

Memorandum

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

IN REPLY REFER TO

2620 (013)

TO : SD (932)

Date: ~~MAR~~ 13 1980

FROM : DM-A

SUBJECT: Navigability Recommendations for Valdez Quadrangle FY 80

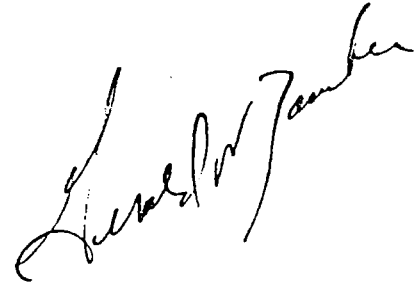
Enclosed is a report of FY 80 navigability recommendations for the Valdez 1:250,000 quadrangle. This third short format report completes all known state selections on the quadrangle for FY 80.

The report was written based on a review of available maps and review of AEIDC contract material. There was an on-site field investigation, however, because of the frozen state of the waterbodies, physical characteristics were not apparent. As shown in the body of the report, the field investigation was helpful in that interviews with local people provided new use information that was previously unknown to this office.

We submit this report for your review, signature, and distribution to the appropriate office(s).

Enclosure

cc:
SD (932)
Hydrologist (013)
File (013)



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NAVIGABILITY REPORT TITLE PAGE

State Alaska	District Anchorage	
Quadrangle Name and FY Valdez FY 80	Organization Code 013	Report Number 3 (Total)
Type of Action State Selections		Format Short
Applicant's Name State of Alaska	Address (include zip code) N.A.	

Remarks: Includes some townships on Anchorage and Gulkana (1:250,000) quadrangles

LANDS INVOLVED

Township	Range	Meridian	Serial Number	Watershed	Acres (est.)
1 S.	10 W.	CRM	AA-006798	Nelchina	23,000
2 S.	10 W.	CRM	AA-006798	Nelchina	23,000
3 S.	10 W.	CRM	AA-006798	Nelchina	23,000
4 S.	10 W.	CRM	AA-006798	Nelchina	23,000
1 S.	11 W.	CRM	AA-006798	Nelchina	7,000
2 S.	11 W.	CRM	AA-006798	Nelchina	7,000
3 S.	11 W.	CRM	AA-006798	Nelchina	7,000
4 S.	11 W.	CRM	AA-006798	Nelchina	9,000
1 N.	10 W.	CRM	AA-006775	Nelchina	23,000
2 N.	10 W.	CRM	AA-006775	Nelchina	23,000
1 N.	11 W.	CRM	AA-006775	Nelchina	3,000
2 N.	11 W.	CRM	AA-006775	Nelchina	2,000

Purpose of report

Recommendations on Navigable and Non-Navigable waters within selected lands for Valdez Quadrangle FY 80.

Prepared by Mac Wheeler	Title Hydrologist	Date of report 3/3/80
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LANDS INVOLVED

Township	Range	Meridian	Serial Number	Watershed	Acres (est.)
2 N.	9 W.	CRM	AA-4818	Nelchina	23,000
2 N.	8 W.	CRM	AA-4817	Nelchina	23,000
2 N.	7 W.	CRM	AA-21201	Nelchina	<u>23,000</u>
				Total	242,000

Purpose of report

Recommendations on Navigable and Non-Navigable waters within selected lands
for Valdez Quadrangle FY 80.

Prepared by	Title	Date of report
Mac Wheeler	Hydrologist	3/3/80

NAVIGABILITY REPORT
VALDEZ QUADRANGLE - FY 80
REPORT #3 (SHORT FORMAT)

- I. Primary Policy Guidelines
 - A. Memorandum from Hugh C. Garner, Solicitor's Office, Washington, D.C. to Director, Bureau of Land Management, "Title to Submerged Lands for Purposes of Administering ANCSA," March 16, 1976.
 - B. Regional Solicitor's letter dated February 25, 1980, subject: Kandik, Nation Decision of Navigability.
- II. Source of Information
 - A. USGS Quadrangles (Scales 1:63,360-1:250,000)
 - B. Master Title Plats
Master title plats were consulted to determine land status regarding ownership, withdrawals, power projects, etc.
 - C. State - BLM Water Delineation Maps
In 1974 the State of Alaska submitted water delineation maps to BLM covering waterbodies within the state which they considered navigable. Later, at an informal meeting between Anchorage District personnel and State of Alaska personnel, the State annotated the maps to include additional waterbodies. BLM also delineated those waterbodies which had appeared to be navigable under current guidelines. No work was done in southeast Alaska.
 - D. AEIDC
The University of Alaska, AEIDC (Arctic Environmental Information and Data Center), under contract to BLM, researched historic information in Alaska and extracted the information relevant to many waterbodies in Alaska. The information is arranged alphabetically by watershed. Copies of the contract data are available at the Alaska Resources Library, Anchorage District BLM, Fairbanks District BLM, and BLM State Office.
 - E. Field Interviews
See Historic Use.
- III. Selections
 - A. Serial No. AA-006798 (approximately 122,000 acres)
 1. General
 - a. Location, Development, and Accessibility
The selection area is located in T. 1 S., R. 10 W., T. 2 S., R. 10 W., T. 3 S., R. 10 W., T. 4 S., R. 10 W., T. 1 S., R. 11 W., T. 2 S., R. 11 W., T. 3 S., R. 11 W., and T. 4 S., R. 11 W., CRM. This portion of the report addresses all waterbodies (USGS source maps) in the above mentioned townships. The first four townships are full townships (approximately 23,000 acres per township) and the second four are fractional townships (approximately 7,500 acres per township). (See attached map.) The area is located

in the headwaters of the Nelchina River drainage area. The only development shown in the selection area is one cabin on Barnette Creek. A second cabin is also located on Barnette Creek just outside and east of the selection area. A trail starting on Glenn Highway, about one mile southwest of Eureka Roadhouse, crosses (fords) the Nelchina River and provides access to the two cabins on Barnette Creek some 14 miles to the southeast. Glenn Highway is the closest road to the selection area and at its nearest point is some six miles northwest of the northwest corner of the selection area. Several small lakes appear on both sides of Glenn Highway in this area and some, especially those close to settled areas (lodges, roadhouses, homes, etc.), are used by floatplanes. Eureka Roadhouse is located about between Anchorage (120 miles southwest) and Glennallen (80 mile northeast).

b. Topography

The topography of the selection area is largely glacial and mountainous. A braided stream system begins at the terminus of Nelchina Glacier and runs in a northerly direction through a glacial outwash plain. Higher elevations dominate especially in the southern portion of the selection area. Elevations range from a high of 10,075 feet (Mt. Siegfried) in the south to about 2,400 feet in the glacial outwash plain to the north.

c. Lakes

No lakes appear in the selection area. The author of this report has heard that a seasonal lake resulting from the damming effect of ice, logs, and other obstructions often appear in the glacial outwash plain during breakup. The lake is temporary and felt to be too shallow and hazardous for floatplane use.

d. Streams

The Nelchina River located in the northern portion of the selection is the principal stream in the area. The braided glacial fed Nelchina River begins at the terminus of Nelchina Glacier and flows in a northerly direction through the glacial outwash plain and a swampy area. Numerous channel changes and obstructions occur in this portion of the Nelchina River. The gradient of the Nelchina River in this area is difficult to estimate but is probably somewhat less than 20 feet per mile.

The only other named stream, Barnette Creek, passes through the northeastern corner of the selection area. Barnette Creek is a rather small (drainage area about 25 square miles) stream with a gradient averaging 200 feet per mile.

Several small, unnamed streams join the Nelchina River system. These streams all have gradients of about 1,000 feet per mile. The streams originate in mountains in the

western portion of the selection area and flow generally in a easterly direction to the Nelchina River system. A small unnamed tributary to the Matanuska watershed, with a gradient greater than 500 feet per mile, originates in the northwest corner of the selection area. Barnette Creek and the unnamed streams are felt to be too small, too steep, or too remote to accommodate commercial watercraft.

- e. Land Status
MTP's for the area provide no information relevant to a navigability determination.

B. Serial No. AA-006775 (approximately 51,000 acres)

1. General

a. Location, Development, and Accessibility

The selection area is located in T. 1 N., R. 10 W., T. 2 N., R. 10 W., T. 1 N., R. 11 W., and T. 2 N., R. 11 W., CRM. This portion of the report addresses all waterbodies (USGS source maps) in the above mentioned townships. The first two townships are full townships (about 23,000 acres per township) and the second two are fractional townships (about 2,500 acres per township). (See attached map.) This selection is located directly north of the area covered by the previous discussion. Eureka Roadhouse and a landing field is located one-half mile to the west of the northern portion of the selection area. A trail running in a northwest direction provides access to two cabins on Barnette Creek and a cabin in the southern portion of the selection area with Glenn Highway near Eureka Roadhouse. The only other development shown in the selection area, other than the above mentioned cabin and trail, is Glenn Highway which passes through the northwestern and northern portion of the selection area.

There is probably additional development within the selection area along Glenn Highway that is not shown on the USGS maps used for this report (see II.A., Source of Information). Eureka Roadhouse is located between Anchorage (about 120 miles southwest) and Glennallen (about 80 miles northeast).

b. Topography

The selection area is relatively flat with a small mountainous area evident in the southwest corner. Elevation ranges from about 2,200 feet to 5,866 feet (mountain southwest corner). The glacial outwash plain with the braided glacial fed Nelchina River dominates somewhat less than half of the southern portion of the selection area.

c. Lakes

The only lake appearing in the selection area is Goober Lake. Goober Lake, with no apparent external drainage, is long (about one-half mile) and narrow and lies just north of the mountainous area in the southwestern portion of the selection area. The lake appears large enough under proper conditions to accommodate floatplanes. A temporary lake is sometimes created during breakup by ice jams, logs, and other obstructions in the Nelchina River glacial outwash plain. The lake is felt to be too shallow and hazardous for floatplane use. Several small lakes appear along Glenn Highway to the west of the selection area. Many of these lakes, especially those close to settlement, are known to be used by floatplanes.

d. Streams

The braided glacial fed Nelchina River system is the principal stream in the selection area (passes through southern portion of selection area, flowing in northerly direction). Near the northeastern corner of the area the character of the Nelchina River changes from that of a braided stream system, made up of many different and changing channels, to that of one confined and obvious channel. Numerous obstructions (gravel bars, trees, etc.) probably occur in the braided part of the Nelchina River. The gradient of the Nelchina River within the selection area is probably around 15 feet per mile. All other named (Old Man, Eureka, and Barnette Creeks) and unnamed streams within the selection area are felt to be obviously either too small, too steep, or too remote to accommodate commercial watercraft.

e. Land Status

MTPs for the area provide no information relevant to a navigability determination.

C. Serial No. AA-4818, AA-4817, and AA-21201 (approximately 69,000 acres)

1. General

a. Location, Development, and Accessibility

The selection area for AA-4818 is located in T. 2 N., R. 9 W., CRM; selection area for AA-4817 is located in T. 2 N., R. 8 W., CRM; and AA-21201 is located in T. 2 N., R. 7 W., CRM. All waterbodies within the above mentioned townships will be addressed in this portion of the report. Here-in-after serial numbers AA-4818, AA-4817, and AA-21201 will be considered as the western, central, and eastern portions of the selection area. (See attached map.) The center of the selection area is located about 16 miles due east of Eureka Roadhouse on Glenn Highway. A few cabins (two appear to have no mapped access) and two cemeteries (near Mendeltna Creek) appear in the selection area. The Glenn Highway passes through the northern part of the western portion of the selection area.

A campground adjacent to Glenn Highway is shown in the northwestern corner of the selection area. There is probably additional development along Glenn Highway which occurred after publication of the USGS maps used in this report. This additional development is felt to be incidental to the purpose of this report and will not be further addressed. Tazlina Lodge, with an airport and seaplane anchorage, is located on Glenn Highway five miles north of the eastern portion of the selection area. Several cabins appear outside the selection area near the shores of Tazlina Lake.

b. Topography

The area is generally flat with a small mountainous area infringing on the southern side of the center and western areas. Elevations range from about 1,800 feet to 3,200 feet. The Nelchina River delta is apparent in the eastern part of the selection area.

c. Lakes

Part of Tazlina Lake (the largest lake in or near the selection area) is located in the southeastern corner of the eastern portion of the selection area. The lake with a surface elevation of 1,786 feet is quite large (57 square miles) and probably deep. Unquestionably under proper conditions floatplanes could use the lake. No roads connect Tazlina Lake to the Alaska highway system.

Two other large lakes (Twin Lakes) appear in the western portion of the selection area. These lakes are both narrow and roughly two miles in length. Both lakes could and probably have been used by floatplanes. Numerous other small unnamed lakes dot the northern portion of the selection area. Some of these lakes may be large enough to accommodate floatplane use.

d. Streams

The principal stream within the selection area is the Nelchina River and, except for the delta area near Tazlina Lake, the Nelchina River is a rather confined flat meandering river. According to Larry Kajdan (BLM-Glennallen Resource Area), who floated (rubber raft 13-foot Avon) the Little Nelchina and Nelchina Rivers in September 1974. The Nelchina River is generally around 200 feet wide and six to eight feet deep. He observed two 16 to 18-foot flat bottomed riverboats going upstream on the Nelchina River at the confluence of the Little Nelchina. The delta of the Nelchina River braids out and empties into Tazlina Lake via several channels. The two previously mentioned riverboats apparently found an adequate channel through the delta area in their journey upstream.

The Little Nelchina, according to Larry Kajdan, was shallow, swift, and had numerous obstructions. He felt it would be very difficult, if not impossible, to motor upstream on the Little Nelchina River. The Little Nelchina, Nelchina, Tazlina Lake, and Tazlina River is a fairly popular recreation water route and is described in several brochures. All other named (Mendelta Creek, Bottley Creek) and unnamed streams within the selection area are felt to be either too small, too steep, or too remote to accommodate commercial watercraft.

e. Land Status

MTPs for the area provide no information relevant to a navigability determination except that the delta area is shown as three main branches, which conflicts with the eight branches shown on the USGS map. This may mean that the three branches stand out in that they more readily lend themselves to boat traffic (wider, deeper). Nelchina River has been under consideration as a potential study river. Presently the river is withdrawn under Section 204(e) of FLPMA but is not being studied for a 20 year withdrawal under Section 204(c) of FLPMA. The Nelchina is, however, still in HR 39 as a wild and scenic river according to Jack Mosby, HCRS.

IV. Historic Use

The AEIDC contract material provided the following information on named waterbodies (Tazlina Lake, Tazlina River, Nelchina River, Little Nelchina River, and Mendeltna Creek) in and near the selection area. This report will address the navigability of all the above named waterbodies except for Tazlina River. Tazlina River is included in this portion of the report because of its past use impacts on the navigability of Tazlina Lake. The reference number (REFN) describes the source of the information. The location of the index is explained in II.D., Source of Information. (See attachment for reference material.)

The following discussion relates to the AEIDC historic information. Tazlina Lake (REFN 06885) was explored in 1848 by a Russian party in a baidarra (small boat). Two tributaries (probably the Nelchina River and Mendeltna Creek) were observed and one tributary (probably Nelchina River) is mentioned as a portage to Kenai Bay. REFN 02831 pertains to an Army Corps of Engineers determination of navigability of Tazlina Lake and Tazlina River. The other Tazlina Lake references deal primarily with physical characteristics and do not appear to have historic use information relevant to a navigability determination.

The Nelchina River references do not mention use of that waterbody by traditional watercraft. The references generally address trapping, mining, and physical characteristics of the area.

The Little Nelchina references do not include historic use information about traditional watercraft use of that waterbody. The references discuss mining, development, and physical characteristics in the area.

Mendeltna Creek references make no mention of watercraft use of that waterbody. The references address physical characteristics and development in the area.

Mr. Don Deering, a bush pilot who has lived in the Eureka area over twenty years, provided the following information during an interview with the author of this report. He has never seen a boat on the Little Nelchina or Nelchina Rivers, however, he had heard of recreational use (kayaks, rubber rafts) of those two rivers. Both rivers are used by trappers and others during the winter as highways of convenience (vegetation absent--easy traveling). He mentioned that he felt a person in a jet boat could probably negotiate the Nelchina River upstream to the edge of the braided area in the glacial outwash plain. Problem areas might be the delta area near Tazlina Lake. He said that a Mr. Barney Anderson (Mile 39, Glenn Highway) had a cabin on Tazlina Lake near Mendeltna Creek and probably knew more about watercraft use on Tazlina Lake, and possibly the Nelchina River, than anyone else in the area. He said Mr. Anderson had two large boats (20 to 30-feet) at his cabin. The boats were taken from Glenn Highway (Tazlina Lodge) to the lake on a sled trail during the winter. He confirmed that there are numerous cabins around Tazlina Lake and had seen numerous boats and floatplanes on the lake. He had also observed floatplane use on Twin Lakes. An effort was made to telephone Mr. Anderson; however, there was no answer.

