

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

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BY
SCHULTZ INTERNATIONAL LIMITED
Vancouver, CANADA



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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:lf

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ADDENDUM NUMBER II
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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 appendix 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

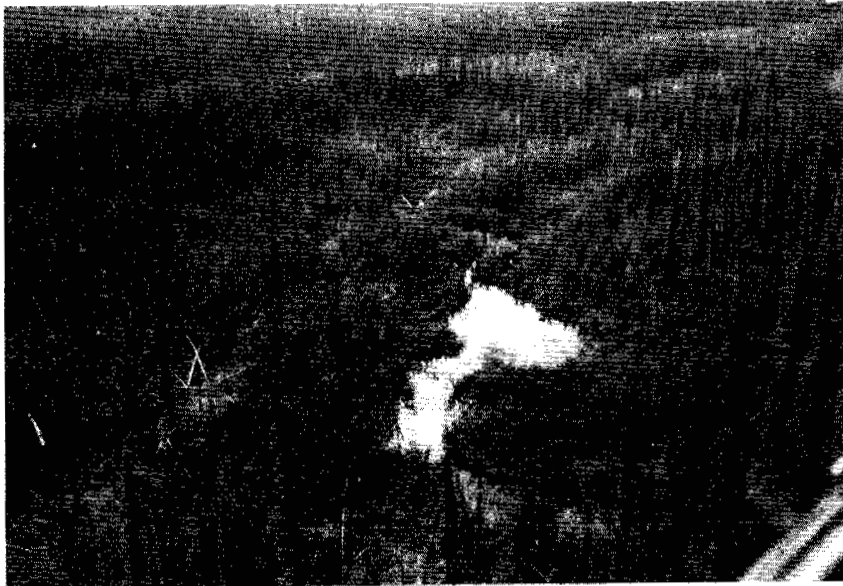


by periods designate successively smaller tributaries. The numbers are allocated so that upstream branches to the right have odd numbers while those to the left are even. For example, in 1.050.11, the 1 refers to the Mackenzie River, the .050 refers to the twenty-fifth tributary on the left side of the 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. The system can be further extended as water courses bifurcate. One 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



SCHULTZ

GROUND STREAM SURVEY

STREAM NAME: Jackfish Creek (Highway Mileage 714.0)

LOCATION: LAT. _____ LONG. _____

MAP NO.: _____

DATE: July 5, 1974

SAMPLER: HAB

PROJECT NO.: _____

CLIENT: _____

Stream

- a) width of stream 10
b) depth of stream 3 - 6
c) flow rate, ft/sec 12'/10 sec
d) pool-riffle ratio 90 - 10
e) stream cover, exposed to shaded ratio 90 - 10
f) bottom vegetation Grass - sedge
g) bottom type _____
 (i) boulder; rocks > 12" _____
 (ii) rubble; rocks 3"-11.9" _____
 (iii) gravel; rocks 1"-2.9" _____
 (iv) sand-silt; material < 1" _____
 (v) other (logs, debris, etc.) Veg
h) probable fish barriers No
i) difficult fish passages No
j) stream source (spring fed, snow melt, etc.) _____

Surrounding Area

- a) erosion of banks No
b) streamside vegetation Willow and sedge

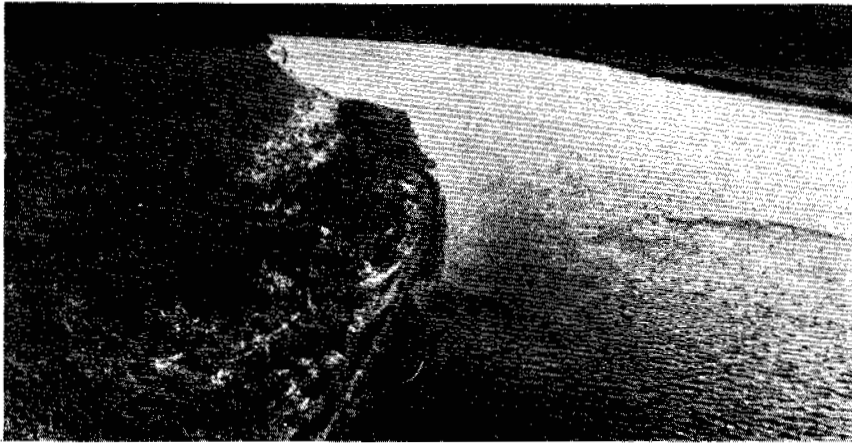
Water Chemistry

- a) dissolved oxygen 10 drops = 10 mg/l
b) temperature 13° C
c) color of water Clear
d) pH 7.0

Fishing Method(s) Used

- a) rod & reel _____
b) gill net _____
c) beach seine _____
d) fish traps X
e) electro shocker X

No fish but looks good.



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 °C

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 Resources of the Mackenzie River

Valley. Vol. II, 1973. Environmental Social

Committee Northern Pipelines.

Report No. 73-2



STREAM 1.152 - UPSTREAM



STREAM 1.152 - DOWNSTREAM

Highway Mileage	734.3
Stream Classification	1.152

Date of Sampling	June 29, 1973
------------------	---------------

Upstream Drainage Area (sq.mi.)	15
Gradient at Crossing (ft./mi.)	70
Bottom Type	cobble
Bottom Vegetation	some algae
Cover	spruce

Discharge (c.f.s.)	0.4
Width (ft.)	8" - 4'
Depth (ft.)	0.5' - 1.5'
Suspended Solids (p.p.m.)	8
Dissolved Solids (p.p.m.)	158
Water Temperature °C	

Fish Observed	many grayling fry and 1 larger grayling (15 cm)
---------------	---

Ice Depth - Mar. 1974	0.5'
Water Under Ice	none

Comments: This stream appeared to be excellent grayling fry
habitat. Numerous caddis flies and crustaceans were
observed. The pool-riffle ratio was about 75:25.



STREAM 1.148.01.02 - UPSTREAM



STREAM 1.148.01.02 - DOWNSTREAM



Highway Mileage	<u>737.8</u>
Stream Classification	<u>1.148.01.02</u>

Date of Sampling	<u>July 2, 1973</u>
------------------	---------------------

Upstream Drainage Area (sq.mi.)	<u>15</u>
Gradient at Crossing (ft./mi.)	<u>80</u>
Bottom Type	<u>gravel</u>
Bottom Vegetation	<u>grass-sedge</u>
Cover	<u>grass-sedge</u>

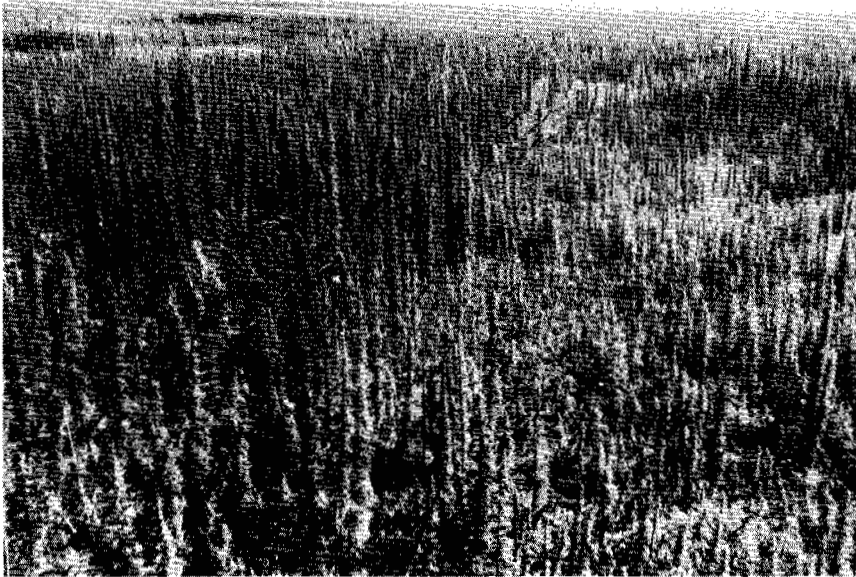
Discharge (c.f.s.)	<u>2</u>
Width (ft.)	<u>1' - 2'</u>
Depth (ft.)	<u>2'</u>
Suspended Solids (p.p.m.)	<u>56</u>
Dissolved Solids (p.p.m.)	<u>102</u>
Water Temperature °C	<u>9.2</u>

Fish Observed	<u>none</u>
	<u></u>

Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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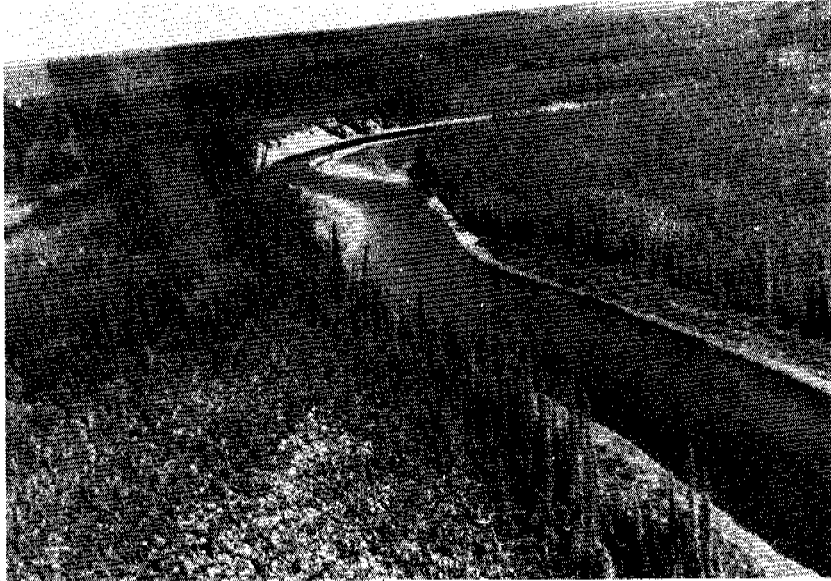
Comments: At the time of sampling this stream was in flood. The
flow was through grass and sedge. The stream is probably
poor fish habitat when flood waters subside.



