RESEARCH PROJECT SEGMENT

State: Alaska

Name: Sport Fish Investigations of Alaska

Project No.: F-9-7

Study No.: G-I

Study Title: INVENTORY AND CATALOGING

Job No.: G-I-J

Job Title: Inventory and Cataloging of the Sport Fish and Sport Fish Waters of Interior Alaska - Tok District.

Period Covered: July 1, 1974 to June 30, 1975.

ABSTRACT

The results of several years of inventory and cataloging surveys on waters in the upper Tanana River valley above the confluence with the Tok River are presented.

Specific information is presented on ten lakes and six streams along the Alaska Highway, and nine remote area lakes.

Survey data includes physical, chemical, biological features when available. Access status, angler usage, and recommended future management programs are also discussed.

RECOMMENDATIONS

1. To complete inventory and catalog surveys on lakes and streams in the Tanana River drainage between the Tok and Little Delta rivers.

2. To complete inventory and catalog surveys on remote area lakes and streams in the Tanana River drainage above the Tok River.

3. To conduct initial inventory and catalog surveys of waters in the Fortymile River drainage.

4. To monitor fish population characteristics and angler harvest in the above waters.

OBJECTIVES

1. To monitor the population structure and stocking success of managed lakes in the Tok District.

2. To determine fish species present, recreation and fish potential of lakes and streams between Tok and the Alaskan border.

3. To determine fish species present, recreation and fishing potential of remote lakes and streams in the Tok District.

4. To determine the environmental characteristics of existing and potential sport fishing waters of the job area and obtain estimates of angler effort and sport harvest.

5. To conduct pre-rehabilitation studies on potential lakes in the Tok district.

6. To assist as required in the determination of public access status to sport fishing waters and recommend public fishing access sites.

TECHNIQUES USED

Graduated mesh monofilament gill nets 125' x 6' made from five panels with mesh sizes varying from 1/2" to 2 1/2" bar measure were used to sample the fish populations in lakes. The nets were usually set in pairs and for a time period as close to 24 hours as possible. Hook and line or visual observations were used to supplement the net returns.

All fish captured were measured for fork length in inches and weight in pounds; and a scale or otolith was taken for age determination.

Water analyses were conducted on surface samples. Chemical analysis was done with a Hach model AL-36-WR kit. Water chemistry parameters measured include: dissolved (D.O.), carbon dioxide (CO_2), activity of acid or alkaline materials (pH), methyl orange (total), alkalinity (MOA) and hardness. A Lowrance echo sounder was used along with a handline to determine or verify water depths.

Surface acreages were determined with a modified acreage grid from 1:63,360 scale topographic maps.

INTRODUCTION

The area of study, the upper Tanana valley, lies in the southeastern corner of Interior Alaska (Fig. 1). It includes the major drainages and lake systems bordered by 62° 00' N latitude on the south, 143° 00' W longitude on the west, 63° 20' N latitude on the north and 141° 00' W latitude or the Alaska-Canadian border on the east. The total area included is approximately 6,000 square miles.

The watershed (Fig. 2) is limited on the south by the Alaska Range, specifically the Wrangell and Nutzotin mountains. The hills of the Fortymile River country, the Yukon-Tanana upland, lie to the north. The Tanana River watershed exits to the northwest and opens to the southeast through the Snag River and Beaver Creek drainages. The two major rivers of the study area, the glacial Chisana and Nabesna, combine near Northway to form the Tanana River which flows northwesterly to the Yukon.

Vegetation varies due to subsurface and drainage types. In areas experiencing poor drainage and permafrost, black spruce and rolling muskeg predominate. Willow and alder edge the ponds and water courses. In areas where adequate drainage or recent fires have occurred, birch, aspen, cottonwood, and white spruce are found.

The climate is one of harsh contrasts. Spring comes as early as mid-March, and sub-freezing temperatures with snowfall occur as late as June. The summers are short, lasting three months, with temperatures occasionally exceeding 90°F at lower elevations. Yearly rainfall is slight, averaging 12 inches per year. The fall extends through early November with snowfall and constantly decreasing temperatures. During the dead of winter from mid-November to mid-March, temperatures exceeding -70°F are not unheard of.

The upper Tanana valley was unglaciated. However, large quantities of gravel, sand, and silt were discharged from nearby melting glaciers. Winds and the braiding of rivers formed dunes which are now covered by vegetation.

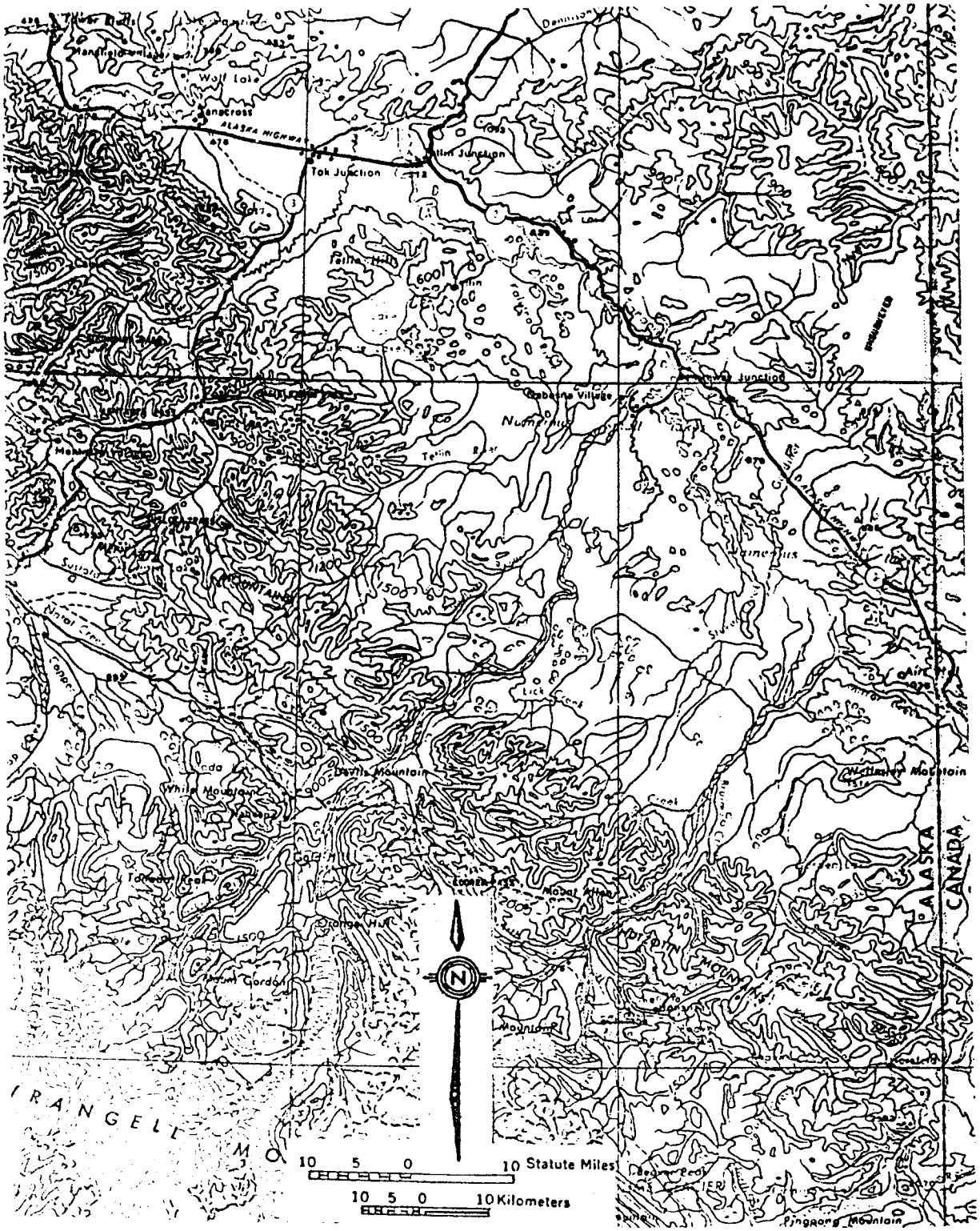

Figure 2. Watershed of the Chisana, Nabesna, and Upper Tanana Rivers.

