or hydrologic features received a score of five points. Rivers with moderate educational or scientific values were given a score of three points; rivers with low educational or scientific geologic values were given a single point; and rivers without any superlative or exceptional geologic or hydrologic values received zero points.

Final Score: Once all three components had been ranked, the scores for the components were added up river by river. Total scores for the Geologic ORV ranged from 1–12 points. The highest possible score for the Geologic ORV was 15 points, and 70 percent of 15 is 10.5. Thus, any river with a score equal to or greater than 10.5 was considered to have the Geologic ORV.

Table B-3. Scores by river for the Geologic outstandingly remarkable value

Geologic Outstandingly Remarkable Value (ORV) Results				
River	Components			
	Feature Abundance	Diversity	Education/Scientific	ORV Score
Aichilik River	1	3.5	0	**4.5**
Atigun River	3	3.0	5	**11.0**
Canning River	3	1.5	5	**9.5**
Marsh Fork Canning River	1	3.0	0	**4.0**
Coleen River	2	2.0	1	**5.0**
East Fork Chandalar River	0	2.0	3	**5.0**
Middle Fork Chandalar River	1	1.5	3	**5.5**
Firth River	1	0.0	1	**2.0**
Hulahula River	5	3.0	1	**9.0**
Jago River	4	2.5	3	**9.5**
Joe Creek	0	2.0	0	**2.0**
Junjik River	0	2.0	0	**2.0**
Spring Creek	0	3.0	0	**3.0**
Kongakut River	4	4.5	3	**11.5**
Okpilak River	5	1.0	5	**11.0**
Sadlerochit River	2	2.5	3	**7.5**
Neruokpuk Lakes complex	4	2.5	5	**11.5**
Porcupine River	3	2.5	5	**10.5**
Sagavanirktok River	1	2.5	0	**3.5**
Turner River	0	0.0	1	**1.0**

B.4 Fish Outstandingly Remarkable Value

The definition for the Fish ORV considers population and habitat data for resident freshwater and anadromous fish species, including rare species. There are four components to the Fish ORV: habitat, habitat quality, diversity of species, and abundance of fish. Because there are no federally listed, State-listed, or candidate threatened or endangered species on Arctic Refuge or in the regions of comparison (R. Brown, Fish Biologist, Fairbanks Fish and Wildlife Field Office, March 2012, pers. comm.), the habitat component was not evaluated.

Fish data are limited for the Refuge. The locations of some overwintering and spawning sites are known, as are the number of fish species and the sizes of the populations for some of these species. Further, the type and reliability of data varies between rivers. The Fish ORV was rated using best professional judgment, supported by available data on the primary fish species in each drainage; abundance; and what is known about species diversity in each river corridor. Rivers that flow north from the Continental Divide were evaluated relative to other freshwater bodies on the North Slope of the Brooks Range in Alaska. Rivers that flow south from the Continental Divide were evaluated relative to other waters in the Interior Yukon River Basin of Alaska.

Two water bodies were determined to have the Fish ORV: the Neruokpuk Lakes complex and the Canning River. The Neruokpuk Lakes complex supports what is probably the largest, healthiest population of lake trout north of the Brooks Range. The Canning River has high species diversity relative to other waters on the North Slope, as well as a large run of Dolly Varden char.

Table B-4. Scores by river for the Fish outstandingly remarkable value.

Fish Outstandingly Remarkable Value (ORV) Results		
River	Components	
	ORV Score 0 - 5	Best Professional Judgment
Aichilik River	2	- Two known overwintering sites and one spawning site - Moderate to low species diversity - Fairly low Dolly Varden Char run (1,000 - 4,000)
Atigun River	1	- Moderate species diversity - No abundance data
Canning River	5	- Extensive overwintering and spawning areas - Highest species diversity on the north side of the Refuge - Largest run of Dolly Varden Char on the Refuge (7,000 – 39,000)
Marsh Fork Canning River	3	- Extensive overwintering sites - Moderate species diversity - No abundance data.
Coleen River	1	- One known overwintering site - Moderate species diversity - No abundance data
East Fork Chandalar River	4	- Extensive overwintering habitat - Relatively high species diversity - No abundance data
Middle Fork Chandalar River	1	- Low species diversity - No abundance data
Firth River	1	- Moderate to low species diversity - No abundance data
Hulahula River	4	- Widely dispersed overwintering and spawning sites along the entire river - Moderate species diversity - Moderate to high run of Dolly Varden Char (4,900 – 23,000)
Jago River	1	- No known spawning or overwintering sites - Moderate to low species diversity - Low run of Dolly Varden Char.
Joe Creek	1	- Low species diversity - No abundance data; however, best professional judgment indicates there are probably very few fish in this creek
Junjik River	1	- Low species diversity - No abundance data
Spring Creek	1	- Low species diversity - No abundance data; however, best professional judgment indicates there are probably very few fish in this creek

Kongakut River	4	- Two known overwintering sites - Widely dispersed spawning sites throughout the river - Moderate species diversity - Moderate run of Dolly Varden Char (more than 8,900) based on one year's data; however, best professional judgment indicates that abundance likely would be higher, possibly similar to the Hulahula
Okpilak River	1	- Okpilak Lake is connected to the river and provides overwintering habitat - Low species diversity - No abundance data
Sadlerochit River	3	- Overwintering and spawning habitat in many areas - Moderate species diversity - No abundance data
Neruokpuk Lakes	5	- Largest overwinter volume of water on the north side of the Refuge - Lake trout population has high weight to length ratio compared to the North Slope of the Brooks Range - Moderate species diversity - High abundance (7,000 lake trout)
Porcupine River	4	- Spawning habitat for chum and Chinook salmon - Migratory habitat for regionally important Chinook salmon (U.S. and Canada have a treaty to help ensure Chinook salmon escapement) - High species diversity - Moderate abundance (35,000 chum salmon)
Sagavanirktok River	1	- Low to moderate species diversity - No abundance data
Turner River	1	- Low species diversity - No abundance data

B.5 Wildlife Outstandingly Remarkable Value

The definition for the Wildlife ORV considers wildlife population and habitat data, including those species that are considered to be unique, rare, State-listed, federally listed, threatened, or endangered. There are three components to the Wildlife ORV: habitat quality, diversity of species, and species abundance. Rivers that flow north from the Continental Divide were evaluated relative to other water bodies on the North Slope of the Brooks Range in Alaska. Rivers that flow south from the Continental Divide were evaluated relative to other waters in the interior Alaska.

Habitat Quality: Three datasets were used to evaluate Habitat Quality: 1) miles of potential polar bear habitat in each river corridor, 2) number of raptor nesting sites, and 3) the number of habitat types in each corridor. Because polar bear habitat is only found north of the Continental Divide, north-side rivers were evaluated for polar bear habitat, raptor nests, and the number of habitats in each corridor. For south-side rivers, only raptor nests and the number of habitat types were used to evaluate habitat quality.

The Refuge contains more than 53 percent of polar bear critical denning habitat. Polar bear critical habitat correlates with the topography, wind patterns, and soil development in river corridors. The total miles of polar bear denning habitat along the length of each river and within one-half mile of either side of ordinary high water was calculated using Geographic Information System (GIS). Rivers received five points for 61 or more miles of polar bear denning habitat in the corridor; four points for 46–60 miles; three points for 31–45 miles; two points for 16–30 miles; one point for 1–15 miles; and zero points for zero miles of polar bear denning habitat in the river corridor.

At a statewide level, the Refuge has notable nesting raptor habitat. In some locations, raptor nesting densities are among the highest in the State. Raptor nests tend to be concentrated in the river corridors of the Refuge, especially if cliffs or cliff-like geologic features are found in the corridor. The number of known nest sites was totaled for each river. A river received five points for 50 or more nest sites; four points for 25–49 nests; three points for 10–24 nests; two points for 5–9 nest sites; one point for 1–4 nests; and zero points if there are no known raptor nests in the river corridor.

The number of habitats in each river corridor was calculated using scientific procedures (Homer et al. 2004) and GIS. A river scored five points for 19–21 habitat types; four points for 17–18 habitats; three points for 14–16 habitats; two points for 12–13 habitats; and one point for 10–11 habitat types in the river corridor.

Three datasets were averaged for north-side rivers, and two datasets were averaged for south-side rivers, to arrive at the component scores for Habitat Quality. Scores ranged from 0.3 to four points.

Diversity of Species: Two datasets were used for the Diversity of Species component score: 1) total number of species, and 2) the number of rare, sensitive, threatened, or endangered species. Both datasets were generated by considering the known range and distribution of mammals and birds across the Refuge and using best professional judgment to decide whether the rivers under consideration were included in these distributions. If a species was known to use a river corridor for all or a portion of its life cycle, that species was included in the count.

North-side rivers were ranked according to the total number of species occupying each corridor using the following scale: five points for rivers with 90 or more species; four points for

80–89 species; three points for 70–79 species; two points for 60–69 species; and one point for 50–59 species. South-side rivers had very similar totals for the number of species, ranging from 122–128 species and, as a result, were all assigned a score of three points. The team assumed that these species were typical for the ROC.

Twelve of the species either listed as threatened under the Endangered Species Act (Service 2010a), species on the Audubon Watchlist (Audubon 2010), species on the International Union for Conservation of Nature red list (International Union for Conservation of Nature 2010), or species of special concern by the State of Alaska (ADFG 2010), are known to occur on the North Slope of the Brooks Range: red-throated loon, yellow-billed loon, arctic peregrine falcon, whimbrel, red knot, dunlin, buff-breasted sandpiper, arctic tern, Smith's longspur, spectacled eider, polar bear, and tiny shrew. North-side rivers were given five points if nine or more of these rare, sensitive, threatened, or endangered species use all or a portion of any of the evaluated rivers. Four points were awarded to rivers with seven to eight species; three points for five to six species; two points for three to four species; one point for one to two species; and zero points if no rare, sensitive, threatened, or endangered species use a river corridor.

