

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2

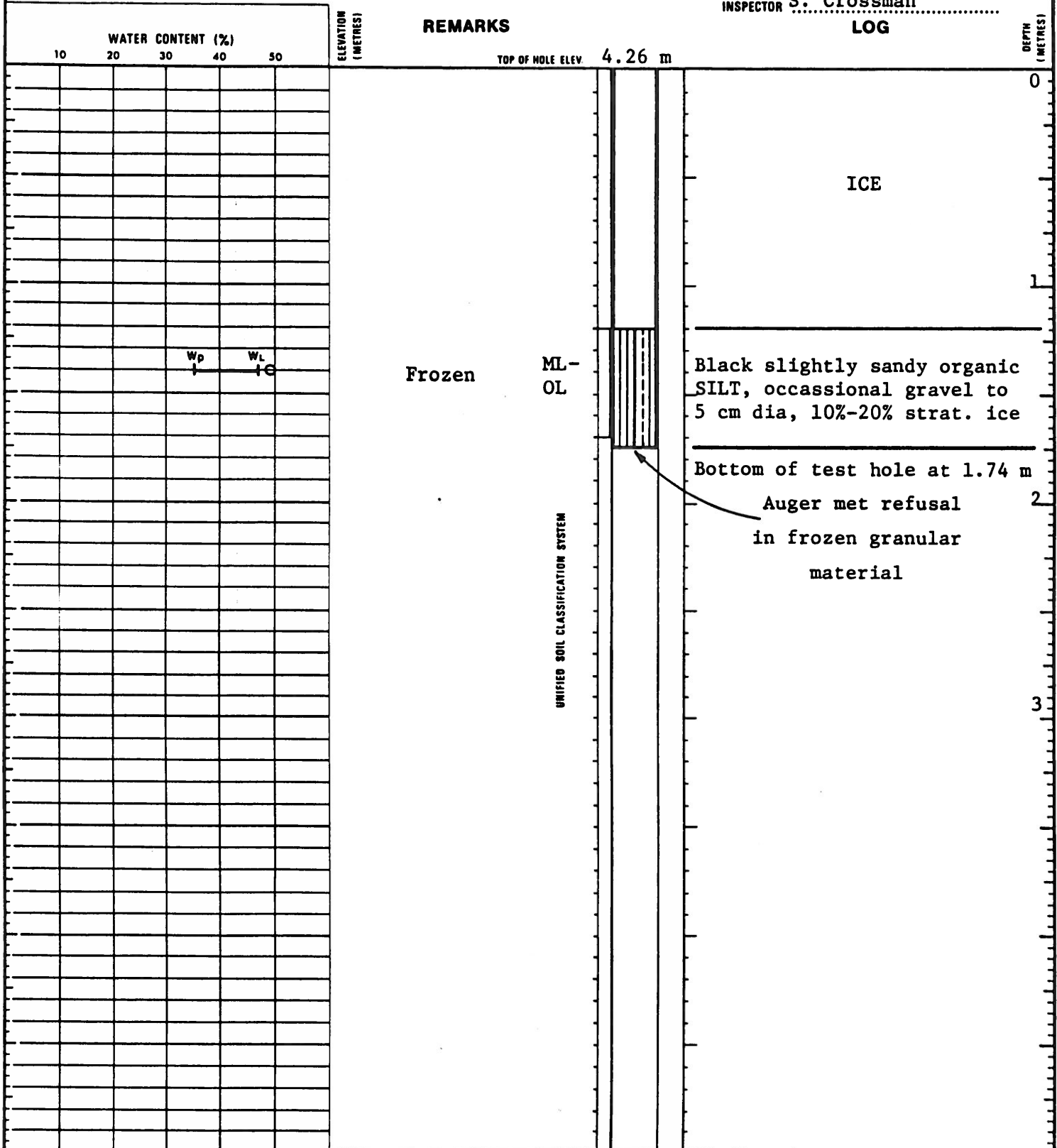
CLIENT DPW - NWT
PROJECT Coral Harbour
Water Supply
DATE April 9, 1979
METHOD Ranger Auger Drill
DRILLING CO Mobile Augers
INSPECTOR S. Crossman

LEGEND:

SAMPLES: ☐ Disturbed ☐ Undisturbed ☒ No recovery
WATER CONTENT: ☐ WATER LEVEL ☐ LIQUID LIMIT ☐ PLASTIC LIMIT

REMARKS

LOG



LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2
.....
.....