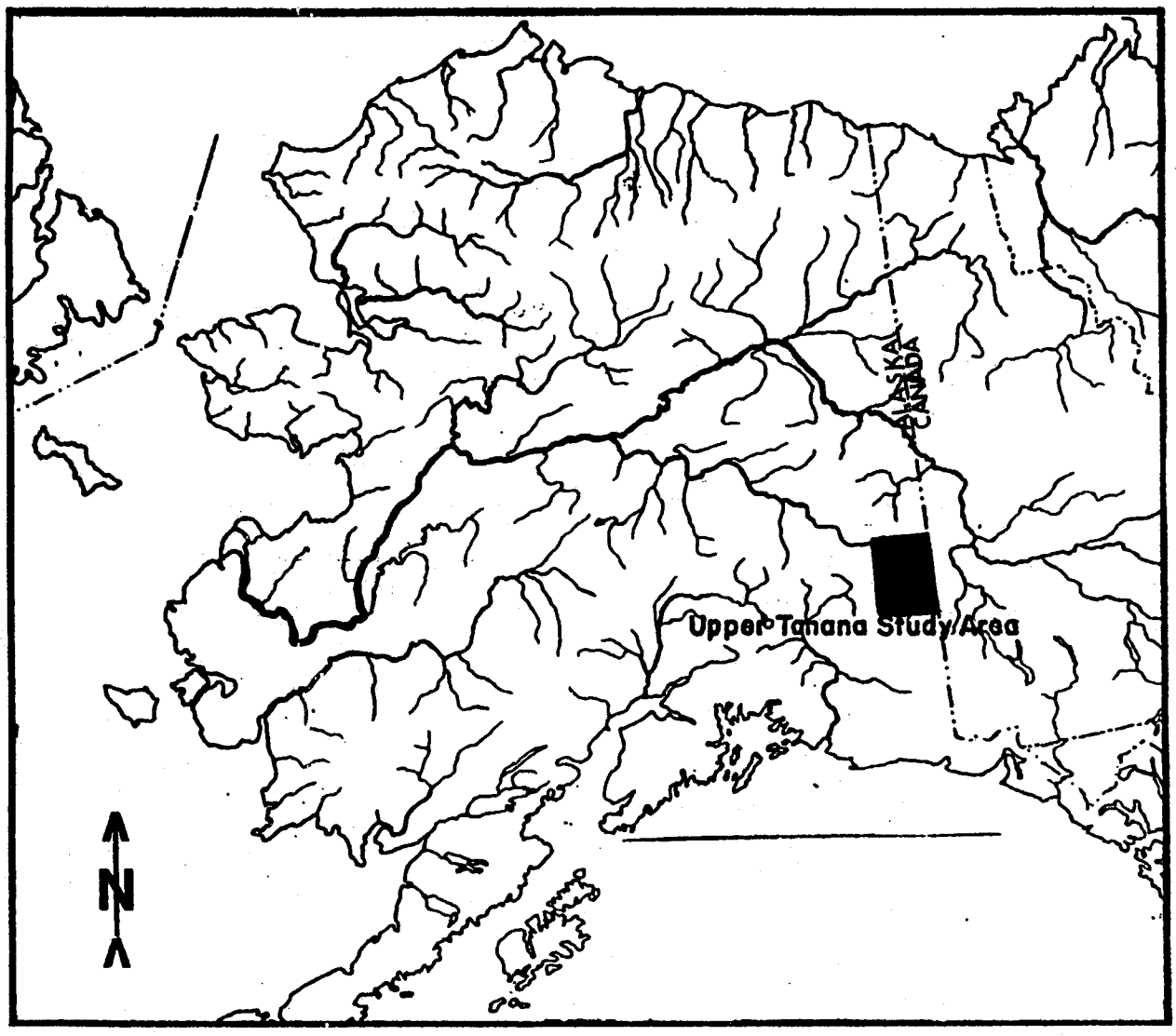

Figure 1. Upper Tanana Study Area.

The lakes in the area were formed in several ways. Damming of drainages leading from nearby hills by silt from the Chisana, Nabesna, and Tanana rivers was one. The origins of smaller lakes found on the flood plain of these rivers evolved through a different mechanism. In areas where the substrate is of fine-grained ice-rich silt, surface thawing brought on by vegetative disturbance can occur. The lakes thus formed are shallow, flat bottomed and, unless open to flow, poor fish producers due to poor winter survival. The water levels in these latter lakes are controlled by the flood level of nearby streams. In lakes formed by the first method, water levels are dependent on yearly precipitation. River flow has connected many lakes which were once separate.

The early residents were northern Athabaskan Indians. There were several transient villages throughout the area. The people trapped, hunted, and fished for subsistence where possible. Miners, trappers and traders came to the country in the late 1800's. Missionaries followed in the early 1920's and so began the introduction of modern culture.

The Alaska Highway was constructed between Big Delta and Dawson Creek, B.C. over an eight month period in 1942. This opened up the country to road access.

The fishery resources of the area have only been superficially assessed. Fish species which have been identified from waters within the area and name abbreviations include: northern pike (NP), Esox lucius, Arctic grayling (GR), Thymallus arcticus, round whitefish (RWF), Prosopium cylindraceum, humpback whitefish (HWF), Coregonus pidschian, lake trout (LT), Salvelinus namaycush, longnose sucker (S), Catostomus catostomus, burbot (BB), Lota lota, and slimy sculpin (SC), Cottus cognatus. Other species of whitefish are probably present but were not collected. Fish species introduced to closed lake systems include sheefish (SF), Stenodus leucichthys, rainbow trout (RB), Salmo gairdneri, and coho (silver) salmon (SS), Oncorhynchus kisutch.

To the present day, the fisheries of the upper Tanana Valley have remained on a low subsistence level, with whitefish being the target species. There are few, if any, cases of overexploitation by sport users. Those species most likely to experience future high use are northern pike and arctic grayling. The following summaries have been compiled from survey data collected over the past 15 years. In most instances, a great deal of detail is lacking, especially in regard to lakes and streams remote from the highway system. These remote fisheries continue to receive little pressure. Therefore, emphasis has been and will continue to be placed on waters adjacent to the highway systems. Future plans call for rehabilitation of suitable waters and introduction of new species combined with management of those native species considered desirable.

FINDINGS

Lake Surveys of Waters Adjacent to the Alaska Highway

The following lakes have been selected for survey due to their proximity to, and accessibility from, the Alaska Highway or their potential for year-round fish production. From the border at Mile 1221.3 to Tok at Mile 1314, numerous lakes lie adjacent to the road system.

The majority are either too shallow, infested with weeds, or show evidence of oxygen depletion during winter months. Fish populations under these conditions fare poorly and if present, are there due to the flooding of nearby rivers.

Name of Lake: Island Lake River System: Tanana
Location: 84 miles east of Tok and 9 miles from Canadian border.
The lake lies .6 miles northeast of the Alaska Highway at Mile 1230 (Fig. 3).
Position: 62° 42' N, 141° 07' W Elevation: 1,843 feet
Surface Area: 270 acres Maximum depth: 40 feet
Water Chemistry:

Date:	July 16, 1974	February, 1970
Temperature:	70°F	
D.O. (ppm):	8.0	5.5
CO_2 (ppm):	5	
pH:	7.5	
MOA (ppm):	51	
Hardness (ppm):	51	

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lbs) Range	Weight (lbs) Mean	Fish/ Net hr
July 17,1974	7	NP	12.5-20.0	15.6	0.57-1.72	1.08	0.15
July 26,1974	14	NP	6.0-20.0	15.1	0.04-2.62	1.13	0.29
July 18,1967	6	NP	9.3-29.3	17.6	0.04-2.62	1.13	0.15

Island Lake was surveyed initially in 1967. It was test netted to depths confirmed and to water analyzed in 1974 as part of pre-rehabilitation studies.

The water is slightly humic stained, with abundant shore vegetation and a mud bottom. There are three inlets, one in the northwest, one in the southwest and one on the southern shore. A single outlet flows to the east into Desper Creek over a large beaver dam. The eastern shore is marshy. There is a 1 acre island in the lake's center.

Invertebrate fauna include an abundance of amphipods, Gammarus sp., and snails. Resident fish species are northern pike. They average 15 inches in length and weigh slightly over one pound.

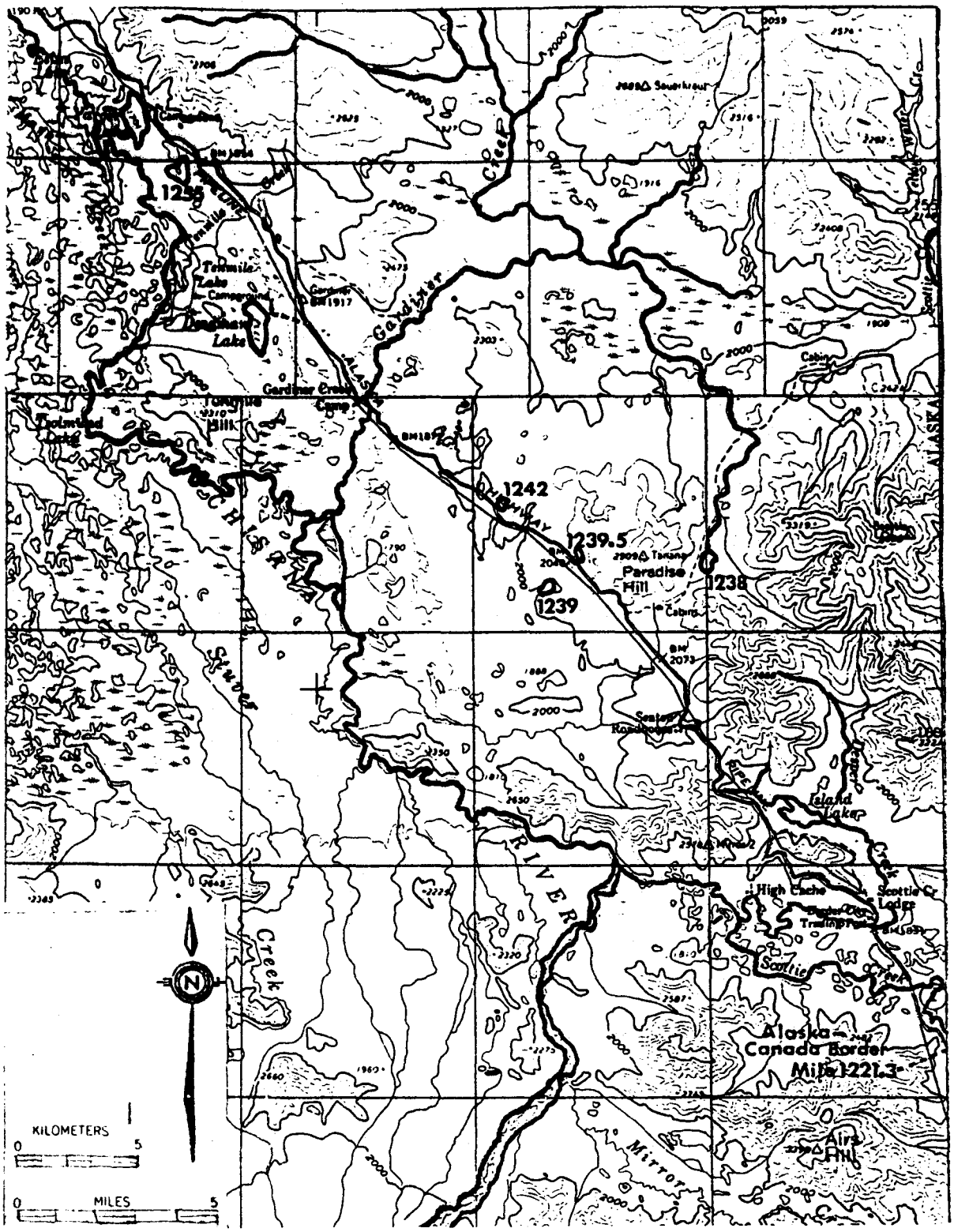

Figure 3. The Upper Chisana River Drainage.

Locals report a good pike fishery in the past, but catch success and size have declined in recent years. Present usage is light.

The lake is recommended for continued pre-rehabilitation studies in 1975 and shows good promise for recreation enhancement.

