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

BLM-Alaska ACEC HMP
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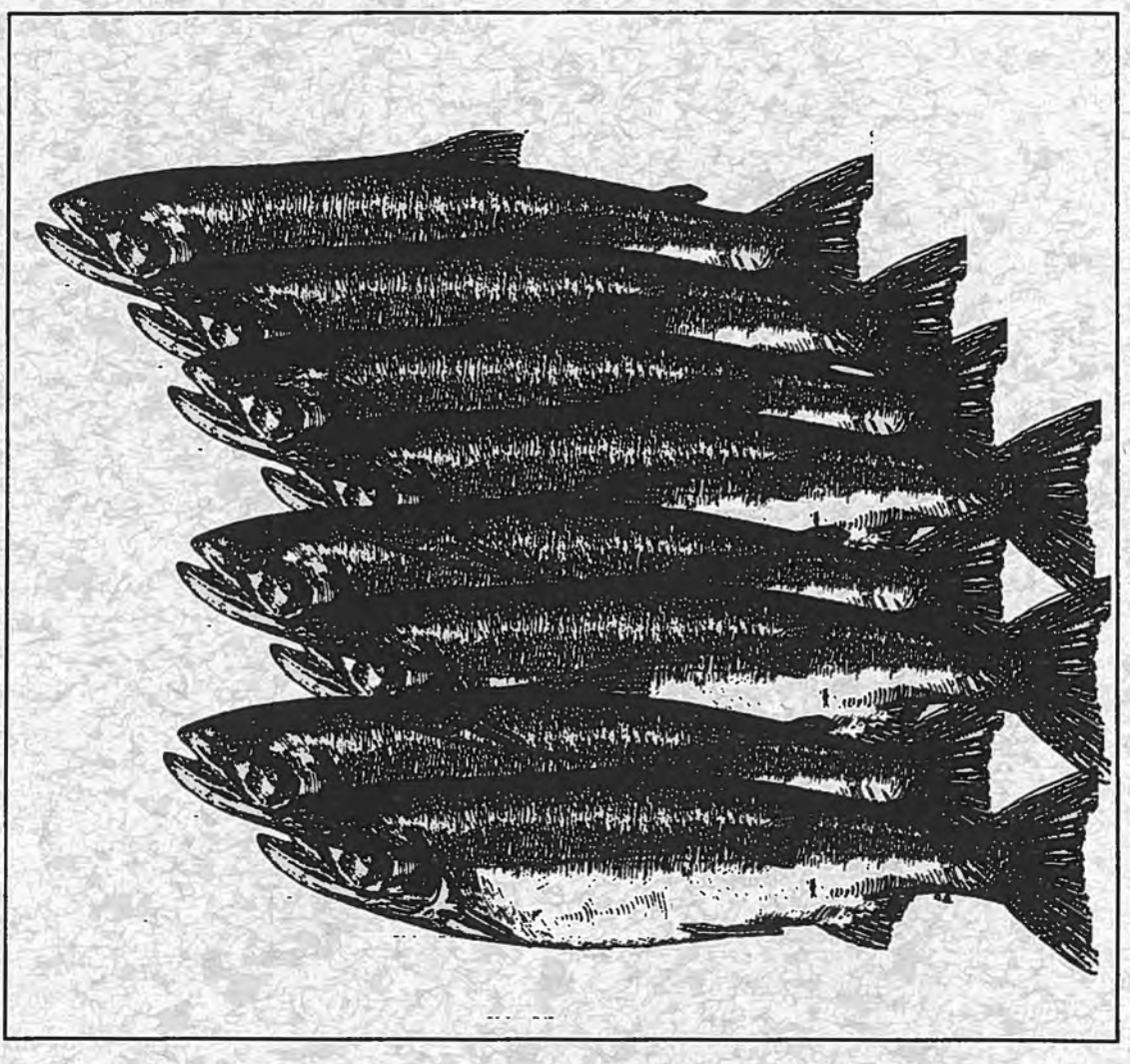
Kobuk District Office
1150 University Avenue
Fairbanks, Alaska 99709

Indian River ACEC Aquatic Habitat Management Plan



Indian River ACEC Aquatic Habitat Management Plan

Prepared by

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Bureau of Land Management
Kobuk District Office
Fairbanks, Alaska 99709

CONCURRENCE AND APPROVAL

This Habitat Management Plan, as written, meets with our concurrence and approval.

Helen M Hankins 3-21-95

Helen M. Hankins Date
Kobuk District Manager
Bureau of Land Management

Tom Kron 4/18/95

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Regional Supervisor
Commercial Fisheries Division
Alaska Department of Fish and Game

for Robert F. McLean, Acting 4-4-95

Alvin G. Ott Date
Regional Supervisor
Habitat Division
Alaska Department of Fish and Game

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CHECKLIST FOR PREPARATION AND REVIEW OF HABITAT MANAGEMENT PLANS

State: Alaska
District: Kobuk
Resource Area:
HMP Name and Number: Indian River ACEC BLM/AK/ST-94/019/7200+070
HMP Prepared by: Kretsinger and Will

REVIEW CHECKLIST	SURNAME	DATE
1. Master Memorandum of Understanding, Sikes Act Agreement and/or Supplemental with State Agency.	C. Kretsinger	2/15/95
2. Preliminary meeting(s) with State Agency (or other appropriate cooperators) to jointly discuss HMP objectives.	See Consultation & Review; p. 15	
3. Endangered Species Act Compliance completed by	AA Norkin	2/15/95
4. Review by District/Resource Area Specialists		
Range	N/A	
Wild Horse and Burro	N/A	
Watershed	[illegible]	2/21/95
Forestry	L. Gill	2/16/95
Fisheries/Botanist/Wildlife Biologist	C. Kretsinger / AA Norkin	2/15/95
Lands	[illegible]	2/15/95
Minerals	[illegible]	2/21/95
Recreation	L. Gill	2/16/95
Wilderness/ACEC	L. Gill	2/16/95
Cultural	[illegible]	2/15/95
Visual	N/A	
Environmental Coordinator (reviews EAs)	[illegible]	2/15/95
Support(Chief of Operations/Fire Management)	[illegible]	4/15/95
Subsistence	AA Norkin	2/15/95
5. Reviewed by Area Manager	N/A	
6. Reviewed by Chief of Resource Management	See case file FF088527 [illegible]	~~7-19-93~~ 2/15/95
7. Draft HMP and EA reviewed by State Agency authorized officer (or other cooperators).	See case file FF088527	11-5-93
8. Final review (if appropriate) by State Director	N/A	
9. Reviewed and approved by District Manager	H Hankins	3-21-95
10. Approved by State Agency authorized officer	See Concurrence & Approval; p. ii	
Remarks:		

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(July 1981)
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ABSTRACT

The Central Yukon Resource Management Plan and Record of Decision (Prescription 9) designated 61% of land within the Indian River watershed as an Area of Critical Environmental Concern (ACEC). The primary purpose of this special designation was to identify sensitive and valuable aquatic resources that require special management. The ACEC contains chum salmon (*Oncorhynchus keta*) and chinook salmon (*O. tshawytscha*) production habitats that could potentially be impacted by land-use activities. This aquatic Habitat Management Plan describes actions to establish baseline data, sets objectives, and establishes management guidelines for the maintenance and protection of this salmon production habitat.

INTRODUCTION

Background

One-million-eight-hundred-thousand acres of land within the Yukon River Basin were designated as an Area of Critical Environmental Concern (ACEC; Appendix A) for fishery values by the Central Yukon Resource Management Plan (BLM 1986a). One management unit within this block of designated land is known as the Indian River ACEC which is located within Alaska's interior region, approximately 12 miles east of the village of Hughes (Figure 1). This ACEC consists of 61% of the Indian River watershed and is one of many riverine systems within the Yukon River Basin that provide production habitat for chum and chinook salmon.

There are over 65 stocks of chum salmon in the Yukon River Basin, and international attention is being focused on perpetuating the ability of the stocks and habitats within the basin to sustain production. The Yukon River Salmon Treaty, currently under negotiation between the United States (U.S.) and Canada, will be a major change agent affecting management in the Yukon Basin. Other impacting factors include economic and nutritional demands of a growing population of consumers, and environmental and political interest in both protecting and augmenting natural wild salmon runs. The BLM will be directly involved as a major land manager in the basin. As a component of the Yukon Basin, the Indian River ACEC will require special management attention in order to protect this chum and chinook salmon production area from the potential impacts of placer mining and other surface disturbing activities.

The purpose of this Sikes Act HMP is to identify and approve specific management objectives for the protection of salmon production habitats within the Indian River ACEC. This HMP is being prepared and implemented jointly with the Alaska Department of Fish and Game (ADF&G) under the authority of the Sikes Act, Title II, Public Law 93-452 (October 18,1974) and the Master Memorandum of Understanding between the BLM and ADF&G (AK-950-MU3-11, August 3,1983).