STREAM 1.148.03.02 - UPSTREAM



STREAM 1.148.03.02 - DOWNSTREAM



STREAM 1.148 (LOON RIVER) - UPSTREAM



STREAM 1.148 (LOON RIVER) - DOWNSTREAM

Highway Mileage 742.2
Stream Classification 1.148 (Loon River)

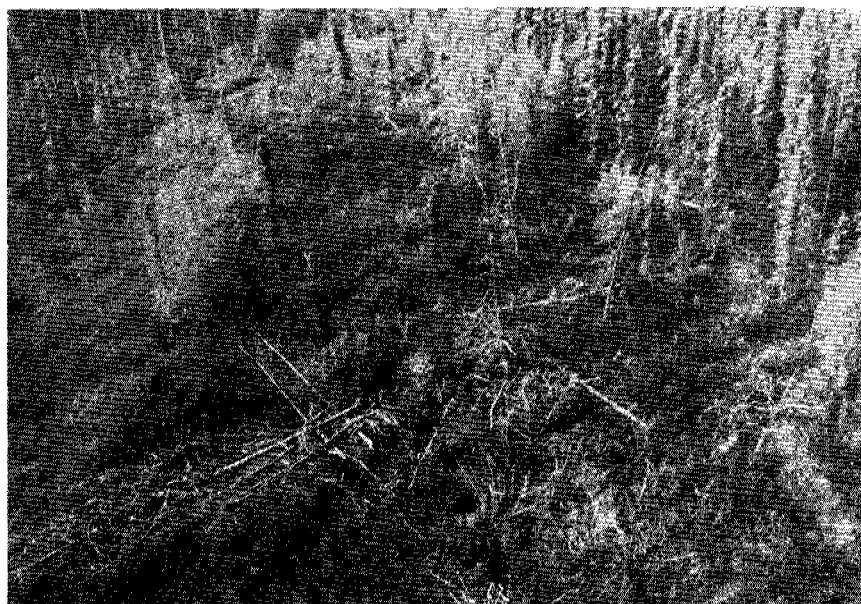
Date of Sampling	<u>September 1973</u>
Upstream Drainage Area (sq.mi.)	<u>1,389 (approx.)*</u>
Gradient at Crossing (ft./mi.)	<u></u>
Bottom Type	<u>sand and gravel</u>
Bottom Vegetation	<u></u>
Cover	<u></u>
Discharge (c.f.s.)	<u>530</u>
Width (ft.)	<u>120</u>
Depth (ft.)	<u>1.9</u>
Suspended Solids (p.p.m.)	<u></u>
Dissolved Solids (p.p.m.)	<u></u>
Water Temperature °C	<u>8</u>
Fish Observed	May 1973: <u>grayling, pike, longnose sucker, nine spin</u> <u>stickleback, slimy sculpin, lake chub, hum</u> <u>back whitefish, broad whitefish, least cis</u>
Ice Depth - Mar. 1974	<u>2.5'</u> arctic cisco)*
Water Under Ice	<u>4 "</u>

Comments *Information obtained from:

Evaluation of Fish Resources of the Mackenzie River
Valley. Vol. II, 1973. Environmental Social Committee
Northern Pipelines, Report No. 73-2.



STREAM 1.140.01 - UPSTREAM



STREAM 1.140.01 - DOWNSTREAM

Highway Mileage	<u>751.6</u>
Stream Classification	<u>1.140.01</u>

Date of Sampling	<u>June 30, 1973</u>
------------------	----------------------

Upstream Drainage Area (sq.mi.)	<u>3</u>
---------------------------------	----------

Gradient at Crossing (ft./mi.)	<u>130</u>
--------------------------------	------------

Bottom Type	<u></u>
-------------	---------

Bottom Vegetation	<u></u>
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Cover	<u></u>
-------	---------

Discharge (c.f.s.)	<u></u>
--------------------	---------

Width (ft.)	<u></u>
-------------	---------

Depth (ft.)	<u></u>
-------------	---------

Suspended Solids (p.p.m.)	<u></u>
---------------------------	---------

Dissolved Solids (p.p.m.)	<u></u>
---------------------------	---------

Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
-----------------	---------

Comments: This creek drains from lakes 2 - 4 miles east of Eagle Falls.
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 Milcage 763.4
Stream Classification 1.138 (Tieda River)

Date of Sampling September 1973

Upstream Drainage Area (sq.mi.) 384 (approx)*

Gradient at Crossing (ft./mi.)

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
---------------------------	-----

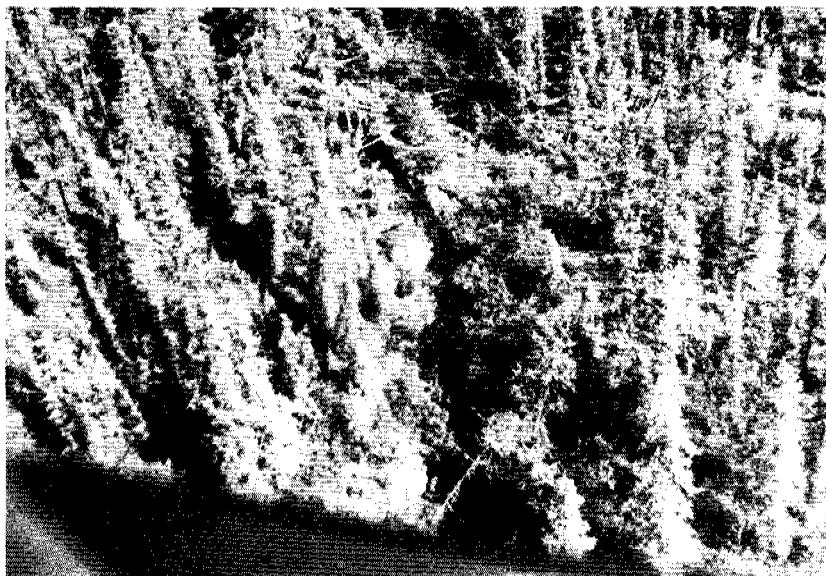
Water Temperature °C

[illegible]

Ice Depth - Mar. 1974 frozen to bottom

Water Under Ice	no
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Comments	* Information obtained from: Evaluation of Fish Resources of the Mackenzie River Valley. Vol II, 1973. Environmental Social Committee Northern Pipelines. Report No. 73-2.
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STREAM 1.128 - UPSTREAM



STREAM 1.128 - DOWNSTREAM

Highway Mileage	<u>776.1</u>
Stream Classification	<u>1.128</u>

Date of Sampling	<u>June 30, 1973</u>
------------------	----------------------

Upstream Drainage Area (sq.mi.)	<u>14.5</u>
Gradient at Crossing (ft./mi.)	<u>70</u>
Bottom Type	<u>sand-large cobbles</u>
Bottom Vegetation	<u>grass</u>
Cover	<u>spruce</u>

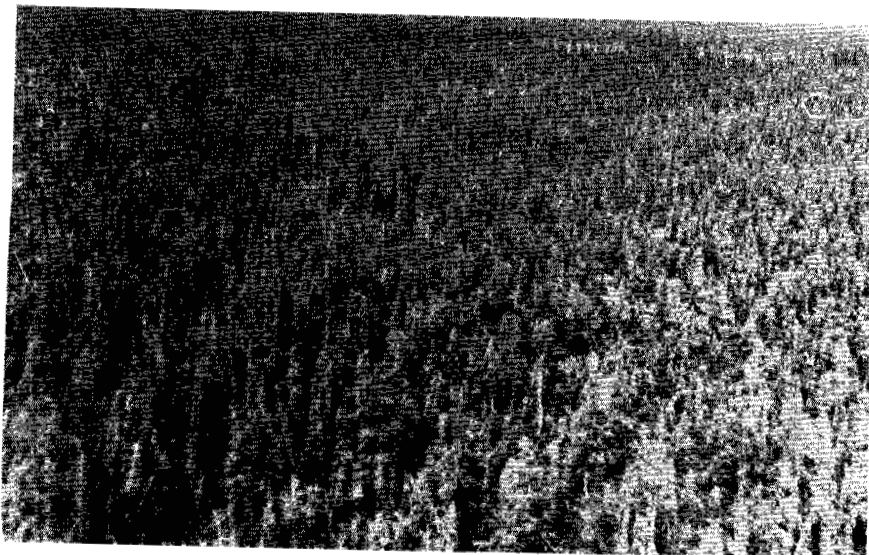
Discharge (c.f.s.)	<u>0.4</u>
Width (ft.)	<u>1' - 8'</u>
Depth (ft.)	<u>0.5' - 1.5'</u>
Suspended Solids (p.p.m.)	<u>10</u>
Dissolved Solids (p.p.m.)	<u>142</u>
Water Temperature °C	<u>8.0</u>

Fish Observed	<u>none</u>
	<u></u>

Ice Depth - Mar. 1974	<u>1.0'</u>
-----------------------	-------------

Water Under Ice	<u></u>
-----------------	---------

Comments: Although this stream appeared to be good fish habitat,
none were observed. Below the crossing site there was
a large marsh area which may block fish movement.



STREAM 1.128.04 - UPSTREAM



STREAM 1.128.04 - DOWNSTREAM



Highway Mileage	<u>783.3</u>
Stream Classification	<u>1.128.04</u>

Date of Sampling	<u>June 30, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>0.5</u>
Gradient at Crossing (ft./mi.)	<u>60</u>
Bottom Type	<u></u>
Bottom Vegetation	<u></u>
Cover	<u></u>

Discharge (c.f.s.)	<u></u>
Width (ft.)	<u></u>
Depth (ft.)	<u></u>
Suspended Solids (p.p.m.)	<u></u>
Dissolved Solids (p.p.m.)	<u></u>
Water Temperature °C	<u></u>

Fish Observed	<u>none</u>
	<u></u>

Ice Depth - Mar. 1974	<u></u>
Water Under Ice	<u></u>

Comments: At crossing site this stream was only a marsh but 1/4 mile
downstream it became a gravel-bottomed watercourse. Fish
may be present in the downstream section.