Name of Lake: 1238 River System: Gardiner Creek
Location: Approximately 3 miles northeast of the Alaska Highway at Mile 1238 (Fig. 3).
Position: 62° 48' N 141° 11' W Elevation (feet): 2,046
Surface Area (acres): 99 Maximum depth (feet): 50
Water Chemistry:

Date:	July 29, 1974
Temperature (F°):	62
DO (ppm):	9.0
CO_2 (ppm):	5
pH:	7.0
MOA (ppm):	51
Hardness (ppm):	51

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
July 30,1974	14	NP	6.7-31.0	16.1	0.88-4.85	1.38	0.29

First surveyed in 1974, this lake lies northeast of the Alaska Highway. Access is by a 3 mile trail leading from a gravel pit at Mile 1238.

The water is slightly humic stained. Water chemistry data show good potential for fish production. There are three small inlets on the southern end draining a low lying bog area above the lake. A single outlet approximately two meters across exits from the northern end and is blocked by a small beaver dam. The outlet feeds the east fork of Gardiner Creek.

Weeds extend no more than 6 feet from shore on the southern end and 50 feet from shore on the northeastern end. The bottom is essentially bowl shaped and of a mud-detritus combination.

Test netting revealed the presence of northern pike only. The largest was 31 inches long and weighed 4.9 lbs while the average length was 16 inches and weight 1.4 lbs. Considerable time was spent fishing the shore margins but without success.

This lake, despite its distance from the highway, would be suitable for rehabilitation in the future. A volumetric survey and winter oxygen analysis are recommended.

Name of Lake: 1239 River System: Chisana
Location: Approximately 1 mile southwest of the Alaska Highway at Mile 1239 (Fig. 3).
Position: 62° 47' N 141° 19' W Elevation (feet): 1,952
Surface Area (Acres): 40 Maximum depth (feet): 35
Water Chemistry:

Date:	August 1, 1974
Temp. (°F):	68
DO (ppm):	8.0
CO_2 (ppm):	5
pH:	7.0
MOA (ppm):	34
Hardness (ppm):	34

Fish Sampling Summary:

Initial surveys were conducted July 31, 1974. There are no inlets or outlets. There is dense vegetation along the eastern shore extending 60 feet into the lake. The rest of the shoreline exhibits minimal vegetation.

The lake lies in a low spot between two small hills. Dense spruce mixed with an open area of birch-aspen surround the lake. There is no permanent trail to the lake, although one could easily be marked.

Water chemistry data show good potential for fish production. Winter dissolved oxygen levels will be measured. Two nets were set for 24 hours and failed to catch any fish. It is assumed that the lake is barren. The lake is recommended for stocking and access development.

Name of Lake: 1239.5 River System: Chisana
Location: The lake lies approximately 100 yards northeast of the Alaska Highway at Mile 1239.5 (Fig. 3).
Position: 62° 47' N 141° 19' W Elevation (feet): 2,125
Surface Area (acres): 30 Maximum depth (feet): 19
Water Chemistry:

Date:	July 22, 1974
Temp. (°F):	68
DO (ppm):	8.0
CO_2 (ppm):	10
pH:	6.5
MOA (ppm):	51
Hardness (ppm):	51

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
July 19, 1974	1	GR		9.0		0.44	0.02

There are no inlets or outlets. Aquatic vegetation rims the lake. Access is via an unimproved trail from the highway. The lake is surrounded by black spruce and muskeg.

Dissolved oxygen levels as low as 0.2 ppm were recorded in May, 1972.

This barren lake was initially stocked in April of 1969 with 81,000 sheefish-Arctic cisco hybrids. Netting in 1970 failed to reveal any survival. Subsequent stockings have included 2,900 rainbow trout in June of 1971 with no survival noted and 20,000 Arctic grayling in June of 1973.

Two nets set for 24 hours in July of 1974 caught one grayling that was 9 inches long and weighed 0.4 lbs. This is considered excellent growth. Scale analysis revealed 19 circuli formed to the first annulus. Apparently some of this last stocking survived possible winterkill conditions. Recommendations call for continued stocking with Arctic grayling and access development.

Name of Lake: 1242 River System: Chisana
Location: Approximately 600 feet northeast of the Alaska Highway at Mile 1242 (Fig. 3). The lake is 72 miles from Tok and 21 miles from the Canadian border.
Position: 62° 48' N 141° 21' W Elevation (feet): 2,020
Surface Area (acres): 15 Maximum depth (feet): 18
Water Chemistry:

Date:	July 22, 1974
Temp. (°F):	66
DO (ppm):	7.0
CO_2 (ppm):	15
pH	7.0
MOA (ppm):	51
Hardness (ppm):	51

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
July 19, 1974	20	GR	7.8-9.0	8.5	0.26-0.44	0.37	0.42

The water is humic colored and the bottom is composed of sand and detritus. There are no inlets or outlets. The lake is accessible by an unimproved dirt road from the Alaska Highway at Mile 1242. Shore vegetation is sparse and spruce trees and muskeg rim the lake.

Water chemistries taken in 1974 are presented. The dissolved oxygen levels in past winters have been recorded as low as 0.2 ppm near the bottom.

The barren lake was initially stocked in January 1969 with 26,000 hybrid sheefish - humpback whitefish fry. Subsequent stockings have included 2,100 silver salmon in June of 1971 and 10,000 grayling in June of 1973. Test netting in July of 1974 resulted in the catch of 20 grayling averaging 8.5 inches long and weighing an average of 0.4 lbs. Their size and weights were closely grouped. No other species were captured. There was an average of 19 circuli to the first annulus. This is considered excellent growth for a one year period.

It is recommended that arctic grayling be restocked in this lake and their success monitored.

Name of Lake: 1255 River System: Chisana
Location: Approximately 1,650 feet southwest of the Alaska Highway at Mile 1255 (Fig. 3). The lake is 59 miles from Tok and 34 miles from the Alaska border.
Position: 62° 57' N 141° 36' W Elevation (feet): 1,725
Surface Area (acres): 151 Maximum depth (feet): 25
Water Chemistry:

Date:	August 2, 1974
Temp. (F°):	66
DO (ppm):	8.0
CO_2 (ppm):	5
pH:	7.5
MOA (ppm):	68

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
August 2, 1974	9	NP	6.0-31.0	13.9	0.07-5.03	1.02	0.38

The water is clear and there is considerable vegetation along the southwest shore. There is one small inlet on the northeast shore and no visible outlet. What appears to be a partial beaver dam and natural earth barrier separates this lake from one to the northwest that is considerably shallower.

Access is by a 650 foot trail which begins at a pull-off on the highway. Past netting has indicated a sizeable population of northern pike ranging in size from 17 inches to 22 inches. A total of 49 was caught in one net in 1967. Netting in early August of 1974 yielded less spectacular results with only 9 pike netted. Their average length was 14 inches and weight 1 lb. The largest was 31 inches long and weighed 5 lbs.

The watershed type is river flats with sparse spruce and willow surrounding the lake. No evidence of flooding from the Chisana River to the southwest was observed.

As long as the demand for pike fishing continues, it is recommended that this lake be managed for their production. However, pre-rehabilitation studies should be conducted as the lake has potential for production of other species.

Name of Lake: Deadman River System: Tanana
Location: The lake is 28 miles from the border and 65 miles from Tok on the Alaska Highway (Fig. 3). The lake lies 1.2 miles south of the highway.
Position: 62° 53' N 141° 33' W Elevation (feet): 1,732
Surface Area (acres): 341 Maximum depth: (ft) 32
Water Chemistry:

Date:	July 18, 1974
Temp. (°F):	68
DO (ppm):	9.0
CO_2 (ppm):	10
pH (ppm):	8.0
MOA (ppm)	120
Hardness (ppm):	120

			Length (in)		Weight (lb)		Fish/
Date	No.	Species	Range	Mean	Range	Mean	Net hr
July 18, 1974	29	NP	5.7-23.7	16.4	0.09-3.84	1.47	0.60

Shoals lie under 50% of the surface area, with abundant water lilies, submerged vegetation and planktonic life. Bottom type is classified as hardened silt. There are two inlets on the southern end, one flowing from a small lake and another draining a large marshy area that is occasionally flooded by the nearby Chisana River. A single outlet drains 2 miles to the northwest into Ten Mile Lake, which is also flooded by the Chisana River.

The surrounding watershed is lowland spruce and marsh. A public campground on the northeast shore of the lake is accessible by a dirt road from the Alaska Highway.

The lake was treated with powdered rotenone on June 26 and 27, 1954 to remove a population of stunted northern pike. By late September of that same year, the lake was restocked with 98,993 rainbow fry. A total of 135,000 rainbow fry was planted in 1955. The lake was closed to fishing until July 1956. Fishing success never exceeded fair levels, however trout up to 19.5 inches and 4 lbs were taken that year. Poorer than expected success was attributed to a lack of a complete pike kill plus low winter dissolved oxygen levels. In 1957, trout up to 25 inches and 7 lbs were taken during a disappointing season. Northern pike were reported present. Reinfestation with pike was confirmed in 1958. Dissolved oxygen levels measured that year dropped to 2.0 ppm under the ice. In 1961, 39 northern pike averaging 24 inches and 2 lbs were netted. Although stocking continued through 1960, none of the 436,993 rainbow trout previously introduced were captured.

In 1969, 253,000 grayling fry were stocked in Deadman Lake in hopes of establishing a desirable fishery. None have since been captured. Test netting during July of 1974 resulted in capture of pike up to 23.7 inches Their stomachs contained mainly amphipods, Gammarus sp., which are abundant.

Winter water analysis during April 1974 revealed a dissolved oxygen of 4 ppm at 6 feet, 3 ppm at 12 feet, and 0.4 at 18 feet.

Aerial observation of the Chisana drainage in August 1974 revealed that the Chisana River had flooded its banks and had formed a definite stream channel flowing slowly into the southern end of Deadman Lake. Field observations at that time confirmed the flow and flooding of several square miles of inlet area.

Based on these observations and poor past rainbow trout success, it is recommended that Deadman Lake be managed as a pike fishery until an inexpensive toxicant or monies are available to construct both inlet and outlet structures.

Name of Lake: Yarger River System: Chisana
Location: South of the Alaska Highway at Mile 1259 (Fig. 4). This lake is 55 miles from Tok and 38 miles from the Canadian border.
Position: 62° 58' N 141° 39' W Elevation: (ft): 1,702
Surface Area (acres): 415 Maximum Depth (ft): 10
Water Chemistry: Low winter dissolved oxygen levels.