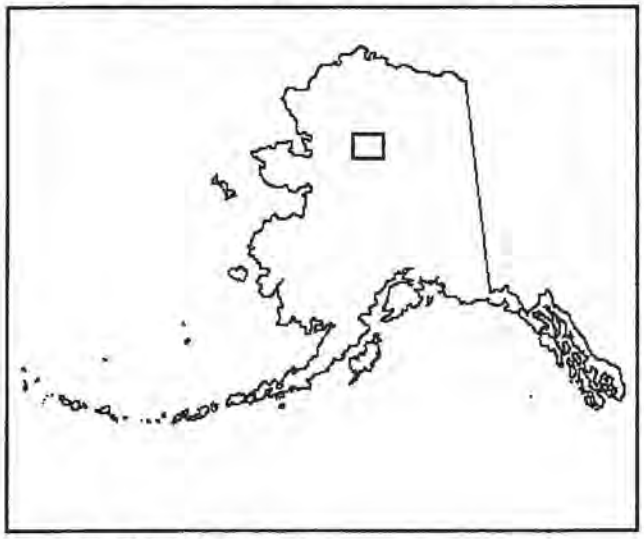

Figure 1. ACEC location

Goal

The goal of this HMP is to ensure that the aquatic ecosystem within the Indian River ACEC can sustain an estimated annual production potential of 3.1 million chum salmon eggs and 117,000 chinook salmon eggs, worth $223,000 over a ten-year period (see Cost/Benefit Analysis). Providing for a sustained production of salmon requires that habitats used for spawning and rearing (production habitat) are protected and maintained in good to excellent condition. Condition and trend of salmon production habitat will also be used as an indicator of the overall health and condition of the aquatic ecosystem within the ACEC. Maintenance of a healthy aquatic ecosystem will provide benefit to other resources, including a significant grayling fishery, moose, bear, and non-game bird populations.

The goal of this plan is directly related to the Yukon River Salmon Treaty being negotiated between the U.S. and Canada. Under this proposed treaty, salmon production in the U.S. must be maintained in order to deliver Canadian-origin salmon to the border without significantly disrupting Alaska's commercial and subsistence fisheries. The Department of the Interior and the ADF&G are currently engaged in developing a management strategy for the U.S. side of the Yukon River Basin.

Management Constraints

Approximately 61% (163,632 acres) of the land within the Indian River watershed was included in the ACEC in order to protect salmon production habitat. However, the protection and optimal management of this habitat can be significantly affected by three factors: 1) the entire ACEC is currently open to mineral location under the General Mining Laws (Appendix B), 2) four federal mining claims, encompassing 160 acres, lie within the upper Indian River watershed, and 3) the Indian River watershed is under multiple ownership and managment authority. The U.S. Air Force (USAF) has management authority over 2% (6,700 acres), U.S Fish and Wildlife Service (USFWS) 11% (28,620 acres), Doyon Limited 18% (47,618 acres), K'oyitl'ots'ina Limited 1% (1,650 acres), and BLM 68% (183,362 acres). As of December 1992, approximately 18% of the BLM land

(33,820 acres) within the Indian River watershed has been Native and State selected.

Management Potential

The Central Yukon Resource Management Plan (CYP) proposed a land withdrawal along approximately 17 miles of Indian River (Figure 2). Under the proposed land withdrawal, new mineral entry and location under the 1872 Mining Law would not be allowed nor would withdrawn land be open to Federal Land Policy and Management Act (FLPMA) leases and sales. The withdrawal would include the streambed and a 300-foot setback from both sides of the stream's mean high water line on Indian River in T6 and 7N, R25 and 26E, Kateel River Meridian. The withdrawal would not apply to valid and existing rights, however, no mining claims exist in areas proposed for withdrawal at this time. Future conflicts between surface disturbing activities and fishery resources could be avoided by amending the CYP land withdrawals to include any newly-documented salmon production habitat identified through future inventory efforts.

Eight issues were identified as having the potential to influence the management of salmon production habitat within the ACEC. The issues are: access, leases and permits, fire suppression, forestry, mineral development, subsistence, navigability, and the Yukon River Salmon Treaty. For the purposes of this plan, salmon production habitat is defined as the physical and chemical properties required by salmon during their life cycle from egg deposition to the out-migration of the fry. This takes into consideration, but is not limited to, water quality, stream discharge, substrate composition, stream-channel geometry, and the watershed plant community including riparian vegetation. These factors all play a role in determining the suitability of the aquatic environment to salmon.

The following objectives were designed to guide the management of lands within the ACEC, as well as fulfill the goal and intent of the Central Yukon Plan ACEC designation.

Objectives

1. Maintain the capability of aquatic habitat within the ACEC to sustain the annual production potential of 3.1 million chum salmon eggs and 117,000 chinook salmon eggs.

2. Maintain or restore the natural substrate composition, stream type and geometry (as defined by Rosgen 1994), on all streams within the ACEC.

3. Maintain the minimum stream discharge necessary for the maintenance of aquatic life, natural stream channel configuration, and habitat composition on all streams within the ACEC.

4. Maintain, restore or improve the existing stream bank stability, riparian cover, woody debris and other instream cover components on all streams within the ACEC.

5. Maintain the water quality within the ACEC to standards established by the Alaska Department of Environmental Conservation (18 AAC 70) for fresh-water use classes (1)(A), (1)(B), and (1)(C).

Planned actions to accomplish these objectives are described later in the document. Values for objectives two through four will be determined following an aquatic inventory of the ACEC. At that time, objectives within this plan will be amended to include these values.

ECOSYSTEM DESCRIPTION

The Indian River ACEC is located in the east-central portion of the Hughes subdistrict of the Central Yukon Planning Area, approximately 12 miles east of the village of Hughes. The ACEC consists of the upper Indian River watershed, which originates in the Indian River Uplands and flows in a rough semicircle from its headwaters to the east, then south where it is joined by the westward-draining Calamity Creek and the northward-draining Big Creek, and then to the west. The following ecosystem description is derived from the Final Environmental Impact Statement for the Central Yukon Planning Area (BLM 1986b) unless stated otherwise.

Vegetation

Elevations range from 500 feet along the Indian River to 4,200-foot Indian Mountain in the northeastern corner of the ACEC. Most of the ACEC consists of the three drainages and their tributaries flowing through low, gentle ridges having rounded summits 1,500 to 2,000 feet in altitude. A few low areas marked by thaw lakes exist in the watershed along the northern border of the ACEC. Well-drained, hilly, or southerly-exposed sites are forested with a mixture of white spruce (*Picea glauca*) and deciduous species such as paper birch (*Betula papyrifera*). Lowlands, poorly-drained sites and gentle slopes are dominated by open black spruce (*P. mariana*) forest. On the depositing slopes of smaller meandering streams, the forest is largely white spruce, quaking aspen (*Populus tremuloides*), willows (*Salix* spp.), and balsam poplar (*P. balsamifera*). Treeline is about 1,000 feet on north-facing slopes and 1,500 feet on south-facing slopes. Elevations greater than 2,000 feet are generally tundra.