STREAM 1.118 - UPSTREAM



STREAM 1.118 - DOWNSTREAM



Highway Mileage	<u>786.7</u>
Stream Classification	<u>1.118</u>

Date of Sampling	<u>June 30, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>42</u>
Gradient at Crossing (ft./mi.)	<u>30</u>
Bottom Type	<u>rock-gravel-sand</u>
Bottom Vegetation	<u>sparse</u>
Cover	<u>willow</u>

Discharge (c.f.s.)	<u>5</u>
Width (ft.)	<u>30'</u>
Depth (ft.)	<u>4'</u>
Suspended Solids (p.p.m.)	<u>13</u>
Dissolved Solids (p.p.m.)	<u>177</u>
Water Temperature °C	<u>12.0</u>

Fish Observed	<u>many grayling fry</u>
---------------	--------------------------

Ice Depth - Mar. 1974	<u>2.5'</u>
Water Under Ice	<u>3'</u>

Comments: This stream had stable banks. Above and below the crossing
site the stream was 80 percent shaded and flowed very
slowly; although no fish were observed in this section,
it appeared to be good pike habitat.



STREAM 1.088.18 - UPSTREAM



STREAM 1.088.18 - DOWNSTREAM

Highway Mileage	<u>795.4</u>
Stream Classification	<u>1.088.18</u>

Date of Sampling	<u>July 1, 1973</u>
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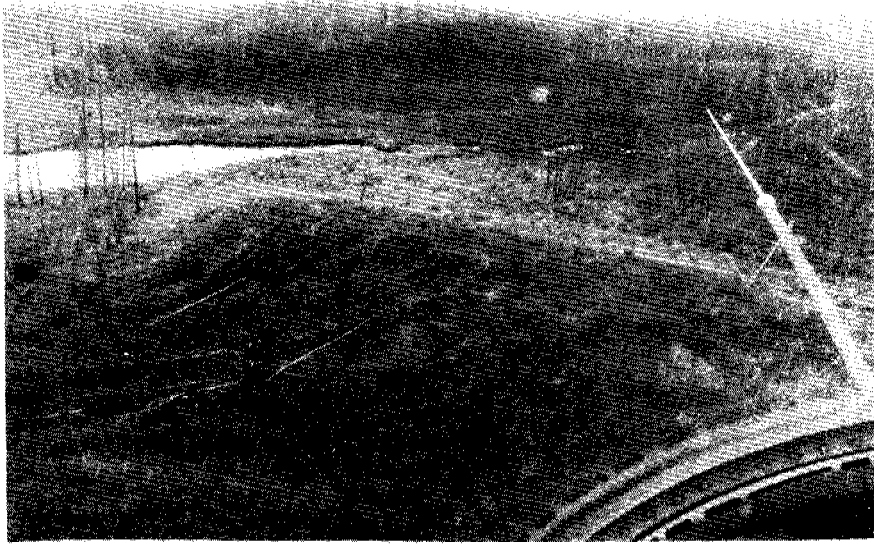
Upstream Drainage Area (sq.mi.)	<u>60</u>
Gradient at Crossing (ft./mi.)	<u>17</u>
Bottom Type	<u>sand-gravel-rock</u>
Bottom Vegetation	<u>none</u>
Cover	<u>spruce-willow</u>

Discharge (c.f.s.)	<u>7</u>
Width (ft.)	<u>2' - 8'</u>
Depth (ft.)	<u>1' - 2'</u>
Suspended Solids (p.p.m.)	<u>12</u>
Dissolved Solids (p.p.m.)	<u>190</u>
Water Temperature °C	<u>12.0</u>

Fish Observed	<u>Many grayling fry and a few</u> <u>juveniles (15 cm)</u>
---------------	--

Ice Depth - Mar. 1974	<u>2.0'</u>
Water Under Ice	<u>none</u>

Comments: This stream appeared to be excellent grayling fry habitat.
The creek bed was quite wide with substantial gravel beds.
Use of the stream gravel should be prohibited.



STREAM 1.088.16 - UPSTREAM



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Highway Mileage	796.8
Stream Classification	1.088.16

Date of Sampling	July 1, 1973
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Upstream Drainage Area (sq.mi.)	4.5
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Gradient at Crossing (ft./mi.)	< 5
--------------------------------	-----

Bottom Type	
-------------	--

Bottom Vegetation	
-------------------	--

Cover	
-------	--

Discharge (c.f.s.)	
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Width (ft.)	
-------------	--

Depth (ft.)	
-------------	--

Suspended Solids (p.p.m.)	
---------------------------	--

Dissolved Solids (p.p.m.)	
---------------------------	--

Water Temperature °C	
----------------------	--

Fish Observed	none
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Ice Depth - Mar. 1974	
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Water Under Ice	
-----------------	--

Comments: This stream was a slow moving stream about 10' wide with sedge covered banks. Pike from nearby lake probably use it as a spawning area and nursery.

GROUND STREAM SURVEY

STREAM NAME: 1.088.16

LOCATION: LAT. _____ LONG. _____

MAP NO.: _____

DATE: July 5, 1974

SAMPLER: HAB

PROJECT NO.: _____

CLIENT: _____

Stream

- a) width of stream 15 - 20
b) depth of stream 3 - 6
c) flow rate, ft/sec _____
d) pool-riffle ratio 95 - 5
e) stream cover, exposed to shaded ratio 95 - 5
f) bottom vegetation Grass
g) 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.) _____
h) probable fish barriers No
i) difficult fish passages No
j) stream source (spring fed, snow melt, etc.) _____

Surrounding Area

- a) erosion of banks No
b) streamside vegetation Willow + Grass

Water Chemistry

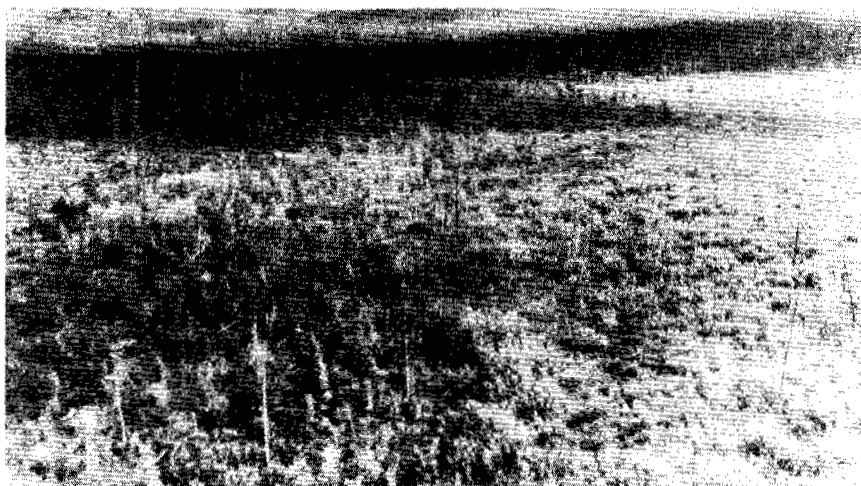
- a) dissolved oxygen 10 mg/l
b) temperature 15° C
c) color of water Clear
d) pH 6.0

Fishing Method(s) Used

- a) rod & reel X Pike
b) gill net _____
c) beach seine _____
d) fish traps X
e) electro shocker _____

- 5 Pike caught:

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



STREAM 1.088.14 - UPSTREAM



STREAM 1.088.14 - DOWNSTREAM



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Highway Mileage	800.7
Stream Classification	1.088.14

Date of Sampling	July 1, 1973
------------------	--------------

Upstream Drainage Area (sq.mi.)	2.5
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Gradient at Crossing (ft./mi.)	< 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 °C	
----------------------	--

Fish Observed	none
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Ice Depth - Mar. 1974	
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Water Under Ice	
-----------------	--

Comments: A drainage field without a distinct watercourse; not considered fish habitat.



STREAM 1.088.12 - UPSTREAM



STREAM 1.088.12 - DOWNSTREAM



Highway Mileage	<u>801.5</u>
Stream Classification	<u>1.088.12</u>

Date of Sampling	<u>July 1, 1973</u>
------------------	---------------------

Upstream Drainage Area (sq.mi.)	<u>54</u>
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Gradient at Crossing (ft./mi.)	<u>45</u>
--------------------------------	-----------

Bottom Type	<u>broken shale</u>
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Bottom Vegetation	<u>none</u>
-------------------	-------------

Cover	<u>spruce-willow</u>
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Discharge (c.f.s.)	<u>1.4</u>
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Width (ft.)	<u>2' - 4'</u>
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Depth (ft.)	<u>0.5' - 1.5'</u>
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Suspended Solids (p.p.m.)	<u>23</u>
---------------------------	-----------

Dissolved Solids (p.p.m.)	<u>262</u>
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Water Temperature °C	<u>10.2</u>
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Fish Observed	<u>grayling fry and numerous juvenile</u> <u>grayling (15 cm)</u>
---------------	--

Ice Depth - Mar. 1974	<u>2.5'</u>
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Water Under Ice	<u></u>
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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 rearing 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.)	
Dissolved Solids (p.p.m.)	
Water Temperature °C	

Fish Observed	None
---------------	------

Ice Depth - Mar. 1974	
Water Under Ice	

Comments: A drainage field without a distinct watercourse; not
considered fish habitat.