Twelve of the species either listed as threatened under the Endangered Species Act (Service 2010), species on the Audubon Watchlist (Audubon 2010), species on the International Union for Conservation of Nature redlist (International Union for Conservation of Nature 2010), or species of special concern by the State of Alaska (ADFG 2010) are known to occur south of the Continental Divide in the Yukon River basin of interior Alaska: horned grebe, peregrine falcon, solitary sandpiper, lesser yellowlegs, upland sandpiper, whimbrel, Hudsonian godwit, red knot, short-billed dowitcher, olive-sided flycatcher, Smith's longspur, and rusty blackbird. South-side rivers were given five points if seven or more of these species use all or a portion of any of the evaluated rivers. Four points were given for five to six species; three points for three to four species; two points for two species; one point for one species; and zero points if no rare, sensitive, threatened, or endangered species use a river corridor. The ranks for the two datasets were averaged for north-side rivers and for south-side rivers. Component scores for Diversity of Species ranged from 0.5 to five points.

Species Abundance: This component was not evaluated. No data are available that describe species abundance in the Refuge in each river corridor.

Final Score: The results for the two evaluated components were compiled. From this point forward, the analysis combined north-side rivers with south-side rivers. Total scores for the Wildlife ORV ranged from 0.8 to nine points. The highest possible score for the Wildlife ORV was 10 points, and 70 percent of 10 is seven. Thus, any river with a score greater than seven was considered to have the Wildlife ORV.

Table B-5. Scores by river for the Wildlife outstandingly remarkable value

Wildlife Outstandingly Remarkable Value (ORV) Results			
River	Components		
	Habitat Quality	Diversity of Species	ORV Score
Aichilik River	3.0	3.5	**6.5**
Atigun River	1.3	1.0	**2.3**
Canning River	4.0	5.0	**9.0**
Marsh Fork Canning River	1.3	0.5	**1.8**
Coleen River	2.5	3.5	**6.0**
East Fork Chandalar River	2.0	3.5	**5.5**
Middle Fork Chandalar River	1.5	3.5	**5.0**
Firth River	1.0	1.5	**2.5**
Hulahula River	2.3	4.5	**6.8**
Jago River	3.3	4.0	**7.3**
Joe Creek	0.3	0.5	**0.8**
Junjik River	1.5	3.0	**4.5**
Spring Creek	1.5	2.5	**4.0**
Kongakut River	2.7	4.0	**6.7**
Okpilak River	2.3	4.0	**6.3**
Sadlerochit River	2.3	4.0	**6.3**
Neruokpuk Lakes complex	0.3	4.0	**4.3**
Porcupine River	4.0	4.0	**8.0**
Sagavanirktok River	0.7	1.0	**1.7**
Turner River	1.0	2.0	**3.0**

B.6 Historic Outstandingly Remarkable Value

The definition for the Historic ORV considers historic sites or features in each river corridor that are associated with a notable event, an important person, or a cultural activity of the past. Sites or features should be rare, one-of-a-kind, or the best representative of a common site or feature. There are four component definitions: historical importance, site integrity, listing or eligibility, and educational and/or scientific importance.

There are few historic data for Arctic Refuge. This is due in part to the lack of historic use of the Refuge's lands and waters but also to a lack of historical research completed in the area. The team relied on best professional judgment supported by qualitative information obtained from Regional Archaeologist Debbie Corbett, published literature, agency reports, and institutional knowledge to evaluate the Historic ORV. Rivers were evaluated on a high (five points), medium (three points), and low (one point) scale based on the team's assessment of how important the gathered historical information was relative to the history of the State of Alaska (the ROC for the Historic ORV).

Only the Porcupine River was determined to have a Historic ORV. The Porcupine River was (and is today) a major travel corridor that fills an important chapter in the history of Alaska and the Yukon Territory of Canada (National Park Service 1984a). The Porcupine River provided Europeans a natural trade route into the Yukon River basin. The Hudson's Bay Company set up trading posts on the Porcupine River, exchanging goods such as beads and cloth for furs. Hudson's Bay Company posts also provided a means of travel for scientists and ministers to the Porcupine and Yukon River regions, and the posts represent the farthest western reach of the British monarchy. Buildings associated with the Hudson's Bay Company posts near Howling Dog Rock and the confluence of the Salmon Trout River are still visible.

The Porcupine River was also involved in other aspects of Alaskan and arctic history, including whaling, exploration, the Klondike gold rush, and early steamboat and gas-powered river boat navigation (National Park Service 1984a). The Porcupine River remains important to local people who rely on it as a means for travel and for pursuing a more traditional way of life, and it provides visitors the opportunity to experience the voyages of the explorers and fur traders of the mid-1800s. It is the most important arctic river route after the Yukon River.

B.7 Cultural Outstandingly Remarkable Value

The definition for the Cultural ORV considers evidence of occupation or use by Alaska Natives, with weight given to rare, unique, exceptional human interest, and/or national or regional importance for interpreting prehistory. There are six component definitions: notable occupation, cultural and/or subsistence importance, number of cultures, site integrity, listing or eligibility, and educational and/or scientific.

No systematic archaeological studies or historical research projects have been conducted across the Refuge. The information available for the eligibility analysis is derived from those studies that have been conducted and the expert knowledge of Regional Archaeologist Debbie Corbett. The data used for the Cultural ORV might not fully depict the cultural and archaeological resources in river corridors or yet-to-be-determined culturally important locations. However, it does represent the best available data. North-side rivers were evaluated separately from south-side rivers to reflect the ROC for the Cultural ORV.

Notable Occupation: The component definition considers evidence of important occupation and rates rare, unique, notable, or unusual sites higher than other sites. Regional Archaeologist Debbie Corbett provided the team with the number and type of prehistoric sites in each river corridor. The team decided to use two datasets to evaluate Notable Occupation: 1) the number of known sites, and 2) the number of different types of sites. We assumed that rivers with a large number of archaeological sites had a higher value than rivers with few or no known prehistoric sites. The other assumption made was that those sites having a variety of occupational evidence, especially those suggesting camps or housing, were of higher value than sites with fewer types of archaeological resources and no evidence of longer-term occupation.

The number of known sites in each corridor ranged from 0–67. The team decided 67 was an outlier, because the next highest number was 21. The number of sites was ranked according to the following scale: five points for 20 or more sites; four points for 15–19 sites; three points for 10–14 sites; two points for 5–9 sites; one point for 1–4 sites; and zero points for zero sites.

Types of sites ranged from flake scatters to tent rings to settlements. The number of types ranged from zero to six types, so these data were evaluated as follows: five points for six types of sites; four points for five types; three points for three to four types; two points for two types; one point for one type; and zero points if no site types have been identified.

The ranks for the two datasets were averaged for north-side rivers and for south-side rivers. Component scores for Notable Occupation ranged from zero to five points.

Cultural/Subsistence Importance: The component definition states that river corridors with notable Alaska Native quality, quantity, or variety of cultural or subsistence uses; or river corridors used for rare or sacred purposes are of higher value. The team interpreted this component to be the contemporary cultural value associated with each river corridor.

Three datasets were used to evaluate contemporary cultural values: 1) the number of subsistence uses, 2) the number of sites with current or recent historical value (e.g., cemetery sites), and 3) the presence or absence of rare, sacred, or other sites of important contemporary cultural value.

Data on the subsistence use of south-side rivers were obtained from the Yukon Flats Land Exchange Environmental Impact Statement (Service 2010b). Rivers on the south side of the Refuge are used by residents of four villages (Arctic Village, Venetie, Fort Yukon, and

Chalkyitsik) for 10 types of subsistence resources: caribou, moose, sheep, bear, wildfowl (e.g., waterfowl), small mammals, furbearers, fish, vegetation (e.g., berry picking), and woodcutting. The numbers of subsistence types were counted for each river. Five points were given to rivers with nine or more identified subsistence use types; four points for seven to eight types; three points for five to six types; two points for three to four types; one point for one to two types; and zero points if a river corridor is not used for any identified subsistence type.

Subsistence data for north-side rivers were extracted from the draft Point Thomson EIS (Exxon Mobil Corporation 2009). North-side rivers are used by the residents of Kaktovik for caribou, fish, sheep, and furbearers. Exxon Mobil Corporation (2009) also indicates if an area is used intensively for any of the subsistence uses, and it provides the specific locations for important subsistence sites. The north-side rivers were scored using all three types of data: a point for any of the four subsistence species, a point for any specific location in a corridor, and a point if all or a portion of any river corridor is intensively used. Rivers were then ranked according to the following scale: a score of five for rivers with nine or more subsistence points; a score of four for seven to eight subsistence points; a score of three for five to six subsistence types; a score of two for three to four subsistence points; a score of one for one to two subsistence points; and a score of zero if a river corridor is not used for any identified subsistence type.

Another measure of contemporary cultural values is to look at known sites with important cultural values. These sites include cemetery sites; 14(h)(1) sites—those that Native village corporations have purchased from the Federal government because they contain important cultural values; historic sites (sites from the last 150 to 100 years) that are associated with Native culture; and the number of Native allotments in each river corridor. A point was given to each site in a river corridor. Points ranged from 0–15. Rivers were ranked according to the following scale: a score of five for rivers with nine or more sites; a score of four for seven to eight sites; a score of three for five to six sites; two points for three to four sites; one point for one to two sites; and zero points if no cemetery, 14(h)(1) sites, historic sites, or Native allotments are located in the river corridor.