An interview with Mr. Fred Williams (area manager, ADFG-Glennallen) revealed the following about the area. There are several cabins around Tazlina Lake. Floatplanes, both recreational and commercial-recreational, use Tazalina Lake for fishing and for access to hunting areas. Several boats have been seen on the lake and a couple of large boats (Mr. Anderson's) were hauled to the lake over a sled trail and now reside on the lake. Mr. Williams knew of a miner who he thought might have gone up the Nelchina River via Tazlina River and Lake in a boat on a prospecting trip. He is trying to obtain more concrete information regarding the above, however, as of the date of this report he has not been heard from.

Jim McAllister and Larry Kajdan (BLM-Glennallen Area Office) revealed the following about the area. They generally confirmed statements made in the other interviews. In addition, Jim contacted a Mr. Jon Brievogel of Rivers Unlimited in Copper Center (Phone 833-3535) and found out that Jon had taken a jet boat upstream on the Tazlina River to assist in recovering a person who had drowned in the Tazlina Lake area. Larry Kajdan, as previously mentioned, floated the Little Nelchina and Nelchina Rivers and, at the confluence of the two rivers, observed two boats (16 to 18-foot long) going upstream on the Nelchina River. He felt that the boats had to have come upstream from Tazlina Lake since the Little Nelchina is too rough for that type of boat and there is no other known access to the area. They both felt that Mendeltna Creek was too small and had too many obstructions to accommodate traditional watercraft engaged in commerce. Others were interviewed, however, nothing they said added information to the above discussion. The only waterbodies within the selection area that the State of Alaska considered navigable on the water delineation maps are Nelchina River and Tazlina Lake.

V. Physical and Commercial Susceptibility

The only waterbodies in the selection area to be discussed under susceptibility are Tazlina Lake, Nelchina River, and Little Nelchina River. All other named and unnamed waterbodies within the selection area are felt to be too small, too steep, or too remote to accommodate traditional watercraft engaged in commerce. Tazlina River is not within the selection area and, therefore, its navigability will not be addressed at this time.

Tazlina Lake is obviously physically large and deep enough to accommodate traditional watercraft. As previously discussed, the fact that it is somewhat remote (about six miles from Glenn Highway at Tazlina Lodge) and has no road access, has not precluded use of that waterbody. Recreational and commercial-recreational craft (kayaks, canoes, rubber rafts) cross Tazlina Lake on their way from the put-in on Glenn Highway (Little Nelchina) and the take-out on Richardson Highway (Tazlina River). Recreational and commercial-recreational floatplanes use the lake for fishing and access to hunting areas. Probably some of these users leave boats on the lake to assist in their operation.

It seems reasonable to assume that sometime in the future, given the relatively short distance, a road will be built from Glenn Highway to Tazlina Lake. This would open up the area to recreational as well as commercial development. This development could be in the form of commercial tour boats to Tazlina Glacier (heaven forbid) as well as ferry and supply boats connecting various development centers around the lake with the road.

Part of the Nelchina River, as discussed earlier, is physically susceptible to certain types of traditional watercraft. It seems evident, based on Larry Kajdan's observation of two boats on the Nelchina River and his physical description of the river, that certain boats can traverse the Nelchina Delta and progress upstream on the Nelchina. The upstream limit of navigability for these boats, based on USGS mapping and interviews, is probably the point where the river braids out (glacial outwash plain). Recent mineral discoveries in the Nelchina Basin may encourage individuals to utilize the river in the transport of bulkier items up to the glacial outwash plain. Floatplanes (less expensive than helicopters) could bring these items to Tazlina Lake where they would be loaded off and taken to the upper limit of the Nelchina River by boat.

The Little Nelchina, as previously discussed, is somewhat more physically restrictive than the other two waterbodies. It is smaller than the Nelchina and has a steeper gradient. It appears from USGS mapping and interviews that it would be difficult, if not impossible, to move up or downstream in watercraft other than kayaks, canoes, and rubber rafts. As previously mentioned, recreation and commercial-recreational canoes, kayaks, and rubber rafts do utilize the Little Nelchina from Glenn Highway to the Nelchina River, however, this type of use under current policy guidelines does not contribute to a determination of navigability.

VI. Recommendations

Based on the above information, I recommend that Tazlina Lake and the Nelchina River (up to the upper limit line on the attached map) be considered administratively navigable. I further recommend that all other waterbodies within the selection areas be considered administratively non-navigable.

VII. Map

USGS quadrangle Valdez with portions of Anchorage and Gulkana.

VIII. Summary of Recommendation

<u>Serial No.</u>	<u>Legal Description</u>	<u>Recommendation</u>
AA-006798	T. 2 S., R. 10 W. & R. 11 W. (CRM)	No navigable waters
	T. 2 S., R. 10 W. & R. 11 W. (CRM)	No navigable waters
	T. 3 S., R. 10 W. & R. 11 W. (CRM)	No navigable waters
	T. 4 S., R. 10 W. & R. 11 W. (CRM)	No navigable waters
AA-00675	T. 1 N., R. 10 W. (CRM)	No navigable waters
	T. 1 N., R. 11 W. (CRM)	No navigable waters
	T. 2 N., R. 10 W. (CRM)	Part of Nelchina River navigable, see upper limit of navigability on attached map. All other waterbodies non-navigable.

AA-4818 T. 2 N., R. 9 W. (CRM)

Nelchina River navigable.
All other waterbodies
non-navigable.

AA-4817 T. 2 N., R. 8 W. (CRM)

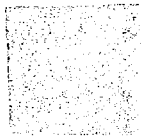
Nelchina River navigable.
All other waterbodies
non-navigable.

AA-21201 T. 2 N., R. 7 W. (CRM)

Nelchina River and Tazlina
Lake navigable. All other
waterbodies non-navigable.

Mac Wheeler
Mac Wheeler, Hydrologist

Proposed by
3/13/80
3/13/80
Date



[Signature]
Area Manager

3/13/80
Date

[Signature]
District Manager

3/13/80
Date

Attachment

AUG 19 1980

*Copy
Kurd**Valley 3*

Memorandum

To: SD (910)

From: Chief, Div. of Resources (930)

Subject: Review of Navigability Report - Nelchina "Gold Rush" Area

A report and supplemental memorandum report have been received from the Anchorage District Office discussing the navigability or nonnavigability of water bodies located within the areas of State selected lands that are within the area that recently was the subject of a "gold rush."

The selections, townships and ranges and acreages are as follows:

AA-6798	T1-4S	R10W	CRM	92,000
	T1-4S	R11W	CRM	30,000
AA-6775	T1-2N	R10W	CRM	46,000
	T1-2N	R11W	CRM	5,000
AA-4818	T2N	R9W	CRM	23,000
AA-4817	T2N	R8W	CRM	23,000
AA-21201	T2N	R7W	CRM	23,000
				<u>242,000 Ac +</u>

Some of the lands involved may be located outside of the area listed on the State's 1980 Priority List, and a telephone discussion with Ron Swanson, State of Alaska, Division of Research and Development was made by Neil Bassett, Branch of L & M Management concerning BLM's desire to process lands in this area to the State. Verbal agreement was received from Mr. Swanson.

The foregoing follows the methodology discussed in a recent letter to Mr. LeResche, Commissioner, Department of Natural Resources, State of Alaska. Although no formal answer has been received to the letter, we have been informed unofficially that the approach to handling lands outside the priority areas is acceptable to the State.

A supplemental report has been prepared by this office and is attached.

A review of the report was made for content and consistency with the December 14, 1979 AN CAB decision on navigable waters. I agree with the

conclusions and recommendations contained in the District's reports and find them consistent with the AN CAB decision. Your concurrence is requested.

I concur:

/s/ ROBERT W. ARNDORFER AUG 22 1980

Acting State Director Date

Enclosure

932:SBerg:ldj/maw:8/22/80:x5069

AUG 19 1980

Memorandum

To: Files - State Selections-Nelchina "Gold Rush" Area

From: Realty Specialist (932)

Subject: Supplemental Data

The subject area is part of the southwesterly portion of the Copper River Valley, lying on the northerly side of the Chugach Mountains.

The area is known to the writer to have a seven-year cycle of rabbit-lynx population, with the lynxes' cycle following the rabbits' by about two years. Trapping for lynx, when the price is high enough, has occurred in the area up to the present date.

Other fur bearers, such as wolverine, grizzly and black bear, fox, etc., inhabit the area, as do moose and sheep. Caribou could be found in the area until comparatively recent times.

In the early 1900's, a prospector's trail went from Valdez Glacier to the Tozlina Lake Trail (Mendenhall, Walter C., Geology of the Central Copper River Region, Alaska, USGS, Professional Paper No. 41, Washington, GPO).

A map showing a trail along or down the Nelchina River, across Tozlina Lake and down the Tozlina River was printed in the Alaska Prospectors, Valdez, January 8, 1903. (The copy of the map is blurred and I cannot say if the route was down the Nelchina River or along the banks.) (Both of the above citations are from A History of the Gulkana River, written by Kathryn Koutsky Cohen for the State of Alaska, Department of Natural Resources, Division of Research and Development in February 1980. I do not believe this was available to the ADO when its report was prepared.)

I assume that if travel across the lake and down the river occurred in the summer it would have been in watercraft fashioned by the prospectors or brought with them.

The report does not enlarge on use of this trail system by prospectors, but it may have been similar to that on the Klutina Lake Trail. Based on historic use by prospectors and others, C. Michael Borwn, Historian

(932), recommended that Klutina Lake and Klutina River be considered administratively navigable. The recommendation was concurred with by the State Director.

Based on the foregoing and the data contained in the ADO report and supplemental memorandum, I agree with the conclusions and recommendations contained in the ADO's request.

/s/ Sherm Berg

cc:
(013) ADO

✓ 932:SBerg:maw:8/19/80:x5069

Memorandum

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

IN REPLY REFER TO:
2620 (013)

To : SD (932)

Date:

FROM : DM-A

SUBJECT: Navigability Supplement to Report Number 3, Valdez Quadrangle,
Dated March 13, 1980.

As a result of conversations between Mr. Sherm Berg (932) and Mr. Mac Wheeler (013) regarding the subject report, it was agreed that a field trip to obtain supplemental information, and some reorganization of the information contained in the subject report, is in order to support our Nelchina River navigability recommendation. It was felt that the other recommendations contained in our report were sufficiently supported, so the only water body that will be addressed in this memo is the Nelchina River.

Mac Wheeler, the author of the subject report, recently floated down the Little Nelchina, Nelchina, Tazlina Lake, and Tazlina River in an Avon Adventurer (capacity 2,000 pounds) raft. Suffice it to say that, the trip confirmed his feelings expressed in the earlier report, that the Nelchina River is physically susceptible. As expected the most difficult section of the Nelchina River was the delta area immediately before the river dumps into Tazlina Lake. Surprisingly, the main delta channels shown on the 1951 USGS quadrangle appeared to be relatively stable in what was thought to be a dynamic area. (Main channel location appears to have changed very little since 1951.) Although somewhat difficult in that you have to pick the right channel, it is felt that a riverboat capable of carrying in excess of 2,000 pounds could ascend the Nelchina River via the delta. The Nelchina River above the delta was about 200-250 feet wide and over six feet deep and, consequently, easily boatable.

Mining claims were observed at several points along the Nelchina; however, none were being actively worked. No other development, except for a trail up Bottley Creek, was observed.

The Nelchina River is undoubtedly physically susceptible to riverboats with outboard motors capable of carrying in excess of 2,000 pounds.

As illustrated by the enclosed brochure, the Little Nelchina, Nelchina, Tazlina Lake, and Tazlina River are recognized as a popular recreational system for kayaks and rafts. Commercial-recreational rafters have reportedly enjoyed this trip on numerous occasions; however, Jules Tileston told Mac Wheeler on or about July 17, 1980, that Jack Allen, the regional solicitor, felt that commercial floating use of a water body by itself would not make that water body navigable. To further illustrate the recognized recreational interest in this river system, one only has to refer to pages 98 and 99 of Sepp Weber's Wild Rivers of Alaska for his account of the so called Tazlina River system.

As discussed in the earlier report, Larry Kajdan (BLM-Glennallen) saw two 16-18 foot riverboats (capacity in excess of 2,000 pounds) going upstream on the Nelchina at the Nelchina-Little Nelchina confluence. Although why those two boats were going upstream is not known, it is reasonable to think that they were either hunting or mining in the area and were using the easiest and least expensive mode of transportation to reach the area.

Even though the historical record of use of the Nelchina River is silent, there was native development in the Tazlina Lake area as evidenced by cabins and cemeteries at Mendeltna Creek and the lake outlet. With the known lifestyle of the natives in other similar areas of the state, it seems reasonable that they may have boated the Nelchina River in traveling and trading to and from the Cook Inlet area.

With the recent interest in access or boatability potential of water bodies in Alaska generated by changing ownership patterns, resource potential (gold in the Nelchina watershed) and the absence of other transportation alternatives (roads, etc.), it seems reasonable to assume that the Nelchina River (see upper limit on map attached to subject report) would probably be used as an access route to the area as development occurs.

It is my hope that this supplement, added to and read with the subject report, will adequately address those concerns Mr. Berg had with the original report.



Enclosure
"Alaska's River Trails"

JAN 19 1983

APC 11/17/83
Seitz 1/1/83
S. J. [unclear] 1/7
Law 1-11-83

Valdez-SS-FY83-#1
AA-004808 (2627)
AA-006775 (2627)
AA-003026 (2627)
AA-021217 (2627)
AA-006800 (2627)
AA-063999 (2627)
AA-061242 (2627)
(962)

Robert Arnold
1-12-83

Memorandum

To: Chief, Division of ANCSA and State Conveyances (960)
From: Assistant to the State Director for Conveyance Management (913)
Subject: Final Navigability Determination for State Selections in the Valdez Quadrangle

This is the administrative navigability determinations for water bodies within lands selected by the State of Alaska in the Valdez Quadrangle. The townships encompassing these selections and this navigability determination are listed in the attached Land Report Title Page of Report #1, Valdez SS - FY83 on file in the Navigability Section (962). A summary of the navigability recommendations contained in the report are attached. For reporting convenience the entire eight townships have been covered.

The report was written based on a review of available maps, a review of AEIDC contract material, library sources, and previous reports prepared by Anchorage District Office covering these areas.

A review has been made of the report. I agree with its recommendations and find them consistent with the December 14, 1979 AN CAB decision on navigable waters.

Based on the report the Tazlina River (T. 3 N., R. 2 W.), the Copper River (T. 2 S., R. 3 E.), and the upper Klutina River (T. 4 S., R. 4 W.) are determined navigable and all other water bodies within the subject townships are determined nonnavigable.

cc: State of Alaska
Navigability Project
Pouch 7-005
Anchorage, Alaska 99510
(with maps)

/s/ Robert D. Arnold

Mr. James E. Culbertson
Land Exchange/Entitlement Unit
State of Alaska
Department of Natural Resources
Division of Research and Development
Pouch 7-005
Anchorage, Alaska 99510
(with maps)

DM-NAV (013)
Attn: C. Neufelder
(with maps)

AM-G (017)
(with maps)

✓ 962:LCarufel*cje*1/6/83
DS 1 *AA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

LAND REPORT TITLE PAGE

State Alaska	District Anchorage
County	Resource area Glennallen
Type of Action Navigability Recommendations Valdez-SS-FY'83-#1	Serial Number See Below
Applicant's name State Selections - Alaska	Address (include zip code)
Date(s) of examination	

LANDS INVOLVED

TOWNSHIP	RANGE	MERIDIAN	SECTION	Serial Number	ACRES
T. 3 N.	R. 2 W.	Copper River		AA-004808	23,000
T. 1 N.	R. 9 W.	Copper River		AA-006775	23,000
T. 2 S.	R. 1 E.	Copper River		AA-003026	23,000
T. 2 S.	R. 3 E.	Copper River		AA-021217	23,000
T. 4 S.	R. 4 W.	Copper River		AA-006800	23,000
T. 8 S.	R. 2 W.	Copper River		AA-063999	23,000
T. 8 S.	R. 3 W.	Copper River		AA-063999	23,000
T. 8 S.	R. 7 W.	Copper River		A-061242	20,000
				Approximate Total	184,000

Purpose of report

To make recommendations as to navigability and nonnavigability of water bodies located within the selected townships.