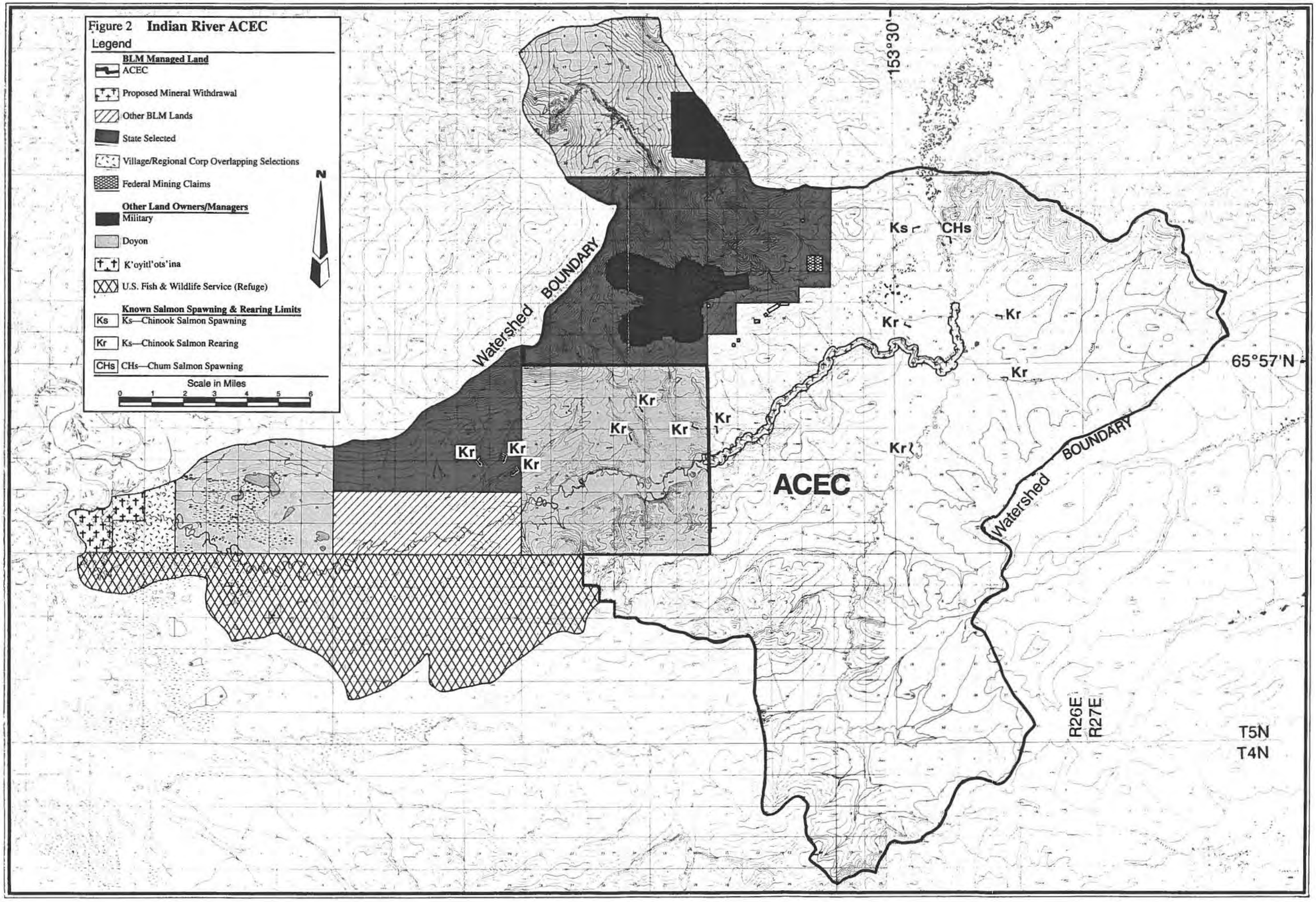
Figure 2 Indian River ACEC
Legend
BLM Managed Land
ACEC
Proposed Mineral Withdrawal
Other BLM Lands
State Selected
Village/Regional Corp Overlapping Selections
Federal Mining Claims
Other Land Owners/Managers
Military
Doyon
K'oyitl'ots'ina
U.S. Fish & Wildlife Service (Refuge)
Known Salmon Spawning & Rearing Limits
Ks Ks—Chinook Salmon Spawning
Kr Ks—Chinook Salmon Rearing
CHs CHs—Chum Salmon Spawning
Scale in Miles
0 1 2 3 4 5 6
N
153°30'
65°57'N
Watershed BOUNDARY
Watershed BOUNDARY
ACEC
Ks
CHs
Kr
R26E
R27E
T5N
T4N

There are no known threatened, endangered, or candidate species of plants within the ACEC.

Climate

Climatological records collected at an elevation of 1,220 feet for the period 1966-1984 indicate temperature extremes ranged between -65° and 89°F, with January minimums averaging -13.3°F and July maximums averaging 67.1°F. Average monthly summer (June–Sept.) temperatures ranged from 40.8° to 57.8°F and average monthly winter (Nov.–April) temperatures ranged from -6.7° to 21.9°F (Leslie 1986). Total mean monthly precipitation was 18.65 inches, which included about 113 inches of snow (Arctic Environmental Information and Data Center, University of Alaska Climatological Summary for Indian Mountain).

Geology

The ACEC lies within the Hughes mining district. Within this district the mountains are underlain mainly by Jurassic and Cretaceous marine and nonmarine clastic and volcanic rocks that were intruded by large granitic and monzonitic plutons and small bodies of latitic hypabyssal rock of Late Cretaceous age. Lowlands near the major streams are underlain by thick alluvial and glaciofluvial deposits mantled by eolian deposits. Except for a permafrost-free area in the Zane Hills west of the Hogatza River, the district is underlain by continuous permafrost.

The only lode deposits known in the district are near Indian Mountain, where small amounts of zinc and copper sulfides occur near two granitic stocks (Miller and Ferrians 1968 in Cobb 1973). Other deposits documented in the Indian River and Utopia Creek area are molybdenite, tetrahedrite, galena, and sphalerite. Most of the gold that has been found in the district came from streams that drain contact zones around granitic plutons near Indian Mountain and in the southern Zane Hills. Utopia Creek and the upper Indian River were the most important sites within the Hughes Mining District until a large dredge was installed on Bear Creek (near Hogatza) in 1957 (Cobb 1973).

Soils

The dominant soil is Histic Pergelic Cryaquepts, loamy, nearly level to rolling-Pergelic Cryaquepts, very gravely, hilly to steep association below 2,000 feet. On ridges and hills these soils consist of very gravely material weathered from local rock type and the soils in valleys and low slopes are generally formed in loamy colluvium. These soils have severe limitations for any intensive use or development.

Cultural

The ACEC is within an area utilized historically and ethnographically by Koyukon Athapaskan people, as well as both Kovagmiut Eskimo people from the upper Kobuk and Nunamiut people from the Anaktuvuk Pass region. Caribou, fish, and volcanic material for tools were the primary attractions of the area to these various groups. Archeological sites, including villages, hunting and fishing sites and quarry sites, indicate prehistoric use of the area. In addition, the area provides a network of routes via rivers and low passes, which allowed for the establishment of an important trading network for the exchange of coastal and interior resources and later trade goods.

Several historic sites are known to occur within the ACEC. These are surface lithic scatters located on fairly high, open topographic features that command a good view of the surrounding countryside. Several of the known sites within the ACEC (118 acres) have been selected by the Doyon Limited Regional Corporation.

Wildlife

The ACEC falls within the general range of many species of wildlife. Some of the more common mammals include: moose (*Alces alces*), caribou (*Rangifer tarandus*), grizzly bear (*Ursus arctos*), black bear (*Ursus americanus*), wolf (*Canis lupus*), beaver (*Castor canadensis*), otter (*Lutra canadensis*), fox (*Vulpes vulpes*), and marten (*Martes americana*). Spruce grouse (*Canachites canadensis*), ruffed grouse (*Bonasa umbellus*), sharp-tailed grouse (*Pedioecetes phasianellus*), and rock ptarmigan (*Lagopus lagopus*) also inhabit the area. Many passerine birds and a few raptor species may be found within the ACEC. Some examples of these are: raven (*Corvus corax*), gray jay (*Perisoreus canadensis*), common redpoll (*Carduelis flammea*), white-crowned sparrow (*Zonotrichia leucophrys*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus*), bald eagle (*Haliaeetus leucocephalus*), and osprey (*Pandion haliaetus*). Crucial habitats have not been identified. There are no known threatened, endangered, or candidate animal species within the ACEC.

Fisheries

The ACEC falls within the general range of several species of fish including: arctic grayling (*Thymallus arcticus*), northern pike (*Esox lucius*), longnose sucker (*Catostomus catostomus*), slimy sculpin (*Cottus cognatus*), Dolly Varden (*Salvelinus malma*), and whitefish (Coregonid spp.). In addition, Indian River and its tributaries are known producers of both chum salmon (*Oncorhynchus keta*) and chinook salmon (*O. tshawytscha*).

Table 1. Summer chum and chinook salmon aerial escapement surveys for the Indian River, 1960-1983 (Barton 1984 and 1991).

Date	Live Chum	Dead Chum	Live Chinook	Dead Chinook
7/11/60	30	–	–	–
7/25/60	1,620	500	–	–
8/11/77a	7	50	–	–
8/15/78b	0	numerous	0	several
7/18/80	4,420	0	38	0
8/06/82c	0	300	4	0
7/13/83d	801	35	93	0
9/26/90e	781	–	–	–

a - Surveyed to late in season and weather marginal.

b - Numerous chinook salmon redds also observed.

c - Lower eight miles too turbid for survey, surveyed too late.

d - Water extremely dark, very poor visibility.

e - Poor survey rating.

Life History

Chum Salmon. Two distinct runs of chum salmon occur in the Yukon River drainage. Those fish destined for the Indian River are summer-run fish, which return to the Yukon River in early June, making it to the spawning grounds by early July. The peak of spawning occurs in the second half of July, and most of the spawning is completed by early August (Barton 1984).

Chum salmon within the Yukon River drainage return to their natal streams to spawn at ages ranging from three to six years, with four-year-olds predominating (Regnart et al. 1966 from Groot and Margolis 1991). Following spawning, eggs incubate in the stream gravels for several months. In the more southerly parts of the range, hatching occurs from December to February, with the fry emerging from 60 to 90 days later (Morrow 1980). The fry migrate to the ocean during their first year. In the Yukon River drainage, downstream migration occurs between spring ice break-up and fall, with the principal out migration taking place in June and July (Martin et al. 1986 from Groot and Margolis 1991).

Chinook Salmon. The predominant age of adult chinook salmon returning to the Yukon River is six years (Brannian 1990; McBride et al. 1983). The fish enter the river in early June and reach the spawning grounds by July. Spawning takes place from July to September (Barton 1984). The eggs hatch about 12 weeks after spawning and the fry emerge from the gravels 2 to 3 weeks later, after which the fry may remain in fresh water from one to three years (Morrow 1980).