A final measure of contemporary cultural value is the presence of any rare, sacred, or other highly valued cultural site in the river corridor. Refuge staff interviewed nine tribal members and elders in Arctic Village and four in Kaktovik about whether any of the Refuge's river corridors contain important contemporary cultural values. If a site or river was mentioned, we assigned the river a yes or no, which was scored as five or zero points, respectively.

The ranks for the three datasets were averaged for north-side rivers and for south-side rivers. Component scores for Cultural/Subsistence Importance ranged from zero to five points.

Number of Cultures: The regional archaeologist provided a list of the cultures known to have used, or believed to have used, each river corridor. To evaluate Number of Cultures, the cultures identified in each corridor were counted. In some cases, both "modern" and "historic" Iñupiat or Gwich'in cultures were listed. For the purpose of this evaluation, "modern" and "historic" are being considered as one culture. For example, modern and historic Iñupiat received a single point—not two. For some of the rivers, the data identified "possible" cultures. These possible cultures were given one-half point because the available archaeological data is inconclusive. Rivers received five points for five cultures, four points for four cultures, etc.

Listing/Eligibility: According to the regional archaeologist, all known sites are eligible for listing in the National Register of Historic Places. This component does not allow comparisons of the rivers, so it was not included in the evaluation.

Site Integrity: The regional archaeologist identified all cultural sites in the Refuge as having high site integrity. Relatively few visitors or developments in the Refuge leave most sites undisturbed. Further, arctic conditions tend to preserve archaeological remains. Some sites have been lost along the coast because of erosion, and additional sites could be lost in the future. The water column in highly braided rivers meanders back and forth and can scour and erode cultural sites. The Site Integrity component does not allow comparisons of the rivers, so it was not included in our evaluation.

Educational/Interpretation: According to the regional archaeologist, the Refuge has two types of cultural resource sites that have national, if not global, significance: caribou fences and thousands of years of intercultural exchange.

The Refuge has the biggest known concentration of caribou fences in the United States. They are known from as far south as Eagle, Alaska, and they extend east into Canada. Archaeologists do not know how far west they extend, but some caribou fences are known to exist in Kanuti National Wildlife Refuge. These fences were very central to the cultures that used them. They appeared about 1,000 years ago and are likely Athabascan. The Refuge caribou fence complex is of national significance, according the the regional archaeologist, and the complex of fences would be eligible as a National Historic Landmark. A river received five points if one or more caribou fences are located in its corridor and zero points if there are no caribou fences.

The Refuge is not considered to be a center of prehistoric Eskimo culture or innovation. However, it was a site from which Eskimo culture expanded from Alaska into Canada and Greenland to the east. The other aspect of prehistory that is notable in the area of the Refuge is 10,000 years of Eskimo and Athabascan interaction. Thus, the Refuge represents a cultural crossroads: north to south and back again, as well as west to east. The cultural exchange in both directions has national, if not global, significance. A river received five points if there are one or more sites in the corridor where it has been documented that Iñupiat, Eskimo, and/or Denbigh cultures used the site, as well as Gwich'in, Athabascan, and/or Paleoindian cultures. These sites are artifacts of the cultural crossroads for which the Refuge is known. A river received zero points if there were no documented sites of intercultural use.

The two datasets were totaled, rather than averaged, because there were no rivers that had both caribou fences and sites of cultural interchange. Thus, the component total represents a yes or no dataset, with five points for yes and zero points for no.

Final Score: The results for the four evaluated components were totaled by river. From this point forward, the analysis combined the north-side and south-side rivers.

Total scores for the Cultural ORV ranged from 0–15 points. The highest possible score for the Cultural ORV was 20 points, and 70 percent of 20 is 14. Thus, any river with a score greater than 14 was considered to have the Cultural ORV.

It was striking to the team that two communities and two cultures brought up the cultural importance of the Hulahula River, yet the river was not identified as having a Cultural ORV based on points alone. We provided the regional archaeologist with the interview information we obtained, and she told us that few archaeological surveys have been conducted on the Hulahula River. It is clear from the data we provided that the river has been used for multi-

cultural exchange and barter for several generations, and there are likely many archaeological sites along the river's extent. In the regional archaeologist's professional judgment, the Hulahula has cultural importance in our regions of comparison, and it does have the Cultural ORV (D. Corbett, Regional Archaeologist, pers. comm., Jan. 11, 2011).

Table B-6. Scores by river for the Cultural outstandingly remarkable value

Cultural Outstandingly Remarkable Value (ORV) Results					
River	Components				
	Notable Occupation	Cultural/Subsistence Importance	Number of Cultures	Educational/ Scientific	ORV Score
Aichilik River	2.5	2.7	1.0	0	**6.2**
Atigun River	4.5	0.0	2.0	5	**11.5**
Canning River	2.0	2.7	5.0	5	**14.7**
Marsh Fork Canning River	0.0	0.0	0.0	0	**0.0**
Coleen River	2.0	1.3	1.0	0	**4.3**
East Fork Chandalar River	4.0	5.0	1.0	5	**15.0**
Middle Fork Chandalar River	2.0	0.7	1.5	0	**4.2**
Firth River	0.0	0.0	0.0	0	**0.0**
Hulahula River	2.0	4.7	2.0	5	**13.7**
Jago River	1.0	1.3	1.0	0	**3.3**
Joe Creek	2.5	0.0	1.0	5	**8.5**
Junjik River	2.5	4.0	2.0	5	**13.5**
Spring Creek	1.0	1.0	1.0	5	**8.0**
Kongakut River	1.0	0.7	1.0	0	**2.7**
Okpilak River	1.0	0.7	2.0	0	**3.7**
Sadlerochit River	3.0	1.7	4.0	5	**13.7**
Neruokpuk Lakes complex	2.5	3.7	3.0	0	**9.2**
Porcupine River	5.0	2.3	3.5	5	**15.8**
Sagavanirktok River	3.5	0.0	1.0	0	**4.5**
Turner River	1.0	0.0	1.0	0	**2.0**

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Appendix C. Consultation and Coordination

C.1 Introduction

The U.S. Fish and Wildlife Service (Service) made a determined effort to consult with those having a direct or indirect legal or administrative interest in the results of the wild and scenic river review process (stakeholders) on Arctic National Wildlife Refuge (Arctic Refuge, Refuge). After the eligibility report was drafted, a letter was sent to 379 stakeholders on October 6, 2010, requesting comments about the review process.

In addition, a 45-day tribal consultation period was held regarding the internal review draft of the Revised Plan. Formal letters were sent to nine tribal council leaders of federally-recognized tribal governments in or near Arctic Refuge on November 1, 2010. On November 3–6, 2010, Arctic Refuge Manager Richard Voss and Assistant Manager Hollis Twitchell consulted in person with local government officials, village elders, and residents of the villages of Venetie, Arctic Village, and Kaktovik.

C.2 Persons, Groups, Agencies, and Governments Consulted

The following people, groups, agencies, and governments were consulted during the wild and scenic river review process:

Federal Government

Environmental Protection Agency
Federal Subsistence Board
Gates of the Arctic National Park
National Marine Fisheries Service
National Park Service
North Slope Science Initiative
Office of Environmental Policy and Compliance
U.S. Arctic Research Commission
U.S. Bureau of Indian Affairs
U.S. Bureau of Land Management
U.S. Coast Guard
U.S. Department of the Interior, Regional Solicitor
U.S. Department of the Interior, Senior Advisor to the Secretary for Alaska
U.S. Fish & Wildlife Service
U.S. Forest Service
U.S. Geological Survey
U.S. Minerals Management Service
Yukon Flats National Wildlife Refuge

Alaska State Government

Alaska Board of Fisheries
Alaska Board of Game
Alaska Bureau of Wildlife Enforcement
Alaska State Troopers
Alaska Department of Commerce, Community, and Economic Development
Alaska Department of Fish and Game
Alaska Department of Natural Resources
ANILCA Program

Local Governments

Arctic Village Council
Canyon Village Traditional Council
Chalkyitsik Village Council
Chalkyitsik Traditional Council
City of Fort Yukon
City of Kaktovik
Gwichyaa Zhee Gwich'in Tribal Government
Native Village of Kaktovik
Native Village of Kotzebue
North Slope Borough
Tuntutuliak Traditional Council
Village of Venetie Tribal Government
Village of Venetie Village Council

Vuntut Gwitchin First Nation

Tribal Consultation
Anaktuvuk Tribal President
Arctic Village First Chief
Beaver Traditional Council First Chief
Birch Creek Tribal First Chief
Chalkyitsik Traditional Council First Chief
Circle Traditional Council First Chief
Fort Yukon Tribal First Chief
Kaktovik Tribal Administer
Stevens Village Tribal First Chief
Venetie Tribal First Chief

Native Corporations
Chalkyitsik Native Corporation
Doyon Ltd.
Kaktovik Iñupiat Corporation
Nana Regional Corporation
Arctic Slope Regional Corporation

Native Organizations
Alaska Federation of Natives
Alaska Inter-Tribal Council
Council of Athabascan Tribal Governments
Gwich'in Steering Committee
Inuit Circumpolar Council
Tanana Chiefs Conference

Other Organizations/Associations
Aircraft Owners and Pilots Association
Alaska Oil and Gas Association
Alaska Air Carriers Association
Citizens' Advisory Commission on Federal Areas
Polar Bears International
Rural Cap
Safari Club International
Sierra Club
Sustainable Arctic Tourism Association
Wilderness Society
Wilderness Watch

Councils/Committees
Fairbanks Fish and Game Advisory Committee
North Slope Regional Advisory Committee
Western Interior Regional Advisory Council
Yukon Flats Resource Conservation and Development

Businesses/Industry
Alyeska Pipeline Service Company
Arctic Power, Inc.
Chignik Airways, Inc.
Coldfoot Camp
Deadhorse Camp
Everts Air Service
North Star Terminal & Stevedore Co., LLC
Kavik River Camp

Arctic Refuge Special Use Permit Holders
Authorized air operators
Authorized hunting guides
Authorized recreational and educational guides

Individuals
Native allottees

Other
Nomads Online Classroom Expeditions
Parks Canada, Western Arctic Field Unit
Parks Canada, Vuntut National Park
Porcupine Caribou Management Board
University of Alaska, Fairbanks – Institute of Arctic Biology, Toolik Field Station

Appendix D. Stakeholder Outreach

On October 6, 2010, the Refuge sent an outreach letter to 379 stakeholders. The letter informed them of the wild and scenic river review process, the preliminary decisions made for the eligibility phase of the review, and asked them to provide information for use during the suitability study. This appendix contains a copy of the stakeholder letter and its two attachments: 1) an eligibility report summary and, 2) a comment form for suitability criteria.