Prepared by Louis H. Carufel	Title Natural Resource Specialists	Date of report
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Valdez-SS-FY'83-#1
AA-003026
AA-004808
AA-006775
AA-006800
AA-021217
AA-061242
AA-063999
(962)

Navigability Report
Valdez-SS-FY'83-#1

I. INTRODUCTION

A. Policy Guidance Used

1. Memorandum from Hugh C. Garner, Solicitor's Office, Washington, D.C. to Director, Bureau of Land Management, "Title to Submerge Lands for Purposes of Administering ANCSA", March 16, 1976.
2. Regional Solicitor's letter dated February 25, 1980 Kandik, Nation's Decision on Navigability.
3. Instruction Memorandum No. AK-81-781, Change 1.
4. Submerged Lands Act (67 Stat. 29, PL-31, May 22, 1953.)

B. Reference to Navigability Request

This report was requested by memorandum dated September 16, 1982 from Chief, Branch of State Adjudication (964)

II. LOCATION

- A. Geographic Setting - The report area covers all water bodies contained within the subject townships listed on the Land Report Title Page. The eight townships of the report area are scattered throughout the Valdez Quadrangle.

Topography within the subject townships is of a rugged steep mountainous nature with glaciers predominating at higher elevations of the Chugach Mountain Range. Also there are several upland valleys followed by riparian drainages which flows into major river lowlands. Elevations range from mean sea level (MSL) to nearly 5,400 feet above MSL. A tidal inlet, Port Valdez, abutts one subject township.

The oldest town in this area is Copper Center, established as a trading post in 1896. Valdez is the next oldest being established as a debarkation point during gold rush days in 1897. Today Valdez serves as a port of entry for Alaska and is the terminus of the Trans-Alaska pipeline. Airports are located throughout this area at Glennallen, Valdez, Tonsina, and Copper Center. Valdez is an important tourist area that is linked to the Alaska Marine Highway system. Valdez is an ice free port for commerce.

- B. Specific Lands - Lands involved are recorded on the Land Report Title Page. No additional townships were reviewed or included in this report.

III. DEVELOPMENT

- A. General commercial and domestic activities in the region consist of an improved road system, Richardson Highway, connecting many towns and major cities as Anchorage and Fairbanks. Secondary roads and several trails are present, many of which were associated with the exploration, trading, freighting and mining and prospecting for gold in the report area.

The major development after World War II was the construction of the Glen Highway to join the Richardson Highway at Glennallen. This road construction opened the region to population growth and development. The discovery of oil at Prudhoe Bay in 1968 resulted in the building of the Trans-Alaska pipeline which eventually ran through the region and terminated at Valdez and helped provide some economic stability for the area.

Present development in the report area appears to be patented headquarter sites associated with pipeline operations, commercial and recreational fishing and hunting, and air taxi operators. A small number of people do maintain cabins on various lakes and creeks. The above activities require service related support.

- B. Specific development activities in the report area will continue to be oil, minerals, tourisms, and recreation and service related industries to the communities in the vicinity.

IV. LAND STATUS

The master title plats (MTP's) contained no information that seemed relevant to a navigability determination. The subject townships are primarily public lands that have been withdrawn for power, utility corridors, transportation systems, pipelines and oil and gas. Some of the public lands in the subject townships are unsurveyed, have had mineral surveys, and R/W access delineations. The subject townships have applications for selection by city, village, native and State governments.

V. ACCESS

General access to the report area is through the Glenn and Richardson Highways and airports located at Glennallen, Valdez, Tonsina, and Copper Center. Also the report area is accessed by the Alaska Marine Highway which provides regular service to Valdez. The Port of Valdez is the loading terminus for large oil barges.

Access into the specific report area is generally by aircraft (float, helicopter, and wheeled), some secondary roads, and trails (historical and contemporary). In addition access could be by watercraft on boatable water bodies or by all terrain vehicles (ATV's) over undesignated trails.

VI. MAPS

A. U.S.G.S. Quadrangles (Scales 1:63,360-1:250,000)

Valdez - 1:250,000

Valdez-1:63,350

A - 4, 5, & 7

B - 5 & 6

C - 3, 4, 5, & 6

D - 5 & 8

Gulkana - 1:63,360

A-4

B. Master Title Plats

Master title plats (MTP's) were consulted to determine land status regarding ownership, withdrawals, power projects, etc.

C. Metallic Minerals Resources Maps of Anchorage, Alaska, compiled by Edward H. Cobb.

This is one of a set of maps showing mining locations in Alaska. This series is published by the United States Geological Survey Office.

VII. PREVIOUS NAVIGABILITY DETERMINATIONS

The Tazlina River is located in the North half of the North half of T. 3 N., R. 2 W., Copper River Meridian. In previous work done by BLM on selections impacted by the Tazlina River, the recommendation was made that it be considered navigable from its mouth at the end of Tazlina Lake to its junction with the Copper River. The State Director has concurred with the recommendations (8/19/80).

Both Klutina Lake and the lower river were previously determined to be navigable. A State Director memo conveying land to the village of Copper Center determined the Klutina River administratively navigable (11/5/79) from its outlet at Klutina Lake to the Copper River.

VIII. WATER BODIES

Several water bodies within the report area are glacially influenced. Physical information as depicted on the U.S.G.S. quadrangles is as follows:

<u>Lakes</u>	<u>Max. Length (Miles)</u>	<u>Area (Acres)</u>
Kenny	.25	+--40
Nelchina Bench	.40	+--50
Pippin	1.00	+--200

<u>Streams</u>	<u>Gradient (ft./mi.)</u>	<u>Width (Ft.)</u>
Bottley Creek	70-800	Minus 80
Sheep Creek (G)	150	Minus 80
Tsina River (G)	50-150	Less than 250
Ptarmigan Creek (G)	150	Plus 80
Cascade Creek (G)	350	Minus 80
Small Creek (G)	500	Minus 80
Mineral Creek (G)	250	Plus 80
Uno Creek (G)	800	Minus 80
Gold Creek (G)	600	Minus 80
Stephens Creek (G)	60	Plus 80
Klutina River (G)	35	Plus 80
Tonsina River (G)	60	Plus 100
Willow Creek	60	Minus 80

<u>Streams</u>	<u>Gradient (ft./mi.)</u>	<u>Width (Ft.)</u>
Squirrel Creek	40-100	Minus 80
Bernard Creek	100	Minus 80
Tazlina River (G)	35	Plus 200

NOTE: (G) indicates glacially influenced water body.

Numerous unnamed lakes many of which are located within the glacial outwash plain are also within the report area. The unnamed streams generally have more restrictive physical characteristics (less depth, less width and higher gradient) than do named streams.

All tidal water within the subject township are considered navigable under the Submerged Lands Act (67 Stat. 29, PL-31, May 22, 1953).

IX. USE INFORMATION

The AEIDC contract material in several instances makes mention of water bodies within this report area. On several occasions this use information refers to boat use for commerce or travel on a water body. Additional historical and contemporary use information was presented in source material listed in the reference portion of this report.

Based on source information the gold rush to the Yukon Territory initiated for a number of prospectors in 1897-98 at the Port of Valdez. Mining supplies and materials were hauled up through Valdez Glacier, past Townsend Peak across the Klutina Glacier to Twelvemile Camp which is slightly downstream from the confluence of the Klutina River and Stephens Creek. Benedict (1899) gave the following account:

One of the more popular methods of reaching Copper Center was by boat. Upon reaching the foot of Klutina Glacier, prospectors, mail carriers, etc., either sledged or packed their supplies and equipment to Twelvemile Camp on the Upper Klutina River, or to the head of Klutina Lake. At Twelvemile Camp, the goods were cached at a safe distance from the river, until the river had risen enough for boat travel. The goods were then carried to the boats by packing or by pulling sleds across the gravel surface. (Benedict 1899:44) By the first of June, the Upper Klutina River at Twelvemile Camp was sufficiently deep for travel, "and many boats were to be seen passing down the river every day," (Benedict 1899:57) the prospectors governing the course of the boat with a pole. Just below Twelvemile Camp, where the river was shallow, heavily-laden boats often scraped the bottom of the river, forcing the prospectors to push or pull the boat. (Benedict 1899:58) A few hundred feet below this spot, the prospectors encountered a dangerous point, upon

which many boats were wrecked. According to Benedict, who descended the Upper Klutina River by boat the point was:

caused by a change in the valley bottom crowding the river back again into a comparatively narrow channel and flinging it heavily against a sharply projecting elbow of land overgrown with great alders, from which it was in turn rudely flung diagonally to the opposite bank, only to be met there by another projection of land which forced it as violently to the right again as it had before been forced to the left. Upon one or the other of these dangerous spits, thus raged against by the whole volume of the stream, many a boat and its valuable cargo came to grief." (Benedict 1899:58)

Although there was but four or five feet of water at either of these formidable spits, the current was so powerful that a searcher for the lost goods could not have held his feet for an instant; and ten men, on a straight tug, could not budge the boat from the spot where it was held by the giant force of the stream. (Benedict 1899:59)

Nevertheless, many boats obtained safe passage through this portion of the river. Just above Sawmill Camp, some boats were upset by a large tree stump about 10 feet from the bank, near a turn in the river. Beyond Sawmill Camp, boats were sometimes upset by "two spruce trees a short distance, which stand in the middle of the swiftest current, and between which boats are compelled to pass." (Benedict 1899:63)(Benedict 1899: 60, 63)

Currently, floatplanes use Klutina Lake and provide access to the upper Klutina River. Boats are used on the lake and some recreational floating of the lower Klutina River occurs.

There is no historical use of Tonsina River being boatable for commerce or trade. Most boat use was for ferrying supplies across the river at permanent sites. Some rafts and boats tried to float the river but were unsuccessful.

The Tonsina River is used by recreational floaters using rubber rafts. Seep Weber's book "Wild Rivers of Alaska", rates the portion through the subject townships as white water 3-4, with a gradient of 32 feet per mile. Physical characteristics of Tonsina River and other water bodies excluding the Copper River, appear to preclude their use as a highway of commerce.

The Tazlina River has been determined navigable from Tazlina Lake to the river bifurcation with the Copper River by the concurrence of the State Director (8/19/80).

X. CONCLUSIONS

The source information that historical use during the "Gold Rush" days, of boats in the upper Klutina River (Twelve mile camp to Klutina Lake) indicate the river to be navigable and an avenue of

be

commerce. Also boat use on the Tazlina River by prospectors to carry mining gear and supplies to the Yukon and Klondike gold rush over a water body highway was a commercial and trade operation.

The accessibility, lack of use information, and limiting physical characteristics of the streams not previously determined in the report area, make it difficult to believe that they have been used or will be used as highways of commerce. Steep gradients, deep gorges, shallow depths, and braided, narrow channels, dominate the character of most streams. If development were to occur in these areas, roads, if possible, not the water bodies, will play the most important role as a mode of transportation.

All named and unnamed water bodies except Klutina River, Copper River and the Tazlina River in the subject townships are therefore concluded to be nonnavigable because they fail to meet the Departmental criteria.

XI. RECOMMENDATIONS

I hereby recommend that the Klutina River, Copper River and the Tazlina River in the subject townships of the report area due to their historical use and susceptibility for use as a highway of commerce (T. 3 N., R. 2 W., T. 2 S., R. 3 E., and T. 4 S., R. 4 W., Copper River Meridian) be determined navigable. Previous reports on waterbodies within the report area have found Tazlina Lake and River and the Klutina Lake and River to navigable.

I further recommend all other freshwater bodies, named and unnamed, in the report area be determined nonnavigable.

XII. REFERENCE

1. Mike Brown, Report on the Klutina watershed with reference to navigability.
2. Andrew Embicks, M.D. - Notes on the comparative difficulty for Kayaking upon 39 waterbodies in Alaska.
3. Weber, Sepp, Wild Rivers of Alaska, Alaska Northwest Publishing Company, 1976, pages 96 & 97.
4. Report on Navigability of streams tributary to the Copper River and Prince William Sound, Grumman Ecosystems Corporation, February 1975, Vol. I, II, & III.
5. AEIDC
The University of Alaska, AEIDC (Arctic Environmental Information and Data Center), under contract to BLM, researched historic information in Alaska and extracted the information relevant to many water bodies in Alaska. The information is arranged alphabetically by named water body. Copies of the contract data are available at the Alaska Resources Library, Anchorage District Office BLM, Fairbanks District BLM and BLM State Office.

6. Anchorage District
Previous Navigability Reports
GULKANA #2, FY81
GULKANA #2, FY82
7. Benedict, Neal D., 1899. "The Valdes and Copper River Trail, Alaska." Unpublished manuscript, Anchorage Historical and Fine Arts Museum. 158 photos., 178 pp.

Prepared by /s/ Louis H. Carufel Date JAN 07 1983
L.H. Carufel

Reviewed by /s/ Sherman F. Berg Date JAN 07 1983
Serm Berg

Reviewed by /s/ Gary K. Seitz Date JAN 07 1983
Gary Seitz

Summary of Navigability Determinations

<u>Legal Description</u> <u>Township-Range,</u> <u>Meridian</u>	<u>Serial Number</u> <u>State Selection</u>	<u>Report</u> <u>Name-FY- Area</u> <u>Month</u> <u>Acres (Est.)</u>
3 N., 2 W., CRM	AA-004808	VAL #1, 22,000 83 Dec.

Recommendations:

Tazlina River navigable. All other water bodies nonnavigable.

1 N., 9 W., CRM	AA-006775	VAL #1, 23,000 83 Dec.
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Recommendations:

Recommend that all water bodies be administratively determined nonnavigable.

2 S., 1 E., CRM	AA-003026	VAL #1, 23,000 83 Dec.
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Recommendations:

Recommend that all water bodies be administratively determined nonnavigable.

2 S., 3 E., CRM	AA-021217	VAL #1, 23,000 83 Dec.
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Recommendations:

Copper River from East boundary of NE $\frac{1}{4}$ of Section 1 as navigable in subject township. Recommend that all water bodies be administratively determined nonnavigable.

4 S., 4 W., CRM	AA-006800	VAL #1, 23,000 83 Dec.
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Recommendations:

Klutina River from South boundary of NW $\frac{1}{4}$ of Sec. 31 is navigable in the subject township. Recommend that all other water bodies be administratively determined nonnavigable.

8 S., 7 W., CRM	A-061242	VAL #1, 20,000 83 Dec.
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Recommendations:

The mean high tideline will be established at the time of survey. Recommend that all fresh water bodies be administratively determined nonnavigable.

8 S., 3 W., CRM A-063999

VAL #1, 23,000
83 Dec.

Recommendations:

Recommend that all water bodies be administratively determined nonnavigable.

8 S., 2 W., CRM A-063999

VAL #1, 23,000
83 Dec.

Recommendations:

Recommend that all water bodies be administratively determined nonnavigable.

Gulkana-GS-FY'92-1
Talkeetna Mountains-GS-FY'92-1
Valdez-GS-FY'91-1
AA-6667-EE (75.4)
AA-6667-B2 (2651)
AA-8104-1 (2653)
AA-4782 (2620)
AA-4786 (2620)
AA-4813 (2620)
AA-4815 (2620)
AA-4777 (2620)
AA-47488 (2620)
AA-47489 (2620)
(961)

Ed. Subst 11/87

NOV 15 1991

Memorandum

To: Deputy State Director for Cadastral Survey (923)
From: Deputy State Director for Conveyance Management (960)
Subject: Navigable Waters in Group Surveys 154, 400, and 434 (Window 96)

This memorandum identifies navigable water bodies below the meanderable size on lands in Window 96 (Lake Louise) which are selected, but not conveyed, under the Alaska Native Claims Settlement Act (ANCSA), the Statehood Act, or Native Allotment Act, and not reserved or withdrawn at the time Alaska entered the Union. It also identifies, if any, navigable waters excluded from conveyances (IC or TA) under ANCSA and the Statehood Act.