CLIENT DPW - NWT
PROJECT Coral Harbour
.....
..... Water Supply
DATE April, 1979
METHOD Ranger Auger Drill
DRILLING CO Mobile Augers
INSPECTOR S. Crossman

LEGEND:

SAMPLES:

- ☐ Disturbed
☐ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐ ☐
☐ ☐

- ☐ WATER LEVEL
W_L LIQUID LIMIT
W_P PLASTIC LIMIT

REMARKS

LOG

TOP OF HOLE ELEV 4.39 m

DEPTH (METRES)

WATER CONTENT (%)
10 20 30 40 50

ELEVATION (METRES)

UNIFIED SOIL CLASSIFICATION SYSTEM

ICE

Bottom of test hole
at 0.66 m
Auger met refusal
in frozen granular
material

LOCATION See Dwg. 15-22-3-2

CLIENT DPW - NWT
PROJECT Coral Harbour
Water Supply

☐ Disturbed
☒ Undisturbed
☒ No recovery

☐

	WATER LEVEL
W_L	LIQUID LIMIT
W_P	PLASTIC LIMIT

DATE April, 1979
METHOD Ranger Auger Drill
DRILLING CO Mobile Augers
INSPECTOR S. Crossman

INSPECTOR S. Crossman.....
LOG

REMARKS

4.40 m

DEPTH

WATER CONTENT (%)

10 20 30 40 50

ELEVATION
(METRES)**TOP OF HOLE ELEV.**

C

ICE

Bottom of test hole at
0.61 m

Auger met refusal
in frozen granular
material

2

UNIFIED SOIL CLASSIFICATION SYSTEM

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2

CLIENT DPW - NWT

PROJECT Coral Harbour

Water Supply

DATE April, 1979

METHOD Ranger Auger Drill

DRILLING CO Mobile Augers

INSPECTOR S. Crossman

LOG

LEGEND:

SAMPLES:

- ☐ Disturbed
- ☐ Undisturbed
- ☒ No recovery

WATER CONTENT:

- ☐ ϕ
- ☐ $\bullet$



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

REMARKS

WATER CONTENT (%)

10 20 30 40 50

ELEVATION
(METRES)

TOP OF HOLE ELEV. 4.40

DEPTH
(METRES)

0

ICE

Frozen

ML-SM

SP

Grey SILT with black organics
Lt. grey silty SAND and GRAVEL

1

Bottom of test hole at
0.91 m

Auger met refusal
in frozen granular
material

2

UNIFIED SOIL CLASSIFICATION SYSTEM

LOG OF TEST HOLE

LOCATION ..See Dwg. 15-22-3-2.....
.....
.....

CLIENT DPW - NWT
PROJECT Coral Harbour
..... Water Supply

LEGEND:

SAMPLES:

- ☐ Disturbed
☐ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐
☐



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

DATE April, 1979

METHOD Ranger Auger Drill

DRILLING CO Mobile Augers

INSPECTOR S. Crossman
LOG

REMARKS

TOP OF HOLE ELEV. 3.51 m

DEPTH
(METRES)

WATER CONTENT (%)

10 20 30 40 50

ELEVATION
(METRES)

Frozen

ML

ML

UNIFIED SOIL CLASSIFICATION SYSTEM

ICE

Dark grey fine
sandy SILT with
pebbles to 25 mm dia
estimate 20% segregated ice

Bottom of testhole
at 1.98 m
Refusal of auger in
frozen granular material

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2
.....
.....

