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Stream Surveys of 31 Rivers in Labrador

Volume II: Kamanatsuk Brook to Eclipse River

by
H.P. Murphy and T.R. Porter

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Resource Development Branch
Newfoundland Region

DEPARTMENT OF THE ENVIRONMENT
FISHERIES AND MARINE SERVICE
NEWFOUNDLAND REGION

INTERNAL REPORT SERIES NO. NEW/1-74-8

STREAM SURVEYS OF 31 RIVERS IN LABRADOR

VOLUME II: KAMANATSUK BROOK TO ESCLIPSE RIVER

by

H.P. Murphy[1] and T.R. Porter

Resource Development Branch
Fisheries and Marine Service
St. John's, Newfoundland

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INTRODUCTION

During August 1973, as part of the Stream Inventory Program initiated in 1970 aerial surveys were conducted on 31 rivers from English River (Index 900) north to Eclipse River (Index 2924). Data were collected on physical characteristics of each river system, namely; bottom composition, obstructions to Atlantic salmon (Salmo salar) or Arctic char (Salvelinus alpinus) migration, and water chemistry. The collection of information on fish populations was limited to conversations with local residents and occasional angling effort. Water samples were sent to St. John's laboratory for chemical analysis by the Water Resources Group, Resource Development Branch.

Potential population estimates of Atlantic salmon, based on estimated rearing area, was calculated for all rivers except those north of Kingurutik R (Index 2142). Rivers north of Nain support mainly Arctic char populations.

In tables throughout the report the bottom type was coded: R, represents rubble; B, boulders; G, gravel and S, sand.

A "Hughes 500" helicopter was used for the survey and was quite adequate for the operations. Bases of operations were Saglek, Nain, and Hopedale.

This report is published in two volumes. Volume I contains information on rivers from English R (L 900) to Fraser R (L 2116). Volume II contains information on rivers from Kamanatsuk Brook (L 2140) to Eclipse R (L 2924).

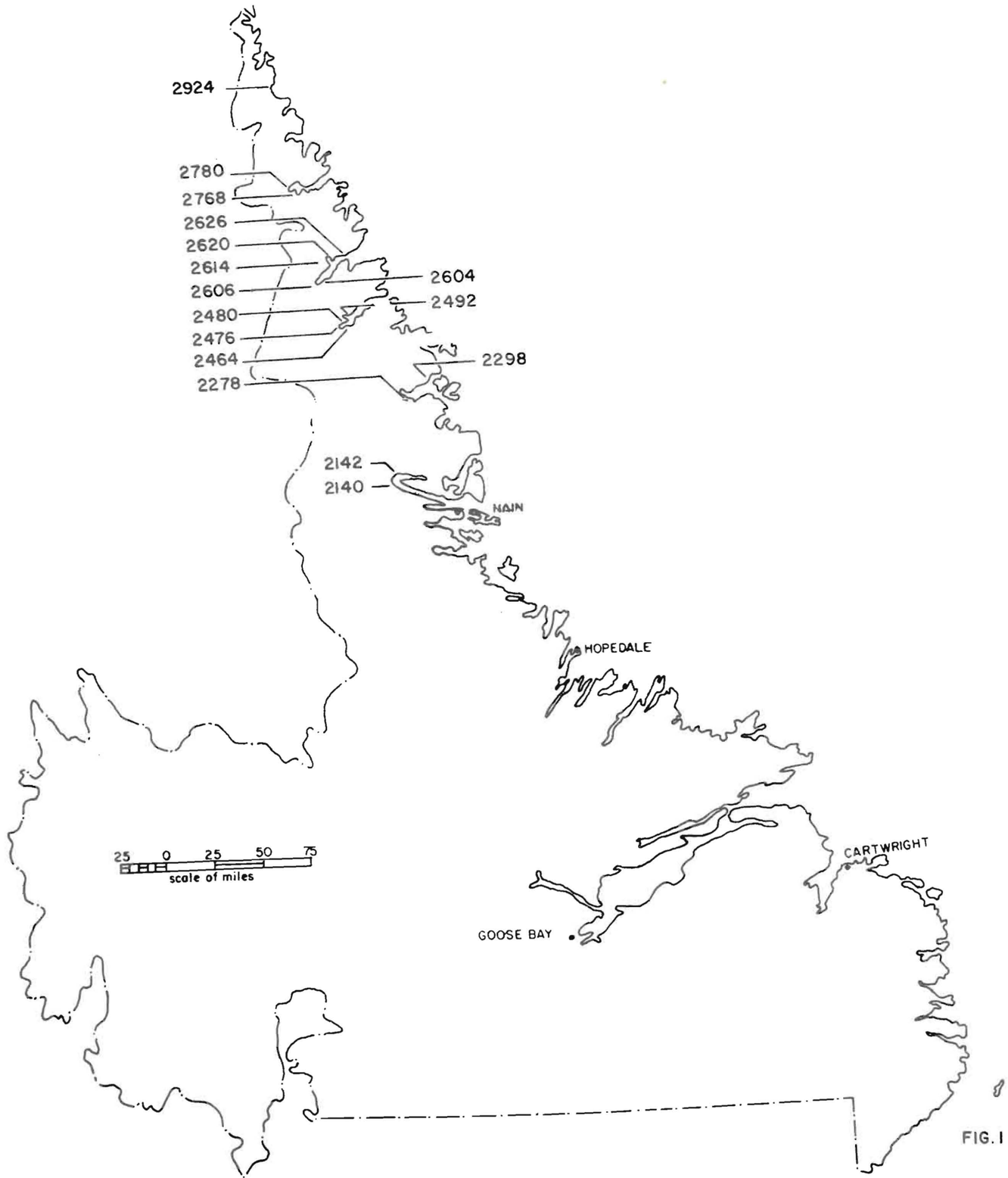

FIG. 1 : MAP SHOWING LOCATION OF RIVERS SURVEYED 1973

Kamanatsuk Brook Index 2140

Location of Mouth: 56°45'00" N
62°33'00" W

General Description

Drainage area.....320 sq. miles

Main River (including standing water)..... 39 linear miles

Tributary stream mileage.....235 linear miles

Largest lake (Tasialuk Lake)..... 43 miles

The main channel of Kamanatsuk Brook (Fig. 2) is 150 feet wide at the mouth and from there meanders across a level valley from falls at mile 3. This falls is 15 feet high and considered to be a complete obstruction. Upstream from the falls the river is slow moving over gravel/rubble bottom for a distance of 5 miles to Tasialuk Lake, which is 6 miles long and bounded by steep rising mountains. Further upstream the flow becomes more swift through a narrow valley bounded on both sides by steep rising mountains.

At mile 29 is a falls (complete obstruction) beyond which the river spreads over level plateau divided into small streams which are mostly dried up during the summer months. Tree growth is confined mostly to the main river valley and consists mainly of scrub spruce.

Similar to the neighbouring Fraser River all tributaries find their way to the main river by cascading over the steep valley wall and consequently are obstructed to fish movements. Due to the falls on the main stem only the first three miles of stream is accessible to anadromous fish migration. Beyond this falls is a potential 26 miles of accessible main stream.

Fig. 2 is a map showing sections surveyed and Table 1 and 2 lists bottom composition, rearing area etc. Barriers to passage of upstream migrating fishes are described in Table 3 .

Water Chemistry

The following data is derived from a water sample taken in Section 2 immediately below Tasialuk Lake.

pH	Alkalinity (total)	Total Hardness	Turbidity	Chlorides	Specific Conductance	Calcium
6.26	2.0 ppm	8.0 ppm	4.5 JTU	1.5 ppm	13.0 micromhos	0.8 ppm

Fish Populations

Salmon and Char probably frequent this river as far as the falls at mile 3, and it may be possible for salmon to get over this falls at certain flood levels· however, there is no information presently available on fish populations in this system.

Potential Population Estimation

The estimated potential salmon population production of the Kamanatsuk Brook accessible to sea run fishes is shown in Table 4 . The potential production of salmon from mile 0 to the falls at mile 29, including tributaries, is presented in Table 5 .

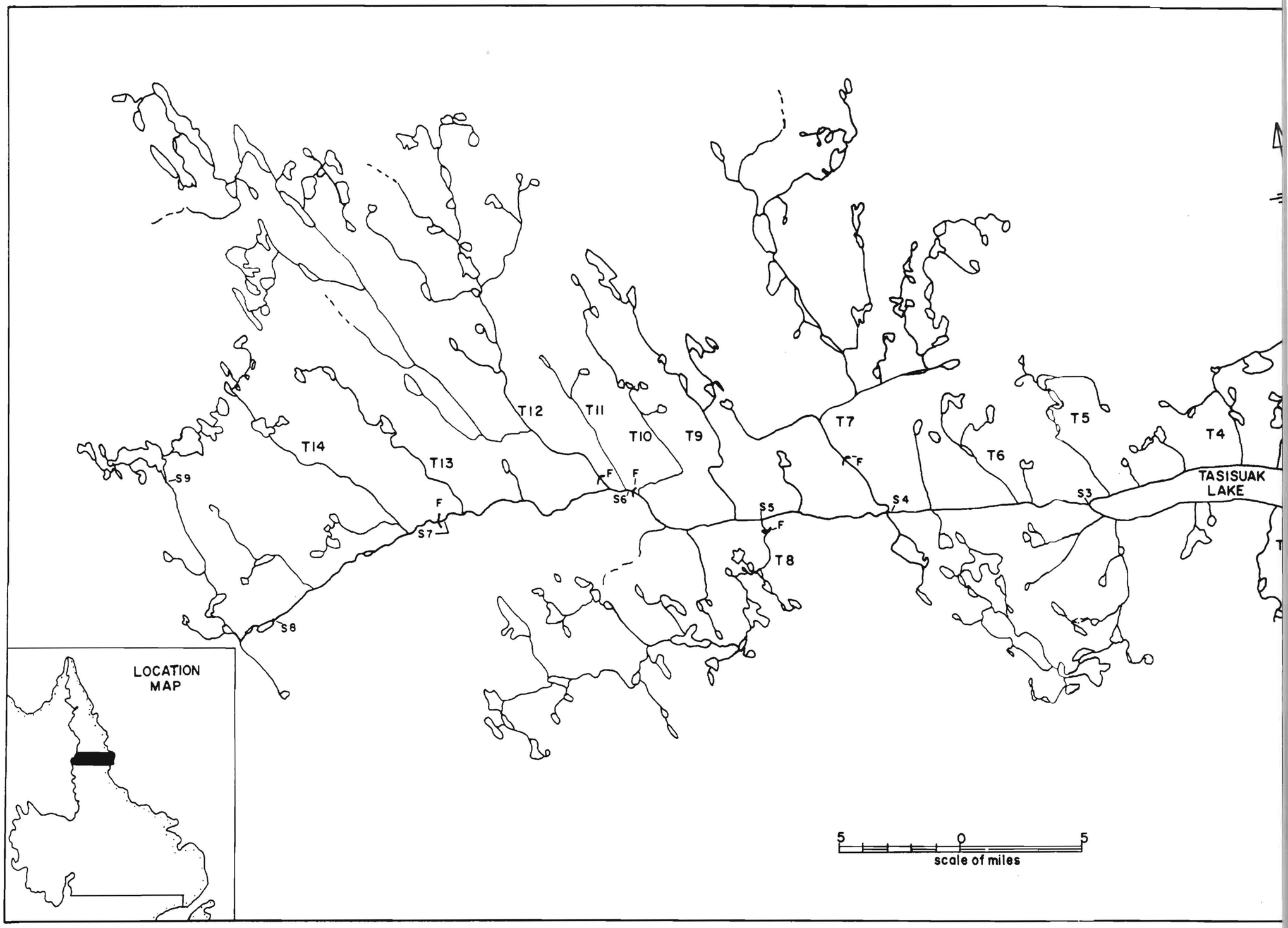

FIG 2 : MAP OF KAMANATSUK BROOK, INDEX 2140, SHOWING SECTIONS SURVEYED

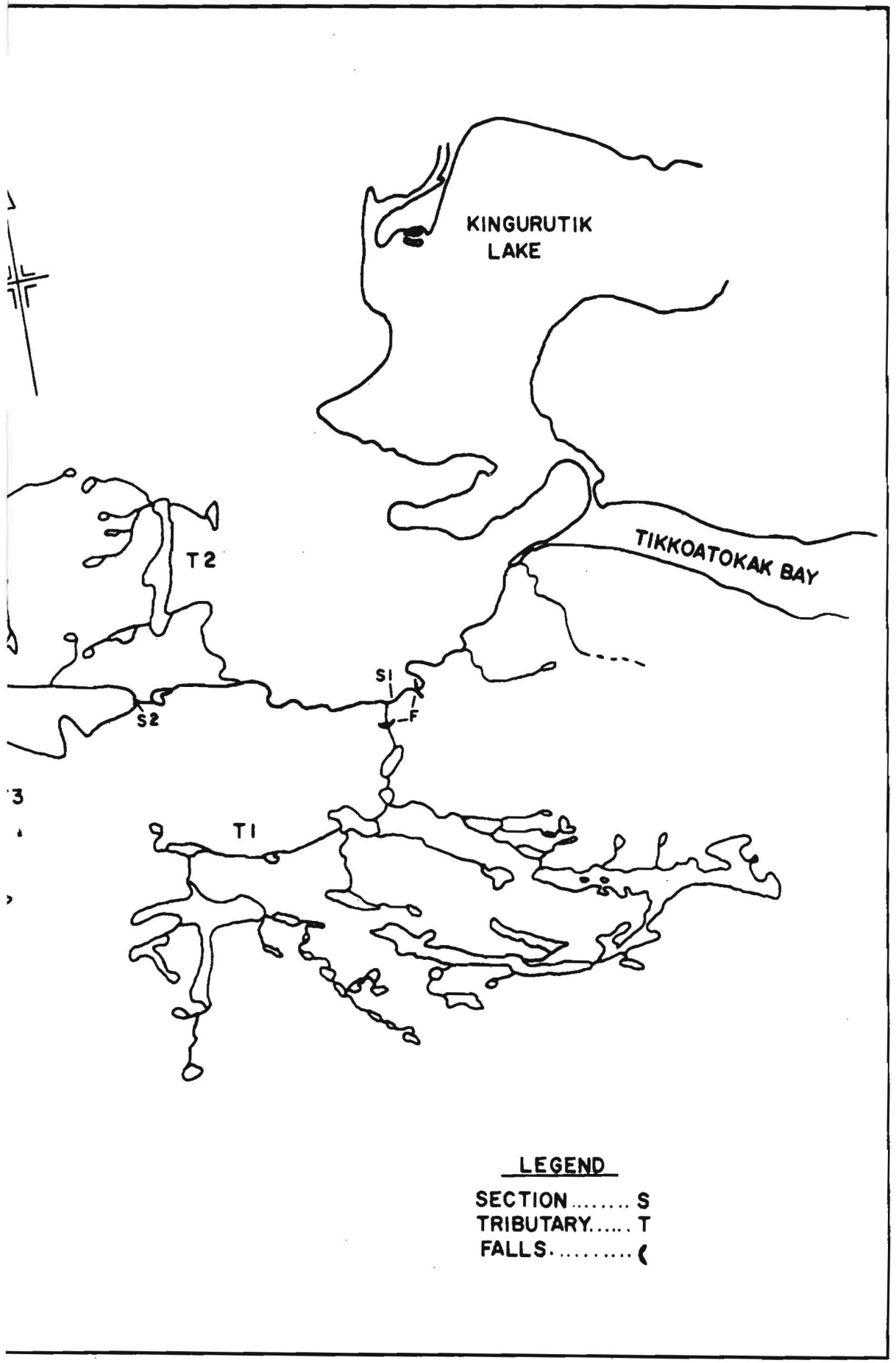
KINGURUTIK
LAKE
TIKKOATOKAK BAY
T2
S1
F
S2
T1
LEGEND
SECTION..... S
TRIBUTARY..... T
FALLS..... (

Table 1 . Bottom Composition - Kamanatsuk Brook, index 2140

Section	Location	Distance yds. (miles)	Av. Width yds.	Total units (100 sq.yds. per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remakrs
1	Mouth-Mile 3	5,280 (3)	50	2,640	boulder/rubble	100	2,640	-	-	Falls at head of this section complete obst.
2	Miles 3-8	8,800 (5)	50	4,400	gravel/rubble	90	3,960	50	2,200	
3	Miles 8-14	10,560 (6)	-	-	-	-	-	-	-	Tasialuk Lake
4	Miles 14-18	7,040 (4)	30	2,112	Gravel	90	1,900	50	1,056	
5	Miles 18-21	5,280 (3)	25	1,320	rubble/gravel	100	1,320	10	132	
6	Miles 21-25	7,040 (4)	20	1,408	boulder/rubble	100	1,408	-	-	
7	Miles 25-29	7,040 (4)	15	1,056	rubble/boulder	100	1,056	-	-	Falls in this section complete obstruction
8	Miles 29-34	8,800 (5)	10	880	boulder/rubble	100	880	-	-	
9	Miles 34-40	10,560 (6)	5	528	rubble/boulder	90	475	-	-	
				14,344			13,639		3,388	

Table 2 . Bottom Composition, Tributaries, Kamanatsuk River, Index 2140

Section	Location	Distance yds. (miles)	Av. Width yds.	Total units (100 sq.yds. per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
T12-S1	Mouth-Mile 1	1,760 (1)	7	123	boulder/rubble	100	123	-	-	Falls at end of this section.
S2	Mile 1-Head water	35,200 (20)	6	2,112	boulder/rubble	75	1,584	-	-	
Remaining tributaries				3,500*			3,000*			*Estimated.
Total				5,735			4,707			

Table 3 . Obstructions on Kamanatsuk Brook, Index 2140

Type of Obstruction	Location	Degree of Obstruction	Description	Remarks
Falls	Main stem mile point 3	Complete	Vertical Ht. 20' Angle 60°; 50' wide	Photo Fig. 3
Falls	Main stem mile point 25	Partial	Vertical Ht. 5' 50' wide	
Falls	Main stem mile point 29	Complete	Vertical Ht. 15' Angle 90° 30' wide	Photo Fig. 4
Falls	Tributary 1 mile point 1	Complete	Vertical Ht. 30' Angle 90°	
Falls	Tributary 7 mile point 2	Complete		
Falls	Tributary 8 near mouth	Complete		
Falls	Tributary 12 near mouth	Complete		

Photos on File.