Abundance

The Alaska Department of Fish and Game conducted aerial escapement counts of both chum and chinook salmon within the Indian River from 1960 to 1990 and continues to do so as their budget allows, however, this stream is not one of their priority escapement index streams. The aerial counts are used to estimate spawner returns in the Koyukuk River drainage and eventually the data set will be of sufficient size to establish escapement objectives for summer chum and chinook salmon in the Indian River (L. H. Barton, ADF&G, pers. comm.).

Chum salmon. Using the aerial count data presented in Table 1, it is possible to make some gross estimates of escapement for the ACEC. For chum salmon, the average of the two complete counts conducted on July 25, 1960 and July 18, 1980 give a value of 3,270 fish. This figure, when expanded by a factor of 3.0, gives a value of 9,810 chum salmon as an estimated annual escapement for the Indian River. The 3.0 expansion factor is based on the results of ADF&G aerial surveys of the Fishing Branch and Sheenjek Rivers. ADF&G has found that aerial counts of fall chum on these rivers must be expanded by a factor of 2.7 and 2.9 respectively in order to approximate total escapement estimates derived using sonar and weir technology (L.H. Barton, ADF&G, pers. comm.).

Based on the distribution of spawners observed during July 1993 and the limited amount of suitable spawning habitat along the main channel of the Indian River, from the lower ACEC boundary upstream to the Big Creek confluence, it is estimated that no more than

25% of the chum salmon spawners returning to the Indian River spawn within the ACEC. Using our estimate of 9,810 chum salmon as an average annual escapement into the Indian River, we can assume 25% of these fish (2,450) spawn within the ACEC. If half of the 2,450 spawners are assumed to be female (Bakkala 1970 in Groot and Margolis 1991) and each female produces 2,500 eggs (Trasky 1974, Regnart et al. 1966 in Groot and Margolis 1991) there is a potential annual production of 3.1 million eggs (2,450 spawners x 0.5 female/spawner x 2,500 eggs/female).

Chinook Salmon. Only two seasons of aerial survey escapement data were available for chinook salmon in the Indian River. The counts used were 38 chinook salmon counted on July 18, 1980, and 93 chinook salmon counted on July 13, 1983. These two counts were averaged to arrive at 66 fish. This figure was expanded by a factor of 1.5, giving us a value of 99 fish. The expansion factor was applied based on the findings of Barton (1987 and 1988), Barton and Conrad (1989), Skaugstad (1990), Burkholder (1991), and Evenson (1991). These researchers found that aerial surveys of chinook salmon ranged from 22% to 59% and 35% to 71% of the estimated abundance from mark-recapture studies on the Chena and Salcha Rivers.

Based on the distribution of spawners observed during July 1993 and the limited amount of suitable spawning habitat along the main channel of the Indian River, from the lower ACEC boundary upstream to the Big Creek confluence, it is estimated that 25% of the chinook salmon returning to the Indian River spawn within the ACEC. If we take 25% of 99 fish, our estimated average annual escapement into the Indian River, then approximately 25 chinook spawn within the ACEC. If half of the 25 spawners are assumed to be female (Burkholder 1991 and Evenson 1991) and each female produces 9,000 eggs (based on fecundity estimates for fish that spend four years in the ocean [Skaugstad and McCracken 1991]), we have the potential for an annual production of 117,000 eggs.

It is important to note that the preceeding estimates are based on only two seasons of aerial survey escapement data and that aerial surveys are, at best, an index of escapement based on a usually unknown proportion of the total spawning population (Cousens et al. 1982). The surveys are generally conducted on or near peak spawning and do not represent total escapement or even a consistent portion of total escapement, due to variability in spawning timing and duration. The surveys can, however, be considered as a minimum escapement.

Habitat

The atlas to the catalog of waters important for spawning, rearing or migration of anadromous fishes, Resource Management Region VI (ADF&G 1989), places the upstream limit of chum and chinook salmon spawning and rearing in the Indian River at approximately 62 miles upstream from the mouth. Observations made during July 1993 extend the upper limit of known spawning an additional six miles for chinook salmon and five miles for chum salmon. In addition, several tributaries to the Indian River, including Big and Calamity Creek, have been identified as rearing streams for chinook salmon (Figure 2).

With the exception of the USAF withdrawal and some minor disturbance caused by fire-line construction along Flat Creek, the Indian River watershed within the ACEC is in a natural, undisturbed condition. Based on observation of spawning fish and habitat composition, the upper Indian River from Big Creek upstream to Flat Creek appears to provide more potential salmon spawning habitat than that of the Indian River from Big Creek to the lower ACEC boundary. During a fly-over on 21 July 1993, five chinook and five chum salmon were observed spawning in the Indian River upstream of Big Creek. Following the fly-over three days were spent working on the Indian River between Big Creek and the lower ACEC boundary. During this time only two salmon, a chinook and a chum, were observed. Both of these fish appeared to be moving upstream to more suitable spawning areas. A majority of the salmon spawning within the Indian River drainage appears to take place downstream of the ACEC. Preliminary analysis of aquatic habitat data collected from a representative two-mile reach within the upper Indian River (from the USAF withdrawal downstream two miles) found the reach to consist of 34% pool, 34% riffle, 22% glide, and 10% secondary channel (based on surface area). Pools ranged in depth from 2.2 to 6.0 feet with an average of 3.5 feet. The D-50 substrate size (50% of the substrate particles are of this size or finer) was found to be coarse gravel (32-48mm in diameter). Greater than 80% of stream bank through the reach was considered stable with a moderate to very high erosion potential. Large woody debris (>6 inch diameter) was found to be a major factor in providing habitat complexity, and pieces averaging 20 feet in length were found in numbers exceeding 80 per mile.

In comparison, the Indian River from Big Creek downstream to the lower ACEC boundary is predominantly pool and glide habitat separated by short sections of riffle. A reach, 0.3 miles in length, located approximately four miles upstream of the lower ACEC boundary, was found to consist of 75% pool and 25%

riffle (based on surface area). Pool depth ranged from 2.2 to 7.0 feet with an average of 3.0 feet. The D-50 substrate size was fine gravel (12-16mm in diameter) and stream banks were 94% stable with moderate to very high erosion potential. As in the upper Indian River, large woody debris was an important factor in habitat complexity, and pieces averaging 20 feet in length were found to number 60 per mile. This portion of the Indian River below Big Creek appeared to be primarily a grayling stream lacking spawning gravels and water velocities necessary for salmon spawning (House 1993 and Kretsinger in draft).

A 0.3 mile section of Big Creek, from the mouth upstream, was quantified by habitat type. Habitat composition was 21% pool, 7% riffle, and 72% glide (based on surface area). Pool depth ranged from 1.2 to 5.0 feet with an average of 1.9 feet. The D-50 substrate size was not measured, however, a visual estimate placed the D-50 in the fine gravel category of (3-25mm diameter). Large woody debris in this section was abundant, and pieces averaging 20 feet in length were estimated at 134 pieces per mile.

Values

The chum and chinook salmon that return annually to spawn in streams within the Indian River watershed are an important food source to local wildlife and people alike. Salmon produced in the Indian River watershed contribute to sport, commercial, and subsistence fisheries within the lower Yukon River Basin. The majority of the harvest occurs during the commercial and subsistence fisheries, however, a small number of chum salmon are caught using sport gear. Mills (1991) reported that the 1990 summer chum salmon sport catch for the entire Yukon River drainage was only 2,149 fish. In comparison, the 1991 commercial harvest of summer chum and chinook salmon, from the mouth of the Yukon to the village of Koyukuk (that portion of the Yukon River downstream of the ACEC), was 327,509 and 99,345 fish, respectively. The 1990 subsistence harvest of summer chum and chinook salmon for this same area was 86,471 and 27,325 fish, respectively (ADF&G 1992a).

The residents of the village of Hughes, located approximately 18 river miles upstream from the mouth of the Indian River, have historically relied heavily on subsistence resources for food. Wolfe and Walker (1985 in USFWS 1987) identified Hughes as having the highest per capita annual harvest of wild resources (1,498 lbs.) of any community which they have studied. Fish comprise the largest volume of the subsistence harvest in Hughes and summer-run chum salmon make up the major portion of this. The summer chum salmon harvest for the village of Hughes averaged 49,701 pounds (round weight) between 1977 and 1988 (Walker et al. 1989). This is equal to an average annual harvest of 7,418 summer chum salmon if one assumes 6.7 pounds per fish (ADF&G 1992a). Much of the fishing conducted by Hughes residents takes place downstream from the mouth of Indian River (USFWS 1987) and a significant portion of the fish may be destined for spawning grounds within the Indian River drainage.

LAND STATUS AND ADMINISTRATION

The proposal to designate the upper Indian River watershed as an ACEC was published in the Federal Register Notices (Vol. 51, No. 72, April 15, 1986). The proposed designation was approved in the CYP on September 26, 1986. The area within the ACEC that is under BLM management was estimated to be 163,632 acres (total area of the ACEC minus the USAF withdrawal and regional historic site selections), using a digital planimeter on the land boundary as described in Appendix C. The CYP reported 155,390 acres for this ACEC. The discrepancy between the two acreage estimates for the ACEC is due to the expansion of the ACEC boundary to include all BLM land within the upper Indian River watershed. The original USGS 1:250,000 scale Hughes Subunit Resource Management Plan Map in the CYP did not always accurately include all tributaries within the watershed. Prescription 9 within the CYP mandates that the portions of the watershed lying above the lower limit of the river withdrawal for the Indian River be designated as an ACEC; therefore the ACEC boundary as shown in the CYP was expanded to include the entire watershed.

