

mountains. Beginning September 9, the men tracked a skin boat an unstated distance upriver using dogs. They returned to Fort Cosmos on September 23. Two days later Stoney maneuvered the Explorer and the Helena up a nearby creek for the winter. 170/

Stoney or detachments from his party explored extensively through the winter. In December parties examined the Noatak's headwaters, Selawik Lake and River, and visited St. Michael and the Yukon River. In January, Stoney made observations for the triangulation of the Kobuk valley. He spent all of March exploring the headwaters of the Kobuk and sent Ensign W. L. Howard north to the Noatak.

On May 27, Stoney launched the Helena. Three days later he had that vessel tow the Explorer three miles up the creek in which they had wintered in order to prevent ice damage. Beginning on June 8, the steamboats transported their supplies to the mouth of the Kobuk. All the supplies were brought down the 17th. On the same date Stoney began triangulating the head of the Kobuk valley. He continued this work to the delta where he arrived on June 25. 171/

Stoney recorded a general description of the Kobuk. He counted thirteen mouths to the river. The smallest and shallowest emptied into Selawik Lake; all the rest emptied into Hotham Inlet and had mud bars "with very narrow channels from three to fourteen feet deep at their mouths." He stated that the entrance opposite Nimiuk Point (probably that today known as Riley Channel) was the widest and carried two fathoms of water over its bar. However, it quickly narrowed and became more winding. Stoney preferred Nazuruk Channel for navigating. It was fifty yards wide with a twenty-yard channel carrying two fathoms. Moreover, after crossing the bar, Stoney stated that it became wider and deeper. Seven miles above the bar the channel was well over a half mile wide and was thirty feet deep at midstream. 172/

Forty miles above its mouth Stoney said the Kobuk lost any evidence of tidal influence. Five miles farther up sand bars appeared. They increased in number and extent toward the source. Two hundred and fifty miles up (using Stoney inflated river mile calculations) boulders were on the banks. They gradually encroached into the riverbed until they were in midstream "with the water swirling about them" in the vicinity of Fort Cosmos. Thirty miles farther up, Stoney stated that "they became very numerous and dangerous." Stoney found the river's depth to be "quite regular with deep holes here and there its entire length." He wrote that the river near its mouth was nearly thirty feet deep, but shallowed gradually to six feet near the Pah River and then dropped further. The tributaries above the Pah, he noted, were all "too small for any extended navigation beyond their mouths." 173/

Stoney also reported general descriptions of the river's width and current. In low country the Kobuk spread over twelve hundred yards and frequently was dotted with islands. Eventually the river narrowed to fifty yards and near its headwaters "it twists and turns, finally becoming a narrow, sinuous mountain stream." As to the current, Stoney said it was least in the widest places and during low water. But "higher up . . . it attains, around the curves, a velocity of three and five knots; while still higher, rapids and rushing torrents are met." 174/

Lieutenant Cantwell visited the Kobuk in 1884 and 1885 leading U.S. Revenue Marine contingents. On his first trip up the Kobuk, Cantwell with six men under him and equipped with a steam launch and two small boats ascended about to where Stoney established Fort Cosmos the following year.

On July 10, 1884 they entered the Kobuk, probably via Riley Channel. Cantwell described the channel at its mouth as two hundred yards wide with two and one-half to three fathoms of water. Through the following day as they traveled thirty miles upriver, the current increased from two to three knots and the depth from three and one-half to five fathoms.

The channel was extremely sinuous. They passed a Native village in this stretch of the river which Stoney had passed the previous year. On the 12th the party reached the first timber on their route and passed what a Native guide reported was the most northerly and westerly Kobuk distributary, what today is known as Melvin Channel. Some distance above this point they calculated the river's depth at six to eight fathoms with a current of seven knots. 175/

During July 13 the current strengthened and the river narrowed. By 1 p.m. the next day, they reached Squirrel River. Above this the river divided. The channel Cantwell chose had many sandbars and they had trouble maintaining sufficient steam to move against the current. Early the next day they cached a skiff they had been towing. The current weakened that morning and after three hours they emerged from the mountainous country. On the 16th they encountered their first rapids and were only able to advance six miles. In the rapids the launch grounded and the men righted it by promptly jumping into the river. They tracked the launch through the worst part of the rapids. The next day they took soundings; the depth was twelve to thirty feet and the current varied from two to six knots. They encountered more rapids on the 18th. Here the depth decreased to six feet and the current reached seven knots. Only with a surge of steam were they able to ascend the rapids. Above the rapids they came to smooth water. The rest of that day the current varied from almost imperceptible to a speed so strong as to make progress nearly impossible. On the 19th they traveled about sixteen miles upstream, occasionally running onto sandbars. They made twenty-six miles on the 20th thanks largely to a favorable wind, which they harnessed by hoisting a sail.

However, the next day their launch travel ended. They came to a large sandbar around which the current flowed so fast as to prevent the launch from moving half the speed of the skin boat, which the Natives poled and tracked upstream. Cantwell turned the launch down the Kobuk to find a safe anchorage. He stopped about eleven miles downriver where he left the launch near a fish camp Natives who had ascended the river in canoes were just then establishing. How far Cantwell had taken his steamer is uncertain. However, since he dispatched men to explore Jade Mountain from where he turned the launch around, he must have gotten some distance above Hunt River on July 21. 176/

After making some repairs on the launch, Cantwell's party resumed their upriver journey, paddling and tracking a birchbark canoe and a skin boat. On July 24 they met the two men Cantwell had sent to Jade Mountain. Cantwell sent these two men and one Native helper back to the launch while he and the four others in the party continued upstream with the skin boat. They traveled approximately thirteen miles up the Black River on July 27 to reach a Native village where they hoped to acquire a replacement for their water-logged and worn boat. However, they could not get one there and the next day spent eight hours portaging northeast via two unnamed lakes to a point on the Kobuk that Cantwell estimated was thirty-five miles above Black River. 177/

From here the men paddled up to a fishing settlement where the men repaired their boat and Cantwell calculated his options. Based on the Natives' information, Cantwell believed he was 275 miles from the falls which he understood was the head of navigation. He believed he could travel this distance in twelve days, but he only had five days' provisions. His skin boat was in poor condition and he feared an accident to it

could jeopardize the entire party. Finally, the water level was dropping. Therefore, Cantwell determined to return to the launch and make an upstream effort with it. 178/

On July 29 they descended most of the distance to the launch. The next day Cantwell walked to Jade Mountain while he let the skin boat dry. When he returned to the river on the 31st, Cantwell learned that Stoney had passed going upstream. Cantwell resolved to follow him with the launch. However, the launch was in no condition to proceed upstream and the river's water level continued to fall. Therefore, on August 2 they began the long journey back to Hotham Inlet. The steam engine could not supply sufficient power to control the boat in the current. Consequently, the men had to use oars and they frequently grounded on sandbars, requiring them to jump overboard to push the launch into deeper water. The current was so swift on their second day of travel downstream that they averaged between four and four-and-one-half miles per hour unaided by any other force. By August 5 they passed Squirrel River and on the 7th they steamed through the delta, where there was little current to carry them, and reached Hotham Inlet. 179/

In 1885 Cantwell led an expedition up the Kobuk to Walker Lake (Cantwell called it Lake Car-loog-ah-look-tah). In early July Cantwell, three other whites, and a varying cast of Natives proceeded upriver in a steam launch and a twenty-eight-foot skin boat called the Pioneer. Natives from nearby villages helped pull them through the first two sets of rapids; twenty Natives helped at the second in the area about midway between the Squirrel and Ambler rivers. By July 5 they reached the Jade Mountain area. The next day the men had to jump overboard to push the launch off sandbars as the river shallowed. This continued as a regular practice until the morning of the 11th. By then they calculated they had reached 156 degrees 51 minutes West longitude (above present-day Kobuk). The river was two hundred yards wide, filled with gravel beds, and immediately before them was a boulder-strewn rapids. They tried getting through with 110 pounds of pressure combined with towing, but the line broke. Consequently, Cantwell abandoned the launch, leaving three men behind with it. 180/

The men had a difficult time lining the skin boat through. Nowhere above was there more than six feet of water. On July 12 or 13 they passed the Pah River and then came upon a Native village. East of the village they adopted the Native practice of poling because lining was difficult in the boulder-strewn river and because paddling such a large vessel against the eight-knot current was impossible. On the 16th they passed Reed River and came to the thirty-yard wide gorge the Natives considered the head of navigation. Rapids a mile long coursed through the gorge. Cantwell found that an old Native portage was overgrown. Since they could not back-pack their instruments to Walker Lake, Cantwell had his men lay logs along the rocks, walk the supplies over these logs, and line the skin boat, which then drew no more than four inches, through the rapids. One Native was almost fatally injured when he fell into the river. Above the gorge they continued to line though there was little current. They made slow progress through shoals and gravel bars. On July 21 they passed through an area with no more than a foot of water. That same day they reached Walker Lake's outlet. It was sixty yards wide and four to six feet deep at its mouth; it was somewhat wider and much deeper than the mainstream. 181/

Cantwell decided to first explore Walker Lake. They boated up to a set of rapids. Here they left the boat. By then the lake was only a two-and-one-half hour walk and there was no need to endanger the dilapidated vessel. After examining Walker Lake, they took their boat up a small left-bank tributary of the lake's outlet, crossed a swampy plain, and made a short portage to the Kobuk above the outlet. At this point the Kobuk was less than fifty yards wide and scarcely more than a foot deep anywhere. Throughout

July 24 "we pushed the boat up the shoal stream past the mouth of a small stream called the Kit-chah-ee-yak [Kichaiakaka Creek], and did not rest until the lightened boat, drawing five inches, would no longer float. The river was now nothing but a shallow brawling brook, tumbling down from between the rugged mountains." 182/

The same day they began their descent. They did not get back into their boat until they reached Kichaiakaka Creek. Cantwell's craft shot a set of rapids, damaging the boat so they had to stop to make repairs. On the 25th they came to the head of the gorge where they removed their supplies and lowered the boat through with a rope. Later that day they came to the village above the Pah. They traveled at a rate of eight to ten miles per hour without paddling below the village. On July 27 they pulled into shore beside the steam launch. The next day they boarded their launch and continued downstream. They ran aground once that day and the next day they stopped to fish and await higher water. Through much of August they examined the lower portion of the river. On August 22 they steamed into Hotham Inlet. 183/

It may have been that no whites ascended the Kobuk for the next dozen years; at least there is no written record of such an ascent. However, the great overflow of prospectors from the Klondike penetrated the region in 1898 and 1899. The published records of two participants in this rush give some indication of the extensive boat use by whites on the river during those years.

George L. Webb's diary of his travels on the river in 1898 and 1899 is not always clear, but it does show extensive boating. From July 25 to the 27th he traveled up from Hotham Inlet to the Squirrel River in a steamboat; probably the stern-wheeler Kotzebue. The pilot evidently had only a vague notion of the course of the Kobuk. He unintentionally took the steamboat some distance up the Squirrel on the 27th. They returned to the main river and by August 4 had made camp at a point Webb considered to be ninety miles below Fort Cosmos and two miles below a set of rapids. Many others on the river built caches here and proceeded upstream in small boats. Webb's party, however, continued upriver in the Kotzebue on August 17. Webb's records show that another steamboat, the John Riley, went up at least as far as the Hunt River. On the 25th Webb began towing his own boat upriver. Dorothy Jean Ray, who edited Webb's diary, believed Webb covered the distance from the Ambler River to the Kogoluktuk between August 28 and September 13. For this distance Leo Chase and two brothers named Reeves accompanied him. On September 13 Webb wrote that "We are making slow progress. There is too much current." Two days later they performed "hard hard towing all day" 184/ and thus reached a camp about a dozen miles 185/ above the Kogoluktuk where the Kotzebue had deposited some of their supplies. That fall Webb panned for gold on the Kogoluktuk and then wintered in that region. 186/

The next year on July 5 Webb began boating up the Kobuk. Presumably he used a riverboat or pole boat. He continued upstream until August 3, by which time he reached the Reed River. On the way he picked up a kayak he had at a cache. This may be a cache he later referred to as twelve miles below Reed River. His diary does not make it clear how the kayak got there. Two days' travel below the Reed, Webb noted other prospectors caching their boat.

Webb spent some time traveling and prospecting on the Reed River. He then descended the Reed and Kobuk, reaching his cache twelve miles below the Reed on August 15. He continued downriver for four days to an unknown point where he and a partner named Hughes began to track and occasionally sail upriver. They got to the Reed River by September 3 where they built a cabin. That same day four men in two boats passed by and two days later he saw six Native women go up and then return down pass the cabin Webb and Hughes were building. Later in September the men went downriver and then

brought supplies back to their Reed River cabin. They moved into the cabin by September 27. Two days later Webb recorded that there were thirty-two whites still in the area. These men had been "busy all summer boating their stuff up the river." 187/ This winter would be Webb's last on the Kobuk.

In 1900 Joseph Grinnell's mother published an account of his stay on the Kobuk in 1898 and 1899. It was based largely on his letters to her and is considerably clearer than Webb's diary. Grinnell went to the Kobuk eager to experience the gold rush, but even more interested in pursuing his naturalist studies of birds. In May 1898 he left California as a member of a group on the Penelope. The ship reached the Kotzebue Peninsula on July 13. Grinnell estimated that there were a thousand people in the Sound. Within a week the group built a river steamer, which they called the Helen. It was a stern-wheeler about thirty feet long and ten feet wide. Since it could not carry all the men's supplies, they also built a barge two feet deep, ten feet wide and eighteen feet long. 188/

On August 5 the Helen took the barge upriver with two-thirds of the supplies. The Penelope group proceeded to relay their equipment and provisions up the Kobuk in the same manner as had Stoney. By August 28 they established Penelope Camp at what Grinnell estimated to be 170 miles from Hotham Inlet and thirty-five miles below the Ambler River. He wrote that "The 'Helen' is a failure, else we should have been much farther up the river. The river is swift and has many rapids which we could not stem. The boat is slow. Her wheel is too small. . . . It took five days to come this far." And they still had to bring up two more loads. On the way up, they, like Webb's party, had accidentally steamed up the Squirrel River. They went up this tributary for twenty-four hours before discovering their error. After returning to the Kobuk they decided to leave their barge behind and made good time until the first set of rapids. Here the Helen kept sliding sideways and losing ground. They had to tow her through. Grinnell's group encountered six such rapids up to Penelope Camp. Grinnell could take little comfort in knowing that others had fared worse. He observed thirty parties in one day towing their provisions; some of these had lost their steamboats. Grinnell wrote that only three of the dozen or more steamboats on the Kobuk succeeded. More discouraging must have been the hundreds of disillusioned men he saw floating back to Hotham Inlet. 189/

On September 1 the Penelope group decided to split in two. One party took the Helen farther upriver and wintered there; the other stayed at the lower Penelope camp. Grinnell stayed with the latter group, which prospected the Hunt River. The former ascended the Kobuk up to the Kogoluktuk. They took the Helen six miles up this river to winter. 190/

During the winter Grinnell spoke to a German who skated on the Kobuk collecting mail. The "Flying Dutchman", as he was called, showed Grinnell a map he had made of the prospectors' winter camps he had visited. The skating mailman had not been above the Pah River, but he reported that there were camps up to the Reed River. He estimated that there were eight hundred whites wintering on the river. Below the Pah he identified twenty-eight camps. Several of these were named for steamboats known to have plied the Kobuk that summer. It is at least possible that these camps bore their names because the steamboats had reached these points. Camps named after the Iowa, Agnes Boyd, and Riley were two to sixteen miles, respectively, below the Kogoluktuk. The "Flying Dutchman" noted the upper Kotzebue camp eleven-and-one-half miles above the Kogoluktuk and a camp he named after the Nugget six miles higher on the river. The names of other camps above the Nugget camp which might have been associated with riverboats were named Guardian (20 miles below the Pah), Davenport (15 miles), Leslie D. (10 miles), and Ralston (2 miles below the Pah). 191/

The Penelope men like many others did not remain on the Kobuk for all the summer of 1899. By June 2 the Helen arrived from the upper camp. Four days later Grinnell wrote that: "Nearly everyone above has already passed down the river in all sorts of boats and rafts." The full crew of the Helen began downstream from their lower camp on June 8. By July 1 they were off the Kotzebue Peninsula where Grinnell saw a half dozen other river steamers. 192/

Two years later Walter C. Mendenhall led the first U.S. Geological Survey expedition to the Kobuk. Mendenhall and seven others, including a Kobuk Native named John, ascended the Alatna River and Helpmejack Creek in Peterborough canoes to a portage to Kichaiakaka Creek. They began floating this creek on August 8 about seven miles from its mouth and reached the Kobuk on the 10th. At this point the river was 125 feet wide and six or eight feet deep, Mendenhall noted in his published report. However, in his field notebook he claimed the river was 150 feet wide and that six to eight foot water only existed in pools. On the 10th they portaged one rapid and lined another before reaching the outlet of Walker Lake. They traveled up to a rapid a mile below the lake on the 11th. The next day they took their empty canoes through the rapids and most of the way to the northern shore of the lake. On the 13th they resumed their downstream expedition. They came to the mile-long gorge on August 14. Although John was very familiar with the portage he had never traversed the gorge in the summer. He had received bad reports about it, though. Nevertheless, Mendenhall wrote that "passage in light canoes was not at all a serious matter. After an hour's work the entire outfit was taken through, one slight puncture being the only mishap." The rest of their trip was uneventful. They reached the outlet of Lake Selby on the 17th, explored the lower Ambler River for a few days, and reached Hotham Inlet on September 3. 193/

A prospector who wintered on the river in 1900-01 told Mendenhall that the John Riley still steamed on the Kobuk. In 1908 Alfred H. Brooks of the USGS reported that one or more steamers continued to supply miners. He noted that they took equipment and provisions to Shungnak from where poling boats and dog teams continued the trip to the mines. 194/

Two years later Philip S. Smith, Henry M. Eakins, and two camp hands made the USGS's second expedition into the Kobuk valley. They left the Koyukuk near the mouth of the Hogatza with a six-horse pack train on June 22, 1910. The men traveled overland to the upper Kobuk, fording the river just below Beaver Creek. Smith's party continued to use horses to Shungnak which they reached July 22. On August 10 they began floating down the Kobuk in a skiff, reaching Kotzebue ten days later. 195/

Concerning the river's characteristics and its boat traffic, Smith stated that travelers reported little more than one fathom of water over the bar at the entrance of a channel Stoney described as carrying two fathoms. The channel referred to was either Riley or Nazurak. Smith described the Squirrel River to Reed River segment as being one-quarter to one-eighth of a mile wide with no obstructions to navigation, though a one- to three-mile-per-hour current made tracking necessary. Above Reed River the Kobuk decreased in width and its depth varied. Near the mouth of Beaver Creek it was fourteen feet deep, but Natives told him that above Kichaiakaka Creek the river split into many streams "all of which are too shallow even for canoe navigation." 196/

Smith wrote that the Kobuk was navigable for boats drawing three feet of water up to the village of Shungnak and that "an even greater draft could be carried if it were not for shallow bars at the mouth of the river and the crooked, shifting course of the channel farther upstream." 197/ He stated that "small gasoline launches or scows which draw only 2 feet of water or less" carried passengers at fifteen dollars each and freight at the

same rate per ton to the mouth of the Squirrel River in one to two days. The same type vessel could reach Shungnak in six to twelve days. 198/

In October 1907, after rafting logs from fifteen miles upriver, the Bureau of Education's Eli M. Myers erected a schoolhouse around which the village of Shungnak arose. The following summer Myers went to Kotzebue to pick up supplies for the following year. The supplies arrived on September 5. Myers hired a launch to take the sixteen tons of goods upriver. At the mouth, the river was so low that they had to wait twelve hours, presumably for the water to rise, before they could proceed. Low water again halted progress near the mouth of Squirrel River. Accommodating Natives took Myers' wife and some of his goods farther upstream in skin boats. When another launch reached Myers', both took a portion of the school's supplies and they placed another part on the shore. The two launches were able to take the supplies to the Salmon River. By then ice ran in the Kobuk. The travelers cached the supplies which had been on the launches. Presumably the launches then returned to Kotzebue. Myers hiked three days to a point ten miles below Ambler River where he found his wife's group where the Natives' boats were frozen. They sledged to Shungnak and over the ensuing weeks sledged the supplies up to the village. 199/

Given their annual journeys down to Kotzebue and the presence of white miners in the area, it is not surprising that the Shungnak Natives learned how to make wooden boats. Myers reported in 1910 that the villagers were building twelve boats, "from a small fishing boat to a large boat 40 ft. long [with an] 8 ft. beam." In the winter of 1911-1912 Shungnak residents whipsawed six thousand feet of spruce with which they constructed more than twenty boats that spring and summer. The boats sold for twenty to 150 dollars. The Natives also made two birchbark canoes. Myers' successor's report on activities at the village in the year following June 1918 also mentioned boats being built, the most noteworthy being two hulls for gas launches to be sold to white men. 200/

Noorvik's Bureau of Education teacher, Delbut E. Replogle also reported on Native boat building in his village for the school year 1918-1919. He stated that three students built a twenty-six-foot V-bottom boat into which Replogle installed a fifty-four-horsepower engine. The teacher also wrote that the villagers built four "small boats" and "a number of small kyaks [sic] or canoes." They were constructing two thirty-foot boats when Replogle wrote in the summer of 1919. 201/

Boats were an important means of transporting goods up to mining camps. In 1920 Alfred H. Brooks of the USGS noted that boats took supplies from Kotzebue to Shungnak for forty dollars a ton. Harry Brown carried freight in his steamboats Imaluktuk and Mary B. Archie Ferguson was another who freighted goods up the Kobuk in this period. The Partner and Shungnak were his boats. He later recalled that "every year the channel changes, gittin' wider'n' shorter. Once I got stuck on a bar for three weeks, but when she raises she raises fast." 202/

In 1940 James L. Giddings conducted the first archaeological survey of the Kobuk drainage. He flew to Allakaket on the Koyukuk in early July, walked to Norutuk Lake, and then hiked west to the Kobuk. He wished to begin rafting as soon as possible, but hearing and then seeing from a hilltop, the rapids through the gorge not too distant below him, he continued hiking. Once past the gorge he built a raft. He floated unhurriedly, reaching Mauneluk River after three days. There he encountered two Native families at their annual fish camp. They told him that there were some house pits in the area, including some above the Mauneluk, but they knew of no one living above them and had never seen anyone come from upriver. Indeed, when they first saw Giddings, they

suspected he was a downed aviator. One of the men at the camp provided Giddings a ride in a canvas-covered kayak to Long Beach, an old Native camp near the village of Kobuk. It took four hours to make the trip. At Long Beach, Giddings observed women netting fish using a "light wooden boat." He learned that they had formerly accomplished this task using birchbark canoes. Giddings bought a kayak and traveled down the Kobuk, stopping at Shungnak, Onion Portage, and Kiana before ending his journey at Kotzebue. In 1941 he returned to Long Beach and traveled downriver with a white and four Natives in a kayak and a rowboat. He also boated on the river below Onion Portage in the early 1960s. 203/

The Army Corps of Engineers focused on the Kobuk's barging activity in reports in the 1950s. The draft copy of an interim report in 1953 stated that a good channel to the village of Kobuk and the river's slow to moderate current made the Kobuk a good river for barging. It stated that a six-foot channel was available to coal fields above Kiana. The Corps' report cited a Mr. Ferguson, probably Archie Ferguson, as telling them that a six foot channel existed up to Shungnak until August in most years. During the navigation season from mid-May to October, between five and six hundred tons of freight moved up the river to Noorvik, Kiana, Kobuk, and Shungnak. The final copy of this interim report, issued in 1957, stated that barges could travel up to the village of Kobuk, but warned that silting had occurred in the upper portion of the river in the previous few years. 204/

B&R Tug and Barge began supplying Northwest Alaska, including the Kobuk River drainage, in 1951. According to Edith Bullock, a founder of the company and its general manager for much of its existence, B&R quickly came to dominate the bulk commercial traffic since it furnished more dependable service than their primary competitor, Archie Ferguson. B&R received supplies at Kotzebue from the BIA's North Star and a Standard Oil ship. B&R also sent one of its barges to Nome each year for more cargo. 205/

In 1951 B&R had three wooden tugs, the Little Tula, the Herald J, and the Tula, which were 36-feet, 40-feet, and 70.6-feet long, respectively. Two of the company's barges were 60-feet long and the other 80-feet. By 1964 the company added four more barges between 85 and 115 feet in length and had completely replaced its original motive power with two 50-foot wooden tugs and five steel tugs measuring between 46 and 59 feet. Bullock recalled in 1984 that all of this equipment except for the 115-foot barge could ascend the Kobuk to Kobuk. 206/

Ray Heinrichs, B&R's operation's manager from 1960 to 1970, recalled those years to the author in 1984. He contended that in 1960 air traffic carried little of the area's cargo. B&R hauled most of the region's supplies, including fuel, food, and building materials. Petroleum products accounted for most of its freight. The company brought goods up the Kobuk to villages, business ventures, and individuals. B&R dropped supplies off at fish camps and any other spot along the river upon request. He stated that, except for empty fuel cans, a little jade, and the belongings of someone leaving the Kobuk, there was little back haulage.

Heinrichs commented on other boats on the Kobuk. Three storeowners--Rob Blankenship and Lorenzo Shirk, Sr., both of Kiana and Tommy Douglas of Ambler--had their own boats with which they supplied their businesses and shipped goods for others. Heinrichs said their boats were about thirty feet long and had inboard gas engines and a cab. Villagers sometimes used their own riverboats to carry goods from Kotzebue in order to save transport costs. Aluminum boats first appeared in the area around 1960. However, even in 1970 most Natives owned wooden rather than aluminum watercraft. Heinrichs stated that the Natives did not have canoes. 207/

In 1965 the Corps on Engineers again reported more extensively on barge traffic on the Kobuk. From the B&R's records the Corps quoted the following tonnage shipped:

**Tons Transported by B&R on the Kobuk River
1958-1964**

Year	To Noorvik or Kiana	To Ambler, Shungnak, or Kobuk
1958	506	232
1959	2,206	277
1960	436	385
1961	461	320
1962	433	415
1963	1,192	359
1964	740	344

The 1959 and 1963 figures included 1,700 and 750 tons for new schools at Noorvik and Kiana respectively. In addition to the 1964 numbers above, Kennicott Copper shipped 388 tons to Kobuk and 2,824 tons to Onion Portage. 208/

Ray Heinrichs of B&R gave the Corps some of his expertise on barging on the Kobuk. Barges went upriver by way of the Lewis Rich Channel. It had shallows of only four and one-half or five feet, but after getting past it the barge operators could take advantage of six and one-half feet of water at almost any stage of the river up to Tenmile Post (T. 17 N., R. 9 W., Kateel River Meridian). Heinrichs said that there were six or seven other shallow areas below Ambler. Running aground was such a problem for B&R that it had wheels on the bottom of its tugs to prevent damage. Still the company lost money because of delayed deliveries. Heinrichs advocated having the Corps remove some of the river's sharper bends and dredge it to a six to six and one-half feet depth to allow longer and heavier barges. 209/

Kennicott Copper's interest in extracting ore from the Ruby Creek area north of the village of Kobuk had stirred the Corps' inquiry. Kennicott conducted drilling and geological testing in the area from 1957 through 1963. Utilizing local barging services, the company apparently shipped its largest tonnage in 1964 when it took in over three thousand tons. Supplies first moved up the river about seventy-five miles where it was unloaded. Because 1964 was a particularly dry year, B&R was not able to move the freight up to Onion Portage until early September following rains. From there Kennicott hauled most of its supplies by tractors fifty miles to its mining site. Some B&R barges did make it to Kobuk, which was only a little over a dozen miles from the Kennicott operations. 210/

The Corps' report included its own assessment of dredging the river. It stated that the Kobuk's current averaged between three and four miles per hour. The Corps believed that there was sufficient water to allow navigation throughout the open season if dredging eliminated the bars and riffles. It theorized that if obstacles were removed early in the season that the river would stay open and possibly even deepen itself. Heavy work also was needed to straighten some bends which prevented tug and barge combinations longer than 180 feet. The Corps concluded that both dredging and the straightening of bends was necessary for barges to deliver at least 40,000 tons downriver within ninety days. Presumably the 40,000 tons was the projected Kennicott ore output. 211/

Although Kennicott continued to advocate dredging and the U.S. Transportation Task Force and Deleuw, Cather, and Associates studied the question in the late 1960s (the former urged the operation, projecting a benefits-to-cost ratio of 3:1), no dredging occurred on the Kobuk. Nevertheless, barges continued to supply river communities. In 1974 the Department of the Interior reported that "deep draft barges reach as far up the Kobuk as Kiana. Shallow draft barges can reach Ambler during most of the ice-free season." Four years later a report prepared for the Department of Commerce stated that "the villages of Kiana, Ambler, Shungnak and Kobuk, . . . are also served by barges The river is navigable after spring breakup, at least as far east as Kiana, and periodically an additional 100 miles farther up river to Kobuk." 212/

Both Natives and visiting whites have utilized riverboats and smaller recreational craft on the Kobuk since WWII. In a publication issued in 1962, Dorothy Jean Ray stated that river Natives then used outboard motors on boats of sawed lumber. A photo of Natives at the village of Kobuk displayed a variety of watercraft. There were two pointed-bow riverboats, at least one of which had an outboard motor. The photo also showed a square-bowed riverboat with a motor and a pole boat or canoe. 213/

In 1965 Don Charles Foote conducted an ethnographic study of the upper Kobuk River, focusing on Shungnak. With the assistance of Bryan Greer-Wootten, he calculated that the river's current at the village was between two and one-half and three miles per hour and that after heavy rains the river could rise an inch or more per hour. 214/ More interestingly, he traced the history of the Natives' watercraft, making valuable use of unpublished Bureau of Indian Affairs records. Foote stated that the upper Kobuk Natives traditionally used sealskin-covered and birchbark-covered kayaks, birchbark double-pointed riverboats, and umiaks. He stated that as early as 1913 some Natives adopted wooden boats. However, the older craft persisted. There were ten or twelve seal skin kayaks in 1916; most families had the birchbark variety. According to Kobuk resident Harry Brown in 1965, there still were about a half dozen umiaks on the upper Kobuk in 1920, which inhabitants used to travel to and trade at Kotzebue. Guy Moyer, another Kobuk resident, told Foote that by 1939 the umiaks had disappeared and only one or two skin-covered kayaks remained. Foote stated that by then canvas had replaced birchbark on kayaks and wood replaced bark on the double-pointed boats. According to BIA records, only one outboard and three inboard motors operated in the Shungnak area in 1939. After WWII motors and, consequently, square-stern craft proliferated. Foote observed while he was at the village that "nearly every family of the upper river owns at least one outboard motor and wooden boat." 215/

Sports fishing increased on the river in the 1950s when two guides began operations there. Thereafter, airplane and float trip travel increased, according to a study by the Arctic Environmental Information and Data Center. 216/

Sportsman Steve McCutcheon provided the best published description of a recreationist boating the Kobuk. McCutcheon and his wife, Phyllis, and Eugene and Delores Roguszka flew to Kiana in early July, 1962 bringing with them their twenty-four-foot, aluminum DuraCraft riverboat. McCutcheon had hired Bob Compeau of Fairbanks, "who makes the world's best engine lift for river work," to fit the boat with a lift. They also had nine hundred pounds of supplies, a thirty-horsepower Evinrude, and a five-and-one-half-horsepower Johnson. The boat's total weight including passengers was 3,100 pounds. 217/

Below the village of Kobuk their journey was uneventful. However, on July 16, as they traveled above the village, the current averaged six or seven miles per hour and bars became more numerous. After hitting one bar, McCutcheon had to hammer out a bent

propeller. He wrote that "propellers took a real beating on the upper river, [and] required a frequent hammering and filing to keep them usable at all." Before getting to Selby River they had to line the boat on at least two occasions and just below the Selby, McCutcheon constantly manipulated the motor and lift through a difficult swift water chute.