Description	File No.
Falls on main stem at mile point 3 (35 mm kodacolor film)	805
Main stem at section 4 (typical section) (35 mm kodacolor film)	805
Mouth of main stem	800
Section near mouth	800
Tasialuk Lake	801
Shallow steady below Tasialuk Lake	801
Outlet of Tasialuk Lake	801
Falls at mile point 29	802

Table 4 . Estimated Atlantic salmon smolt production and adult sea survival, Kamanatsuk River, based on 2,640 units of rearing area below falls I.

If smolts produced per 100 yds.^{2} is: Smolts produced		1 2,640	2 5,280	3 7,920
Adult return if sea survival is:	5%	132	264	396
	10%	264	528	792
	15%	396	792	1,188
	20%	528	1,056	1,584
	25%	660	1,320	1,980

Table 5 . Estimated Atlantic salmon smolt production and adult sea survival, Kamanatsuk River based on 2,640 accessible units of rearing area plus 10,000 units of rearing area between falls 1 and 3*

If smolts produced per 100 yds.^{2} is: Smolts produced		1 12,640	2 25,280	3 37,920
Adult return if sea survival is:	5%	632	1,264	1,896
	10%	1,264	2,528	3,792
	15%	1,896	3,792	5,688
	20%	2,528	5,056	7,584
	25%	3,160	6,320	9,480

*Due to the type of obstructions on the main stem at mile 29 and all tributaries it would be pointless to list streams beyond as potential rearing area for sea run populations.

SUMMARY

1. This river is a little under average size as compared with other rivers in the area and only the first three miles of stream is accessible to anadromous fish.
2. All tributaries are obstructed to anadromous fish as they fall over the steep valley wall.
3. There are two complete obstructions on the main stem at mile 3 and mile 29 and a partial obstruction at mile 25.
4. There are completely obstructing falls on tributaries, 1, 7, 8 and 12.
5. There are 14 major tributaries on the system.
6. The following is a table of the accessible and inaccessible areas:

	Accessible	Inaccessible
Main stem	2,640	11,704
Tributaries	____	5,735*
Total	2,640	17,439

*Estimated

Fig. 3. Falls on Kamanatsuk Brook (Index 2140) at mile 3.

Fig. 4. Falls at mile 29.

KINGURUTIK RIVER - INDEX 2142

Position of Mouth: 56°45'30"N. Latitude

62°30'00"W. Longitude

Location: Tikkoatokak Bay

Map Reference: Scale 1:250,000 - Tasisuak Lake, 14D

- North River, 14E

GENERAL DESCRIPTION

Drainage Area: 1,605 sq. mi. Mean Width of Drainage Basin:

Axial Length of Basin:

Perimeter of Basin:

Max. Basin Relief:

Length of Main Stream to section 18: 76 miles.
(including standing water)

Number of Major Tributaries: 12

Total Length of Tributaries: 914 miles

Area of Lakes I (Kingurutik Lake): 34.4 sq. miles.

T10-I	4.8 sq. miles
T10-II	7 sq. miles
T10-III	5 sq. miles
T10-IV	3 sq. miles
T10-1-I	12.8 sq. miles

Table 6 . Bottom composition, accessible areas on the main stem, Kingurutik River, index 2142

Section	Location	Length yds (miles)	Av. width yds	Total units (100 sq. yds per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
1	Mouth - mile 1	1,760 (1)	70	1,232	rubble/boulder	100	1,232	-	-	Kotannak Brook
2	mile 1- 5	7,040 (4)								Kingurutik Lake
3	mile 5 - 8	5,280 (3)	100	5,280	sand/gravel	50	2,640	10	528	
4	mile 8 - 10	3,520 (2)	70	2,460	boulder/rubble	100	2,460	-	-	
5	mile 10- 14	7,040 (4)	50	3,520	gravel/rubble	75	2,640	10	352	
6	mile 14-20	10,560 (6)	70	7,392	rubble/boulder	100	7,392	5	370	
7	mile 20 - 28	7,040 (4)	50	3,520	rubble/boulder	90	3,168	-	-	
8	mile 28 - 32	7,040 (4)	65	4,576	boulder/rubble/gravel	90	4,118	10	458	
9	mile 32 - 34	3,520 (2)	65	2,288	rubble/boulder	75	1,716	-	-	
10	mile 34 - 43	15,840 (9)	50	7,920	boulder/rubble/gravel	90	7,128	10	792	
11	mile 43 - 48	8,800 (5)	60	5,280	rubble/boulder/gravel	100	5,280	10	528	
12	mile 48 - 51	5,280 (3)	50	2,640	rubble/gravel/boulder	75	1,980	20	528	
13	mile 51 - 55	7,040 (4)	50	3,520	rubble/boulder	100	3,520	-	-	
14	mile 55 - 62	12,320 (7)	20	2,464	rubble/gravel/boulder	90	2,218	10	246	
15	mile 62 - 66	7,040 (4)	30	2,112	rubble/gravel/boulder	90	1,901	10	211	
16	mile 66 - 70	7,040 (4)	20	1,408	gravel/rubble	90	1,267	10	141	Falls at mi. 70 complete obst.
Total				55,612			48,660		4,154	

Table 7. Bottom composition, inaccessible areas on the main stem, Kingurutik River, Index 2142

Section	Location	Length yds (miles)	Av. width yds	Total units (100 sq.yds. per unit)	Bottom Type.	Rearing		Spawning		Remarks
						%	Units	%	Units	
17	mile 70 - 72	3,520 (2)	20	704	bedrock/boulder	100	704	-	-	Falls at mi. 7 partial obst.
18	mile 72 - 76	7,040 (4)	20	1,408	boulder	90	1,267	-	-	
Total				2,112			1,971			

Table 8. Bottom composition, tributaries accessible to anadromous fish, Kingurutik River, index 2142

Section	Location	Length-yds. (miles)	Av. width yds.	Total units (100 sq. yds. per unit)	Bottom type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
T1-S1	mouth mile 3	5,280 (3)	20	1,056	sand	10	106	-	-	winding stream
-S2	miles 3 - 5	3,520 (2)	20	704	boulder/rubble	100	704	-	-	
-S3	miles 5 - 7	3,520 (2)	20	704	rubble/gravel	100	704	25	176	
-S4	miles 7 - 10	5,280 (3)	10	528	rubble/boulder	100	528	-	-	Falls-partial obstruction
-S5	miles 10 - 16	10,560 (6)	8	845	rubble/boulder	100	845	-	-	
T1-1	entire stream	10,560 (6)	5	528		100	528*	-	-	*Estimated-area not surveyed.
T2-*	entire stream	14,080 (8)					200	-	-	small stream-15' wide at mouth-not surveyed.
T3-S1	mouth mile 3	5,280 (3)	10	528	rubble/boulder	100	528	-	-	rapid sections.
-S2	miles 3 - 6	5,280 (3)	7	370	boulder/rubble	100	370	-	-	
	Headwater area	14,080 (8)					100	-	-	
T7	entire stream	10,560 (6)	5	528		50	264	-	-	
T8	entire stream	14,080 (8)	5	704		100	704			
T9										stream dry at time of survey.
T10-S1	mouth mile 3	5,280 (3)	50	2,640	rubble/boulder	75	1,980	-	-	
Sub-total				9,135			7,561		176	

Table 8 Cont'd.

Section	Location	Length-yds. (miles)	Av. width yds	Total units (100 sq.yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
Brought Forward..				9,135			7,561		176	
T10-S2	miles 3 - 8	8,800 (5)								Lake
T10-S3	miles 8 - 12	7,040 (4)	30	2,112	rubble/gravel	90	1,901	10	211	remainder of streams, lakes & steadies
T10-1-S1	mouth mile 3	5,280 (3)	50	2,640	rubble/boulder	50	1,320	-	-	remainder of streams, lakes & steadies.
T11	entire stream								100	relatively small stream.
T12-S1	mouth mile 4	7,040 (4)	35	2,464	boulder/rubble/gravel	100	2,464	10	246	falls at mi.4 partial obst.
-S2	miles 4 - 12	14,080 (8)	35	4,928	boulder/rubble	90	4,435	10	493	falls at end of this sec.complet
T12-1-S1	mouth mile 1	1,760 (1)	50	880	boulder/rubble	100	880	-	-	obstruction.
T12-1-S2	miles 1 - 5	7,040 (4)	30	2,112	boulder/rubble/gravel	80	1,689	10	211	
T12-1-S3	miles 5 - 17	21,120 (12)	20	4,224	rubble/boulder	75	3,168	10	422	
T15	entire stream	21,120 (12)	5	1,056	boulder/rubble	75	792	-	-	
T16	entire stream	17,600 (10)	3	528	boulder/rubble	75	396	-	-	
Total				30,079			24,606		1,859	

Table 9. Bottom composition, tributaries inaccessible to anadromous fish, Kingurutik River, index 2142

Section	Location	Length-yds. (miles)	Av. width yds.	Total units (100 sq.yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
T4	Entire stream	17,600 (10)	10	1,760	rubble/gravel	100	1,760	-	-	Falls near mouth complete obst.
T5	Entire stream	35,200 (20)	8	2,816		50	1,408	-	-	Falls at mouth, complete obst.
T6	Entire stream	21,120 (12)	5	1,056		50	528	-	-	Falls near mouth complete obst.
T12-S3	Entire stream above S2	14,080 (80)	10	1,408		50	704	-	-	Maze of connecte ponds & steadies
T13	Entire stream	14,080 (8)	5	704		50	352	-	-	
T14	Entire stream	14,080 (8)	5	704		50	352	-	-	
Total				8,448			5,104			

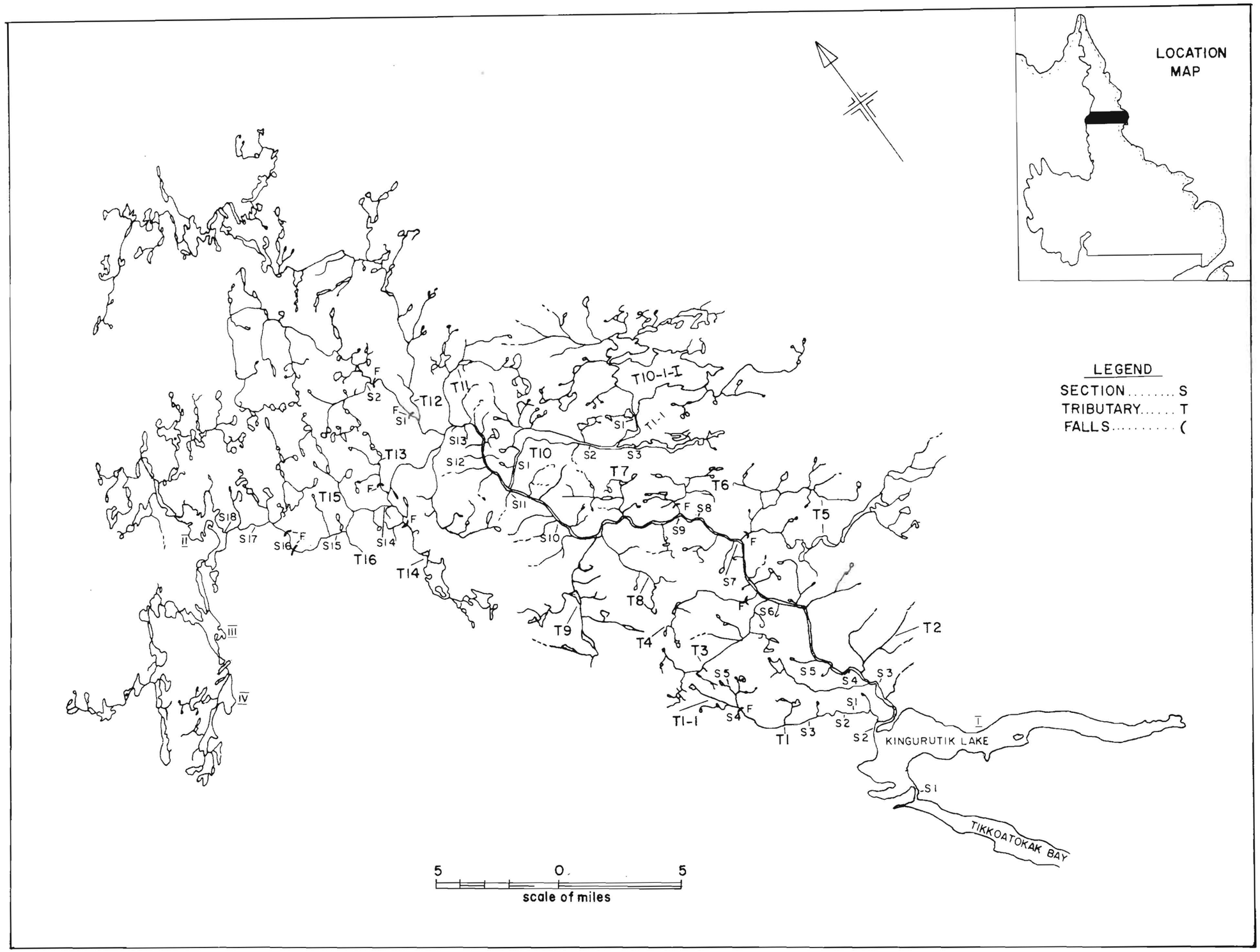

FIG.5 : MAP OF KINGURUTIK RIVER, INDEX 2142, SHOWING SECTIONS SURVEYED

POTENTIAL SALMON POPULATION ESTIMATES

Table 10. Estimated Atlantic salmon smolt production and adult sea survival, Kingurutik River, based on 73,266 accessible units of rearing area.

If smolts produced per 100 yds.^{2} is: Smolts produced		1 73,266	2 146,532	3 219,798
Adult return if sea survival is	5%	3,664	7,327	10,990
	10%	7,327	14,654	21,980
	15%	10,991	21,981	32,970
	20%	14,654	29,308	43,960
	25%	18,318	36,635	54,950

Fish Populations

There are no angling camps on this river and very little is known of the fish populations. During the aerial survey fish were seen throughout the system which were identified as Arctic char. It is probable that Arctic char may be the predominant species together with a smaller run of Atlantic salmon.

Table 11. Obstructions on Kingurutik River - Index 2142

Type of Obstruction	Location	Degree of Obstruction	Description	Remarks
Falls	Main stem Mi. Pt. 70	complete	Vertical Ht. 30'. Two main steps 18 & 12 feet high.	Photo Fig. 8
Falls	Main stem mi. pt. 72	Partial	Vertical Ht. 6'	
Falls	Tributary 1 mi.pt. 10	Partial	Series of 4 Falls Vertical Ht. 30'	Photo Fig. 9
Falls	Tributary 4 Near mouth	Complete	Vertical Ht. 10' Angle 90°. 30' Wide.	
Falls	Tributary 5 at mouth	complete		
Falls	Tributary 6 mi.pt. 1	complete		Photo Fig. 10
Falls	Tributary 12 mi.pt. 4	Partial	Vertical Ht. 6' Angle 45° 100' wide	Photo Fig. 11
Falls	Tributary 12 mi.pt. 12	Complete	Vertical Ht. 10' 100 feet wide	Photo Fig. 12
Falls	Tributary 13 at mouth	Complete	Vertical Ht. 20' Angle 90°	
Falls	Tributary 14 near mouth	Complete		

PHOTOS ON FILE

Description	File Number
Mouth of main river - (35mm Kodacolor)	807
Main stem of Lake I - (35mm Kodacolor)	809 - 1
Main stem at Section 5 - (35mm Kodacolor)	809 - 2
Main stem at Section 6 - (35mm Kodacolor)	809 - 3
Main stem - Lower Section - (35mm Kodacolor)	809 - 4
Main stem - Section 8 (35mm Kodacolor)	809 - 5
Main stem - Section 10 - (35mm Kodacolor)	809 - 6
Main stem - Section 12 - (35mm Kodacolor)	809 - 7
Falls on main stem at mile 70 - (35mm Kodacolor)	823 - 1
Falls on Tributary 1 at mile point 10 - (35mm Kodacolor)	820 - 1
Falls on Tributary 6 at mouth - (35mm Kodacolor)	820 - 2
Tributary 10 above lake (35mm Kodacolor)	821 - 2

SUMMARY

(1) This system covers a drainage area of approximately 1,605 square miles; length of main stem being 76 linear miles and total length of tributaries 914 miles.

(2) Arctic char may be the predominant fish species.

(3) There are 10 falls throughout the system; a complete obstruction at mile 70 on the main stem and a partial obstruction at mile 72. The remaining falls are located on several tributaries.

(4) Despite the falls a large portion of this system is accessible to anadromous fish.

	Accessible			Inaccessible		
	Total units	Rearing units	Spawning units	Total units	Rearing units	Spawning units
Main River	55,612	48,660	4,154	2,112	1,971	-
Tributaries	30,079	24,606	1,859	8,448	5,104	-
Total	85,691	73,266	5,013	10,560	7,075	-

RECOMMENDATIONS

Due to the type of falls and their location any type of stream remedial work is not recommended.

Fig.6 . Mouth of Kingurutik River (Katannak Brook) Index 2142

Fig.7 . Kingurutik River, main stem at mile 30.

Fig. 8 . Kingurutik River. Falls on main stem at mile point 70.

Fig. 9 . Kingurutik River, Tributary 1, Falls at mile point 10.

Fig. 10. Kingurutik River, Falls on tributary 6 at mile point 1.

Fig. 11. Kingurutik River, falls on tributary 12 at mile point 4.

Fig. 12. Falls on tributary 12 at mile point 12, Kingurutik River.

Fig. 13. Falls on tributary 14, Kingurutik River.

NORTH RIVER INDEX 2278

Position of Mouth: 57°20'00" N. Latitude
62°32'00" W. Longitude

Location of Mouth: Okak Bay

Map Reference: North River, 14E, Scale 1:250,000.

GENERAL DESCRIPTION

Drainage Area: 639 square miles.

Mean Width of Drainage Basin: 20.3 miles.