STREAM 1.088.08 - UPSTREAM



STREAM 1.088.08 - DOWNSTREAM



Highway Mileage	806.5
Stream Classification	1.088.08

Date of Sampling July 1, 1973

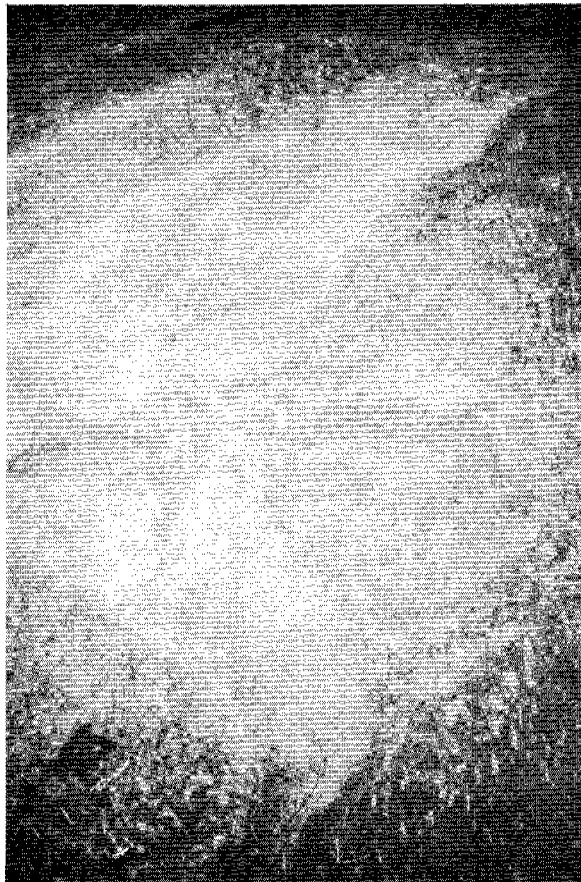
Upstream Drainage Area (sq.mi.)	<u>11</u>
Gradient at Crossing (ft./mi.)	<u>85</u>
Bottom Type	<u>gravel</u>
Bottom Vegetation	<u>none</u>
Cover	<u>sedge & grass</u>

Discharge (c.f.s.)	<u>3</u>
Width (ft.)	<u>1' - 4'</u>
Depth (ft.)	<u>0.5' - 1.5'</u>
Suspended Solids (p.p.m.)	<u>16</u>
Dissolved Solids (p.p.m.)	<u>133</u>
Water Temperature °C	<u>11.2</u>

Fish Observed some grayling fry sighted

Ice Depth - Mar. 1974 _____
Water Under 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



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Highway Mileage	<u>810.1</u>
Stream Classification	<u>1.088.02</u>

Date of Sampling	<u>July 1, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>1</u>
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Gradient at Crossing (ft./mi.)	<u>145</u>
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Bottom Type	<u></u>
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Bottom Vegetation	<u></u>
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Cover	<u></u>
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Discharge (c.f.s.)	<u></u>
--------------------	---------

Width (ft.)	<u></u>
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Depth (ft.)	<u></u>
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Suspended Solids (p.p.m.)	<u></u>
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Dissolved Solids (p.p.m.)	<u></u>
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Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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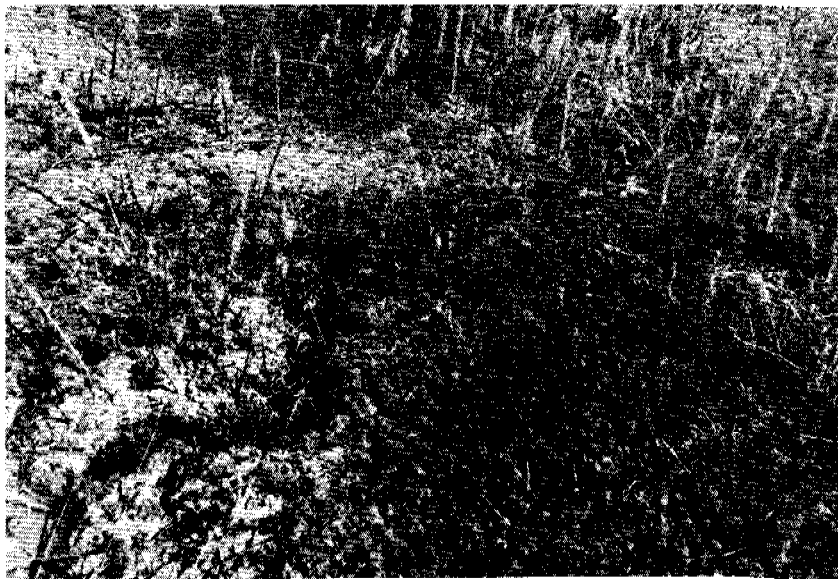
Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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Comments: A drainage field without a distinct watercourse; not
considered fish habitat.



STREAM 1.080.08 - UPSTREAM



STREAM 1.080.08 - DOWNSTREAM



Highway Mileage	<u>815.9</u>
Stream Classification	<u>1.080.08</u>

Date of Sampling	<u>July 2, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>3</u>
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Gradient at Crossing (ft./mi.)	<u>70</u>
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Bottom Type	<u></u>
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Bottom Vegetation	<u></u>
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Cover	<u></u>
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Discharge (c.f.s.)	<u></u>
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Width (ft.)	<u></u>
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Depth (ft.)	<u></u>
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Suspended Solids (p.p.m.)	<u></u>
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Dissolved Solids (p.p.m.)	<u></u>
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Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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Comments: A drainage field without a distinct watercourse; not
considered fish habitat.



STREAM 1.078.01 - UPSTREAM



STREAM 1.078.01 - DOWNSTREAM

Highway Mileage	<u>820.0</u>
Stream Classification	<u>1.078.01</u>

Date of Sampling	<u>July 2, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>0.5</u>
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Gradient at Crossing (ft./mi.)	<u>205</u>
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Bottom Type	<u></u>
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Bottom Vegetation	<u></u>
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Cover	<u></u>
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Discharge (c.f.s.)	<u></u>
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Width (ft.)	<u></u>
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Depth (ft.)	<u></u>
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Suspended Solids (p.p.m.)	<u></u>
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Dissolved Solids (p.p.m.)	<u></u>
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Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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Comments: A drainage field without a distinct watercourse; not
considered fish habitat.



STREAM 1.078 - UPSTREAM



STREAM 1.078 - DOWNSTREAM



Highway Mileage	<u>820.4</u>
Stream Classification	<u>1.078</u>

Date of Sampling	<u>July 2, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>3</u>
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Gradient at Crossing (ft./mi.)	<u>180</u>
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Bottom Type	<u></u>
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Bottom Vegetation	<u></u>
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Cover	<u></u>
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Discharge (c.f.s.)	<u></u>
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Width (ft.)	<u></u>
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Depth (ft.)	<u></u>
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Suspended Solids (p.p.m.)	<u></u>
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Dissolved Solids (p.p.m.)	<u></u>
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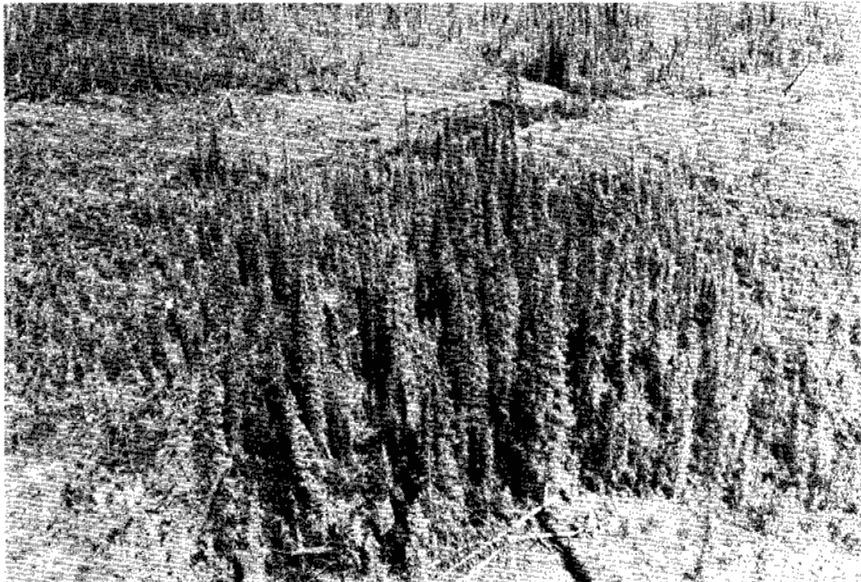
Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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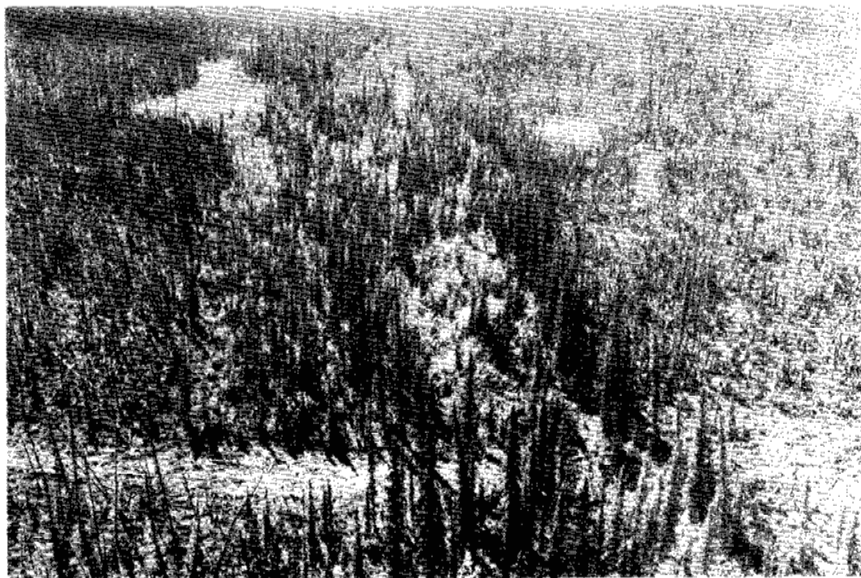
Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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Comments: A drainage field without a distinct watercourse; not
considered fish habitat.



STREAM 1.076 - UPSTREAM



STREAM 1.076 - DOWNSTREAM

Highway Milcage	<u>821.3</u>
Stream Classification	<u>1.076</u>

Date of Sampling	<u>July 2, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>9</u>
Gradient at Crossing (ft./mi.)	<u>75</u>
Bottom Type	<u>shale - sandstone</u>
Bottom Vegetation	<u>none</u>
Cover	<u>alder-willow-spruce</u>

Discharge (c.f.s.)	<u>0.4</u>
Width (ft.)	<u>2' - 6'</u>
Depth (ft.)	<u>2" - 1'</u>
Suspended Solids (p.p.m.)	<u>44</u>
Dissolved Solids (p.p.m.)	<u>398</u>
Water Temperature °C	<u>8.0</u>

Fish Observed	<u>two grayling (27.5 cm and 30.0 cm)</u> <u>without milt</u>
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Ice Depth - Mar. 1974	<u>1.5'</u>
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Water Under Ice	<u></u>
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Comments: This stream appeared to be a good grayling spawning stream
although no fry were observed. There was a considerable
brush-log jam downstream, which may block fish passage.
Although mature grayling were observed, the stream is only
marginal habitat.