The land within the Indian River watershed is owned or under the management authority of five entities including: Doyon Limited, K'oyitl'ots'ina Limited, USFWS, USAF and BLM. All land within the Indian River ACEC is currently under the management authority of BLM, with the exception of 5,200 acres of USAF withdrawal and 118 acres of regional historical site selections. As of September 1993, four federal mining claims encompassing 160 acres existed within the ACEC.

The following is a summary of the land status and approximate acreage within the Indian River watershed (Figure 2):

Lands within the ACEC	**168,950 acres**
Unpatented Federal Claims	160 acres
Regional Selections (Historical Sites)	118 acres
USAF Withdrawal	5,200 acres
Unselected BLM	141,702 acres

State Selections	21,770 acres
Lands outside of the ACEC	**99,000 acres**
Unselected BLM	7,680 acres
USAF Withdrawal	1,500 acres
USFWS	28,620 acres
Doyon Limited	47,500 acres
K'oyitl'ots'ina Limited	1,650 acres
Native Selections	1,950 acres
State Selections	10,100 acres
Total Indian River Watershed Area	**267,950 acres**

MANAGEMENT ISSUES

Eight issues were identified as having the potential to influence management of, or cause harm to, salmon production habitat within the ACEC. The effects of each of the issues are outlined below.

Access

The use of stream beds as roads and the construction of new roads and trails have the potential to adversely impact salmon spawning and rearing habitat in a variety of ways. Examples include: direct physical injury to eggs and alevins, removal of riparian vegetation and other vegetation which stabilize soils, increased erosion and sediment input into streams, and creation of barriers to fish passage. New road and trail construction would be done primarily in association with mineral development or development of transportation systems. Currently, about nine miles of unimproved road, 20 miles of trail, and three airstrips (one associated with the USAF withdrawal and two associated with mining operations) are located within the ACEC. The Alaska Statehood Omnibus Act (1959) does not list these roads or trails as being deeded to the State of Alaska from the Federal Government, however, the potential for these roads and trails to be asserted under R.S. 2477 still exists. Currently, the trail system running from Hughes to Indian Mountain, and from Indian Mountain to Utopia, with a branch going partially down Indian River and another running to the north, are identified on the 1973 Alaska state trail system inventory.

Leases and Permits

This issue was identified primarily in response to the potential impacts associated with the location of long-term field camps or construction of structures associated with shelter and storage. Examples of potential impacts include leakage of hazardous materials such as fuel and stove oil; increased erosion due to the clearing of campsites, cabin sites, or trails; and alterations in water quality due to improper gray water and solid waste disposal.

One Special Recreation Permit, for commercial hunting and guiding, has been issued within the ACEC. This permit is valid through 1996. In addition, the following unauthorized structures are known to exist within the ACEC:

An unauthorized cabin is located within the SE 1/4, of Section 22, T. 7 N., R. 24 E, KRM. The owner is presently in the process of removing and rehabilitating the site.

An unauthorized cabin located in the NE 1/4 of Section 3, T. 6 N., R. 25 E, KRM, is within 300 feet of the Indian River. The Kobuk District approved a proposal to remove this cabin from its present location and authorize it to be rebuilt within the SE 1/4 of Section 34, T. 7 N., R. 25 E, KRM, under the authority of 43 CFR 2920 regulations, to be used for commercial trapping purposes. The new location would be more than 300 feet from the Indian River and more than 100 feet east of an unnamed stream.

An unauthorized cabin is reportedly located near the center of Section 8, T. 7 N., R. 26 E, KRM. The area will require a site visit for verification before further action is taken to resolve this issue.

Fire Suppression

The primary impact associated with fire suppression is that of fire-line construction, which can lead to erosion problems and increased sediment yield. Lands within the ACEC and the watershed area outside of the ACEC boundary have been assigned the Limited Action fire suppression option. With the exception of Critical Protection Areas, fires within the ACEC will be contained only to the extent required to prevent an undesirable escape of that fire from the immediate area. (Alaska Interagency Fire Management Plan 1993).

Forestry

Removal of trees adjacent to the stream can reduce stream shading, increase stream temperatures, and remove potential sources of instream cover (fallen trees). In addition, road and trail construction conducted in conjunction with logging activities can lead to increased erosion. Currently, commercial or subsistence harvest of trees within the ACEC is not known to occur.

Mineral Development

Some of the impacts associated with mineral development include: direct loss of aquatic habitat brought about by modification or relocation of the stream channel, increased sediment yield, reduced water quality,

increased water temperatures, reduced water availability, and introduction of hazardous and solid wastes.

As with many surface-disturbing activities, one of the most detrimental impacts associated with mining is increased sediment yield. Significant increases in sediment yield can lead to alteration of stream channel morphology, substrate composition, and surface-ground water interaction. It can also lead to decreased survival of fish in the egg and young-of-the-year stages; changes in macroinvertebrate community structure; and decreased primary production (Madison 1981, Van Nieuwenhuyse 1983, Weber and Post 1985, Bjerklie and LaPerriere 1985, Lloyd et al. 1987, Reynolds et al. 1989, Buhl and Hamilton 1990).

A general description of mineral exploration and development activities with impacts that would likely happen can be found in BLM (1986b).

Oil and Gas: No known testing for oil and gas has been conducted within the ACEC or in the upper Indian River watershed. The only stratigraphic test well drilled within the Central Yukon Planning Area was drilled in the Nulato Hills Subunit (a subunit west of the Hughes Subunit which encompasses the Indian River.) The Nulato Hills Subunit is considered to be the most promising for oil and gas development within the Central Yukon Planning Area and yet was estimated to have only a 25 percent probability of having commercial quantities of undiscovered oil and gas (BLM 1986b).

Lode Mining: The only lode prospects in the vicinity are small showings of zinc and copper sulfides found typically in association with granitic stocks. Trace base metal, silver, and molybdenum minerals have been found along high-angle fault traces or shears in the andesitic pyroclastic unit to the south of Indian Mountain (Deininger 1986).

Placer Mining: Mining in the Indian River drainage dates back to at least 1924 when two association claims were located along Utopia Creek (Deininger 1986). Mining on Utopia Creek ceased in 1952 and on upper Indian River in 1961 (Cobb 1973), however, 47 federal claims, encompassing 1,880 acres, were maintained along Flat Creek and Indian River below Flat Creek until 1993.

In June of 1987, two individuals located and recorded four association placer claims three miles west of Indian Mountain near Utopia. Following the initial recordation, the claimants located and recorded six additional, adjacent, association placer claims to the north and south of the original claims. These claims encompassed an area of approximately 400 acres. Proposed exploration work was to include hand sampling by shovel or with a small suction dredge. To gain access to the claims, the claimants constructed a 1,200 ft. airstrip and a 12 x 16 ft. cabin for support of the exploration. As of September 1993, six of the 10 claims have been classified as abandoned and void. The total land disturbance as a result of this operation stands at approximately 2.8 acres, or roughly the size of the airstrip and campsite combined. The entire project is located within the ACEC.

A second operation was located along the upper reaches of Indian River and Flat Creek, adjacent to the military withdrawal. In 1987, this claimant located and filed for record 37 association placer claims generally following the stream channels of Flat Creek and Indian River. These claims encompassed an area of approximately 1,480 acres. In 1991, this claimant filed a plan of operations as required by the 43 CFR 3809.1-4 (3) regulations. The claimant proposed to conduct mineral exploration of placer claims within the subject claims located within Sections 19-20 and 29-30, T7N, R25W, of the Kateel River Meridian.

The claimant proposed to use a bulldozer to construct approximately eight prospect trenches, approximately 10 x 48 ft., at four separate locations on the claim block. The bulldozer was acquired from the nearby military site, so little off-claim cross-country access was proposed. Access to and from the claim was to be via an estimated 1/4 mile of new trail and a 1,500 ft. airstrip on and adjacent to the subject mining claims. Samples collected from the prospect trenches were to be processed in a three-inch suction dredge or pan discharging directly into the trench. No discharge of processed wastewater was anticipated, and no discharge permits were applied for. During a 1992 compliance exam it was noted that the airstrip and 1/4 mile of new trail had been constructed as planned, but no other activity was observed at that time. As of September 1993, all 37 claims were classified as abandoned and void. Reclamation of the claims is now complete and expected to be approved in 1995. The total surface disturbance on federal lands as a result of this operation is estimated to be approximately 3.1 acres.

As of September 1993, filing fees were not received for 41 of the 47 claims located within the ACEC, and consequently these claims were classified abandoned and void. The area encompassing the voided claims is now closed to mineral entry due to state land selections but would be reopened in the event the selections are relinquished. Currently there are four federal claims totaling 160 acres within the ACEC.