Photo by Dave Prestipino

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Arctic National Wildlife Refuge

101 12th Avenue, Room 236

Fairbanks, Alaska 99701-6267

(907) 456-0250

October 5, 2010

Dear Interested Party:

The Fish and Wildlife Service (FWS), Arctic National Wildlife Refuge (Refuge), is completing a Wild and Scenic River (WSR) review as part of the revised Comprehensive Conservation Plan (CCP) and Environmental Impact Statement (EIS). The Wild and Scenic Rivers Act requires that such a study be completed whenever Federal agencies revise their land use plans. This multi-step process includes **eligibility** review, **suitability** analysis, and potential Congressional **designation**.

This month the Arctic Refuge completed the **eligibility** report which can be found at **http://arctic.fws.gov/ccp.htm.** The report details which rivers and river systems on FWS lands within the Refuge meet the criteria to be eligible for designation. The eligibility phase of the study is solely an inventory designed to identify outstanding river-related values (ORVs) (which are defined in the Wild and Scenic Rivers Act) and does not examine competing uses for the identified rivers and river systems. A summary of this report, list of eligible rivers, and associated outstanding river-related values is attached.

The FWS is now beginning the next phase of the WSR review. The **suitability** analysis is the process of determining whether each segment identified as eligible would be a worthy addition to the National Wild and Scenic Rivers System. During the initial stage of the suitability process, the FWS is considering a number of suitability criteria such as manageability of each segment, land ownership, use tradeoffs and conflicts, usage levels, and availability of other methods for protecting values, to name a few.

At this time, the FWS is soliciting data from interested stakeholders and partners for each of the eligible rivers. The most helpful data is information that directly addresses the suitability criteria. The FWS will then use these data in making draft suitability determinations during the alternatives analysis for the Draft CCP/EIS. **Please send us your comments regarding the eligible rivers of interest to you by November 12, 2010.** When the Draft CCP/ EIS is published (tentatively scheduled for spring of 2011), the public will have 90-days to comment on the draft suitability determinations.

If you have any questions, please contact Sharon Seim at (907) 456-0501 or e-mail them to ArcticRefugeCCP@fws.gov.

Sincerely,

Richard Voss

Refuge Manager

Enclosures: Summary of Eligibility Report, List of Eligible Rivers;
Comment Request Form

Attachment #1

Arctic National Wildlife Refuge Eligibility Report Summary

The Wild and Scenic Rivers Act, (Pub. L. 90-543 as amended: 16 U.S.C. 1271-1287) (the Act) establishes a method for providing federal protection for certain free-flowing rivers and preserving them and their immediate environments for the use and enjoyment of present and future generations. The function of the wild and scenic river review is to inventory and study the rivers and water bodies within the boundary of the Arctic National Wildlife Refuge (Refuge) to determine whether they merit inclusion in the National Wild and Scenic River System (NWSRS).

Minimum Wild and Scenic River Criteria

To be eligible for designation as a Wild and Scenic River, a river or river segment and its immediate environment is required to possess at least one "outstandingly remarkable value" (ORV) and be free flowing.

Outstandingly Remarkable Values (ORVs)

The Refuge Wild and Scenic River Eligibility Review evaluated the seven ORVs mentioned in the Act: scenic, recreational, geological, fish, wildlife, historical, and cultural. While the spectrum of resources that may be considered is broad, ORVs must be directly river-related. They should:

4) Be located in the river or on its immediate shore;
5) Contribute substantially to the functioning of the river ecosystem; and/or
6) Owe their location or existence to the presence of the river.

If a river was found to meet the eligibility criteria, it was evaluated to determine the tentative classification.

Wild and Scenic River Classification

*"1) **Wild river areas** – Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.*

*"2) **Scenic river areas** – Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.*

*"3) **Recreational river areas** – Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."*

A comprehensive list was identified of all named refuge rivers and river segments from the U.S. Geological Survey (USGS) Geographic Names Information System and the National Hydrography Dataset. A total of 160 rivers and creeks were identified, all of which are free flowing. Rivers with known river-related public use were identified to be reviewed further. For a further explanation of the process, see the Arctic National Wildlife Refuge Eligibility Report (at http://arctic.fws.gov/ccp.htm). The findings of that report are included in the following summary table.

Eligible Rivers				
River System	**Description**	***Segment Length**	**Preliminary Classification**	**Remarkable Values**
Atigun River	The Atigun River flows into the refuge from bordering State and BLM lands and can be accessed by the Dalton Highway. The portion that's on the refuge is often referred to as Atigun Gorge. The Gorge ends just before the confluence with the Sagavanirktok River.	11.08	Wild	Geology
Canning River	The Canning River is the longest north flowing river within the Refuge. It forms the western boundary of the Refuge as it flows through mountains, to foothills, to the coastal plain, and finally to the arctic coast.	125.50	Wild	Wildlife, Fish
Marsh Fork – Canning River	The Marsh Fork begins and ends in the precipitous Phillip Smith Mountains, flowing through spectacular vistas of rocky peaks. Just before reaching the foothills, the Marsh Fork joins the main stem of the Canning.	53.84	Wild	Recreation
East Fork – Chandalar River	The East Fork has its headwaters near the Romanzof Mountains in the eastern Brooks Range. It's surrounded by Refuge until Arctic Village, where it then forms the Refuge's southern boundary. The East Fork eventually flows into the main stem of the Chandalar River.	203.71	Wild	Culture
Hulahula River	The Hulahula begins in glaciers of the Romanzof Mountains, flows west and then about 100 miles north, through valleys between Mt. Chamberlin and Mt. Michelson, onto the coastal plain, and ending in Camden Bay.	96.64	Wild	Recreation
Jago River	The Jago River is flanked by the Romanzof Mountains and is fed by the McCall Glacier on Mt. Itso. It flows through the mountains to the coastal plain and finally to the arctic coast.	83.77	Wild	Wildlife
Kongakut River	The Kongakut is the only major refuge river whose entire course is within designated wilderness. Originating high in the mountains of the eastern Brooks Range, the river flows generally north through miles of rugged mountains to the coastal plain and emptying into Beaufort Sea.	116.27	Wild	Recreation, Scenery, Geology

Eligible Rivers				
River System	**Description**	***Segment Length**	**Preliminary Classification**	**Remarkable Values**
Okpilak River	The silt-laden Okpilak begins in the heart of the most active glacial area of the Refuge. The river churns as it flows north through a classic U-shaped valley containing moraines, fans, sand dunes and other glacial features. The water then abruptly flattens as it flows onto the coastal plain to the arctic coast.	73.25	Wild	Scenery, Geology
Neruokpuk Lakes	These lakes are the two largest and most northern arctic alpine lakes in North America. The two large, deep, connected lakes are surrounded by steep slopes rising to some of the highest peaks in the Brooks Range.	9.86	Wild	Scenery, Geology, Fish
Porcupine River	The Porcupine is one of the largest tributaries of the Yukon River and a historically important travel route. The Refuge portion begins at the Canada/US border and flows downstream for approximately 85 miles.	84.77	Wild	History, Culture, Geology, Wildlife, Fish

* Segment Length is approximate

** Preliminary classifications are interim classifications and can change through Suitability, Recommendation or Designation.

Attachment #2

Arctic National Wildlife Refuge – Wild and Scenic River Review

Stakeholder Comments on Suitability Criteria

Are any of the Refuge's Eligible Rivers of specific interest to you? If so, please mark the river values that are important to you.

River	River Values							
	Recreation	Scenery	History	Culture	Geology	Wildlife	Fish	Other
Atigun River								
Canning River								
Marsh Fork – Canning River								
East Fork – Chandalar River								
Hulahula River								
Jago River								
Kongakut River								
Okpilak River								
Neruokpuk Lakes								
Porcupine River								

Do you own land or an allotment adjacent to or near one or more of these rivers? ☐Yes ☐No Which ones?

Do you have a claim or existing right associated with any of these rivers? ☐ Yes ☐ No Explain.

Do you use or plan to use any of these rivers for commercial use, hunting, recreation, subsistence etc.?

☐ Yes ☐ No Explain.

Are the river values you selected above at risk? ☐ Yes ☐ No Explain.

How do you think the river and/or river values you selected above should be protected? Explain.

Do you have additional questions or concerns about designation and how it may impact you, your community, your authority, or use of these rivers?

Anything else we should know? Are there other rivers with similar values that you think the Refuge should consider for further protections?

Your comments or questions are welcome anytime.

Please contact Sharon Seim (907) 456-0501 for more information or visit our website at http://arctic.fws.gov/ccp.htm.