Axial Length of Basin: 34.5 miles.

Perimeter of Basin: 126 miles.

Maximum Basin Relief: 2,200 feet.

Length of Main Stem (including standing water): 52 miles.

Number of Major Tributaries: 9

Total Length of all tributaries (including standing water):

Area of Lakes:	T1-1	6 sq.miles
	Umiakovik Lake-(T2-1)	8 sq.miles
	T2-11	1.5 sq.miles
	T2-1-2-1	3 sq.miles
	T4-1	8 sq.miles
	T4-11	5 sq.miles
	T4-111	5 sq.miles
	T4-IV	2.0 sq.miles

The mouth of the main stem is approximately 200 feet wide; rubble/boulder is the predominant bottom type (Tables 12 and 13). From mile 10

to mile 41 the channel winds down a low lying valley bounded by steep mountains. The surrounding vegetation is scrub forest which is burnt in some areas.

At mile 41 the river is completely obstructed by a series of falls (Table 17) beyond which a swifter flow constitutes a rubble/boulder bottom. The surrounding country at this point is a plateau with barren vegetation.

All of the major tributaries except T1 and T2 are obstructed to within one mile of the mouth. Tributary 1 and 2 each has approximately 15 miles of accessible stream. These streams are physically similar to the main stem in that a portion of the stream winds through a wide valley eventually rising to the plateau by a series of falls.

Fig. 14 is a map showing sections surveyed.

Fish Populations

Although no biological surveys have been conducted in this area to date, it is evident that the predominant fish species, (as may well be the case for all rivers north of Nain), is Arctic char. During this survey char could be viewed anywhere throughout the accessible areas of this system. It was found that these fish could be caught by spinner with very little effort.

There is one fishing camp located on Umiakovik Lake (T2-I) where fishing is conducted mainly for char. Reports of catching a pink salmon Oncorhynchus gorbuscha (Walbaum), (a species introduced in North Harbour River, St. Mary's, Bay, Newfoundland) were received from this camp during the 1973 season. There is currently no information available on the total catch from this camp.

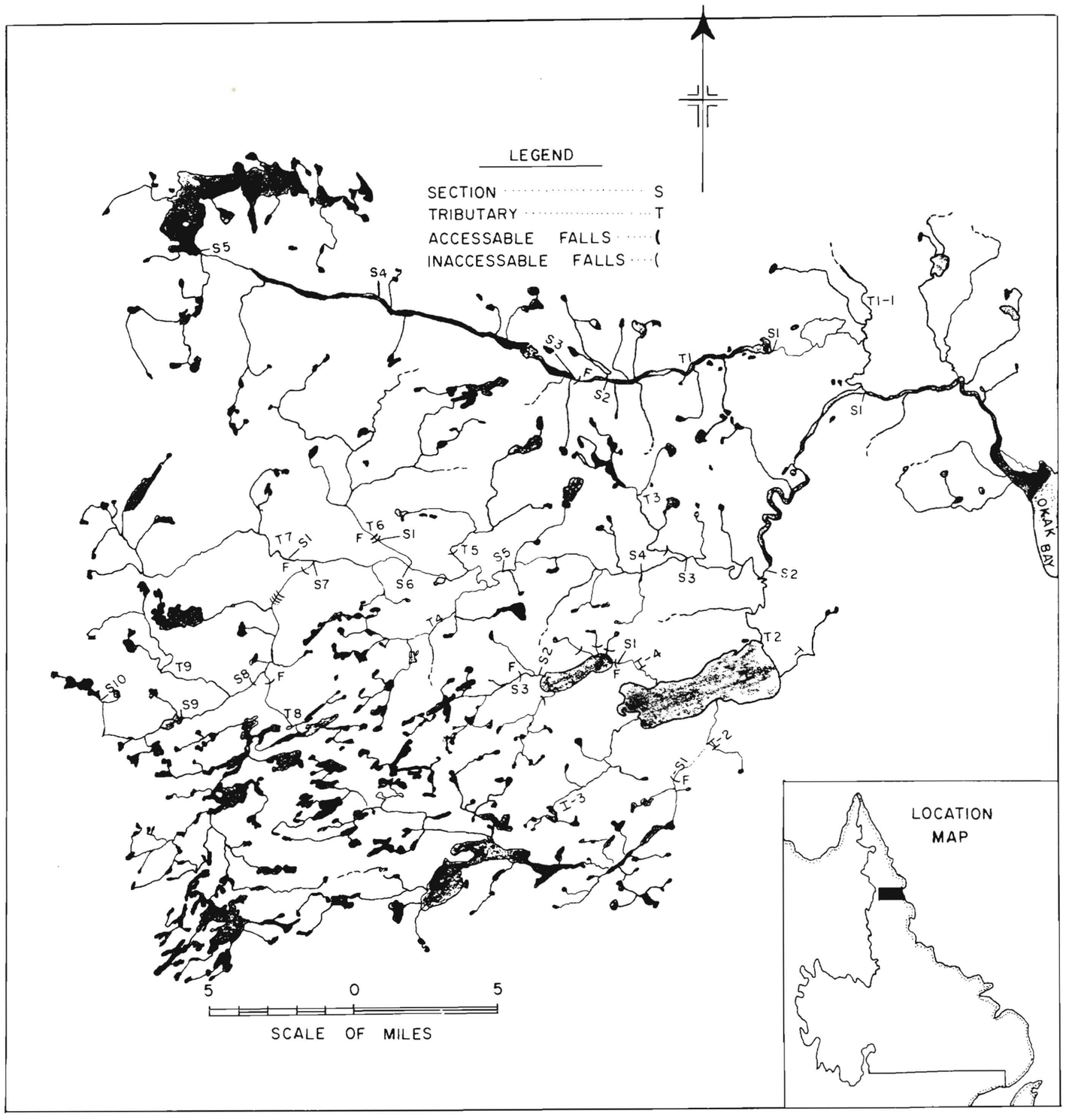

FIG.14 Map Of North River Index 2278, Showing Sections Surveyed.

Table 12. Bottom composition, accessible areas of the main stem, North River, index 2278

Section	Location	Distance Yds. (miles)	Av.Width Yds.	Total units (100 sq.yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
1	Mouth-mile 8	14,080 (8)	60	8,448	rubble/boulder	90	7,603	-	-	
2	Miles 8 - 20	21,120 (12)	50	10,560	gravel/sand	50	5,280	25	2,640	river winding
3	Miles 20 - 24	7,040 (4)	30	2,112	sand/gravel	50	1,056	10	211	
4	Miles 24 - 26	3,520 (2)	25	880	gravel/sand	75	660	10	88	
5	Miles 26- 32	10,560 (6)	30	3,168	gravel/sand	80	2,534	20	634	
6	Miles 32 - 38	10,560 (6)	30	3,168	rubble/gravel	100	3,168	20	634	
7	Miles 38 - 41	5,280 (3)	25	1,320	rubble/boulder	90	1,188	-	-	Falls at end of the section. complete obstruction.
Total				29,656			21,489		4,207	

Table 13. Bottom composition, inaccessible areas of the main stem, North River, Index 2278

Section	Location	Distance Yds. (miles)	Av.Width Yds.	Total units (100 sq. yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
8	Miles 41 - 45	7,040 (4)	30	2,112	rubble/boulder	80	1,690	-	-	4 falls in this section
9	Miles 45 - 48	5,280 (3)	25	1,320	rubble/boulder	90	1,188	-	-	
10	Miles 48 - 52	7,040 (4)	10	704	rubble/boulder/ gravel	90	634	5	35	
Total				4,136			3,512		35	

Table 14. Bottom composition, accessible areas of tributaries, North River, Index 2278

Tributary	Location	Distance Yds. (miles)	Av. width yds.	Total Units (100 sq. yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
T1-S1	Mouth-mile 7	12,320 (7)	20	2,464	rubble/boulder	100	2,464	-	-	
-S2	Mile 7 - 14	12,320 (7)	50	3,696	sand/gravel	20	739	60	2,218	flat steady area
-S3	Miles 14 - 15	1,760 (1)	40	704	rubble/gravel	90	634	10	70	falls at mi.15, complete obst.
T1-1	Entire system	8,800 (5)	8	704	sand/gravel/rubble	50	352	10	70	
T2-S1	Mouth-mile 6	10,560 (6)	20	2,112	sand/mud	10	211	-	-	Umiakovik Lake at end of this section
T2-I-1	entire system	5,280 (3)	5	264	sand	-	-	-	-	relatively small stream.
T2-I-2-S1	Mouth-mile 4	7,040 (4)	20	1,408	boulder/rubble/ bedrock	80	1,126	-	-	Falls at end of this section. Complete obst.
T2-I-3	entire system						500			Small stream.
T2-I-4-S1	Mouth-mile 2	3,520 (2)	10	352	rubble/gravel	100	352	20	70	
-S2	Miles 2 - 4									Lake
-S3	Miles 4 - 5	1,160 (1)	10	176	rubble	100	176			Falls at mi.5, complete obst.
T6-S1	mouth-mile 1	1,760 (1)	10	176	rubble	100	176			total obst.at mile 1
T7-S1	mouth-mile 1	1,760 (1)	20	352	boulder/rubble	100	352			ttl.obst. mi. 1
	Total			12,408			7,082		2,428	

Table15. Bottom composition, inaccessible areas of tributaries, North River, Index 2278

Tributary	Location	Distance Yds. (miles)	Av. width Yds.	Total units (100 sq.yds. per unit)	Bottom Type	Rearing %	Rearing Units	Spawning %	Spawning Units	Remarks
T1-S4	Miles 15 - 23	14,080 (8)	60	6,448	rubble/boulder	50	3,224	-	-	steady areas -very dry at time of survey
-S5	Miles 23 - 29	10,560 (6)	30	3,168	boulder/rubble	50	1,584			
T2-I-2-S2	Entire system above mi. 4	35,200 (20)	10	3,520		75	2,640			
T3	Entire system			1,000		75	750			Small stream. Obst. near mouth.
T5	Entire system			1,000		75	750			Obst. near mouth.
T6	Entire system above mi. 1	26,400 (15)	8	2,112		75	1,584			
T7	Entire system above mi. 1	26,400 (15)	8	2,112		75	1,584			
T8	Entire system			1,000		75	750			Small stream. Obst. near mouth.
T9	Entire system			1,000		75	750			
Total				21,360			13,616			

POTENTIAL POPULATION ESTIMATION

Table 16. Estimated Atlantic salmon smolt production and adult sea survival of North River, Index 2278.

If smolt production per 100 yd^2 is:		1	2	3
Smolt produced		28,571	57,142	85,713
Adult return if sea survival is:	5%	1,429	2,857	4,286
	10%	2,857	5,714	8,571
	15%	4,286	8,571	12,857
	20%	5,714	11,428	17,143
	25%	7,143	14,286	21,428

In addition to a sport fishery, the Arctic char in this area is being exploited commercially. Consequently, plans are now being made for an Arctic char study so that other proper conservation regulations can be imposed.

Table 17. Obstructions on North River Index 2278

Type of obstruction	Location	Degree of obstruction	Description	Remarks
Falls	Main stem, mi.pt. 41	complete	Vertical ht. 25' Angle 90°, 30' wide.	
4 Falls	Main stem, mi.pt.42-43	complete	Vertical ht. 10' Angle 90°, 50' wide (each fall)	
Falls	Trib. 1, mile pt. 15	complete	Vertical ht. 15' Angle 90°, narrow gorge.	
Falls	Trib. 2-I-2, mi.pt. 4	complete	Vertical ht. 30' Angle 75°, 30' wide	
Falls	Trib. 2-I-4, mi.pt. 2	partial	Vertical ht. 6' Angle 30°, 50' wide	
Falls	Trib. 2-I-4, mi.pt. 5	complete	Vertical ht. 25' Angle 80°, 20' wide	
Falls	Trib. 3 near mouth	complete	Vertical ht. 30' Angle 80°, 30' wide	
Falls	Trib. 5 near mouth	complete	Vertical ht. 25' Angle , 30' wide	
Falls	Trib. 6, mil.pt. 1	complete	Vertical ht. 25' Angle , 30' wide	
Falls	Trib. 6,mi.pt. 1	complete	Vertical ht. 50' Angle 90°, 20' wide	
Falls	Trib. 8 near mouth	complete		
Falls	Trib. 9 near mouth	complete		

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of main River	1289 (2 slides)
Main River at Mile Point 8	1290
Main River at Mile Point 10	1290
Main River at Section 6 (Mile Point 35)	1291
Main River at Section 4 (Mile Point 24)	1291
Main River at Section 3 (Mile Point 20)	1291
Main River at Section 2 (Mile Point 15)	1291
Upstream from Umiakovik Lake	1292
Falls above Umiakovik Lake	1293
Falls at Headwaters of Main River (Miles 40-43)	1294 (5 slides)
Main River at Headwater Area	1295
Tributary 1, Near Mouth	1296
Tributary 1, Area in Section 1	1296
Tributary 1, Area in Section 5 (Mile Point 25)	1296
Tributary 1, Dry Area in Section 5 (Mile Point 28)	1296
Tributary 1, Typical of Section 2 (Mile Point 10)	1297
Tributary 1, Area in Section 3 (Mile Point 14)	1297
Tributary 1, Falls at Mile Point 15	1298
Tributary 7, Falls at Mile Point 1	1299
Tributary 6, Typical Section Near Mouth	1300
Tributary 6, Falls at Mile Point 1	1301 (2 slides)
Tributary 5, Falls Near Mouth	1302
Tributary 2-I-4, Falls at Mile 2	1303

PHOTOS ON FILE

Description (35 mm slides)	File No.
Tributary 2-I-4, Falls at Mile 5	1303
Tributary 2, Small Stream of Umiakovik Lake	1304
Tributary 2-2, River Mouth of Umiakovik Lake	1305
Arctic char from Mouth of River	1008
Mouth of North River	941
Angling char on Tributary 1	941
Tributary of Umiakovik Lake	941
Tributary 1, Falls at Mile 15	941
Falls on Tributary of Umiakovik Lake	941
Falls on Tributary of Umiakovik Lake	941

SUMMARY

1. The drainage area of North River is 639 square miles.
2. The length of the main stem is 52 linear miles which is obstructed at mile 41.
3. There are nine major tributaries and all are obstructed to within one mile of the mouth with the exception of tributary 1 and 2, where each has approximately 15 linear miles of accessible stream.
4. It is thought that the predominant anadromous fish species is Arctic char.
5. There is one fishing camp at Umiakovik Lake, also a char commercial fishery in Okak Bay.
6. The accessible and inaccessible units are as follows:-

	Accessible			Inaccessible		
	Total Units	Rearing Units	Spawning Units	Total Units	Rearing Units	Spawning Units
Main River	29,656	21,489	4,207	4,136	3,512	35
Tributaries	12,408	7,082	2,428	21,360	13,616	-

RECOMMENDATIONS

1. Due to the type of falls and the amount of inaccessible areas, stream clearance is not feasible in this system.
2. The sport fishery should be monitored as to quantity of fish taken and also to collect data on size, age and sex so that effective conservation regulations can be enforced.

Siugak Brook - Index 2298

Position of Mouth:	57°36'00" N
Location of Mouth:	62°05'00" W
Map Reference:	North River, 14E, Scale 1:250,000

GENERAL DESCRIPTION

Drainage Area: 414 sq. miles

Mean width of Drainage Basin: 8.8. miles

Axial Length of Basin: 45 miles

Perimeter of Basin: 136 miles

Maximum Basin Relief: 1,800 feet

Length of main stem (including standing water): 50 miles

Number of Major Tributaries: 3

Total Length of all Tributaries: 150 miles

Area of Lakes: I - 1.5 sq. miles

The estuary is shallow, exposing mud and sand flats, at low tides. The river mouth is approximately 200 feet wide and is adjacent to another smaller stream flowing into the estuary. Except for a few rapid sections, the major part of the system is winding, steady stream, through a valley approximately 1 mile wide bounded by low rolling hills. Vegetation on the surrounding country is sub-Arctic tundra with sparse patches of scrub forest.

There are severl falls (Table 22) throughout the system, the largest located at mile 30 on the main stem, completely closing the upper portion

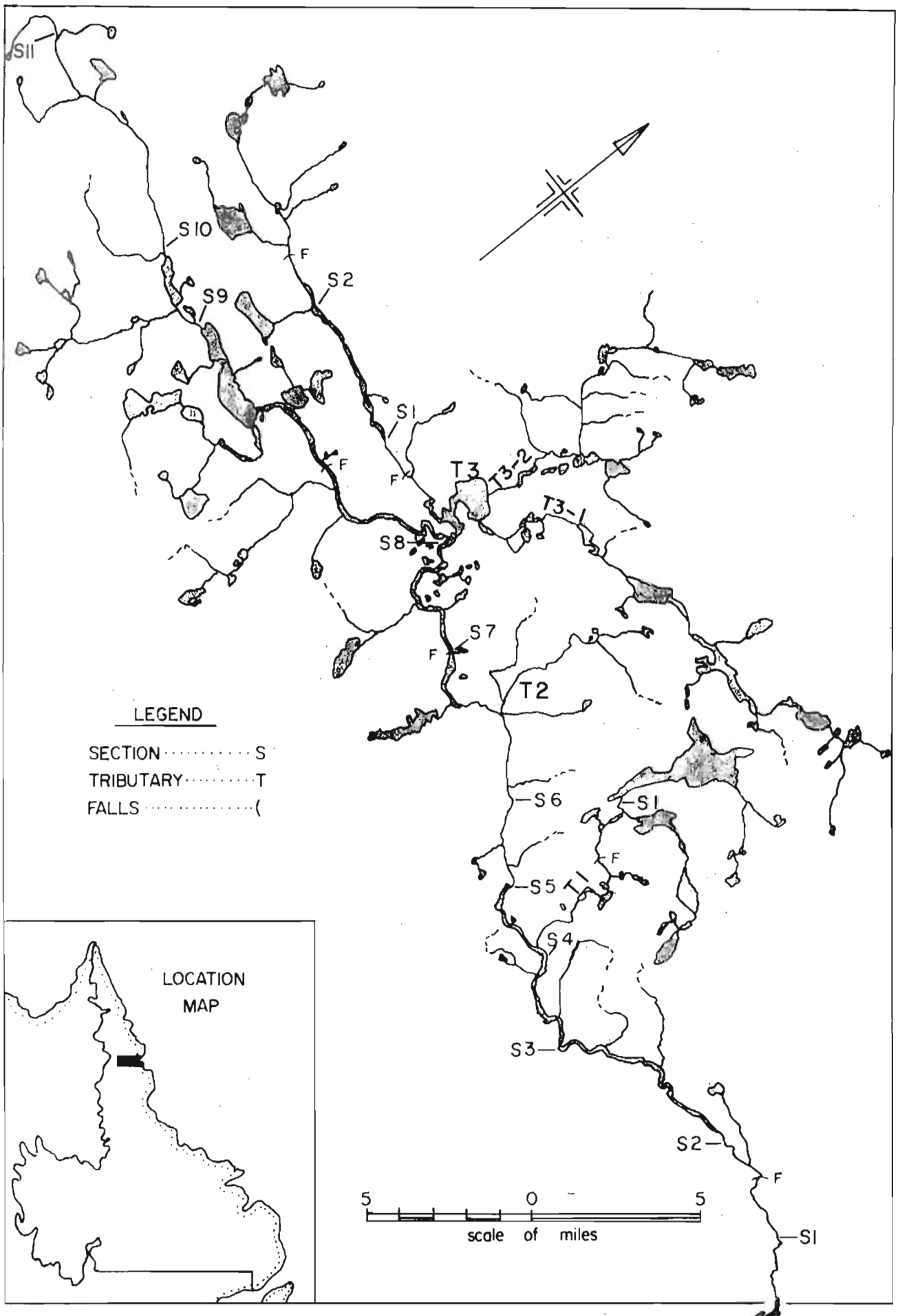

Fig. 15 — Map of Siugak Brook (Index 2298) Showing Sections Surveyed

of the system from anadromous fish migrations.