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
August 8, 1974	1	NP		26.0		1.73	0.04
	10	HWF	381-457	16.9	1.76-3.09	2.53	0.42

There is abundant submerged vegetation and a mud bottom. The lake has two small inlets on the eastern shore and a single outlet on the north end which feeds into the Chisana River 1 mile away. The lake is flooded by this river during periods of high water. The lake lies at the base of the hills on the river flats: access is by a short dirt road from Mile 1259. A state campground is situated at the lake's eastern edge, as is an abandoned military pumping station.

Past netting has resulted in the capture of small pike, whitefish, and suckers. Netting in 1974 resulted in the capture of 1 northern pike 26 inches long and 10 humpback whitefish averaging 16.8 inches and 2.5 lbs. The water was quite turbid at the time of netting due to flooding from the Chisana River to the west.

Winter oxygen determinations have shown very low dissolved oxygen levels. Based on this and due to the lake's shallowness and proximity to the Chisana River, it is recommended that no attempts be made to enhance the fishery at this time.

Name of Lake: Midway River System: Tanana
Location: South of the Alaska Highway at Mile 1289.5 (Fig. 4). Midway Lake is approximately 25 miles from Tok and 68 miles from the border.
Position: 63° 13' N 142° 17' W Elevation: (ft) 1,650
Surface Area (acres): 1,360 Maximum depth (ft) 22
Water Chemistry: No data available

Fish Sampling Summary:

September 1974. No fish captured.

The bottom is muddy, and except for one deep hole, the majority of the lake is less than 6 feet deep and densely vegetated. There are four small inlets on the northern shore and one outlet on the western end that flows to the Tanana River to the south. The outlet is in turn flooded by the Tanana during high water.

The majority of the lake lies on the Tetlin Indian Reservation with only the easternmost portion open to public access. Past netting has failed to reveal the presence of fish. A net set in September 1974 for 12 hours also failed to capture any fish. The lake has poor overwintering capacity and is used mainly by duck hunters.

Name of Lake: Four Mile River System: Tanana
Location: 4 miles up the Taylor Highway from Tetlin Junction 13 miles from Tok (Fig. 5).
Position: 63° 22' N 142° 34' W Elevation (ft): 2,050
Surface Area (acres): 110 Maximum Depth (ft): 17
Water Chemistry: No data available

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
May 31, 1974	11	SF	20.6-25.4	22.4	4.85-6.61	5.67	0.44
	5	SS	12.2-13.4	12.9	0.71-0.99	0.83	0.20
Dec. 19, 1974	7	SF	21.1-24.0	22.8	4.48-6.02	5.34	0.15
	22	SS	14.0-17.3	16.3	14.3 -2.65	2.15	0.46

The lake lies in a bowl east of the Taylor Highway from which a trail at Mile 5 leads to the lake. An island is located in the lake's middle with abundant vegetation surrounding it. Invertebrate fauna include a rich growth of amphipods, Gammarus sp., snails and other plankton. There is one small inlet on the south shore but no outlets.

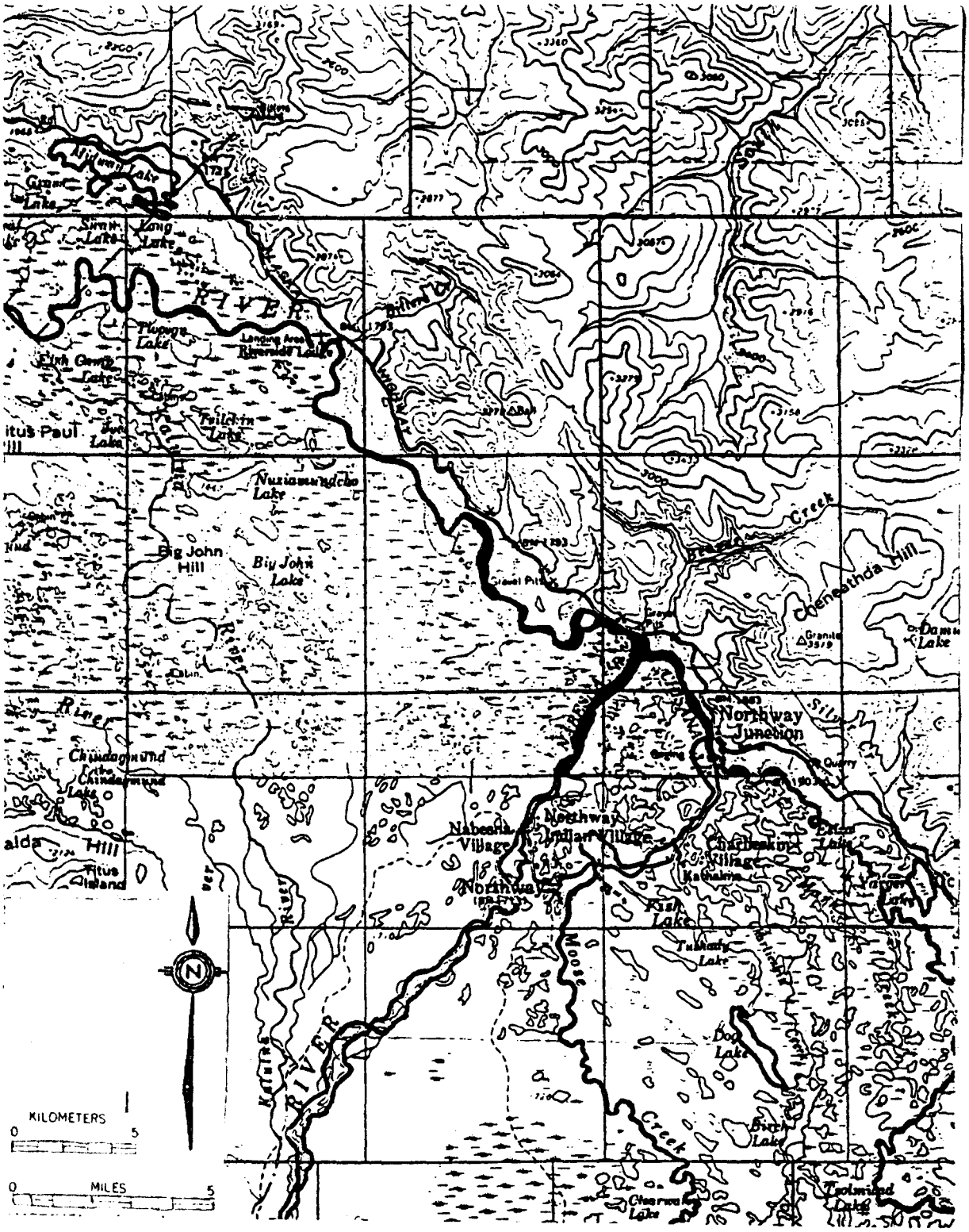

Figure 4. Lakes and Streams in the Northway Area.

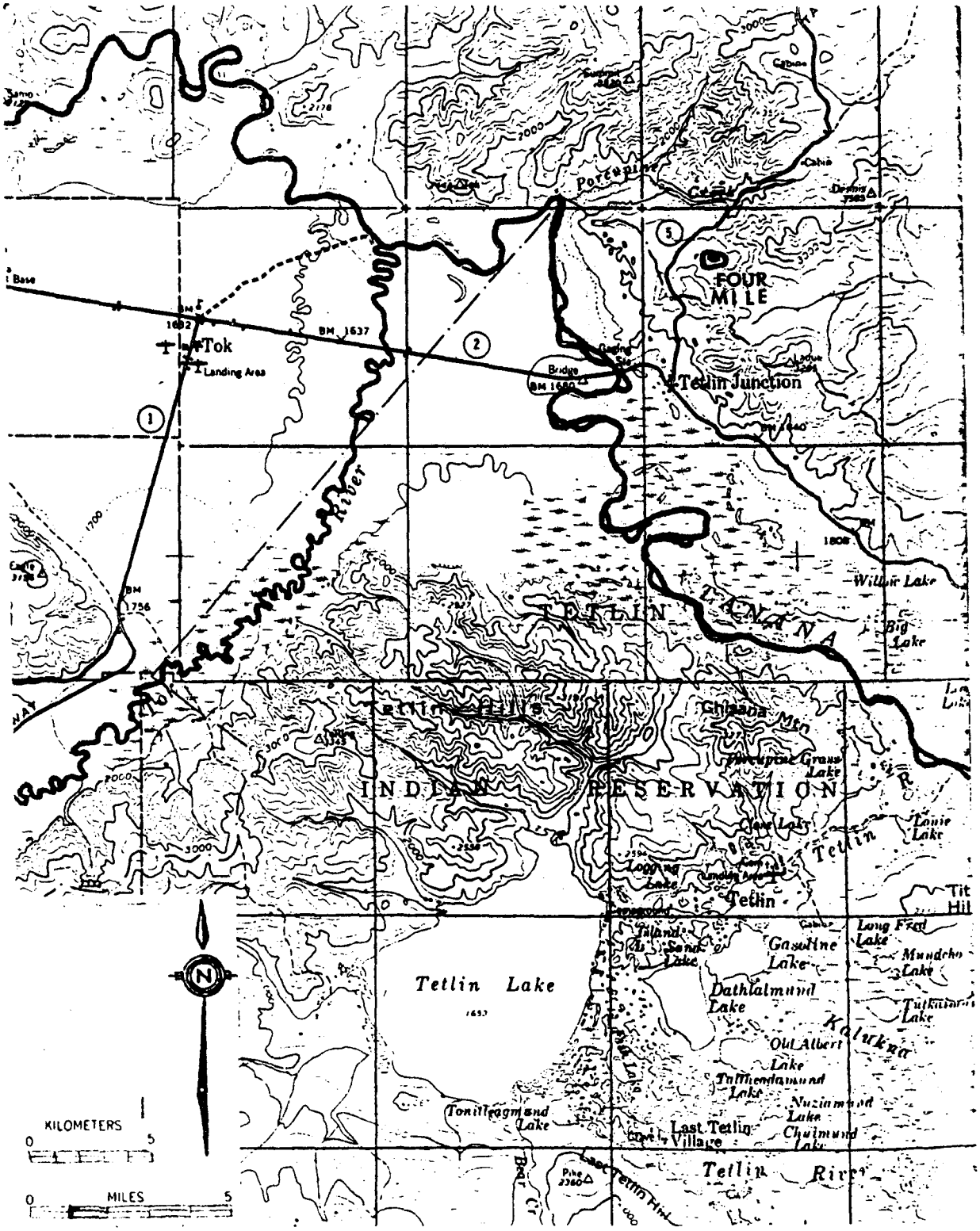

Figure 5. Lakes and Streams in the Vicinity of Tok Junction.