Use additional paper if necessary or email your responses, comments, or questions to ArcticRefugeCCP@fws.gov

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Appendix E. Comments on Non-Eligible Rivers

The Service received comments about 15 rivers that were not determined to be eligible: the Aichilik, Coleen, Ivishak, Junjik, Katakturuk, Middle Fork Chandalar, Okerokovik, Sadlerochit, Sagavanirktok, Salmon Trout, Sheenjek (already a designated wild river), Tamayariak, and Turner rivers; and Joe and Spring creeks. Comments came from 10 stakeholders, including commercial guides, recreational visitors, conservation organizations, residents of Arctic Village, Arctic Village council members, the Native Village of Kaktovik tribal president, and a Native Village of Venetie council member. While the State of Alaska and the Citizens' Advisory Commission on Federal Areas did not comment on the following rivers, they stated they're opposed to wild and scenic river designation of any river in the Refuge. For information about general wild and scenic river comments and/or comments pertaining to eligible rivers, please refer to Section 4.6.5.2 and Section 5 of this review. The Refuge received the following comments about non-eligible rivers.

E.1 Aichilik River

During the 2010 stakeholder comment period regarding suitability criteria, the Service received six comments for the Aichilik River from a commercial guide, recreational visitors, conservation organizations, and the Native Village of Kaktovik tribal president. Five comments support considering the Aichilik for designation and one comment does not clearly mention support for or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, fishing, and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: scenic (4), geologic (2), wildlife (4), fish (4), and cultural (1). Additionally, stakeholders identified intact wilderness, intact ecological systems, and subsistence as other Aichilik River values. Specifically, comments note that the river provides backpacking, rafting, and wildlife-viewing opportunities and is well known for its wolves; the migrating Porcupine caribou herd; cliff nesting raptors; and a concentration of nesting tundra swans, geese, and other waterfowl and shorebirds at its delta. Comments also note that the river contains dramatic scenery with mountain spires, aufeis fields, Dryas terraces, and gravel bars full of coral and other fossils. Comments also mention that the river should be recommended for designation because it forms the Wilderness boundary of the Refuge and because the river corridor was part of the range for herding reindeer.

E.2 Coleen River

During the 2010 Refuge comment period regarding suitability criteria, the Service received five comments from commercial guides, a recreational visitor, and conservation organizations. All five comments support considering the Coleen River for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (3), scenic (2), geologic (5), wildlife (5), fish (2), cultural (5), and, historic (1). Additionally, stakeholders identify intact wilderness, intact ecological systems, and remoteness as other Coleen River values. Specifically, comments note that the Coleen River should be eligible for wild river status because it contains many ORVs such as archeological evidence of Iñupiat cultures;

special geological features like Conglomerate Mountain and Bear Mountain; and wildlife habitat for caribou and migratory moose populations.

E.3 Ivishak River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Ivishak River from a commercial guide, a recreational visitor, and conservation organizations. Ivishak River is already designated as a wild river. The four comments support extending designation to the Ivishak River's tributaries. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (3), scenic (4), geologic (2), and wildlife (4). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Ivishak River values. Specifically, comments note that the river provides special recreational opportunities because it is near Dalton Highway.

E.4 Joe Creek

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a commercial guide who supports considering Joe Creek for designation. The stakeholder identified wildlife, fish, and intact wilderness as Joe Creek values. The comment notes that Joe Creek is an important international caribou migration corridor linking the Firth River with points east.

E.5 Junjik River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Junjik River from a commercial guide, an Arctic Village resident, Arctic Village council members, and a Venetie tribal government council member. Three comments support considering the Junjik River for designation, and one comment does not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial recreation and subsistence. In their comments, stakeholders identify the following values with the corresponding frequencies: recreational (1), wildlife (1), and cultural (3). Additionally, stakeholders identify intact wilderness and subsistence as other Junjik River values. Specifically, comments note that the Junjik River should be designated as a wild river due to its variety of resources; concentration of Native allotments, which represent high use areas for subsistence; seasonal habituation of families; and unique water qualities (the Gwich'in believe the Junjik possesses mineral and medicinal health qualities). Comments also note that resources harvested along the river include Dall's sheep, moose, grizzly bear, caribou, wolf, wolverine, red and arctic fox, ground squirrel, ptarmigan, porcupine, grayling, whitefish, and waterfowl.

E.6 Katakturuk River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Katakturuk River from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the river for designation. One

stakeholder indicates that river uses include commercial and non-commercial recreation. Stakeholders identified the following values with the corresponding frequencies: recreational (2), scenic (4), geologic (4), wildlife (4), fish (3), and cultural (2). Additionally, stakeholders identified intact wilderness and intact ecological systems as other Katakturuk River values. Specifically, comments note that the Katakturuk River provides calving and post-calving habitat for the Porcupine caribou herd and the summer range for the Central Arctic herd; and habitat for fish, Dall's sheep, wolves, and grizzly bears. Comments also note that the river offers hiking opportunities and scenic views of mountains and a canyon.

E.7 Middle Fork Chandalar River

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a conservation organization supporting wild and scenic river consideration for the Middle Fork Chandalar. The stakeholder identifies wildlife and scenery as values of the river.

E.8 Okerokovik River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the river for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation. In their comments, stakeholders identify the following values with the corresponding frequencies: recreational (1), scenic (2), geologic (1), wildlife (4), cultural (1), and historic (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Okerokovik River values. Specifically, comments note that the Okerokovik River provides calving and post-calving habitat for the Porcupine caribou herd and contains an aufeis field and a large spring. Comments also noted that wildlife sightings include grizzly bears, wolverine, and a wolf.

E.9 Sadlerochit River

During the 2010 Refuge comment period regarding suitability criteria, the Service received five comments from a commercial guide, a recreational visitor, conservation organizations, and the Native Village of Kaktovik tribal president. Four comments support considering the river for designation. One comment does not clearly mention support for or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (2), scenic (3), geologic (4), wildlife (4), fish (4), cultural (1), and historic (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Sadlerochit river values. Specifically, comments note that: 1) the river contains diverse scenery with the Brooks Range, braided channels, and polygonated tundra; 2) the river contains Fire Creek Canyon, which is a geologic ORV; 3) the river historically was used for reindeer herding; 4) Sadlerochit Springs has been nominated as a National Natural Landmark, is one of the largest perennial springs on the North Slope, and hosts several unique plant and bird species; 5) the springs and river provide important spawning, rearing, and overwintering habitat for Dolly Varden and Arctic grayling; 6) both the river and springs

are important to many other species, including birds and muskoxen; 7) the river can act as a scientific control, which may be important for climate change research; 8) designation is feasible because the river system is almost entirely in Federal ownership; and 9) consideration should be given to connect the river with Neruokpuk Lakes for designation.

E.10 Sagavanirktok River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Sagavanirktok River from a commercial guide, a recreational visitor, and conservation organizations. All four comments support considering the river for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (4), scenic (4), geologic (2), wildlife (4), and fish (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Sagavanirktok River values. Specifically, comments note that the river provides wildlife habitats for caribou, Dall's sheep, and moose; and it is important for general hunting. Comments also note that the river has added recreational value due to its proximity to Dalton Highway.

E.11 Salmon Trout River

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a conservation organization that supports considering the Salmon Trout for designation. The stakeholder identified scenery, wildlife, fish, and history as river values.

E.12 Sheenjek River

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a Venetie tribal government council member noting that the Sheenjek River should have an ORV for subsistence and cultural use. The portion of the Sheenjek that flows through Arctic Refuge is already designated as a wild river. The stakeholder noted that the Sheenjek River is so important that it was seriously considered as the permanent location for what is now Arctic Village.

E.13 Spring Creek

During the 2010 Refuge comment period regarding suitability criteria, the Service received two comments for Spring Creek from a commercial guide and a resident of Arctic Village. One comment supports considering Spring Creek for designation, and one comment does not clearly mention support for or opposition to designation. In their comments, stakeholders identified the following values with the corresponding frequencies: recreational (1), wildlife (1), and cultural (1). Additionally, one stakeholder identified intact wilderness as another value of the creek. One comment notes that Spring Creek has a natural warm spring and four Native allotments along its waterway.

E.14 Tamayariak River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Tamayariak River from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the Tamayariak River for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (1), scenic (1), geologic (1), wildlife (4), and fish (3). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Tamayariak River values. Specifically, comments note that lakes in the Tamayariak River delta contain adequate, clean water important to birds and fish and that the river provides habitat for caribou and muskoxen. Comments also note that the river's tributaries and complex of lakes, wetlands, and mudflats provide outstanding habitat for migratory birds and that the Tamayariak's tributaries should also be considered for designation.

E.15 Turner River

During the 2010 Refuge comment period regarding suitability criteria, the Service received three comments for the Turner River from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the Turner River for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (1), scenic (2), wildlife (3), and cultural (2). Additionally, stakeholders identify intact wilderness and intact ecological systems as additional Turner River values. Specifically, comments note that that the river's proximity to Demarcation Bay and nearby barrier islands makes it especially productive for wildlife and waterfowl. Comments also note that it contains a diversity of landscapes and is highly used by the Porcupine caribou herd during the calving and post-calving seasons.

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Appendix F. Interim Management Prescriptions for Suitable/ Recommended Rivers Pending Designation

F.1 Introduction

Interim management to adequately protect a candidate river's free flow, water quality, outstandingly remarkable values, and preliminary or recommended classification is derived from an agency's existing authorities and subject to existing private rights. The intent of interim protective management is to assure that a river maintains its suitable status while Congress reviews and considers a river for designation. Interagency guidance (IWSRCC 1999) directs land managers to develop interim management prescriptions for suitable rivers. The intent of the prescriptions is to maintain, not enhance, the current condition and values of each suitable river.

The following prescriptions were developed from the Management Guidelines and Policies discussed in Chapter 2 of the Arctic National Wildlife Refuge (Arctic Refuge, Refuge) Revised Comprehensive Conservation Plan (Plan, Revised Plan).