The BLM's navigability findings are based upon Federal law of title navigability. In a March 16, 1976, memorandum, Associate Solicitor Hugh C. Garner summarized the law for the purpose of administering the Alaska Native Claims Settlement Act (ANCSA). In general, nontidal water bodies are navigable if, at the time of statehood, they were used or were susceptible to use for travel, trade, and commerce. The Ninth Circuit Court's decision of December 13, 1989, on the navigability of the Gulkana River provides additional guidance. In this case, the Court found that watercraft customary at statehood included boats with a load capacity of about 1,000 pounds. The Court further held that contemporary guided fishing and sightseeing activity on the Gulkana River was commerce and that watercraft customary at statehood "could have at least supported" this commercial activity.

The report area is within the Copper River drainage. The north part of the area drains into the Gulkana River; the south part drains into the Tazlina River, and thence into the Copper River.

Most of the townships in the survey window are tentatively approved and twenty-two are patented to the State. Three townships are both ANCSA- and State-selected. Table 1 lists the lands and navigable waters in the fifty-five townships in the report area. Not all streams 198 feet or more in width are listed in the report because, regardless of navigability status, they are segregated on the survey plats. The same is true of lakes of fifty acres or more. Water bodies in the report area which have been determined navigable and which are meanderable by reason of size include: Nelchina River, Tazlina River, Tazlina Lake, Tyone Lake, Tyone River, Lake Louise, Susitna Lake, and Crosswind Lake.

Information for this memo was obtained from the United States Geological Survey (USGS) Gulkana, Valdez, Talkeetna Mountains, and Anchorage quadrangle maps; NASA aerial photographs (1:60,000 scale); BLM's litigation files for the Gulkana River case, field survey notes, master title plats, AALMRS; a 1984 draft navigability determination memo for nine State-selected townships prepared by Sherman F. Berg (copy in file AA-47490); and past navigability reports and related memoranda.

The draft memorandum of 1984 contains extensive use information regarding a water canoe route from Crosswind Lake to Fish Lake, thence through the lake's outlet and down West Fork Gulkana to Sourdough. Most of the information in the report came from depositions and affidavits obtained in preparation for the Gulkana River navigability litigation, and from contacts made by Sherman Berg of the Navigability Section.

In addition, the following people were interviewed in November, 1990:

<u>Name</u>	<u>Date</u>	<u>Phone Number and Background</u>
Larry Kajdan	11/09/90 09/27/91	822-3217, Recreation Specialist, BLM Glennallen District Office
Darryl Fish	11/09/90	271-5713, former manager at Glennallen BLM office
Vern Adkins	11/13/90	822-3346, longtime owner of Mendeltna Lodge on Glenn Highway at Mendeltna Creek
Ken Roberson	11/16/90	822-5521, sports fisheries biologist with ADF&G, Glennallen
Al Lee	11/16/90	822-3343, guide with operation from south end of Crosswind Lake
Wilson (Butch) Potterville	11/19/90	822-3416, recently retired ADF&G biologist at Glennallen

Sam Aguiar	11/20/90	822-3349, longtime resident of Glennallen, trapper
Al Krinke	11/21/90	822-3390, retired school principal, now minister of Basin Bible Church, Glennallen
Michael Goodwin	09/30/91	745-3975, District Ranger, State Div. of Parks
Michael McGinty	09/30/91	822-3217, BLM realty specialist, Glennallen
Mrs. Oro Stewart	10/1/91	277-2931, owner of Stewart's Camera Shop, longtime collector of rocks from streambeds
Tom Berkley	10/2/91	822-3808, owner of Eureka Lodge on the Glenn Highway

For a full account of the interviews, see Edgar A. Earnhart to Files, November 30, 1990, and October 23, 1991, copies in files AA-6667-EE (75.4) and AA-47486 (2620).

West Fork Gulkana River

On June 27, 1984, the United States disclaimed any interest in the West Fork Gulkana to Victor Creek in Sec. 20, T. 10 N., R. 4 W., CRM, about ten miles upstream of Fish Creek. The disclaimer was confirmed by the U.S. District Court, District of Alaska, on September 24, 1984 (case No. A-80-359 CIV, Gulkana River).

All-Water Route from Crosswind Lake to West Fork Gulkana River

The route is on State-selected lands. The lakes on the route are meanderable by reason of size.

The Crosswind Lake to West Fork Gulkana River water route can be located on the USGS Gulkana B-4 (1951, minor revisions 1963), B-5 (1951, minor revisions 1973) and C-4 (1950, limited revisions 1977) quadrangles. It extends about twenty miles from Crosswind Lake to West Fork Gulkana River. It is described as follows:

Beginning at the outlet stream at the northerly end of Crosswind Lake in Sec. 8, T. 7 N., R. 4 W., CRM; thence northeasterly through Secs. 8 and 5 to a lake in Secs. 4 and 5, T. 7 N., R. 4 W., CRM., thence across the lake to its outlet in its northeasterly end in Sec. 4; thence northeasterly down the outlet stream through Sec. 4, T. 7 N., R. 4 W., and Sec. 33, T. 8 N., R. 4 W., CRM, to a lake in Secs. 27, 28, 33 and 34, T. 8 N., R. 4 W., CRM; thence across the lake to the outlet stream in its northeast end in Sec. 27; thence easterly along the outlet stream to Dog Lake in Secs. 10, 14, 15, 22, 23, 26, and 27, T. 8 N., R. 4 W., CRM; thence across Dog Lake to its outlet stream, Dog Creek, in the southeast corner of the lake in Sec. 26; thence northerly down Dog Creek to the southerly end of Fish Lake in Sec. 32, T. 9 N., R. 3 W., CRM; thence down Fish Lake to its outlet stream (known as Dog Creek or Fish Creek) in Sec. 12, T. 9 N., R. 4 W., CRM; thence down this outlet stream to its junction with the West Fork Gulkana River in Sec. 6, T. 9 N., R. 3 W., CRM.

On the USGS inch-to-the mile maps, the streams on the route are single-lined, thus less than eighty feet wide. From the Gulkana main stem to about three miles below Fish Creek, the West Fork's gradient is about ten feet per mile; five feet per mile from that point to Fish Lake; ten feet per mile from Fish Lake to Dog Lake; and about three feet per mile between Dog and Crosswind lakes.

BLM's high altitude aerial photographs show a clear band of water running between the lakes. There are sharp bends, especially just below Crosswind Lake and in the outlet to Dog Lake (Dog Creek). Narrow channels and sharp bends may be impediments to navigation during times of ordinary high water. (CIR 60, roll 3097, frames 9469, July 1982 and roll 3013, frames 4205, 4206, and 4152, August 1981.)

Most people use the West Fork Gulkana-Fish Lake segment of the route, putting in at Sourdough on the Gulkana River. Bruno Zimbicki has traveled to his cabin on Fish Lake in a fourteen-foot plywood boat for subsistence hunting and fishing. Zimbicki has observed "power boats" (jet-driven boats) eighteen feet long on Fish Lake. A State biologist, Fred Williams, who floated the route from Crosswind Lake through to the West Fork in canoes counting fish, said that twenty-two- to twenty-four-foot aluminum riverboats had more trouble ascending the West Fork Gulkana than they did Fish Creek. BLM mining engineer, Dan Pederson, said he carried four passengers and gear on a fishing trip to Fish Lake in mid-July 1981. He used an eighteen-foot aluminum boat with a thirty-five-horsepower motor equipped with a jet unit. Fred Ewan, an Alaskan native leader and longtime resident of the area, saw people travelling from Sourdough to Fish Lake in twenty-one- to twenty-four-foot boats. Ewan said none of the boats that size went up to Crosswind Lake. (Sherman Berg's draft report, pp. 4-6.)

Few people have traveled the entire Crosswind Lake-West Fork Gulkana route. Fred Ewan said that some fifty or sixty years ago Natives at a village on the north end of Crosswind Lake used the route to Sourdough in homemade wooden boats. Ewan said that the boats were broken down at Sourdough. He did not say what the boats carried, but presumably they carried some cargo, maybe furs. Larry Kajdan of BLM confirmed that there are house pits at the north end of Crosswind Lake.

More recently, fish biologist Wilson (Butch) Potterville of ADF&G used a sixteen-foot Grumman Sports canoe with a small outboard motor--transported to Crosswind Lake during winter--to go from Crosswind Lake to Sourdough. He described the water as about knee-deep and the channels about ten feet wide with mostly broad curves. Potterville believed that an eighteen- to twenty-four-foot boat could navigate the route. Fred Williams of the ADF&G said that he has canoed the route twice in a fifteen-foot Grumman canoe with a three-horsepower motor. Al Lee and Ken Roberson claimed that people mostly use canoes from Crosswind Lake. Lee, a pilot, said that he has taken people with three-man rafts and sixteen-foot canoes to Crosswind Lake. He once rafted with several people as far as Dog Lake in a three-man raft. There are rocks in places which impede travel when the water is low, but the route can be canoed or rafted every spring and usually in the fall. Finally, Sam Aguiar, who has a cabin on Fish Lake, has floated down from Middle Lake in canoes and then down to Sourdough in what he says makes a nice "five-day trip." (See Sherman Berg's draft report, 1984, 5 and 6; and Edgar Earnhart to Files, November 30, 1990, copies in file AA-6667-EE.)

The all-water route from Crosswind Lake to West Fork Gulkana River is navigable. Around the turn of the century, Natives at a village on Crosswind Lake may have taken wooden boats down to Sourdough. Government personnel and local residents have taken fifteen- and sixteen-foot canoes over the entire route. The lower leg, Fish Creek (Lower Dog Creek), is used to take people and supplies to Fish Lake. It has sufficient water in spring for floats in rafts and canoes carrying substantial loads (up to a thousand pounds). In addition, the lower leg, Fish Creek (lower Dog Creek), is used by people in jet boats to reach Fish Lake.

Stream with Mouth in Southwest Corner of Crosswind Lake in Sec. 13, T. 6 N., R. 5 W., CRM. (Native allotment AA-6057 Parcel B)

This allotment (Delia E. Renard) straddles an unnamed stream in Sec. 13, T. 6 N., R. 5 W., CRM, at the southwest end of Crosswind Lake. Upstream of the allotment, the stream was determined non-navigable and the lands were patented or TA'd to the State.

Single-lined on the USGS Gulkana B-5 (1951, minor revisions 1972) map, the stream forks at about mile 3. The north branch, about four miles long, heads in Second Hill Lake. A south, or west branch, about seven miles long, drains some nine lakes, all much smaller than Second Hill Lake.

This stream's gradient is about thirteen feet per mile for the first half mile and about twenty-five feet per mile for the next mile. In BLM's NASA photographs, the stream is about forty to fifty feet wide for the first three-eighths of a mile to the second bend. It is unobstructed and appears flat and deep. Beyond the second bend, it is much narrower, about fifteen feet wide, with many sharp turns and much brush on its banks. Surface and low-level aerial photographs, taken by a BLM employee during an examination of the allotment in August, 1981, complement the aerial photos.

The field examiner's notes describe the parcel's boundary as following the shoreline. His sketch indicates that the presumed mean high water line of the lake is about three hundred feet from the edge of the water as shown in the photographs. The stream is about sixty-five feet wide at its mouth. (CIR 60, roll 26, frames 154 and 155, August, 1980; and James McAllister, Native Allotment Field Report, September 24, 1981, File AA-6057.)

Larry Kajdan said that he believes the stream is navigable to the second bend. The stream appears to be an extension of the lake to near that point.

The stream is navigable through Native allotment AA-6057 Parcel B, as adjusted by the BLM field examiner in 1981. The stream appears to be boatable on the low-level photos. A BLM employee confirmed that it is navigable for small craft to the second bend. This bend is located at or near the allotment's west boundary (adjusted).

Little Nelchina River

The Little Nelchina is on State-selected lands in Sec. 31, T. 3 N., R. 9 W., CRM. It is patented to the State upstream in T. 3 N., R. 10 W., CRM, and downstream in T. 2 N., R. 9 W., CRM. The stream is also on land patented to the State of Alaska within U.S. Survey 3677, most of which is downstream of, but partly in, Sec. 31. An Alaska Division of Parks campground is located on the survey (rivermile 5).

On the USGS Gulkana A-6 (1949, minor revisions 1971) and Valdez D-8 (1949, minor revisions, 1981) maps, the Little Nelchina is double-lined except in the last mile before emptying into the Nelchina River. It shows as a moderately braided stream in BLM photos. It is fifteen to sixty feet wide below the highway; thirty to one hundred feet wide, and generally more braided, north of the campground. (CIR 60, roll 2670, frames 8259 and 8260, August, 1978.) The Little Nelchina's gradient is moderately steep throughout the report area. It averages about fifty feet per mile between rivermiles 1 and 5. Beyond, the gradient is more moderate, and the channels wider, to near the big bend in Sec. 24, T. 4 N., R. 10 W., CRM.

None of the people contacted believed that the Little Nelchina is navigable above the Little Nelchina campground at the Glenn Highway. Mrs. Oro Stewart is probably more acquainted with the river than anyone else contacted. Although she has not tried to raft or canoe it, Mrs. Stewart has walked in and along it for many years hunting precious stones and rock samples in the streambed. She has never seen anyone attempting to float or ascend the Little Nelchina above the campground. She said that the long shallow stretches are too difficult to get through. The river is very shallow where the trail crosses it at many points. Larry Kajdan, who floated the river in a raft with three other men about ten years ago from the vicinity of the Glenn Highway bridge, believes that upstream it is not suitable for rafting or canoeing. District Ranger Mike Goodwin of the State Division of Parks, Copper River District, stated that all use is from the campground downstream. The river is rafted in fourteen- to fifteen-foot rafts from the Little Nelchina campground by people fishing for red salmon, and sometimes kings; it is also used by hunters. They go down to the Tazlina River and reach the Richardson Highway south of Glennallen. Goodwin did not believe the Little Nelchina is susceptible to navigation above the campground. Stretches of it are less than six inches deep. Finally, Tom Berkley at Eureka Lodge said the stream is too shallow for any craft larger than a small canoe, and he is not sure a small canoe could make it.

The Little Nelchina River is non-navigable upstream of U.S. Survey 3677 within Sec. 31, T. 3 N., R. 9 W., CRM. The river is too shallow for canoes or rafts. It is less than half a foot deep. Four people familiar with the river do not believe it is useful for recreation or transportation with anything larger than the smallest of canoes, and possibly not at all.

Other Water Bodies

All other named and unnamed streams less than the meanderable size are too steep, shallow, and swift to be boated or floated. Moose Creek in T. 3 N., R. 7 W., CRM, is too steep and shallow; the stream emptying into the West Fork Gulkana River in Sec. 5, T. 9 N., R. 3 W., CRM, is too narrow and swift; and Wood Creek in T. 3 N., R. 7 W., CRM, is shallow and narrow. Lakes under fifty acres are too small or are not connected to a navigable water body.

/s/ WAYNE A. BODER

cc:

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Title and Contract Section
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State of Alaska
Department of Natural Resources
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Ahtna, Inc.
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Chief, Branch of CIRI/Ahtna Adjudication (968)

Chief, Branch of Planning and Development (920B)

Chief, Branch of Field Surveys (921)

Chief, Branch of Examination and Records (922)
Attn: Records

Chief, Branch of Survey Preparation and Contracts (923)

Section Chief, Special Instructions (923)

Chief, Branch of Mapping Sciences (924)

John Toms (924)

DM-G (050)

961:EEarnhart:bav:11/05/91/9012t

Rivers and Streams Less Than 198 Feet Wide and Lakes Less Than
50 Acres in Size in Survey Window 96 (Lake Louise), Group Survey 154,
400, and 434. That Must Be Meandered and Segregated on Survey Plats,
by Township

Copper River Meridian

Tps. 5, 6 and 7 N., R. 3 W.
None.

T. 9 N., R. 3 W.
West Fork Gulkana River; outlet to Fish Lake in Sec. 6; Dog Creek in Sec. 32.

T. 3 N., R. 4 W.
None.

T. 4 N., R. 4 W.
Tazlina River (determined navigable on September 11, 1981).

Tps. 5 and 6 N., R. 4 W.
None.

T. 7 N., R. 4 W.
Outlet to Crosswind Lake in Secs. 5 and 8; outlet to lake north of Crosswind
Lake in NE1/4 Sec. 4.

T. 8 N., R. 4 W.
Dog Creek in Secs. 24, 25, 26 and 27; outlet to lake north of Crosswind Lake
in T. 7 N., R. 4 W., in SE1/4 Sec. 33.

T. 9 N., R. 4 W.
West Fork Gulkana River; outlet to Fish Lake in Secs. 1 and 12.

Tps. 3-5 N., R. 5 W.
None.

T. 6 N., R. 5 W.
Stream in Native allotment AA-6057-B in Sec. 13.

Tps. 7-9 N., R. 5 W.
None.