For ten miles above the Selby they had "tough driving" because of shallow water in a braided stretch. Following this ten-mile section they entered "wide, still, deep water." After passing Bear Island, they lined the boat several times over shallow spots. This was neither difficult nor dangerous. As they passed one tributary after another upriver they noticed the river getting smaller. On July 18 they cached twenty gallons of gasoline and some other gear. Overnight the water level had dropped several inches and as they continued upriver, boulders began showing up throughout the river. By lunch time McCutcheon had to hammer out dents in the prop.

Later that day they reached the Kobuk's lower canyon, which McCutcheon described: "Here the water was white where it coursed over or around the boulders. The channel was often six feet wide between the boulders and the water raced along at ten to twelve miles and [sic] hour." McCutcheon noted that "by this time our skeg, at the bottom of its extra-length [sic] shaft, was banging boulders too frequently to suit me. No matter how I handled the lift it was impossible to avoid all of them and it got to be slow, rough going." McCutcheon fixed a sheared pin and then scouted ahead in vain for pools; "for nearly a mile all I could see was white water and boulders." With this information, all agreed to turn back. Still on the 18th, they reached a point thirty miles below the canyon without incident.

On July 19 they met two Native adults and a boy. They at first were skeptical that anyone could go up to the canyon with the water so low. However, after McCutcheon demonstrated the use of the lift, they found the trip credible. The next day they easily traveled through the chute and shallows which had given them considerable trouble on the way up. McCutcheon recorded no more incidents for the rest of their downriver trip. 218/

McCutcheon ended his story by summarizing his experience on the river and giving advice to those who might wish to take the same trip. They had hoped to reach Walker Lake, but the water was too low. Nevertheless, he believed he was the first white to take a powerboat up to the canyon. He did not recommend the trip to the complete novice, but stated that "anyone who can handle a small boat should have no trouble." Those who were just out for fun, he suggested, might want to stop at the Selby or possibly the Reed River, since the upper river could cause problems, especially at low stages of water. 219/

In the 1970s the Department of the Interior became interested in the Kobuk as a potential Wild and Scenic River and in the surrounding terrain as part of a wilderness area. Alaska Task Force personnel flew over the upper part of the river in or before 1973 and were not impressed by what they saw. However, John Kauffmann, another member of the task force, was skeptical of the overflight examination. In 1973 he and another man made a four-day foldboat trip from below the Upper Kobuk Canyon to the mouth of Selby River. Kauffmann reported favorably on his Kobuk experience and, consequently, the Department again investigated the upper river in 1974. 220/

Seven people participated in the 1974 float trip on the river from Walker Lake to Kobuk. Buff Bohlen, an assistant deputy of the Interior, traveled the uppermost portion of the river. Halfway through the journey he flew out on a helicopter which brought Debbie Clausen of the Fairbanks Center for the Environment to the Kobuk. She made the rest of

the trip. Ted Swen, chairman of the Alaska Planning Group, and his son Ted, Jr., came from Washington, D.C., for the trip. Others on the expedition were Scott Grundy of the ADF&G, Ed Porter of the University of Alaska, Fairbanks, and Patrick Pourchot of the Bureau of Outdoor Recreation.

Pourchot kept a log of the field examination. On August 8 they flew to the lake's outlet, where they fished. Pourchot hiked down to a set of rapids about three-quarters of a mile below Walker Lake which he believed impossible for a canoe to run. On the 10th the six men began canoeing downstream in three seventeen-foot Grumman's. Pourchot described the distance down to the rapids as easy class I water, but the subsequent rapids as class V for a third of a mile. He noted four major drops of several feet for a total drop of about twenty feet, many boulders and "lots of hydraulics, and cross-currents, haystacks, and no clear channels or chutes." After portaging, they paddled through a half mile of class II whitewater "requiring maneuvering around racks and through riffles but not dangerous." One chute had a two-foot standing wave, but below this stretch all the water encountered that day was class I. Pourchot noted that the main river had only slightly more water than the lake's outlet stream. At their confluence, the river was twenty-five yards wide, four to five feet deep with ten foot holes, and a three- to four-mile-per-hour current. They camped that night about eight miles below Walker Lake, having traveled for about two and one-half hours.

The men traveled thirteen miles in about four hours on August 11. Pourchot described the Upper Kobuk Canyon as "easy Class II water . . . with 1/2 mile stretch of scattered boulders requiring some easy maneuvering." The rest of that day's travel was through class I water with few riffles. They stopped for the night at the outlet of Nutuvukti Lake where the river was forty yards wide, four to five feet deep, with a three- to four-mile-per-hour current. He noted few gravel bars and the river appeared to have "fairly stable water levels."

On August 12 the party reached the Lower Kobuk Canyon. Pourchot wrote that it was three-quarters of a mile long and consisted of three sections of rapids. After scouting ahead, all three canoes ran the first 150-yard set of rapids, which Pourchot described as "low Class III" with two-foot standing waves below the first chute, strong current, and some rock outcrops requiring "some easy but critical maneuvering."

The second set of rapids was a quarter mile downstream and consisted primarily of two chutes. The men scouted ahead. Two chose to line their canoe through these rapids along the right side. The others shot the first chute without shipping water. It was a class III rapid and below it the men had to do fast and careful paddling to pull up on the right bank because of the swift current. Pourchot described the second chute as a "5 or 6 foot v-shaped chute through which the whole river plunged with a 3 foot high resurge swell at the end. It appeared too heavy to take an open canoe through without filling with water." Therefore, all lined around it. The last set of rapids in the Lower Kobuk Canyon was a third of a mile downriver. It consisted of two channels divided by a continuous wall of huge boulders. Each channel had about four drops within a hundred-yard distance. Pourchot had a hard time seeing the left channel, however it "appeared to have heavier water but straighter approaches and chutes." The right channel "required several radical maneuvers between drops to go down chutes at [the] proper angle." He said both channels were class IV. Pourchot and Ted Swen, Jr., ran the right channel. Their stern hit a rock ledge on two of the drops and they took on three or four inches of water. The others lined through this section. The current was so strong that close attention and firm holds were necessary to keep their canoes from getting out into the rapids. Near the bottom those that lined had to get into the canoes and skirt along the edge because there was no bank or rocks on which to stand. The trip through the canyon absorbed two

and one-half hours. Three miles below the canyon they made camp. At this point the river was fifty to sixty yards wide, three to five feet deep, with clear water and a three- to four-mile-per-hour current.

The rest of the trip was uneventful. On the next day they traveled fourteen miles in about three hours and camped for the night a few miles below Beaver Creek. Here the Kobuk was sixty to seventy yards wide, five to eight feet deep, with a current of three to four miles per hour. On August 14 the group floated twenty-five miles in five hours encountering many "fast smooth riffles." They camped across from the Selby River. The Kobuk there was seventy to eighty yards wide, three to five feet deep and had a three- to four-mile-per-hour current. The next day they covered eight miles in roughly two hours, camping at the confluence of the Pah. On the 16th they canoed ten miles in two and one-half hours, stopping two miles above the Mauneluk River. Two miles below the Killak River they stopped at local guide Nelson Walker's new plywood house, then under construction. Walker had a riverboat in the water and a gravel bar airstrip. On the 17th the group spent two hours on the river and camped about two and one-half miles above the Kollioksak River. Shortly after leaving camp the next morning, three Natives passed them going upriver. When the government party came to a large island they took the north channel which took them to where the abandoned settlement of Kalla is marked on USGS maps. Pourchot indicated this branch was much smaller than that to the south. Above the island the river was one hundred to 120 yards wide, four to ten feet deep, with a three-mile-per-hour current. The channel they took was twenty-five yards wide, two to three feet deep, with a two to three mile per hour current. They stopped at Kalla as marked on the maps, but found nothing which looked like an old village. While there, the Natives who had passed them early in the day stopped. The Natives told the government employees that Kalla was not properly marked on maps; it was upstream where the river divided. The Natives had guns in their boat. They said they were out "looking around." Moose season had not yet opened. The government employees did not travel on August 19. The next day they covered thirteen and one-half miles in three hours of "steady, moderate paddling." They took out at Kobuk and flew back to Fairbanks, Anchorage, and the District of Columbia. 221/

In the fall of 1974 the Bureau of Outdoor Recreation drafted a report based on its research of the Kobuk's Wild and Scenic river potential above the village of Kobuk. It described the river above the Walker Lake outlet as having a five- to ten-mile-per-hour current. Up to Kichaiakaka Creek there were at least two major rapids and above the creek the river was "extremely shallow and rocky." Below the lake outlet the report indicated that the current averaged between three and four miles per hour with periodic swifter riffles near Selby River. There were "major rapids" located in the Lower Kobuk Canyon, and a two- to three-mile-per-hour current near Kobuk.

The report echoed several of Pourchot's width, depth, and white water classification figures and stated that the river bottom was generally composed of gravel or stones. Basing its conclusions on data gathered at a stream gauging station at Ambler in 1971 and 1972, the Bureau of Outdoor Recreation stated that the upper river's maximum discharge usually occurred after spring breakup in mid to late May. In June the discharge dropped substantially.

The Bureau of Outdoor Recreation report also addressed human use of the river. It stated that generally subsistence fishing only occurred up to about the Selby River and that hunting and trapping took place up to the Lower Kobuk Canyon. It was not certain, but indicated that a guide thirty miles up the river, doubtlessly referring to Nelson Walker, "apparently" used a plane or riverboat to take his customers hunting and fishing.

The report also asserted that several parties of floaters descended this segment of the river each summer, usually from Walker Lake. The Bureau of Outdoor Recreation noted that one river guide annually took a raft-load of passengers down this part of the Kobuk. The agency stated that "during most water levels boats can be taken upstream to the Lower Kobuk Canyon where rapids block further travel." 222/

In 1980 Jack Mosby of the Heritage Conservation and Recreation Service, and Howard Wagner, Ross Kavanagh, and Chuck Gilbert of the National Park Service examined the Kobuk from Walker Lake to Pah River. A floatplane landed the men and their two twelve-foot Redshank rafts on Walker Lake near its outlet on July 29. They had originally intended to float the Killak River, but bad weather prevented access to its headwaters. They chose to examine the Kobuk instead because, except for the Noatak, they believed it to receive "the heaviest recreational use of any river" in the proposed Kobuk River Monument. *GPAS*

Chuck Gilbert wrote a report of the trip in which he described the river's condition and use. He termed the current for the uppermost two miles of the outlet to be "gentle" with holes as deep as eight to ten feet. Two miles below the lake the foursome came to rapids they rated either III or IV. After examining the rapids they decided they were too rough for their twelve-foot rafts. They portaged a quarter of a mile. However, evidence of foot travel along the bank indicated that only two parties had portaged the rapids that year. The government personnel knew that more than two parties had traveled the route so they "surmised that some groups are running the rapids." Gilbert added that, "some of the commercial river companies are apparently using larger rafts, which would have little problem with these rapids." Following the rapids, riffles continued for a half mile before the river flattened out. He added that the river bottom consisted of cobbles. They camped after their first day's travel one or two miles below the outlet of Walker Lake.

On July 30 the party floated through the Upper Kobuk Canyon. Gilbert wrote that the current in the canyon was about four miles per hour and had no whitewater. It was easy to dodge the few large boulders in the channel. After the canyon the river "slows considerably." In this stretch the river bottom consisted of sand. The Kobuk regained speed about a mile below the canyon and here cobble again made up the riverbed. Gilbert stated that for the rest of the trip the bottom alternated between sand and rock, with the latter predominating. That night they camped on a sandy bar several miles below the outlet of Nutuvukti Lake.

The foursome passed through the lower canyon on the 31st. Above the canyon, Gilbert recorded that the river was no more that two to four feet deep and over two hundred feet wide. For the first mile within the canyon the current was gentle. The first set of rapids was class II. After scouting them the group ran their rafts along the right side. For the next three hundred yards they traveled through riffles and exposed rock followed by a couple hundred yards of one- to two-foot standing waves requiring some maneuvering. Gilbert considered the rapids at the lower end of the canyon to be the most challenging. Here a bedrock island divided the river. Gilbert described the water:

The right channel flows over a low shelf and then across several large rocks. Two to three foot waves lie behind these obstacles, and would require quick maneuvering in small rafts. The left channel flows quickly down a chute against the vertical wall of the canyon. A hole and wave of about 3-4 feet in height lie in the center of the channel, but can be passed on the right by quick paddling or rowing. The right channel empties into a deep quiet pool.

*check +
changes
according to our
comments*

Gilbert and Ross Kavanagh lined their raft along the right bank; Jack Mosby and Howard Wagner shot the chute on the left. After abruptly leaving the canyon the river flattened out and at some places braided into two or more channels. For several miles the Kobuk slowed at "deep, sandy-bottomed pools" and then accelerated as it left the pools. That night the men stopped at a point about halfway between the lower canyon and Reed River.

The river presented little excitement for the rest of the trip. Gilbert made no observations of river conditions on August 1 and August 2. The first day they camped seven miles above the Selby River; the next day they reached a point less than a mile below the Selby. On the 3rd they encountered the first people on the river. Overnight a river boat had passed upstream and in the early morning they passed again going downstream. Below the Selby, Gilbert noted that numerous boulders lay in the riverbed and that many protruded above the surface. He added that "many segments of the upper Kobuk have boulders." That night the group camped on a gravel bar about five miles below the Pah River. On the morning of August 4, Ron Costello of Brooks Range Aviation picked them up and by the late afternoon they were back in Anchorage. 223/

Jack Mosby filed a brief separate report on this trip. He rated the rapids three-quarters of a mile below Walker Lake as class III. The men easily oared around four- to eight-foot rocks in the upper canyon. He indicated that the lower canyon consisted of two class II rapids followed by a series of class II to III drops near the end of the canyon. Only in the outlet did Mosby consider the water too rough for the twelve-foot rafts. Below the Pah River there were "numerous" cabins and Mosby observed that there "the river is a travel corridor for subsistence activities." 224/

Given the previous accounts of Kobuk River trips already in the National Park Services files, Jim Morris of that agency did not make any special effort to record his on a government trip in 1983. On July 18, Morris, Bill Brown, Judy Liedberg, Sandra Cosentino, and Willard Commack, all of the National Park Service, and Larry Goldstein of Alaska's Division of Land and Water Management flew into Walker Lake along with supplies and two thirteen-foot Avon rafts. 225/ Morris noted a lodge at the southeast end of the lake. On the next day they carefully examined the rapids on the outlet and decided "there was simply too many rocks and our crew too green on the first day to risk an attempt at running." They portaged for two and one-half hours and lined the boats down.

On July 20 they passed through the Upper Kobuk Canyon without any difficulty. Morris categorized the rapids as class I with a few rocks to maneuver around. Nor did the group encounter problems on the lower canyon which they traversed on the 21st. The water level was unusually low. At that stage, Morris rated the rapids as class II. The evening of the 22nd they camped on an island above Bear Island. The following night they stopped at an island above the Killak River and on July 24 they over-nighted below the abandoned village of Kalla. On July 25 they stopped at Kobuk and picked up two small motors. The next day they visited Shungnak. Here Kent Hall joined the party. He remained with the group to Ambler. Liedberg and Goldstein left the group on the 27th. By July 30 they had descended to the area of the Kobuk sand dunes and on August 1 they motored the last ten miles to Kiana, from where they flew to Kotzebue. 226/

The BLM has already determined the Kobuk to be navigable within many State- and Native-selected areas. The farthest upriver such a determination has been made is T. 18 N., R. 21 E., Kateel River Meridian, near the Kobuk's upper canyon. In June 1980 the Fairbanks District Office prepared a report stating that the river was thirty to forty feet wide and about two feet deep in the township and that people reached homesites

above this point using nineteen-foot canoes with motors. [The BLM's records show no homesites on the river in or above this township.] The report also pointed to "historic use" and "fairly heavy recreation use at the present time." The District gave the AEIDC printout and several flying services as its sources of information. The District recommended the river be determined navigable in the township; the State Director concurred on August 13, 1980. 227/

Kichaiakaka Creek

In 1901 Walter C. Mendenhall of the USGS, led six other men with Peterborough canoes up the Alatna River and Helpmejack Creek and portaged to the head of Kichaiakaka Creek. Mendenhall did not state how far he floated on the creek. However, he put in on August 8 and did not reach the stream's mouth until the 10th. Based upon a map in his report, it appears they canoed the lowest six to eight miles of the creek. 228/

Walker Lake

Explorers Lieutenant John C. Cantwell and Walter C. Mendenhall provided the earliest documented evidence of travel on Walker Lake. Cantwell, who led a four-man Revenue Marine contingent up the Kobuk River in 1885, was the first white to view Walker Lake. They dragged a skin boat, probably a umiak, to the rapids in the lake's outlet stream. On July 21 they hiked two and one-half hours to the lake. Cantwell recorded that the lake's Native name meant "Big Fish Lake" and that Natives fished from canoes on it. He also stated that Natives hunted caribou on the north side of the lake in winter. 229/ On August 12, 1901, Walter C. Mendenhall and his seven-man USGS expedition lined their canoes up the lake's outlet and then canoed most of the way to the northern end of the lake. 230/

Most documented evidence of travel on Walker Lake dates from the 1970s when recreational floating became more common. Walker Lake was the most common put-in point for float trips down the Kobuk. Airplanes with pontoons, frequently chartered out of Bettles, landed on the lake, and passengers and equipment were unloaded. A government-sponsored examination of the area took place in 1974. On August 8 the six people and their equipment flew into the north end of the lake. The next day they flew to the outlet and on the 10th they began canoeing downstream. 231/

On July 29, 1980 four National Park Service and Heritage Conservation and Recreation Service personnel flew to Walker Lake. They came into shore one-half mile east of the outlet because Ron Costello, their pilot from Brooks Range Aviation, preferred the steep shelf at this point. The water was deeper here than closer to the outlet. From here the group paddled their twelve-foot Avon rafts to the outlet. One of those on this trip recorded that other groups had already floated downstream from Walker Lake that year. 232/

The most recent National Park Service float on the Kobuk occurred in 1983. On July 18 a six-person group flew to Walker Lake. They spent that night on the lakeshore before floating down to the river in their thirteen-foot inflatable rafts. While at the lake they noted one aircraft which landed at a lodge at the southeast end of the lake and heard the rumble of the lodge's generator. 233/

Walker Lake Outlet

Lieutenant John C. Cantwell and USGS explorer Walter C. Mendenhall provided the first written accounts of this stream. In 1885 Cantwell led three other whites and a varying number of Natives up the river. By the time they got to the outlet they were using a skin

boat they had obtained on the coast. They reached the outlet's mouth on July 21. Cantwell wrote that the stream was sixty yards wide and four to six feet deep; it was somewhat wider and much deeper than the mainstream. He and his men boated up to a set of rapids in the outlet. By then the lake was only a two-and-one-half-hour walk. Cantwell decided to carry their surveying instruments the rest of the way to the lake rather than further endanger their dilapidated umiak. After examining the lake they took the boat back down the outlet a short distance and then up a small left-bank tributary of the outlet. They crossed a swampy plain and made a short portage to the Kobuk River. 234/

Mendenhall led seven others on a downstream exploration of the Kobuk River valley in 1901. On August 11 they took their three Peterborough canoes up the outlet to the falls. Here they unloaded the canoes and the next day they took the empty canoes through the rapids. They returned downstream on the 13th. 235/

It does not appear that the outlet was extensively traveled until the 1970s when recreationists and government personnel studying the upper Kobuk's recreational potential began to land on Walker Lake and float downstream. In 1974 six members of a Department of the Interior team landed on the lake on August 8. On the 10th they began to canoe downstream in their seventeen-foot Grumman's. Patrick Pourchot, one of the participants, wrote later that he had walked three-fourths of a mile downstream to the rapids and had concluded that canoes could not run them. He stated that to the rapids the water was class I on the international white water scale, but the rapids which followed were class V for a third of a mile. He noted four major drops of several feet for a total drop of about twenty feet, many boulders and "lots of hydraulics, and cross-currents, haystacks, and no clear channels or chutes." After portaging, they paddled through a half mile of class II whitewater "requiring maneuvering around rocks and through riffles but not dangerous." One chute had a two-foot standing wave, but below this stretch all the water encountered that day was class I. Pourchot noted that the main river had only slightly more water than the lake's outlet stream. 236/

In 1980 three men from the National Park Service and one from the Heritage Conservation and Recreation Service floated the outlet to the Kobuk in twelve-foot rafts. Chuck Gilbert, one of the participants, later described the current for the uppermost two miles of the outlet to be "gentle" with holes as deep as eight to ten feet. Two miles below the lake the foursome came to rapids they rated either class III or IV. After examining the rapids they decided they were too rough for their twelve-foot rafts. They portaged a quarter of a mile. However, evidence of foot travel along the bank indicated that only two parties had portaged the rapids that year. The government personnel knew that more than two parties had traveled the route so they "surmised that some groups were running the rapids." Gilbert added that, "some of the commercial river companies are apparently using larger rafts, which would have little problem with these rapids." Following the rapids, riffles continued for a half mile before the river flattened out to the outlet's mouth. He added that the river bottom consisted of cobbles. 237/

Jack Mosby, another participant in this 1980 trip, gave a slightly variant description of the outlet. He wrote that the rapids three-quarters of a mile below the lake were class III. They portaged around for an eighth of a mile. Mosby stated this was the only part of their trip "too rough for the 12' rafts." 238/

The most recent government excursion on the outlet occurred in July 1983. Jim Morris, who wrote a trip report, noted that the National Park Service already had many notes on river conditions in its files and so paid little heed to that topic. However, he did state

that on July 19 the six people in their group examined the rapids in the outlet and decided "there was simply too many rocks and our crew too green on the first day to risk an attempt at running." Instead, they portaged for two and one-half hours and lined their two thirteen-foot Avon rafts. 239/

Nutuvukti Lake Outlet

On August 11, 1974 a Department of the Interior team examining the Wild and Scenic River potential of the Kobuk River passed by this stream. Patrick Pourchot, who was on the trip, noted it to be twenty feet wide and two feet deep at its mouth. 240/

Reed River

Anthropologist Ernest S. Burch, Jr., who in 1968 conducted ethnographic research on Northwest Alaskan travel, stated that Natives used the Reed River in both winter and summer as a route between the Kobuk and Noatak drainages. In summer Kobuk Natives used the route to return home after hunting in the Noatak headwaters. Near the forested upper portion of the Reed, they built rafts and floated to their families on the Kobuk carrying their harvest of caribou hides, meat, and fat. 241/

Lieutenant John C. Cantwell made the first written mention of the Reed River. He passed by this stream twice, once on July 16, 1885. He noted that it was approximately the same size as Beaver Creek, which he had earlier indicated was seventy-five yards wide with five to seven feet of water nearly all the way across. 242/

George L. Webb indicated that he and three friends traveled on the river in the summer of 1899. In June of that year they heard rumors of a gold strike on the Reed and made their way to it. Webb's diary entries were so infrequent and confusing that it is unclear how far the men boated up the river. However, it is evident that they rafted down from near its head. On August 4, Webb and at least one of his friends, a man named Hughes, reached the Reed River hot springs (Sec. 34, T. 22 N., R. 17 E., Kateel River Meridian) 243/ and made their camp at the timberline. Two other friends, George and Richard Reeves, arrived within the next week and they all began building two rafts. On August 14 they started down the river on their rafts. The Reeveses tipped over theirs. Webb "got down to my boat all right [sic] about 7:00 p.m." He was still on the Reed River. Evidently he had gotten the boat up to this unstated point earlier in the summer. On the 15th, Webb floated in his boat to a cache twelve miles below the mouth of the Reed River. 244/

There is surprisingly little other documentary information about the Reed River. In the course of collecting data about the Kobuk for its possible nomination to the national Wild and Scenic River system, Patrick Pourchot and other Interior Department employees floated down the upper Kobuk in 1974. Pourchot noted that the Reed River was twenty yards wide at its mouth when they passed it on August 13. 245/

The BLM considers Reed River to be nonnavigable. In August 1979 Keith H. Woodworth of the Arctic-Kobuk Resource Area drafted a report on a State-selection encompassing T. 21 N., R. 17 E., Kateel River Meridian. He described the Reed as "a single relatively flat bottomed channel," which "is relatively shallow with numerous sand and gravel bars limiting water depth." Woodworth, who did not give a source for his information, added that the river was forty to fifty feet wide at its mouth and that at sandbars between pools the river is only one or two feet deep. Besides the sandbars, though, "there are no obstructions to navigation." Woodworth also stated that the stream's shallowness limited its use to recreational rafts and Eskimo skin rafts at normal water levels.

He recommended the BLM determine Reed River to be nonnavigable. The following summer the Fairbanks District Office repeated the wording of Woodworth's report almost verbatim in recommending the river to be nonnavigable in Tps. 19-20 N., R. 18 E., Kateel River Meridian. The State Director concurred with this recommendation on August 7, 1980. 246/ The following month the State Director determined the Reed to be nonnavigable further downstream in T. 18 N., R. 18 E., Kateel River Meridian. 247/

Beaver Creek

Lieutenant John C. Cantwell passed the mouth of this stream on July 14, 1885 on his exploration of the Kobuk River. He recorded that it was "one of the principal feeders" of the Kobuk and carried five to seven feet of water nearly all the way across its seventy-five-yard-wide mouth. 248/

The BLM considers Beaver Creek to be nonnavigable. In August 1979 Keith H. Woodworth of the agency's Arctic-Kobuk Resource Area recommended that the creek be found nonnavigable near its headwaters in T. 21 N., R. 17 E., Kateel River Meridian and, in a separate report, in Tps. 19-20 N., Rs. 16-17 E., Kateel River Meridian. He wrote in his report on the headwater township that the stream was twenty-five feet wide as it exited the township. Its depth ranged from six inches to two feet. "Numerous sand bars [made] the water depth within this tract . . . rather shallow," recorded Woodworth. He also noted that the lake at the creek's source was "a relatively shallow clear lake." A constriction in its center made the lake marginal for floatplane landings. In the report on the four townships farther downstream, Woodworth stated the creek was still no more than twenty-five feet wide where it passed into T. 18 N., R. 17 E., Kateel River Meridian and one to two feet deep. He stated that the creek was thirty feet wide at its mouth. In September 1979 the State Director determined that the creek was nonnavigable in the four lowest townships. 249/

A year later the BLM issued another report concerning Beaver Creek, this time in T. 18 N., R. 18 E., Kateel River Meridian. It stated that bars less than one foot below the water surface made the stream impassable for all but kayaks and light canoes. A Native allotment on the shore of Lake Minakokosa left open the possibility of some Native use of the lower creek. Still the creek's shallowness "would virtually preclude usage by commercial watercraft." This report also recommended that Beaver Creek be found nonnavigable, a finding the State Director agreed with on September 11, 1980. 250/

Lake Minakokosa

In June 1980 Ralph S. Rhodes of BLM drafted a report for the Fairbanks District Office in connection with a State selection covering T. 18 N., R. 17 E., Kateel River Meridian in which he recommended that the lake be determined nonnavigable. He had contacted three flight services in the region, one of which had averaged six to eight charters a year to Lake Minakokosa for fishing and hunting. Otherwise he could document no use of the lake. On July 24 the State Director concurred with the recommendation. 251/ In September, though, another BLM report from the Fairbanks District addressed the lake in T. 18 N., R. 18 E., Kateel River Meridian. Because of the lake's uncertain "but not shallow" depth, it recommended that it be determined navigable. Sherman Berg of the State Office noted this inconsistency and contacted David Ruppert, the Fairbanks District Office's historian in charge of navigability reports. He agreed with Berg, that the shallowness of Beaver Creek made the lake "impracticable" as a route of travel. Consequently, when the State Director signed the navigability decision for this township on September 11, 1980, Lake Minakokosa was among the water bodies found nonnavigable. 252/

Selby River

The BLM's Fairbanks District Office prepared a navigability recommendation on the Selby River in T. 16 N., R. 14 E., Kateel River Meridian in early September 1980. It described the water body as from ten to fifteen feet wide and one to two feet deep with a sandy bottom. The river was "choked with numerous gravel bars, rapids, and overhanging brush" and that sweepers lay across the stream. The District Office recommended, and on September 11 the State Director concurred, that the Selby River be found nonnavigable. 253/

Lake Selby

Natives told Lieutenant George M. Stoney of this lake in the course of his 1884 exploration of the Kobuk River. Interested in charting this lake and its vicinity, he left a skin boat behind and walked with five others from the Kobuk to the lake carrying a canoe and equipment. Each person carried thirty pounds on what proved a fatiguing one-day hike to the lake, which he named. Stoney crossed the lake in the canoe making soundings. He found no bottom at eighteen fathoms. 254/

Pah River

Apparently the Pah River just before the contact period was a route between the Kobuk and Koyukuk rivers. Lieutenant John C. Cantwell while on his 1885 exploration of the Kobuk learned from Natives that they had gone up this river and portaged a short distance to the Koyukuk drainage. (Cantwell recorded that the Native name for the river referred to its rapid current.) 255/ Anthropologist Annette M. Clark's fifty-six-year-old Indian informer in 1961 or 1962 passed along an oral tradition which coincides with Cantwell's information. According to this resident of Allakaket, her great-grandfather in the period around 1870 made summer trading trips to the upper Kobuk via a portage and the Pah River. 256/

Following a State request for the conveyance of Tps. 14-16 N., R. 13 E., Kateel River Meridian, the BLM determined that the Pah River in these townships was navigable. In a report on the area, the Fairbanks District Office noted that there was one headquarters site on the river as well as some reported Native cemetery or historic sites. The river was fifteen to twenty feet wide and shallow, in some places less than a foot deep. The channel was covered at times with brush or fallen timber and there were some boulders at its lower end. No person contacted by the District Office ever boated on the river and one person stated it was so shallow that he doubted anyone could travel the river with anything larger than a kayak or canoe. Nevertheless, the District recommended that it be determined navigable based upon "the historical record [which] shows considerable use including trading trips from the Huslia area" to the Kobuk drainage via the Pah. The State Director signed this determination on September 11, 1980. 257/

Killak River

On August 16, 1974 Patrick Pourchot and others on an Interior Department examination of the upper Kobuk, stopped at the mouth of the Killak River. Pourchot wrote that the river was six to eight feet wide and six inches to one foot deep near its mouth. 258/

The State Director determined the Killak River to be nonnavigable in T. 17 N., R. 13 E., Kateel River Meridian on September 17, 1979. He based his decision on a report prepared the previous month at the Fairbanks District Office. This report cited the difficulty of entering the river with a riverboat because of bars on the Kobuk River. It also noted that the Killak's own shallow depth restricted Native use to the lowest

quarter to half mile. The District Office submitted another report repeating this information when addressing the need for a navigability decision in T. 16 N., R. 13 E., Kateel River Meridian. The latter conveyance included the mouth of the Killak. It recommended the river be determined nonnavigable in this township. The State Director concurred with this recommendation on September 11, 1980. 259/

Mauneluk River

Arthur T. Fernald of the USGS reported in 1964 that twelve years earlier he and others used a floatplane to land on Avaraart Lake. From there they made a geological reconnaissance by canoe to the mouth of Mauneluk River.