The Kongakut River and the upper portion of the Hulahula River flow through lands designated as Wilderness. The interim management prescriptions for these river segments were drawn from the Refuge's Wilderness Management category. The Atigun and Marsh Fork Canning rivers, and the lower portion of the Hulahula River, flow through lands managed as Minimal Management. The interim prescriptions for these river segments were derived from the Refuge's Minimal Management category.

The two sets of interim management prescriptions are similar whether the river flows wholly or partially within designated Wilderness. The primary difference between the prescriptions is that activities and uses conducted by the Service in designated Wilderness are subject to a minimum requirement analysis (MRA), which is a decision making process to determine if the proposed activities are necessary to administer the area as designated Wilderness and to accomplish the purposes of the Refuge, including the purposes of the Wilderness Act. Terms used in the following table are defined as:

- Allowed – Activity, use, or facility is allowed under existing NEPA analysis, appropriate use findings, Refuge compatibility determinations, and applicable laws and regulations of the Service, other Federal agencies, and the State of Alaska
- May be Allowed – Activity, use, or facility may be allowed subject to site-specific NEPA analysis, an appropriate use finding (when required), a specific Refuge compatibility determination (when required), and compliance with all applicable laws and regulations of the Service, other Federal agencies, and the State of Alaska
- May be authorized – Activity, use, or facility may only be allowed with a required special use permit or other authorization
- Not allowed – Activity, use, or facility is not allowed

Table F-1. Interim Management Prescriptions for Suitable and Recommended Rivers

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
ECOSYSTEM, HABITAT, FISH and WILDLIFE MANAGEMENT		
Collecting Information on and Monitoring Ecosystem Components Data gathering, monitoring, and maintaining a comprehensive database of selected ecosystem components (e.g., plants, animals, fish, water, air)	Allowed (subject to MRA)	Allowed
Research and Management ***By the Service:*** Access and collection of data necessary for management decisions or to further science	Allowed (subject to MRA)	Allowed
By the Alaska Department of Fish and Game: Access and collection of data necessary for management decisions or to further science	Allowed (subject to MRA)	Allowed
By Other Researchers: Access and collection of data necessary for management decisions or to further science	May be authorized (subject to MRA)	May be authorized
Research and Management Facilities May be permanent or temporary structures or camps, including weirs, counting towers, and sonar counters	May be allowed (subject to MRA)	May be allowed
Describing, Locating, and Mapping Habitats Development of quantitative, written, and graphic descriptions of fish and wildlife habitat, including water, food, and shelter components	Allowed (subject to MRA)	Allowed
Habitat Management ***Mechanical Treatment:*** Activities such as cutting, crushing, or mowing of vegetation; water control structures; fencing; artificial nest structures	Not allowed, with exceptions	Not allowed, with exceptions
Chemical Treatment: Use of chemicals to remove or control non-native species	May be allowed (subject to MRA)	May be allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Manual Treatment: Use of hand tools to remove, reduce, or modify hazardous plant fuels or exotic plant species, or to modify habitats (e.g., remove beaver dams)	May be allowed (subject to MRA)	May be allowed
Aquatic Habitat Modifications Activities such as stream bank restoration, passage structures, fish barriers, or removal of obstacles that result in physical modification of aquatic habitats to maintain or restore native fish species	May be allowed (subject to MRA)	May be allowed
Fire Management ***Prescribed Fires:*** Fire ignited by management actions to meet specific management objectives	May be allowed (subject to MRA)	May be allowed
Wildland Fire Use: The planned use of any wildland fire to meet management objectives	May be allowed (subject to MRA)	May be allowed
Fire Suppression: Management actions intended to protect identified values from a fire, extinguish a fire, or confine a fire	Allowed	Allowed
Non-native and Pest Plant Control Monitoring, extirpation, control, removal and/or relocation, and other management practices for pest and non-native plant species	May be allowed (subject to MRA)	May be allowed
Water Quality and Quantity Management Monitoring of water quality and quantity to identify baseline data and for management purposes; includes installation of gauging stations	Allowed (subject to MRA)	Allowed
Reintroduction of Species The reintroduction of native species to restore diversity of native fish, wildlife, and habitats	May be allowed (subject to MRA)	May be allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Fish and Wildlife Control The control, relocation, sterilization, removal, or other management of native species, including predators, to maintain diversity of native fish, wildlife, and habitats; favor other fish or wildlife populations; protect reintroduced, threatened, or endangered species or to restore depleted native populations	May be allowed (subject to MRA)	May be allowed
Non-native Species Management The removal or control of non-native species (including predators)	May be allowed (subject to MRA)	May be allowed
Pest Management and Disease Prevention and Control Relocation or removal of organisms that threaten human health or survival of native fish, wildlife, or plant species; management practices directed at controlling pathogens that threaten fish, wildlife, and people, such as rabies and parasite control	May be allowed (subject to MRA)	May be allowed
Fishery Restoration Actions taken to restore fish access to spawning and rearing habitat, or actions taken to restore populations to historic levels; includes harvest management, escapement goals, habitat restoration, stocking, egg incubation boxes, and lake fertilization	May be allowed (subject to MRA)	May be allowed
Fishery Restoration Facilities Fisheries facilities may be permanent or temporary and may include hatcheries, fish ladders, fish passages, fish barriers, and associated structures	May be authorized (subject to MRA)	May be authorized
Fishery Enhancement Activities applied to a fish stock to supplement numbers of harvestable fish to a level beyond what could be naturally produced based upon a determination or reasonable estimate of historic levels	Not allowed	Not allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Fishery Enhancement Facilities May be permanent or temporary and may include hatcheries, egg incubation boxes, fish ladders, fish passages, fish barriers, and associated structures	Not allowed	Not allowed
Non-native Species Introductions Introduction of species not naturally occurring within the Refuge	Not allowed	Not allowed
SUBSISTENCE		
Fishing, Hunting, Trapping, and Berry Picking The taking of fish, wildlife, and other natural resources for personal consumption, as provided by law	Allowed	Allowed
Collection of House Logs and Firewood Harvesting live standing timber greater than 6 inches diameter at breast height for personal or extended family use	May be authorized	May be authorized
Collection of House Logs and Firewood Harvesting live standing timber between 3 and 6 inches diameter at breast height for personal or extended family use	20 trees or less per year allowed; more than 20 trees per year may be authorized	20 trees or less per year allowed; more than 20 trees per year may be authorized
Collection of Plant Materials Harvesting trees less than 3 inches diameter at breast height, dead standing or downed timber, grass, bark, and other plant materials used for subsistence purposes	Allowed	Allowed
Temporary Facilities – see Temporary Facilities (Public Use)		
Subsistence Cabins – See **Cabins (Public Use)**		

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Access for Subsistence Use of snowmobiles, motorboats, and other means of surface transportation traditionally employed for subsistence purposes	Allowed	Allowed
PUBLIC ACCESS		
Foot	Allowed	Allowed
Dogs and Dog Teams	Allowed	Allowed
Domestic Sheep, Goats, and Camelids (e.g., llamas and alpacas)	Not allowed (requires new regulations for non-commercial uses)	Not allowed (requires new regulations for non-commercial uses)
Other Domestic Animals Includes horses and mules (pelletized weed-free feed required)	Allowed	Allowed
Non-motorized Boats Includes canoes, kayaks, rafts, etc.	Allowed	Allowed
Motorized Use of snowmobiles, motorboats, airplanes, and non-motorized surface transportation methods for traditional activities and for travel to and from villages and home sites	Allowed	Allowed
Highway Vehicles	Not allowed	Not allowed
Off-Road Vehicles (All-Terrain Vehicles) Includes air boats and air-cushion vehicles	Not allowed, with exceptions	Not allowed, with exceptions
Helicopters Includes all rotary-wing aircraft	Not allowed, with exceptions	Not allowed, with exceptions
PUBLIC USE, RECREATION, and OUTREACH ACTIVITIES		
Hunting, Fishing, Wildlife Observation, Wildlife Photography, Interpretation, and Environmental Education Note: All activities listed are priority public uses	Allowed	Allowed
Trapping, Walking, Hiking, Camping at Undeveloped Sites, and Dog Sledding	Allowed	Allowed
General Photography See also COMMERCIAL USES	Allowed	Allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Outreach Activities	Allowed	Allowed
All Weather Roads And associated developments, including bridges	Not allowed	Not allowed
Unimproved Roads Note: While unimproved roads are not allowed in Minimal, Wilderness, and Wild River Management categories, roads may exist; in these management categories, the roads would not be designated for use or maintained	Not allowed	Not allowed
Designated Off-Road Vehicle (All-Terrain Vehicle) Routes and Areas	Not allowed	Not allowed
Roadside Exhibits and Waysides	Not applicable	Not applicable
Constructed and Maintained Landing Areas	Not allowed	Not allowed
Cleared Landing Area	Existing areas allowed to remain, new areas not allowed	May be allowed
Constructed Hiking Trails Includes bridges, boardwalks, trailheads, and related facilities	May be allowed (subject to MRA)	May be allowed
Designated Hiking Routes Unimproved and unmaintained trails; may be designated by signs, cairns, and/or on maps	Allowed	Allowed
Boat Launches and Docks (Public) Designated sites for launching and storing watercraft or tying up a float plane	Not allowed (subject to MRA)	Not allowed
Visitor Contact Facilities A variety of staffed and unstaffed facilities providing information on the Refuge and its resources to the public; facilities range from visitor centers to kiosks and signs	Not allowed (subject to MRA)	Not allowed
Campgrounds Developed sites accessible by highway vehicles	Not applicable	Not applicable