There are three major tributaries to the main stem, the remaining streams are smaller and almost dried up during the dry season.

Fig.15 is a map showing sections surveyed and Table 18 to 21 lists the bottom composition of each section surveyed.

Fish Populations

There is no information available on the fish populations; however, it is likely that sea run Arctic char use the accessible portion of this system.

Table 18. Bottom composition, accessible areas of the main stem, Siugak River, Index 2298.

Section	Location (miles)	Distance yds. (miles)	Av. Width Yds.	Total Units (100 sq.yd. per unit)	Bottom Type	Remarks
1	Mouth to 2	3520 (2)	40	1408	Boulder/rubble	
2	2 to 7	8800 (5)	30	2640	Rubble/boulder/sand	Falls at mile 5
3	7 to 14	12320 (7)	60	7392	Sand 50% gravel 50%	Fig.
4	14 to 17	5280 (3)	30	1584	Gravel 50% sand 50%	Winding river
5	17 to 20	5280 (3)	50	2640	Rubble/boulder	
6	20 to 23	5280 (3)	30	1584	Rubble/boulder	
7	23 to 29	10560 (6)	30	3168	Rubble/boulder	Falls at end of this section. Complete obst.
Total				20416		

Table 19. Bottom composition inaccessible areas of the main stem, Siugak River, Index 2298.

Section	Location (miles)	Distance yds Miles	Av. width Yds.	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
8	29 to 33	7040 (4)	60	4224	rubble/boulder	Steady flow.
9	33 to 45	21120 (12)	60	12672	boulder/rubble	Falls - complete obstruction
10	45 to 47	3520 (2)	60	2112	gravel/rubble	
11	47 to 55	14080 (8)	30	4224	gravel/rubble	Few steadies
Total				23232		

Table 20. Bottom composition, accessible areas of tributaries, Siugak River, Index 2298.

Sections	Location (miles)	Distance yds. (miles)	Av. width Yds	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
T1	00 to 8	14080 (8)	25	3520	boulder/rubble	Swift flow.
T2	Entire stream			1000		relatively small stream.
Total				4520		

Table 21. Bottom composition, inaccessible areas of tributaries, Siugak River, Index 2298

Section	Location (miles)	Distance yds. (miles)	Av. width yds.	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
T3-S1	00 to 4	7040 (4)	30	2112	boulder/rubble	
-S2	4 to 9	8800 (5)	50	4400	rubble/gravel	Fig. 21
-S3	9 to 15	10560 (6)	30	3168	rubble/gravel	
T3-1	Entire stream	(16)		3000	-	Not surveyed
T3-2	Entire stream	(14)		3000	-	Not surveyed
Total				15680		

Obstructions

Table 22. Obstructions on Siugak River, Index 2298

Type of obstruction	Location	Degree of obstruction	Description	Remarks
Falls	Main stem mi. 5	Partial	Vertical height 6-8' angle 80° 30' wide	Fig. 18
Falls	Main stem mi. 30	Complete	Vertical height 15' angle 90° 150' wide	Fig. 19
Falls	Main stem mi. 40	Partial	Vertical height 10' Angle 90° 50' wide	Fig. 20
Falls	Tributary 1 Mi. 6	Partial	Series of small falls for 1 mi.	
Falls	Tributary 3 mi. 10	Partial	Vertical height 6' angle 90° 50' wide	

Water Chemistry

No sample taken.

PHOTOS ON FILE

Description	Type of Photo	File No.
Mouth of Siugak Brook	35 mm slide	1306
Main river in section 3	35 mm slide	1307
Main river in section 5	35 mm slide	1307
Main river in section 10	35 mm slide	1307
Falls on main river at mile 5	35 mm slide	1308
Falls on main river at mile 30	35 mm slide	1309 (3 slides)
Falls on main river at mile 40	35 mm slide	1310
Typical section of tributary 3	35 mm slide	1311
Main river	35 mm slide	1307

SUMMARY

1. The drainage area of Siugek River is 414 square miles.
2. The length of the main stem is 50 miles and is totally obstructed at mile 30.
3. There are three major tributaries to the main stem.
4. It is likely that the predominant fish species is Arctic char.
5. The accessible and inaccessible units are as follows:

	Total accessible units	Total inaccessible units
Main river	20416	23232
Tributaries	4520	15680
Total	24936	38912

RECOMMENDATIONS

1. Blasting of the falls on the main stem to open up the entire system to anadromous fish.
2. Further investigation of fish species could be conducted in conjunction with Arctic char studies which are currently planned for that area.

Fig. 16. Mouth of Siugak Brook.

Fig. 17. Typical area in section 3.

Fig. 18. Falls at mile 5.

Fig. 19. Falls at mile 30.

Fig. 20. Falls on main river at mile 40.

Fig. 21. Typical area of tributary 3.

Hebron Fiord River - Index 2464

Position of Mouth:	58°04'30" N. Latitude 63°02'30" W. Longitude
Location of Mouth	Hebron Fiord
Map Reference:	Hebron 14L, 1:250,000. North River 14E, 1:250,000.

GENERAL DESCRIPTION

Drainage area: 305 square miles

Mean Width of Drainage Basin: 7 miles

Axial Length of Basin: 43 miles

Perimeter of Basin: 116 miles

Maximum Basin Relief: 2600 feet

Length of main stem (including standing water): 50 miles

Number of Major Tributaries: 1

Total length of all tributaries (including standing water): 117 miles.

The lower section of this river (19 miles) is medium flow, through a wide river valley, which is bounded by steep rising mountains. The river channel is comprised mainly of rubble and gravel. At mile 19 the river rises abruptly to the plateau, completely obstructing to migrating fish by a series of falls. Beyond this point the river "takes on" a more rugged characteristic with swift flow over rubble/boulder. The surrounding vegetation is tundra.

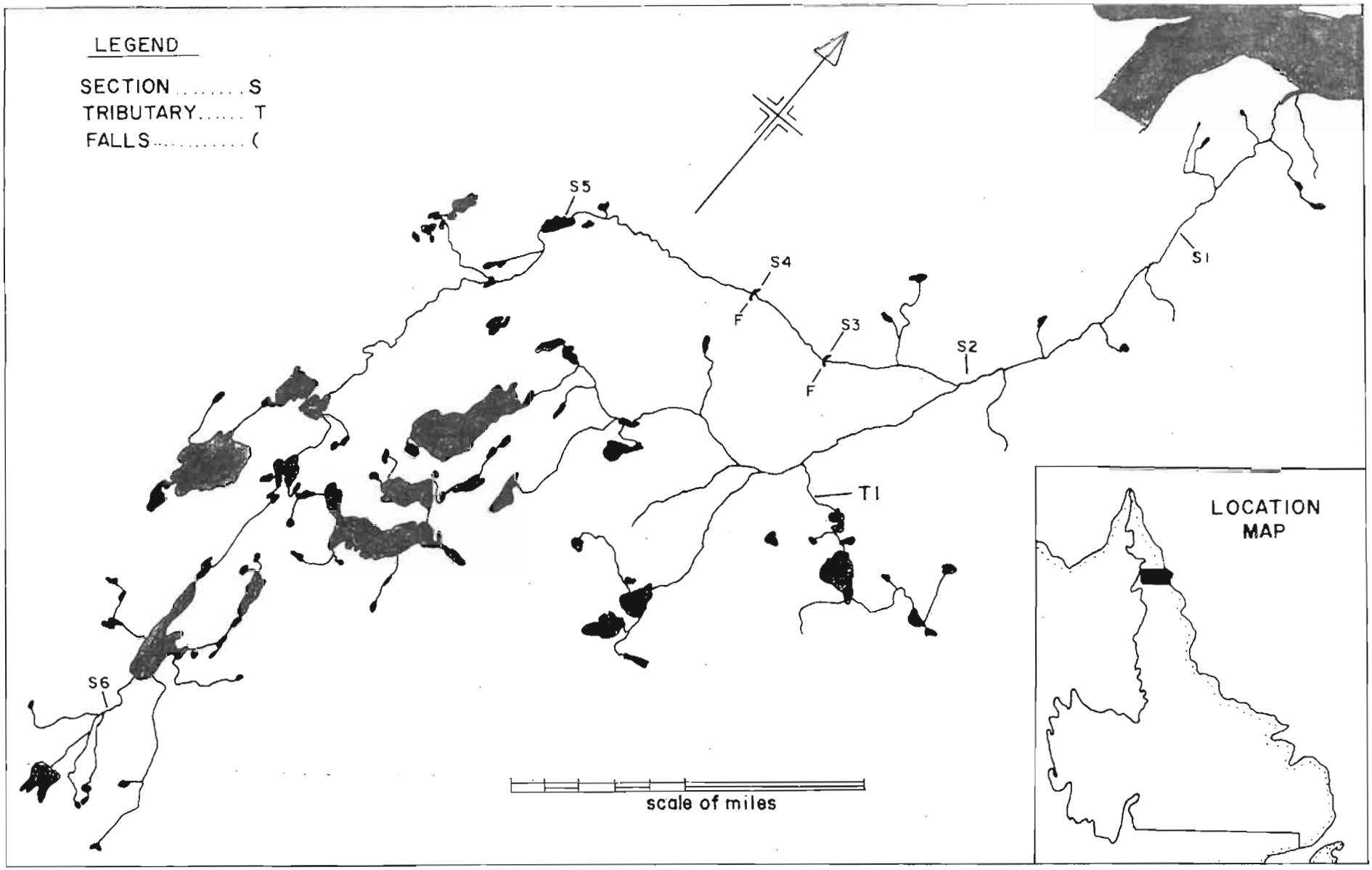

FIG. 22 MAP OF HEBRON FIORD RIVER, INDEX 2464, SHOWING SECTIONS SURVEYED

Fish Populations

Arctic char was spotted from helicopter throughout several areas of the system.

Obstructions

Table 23. Obstructions on main stem of river - Index 2464.

Type of obstruction	Location (miles)	Degree of obstruction	Description	Remarks
Falls	19	Complete	Vertical height 20' Angle 90° 15' wide	Fig.24
Falls	22	Complete	Vertical height 15' Angle 80° 15' wide	

Water Chemistry

No sample taken.

Table 24. Bottom composition, of the main stem, Index 2464.

Section	Location (miles)	Distance yds (miles)	Av. width yds.	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
Accessible						
1	00 to 6	10560 (6)	35	3696	rubble/gravel	
2	6 to 14	14080 (8)	25	3520	rubble/gravel	
3	14 to 19	8800 (5)	20	1760	rubble/boulder	Falls. Complete obstruction
Total				8976		
Inaccessible						
4	19 to 22	5280 (3)	20	1056	rubble/boulder	Falls. Complete obstruction.
5	22 to 30	14080 (8)	20	2816	rubble	
6 Remaining stream		35200 (20)	-	-	-	Not survyed.
Total				3872		

Table 25. Bottom composition of tributaries - Index 2464 (Hebron Fiord).

Section	Location	Distance yds (miles)	Av. width yds	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
T1	Entire stream	26400 (15)	10*	2640		Tributary not surveyed. Obstructions unknown

*Estimated.

PHOTOS ON FILE

Description (35 mm slides)	File No.
River mouth, Index 2464	1321
Main river near mouth	1322
Falls on main stem at mile 19	1323
Falls on main stem at mile 22	1324
Area in section 4	1325

SUMMARY

1. The drainage area for this river is 305 square miles.
2. The length of the main stem is 50 miles and totally obstructed at mile 19.
3. There are two major falls and only 1 major tributary on the system.
4. Arctic char were seen in the river and is likely the predominant species.
5. The accessible and inaccessible areas are as follows:

	Accessible units	Inaccessible units
Main river	8,976	3,872
Tributaries	2,640	-
Total	11,616	3,872

Fig. 23. Mouth of main river, Index 2464.

Fig. 24. Falls at mile 19, Index 2464.

INDEX, 2476

Position of Mouth:	57°58'00" N. Latitude 63°21'00" W. Longitude
Location of Mouth:	Hebron Fiord
Map Reference:	North River 14E, Scale 1:250,000.

GENERAL DESCRIPTION

Drainage Area: 564 square miles

Mean Width of Drainage Basin: 10 miles

Axial Length of Basin: 45 miles

Perimeter of Basin: 184 miles

Maximum Basin Relief: 2,200 feet

Length of Main Stem (including standing water) 23 miles.

Number of Major Tributaries: 4

Total Length of all Tributaries: 253 miles.

The main stem near the mouth is divided into many channels. From the mouth to mile 21 the river is a winding, slow flow, over gravel/rubble bottom. The river valley is 1/2 - 1 mile wide and bounded by high rising mountains. At mile 21 the valley gives way to a relatively steep incline to the higher plateau. A falls at this point creates a complete barrier to fish. The major portion of the plateau area is rugged with many gorge areas. The surrounding vegetation throughout the system is tundra of sub-Arctic tundra.

Fish Populations

Arctic char is the predominant species in this area and many of these fish were seen during the helicopter survey.

Obstructions

Table 26. Obstructions on river - Index 2476.

Type of obstruction	Location (mile)	Degree of obstruction	Description	Remarks
Main river				
Falls	21	Complete	Vertical height 15' Angle 90° 20' wide	
Falls	22	Complete	Vertical height 20' Angle 80° 30' wide	
Falls	Tributary 1 mi. 12	Complete	Vertical height 20' Angle 70° 15' wide	
Falls	Tributary 1-1	Complete	Vertical height 15' Angle 90° 15' wide	

Water Chemistry

A water sample taken on August 27, 1973, shows the following results:

pH	Hardness (total)	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.4	8.0 ppm	19.0 micromhos	0.4 JTU	4.0 ppm	1.0 ppm	1.5 ppm

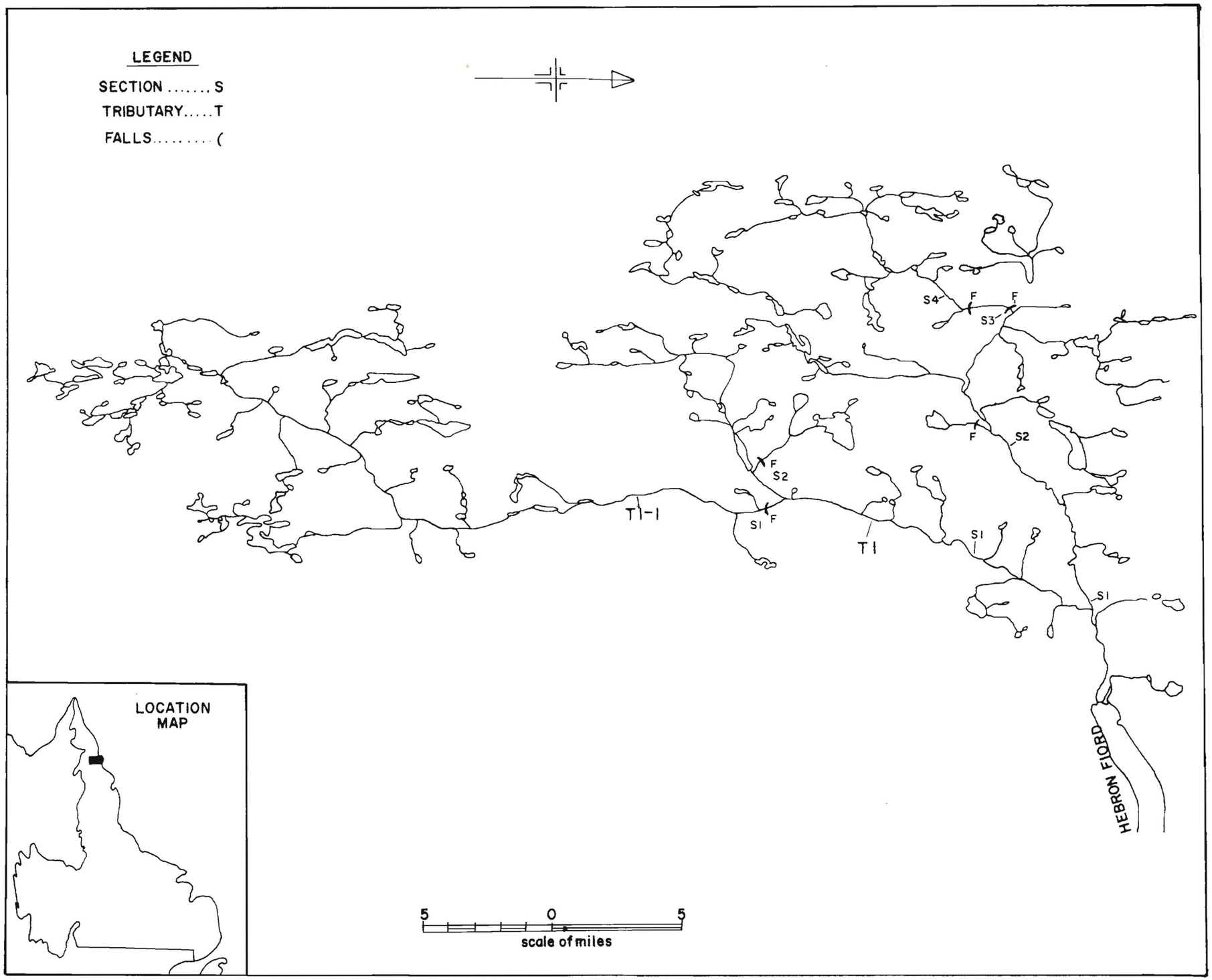

FIG.25. MAP OF HEBRON FIORD RIVER, INDEX 2476, SHOWING SECTIONS SURVEYED

Table 27. Bottom composition of the main river, Index 2476 (Hebron Fiord).