The BLM determined the extent of navigability of Mauneluk River in September 1980. On September 2nd the Fairbanks District Office submitted a report addressing State-selected lands from the river's mouth through T. 19 N., R. 13 E., Kateel River Meridian. The report stated that at its mouth the water body was sixty feet wide and that up to the tributary in Sec. 1, T. 18 N., R. 12 E., Kateel River Meridian, the Mauneluk was "wide and relatively free of obstacles." At this tributary the river narrowed considerably. In places it was only three to five feet wide with "numerous sandbars and rocks in the channel, although it is still passable to the fifth tributary (Sec. 31, T. 19 N., R. 13 E., Kateel River Meridian)." Above that it becomes "extremely shallow with gravel and sandbars, rocks, and occasional rapids." The report stated that homesites, headquarter sites, and trade and manufacturing sites dotted the river's banks up to the fifth tributary, but that only one Native allotment was above that point. The report writer, Art Conforti, further stated that two people he spoke with said it was possible to boat up to this tributary. Based upon this information the District Office recommended that the river be found navigable to the tributary in Sec. 36, T. 19 N., R. 13 E., Kateel River Meridian. Reference to Section 36 was in error as the Mauneluk does not traverse that section; apparently the intended upper limit of the determination was Sec. 31, T. 19 N., R. 13 E., Kateel River Meridian. Above that the District recommended that the river be determined nonnavigable. The State Director followed this recommendation on September 11, 1980. 260/

Avaraart Lake

In 1964 Arthur T. Fernald of the USGS reported that a dozen years earlier he and others landed in a floatplane on this lake and made a geological reconnaissance down Mauneluk River. Other references to this water body relate to BLM's investigation of its navigability. The Fairbanks District Office personnel traveled to the lake, probably in the summer of 1980. They saw no boats. However, the report stated there were two Native allotments on the north shore and a mineral exploration camp and Native-style tent frames on an island in the lake. The report stated the lake was two to five feet deep. The District recommended that the State Director determine Avaraart Lake nonnavigable, an action he took on September 11, 1980. 261/

Kolliksak Lake

In a 1969 publication, Crawford E. Fritts stated that people could access the eastern part of the Cosmos Hills by landing a floatplane on landlocked Kolliksak Lake. 262/ In April 1976 when BLM personnel met with Shungnak and Kobuk villagers to discuss easements in their selected lands, the Natives stated that fishermen regularly landed floatplanes on the lake. 263/

The State of Alaska's Department of Fish and Game and Division of Lands as well as the Bureau of Mines proposed easements around this lake when they learned it was within lands selected by the village of Kobuk. The ADF&G wanted an area for floatplane and boat tie-ups and for camping, noting that the lake was popular among those fishing for Arctic char and sheefish. The other agencies wanted a shoreline easement and also referred to the lake's recreational value. Citing the lake's popularity with fishermen, BLM's easement task force on June 23, 1977 supported a one-acre site on the southern shore of the lake including a twenty-five-foot-wide easement on the lakebed fronting the site. Moreover, the task force recommended that Kolliksak Lake be determined nonnavigable. However, discussion of the lake in regard to conveying land to the village of Kobuk ended in January 1978 when the Natives refined their land selection pattern to exclude the township encompassing the lake. 264/

Kolliksak River

Evidence of water travel on the Kolliksak River is not available. In 1885 Lieutenant John C. Cantwell doubtlessly referred to this stream when he described access to Kolliksak Lake. Cantwell apparently got his information from Natives. He stated that there was no direct water route to the landlocked lake, but that people could reach it by following a small tributary of the Kobuk. 265/

Kogoluktuk River

Some of Joseph Grinnell's companions on a gold-hunting party in 1898 took their steamboat up the Kobuk to the Kogoluktuk. In order to protect it from the Kobuk's ice, they took it six miles up the Kogoluktuk before winter set in. 266/

In September and October 1898, another group of prospectors composed of George L. Webb, Leo Chase, and George and Richard Reeves boated up the Kogoluktuk. On September 17 they took their boat from the river's mouth to the Grinnell party's steamboat. Webb commented that it was "harder pulling than ever." Here they unloaded part of their supplies. Over the next four days they dragged their supplies one and one-half miles upstream in two trips. At least on the second trip some of the men with the steamboat helped them "over the rapids." 267/

It is unclear what Webb and his partners did the last nine days of September. On October 1 and 2, they pulled their boat out of the water because ice was forming. On the 9th and 10th they took George Reeves' "little canvas boat" up from a cache (location unclear) in order to prospect farther upstream. All four started upriver, but Richard Reeves came along only to help carry the boat "about a mile and a half around the falls." From there they towed the boat up another one and one half miles to where the river was frozen. Webb's incomplete diary gave no other mention of watercraft on the Kogoluktuk. 268/

Several USGS explorers made observations of the Kogoluktuk. In 1901 Walter C. Mendenhall wrote that the Kogoluktuk was one of the Kobuk's most important northern tributaries. He stated that "the pass at its head to the Noatak is reported by the Natives to be one of the shortest and easiest leading to that river. Many rapids, however, make its navigation difficult." 269/ Philip S. Smith and Henry M. Eakin in 1910, noted that the Kogoluktuk maintained a relatively constant flow because it derived a good proportion of its water from melting snow. They added that "Kogoluktuk" meant "river with falls" in the Native language, referring to rapids and low falls through which the river tumbled on its way through the Cosmos Hills. 270/

The BLM considers the lowest six miles of the river to be navigable. Natives of both Shungnak and Kobuk selected lands including portions of the lower Kogoluktuk River. The BLM's easement staff in June 1977 considered the river nonnavigable and proposed a twenty-five-foot streamside easement along the river's banks and an easement on the riverbed in lands selected by Shungnak in T. 18 N., R. 10 E., Kateel River Meridian. The BLM stated that it served "as an access route to public lands and public waters" and that recreationists floated and fished in the Kogoluktuk. The easement would provide boat tie-ups and resting and camping areas. However, the agency rejected this easement before sending its proposed easement list to the Federal-State Land Use Planning Commission. The Commission endorsed this reversal in BLM's position in June 1979 and there was no more mention of the easement. 271/

The village of Kobuk chose lands including the Kogoluktuk River in the northern part of T. 19 N., R. 10 E. and the southwest corners of T. 18 N., R. 10 E., and T. 20 N., R. 11 E., Kateel River Meridian. The BLM proposed a one-acre site easement along the river in the former township in order to facilitate access along the river. For similar reasons the Alaska Division of Lands and the Bureau of Mines proposed a streambed and ten-foot bank easement along the river. Simultaneously with its meeting on Shungnak's easements in June 1977, BLM's easement staff approved these two proposals for Kobuk (widening the streamside easement to twenty-five feet). Also like the Shungnak easements, BLM dropped both of those proposed for Kobuk near the Kogoluktuk before submitting a list of easements to the Land Use Planning Commission. The Commission agreed that they were inappropriate. 272/

In January 1980 the BLM issued a Notice of Proposed Easement Recommendations for Kobuk. It cited the steamboat ascent six miles up the Kogoluktuk to support a stance of navigability for the Kogoluktuk "into" Sec. 33, T. 19 N., R. 10 E., Kateel River Meridian. 273/ The agency determined four months earlier that the water body was not navigable above T. 20 N., R. 11 E., Kateel River Meridian. It noted that a "series of falls and rapids located below Canyon Creek form a major obstruction to any possible commercial river usage". Above the falls lay gravel bars which "preclude river access and usage." Native boats only traveled below the falls. 274/

Kuikcherk River

After their 1910 travels in the Kobuk drainage, USGS geologists Philip S. Smith and Henry M. Eakin compared the southern bank tributaries of Kuikcherk, Pick, and Black rivers to the northern tributaries--Kogoluktuk, Shungnak, and Ambler rivers. They stated that the southern rivers were smaller because their drainages were smaller and because the low hills in which they head accumulate less snow than the higher mountains to the north. The geologists added that the southern tributaries were "rather sluggish" in their lower courses and that their water was in large measure derived from the tundra through which they flow. 275/

In January 1980 when it issued a Notice of Proposed Easement Recommendations for the village of Kobuk and a year later when it compiled its final easement memorandum, the Bureau of Land Management considered Kuikcherk River nonnavigable in its lower course through T. 17 N., R. 9 E. Kateel River Meridian. 276/

Pick River

USGS geologists Philip S. Smith and Henry M. Eakin compared the southern bank tributaries of Kuikcherk, Pick, and Black rivers to the northern tributaries--Kogoluktuk, Shungnak, and Ambler rivers. They stated that the southern rivers were smaller because their drainages were smaller and because the low hills in which they head accumulate

less snow than the higher mountains to the north. The geologists added that the southern tributaries were "rather sluggish" in their lower courses and that their water was in large measure derived from the tundra through which they flow. 277/

When addressing the need for easements in lands selected by Shungnak Natives, the Alaska Division of Lands and the Bureau of Outdoor Recreation proposed a streambed and streamside easement along Pick River and the Bureau of Land Management suggested a one-acre campsite in Sec. 9, T. 15 N., R. 9 E., Kateel River Meridian, to facilitate recreational use along the river. However, the BLM easement staff rejected both of these as unnecessary at its June 23, 1977 meeting. That same group simultaneously recommended that BLM consider the stream nonnavigable. The Federal-State Land Use Planning Commission in 1979 agreed that these easements should be dropped. The final easement statement for the village dated March 31, 1982, found the Pick to be nonnavigable. 278/

Tekeaksakrak Lake

In the course of conveying land to the village of Shungnak, the BLM directly addressed the navigability of Tekeaksakrak Lake. Its easement staff in June 1977 recommended the lake be found nonnavigable. This recommendation held through the State Director's easement memorandum signed March 31, 1982. However, within the next three months BLM received information indicating that the lake and its outlet provided riverboat access to several Native allotments. Consequently, on June 18, the BLM determined the lake and its outlet to be navigable. 279/

Shungnak River

Philip S. Smith and Henry M. Eakin, both USGS geologists, examined the Kobuk drainage in 1910. They noted that the Shungnak, like the Kogoluktuk and Ambler, maintained a relatively constant flow because it derived a good proportion of its water from melting snow. Their report also stated that "low falls and rapids" occurred on these rivers. 280/

The BLM considered the navigability of Shungnak River in the course of conveying land to the villages of Shungnak and Kobuk and to the State. The easement staff met on June 23, 1977 to consider both villages' selections, which encompassed portions of the river up through T. 20 N., R. 10 E., Kateel River Meridian. It recommended that the river be determined nonnavigable. However, it urged streambed and streamside easements follow the river through the conveyance area, noting that the Alaska Wilderness Council had cited the river as having excellent "recreational resources" and that the Shungnak "serves as a travel route providing access to public lands, waters, and resources." The staff also urged site easements in Sec. 35, T. 19 N., R. 7 E. and Sec. 21, T. 20 N., R. 9 E., Kateel River Meridian and a fifty-foot-wide access trail roughly paralleling the river to the first of these sites. Both site easements were to include a twenty-five-foot extension onto the riverbed. The sites were at least in part related to trail travel. However, by the time BLM forwarded its recommended easements to the Federal-State Land Use Planning Commission, it had dropped all but the fifty-foot easement, and the Commission urged BLM to drop it arguing that another trail served the same purpose. When signing final easement memoranda for the villages in 1981 and 1982, the State Director determined that the Shungnak was nonnavigable. 281/

The BLM twice determined the Shungnak nonnavigable in T. 21 N., R. 10 E. and T. 21 N., Rs. 10-11 E., Kateel River Meridian in 1980. The State Director first signed off on these three townships on August 5 after receiving a report from the Fairbanks District Office. The District described the river as being twenty to forty feet wide with depths commonly falling under six inches in the township under review. It referred to

"impassable rapids" in Secs. 24-25, T. 19 N., R. 7 E., Kateel River Meridian. The Fairbanks office prepared a September 2, 1980 report containing much the same information. Based upon it the State Director again determined the river nonnavigable in these townships on September 11, 1980. 282/

Black River

Lieutenant John C. Cantwell and three men in his 1884 expedition made the first documented boat ascent of the Black River. They traveled in a umiak up the Kobuk, reaching the Black River on July 26. By then their boat had become water-soaked and Cantwell determined to travel up the Black River to obtain a replacement in a Native village. On the 27th they boated up to the village. In an article Cantwell described the Black River as "narrow and crooked, soon diminishing to a mere torrent." 283/ In his official report he wrote that his men broke camp at 7:30 and reached the village at 1 p.m. He observed that "in some places the river was fifty to seventy-five yards wide, but as we ascended the shores contracted, and when we stopped at 1 p.m. the stream had diminished in width until it was then but a roaring mountain torrent of some twenty-five feet in width." He added that they found eighteen to twenty-four feet of water for "fifteen or twenty miles, after which the depth decreased to ten to twelve feet." Cantwell stated that there was little current and they made about five miles per hour. His measure of river mileage could not have been correct. The Black River is only nineteen miles long. Since the next day they followed the villagers' advise and portaged directly from the village northeast to the Kobuk above the Black's mouth, it is unlikely that they traveled much more than thirteen miles up Black River. 284/

After their 1910 travels in the Kobuk drainage, USGS geologists Philip S. Smith and Henry M. Eakin compared the southern bank tributaries of Kuikcherk, Pick, and Black rivers to the northern tributaries--Kogoluktuk, Shungnak, and Ambler rivers. They stated that the southern rivers were smaller because their drainages were smaller and because the low hills in which they head accumulate less snow than the higher mountains to the north. The geologists added that the southern tributaries were "rather sluggish" in their lower courses and that their water was in large measure derived from the tundra through which they flow. 285/

Ambler River

In December 1885 Lieutenant George M. Stoney of the U.S. Navy and five others sledged up the Ambler River. Stoney noted that this was not a good winter route because its rapids did not freeze. He wrote that "for many miles" the Ambler was a "rapid mountain stream, winding down in a southerly direction Where the valley narrows, the banks rise into towering perpendicular cliffs, and the waters tumble and roar over great boulders." 286/

Philip S. Smith and Henry M. Eakin, both USGS geologists, examined the Kobuk drainage in 1910. They noted that the Ambler, like the Kogoluktuk and Shungnak, maintained a relatively constant flow because it derived a good proportion of its water from melting snow. Their report also stated that "low falls and rapids" occurred on these rivers. 287/ Arthur T. Fernald of the USGS reported in 1964 that twelve years earlier he and others landed a floatplane on Lake Anirak. From there they made a geological reconnaissance by canoe to the mouth of Ambler River. 288/

In 1973 the Department of the Interior's Alaska Task Force drafted two chapters for a preliminary report concerning the Wild and Scenic River potential of the Ambler River. The chapters were based on an overflight on June 14, 1972 and an "office review of

available information." They stated that access at least to the area above T. 22 N., R. 9 E., Kateel River Meridian, was gained by light aircraft which could take advantage of many gravel bars. Riverboats could travel "in the lower reaches" and "the river offers an exceptional experience for skilled canoeists and kayakers in the upper reaches." At that time hunting and fishing were "the only major recreational activities" along the Ambler River. 289/

The BLM in 1980 determined the Ambler River navigable throughout the conveyance to the village of Ambler and up through Sec. 4, T. 22 N., R. 9 E., Kateel River Meridian in State-selected lands. A Notice of Proposed Easement Recommendations for Ambler issued in January of that year did not consider the river navigable even in its lowest portions. However, in April the Alaska State Office conducted a review of the river's navigability status. According to Keith Woodworth, a BLM natural resource specialist at Kotzebue, twenty- to twenty-four-foot flat-bottomed riverboats ascended the Ambler to the braided stretch in T. 21 N., R. 8 E., Kateel River Meridian. Also a cluster of headquarter sites, homesites, and trade and manufacturing sites was located in T. 22 N., R. 9 E., Kateel River Meridian. Claimants reportedly transported goods to these places by way of the Ambler River. One headquarter site owner offered float trips down the Ambler. Based upon the above information, Berg recommended BLM determine the Ambler navigable in the selection area which extended through T. 20 N., R. 7 E., Kateel River Meridian. The State Director's final easement memorandum adopted Berg's recommendation on June 17. 290/

The BLM's Fairbanks District Office prepared a report in August 1980 addressing State-selected lands encompassing most of the Ambler River upstream of the village selection. The District noted several homesites and headquarter sites between Kalurivik Creek and the tributaries entering the river in Sec. 4, T. 22 N., R. 9 E., Kateel River Meridian. Local sources reported riverboats ascending "as far as Cooper's cabin, three down from the north," a nineteen-foot Grumman canoe used to access the "upper cabin," and raft trips run from the headquarter site, "the second cabin down." The District's report indicated that the river was "up to four feet or more" in depth in the main channel. Based upon this information the District recommended and on September 11, 1980, the State Director determined that the Ambler be considered navigable up through T. 22 N., R. 9 E., Kateel River Meridian. 291/

Redstone River

Archaeologist James Louis Giddings kayaked an unstated distance up the Redstone River in the 1940s examining house pits. 292/ About two decades later Frederick C. Dean and David L. Chesemore published a wildlife study of the region in which they stated that the Redstone normally was shallow, but rose rapidly when it rained on its headwaters. 293/

The BLM in 1980 addressed the navigability of the entire Redstone River in the course of conveying land to the village of Ambler and to the State. The Notice of Proposed Easement Recommendations for the village issued in January 1980 did not consider the river navigable even near its mouth. However, in April the BLM considered the river's navigability status. Contacted by Keith Woodworth, a BLM natural resource specialist at Kotzebue, Eric Van Venen of Ambler, a commercial guide, characterized the river up to its braided area in T. 23 N., R. 6 E., Kateel River Meridian as fifty to sixty feet wide and five to six feet deep. Van Venen used a twenty-four foot freighter canoe up to the braided section and a jet boat beyond that point. There was a shallow area a mile above the river's mouth, but this could be crossed even with a loaded boat. Van Venen also indicated that Ambler villagers boat to the braided segment at higher water levels.

Based upon this information the BLM proposed to declare the Redstone navigable to Sec. 34, T. 23 N., R. 6 E., Kateel River Meridian. On June 17 the State Director determined the river navigable in the selection area, that is through T. 22 N., R. 6 E., Kateel River Meridian. 294/

The BLM considered the navigability of the rest of the Redstone River as part of its effort to convey lands to the State. The Fairbanks District Office issued a report on September 2, 1980 noting that the river was four to six feet deep below the braided section in T. 22 N., R. 6 E., Kateel River Meridian and one to three feet deep above it. The report stated that there were two braided sections; one in T. 22 N., R. 6 E. and one in T. 23 N., R. 6 E. After the lower braided portion the river is quite shallow "and navigability ends at this point." Consequently, the State Director on September 11 determined the Redstone nonnavigable above T. 22 N., R. 6 E., Kateel River Meridian. 295/

Jade Creek

In 1962 Steve and Phylis McCutcheon and Eugene and Delores Roguszka took a twenty-four-foot aluminum boat equipped with an outboard motor on a lift up the Kobuk River on their vacation. They carried nine hundred pounds of gear. On July 11 they entered the mouth of Jade Creek, "but found it so shallow that, with our heavily loaded boat, it was impractical to negotiate it for more than a quarter of a mile." They walked the banks of the creek looking for jade. 296/

On June 17, 1980, the BLM issued its final easement memorandum for conveying lands to the village of Ambler, Jade Creek, which was in the conveyance area, was determined nonnavigable. 297/

Hunt River

Prospector Joseph Grinnell recorded both Natives and whites using watercraft on the Hunt River in mid-September 1898. He and five other gold-seekers with considerable difficulty tracked an eighteen-foot, fairly-well-loaded "sealing boat" up the river for three days. How far they ascended is not clear. They met a Native hunter who took a canoe a shorter distance up the Hunt than they had. The prospectors found nothing worth mining and floated down to the Kobuk in their boat, shooting some rapids in the process. 298/

Salmon River

In 1975 or 1976 the mineral exploration company, WGM, conducted an examination of the upper Salmon River area in Tps. 26-27 N., Rs. 5-6 W., Kateel River Meridian. The company's report stated that "during the summer months, small boats can travel up the Salmon River to within about 10 miles of the area visited by WGM." 299/

In the 1970s the Department of the Interior examined the Salmon's Wild and Scenic River potential. An overflight occurred in 1972. 300/ The next year the Bureau of Outdoor Recreation floated the river from the southern part of T. 25 N., R. 5 W., or the northern part of T. 24 N., R. 5 W., Kateel River Meridian. There is no field report of this trip, but Bureau of Outdoor Recreation personnel stated in 1975 that after an extremely heavy rain, the Salmon River rose nearly six feet, virtually washing the rafting party down to the Kobuk. 301/

In 1975 the Bureau of Outdoor Recreation sponsored a six-man float-trip examination of the river. This became the most publicized Bureau of Outdoor Recreation river trip in

Alaska, because John McPhee was one of the participants. He later wrote about it in Coming Into the Country. However, McPhee gave few descriptions of the river. He did note that they had to do some lining, that there were sweepers, and that there was a pool about twelve feet deep at the mouth of the Kitlik. Without indicating his source of information, McPhee also stated that after summer hunting trips, Natives formerly rafted down the Salmon. 302/

John M. Kauffmann of the National Park Service and Pat Pourchot, the Bureau of Outdoor Recreation leader of the trip, wrote more revealing chronicles. Kauffmann stated that the six men helicoptered from Kiana to a point on the river five miles below the confluence of Anaktok and Sheep creeks (Pourchot calculated the distance at six miles) with a seventeen-foot aluminum canoe, a two-man folding Klepper, and two one-man Kleppers. Low water prevented them from putting in at the confluence of these two creeks and required that they do a lot of dragging, especially for the first half of their trip. Kauffmann stated that there were no difficult rapids, except one he viewed from the air in 1972 at the juncture of Anaktok and Sheep creeks. 303/

Pourchot reiterated much of what was in Kauffmann's memorandum and added a great deal of detail in his daily log of the trip. He decided on the put-in point while flying overhead, knowing that there was little water there. He wrote that "we would have had to put-in 10-15 miles further downstream for reasonably good floating and thereby would not have been able to inspect the tundra headwater country." Pourchot described the river near the long river bar on which they landed to be ten to twelve yards wide with an average depth of less than a foot. Maximum depth was one and one-half feet and there was only two to four inches over the gravelly riffles which dropped one to two feet within several yards. He stated that the current was two miles per hour in the pools.

On the 14th they hiked the surrounding terrain. Jack Hession of the Sierra Club, Bob Fedeler of the ADF&G, and McPhee walked upstream. They reported that evening that above the confluence of Anaktok and Sheep creeks, the river was "very small and rocky with very little water." Below the juncture there were "several relatively deep pools."

At 9:45 a.m., they began descending the river, making eleven miles by six that evening. Pourchot recounted that for the first four or five miles they did as much walking as floating. They lined through many shallow riffles. After lunch pools became longer, but they still "frequently" had to line riffles. The men could only float a few of the riffles. When they camped for the evening they had to repair the double Klepper and one of the single Kleppers. At their evening stop the river was ten to twelve yards wide, one to two feet deep in most pools, six to eight inches in the riffles, and six to eight feet deep in holes. The current was one to two miles per hour in the pools and three to five in the riffles.

They did not begin floating on the 16th until 11:45 a.m and traveled twelve miles before stopping at six o'clock. The men continued to have to walk some riffles, although there were pools ten to twelve feet deep and the river became easier to travel below Nikok River. McPhee and Kauffmann overturned the two-man Klepper on a sweeper, necessitating repairs for the Klepper.

On August 17 they continued to bump rocks and to have to get out of the boats at riffles, but not nearly as often as in previous days. The riffles did not drop as far as those upstream and thus they were able to float through many of them. The men passed pools which were at least fifteen feet deep. They covered thirteen miles in less than six hours and camped at the mouth of the Kitlik River. There the Salmon was fifteen yards wide, six inches to a foot deep at the riffles, two to three feet deep at smooth water, and five

to eight feet deep in pools. The current was no more than one mile per hour in the pools, two to three miles per hour in the smooth water, and four to five miles in the riffles.

They floated the rest of the way to the Kobuk in a little over five hours on the 18th. The group bumped rocks a few times and had to get out of their boats twice to line through riffles below the Kitlik River. The pools were a quarter to a half mile long, separated by riffles which continued down to the mouth. The last riffle averaged one foot deep with a two-foot maximum and was twenty yards wide. The current was six miles per hour at this riffle. Generally though, the Salmon River flowed at only two miles per hour in its last ten miles.

The Bureau of Outdoor Recreation group continued on the Kobuk to Kiana where they spoke to local residents, Guy Blankenship and a store owner identified only as Ruth. The two Kiana residents stated that there was some motorboat travel on the Salmon up to the "foothills" for hunting during higher water levels. They told Pourchot that such users would have to drag their boats over riffles. The Blankenships had landed a floatplane on the river about fifteen or twenty miles above its mouth and then floated down in canoes for fun. The two added that in the 1950s there was a geologists' camp on Sheep Creek and that on two occasions the scientists floated down the Salmon on rafts. 304/

In November 1975 the Bureau of Outdoor Recreation issued a draft analysis of the Salmon's Wild and Scenic River potential. It incorporated much of Pourchot's descriptions of the river's characteristics and added considerable other information. It stated that below Kanaktok Creek "the Salmon is extremely small with a rock strewn course over much of the 15 miles to the Sheep Creek-Anaktok Creek confluence." In this stretch it indicated that the current was five to seven miles per hour. The draft report indicated that throughout its length the river bottom generally was gravelly or stony although there were sections of exposed bedrock in its upper area.

The draft report also addressed the type of craft which could navigate the river. Canoes, rafts, and kayaks could descend the river from the juncture of Anaktok and Sheep creeks in normal to high water levels. There are "no major rapids or falls" in this area, though the report advised that shallow riffles were frequent and there were sweepers. It stated that the river was "virtually all easy Class I whitewater." The Bureau of Outdoor Recreation cautioned that in low water small craft should not put-in above the Nikok River in order to avoid lining and damage to boats.

As for riverboats, the report stated "during high water levels powerboats are occasionally taken up the Salmon River from the Kobuk. Although dragging the boats over shallow riffles is frequently required, boats can reportedly be taken up the Salmon 15-20 miles. During low water, motorized boats, except for jet-equipped boats are virtually prohibited from ascending above the mouth."

