ADDENDUM NUMBER II

MACKENZIE STREAM CATALOGUE

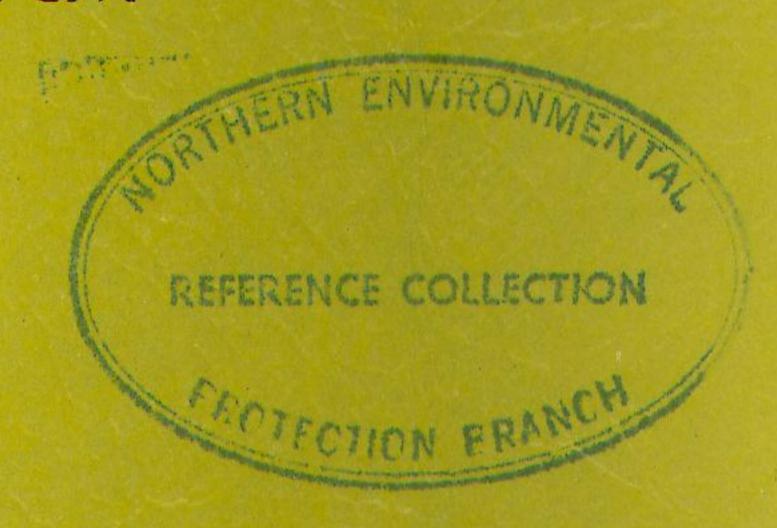
TO

BASE DATA REPORT

SECTION D - MACKENZIE HIGHWAY

MILES 715 TO 936

October 1974





FOR

DEPARTMENT OF PUBLIC WORKS OF CANADA EDMONTON, CANADA



SCHULTZ

C.D. SCHULTZ & COMPANY LIMITED
FORESTERS AND CONSULTING ENGINEERS
ECONOMISTS AND BIOLOGICAL SCIENTISTS

VANCOUVER, CANADA V6C 2A1



REGISTERED ISSUE
NUMBER 8

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 $\mathbf{BY}$ 

SCHULTZ INTERNATIONAL LIMITED Vancouver, CANADA





#### SCHULTZ INTERNATIONAL LIMITED

Integrated Resource Development

**Environmental Impact Studies** 

325 HOWE STREET, VANCOUVER, CANADA V6C 2A1

October 28, 1974 Our File: CG170.3.5

Mr. F.E. Kimball Project Manager, N.W.T. Roads D.P.W. Western Region P.O. Box 488 Edmonton, Alberta T5J 2K1

Dear Mr. Kimball:

In accordance with Mr. Hucluk's telephone conversation of September 16, 1974, Addendum II (Stream Catalogue), to the Base Data Report for Section D of the Mackenzie Highway, has been completed.

If you have any questions pertaining to this addendum, please contact our office.

Thank you.

Yours truly,

SCHULTZ INTERNATIONAL LIMITED

Dr. L.W. Mottus

Manager, Environmental Studies

LWM:1f

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## ADDENDUM NUMBER II MACKENZIE STREAM CATALOGUE

TO

BASE DATA REPORT
SECTION D - MACKENZIE HIGHWAY
MILES 715 TO 936

#### 1.0 INTRODUCTION

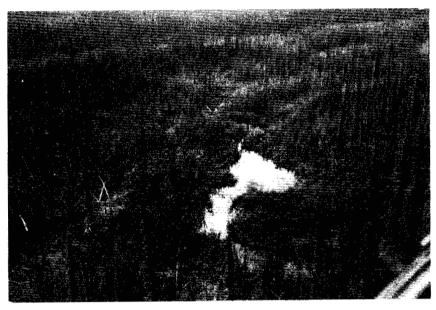
Investigations by Schultz International Limited, aimed at determining the possible impact of construction activities upon streams crossed by Section D of the proposed Mackenzie Highway, are continuing. This appendum to Schultz International Limited's Base Data Report of June 1974 has been compiled to provide an updated and revised summary of data gathered to date. It is designed to be used either as a complement to the Base Data Report or as a separate summary.

The information included on streams consists of one or more data sheets and, where available, two identifying photographs, one of the area upstream from the crossing site and one of the area downstream, taken from a position directly above the crossing site. Where photographs of this type are not presently available, temporary prints have been added from our existing photo log.

Because of the large number of unnamed streams in the study area, a code designation system was used to identify streams. Each stream and tributary was assigned a number which is unique. The first digit of the code indicates the major drainage river which runs into the sea. Subsequent sets of digits separated



by periods designate successively smaller tributaries. numbers are allocated so that upstream branches to the right have odd numbers while those to the left are even. example, in 1.050.11, the 1 refers to the Mackenzie River, the .050 refers to the twenty-fifth tributary on the left side of the Mackenzie River from its downstream origin. This is the Travaillant River. The .11 refers to the sixth tributary of the Travaillant on the right side. can be further extended as water courses bifurcate. advantage of the system is that distant tributaries can be easily associated with large rivers, e.g. all tributaries of the Travaillant River have codes beginning with 1.050. Maps of the study area showing all streams evaluated with their code numbers are contained in Appendix II. A list of fish species captured in the area is contained in Appendix I. 2.0 DATA SHEETS



STREAM 1.158 (JACKFISH CREEK) - UPSTREAM



STREAM 1.158 (JACKFISH CREEK) - DOWNSTREAM



### GROUND STREAM SURVEY

STRE	EAM NAME: _	Jackfish Crock (Highway Mileage 714.0)
LOCA	TION: LAT.	LONG.
МАР	NO.:	
DATE	:	July 5, 1974 ·
SAMP	LER:	НАВ
PROJ	ECT NO.:	
CLIE	ENT:	
Stre	am	
a)	width of	stream 10
b)	depth of	stream 3 - 6
c)	flow rate	stream 3 - 6 , ft/sec 12'/10 sec le ratio 90 - 10 ver, exposed to shaded ratio 90 - 10
a)	pool-riff	$\frac{12 \times 10^{-360}}{10^{-10}}$
e)	stream co	ver exposed to shaded ratio 00 = 10
£)	bottom wo	gotation Chara and a
~)	bottom ver	getation Grass - sedge
g)	bottom ty	pe lder; rocks>12"
	(1) DOU.	lder; rocks>12" ble; rocks 3"-11.9"
	(ii) rubl	ole; rocks 3"-11.9"
	(1111) aray	VAL * TOCKS I"-7 4"
	ITTH Can	Geclite matorial - 1"
	(v) other	er (logs, debris, etc.) Veg
h)	probable i	er (logs, debris, etc.)  Fish barriers  Fish passages  No  Arroe (spring fed, snow melt, etc.)
i)	difficult	fish passages No
i)	stream son	arce (spring fed, snow melt, etc.)
٠,٠		(0) (0) (0) (0) (0) (0) (0)
Surr	ounding Are	a a
a)	erosion of	banks No
h)	stroamside	e vegetation Willow and sedge
D,		
Jato:	r Chemistry	•
14 LE.	discolude	10 June 10 mg/1
a)	drazor ved	oxygen $10 \text{ drops} = 10 \text{ mg/l}$
D)	cemperatur	.е 130 С
2)	COTOL OI A	oxygen       10 drops = 10 mg/l         re       13° C         vater       Clear
a)	рн	7.0
25 2 - 3		
risni	ing Method	(s) Used
a)	rod ? Lee1	
υį	giii net	
c)	beach sein	e
d)	fish traps	X X
a)	alectro ch	nocker