STREAM 1.070 - "TYPE" PHOTOGRAPH



SCHULTZ

Highway Mileage	<u>825.6</u>
Stream Classification	<u>1.070</u>

Date of Sampling	<u>July 2, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>0.5</u>
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Gradient at Crossing (ft./mi.)	<u>50</u>
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Bottom Type	<u></u>
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Bottom Vegetation	<u></u>
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Cover	<u></u>
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Discharge (c.f.s.)	<u></u>
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Width (ft.)	<u></u>
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Depth (ft.)	<u></u>
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Suspended Solids (p.p.m.)	<u></u>
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Dissolved Solids (p.p.m.)	<u></u>
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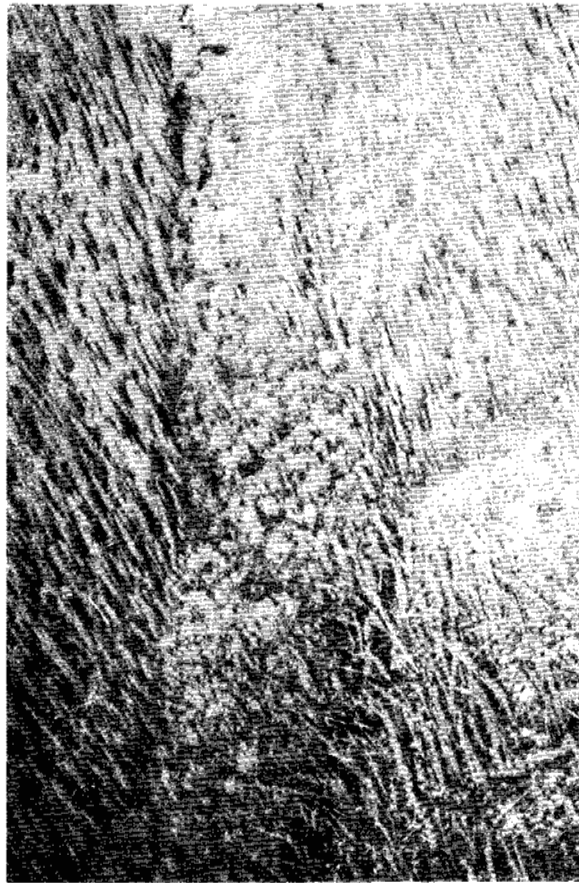
Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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Comments: No definite stream channel was apparent. Water flowed
through sedge in a diffuse drainage field.



STREAM 1.068 - "TYPE" PHOTOGRAPH



Highway Mileage	<u>828.7</u>
Stream Classification	<u>1.068</u>

Date of Sampling	<u>July 2, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>7</u>
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Gradient at Crossing (ft./mi.)	<u>70</u>
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Bottom Type	<u></u>
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Bottom Vegetation	<u></u>
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Cover	<u></u>
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Discharge (c.f.s.)	<u></u>
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Width (ft.)	<u></u>
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Depth (ft.)	<u></u>
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Suspended Solids (p.p.m.)	<u></u>
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Dissolved Solids (p.p.m.)	<u></u>
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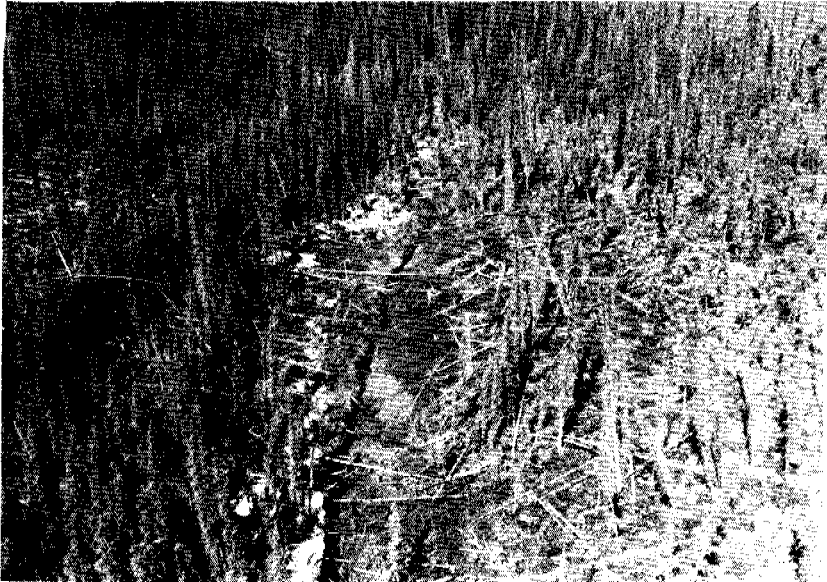
Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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Comments: No definite stream channel was apparent. Water flowed
through sedge in a diffuse drainage field.



STREAM 1.068.04 - UPSTREAM



STREAM 1.068.04 - DOWNSTREAM

Highway Mileage	<u>832.3</u>
Stream Classification	<u>1.068.04</u>

Date of Sampling	<u>July 2, 1973</u>
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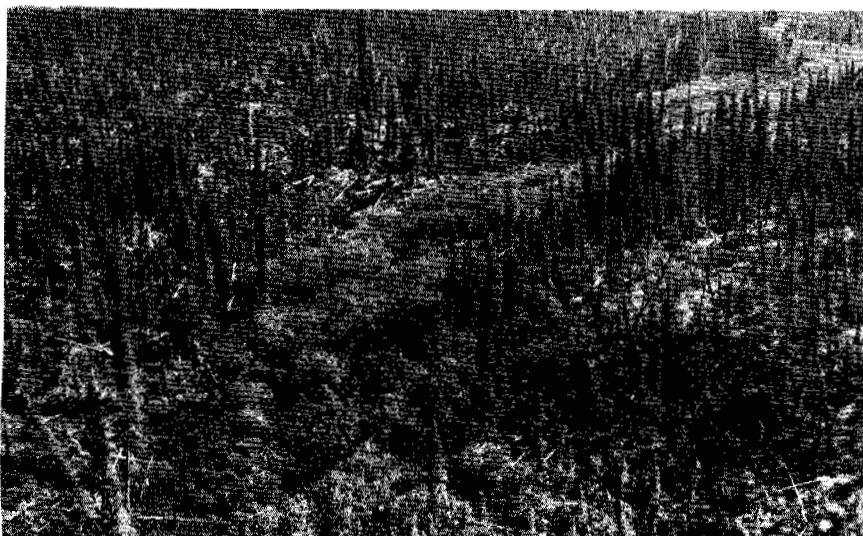
Upstream Drainage Area (sq.mi.)	<u>8</u>
Gradient at Crossing (ft./mi.)	<u>135</u>
Bottom Type	<u>gravel - silt</u>
Bottom Vegetation	<u>sparse</u>
Cover	<u>sedge - some spruce</u>

Discharge (c.f.s.)	<u>3.5</u>
Width (ft.)	<u>1' - 2.5'</u>
Depth (ft.)	<u>1' - 2.5'</u>
Suspended Solids (p.p.m.)	<u>955</u>
Dissolved Solids (p.p.m.)	<u>180</u>
Water Temperature °C	<u>9.0</u>

Fish Observed	<u>one unidentified cyprinid captured</u>
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Ice Depth - Mar. 1974	<u>6.5'</u>
Water Under Ice	<u>none</u>

Comments: This stream was very muddy because of an extensive area of
bank collapse and erosion upstream, where a seismic line
was located. The stream may be clear in other years and
then may be good grayling habitat.



STREAM 1.058.03 - UPSTREAM



STREAM 1.058.03 - DOWNSTREAM



Highway Mileage	<u>837.9</u>
Stream Classification	<u>1.058.03</u>

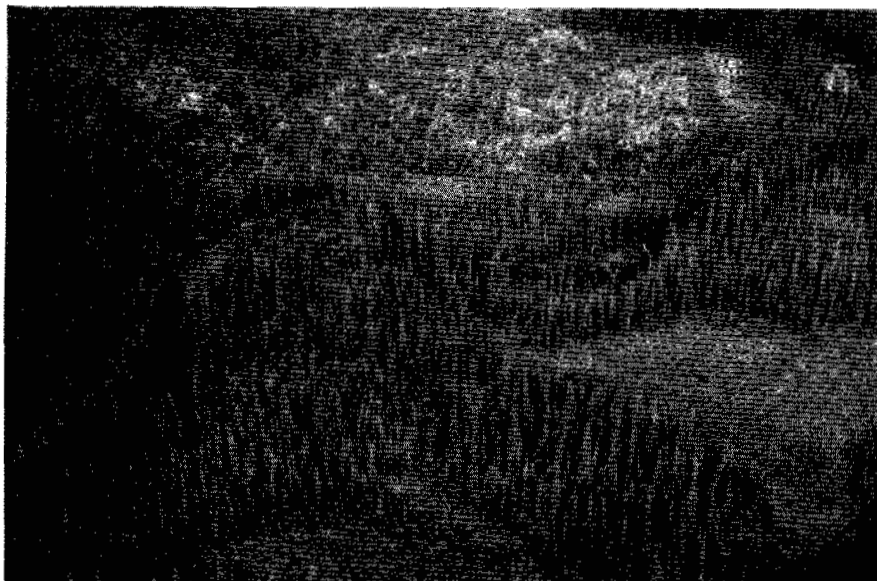
Date of Sampling	<u>July 2, 1973</u>
Upstream Drainage Area (sq.mi.)	<u>20</u>
Gradient at Crossing (ft./mi.)	<u>60</u>
Bottom Type	<u>gravel</u>
Bottom Vegetation	<u>none</u>
Cover	<u>willow - spruce - sedge</u>

Discharge (c.f.s.)	<u>0.1</u>
Width (ft.)	<u>0.5' - 4'</u>
Depth (ft.)	<u>2" - 2'</u>
Suspended Solids (p.p.m.)	<u>15</u>
Dissolved Solids (p.p.m.)	<u>170</u>
Water Temperature °C	<u>6.4</u>

Fish Observed	<u>numerous grayling fry</u>
	<u></u>

Ice Depth - Mar. 1974	<u>2.0'</u>
Water Under Ice	<u>none</u>

Comments: This small stream had stable banks and many benthic
invertebrates. It is a good grayling spawning stream, but
not adult grayling habitat.