Elsewhere it contended that, "because of shallow riffles the river is not navigable upstream or downstream with boats with drafts of more than several inches." The report stated that small boats and rafts may have transported trapping and prospecting supplies on the river, but it believed this use to have been slight. Current recreational use was low; the Bureau of Outdoor Recreation believed it to be less than fifty visitor days a year, most of it sport hunting or fishing on the lower river. 305/

Kanaktok Creek

The Bureau of Outdoor Recreation issued a draft report on the Salmon River in November 1975. By then the agency had conducted at least one aerial survey of the river. The draft report stated that Kanaktok Creek and another unnamed headwater stream were "very shallow and tumble over boulders and rocks over much of their lengths." 306/

Unnamed Creek (mouth in Sec. 35, T. 28 N., R. 5 W., Kateel River Meridian)

The Bureau of Outdoor Recreation issued a draft report on the Salmon River in November 1975. By then the agency had conducted at least one aerial survey of the river. The draft report stated that this creek and Kanaktok Creek to which it joins to form the river were "very shallow and tumble over boulders and rocks over much of their lengths." 307/

Kitlik River

On August 17, 1975 a Bureau of Outdoor Recreation float expedition of the Salmon River reached the mouth of Kitlik River. Pat Pourchot, the leader of the group, noted that it was the largest tributary they had yet encountered (they put-in about six miles below the confluence of Anaktok and Sheep creeks with the Salmon River). He wrote that at its mouth it was seven to eight yards wide, one foot deep, with a three- to four-mile-per-hour current. 308/

Squirrel River

Lieutenant John C. Cantwell suggested pre-contact period Native use of the Squirrel River. In 1884 while he explored the Kobuk River, Natives told him that a one-day portage connected the Squirrel River to the Noatak. 309/

Both of the 1898 prospectors who ascended the Kobuk and left a lengthy record of their trip admitted to have accidentally gone up the Squirrel River. George L. Webb was on a steamboat which erroneously ascended the river an unstated distance on July 27. 310/ On August 28, Joseph Grinnell and his companions on the steamboat Helen took a wrong turn and steamed for twenty-four hours up the Squirrel River which he described as "as large as the Sacramento and San Joaquin combined." 311/

By 1910 miners used the lowest six or seven miles of Squirrel River and a six- or seven-mile wagon road from the river to access gold placers on Klerly Creek, a Squirrel River tributary. The Iditarod Nugget published a story in September 1910 claiming that Mr. Ballard "went up the Kobuk to Squirrel River within 6 miles of Klearly with a 70-ton loaded barge. From the head of navigation there is a good, wagon road to Klearly, six miles distance." 312/ However, USGS explorer, Philip S. Smith's 1910 observations bring into question whether a seventy-ton barge could have gone up both the Kobuk and the Squirrel. He wrote that above Kiana further travel to the mines was by "small boat" up the Squirrel River. Smith continued, stating that:

though during high water light-draft launches can go for many miles above the settlement, ordinarily the trip can be best made by dory or other boat drawing not over 6 or 8 inches of water. By this method Squirrel River is ascended for about 7 miles to a slough which makes off toward the north and east and which at the time of the visit by the Survey geologist was so shallow near its junction with Squirrel River that the dory, containing only about 500 pounds of freight, had to be partly unloaded and hauled over the shallow riffles by men lifting on each side of the boat.

Finally the slough enters a nearly round lake between one-fourth and one-half mile in diameter, which is the nearest point by water to the placer diggings.

The boating charge to this point was two cents per pound. Smith estimated that it was seven more miles over a very soft wagon road to the placers. 313/

The Alaska Road Commission corduroyed the soft wagon road in 1912. 314/ Nine years later the Road Commission provided ferry service over a slough and the Squirrel River using small boats on an endless cable. This was to facilitate access to Klery Creek from Kiana, but its exact location is not clear. 315/ Miners boated supplies and equipment up the Squirrel. For example, in the fall of 1924 miner Charles H. Hawkins brought a Star drilling machine and a tractor into the country, boating them up the Squirrel River. 316/ In 1932 Ross J. Kinney of the ARC boated up the Squirrel River and "thence through a slough and chain of lakes to a point . . . known as the Landing." Here the corduroy road, then practically useless, started. 317/ A sketch map compiled from notes by local miner Arthur M. Hansen in May 1934 indicated where this slough and lake system was. 318/ The landing from which the corduroy road began was in Sec. 32-33, T. 20 N., R. 8 W., Kateel River Meridian. The slough ran from it to connect with Squirrel River in Sec. 15, T. 19 N., R. 8 W., Kateel River Meridian. (The USGS Baird Mountains A-3 Quadrangle did not show the slough running into the Squirrel in this section, though it did indicate a dearth of vegetation where it appears the slough once flowed.) However, by 1934 miners had constructed at least two other trails to Klery Creek, both leaving the Squirrel River proper. One began just below the mouth of the slough; the other near the mouth of Central Creek. The 1955 USGS map for the area depicted the former as a trail and the latter as an unimproved road. Presumably it was the latter that Kinney referred to in 1935 when stating that miner Arch J. Tourtellotte improved a freight road and constructed "an excellent landing at the Squirrel River where lighters of 50 tons discharged their gear." 319/ Still the boats that went up the Squirrel to supply the mines were smaller than those which normally plied the Kobuk. Orah Dee Clark in the Kusko Times in May 1937, stated that the Squirrel River "is not navigable to the small boats which serve Kiana via the Kobuk, smaller boats are used on the Squirrel," with Kiana as the transshipment point. The source of Clark's information is unclear. 320/

There is one documented archaeological boat survey of the Squirrel River. In 1940 James Louis Giddings went up the river with two Natives in a motor boat. He wrote that "by late morning we were able to tie the boat up and walk a half mile through alders and willows along a shallow pond, formerly a slough of the river to the sandy bank that was Ekseavik." Giddings did not make it clear how far up the Squirrel they had traveled to reach this old village site, but Ekseavik was about two miles from the mouth of Canyon Creek and "only a few bends" up the river. 321/

In 1962 Steve and Phylis McCutcheon and Eugene and Delores Roguszka took a twenty-four-foot aluminum boat equipped with an outboard motor on a lift up the Kobuk on their vacation. They carried nine hundred pounds of gear and supplies, though by the time they reached the mouth of Squirrel River on their return trip downstream on July 25, that total probably had decreased somewhat. They took their boat three miles up Squirrel River to photograph a Native family bound for their fish camp. 322/

In 1975 the Bureau of Outdoor Recreation conducted a float trip to evaluate the Squirrel's Wild and Scenic River potential. On August 6 David Dapkus of the Bureau of Outdoor Recreation, John Blankenship of the U.S. Fish and Wildlife Service, David Mihalic of BLM, and Scott Grundy of the ADF&G helicoptered with two fifteen-foot Klepper kayaks to the upper stretches of the Squirrel River. Dapkus described their put-in point as a long gravel bar sixty-seven miles up the river, or about fifteen miles

above the water body's North Fork. This would have placed them in Sec. 27, 28, or 29, T. 22 N., R. 13 W., Kateel River Meridian. Dapkus observed from the helicopter that it would have been too shallow farther upstream for their kayaks. At the gravel bar where the helicopter landed, the river was only two inches to three feet deep, twenty feet wide with a two- to three-mile-per-hour current.

They began the trip down the Squirrel on August 7. For the first two days they spent half their time dragging the kayaks over shallow water. Dapkus described the river for the 7th as fifteen to sixty feet wide with eight-foot pools and gravel bars with only an inch of water. On the 8th the river was one hundred feet wide and one inch to ten feet deep. On both days the current was two miles per hour. They paddled and dragged eight miles the first day and ten the second, ending at a point several miles below the North Fork. Dapkus added that on August 8 they passed many dry channels in which water had flowed when he had overflowed the area in June.

On the 9th the men began to benefit from the water added by the North Fork and Omar River. Dapkus stated that although these tributaries were small, they contributed enough water to deepen most riffles to three to six inches. They kayaked sixteen miles on August 9, having had to get out and walk only a few times. The current was two or three miles per hour. On the next day they did not have to drag the kayaks at all. They made fifteen miles and the current remained the same although in places the river widened to 150 feet and there were holes of ten feet. In the last two miles traveled that day, the bottom changed from gravel to sand. On August 10 they passed two barely standing cabins on the river's south shore. These and one new cabin they saw the same day were the only man-made structures they noticed. On the 11th the river widened to two hundred feet with a two to three mile per hour current and an average depth of four feet. They traveled ten miles that day. Finally, on August 12 they paddled eight miles on the river then flowing at only one mile per hour. The river continued to have a four-foot average depth and to vary from one hundred to two hundred feet wide. That day they reached Kiana.

Dapkus gave a few observations of overall river conditions. He stated that recreationists could float this section of the river in five "fairly easy days." He observed no rapids on the river and rated all the portion of river he had traveled as class I on the whitewater scale. 323/

Blankenship and Mihalic drafted reports of the trip, though theirs were less detailed than Dapkus's. Blankenship wrote that the river was "usually too shallow in summer for power boats to operate above the Omar, thence few people go further." 324/ Mihalic added valuable information concerning current and prospective use. He stated that "there are a few Native allotments on the lower river where access is available by power boats (generally below the Omar River)." Some subsistence fishing occurred on this segment. Mihalic spoke with the Blankenship family resident at Kiana. They said that some people floated the river in canoes. The majority went up in riverboats "as far as possible towing canoes." Because of the low water level, most boats remained below the Omar. The Blankenships indicated some flew to a put-in point. Mihalic, however, anticipated that most floaters would fly in, landing on any of a number of gravel bars in the upper river valley. However, the planes would only be able to bring in kayaks and folding boats. He added that floatplanes not much larger than a Supercub could probably land in some stretches of the middle and lower river. He cautioned, though, that he was not an expert in calculating aircraft capabilities. 325/

A report issued by the Bureau of Outdoor Recreation in 1976 took virtually all its information from the memorandums of Dapkus, Blankenship, and Mihalic and from

previously cited USGS investigations. The one relevant point it added was that, though the gravel bars of the upper river may provide landings for fixed-wheel planes, no pilot had yet made use of them. 326/

In 1982 the National Park Service, having assumed the Bureau of Outdoor Recreation's responsibility for Wild and Scenic River studies, sponsored another trip down the Squirrel. James Morris of the National Park Service led the expedition consisting of Howard L. Smith of the BLM and Kim Francisco and Robert McLean of the ADF&G. They flew out of Kotzebue in a Cessna 185, intending to land on a river bar near where Dapkus's party had landed in a helicopter. However, the pilot was reluctant to land at any bar they surveyed until they reached one at the confluence of the North Fork. Fisheries biologist McLean later reported that the river just above the confluence of the North Fork was one hundred feet wide and ranged between six and twenty inches deep, though there were holes up to eight feet deep along the bank. He estimated the velocity to be 4.2 feet per second and the flow at 470 cubic feet per second. 327/ The next morning Morris observed that the river had dropped about four inches overnight. He stated that the river appeared to have dropped nearly two feet during the previous couple days and added that it continued to drop during the trip.

On August 4 the foursome floated to the mouth of Omar River. Morris indicated that the current was three miles per hour and that the depth varied from a few inches in the riffles to over six feet in the pools. Half-inch to two-inch gravel constituted the river bottom. One mile below the North Fork they passed a campsite where Morris saw a badly battered outboard motor propeller. A little below that he noted a new Native allotment. That evening three Kiana hunters traveling upriver in a fiberglass boat with an eighty-five horsepower outboard motor stopped at their campsite before continuing up the Squirrel.

Morris made only a few comments on river conditions on the rest of the trip. On August 5 they floated to the mouth of Timber Creek. There was no white water, some stretches of fast water with ripples, and other sections with little current. Except for short braided portions, the river flowed in a single channel. On the 6th they continued downstream to river mile 7. Because of only a slight current and a steady breeze, paddling became difficult. This problem continued the next day when they found that pulling the boats from the shoreline was as fast as paddling against the wind. They arrived at Kiana about noon of August 7. Morris summarized the Squirrel as providing a safe float by canoe, kayak, or raft and stated that "the lower 50 miles appears boatable by small power boat with some difficulty in frequent shallow areas." 328/

The BLM considered the Squirrel's navigability in the process of conveying land to the Natives of Kiana. In a Notice of Proposed Easement Recommendations signed September 24, 1979 the agency stated that the river was navigable from its mouth to a barge landing site in Sec. 6, T. 19 N., R. 8 W., Kateel River Meridian. In the wake of the Kandik-Nation decision, the BLM reexamined this position. According to Keith Woodworth of the Fairbanks District Office, riverboats ascended the river to Omar River and Native allotments were located along both the Squirrel and Omar rivers. In a final easement document signed March 10, 1982 the State Director thus determined the Squirrel navigable to the Omar which was above the selection area. 329/

Omar River

While on a 1982 National Park Service float trip down the Squirrel River, Robert F. McLean, a fishery biologist with the ADF&G, recorded observations at the mouth of Omar River. On the evening of August 4 he estimated that the river was eighty-five feet

wide with a depth ranging from six inches to three feet. Its current was 4.2 feet per second and its water flow was seven hundred cubic feet per second. 330/

Klery Creek

The USGS's Philip S. Smith investigated the mining activity and potential of the Squirrel River tributary in the summer of 1910. He pointed to its satisfactory flow of water stating that "a crossing even on a riffle, could not be made in less than 2 1/2 feet of water, in a current of such speed that care had to be taken in keeping one's feet, shows that several thousand miner's inches are probably available during a wet season such as 1910." 331/

SELAWIK RIVER

According to Navy Lieutenant George M. Stoney, who visited the area in the mid-1880s, Natives' travel pattern on the Selawik River was similar to theirs on the Noatak and Kobuk. When the river broke, families in skin-covered umiaks rode the high water to the coast. Returning upstream they sometimes used a towline to pull the boats. Lieutenant John C. Cantwell, who was in the area at the same time as Stoney, learned from Natives that they reached the Yukon by ascending the Selawik to near its headwaters and then descending the Koyukuk system.

Cantwell and Stoney both explored the Selawik River. On August 14, 1884, Cantwell with two Natives in a skin boat traveled from a village at the mouth of the Throat River to the Selawik. There the Selawik was six hundred to one thousand yards wide. Cantwell then descended the Selawik to Selawik Lake. He described the river in this stretch as being from twenty-four to thirty-six feet deep. 332/

Stoney with two dogsleds and three Natives explored and mapped the headwaters of the Selawik from their Kobuk River Fort Cosmos base in the winter of 1885-86. At some point he cut through the river ice and discovered it was deep enough to float his steamboat, the Explorer. In the following July he took the Explorer up the Selawik to map the lower portion of the river. He wrote that the "banks of the Selawik are as regular as canal banks. Two fathoms can be carried up to the forks where there is a five fathom hole." Beyond this point, which most likely was at the mouth of the Kugarak, the river was too shallow for the Explorer. Stoney also described three outlets to Selawik Lake: "the westernmost is the deepest, two fathoms can be carried over this bar; over the others only a few feet." 333/

Given the prospecting activity on the Kobuk, it is not surprising that gold-seekers also panned the Selawik. Miner W. Bruce, a prominent Alaskan miner, wrote in 1899 that four years earlier two men from the Yukon ascended the Koyukuk in the summer and portaged to the headwaters of the Selawik. They then prospected along that river to its mouth. Bruce does not indicate whether they boated down the river. 334/

Boats brought supplies upriver to the village of Selawik. An unidentified individual familiar with the area reported to the Alaska Indian Service in 1945 that the "Selawik is navigable for mail boats and lighterage. There would be no limit to the amount of freight that could be brought in on this river." The U.S. Army Corps of Engineers in 1953 prepared a draft report which addressed the characteristics of numerous rivers in the Alaska Northwest. It is uncertain how the Corps got its information. The Corps stated that barges with three-foot drafts could navigate two hundred miles above the village of Selawik and that there was ten feet of water up to the mouth of the Kugarak River. The report noted that the river became very tortuous about twenty-five miles above the

village. The Corps also stated that there currently was little use for barge navigation above Selawik. A 1957 Corps publication reiterated this information. 335/

Several other government studies addressed the Selawik River in the 1960s and 1970s. The University of Alaska's Arctic Environmental Information and Data Center reported in 1975 that sport fishing increased along the river in the 1950s and early 1960s as the numbers of mail planes, charter flights, float trips, and Native boat operators grew. A consultant firm in a report prepared for the Department of Commerce in 1965 noted that barging operations served the community of Selawik. And the State of Alaska's Division of Planning and Research wrote that navigation was difficult during seasonal low water. 336/

In the mid 1970s the Bureau of Outdoor Recreation considered the Wild and Scenic River potential of the Selawik River. On June 19, 1976, a helicopter transported BOR's David Dapkus, Philip Bailey of BLM, Morris LeFever of the Fish and Wildlife Service, and Ted Swem, Jr., with two-man kayaks to the confluence of Shiniliaok Creek with the Selawik. Reports by all participants are in the National Park Service files. Bailey stated that the river was easy class I on the whitewater scale. He saw no evidence of human use on the uppermost twenty-five to thirty miles and very little in the next fifty miles. Local Natives fished and hunted on the lower half of the Selawik and recreational hunters flew to it in the fall. Bailey wrote that there was little use of the river in the summer. He added that the upper river was accessible only by air, "unless a boat is pulled up river [sic] by hand." 337/

LeFever gave a better description of the trip and the river's characteristics. Near where they put in, the river was thirty to fifty feet wide "with gravel or sand bars on every curve." LeFever added that the river "curved constantly." For the first three days the current was three to four miles per hour and they averaged about twenty-six miles each day. In T. 13 N., R. 7 E., Kateel River Meridian the Selawik passed through a series of bluffs. Along one of these they met Jim Schwarber, the only person they encountered above Selawik. Schwarber had a homesite a mile downstream and was cutting logs to float down to build a cabin. "For several days" after reaching T. 13 N., R. 4 E., Kateel River Meridian the current slowed. The men located house pits at the juncture of Tagagawik River. They were surprised that they had made so little progress; LeFever concluded that the numerous meanders on the upper river had thrown off their calculations that they would only have to float 140 miles to reach Selawik. He later had cartographer Drew Morton measure their route on a 1:250,000 scale map. Morton estimated they floated 207 miles. In one more day they reached the Kugarak River, "where the current ended" and where past habitation was obvious. LeFever then wrote that during "the last four days of the trip, the now large river meandered extensively." Moreover, strong winds off Kotzebue Sound hindered progress. Approximately forty river miles above Selawik "recently used campsites" became more and more common. Some were trapping camps, while the most recently used ones showed evidence of having been fishing or waterfowl hunting sites. On June 29 they arrived at Selawik where an older man was excited to see the kayaks. He had not seen a kayak used since the 1940s. 338/

Swem's report added to and in some cases contradicted LeFever's. Among the contradictions were Swem's assertion that they had floated only 165 miles and that the current was four to seven miles per hour at the upper end of the river. Swem recorded that they began floating on June 20 and made seven miles. On the 21st they floated eighteen miles and on the next day they reached Ingruksukruk Creek, where the river "began winding . . . , and continued to do so from then on." Swem did not continue his day-to-day description of their progress. He estimated that the winds on the lower river off Kotzebue Sound reached thirty-five to forty miles per hour. Wind-stirred "standing waves" reached two and one half to three feet, making paddling risky. Swem concluded

that the Selawik was not a very good float trip. The upper portion was swift and scenic, but below the Kugarak the current died, the headwinds increase, and the scenery was poor. Floating the head of the river was possible, yet expensive for an eighty-mile trip. 339/

Dapkus paid the closest attention to the day-to-day changes in the river's characteristics. On the evening of June 19 they landed a quarter mile below Shiniliaok Creek. Dapkus observed that the river was six to ten inches below its normal level. It was forty feet wide and a half to two feet deep with a three- to four-mile-per-hour current and fist-size rocks on the bottom.

They began their float on the 20th. For the first three days the current remained in the three- to four-mile-per-hour range and Dapkus considered it all, and indeed the entire river traveled, as class I whitewater. On the first day they went downstream about fifteen miles to camp near an unidentified unnamed stream. The river varied between eight and thirty-six inches deep, was forty to sixty feet wide and had a gravel bottom. There were some sweepers and floating tundra masses. There were many small gravel bars, but these were too small to land a wheel plane on and the river was not large enough for float planes. The next day sweepers, tundra masses, and small boulders increased; the depth varied between four inches and five feet and the river was twenty to seventy-five feet wide. They traveled down to Kiliovilik Creek on the 21st. They met Jim Schwarber cutting logs for a cache on his homestead near Shinilikrok Creek. Dapkus recorded that on the 22nd the Selawik "receded to its normal level" and that the number of sweepers increased. The party also encountered a few boulders and some living trees which had been washed into the river at breakup. He stated that the river had flowed through "a narrow, meandering channel from the start," but that that day the bends became tighter and more frequent. Also the seventy-five-foot-wide channel began breaking into twenty- and forty-foot-wide braids. The water's depth was two to three feet.

On June 23 the current slowed from three to one mile per hour. In the morning the floaters entered the flats and about midday the rock and gravel bottom gave way to sand. They encountered fewer sweepers, tundra masses, and rocks. The river varied from fifty to 125 feet wide with one inch to six feet of water.

For the remainder of the trip the one-mile-per-hour current combined with headwinds made travel difficult even though the river was one large channel. On June 24 the river became 125 feet wide and six to ten feet deep. The winds blew up one to three-foot waves. The next day conditions changed little, except that the wind died down in the afternoon and the river widened to as much as two hundred feet. That day they passed the Tagagawik and camped in the evening at the mouth of the Kugarak. On the 26th Dapkus found the five-hundred-foot-wide river so broad and its current so slow that he had the feeling of floating on a lake. The headwinds picked up to thirty miles per hour on the 27th making paddling very arduous. The river widened to nine hundred feet. The winds continued for the next two days. On the 28th and 29th they passed Native camps and on the 29th at 5:45 p.m. they pulled into Selawik; later that evening they flew to Kotzebue where they stayed overnight before flying to Anchorage.

Dapkus concluded that they had traveled 207 miles in "ten long days of hard paddling." He wrote that they floated about twenty-five miles a day for the first three days and eighteen to twenty the remaining seven days. The lower river was large enough for floatplanes, but he noted that neither wheel planes nor floatplanes could land on the upper stretches. Dapkus did consider it possible for floatplanes to land on some of the lakes near the headwaters. 340/

The Bureau of Outdoor Recreation issued a report on the Selawik's Wild and Scenic River potential in November 1976. It stated that the river had no rapids and was class I whitewater, numerous sweepers and tundra masses being the primary hazards. The BOR report stated that the river averaged three miles per hour from its source to about Keruluk Creek; thereafter its rate slowed to a steady one mile per hour. (The USGS map spells the name of the creek, "Keruluk." Orth spells it "Kerulu.") The report added that barges traveled to Selawik, "shallow draft [sic] riverboat(s)" were able to ascend the river to the mouth of Tagagawik River, and during high and normal water periods, rafts, canoes, and kayaks could float from the headwaters. Most hunting and fishing camps were below the Kugarak, though there was a new cabin near Shinilkrok Creek and two older cabins in disrepair a few miles below Ekiek Creek. Difficulties of access made for very limited recreational use; the BOR knew of no wheeled landing sites along the river and the upper river was too small for floatplanes to land. However, small floatplanes could land on the lower river and they might be able to land on some of the small lakes bordering the upper river. 341/

The BLM has determined the lower Selawik River to be navigable. On February 10, 1982 the State Director signed a final easement memorandum declaring the river navigable through and above the selection area for the village of Selawik up to the settlement of Nillik. The BLM justified this decision by noting there was documented evidence of shallow-draft lighterage service from Selawik to Nillik. 342/

Throat River

In 1884 Lieutenant John C. Cantwell examined this distributary of the Selawik River. Cantwell explored Inland Lake with two Natives in a skin boat and observed the mouth of the Throat River. He traveled up it to the Selawik on August 13 and 14 and described the distributary as winding with no shoals, a depth of three to five fathoms, and a slight current. 343/

Ensign John L. Purcell, detached from the Stoney expedition, journeyed into Inland Lake with the steamer Helena ten days after Cantwell by way of Selawik Lake and Fox River. He found what he believed to be an outlet of the Selawik River into the Inland Lake. But his description makes it somewhat questionable whether it was the Throat River. He stated that he followed it for five miles in a northwesterly direction and discovered the stream shoaled to one foot near the Selawik. 344/

In the course of conveying ANCSA land to the Natives of Selawik, the BLM determined the Throat River to be navigable and tidally influenced. The agency made this determination on February 10, 1982. 345/

Inland Lake

Lieutenant John C. Cantwell and Ensign John L. Purcell explored this lake separately in August 1884. Cantwell traveled in a skin boat with two Natives. On the 11th they traveled through Tuklomarak Lake and Fox River to Inland Lake. He found soundings virtually everywhere on the lake to measure about six feet, except at its southeast side, where he found that there was barely enough water to float his boat. Cantwell observed tidal fluctuations of about six inches. A storm pinned the men down on the shore of the lake on the 12th and they left the next day. 346/

On August 24 Purcell with four assistants took the steam launch Helena into the lake via the same route as Cantwell. Purcell reported after two days' observation that tides raised and lowered the lake two feet. It was five feet deep at low tide and there was insufficient depth outside the channel to float the launch. 347/

In 1976 the Bureau of Outdoor Recreation examined the Selawik River for its potential as an addition to the Wild and Scenic Rivers system. It noted no improvements along that water body except that the inhabitants of Selawik about 1970 hand-dug a small ditch between the river and Inland Lake. Subsequently, natural water action during breakups had widened this channel to two hundred feet. 348/

The BLM addressed the navigability of Inland Lake in the process of conveying land to Selawik under the terms of ANCSA. On February 10, 1982, the agency determined the lake navigable. 349/

Fox River, Tuklomarak Lake, and Outlet of Tuklomarak Lake

Lieutenant John C. Cantwell and Ensign John L. Purcell independently explored these water bodies draining the Inland Lake in August 1884. Cantwell with two Natives in a skin boat entered the outlet of Tuklomarak Lake from Selawik Lake on the 11th. He recorded that it was seventy-five yards wide with two to three fathoms of water. He passed through Tuklomarak Lake and entered Fox River. Cantwell later described it as a "narrow creek." 350/ Purcell traveled the same route on August 24 in the steam launch Helena. He stated that the outlet had a regular width of seventy-five yards with a depth of five to eight fathoms. He noted the Fox's very winding course. 351/

The BLM determined these water bodies navigable in the course of conveying ANCSA land to Selawik. The agency took this action on February 10, 1982. In the same document BLM stated that they were tidally affected. 352/

UNNAMED CREEK (mouth in Sec. 1, T. 12 N., R. 13 W., Kateel River Meridian)

On May 6, 1983 the BLM determined that the unnamed creek entering Hotham Inlet in Sec. 1 of this township was navigable to its source in a lake in Sec. 12. This determination was based upon a local resident accessing a Native allotment near the lake outlet by boat. The lake itself was too marshy and shallow for boats and thus not found navigable. 353/

KAUK RIVER

The Arctic Environmental Information and Data Center computerized navigability project printout produced for the Bureau of Land Management equated the "Kuak River" mentioned by David Wharton in his history of the Alaskan gold rush with the Kauk. Indeed, Wharton seems to have made this connection for he described the Kuak as "not a long river" and "at the northern base of the Seward Peninsula." Wharton, using the diary of prospector Maurice Hartnett at the University of Alaska, Fairbanks, stated that on July 3, 1899 twenty-five boats of over-winter gold seekers floated down the river to the Kotzebue Sound.

However, Wharton almost certainly erred. Hartnett may have spelt the river as Kuak. This is close phonetically to Kowak, a common late nineteenth century spelling of Kobuk. Moreover, there is abundant internal evidence in Wharton's recounting of Hartnett's experience to confirm that the prospector was on the Kobuk. A mail carrier in the winter of 1898-99 reported 769 men and 260 cabins on the river. These numbers are not out of line with those Joseph Grinnell noted in his account of prospecting on the Kobuk; they would be quite remarkable for a river about which there is no other written record of prospecting. At one point Hartnett and his friends skated downriver to the steamboat Riley. The Riley was on the Kobuk that year. Hartnett also made reference to others traveling from the Ambler and Hunt rivers, Kobuk tributaries, and from Kotzebue and Riley camps, both places Grinnell located on the Kobuk. 354/

BUCKLAND RIVER

The first recorded boat ascent of the Buckland River occurred in 1849. In that year men of H.M.S. Herald on an exploratory mission took a whaleboat about thirty miles upstream and then proceeded another thirty miles in lighter boats. 355/

The U.S. Geological Survey's Arthur J. Collier did not visit the area in 1901, but nevertheless listed the Buckland among a number of rivers which were "navigable to some extent for small boats." 356/ Two years later Fred H. Moffit headed a survey team exploring the Fairhaven mining district located in the northeastern corner of the Seward Peninsula. His group traveled overland, but Moffit made several observations on the navigation of the Buckland River. He mentioned the Buckland along with the Inmachuk, Kugruk, and Kiwalik rivers as having "gentle gradients in their lower stretches, . . . meander[ing] widely over the lowlands near the coast, producing bars and mud flats which often embarrass even the lightest of the small boats used in freighting supplies to the mining camps."

The primary destination for supplies in the Buckland drainage was Bear Creek, where a moderate amount of mining occurred. Moffit stated that the river "because of its frequent sand bars and crooked channels, is not a practicable route." The preferred route was by pack train over forty miles of tundra from Candle. It cost twenty cents per pound and took twenty-four to twenty-six hours. However, Moffit did find that some men boated supplies up Buckland River to the mines. He cited one case in which men worked hard for sixteen days to get a boatload of supplies up the Buckland, its West Fork, and Bear Creek to Cub Creek. 357/

Paleontologist L. S. Quackenbush ascended the Buckland River in 1907 and 1908. On September 1, 1907 he and Madison Grant, of the New York Zoological Society, went up fifteen miles in "a clumsy, waterlogged canoe." They turned back when they realized that an early fall would prevent a thorough exploration. Quackenbush returned in 1908. On July 20 he and hired hand James Hoffman left Kiwalik in the latter's fishing dory towing a light canoe. They abandoned the dory eight miles up the Buckland and continued another seventy-eight miles up the river to where "the water was so low, on account of a drought, that no further progress could be made." That year's especially dry season forced them "to do a great deal of wading, and to make many otherwise unnecessary portages over shallow gravel bars." They walked on a few miles. However, since they had found few fossils and "the river was constantly falling and seemed about to dry up altogether," they returned to Eschschooltz Bay.