Prior to 1968, the lake was barren; 4,000 sheefish fry were stocked in June of that year. By May of 1969, these fish had attained a mean length of 11 inches and by August averaged 14 inches.

Coho salmon were stocked in the lake in August of 1972. A total of 9,821 was planted.

Test netting conducted in May of 1974 yielded 11 sheefish averaging 22 inches and 5.7 lbs, and 5 coho salmon averaging 12.8 inches and 0.8 lbs. In May 1974, three sheefish as well as numerous silver salmon, were caught on rod and line by the investigators. Attempts in early August yielded only one coho salmon.

While conducting an under ice test netting evaluation in December, 1974, 7 more sheefish and 22 coho salmon were captured. Two female and three male sheefish were spent, indicating attempts at fall spawning. Mature male and female coho salmon were noted in the sample.

It is recommended that the lake be managed for experimental rearing of sheefish and as a possible egg take source. Restocking with coho salmon should be continued.

Stream Surveys of Waters Adjacent to the Alaska Highway

The following streams cross or are in close proximity to the Alaska Highway between the Canadiar border at Mile 1221.3 and Tok at Mile 1314. Fish in these systems are seasonally available. Generally, the larger river systems, i.e. Chisana, Nabesna, and Tanana, are overwintering areas. With spring breakup, runoff flow swells the smaller, clear tributaries and fish begin an upstream migration for spawning or feeding purposes. In these systems they are available from mid-May to freezeup in mid-September. The major rivers carry heavy silt loads during the summer months and fish in them are best caught off the mouths of the clear tributaries. During the winter, these large systems clear up and flow at reduced levels.

Name of Stream: Scottie Creek Tributary To: Chisana River
River System: Tanana
Location: Flows westerly and joins Desper Creek in eastern portion of study area (Fig. 3).
Position: 62° 41' N 141° 16' W Crosses Alaska Highway at Mile 1223.7.
Length: (mi): 34 Width: (ft) 12
Water Chemistry: No data available.
Fish Sampling Summary: No data available
Known fish species present include burbot, northern pike, Arctic grayling, and whitefish.

Scottie Creek begins approximately 20 miles north of Mile 1221 of the Alaska Highway. The headwaters are composed of several small lakes and muskeg. The stream flows about 3 miles easterly in Alaska then enters Cananda and flows southerly until it re-enters Alaska just north of the border station (Mile 1221.3) and crosses the Alaska Highway at Mile 1223.7. It then flows northwest and joins Desper Creek. The two enter the Chisana River 3.7 miles to the west.

The water is humic colored. Flows rarely exceed 1.5 fps.

There is light fishing for grayling where the river crosses the Alaska Highway. The lower stream stretches are marked by numerous beaver dams and adjacent lakes that should provide excellent pike fishing. Burbot should be available at the confluence with the Chisana River.

The drainage below the Alaska Highway to the confluence with the Chisana River should receive more complete surveys in the near future.

Name of Stream: Desper Creek Tributary To: Chisana River
River System: Tanana
Location: Flows southeasterly then westerly and joins with Scottie Creek in the eastern section of study area (Fig. 3).
Position: 62° 40' N 141° 10' W Mile 1225.5 Alaska Highway
Length (mi): 12 Width (ft) 12
Water Chemistry: No data available
Known fish present include northern pike, Arctic grayling, and whitefish. Others are probably present. No specific biological data is available.

Little is known of this stream which crosses the Alaska Highway at Mile 1225.5, 4 miles from the Canadian border. It begins north of Island Lake at Mile 1230, flows southerly until it crosses the highway, then westerly until it joins with Scottie Creek to the east. Total length is approximately 12 miles. Local residents report a small spring up-migration of whitefish and grayling but no extensive summer fishery on either species was observed during 1974. Northern pike are also present. Future surveys are recommended.

Name of Stream: Gardiner Creek Tributary to: Chisana River
River System: Tanana
Location: In northwestern portion of study area. One fork flows southerly and another northwesterly. The two join then flow southwesterly. (Fig. 3).
Position: 62° 49' N 141° 31 W Crosses Alaska Highway at Mile 1247.
Length (mi): 28 Width (ft): 12
Water Chemistry: No data available

Fish species present include arctic grayling, northern pike, and whitefish. This stream drains an extensive area northeast of the Alaska Highway at Mile 1247 and flow southwesterly into the Chisana River 2.5 miles below the highway. There is a small grayling fishery for about three weeks in late May and early June when these fish migrate up the creek from the Chisana River. Midsummer fishing is poor. Above the state campground at the highway no fishing pressure is placed upon these fish. The section

between the highway and the Chisana River is blocked by numerous beaver dams, making travel by boat difficult. Northern pike and whitefish are available below the highway.

The angling effort on these fish at this time is acceptable and only monitoring of the catch, as time permits, is recommended.

Name of Stream: Chisana River Tributary to: Tanana River
River System: Tanana
Location: Flows northeasterly then northwesterly through the eastern portion of study area (Fig. 3, 4, 6, 9).
Position: 63° 02' 45" N 141° 51' 45" W
Length (mi): 100 Width (ft.): 5,000
Water Chemistry and Flow Data:

Date	6/20/71	8/27/71	10/14/71	7/31/72	8/23/72
Discharge(cfs):	3,420	3,900	1,500	5,680	6,490
Temp. (°F):	60	49	32	56	52
pH	7.7	7.7	8.0	7.7	7.1
MOA (ppm):	116	118	150	99	99
Hardness (ppm):	111	115	143	93	89

Known species include northern pike, burbot, humpback whitefish, and arctic grayling.

Little is known of the fishery resources available in this river which runs approximately 100 miles from the Chisana Glacier in the Wrangell mountains to the junction with the Nabesna River, 7 miles north of Northway. Many lakes and streams feed and are fed by this river. One existing fishery centers on burbot, in the Northway junction area. Almost any good eddy will produce fine burbot up to 11 lbs during late April and early May. The section between the bridge on the Northway road and the junction with the Nabesna River 3.1 miles northwest is a good area. A subsistence fishery for humpback whitefish exists in the Northway area.

Future surveys of this river system and adjoining waters are recommended.

Name of Stream: Moose Creek Tributary to: Chisana River
River System: Tanana
Location: Flows northerly south of Northway, crosses road 1.2 miles east of airport and enters Chisana River 0.6 mile below the bridge (Fig. 4, 7).
Position: 63° 01' N 141° 49' W Crosses Northway Road 1.2 miles east of airport.
Length (mi): 15.5 Width (feet): 30
Water Chemistry: No data available
Fish species present include burbot, northern pike, arctic grayling, and whitefish.

Moose Creek, a tributary to the Chisana River, begins approximately 9.3 miles south of Northway in a series of small lakes and muskeg. The stream flows

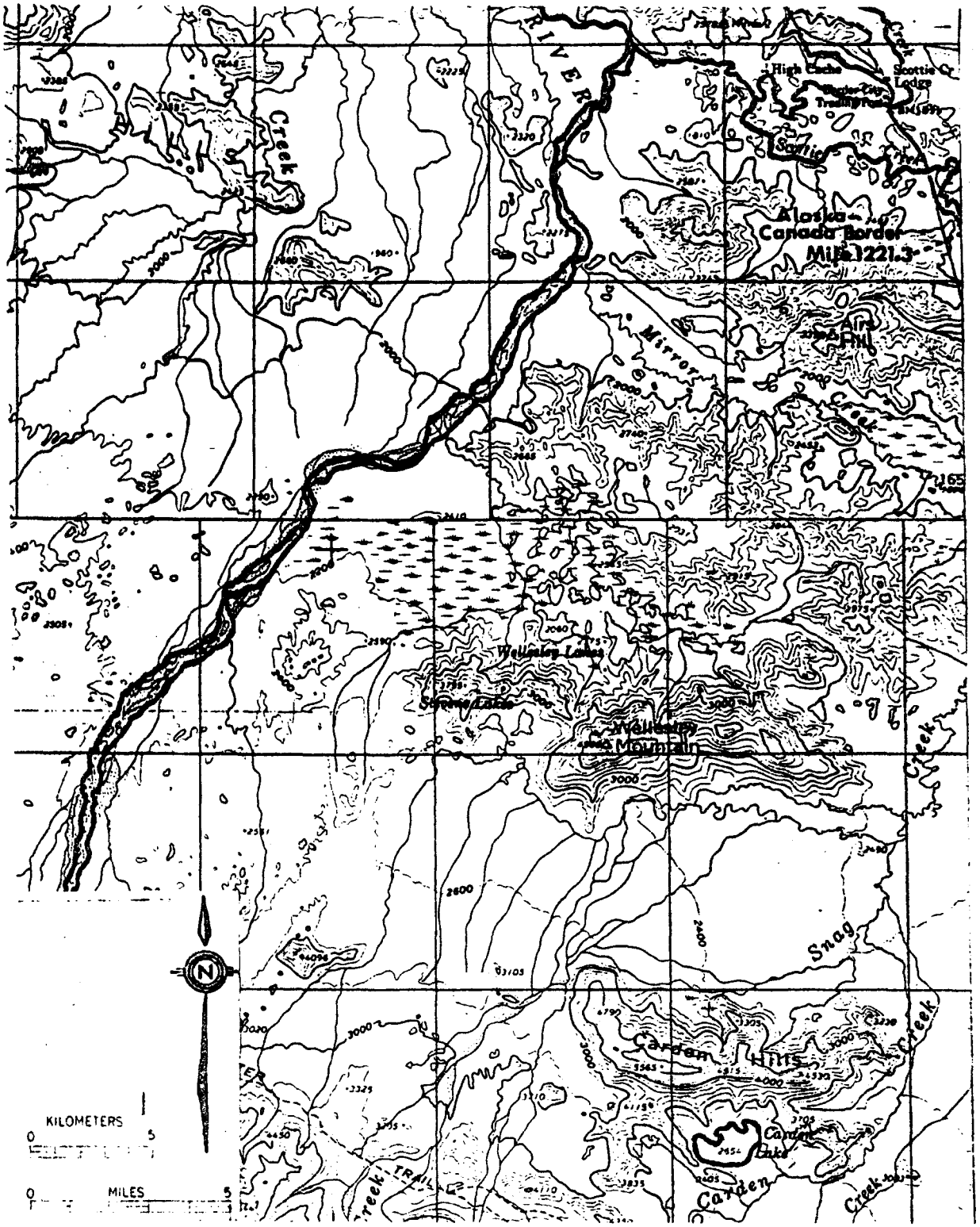

Figure 6. The Middle Chisana River Drainage.

northerly from these lakes and crosses the Northway road 1.2 miles east of the airport. It then parallels the road for 4.3 miles. It joins with Fish Creek below the second bridge and enters the Chisana River shortly thereafter.