T. 3 N., R. 6 W.
Tazlina River (determined navigable August 16, 1982).

Tps. 4 through 9 N., R. 6 W.
None.

T. 3 N., R. 7 W.

Nelchina River (determined navigable September 9, 1981).

Tps. 4 and 5 N., R. 7 W.

None.

Tps. 7, 8 and 9 N., R. 7 W.

None.

T. 2 N., R. 8 W.

None.

T. 3 N., R. 8 W.

Nelchina River (determined navigable September 9, 1981).

Tps. 4 and 5 N., R. 8 W.

None.

Tps. 7, 8 and 9 N., R. 8 W.

None.

Tps. 2 through 9 N., R. 9 W.

None.

Tps. 3 through 9 N., R. 10 W.

None.

Tps. 3 and 4 N., R. 11 W.

None.



United States Department of the Interior



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Gulkana-GS-FY'93
AA-6704EE
AA-6666-EE
AA-6667-EE
AA-6658-EE
AA-8104-EE

May 17, 1993

RECEIVED

MAY 24 1993

Memorandum

To: Chief, Branch of Survey Preparation and Contracts (923)

From: Chief, Branch of Mapping Sciences (924)

Subject: Navigable Waters on Lands Selected by Ahtna, Inc., in Group Survey Nos. 148, 220, 222 and 394 (Window 1867)

This memorandum identifies navigable waters on lands interim-conveyed to, and selected by, Ahtna, Inc., in survey window 1867 (Chistochina, Gulkana, Gakona, Gulkana Townsite, Copper Center, Tazlina, and Tonsina). The survey window consists of 156 townships in the Copper River valley. Navigable waters in each township are listed in Appendix I.

This memo supplements our navigability memorandum of August 7, 1989.¹ At that time, at the request of Ahtna, Inc., we simply identified navigable waters excluded from conveyances, potentially navigable waters on selected lands, and non-navigable waters on selected lands. We did not identify navigable waters on Ahtna-selected lands. The corporation requested that this action be deferred until litigation over the navigability of the

¹ Wayne A. Boden to Deputy State Director for Cadastral Survey, August 7, 1989, file AA-6667-EE, ANCSA files. This report also identified navigable waters on state-selected lands and navigable waters excluded from tentatively approved lands.

Gulkana River was completed.²

Not long after the conclusion of the Gulkana River litigation, Ahtna, Inc., requested BLM to meander all navigable water bodies on its interim-conveyed lands and to segregate the submerged lands from the uplands. On August 21, 1991, the corporation requested that the following interim conveyances be reviewed for navigable waters: 226 and 227, 235, 245, 442, and 564.³ This report includes lands conveyed by ICs 235, 245, 442 (in part), and 564. Future reports will address lands conveyed by ICs 226, 227, and 442.

Navigability Criteria

The BLM-Alaska's navigability criteria are based upon federal title navigability law. In a March 16, 1976, memorandum, Associate Solicitor Hugh C. Garner summarized the law for the purpose of administering the Alaska Native Claims Settlement Act. In general, nontidal water bodies are navigable if, at the time of statehood, they were suitable for travel, trade, and commerce. The Ninth Circuit Court's decision of December 13, 1989, on the ~~navigability of the Gulkana River provides additional guidance. In this case, the Court found~~ that watercraft customary at statehood included boats with a load capacity of about 1,000 pounds. The Court further held that contemporary guided fishing and sightseeing activity on the Gulkana River was commerce and that watercraft customary at statehood "could have at least supported" this commercial activity.

Sources of Information

Information about the land status, history and physical character of the report area comes from a variety of sources. The USGS topographic maps (scale 1:63,360 and 1:250,000) are the primary sources for location, relief, and stream gradients. For further physical evidence, we used aerial photographs, particularly the NASA (CIR 60) color infrared photos, as well as a number of published and unpublished reports.

For sources containing historical and physical character information, see the bibliography. For land status information, we relied upon the Master Title Plats (MTPs). Certain U. S. Survey field notes and BLM navigability reports were also consulted. In addition, Fabio Ferruzzi and Donald C. Koenig interviewed local residents for information about certain

² Wayne A. Boden to Roy Ewan, February 9, 1989, file AA-6667-EE, ANCSA files. Mr. Ewan was president of Ahtna, Inc.

³ John L. Devenport to Lisa Burgess, August 21, 1991, enclosing Option 2, "Request to Modify Navigability Determination on IC'd Lands"; Ronald E. Royer to Chief, Navigability Section, September 4, 1991, file AA-6656-A, ANCSA files.

water bodies.⁴

Report Area

The report area is located in southcentral Alaska, popularly known as the Copper River Basin. The basin is bordered by the Alaska Range on the north, the Talkeetna Mountains on the west, the Wrangell Mountains on the east, and the Chugach Mountains on the south. The physiographic region of approximately 24,400 square miles is drained by the Copper River and its tributaries.⁵

The basin is dominated by glaciers and glaciated valleys with side slopes rising steeply into high mountain ranges. The major tributaries of the Copper River are generally heavily laden with silt, with the notable exceptions of the Tazlina, Klutina, and Tonsina rivers. These three rivers have natural settling basins formed by large morainal lakes. The water which emerges contains mostly very fine "rock flour."⁶

~~Relief in the lower elevations of the basin is generally low over a gently sloping and rolling landscape. Elevations over the entire basin range from 1,000 feet along the Copper River to the mountains of the Wrangell-St. Elias mountain complex, which contains the "largest concentration of peaks exceeding 14,500 feet in the United States."⁷ The basin is largely covered by spruce and hardwood forest, with large and small lakes and marshes sporadically spread throughout. The area of study is situated mostly in the northern end of the basin. All rivers and streams discussed in this report are direct or indirect tributaries to the Copper River.~~

The rivers and streams of this region are substantially influenced not only by snowmelt cycles, but also precipitation. One writer observed that "precipitation over the basin area is characterized by wide extremes. On the coastal side of the Chugach Mountains the average annual precipitation varies from 60 to 193 inches at sea level stations. In the Copper River Basin, the average precipitation ranges from 9 to 22 inches per year at the reporting stations. The change from the wet coastal climate to the dry continental climate occurs in a distance of probably less than 20 miles."⁸

⁴ Fabio Ferruzzi to File AA-6656-EE, May 18, 1992; and C. Michael Brown (for Donald C. Koenig) to File AA-6704-EE, April 30, 1993, ANCSA files.

⁵ Grumman Ecosystems Corporation 1975, 2-1.

⁶ Ibid., 2-9,10.

⁷ Ibid., 2-13.

⁸ Ibid., 2-23.

The Gakona River is reasonably representative of glacial rivers in the region. The Gakona's watershed, 620 square miles in size, is about three percent of the Copper River drainage. The river heads in the Gakona Glacier, the largest on the south side of the Alaska Range, situated about twelve miles east of Isabel Pass on the Richardson Highway.⁹ The highly turbid river flows southerly for ninety-two miles to the Copper River near the town of Gakona. The river's gradient fluctuates between twenty and thirty feet per mile with an average of about twenty-three feet per mile. Below the glacier for many miles the river is very braided, and the streambed is up to a mile wide. Below Otter Creek in T. 12 N., R. 1 E., CRM, to the Copper, the river is mostly confined to a primary channel about three chains wide, sometimes more, sometimes less. In some areas, the gravel streambed widens to nearly one-half mile.

Rainfall maps show that fifty-nine percent of the precipitation in the watershed falls on the upper reaches of the river, and most of the precipitation is during the summer months, with the peak in July. Mean monthly streamflow varies from about 110 cubic feet per second in February to 2,400 cubic feet per second in July. Ice jams sometimes cause the extreme ~~conditions of streamflow, ranging from blocked flow to peak flows when the the jam breaks.~~ The streamflow is significantly affected by the snowmelt runoff, which is typically greatest in the evenings and lowest in the morning due to a daily snowmelt cycle in the summer.

Copper River (USGS Gulkana and Valdez Topographic Series Maps; scale: 1:250,000)

The Copper River is one of the largest rivers in Alaska. In the course of conveying land to the Native corporations and the State of Alaska, we consistently found different segments of the river navigable. On June 26, 1979, we found the river navigable through the report area in T. 10 N., R. 5 E., CRM.¹⁰

Indian Creek (USGS Gulkana C-1 and D-1) (CIR 60: roll 3013, frame 4073, August 1991)

Indian Creek is entirely within IC 235 in T. 10 N., R. 5 E., CRM, and IC 442 in T. 11 N., R. 5 E., CRM. The submerged lands were not excluded from the conveyances.

This stream is a tributary to the Copper River at mile 228. In its first 8.5 miles, the creek has an average gradient of 55 feet per mile. The overall drainage area is 113 square miles. On October 14, 1963, the creek's discharge at the highway crossing was measured at 55 cubic feet per second (cfs); on June 12, 1964, 195 cfs; on July 7, 1964, 127 cfs.¹¹ The Glenn Highway crosses the river over a bridge at stream mile 2.

⁹ Inghram and Clay 1982, 2.

¹⁰ Sue A. Wolf, Decision, June 26, 1979, file AA-6656-EE, ANCSA files.

¹¹ Grumman Ecosystems Corporation 1975, 2-232.

The aerial photo shows a moderately meandering stream. Gravel and sand bars marking stream bends increase in number and are larger as the stream approaches the Copper. Thick vegetation covers the banks. The creek empties into an half-mile-long interconnecting channel of the Copper River in two distributaries. Each one is about thirty-five feet wide. The streambed appears to reach its maximum width of 75 to 100 feet at the bridge. The channel is about fifty feet wide. Only a half mile upstream from the bridge, the entire creek bed narrows to about thirty-five feet and remains that way for many miles upstream.

In 1929, when this stream was called Indian River, the Alaska Road Commission described the creek at a proposed bridge site near its mouth as 124 feet wide bank to bank with shifting channels. At extreme high water, it was four feet deep; at ordinary extreme high water, about three feet deep for about fifty feet.¹²

In 1992 and 1993, local residents generally informed us that this creek is not navigable except possibly in the short period after the spring breakup. Irvin Postin, who has lived in the area for forty-five years, described the stream as generally narrow and shallow. During the spring breakup, it is very fast and between three and five feet deep. ~~Ken Roberson~~ described the stream as one to two feet deep, thirty to sixty feet wide, with a gravel bed. Sweepers and logjams are present. He thought that he could float a moose in a canoe (about 1,000 pounds) down the creek, but it would be very marginal in a dry season. Larry Kajdan thought it might be possible to take canoes or rafts down the two miles from the highway to the Copper River, but he has not heard of anyone doing it. He did not think it would be a popular route of travel, given the presence of brush, trees and logjams, and usual shallow water. He was even more doubtful about the usefulness of the creek above the highway as a route of travel. John Rego also did not know of anyone who had boated the creek. Like Roberson, he thought a person might be able to float out a moose kill, but he noted that the water level would have to be "well above average."¹³

Indian Creek is not navigable. The creek is easily accessible by highway. Yet there is no readily available evidence of anyone boating this creek. Four informants consistently held the opinion that the creek was not navigable for canoes or rafts except possibly during the brief high water periods. Ordinarily, the creek is too shallow and hazardous (sweepers, logjams, fast current) for commercial navigation.

Boulder Creek (USGS Gulkana C-1 and C-2) (CIR 60s: roll 3013, frames 4140 and 4217, August 1981)

The first half mile of Boulder Creek, in Section 36, T. 10 N., R. 4 E., CRM, is patented

¹² Arctic Environmental Information and Data Center (AEIDC) 1979, 1351.

¹³ Fabio Ferruzzi to File AA-6656-EE, May 18, 1992; C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

(50-79-0146). The next next mile (Sec. 1, T. 9 N., R. 4 E. and Sec. 6, T. 9 N., R. 5 E., CRM) was conveyed by IC No. 235. The remainder of the creek in T. 9 N., R. 5 E., CRM, about six miles, except for a short segment in Sec. 4 conveyed by IC 442, crosses ANCSA-selected land.

Heading in glaciers in the Wrangell Mountains, Boulder Creek, about twenty-three miles long, flows northwest to empty into the Copper River about a mile upstream of the Chistochina River. The gradient is about twenty-five feet per mile in the first one and one-half miles; the next three miles (to the 2,150 foot contour line), about sixty-six feet per mile. In the next three miles, the average gradient is about 100 feet per mile. The aerial photos show a braided stream with a bed one to four chains wide and a stream channel one-half to one chain in width. Gravel bars, some vegetated, some not, are visible throughout. The creek meanders little. It has high, brush-covered banks.

We found no evidence of anyone boating this creek. Local residents informed us that the creek is most likely not navigable. John Rego remarked that he has walked up the streambed many times. Larry Kajdan said hunters and others drive ORVs up the creek (presumably the exposed gravel bars). While they and others (Ken Roberson, Lee Adler) thought that the creek was raftable at high water, they emphasized that such trips would be very dangerous. The creek is steep and very fast at high water. Ken Roberson noted that, as the name implies, the creek contain boulders. Normally, the channels are too shallow and rocky for any craft. Rego thought the channels were often less than a foot deep, sometimes only inches deep.¹⁴

Boulder Creek is not a navigable waterway. Local residents do not boat this braided glacial creek. Ordinarily, the channels are very shallow. The creek flows very fast during high water periods, making it very hazardous for raft or canoe navigation.

Chistochina River (USGS Gulkana C-2 and D-2) (CIR 60: roll 3013, frame 3990, August 1981)

The report area generally includes the first fourteen miles of this river. Starting at the mouth, the first few miles of the Chistochina riverbed, in Sec. 2, T. 9 N., R. 4 E., CRM, and Secs. 27 and 34, T. 10 N., R. 4 E., CRM, are patented (50-79-0146 and 50-82-0007). The next few miles in Secs. 9, 16, 21, and 22, T. 10 N., R. 4 E., CRM, were conveyed by IC 442. The riverbed in Secs. 9 and 16, T. 11 N., R. 4 E., CRM, was also conveyed to the State of Alaska.

Certain river segments are ANCSA- and State-selected: Secs. 5 and 8, T. 10 N., R. 4 E., (miles 6-8) and Sections 3, 4, 20, 29 and 32, T. 11 N., R. 4 E., CRM (miles 8-11, 13-14).

¹⁴ Ibid.

In 1988, we found the river navigable in two sections in T. 10 N., R. 4 E., CRM.¹⁵

A tributary of the Copper River at mile 221, the Chistochina drains an area of 750 square miles. In its last fourteen miles, the river has an average gradient of about twenty-eight feet per mile. Its principal tributaries are the East Fork (mile 15) and the Middle Fork (mile 25).

The river's average discharge (estimated) is 1,200 cubic feet per second.¹⁶ During the flood of August 1971, the U.S. Geological Survey measured at the Sinona Lodge a discharge of 40,000 cubic feet per second.¹⁷

The aerial photos show a braided river with a well-defined channel. It is about eight chains wide at the north end of the survey area, expanding to about fifteen chains at the south end. The river appears to have high energy and is loaded with sediment. There are no visible obstructions. Low brush occupy its banks.

During the Klondike Gold Rush, some prospectors explored this river valley for gold. A few tried to ascend the river in boats. On July 1, 1898, George Hazelett and fellow travellers attempted to take a boat up one of the mouths. Hazelett described the channel as six to eight feet deep, fifty feet wide, and very swift. They were unable to line the boat up due to the thick brush on the banks. So they hiked up the river. Several weeks later, Hazelett and his party of seven people returned to the boat (loaded with supplies) and succeeded this time in pulling it up the river. Just how far they traveled is not clear. Hazelett wrote that they reached the first fork on the right side -- perhaps the Middle Fork -- in six days. In late August, Hazelett and several others attempted to descend the upper reaches of the river in a wooden raft. They found the water so deep that they could not pole the raft. Eventually, they reached their boat, and in this, floated down the Chistochina an estimated twenty-two miles to the Copper in two hours and ten minutes.¹⁸

Subsequently, gold was discovered on the headwater tributaries of the Chistochina, and several mines were developed. Mining machinery and supplies were hauled to the mines over a trail following the river during the summer and over the river ice during the winter. Later, beginning in the 1930s, airplanes were frequently used.¹⁹

¹⁵ Robert W. Arndorfer to Deputy State Director for Cadastral Survey, September 22, 1988, file AA-6656-EE, ANCSA files. (Report for survey window 832.)

¹⁶ Grumman Ecosystems Corporation 1975, 4-19.