CLIENT DPW - NWT
PROJECT Coral Harbour
Water Supply

LEGEND:

SAMPLES:

- ☐ Disturbed
☐ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐ ☐



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

DATE April, 1979

METHOD Ranger Auger Drill

DRILLING CO Mobile Augers

INSPECTOR S. Crossman
LOG

WATER CONTENT (%)						ELEVATION (METRES)	REMARKS	DEPTH (METRES)
10	20	30	40	50	TOP OF HOLE ELEV. 4.71 m			
							Frozen Pt	0
								0.1
								0.2
								0.3
								0.4
								0.5
								0.6
								0.7
								0.8
								0.9
								1.0
								1.1
								1.2
								1.3
								1.4
								1.5
								1.6
								1.7
								1.8
								1.9
								2.0
								2.1
								2.2
								2.3
								2.4
								2.5
								2.6
								2.7
								2.8
								2.9
								3.0
								3.1
								3.2
								3.3
								3.4
								3.5
								3.6
								3.7
								3.8
								3.9
								4.0
								4.1
								4.2
								4.3
								4.4
								4.5
								4.6
								4.7
								4.8
								4.9
								5.0

Brown, fibrous woody MUSKEG
10%-20% segregated ice
saturated when thawed

Bottom of test hole
at 0.46 m
Auger refusal on
bedrock

Drilled second test hole 3 m
north of 79- which
met refusal at 0.37 m
depth - encountered
same muskeg material

UNIFIED SOIL CLASSIFICATION SYSTEM

LOCATION See Dwg. 15-22-3-2
.....
.....
.....

CLIENT DPW - NWT
PROJECT Coral Harbour
..... Water Supply
DATE April, 1979
METHOD Ranger Auger Drill
DRILLING CO Mobile Augers
INSPECTOR S. Crossman
LOG

DATE ☐ ☒

	WATER LEVEL
W_L	LIQUID LIMIT
W_P	PLASTIC LIMIT

10 20 30 40 50

ELEVATION
(METRES)

TOP OF HOLE ELEV. 4.77 m

DEPTH

ICE

Frozen

SM

ML

ML

Grey, fine sandy
SILT

- estimate 25% stratified ice with occasional sea shells

Bottom of test hole
at 1.52 m

Auger met refusal
in frozen soil

UNIFIED SOIL CLASSIFICATION SYSTEM

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2

CLIENT DPW - NWT
PROJECT Coral Harbour
Water Supply
DATE April 10, 1979
METHOD Ranger Auger Drill
DRILLING CO Mobile Augers
INSPECTOR S. Crossman
LOG

LEGEND:

SAMPLES:

- ☐ Disturbed
☐ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐ ☐
☐ ☐

- WATER LEVEL
W_L LIQUID LIMIT
W_P PLASTIC LIMIT

REMARKS

WATER CONTENT (%)
10 20 30 40 50

ELEVATION
(METRES)

TOP OF HOLE ELEV. 4.87 m

DEPTH
(METRES)

W.C. = 133.5% OM-OL
Frozen ML

UNIFIED SOIL CLASSIFICATION SYSTEM

ICE

Decomposed moss 2

Black sandy organic SILT

Grey slightly sandy SILT
10%-20% segregated ice

Grey silty gravelly SAND

Bottom of test hole
at 1.68 m

Refusal of auger in
frozen soil

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2
.....
.....