STREAM 1.156 (HARE INDIAN RIVER) - UPSTREAM



STREAM 1.156 (HARE INDIAN RIVER) - DOWNSTREAM



# Highway Mileage 724.8 Stream Classification 1.156 (Hare Indian River)

Date of Sampling	May 1973
Upstream Drainage Area (sq.mi.)	8,951 (approx.)*
Gradient at Crossing (ft./mi.)	2.7
Bottom Type	gravel
Bottom Vegetation	
Cover	spruce
Discharge (c.f.s.)	
Width (ft.)	>350
Depth (ft.)	≥15
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	
Water Temperature OC	
Fish Observed	(broad whitefish, humpback whitefish, grayling, white sucker, burbot, laked chub, slimy sculpin, longnose dace)*
Ice Depth - Mar. 1974	
Water Under Ice	
Comments * Information obtained	from:
Evaluation of Fish Re	sources of the Mackenzie River
Valley. Vol. II,1973.	Environmental Social
Committee Northern Pi	pelines.
Report No. 73-2	



STREAM 1.152 - UPSTREAM

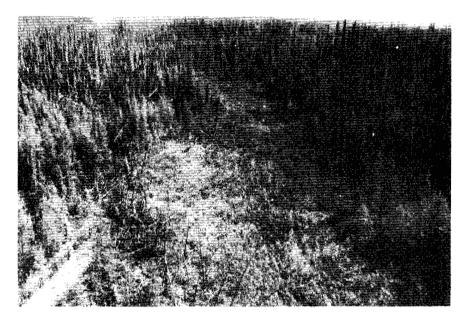


STREAM 1.152 - DOWNSTREAM



Highway Mileage 734.3

	Stream Classification	1.152	
	•		
Date of Sa	mpling	June 29, 1973	
Upstream D	Prainage Area(sq.mi.)	15	·
Gradient a	t Crossing (ft./mi.)	70	
Bottom Typ	e	cobble	
Bottom Veg	getation	some algae	
Cover	*	spruce	
Discharge	(c.f.s.)	0.4	
Width (ft.		8" - 4'	
Depth (ft.		0.5' - 1.5'	
		8	
Suspended Solids (p.p.m.)			
	Solids (p.p.m.)	158	
Water Temp	erature <sup>O</sup> C		
_			
Fish Observed		many grayling fry ar	nd 1 larger
		grayling (15 cm)	
Ice Depth	- Mar. 1974	0.5'	
Water Unde	•	none	
	- +00	* · · · · · · · · · · · · · · · · · · ·	
Comments:	mi- i a - i		
condition to	This stream appeared to		
,	habitat. Numerous cadd		
observed. The pool-riffle ratio was about 75:25.			:25.
•			
•			
•			



STREAM 1.148.01.02 - UPSTREAM

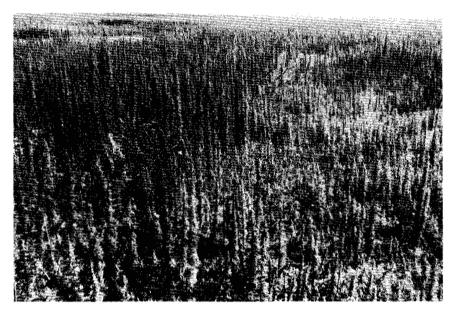


STREAM 1.148.01.02 - DOWNSTREAM



Highway Mileage737.8Stream Classification1.148.01.02

Date of Sampling	July 2, 1973
•	Bernard Barrenth (1988) - Anna Barrenth
Upstream Drainage Area(sq.mi.)	15
Gradient at Crossing (ft./mi.)	80
Bottom Type	gravel
Bottom Vegetation	grass-sedge
Cover	grass-sedge
Discharge (c.f.s.)	2
Width (ft.)	1' - 2'
Depth (ft.)	2'
Suspended Solids (p.p.m.)	56
Dissolved Solids (p.p.m.)	102
Water Temperature OC	9.2
Fish Observed	none
Ice Depth - Mar. 1974 Water Under Ice	
water onder ite	
Comments: At the time of samp	oling this stream was in flood. The
flow was through gr	ass and sedge. The stream is probably
poor fish habitat w	hen flood waters subside.
	·



STREAM 1.148.03.02 - UPSTREAM



STREAM 1.148.03.02 - DOWNSTREAM

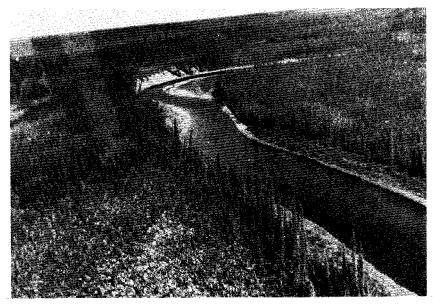


Highway Mileage

740.6

1.148.03.02

	Stream Classification	1.148.03.02
Date of Sam	mpling	June 29, 1973
_		7 90 gravel-rock
_	Solids (p.p.m.) Solids (p.p.m.)	
Fish Observ	ved	many grayling fry
Ice Depth - Water Under	- Mar. 1974 r Ice	
Comments:	This is a small tribut	ary of Loon River. At the time of
_	sampling there was no	flow above the gravel but water
	probably moved through	the gravel from one pool to the
-	next. Each pool conta	ined numerous grayling fry. This
-	stream is probably a m	ajor spawning tributary of Loon River
-		
-		



STREAM 1.148 (LOON RIVER) - UPSTREAM



STREAM 1.148 (LOON RIVER) - DOWNSTREAM



# Highway Mileage 742.2 Stream Classification 1.148 (Loon River)

Date of Sampling	September 1973
Upstream Drainage Area (sq.mi.)	1,389 (approx.)*
Gradient at Crossing (ft./mi.) Bottom Type	sand and gravel
Bottom Vegetation Cover	
Discharge (c.f.s.)	530
Width (ft.)	120
Depth (ft.)	1.9
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	
Water Temperature OC	8
Fish Observed May 1973:	grayling, pike, longnose sucker, nine spir
	stickleback, slimy sculpin, lake chub, hum
	back whitefish, broad whitefish, least cis
Ice Depth - Mar. 1974	2.5' arctic cisco)*
Water Under Ice	4 "
Comments * Information obtained :	from:
Evaluation of Fish Res	sources of the Mackenzie River
Valley. Vol. II, 1973	. Environmental Social Committee
Morthern Pipelines, Re	eport No. 73-2.



STREAM 1.140.01 - UPSTREAM



STREAM 1.140.01 - DOWNSTREAM



	Highway Mileage Stream Classification		
Date of Sa	ampling	June 30, 1973	
Gradient a Bottom Typ		<u>3</u> <u>130</u>	
Bottom Vec	getation		
Dissolved	.)		
Fish Obser	rved	none	
Ice Depth Vater Unde	- Mar. 1974 er Ice		
Comments:	This creek drains from	lakes 2 - 4 miles east of Eagle Fal	.1s
	There was a very steep	section below the crossing site	
	which would block fish	passage from the Mackenzie River	
•	upstream.		



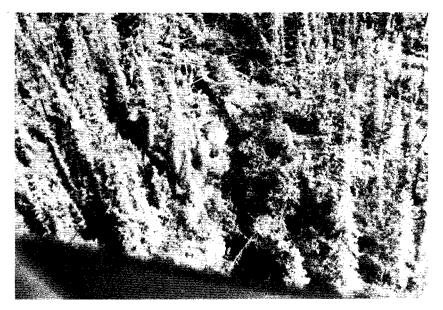
STREAM 1.138 (TIEDA RIVER) - UPSTREAM



STREAM 1.138 (TIEDA RIVER) - DOWNSTREAM

# Highway Mileage 763.4 Stream Classification 1.138 (Tieda River)

Date of Sampling	September 1973
<pre>Upstream Drainage Area (sq.mi.) Gradient at Crossing (ft./mi.)</pre>	384 (approx)*
Bottom Type	fine gravel and sand*
Bottom Vegetation	
Cover	
Discharge (c.f.s.)	_67.8
Width (ft.)	38'
Depth (ft.)	0.9'
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	5.0
Water Temperature OC	
Fish Observed	May 1973: grayling
	(humpback whitefish, pike)*
Ice Depth - Mar. 1974	frozen to bottom
Water Under Ice	no
	<del>Various 1, de 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -</del>
Comments * Information obtain	ined from:
Evaluation of Fish	Resources of the Mackenzie River
Valley. Vol II, 197	73. Environmental Social Committee
Northern Pipelines.	Report No. 73-2.