Subsistence

Salmon produced within the Indian River contribute to downstream subsistence harvest. A loss of quality or quantity of salmon production habitat due to foreseeable land-use activities occurring within the ACEC could result in diminished production capability and ultimately may result in restricted subsistence use.

Navigability

Navigability determinations are required to determine whether the state, the federal government, or a third party owns the submerged lands. Waters determined to be navigable are under the management jurisdiction of the State of Alaska. This includes the streambed up to the ordinary high water mark. Under the Alaska Constitution, the state also has authority over water appropriations and water quality regardless of navigability.

Indian River has been determined to be navigable from its mouth through T. 6N., R. 24E., Kateel River Meridian, a distance of approximately 38 miles. No determinations have been made on the river within the ACEC, however, Boden (1992) reported that a 16-foot jet-powered boat was used to ascend the stream as far upstream as Big Creek.

Yukon River Salmon Treaty

One of the factors influencing the management of salmon stocks within the Yukon River Basin is the gradual diminishment of production habitat. As more and more habitat is lost due to various land-use activities, it will become increasingly difficult to meet the demands of Alaska's commercial, subsistence, and sport fishing interests and yet fulfill international obligations and escapement goals.

MANAGEMENT GUIDELINES

Proposals for surface-disturbing activities within the Indian River ACEC above the level of casual use would require an environmental assessment. Project-specific environmental assessments would analyze proposed actions and impacts to the ACEC in relation to the purpose and objectives of this HMP. When developing mitigation measures for environmental documents, BLM shall consider the management guidelines listed in Appendix D.

PLANNED ACTIONS

The planned actions within this HMP are to: 1) establish quantitative habitat-specific management objectives for fisheries resources in the ACEC; 2) establish management guidelines for mining and other surface-disturbing land-use activities within the ACEC; 3) establish a serialized case file for the ACEC and amend the Master Title Plats to show the ACEC boundary; 4) obtain large-scale aerial photography of streams within the ACEC; 5) document stream channel geometry from representative reaches of the Indian River, Big and Calamity Creek (topographic surveys); 6) conduct stream flow monitoring and aquatic habitat inventories on upper Indian River, Big and Calamity Creek; and 7) conduct annual compliance inspections of mining and other surface-disturbing land-use activities occurring within the ACEC to ensure protection of the aquatic resources.

INVENTORY AND MONITORING

This inventory and monitoring plan was based on the following considerations:

1) The management goal and objectives set forth in this plan.

2) The designated use of water within the ACEC. The Alaska Administrative Code, 18 AAC 70.050, designates the waters within the ACEC as having the following freshwater use classes: water supply; water recreation; and the growth and propagation of fish, shellfish, and other aquatic life, and wildlife.

3) The potential impacts associated with the issues identified in this plan, particularly those of surface disturbing activities which may physically alter the stream channel or increase sediment yield.

4) The cost of conducting inventory and monitoring within this ACEC. Budgetary considerations included access, equipment, frequency of sampling, data analysis, and manpower.

Inventory Elements

Initial inventory efforts will focus on four elements:

1) Obtaining aerial photography for use in mapping habitat types and discrete spawning concentrations of chum and chinook salmon, as well as aiding with stream channel classification. The existing riparian vegetation cover and condition along streams within the ACEC will also be documented using aerial photography.

2) Collecting channel geometry from representative reaches of all target streams. Data on the physical stream channel features will provide a model for channel design and reclamation standards. In addition, stream channels will be typed according to the Rosgen (1993) stream classification system allowing comparisons between altered and unaltered channels.

3) Obtaining aquatic habitat data on all target streams. Aquatic habitat inventory (level 3, BLM Aquatic Habitat Manual 6720) will allow us to evaluate post-mining reclamation and identify habitat deficiencies within reclaimed channels. Aquatic habitat inventory will also document the quantity and quality of existing habitat and provide a basis for instream flow evaluations.

4) Collection of streamflow data to be used for channel design, as a component of the monitoring program and to determine instream flow requirements within the ACEC.

The initial target streams are those portions of the Indian River, Big and Calamity Creeks that lie within the ACEC boundary. Other streams within the ACEC may be included at a later date.

Inventory Methods

Large-scale aerial photography (ie. 1:3,000 - 1:6,000) will be taken of all target streams within the ACEC according to procedures outlined by the BLM Branch of Mapping Science.

A topographic survey using an automatic level shooting stadia will be used to collect information concerning stream morphology. Features surveyed will be those as defined by Rosgen (1994) and will include bankfull width, flood-prone width, water edge, and upper and lower limits of pools. These surveys will be plotted as plan views, cross sections, and longitudinal views. Information as to the stream's entrenchment, width-to-depth ratio, sinuosity, gradient, meander geometry, riffle/pool sequence, bank erosion potential, and stream type will be obtained from survey data. In addition, a pebble count based on the procedure described by Wolman (1954) will be used to determine bed material particle size distribution.

Aquatic habitat will be inventoried according to procedures described by Bisson et al. (1982). Bisson's method of classifying habitat types has become a standard within the Bureau and is commonly referred to as the Basin Wide Method. Using the Basin Wide approach, the stream is stratified by habitat types, which are then quantified by length, width, depth, substrate type, and cover type. Stream discharge will be recorded during the habitat inventory and will provide a reference stage.

Streamflow data will be measured using a Price AA flow meter at various stage heights. In addition, a stage recorder will be used to provide a continuous measurement of water surface elevation on Indian River. The stage recorder will be operated from approximately May through October each year, for a period of five years. Crest gauges may be installed to assist in determining peak flows. It is assumed peak flows will have to be measured by indirect methods due to limited access.

Monitoring Levels

The land-use activities occurring within the ACEC will dictate the frequency and level of monitoring. Three levels of monitoring are described below:

1) Base Level. This monitoring level will be initiated in the event that only casual use activities or activities not considered to be a threat to aquatic resources are occurring within the ACEC. Monitoring under this level will consist of repeating aquatic habitat surveys every 10 years on all target streams.

2) Mid-Level. This monitoring level will be initiated in the event land-use activities are occurring within the ACEC which have the potential to adversely impact aquatic resources. Monitoring at this level will consist of collecting stream discharge, turbidity, and suspended sediment data using a paired watershed approach. Activities under this level of monitoring are to be conducted on an annual basis during periods of active placer mining within the ACEC.

3) Evaluation Level. Monitoring at this level will involve evaluation of reclamation work on federal mining claims and other surface-disturbing activities under permit. Topographic and aquatic habitat survey methods, as well as visual inspections will be used to determine if bonding requirements have been met. This level of monitoring will be continued on an annual basis until bonding requirements have been met.

Monitoring Methods

Under the Mid-Level monitoring scenario, stream discharge data will be collected using a streamflow recorder. Turbidity and suspended sediment samples will be collected using ISCO water samplers and analyzed using standard procedures as outlined by the Environmental Protection Agency (1979).

High-Level monitoring methods are beyond the scope of this plan and will be designed on a case-by-case basis.

Data Storage and Availability

Inventory and monitoring data collected in conjunction with this HMP will be stored on a data base in the BLM Kobuk District Office. The data will be available in either electronic or hard-copy format.

Progress Report

Implementation of the HMP will be tracked on an annual basis using the form in Appendix E.

COORDINATION AND COOPERATION

The implementation of this HMP shall be in cooperation with ADF&G. The role and responsibilities of ADF&G are as follows: 1) the Commercial Fisheries Division is responsible for monitoring the annual escapement of chum and chinook salmon in streams within the Indian River watershed; 2) the Habitat Division is responsible for the issue and compliance of Title 16 permits; and 3) the BLM shall be responsible for the implementation of the management guidelines, inventory, and monitoring activities set forth in this HMP. Meetings between BLM and ADF&G shall be held as necessary to discuss concerns and exchange data. The HMP shall be amended as necessary to include any future projects requiring cooperative funding or use of personnel.

IMPLEMENTATION COSTS

The cost estimate (Table 2) was based on the following assumptions:

1. The use of a helicopter for access at an estimated $2,000 per day.
2. A work-month cost of $4,500.
3. Implementation of Base-Level monitoring.

COST/BENEFIT ANALYSIS

The commercial value of summer chum and chinook salmon produced within the ACEC over a 10-year period was estimated to be $223,000. The estimated implementation cost for the HMP over a similar period is $196,000 or 88% of the 1992 commercial value of the resource (assuming base-level monitoring after the sixth year of implementation). For the purpose of generating a monetary value of the resource, this estimate assumes that the entire harvestable surplus would be available for commercial harvest and does not consider a subsistance harvest. It is important that the reader understand that if the social, cultural, and environmental values of these fish were considered, then the overall value of the resource would be much greater than the $223,000 estimate.

The following outlines the procedure used to calculate the commercial value of summer chum and chinook salmon produced within the Indian River ACEC.