Section	Location (miles)	Distance yds (miles)	Av. width Yds	Total units (100 sq. yds. per unit)	Bottom Type	Remarks
Accessible						
1	00 to 5	8800 (5)	50	4400	gravel/sand	Several channels
2	5 to 15	17600 (10)	35	6160	gravel	winding river
3	15 to 21	10560 (6)	35	3696	gravel/rubble	falls.Complete obstruction.
Total				14256		
Inaccessible						
4	21 to 23	3520 (2)	10	352	bedrock	Gorge area.

Table 28. Bottom composition of the accessible areas of tributaries, Index 2476 (Hebron Fiord).

Section	Location (miles)	Distance yds (miles)	Av. width Yds	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
T1-S1	00 to 12	21120 (12)	.60	12672	rubble/boulder/ gravel	Falls.Complete obstruction.
Total				12672		

Table 29. Bottom composition of the inaccessible areas of tributaries, Index 2476 (Hebron Fiord).

Section	Location (miles)	Distance yds (miles)	Av. width yds	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
T1-S2	00 to 5	8800 (5)	50	4400	rubble/gravel/ boulder	
T1-1-S1	00 to 1	1760 (1)	50	880	boulder/bedrock	Falls.complete obstruction.
T1-1-S2	00 to 20	35200 (20)	30	10560	-	
Total				15840		

SUMMARY

1. The drainage area of this stream is 564 square miles.
2. The length of the main stem is 23 miles and there are four major tributaries.
3. There is a complete obstruction on the main river at mile 21 and tributary 1 is completely obstructed at mile 12.
4. There are four major falls on this system, two being on the main stem.
5. Arctic char is the predominant species.
6. The accessible and inaccessible areas are as follows:

	Accessible units	Inaccessible units
Main river	14,256	352
Tributaries	12,672	15,840
Total	26,928	16,092

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of main river	1317
Falls at mile 21	1318
Main river at section 2	1320
Falls on tributary 1, mile 12	1319

Fig. 26. Main River at mile 10 (Sect. 2).

Fig. 27. Mouth of main river, Index 2476.

Fig. 28. Falls on main river mile 21, Index 2476.

Index 2480

Position of Mouth:	58°03'30" N Latitude 63°13'30" W Longitude
Location of Mouth:	Hebron Fiord
Map Reference	Hebron 14L, Scale 1:250,000 George's River 24I, Scale 1:250,000

GENERAL DESCRIPTION

Drainage Area: 520 square miles

Mean Width of Drainage Basin: 13 miles

Axial Length of Basin: 45 miles

Perimeter of Basin: 144 miles

Maximum Basin Relief: 2,500 feet

Length of main stem (including standing water): 47 miles

Number of Major Tributaries: Nil

Total Length of all Tributaries (including standing water): 252 miles

Area of Lakes (>1 sq. mile): I-9.9 square miles.

The main river from the mouth to Lake I at mile 6 is a deep 200 foot wide channel, with a steady flow over rubble bottom. The lake appears relatively deep and is bounded by steep mountains. Above the lake the river is a gentle flow over rubble/gravel to mile 27 where the rise to the plateau gives way to a more rugged river with complete obstructions, beyond which the predominant bottom type is rubble/boulder with many rapids and small falls.

Fish Populations

The predominant species in this area is Arctic char. There is no information available on other species.

Obstructions

Table 30. Obstructions on the main stem of river - Index 2480.

Type of obstruction	Location (miles)	Degree of Obstruction	Description	Remarks
Falls	30	Complete	Vertical height 30' Angle 90° 20' wide	
Falls	40	Complete	Vertical height 15' Angle 90° 10' wide	

Water Chemistry

A water sample collected on August 27, 1973, shows the following results:

pH	Hardness (total)	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.0	6.0 ppm	18.0 micromhos	0.9 JTU	3.0 ppm	0.9 ppm	2.5 ppm

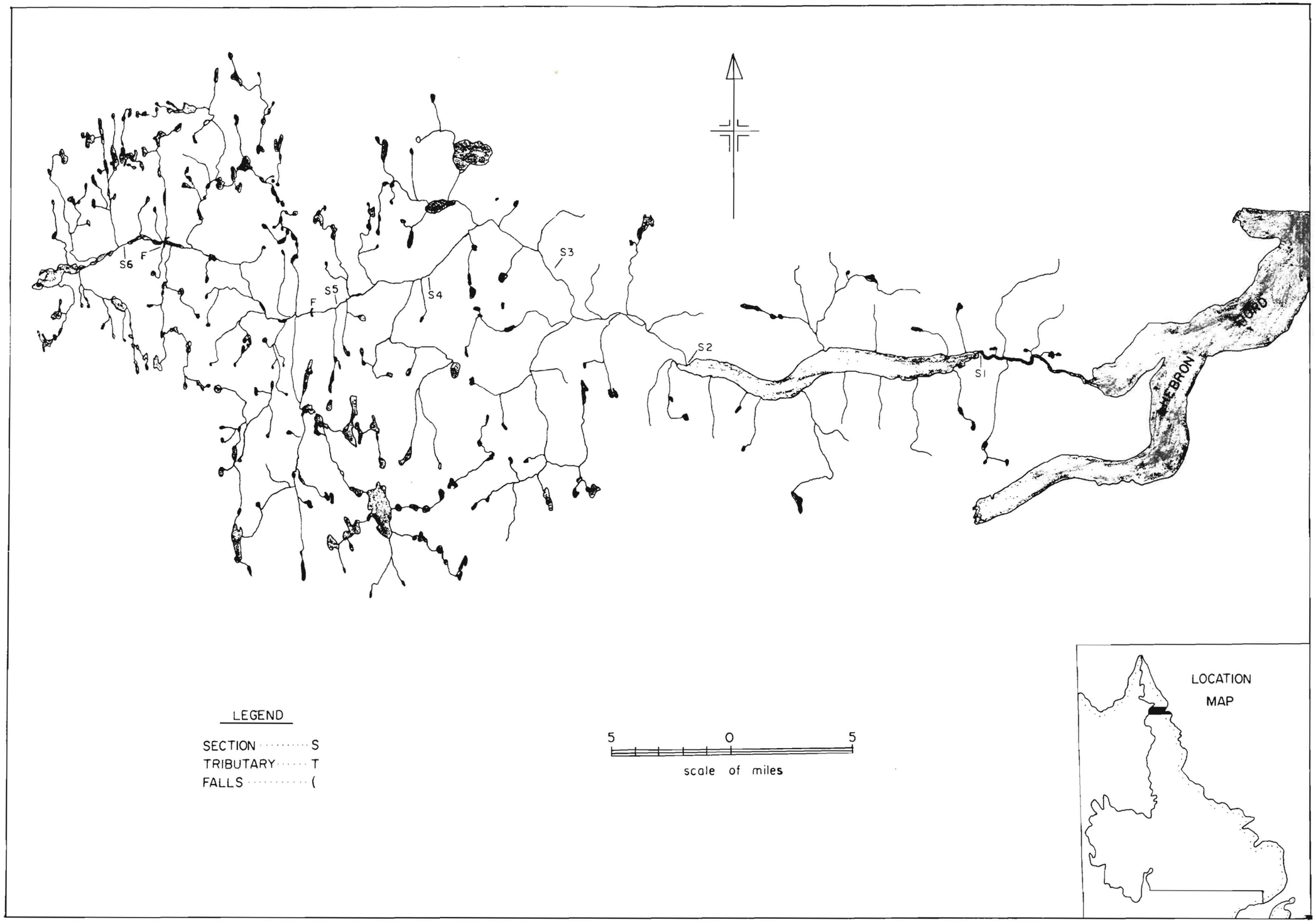

FIG.29 MAP OF A RIVER, HEBRON FIORD, INDEX 2480, SHOWING SECTIONS SURVEYED

Table 31 . Bottom composition of the main stem, Index 2480.

Section	Location (miles)	Distance yds (miles)	Av. width yds	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
Accessible						
1	00 to 6	10,560 (6)	65	6,864	Rubble	deep channel. steady flow
2	6 to 18	21,120 (12)				Lake
3	18 to 27	15,840 (9)	30	4,752	rubble/ gravel	Falls. Complete obstruction.
Total				11,616		
Inaccessible						
4	27 to 35	14,080 (8)	10	1,408	Boulder/ bedrock	Mostly gorge section.
5	35 to 40	8,800 (5)	25	2,200	Rubble	Swift flow.
6	40 to 47	21,120 (12)	25	5,280	Boulder/ rubble	Several falls in this section
Total				8,888		

SUMMARY

1. This river has a drainage area of 520 square miles.
2. The main stem is 47 miles long.
3. There are no major tributaries but a complete obstruction at mile 30 makes the remaining 17 miles inaccessible.
4. Arctic char is the predominant species in this area.
5. The accessible and inaccessible areas are as follows:

	Accessible	Inaccessible
Main River	11,616	8,888
Total	11,616	8,888

PHOTOS ON FILE

Description (35 mm Slides)	File No.
Main River - Lower Section	946 (5 slides)
Main River - near mouth	1313
Main River below Lake I	1314
Main River above Lake I	1314
Lake I	1314
Main River below gorge area	1315
Gorge Section	1315
Falls on Main River	1316 (2 slides)

Fig. 30 Gorge section at mile 30.

Fig. 31. Mouth of main river, Index 2480.

Fig. 32. Main river near mouth, Index 2480.

Ikarut River - Index 2492

Position of Mouth: 58°10'00" N Latitude
63°04'00" W Longitude

Location of Mouth: Hebron Fiord

Map Reference: Hebron 14L, Scale 1:250,000.

GENERAL DESCRIPTION

Drainage Area: 183 square miles

Mean Width of Basin: 8 miles

Axial Length of Basin: 25 miles

Perimeter of Basin: 70 miles

Maximum Basin Relief: 1,500 feet

Length of main stem (including standing water): 23 miles

Number of Major Tributaries: 2

Total Length of all Tributaries (including standing water): 64 miles.

Similar to other rivers in this area. The lower section (21 miles long) is flowing to a wide level river valley. The channel comprises mainly of gravel and rubble and in some places is divided into many channels.

At mile 21 is a falls (complete obstruction) as the river flows from the higher plateau. The plateau section of the river is boulder/rubble with the headwaters being made up of many ponds.

Fish Populations

Arctic char was sighted during the helicopter survey. There is no information available on other species.

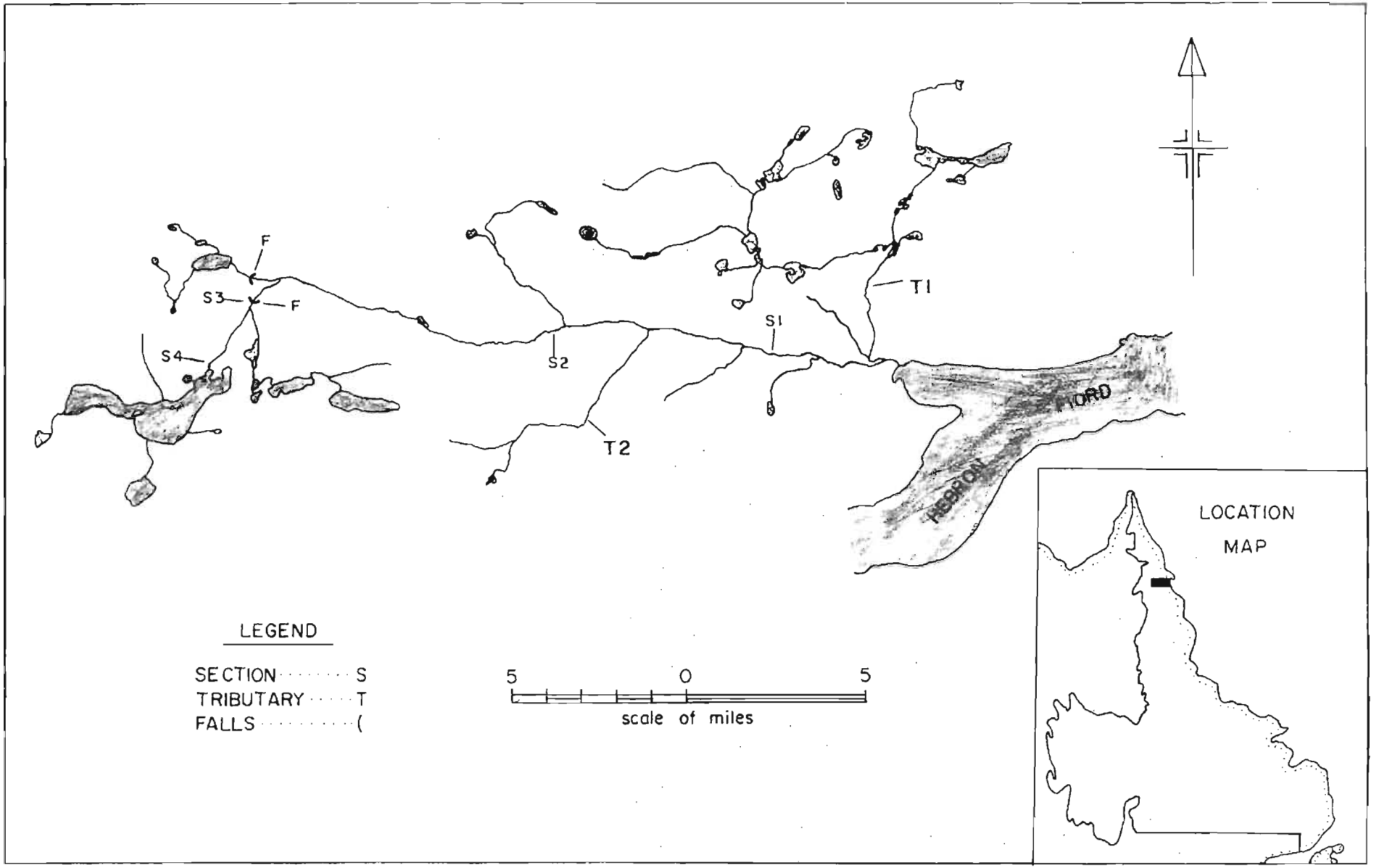

FIG.33 MAP OF IKARUT RIVER, INDEX 2492, SHOWING SECTIONS SURVEYED

Obstructions

Table 32. Obstructions on main stem of Ikarut River - Index 2492.

Type of obstruction	Location (miles)	Degree of obstruction	Description	Remarks
Falls	21	Complete	Vertical height 20' Angle 90° 20' wide	Fig.

Water Chemistry

No water sample taken.

Table 33. Bottom composition of the main stem - Ikarut River, Index 2492.

Section	Location (miles)	Distance yds (miles)	Av. width yds	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
Accessible						
1	00 to 4	7,040 (4)	35	2,464	Gravel/rubble	
2	4 to 11	12,320 (7)	35	4,312	Rubbel/gravel	River divided into many channels
3	11 to 21	17,600 (10)	25	4,400	Rubble/boulder	Falls. Complete obstruction
Total				11,176		
Inaccessible						
4	21 to 23	3,520 (2)	65	2,288	Rubble/boulder	
Total				2,288		

Table 34. Bottom composition of accessible tributaries - Ikarut River, Index 2492.

Section	Location (miles)	Distance yds (miles)	Av. width yds	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
T1	Entire system	35,200 (20)	10	3,520		Tributaries not completely covered.
T2	Entire system	14,080 (8)	8	1,126		
Total				4,646		

PHOTOS ON FILE

Description (35 mm Slides)	File No.
Main River - near mouth	950 (5 slides)
Main River - falls at mile 21	1326 (2 slides)
Typical area of Section 1	1327 (2 slides)

SUMMARY

1. The drainage area of this system covers 183 square miles and the length of the main river is 23 miles.
2. There are only two major tributaries on this system and only one major obstruction at mile 21; however, despite this obstruction most of this stream is accessible to anadromous fish.
3. The predominant species in this river is Arctic char.
4. The following is a table of the accessible and inaccessible areas:

	Accessible	Inaccessible
Main River	11,176	2,288
Tributaries	4,646	
Total	15,822	2,288

Fig. 34. Mouth of Ikarut River, Index 2492.

Fig. 35. Falls at mile 21, Ikarut River, Index 2492

Ugjuktok Fiord River - Index 2604

Position of Mouth:	58°17'30" N. Latitude 63°35'00" W. Longitude
Location of Mouth:	Saglek Fiord
Map Reference:	Hebron 14L. Scale 1:250,000

GENERAL DESCRIPTION

Drainage Area: 82 square miles

Mean Width of Drainage Basin: 7 miles

Axial Length of Basin: 13 miles

Perimeter of Basin: 40 miles

Maximum Basin Relief: 2,500 feet

Length of main stem (including standing water): 17 miles

Number of Major Tributaries: Nil

Total Length of all Tributaries (including standing water): 35 miles.

The main river in the lower section (13 miles) has medium flow through a wide river valley, surrounded by steep mountain walls. The bottom composition is mainly gravel and rubble. The abrupt rise to the plateau results in a complete obstruction at mile 13.