STREAM 1.128 - UPSTREAM



STREAM 1.128 - DOWNSTREAM

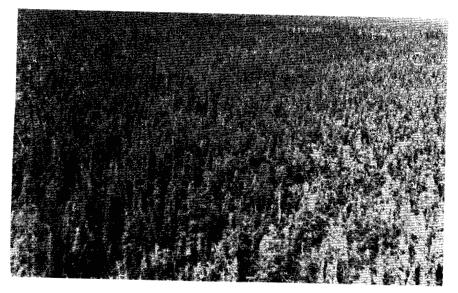


776.1

Highway Mileage

Stream Classification

Date of Sampling	June 30, 1973		
Upstream Drainage Area(sq.mi.)	14.5		
Gradient at Crossing (ft./mi.)	70		
Bottom Type	sand-large cobbles		
Bottom Vegetation	grass		
Cover	spruce		
Discharge (c.f.s.)	0.4		
Width (ft.)	1' - 8'		
Depth (ft.)	0.5' - 1.5'		
Suspended Solids (p.p.m.)	10		
Dissolved Solids (p.p.m.)	142		
Water Temperature OC	8.0		
Fish Observed	none		
Ice Depth - Mar. 1974	3.01		
Water Under Ice	1.0'		
water onder re-			
Comments: Although this stream	appeared to be good fish habitat.		
none were observed. Below the crossing site there wa a large marsh area which may block fish movement.			
	,		



STREAM 1.128.04 - UPSTREAM



STREAM 1.128.04 - DOWNSTREAM



Highway Mileage 783.3

	Stream Classification	1.128.04	
Date of Sa	ampling	June 30, 1973	
	D		
_	Drainage Area (sq.mi.)	60	
	at Crossing (ft./mi.)	00	
Bottom Typ			
Bottom Ve	getation		
Cover		**************************************	
Discharge	(c.f.s.)		
Width (it	.)		
Depth (ft	.)		
Suspended	Solids (p.p.m.)		
Dissolved	Solids (p.p.m.)		
Water Temp	perature <sup>O</sup> C		
Fish Obse	rved	none	
Ice Depth	- Mar. 1974		
Water Und		**************************************	
		The second secon	
Comments:	At crossing site this s	tream was only a marsh bu	it 1/4 mile
	downstream it became a	gravel-bottomed watercour	se. Fish
	may be present in the d	ownstream section.	
	m - Margin Lida,		



STREAM 1.118 - UPSTREAM



STREAM 1.118 - DOWNSTREAM



786.7

Highway Mileage \_\_

	Stream Classification	1.118
	·	
Date of Sa	mpling	June 30, 1973
Upstream D	rainage Area(sq.mi.)	42
	t Crossing (ft./mi.)	30
Bottom Typ		rock-gravel-sand
Bottom Veg		sparse
Cover		willow
Discharge	(c.f.s.)	5
Width (ft.	·	30'
Depth (ft.	)	4'
Suspended	Solids (p.p.m.)	13
	Solids (p.p.m.)	177
	erature <sup>O</sup> C	12.0
		**************************************
Fish Obser	ved	many grayling fry
Ice Depth	- Mar. 1974	2.5'
Water Unde	r Ice	3'
Comments:	This stream had stable	banks. Above and below the crossing
	site the stream was 80	percent shaded and flowed very
	slowly; although no fi	sh were observed in this section,
	it appeared to be good	pike habitat.
•		
-	ري چې د بېران د د د او د د د او د د د او د د د د او د د د د	
-		
•		



STREAM 1.088.18 - UPSTREAM



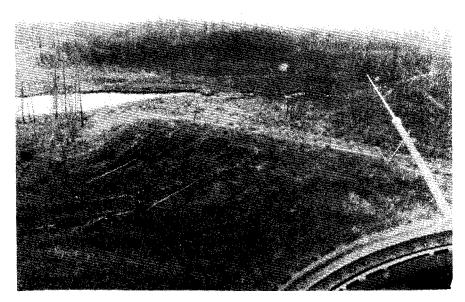
STREAM 1.088.18 - DOWNSTREAM



Highway Mileage \_\_\_\_795.4

Stream Classification 1.088.18

Date of Sampling	July 1, 1973
Upstream Drainage Area (sq.mi.)	60
Gradient at Crossing (ft./mi.)	17
Bottom Type	sand-gravel-rock
Bottom Vegetation	none
Cover	spruce-willow
Discharge (c.f.s.)	7
Width (ft.)	2' - 8'
Depth (ft.)	1' - 2'
Suspended Solids (p.p.m.)	12
Dissolved Soliás (p.p.m.)	190
Water Temperature OC	12.0
Fish Observed	Many grayling fry and a few
	juveniles (15 cm)
Ice Depth - Mar. 1974	2.0'
Water Under Ice	none
Comments: This stream appeared	to be excellent grayling fry habitat
The creek bed was qui	ite wide with substantial gravel beds
Use of the stream gra	avel should be prohibited.
**************************************	



STREAM 1.088.16 - UPSTREAM



Highway Mileage	796.8
Stream Classification	1.088.16
•	
Date of Sampling	July 1, 1973
Upstream Drainage Area(sq.mi.)	4.5
Gradient at Crossing (ft./mi.)	<u>&lt; 5</u>
Bottom Type	
Bottom Vegetation	
Cover	
Discharge (c.f.s.)	
Width (ft.)	
Depth (ft.)	_
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	
Water Temperature OC	
Fish Observed	none
Ice Depth - Mar. 1974	And the state of t
Water Under Ice	Company of the Compan
Comments: This stream was a slow	moving stream about 10' wide with
sedge covered banks. P	ike from nearby lake probably use
it as a spawning area a	nd nurserv.
To ab a opaming area a	The free free free free free free free fr
**************************************	

### GROUND STREAM SURVEY

STRE	AM NAME: 1.088.16
rocy	TION: LAT. LONG.
МУБ	NO.:
DATE	:
	LER: HAB
PROJ	ECT NO.:
CLIE	NT:
b) c) d) e) f) g)	width of stream 15 - 20  depth of stream 3 - 6  flow rate, ft/sec pool-riffle ratio 95 - 5  stream cover, exposed to shaded ratio 95 - 5  bottom vegetation Grass  bottom type (i) boulder; rocks > 12" (ii) rubble; rocks 3"-11.9" (iii) gravel; rocks 1"-2.9" (iv) sand-silt; material < 1" X (v) other (logs, debris, etc.) probable fish barriers No difficult fish passages No stream source (spring fed, snow melt, etc.)
a)	erosion of banks No streamside vegetation Willow + Grass
a) b)	Chemistry dissolved oxygen 10 mg/l temperature 15°C color of water Clear pH 6.0
a) b) c) d)	ng Method(s) Used rod & reel

17"; 18"; 14"; 12"; 19" in length.