Summer Chum Salmon

If we use 2,450 summer chum salmon as a basis for the monetary estimate (see the Fisheries Abundance section of this document) we can assume half of these, or 1,225 fish, are female, (Bakkala 1970 in Groot and Margolis 1991). If each female produces 2,500 eggs (Trasky 1974, Regnart et al. 1966 in Groot and Margolis 1991), there is a potential production of 3.1 million eggs. If 7.8 % of eggs survive to be fry and 2.8% of the fry survive to become adults, we have 6,689 fish (Parker 1962 in Groot and Margolis 1991). Subtracting the estimated average annual escapement of 2,450 fish from total returns (6,689 fish), we have 4,239 fish as a harvestable surplus. Assuming each fish weighs 6.7 pounds, we have 28,401 pounds of fish worth $0.18 per pound (Upper Yukon price) or $5,112 (ADF&G 1992a). In addition to the price paid for the fish in the round, summer chum salmon produce high-quality caviar. Again, assuming half of the harvestable surplus are females and each female produces 1.5 pounds of roe and the value of roe is $4.21 per pound (4,239 fish x 0.5 female fish x 1.5 pounds roe/female x $4.21/pound roe), we arrive at an additional value of $13,385 (ADF&G 1992a). The estimated annual commercial value for summer chum salmon produced within the ACEC is the sum of $5,112 and $13,385 or $18,497. Over a 10-year period this equals $185,000.

Chinook Salmon

If we use 25 chinook salmon as a basis for this monetary estimate (see the Fisheries Abundance section of this document) and assume an average production of 3.0 returns per spawner (Brannian 1990), we are left with 75 fish. Assuming a maximum sustainable harvest rate of 67% (Brannian 1990), we have 50 fish as a harvestable surplus. If each fish weighs 20.4 pounds, we have 1,020 pounds of fish worth $3.70 per pound (Lower Yukon price) or $3,774 (ADFG 1992a). Over a 10-year period this equals $37,740.

The total estimated commercial value of salmon produced in the ACEC over a 10-year period is $185,000 for summer chum salmon and $37,740 for chinook salmon, or $223,000 in all.

NEPA PROCESS

The environmental assessment (EA) Decision Record and Finding of No Significant Impact for this HMP was approved on March 21, 1995. Prior to approval, the EA was subject to public comment. On January 30, March 5, August 6 and 25, and September 1, 1993, a notice stating that an EA for the Indian River HMP was being prepared was published in the Anchorage Daily News. No public comment was received.

Table 2. Estimated five-year cost and implementation schedule for the Indian River ACEC, Aquatic Habitat Management Plan.

Element	Estimated work months (WM) and operations dollars ($000)									
	Year 1		Year 2		Year 3		Year 4		Year 5	
	No. WM	$000	No. WM	$000	No WM	$000	No. WM	$000	No. WM	$000
Administration and preparation (incl. updating, revision, and reports)	4.0		3.0		3.0		1.0		1.0	
Large-scale aerial photography of upper Indian R., Flat Cr., Big Cr., and Calamity Creek.				7.0						
Topographic survey and channel typing on upper Indian R., Big Creek, and Calamity Creek.			1.0	6.5						
Collection of stream flow data on upper Indian River, Big Creek, and Calamity Creek.			1.0	5.5	1.0	5.5	1.0	8.5	1.0	8.5
Aquatic habitat inventory on upper Indian R., Big Creek, and Calamity Creek.					1.0	17.5				
Maintenance										
Research										
Equipment				6.5		3.0		0.5		0.5
Total BLM Costs	4.0	0*	5.0	25.5*	5.0	26.0*	2.0	9.0*	2.0	9.0*
ADF&G Commercial Fish Division; cost for escapement survey and reporting (expendituress not necessarily on an annual basis — dependent on budget constraints).	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0
ADF&G Habitat Division; cost of issue and compliance of Title 16 permits (expenditures not necessarily on an annual basis — dependent on development activity).	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5

*Detail of Operations Dollars:

Year 2 — two days helicopter time ($4,000); fuel delivery and fixed-wing helicopter support ($2,000); three days fixed-wing support ($5,000); flight time, pilot per diem, fuel, film costs for aerial photography ($7,000); purchase of stream stage recorder and associated hardware ($6,000); miscellaneous equipment, transportation and per diem ($1,500).

Year 3 — three days helicopter time ($6,000); fuel delivery and fixed-wing helicopter support ($2,000); three days fixed-wing support ($5,000); two work months for seasonal ($5,000 incl. in operations dollars); expenses associated with two volunteers ($5,000); miscellaneous equipment, transportation, and per diem ($3,000).

Year 4 — five days fixed-wing support ($8,000); per diem and miscellaneous equipment ($1,000).

Year 5— five days fixed-wing support ($8,000); per diem and miscellaneous equipment ($1,000).

The cost estimate for the HMP and associated project work was carried out for five years. The year in which a particular element is initiated may vary due to budgetary limitations.

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Appendix A. Area of Critical Environmental Concern Definition and Process (BLM, 1986b).

The objectives of ACEC designation are to identify, designate, and manage areas within the public lands where special management attention is required to protect (a) important historic, cultural and scenic values, fish and wildlife resources and other natural systems and processes; and (b) human life and property from natural hazards.

Authority and Mandate.

The Federal Land Policy and Management Act of 1976 contains the following key provisions regarding Areas of Critical Environmental Concern.

Definition.

An "Area of Critical Environmental Concern" is an area "within the public lands where special management attention is required (when such areas are developed or used, or where no development is required) to protect and prevent irreparable damage to important historic, cultural or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards" (Sec. 103[a]).

Identification Priority and Effect.

Identification of potential ACEC's shall be given "priority" in the "inventory of all public lands and their resources and other values," and identification "shall not, of itself, change or prevent change of the management or use of public lands" (Sec. 201[a]).

Designation Priority and Process.

The designation of ACEC's shall be given "priority" in the "development and revision of land use plans" (Sec. 202[c][3]).

Special Management Priority.

The protection of ACEC's shall be given "priority" (Sec. 202[c][3]) in applying the required special management attention.

The ACEC Process is Part of Multiple-Use Management.

The ACEC identification, designation, and management process is an integral part of BLM's on-the-ground multiple-use planning and management processes. Through the ACEC process, BLM has a mandate to both:

(a) provide special management attention that will protect important environmental resources, and protect human life and property from important natural hazards; and

(b) do this without unnecessarily or unreasonably restricting users of these lands from uses that are compatible with that protection.

Development May Occur in Some ACEC's.

As the Senate Committee Report on FLPMA (Senate Report 94-583) said, "Unlike wilderness areas . . . (ACEC's) are not necessarily areas in which no development can occur. Quite often, limited development, when wisely planned and properly managed, can take place in these areas without unduly risking life or safety or permanent damage to historic, cultural or scenic values or natural systems or processes." Thus, a particular ACEC designation may provide for a range of multiple-use activities, including specified kinds and degrees of development and commodity-production activities, provided that the important environmental resources within that area, or human property or lives, are not damaged or endangered.

The ACEC Process Is Part of the Planning Process.

Identification of potential ACEC's and designation of ACEC's will be done through BLM's on-the-ground planning process, in accord with BLM's procedures for preparation, approving, and revising Resource Management Plans. This planning process incorporates environmental analysis pursuant to the National Environmental Policy Act. An ACEC is designated through approval by a BLM District Manager of a Resource Management Plan. This designation decision is made after review and concurrence by the BLM State Director. Where a proposed ACEC contains an environmental resource of multi-state, national, or international significance, concurrence by the BLM Director and, in some cases by the Secretary, also may be required.

ACEC Designations May Complement Other Forms of Management.

ACEC and other special management area designations are not necessarily mutually exclusive. An ACEC may overlay another form of designation, in whole or in part, so as to complement the management provided through the other form — for example, a unit of the National System of Wild and Scenic Rivers, within the public lands.

Opportunity for Public Involvement Is Provided at Each Step.

Opportunity for public participation at each phase of the ACEC process will be provided by BLM officials, pursuant to FLPMA and the National Environmental Policy Act, the Department of the Interior's policy on public participation in decision making, and BLM's resource management planning regulations.

Appendix B. Definition of Mining Laws as per 43 CFR 3809.0-5 (e).

"Mining laws" means the Lode Law of July 26, 1866, as amended (14 Stat. 251); the Placer Law of July 9, 1870, as amended (16 Stat. 217); and the Mining Law of May 10, 1872, as amended (17 Stat. 91); and all laws supplementing and amending those laws, including among others the Building Stone Act of August 4, 1892, as amended (27 Stat. 348); and the Saline Placer Act of January 31, 1901 (31 Stat. 745).

Appendix C. Boundary description for the Indian River ACEC.

The extent of the Indian River Area of Critical Environmental Concern is described as follows:

All those lands draining into the Indian River within: Township 4 North, Ranges 25, 26, & 27 East; Township 5 North, Ranges 24, 25, & 26 East (Excepting those lands in Township 5 North, Range 24 East, that fall within the Koyukuk National Wildlife Refuge); Township 6 North, Ranges 25, 26, & 27 East; Township 7 North, Ranges 24, 25, 26, & 27 East; Township 8 North, Ranges 25 & 26 East; all within the Kateel River Meridian, Alaska, as depicted on the accompanying map (Figure 2). The area as described contains approximately 168,950 acres.