Quackenbush made several observations about the river and its major forks. He stated that before the road from Candle reached Bear Creek, prospectors towed their supplies "in small barges" fifty-one miles up the Buckland and then up its West Fork. Prospectors, Quackenbush reported, had asserted the main stem was navigable for two hundred miles. However, he believed the river was not more than 150 miles long and that its North and South forks converged eighty-nine miles from the sea (Quackenbush wrote the "north and middle forks," but described them as coming from the northeast and southeast. Therefore he probably referred to the North and South rather than North and Middle forks). He added that both of these forks "are of equal size and each is no doubt navigable for a few miles by canoe in a season of average rainfall." 358/

In the years before WWI the Bureau of Education established a school on the river around which the village of Buckland grew. In April 1913 the school and the seven homes of the village were located somewhere not far from the coast. An agency official considered

moving it up to timber thirty miles farther upstream. However, upon closer examination he learned that "the river is so shallow that it would be very difficult for us to get any materials up the river for erecting a school house." Instead, the Natives planned to move about five miles upstream to an area with shelter from the wind and a good supply of alders for firewood. Still, the Bureau's teachers experienced difficulty boating to the settlement. The teacher reported that the river commonly was low in the fall and that in the fall of 1915 it was particularly difficult to get government supplies upriver. 359/

In 1956 archeologist James Louis Giddings, two graduate students, and boatman Almond Downey took an undescribed boat up the river to the village of Buckland. Gidding wrote of the trip: "By the time we got as far as the first straggling trees, . . . the river had become so shallow that it seemed doubtful for a while that we could reach even Buckland village thirty miles upstream." However, "after a hard day's travel" they reached the town in the evening. 360/

In 1965 Transportation Consultants, Inc. completed a study for the U.S. Department of Commerce on Alaskan transportation. Their report stated that barges supplied villagers on the Buckland, presumably at the village of Buckland. 361/

In July 1978, Joseph F. Webb led three other BLM employees on a fisheries survey of the Buckland. They helicoptered to the confluence of the South and Middle forks on the 19th. The men then floated to the village of Buckland in two twelve-foot Avon rafts. They stopped along the route to make observations and did not reach the village until the 31st. Webb described the stream as having "long, slow-moving pools separated by relatively short riffle sections." Although the current was "relatively fast," he believed there was only one area with class II water. Webb added that "Use of the South Fork Buckland River above the South Fork-West Fork [sic] area is low to non-existent." He found evidence of hunters at this confluence and at two points further upriver. 362/

The BLM determined the Buckland River navigable in Native- and State-selected land below and through T. 5 N., R. 10 W., Kateel River Meridian. On a navigability report form, Keith Woodworth of BLM recorded in the summer of 1977 that commercial tug and barge traffic was important to the village of Buckland. South of the village the river was "shallow and rocky" and travel was limited to subsistence boat use and winter travel. The BLM issued proposed easement notices for lands near the village of Buckland on October 29, 1979 which referred to commercial tug and barge service up to the community and to "historical commercial usage" from Buckland to "New Site," an abandoned village which was stated to have been on the river's West Fork. The notices stated that this upper portion of the river "was commercially utilized with scows during periods of high water." Therefore, the notices indicated that the Buckland was navigable through the selection area, which included all of the river's course in T. 5 N., R. 10 W., Kateel River Meridian and most of its course below that township. The BLM issued a Decision for Interim Conveyance for this land on August 5, 1983 and an Interim Conveyance on September 28, 1983. 363/

The BLM made a similar determination for similar reasons in connection with State-selected land from T. 5 N., R. 10 W., Kateel River Meridian downstream. In March 1980 David O. Scott of the Fairbanks District Office prepared a report which described the river from Buckland up to the West Fork as two to twenty feet deep with a few gravel bars and a small gradient. The bars could prove a hinderance to navigation in low water, Scott wrote, but during most periods of open water the river was suitable for shallow-draft boats. After citing use up to New Site, Scott recommended the river be

found navigable to that defunct settlement. The State Director concurred with this recommendation on July 24, 1980. 364/

However, the BLM did not find the West Fork navigable in or above T. 3 N., R. 10 W., Kateel River Meridian. In a report dated August 30, 1979 Keith H. Woodworth of BLM stated that at its lower limit in the above township the river was twenty to twenty-five feet wide and narrowed to nearer fifteen feet at Bear Creek. He estimated its depth as six inches to two feet; the stream's shallowness was the only impediment it offered to boat travel. Woodworth stated that shallow-draft boats could bring supplies to New Site in Sec. 29, T. 5 N., R. 11 W., Kateel Meridian. This location is clearly wrong. Neither the Buckland nor its West Fork traverse this section. Maps compiled by the USGS show structures in Sec. 29, T. 5 N., R. 9 W., on the West Fork; possibly this was New Site. Woodworth stated that Natives abandoned this settlement, which contained a BIA school, because boats could only bring supplies to the town during high water. Woodworth added that at high water people could line or pole shallow-draft riverboats to reindeer corrals in T. 3 N., R. 11 W. and that he learned from one Native that the river's shallowness had thwarted his effort to access his Native allotment in Sec. 8, T. 2 N., R. 10 W., Kateel River Meridian by boat during spring breakup. On the basis of this report the State Director determined the West Fork nonnavigable above the township line common to T. 3 N., Rs. 9-10 W., Kateel River Meridian on September 18, 1979. 365/

KIWALIK RIVER

Natives used kayaks and, possibly, umiaks on the Kiwalik River before whites arrived on the Seward Peninsula. Dorothy Jean Ray in her study of the area's people quoted the Russian explorer Lavrentiy Zagoskin stating that the Eskimos of the Norton Bay area had contact with those in the vicinity of present-day Kotzebue via "the convenient portage" between the Koyuk and Kiwalik river. 366/

John Muir and Edward W. Nelson, two of the most prominent explorers of Alaska, and six others from the U.S. Revenue Steamer Corwin made the first recorded boat expedition up the Kiwalik River. On July 14, 1881 they took one of the ship's boats upriver to a point about eight miles from "the mouth of the estuary near the head of the delta." 367/

The USGS became very interested in the Seward Peninsula soon after the gold discoveries at Nome. Arthur J. Collier was the first Survey employee to address the suitability of the Kiwalik for boats. Although he did not visit the river, in 1901 he listed the Kiwalik among a number of water bodies "navigable to some extent for small boats." 368/ In 1903 Fred H. Moffit led another Survey group on an overland exploration of the northeast Seward Peninsula. He later made several observations concerning the Kiwalik. He included it along with the Inmachuk, Kugruk, and Buckland as having "gentle gradients in their lower stretches, . . . meander[ing] widely over the lowlands near the coast, producing bars and mud flats which often embarrass even the lightest of the small boats used in freighting supplies to the mining camps." Moffit wrote that "a small boat" brought coal up to Candle from ships off the coast and that those wishing to build at Candle would cut spruce trees along several streams at the head of the valley and float them down to town on the high water of the spring snow melt. 369/

In the first years of the century there was sufficient activity in Candle to support a steam-powered freighting service on the Kiwalik. Ellsworth L. West, who skippered the steamship Corwin, visited the town in this early boom period. He later recalled that, "freight and passengers went from Keewalik to Candle on a small stern-wheeler, the

Keewalik Flyer, so constructed that she could proceed on a "'heavy dew.'" Its shallow water capabilities were necessary, according to West, because "the river wasn't more than nine inches deep in places." He stated that the boat had a stationary Fairbanks engine amidship with a rope transferring power to the paddle wheel. A photograph published with West's story showed the Keewalik Flyer. It appears to have been about forty feet long. Missionary Edward James Devine also took the Flyer sometime between 1902 and 1904. He wrote soon after that the trip up the river was very slow; it took four or five hours to go only twelve miles through the "tortuous, shallow" river. 370/

In 1917 the USGS's George L. Harrington traveled in the Candle area. He stated that shallow-draft power scows took supplies from the coast to town. He also wrote that the "effects of the higher tides are sometimes noted at Candle. On the other hand, at normal or low stages of water, if a south wind is blowing, considerable difficulty may be experienced in reaching Candle by boat, for the winds may be sufficient to overcome the effects of the incoming tide." 371/

Boating up the Kiwalik may have become more difficult in the next decade. Candle and Fairhaven mining district residents petitioned the Alaska Road Commission in 1926 for a road from the village of Kiwalik on the coast to Candle complaining that the river had "become so filled and blocked with silt that it is no longer a dependable route for handling freight." The ARC's James G. Steese responded that the Commission would consider the request, but he was not optimistic it would approve. 372/

Boating supplies to Candle continued. The U.S. Coast and Geodetic Survey stated in 1926 that freight was lightered up the river from Kiwalik. Similar entries exist in the USC&GS's 1938 and 1954 editions. 373/ Mrs. Solveig K. Xavier elaborated on the shipping in her March 1945 filing of Candle's Post War Planning Survey form with the Alaska Indian Service. The Ferguson Lighterage Company barged supplies to Kiwalik. From there J. Sherman used a power-driven scow to tow barges and scows to Candle. Sherman was able to handle about seventy tons per trip. Each trip between Kiwalik and Candle took twenty-four hours depending on the tides. 374/ In 1963 the Bureau of Indian Affairs conducted a survey of some Native villages and reported that all of Candle's heavy freight came up the Kiwalik "with the tide" on small tugs and barges. 375/

The BLM addressed the navigability of the Kiwalik River in two determinations relevant to State-selected land. In August 1979 Keith H. Woodworth, a BLM natural resource specialist, reported on the river in Tps. 1-3 N., R. 15 W., Kateel River Meridian. He noted that farthest downstream in this stretch the river was six inches to two feet deep and at the mouth of Quartz Creek it was six inches to a foot deep. Woodworth added that there were numerous gravel bars and riffles in the main channel. He recommended the river be found nonnavigable in the townships. The State Director concurred with this recommendation on September 17, 1979. In March, 1980, the Fairbanks District Office addressed the Kiwalik's navigability in Tps. 4-6 N., R. 15 W., Kateel River Meridian. It stated that tides affected the river to Candle and noted J. Sherman's commercial navigation of the river up to Candle. Therefore, the District recommended BLM determine the Kiwalik navigable to Candle and nonnavigable above that town. The State Director concurred on July 30, 1980. 376/

KUGRUK RIVER

Although it drains a relatively large area and coal was once mined along it, there are few reports referring to the Kugruk's character or boatability. The USGS's Arthur J. Collier and his 1901 mapping party did not visit the river, but he did list it along with the Goodhope, Kiwalik, and Buckland as "navigable to some extent for small boats." 377/

Two years later Fred H. Moffit's Survey group explored the region on horseback. He wrote that: "Lagoons and old abandoned channels, filled with water, but no longer connected with the main channel except in time of freshet, are frequent, so that traveling is often slow and difficult. The Kugruk is larger than the Inmachuk or the Kiwalik and at the same time much more crooked." He added that the river, like the Inmachuk, Kiwalik, and Buckland, had a gentle gradient in its lower stretches "producing bars and mudflats which often embarrass even the lightest of the small boats used in freighting supplies to the mining camps." 378/ Boat traffic doubtless was not assisted by ditching operations that tapped the river's source. In 1957 the Corps of Engineers noted that the Kugruk began in Imuruk Lake, but that the lake did not contribute its flow because miners had diverted the water to their works in the Inmachuk drainage. 379/

The BLM has addressed the Kugruk's navigability in both Native and State conveyance areas. The village of Deering and NANA selected lands encompassing the river up through T. 6 N., R. 18 W., Kateel River Meridian. Phil Bailey of BLM attended a village meeting on April 29, 1976 at which villagers indicated that the Kugruk was too shallow for any boat traffic. Keith Woodworth of the Arctic-Kobuk Resource Area later recorded his personal knowledge and that which he had obtained from Deering residents about the Kugruk on agency navigability forms. He described the river as shallow, rocky, and running in a single channel. Local residents told him that tides influenced the river up to the first set of bluffs. Shallow-draft boats could utilize the river to about this point; above they could only travel during high water. 380/

In January 1978 the Fairbanks District Office reviewed easements proposed for the Deering selection. A couple easements had been suggested which bore on the Kugruk's navigability. One was for a camping site in Sec. 27. T. 6 N., R. 18 W., Kateel River Meridian on the river's bank. The FDO objected to this proposal because it could find no evidence of past use. The District also opposed a streamside easement for the full length of the river above the limit of tidal influence because it did not believe the Kugruk to be navigable by riverboat "except during brief periods of extreme high-water." A November 5, 1979 Notice of Proposed Easement Recommendations also dropped the easements, indicating that they did not meet existing criteria, and stated that the Kugruk was nonnavigable. It added that tides affected the river up to its first bluffs in Sec. 8, T. 6 N., R. 19 W., Kateel River Meridian. 381/

On March 11, 1982 Dennis P. Daigger of the State Division of Research and Development wrote to BLM providing information to bolster the State's contention that the river was navigable. Daigger wrote that Carl Grauvogel, an ADF&G biologist at Nome, indicated that jet and prop motors regularly powered riverboats and V-bottomed boats sixteen to eighteen feet long up the Kugruk. He stated that prop-driven boats ascended the lowest ten miles; those with jet units could reach the lowest thirty to forty miles. Where riffles were encountered boaters pulled their craft through with the motors lifted. Grauvogel told Daigger that subsistence was the primary motive for traveling the river. Despite this new information, the BLM did not alter its position in final easement statements signed March 25, 1982, in a DIC issued that August, or in Interim Conveyances dated September 29, 1983. 382/

The BLM drafted two reports addressing the Kugruk's navigability above the Native selection. On August 30, 1979 Keith H. Woodworth reported on the river for a State conveyance including T. 3 N., R. 18 W., Kateel River Meridian. He wrote that at high water the previous day the river was about twenty feet wide where it crossed into T. 4 N., R. 18 W., Kateel River Meridian. He stated the river was shallow -- "less than 1/2 foot with a few pools that are approximately 2 to 3 feet deep" -- and had numerous gravel bars and resulting riffles. Woodworth, however, learned that, "During periods of very high water, residents of Deering have traveled as far as the Chicago Creek Mines

(coal) (with difficulty)." He recommended the river be determined nonnavigable, a recommendation in which the State Director concurred on September 18, 1979. In the following year the State Director also determined the river nonnavigable in T. 4 N., R. 18 W.; T. 3 N., R. 19 W.; and T. 2 N., R. 20 W., Kateel River Meridian based upon a Fairbanks District Office report. 383/

INMACHUK RIVER

U.S. Geological Survey explorer Fred H. Moffit led an expedition in the Inmachuk River area in 1903. He stated that the valley was narrow and steep down to Hannum Creek where a series of gravel bars began. These flats at some points were over four hundred feet wide; below the Pinnell River they were in places over a quarter of a mile wide. The bars and mud flats "often embarrass even the lightest of the small boats used in freighting supplies to the mining camps." Moffit recorded that in 1903 a large portion of the miners on Hannum Creek, a tributary of the Inmachuk, brought their supplies overland by pack train or wagon from the mouth of Rex Creek. He stated that this "proved more satisfactory than that of carrying the freight to the mouth of the Hannum in small boats, since the use of horses is still necessary from that point onward and, furthermore, the shallows of the Inmachuk offer difficulties to the lightest boats." However, for the prospecting and mining camps along the Inmachuk which extended up to the Pinnell River, boats were then the best means of access. Moffit observed that, "the sides and bottom of the valley offer a poor road for foot travelers and a still worse one for horses; consequently boats are generally employed in the summer time for transporting supplies from the coast to the camps." 384/

Moffit did not describe the boats plying the Inmachuk. However, the Anchorage Museum of History and Arts has two photographs taken by a man named Nowell which show boats on the river in September 1903. One picture contains either a canoe or poling boat. Both ends are pointed; its length is indeterminate. The second photograph shows a wooden boat. Its front is pointed; its back is out of view, but the sides suggest that it too is pointed. If its front and back halves were symmetrical, it would be fifteen to twenty feet long. 385/

Reliance on boats, though, may have been short-lived. In 1907 the Alaska Road Commission took over the extant mining road up the Inmachuk. The road followed the river bars most of the way up the river. In 1908 six hundred tons of freight moved up this road; the figure was eight hundred tons for the following summer. The Road Commission carried out improvements on the road in subsequent years. 386/

The BLM addressed the navigability of much of the Inmachuk River in the course of conveying land to Deering and NANA. Phil Bailey of BLM attended a village meeting in April 1976 at which he learned that small boats could go about one mile up from the river's mouth. Keith Woodworth of BLM's Arctic-Kobuk Resource Area wrote from personal knowledge and information obtained from residents of Deering that this was a shallow, rocky, single-channel stream affected by tides for approximately two miles. He stated that people rarely used it for transportation and that use was generally restricted to periods of high water. It undoubtedly was upon this information that the Fairbanks District Office opposed a streamside easement along the river, noting that the water body was "not navigable by river boat except during short periods of extremely high-water" and the BLM's Notice of Proposed Easement Recommendations dated November 5, 1979 stated the Inmachuk was nonnavigable. The agency did not alter its position in subsequent documents, including Interim Conveyance in September 1983. 387/

GOODHOPE RIVER

In 1900 five prospectors boated an unstated distance up the Goodhope River. They left Nome on August 6 by dory and arrived at the river's mouth without mishap. They later reported that they ascended the river "by boat 140 miles," though the Goodhope is only half that length. The men prospected as they went. They found their best prospects and spent most of their time on three creeks in the upper part of the drainage which they named Jamieson, Esperanza, and Placer. The men returned to Nome overland in November and, after resupplying and alerting friends, some quickly went back to the claims. 388/

Although Arthur J. Collier and his USGS party did not visit the Goodhope River drainage in 1901, he later stated that it, along with the Kugruk, Kiwalik, and Buckland rivers were "navigable to some extent for small boats." 389/

NUGNUGALUKTUK RIVER

In August 1861 Otto von Kotzebue and his crew on the Rurik landed at the mouth of a river, whose description of direction of flow matched that of the Nugnugaluktuk River. They questioned a family of local Natives about the river. Through signs the Natives indicated one could paddle nine days up this river to get to the open sea. Kotzebue tried for several hours to enter the river, but failed because of shallow water. 390/

ESPENBERG RIVER

In 1958 James Louis Giddings explored the mouth of this river for archaeological sites. He found a campsite as a base camp about one mile upriver. His Native assistant transported them and their supplies up to that point in a large, wooden-planked skiff, which when well-loaded "lay as low in the water as an outbound tanker." The boat had a thirty-five horsepower motor. 391/

UNNAMED CREEK (mouth in Secs. 14 and 23, T. 11 N., R. 33 W., Kateel River Meridian)

When the village of Shishmaref selected T. 11 N., R. 33 W., Kateel River Meridian, the State's Division of Lands requested a twenty-five-foot-wide streamside easement paralleling the stream and an easement on the creek's bed, claiming the creek was navigable. However, BLM's Fairbanks District Office in 1977 opposed the easement as it could find no history of use of this stream. Since then the BLM has determined this stream to be nonnavigable within this township. On April 19, 1982 the agency granted Interim Conveyance for this land. 392/

SERPENTINE RIVER

Arthur J. Collier led a USGS exploration of the northwestern portion of the Seward Peninsula in 1901. His party traveling overland visited the head of the Serpentine River drainage about September 1. Area residents told him that Charles McLennan was the first to explore this river, arriving in the area by dog team in May 1900. McLennan named the river for its tortuous course in its lower reaches. McLennan reached the hot springs near the head of the river that same year. Charles W. Mashburn, the deputy recorder of the district based at Shishmaref, told Collier that the Serpentine was navigable for small steamboats "for at least 20 miles." 393/ Collier in a separate publication referred to access to the northwest portion of the Seward Peninsula: "This region may be approached by a long overland trip up the valley of the Kougarok or by small boats up the rivers which flow into Shishmaref Inlet." He added that access was

so difficult that the cost of bringing in supplies prohibited mining any but the richest deposits. 394/ Not only was the river trip difficult, but, as Adolf Knopf, also of the USGS, observed in 1908, the Shishmaref Inlet "was only navigable by umiaks and flat-bottomed dories." 395/ The situation had not changed in the 1920s when the USGS's Edward Steidtmann and S. H. Cathcart wrote that, "freight landed at such points as Shishmaref Inlet must be lightered in shallow-draft boats from the coastwise schooners to the shore and up the tortuous stream channels of the tundra flats to solid ground, where it can be picked up by teams." 396/

Natives also boated on the Serpentine River. Edward L. Keithahn, who lived at Shishmaref in 1924 and 1925, recounted that on July 14, 1924 he accompanied villagers on their annual duck hunt up the lower Serpentine River. He described the scene: "Ahead were half a dozen kayaks side by side and equally spaced from bank to bank. Behind them came a string of oomiaks single file and midstream. Each oomiak was loaded with women and children, a few dogs and vast quantities of gear and camping material." They traveled upriver until they were near a promising lake. There the men portaged the kayaks and hunted. After that they continued upstream. They proceeded like this for three days before returning to the village. In mid September of the same year Keithahn and his wife accompanied a Native family up the river on a vacation trip. Keithahn recorded that they "chugged" up the river all day in a decked "little gasboat," yet when they camped that night they found they could still see cold storage mounds at the mouth of the river less than five air miles away. They set up tents and hunted and fished. On their third day a storm came up dropping nine inches of snow and "the river ran dry." Keithahn theorized that the northerly winds had blown so hard that the Chukchi Sea lowered somewhat. Since the Serpentine was "a tidal river well past our anchorage" and because the cold weather had curtailed the waterflow from above, they had to wait seven days for enough water to come back to the river so they could float their boat. Keithahn traveled up the Serpentine one more time in late June 1925 when Natives invited him to accompany them on a recreational trip before the mosquitoes descended on the area for the summer. It is not clear how far they went. 397/

The BLM examined the navigability of the lower Serpentine River in the course of conveying ANCSA lands to Shishmaref. The easement staff in November 1977 recommended that it be considered nonnavigable through the selection area which extended up through T. 8 N., R. 32 W., Kateel River Meridian. However, the Fairbanks District manager believed that this recommendation should only become final after a field examination. When BLM issued a Notice of Proposed Easement Recommendations on January 9, 1980 it stated that the river was navigable to the mouth of its South Fork in Sec. 6, T. 8 N., R. 32 W., Kateel River Meridian. Evidently the agency based this position on an interview on November 14, 1979 in which Z. William Barr, Executive Director of the Shishmaref Native Corporation, stated that miners had taken supplies up the river to the fork and thence used a cat train to reach Taylor. The State Director signed the final easement recommendation on June 9, 1981, indicating that the Serpentine River was navigable through the selection area and again citing Barr's testimony. 398/

The State selected T. 6 N., R. 30 W., Kateel River Meridian which included the source of Serpentine River. Based upon its physical characteristics and the lack of evidence of use, the BLM determined it nonnavigable on May 25, 1982. 399/

SANAGUICH RIVER

The Alaska Division of Lands proposed a streamside easement on both banks of the Sanaguich River within lands selected under ANCSA by Shishmaref. The State contended that this water body was navigable and that local residents used it for subsistence.

However, BLM's easement task force could find no evidence of anyone using the river for navigation or recreation, and so dropped the easement from further consideration. When the State Director signed the final easement memorandum for the village selection in January 1981, he did not list the Sanaguich among navigable streams. 400/

ARCTIC RIVER

There is some evidence that Natives have boated on at least part of this river. Christine A. Heller and Edward M. Scott in the early 1960s learned from Shishmaref residents that their village had been located inland on the banks of Arctic River. 401/ In August 1924 Edward L. Keithahn accompanied Natives to their reindeer corral at Arctic River's estuary. A photograph which accompanied Keithahn's account of this trip showed three boats in the water. 402/

In the process of conveying land to the Native village of Shishmaref, the BLM considered the navigability of Arctic River's lower course. When it issued its Notice of Proposed Easement Recommendations on January 9, 1980, the agency did not include Arctic River among the navigable water bodies in the area. However, at a meeting with Native corporation members on September 9 of the same year, BLM officials learned that Natives used large boats up the river to Sec. 32, T. 8 N., R. 33 W., Kateel River Meridian where they maintained a reindeer corral and associated cabins. Moreover, BLM learned that Natives boated up the river to reach allotments. Consequently, the final easement memorandum signed by the State Director on January 9, 1981 determined the river navigable in T. 8 N., R. 32 W., Kateel River Meridian, the full extent of the river located in village land. 403/

The BLM determined part of the upper Arctic River to be nonnavigable in the course of conveying land to the State. On May 11, 1982 the Fairbanks District Office issued a report recommending that the Arctic River be determined nonnavigable in T. 6 N., Rs. 34-35 W., Kateel River Meridian. The District Office based its position on the river's physical characteristics and a lack of evidence of use. The State Director concurred in this recommendation on May 26th. 404/

GOOSE CREEK

Alaska's Division of Lands proposed a streamside and streambed easement along Goose Creek in the northern half of T. 8 N., R. 35 W., Kateel River Meridian which lay within lands selected by Shishmaref. The BLM's easement staff opposed this proposal noting that it could find no history of use of the creek. The State Director dropped the easement and determined Goose Creek nonnavigable in a final easement memorandum signed January 9, 1981. 405/

KUGRUPAGA RIVER

The Anchorage Museum of History and Art contains a photograph of two horses and seven men taking an open wooden boat about twelve feet long up a river. When the camera snapped the picture, two or three men stood in the water; at least one was pushing the boat. Two others rode horses which appear to have been pulling. The others sat or kneeled at the edge of the watercraft. Bulging bags filled the boat to its gunnels. A caption identified the photo as showing supplies being freighted up the Kugrupaga River to Tuttle Creek in 1913. 406/

While conveying lands selected by the State, the BLM determined that the Kugrupaga River was nonnavigable in and above T. 6 N., R. 37 W., Kateel River Meridian. The Fairbanks District Office drafted a report recommending this position, stating that there

was a lack of evidence of use and that the water body's physical characteristics were such as to make it unsusceptible of navigation. The State Director concurred with this recommendation on May 26, 1982. 407/

NULUK RIVER

In 1901 Arthur J. Collier led an overland USGS party to explore the northwestern portion of the Seward Peninsula. While there he mapped the Nuluk River drainage. In his report Collier included it among a number of rivers which were "navigable to some extent for small boats." 408/

In May 1982 the BLM's Fairbanks District Office issued a report which recommended that the Nuluk River be determined nonnavigable in all townships in and above T. 4 N., R. 38 W., Kateel River Meridian. The State had selected these townships. The District Office supported its recommendation stating that the river was physically unsusceptible to navigation and that there was no record of use. The State Director concurred with this position on May 26, 1982. 409/

UPKUAROK CREEK

The BLM determined Upkuarok Creek to be nonnavigable in May 1982 in the State-selected townships, Tps. 3-4 N., R. 39 W., Kateel River Meridian. The agency's Fairbanks District Office proposed this finding stating that neither the stream's physical condition nor its record of past use supported its navigability. The State Director signed the determination for the creek on May 26, 1982. 410/

PINGUK RIVER

Traveling overland, the USGS's Arthur J. Collier's survey party mapped the Pinguk River drainage. In his report, Collier included it among a number of rivers which were "navigable to some extent for small boats." 411/

The BLM determined the upper portion of Pinguk River nonnavigable in the course of conveying T. 2 N., Rs. 38-39 W. and T. 3 N., Rs. 38-40 W., Kateel River Meridian to the State. The Fairbanks District Office prepared a report stating that there was a lack of evidence of use and that the river was not physically susceptible to boat traffic. The State Director determined Pinguk River nonnavigable on May 25, 1982. 412/

The agency also addressed the Pinguk in connection with a selection by Diomedé Natives. At the initial stage of the ANCSA selection process it was thought that the village's land would extend to encompass part of the Pinguk. The State proposed a streamside easement along it. But the easement task force opposed it on November 21, 1977, since the only known use was for local subsistence and because "the area is neither of a highly recreational nature nor is this channel subject to navigation." 413/ Thereafter, BLM no longer considered the Pinguk's navigability because it was outside the selection.

MINT RIVER

Arthur J. Collier led USGS parties to the Mint River area in 1901 and 1903. In both cases he traveled overland. In 1901 he mapped the Mint River drainage and in his subsequent report Collier included it among a number of rivers which were "navigable to some extent for small boats." 414/

The report stemming from the 1903 examination gave more extensive information concerning travel in the Mint drainage, concentrating on access to the tin mines on Buck Creek, a tertiary tributary of the Mint flowing through Grouse Creek. Collier stated that wagons followed a road from York northward to Buck Creek. The road generally was in good shape except for a one-and-one-half-mile portion which Collier stated could easily be repaired with gravel from the Anikovik River. Access by water was also possible, but difficult. Lopp Lagoon into which the Mint flowed was not navigable by seagoing vessels and landing was difficult because of extensive shallow water. Collier hypothesized that:

For small, flat-bottomed boats, however, this lagoon is navigable, and it is possible that such boats might, but not probable that they ever will, convey tin ore from the Buck Creek mines, out through the inlet, to vessels lying offshore in the Arctic Ocean. It is reported that small boats can be brought up Mint River and Grouse Creek to within 1 mile of the mouth of Buck Creek. These streams, however, are shallow and crooked, and it is not probable that they can be used successfully for conveying ore from Buck Creek to the sea. 415/

In May 1982 the BLM's Fairbanks District Office issued a report which recommended that the Mint River be determined nonnavigable in all townships in and above T. 3 N., R. 42 W., Kateel River Meridian. The State had selected these townships. The District Office supported its recommendation stating that the river was physically unsusceptible to navigation and that there was no record of use. The State Director concurred with this position on May 26, 1982. 416/

The agency also addressed the Mint in connection with a selection by Diomedes Natives. At the initial stage of the ANCSA selection process it was thought the village's land would include the upper Mint. Therefore, the State proposed a streamside easement along it and a fifty-foot trail easement. The BLM's easement task force in November 1977 approved of the extant trail noting past use and subsistence and mining operations in the York Mountain area, but opposed the streamside easement since the only known use was for local subsistence and because "the area is neither of a highly recreational nature nor is this channel subject to navigation." 417/ Thereafter, BLM no longer considered the Mint River's navigability because it was outside the selection.