The water is humic stained and takes on a turbid characteristic below the junction with Fish Creek. Flow rates rarely exceed 1 fps.

Moose Creek is known for its fine burbot fishing and experiences light catches of grayling and northern pike. Subsistence usage of whitefish is reported. The prime area for burbot fishing is at the confluence with the Chisana River during late April and early May. Heavy pressure is exerted by local residents at this time.

Due to the pressure levels placed on burbot, it is recommended that this fishery be closely monitored in the future.

Name of Stream: Nabesna River Tributary to: Tanana River.
River System: Tanana
Location: Flows north in central study area and with the confluence with the Chisana River forms the Tanana River (Fig. 4, 7, 10, 11).
Position: 62° 03' N 141° 52' W
Length (mi): 71 Width (feet): 6,500
Water Chemistry: None available

Species present should include burbot, northern pike, arctic grayling and whitefish. No specific biological data is available.

The Nabesna River originates at the Nabesna Glacier in the Wrangell mountains and flows northerly through the central study area for 71 miles. At its confluence with the Chisana River 7 miles north of Northway it forms the origin of the Tanana River. Numerous hillside and glacial runoff streams feed the upper reaches while muskeg and shallow lakes feed its middle and lower sections. Specific data on flows and water chemistries are not available. However, these characteristics should follow closely those for the Chisana River to the east.

Further surveys are recommended.

Lake Surveys of Remote Waters From Tok to the Border

The following lakes surveyed are only a scattering of those present in the area. Hundreds of small lakes dot the lowlands and are generally poor fish producers. The following lakes were chosen for survey based on their existing or potential fish productory capabilities.

The lakes found in low areas adjacent to major river systems are usually characterized by the presence of pike, grayling, whitefish, or burbot. Those in the higher elevation of the Wrangell mountains are characterized by cold, deep waters and their fish species usually include lake trout, grayling and whitefish. The open water periods of the lakes found at higher elevations extend from early June to late September, a full two months shorter than lower lakes. It is due to their inaccessibility that use levels remain low for all these lakes.

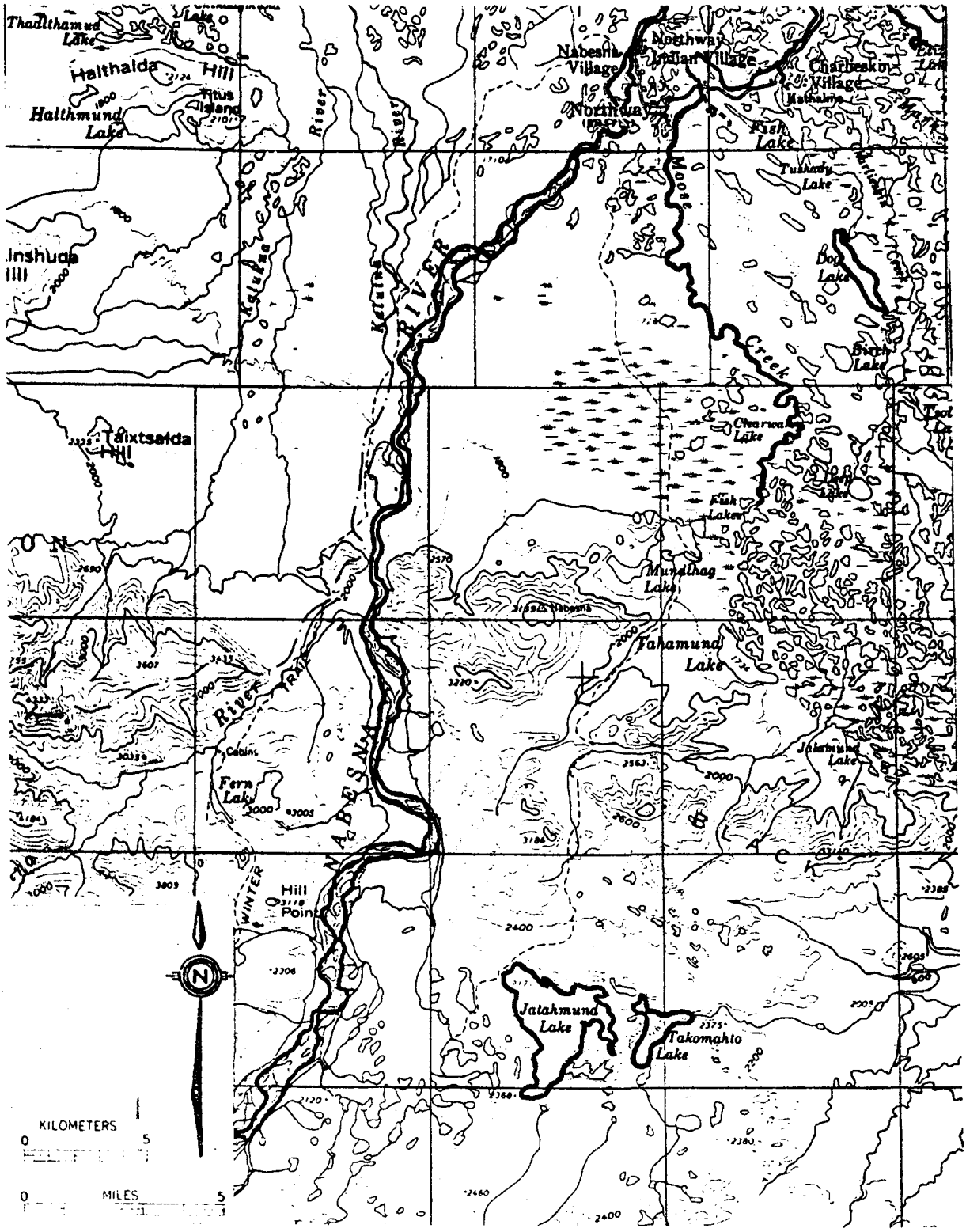

Figure 7. The Middle Nabesna River Drainage

Name of Lake: Rock Lake River System: White
Location: Approximately 55 mi. south of Mile 1221 of the Alaska Highway along the Alaskan-Canadian border (Fig. 8).
Position: 61° 48' N 141° 15' W Elevation: (ft) 3,571
Surface Area (acres): 2,690 Maximum depth (ft): 207
Water Chemistry:

Date:	June 27, 1974
Temp. (°F):	52
CO_2 (ppm):	5
DO (ppm)	10.0
pH	8.0
MOA (ppm):	103
Hardness (ppm):	103

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
June 27, 1974	7	GR	9.5-15.5	12.8	0.29-1.12	0.76	0.22
	4	RWF	15.2-18.4	17.0	1.59-2.82	2.18	0.13
	9	LT	15.0-18.5	16.7	1.10-2.60	1.79	0.28

This lake was initially surveyed on June 26 and 27, 1974. There are six small inlet streams, mainly hillside runoff. A single outlet stream flows into Ptarmigan Lake 2 miles to the north. The outlet, although not surveyed, should provide excellent grayling fishing.

The water is extremely clear and the bottom could be seen down to 30 feet. This clarity made it possible to observe large lake trout while flying along the lake's margin.

Access is either through floatplane or by trail from Ptarmigan Lake. There are several tent frames on the shore and one substantial cabin on the westernmost inlet stream.

Nine lake trout were captured, the largest only 18.5 inches and weighing 2.6 lbs. Seven grayling were captured averaging 12.8 inches. Four round whitefish were netted averaging 17 inches. Sport fishing proved excellent and one large lake trout was hooked but not landed. Why larger lake trout were not netted is not known, as they were observed feeding along the lake margins.

Water chemistries confirm the productive capacity of this lake, the one limiting factor being a lack of extensive littoral area due to the sharply rising banks found around the lake. Water temperatures ranged from 60°F at the surface to 41°F at 60 feet. The greatest lake depth recorded was 207 feet, however deeper holes not sounded may exist.