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.)

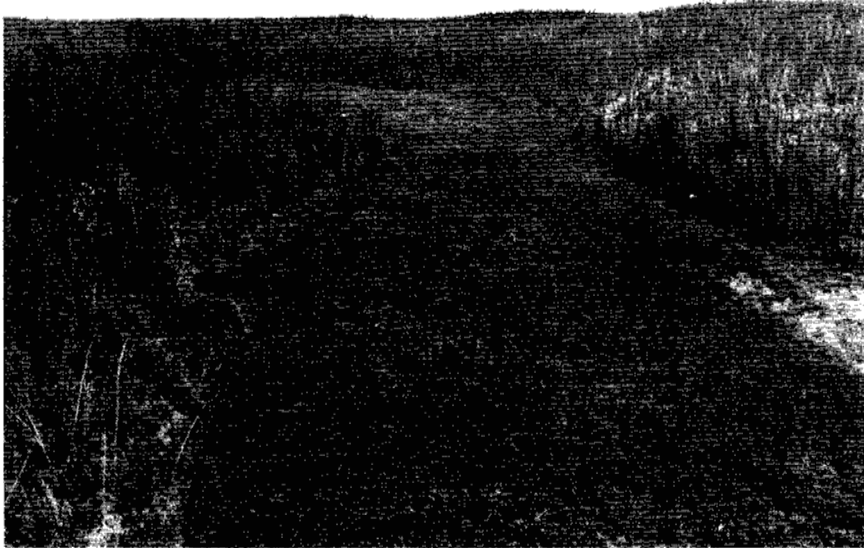
Water Temperature °C 5

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



STREAM 1.058.04 - UPSTREAM



STREAM 1.058.04 - DOWNSTREAM

Highway Mileage	<u>849.3</u>
Stream Classification	<u>1.058.04</u>

Date of Sampling	<u>July 8, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>16.5</u>
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Gradient at Crossing (ft./mi.)	<u>20</u>
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Bottom Type	<u></u>
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Bottom Vegetation	<u></u>
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Cover	<u></u>
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Discharge (c.f.s.)	<u></u>
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Width (ft.)	<u></u>
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Depth (ft.)	<u></u>
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Suspended Solids (p.p.m.)	<u></u>
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Dissolved Solids (p.p.m.)	<u></u>
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Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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Comments: At crossing, this stream was less than 4 feet wide and
heavily overgrown. Probably not a significant fish habitat.



STREAM 1.050.03 - UPSTREAM



STREAM 1.050.03 - DOWNSTREAM

Highway Mileage	855.0
Stream Classification	1.050.03

Date of Sampling July 8, 1973

Upstream Drainage Area (sq.mi.)	4.5
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Gradient at Crossing (ft./mi.) 55

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 °C 13.4

Fish Observed	<u>Pungitius pungitius and pike</u> observed
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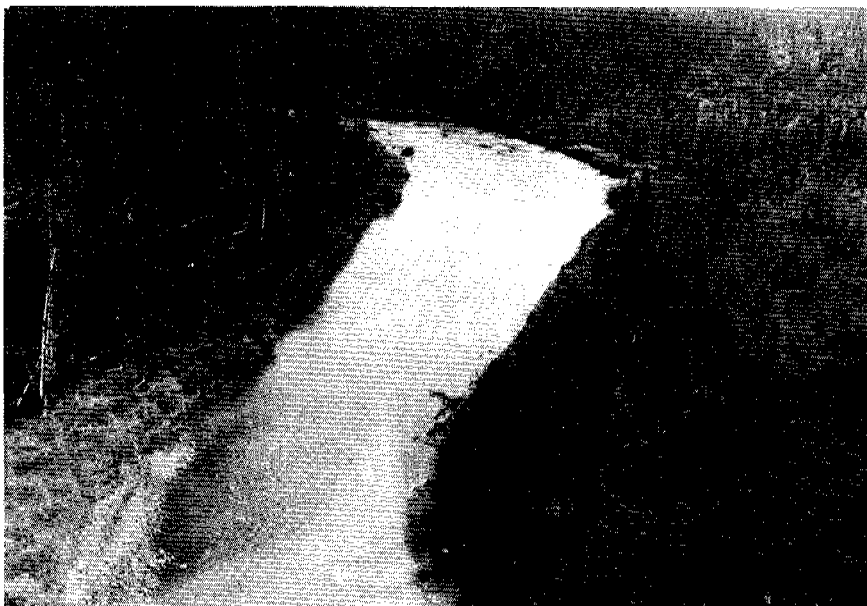
Ice Depth - Mar. 1974

Water Under Ice

Comments: This was a slow moving stream with stable banks and much
plant growth on the bottom. Probably serves as a pike
nursery for Travaillant 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 coarse gravel *

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

May 1973: grayling, pike

(longnose sucker, humpback whitefish)*

Ice Depth - Mar. 1974

4'

Water Under Ice

2' (under pressure)

Comments * Information obtained from:

Evaluation of Fish Resources of the Mackenzie River

Valley. Vol. II, 1973. Environmental Social Committee

Northern Pipelines, Report No. 73-2.



STREAM 1.050.12.04 - UPSTREAM



STREAM 1.050.12.04 - DOWNSTREAM



Highway Mileage 881.1
Stream Classification 1.050.12.04

Date of Sampling July 24, 1973

Upstream Drainage Area (sq.mi.) 7.5

Gradient at Crossing (ft./mi.) < 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 °C _____

Fish Observed none

Ice Depth - Mar. 1974 _____

Water Under Ice _____

Comments: This stream empties into Loche Creek from a small lake.
The stream is about one mile long. At the exit of the
lake there was a large beaver dam and active lodge. The
stream appeared to be good pike habitat although none were
observed.



STREAM 1.050.12.08 - UPSTREAM



STREAM 1.050.12.08 - DOWNSTREAM

Highway Mileage	<u>886.5</u>
Stream Classification	<u>1.050.12.08</u>

Date of Sampling	<u>July 8, 1973</u>
Upstream Drainage Area (sq.mi.)	<u>12.5</u>
Gradient at Crossing (ft./mi.)	<u>40</u>
Bottom Type	<u>plants - some gravel</u>
Bottom Vegetation	<u>thick plant growth</u>
Cover	<u>exposed</u>

Discharge (c.f.s.)	<u>5</u>
Width (ft.)	<u>1' - 12'</u>
Depth (ft.)	<u>1.5' - 4'</u>
Suspended Solids (p.p.m.)	<u>37</u>
Dissolved Solids (p.p.m.)	<u>85</u>
Water Temperature °C	<u>12.0</u>

Fish Observed	<u>none</u>
	<u></u>

Ice Depth - Mar. 1974	<u></u>
Water Under Ice	<u></u>

Comments: A beaded stream which had the appearance of pike habitat,
although none were observed.



STREAM 1.002.38.23 - UPSTREAM



STREAM 1.002.38.23 - DOWNSTREAM



Highway Mileage	<u>898.0</u>
Stream Classification	<u>1.002.38.23</u>

Date of Sampling	<u>July 24, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>39</u>
Gradient at Crossing (ft./mi.)	<u>5</u>
Bottom Type	<u>plants - some sand</u>
Bottom Vegetation	<u>water plants</u>
Cover	<u>grass and sedge</u>

Discharge (c.f.s.)	<u>35</u>
Width (ft.)	<u>8' - 20'</u>
Depth (ft.)	<u>3' - 6'</u>
Suspended Solids (p.p.m.)	<u>5.0</u>
Dissolved Solids (p.p.m.)	<u>85.0</u>
Water Temperature °C	<u>11.8</u>

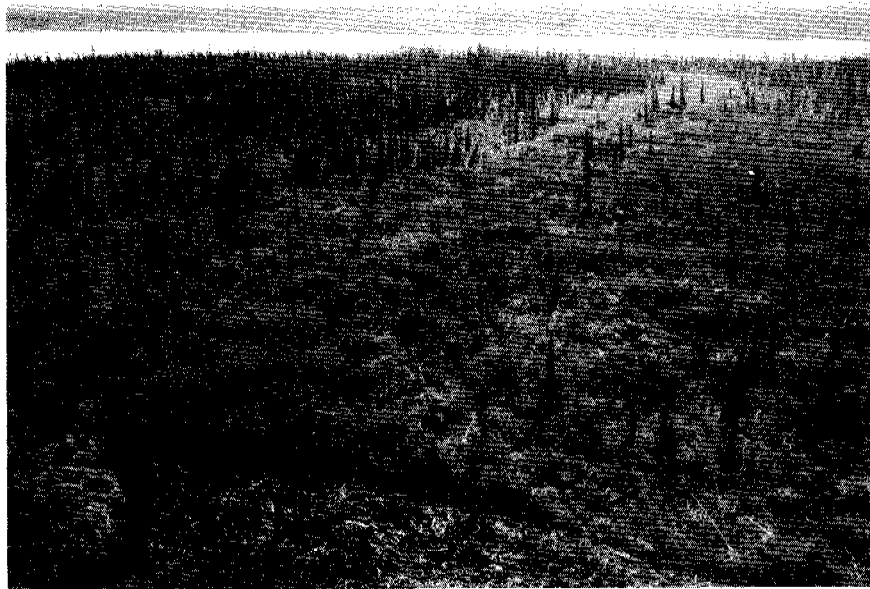
Fish Observed	<u>a few small pike</u>
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Ice Depth - Mar. 1974	<u>1.5'</u>
Water Under Ice	<u>none</u>

Comments: A beaded stream with shallow pools filled with plants. The
stream is probably important for movement of fish from
Rengleng River to Bathing Lake.