¹⁷ Ibid., 2-235

¹⁸ AEIDC 1979, 558-559.

¹⁹ Ibid., 556, 557.

In recent times, several local residents reported that they had rafted the Middle Fork and the Chistochina. Ken Roberson said that he has rafted the Chistochina from the upper part of the Middle Fork on moose hunting trips. Along the way he shot and quartered a moose and floated to the mouth. He noted that the river was four to six feet deep with no obstructions. Larry Scribner has floated the Middle Fork and the main stem to near the Copper River. He knows hunters have also made this trip. He said too that he once saw a riverboat at the mouth of the Middle Fork. He described the Chistochina's main channel downstream of the East Fork as four to eight feet deep in many places.²⁰ Dr. Andrew Embick thought a small, lightly loaded raft was the best craft to use on the river. The primary challenge in navigating this river is simply deciding which of the many shallow channels to follow. He doubted that moose hunters would boat the river in September because flows were low then and boaters would ground their craft a lot. They would more likely use the ATV trail following nearly the entire length of the river.²¹ John Rego, who routinely flies in this area inspecting mining claims, said that he has frequently seen boaters on the Chistochina beyond the reach under investigation.²²

We conclude that the Chistochina River is navigable through the report area. Riverboats and smaller craft carrying in excess of one thousand pounds may be used successfully on this reach. Reportedly, this reach of the river is four to eight feet deep in places. Hunters in rafts often descend the river, putting in on of its major forks. One of these forks (East) is about a mile below the upstream boundary of the report area; two of them (Middle and West) are many miles upstream from the report area.

Sinona Creek (USGS Gulkana C-2 and D-2) (CIR 60s: roll 3013, frames 3992, 4070, 4141, and 4143, August 1991)

The first twenty-four and a half miles of this creek are located in the report area. The lower reaches, in the NW¼ Sec. 10, T. 9 N., R. 4 E., CRM, were conveyed by IC 235. Upstream, the creek crosses several patented U.S. Surveys and the Glenn Highway in the Section 3. In T. 10 N., R. 4 E., CRM, the creek bed was conveyed by ICs 235 and 442; and patented in the extreme southwest corner of Section 34. It is State- and ANCSA-selected in Section 33, T. 10 N., R. 4 E., CRM, as well as in T. 11 N., R. 3 E., CRM.

This creek empties into the Copper River at mile 222, about a mile below the Chistochina River. Within the report area, the creek twists and turns in a narrow valley, falling on the average about twenty feet per mile. In its lowest two miles, its course is more linear. The

²⁰ Steven T. Leskosky to File AA-6656-EE, August 26, 1988; Robert W. Arndorfer to Deputy State Director for Cadastral Survey, September 22, 1988, file AA-6656-EE, ANCSA files.

²¹ Fabio Ferruzzu to File AA-6656-EE, May 18, 1992, ANCSA files.

²² C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

channel is about thirty-five feet wide in the photos. Gravel bars are visible on some bends.²³

The Glenn Highway crosses the creek over a bridge at creek mile 1.75. Three U.S. Surveys are clustered near the Glenn Highway bridge. On September 4, 1952, during the execution of U.S. Survey No. 3222, cartographer Harold Radcliff described the creek as forty feet wide and twenty inches deep. During the survey for U.S. Survey No. 3319 in July 17-22, 1954, he described the stream as twenty feet wide and ten to twenty inches deep. During the survey for U.S. Survey No. 5362 in May 20-24, 1976, surveyor Sherman Bell noted Sinona Creek as forty-six feet wide and two feet deep.²⁴

Local residents informed us that this creek is non-navigable. Irvin Postin, who lives near the creek's mouth, said that during most of the open season the creek is six to eight inches deep and fifteen to twenty feet wide on his property. It contains many logjams, beaver dams, sweepers, and deadfalls. He doubted this creek could be navigated during high water periods because it is then too swift and dangerous. Ken Roberson described the creek as fifteen to twenty-five feet wide and shallow, sometimes even dry, and containing many overhanging limbs and logjams.²⁵ John Rego said that this stream is too shallow, narrow, and filled with debris for navigation under any circumstances.²⁶

Sinona Creek is non-navigable. The creek is too shallow for commercial navigation. In its lower reaches, the creek is six inches to two feet deep. Logjams, deadfalls, and sweepers are present. Local residents, one of whom lives at the mouth of the creek, believe that this creek is non-navigable, primarily due to numerous impediments. The creek is too fast and dangerous to navigate during high water periods.

Sanford River (USGS Gulkana B-2 and 3) (CIR 60s: roll 26, frame 143, August 1980; and roll 3395, frames 7800 and 7801, August 1984)

The lower twenty-three miles is within the report area. The first mile and a half of the river bed, in Sections 35 and 36, T. 7 N., R. 1 E., CRM, was conveyed by ICs 564 and 565. The remainder of the river, located within the Wrangell-St. Elias National Park, is also selected by the regional corporation.

From its source in the Sanford Glacier in the Wrangell Mountains, this river flows northwesterly thirty-five miles to the Copper River at mile 199. The river drains a 350-square-mile area. It has a gradient of about forty feet per mile (fpm). The average runoff

²³ Fabio Ferruzzi to File-AA-6656-EE, May 18, 1992, ANCSA files.

²⁴ Ibid.

²⁵ Ibid.

²⁶ C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

(estimated) is about five hundred cubic feet per second.²⁷

The aerial photos show a stream bed 1,300 to 2,000 feet wide and braided channels. At its mouth, the Sanford is wider than the Copper. A main channel, one to two hundred feet wide, can be seen in the photos for about six and a half miles from the Copper. Upstream, a main channel is difficult to locate, the flow distributed in many narrow channels. The shoreline is well-defined, often consisting of high bluffs. There is little evidence of vegetated islands.²⁸

We have no historical record of boating on this river. During the Klondike Gold Rush period, explorers and prospectors recorded their experience in crossing this river by foot or with horses. They wrote that the best time to cross the river was at low water. The river was too swift and dangerous to cross at high water, usually in the afternoon when glacier melt adds to the flow. Neal Benedict reported that the banks were fifty to one hundred feet high. The main channel was about 125 feet wide and very swift.²⁹

In the course of interviewing local residents, we found only one person with boating experience on the river. Dr. Andrew Embick has kayaked the Sanford from its headwaters to the Copper River. He described it as fast, shallow, and rocky. The main difficulty in floating the river was staying in the main channel. The river is so braided that it was difficult to identify the main channel. He did not believe that the river was suitable for rafts, canoes, and fiberglass kayaks, generally because they would sustain damage from continual groundings. He recommended use of the more durable polyethylene kayaks.

Several local residents (Ken Roberson, Lee Adler, and Larry Kajdan³⁰) recalled stories of hunters rafting or canoeing the river. Roberson and Adler noted that an airstrip once existed on the upper reaches of the river. Before the creation of the Wrangell-St. Elias National Park in 1981, hunters reportedly were dropped off at the airstrip; they then hunted and transported game kills down the river in rafts. Neither was able to name anyone who had actually made the trip. John Breivagle also recalled someone ascending the river about twelve miles in a boat with outboard motors, but he could not recall their names.³¹

²⁷ Grumman Ecosystems Corporation 1975, 4-19 and 4-20.

²⁸ In addition, see Lynette Nakazawa's photo of river's mouth taken on July 29, 1985, Navigability Section files.

²⁹ AEIDC 1979, 2852 and 2853.

³⁰ Fabio Ferruzzi to File AA-6656-EE, May 18, 1992, ANCSA files.

³¹ C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

While they had no boating experience on the river, all of our contacts except Embick were confident that, during ordinary high water periods, the lower twenty-three miles of Sanford River are suitable for navigation by inflatable rafts carrying substantial loads. These included Doug Whitaker, Larry Kajdan, Ken Roberson, Lee Adler, and John Breivagle. All but Breivagle also thought canoes carrying substantial loads could be used on the river. Breivagle believed that it would take an expert canoeist. The river is fast and can be dangerous when high. Nevertheless, he thought a boat carrying a half ton or more could be taken up and down the river, at least to a canyon at the base of the mountains.³²

Due to the lack of sufficient information, we are unable to reach a finding on the navigability of this river. In view of local residents' opinions, we believe that this river may be susceptible to navigation and, therefore, warrants further investigation. More concrete information is needed. This may require a field inspection.

Gakona River (USGS Gulkana B-3 and C-3) (CIR 60s: roll 3013, frame 4211, August 1981; roll 3395, frame 7804, August 1984)

The Gakona River flows through three townships in the report area: Tps. 6-8 N., R. 1 E., CRM. In T. 8 N., R. 1 E., CRM (miles 14 to 23), the river crosses both State- and ANCSA-selected land. In 1981, the BLM held that the river downstream is non-navigable, and the submerged lands were conveyed by ICs 564 and 565.

This action was challenged by the State in a complaint filed in U.S. District Court (A82-200 CIV) against the Department, the BLM, and the Native corporations, alleging that the Gakona River is navigable from its headwaters to the Copper River. On July 1, 1982, the Solicitor in Washington, D.C., requested that this case be defended by the Department of Justice.

On March 15, 1991, the U.S. District Court for Alaska declared the lower reaches of this river navigable. The Court "ordered and adjudged" that "the Gakona River is navigable in fact under the federal test of navigability from its confluence with the Copper River to the point upstream where the river intersects the North township line of Township 9 North, Range 1 East, Copper River Meridian, in the State of Alaska." The township identified in this court order is adjacent and upstream of the uppermost township in the report area. Therefore, the Court's judgement obviates any further discussion of the navigability of this river within the report area.³³

³² Fabio Ferruzzi to File AA-6656-EE, May 18, 1992; C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

³³ State of Alaska v. United States of America, et al., A82-200 CIV (Gakona River). For a thorough discussion of modern usage of the river, see Susan DiPrete to File AA-6666-EE, June 10, 1987, ANCSA files.

Dog Creek (USGS Gulkana B-4) (CIR 60: roll 3013, frame 4205, August 1981)

This creek flows through Secs. 5, 7, 8, 18, 19, and 30, T. 8 N., R. 3 W., CRM, in the report area (miles 0.5 to 6). The lands are State- and ANCSA-selected. The remainder of the creek (in T. 9 N., R. 3 W., and Tps. 7-9 N., R. 4 W., CRM), on State-selected lands, is not within the report area.

Heading in Crosswind Lake (elevation 2,112 feet), this tightly meandering stream, single-lined on the USGS map, empties into the southern end of Fish Lake (elevation 2,015 feet), which in turn empties into the West Fork Gulkana River.³⁴ The creek flows through a number of small lakes in its course, including Dog Lake (elevation 2,098). From Dog Lake to Fish Lake, the creek travels about eight miles with an average gradient of about ten feet per mile.

In 1991, we found the creek navigable from Fish Lake to Crosswind Lake.³⁵ Nearly all traffic is downstream. Fred Ewan reported that inhabitants of a former village on Crosswind Lake used to descend the creek to the Gulkana in wooden boats. In more recent times, a few people have taken small boats and canoes down the creek from Crosswind Lake. In the fall of 1962, Bruno (Blackie) Zimbicki and a friend took two fourteen-foot wooden boats with a load capacity of seven to eight hundred pounds down the creek to Fish Lake. According to Zimbicki, other than having to cut a few trees out of the way, they had "no trouble" in reaching Fish Lake. (Zimbicki also recalled that in the mid 1960s Wayne Green and two others took a sixteen- to eighteen-foot Smokercraft up Dog Creek to Green's cabin on Crosswind Lake.)³⁶ Wilson (Butch) Potterville used a fifteen-and-a-half-foot Grumman Sport canoe (carrying capacity 1,100 pounds) and a four-horsepower motor with a lift; Fred Williams used the same canoe or a similar one. Potterville, who descended the creek on August 11, 1981, with an assistant, recalled that the channel was about ten feet wide and "knee-deep." He believed that he could have ascended the creek to Crosswind Lake in the canoe as well as eighteen- to twenty-four-foot boats during ordinary high water. Williams descended Dog Creek to Fish Lake in mid July 1965 and again in June 1966. (There are reports of others taking sixteen-foot canoes down the creek.) Finally, Al Lee once accompanied several people in a small raft as far as Dog Lake. He mentioned that rocks can

³⁴ On June 27, 1984, the United States disclaimed any interest in the West Fork Gulkana River from its mouth to Victor Creek in Sec. 20, T. 10 N., R. 4 W., CRM, about ten miles upstream of the Fish Lake effluent.

³⁵ Edgar A. Earnhart to Files, November 30, 1990; Wayne A. Boden to Deputy State Director for Cadastral Survey, November 15, 1991, file AA-6667-EE, ANCSA files.

³⁶ "Affidavit of Blackie Zimbicki," c. January 1983; Sherman F. Berg, Draft memo entitled "Final Navigability Determination for Gulkana Village Corporation on the Gulkana Quadrangle," February 9, 1984, Navigability Section files.

be impediments during low water periods.³⁷

Middle Lake Effluent (USGS Gulkana C-4) (CIR 60: roll 3013, frame 4205, August 1981)

This creek is located on ANCSA-selected lands in its entirety. The creek is located in Secs. 4 and 5, T. 8 N., R. 3 W., CRM, and in Sec. 32, T. 9 N., R. 3 W., CRM. In 1991, BLM decided that the creek is not navigable in Sec. 32, T. 9 N., R. 3 W., CRM.³⁸

From Middle Lake (elevation 2,080), this effluent, two and a half miles long, flows westerly to empty into Dog Creek at mile 0.5. The USGS map shows a meandering, single-lined stream. It has an average gradient of twenty-five feet per mile.

This creek is part of a canoe route from Middle Lake to Sourdough on the Gulkana River. People usually haul a sixteen- to seventeen-foot canoe in an ATV over the eleven miles from Sourdough to Middle Lake. This is a shallow lake, only four to six feet deep. Sam Aguiar, who has a cabin on Fish Lake, has perhaps canoed the route ten times between 1975 and 1990. In 1989, he and his wife, in a party of six, made the trip in two canoes. He described it as a pleasant three- to five-day trip. The float down the creek is a "thriller." The creek ranges from six inches to three feet deep, and in places it is too narrow to paddle, only four feet wide with three- to four-foot-high banks. In high water, the stream in these tight areas is like a chute. An occasional deadfall over the stream may cause the canoeists to duck fast. During low water, one must wade or drift the canoes over some riffles.

The Reverend Al Krinke of Glennallen recalled making one of these trips with Sam Aguiar, probably in September. They used a nineteen-foot aluminum canoe with a ten-horsepower motor. The three people and their gear probably weighed around 800 pounds. Although the stream was narrow, it always carried enough water to float the canoe. They had to clear or duck some deadfalls. He noted that the water was deepest after they entered Dog Creek.³⁹

Larry Kajdan, Ken Roberson, and Fred Ewan confirmed that others canoe this creek. Roberson said that the proximity of this route to Sourdough made it easier and more economical to access than some others; he characterized it as a "poor man's float." From what he has seen during overflights, Roberson described the creek as ten to fifteen feet wide and about a foot deep. It is not deep, but most of it will float a loaded canoe. It is too

³⁷ Edgar A. Earnhart to Files, November 30, 1990; Wayne A. Boden to Deputy State Director for Cadastral Survey, November 15, 1991, file AA-6667-EE, ANCSA files; "Affidavit of Wilson 'Butch' Potterville," February 1, 1983; "Deposition of Butch Potterville," April 6, 1983; "Affidavit of Fred T. Williams," January 26, 1983, Navigability Section files.

³⁸ Wayne A. Boden to Deputy State Director for Cadastral Survey, November 15, 1991, file AA-6667-EE, ANCSA files. (Report for survey window 96.)

³⁹ Edgar A. Earnhart to Files, November 30, 1990, file AA-6667-EE, ANCSA files.

narrow for rafts. Some portaging or walking may be necessary.⁴⁰

We conclude that this creek is non-navigable. The creek is too narrow and shallow for craft carrying substantial loads (about 1,000 pounds). Ordinarily, local residents use this creek for recreational purposes in small lightly loaded canoes. It is not suitable for larger craft.

Tazlina River (USGS Gulkana A-3 and 4) (CIR 60: roll 3097, frames 9435 and 9437, August 1982)

The lower twenty-two miles of this river is located within the report area; specifically, T. 3 N., Rs. 1-3 W., and T. 4 N., Rs. 2 and 3 W., CRM. The riverbed in all these townships but T. 3 N., R. 1 W. was conveyed by ICs 245 and 246.