CLIENT DPW - NWT
PROJECT Coral Harbour
Water Supply

LEGEND:

SAMPLES:

- ☐ Disturbed
☐ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐ ☐



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

DATE April, 1979

METHOD Ranger Auger Drill

DRILLING CO Mobile Augers

INSPECTOR S. Crossman

LOG

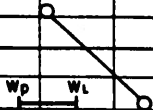
REMARKS

DEPTH
(METRES)

WATER CONTENT (%)
10 20 30 40 50

ELEVATION
(METRES)

TOP OF HOLE ELEV. 4.81 m



Frozen

SM

OM

UNIFIED SOIL CLASSIFICATION SYSTEM

Brown amorphous & fibrous woody
PEAT 0

Dark grey
sandy organic SILT
occ. gravel to 6 cm dia
20%-30% segregated ice 1

Bottom of test hole at
1.22 m

Refusal of auger
on suspected bedrock

Drilled two further
testholes close to 79-12
and met refusal
at same depth 2

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2

CLIENT DPW - NWT
PROJECT Coral Harbour
Water Supply

LEGEND:

SAMPLES:

- ☐ Disturbed
☐ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐ ☐



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

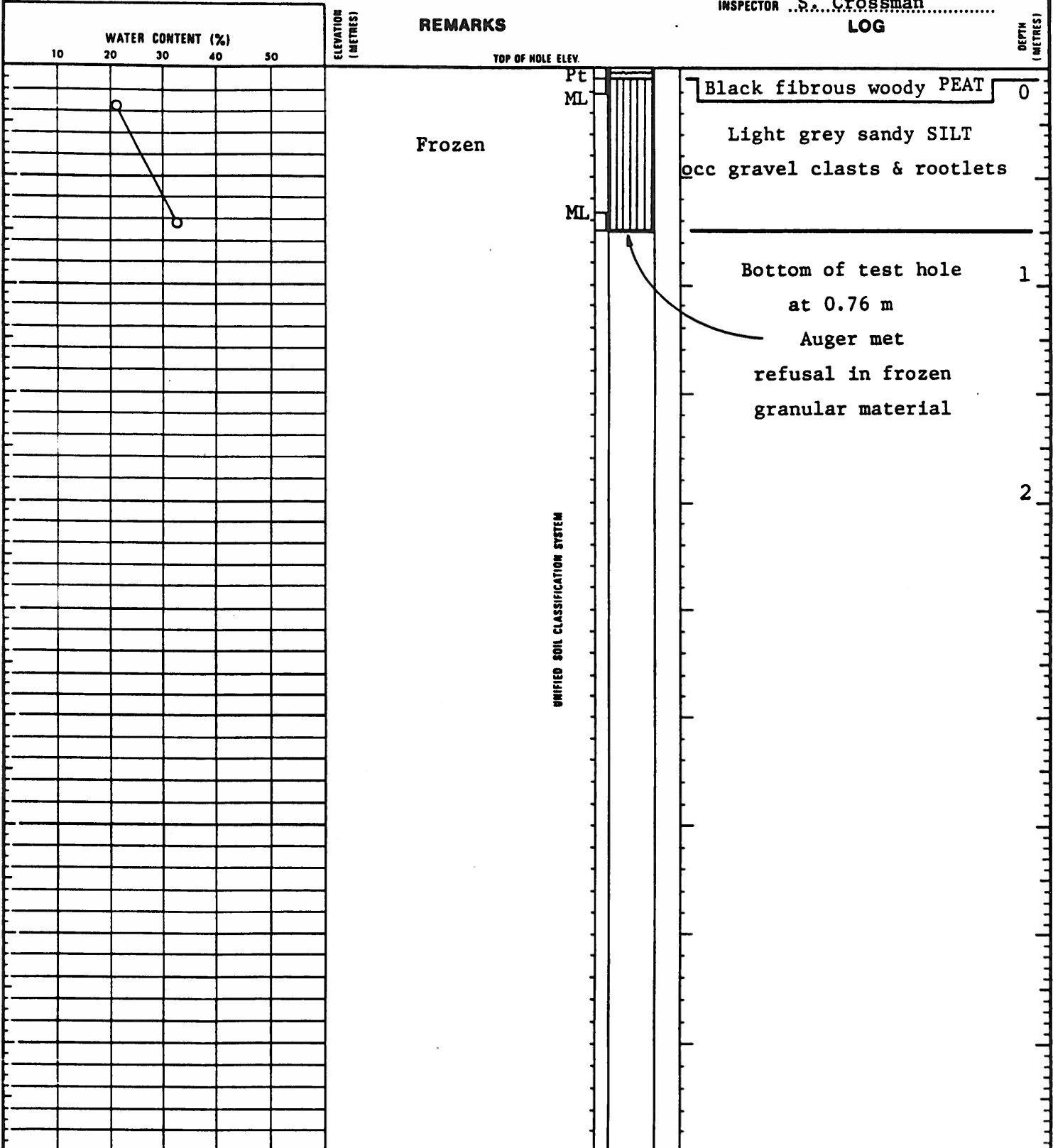
DATE April 1979

METHOD Ranger Auger Drill

DRILLING CO Mobile Augers

INSPECTOR S. Crossman

LOG



THURBER CONSULTANTS LTD.
Geotechnical Engineers

TEST HOLE NO
79-14

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2
.....
.....

CLIENT DPW - NWT
PROJECT Coral Harbour
..... Water Supply

LEGEND:

SAMPLES:

- ☐ Disturbed
☐ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐
☐



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

DATE April 10, 1979

METHOD Ranger Auger Drill

DRILLING CO Mobile Augers

INSPECTOR S. Crossman
LOG

REMARKS

12.47 m

TOP OF HOLE ELEV.

DEPTH
(METRES)

WATER CONTENT (%)

10 20 30 40 50

ELEVATION
(METRES)

Frozen
reticulate ice Pt
structure

ICE

Dark brown amorphous PEAT
with fine sand and silt