STREAM 1.002.38.25 - UPSTREAM



STREAM 1.002.38.25 - DOWNSTREAM



SCHULTZ

Highway Mileage	<u>899.9</u>
Stream Classification	<u>1.002.38.25</u>

Date of Sampling	<u>July 24, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>1.5</u>
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Gradient at Crossing (ft./mi.)	<u>5</u>
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Bottom Type	<u></u>
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Bottom Vegetation	<u></u>
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Cover	<u></u>
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Discharge (c.f.s.)	<u></u>
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Width (ft.)	<u></u>
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Depth (ft.)	<u></u>
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Suspended Solids (p.p.m.)	<u></u>
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Dissolved Solids (p.p.m.)	<u></u>
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Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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Comments: The stream was heavily overgrown. The water was stagnant
and had an oily scum. Possibly pike habitat, although none
were observed.

GROUND STREAM SURVEY

STREAM NAME: 1.002.38.25

LOCATION: LAT. _____ LONG. _____

MAP NO.: _____

DATE: July 4, 1974

SAMPLER: HAB

PROJECT NO.: _____

CLIENT: _____

Stream

- a) width of stream 6'
- b) depth of stream 3"
- c) flow rate, ft/sec 1 1/4 sec - actually negligible, but is moving
- d) pool-riffle ratio 90 - 10
- e) stream cover, exposed to shaded ratio 10 - 90
- f) bottom vegetation Grass
- g) bottom type _____
 - (i) boulder; rocks > 12" _____
 - (ii) rubble; rocks 3"-11.9" _____
 - (iii) gravel; rocks 1"-2.9" _____
 - (iv) sand-silt; material < 1" _____
 - (v) other (logs, debris, etc.) Grass
- h) probable fish barriers Yes
- i) difficult fish passages Yes
- j) stream source (spring fed, snow melt, etc.) _____

Surrounding Area

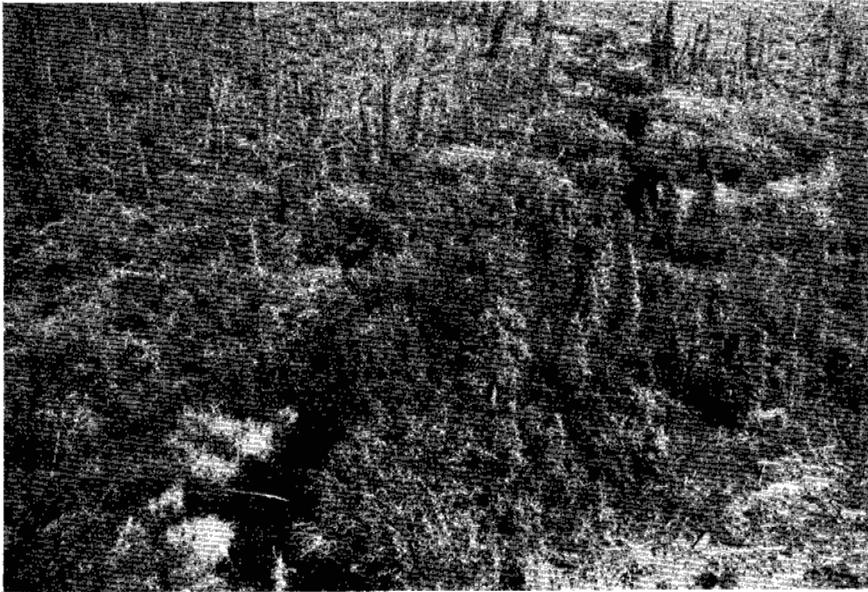
- a) erosion of banks No
- b) streamside vegetation 80% willow, 20% trees

Water Chemistry

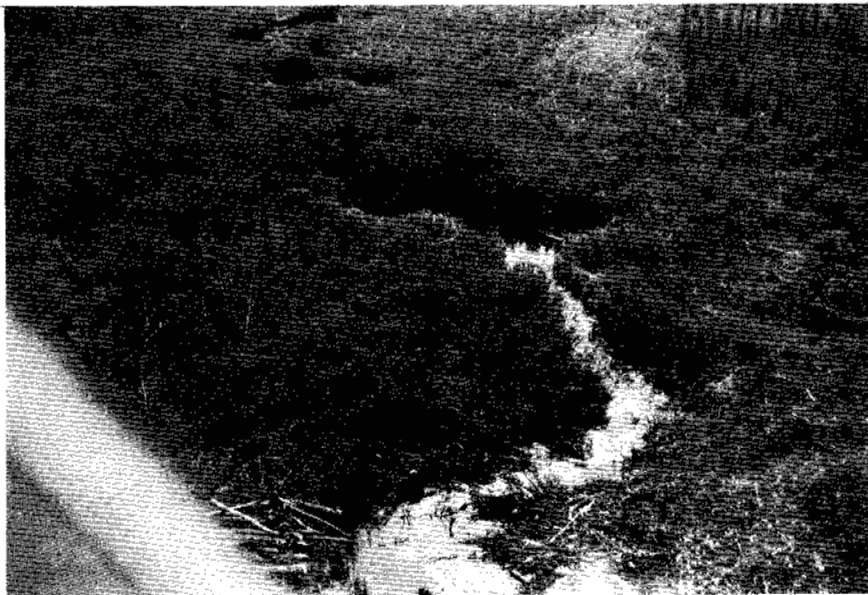
- a) dissolved oxygen 7 drops = 7 mg/l
- b) temperature 40° C
- c) color of water Clear
- d) pH 7.0

Fishing Method(s) Used

- a) rod & reel _____
- b) gill net _____
- c) beach seine _____
- d) fish traps _____
- e) electro shocker _____



STREAM 1.002.38 - UPSTREAM



STREAM 1.002.38 - DOWNSTREAM



Highway Mileage	901.5
Stream Classification	1.002.38

Date of Sampling July 24, 1973

Upstream Drainage Area (sq.mi.) 23

Gradient at Crossing (ft./mi.) 5

Bottom Type plants - some sand

Bottom Vegetation water plants

Cover grass and sedge

Discharge (c.f.s.)

Width (ft.)

Depth (ft.)

Suspended Solids (p.p.m.)

Dissolved Solids (p.p.m.)

Water Temperature °C

Fish Observed	none
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Ice Depth - Mar. 1974 1.2'

Water Under Ice	none
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Comments: Rengheng River into Wounded Bear Lake. Probably pike
habitat although none were observed. The stream may be
important for fish movement between lakes.

GROUND STREAM SURVEY

STREAM NAME: 1.002.38

LOCATION: LAT. _____ LONG. _____

MAP NO.: _____

DATE: July 4, 1974

SAMPLER: HAB

PROJECT NO.: _____

CLIENT: _____

Stream

a) width of stream 15'

b) depth of stream 24"

c) flow rate, ft/sec 12'/17 sec

d) pool-riffle ratio 80 - 20

e) stream cover, exposed to shaded ratio 75 - 25

f) bottom vegetation None

g) bottom type _____

 (i) boulder; rocks > 12" _____

 (ii) rubble; rocks 3"-11.9" _____

 (iii) gravel; rocks 1"-2.9" 80 - 20 (silt)

 (iv) sand-silt; material < 1" _____

 (v) other (logs, debris, etc.) _____

h) probable fish barriers Yes (beaver dam)

i) difficult fish passages Yes (logs)

j) stream source (spring fed, snow melt, etc.) _____

Surrounding Area

a) erosion of banks No

b) streamside vegetation 80% willow, 20% trees

Water Chemistry

a) dissolved oxygen 13 drops = 13 mg/l

b) temperature 10° c

c) color of water Clear

d) pH 7.2

Fishing Method(s) Used

a) rod & reel X

b) gill net X

c) beach seine _____

d) fish traps X

e) electro shocker _____

No fish, but looks good.



STREAM 1.002.38.16 - UPSTREAM



STREAM 1.002.38.16 - DOWNSTREAM



SCHULTZ

Highway Mileage	<u>905.8</u>
Stream Classification	<u>1.002.38.16</u>

Date of Sampling	<u>July 24, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>4.5</u>
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Gradient at Crossing (ft./mi.)	<u>185</u>
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Bottom Type	<u></u>
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Bottom Vegetation	<u></u>
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Cover	<u></u>
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Discharge (c.f.s.)	<u></u>
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Width (ft.)	<u></u>
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Depth (ft.)	<u></u>
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Suspended Solids (p.p.m.)	<u></u>
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Dissolved Solids (p.p.m.)	<u></u>
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Water Temperature °C	<u></u>
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Fish Observed	<u>none</u>
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Ice Depth - Mar. 1974	<u></u>
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Water Under Ice	<u></u>
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Comments: A creek entering Foot Lake. No flowing water was observed.



STREAM 1.002.38.06 - UPSTREAM



STREAM 1.002.38.06 - DOWNSTREAM



Highway Mileage	<u>915.7</u>
Stream Classification	<u>1.002.38.06</u>

Date of Sampling	<u>July 7, 1973</u>
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Upstream Drainage Area (sq.mi.)	<u>10</u>
Gradient at Crossing (ft./mi.)	<u>70</u>
Bottom Type	<u>shale</u>
Bottom Vegetation	<u>none</u>
Cover	<u>deciduous bushes</u>

Discharge (c.f.s.)	<u>4.5</u>
Width (ft.)	<u>3' - 15'</u>
Depth (ft.)	<u>0.5' - 5'</u>
Suspended Solids (p.p.m.)	<u>26</u>
Dissolved Solids (p.p.m.)	<u>62</u>
Water Temperature °C	<u>13.6</u>

Fish Observed	<u>none</u>
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Ice Depth - Mar. 1974	<u> </u>
Water Under Ice	<u> </u>

Comments: The stream appeared to be good habitat but no fish were
observed. Downstream the channel became marshy with numerous
"branch-jams" (possible blockage to fish movement).