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Hardened Campsites Areas where people can camp that are accessible by vehicle or on foot but where the only facilities provided are for public health and safety and/or resource protection; may include gravel pads for tents, hardened trails, and/or primitive toilets	May be allowed (subject to MRA)	May be allowed
Temporary Facilities Includes tent frames and platforms, caches, and other similar or related facilities; does not include cabins. See also COMMERCIAL USES and Administrative Facilities	Tent platforms left in place more than 12 months may be authorized; all others may be allowed	Tent platforms left in place more than 12 months may be authorized; all others may be allowed
Public Use Cabin A cabin administered by the Service and available for use by the public; intended only for short-term public recreational use and occupancy	Not allowed	Not allowed
Administrative Cabin Any cabin primarily used by Refuge staff or other authorized personnel for the administration of the Refuge	May be allowed (subject to MRA)	May be allowed
Subsistence Cabin Any cabin necessary for health and safety and to provide for the continuation of ongoing subsistence activities; not for recreational use	Existing cabins allowed to remain; new cabins may be authorized	Existing cabins allowed to remain; new cabins may be authorized
Commercial Cabin Any cabin that is used in association with a commercial operation, including but not limited to commercial fishing activities and recreational guiding services	Existing cabins allowed to remain; new cabins not allowed	Existing cabins allowed to remain; new cabins may be authorized
Other Cabins Cabins associated with authorized activities or uses by other government agencies	May be authorized	May be authorized

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Administrative Field Camps Temporary facilities used by Refuge staff and other authorized personnel to support individual (generally) field projects; may include, but not limited to, tent frames and temporary or portable outhouses, shower facilities, storage and/or maintenance facilities, and caches	May be allowed (subject to MRA)	May be allowed
Administrative Field Sites Permanent facilities used by Refuge staff or other authorized personnel for the administration of the Refuge; includes administrative cabins and related structures (see Cabins) and larger multi-facility administrative sites necessary to support ongoing field projects, research, and other management activities; temporary facilities, to meet short-term needs, may supplement the permanent facilities at these sites	Use of existing sites allowed including replacement of existing facilities as necessary; new sites may be allowed (subject to MRA)	Use of existing sites allowed including replacement of existing facilities as necessary; new sites may be allowed
Refuge Administrative Office Complex Facilities necessary to house Refuge operations, outreach, and maintenance activities, and associated infrastructure; includes staff offices, storage, maintenance, parking lots, and other similar facilities	Not allowed	Not allowed
Hazardous Materials Storage Sites, including appropriate structures and equipment, necessary for the storage and transfer of fuels and other hazardous materials necessary for administrative purposes; must be in compliance with all Federal and State requirements	May be allowed (subject to MRA)	May be allowed
Residences Residential housing for Refuge staff and their families; includes single and multi-family dwellings	Not allowed	Not allowed
Bunkhouses Quarters to house temporary and similar employees, volunteers, visitors, and other agency personnel	Not allowed	Not allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Aircraft Hangars and Facilities for Storage of Aircraft	Not allowed	Not allowed
Boat Launches and Docks (Administrative) Designated sites for launching and storing watercraft or tying up a float plane	May be allowed (subject to MRA)	May be allowed
Radio Repeater Sites Sites used to maintain radio communications equipment; may include a location for helicopter access	May be allowed (subject to MRA)	May be allowed
COMMERCIAL ACTIVITIES or USES		
Guiding and Outfitting	May be authorized	May be authorized
Transporting	May be authorized	May be authorized
Fixed-Wing Air Taxis	May be authorized	May be authorized
Helicopter Air Taxis	Not allowed	Not allowed
Bus and Auto Tours	Not applicable	Not applicable
Surface Geological Studies Includes surface rock collecting and geological mapping activities (includes helicopter or fixed-wing access)	May be authorized	May be authorized
Geophysical Exploration and Seismic Studies Examination of subsurface rock formations through devices that set off and record vibrations in the earth; usually involves mechanized surface transportation but may be helicopter supported; includes studies conducted for the Department of the Interior	Not allowed	May be authorized
Core Sampling Using helicopter transported motorized drill rig to extract subsurface rock samples; does not include exploratory wells; includes sampling conducted for Department of the Interior	Not allowed, with exceptions	May be authorized
Other Geophysical Studies Helicopter-supported gravity and magnetic surveys and other minimal impact activities that do not require mechanized surface transportation	Not allowed	May be authorized

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Oil and Gas Leasing Leasing, drilling, and extraction of oil and gas for commercial purposes; includes all associated above and below ground facilities.	Not allowed unless authorized by Congress under ANILCA 1003	Not allowed unless authorized by Congress under ANILCA 1003
Sale of Sand, Gravel, and Other Common Variety Minerals Extraction of sand, gravel, and other saleable minerals for commercial purposes; includes commercial use by Federal, State, and local agencies	Not allowed	Not allowed
Other Mineral Leasing Includes the extraction of coal, geothermal resources, potassium, sodium, phosphate, sulfur, or other leasable minerals for commercial purposes; exceptions are available for cases of national need	Not allowed	Not allowed
Mining of Hardrock Minerals Development of valid (pre-ANILCA) mining claims (lode, placer, and mill sites) on Refuge lands for the purpose of extracting hardrock minerals (there are no valid claims on the Refuge)	Not allowed	Not allowed
Commercial Filming, Videotaping, and Audio taping	May be authorized	May be authorized
Grazing	Not allowed	Not allowed
Agriculture (Commercial)	Not allowed	Not allowed
Commercial Fishery Support Facilities At or below 1979 levels	Not applicable	Not applicable
Commercial Fishery Support Facilities Above 1979 levels	Not allowed	May be authorized
Seafood Processing	Not allowed	Not allowed
Aquaculture and Mariculture Support Facilities	Not allowed	Not allowed
Commercial Timber and Firewood Harvest	Not allowed	May be authorized
Commercial Gathering of Other Resources	Not allowed	Not allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Transportation and Utility Systems Includes transmission lines, pipelines, telephone and electrical power lines, oil and gas pipelines, communication systems, roads, landing areas, and other necessary related facilities; does not include facilities associated with on-Refuge oil and gas development	May be authorized by Congress	May be authorized
Navigation Aids and Other Facilities Includes air and water navigation aids and related facilities; communication sites and related facilities; facilities for national defense and related air and/or water navigation aids; and facilities for weather, climate, and fisheries research and monitoring; includes both private and government facilities	May be authorized (subject to MRA)	May be authorized
Major Hydroelectric Power Development Hydroelectric dams creating a change in stream flow with an elevation change and reservoir behind the dam	Not allowed	Not allowed
Small Hydroelectric Power Development Hydroelectric generation by low-head or in-stream structures that do not change the flow of the river	Not allowed	Not allowed

F.2 References

Interagency Wild and Scenic Rivers Coordinating Council. 1999. The wild and scenic river study process. December 1999 Technical Report. Washington, D.C., USA.

Appendix G. Existing Protections

G.1 Introduction

The U.S. Fish and Wildlife Service (Service) management and protection of refuge resources throughout the National Wildlife Refuge System (Refuge System) are influenced by a wide array of laws, treaties, and executive orders and the corresponding regulations and policies used to implement them. Among the most important are: the Refuge System Administration Act, as amended by the Refuge System Improvement Act; the Refuge Recreation Act; the Migratory Bird Treaty Act; and the Endangered Species Act (see Section G.3 of this appendix for more information). Following are some overarching ways that the values and resources of Arctic National Wildlife Refuge (Refuge, Arctic Refuge) are currently protected.

G.2 Laws and Policies Pertaining to Arctic Refuge

G.2.1 Alaska National Interest Lands Conservation Act

For national wildlife refuges in Alaska, the Alaska National Interest Lands Conservation Act (ANILCA), as amended, provides key management direction. In 1980, ANILCA established Federal public lands across Alaska, and the Arctic National Wildlife Range (Arctic Range) was incorporated into the newly created Arctic National Wildlife Refuge. The establishing orders under ANILCA outline the purposes for Arctic Refuge and require that these purposes be protected. ANILCA Section 303(B) states:

> *"The purposes for which the Arctic National Wildlife Refuge is established and shall be managed include-*
>
> *"(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char [note in 2001- now mostly called Dolly Varden] and grayling;*
>
> *"(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
>
> *"(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
>
> *"(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge."*

Additional ANILCA provisions authorize studies and programs related to wildlife and other natural resources, subsistence opportunities, recreational activities, and economic uses. The original Arctic Range was established in 1960 *"for the purpose of preserving unique wildlife, wilderness and recreational values."* These purposes still attach to those lands and waters that were part of the original Arctic Range, to the extent they are not inconsistent with ANILCA.

G.2.2 Regulations

All refuges are regulated by the Code of Federal Regulations. Title 50 part 36 of the Code of Federal Regulations, General Refuge Regulations, applies specifically to Alaska Refuges. Currently, there are no Arctic Refuge specific regulations. All applicable State and Federal laws apply on Arctic Refuge. The State hunting regulations apply to the general harvest of fish and wildlife, and the Federal subsistence hunting regulations apply to the harvest of fish and wildlife by federally qualified subsistence users.

G.2.3 Special Use Permits

Most visitors access the Refuge using the commercial services of a guide and/or commercial air operator. Conducting a commercial activity on the Refuge requires a special use permit that contains activity-specific conditions (including potential temporal and geographic restrictions). Before issuing a permit, the Refuge manager must determine that the proposed activity is compatible, which is done through a compatibility determination and a Section 810 Analysis. Except for hunting guides, there are no limits to the number of clients an operator may service. However, recreation guides may only have one guided float trip on a river at any given time. Guided float trips are limited to 10 people, and guided land-based activities are limited to 7 people (both limits include guides).