ANIKOVIK RIVER

A photograph relevant to the Anikovik River in the Tom J. Christensen Collection at the University of Alaska, Fairbanks, archives, shows a herd of caribou in the foreground, a dredge in the background, and an umiak being pulled by dogs up the mouth of the river. Its caption refers to "Ben Benard's gold dredge on Anikovik River" in 1916. The USGS made no mention of dredges on the river in that year. However, in 1914 and 1915 there was a dredge a half mile above the river's mouth. 418/

The village of Wales selected lands encompassing nearly all of Anikovik River as part of its ANCSA entitlements. Neither the State nor BLM ever suggested that the river was navigable; the State Director determined it to be nonnavigable in a final easement memorandum on July 28, 1980. Rather, BLM granted an easement requested by the Bureau of Mines, Alaska Division of Lands, and ADF&G for an existing trail from Bering Sea paralleling the river to its head and over a divide to mines on Goose and Buck creeks in the Mint River drainage. 419/

KANAUGUK RIVER

The BLM considered the navigability of Kanauguk River in the process of conveying ANCSA land to Wales and Inalik. In November 1979 the BLM issued a Notice of Proposed Easement Recommendations for Wales which included the lowest few miles of the river. It stated that the Kanauguk was nonnavigable. The following July the State Director determined the river nonnavigable in the final easement memorandum. This determination did not change in an Interim Conveyance in March 1982. 420/ Similarly, the State Director determined the river nonnavigable in T. 1 N., R. 42 W., Kateel River Meridian within Inalik's selection area on July 28, 1980, maintaining this position through Interim Conveyance nearly a year later. 421/

LOST RIVER

The U.S. Geological Survey and the Corps of Engineers have made observations on the character of Lost River. In late July 1903 the Survey's Arthur J. Collier estimated it carried one thousand miner's inches of water just below Cassiterite Creek. 422/ In 1922 Edward Steidtmann and S. H. Cathcart of the USGS observed that "Lost River is a swift-flowing perennial stream. Where confined to a narrow bed it is about 2 1/2 feet deep and 25 feet wide under average conditions, but in the vicinity of Cassiterite and Tin creeks it spreads out over flats several hundred feet wide." 423/

Using 1972 data, the Corps of Engineers estimated that the mean annual flow of the river was forty-three cubic feet per second. But there was great variation through the year; the Corps noted that due to sparse vegetation there was rapid runoff. A rainfall of only one inch could raise the river two feet. 424/

The river may not have been used for boats to travel up to the mines concentrated about nine miles above the mouth. Its valley evidently furnished a natural road. In 1908 a USGS report based on investigations conducted the previous year stated that the "valley is broad and open and furnishes a good wagon roadway." 425/

The BLM determined all of Lost River nonnavigable in the course of conveying ANCSA land to Inalik. The agency's village file provides no evidence of water travel on the river and the State Director in July 1980 determined it nonnavigable. The agency maintained this position through Interim Conveyance in July 1981. The IC reserved an easement for the existing road which paralleled the river from the coast to the Lost River mine in Sec. 22, T. 1 N., R. 41 W., Kateel River Meridian. 426/

DON RIVER

In their 1922 USGS study of the York tin placers, Edward Steidtmann and S. H. Cathcart noted that there was a beach trail suitable for a team with a light load from Brevig Mission to York. They wrote that the Don River was easily fordable at its mouth. 427/

Brevig Mission selected lands under ANCSA including all of the Don River below the township line common to T. 1 N., Rs. 39-40 W., Kateel River Meridian. The State Division of Lands considered this water body navigable and therefore requested a bank easement along it. The Resource Associates of Alaska also proposed an easement paralleling the river to Tozer Creek. The BLM easement and navigability staff in June 1976 approved a trail along the river through the entire conveyance area and at the same time stated that it did not consider the river navigable. The final easement memorandum signed September 20, 1979 incorporated the staff's earlier findings both as to navigability and the trail. It added that the trail was extant and used primarily by

snowmobilers. The BLM issued an Interim Conveyance for this land on October 10, 1979. 428/ About seven months later the BLM determined the Don to be nonnavigable for the rest of its length within Tps. 1-2 N., R. 40 W., Kateel River Meridian in the course of conveying land to the State. The Fairbanks District Office in recommending this position cited a lack of evidence of use and the river's physical characteristics. 429/

CALIFORNIA RIVER

In their 1922 USGS study of the York tin placers, Edward Steidtmann and S. H. Cathcart noted that there was a beach trail from Brevig Mission to York. The trail was suitable for a team with a light load. They wrote that the California River was easily fordable at its mouth. 430/

The BLM issued an Interim Conveyance On December 7, 1979 for Brevig Mission which included all of the California River up through T. 1 N., R. 38 W., Kateel River Meridian. The agency had determined the river in the conveyed land to be nonnavigable on September 20 of the same year. 431/

AGIAPUK and American Rivers

All available evidence links water travel on these two rivers to access mines on American River via the lower thirty-five miles of the Agiapuk. Allan A. Allan recalled in his reminiscences that he and two young men rescued two others stranded on an island after a mishap floating down the river after breakup. He did not indicate the year, but a reference to cannibalism among the stranded men 432/ corresponds very loosely to reminiscences of Irving Reed who stated the crime occurred in the fall of 1900. 433/ If this incident did not occur in that year, it probably happened within the next few years.

The USGS made several mentions of boat traffic in the first two decades of the century. After leading a Survey team through the area in 1901 Arthur J. Collier wrote that the American River was "easily navigable for small boats for several miles above the mouth of Portage Creek." 434/ In a 1908 publication he wrote that small boats and canoes could navigate the American River for thirty miles; it is nearly thirty-three miles to Portage Creek. 435/ Finally, in 1918 the USGS reported the cost of transporting goods from Seattle to Budd Creek about twenty-two miles up the American River. It cost \$22.50 per ton to Teller and another \$12.50 to lighter the goods to the mouth of the Agiapuk. From there it cost \$10.00 per ton to move supplies up the Agiapuk and American rivers by flatboat. 436/

The BLM received several requests for easements along the Agiapuk River in the 1970s when it was thought that portions of the river lay within the Brevig Mission ANCSA selection. The ADF&G proposed a campsite and floatplane tie-up on the Agiapuk near the confluence of American River in Sec. 12, T. 1 S., R. 35 W., Kateel River Meridian stating that people already were using this place and that their use should not be curtailed. The BLM, Bureau of Mines, and the Alaska Division of Lands suggested trails along the Agiapuk River east of Dese Creek. However, the BLM dropped all consideration of these easements after June 1976 when its easement and navigability task force noted that all were outside the village's selection area. 437/

The BLM found both rivers nonnavigable in State-selected land. In May 1982 the Fairbanks District Office recommended that the Agiapuk be found nonnavigable in T. 1 N., Rs. 34-35 W., and the American be nonnavigable in T. 3 N., R. 33 W., Tps. 1-4 N., R. 34 W., and Tps. 2-3 N., R. 35 W., Kateel River Meridian. The District Office rested its recommendation on the rivers' physical characteristics and the lack of evidence of past use on the water bodies. The State Director concurred with this recommendation on May 26, 1982. 438/

In March 1985 the BLM determined the Agiapuk and its tributaries in T. 1 N., R. 37 W., Kateel River Meridian to be nonnavigable. In reaching this decision BLM's staff in February 1985 interviewed three men familiar with the general vicinity--David Scott, a former BLM Area Manager who had flown over this State-selected township at least twenty times; Norman Mendelook, a resident of Teller; and Elmer Seetot, a storekeeper at Brevig Mission. None of the men knew of boat use in the township and each referred to the streams of the area as shallow and rocky. Scott mentioned that there was a flurry of mining claim staking on the upper portion of Arctic Creek, a tributary which converges with the Agiapuk in the selected township, but he said that access was overland. Seetot discussed the recent history of boat use on the Agiapuk River. He stated that until the 1970s, people used twenty-four-foot flat-bottomed wooden boats on the lowest five miles of the river. They did not proceed farther because the boats did not have motors and their weight made it difficult to continue. Seetot told the BLM that in the 1970s eighteen-foot aluminum V-bottom boats with twenty-five horsepower outboard motors began traveling the river. They went up to about Igloo Creek. Ten to fifteen residents of Brevig Mission used these boats, which were capable of carrying one thousand pounds to hunt moose during high water. 439/

KAVIRUK RIVER

Beginning in 1905 boats brought supplies bound for the Kougarok mines up this river to Davidson's Landing. This began the shift of the transshipment point from Shelton to Davidson's Landing. The USGS's Fred H. Moffit reported that in 1905 more supplies than in previous years entered the Kougarok and that "many of the boats were taken up Mary [Kaviruk] River to the recently constructed warehouses at Davidson's landing and there unloaded. Wagons were then employed to transport it over a new trail to the upper part of the Kougarok." This trail followed the Kaviruk and Coco Creek to the Kougarok drainage. 440/ By 1918 when the USGS gave the costs of bringing freight into the Kougarok mining district, it made all calculations via Davidson's Landing. 441/ Evidently such transit continued into the 1940s. In 1953 the Corps of Engineers reported that shallow-draft barges could go up to the landing, although none had in the previous six years because of a sharp decline in mining. 442/

Virtually from the beginning of its consideration of the Marys Igloo ANCSA selection, BLM considered Marys Lake, Lake Omiaktalik, and Kaviruk River to Davidsons Landing to be navigable. The easement staff reached this conclusion when it met on June 28, 1977, noting that barges formerly ascended to the landing. A Notice of Proposed Easement Recommendations issued in January 1980 repeated the same conclusion and rationale. However, by September of the same year, when it issued its final easement memorandum, the BLM had determined that the barge route had followed a northern arm of Marys Lake rather than Kaviruk River. Therefore, this memo and the Decision for Interim Conveyance which followed within two weeks, both limited the Kaviruk's navigability to below the west section line of Sec. 20, T. 3 S., R. 32 W., Kateel River Meridian. Above that point the river was nonnavigable. 443/

KUZITRIN RIVER

Native boat travel on the Kuzitrin preceded the arrival of whites, but it is not as well documented as that for the Kobuk and Noatak rivers. In February 1854 William R. Hobson of H.M.S. Rattiesnake set out up the river with a dogsled headed for Kotzebue Sound in connection with the Franklin search expedition. In traveling upriver for six to eight days above a starting point near the Kuzitrin's mouth, he passed eight or nine inhabited settlements before heading north from the Kuzitrin. Anthropologist Dorothy Jean Ray in the late 1960s learned from Seward Peninsula Natives that the last of these

villages was "on the upper Kuzitrin River." It is not known if the Natives accessed these places other than in the winter. 444/ However, Ray and another anthropologist, William L. Sheppard, indicated that Natives hunted caribou in Kuzitrin Lake in the summer. Although she does not state the source of her information, Ray wrote that not only Natives of the lower Kuzitrin, but also those of King Island took caribou at the lake during the summer. 445/ For his 1983 publication, Fish River Natives told Sheppard that traditionally they and their western neighbors, presumably those in the lower Kuzitrin, jointly hunted caribou on Kuzitrin Lake in the late summer. Although neither author explicitly stated how the Natives got to the lake, Sheppard wrote that the traditional means of harvesting caribou at the lake was from kayaks. 446/

There also were conflicting reports of an inland water route utilizing the Kuzitrin and Fish river systems. Ray in The Eskimos of Bering Strait recorded that in 1821 Russian explorer Vasilii S. Khromchenko sailed into Golovin Bay where he communicated with local Natives. They told him that a five-day boat trip up the Fish River could bring them to Shishmaref Inlet. Khromchenko corrected this information in an 1824 publication, indicating that the western terminus of this route was gained via the Kuzitrin. The account of a Native named Tungan at Golovin Bay in August 1822 probably helped Khromchenko correct the confusion of Shishmaref Inlet and Imuruk Basin. Tungan told Khromchenko that he returned to Golovin Bay from King Island through a pass between the Kuzitrin and Niukluk rivers. Two other Natives had recently reached the bay by the same route. Ray hypothesizes that the portage was between the headwaters of Belt Creek and the Niukluk River. 447/

Two Americans, however, disputed the use of the route. William H. Ennis explored the region in the winter of 1865-66 as part of Western Union's efforts to construct a telegraph from Europe to North America via Siberia. He was interested in the suitability of the Kuzitrin and Niukluk for transporting supplies, including telegraph poles along the proposed line. In December 1865 he wrote his superior that, "All seem to think, that the rivers from Golovine [sic] Sound to Grantley Harbor, are not navigable, even for skin boats, and this seems to me to be true; for, were those streams navigable, the Indians would not take the route along the coast, when trading to Port Clarence, when the river travelling is so much shorter." 448/

However, he did feel that logs could be rafted up from Grantley Harbor to a portage. Here oxen could transport them through a long barren portage to the Niukluk. 449/ Walter C. Mendenhall, who reconnoitered the Norton Bay area in 1900 for the USGS, also was skeptical of the Kuzitrin-Niukluk-Fish rivers route. He wrote that, "the all-water summer route which appeared so long on maps of the region does not exist, and the portage of 9 miles is such a barrier to summer travel that during this season the trip is much more easily made by boat through Norton Sound and Bering Sea." 450/

When the world learned of the fabulously rich creeks and beaches of Nome, thousands of gold-seekers came north and many spilt over into the Kuzitrin drainage. Prospectors probed the entire basin, but the greatest activity concentrated along the Kougarok and its tributaries. Although some packed to the area from Nome, 451/ many early miners came in by boat. In 1900 the USGS's Alfred H. Brooks visited the region and he later reported on how miners reached the Kougarok district. Steamboats could proceed up to Marys Igloo. From there small boats went up to the mouth of the Kougarok where there was a small community called Checkers. From there pack trains took supplies overland. 452/ One contemporary newspaper article stated that small boats also proceeded up the Kougarok, 453/ but another article noted that at least miner Norman Brander planned to avoid small boat use for his heavy supplies. After the stern-wheeler Kotzebue unloaded his coal and lumber at Marys Igloo, he waited until winter to haul the goods to his mines. 454/

Dissatisfaction with boating on the Kuzitrin led to several alternative routes to the Kougarok mines. In 1901 a Nome newspaper pointed to a new route to Quartz Creek on the lower Kougarok. It reported that:

Parties well acquainted with the topography of the country claim that a trail can be made from a point about two miles above [Marys Igloo] to Quartz Creek, making that [creek] about ten or twelve miles from the steamer landing. At present the way of ordinary travel is by the mouth of the Kougarok and thence by trail about six miles to the mouth of Quartz [sic]. As the distance by small boat to the mouth of the Kougarok is thirty miles by the river, it would seem that the route by the way of the first mentioned trail would be preferable. 455/

The USGS's Arthur J. Collier led a party which mapped the Kuzitrin drainage in 1901. The resultant map showed Lanes Landing, later called Shelton, and a wagon road from it to the mouth of Dahl Creek on Quartz Creek. 456/ While boats doubtless landed here, it also served as an extension of an overland route from Nome. In 1906 the Seward Peninsula Railway reached the Kuzitrin opposite Shelton. 457/ The railroad built a bridge over the river some years, but the company had to keep rebuilding it. For many years a ferry provided the only means of crossing from the rail terminus to Shelton and the trail to the Kougarok. 458/

Collier's report, however, also indicated that boats carried freight on the Kuzitrin. He wrote that A. D. Nash had a warehouse at Marys Igloo from which he carried on a general freighting business on the river at least up to the mouth of the Noxapaga. At the end of the season Collier and topographer T. G. Gerdine traveled with Nash from the settlement of Noxapaga, seventeen miles up the river of the same name, to Lanes Landing. The trip occurred in late September, took about a day, and Collier estimated it covered one hundred miles. He without doubt referred to supplying Noxapaga when he wrote that after steamers transported goods to Marys Igloo, "extensive freighting is done with large flat-bottomed boats along the Kuzitrin and Noxapaga for about 100 miles." 459/

Collier also gave physical descriptions of the Kuzitrin. He stated that the lowest rapid and the limit of tidal influence was at Marys Igloo. Between Marys Igloo and the Kougarok there was a canyon with "long stretches of comparatively quiet water with small rapids between." A gravel-filled basin about twenty miles long occupied the area above the Kougarok. In this basin the Kuzitrin and its two major tributaries, the Kougarok and Noxapaga, meandered extensively. 460/

In the particularly dry year of 1908 the USGS's Fred F. Henshaw measured the daily discharge of the Kuzitrin at Lanes Landing and also made observations of shipping in the area. The averages for June, July, August, and September were 3,490; 433; 528; and 357 second-feet per day, respectively. The peak was in early June when the discharge was over 6,000 second-feet for four days in a row; by the end of September the figure was down to 250. 461/ In a separate report, he stated that miners in 1908 were shipping items into the Kougarok via Davidsons Landing on the Kaviruk rather than Lanes Landing and thus saving at least 25 percent in freight charges. 462/

The Alaska Road Commission was interested in transportation in the Kuzitrin drainage. The agency's primary responsibility was for trails to the mining areas. This was a matter of contention among various miners. The Davidsons Landing trail was most useful for those on Taylor Creek and elsewhere in the upper Kougarok area. But miners such as K. L. Graven wrote the Commission that a route from Shelton or Marys Igloo would better serve properties on the lower Kougarok. In connection with his efforts to

have the Commission extend a trail from these places, Graven wrote that the depth of water, "about 3 feet," was equal at Marys Igloo and Davidsons Landing and that the same boats could reach both. 463/

The Road Commission also provided ferry service across the Kuzitrin for those traveling over the tram line from Nome, which used the Seward Peninsula Railway's abandoned tracks. Some time prior to WWI the Territorial Road Commission established a ferry at Shelton. The local roadhouse keeper operated the ferry and indeed may have rowed people across even before aided by the Territorial Commission. But when traffic declined during the war, the roadhouse keeper abandoned the area except for the winter. The Territorial Road Commission hired Isador Fix to act as ferryman at Shelton right after breakup and just prior to freeze-up. 464/ In 1920 the Alaska Road Commission began paying Fix for this service. 465/ In the mid 1930s the ARC relocated the terminus of the tram to Bunker Hill, about six miles above Shelton. The Commission installed a scow capable of ten-ton loads at the location in 1935 and reported that it transported 85 people, 12 autos or tractors, 10 wagons, 4 sleds, and 56 tons of freight. Nevertheless, G. D. Lammars, who had tried to operate the scow, requested a boat capable of carrying one ton and a cable at Shelton, complaining that the ten-ton scow was unsuccessful. The Commission's records do not reveal what course the agency pursued. 466/

In late 1944 the Department of the Interior collected data on Alaska Native villages. William R. Benson completed a form concerning New Igloo near the mouth of Pilgrim River. He noted that the Lomen Commercial Company brought two hundred tons to the village each year with tugboats and scows. He also wrote that Natives occasionally brought mail to town from Teller in small boats and that small boats could travel up the Kuzitrin above the village. 467/

Several sources have addressed the navigability of the Kuzitrin since WWII. The U.S. Coast and Geodetic Survey in 1954 stated that shallow-draft lighters could go upriver to Shelton. 468/ In August 1966 Lutheran missionary Lee Luebke rode from Brevig Mission to Marys Igloo in a Native's sixteen-foot, home-built boat with a twenty-eight horsepower motor. Luebke characterized the lower Kuzitrin as a Native "vacation spot." He saw at least a dozen camps on the trip. Luebke wrote that some Eskimos came from Nome by the Nome-Shelton road and then boated downstream. 469/ In 1971 and 1972 Laurel L. Bland collected historic sites information in the region. Bland noted that the ruins of a barge and cable remained at Bunker Hill and that sportsmen using jet boats as well as subsistence users exploited the resources of the lower river. 470/

The village of Marys Igloo chose lands including much of the Kuzitrin below Shelton as part of its ANCSA selection. The BLM's Roland Shanks recorded information about the river's navigability while attending a village meeting in March 1977. Villagers explained that:

from an area approximately six miles up river from the mouth of the Kuzitrin the river was very shallow and very hard to navigate even in the small, light riverboats which they use in this area. They also pointed out several sloughs in the village area which dried up during the summer or only carried water during flood time. The Kuzitrin River above Mary's Igloo, they said, was very shallow and that even in a canoe or very light boat there were several places where you had to pull the boat over the shallow spots in the river.

Subsequently, the BLM cited past boat transportation to trail heads at Shelton and Brockways Bar to justify a determination of navigability to the latter place in T. 3 S.,

R. 29 W., Kateel River Meridian, above the village's selection. A Notice of Proposed Easement Recommendations dated January 9, 1980 and a final easement memorandum and a Decision for Interim Conveyance issued that September reflected this determination. 471/

The State selected T. 3 S., R. 29 W., Kateel River Meridian. On June 6, 1983 the BLM determined the Kuzitrin navigable through the rest of this township. The agency based this determination largely on the previously mentioned boat traffic up the Noxapaga River. 472/

Noxapaga River

In 1901 Arthur J. Collier and T. G. Gerdine of the USGS mapped the lower and western portion of the Noxapaga drainage. In late September they reached the settlement of Noxapaga from the northwest. Noxapaga was at the mouth of Turner Creek, which supported several mining operations. They then traveled to Lanes Landing on the Kuzitrin on a boat or scow as passengers of A. D. Nash. Nash had a regular freighting service between Marys Igloo and points along the Kuzitrin and Noxapaga, at least to Turner Creek. Collier later wrote that "extensive freighting is done with large flat-bottomed boats along the Kuzitrin and Noxapaga for about 100 miles." 473/

In the especially dry season of 1908 Fred F. Henshaw of the USGS took three measurements of the water available in the river above Goose Creek. On June 30 the discharge at the confluence with Goose was 126 feet per second; the figures were 67 and 71 feet per second on July 21 and September 8, respectively. 474/

Although the Alaska Road Commission's papers make no direct mention of travel on the Noxapaga, one telegram does display an appreciation of the possibility of boating on that river. In 1927 Ross J. Kinney wrote his superior on the Commission, D. H. Gillette, that boats could travel fifty-three miles above Shelton on the Kuzitrin and Noxapaga rivers. 475/

Kougarok River

The earliest prospectors and miners used boats on the Kougarok, though with considerable difficulty. In August 1900 the Nome Gold Digger rendered the following observations:

Louis Lane is interested in that section and is now packing in lumber with horses via the cut-off across the tundra from the mouth of the Kougrok [sic] to the mines, a distance of forty miles. The river is very shallow in many places and boating is attended with many difficulties, and mine owners find it much more expeditious to pack all heavy supplies overland. Very many prospectors who started out for the locality of the Kougrok [sic] gold fields got only as far as the mouth of the river and, learning of the difficulties they had to contend with, got 'cold feet' and returned, reporting the country 'no good.' . . . Those going up the river with small boats constantly meet with shallows where they have to don rubber boots and wade beside their boat, pulling it for considerable distances over the bars. Additional horses and mules are being sent up for packing in from the mouth of the river. 476/

A month later the Nome Daily Chronicle published a map of the Kougarok mining area which drew a trail from the mouth of the river to its North Fork via the divide between the Kougarok River and Garfield and Delome creeks. 477/ Presumably, Lane planned on using this trail.

Government geologists commented on transportation to the Kougarok mines in the middle of the first decade of the twentieth century. Alfred H. Brooks noted that miners took freight to Harris Creek, a tributary four or five miles up the North Fork, either overland from Lanes Landing on the Kuzitrin or "during high water, . . . up Kougarok River in small boats within a few miles of the camp." 478/ Arthur J. Collier stated that up to 1906 freighters towed flat-bottomed boats up the Kuzitrin and Kougarok to the mines. He added that since 1906 the Seward Peninsula Railway with its terminus at Lanes Landing and a trail from the railhead offered more direct transportation to the mines. 479/ Brooks also noted that by that time Davidson's Landing and a trail from it provided another relatively cheap means of access to the district. 480/ Neither Brooks nor Collier claimed explicitly that men no longer boated on the Kougarok. However, trail transport clearly dominated the region after, if not before, 1906. When the USGS's S. H. Cathcart addressed the question of transport into the upper Kougarok basin in 1918, he only mentioned travel via Davidson's Landing. 481/

From late June through early September 1908 the USGS took measurements of the daily water discharge of the Kougarok at its confluence with Coarse Gold Creek, a tributary flowing into the river a couple miles above the North Fork. This was a particularly dry year on the Seward Peninsula. On June 26 the discharge was 285 second-feet. The next day it dropped to 150. From then on it declined gradually to a low of only 13 for July 27 and July 28. It increased so that it averaged 32 for August, then rose into the 50s and 60s in early August until falling to 13 by August 12, the last day of the survey. 482/ A separate report included spotty observations of water flow on Taylor Creek, another Kougarok tributary, in 1907, which indicated that the frozen ground absorbed so little moisture that rains induced rapid fluctuation in water level. On July 24 the creek's flow rose from ten to 186 second-feet in two or three hours following a rain and within four days had fallen back to thirteen. 483/

The papers of the Alaska Road Commission hold a couple of pieces of correspondence relative to trails crossing the Kougarok. At least by 1920 the Road Commission furnished "a small boat on an endless rope" where the trail from Dahl Creek crossed the river on its way to Candle. 484/ This location is not well-defined, but probably was near Niagara Creek. In 1921 the Commission had a fifty- to one-hundred-foot suspension bridge over the river near the mouth of Coarse Gold Creek. 485/

Although it was outside Marys Igloo's conveyance area, BLM personnel gathered some information on the Kougarok while attending a village meeting in 1977. Roland Shanks of the agency recorded that several villagers stated that the river was not navigable. Muriel A. Tweet recounted that several years earlier some of her friends set out from Taylor to float the river, only to return the next day on foot. Low water and rocks destroyed their boat. 486/

The BLM had made navigability determinations for State lands encompassing much of the Kougarok drainage. In May 1982 the Fairbanks District Office submitted a report for the entire river and its tributaries upstream of the south township line of T. 1 S., R. 29 W., Kateel River Meridian. It determined the Kougarok and its tributaries to be nonnavigable in this area citing a lack of evidence of use and the water bodies' physical unsusceptibility to navigation. The State Director concurred on May 25, 1982. 487/ However, on June 6, 1983 the BLM determined that the Kougarok was navigable in T. 3 S., R. 29 W., Kateel River Meridian. The agency based this decision on Collier's statement that up to 1906 flat-bottomed boats ascended the Kougarok on their way to gold mines. 488/

Pilgrim River

The USGS recorded the earliest data relevant to the Pilgrim River. In 1900 Alfred H. Brooks led a Survey party of five men in two Peterborough canoes. On July 31 they portaged from the Niukluk River to an unspecified point on the Pilgrim. They then ascended Pilgrim River to Salmon Lake which they reached August 3. Later in August they descended the river to the Kuzitrin. 489/

In 1906 and 1908 the USGS gathered water flow data on the Pilgrim River just below its source in Salmon Lake. Miners were interested in these statistics for hydraulic mining purposes and to evaluate the lake's potential as a dam site for electrical power. In 1906 John P. Samuelson read the gauge by wading at low water. At higher stages he had to resort to "float measurements," because the depth and velocity of the river prevented him from reaching mid-stream. Samuelson found that the flow diminished from 3,270 second-feet to 1,220 between May 28 and June 7. The last eight days of June the average daily discharge was 383 second-feet. This jumped to 571 in July due to heavy rains after the first week, which raised the discharge to 2,130 on the 9th. The figure dropped to 259 in August and by mid September it was in the 170s. Then rains again upped the discharge over 1,400 second-feet. 490/ Two years later the basin was dramatically drier. The first day of measurements, June 21, registered 550 second-feet, the highest water flow recorded for the season. It dropped gradually to 92 by late July, averaged 288 in August, and dropped through September ending at 97. 491/

There is substantial evidence of boat travel below Pilgrim Springs for the years immediately following WWI. At that time Father Bellarmine Lafortune had converted this former resort into a mission and orphanage. By September 24, 1918 Lafortune's garden had produced enough vegetables to justify marketing them. He and a Native took a dory-full down the river to Teller. 492/ Apparently, the mission had a powerboat. In 1919 Sister Berchmans reported she reached the mission by way of a power launch from Nome to the mouth of Pilgrim River where Lafortune met her in a boat. Malfunctioning "motors" on the boat slowed their trip to the springs. 493/ The mission also may have used the river above the springs. Laurel L. Bland, in compiling information on historic sites in the Imuruk Basin, noted that in 1919 the mission bought lumber on Iron Creek and floated it downriver to the springs. The Arctic Environmental Information and Data Center navigability contract printout of notes from Bland's report did not indicate the source of this information. 494/ In 1919 a game warden also used a motor boat up at least as far as the mission. M. O. Solberg on August 15 hired a boat with an Evinrude engine and the next day traveled up to the springs. He spent the 17th and 18th at the springs and unspecified tributaries of the Pilgrim. 495/

The BLM examined the navigability of Pilgrim River in conjunction with both Native and State selections. When Roland Shanks of the agency attended a Marys Igloo meeting in March 1977, villagers told him that the river "was unnavigable even by light boats much above New Igloo" [Sec. 23, T. 4 S., R. 32 W., Kateel River Meridian]. Nevertheless, on January 9, 1980 the BLM issued a Notice of Proposed Easement Recommendations stating that barge traffic had ascended to Pilgrim Springs and possibly as far up as the old Seward Peninsula Railroad line in Sec. 24, T. 4 S., R. 30 W., Kateel River Meridian. Based upon this, the notice stated that the Pilgrim was navigable through the selection area, that is up through Sec. 32, T. 4 S., R. 30 W., Kateel River Meridian which is a few river miles above Pilgrim Springs. The BLM maintained this rationale and decision through a final easement statement and a Decision for Interim Conveyance, both dated in September 1980. 496/

The BLM has made several determinations of nonnavigability for the Pilgrim River in and above T. 5 S., R. 30 W., Kateel River Meridian. On May 2, 1980 the BLM's Fairbanks District Office prepared a report for State-selected land in Tps. 5-6 S., R. 29 W.,

Tps. 5-7 S., R. 30 W., Tps. 6-7 S., R. 31 W., Kateel River Meridian. It described the river as swift with numerous rocks and boulders and noted that prospectors formerly descended it in canoes and small boats to reach the Kougarok mines. It gave no source for this information. The District recommended the river be considered nonnavigable. Because the State Office differed with the District's stance that Salmon Lake was navigable, a decision on the last two townships was suspended. There is no record of the State Director signing off on the other five townships. In 1982 the BLM produced two reports, each recommending the Pilgrim River and Salmon Lake to be nonnavigable in one of the two suspended townships. On May 26, 1982 the State Director concurred in separate memorandums with the recommendations for both townships. Also five months later the Assistant to the State Director for Conveyance Management signed another memorandum declaring the Pilgrim and Salmon Lake nonnavigable in the same two townships. 497/