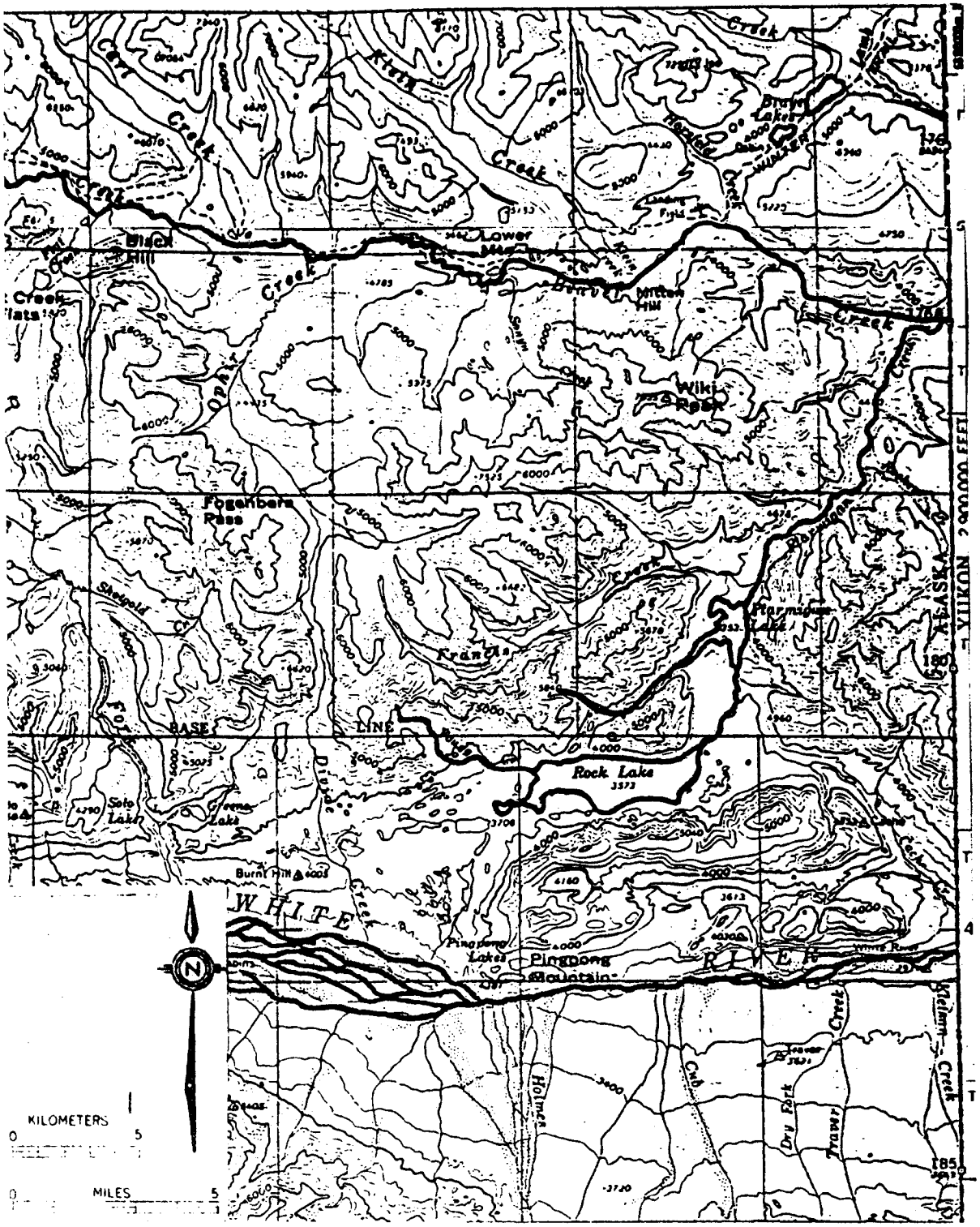

Figure 8. The Upper White River Drainage

This lake is by far the most scenic in the Tok area. Due to its high quality fishery, further studies to ensure the maintenance of these features are recommended.

Name of Lake: Ptarmigan Lake River System: White
Location: Approximately 53 mi. south of Mile 1221 of the Alaska Highway and 8 mi. north of the White River (Fig. 8).
Position: 61° 52' N 141° 10' W Elevation (ft): 3,533
Surface Area (acres): 650 Maximum depth (ft): 36
Water Chemistry:

Date:	June 27, 1974
Temp. (°F):	54
DO (ppm):	9.0
CO_2 (ppm):	5
pH:	8.5
MOA (ppm):	120
Hardness (ppm):	120

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
June 26, 1974	12	GR	12.2-14.0	12.9	0.66- 0.92	0.77	0.05
	8	RWF	9.0-14.3	11.4	0.22- 1.04	0.53	0.33
	12	LT	14.0-32.0	21.0	0.76-14.3	4.95	0.50
	9	S	9.0-19.8	13.8	0.20- 2.43	1.14	0.38

Ptarmigan Lake was surveyed initially on June 26 and 27, 1974. Maximum depth was 36 feet and bottom type largely cobble in shoal areas. There are seven inlet streams, one of which flows from Rock Lake to the south. The outlet stream, Ptarmigan Creek, flows northeasterly 8 miles into Beaver Creek which then flows into Canada. The outlet was not surveyed but should offer excellent fishery potential for grayling.

Present access is either by trail from Chisana or Braye lakes to the northwest or by floatplane. There is a large private cabin complex on the lake. The lake has a deserved reputation as an excellent lake trout fishery. Results of test netting showed the presence of lake trout up to 32 inches and 14.3 lbs. The average length was 21 inches. Grayling averaging 12.9 inches were captured. Other species present were round whitefish and longnose suckers.

Efforts at sport fishing resulted in good catches of small lake trout. However, the locals report that many large lake trout are readily caught just after ice-out in the spring.

Water quality measurements indicate good productive potential. Temperature profiles showed temperatures varying from 54°F on the surface to 50°F on the bottom Recommendations are for continued monitoring of this fishery to ensure maintenance of its present high quality.

Name of Lake: Braye Lakes (2) River System: White
Location: Approximately 40 miles south of Mile 1221 of the Alaska Highway. (Fig. 8).
Position: 62° 3' N 141° 6' W Elevation (ft): 3,600
Surface Area (acres): Northern lake; 300, Southern; 50
Maximum depth (ft): Unknown
Water Chemistry: No data available

There are two Braye lakes, the one on the north larger. Both lakes lie in a valley draining to the northeast. The outlet of the larger Braye Lake drains through Lamb Creek into Beaver Creek which joins the White River in Canada.

Access is available to either lake through float plane or by wheel plane into upper Braye Lake, or Horsfeld strip 3 miles to the southwest.

The lakes have a good year-round reputation for medium sized lake trout. However, no surveys have been conducted. Future lake and fishing potential surveys are recommended.

Name of Lake: Beaver Lake River System: White
Location: Approximately 42 miles southwest of Mile 1221 of the Alaska Highway and 7 miles east of the airstrip at Chisana (Fig. 9).
Position: 62° 2' N 141° 49' W Elevation (ft): 4,449
Surface Area (acres): 365 Maximum depth (ft): 42
Water Chemistry: None available

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
Aug 10-13,1969	66	GR	4.5-14.5	12			0.93
	160	WF	7.5-15.5	11			2.25
	6	LT	13.0-30.5	18.5	1.5-13.5	5	0.08

There are two inlets on the north shore. The outlet on the eastern shore is the source of Beaver Creek which flows easterly into the White River in Canada. The bottom is rocky with alpine vegetation surrounding the lake shore.

Access is by floatplane or a 7 mile trail from Chisana.

This lake was not surveyed in 1974 and future surveys are recommended.

Name of Lake: Carden Lake River System: Tanana
Location: Approximately 25 miles southwest of Mile 1221 of the Alaska Highway (Fig. 6).
Position: 62° 17' N 141° 11'W Elevation (ft): 2,635
Surface Area (acres): 820 Maximum depth (ft): unknown
Water Chemistry: No data available

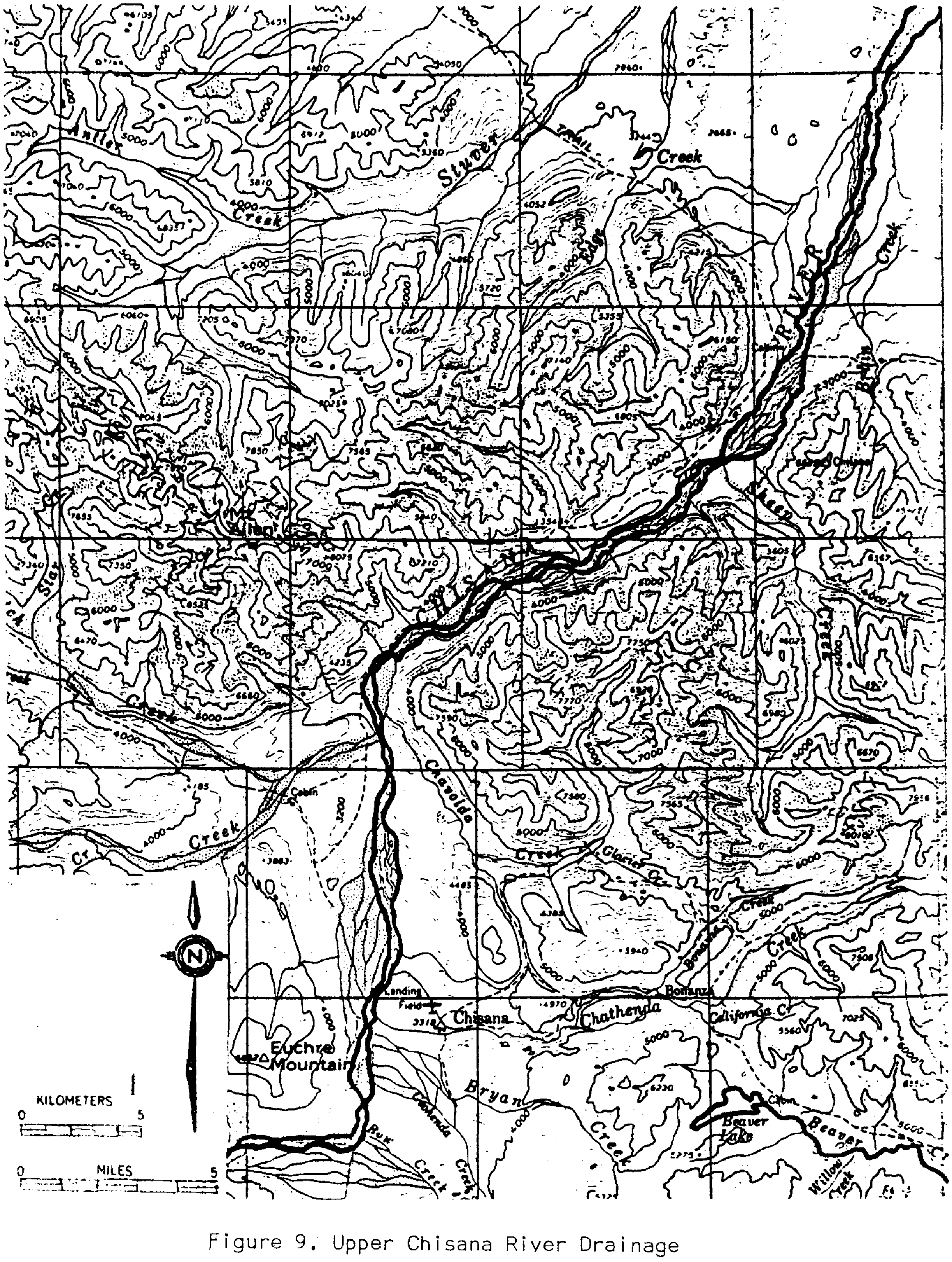

Figure 9. Upper Chisana River Drainage

There is one inlet on the northwest shore and the outlet on the south shore feeds Carden Creek. The lake lies in a bowl in the Carden Hills and is open to the southeast.

Access is by float plane.

Northern pike are the reported sport fish, although other species are probably present due to the open outlet. A survey of this lake is required.

Name of Lake: Takomahto (Floyd) Lake River System: Nabesna
Location: Approximately 23 miles south of Northway (Fig. 7).
Position: 62° 37' N 141° 57' W Elevation (ft): 2,168
Surface Area (acres): 590 Maximum depth (ft): 75
Water Chemistry: No data available

Fish Sampling Summary: August 11, 1963. No fish captured.