Fish Populations

During the helicopter survey Arctic char was noted as being plentiful in the accessible areas of the main stem.

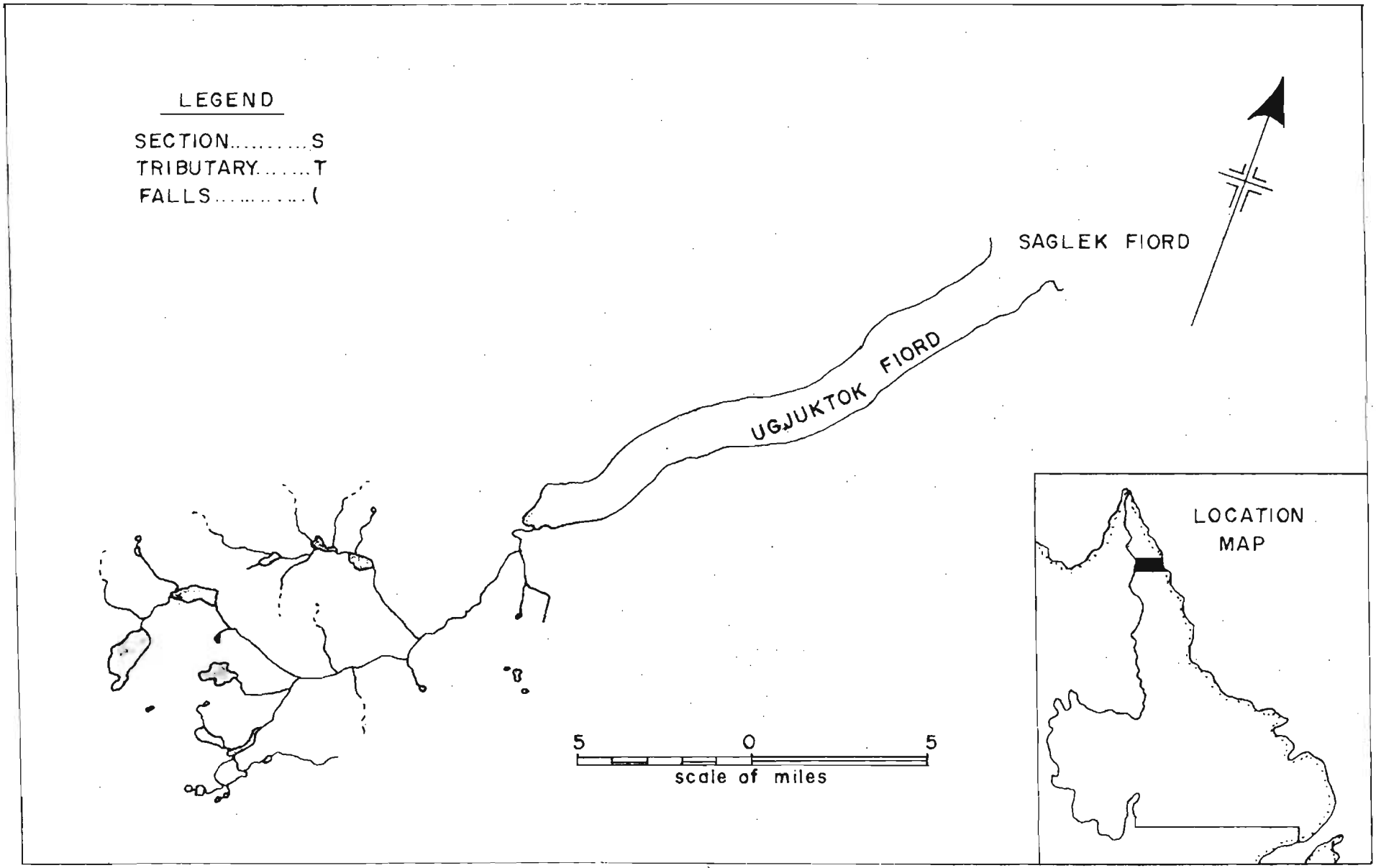

FIG.36MAP OF UGJUKTOK FIORD RIVER, INDEX 2604, SHOWING SECTIONS SURVEYED.

Obstructions

Table 35 . Obstructions on main stem of river - Index 2604.

Type of obstruction	Location (miles)	Degree of Obstruction	Description	Remarks
Falls	13	Complete	Vertical height 25' Angle 90° 15' wide	

Water Chemistry

A water sample taken on August 27, 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.4	10.0 ppm	21.0 micromhos	0.9 JTU	4.0 ppm	1.3 ppm	10.0 ppm

Table 36. Bottom composition of river - Index 2604.

Section	Location (Mile)	Distance yds (miles)	Av. width yds	Total units (100 sq.yds. per unit)	Bottom Type	Remarks
Accessible						
1	00 - 6	10560 (6)	60	6336	Gravel	
2	6 - 10	7040 (4)	50	3520	Gravel	
3	10 - 13	5280 (3)	50	2640	Rubble	
Total				12496		
Inaccessible						
4	13 - 17	7040 (4)				

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of main stem	1330

SUMMARY

1. The total drainage area of this stream is 82 square miles.
2. The main river is 17 miles long and there are 35 miles of tributary streams.
3. The river has a complete obstruction at mile 13 and no major tributaries, so most of the system is accessible to anadromous fish.
4. The predominant fish species is Arctic char.
5. The accessible and inaccessible areas are as follows:-

	Accessible	Inaccessible
Main river	12,496	-

Fig. 37. Mouth of main stem, Index 2604.

Ugjuktok Fiord River - Index 2606

Position of Mouth: 58°18'00" N. Latitude
63°35'00" W. Longitude

Location of Mouth: Saglek Fiord

GENERAL DESCRIPTION

Drainage Area: 65 square miles

Mean Width of Drainage Basin: 6 miles

Axial Length of Basin: 13 miles

Perimeter of Basin: 32 miles

Maximum Basin Relief: 2,500 feet

Length of main stem (including standing water): 16 miles

Number of Major Tributaries: Nil

Total Length of all Tributaries (including standing water): 26 miles

Fish Populations

During the survey Arctic char were noted as being plentiful in the lower accessible areas of the river.

Obstructions

Table 37. Obstructions on main stem of river - Index 2606.

Type of obstruction	Location (mile)	Degree of Obstruction	Description	Remarks
Falls	10	Complete	Vertical height 25' Angle 90° 15' wide	

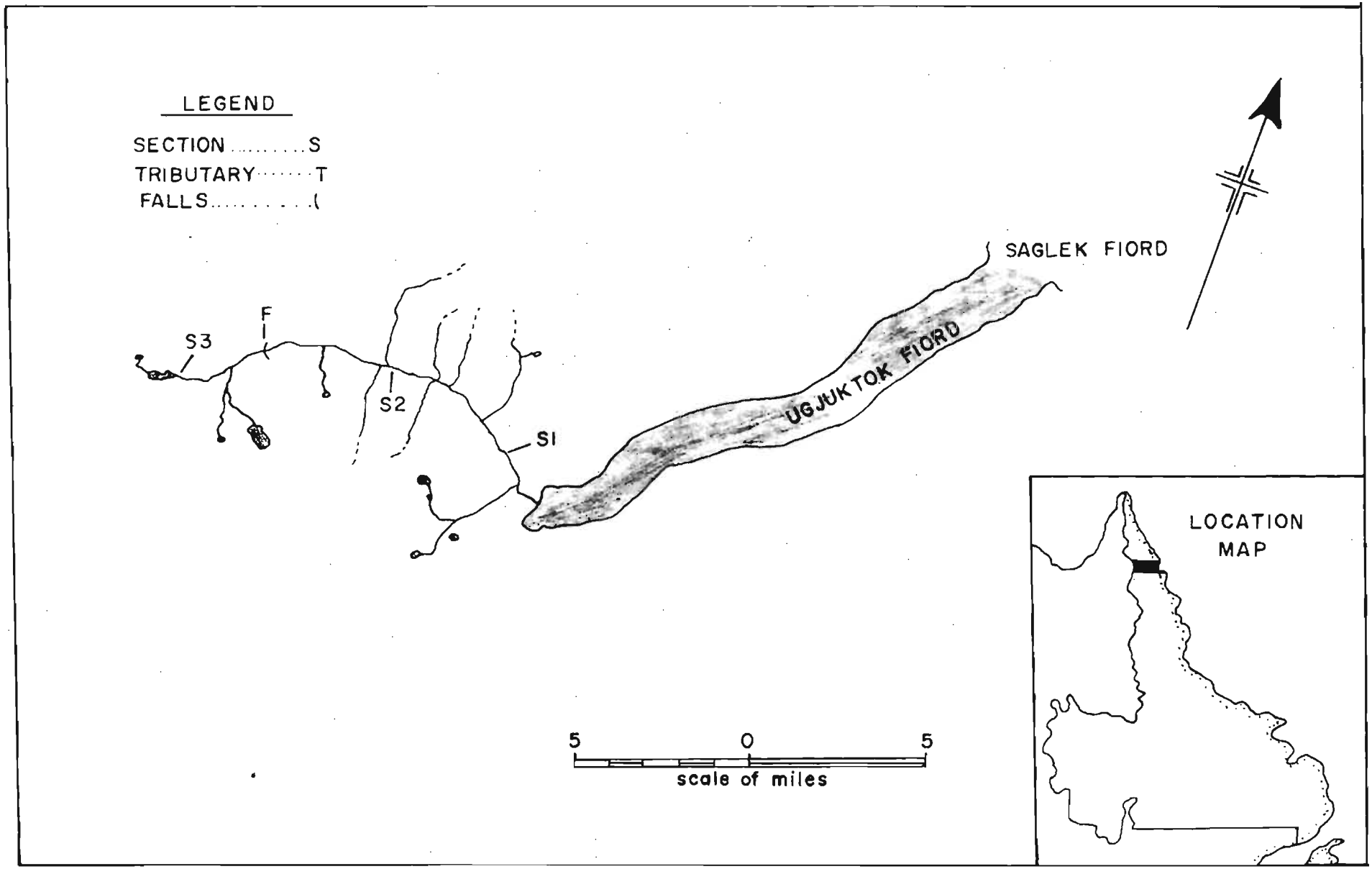

FIG.38 MAP OF UGJUKTOK FIORD RIVER, INDEX 2606, SHOWING SECTIONS SURVEYED.

Water Chemistry

A water sample taken on August 27, 1973 shows the following results:-

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.3	8.0 ppm	17.0 micromhos	0.8 JTU	3.0 ppm	0.9 ppm	0.5ppm

Table 38 . Bottom composition of the accessible areas of the main river - Index 2606

Section	Location (mile)	Distance yds (miles)	Av. width Yds	Total units (100 sq.yds. per unit)	Bottom Type
1	00 - 3	5280 (3)	35	1848	Gravel/sand
2	3 - 6	5280 (3)	20	1056	Rubble/boulder/gravel
3	6 - 16	17600 (10)	20	3520	Rubble
Total				6424	

PHOTOS ON FILE

Description (35 mm slides)	File No.
Falls at mile 10	1328
Main stem near mouth	1329 (2 slides)

SUMMARY

1. This stream covers a drainage area of 65 square miles.
2. The main stem is 16 miles long and there is 26 miles of tributaries.
3. There are no major tributaries and only one falls at mile 10 which renders the remaining 6 miles of main stream inaccessible.
4. Arctic char is the predominant species in this area.
5. The accessible and inaccessible areas are as follows:-

	Accessible	Inaccessible
Main River	6424	-

Fig. 39. Falls at mile 10. River Index 2606.

Fig. 40. Main stem near mouth, River Index 2606.

Southwest Arm Brook - Index 2614

Position of Mouth:	58°27'30" N. Latitude 63°33'30" W. Longitude
Location:	Saglek Fiord
Map Reference:	Hebron 14L. Scale 1:25,000 George River 24I. Scale 1:250,000

GENERAL DESCRIPTION

Drainage Area: 274 square miles

Mean Width of Drainage Basin: 7 miles

Axial Length of Basin: 30 miles

Perimeter of Basin: 99 miles

Maximum Basin Relief: 3,000 feet

Length of Main Stem (including standing water): 36 miles

Number of Major Tributaries: 5

Total Length of all Tributaries (including standing water):138 miles

Tributaries are relatively small and completely obstructed.

Fish Populations

A large number of Arctic char were seen in the section of main river below the falls during the helicopter survey. There is no other information available of fish fauna in this system.

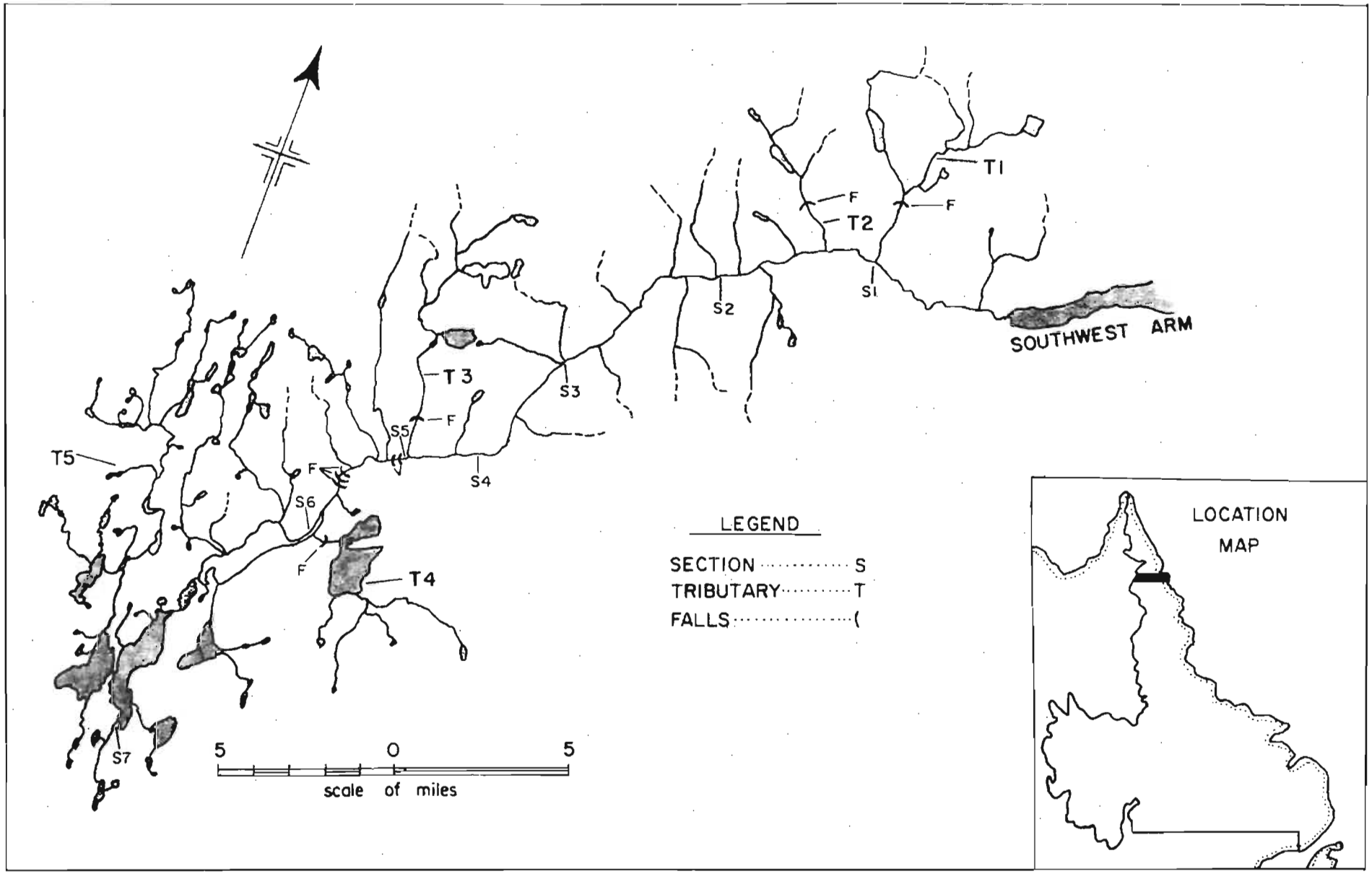

FIG.41: MAP OF SOUTHWEST ARM BROOK, INDEX 2614, SHOWING SECTION SURVEYED

Obstructions

Table 39. Obstructions main stem of Southwest Arm Brook - Index 2614

Type of obstruction	Location (mile)	Degree of obstruction	Description
Falls	22	Complete	Vertical height 15' Angle 80° 15' wide
Falls	22	Complete	Vertical height 20' Angle 80° 15' wide
Falls	23	Complete	Vertical height 20' Angle 80° 15' wide
Falls	23	Complete	Vertical height 20' Angle 90° 20' wide
Falls	23	Complete	Vertical height 20' Angle 80° 20' wide

Water Chemistry

A water sample taken on August 27, 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chlorides
5.6	2.0 ppm	5.0 micromhos	0.4 JTU	1.0 ppm	0.3 ppm	0.5 ppm

Table40 . Bottom composition of accessible areas of the main stem Southwest Arm River - Index 2614

Section	Location (mile)	Distance Yds. (miles)	Av. width yds.	Total units (100 sq.yds. per unit)	Bottom Type
1	00 - 7	12320 (7)	80	9856	Gravel
2	7 - 10	5280 (3)	70	3696	Gravel
3	10 - 16	10560 (6)	35	3696	Gravel
4	16 - 20	7040 (4)	50	3520	Rubble/gravel/boulder

Table 40. (cont'd.)

Section	Location (mile)	Distance yds. (miles)	Av. Width yds.	Total units (100 sq.yds. per unit)	Bottom type
5	20 - 22	3520 (2)	30	1056	Rubble
Total				21824	

Table 41. Bottom composition of inaccessible areas of the main stem, Southwest Arm River, Index 2614.