In March 1985 the BLM determined the Pilgrim River to be navigable in T. 4 S., R. 30 W., Kateel River Meridian. The agency based this determination upon past work connected with the Mary's Igloo selection and an earlier draft of this regional report and upon interviews conducted in February 1985 with Boyce Bush, a Fairbanks District Office realty specialist, and Fred DeCicco of Alaska's Department of Fish and Game. Bush reported that people regularly took twenty-foot boats with outboard motors between the highway in Sec. 24, T. 4 S., R. 30 W., Kateel River Meridian and Pilgrim Springs. He believed that such boating was possible throughout the open-water season. DeCicco had used a sixteen-foot boat with a jet unit on the segment of the river in the township above the highway bridge. He confirmed Bush's statement that boats of a variety of sizes used the river below the highway and added that they also went upriver. DeCicco indicated that the river's depth was one to twelve feet in the selection and believed that eighteen-to twenty-four-foot riverboats with outboard motors could travel throughout. 498/

Grand Central River

At the same time it examined the Pilgrim River below Salmon Lake, the USGS studied Grand Central River, the primary tributary of that lake. Based on measurements employees of the Wild Goose Mining and Trading Company obtained at the confluence of its North and West forks from July to September, 1906, the river's average velocity was 1.2 second-feet and it was two feet deep and fifty feet wide. The USGS report indicated that below Nugget Creek the river was still fifty feet wide, one to two feet deep and had a velocity of about two second-feet. In terms of daily discharge the averages below the forks was 144, 85.2, and 62.0 second-feet, respectively, for July, August, and September. 499/ In 1908 the figures for the same months were 62.7, 123, and 52.6. In that year the USGS took similar measurements for the West Fork at its mouth which indicated average daily discharges of 39.2, 69.8, and 30.2 second-feet for the same three summer months. 500/

The BLM addressed the navigability of Grand Central River in T. 7 S., R. 32 W., Kateel River Meridian in the course of conveying that township to the State. In a report dated May 1, 1982 the Fairbanks District Office recommended that the BLM find the water body nonnavigable because of its physical character and a lack of evidence of use. The State Director concurred with this recommendation on May 25. 501/

Iron Creek

The Alaska Road Commission maintained a tram line on the abandoned Seward Peninsula Railway trackage. By 1921 the bridge across Iron Creek just above its confluence with the Pilgrim River had collapsed and the ARC had replaced it with one or more "small scows or flat boats." 502/

COBBLESTONE RIVER

Laurel L. Bland, who composed a paper dealing with the historic sites of the Imuruk Basin in 1971 and 1972, made several observations about this river. The paper stated that the river was "broad and shallow with a sandy bottom . . . and sustains a good volume year round." It added that the river provided safe moorage, presumably for those traveling the southern shore of Imuruk Basin. Although Bland spoke with local Natives, the source of the information on Cobblestone River is not clear from the Arctic Environmental Information and Data Center computerized research note of this paper. 503/

BLUESTONE RIVER

During the 1900 rush to newly-found gold on the Bluestone River, miners used boats up the river as well as a trail from Teller and Bering, a now long-abandoned mining community five miles south of Teller, to reach the placers. The USGS's Alfred H. Brooks after touring Seward Peninsula gold mining regions in 1900 stated that, "Lumber is usually brought up the Bluestone by small boats, which in good water can reach the mouth of the canyon, and is thence transported by horses to the diggings." That same year the Nome News reported that, "Small boats" could ascend to within "three or four miles" of Gold Run. 504/

In 1905 Leigh H. French, a miner in the area in 1900, published an account of his experiences stating that small boats could travel up the Bluestone to within four miles of Gold Run. 505/ Gold Run and the Right Fork Bluestone converge to form the main river in an area just above what appears on USGS maps to be a canyon. Boat traffic, however, may have been short-lived. In 1906 the USGS reported that a wagon road provided access from Teller to Sullivan, the principal settlement on the Bluestone. It did not mention water transportation. 506/

In the process of conveying ANCSA land to Teller, the BLM addressed the navigability of Bluestone River and the need for easements along the river. Roland Shanks of BLM attended a meeting of villagers in March 1977. The villagers told him that the Bluestone was navigable by boat only at extreme high water and then not very far up from its mouth. During normal water levels they anticipated that it would be hard to get even a canoe or raft down the river. Shanks also prepared a staff easement report in which he commented unfavorably on a State Division of Lands streamside easement along the Bluestone. In 1976 he visited the stream's mouth and where the Nome-Teller road crossed it. He stated that the river was navigable to about a half mile above its mouth where "you hit a very shallow area." Shanks added that no area residents boated up the river; rather several villagers told him "that the route of the Bluestone River was a very good place to walk during the summer and that fish were found in several of the deep ponds because they are separated by sections of the river which were extremely shallow." Doubtless based heavily upon Shanks input, the easement task force on June 23, 1977 rejected the proposed streamside easement as unwarranted due to its lack of recreational importance and recommended that the Bluestone be considered nonnavigable. 507/

The BLM did not alter its stance on the easement through the rest of the conveyance process or its position on the Bluestone's navigability. Following the Kandik-Nation decision Sherman F. Berg in February 1980 prepared a brief review of BLM's navigability position concerning Teller-selected lands. He did not recommend any changes, nor did C. M. Brown also of the BLM's navigability section, who apparently added his comments to Berg's memo the same day as Berg prepared the memo. Brown, however, noted that in the early 1900s prospectors used small boats on the Bluestone to within four miles of

Gold Run. He maintained that this use was relatively rare and did not justify a finding of navigability. The BLM maintained its nonnavigability stance for the Bluestone on a final easement memorandum and a DIC issued in September 1980. In October the State disputed this determination, filing an appeal with the Alaska Native Claims Appeal Board. However, in January 1982 the BLM did not include the bed of the Bluestone in its Interim Conveyance to Teller of Tps. 3-4 S., R. 36 W., and T. 4 S., R. 37 W., Kateel River Meridian and the State dropped its appeal. 508/ Therefore, BLM records indicate that although the federal government determined the Bluestone nonnavigable, it did not convey it to the Native claimants.

TISUK RIVER

In 1907 the Alaska Road Commission indicated Tisuk River was a wide and deep stream. To facilitate travel along the coast the ARC installed a ferry across the river's mouth. 509/

In the course of conveying ANCSA lands to King Island the BLM considered the navigability of the Tisuk River and an easement on the river's bed. In 1977 the BLM's easement task force opposed the easement for lack of information concerning use of the river and on January 9, 1980 the BLM rejected it in a Notice of Proposed Easement Recommendations stating that it did not meet public easement regulations issued November 27, 1978. There was no further consideration of this easement.

Herbert Brownell, Jr., a realty specialist with the Arctic-Kobuk Resource area, attended a village easement meeting on February 16, 1977 at which he learned that navigation was doubtful more than a "short" distance above the Tisuk's mouth. He recorded on a BLM navigability information form that shallow-draft and flat-bottom boats could navigate only about six hundred yards of the river. A Notice of Proposed Easement Recommendations dated January 9, 1980 reiterated this information and added that because there was no evidence of "travel, trade and commerce" on the Tisuk, that the river was nonnavigable. The final easement statement and a DIC issued that September maintained the same position, though they stated that the river was tidally influenced to the east section line of Sec. 8, T. 7 S., R. 38 W., Kateel River Meridian. The State disputed the nonnavigable finding and on June 3, 1981 ANCSA ordered BLM to segregate the bed of the river from the conveyance so that undisputed lands might be conveyed. The BLM did so in Interim Conveyances it issued December 18, 1981 to the King Island and Bering Straits Native corporations. In 1983 the State dropped its appeal. 510/ Thus the record indicates the BLM did not convey the land under the Tisuk to its Native claimants, though the agency did find the river nonnavigable.

FEATHER RIVER

In the course of conveying ANCSA lands to King Island the BLM considered the navigability of the Feather River and an easement on the river's bed. In 1977 the BLM's easement task force opposed the easement for lack of information concerning use of the river and on January 9, 1980 BLM rejected it in a Notice of Proposed Easement Recommendations stating that it did not meet public easement regulations issued November 27, 1978. There was no further consideration of this easement.

Herbert Brownell, Jr., a realty specialist with the Arctic-Kobuk Resource area, attended a village easement meeting on February 16, 1977 at which he learned that navigation was doubtful more than a "short" distance above the mouth of Feather River. He recorded on a BLM navigability information form that shallow-draft and flat-bottom boats could navigate only about six hundred yards of the river. A Notice of Proposed Easement Recommendations dated January 9, 1980 reiterated this information and added that

because there was no evidence of "travel, trade and commerce" on the Feather, that the river was nonnavigable. The final easement statement and a DIC issued that September maintained the same position though they stated that the river was tidally influenced to the east section line of Sec. 8, T. 7 S., R. 38 W., Kateel River Meridian. The State disputed the nonnavigable finding and on June 3, 1981 ANCAB ordered BLM to segregate the bed of the river from the conveyance so that undisputed lands might be conveyed. The BLM did so in Interim Conveyances it issued December 18, 1981 to the King Island and Bering Straits Native corporations. In 1983 the State dropped its appeal. 511/ Therefore, the bed of the Feather River apparently was not conveyed to its Native claimants, although the BLM considered it nonnavigable.

SINUK RIVER

The U.S. Coast and Geodetic Survey commented on the Sinuk River over many years. In 1904 the agency noted there were shifting bars at the river's mouth, but that "there is generally water enough . . . to permit light draft river steamers to enter." 512/ The USC&GS indicated in 1926 and 1938 that steamers with four-foot drafts could enter the river; in 1954 the USC&GS modified the earlier statements, claiming water only sufficient for steamers with drafts of three feet. 513/

In 1906 the USGS took sporadic water measurements on the upper Sinuk River. Near its head at an elevation of 770 feet the Survey made five measurements between June 27 and August 10 which averaged a discharge of thirty second-feet per day. 514/

The Alaska Road Commission installed a ferry in 1910 at the mouth of Sinuk River to aid travel along the coastal trail from Nome to Teller. Here the river was 150 feet wide. In 1914 the ARC replaced the older ferry with a scow 3.5 x 10 x 28 feet. 515/ The Commission maintained a ferry system capable of taking wagons across the river at least until 1935. 516/

The BLM considered easements alongside the Sinuk River and the water body's navigability in the course of conveying T. 10 S., R. 38 W., Kateel River Meridian to the King Island Native Corporation and the Bering Straits Native Corporation. Herbert Brownell, Jr. of the agency's Arctic-Kobuk Resource Area, after attending a village meeting on February 16, 1977, reported that boating on the Sinuk "seems to have taken place at least five miles upstream from the mouth." On June 13 he filled out a "Physical Data" navigability form on the river stating that the river "is navigable for shallow draft and flat bottomed boats for only about 4 miles." Within two weeks BLM's easement staff convened and recommended that the Sinuk be considered nonnavigable and that an easement be placed on its bed and banks. The agency justified the easement noting that the stream was a "highly significant recreational river." However, BLM reversed its stance on the easement in a January 9, 1980 Notice of Proposed Easement Recommendations, indicating that it did not meet public easement regulations issued November 27, 1978. The final easement statement and the Decision for Interim Conveyance, both signed in September 1980, dropped this easement, determined the Sinuk nonnavigable, and stated that the river was tidally influenced to the north section line of Sec. 26, T. 10 S., R. 38 W., Kateel River Meridian. The State promptly protested the nonnavigability finding to ANCAB which in 1981 ordered BLM to segregate the river bottom from the selection so that the rest of the conveyance could proceed. This BLM did in a December 18, 1981 Interim Conveyance. In 1983 the BLM, State, and ANCAB agreed to drop the case. 517/ Thus the bed of the Sinuk appears not to have been conveyed despite BLM's nonnavigability finding.

The BLM has also addressed the Sinuk River above the King Island selection. In 1982 the agency determined the river nonnavigable in State-selected T. 7 S., R. 33 W., and T. 8 S., Rs. 34-35 W., Kateel River Meridian based on a lack of evidence of past use and physical unsusceptibility. 518/ The State Director also declared the river nonnavigable in T. 9 S., R. 36 W., Kateel River Meridian within the Nome village selection on the last day of 1981. However, the BLM's easement staff in 1977 had approved a streamside and streambed easement and a site easement at the Nome-Teller road crossing which included part of the riverbed, noting the Sinuk's popularity among fishermen and that floaters also used it. The BLM rejected these easements in May 1979 because of their recreational basis. 519/

CRIPPLE CREEK

The USGS's Frank C. Schrader, Alfred H. Brooks, and D. C. Witherspoon visited the newly-found gold district surrounding Nome in October 1899. One or more of these men traveled to and mapped the Cripple Creek drainage. Their subsequent report included it along with the Snake, Nome, Penny, Solomon, and Bonanza rivers as a water body with a "generally rather swift" current and up which "small boats" could proceed "8 to 10 miles" to the placer fields. 520/ They added that, "In the Nome region, along the coast, waterways, and streams of sufficient size, travel and transportation are principally by small boats and canoes. Across the country there are as yet but few definite and well-marked trails." 521/

The longest and most consistently documented boat use on Cripple Creek occurred at its mouth to transport those traveling the coastal Nome to Teller trail in the summer. In 1916 over one hundred residents of the Nome area petitioned the Alaska Road Commission for a bridge over the river at its mouth asserting that, "The miners have no way of getting their supplies across Cripple River [sic], and it does not only work a hardship on them, but it is extremely dangerous for anyone to cross the river without a foot bridge, during the open season." 522/ A. Polet, the chairman of the Nome-Seward Peninsula Chamber of Commerce's Board of Directors, soon after wrote backing a foot bridge over the river. He stated that there was no ferry there and that "the river is deep enough and swift enough to be impassable [sic] for foot travellers nearly all summer." 523/

At least by 1920 the Road Commission had installed a free ferry service composed of a boat on an endless cable where the trail met the river. An ARC district officer reported in 1921 that the cable was four hundred feet long. It was attached to a whale boat. 524/ In 1935 the Commission still maintained a rowboat at the crossing. That year 262 people took the boat across the river. 525/

The BLM has addressed the navigability of Cripple Creek in Tps. 9-11 S., R. 36 W. and most of its course in T. 9 S., R. 35 W., Kateel River Meridian while processing Nome's ANCSA conveyance. An undated navigability report stated that shallow-draft boats were used in the area and that tidal influence extended about a half mile upstream. At no stage in its work did BLM evidence any inclination to determine the creek navigable; the State Director on the last day of 1981 declared the river nonnavigable, but stated that tidal influence extended to the north section line of Sec. 12, T. 11 S., R. 36 W., Kateel River Meridian. 526/

PENNY RIVER

Frank C. Schrader, Alfred H. Brooks, and D. C. Witherspoon of the USGS visited the newly-found gold district surrounding Nome in October 1899. One or more of these men

traveled to and mapped the Penny River drainage. Their subsequent report included it along with the Snake, Nome, Solomon, and Bonanza rivers and Cripple Creek as a water body with a "generally rather swift" current and up which "small boats" could proceed "8 to 10 miles" to the placer fields. 527/ They added that, "In the Nome region, along the coast, waterways, and streams of sufficient size, travel and transportation are principally by small boats and canoes. Across the country there are as yet but few definite and well-marked trails." 528/

Boat travel may not have lasted long on the Penny River. The Alaska Road Commission's Wilds P. Richardson in 1905 traveled twelve miles up the river in a wagon following the bars and frequently crossed the stream. 529/ The Commission's report of 1907 stated that the first safe ford to cross the river was a quarter mile above the mouth. 530/

In the summer of 1907 the USGS studied the water supply available from the Penny River at the Sutton ditch intake, about a half mile above Willow Creek. Measured in second-feet the lowest daily discharge from July through September was 33 on August 15; the highest was 181 on July 7. The monthly averages for July, August, and September were 79, 59, and 71 second-feet, respectively. 531/

The U.S. Coast and Geodetic Survey made brief mentions of the river in its reports. Its 1926 and 1938 reports stated that, as with the Sinuk, Snake, and Nome rivers, there were shifting bars at the mouth of the Penny, but that there was sufficient water at the mouths of these rivers to permit steamers with four-foot drafts to enter. A 1954 report altered the previous statements by changing the maximum draft to three feet. 532/

Penny River below Sec. 10, T. 10 S., R. 35 W., Kateel River Meridian lies within lands selected by Nome under ANCSA. In an undated and unsigned report the BLM's Fairbanks District Office noted that people used shallow-draft boats in the area and that tidal influence probably extended only a quarter of a mile above the mouth. The BLM's records hold no evidence that the agency considered declaring the Penny navigable. On December 31, 1981 the State Director declared it nonnavigable. A Decision for Interim Conveyance dated September 30, 1982 reflected this decision. 533/

SNAKE RIVER

In October 1899 as the rush to Nome was just beginning, Frank C. Schrader, Alfred H. Brooks, and D. C. Witherspoon of the USGS came to the area. They found that the Snake River along with the Nome, Penny, Solomon, and Bonanza rivers and Cripple Creek had a "generally rather swift" current. "Small boats" could proceed "8 to 10 miles" up these streams to the placer fields. 534/ They added that, "In the Nome region, along the coast, waterways, and streams of sufficient size, travel and transportation are principally by small boats and canoes. Across the country there are as yet but few definite and well-marked trails". 535/

Many of the thousands of turn-of-the-century gold-rushers to Nome mentioned the Snake River. Some referred to limited upriver travel. Carl Rydell found at the beginning of the 1899 mining season that the river was navigable only for the smallest stern-wheel steamers. He did not indicate how far these types of vessels could ascend. 536/ Joseph Grinnell was at Nome in July and August 1899. On July 30 after mentioning a small steam launch, he noted that the river was not navigable "except after heavy rains." Two weeks later he wrote that, "several steamers have gotten over the bar and are in the mouth of Snake River." 537/ Another turn-of-the-century gold-rusher, Eugene McElwaine, claimed in his The Truth About Alaska that half of the river's thirty mile length was navigable by small boats. 538/ And Carl Lomen recalled decades later that

on June 24, 1900 he and two other men rowed from the river's mouth an unstated distance up to his camp consisting of several tents. 539/

The river at Nome was large enough to afford a small anchorage. John Hines recalled that in 1900 "small boats of all kinds were tied up there--rowboats, little steam tugs, catboats, barges, and a few Indian [sic] umiaks." 540/ A photograph in the purchase centennial picture collection showed two stern-wheelers and a barge on the river in the city. 541/ The U.S. Coast and Geodetic Survey noted that in 1900 there generally was enough water over the bars to allow light-draft steamers to enter the river. 542/ Two years later Edward J. Devine observed the dangers of storms on Nome's coast and noted that small vessels could take refuge in the river. 543/

The river also inhibited east-west travel along the coast. In 1899 E. G. McMicken paid a ferryman twenty-five cents to row him across the river at its mouth. 544/ Two others at Nome in 1900--Paul Becker 545/ and Irving Reed--also attested to the use of rowboats to cross the river. Reed later recalled that in its earliest times Nome "was really divided into two parts with a busy traffic in rowboats back and forth." 546/ The ferryman's business doubtless plummeted when W. E. Geiger built a bridge over the river in 1900. He charged men crossing it ten cents; women crossed for free. 547/

In 1916 J. C. Mahaffey's request to the Secretary of War for permission to build a bridge a half mile above the Snake's mouth generated more information about navigation of its lower stretch. A foot bridge spanned the river about a thousand feet above its mouth. 548/ Mahaffey wrote the Secretary of War that small coastal schooners and launches which met incoming steamers used the river up to the foot bridge. He stated that only rowboats and small launches went further up the river, though a gold dredge had worked above his proposed bridge and a storm in 1913 had washed up and wrecked a shallow-draft steamer near the dredge. 549/ The Alaska Road Commission's local engineer, Charles D. Jones, wrote that besides the stern-wheeler, the 1913 storm pushed two barges and three or four lighters above Mahaffey's bridge site; Jones stated that at high water the lighters could return to the lower river under the proposed bridge. He reported that "there has never been any navigation of the river at the proposed site with the exception of pleasure craft equipped with Evinrudes, or rowboats." Jones also described the Snake River's characteristics to a point a short way above Mahaffey's bridge site. He wrote that the river was thirty feet wide at its mouth with an average depth of six feet to its first bend. From this bend to the foot bridge it was almost ten feet deep. It quickly shoaled to three or four feet up to the second bend, and from the second bend to the proposed bridge it was only two to three feet deep. Above the bridge site the depth varied between two and four feet deep in a one-hundred-foot-wide channel. While at Mahaffey's crossing the normal depth was two feet, it reached eight to ten feet in southerly storms and six feet during June freshets. In the last instance the current could reach three miles per hour, but normally the current ran at two miles per hour. 550/

Most subsequent information regarding the lowest portion of Snake River referred to the improvement and dredging of a boat harbor to the joint mouths of Bourbon and Dry creeks. In 1917 Congress authorized two jetties at the river's mouth, revestments on the banks, and the dredging of a basin and a seventy-five-foot-wide, eight-foot-deep channel. The Corps of Engineers completed this work in 1923. 551/ A 1931 report stated that prior to this work a one-and-one-half-foot deep sandbar obstructed the river, except for its channel which was thirty feet wide and two or three feet deep. Inside the bar the river had been six feet deep and that "the head of navigation . . . was about 1/2 mile above its mouth." This report added that the tides reached about a half mile inland and that vessels sought the harbor both for shelter and to discharge freight. 552/

In the 1930s and 1950s the Corps of Engineers made repairs and further improvements to this harbor. 553/

The Alaska Road Commission had to deal with the difficulties the middle portion of the Snake River imposed on overland travel. In the early 1920s the ARC built and maintained an overhead trolley near Monument Creek and a suspension foot bridge of less than one hundred feet over the river near Boulder Creek. 554/ About a decade later freighter W. J. Rowe wrote to the Commission stating that the route along the Snake River required two river crossings. High water sometimes delayed his horse-drawn wagons and the crossings could risk lives and property. 555/

The BLM considered the Snake River's navigability in the course of conveying ANCSA lands to Nome. The entire length of the river, excluding numerous mining claims and other inholdings, fell within the selection area. The Fairbanks District Office in an undated and unsigned report noted that the mouth had been dredged and was used as a harbor and that tidal influence extended about two miles. An accompanying report on easements indicated that the Alaska Division of Lands and the Bureau of Mines proposed a streamside easement on that portion, estimated at fifteen miles, which the State considered navigable. The Fairbanks District Office supported this easement for the navigable part of the river, but stated that BLM's criteria might limit navigability to the lowest two miles. In May 1979 the BLM issued a Notice of Proposed Easement Recommendations which dropped the easement because of its recreational nature, stated that the river was nonnavigable, but added that it was tidally influenced to Anvil Creek. In the final easement statement the State Director set aside no bank easement, determined the river to be nonnavigable, and indicated that tidal influence rose to the southern boundary of Mineral Survey 1892 in Sec. 26, T. 11 S., R. 34 W., Kateel River Meridian. This position remained unaltered in a September 30, 1982 Decision for Interim Conveyance. 556/

NOME RIVER

The U.S. Geological Survey's Frank C. Schrader, Alfred H. Brooks, and D. C. Witherspoon visited the newly-found gold district surrounding Nome in October 1899. Their subsequent report included the Nome River along with the Snake, Penny, Solomon, and Bonanza rivers and Cripple Creek as a water body with a "generally rather swift" current and up which "small boats" could proceed "8 to 10 miles" to the placer fields. 557/ They added that such boats and canoes were the principal means of traveling in the Nome region because "there are as yet but few definite and well-marked trails." 558/

Joseph Grinnell recorded his experience boating to prospects he and his friends mined in 1899. Sometime between August 25 and September 3 they traveled to a leased claim on Buster Creek. Grinnell described the trip as follows: "It took two days towing up Nome River, which is really nothing more than a creek. There were bars to drag the boat over every hundred yards. That brought us to the mouth of Buster Creek." From there they packed all their lumber and other supplies three miles to their claim. Between September 17 and the 20th they boated down the river and over to Nome in five hours. 559/

The U.S. Coast and Geodetic Survey reported that in 1900 "light-draft river steamers" normally could get into the river. In its reports of 1926 and 1938 the agency stated that vessels with four-foot drafts could enter the river; by 1954 it reduced the draft figure to three feet. 560/

In 1906 the USGS measured the river near its headwaters a short distance above Deep Canyon Creek. At low water the river was thirty feet wide, one and one-half feet deep, with a mean velocity of one foot per second. The daily discharge averaged 51.4, 50.4, and 64.4 second-feet in July, August, and September, respectively. Similar data collected in 1907 indicated that the average discharge was 202, 72.2, 32.9, and 58.4 second feet in June, July, August, and September, respectively. 561/

In the 1920s the Alaska Road Commission maintained a ferry across the Nome River near the mouth of Osborne Creek. This replaced a Seward Peninsula Railway bridge. The ferry, which was free, consisted of a small scow or flatboat on a light wire cable. 562/

The Nome River below T. 8 S., R. 32 W., Kateel River Meridian lies within lands selected under ANCSA by Nome. The BLM examined the water body's navigability and numerous easements along it in the process of conveying the land. The Fairbanks District Office noted on an unsigned and undated form that local residents used the river for subsistence purposes, that shallow-draft boats were used in the area, and that the tides probably extended one and one-half miles inland. On June 22-23, 1977 the BLM's easement staff convened to discuss easements and navigability pertaining to the Nome selection. It suggested that the Nome River might be navigable to "the Dexter area," but admitted that more research was necessary. It also recommended a streambed and streamside easement for the river and site and trail easements to access the river. In doing so the staff stated that the river was "a highly significant recreational river being used for boating, sportfishing, and raft racing." Such use apparently extended up as far as the river end of Easement number 41. This trail easement left the Nome-Taylor road in Sec. 29, T. 9 S., R. 33 W., Kateel River Meridian and trended westerly a short distance to the river. The easement staff wrote that the trail was utilized by fishermen, boaters, and others using the river. However, when BLM issued its Notice of Proposed Easement Recommendations on May 3, 1979, it dropped all the easements stating that their recreational nature did not coincide with new regulations. At the same time it stated that the Nome River was nonnavigable but tidally influenced to the north section line of Sec. 35, T. 11 S., R. 33 W., Kateel River Meridian. The agency's position changed only in modifying the estimated extent of tidal influence to the point in Section 33 where the Nome-Council road crossed the river when it issued a final easement memorandum the last day of 1981. The BLM maintained this position through its September 1982 Decision to Issue Conveyance. 563/

The BLM again addressed the Nome River's navigability in conveying 3(e) land to Nome Natives. The approximately 274 acres involved were in Sec. 3, T. 12 S., R. 33 W., and Sec. 34, T. 11 S., R. 33 W., Kateel River Meridian. In a memorandum of September 7, 1983, the BLM determined the river nonnavigable for this selection. That November 30th, the State wrote BLM informing the agency that local residents in jet-powered, flat-bottomed riverboats "regularly" traveled on the river. This "primarily recreational" use extended, the State indicated, to Dexter, presumably referring to the mouth of Dexter Creek. A month later BLM responded, denying the State's request to alter the agency's nonnavigable decision for the Nome River. 564/

HASTINGS CREEK

The BLM considered the navigability of Hastings Creek in the course of conveying land to Nome Natives. Unsigned and undated forms in the agency's file stated that shallow-draft boats plied waters in the area, that local residents used the creek for subsistence fishing, and that tides probably affected the lowest half mile. The easement staff in June 1977 recommended a site easement, including a twenty-five-foot-wide

strip of the creek bed fronting the site, within a couple hundred yards of the mouth. The staff noted that, "The area along Hastings Creek has been used in the past as a public recreation site for swimming, picnicking, camping, boating, fishing, and other similar uses." The staff did not believe the creek to be navigable. The BLM dropped consideration of the easement in its Notice of Proposed Easement Recommendations dated May 3, 1979 because of its recreational nature. The State Director determined Hastings Creek nonnavigable on the last day of 1981 and the BLM issued a Decision for Interim Conveyance for the land on September 30, 1982. 565/

FLAMBEAU RIVER

Turn-of-the-century gold-rusher Eugene McElwaine wrote in his The Truth About Alaska that twenty miles of the thirty-five-mile long Flambeau River was navigable. However, the chronicles of prospecting the area were largely if not wholly silent on travel on the river. An Alaska Road Commission ferry did cross it below Eldorado River in the 1920s. Local ARC engineer Charles D. Jones described it as "the most important ferry operated by the Commission." Actually, the ARC only owned the cable; the Road Commission paid Charles Dahlquist a monthly salary to run his scow across the twelve-hundred-foot-wide river. 566/ Possibly historian Clarence L. Andrews referred to this ill-defined crossing as the point he met the Eskimo Ahwinina, probably in the 1920s. Ahwinina informed Andrews that the chief reindeer herder, Oscar Panik, had gone to Port Safety in a boat. It is not clear whether Panik had boated the Flambeau River. 567/

The BLM examined the Flambeau River below Sec. 25, T. 10 S., R. 32 W., Kateel River Meridian in the course of conveying ANCSA lands to Nome. In an undated and unsigned report the Fairbanks District Office noted that local residents had shallow-draft vessels and used the river for subsistence hunting and fishing. The BLM considered easements along the river, noting that "this highly significant area . . . is used for boating, camping, fishing, and general recreation." However, the agency eventually disregarded these proposed easements because of their recreational nature. The same Notice of Proposed Easement Recommendations which notified the public of this position also stated that the Flambeau was nonnavigable. Moreover, it stated that the Eldorado River, a tributary of the Flambeau, was tidally influenced through Sec. 16, T. 11 S., R. 31 W., Kateel River Meridian. The final easement statement estimated that tidal influence extended up the Flambeau to Sec. 19, T. 11 S., R. 31 W., Kateel River Meridian. The Decision to Issue Conveyance dated September 30, 1982 reflected this decision. 568/