The water is humic stained. There are two inlets, one on the south end and one on the northwest end. The outlet flows easterly into Stuver Creek. The watershed type is bog with some spruce-aspen cover in higher areas. Access is by float plane.

When surveyed in 1963, a single experimental gill net fish for 24 hours failed to catch any fish. However, 'rolling' presumably by fish was observed on the lake surface. This lake was not test netted during 1974.

Future surveys are recommended.

Name of Lake: Jatahmund (Swan) Lake River System: Tanana
Location: Approximately 23 miles south of Northway, Mile 1264 of the Alaska Highway (Fig. 7).
Position: 62° 37' N 142° 00' W Elevation (ft): 2,171
Surface Area (acres): 2,790 Maximum depth (ft): 35
Water Chemistry: No data available.

Fish Sampling Summary:

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr
Aug 13, 1963	1	NP		19.5		1.99	0.02

The water is clear and bottom type is reportedly detritus and sand. The habitat is scattered spruce and muskeg. No inlets or outlets were determined.

Fishing history is unknown. When surveyed in 1963, only one northern pike was captured.

Of interest are the three temperature profiles taken at the time which indicate that the water temperature varied little from 61°F from top to bottom at 32 feet.

Access is by float plane only. A more complete survey of fishing potential and water analysis is recommended.

Name of Lake: Pickerel Lakes River System: Nabesna
Location: Approximately 40 miles southwest of Northway and 1.5 miles southeast of the Nabesna River (Fig. 10).
Position: 62° 37' N 142° 24' W Elevation (ft): 2,000
Surface Area (acres): 460 Maximum depth (ft): 21
Water Chemistry: No data available
Fish Sampling Summary: No Data Available

This lake was surveyed August 11, 1963. Vegetation comprises 25% of the surface area with a grass-sedge margin. The bottom type is a detritus-sand combination. There is one inlet to the southwest corner and one outlet in the northwest corner that leads 4 miles north to the Nabesna River.

The watershed is comprised of muskeg to the west and north and mixed spruce and aspen-birch to the south.

Access is by floatplane.

The presence of fish is unknown. Further surveys are recommended.

Name of Lake: Dog Lake River System: Tanana
Location: Located 5 mi southeast of Northway (Fig. 4).
Position: 62° 53' N 141° 46' W Elevation (ft): 1,742
Surface Area (acres): 590 Maximum depth (ft): 17
Water Chemistry: No data available.
Fish Sampling Summary: No data available.

Bottom types are reported as sand and weeds and shoal areas occupy 50% of the lake. There is a single inlet on the southern end with no visible outlet.

Access is either through a trail from Northway or by floatplane.

Fish species reported present are northern pike up to 24 inches, and humpback whitefish. The sport fishery is reported as being excellent. No surveys were made during 1974. They are, however, recommended.

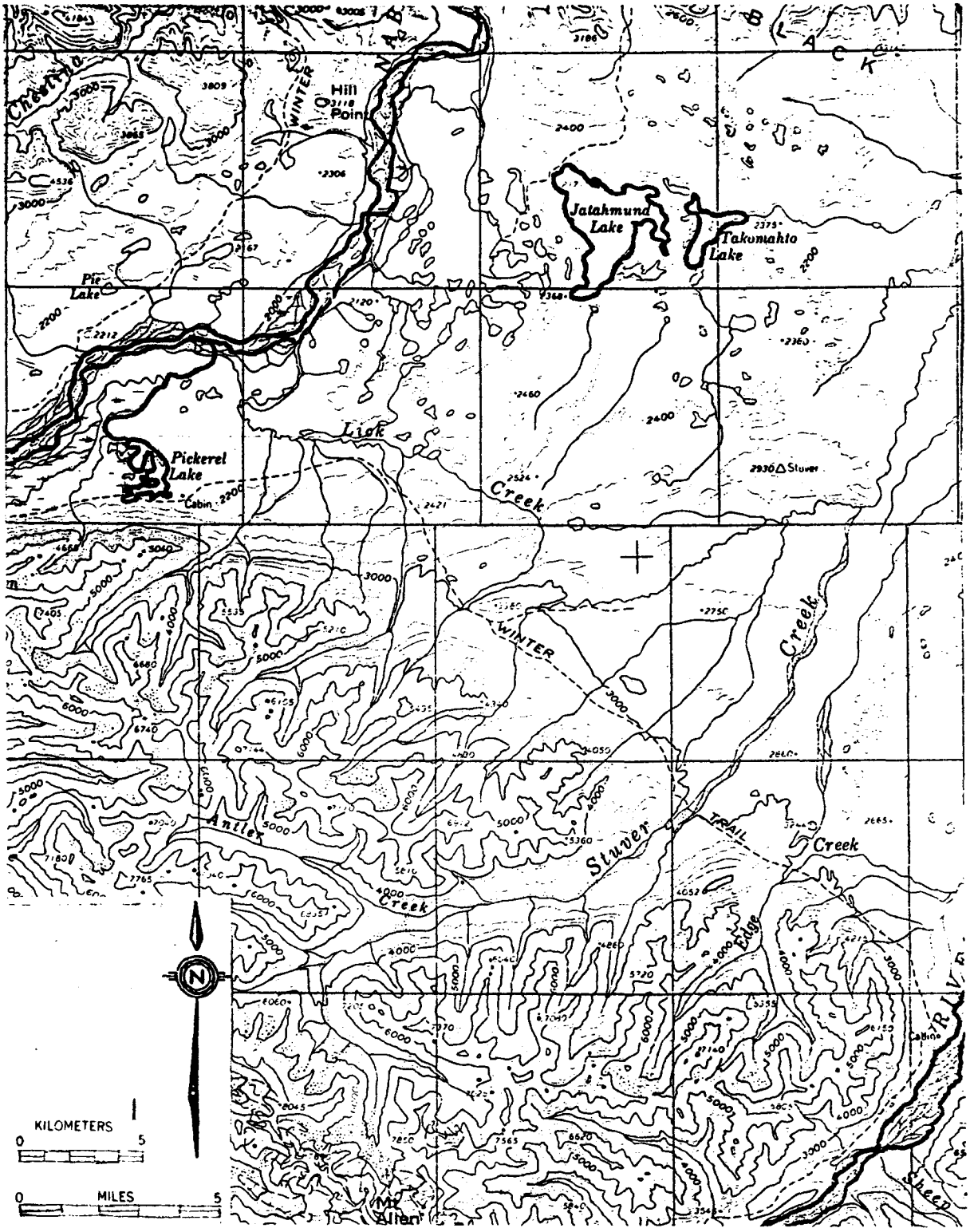

Figure 10. Middle Nebesna River Drainage

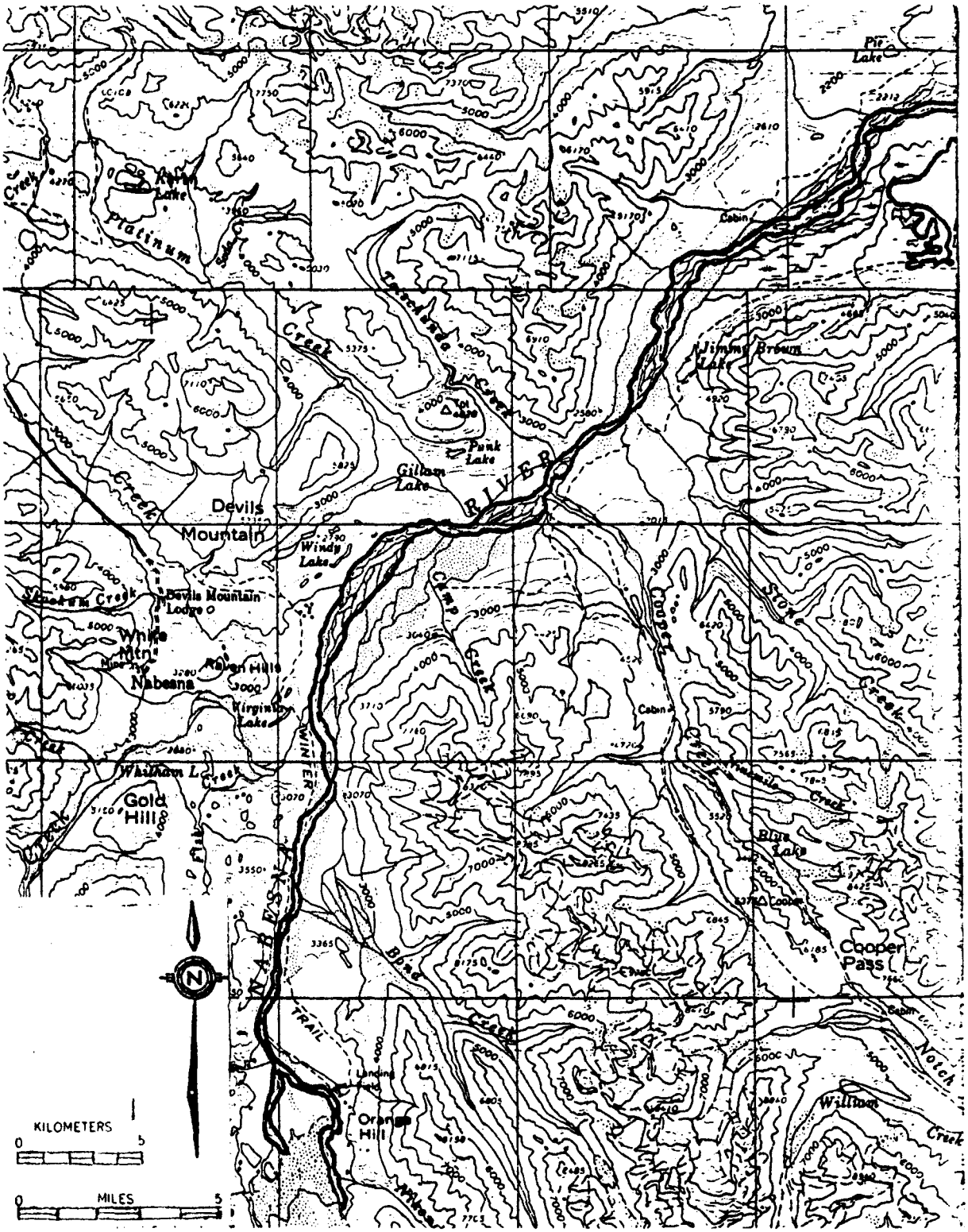

Figure 11. Upper Nebesna River Drainage

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