In 1980, the State Director decided that the Tazlina River, about thirty miles long, is navigable from the Copper River to Tazlina Lake.⁴¹ The river drains an area of 2,590 square miles, the largest drainage area of any tributary west of the Copper River. It has an average gradient of about seventeen feet per mile. The river flows through a canyon for most of its length. In the first twenty-five miles, the canyon has sharply cut bluffs rising five hundred feet above the river. On the lower fifteen miles the banks are about six to eight feet high. The river is well over three chains wide and frequently four to six chains wide. Normal depths range from about two to twelve feet. The estimated flow is six miles per hour.

The river has an average flow of 4,100 cubic feet per second. A gage for the Tazlina River on the Richardson Highway bridge, for a drainage area of about 2,670 square miles, showed a discharge averaging 4,085 cubic feet per second over a twenty-two-year period.⁴²

The Glennallen Resource Area reported that in the early 1900s miners transported goods and equipment up the river. In more recent times, John Breivagle, a commercial jet boat operator, transported people, supplies, and small vehicles up and down the river. Karl Becker, an outfitter, also used large inflatable rafts capable of carrying a ton on the river.

⁴⁰ Ibid.; Darryl L. Fish to DM-A, November 17, 1980; and Sherman F. Berg, Draft memo entitled "Final Navigability Determination for Gulkana Village Corporation on the Gulkana Quadrangle," February 9, 1984, Navigability Section files.

⁴¹ Louis H. Carufel, Navigability Report: Valdez-SS-FY'83-#1, January 7, 1983, and Robert D. Arnold to Chief, Division of ANCSA and State Conveyances, January 19, 1983, file AA-004808, State selection files. Sherman F. Berg, Navigability Report: Gulkana, FY-82, Report No. 2, c. August 1982, and Robert D. Arnold to Assistant to the State Director for Conveyance Management, August 16, 1982, file AA-004809, State selection files.

⁴² Grumman Ecosystems Corporation 1975, 2-67, 2-79, and 4-170.

Landowners on Tazlina Lake have also boated to their property.⁴³

Mendeltna Creek (USGS Valdez D-7) (CIR-60: roll 2670, frame 8264, August 1978)

The report area includes about four miles (only two air miles) of this creek: in Secs. 2, 11 and 12, T. 2 N., R. 7 W., CRM. These lands, below the Glenn Highway crossing, are selected by both the State and regional corporation.

This creek flows fifteen miles southeasterly in tight meanders from its source in Old Man Lake to Tazlina Lake, emptying into the lake about two miles northeast of the Nelchina River. It has an average gradient of about twenty-eight feet per mile, drains an area of about 180 square miles, and has a average (estimated) runoff of about two hundred cubic feet per second.⁴⁴ On July 13, 1970, it had a discharge measuring only 108 cubic feet per second.⁴⁵ The aerial photos show a meandering single-channeled creek twenty to forty feet in width and numerous small gravel bars on bends. Reportedly, the creek is two to six feet deep. Below the highway, the creek "flows through dense willow and alder thickets and is choked with log jams in many places. This creek provides habitat for red salmon, king salmon and grayling. Grizzly bears are often seen along its banks."⁴⁶ There are no visible obstacles. The banks are covered with low-lying vegetation.

The Glenn Highway crosses this creek over a bridge in creek mile 7. Mendeltna Lodge is located near here. According to Larry Kajdan, several cabins also are located about a quarter mile above the highway. Several cabins also are located on Tazlina Lake near the creek's mouth. He also reported a former Native village about a quarter mile from the lake.⁴⁷

Occasionally, canoers (and possibly kayakers and rafters) float Mendeltna Creek from the Oil Well Road about a mile below Old Man Lake to the Glenn Highway. We interviewed three people --- Larry Kajdan, Darryl Fish, and Ken Roberson -- who have canoed the route. Kajdan used a seventeen-foot canoe; Fish, a nineteen-foot canoe. Kajdan called the trip a "pleasant run." The creek is twenty to thirty feet wide and two to six feet deep. After clearing the creek of logjams, Vern Atkins, who owns a business on the highway, used to

⁴³ Darryl L. Fish (for Larry Kajdan) to DM-A, November 17, 1980, Navigability Section files.

⁴⁴ Grumman Ecosystems Corporation 1975, 4-171.

⁴⁵ Ibid., 2-233.

⁴⁶ Lance Lockard (for Larry Kajdan), Navigability Report: Gulkana-FY81-#2, July 2, 1981, file AA-004805, State selection files.

⁴⁷ Ibid.

sponsor canoe races on the creek. In addition, he used to run an airboat from the highway for about two miles. He no longer sponsors the races because of the pressure of his business and no longer operates the airboat because it is "too cumbersome." He, like Kajdan, estimated the creek's width at twenty to thirty feet and its depth at two feet and more.⁴⁸

Local residents agreed that the creek below the highway is non-navigable. The creek is filled with logjams, deadfalls, and sweepers. Atkins said it is rocky just below the highway and very shallow near Tazlina Lake. In 1990, Atkins said that in the past twenty years he had known of only three people who tried to descend this section. One drowned; another said "never again." (He didn't mention what happened to the third person.) John Breivagle recalled that in June 1977 he took a state trooper up the creek a half mile in a twenty-four foot jet boat in order to retrieve the body of man who drowned. They had to cut through several deadfalls. Several people agreed with Breivagle's opinion that this section of the creek is "just too much trouble" and "too dangerous" for navigation.⁴⁹

Mendeltna Creek is non-navigable. The consensus of local residents (Roberson, Fish, Atkins and Breivagle) is that this stream is too dangerous for any kind of boating south of the Glenn Highway. One person drowned in trying to descend it. Another said he would never try it again. Another person who tried to take a jet boat up said it is too much trouble and too dangerous to boat.

Nelchina River (USGS Valdez D-7) (CIR 60: roll 2670, frame 8264, August 1978)

The report area includes public land fronting on a quarter-mile of the main channel of the Nelchina River in mile 1, in Section 11, T. 2 N., R. 7 W., CRM. The lands are selected by the State under AA-21201. The river, about three-quarters of a mile wide in this township, has been meandered and the submerged lands segregated in the rectangular survey.

In 1980, the State Director decided that Nelchina River is navigable to Eureka Creek. Heading in Nelchina Glacier, this river flows north and southeast twenty-eight miles to Tazlina Lake. The river drains an area of about 800 square miles and has an estimated flow of 1,500 cubic feet per second. The mouth is an alluvial fan about two miles wide. In the

⁴⁸ Ibid.; Edgar A. Earnhart to Files, November 30, 1990, file AA-6667-EE; Fabio Ferruzzi to File AA-6656-EE, May 18, 1992; and C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files. In 1980, Kajdan reported this creek navigable "both upstream and downstream by boats carrying over 1,000 pounds. . . . Affords upstream access to Old Man Lake and downstream access to Tazlina Lake. . . . Should be considered navigable." Darryl L. Fish to DM-A, November 17, 1980, Navigability Section files.

⁴⁹ Edgar A. Earnhart to Files, November 30, 1990, file AA-6667-EE; Fabio Ferruzzi to File AA-6656-EE, May 18, 1992; and C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

first five miles, the river flows in numerous channels, varying from fifty to more than two hundred feet in width. Above mile 5.5, the flow is consolidated into a primary channel over two hundred feet in width. The average gradient throughout this stretch is about twenty-eight feet per mile.⁵⁰

The river is navigable for rafts and riverboats. Mac Wheeler, a BLM employee, floated down the Nelchina from the Little Nelchina (mile 21) in an Avon Adventurer. He reported that the delta was most difficult section to float, presumably because of shallow water. Nevertheless, he believed that a riverboat carrying a ton of goods could be taken up the Nelchina. Above the delta, the river is 200 to 250 feet wide and more than six feet deep. Commercial rafting companies reportedly have operated on the river. Larry Kajdan, also a BLM employee, observed two sixteen- to eighteen-foot riverboats near the mouth of the Little Nelchina.⁵¹

Moose Creek (USGS Gulkana A-4) (CIR 60: roll 3395, frame 7833, August 1984)

Moose Creek in T. 4 N., R. 2 W. CRM (miles 2-12), is either patented or conveyed by IC 245. A short segment in Secs. 1 and 2, T. 4 N., R. 3 W., CRM, is located in an ANCSA- and State-selection area.

Heading in the Twin Lakes, this creek empties into the Tazlina River at mile 6. The creek drains an area of about 150 square miles and has an estimated average flow of about 120 cubic feet per second at mile 5.9.⁵² In mile 3 to 10, the creek falls two hundred feet for an average gradient of twenty-nine feet per mile. It is about twenty-five feet wide and very sinuous. The banks are heavily vegetated. There are numerous places along the stream where vegetation appears to nearly or completely block the stream (probably beaver dams).

Local residents reported that this creek is non-navigable. Larry Kajdan and John Rego said that this stream is too narrow, shallow, and full deadfalls and the like for navigation. Kajdan said the stream is a popular fishing stream for grayling. It is fished from the banks only.⁵³

Moose Creek is not navigable. From photo-interpretation and interviews with local residents we know that this creek is narrow and filled with deadfalls, logjams, and the like. Local residents report that the creek is not boated and, in fact, is too shallow for practical navigation.

⁵⁰ Grumman Ecosystems Corporation 1975, 4-171.

⁵¹ Donovan Yingst to SD (932), August 18, 1980, Navigability Section files. This supplemented report no. 3, Valdez Quadrangle, March 13, 1980.

⁵² Grumman Ecosystems Corporation 1975, 4-171.

⁵³ C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

Tonsina River (USGS Valdez C-3 and C-4) (CIR 60: None available) (Black/White 1967, Line 8, Roll 29, 1;12,000)

This river flows through eleven townships, eight of which are in the report area. This encompasses all but the lowest twelve miles of the fifty-nine-mile-long river (including Tonsina Lake). The river in three townships -- T. 4 S., Rs. 1 and 2 W., and T. 2 S., 2 E., CRM -- must yet be reviewed in terms of navigability. All include river segments below Tonsina Lake. Either Ahtna, Inc., or the State, or both (topfilings), have selections along the river in the townships.

In 1981, BLM determined that Tonsina Lake was navigable. However, Tonsina River was determined non-navigable in Tps. 3 and 4 S., R. 1 W.; Tps. 4 and 5 S., R. 2 W., CRM. In 1989, we found the river navigable in Tps. 2 and 3 S., R. 1 E. and non-navigable in T. 6 S., R. 2 W., CRM (segment above Tonsina Lake).⁵⁴

From Tonsina Lake, the river flows northeasterly thirty-eight miles to the Copper River at mile 123. The average gradient from the lake to Copper River is thirty-one feet per mile. The river is mostly greater than three chains in width, but it has stretches under and over three chains in width. The drainage area is 830 square miles. The estimated average flow is 1,500 cubic feet per second.⁵⁵

In July 1974, employees of the Grumman Ecosystems Corporation conducted a helicopter survey of the river. They described the river below the lake as follows: "The river is characterized, in this reach, by a steep gradient, swift flow, boulders in channel, some gravel bars, high concentrations of glacial flour and numerous riffles. The first 8 miles below Tonsina Lake slope only 11 feet per mile, while the remaining 32 miles slope at nearly 40 feet per mile. From mile 40 to mile 32 flow is somewhat laminar and waters are not always confined within their banks. Below mile 32, as the gradient steepens, flow increases and becomes more turbulent, with some white water and standing waves. Flow is generally confined to one channel, except below the Edgerton Highway bridge, where the main channel is still easily definable in all areas." The width of the main channel ranged between sixty and eighty feet. At mile 5, they measured the river's velocity at eight feet per second.⁵⁶

According to the Grumman Ecosystems Corporation, the Coast Guard in October 1970 decided that the Tonsina was navigable at least to the proposed site of the trans-Alaska pipeline crossing at mile 27.5. In September 1973, the Corps of Engineers surveyed the site

⁵⁴ Lance Lockard, Navigability Report, July 2, 1981; Jules Tileston to State Director, July 31, 1981, AA-6800, State selection files; Wayne A. Boden to Deputy State Director for Cadastral Survey, August 7, 1989, AA-6704-EE, ANCSA files.

⁵⁵ Grumman Ecosystems Corporation 1975, 4-20, 4-126.

⁵⁶ Ibid., 4-133.

and considered the river navigable to Tonsina Lake. The corporation agreed with the Corps that the river is navigable to the lake.⁵⁷

Recreationists and hunters occasionally visit this river system. In 1983, Ken Roberson reported that recreationists fly into Tonsina Lake for float trips (rafts and kayaks) down the river to the Richardson Highway crossing. In the fall, hunters also take eighteen- to twenty-foot riverboats using jets up to the lake. He said too that Jon Brievagle taken a twenty-four-foot boat with a jet unit from Tonsina Lodge on the highway to Tonsina Lake seven or eight times. Four or five trips were chartered.⁵⁸ According to kayakers, the river between the lake and the highway is Class II+ on the International Whitewater Scale. The main channel is at least two feet deep.⁵⁹

The Tonsina River from Tonsina Lake to the Copper River is navigable. Reported usage has included eighteen- to twenty-four-foot-long shallow draft boats using jets, and numerous inflatable rafts. These craft are capable of carrying more than a thousand pounds (people or goods) on this river. At least one boater has transported people to the lake for hire.

Upper Klutina River (USGS Valdez B-6 and C-6) (CIR 60: Roll 2670, Frame 7933, August 1978)

This river (above Klutina Lake) flows four miles across ANCSA-selected lands in T. 3 S., R. 4 W., CRM, to empty into Klutina Lake. This is below Stephens Creek (NW ¼ Sec. 31, T. 4 S., R. 4 W., CRM), which we identified in 1983 as the head of navigation for boats.⁶⁰

The Upper Klutina River heads in the Klutina Glacier on the slopes of Mt. Brookfield, sixteen miles north of Valdez, and flows northerly about seventeen miles to Klutina Lake (elevation 1,719 feet). The lake, sixteen and a half miles long, acts as an effective settling pond for this glacial river. From the lake, the Lower Klutina flows twenty-five miles with an average gradient of twenty-nine feet per mile to the Copper River at Copper Center. The river in this reach is in a steep-walled U-shaped glacial valley. It has been characterized as a

⁵⁷ Ibid., 4-128 and 4-129.

⁵⁸ Dennis P. Daigger to Gary Seitz, July 12, 1983, Navigability Section files. Mr. Daigger was a State natural resource manager.

⁵⁹ Wayne A. Boden to Deputy State Director for Cadastral Survey, August 7, 1989, file AA-6704-EE, ANCSA files.

⁶⁰ Louis H. Carufel, Navigability Report, January 7, 1983; Robert D. Arnold to Chief, Division of ANCSA and State Conveyances, January 19, 1983, file AA-6800, State selection files.

swift flowing, sediment-choked, shallow and narrow-channeled stream.⁶¹

Our conclusion that the Upper Klutina is navigable to Stephens Creek (mile 10) is based upon evidence of boating during the Klondike Gold Rush. According to one report, a large camp was situated near the creek during the winter of 1898-99: "Draining Klutina Glacier and heading northerly into Klutina Lake, Upper Klutina River is about 20 miles in length, of which length four miles lay above and 16 below a small community known as Twelvemile Camp in 1898-99."⁶² On July 17, 1898, an Army lieutenant found three hundred people in the tent community, all waiting for the river to go down for safe boating. He noted that several people were drowned in attempts to boat the river.⁶³

One observer (Benedict) described the stampeders' descent of the river in the spring of 1899. Once the river had risen enough for boating, men at Twelvemile Camp carried or sledged their supplies and gear to homemade or knockdown boats. By the first of June, the river was sufficiently deep for travel. Many boats were subsequently launched. Heavily-laden boats often scraped the river bottom just below Twelvemile Camp. Here the prospectors pushed or pulled the boat. A few hundred feet below this spot, they encountered a dangerous point, upon which many boats were wrecked. Nevertheless, using a pole to steer, many made a safe passage to the lake, and continued down the river to the Copper.⁶⁴

According to one turn-of-the-century observer, during normal stages the river is no more than three hundred feet wide and three or four feet deep. Another reported that in early August the river was nearly a hundred feet wide and between two and three feet deep.⁶⁵

Western Distributary of Upper Klutina River (USGS Valdez C-6) (CIR 60: roll 2670, frame 7933, August 1978)

This distributary crosses ANCSA-selected lands in T. 3 S., R. 4 W., CRM.