Appendix D. Management Guidelines.

Management of the Indian River ACEC is guided by several different sources. The regulations, handbooks, and policy for permitting actions under Rights-of-Ways (43 CFR 2800), Land Use Actions (43 CFR 2920), or the General Mining Laws (43 CFR 3809), in addition to other Federal and State regulations, must be referred to prior to permitting any of these activities on BLM land. The CYP/Environmental Impact Statement established the ACEC, the purpose and goals for the ACEC, and identified withdrawals to be implemented to meet those goals (primarily for the protection of salmon habitat). This Habitat Management Plan and Environmental Assessment are the next step in the BLM planning hierarchy to provide for more specific identification and protection of the fisheries habitat within the ACEC.

BLM shall consider the following management guidelines during the development of environmental documents pertaining to land-use activities occurring within the ACEC.

General

1. All surface disturbing activities, including fire fighting, mining, road construction, and others should be conducted so as to minimize impacts to aquatic life, in particular spawning and rearing salmon and their habitat.

2. Surface disturbing activities conducted within the boundaries of the ACEC may be bonded.

3. Handling of fuels, hazardous and toxic materials will be in compliance with DEC/EPA standards. In addition, with the exception of boat refueling, all fuel storage, transfer, or refueling operations should be conducted outside of the proposed land withdrawal on the Indian River.

4. Compensatory mitigation for disturbance of aquatic habitat may be considered by BLM prior to any surface-disturbing activity.

Access

1. All roads, trails, and airstrips should be located and constructed so as to minimize erosion and sedimentation and impacts to riparian areas according to the stipulations outlined in BLM Manual H-2801-1 for Right of Way Plans of Development and Grants and other BLM manuals and guidance. For example:

a. Streams that serve as critical spawning and rearing habitat should not be used as roads or trails. No vehicles, other than boats and snow machines, should be operated within stream channels except at existing or authorized road and trail crossings.

b. Vehicles should be restricted to established or approved roads and trails during periods in which snow cover is less than one foot in depth and soils are not frozen in order to protect the vegetation mat and minimize erosion.

c. Saturated soils are susceptible to slides and slumps, excessive settlement, severe erosion, and soil creep. Areas having saturated soils should be avoided during thawed periods.

d. Roads should be put to bed following the completion of the land-use activity unless otherwise authorized. Proper, well protected drainage and common revegetation practices should be used to prevent erosion.

e. Material sites should not be located within the active flood plain of any stream within the ACEC.

2. Culverts and bridges should be designed to optimize fish passage and minimize harm to aquatic life. Measures should be taken to maintain natural stream gradients and ensure stream-channel stability. Fill material for drainage structures should not be placed within the active flood plain without authorization.

Leases and Permits

The following measures apply to leases and permits for long-term field camps used in conjunction with commercial and subsistence activities, including camps used in conjunction with mining. For the purposes of this plan, a long-term field camp is defined as a camp which is used for 15 or more days during the year.

1. All activities should be conducted so as to avoid or minimize disturbance to vegetation. Campsites and structures should be located outside of the proposed withdrawal on Indian River. The proposed withdrawals include the stream bed and 300 feet on both sides of the stream's mean high water level. Campsites, in areas other than those adjacent to the proposed withdrawal, should be located a minimum of 100 feet from water bodies. Removal of vegetation will be under conditions specified in a permit.

2. Gray water and human waste should be disposed of on land, outside of the proposed withdrawal on Indian River and 100 feet from other water bodies. Solid waste may be burned pursuant to state standards (Alaska Administrative Code, 18 ACC 50); items which cannot be burned or are left as a residue from burning should be back-hauled at the end of the season.

3. All applicable permittees will be expected to complete and submit a written Post Use Report annually according to BLM Handbook H-8372-1.

Fire Suppression

Within the ACEC fires will be contained only to the extent required to prevent an undesirable escape of that fire from the immediate area with the exception of Critical Protection Areas (Alaska Interagency Fire Management Council 1993).

1. Fire suppression activities within the ACEC should be based on fire management policies and suppression constraints identified in the Alaska Interagency Fire Management Plan (AIFMP).

2. Heavy equipment should be used for fire-line construction only after completion of an Escape Fire Situation Analysis report and upon authorization by the District Manager. Other methods such as fireline explosives or handlines are preferred (AIFMP).

Forestry

Timber harvest will be restricted to an area outside of the proposed withdrawal area along the Indian River as per prescription in the Central Yukon Resource Management Plan.

Mineral Development

All mining operations within the Indian River ACEC will be conducted in compliance with the 43 CFR 3809 regulations and reasonable measures shall be taken to ensure undue and unnecessary degradation to aquatic life does not occur, for example:

1. A reclamation bond will ensure that reclamation work restores an approximation of the pre-disturbed habitat complexity and channel configuration (based on topographic survey and aquatic inventory data) and that the stream channel is stable under natural events such as high flows and aufeis conditions. The bond will be released at the end of a five-year evaluation period or upon demonstration that the area reclaimed is stable and approximates the desired habitat prior to the completion of the five-year evaluation period (e.g., if a 50-year stream flow event occurred two years after reclamation and the channel appeared to be stable and approximate the desired habitat, the bond may be released after only a two-year evaluation period).

2. Mining within known salmon production areas or production areas documented during future inventory should not be allowed until July 1 of the initial disturbance year to allow recently hatched chum salmon to out-migrate from the area.

3. Bypass channel construction should be done in a manner that ensures fish passage and does not result in excessive erosion. The bed and banks of the bypass channel should be constructed of material that will not significantly erode and create

a fish passage barrier. In order to decrease bank erosion, the side slopes of bypass channels should be contoured to a minimum of a 3:1 slope unless slope material consists of bedrock or material having a similar resistance to erosion. Other measures that may be required to stabilize stream bypass channels are: energy dissipating structures and structures to maintain stream gradient above and below the bypass channel (e.g. vortex rock weirs). Guidelines established by ADF&G for Temporary Resident Fish Stream Bypass Design Guidelines for Placer Mining Operations (1992b) should be used in the event that stream channel geometry data is not available for the site.

4. Prior to mining a new segment of stream and constructing a new bypass channel, operators will be expected to plug and backfill the old bypass channel with suitable, erosion resistant material. The stream bed and stream banks should be reconstructed in the lowest part of the valley using data collected during topographic surveys and Rosgen (1993) stream channel classification. This step may be omitted if a suitable channel was constructed prior to mining and the channel is stable and approximates the desired habitat.

5. Settling ponds should be placed to allow for stream relocation in the lowest part of the valley in a natural meander configuration.

6. Reclamation of mined sites may include: redistribution of vegetation removed prior to mining, planting of willow cuttings, and the application of fine mesh geo-textile matting or straw over disturbed areas.

Subsistence

In determining whether to lease, or otherwise permit the use, occupancy, or disposition of public lands under any provision of law authorizing such actions, the head of the federal agency having primary jurisdiction over such lands or his designee shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purpose sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition or public lands needed for subsistence purposes (Section 810 ANILCA, 16 USC 3120).

Other Guidelines

Future administration or management actions such as the signing and ratification of the Yukon River Salmon Treaty may require amendment of this HMP.

Appendix E. Indian River ACEC aquatic Habitat Management Plan progress report.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
• Maintain the capability of aquatic habitat within the ACEC to sustain the annual production potential of 3.1 million chum salmon eggs and 117,000 chinook salmon eggs. • Maintain or restore the natural substrate composition, stream type and geometry (as defined by Rosgen 1993), on all streams within the ACEC. • Maintain the minimum stream discharge necessary for the maintenance of aquatic life, natural stream channel configuration, and habitat composition of all streams within the ACEC. • Maintain, restore, or improve the existing stream bank stability, riparian cover, woody debris and other instream cover components on all streams within the ACEC. • Maintain the water quality within the ACEC to standards established by the Alaska Department of Environmental Conservation (18 AAC 70) for fresh-water use classes (1)(A), (1)(B), and (1)(C).		• Establish quantitative habitat-specific management objectives for fisheries resources in the ACEC. • Establish management guidelines for mining and other surface disturbing land use activities within the ACEC. • Establish a serialized case file for the ACEC and amend the Master Title Plats to show the ACEC boundary. • Obtain large scale aerial photography of streams within the ACEC. • Document the stream channel geometry from representative reaches of the Indian River, Big and Calamity Creek (topographic surveys). • Conduct stream flow monitoring and aquatic habitat inventories on upper Indian River, Big and Calamity Creek. • Conduct annual compliance inspections of mining and other surface disturbing land-use activities occurring within the ACEC to ensure protection of the aquatic resources.		• Monitor the aquatic resources within the ACEC at the appropriate level (base, mid, or evaluation level).	

INSTRUCTIONS

1. List specific HMP objectives from RMP/MFP planning documents or as otherwise approved
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

Form 6780-2
(July 1981)
(formerly 6620-3)