Brown gravelly silty SAND

Bottom of test hole
at 0.94 m

Suspected bedrock
rig squeaking

UNIFIED SOIL CLASSIFICATION SYSTEM

LOG OF TEST HOLE

LOCATION See Dwg 15-22-3-2

CLIENT DPW - NWT

PROJECT Coral Harbour

Water Supply

DATE April, 1979

METHOD Ranger Auger

DRILLING CO Mobile Augers

INSPECTOR S. Crossman

LOG

LEGEND:

SAMPLES:

- ☐ Disturbed
☒ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐ ☐
☐ ☐



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

REMARKS

WATER CONTENT (%)

10 20 30 40 50

ELEVATION
(METRES)

TOP OF HOLE ELEV. 12.27

DEPTH
(METRES)

Frozen

SP-SM



SM

is ML

ICE

Dark grey very silty SAND
with trace of clay and gravel
pebbles to 25 mm dia
Segregated ice throughout
estimate 10%-20%

Bottom of test hole
Suspected bedrock,
rig squeaking, unable
to penetrate further

Drilled hole 3 m east -
unable to penetrate
past 1.14 m

UNIFIED SOIL CLASSIFICATION SYSTEM

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2

CLIENT DPW - NWT

PROJECT Coral Harbour
Water Supply

DATE April, 1979

METHOD Ranger Auger Drill

DRILLING CO Mobile Augers

INSPECTOR S. Crossman

LOG

LEGEND:

SAMPLES:

- ☐ Disturbed
- ☒ Undisturbed
- ☒ No recovery

WATER CONTENT:

- ☐ Liquid Limit
- ☒ Plastic Limit



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

REMARKS

TOP OF HOLE ELEV. 12.36

DEPTH (METRES)

WATER CONTENT (%)

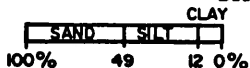
10 20 30 40 50

ELEVATION (METRES)

Ice lensing 20-30% CL Pt

○ - 85.5%

SM-ML



Frozen

UNIFIED SOIL CLASSIFICATION SYSTEM

ICE

Light grey very silty CLAY with sand and shells

Dk. br. amorphous granular PEAT

Light brown clayey very silty SAND

low plastic silt
seashells throughout
lensing 0-5%

Bottom of test hole
2.44 m

Suspected bedrock
refusal of auger

LOG OF TEST HOLE

LOCATION 15-22-3-2
.....
.....
.....