Section	Location (mile)	Distance yds. (miles)	Av. Width yds.	Total units (100 sq.yds. per unit)	Bottom Type
6	22 - 26	7040 (4)	30	2112	
7	26 - 38	21120 (12)			
Total					

PHOTOS ON FILE

Description (35 mm slides)	File No.
Main stem at section 5	1333
Falls at mile 22	1332
Falls at mile 22	1334
Falls at mile 23	1335
Falls at mile 24	1335

SUMMARY

1. This system has a total drainage area of 274 square miles.
2. The main stem is 36 miles long and the total length of the tributaries is 138 miles.
3. There are five major tributaries on the system.
4. There are five falls at mile 22 and 23 and all are considered complete barriers to anadromous fish.
5. Arctic char is the predominant species in this stream.
6. The accessible and inaccessible areas to anadromous fish are as follows:-

	Accessible	Inaccessible
Main River	21,824	2,112

Fig.42.Falls at mile 22. Southwest Arm River.

Fig. 43. Falls at mile 22, Southwest Arm River.

Fig.44. Falls at mile 23, Southwest Arm River.

Fig.45. Falls at mile 24, Southwest Arm River.

North Arm River - Index 2620

Position of Mouth:	58°32'30" N. Latitude 63°28'00" W. Longitude
Location of Mouth:	Saglek Fiord
Map Reference:	Hebron 14L. Scale 1:250,000

GENERAL DESCRIPTION

Drainage Area: 40 square miles

Mean Width of Drainage Basin: 4 miles

Axial Length of Basin: 10.5 miles

Perimeter of Basin: 29 miles

Maximum Basin Relief: 2,500 feet

Length of main stem (including standing water): 12 miles

Number of Major Tributaries:

Total length of all tributaries (including standing water): 10 miles.

Fish Populations

Approximately five miles of stream is accessible to sea run species. During the survey Arctic char could be seen throughout this area. There is no information on the presence of other species in this system.

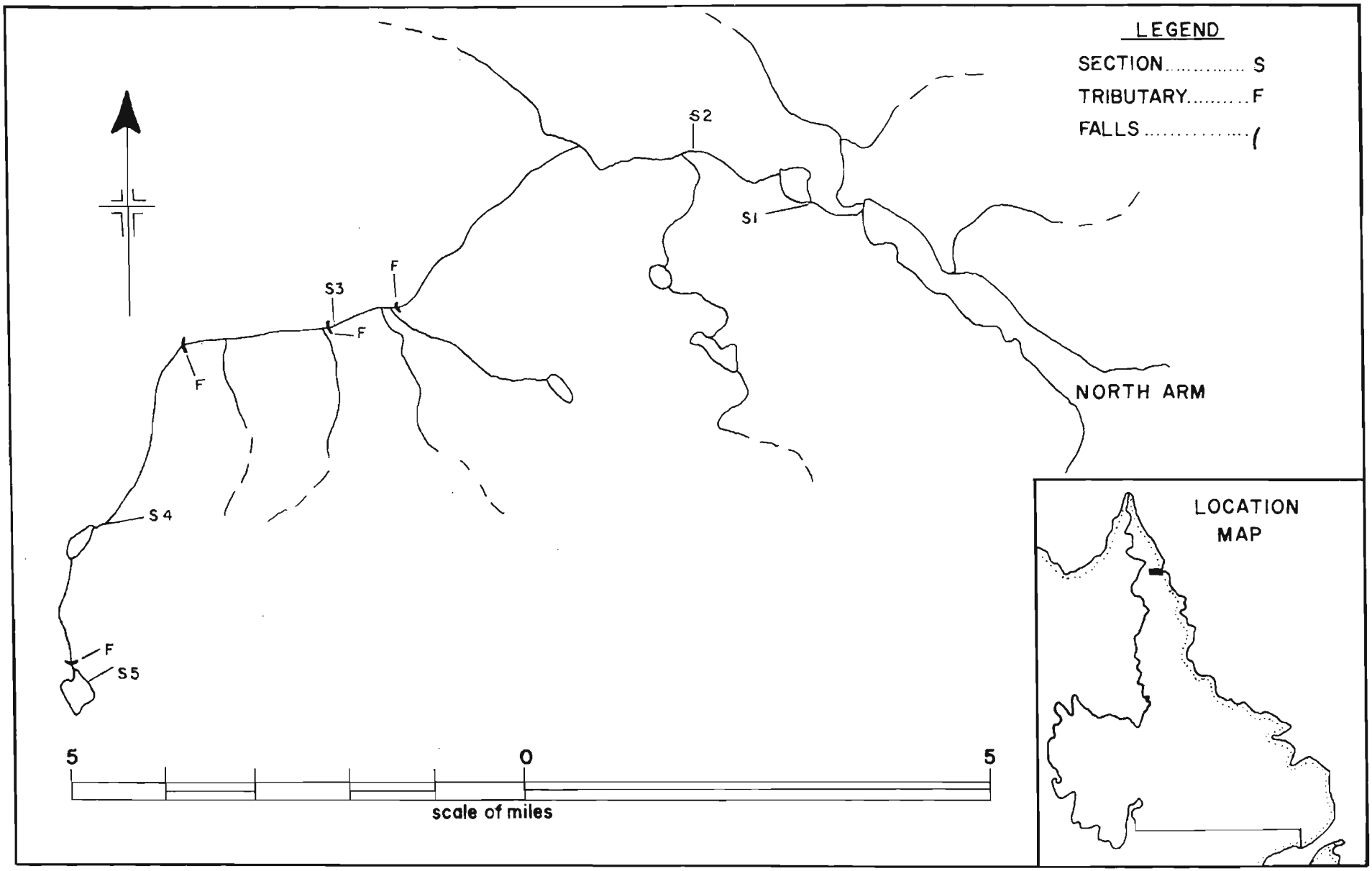

FIG.46: MAP OF NORTH ARM RIVER, INDEX 2620, SHOWING SECTIONS SURVEYED

Obstructions

Table 42 . Obstructions on main stem of North Arm River - Index 2620.

Type of obstruction	Location (mile)	Degree of obstruction	Description	Remarks
Falls	5	Complete	Vertical height 20' Angle 70° 20' wide	
Falls	7	Complete	Vertical height 25' Angle 90° 20' wide	
Falls	9	Complete	Vertical height 30' Angle 90° 20' wide	
Falls	12	Complete	Vertical height 100' Angle 70° 50' wide	

Water Chemistry

A water sample taken on August 27, 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chlorides
4.8	6.0 ppm	15.0 micromhos	0.3 JTU	0.0 ppm	0.7 ppm	0.5 ppm

Table 43. Bottom composition of the main stem, North Arm River - Index 2620

Section	Location (mile)	Distance yds. (miles)	Av. Width yds.	Total units (100 sq.yds per unit)	Bottom Type
1	00 - 1	1760 (1)	10	176	Gravel
2	1 - 2	1760 (1)	10	176	Gravel/sand
3	2 - 7	8800 (5)	10	880	Rubble/boulder
4	7 - 11	7040 (4)	15	1056	Rubble/boulder
5	11 - 13	3520 (2)	10	352	Rubble/boulder
Total				2640	

SUMMARY

1. The total drainage area for this system is 40 square miles.
2. Main stream mileage is 12 miles and tributary stream mileage is 10 miles.
3. There are four falls on the main river, the first occurring at mile 5. All are impassable by anadromous fish.
4. The predominant species is Arctic char.
5. The accessible and inaccessible areas are as follows:

	Accessible	Inaccessible
Main River	2,640	-

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of North Arm River	1336
Falls at section 3	1337 (2 slides)
Falls at Section 4	1338

Fig. 47. Mouth of North Arm River - Index 2620

Nakvak Brook - Index 2626

Position of Mouth:	58°31'00" N. Latitude 63°19'00" W. Longitude
Location of Mouth:	Saglek Fiord
Map Reference:	Hebron 14L. George River 24I.

GENERAL DESCRIPTION

Drainage Area: 326 square miles

Mean Width of Drainage Basin: 10 miles

Axial Length of Basin: 30 miles

Perimeter of Basin: 105 miles

Maximum Basin Relief: 3,000 feet

Length of Main Stem (including standing water) 40 miles

Number of Major Tributaries: 4

Total Length of all Tributaries (including standing water): 136 miles

Tributaries to this river are relatively small and are all completely obstructed by falls cascading over mountains.

Fish Populations

There were no fish noted during the helicopter survey; however, it is possible for Arctic char to use the main stem to the first falls at mile 11.

There is no information available on species using this system.

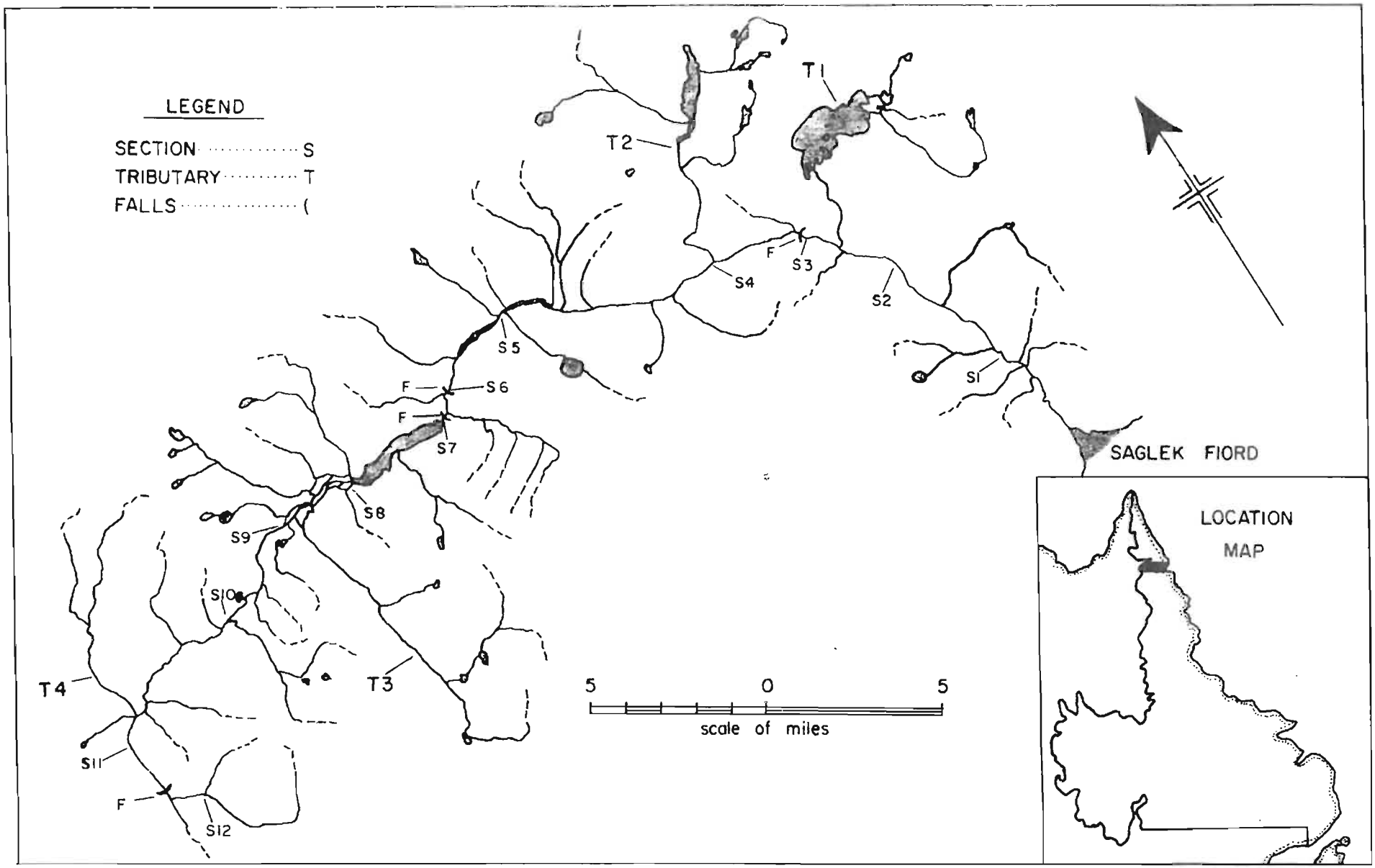

FIG.48 MAP OF NAKVAK BROOK, INDEX 2626, SHOWING SECTIONS SURVEYED

Obstructions

Table 44 . Obstructions on main stem of Nakvak Brook - Index 2626.

Type of Obstruction	Location (mile)	Degree of Obstruction	Description
Falls	11	Complete	Vertical height 15' Angle 75° 15' wide
Falls	23	Complete	Vertical height 30' Angle 90° 20' wide
Falls	24	Complete	Vertical height 50' Angle 90° 20' wide
Falls	40	Complete	Vertical height 50' Angle 80° 20' wide

Water Chemistry

A water sample taken on August 27, 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.1	6.0 ppm	15.0 micromhos	0.2 JTU	2.0 ppm	0.9 ppm	1.0 ppm

Table 45 . Bottom composition of accessible areas of the main river -Nakvak Brook

Section	Location (mile)	Distance yds. (miles)	Av. width yds.	Total units (100 sq.yds. per unit)	Bottom Type
1	00 - 4	7040 (4)	35	2464	Rubble/boulder
2	4 - 9	8800 (5)	50	4400	Gravel/rubble
3	9 - 11	3520 (2)	50	1760	Rubble/gravel/boulder
Total				8624	

Table 46. Bottom composition of inaccessible areas of the main river Nakvak Brook, Index 2626

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units (100 sq.yds. per unit)	Bottom type	Remarks
4	11 - 14	5280 (3)	50	2640	Rubble/gravel/boulder	
5	14 - 20	10560 (6)	35	3696	Rubble/gravel/boulder	
6	20 - 23	5280 (3)	35	1848	Rubble/boulder	Falls-complete obstruction
7	23 - 24	1760 (1)	35	616	Rubble	Falls-complete obstruction
8	24 - 27	5280 (3)				Lake
9	27 - 30	5280 (3)	50	2640	Gravel	"Flats" area
10	30 - 33	5280 (3)	35	1848	Rubble/boulder	Swift flow
11	33 - 39	10560 (6)	20	2112	Gravel	Steady flow
12	39 - 42	5280 (3)	20	1056	Gravel/rubble	Falls-complete obstruction
Total				16456		

PHOTOS ON FILE

Description (35 mm slides)	File No.
Mouth of Nakvak Brook	1339
Falls at mile 11 and 24	1340
Falls at mile 23	1341
"Flats" area at mile 27	1342
Tributary 3, Nakvak Brook	1343

SUMMARY

1. No information available on species composition. However, Arctic char is assumed to be present.
2. There are four major falls on the main stem. All are complete obstructions and the first one occurs at mile 11. The remaining 29 miles of main stem are inaccessible to anadromous fish.
3. Accessible and inaccessible areas on the system are as follows:

	Accessible	Inaccessible
Main River	8624	16,456

Fig. 49 Mouth of Nakvak Brook.

Fig. 50. "Flats" area, Section 8, Nakvak Brook.

Fig. 51. Falls at mile 11, Nakvak Brook.

Fig.52. Falls at mile 24, Nakvak Brook.

Palmer River - Index 2768

Position of Mouth:	58°57'00" N. Latitude 63°53'00" W. Longitude
Location of Mouth:	Napartokh Bay
Map Reference:	Hebron 14L George River 24I

GENERAL DESCRIPTION

Drainage Area: 120 square miles

Mean Width of Drainage Basin: 7 miles

Axial Length of Basin: 17 miles

Perimeter of Basin: 56 miles

Maximum Basin Relief: 3,000 feet

Length of Main Stem (including standing water): 20 miles

Number of Major Tributaries: Nil

Total Length of all tributaries (including standing water: 48 miles

Fish Populations

No information available.

Obstructions

The major portion of the main river (16 miles) is free from obstructions; however, at mile 16 the river rises into the surrounding mountains by a series of falls and rapids, causing a barrier to fish for the remaining four miles of stream.

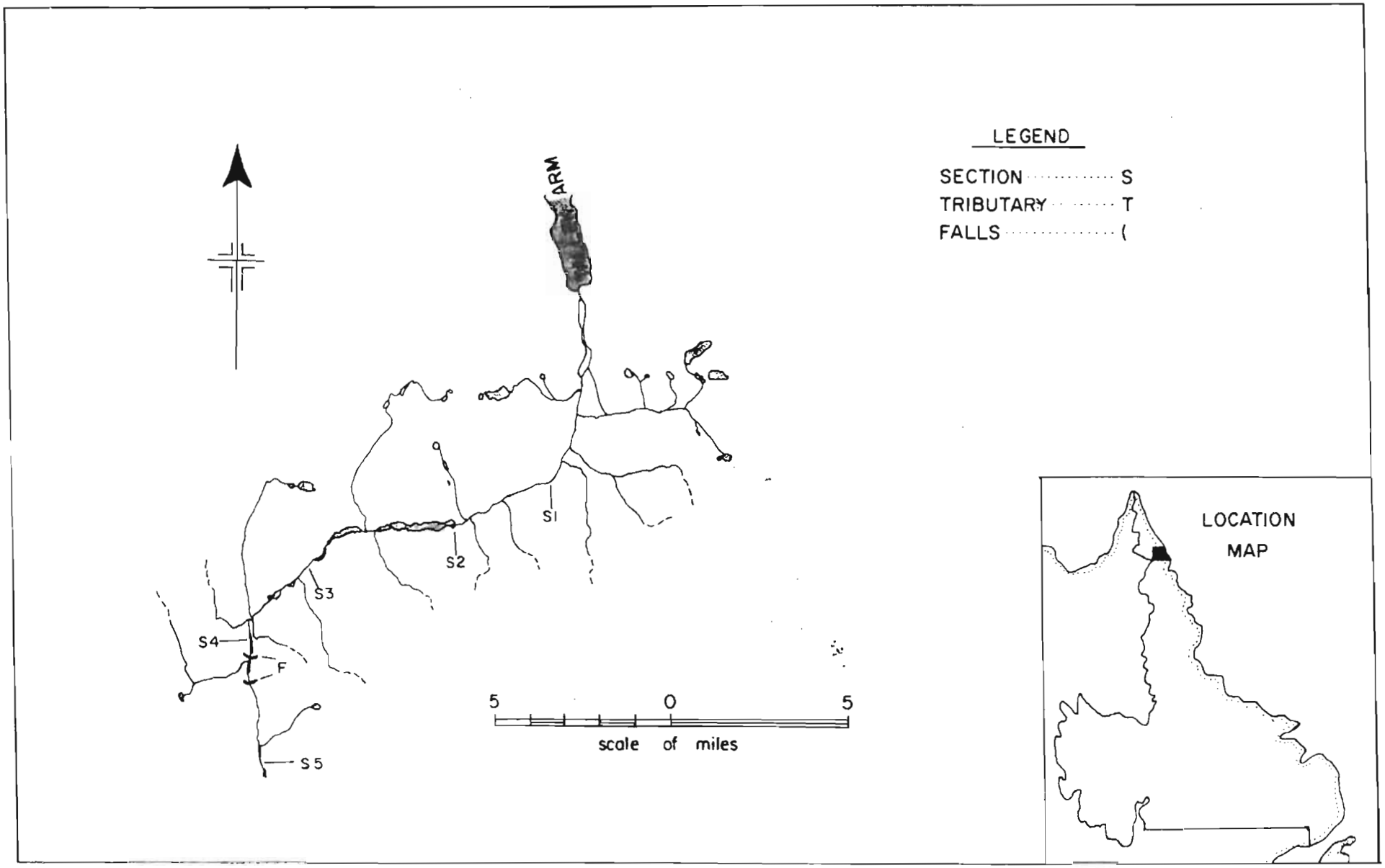

FIG.53 MAP OF PALMER RIVER, INDEX 2768, SHOWING SECTIONS SURVEYED

The tributaries are relatively small and many dried up in summer; all are completely obstructed as they cascade from steep mountains.