Revisited July 24 - no fish.



STREAM 1.002.38.04 - UPSTREAM



STREAM 1.002.38.04 - DOWNSTREAM

Highway Mileage	<u>917.2</u>
Stream Classification	<u>1.002.38.04</u>

Date of Sampling	<u>July 7, 1973</u>
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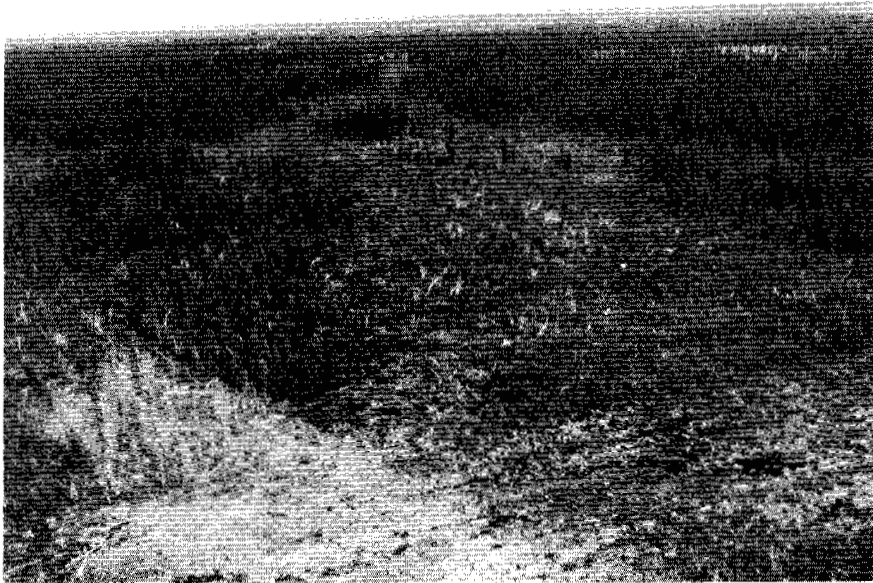
Upstream Drainage Area (sq.mi.)	<u>13</u>
Gradient at Crossing (ft./mi.)	<u>55</u>
Bottom Type	<u></u>
Bottom Vegetation	<u></u>
Cover	<u></u>

Discharge (c.f.s.)	<u></u>
Width (ft.)	<u></u>
Depth (ft.)	<u></u>
Suspended Solids (p.p.m.)	<u></u>
Dissolved Solids (p.p.m.)	<u></u>
Water Temperature °C	<u></u>

Fish Observed	<u>none</u>
	<u></u>

Ice Depth - Mar. 1974	<u></u>
Water Under Ice	<u></u>

Comments: No definite stream channel was apparent. Water flowed through
sedge in a diffuse drainage field.



STREAM 1.002.38.04.06 - UPSTREAM



STREAM 1.002.38.04.06 - DOWNSTREAM



SCHULTZ

Highway Mileage	<u>918.2</u>
Stream Classification	<u>1.002.38.04.06</u>

Date of Sampling	<u>July 7, 1973</u>
------------------	---------------------

Upstream Drainage Area (sq.mi.)	<u>4</u>
Gradient at Crossing (ft./mi.)	<u>45</u>
Bottom Type	<u></u>
Bottom Vegetation	<u></u>
Cover	<u></u>

Discharge (c.f.s.)	<u></u>
Width (ft.)	<u></u>
Depth (ft.)	<u></u>
Suspended Solids (p.p.m.)	<u></u>
Dissolved Solids (p.p.m.)	<u></u>
Water Temperature °C	<u></u>

Fish Observed	<u>none</u>
	<u></u>

Ice Depth - Mar. 1974	<u></u>
Water Under Ice	<u></u>

Comments: No definite stream channel was apparent. Water flowed
through sedge in a diffuse drainage field.



STREAM 1.002.38.04.04 - UPSTREAM



STREAM 1.002.38.04.04 - DOWNSTREAM



SCHULTZ

Highway Milcage	<u>921.5</u>
Stream Classification	<u>1.002.38.04.04</u>

Date of Sampling	<u>July 7, 1973</u>
Upstream Drainage Area (sq.mi.)	<u>12</u>
Gradient at Crossing (ft./mi.)	<u>45</u>
Bottom Type	<u>cobble-gravel-silt</u>
Bottom Vegetation	<u>none</u>
Cover	<u>alder-spruce-willow</u>
Discharge (c.f.s.)	<u>9</u>
Width (ft.)	<u>3' - 10'</u>
Depth (ft.)	<u>2' - 4'</u>
Suspended Solids (p.p.m.)	<u>14</u>
Dissolved Solids (p.p.m.)	<u>52</u>
Water Temperature °C	<u>12.6</u>
Fish Observed	<u>none</u>
Ice Depth - Mar. 1974	<u>3.0'</u>
Water Under Ice	<u></u>

Comments: Although stream had appearance of good habitat, no fish were
observed or captured.

Revisited July 24 - discharge 5 c.f.s.

water temp. 11.4°C

APPENDICES



APPENDIX I FISH SPECIES LIST



SCHULTZ

APPENDIX I

Fish Species List - North Section
Mackenzie Highway

<u>Catostomus catostomus</u>	longnose sucker*
<u>Catostomus commersoni</u>	white sucker*
<u>Coregonus autumnalis</u>	Arctic cisco
<u>Coregonus clupeaformis</u>	humpback whitefish*
<u>Coregonus nasus</u>	broad whitefish*
<u>Coregonus sardinella</u>	least cisco
<u>Cottus cognatus</u>	slimy sculpin*
<u>Cottus ricei</u>	spoonhead sculpin
<u>Couesius plumbeus</u>	lake chub*
<u>Esox lucius</u>	northern pike*
<u>Hypomesus olidus</u>	pond smelt*
<u>Lampetra japonica</u>	Arctic lamprey
<u>Lota lota</u>	burbot*
<u>Oncorhynchus keta</u>	chum salmon
<u>Osmerus eperlanus</u>	boreal smelt
<u>Percopsis omiscomaycus</u>	trout perch
<u>Pfritille neogaea</u>	finescale dace
<u>Platygobio gracilis</u>	flathead chub
<u>Prosopium cylindraceum</u>	round whitefish*
<u>Pungitius pungitius</u>	ninespine stickleback*
<u>Rhinichthys cataractae</u>	longnose dace
<u>Salvelinus alpinus</u>	Arctic char
<u>Salvelinus namaycush</u>	lake trout
<u>Stenodus leucichthys</u>	inconnu
<u>Stizostedion vitreum</u>	yellow walleye
<u>Thymallus arcticus</u>	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.

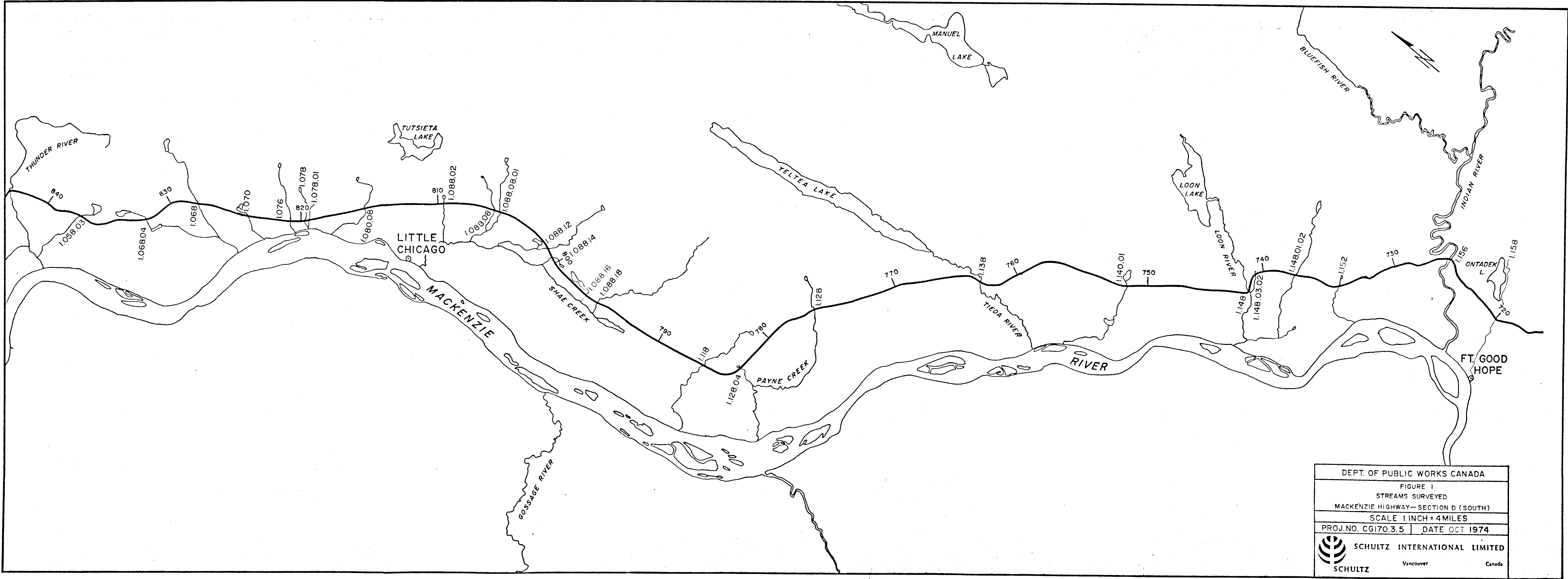



APPENDIX II

LOCATION MAPS

FIGURES 1 AND 2





DEPT. OF PUBLIC WORKS CANADA	
FIGURE 1	
STREAMS SURVEYED	
MACKENZIE HIGHWAY—SECTION D (SOUTH)	
SCALE 1 INCH = 4 MILES	
PROJ. NO. CG170.3.5	DATE OCT 1974
 SCHULTZ INTERNATIONAL LIMITED	
SCHULTZ	Vancouver Canada