<sup>- 5</sup> Pike caught:



STREAM 1.088.14 - UPSTREAM



STREAM 1.088.14 - DOWNSTREAM

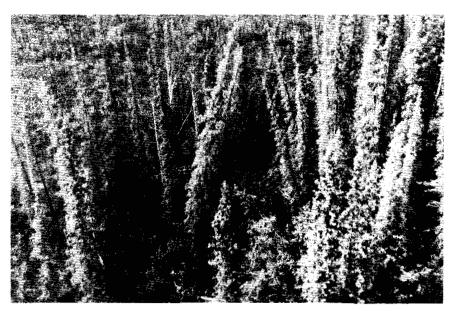


Highway Mileage 800.7

	Stream Classification	1.088.14	_
	V.		
	•		
Date of Sa	mualina	July 1, 1973	
Date of Sa	wbring		
Upstream D	rainage Area(sq.mi.)	2.5	
	t Crossing (ft./mi.)	<b>∢</b> 5	
Bottom Typ	e		
Bottom Veg	etation		<b>-</b>
Cover			-
			-
Discharge	(c.f.s.)		
Width (ft.			
Depth (ft.	)		
Suspended	Solids (p.p.m.)		
Dissolved	Solids (p.p.m.)		
Water Temp	erature <sup>O</sup> C		
Fish Obser	ved	none	· · · · · · · · · · · · · · · · · · ·
_	- Mar. 1974		
Water Under	r Ice		
	* 1		
Comments:	A drainage field without considered fish habita	· · · · · · · · · · · · · · · · · · ·	ourse; not
•	Considered fish habita	, , , , , , , , , , , , , , , , , , ,	,
-	The same of the sa		
-			
-			· · · · · · · · · · · · · · · · · · ·
_			
_			



STREAM 1.088.12 - UPSTREAM



STREAM 1.088.12 - DOWNSTREAM



Highway Mileage 801.5
Stream Classification 1.088.12

Date of Sa	mpling	July 1, 1973
Upstream D	Prainage Area(sq.mi.)	54
Gradient a	at Crossing (ft./mi.)	45
Bottom Typ	oe .	broken shale
Bottom Veg	getation	none
Cover		spruce-willow
Discharge	(c.f.s.)	1.4
Width (ft.	)	2' - 4'
Depth (ft.	)	0.5' - 1.5'
Suspended	Solids (p.p.m.)	23
Dissolved	Solids (p.p.m.)	262
Water Temp	erature <sup>O</sup> C	10.2
Fish Obser	ved	grayling fry and numerous juvenile
		grayling (15 cm)
Ice Depth	- Mar. 1974	2.5'
Water Unde	r Ice	
Comments:	This stream had a 50:	50 pool-riffle ratio. The creek is
	too small to support	mature grayling but is an important
spawning and rear		stream.
•		
,		
	·	

Highway Mileage \_\_\_ 806.0

Stream Classification	1.088.08.01	
Date of Sampling	July 1, 1973	
Upstream Drainage Area(sq.mi.)	7.5	
Gradient at Crossing (ft./mi.)	75	
Bottom Type		
Bottom Vegetation		
Cover		
Discharge (c.f.s.)		
Width (ft.)		
Depth (ft.)		
Suspended Solids (p.p.m.)	and the specific distribution and specific distributions and the specific distributions and the specific distributions are specific distributions are specific distributions.	
Dissolved Solids (p.p.m.)		
Water Temperature <sup>O</sup> C		
Fish Observed	None	
Ice Depth - Mar. 1974		
Water Under Ice		
	<del></del>	
Comments: A drainage field without	a distinct watercourse; not	
considered fish habitat.		
	·	



STREAM 1.088.08 - UPSTREAM



STREAM 1.088.08 - DOWNSTREAM



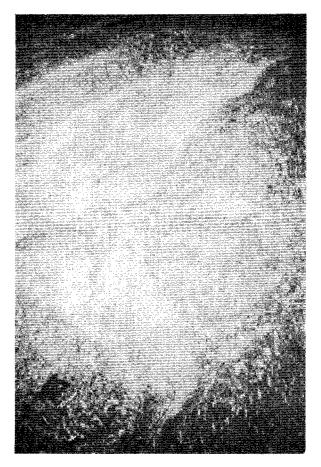
Highway Mileage \_\_\_

Stream Classification

806.5

1.088.08

Date of Sam	npling	July 1, 1973
Upstream Di	rainage Area(sq.mi.)	11
Gradient at	Crossing (ft./mi.)	85
Bottom Type	9	gravel
Bottom Vege	etation	none
Cover	•	sedge & grass
P. C. L. C. C.	(- 5 - <u>)</u>	3
Discharge		1' - 4'
Width (ft.)		0.5' - 1.5'
Depth (ft.)		16
•	Solids (p.p.m.) Solids (p.p.m.)	133
Water Tempe		
water rempe	statute C	11.2
Fish Observ	ved	some grayling fry sighted
Ice Depth .	- Mar. 1974	
Water Under	r Ice	
Comments:	This stream appeared	to be a permanent creek with stable
	banks with sedge and	grass. It is probably not mature
	grayling habitat but	is used for spawning.
•		
•		
•		
•		



STREAM 1.088.02 - "TYPE" PHOTOGRAPH

SCHULTZ

Highway Mileage	810.1
Stream Classification	1.088.02
Date of Sampling	July 1, 1973
Upstream Drainage Area (sq.mi.)	1
Gradient at Crossing (ft./mi.)	145
Bottom Type	
Bottom Vegetation	
Cover	
	**************************************
Discharge (c.f.s.)	
Width (ft.)	
Depth (ft.)	
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	
Water Temperature OC	
water remperature c	
Fish Observed	none
Tish Observed	none
Ice Depth - Mar. 1974	
Water Under Ice	
water onder ice	was the same of th
Comments: A drainage field without	et a distinct watercourse: not
considered fish habitat	. •
_	
· · · · · · · · · · · · · · · · · · ·	



STREAM 1.080.08 - UPSTREAM



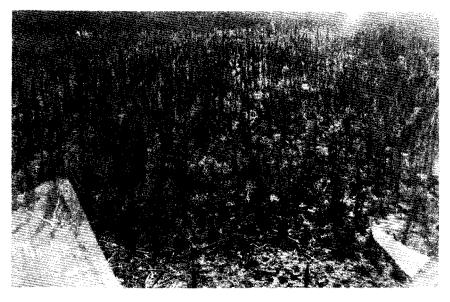
STREAM 1.080.08 - DOWNSTREAM



	Highway Mileago	815.9	
	Stream Classification	1.080.08	
	•		
Date of Sa	mpling	July 2, 1973	
Upstream D	rainage Area(sq.mi.)	3	
	t Crossing (ft./mi.)	70	
Bottom Typ		Vision in the second se	
Bottom Veg			
Cover			
Discharge	(c.f.s.)		
Width (ft.		**************************************	
Depth (ft.			
_	Solids (p.p.m.)		
	Solids (p.p.m.)		
	erature °C		
Fish Obser	ved	none	
	•		
Ice Depth	- Mar. 1974		
Water Unde			
Comments:	A drainage field withou	t a distinct watercourse; not	
	considered fish habitat	·	
			_
			_
		·	



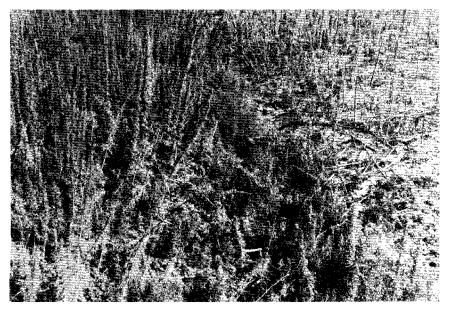
STREAM 1.078.01 - UPSTREAM



STREAM 1.078.01 - DOWNSTREAM



Highway Mileage	820.0
Stream Classification	1.078.01
•	·
Date of Sampling	July 2, 1973
	· · · · · · · · · · · · · · · · · · ·
Upstream Drainage Area(sq.mi.)	0.5
Gradient at Crossing (ft./mi.)	205
Bottom Type	
Bottom Vegetation	
Cover	
Discharge (c.f.s.)	
Width (ft.)	,
Depth (ft.)	
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	
Water Temperature C	
Fish Observed	none
Ice Depth - Mar. 1974	
Water Under Ice	
Co-monte 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Comments: A drainage field withou	t a distinct watercourse; not
considered fish habitat	•
	,