Table 47. Bottom composition Palmer River - Index 2768.

Section	Location (mile)	Distance yds. (miles)	Av. width yds	Total units 100 sq.yds. (per unit)	Bottom Type
Accessible Area					
1	0 - 6	10560 (6)	25	2640	Gravel
2	6 - 9	5280 (3)	20	1056	Rubble
3	9 - 14	8800 (5)	35	3080	Gravel
4	14 - 16	3520 (2)	50	1760	Rubble/boulder
Total				8536	
Inaccessible Area					
5	16 - 20	7040 (4)	20	1408	Gravel
Total				1408	

SUMMARY

1. Arctic char is assumed to be the predominant species in this river, although no information is available on it.
2. There are no major tributaries and most dry up in summer.
3. Only one major falls at mile 16 is a complete obstruction to anadromous fish. Most of the river system is accessible.
4. Accessible and inaccessible areas are as follows.

	Accessible	Inaccessible
Main River	8,536	1,408

PHOTOS ON FILE

Description (35 mm slides)	File No.
Looking downstream to the mouth of Palmer River	1344
Palmer River near mouth	1344
Palmer River in section 3	1345
Palmer River in section 4	1345

Fig. 54 .Looking downstream to mouth of Palmer River.

Nachvak River - Index 2780

Position of Mouth:	59°01'15" N. Latitude 64°03'00" W. Longitude
Location of Mouth:	Napartokh Bay
Map Reference:	Point Le Droit 24,P George River 24,I

GENERAL DESCRIPTION

Drainage Area: 263 Square miles

Mean Width of Drainage Basin: 9 miles

Axial Length of Basin: 31 miles

Perimeter of Basin: 98 miles

Maximum Basin Relief: 3,000 feet

Length of main stem (including standing water): 40 miles

Number of Major Tributaries: 1

Total Length of all Tributaries (including standing water): 108 miles.

Fish Populations

There is no information available on fish species in this system.

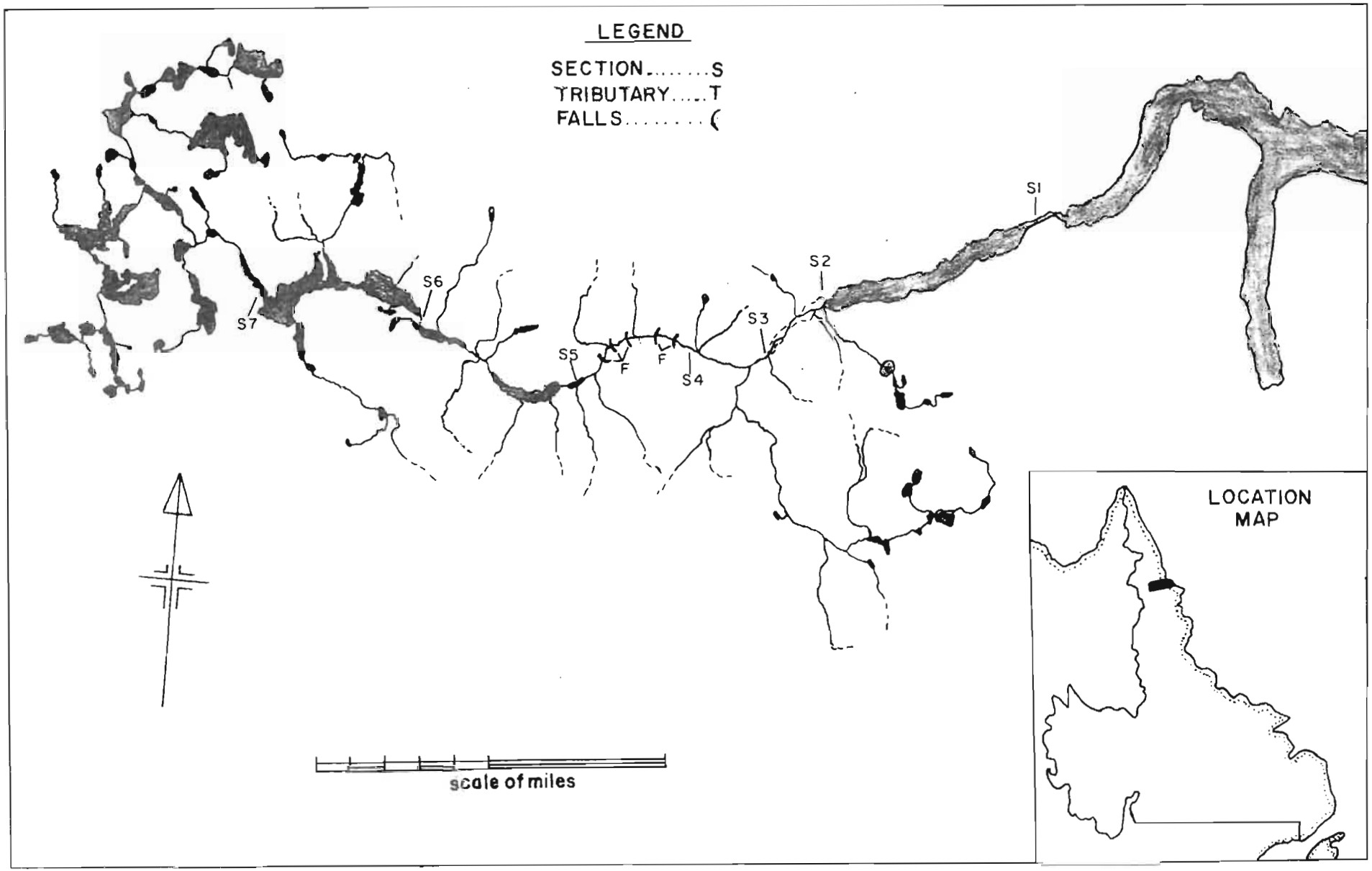

FIG.55 MAP OF NACHVAK RIVER, INDEX 2780, SHOWING SECTIONS SURVEYED

Obstructions

Table 48 . Obstructions on main stem of Nachvak River - Index 2780.

Type of obstruction	Location (mile)	Degree of obstruction	Description	Remarks
Falls	13	Complete	Vertical height 20' Angle 90° 20' wide	Fig. 57
Falls	13.5	Complete	Vertical height 25' Angle 90° 20' wide	Fig. 58
Falls	14	Complete	Vertical height 30' Angle 50° 20' wide	Fig. 59
Falls	14.5	Complete	Vertical height 30' Angle 90° 20' wide	Fig. 60
Falls	15	Complete	Vertical height 30' Angle 90° 20' wide	
Falls	15.5	Complete	Vertical height 30' Angle 90° 20' Wide	

Water Chemistry

A water sample taken on August 28, 1973 shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
4.8	1.0 ppm	15.0 micromhos	1.4 JTU	0 ppm.	0.6 ppm.	1.0 ppm.

Table 49. Bottom composition of the main stem, Nachvak River - Index 2780.

Section	Location (mile)	Distance Yds. (miles)	Average width yds.	Total units (100 sq.yds. per unit)	Bottom Type
Accessible					
1	0 - 1	1760 (1)	50	880	Gravel/rubble
2	1 - 7	10560 (6)			
3	7 - 10	5280 (3)	35	2640	Gravel
4	10-13	5280 (3)	50	2640	Rubble/boulder
Total				6160	
Inaccessible					
5	13-17	7040 (4)	50	3520	Rubble/boulder
6	17-23	10560 (6)	60	6336	Rubble/boulder
7	23-28	8800 (5)			
8	28-40	21120 (12)	60	12672	Rubble/boulder
Total				22528	

SUMMARY

1. The predominant fish species is assumed to be Arctic char.
2. There are six major falls on this system, all between mile 13 and mile 15.5 on the main stem. All those falls are

complete obstructions.

3. There is only one major tributary on the system.

4. Accessible and inaccessible areas are as follows:-

	Accessible	Inaccessible
Main stem	6160	22,528

PHOTOS ON FILE

Description (35 mm slides)	File No.
Nachvak Fiord looking upstream to Nachvak Lake	1346
Nachvak Lake	1347
Falls at mile 13	1348 (2 slides)
Falls at mile 17	1349
Typical area above falls	1350
Area in section 6	1351
Falls at mile 13.5	1352
Falls at mile 14	1352
Falls at mile 14.5	1352

Fig.56 . Nachvak Lake.

Fig. 57 . Falls at mile 13. Nachvak River.

Fig. 58 . Falls at mile 13.5, Nachvak River.

Fig. 59 . Falls at mile 14, Nachvak River.

Fig. 60 . Falls at mile 14.5, Nachvak River.

Fig.61 . Typical area above falls, Nachvak River.

Eclipse River - Index 2924

Position of Mouth	59°47'00" N. Latitude 64°15'00" W. Longitude
Location of Mouth:	Eclipse Channel
Map Reference	Point le Droit, 24,P. Scale 1:250,000

GENERAL DESCRIPTION

Drainage Area: 424 square miles

Mean Width of Drainage Basin: 16 miles

Axial Length of Basin: 28 miles

Perimeter of Basin: 111 miles

Maximum Basin Relief: 2,500 feet

Length of main stem (including standing water): 40 miles

Number of Major Tributaries: 5

Total Length of all tributaries (including standing water): 195 miles.

Fish Populations

There is no data availabele on species composition in this system. However, during the survey several large fish (approximately 50 cms) were sighted from helicopter at mile 3 above lake, but was unable to make identification. Angling efforts in this particular area were unsuccessful.

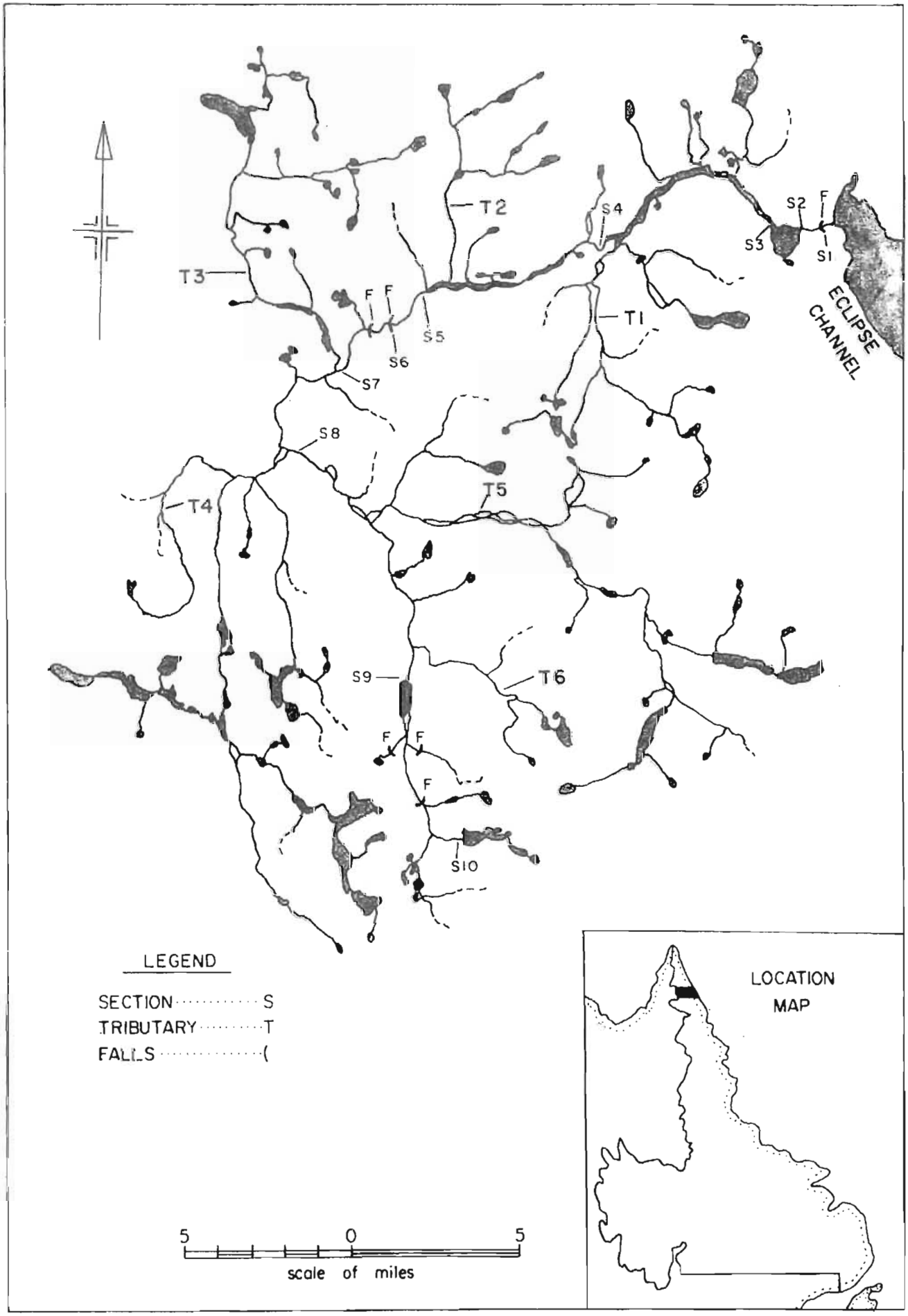

FIG. 62 MAP OF ECLIPSE RIVER, INDEX 2924, SHOWING SECTIONS SURVEYED

Obstructions

Table 50 . Obstructions on main stem of Eclipse River - Index 2924.

Type of obstruction	Location (mile)	Degree of Obstruction	Description	Remarks
Falls	1	Complete	Vertical height 15-20' Angle 80° 15' wide	
Falls	19	Complete	Vertical height 15-20' Angle 90° 100' wide	Fig. 64
Falls	20	Complete	Vertical height 8-10' (each of 2 steps) Angle 80° 15' wide	Fig. 65

Water Chemistry

A water sample collected on August 28, 1973, shows the following results:

pH	Total Hardness	Specific Conductance	Turbidity	Total Alkalinity	Calcium	Chloride
6.2	2.0 ppm.	10.0 micromhos	0.6 JTU	2.0.ppm.	0.5 ppm.	1.5 ppm.

Obstructions

Table 51 . Bottom composition main stem, Eclipse River, Index 2924.

Section	Location (mile)	Distance yds. (miles)	Average width yds.	Total units 100 sq.yds. (per unit)	Bottom Type
Accessible					
1	0- 1	1760 (1)	35	616	Boulder/rubble
Total				616	
Inaccessible					
2	1- 2	1760 (1)	35	616	Boulder/rubble/ bedrock
3	2- 3	1760 (1)			
4	3-10	12320 (7)	65	8008	Sand/gravel
5	10-17	12320 (7)	50	6160	Gravel/rubble
6	17-19	3520 (2)	50	1760	Gravel/rubble
7	19-22	5280 (3)	40	2112	Boulder/rubble
8	22-27	8800 (5)	35	3080	Gravel
9	27-36	15840 (9)	50	7920	Rubble/boulder/ gravel
10	36-42	10560 (6)	50	5280	Rubble/boulder
Total				34936	

Table 52. Bottom composition of tributaries, Eclipse River, Index 2924.

Section	Location (mile)	Distance yds (miles)	Av. width yds.	Total units 100 sq.yds. (per unit)	Bottom type	Remarks
T1	Entire stream	24640 (14)	10*	2464		Estimated - stream not surveyed
T2						Very small stream. Almost dry.
T3-S1	0- 5	8800 (5)	5	440	Rubble	2 steady areas.
-S2	5-10	8800 (5)	10	880	Rubble/boulder	
T4-S1	7	12320 (7)	15	1848	Rubble/boulder	Swift flow
-S2	7-15	14080 (8)	10	1408	Rubble/boulder	
T5-S1	0- 6	10560 (6)	65	6864	Rubble/boulder	
-S2	6-14	14080 (8)	20	2816	Rubble/boulder	
T6						Small stream
Total				16720		

Summary

1. Arctic char is assumed to be predominant species in this area.
2. There are five major tributaries on this system.
3. There are three major falls (all complete obstruction) on the main stem at mile 1, mile 19 and mile 30.
4. Accessible and inaccessible areas are as follows:

	Accessible	Inaccessible
Main River	616	34,936

PHOTOS ON FILE

Description (35 mm slides)	File No.
Typical area above Lake I	1354 (2 slides)
Falls at mile 20	1355
Falls at mile 19	1356
Main river at section 6	1357
Falls at mile (smaller of 2 falls)	1358 (2 slides)
Tributary 4. Eclipse River	1359
Headwaters of tributary 4	1360
Tributary 5	1361

Fig. 63. Lower section of tributary 4. Eclipse River.

Fig. 64. Falls on main stem at mile 19. Eclipse River.

Fig. 65 . Falls on main stem at mile 20, Eclipse River.

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