On the USGS maps, the eastern distributary bears the name of the river. The USGS Valdez C-6 quadrangle (scale 1:63,360; 1950, Minor Revisions 1965), compiled from aerial

⁶¹ Grumman Ecosystems Corporation 1975, 4-151.

⁶² C. Michael Brown, Report on Klutina Lake and River, c. 1977, 2. In this report, much information about Klutina River was gleaned from Neal D. Benedict, "The Valdes and Copper River Trail, Alaska" (unpublished manuscript, Anchorage Historical and Fine Arts Museum. 178 pp. 158 photos).

⁶³ Ibid., 21.

⁶⁴ Ibid., 18, 19.

⁶⁵ Ibid., 3.

photographs taken in 1950, shows a main channel in the eastern distributary about three chains wide with numerous interconnecting single-line channels. The western distributary, which branches off directly north in Section 17, is well-defined and about two chains in width.

In the aerial photo taken in August 1978, the eastern distributary consists of many stretches of gravel bars with very little water and widely dispersed, very narrow channels of water, particularly at the junction with the western distributary and the last mile before entering the lake. The western distributary, on the other hand, is a well-defined and continuous channel over two chains wide to the lake. At the time of the photo, the western channel is clearly the main channel.

What little there is in the historical record about this distributary supports this viewpoint. The historical record does not mention or imply any distinctive route to the lake. One source noted that the river enters the lake from the southwest and "was similar to the main forks of the Klutena." (This is the only source found that noted the existence of the forks.) Counting the western distributary, there are four distinct mouths of the Klutina on Klutina Lake, which from the maps and photos would appear to be closely equivalent from the lake view. A U.S. Geological Survey source in 1898 reported: "The confluence of the Hallet and the Klutena is where the Klutina valley is 5 mi. wide." Since Hallet Creek is west of the Klutina River, this also strongly implies that the author of that observation considered the "western distributary" as equivalent to the main river.⁶⁶

Local residents tended to agree that the western distributary is navigable. Lee Adler was not aware of any particular physical distinction between them. John Breivagle, who boated both distributaries in 1974, agreed that the two forks are equally usable for boating. He described the western distributary as more defined and probably deeper than the more braided eastern distributary. He did not believe there would be any difficulty in ascending the distributary in his twenty-four-foot long jet boat with a thousand-pound load. He described the western branch as over four feet deep; the eastern distributary, about two feet deep.⁶⁷

Hallet River (USGS Valdez C-6, 1950, Minor Revisions 1965) (CIR 60: roll 2670, frame 7933, August 1978)

The last mile of this river flows through an ANCSA- and State-selected area (T. 3 S., R. 4 W., CRM). The remainder of the creek (Tps. 3 and 4 S., R. 5 W., CRM) has been TA'd to the State.

Draining an area of about one hundred square miles, this glacial river, eighteen miles long,

⁶⁶ AEIDC 1979, 1200.

⁶⁷ C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

empties into Klutina Lake about a half mile northwest of the western distributary of the Klutina River.⁶⁸ In miles 4 to 10, the river is braided. The floodplain is one to three thousand feet wide. In miles 1 to 4, it flows through a steep-walled canyon in a single channel. Rapids in this reach are visible in the photos. The lowest half mile of the river is braided, crossing a wide (at least 1,000 feet), most unvegetated gravel plain. (Photo-interpreter Greg Balen explained that this reach would be meandered.) The main channel is about 35 feet wide. Numerous gravel bars appear throughout. In its lowest nine miles, the stream's gradient is about fifty feet per mile. The average estimated discharge is three hundred cubic feet per second.⁶⁹

Three local residents unanimously agreed that this creek is not navigable. John Breivagle said that he attempted to take a twenty-four-foot jet boat up this river a short distance (perhaps a half mile). He found it very difficult to boat and believed the canyon section would be even more difficult. Lee Adler and John Rego were unaware of anyone boating the river. Both thought the river is too shallow and rocky. Neither considered it navigable by small craft.⁷⁰

This river is non-navigable. The river is too shallow and rocky for navigation by small craft. Local residents were unaware of anyone boating the river and believed that it could not be navigated on a practical basis. One of these residents included a well known boater in the area who in fact attempted to take a jet boat up the river, but found it very difficult to navigate.

Saint Anne Creek (USGS Valdez C-6 and D-6) (CIR 60: roll 2670, frame 8225, August 1978)

The first half mile of the creek below Saint Anne Lake (in Sec. 36, T. 1 N., R. 5 W., CRM) is selected by both Ahtna, Inc., and the State. It then crosses the extreme southwest corner of Sec. 31 in T. 1 N., R. 4 W., CRM, before continuing through unsurveyed T. 1 S., R. 4 W., CRM. These lands also are selected by the regional corporation. A patented U.S. Survey (6726) straddles the stream's mouth.

From the extreme southern tip of Saint Anne Lake, this creek flows south-southeasterly eight and a half miles to Klutina Lake. The maps show the creek below Saint Anne Lake an area called Cranberry Marsh, bordered by steep valley walls formed by Cranberry, Wests and Powell peaks. The average gradient is about thirty feet per mile. In the one and one-half miles before entering Klutina Lake, the creek drops eighty-one feet. It has an estimated

⁶⁸ The USGS Valdez topographic map (scale 1:250,000, 1960, Minor Revisions 1972, names this stream "Hallet Creek."

⁶⁹ Grumman Ecosystems Corporation 1975, 4-152.

⁷⁰ C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

average run-off of 150 cubic feet per second. The drainage area is about ninety square miles.⁷¹ In the aerial photo, the tightly meandering stream is fifteen to forty feet wide with noticeable obstructions and dense vegetation along its banks and throughout the stream valley.

The historical record contains some references of people walking up this stream valley or crossing the stream, and one instance of two people boating up the creek. In 1898, Addison M. Powell wrote that he and his party walked along this creek and, when attempting to jump across, landed in waist-deep water. Powell mentions two men who ascended the creek and also says that it was about five feet deep.⁷²

Local residents unanimously agreed that this creek is not navigable on a practical basis. Ken Roberson said that people in his office floated the narrow creek with great difficulty, frequently encountering snags, deadfalls, sweepers, and some beaver dams. Larry Kajdan and John Rego echoed Roberson's view of the creek.⁷³

Saint Anne Creek is not navigable. It is clear from the aerial photo and recent interviews that this stream is unsuitable for navigation even under the best of conditions. It contains too many snags, overhanging limbs, log jams, and beaver dams. While a few historical sources indicate that people ascended the creek in boats, they do not reveal if these ascents were successful. In view of contemporaries' statements, we believe they were not.

Other Water Bodies

The remaining water bodies in the report area, both named and unnamed, are not suitable for use by any watercraft. They are too steep, swift, narrow and/or discontinuous. These streams were eliminated by virtue of physical characteristics only, as interpreted from the aerial photos and maps. They include: the unnamed Tazlina Glacier streams in Sections 26 and 27, T. 1 S., R. 7 W., CRM; and Bear, Bernard, Dust, Hurtle, Kaina, Manker, Nickel, Quartz, Rainbow, Squirrel, and Willow creeks. Lakes under fifty acres in size are not included unless they are connected to a navigable water body.

*Louisa Doore, J.
Acting Mapping Services Branch Chief*

⁷¹ Grumman Ecosystems Corporation 1975, 4-155.

⁷² AEIDC 1979, 2826. Ferruzzi noted that, on August 11, 1898, Will H. Cary ascended the river from Klutina Lake about a half mile in a whipsawed lumber boat, eighteen feet long and four and one-half feet wide. Fabio Ferruzzi to File 6656-EE, May 18, 1992, ANCSA files. We were unable to locate the source of this note.

⁷³ Fabio Ferruzzi to File AA-6656-EE, May 18, 1992; C. Michael Brown to File AA-6704-EE, April 30, 1993, ANCSA files.

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John Toms (923)

DM (050)

Chief, Branch of CIRI/Ahtna Adjudication (968)

APPENDIX I

Navigable Waters on Lands Selected by Ahtna, Inc., in Group Survey
Nos. 148, 220, 222, and 394 (Survey Window 1867)

Copper River MeridianTownships

Tps. 1-5 N., R. 1 E.

None.

Tps. 6 and 7 N., R. 1 E.

Copper River and Gakona River.

T. 8 N., R. 1 E.

Gakona River.

Tps. 1-5 N., R. 2 E.

None.

T. 6 N. R. 2 E.

None. No determination is made for the Sanford River.

T. 7 N., R. 2 E.

Copper River. No determination is made for the Sanford River.

Tps. 8-11 N., R. 2 E.

None.

Tps. 1-5 N., R. 3 E.

None.

T. 6 N., R. 3 E.

None. No determination is made for the Sanford River.

Tps. 7-9 N., R. 3 E.

Copper River.

Tps. 10 and 11 N., R. 3 E.

None.

Tps. 7 and 8 N., R. 4 E.
None.

T. 9 N., R. 4 E.
Copper River.

T. 10 and 11 N., R. 4 E.
Chistochina River.

Tps. 7-9 N., R. 5 E.
None.

T. 10 N., R. 5 E.
Copper River.

T. 11 N., R. 5 E.
None.

Tps. 7-11 N., R. 6 E.
None.

Tps. 1 and 2 N., R. 1 W.
Klutina River.

T. 3 N., R. 1 W.
None.

T. 4 N., R. 1 W.
Copper River.

T. 5 N., R. 1 W.
None.

T. 6 N., R. 1 W.
Copper River and Gulkana River.

Tps. 7 and 8 N., R. 1 W.
Gulkana River.

T. 1 N., R. 2 W.
Klutina River.

T. 2 N., R. 2 W.
None.

Tps. 3 and 4 N., R. 2 W.

Tazlina River.

Tps. 5-7 N., R. 2 W.

None.

T. 8 N., R. 2 W.

Gulkana River.

Tps. 1 and 2 N., R. 3 W.

None.

Tps. 3 and 4 N., R. 3 W.

Tazlina River.

T. 8 N., R. 3 W.

Dog Creek.

Tps. 1 and 2 N., R. 4 W.

None.

T. 1 and 2 N., R. 5 W.

None.

Tps. 1 and 2 N., R. 6 W.

None.

T. 1 N., R. 7 W.

None.

T. 2 N., R. 7 W.

Nelchina River.

T. 1 N., Rs. 8-11 W.

None.

T. 2 N., R. 10 W.

Nelchina River to Eureka Creek.

T. 2 N., R. 11 W.

None.

T. 1 S., R. 1 E.

None.

Tps. 2 and 3 S., R. 1 E.
Tonsina River.

Tps. 4-8 S. R. 1 E.
None.

T. 1 S. R. 2 E.
None.

T. 2 S., R. 2 E.
Tonsina River.

Tps. 3-5 S., R. 2 E.
None.

T. 1 S., R. 3 E.
Copper River.

Tps. 8 and 9 S., Rs. 6-9 E.
None.

Tps. 1-3 S., R. 1 W.
None.

T. 4 S., R. 1 W.
Tonsina River.

T. 5-8 S., R. 1 W.
None.

T. 1 S., R. 2 W.
Klutina River.

Tps. 2 and 3 S., R. 2 W.
None.

T. 4 S., R. 2 W.
Tonsina River.

Tps. 5 and 6 S., R. 2 W.
None.

T. 1 S., R. 3 W.
Klutina River.

Tps. 2-6 S., R. 3 W.
None.

T. 1 and 2 S., R. 4 W.
None.

T. 3 S., R. 4 W.
Klutina River.

T. 4 S., R. 4 W.
Klutina River to Stephens Creek.

Tps. 5 and 6 S., R. 4 W.
None.

Tps. 1-4 S., Rs. 5-11 W.
None.

APPENDIX II

LIST OF CONTACTS

<u>Name</u>	<u>Date</u>	<u>Phone Number and Background</u>
Larry Kajdan	03/09/93	(267-1369) Recreation Specialist, BLM Glennallen District Office
John Rego	03/09/93	(822-3217) Geologist, BLM Glennallen District Office
Lee Adler	03/24/93 04/13/93	(822-3217) Resource Specialist, BLM Glennallen District Office
Ken Roberson	04/13/93	(822-5520) Fish Biologist, Alaska Department of Fish and Game
John Breivagle	04/24/93	(822-5870) Resident, Copper Center

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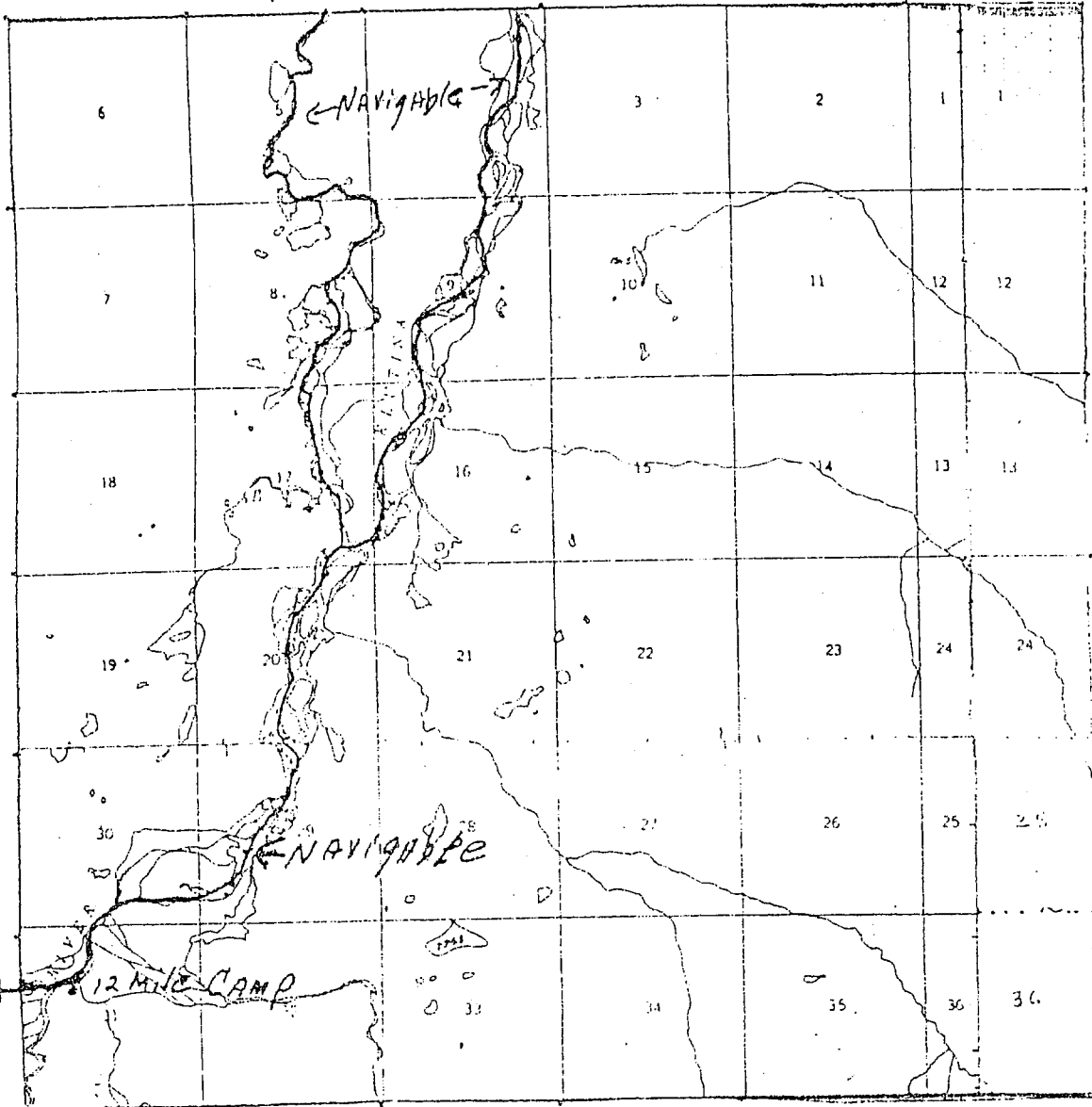
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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Serial Number
AA-006800

SITE PLOT

Township 4S , Range 4W , CRM Meridian



LAND OWNERSHIP KEY AND ADDITIONAL TOPOGRAPHIC SYMBOLS

Scale: 1" =

OTHER DATA

NAVIGABLE - SEC 31
UPPER LIMIT OF NAVIGABILITY
SOUTH BOUNDARY OF NW 1/4, SEC 31
KLUTINA RIVER & STEPHENS CREEK

SITE PLOT

Form 2000-2 (January 1975)