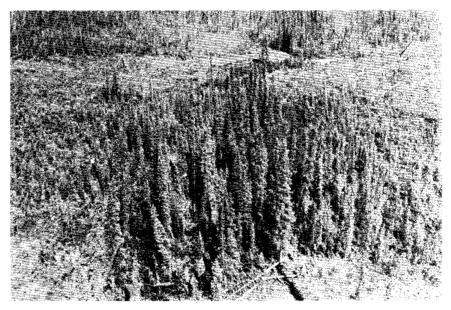
STREAM 1.078 - UPSTREAM



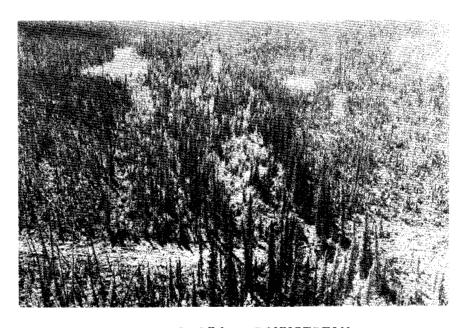
STREAM 1.078 - DOWNSTREAM



Highway Mileage	820.4
Stream Classification	1.078
Date of Sampling	July 2, 1973
Upstream Drainage Area(sq.mi.)	_3
Gradient at Crossing (ft./mi.)	180
Bottom Type	
Bottom Vegetation	
Cover	
Discharge (c.f.s.)	
Width (ft.)	
Depth (ft.)	
Suspended Solids (p.p.m.)	manage destruction and the second sec
Dissolved Solids (p.p.m.)	
Water Temperature <sup>O</sup> C	
Fish Observed	none
Ice Depth - Mar. 1974	•
Water Under Ice	-
Comments: A drainage field without	t a distinct watercourse; not
considered fish habitat	·



STREAM 1.076 - UPSTREAM



STREAM 1.076 - DOWNSTREAM



Stream Classification 1.076

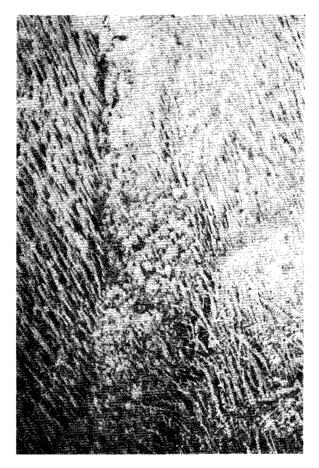
Highway Mileage 821.3

	•	
Date of Sa	ampling	July 2, 1973
Upstream I	Orainage Area(sq.mi.)	9
Gradient a	at Crossing (ft./mi.)	_75
Bottom Typ	pe	shale - sandstone
Bottom Ve	getation	none
Cover		alder-willow-spruce
Discharge	(c f s )	0.4
Width (ft.		2' - 6'
Depth (ft.		2" - 1'
-	Solids (p.p.m.)	44
	Solids (p.p.m.)	398
	perature <sup>O</sup> C	8.0
Fish Obse	rved	two grayling (27.5 cm and 30.0 cm)
		without milt
Tao Donah	- Mars 1074	7 51
Water Unde	- Mar. 1974	1.5'
water ond	er ice	
Comments:	This stream appeared to	be a good grayling spawning stream
	although no fry were ob	served. There was a considerable
	brush-log jam downstrea	m, which may block fish passage.
	Although mature grayling	g were observed, the stream is only
	marginal habitat.	



STREAM 1.070 - "TYPE" PHOTOGRAPH

Highway Mileage	825.6
Stream Classification	1.070
	Marie and the second se
Date of Sampling	July 2, 1973
made of panificants	
Upstream Drainage Area(sq.mi.)	0.5
Gradient at Crossing (ft./mi.)	50
Bottom Type	The state of the s
Bottom Vegetation	
Cover	
Cover	
Discharge (a.f. a.)	
Discharge (c.f.s.)	Friding to the Art Art State of the Art
Width (ft.)	* · · · · · · · · · · · · · · · · · · ·
Depth (ft.)	
Suspended Solids (p.p.m.)	Million and the state of the st
Dissolved Solids (p.p.m.)	
Water Temperature OC	# Construction and the state of
Fish Observed	none
Ice Depth - Mar. 1974	
Water Under Ice	
Comments: No definite stream change	nel was apparent. Water flowed
through sedge in a diff	use drainage field.



STREAM 1.068 - "TYPE" PHOTOGRAPH

Highway Mileage	828.7
Stream Classification	1.068
	•
Date of Sampling	July 2, 1973
Upstream Drainage Area(sq.mi.)	7
Gradient at Crossing (ft./mi.)	70
Bottom Type	
Bottom Vegetation	
Cover	
Discharge (c.f.s.)	
Width (ft.)	
Depth (ft.)	
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	And the state of t
Water Temperature OC	
mater remperature t	
Fish Observed	none.
· · · · · · · · · · · · · · · · · · ·	none
Ice Depth - Mar. 1974	
Water Under Ice	——————————————————————————————————————
Comments: No definite stream cha	nnel was apparent. Water flowed
through sedge in a dif	fuse drainage field.



STREAM 1.068.04 - UPSTREAM



STREAM 1.068.04 - DOWNSTREAM



Highway Mileage	832.3
Stream Classification	1.068.04
Date of Sampling	July 2, 1973
Upstream Drainage Area(sq.mi.)	_8
Gradient at Crossing (ft./mi.)	135
Bottom Type	gravel - silt
Bottom Vegetation	sparse
Cover	_sedge - some spruce
Discharge (c.f.s.)	3.5
Width (ft.)	1' - 2.5'
Depth (ft.)	1' - 2.5'
Suspended Solids (p.p.m.)	955
Dissolved Solids (p.p.m.)	180
Water Temperature OC	9.0
Fish Observed	one unidentified cyprinid captured
Tre Doubh Nov 1074	5.51
Ice Depth - Mar. 1974	6.5'
Water Under Ice	none
Comments: This stream was very m	uddy because of an extensive area of
bank collapse and eros	ion upstream, where a seismic line
was located. The stre	am may be clear in other years and
then may be good grayl	ing habitat.
,	
and the second s	
	**************************************



STREAM 1.058.03 - UPSTREAM



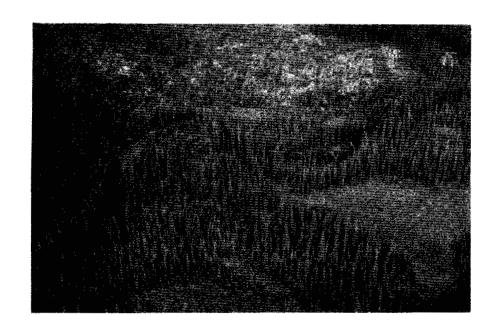
STREAM 1.058.03 - DOWNSTREAM



Highway Mileage 837.9

Stream Classification 1.058.03

Date of Sampling	July 2, 1973
Upstream Drainage Area(sq.mi.)	20
Gradient at Crossing (ft./mi.)	60
Bottom Type	gravel
Bottom Vegetation	none
Cover	willow - spruce - sedge
Discharge (c.f.s.)	0.1
Width (ft.)	0.5' - 4'
Depth (ft.)	2" - 2'
Suspended Solids (p.p.m.)	15
Dissolved Solids (p.p.m.)	170
Water Temperature OC	6.4
Fish Observed	numerous grayling fry
T D. 11	
Ice Depth - Mar. 1974	2.0'
Water Under Ice	none
Comments: This small stream had	stable banks and many benthic
invertebrates. It is	a good grayling spawning stream, but
not adult grayling hab	itat.