G.2.4 Comprehensive Conservation Plans

Comprehensive conservation plans for Alaska refuges describe broad management categories (Intensive, Moderate, Minimal, Wilderness, and Wild River Management) to outline the types of activities that would be allowed in different areas across a refuge. Although five management categories exist, only the least intrusive are administratively and legally applied on Arctic Refuge: Minimal, Wilderness, and Wild River management. Minimal Management applies to all lands within the Refuge that are not designated Wilderness or are within a designated wild river corridor. Wilderness Management applies to all designated Wilderness areas in the Refuge. Wild River Management applies to the lands and waters within the Refuge's three wild river corridors (Ivishak, Sheenjek, and Wind rivers). Table G-1 outlines the differences between Minimal and Wilderness Management.

Table G-1. Key differences between Minimal and Wilderness Management categories[1]

Topic	Minimal Management	Wilderness Management
Management of Area	Managed under ANILCA and other laws and policies	Managed under the Wilderness Act, the exceptions provided by ANILCA, the Service's Wilderness Stewardship Policy, and other laws and policies
Purposes	Managed to achieve establishing purposes of the Refuge	Managed to achieve establishing purposes of the Refuge and Wilderness Act purposes
Refuge Management Activities	No Minimum Requirement Analysis (MRA) required Mechanized and motorized equipment may be allowed when overall impacts are temporary or its use furthers management goals.	Minimum Requirement Analysis (MRA) required for all Refuge management activities Mechanized and motorized equipment would be subject to an MRA or where ANILCA provides exceptions
Public Access	Cleared aircraft landing areas may be allowed [2]	Existing cleared aircraft landing areas allowed to remain, but new cleared areas not allowed
Public Use, Recreation, and Outreach Activities	New commercial cabins may be authorized[3]	New commercial cabins are not allowed
Public Use of Motorized Generators and Water Pumps	May be allowed	Not allowed
Commercial Activities or Uses	Geophysical exploration and seismic studies, core sampling, and other geophysical studies may be authorized outside the coastal plain (1002 Area) Transportation and utility systems may be authorized by the Service through a Plan amendment	Geophysical exploration and seismic studies, core sampling, and other geophysical studies not allowed Transportation and utility systems may be authorized subject to Presidential and congressional approval

[1] See Revised Plan Chapter 2, Section 2.3.3 Minimal Management, Section 2.3.4 Wilderness Management, and Section 2.4.20 Management of Designated Wilderness

[2] May be allowed: Activity, use, or facility may be allowed subject to site-specific NEPA analysis, an appropriate use finding (when required), a specific Refuge compatibility determination (when required), and compliance with all applicable laws and regulations of the Service, other Federal agencies, and the State.

[3] May be authorized: Activity, use, or facility may only be allowed with a required special use permit or other authorization.

G.3 Laws and Executive Orders

The following list describes some of the laws and executive orders under which the Service operates. This list is not exhaustive; rather, it is meant to represent the types of laws and regulations that currently protect Arctic Refuge's river values. Items are listed in chronologic order (oldest to newest):

Rivers and Harbor Act (1899) (33 U.S.C. 403): Section 10 of this act requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States.

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a Federal responsibility. This act enables the setting of seasons and other regulations, including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Fish and Wildlife Coordination Act (1934), as amended (1958): Requires that the Service and State fish and wildlife agencies be consulted whenever water is to be impounded, diverted, or modified under a Federal permit or license. The Service and State agency recommend measures to prevent the loss of biological resources, or to mitigate or compensate for the damage. The project proponent must take biological resource values into account and adopt justifiable protection measures to obtain maximum overall project benefits. A 1958 amendment added provisions to recognize the vital contribution of wildlife resources to the nation and to require equal consideration and coordination of wildlife conservation with other water resources development programs. It also authorized the Secretary of Interior to provide public fishing areas and accept donations of lands and funds.

Migratory Bird Hunting and Conservation Stamp Act (1934): Requires every waterfowl hunter 16 years of age or older to carry a stamp; the act also earmarks proceeds of Duck Stamps to buy or lease waterfowl habitat. A 1958 amendment authorizes the acquisition of small wetland and pothole areas to be designated as 'Waterfowl Production Areas,' which may be acquired without the limitations and requirements of the Migratory Bird Conservation Act.

Historic Sites, Buildings, and Antiquities Act (1935) as amended: Declares it a national policy to preserve historic sites and objects of national significance, including those located on refuges. Provides procedures for designation, acquisition, administration, and protection of such sites.

The Bald and Golden Eagle Protection Act of 1940 (16USC 668 et seq.): Provides protection for bald and golden eagles.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Fish and Wildlife Coordination Act of 1958: Requires equal consideration and coordination of wildlife conservation with other water resource development programs.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Wilderness Act (1964) as amended: Directed the Secretary of Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System.

National Wildlife Refuge System Administration Act (1966) 16 USC 668dd-668ee: Provides for administration, management, and planning for national wildlife refuges.

National Historic Preservation Act (1966) as amended: Establishes as policy that the Federal government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

The Clean Water Act of 1972, Section 404 (33 USC1344 et seq.), as amended: Provides for protection of water quality.

Endangered Species Act (1973): Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Clean Water Act (1977): Requires consultation with the U.S. Army Corps of Engineers for wetland modifications (404 permits) or work in, over, or under navigable waters (402 permits).

Surface Mining Control and Reclamation Act (1977) as amended (Public Law 95- 87): Regulates surface mining activities and reclamation of coal-mined lands. Further regulates the coal industry by designating certain areas as unsuitable for coal mining operations.

Executive Order No. 11593, Protection and Enhancement of the Cultural Environment: States that if the Service proposes any development activities that may affect archaeological or historical sites, the Service will consult with Federal and State historic preservation officers to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.

Executive Order 11988, Floodplain Management (1977): Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 11990, Protection of Wetlands (1977): Order directs Federal agencies to (1) minimize destruction, loss, or degradation of wetlands, and (2) preserve and enhance the natural and beneficial values of wetlands when a practical alternative exists.

Executive Order 12372, (Intergovernmental Review of Federal Programs): Directs the Service to send copies of the environmental assessment to State planning agencies for review.

Fish and Wildlife Improvement Act (1978): Improves the administration of fish and wildlife programs and amends several earlier laws including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf

of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out a volunteer program.

Archaeological Resources Protection Act (1979) as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (PL 96-510; 42 USC 9601, et seq.): Provides mechanisms for hazardous waste cleanup.

Fish and Wildlife Conservation Act of 1980 (16 USC 661-667e) as amended: Requires the Fish and Wildlife Service to monitor non-game bird species, identify species of management concern, and implement conservation measures to preclude the need for listing under the Endangered Species Act.

Emergency Wetlands Resources Act (1986): Promotes the conservation of migratory waterfowl and offsets or prevents the serious loss of wetlands by the acquisition of wetlands and other essential habitats.

Oil Pollution Act of 1990 (PL 101-380; 33 USC 2701, et seq.): Provides oil pollution policies and protections.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species, and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Native American Graves Protection and Repatriation Act (1990): Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

Americans with Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the Refuge System.

Executive Order 13007, Indian Sacred Sites (1996): Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

National Wildlife Refuge System Improvement Act (1997) PL 105-57: This act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966. Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge, provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); establishes a formal process for determining compatibility; establishes the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a comprehensive conservation plan for each refuge by the year 2012.

National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act (1998): Amends the Fish and Wildlife Act of 1956 to promote volunteer programs and community partnerships for the benefit of national wildlife refuges and for other purposes.

Executive Order 13112, Invasive Species (1999): Directs Federal agencies to prevent the introduction of invasive species, control populations of such species, monitor invasive species populations, provide for restoration of native species and habitat conditions in ecosystems that have been invaded, conduct research, promote public education on invasive species and the means to address them, and consult with the Invasive Species Council.

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000: Provides a mechanism for establishing regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, 2001: Instructs Federal agencies to conserve migratory birds by several means, including the incorporation of strategies and recommendation found in Partners in Flight Bird Conservation plans, the North American Waterfowl Plan, the North American Waterbird Plan, and the United States Shorebird Conservation Plan, into agency management plan and guidance documents.

Director's Order Number 132 (January 18, 2001): National Wildlife Refuge System Mission, Goals, and Purposes. This reiterates the mission of the Refuge System and how it relates to the mission of the Service. The order also provides guidance on the use of goals and purposes in the administration and management of the system.

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Appendix H. List of Contributors

While the primary wild and scenic river review team consisted of six people (see Table 1-1 of this review), many people contributed to the project. The following table identifies key contributors and their roles.

Table H-1. List of contributors to the wild and scenic river review

Name	Title	Agency	Contribution
Michelle Bailey	Outdoor Recreation Planner	BLM	WSR* suitability, stakeholder outreach
Heather Bartlett	Law Enforcement Officer/Pilot	Service	Law enforcement, public use, permit administration
			WSR Team Leader
Alan Brackney	Wildlife Biologist/GIS Specialist	Service	Wildlife biologist, GIS
			WSR Team Member; maps
Greta Burkhart	Aquatic Ecologist	Service	Fish resources
Bret Christensen	Navigable Waters Specialist	Service	Water rights, jurisdictions, navigability
Debra Corbett	Regional Archaeologist	Service	Cultural and historical resources
Donita Cotter	National Wild and Scenic Rivers Coordinator	Service	WSR policy and guidance
			WSR Team Assistant Leader
Judy Culver	Outdoor Recreation Planner	BLM	WSR suitability
Scott McGee	Cartographer	Service	Land status and GIS; maps
Meghan Murphy	Visitor Services Specialist	Service	Comments summary
Jennifer Reed	Park Ranger/Visitor Services Specialist	Service	Public use, interpretation, permit administration, education
			WSR Team Member
Sharon Seim	Natural Resource Planner	Service	Planning process, NEPA coordination
			WSR Team Member
Richard Voss	Arctic National Wildlife Refuge Manager	Service	Refuge Manager

*WSR = Wild and Scenic River