The BLM also indirectly obtained information on the Flambeau in 1983 in the course of making a navigability decision on the Eldorado in State-selected T. 10 S., R. 31 W., Kateel River Meridian. According to Tommy Johnson, a thirty-year resident of the Nome area, jet boats could travel on the Eldorado and previously "some small boats were used on these rivers for fishing, but they had to be pulled for most of their trips by ropes." Presumably a part of these trips also took place on the Flambeau. 569/

Eldorado River

Eugene McElwaine, who was in the Nome area about 1900, wrote that the Eldorado River was forty miles long and that it was navigable for half of this distance. 570/ Clarence L. Andrews, who was on the Seward Peninsula in the 1920s, wrote that he and an Eskimo traveled by kayak from Port Safety across Safety Sound. They then kayaked ten miles farther "through the maze of lakes, lagoons, and marshes filled with rank grasses, to where El Dorado [sic] River flowed out of the hills." Andrews crossed the river and descended it six miles to a cabin from where he started the next morning for Nome. 571/

The BLM considered the Eldorado's navigability in both Native- and State-selected lands. Nome selected an area including the river in T. 11 S., R. 31 W., Kateel River Meridian. A Fairbanks District Office worker wrote on a Bureau navigability form that shallow-draft boats traveled in the area and that the Eldorado was important for both recreation and subsistence. The District's easement staff in June 1977 recommended that the river be considered nonnavigable and that a streamside and streambed easement and a site easement be placed on the Eldorado "to provide continued public, recreational and subsistence use of this highly significant river where fishing, waterfowl hunting, camping, and boating takes place." The Notice of Proposed Easement Recommendations issued in May 1979 dropped the easements because of their recreational nature and stated that the Eldorado was nonnavigable but tidally influenced through Sec. 16, T. 11 S., R. 31 W., Kateel River Meridian. The December 31, 1981 final easement statement did not alter the agency's stance on navigability or revive the easement proposals and only changed the tidal extent to the east boundary of Section 17. The DIC issued in September 1982 maintained this position. 572/

The BLM also determined the Eldorado nonnavigable in State-selected T. 10 S., R. 31 W., Kateel River Meridian. The State Office's Sherman F. Berg contacted the agency's Nome office. Tommy Johnson, who had been in the Nome area about thirty years, visited the Nome office while Berg was on the phone. From Johnson Berg learned that jet boats could travel on unspecified portions of the Eldorado and that in previous years people tracked small boats up the river to fish. The State Director determined the river nonnavigable in the township on May 17, 1983. 573/

BONANZA RIVER

The USGS's Frank C. Schrader, Alfred H. Brooks, and D. C. Witherspoon visited the newly-found gold district surrounding Nome in October 1899. One or more of these men traveled to and mapped the Bonanza River drainage. Their subsequent report included Bonanza River, along with the Snake, Nome, Penny, and Solomon rivers, as a water body with a "generally swift" current and up which "small boats" could proceed "eight to ten miles" to the placer fields. 574/ They added that "In the Nome region, along the coast, waterways, and streams of sufficient size, travel and transportation are principally by small boats and canoes. Across the country there are as yet but few definite and well-marked trails." 575/ Eugene McElwaine, another gold-rush era visitor, commented in his 1901 book that the Bonanza River was navigable for small boats for about its lowest twenty miles. 576/

Starting in 1906 the Alaska Road Commission assisted in the maintenance of ferry service across the river near its mouth. The 1907 Road Commission report stated that the river was not fordable, but that in 1906 the agency had not considered traffic to be sufficient to make ferry service self-supporting. Therefore, the ARC guaranteed the wages of the ferryman. The ferry was able to carry horses and wagons; it transported twenty-two of the latter in August and September 1906. In 1907 the agency determined that the ferry could be self-sustaining and discontinued subsidization. 577/ In 1919 Harry Ewert served as ferryman using a small gasoline launch. 578/ The following year Henry Nokarok ran the ARC's new ferry on an ARC salary. The crossing was 250 feet and the ferry could accommodate wagons. 579/ The Road Commission placed a new ferry at this crossing. 580/ In 1935 it had a hand-powered "cable scow" capable of carrying a ten-ton load. In that year it carried 635 people, 249 automobiles and tractors, 40 tons of freight, and a scattering of wagons, sleds, horses, and dogs. 581/

In the 1970s the village of Solomon and the State selected lands including much of the Bonanza River. In August 1980 the Fairbanks District Office reported that it was a narrow river, broad and deep at its mouth, tidally affected through T. 11 S., R. 29 W., Kateel River Meridian, but nonnavigable. The State Director concurred in this recommendation on March 9, 1981. On May 1, 1982 the District Office submitted a report stating that the Bonanza River was nonnavigable in T. 8 S., R. 30 W., Kateel River Meridian, noting its physical unsusceptibility and lack of evidence of use. The State Director concurred with this position on May 25th. Finally, the BLM examined the Bonanza River in Tps. 10-11 S., R. 30 W., Kateel River Meridian for a State selection. In May 1983 the Navigability Section's Sherman F. Berg spoke to Tommy Johnson, a three-decade resident of the Nome area, concerning boating on the river. Johnson told Berg that jet boats could ascend the Bonanza an unstated distance and that "some small boats were used . . . for fishing, but they had to be pulled for most of their trips by ropes." On May 17 the BLM determined the river nonnavigable in the two townships. 582/

SOLOMON RIVER

The USGS's Frank C. Schrader, Alfred H. Brooks, and D. C. Witherspoon visited the newly-found gold district surrounding Nome in October 1899. One or more of these men traveled to and mapped the Solomon River. Their subsequent report included it, along with other area water bodies, as a river with a "generally swift" current. The report indicated that "small boats" could proceed "eight to ten miles" to the placer fields 583/ and added that in general people traveled by small boats and canoes in the Nome region because "there are as yet but few definite and well-marked trails." 584/

In the first decade of this century there were numerous published references to travel on the Solomon River. Eugene McElwaine, a gold rush era visitor, commented in his 1901 book that the Solomon River's width varied from ten to one hundred yards and was navigable for about fifteen miles from the coast. 585/ About the same time Arthur Walden, traveling in a boat from Golovin to Nome, found shelter from a storm by boating up the river. 586/ The U.S. Coast and Geodetic Survey noted in 1926 that in 1902 a bar at the entrance of the Solomon carried three feet of water. 587/ L. S. Quackenbush on a paleontological survey in August 1907 made a short ascent of the river. 588/ The following year Thomas A. "Tex" Rickard made a horseback trip along the Solomon River to his mining operations near Council. Along the way he and his party forded the river seventeen times. 589/ Finally, in 1908 the USGS gathered approximate discharge data for the Solomon River below the East Fork. From July 1 through September 18 the highest discharge was 626 second-feet on August 5 and the lowest was 40 on July 27; the daily averages for July, August and the first eighteen days of September were 96, 150, and 96 second-feet, respectively. 590/

The BLM addressed the navigability of all but the uppermost three miles of Solomon River in a report drafted in August 1980 for State- and Native-selected land in Tps. 10-11 S., R. 29 W., and Tps. 9-10 S., R. 28 W., Kateel River Meridian. The Fairbanks District Office reported that the river channel was narrow with a gravel bottom and that the tides extended to the settlement of Solomon. The District Office recommended the Solomon be determined nonnavigable. The State Director concurred in March 1981. 591/ Four years later the BLM determined the headwaters of the Solomon in T. 8 S., R. 28 W., Kateel River Meridian to be nonnavigable because its gradient of fifty to two hundred feet per mile made it unsusceptible of commercial navigation. 592/

FISH RIVER

Natives traditionally traveled on the Fish River for subsistence and probably to travel to the Kuzitrin drainage. For his 1983 study of historic sites in the Norton Sound area, Fish River Natives told anthropologist William Sheppard that they traditionally hunted caribou on Kuzitrin Lake in the late summer. Sheppard does not explicitly state how the Natives got to the lake but noted a skin boat storage site at a fork (T. 3 S., R. 23 W., Kateel River Meridian) far up Boston Creek, a Fish River tributary. Sheppard's research also revealed a fish site at the mouth of Etchepuk River as well as similar sites below that point. 593/

There were conflicting reports of an inland water route utilizing the Fish and Kuzitrin river systems. Dorothy Jean Ray in The Eskimos of Bering Strait recorded that in 1821 Russian explorer Vasilii S. Khromchenko sailed into Golovnin Bay where he communicated with local Natives. They told him that a five-day boat trip up the Fish River could bring them to Shishmaref Inlet. Khromchenko corrected this information in an 1824 publication, indicating that the western terminus of this route was gained via the Kuzitrin. The account of a Native named Tungan at Golovnin Bay in August 1822 probably helped Khromchenko correct the confusion of Shishmaref Inlet and Imuruk Basin. Tungan told Khromchenko that he returned to Golovnin Bay from King Island through a pass between the Kuzitrin and the Fish's tributary, the Niukluk River. Two other Natives had recently reached the bay by the same route. Ray hypothesized that the portage was between the headwaters of Belt Creek and the Niukluk River. Daniel B. Libby, an American in charge of the Western Union telegraph line construction in the area in 1867, wrote that the Fish and Niukluk were "navigable for skin canoes alone." 594/

Two Americans, however, disputed the use of the route. William H. Ennis explored the region in the winter of 1865-66 as part of Western Union's efforts to construct a telegraph from Europe to North America via Siberia. He was interested in the suitability of the Kuzitrin and Niukluk for transporting supplies, including telegraph poles along the proposed line. In December 1865 he wrote his superior that, "All seem to think, that the rivers from Golovine [sic] Sound to Grantley Harbor, are not navigable, even for skin boats, and this seems to me to be true; for, were those streams navigable, the Indians would not take the route along the coast, when trading to Port Clarence, when the river traveling is so much shorter." 595/ Ennis later wrote that it was impossible to raft logs up the Fish and Niukluk because of "the strong current of these rivers." However, he did feel that logs could be rafted up from Grantley Harbor to a portage. Here oxen could transport them through a long barren portage to the Niukluk. Walter C. Mendenhall, who reconnoitered the Norton Bay area in 1900 for the USGS, also was skeptical of the Kuzitrin-Niukluk-Fish rivers route. He wrote that, "the all-water summer route which appeared so long on maps of the region does not exist, and the portage of 9 miles is such a barrier to summer travel that during this season the trip is much more easily made by boat through Norton Sound and Bering Sea." 596/

In 1880 whites for the first time examined the Fish River above the Niukluk. William P. Gallagher, a whaling schooner captain, convinced Natives to take him to one of their summer fish camps. Presumably, they traveled by umiak or kayak. The Natives showed him ore on a hill near their fish camp, which proved rich in silver. They had revealed the Omilak deposit. The following year Gallagher and others returned to the area and by August 11 they were transporting ore in Native skin boats down to their ship in Golovnin Bay. The mine reportedly produced 55 tons in 1883, 125 tons in 1885, and 30 tons the following year. 597/ The Revenue ship Corwin visited Golovnin Bay in 1885 where

Captain Michael A. Healy met a mine employee named Mackey. Healy recorded that the mine was only thirty miles upriver, but that "the shallowness of the water makes it a matter of no little difficulty to convey the ore from the mine." 598/ Miners probably continued to transport their production by Native boats with Native help. With additional financial resources, the miners in the early 1890s intended on constructing a forty-five-mile-long tramway from the mine to the bay and sent a stern-wheeler with a fifty-ton capacity for transportation up the river. But they later reported that they had ascended the river in umiaks instead. The mine worked a few years in the twentieth century. The river again provided transportation, but the precise mode is uncertain. 599/

Carl Rydell was among the first gold-rush era prospectors on the Fish River. He traveled up to Council City on the Niukluk River in the middle of July 1898 on a small river steamer, the Independence. Rydell later recounted that the Independence was the only vessel besides the Natives' umiaks on the river. Rydell skippered the boat between the coast and Council until late August or early September, bringing up his partners' supplies and carrying others for a fee. He marked the river channel to make navigation easier. Steamboating on the Fish ended for that year when Rydell found the rapidly falling river prevented continued use. He put it in winter quarters near White Mountain and with his shipmates brought the supplies from the stranded Independence nearly to Council with umiaks by poling or tracking with dogs. The following summer Rydell again transported passengers up and down the river on the Independence. 600/

In 1900 two USGS exploration parties ascended the Fish River. Alfred H. Brooks led seven men up the river in three Peterborough canoes in late June and July. They traveled up the Niukluk; five portaged into the Pilgrim River drainage while three canoed back down the Fish to the coast. 601/

Walter Mendenhall and four others started canoeing upriver about the same time as Brooks' group. It took them two days to ascend from White Mountain to the Niukluk. They continued up the Fish, mapping as they went. By July 14 they reached the mouth of Omilak Creek. Mendenhall and one assistant took a light canoe up this stream ten or eleven miles "to the point where the company operating at Omalik [sic] Mountain had landed wagons and outfits for development and test work nearly twenty years ago." On the 17th they returned to the river and continued upstream. Mendenhall stated that he overtook the rest of the party "several miles up the river" about noon on the 18th. There may have been some confusion on Mendenhall's part on this point. On a map accompanying his report, he marked a July 17 camp (presumably that of his subordinates who preceded him upriver) at what almost certainly is Lava Creek. Lava Creek is over twelve miles above Omilak Creek. Furthermore, Mendenhall wrote elsewhere in the report that the July 17 camp was thirteen miles above Omilak Creek. He stated that this point was the "head of loaded-canoe navigation." At any rate a severe rain and wind storm beset them on the afternoon of the 18th and the following day. The higher water which followed the rain allowed them "to advance about 5 miles more" with two canoes and only three or four days' provisions. Their July 20 camp, marked a mile below Wagon Wheel Creek, may have been the end of their canoe journey. They hiked about the mountains for a couple days. On the 23rd they began their descent of the Fish, arriving at Golovnin Bay at noon July 27. 602/

Brooks and, to a lesser extent, Mendenhall were "exploring" in the midst of scores of busy prospectors. Mendenhall wrote that, "the lower course of Fish River was one of the highways into the interior during the past summer, and as far as the mouth of the Niukluk prospecting parties were met daily." 603/ The gold-seekers worked upstream "with any kind of craft that would carry supplies or was capable of being propelled by

tracking or sailing or the use of dog teams." Most of these men did not ascend the Fish River above the Niukluk. The "few prospectors" 604/ Mendenhall observed above that tributary concentrated their activity in the vicinity of Slate Creek. 605/

Brooks noted that "White Mountain is usually considered the head of steamboat navigation, though at high water small steamers have ascended the Niukluk as far as the mouth of Melsing Creek. From White Mountain transportation is usually by small boats, which are towed up the river. During low water even rowboats find difficulty in crossing the river bars." 606/

In September 1900 one prospector recently into Nome after a trip from Council stated he had encountered "at least 100 men going up the river with their outfits." 607/ Frances Ella Fitz was a member of the Rowe Mining Company which she accompanied on a prospecting trip up the Fish Valley in 1900. They sailed two small boats from Nome to and up the Fish River to the mouth of the Fox River. There they prospected and wintered, returning downriver in the spring on Rydell's Independence. 608/

Lanier McKee described the miners' boating experience on the Fish in greater detail. White Mountain, where the Wild Goose mining company had a warehouse, was "the head of navigation for the several small, light-draft stern-wheelers which occasionally make the trip in the interest of the larger mine-owners." Sometimes these steamers towed smaller boats behind them. The Arctic Bird towed McKee's Mush-on to White Mountain in 1900. McKee described the river as clear, swift, and shallow averaging less than two feet deep, with a gravel bottom. The Arctic Bird grounded many times. On July 17 McKee and his three partners proceeded above White Mountain in the shallow-draft, twenty-two-foot-long Mush-on with only half their supplies. They contracted with someone else to bring up the rest. Three men pulled the boat with a rope while the fourth alternately rowed or jumped into the stream to guide the boat. Some men with more poorly constructed boats had to unload them in order to get through riffles. In September McKee traveled downriver from Council. He and his friends took the wrong fork in the delta and only got to Golovnin Bay by all hands getting out and pulling the boat, which then drew "practically no water." McKee returned to Council the next year. The steamer North Star took him to White Mountain. Freighter "Ed" Trundy carried one and one-half tons of McKee's supplies the rest of the way to Council for three cents per pound. McKee noted that the best adapted boat between White Mountain and Council was a long, shallow scow pulled upstream by a horse; the horse would ride as freight on the downstream trip. 609/

Horse-drawn boats became the primary means of bringing supplies from White Mountain to Council in the first years of the twentieth century. The U.S. Geological Survey's Chester Purington wrote in 1905 that a strong horse could pull a flatboat with a five-ton load "during favorable conditions of water" from White Mountain to Council and on up the Niukluk and Casadepaga rivers. 610/ In the same year Wilds P. Richardson of the Alaska Road Commission traveled up the Fish River. A small river steamer took him to White Mountain. From there he went up to Council in a horse-drawn boat whose operation he described as follows: "The horse draws the boat, about 5-ton scow, wherever footing can be found along the bank, or the stream is not too deep for him to wade. When the situation is too much for him he is taken aboard the boat and the boat 'poled' to where he can take up his work again." 611/ In 1908 the USGS published another report which stated that "small power boats" could navigate to Council but that "the usual method of freighting supplies is by steamer to White Mountain, at the head of tide water, and thence by flatboat." 612/

As Council's population fell after the gold rush to Ophir, Melsing, and nearby creeks ended, so too did boat travel on the Fish River. However, horses continued to drag boats upstream in the 1920s. On August 1, 1925 John and Hazel Berto traveled with six others from Golovnin Bay to White Mountain in a launch which struggled to enter the river. Their Native boatman said "The river . . . is very shallow sometimes. We have hard time, many times. Maybe we have to get out and walk along the bank part way." When asked how barges and scows went upstream, the Native replied, "They bring horses on the barge. When the shallow water comes, horses get off the barge and from the bank pull the barge over the riffles. Then horses get back on the barge." At White Mountain that summer Hazel Berto noticed "almost no traffic upriver". When the river broke the following spring some Natives quickly used the opportunity to kayak to the coast to hunt seals. The Bertos traveled to the delta's mudflats by motorboat and later took a horse-drawn scow on a two-day journey to Council. 613/

At least one commercial freighter continued to ascend the Fish and Niukluk rivers to Council into the 1940s. In 1941 L. E. Ost freighted supplies for the Alaska Placers mining operations. This use was pertinent to the Federal government's stance that the Niukluk was navigable to about 1,500 feet above Council, according to A. B. Shallit in a 1941 letter to B. D. Stewart, Alaska's Commissioner of Mines. However, Shallit observed that Ost contemplated abandoning river freighting "in a year or less." 614/ A Corps of Engineers report the following year noted that shallow-draft boats lightered supplies from Golovnin Bay to Council, 615/ and a White Mountain resident noted in February 1945 that his village depended heavily on river freighting for its supplies. 616/

The Natives of White Mountain received Interim Conveyance to lands encompassing portions of the Fish River in 1980 and 1982. Throughout the conveyance process the BLM demonstrated little question that the river was navigable. In November 1978 its easement staff recommended the Fish be considered navigable. The State Director issued nearly a year later, a final easement memorandum determining the river navigable on the basis its history of commercial freighting to White Mountain and Council and use by subsistence and sport fishermen and hunters. Thus, on February 15, 1980 the BLM granted interim conveyance to the village excluding portions of the Fish up through Sec. 24, T. 8 S., R. 24 W., Kateel River Meridian. 617/

That October the BLM issued a Notice of Proposed Easements Recommendations for portions of T. 7 S., R. 22 W., and Tps. 7-8 S., R. 23 W., Kateel River Meridian which justified a finding that the river was navigable in the selection area by noting subsistence and sport boating in conjunction with hunting and fishing. Both Alaska's Department of Natural Resources and its Department of Fish and Game informed the BLM that the Fish received heavy use through the conveyance area. The Arctic-Kobuk Resource Area Manager in late 1981 also stated that Nels Swanberg reached his Aggie Creek mining claims by boat from Council. Aggie Creek meets the Fish just above the village's selection. On February 9, 1982 the State Director determined the Fish River navigable in the conveyance area which included Sec. 6, T. 7 S., R. 22 W., Kateel River Meridian. The BLM issued an Interim Conveyance for this land excluding the riverbed that May. 618/

Boston Creek

For his 1983 study of historic sites in the Norton Sound area, Fish River Natives told anthropologist William Sheppard that they traditionally hunted caribou on Kuzitrin Lake in the late summer. Sheppard did not explicitly state how the Natives got to the lake but noted a skin boat storage site at a fork (T. 3 S., R. 23 W., Kateel River Meridian) far up Boston Creek. 619/

Omilak Creek

In the 1880s miners transported several hundred tons of silver ore from a mine near this creek. They used Native skin boats on Fish River for this purpose at least into the early 1890s. 620/ The USGS's Walter C. Mendenhall indicated that miners probably shipped ore and supplies on Omilak Creek by boat. By July 14, 1900 Mendenhall's exploration party had canoed up the Fish River to the mouth of the creek. Mendenhall and one assistant took a light canoe up Omilak Creek ten or eleven miles "to the point where the company operating at Omalik [sic] Mountain had landed wagons and outfits for development and test work nearly twenty years ago." He noted wagons and carts and a track leading from the landing to the mine headquarters. 621/

Niukluk River

Natives traditionally traveled on the Niukluk River for subsistence and to travel to the Kuzitrin drainage. For his 1983 study of historic sites in the Norton Sound area, Fish River basin Natives told anthropologist William Sheppard that they had traditional summer fishing sites near the mouths of Melsing and Ophir creeks. Sheppard did not state how they traveled to these sites, but they probably used skin kayaks or umiaks. 622/

There were conflicting reports of an inland water route utilizing the Fish and Kuzitrin river systems. Dorothy Jean Ray in The Eskimos of Bering Strait recorded that in 1821 Russian explorer Vasilii S. Khromchenko sailed into Golovnin Bay where he communicated with local Natives. They told him that a five-day boat trip up the Fish River could bring them to Shishmaref Inlet. Kromchenko corrected this information in an 1824 publication, indicating that the western terminus of this route was gained via the Kuzitrin. The account of a Native named Tungan at Golovnin Bay in August 1822 probably helped Khromchenko correct the confusion of Shishmaref Inlet and Imuruk Basin. Tungan told Khromchenko that he returned to Golovnin Bay from King Island through a pass between the Kuzitrin and Niukluk rivers. Two other Natives had recently reached the bay by the same route. Ray hypothesized that the portage was between the headwaters of Beit Creek and the Niukluk River. Daniel B. Libby, an American in charge of the Western Union telegraph line construction in the area in 1867, wrote that the Fish and Niukluk were "navigable for skin canoes alone." 623/

Two Americans, however, disputed the use of the route. William H. Ennis explored the region in the winter of 1865-66 as part of Western Union's efforts to construct a telegraph from Europe to North America via Siberia. He was interested in the suitability of the Kuzitrin and Niukluk for transporting supplies, including telegraph poles along the proposed line. In December 1865 he wrote his superior that, "All seem to think, that the rivers from Golovine [sic] Sound to Grantley Harbor, are not navigable, even for skin boats, and this seems to me to be true; for, were those streams navigable, the Indians would not take the route along the coast, when trading to Port Clarence, when the river traveling is so much shorter." 624/ Ennis later wrote that it was impossible to raft logs up the Fish and Niukluk because of "the strong current of these rivers." However, he did feel that logs could be rafted up from Grantley Harbor to a portage. Here oxen could transport them through a long barren portage to the Niukluk. Walter C. Mendenhall, who reconnoitered the Norton Bay area in 1900 for the USGS, also was skeptical of the Kuzitrin-Niukluk-Fish rivers route. He wrote that, "the all-water summer route which appeared so long on maps of the region does not exist, and the portage of 9 miles is such a barrier to summer travel that during this season the trip is much more easily made by boat through Norton Sound and Bering Sea." 625/

Carl Rydell was among the first gold-rush era prospectors on the Niukluk River. He traveled to Council City in the middle of July 1898 on a small river steamer, the Independence. Rydell later recounted that the Independence was the only vessel besides the Natives' umiaks on the river and that Council was as far upstream his steamboat could go. Rydell skippered the boat between the coast and Council until late August or early September bringing other stampeders to the Niukluk gold fields as well as bringing up his partners' supplies. He marked the channel making navigation easier. Rydell ceased steamboating in 1898 when he found the rapidly falling river prevented continued use. He put the Independence into winter quarters near White Mountain and with his shipmates brought the supplies from the stranded Independence nearly to Council with umiaks by poling or tracking with dogs. The following summer Rydell again transported passengers up and down the river on the Independence. 626/

In 1900 the USGS's Alfred H. Brooks led seven others up the Fish and Niukluk rivers in three Peterborough canoes in late June and July. They all paddled to the mouth of the Casadepaga River; five continued up the Niukluk and portaged into the Pilgrim River drainage, while three ascended the Casadepaga before canoeing back down the Fish to the Coast. 627/

The USGS was "exploring" in the midst of scores of busy prospectors and miners. One prospector recently returned to Nome in September 1900 stated that he had encountered "at least 100 men going up the river with their outfits." 628/ Walter C. Mendenhall, who led a Survey party up the Fish River above the Niukluk at the same time as Brooks' journey, noted that the great majority of men who used "the lower course of Fish River [as] one of the highways into the interior" headed up the Niukluk. 629/ They worked upstream "with any kind of craft that would carry supplies or was capable of being propelled by tracking or sailing or the use of dog teams." 630/

Brooks observed that, "White Mountain is usually considered the head of steamboat navigation, though at high water small steamers have ascended the Niukluk as far as the mouth of Melsing Creek. From White Mountain transportation is usually by small boats, which are towed up the river. During low water even rowboats find difficulty in crossing the river bars. 631/

A number of gold-rushers recorded their remembrances of boating on the Niukluk River. Lanier McKee boated up the Fish and Niukluk reaching Council on July 19, 1900. He described the Niukluk as "a tributary nearly as large as the main stream." The Niukluk "in places was broad and shallow, or broken up into a number of streams by alternate gravel bars, or occasionally the stream broke, forming an island." McKee wrote that a narrow, shallow-draft boat was essential to move freight up the river. He made a twenty-two-foot boat christened Mush-on for his journey. On the Fish, and possibly the Niukluk River, he and his partners powered the boat primarily by towline. But near Council "the tow-line was practically abandoned, and it was a case of hauling and shoving the boat with hands and shoulders, one of us frequently going on in advance to discover a route which would afford the necessary passage, or to kick out a channel through the stones and gravel." In all it took them twenty-three hours actual travel time to go from White Mountain to Council. McKee described the Niukluk at Council as about one hundred yards wide. In early September, though, a heavy rainstorm set in, turning the Niukluk into "a young Mississippi." The river bar was completely covered, enabling a wind-powered freighter to sail up to Council. On September 9, McKee and others departed on an uneventful trip on the Niukluk for the coast. 632/

Frances Ella Fitz prospected on the Fox River, a Fish River tributary below the Niukluk, in 1900 and occupied a cabin in Council the next year. She later wrote that flat-bottomed boats hauled winter supplies up to Council. The shipping cost by coastal freighter and flatboat from Nome was one hundred dollars a ton. Fitz recalled that one entrepreneur shipped two tons of beans up the Niukluk in horse-drawn boats. 633/

Others also addressed traffic on the Niukluk. Missionary Edward J. Devine made trips to Council between 1902 and 1904. He wrote that uprooted trees in the Niukluk and Fish rivers caused dams and rapids and that two to three miles per hour was the average upriver freighting time on these rivers. While at Council he observed Natives taking kayaks and umiaks downstream. 634/ J. S. McClain, who accompanied a Senate subcommittee examination of Alaska, noted that boats took "considerable quantities of machinery" to Council. 635/ The next year Klondy Dufresne with her parents traveled in a scow down from Council to the sea. She recalled in reminiscences published in 1958 that the scow had a plank deck just large enough to carry their "tow horse." 636/

Horse-drawn boats became the primary means of bringing supplies from White Mountain to Council. The USGS's Chester Purington wrote in 1905 that a strong horse could pull a flatboat with a five-ton load "during favorable conditions of water" from White Mountain to Council and on up the Niukluk and Casadepaga Rivers. He added that horse boats up to Council formed part of a transportation route which allowed larger mining companies to deliver supplies to mines near Council at only two cents above San Francisco prices. 637/ In the same year Wilds P. Richardson of the Alaska Road Commission traveled to Council from White Mountain in a horse-drawn boat whose operation he described as follows: "The horse draws the boat, about 5-ton scow, wherever footing can be found along the bank, or the stream is not too deep for him to wade. When the situation is too much for him he is taken aboard the boat and the boat 'poled' to where he can take up his work again." 638/

In 1908 the USGS published another report which stated that "small power boats" could navigate to Council, but that "the usual method of freighting supplies is by steamer to White Mountain, at the head of tide water, and thence by flatboat." The same report stated the flatboat provided the primary means of bringing supplies to the mouth of Goldbottom Creek, ten miles above Council. 639/

As Council's population fell after the gold rush to Ophir, Melsing, and nearby creeks waned, so too did boat travel on the Niukluk River. Yet boats continued to ascend the river. The USGS reported in 1918 that boats brought supplies from Golovnin to Council for thirty-five dollars a ton. John and Hazel Berto traveled from White Mountain to Council in that way in 1926. 640/ For some, if not all, of the period from 1920 to 1935 the Alaska Road Commission provided for a boat to ferry mail, dogs, and people from Council to a stage line to Nome with a terminus on the south side of the Niukluk. 641/

At least one commercial freighter continued to ascend the Fish and Niukluk rivers to Council into the 1940s. L. E. Ost freighted supplies for the Alaska Placers mining operations in 1941. This use was pertinent to the Federal government's stance that the Niukluk was navigable to about 1,500 feet above Council, according to A. B. Shallit in a 1941 letter to B. D. Stewart, Alaska's Commissioner of Mines. However, Shallit observed that Ost contemplated abandoning river freighting "in a year or less". 642/ A Corps of Engineers report the following year noted that shallow-draft boats lightered supplies from Golovnin Bay to Council. 643/