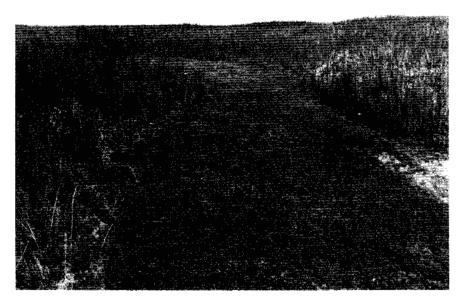


STREAM 1.058 - "TYPE" PHOTOGRAPH



Highway Mileage 844

Stream Classification	1.058 (Thunder River)
	,
Date of Sampling	September 1973
Upstream Drainage Area (sq.mi.)	
Gradient at Crossing (ft./mi.)	
Bottom Type .	gravel
Bottom Vegetation	
Cover	**************************************
Discharge (c.f.s.)	57.1
Width (ft.)	18
Depth (ft.)	2.0
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	
Water Temperature <sup>O</sup> C	5
Fish Observed	May 1973: pike, grayling, pond smelt
	longnose sucker, slimy sculpin, late
	chubs.
Ice Depth - Mar. 1974	6.5
Water Under Ice	no
Comments	
#PAT	
•	



STREAM 1.058.04 - UPSTREAM



STREAM 1.058.04 - DOWNSTREAM



Highway Mileage 849.3

	Stream Classification	1.058.04
Date of Sa	mpling	July 8, 1973
_	rainage Area(sq.mi.) t Crossing (ft./mi.)	<u>16.5</u> 20
Bottom Typ	e	***************************************
Bottom Veg	etation	
Cover		
Discharge		
Width (ft.		· · · · · · · · · · · · · · · · · · ·
Depth (ft.	)	
4	Solids (p.p.m.)	
	Solids (p.p.m.)	The state of the s
Water Temp	erature <sup>O</sup> C	
Fish Obser	ved	none
	,	
Ice Depth	- Mar. 1974	
Water Unde	r Ice	***************************************
0	21	
Comments:	At crossing, this stre	am was less than 4 feet wide and
	heavily overgrown. Pr	obably not a significant fish habitat



STREAM 1.050.03 - UPSTREAM



STREAM 1.050.03 - DOWNSTREAM



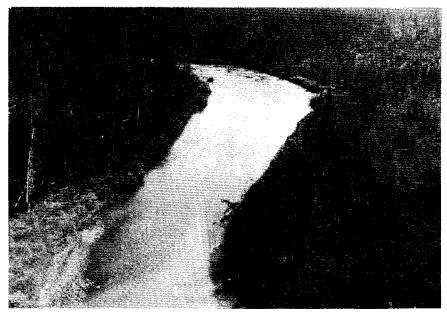
Stream Classification 1.050.03

Highway Mileage 855.0

Date of Sampling	July 8, 1973
Upstream Drainage Area(sq.mi.)	4.5
Gradient at Crossing (ft./mi.)	
Bottom Type	mud - some fine gravel
Bottom Vegetation	water plants
Cover	spruce
Discharge (c.f.s.)	3.5
Width (ft.)	12' - 25'
Depth (ft.)	1' - 5'
Suspended Solids (p.p.m.)	23
Dissolved Solids (p.p.m.)	83
Water Temperature OC	13.4
Fish Observed	Pungitius pungitius and pike
	observed
Ice Depth - Mar. 1974	
Water Under Ice	
	at room with stable banks and much
	stream with stable banks and much
plant growth on the bo	ttom. Probably serves as a pike
nursery for Travaillan	nt River.



STREAM 1.050 (TRAVAILLANT RIVER) - UPSTREAM



STREAM 1.050 (TRAVAILLANT RIVER) - DOWNSTREAM



## Highway Mileage 869.9 Stream Classification 1.050 (Travaillant River)

Date of Sampling	May 1973
Upstream Drainage Area (sq.mi.)	139 (approx)*
Gradient at Crossing (ft./mi.)	
Bottom Type	fine and course gravel *
Bottom Vegetation	
Cover	
Discharge (c.f.s.)	
Width (ft.)	
Depth (ft.)	
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	
Water Temperature OC	*
Fish Observed	May 1973: grayling, pike
	(longnose sucker, humpback whitefish)
Ice Depth - Mar. 1974	4'
Water Under Ice	2' (under pressure)
Comments * Information obtained	from:
•	sources of the Mackenzie River
Valley. Vol. II, 1973. Environmental Social Committee	
Northern Pipelines,	
Tipellies,	Nepole 20. 13-2.



STREAM 1.050.12.04 - UPSTREAM



STREAM 1.050.12.04 - DOWNSTREAM

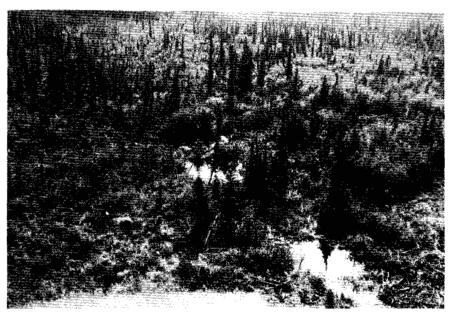


Highway Mileage 881.1

Stream Cla	ssification	1.050.12.04	
Date of Sampling		July 24, 1973	
Upstream Drainage Area	(sq.mi.)	7.5	
Gradient at Crossing (	• -	<b>&lt;</b> 5	
Bottom Type			
Bottom Vegetation			
Cover			
Discharge (c.f.s.)			
Width (ft.)			
Depth (ft.)			
Suspended Solids (p.p.	m.)		
Dissolved Solids (p.p.	m.)		
Water Temperature OC			
Fish Observed		none	
Ice Depth - Mar. 1974			
Water Under Ice			
Comments: _ This strea	m empties ir	nto Loche Creek from a	small lake.
The stream	is about or	ne mile long. At the	exit of the
lake there	was a large	e beaver dam and active	e lodge. The
stream app	eared to be	good pike habitat alt	hough none were
observed.			
***************************************			
	•	·	***************************************



STREAM 1.050.12.08 - UPSTREAM



STREAM 1.050.12.08 - DOWNSTREAM



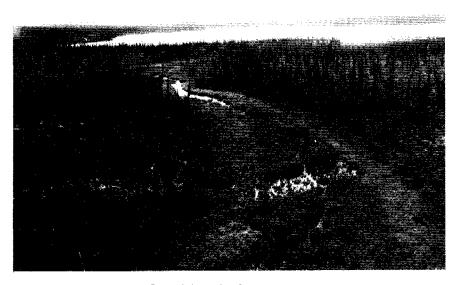
Highway Mileage 886.5

Stream Classification 1.050.12.08

Date of Sampling	July 8, 1973
Date of Damping	bd1y 0, 1373
Upstream Drainage Area(sq.mi.)	12.5
Gradient at Crossing (ft./mi.)	40
Bottom Type	plants - some gravel
Bottom Vegetation	thick plant growth
Cover	exposed
55701	
Dinahawa (n. 5 - )	_
Discharge (c.f.s.)	5
Width (ft.)	1' - 12'
Depth (ft.)	1.5' - 4'
Suspended Solids (p.p.m.)	37
Dissolved Solids (p.p.m.)	85
Water Temperature OC	12.0
•	
Fish Observed	
rish Observed	none
Ice Depth - Mar. 1974	
Water Under Ice	
Comments: A beaded stream which	had the appearance of pike habitat,
although none were ob	served.



STREAM 1.002.38.23 - UPSTREAM



STREAM 1.002.38.23 - DOWNSTREAM



Highway Mileage 898.0
Stream Classification 1.002.38.23

Date of Sampling	_July 24, 1973
Upstream Drainage Area(sq.mi.)	_ 39
Gradient at Crossing (ft./mi.)	5
Bottom Type	plants - some sand
Bottom Vegetation	water plants
Cover	grass and sedge
Discharge (c.f.s.)	35
Width (ft.)	8' - 20'
Depth (ft.)	3' - 6'
Suspended Solids (p.p.m.)	5.0
Dissolved Solids (p.p.m.)	85.0
Water Temperature OC	11.8
Fish Observed	a few small pike
Ice Depth - Mar. 1974	1.5'
Water Under Ice	none
Comments: A beaded stream with s	hallow pools filled with plants. The
stream is probably imp	ortant for movement of fish from
Rengleng River to Bath	ing take.



STREAM 1.002.38.25 - UPSTREAM



STREAM 1.002.38.25 - DOWNSTREAM



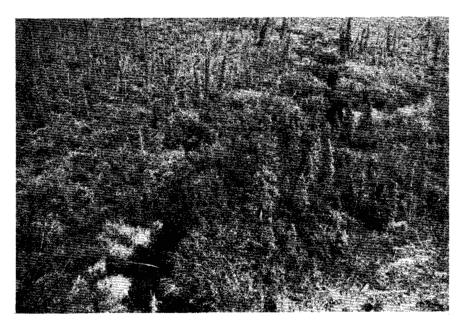
Highway Mileage 899.9

Stream Classification 1.002.38.25

			·	
Date of S	ampling	July 24, 1	.973	
Upstream	Drainage Area(sq.mi.)	1.5		
	at Crossing (ft./mi.)	5		
Bottom Ty				
Bottom Ve	- getation			
Cover				
Discharge	(c.f.s.)			
Width (ft	.)		•	
Depth (ft	.)			
Suspended	Solids (p.p.m.)	<del></del>		
Dissolved	Solids (p.p.m.)	N. Of Challenger,		
Water Tem	perature <sup>O</sup> C			,
Fish Obse	rved	none		
Ice Depth	- Mar. 1974			
Water Und	er Ice			
_				
Comments:	The stream was heavily	overgrown.	The water was	stagnant
	and had an oily scum.	Possibly pik	ce habitat, alt	hough none
	were observed.			
	were observed.		···.	
	<del></del>			
			,	
		<del></del>		

## GROUND STREAM SURVEY

STRE	AM NAME:	1.002.38.25	• <del></del>		
rocy	TION: LAT.	,	ro	ong.	.:
MAP	NO.:			<u></u>	·
		July 4,1974			
SAMP	LER:	НЛВ			
PROJ	ECT NO.:				· · · · · · · · · · · · · · · · · · ·
CLIE	NT:				
Stre	am			negligible, but	
`a)	width of st	ream	6'		
b)	depth of st	ream	3"		
c)	flow rate.	ft/sec 1 se	c - actually	negligible, but	is moving
ď)	pool-riffle	ratio	90 - 10		
e)	stream cove	r, exposed t	o shaded rat	io <u>10 - 90</u>	
f)	bottom vege	tation	Grass		
a)	bottom type				
57	(i) bould	er: rocks > 1	2"		
	(ii) rubbl	e: rocks 3"-	11 9"		
	(iii) grave	l. rocks l"-	2 9"		
	(xv) sand	Sile, materia	ic ota	Grass	
ъ1	probable fi	ch harriors	15, etc.)	Grass	
				Yes	
7)	airricult i	ish passages	- 3	Yes	
77	stream sour	ce (spring fo	ed, snow mer	t, etc.)	<del></del>
C				• .	
_ \	ounding Area	1	**-		
a)	erosion or	vegetation	No		······································
D)	streamside	vegetation _	80% WILLOW,	20% trees	
Wata:	r Chamiatur		•		
	r Chemistry		7 3		
a)	dissolved o	xygen	7 drops = 7	/ mg/1	
	temperature		40° C		
	color of wa	ter	Clear		
α)	рН		7.0		
Diah.	na Mothad/-	\ ttass			
	ing Method(s			<del></del>	
	rod & reel				
	gill net				
	beach seine				
	fish traps		·		
e)	electro sho	cker			



STREAM 1.002.38 - UPSTREAM



STREAM 1.002.38 - DOWNSTREAM



Highway Mileage 901.5

Stream Classification 1.002.38

Date of Sam	npling	July 24, 1973
Ungtroom Du	naiwana Amaa (am mi )	23
	cainage Area(sq.mi.)	5
	Crossing (ft./mi.)	plants - some sand
Bottom Type		
Bottom Vege	etation	water plants
Cover		grass and sedge
Discharge (	(c.f.s.)	
Width (ft.)		**************************************
Depth (ft.)		
- ,	Solids (p.p.m.)	
-	Solids (p.p.m.)	
Water Tempe		
wa ooz zompe		
Fish Observed		none
Ice Depth -	- Mar. 1974	1.2'
Water Under Ice		none
Comments: _	Rengleng River into Wou	nded Bear Lake. Probably pike
_	habitat although none w	ere observed. The stream may be
_	important for fish move	ment between lakes.
_		
-		
-		
-		

## - 41 -GROUND STREAM SURVEY

STREA	м илме:	1.002.38				
LOCAT	ION: LAT		LONG.			· .
MAP N	o.:					
DATE:		July 4,1974	•			
SAMPLI	ER:	нав	**		<del></del>	
PROJE	CT NO.:_			· · · · · · · · · · · · · · · · · · ·		<del></del>
CLIEN	r:		<del></del>			
b) (c) id) id) id) id) id) id) id) id) id) id	width of depth of flow rat pool-rife stream of cottom voottom to (i) bo (ii) ru (iii) gr (iv) sa (v) ot cobable difficul	stream e, ft/sec fle ratio over, exposed to egetation ype ulder; rocks > 12 bble; rocks 3"-1 avel; rocks 1"-2 nd-silt; materia her (logs, debri fish barriers t fish passages ource (spring fe	24" 12'/17 sec 80 - 20 0 shaded ratio None 2" 11.9" 2.9" a1 < 1" 4s, etc.)	75 - 80 - Yes (	20 (silt) (beaver dam) (logs)	
a) e b) s Water a) d b) t	streamsi Chemist dissolve cemperat	of banks de vegetation  ry d oxygen ure	80% willow, 20 13 drops = 13 10° C		· S	
d) p	color of		Clear 7.2	<del></del>		
a) r b) g c) b d) f	ng Metho rod & re gill net beach se lish tra	ine ps	X X			



STREAM 1.002.38.16 - UPSTREAM

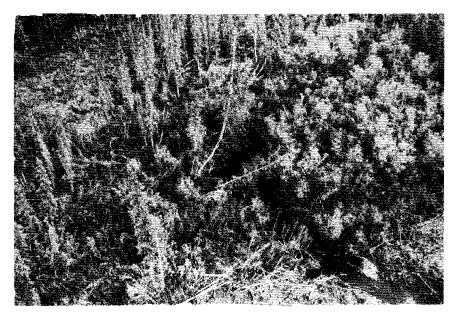


STREAM 1.002.38.16 - DOWNSTREAM



Highway Mileage 905.8

Stream Classification	1.002.38.16
•	
Date of Sampling	July 24, 1973
Upstream Drainage Area(sq.mi.)	4.5
Gradient at Crossing (ft./mi.)	185
Bottom Type	
Bottom Vegetation	
Cover	
Discharge (c.f.s.)	
Width (ft.) Depth (ft.)	
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.)	the reflect to the control of the co
Water Temperature OC	
Fish Observed	none
Ice Depth - Mar. 1974	
Water Under Ice	The second of th
Comments: A creek entering Foot I	ake. No flowing water was observed
	·



STREAM 1.002.38.06 - UPSTREAM



STREAM 1.002.38.06 - DOWNSTREAM

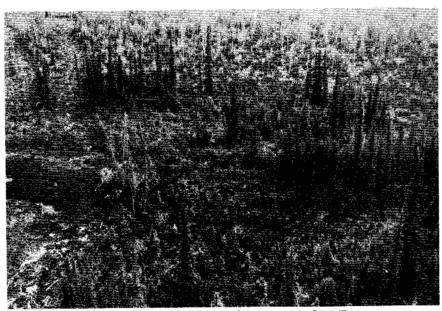


Highway Mileage 915.7
Stream Classification 1.002.38.06

Date of Sa	ampling	July 7, 1973	
Instronm )	Drainage Area(sq.mi.)	3.0	
	at Crossing (ft./mi.)	10	
Bottom Typ	•	70	
_ •	•	shale	
Bottom Veg	getation .	none	
Cover	•	deciduous bushes	
Discharge	(c.f.s.)	4.5	
Width (ft.	.)	3' - 15'	
Depth (ft.	.)	0.5' - 5'	
Suspended	Solids (p.p.m.)	26	
Dissolved	Solids (p.p.m.)	62	
Water Temp	perature <sup>O</sup> C	13.6	•
Fish Obser	cved -	none	
Ice Depth	- Mar. 1974		
Water Unde	-		
	•		
Comments:	The stream appeared to h	oe good habitat but n	o fish were
	observed. Downstream the	e channel became mars	hy with numerous
	"branch-jams" (possible blockage to fish movement).		
	Revisited July 24 - no f	ish.	
		,	
			<del></del>
			····



STREAM 1.002.38.04 - UPSTREAM

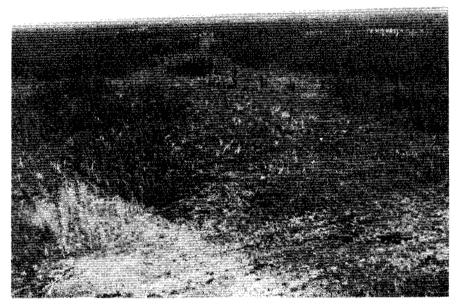


STREAM 1.002.38.04 - DOWNSTREAM



Highway Mileage 917.2

Stream Classification	1.002.38.04
· · ·	
Date of Sampling	July 7, 1973
Upstream Drainage Area(sq.mi.)	13
Gradient at Crossing (ft./mi.)	55
Bottom Type	Waltermygggggaadens, serige, Matthibuseper
Bottom Vegetation	
Cover	
Dischause (a.f. a.)	
Discharge (c.f.s.)	
Width (ft.)	
Depth (ft.) Sugmended Solids (n.n.m.)	- Address of the second of the
Suspended Solids (p.p.m.)	
Dissolved Solids (p.p.m.) Water Temperature OC	
water Temperature C	
Fish Observed	none
Ice Depth - Mar. 1974	- Indiana
Water Under Ice	
Comments: No definite stream chann	nel was apparent. Water flowed through
sedge in a diffuse drain	



STREAM 1.002.38.04.06 - UPSTREAM



STREAM 1.002.38.04.06 - DOWNSTREAM



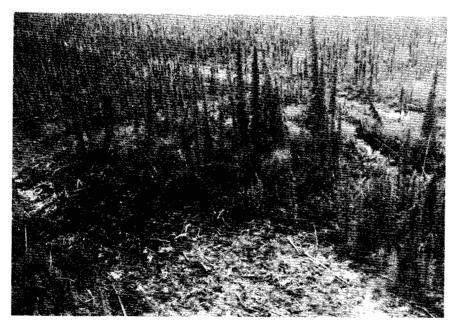
Highway Mileage

918.2

	Stream Classification	1.002.38.04.06	
Date of Sa	ampling	July 7, 1973	
-	Drainage Area(sq.mi.)	4	
	at Crossing (ft./mi.)	45	
Bottom Typ	-		
Bottom Ve	getation		
Cover		***************************************	
Discharge	(c.f.s.)		
Width (ft			
Depth (ft		The state of the s	
_	Solids (p.p.m.)		
	Solids (p.p.m.)	<del>V-Brackers and print of the Complete specific</del> (1984).	
Water Temp	perature <sup>O</sup> C		
		· · · · · · · · · · · · · · · · · · ·	
Fish Obse:	rved	none	
T	V - 10#4		
ice bepth Water Unde	- Mar. 1974		
water ond	er ice		
Comments:	No definite stream char	nel was apparent. Wate	er flowed
	through sedge in a diffu	se drainage field.	
		المستور و والمستور و و	



STREAM 1.002.38.04.04 - UPSTREAM



STREAM 1.002.38.04.04 - DOWNSTREAM



Highway Mileage 921.5
Stream Classification 1.002.38.04.04

, ,				
Date of S	ampling	July 7, 1973		
Upstream	Drainage Area(sq.mi.)	_12		
Gradient	at Crossing (ft./mi.)	45		
Bottom Ty	pe	cobble-gravel-silt		
Bottom Ve	getation	none		
Cover		alder-spruce-willow		
Discharge	(c.f.s.)	9		
Width (ft	.)	3' - 10'		
Depth (ft	.)	2' - 4'		
Suspended	Solids (p.p.m.)	14		
Disselved	Solids (p.p.m.)	52		
Water Tem	perature <sup>O</sup> C	12.6		
Fish Obse	rved	none		
Ice Depth	- Mar. 1974	3.0'		
Water Und				
		and helitate no fich work		
Comments:	Although stream had app	pearance of good habitat, no fish were		
	observed or captured.			
	Revisited July 24 - discharge 5 c.f.s.			
	wa	ter temp. 11.4°C		

APPENDICES

APPENDIX I FISH SPECIES LIST



## APPENDIX I

## Fish Species List - North Section Mackenzie Highway

Catostomus catostomus Catostomus commersoni Coregonus autumnalis Coregonus clupcaformis Coregonus nasus Coregonus sardinella Cottus cognatus Cottus ricei Couesius plumbeus Esox lucius Hypomesus olidus Lampetra japonica Lota lota Oncorhynchus keta Osmerus eperlanus Percopsis omiscomaycus Pfrille neogaea Platygobio gracilis Prosopium cylindraceum Pungitius pungitius Rhinichthys cataractae Salvelinus alpinus Salvelinus namaycush Stenodus leucichthys Stizostedion vitreum Thymallus arcticus

longnose sucker\* white sucker\* Arctic cisco humpback whitefish\* broad whitefish\* least cisco slimy sculpin\* spoonhead sculpin lake chub\* northern pike\* pond smelt\* Arctic lamprey burbot\* chum salmon boreal smelt trout perch finescale dace flathead chub round whitefish\* ninespine stickleback\* longnose dace Arctic char lake trout inconnu yellow walleye Arctic grayling\*

Compiled from McPhail and Lindsey (1970)

\* Fish species captured or observed by Schultz International Limited, Canadian Arctic Gas, and Fisheries Service field crews.



APPENDIX II

LOCATION MAPS

FIGURES 1 AND 2