CLIENT DPW - NWT
PROJECT Coral Harbour
.....
.....
.....
DATE April 11, 1979
METHOD Ranger Auger Drill
DRILLING CO Mobile Augers
INSPECTOR S. Crossman

LEGEND:

SAMPLES:

- ☐ Disturbed
☐ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐
☒

- ▼ WATER LEVEL
W_L LIQUID LIMIT
W_P PLASTIC LIMIT

REMARKS

LOG

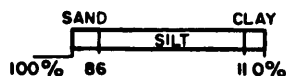
DEPTH
(METRES)

WATER CONTENT (%)
10 20 30 40 50

ELEVATION
(METRES)

TOP OF HOLE ELEV. 18.94

Estimated 10-50% of
segregated ice



Frozen

ML
ML

Dark brown fibrous PEAT
with lumps of silt

Light brown clayey sandy SILT
with shells & occ organics

Bottom of test hole at 0.66 m

suspected bedrock

50 mm of sandy silty
gravel encountered before
refusal of auger

1

2

3

UNIFIED SOIL CLASSIFICATION SYSTEM

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2
.....
.....
.....

CLIENT DPW - NWT
PROJECT Coral Harbour
Water Supply
DATE April 1979
METHOD Ranger Auger Drill
DRILLING CO Mobile Augers
INSPECTOR S. Crossman
LOG

LEGEND:

SAMPLES:
☐ Disturbed
☒ Undisturbed
☒ No recovery

WATER
CONTENT:
☐ ☐

WATER LEVEL
WL LIQUID LIMIT
Wp PLASTIC LIMIT

REMARKS

TOP OF HOLE ELEV. 18.43

DEPTH
(METRES)

WATER CONTENT (%)

10 20 30 40 50

ELEVATION
(METRES)

Frozen

O.M.C. = 152.7%

ICE

Black amorphous PEAT

Bottom of test hole at 1

0.74 m

suspected bedrock
soil frozen

UNIFIED SOIL CLASSIFICATION SYSTEM

2

3

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2

CLIENT DPW - NWT

PROJECT Coral Harbour

LEGEND:

SAMPLES:

- ☐ Disturbed
- ☐ Undisturbed
- ☒ No recovery

WATER CONTENT:

-
-



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

DATE April, 1979

METHOD Ranger Auger Drill

DRILLING CO Mobile Augers

INSPECTOR S. Crossman

LOG

REMARKS

TOP OF HOLE ELEV. 19.11

DEPTH
(METRES)

WATER CONTENT (%)
10 20 30 40 50

ELEVATION
(METRES)

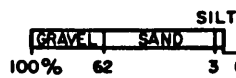
Frozen

SM

SM

SM

SW



Dark brown fibrous PEAT

with segregated ice est. 10-20%

Light brown fine silty

gravelly SAND, with

numerous seashells throughout

Bottom of test hole at 0.97 m
numerous rocks, small pebbles
for 75 mm before refusal
of auger

UNIFIED SOIL CLASSIFICATION SYSTEM

LOG OF TEST HOLE

LOCATION See Dwg. 15-22-3-2
.....
.....

CLIENT DPW - NWT
PROJECT Coral Harbour
Water Supply

LEGEND:

SAMPLES:

- ☐ Disturbed
☐ Undisturbed
☒ No recovery

WATER CONTENT:

- ☐
☐



WATER LEVEL

W_L

LIQUID LIMIT

W_p

PLASTIC LIMIT

DATE April 11, 1979

METHOD Ranger Auger Drill

DRILLING CO Mobile Augers

INSPECTOR S. Crossman

LOG

REMARKS

WATER CONTENT (%)

10 20 30 40 50

ELEVATION
(METRES)

TOP OF HOLE ELEV.

DEPTH
(METRES)

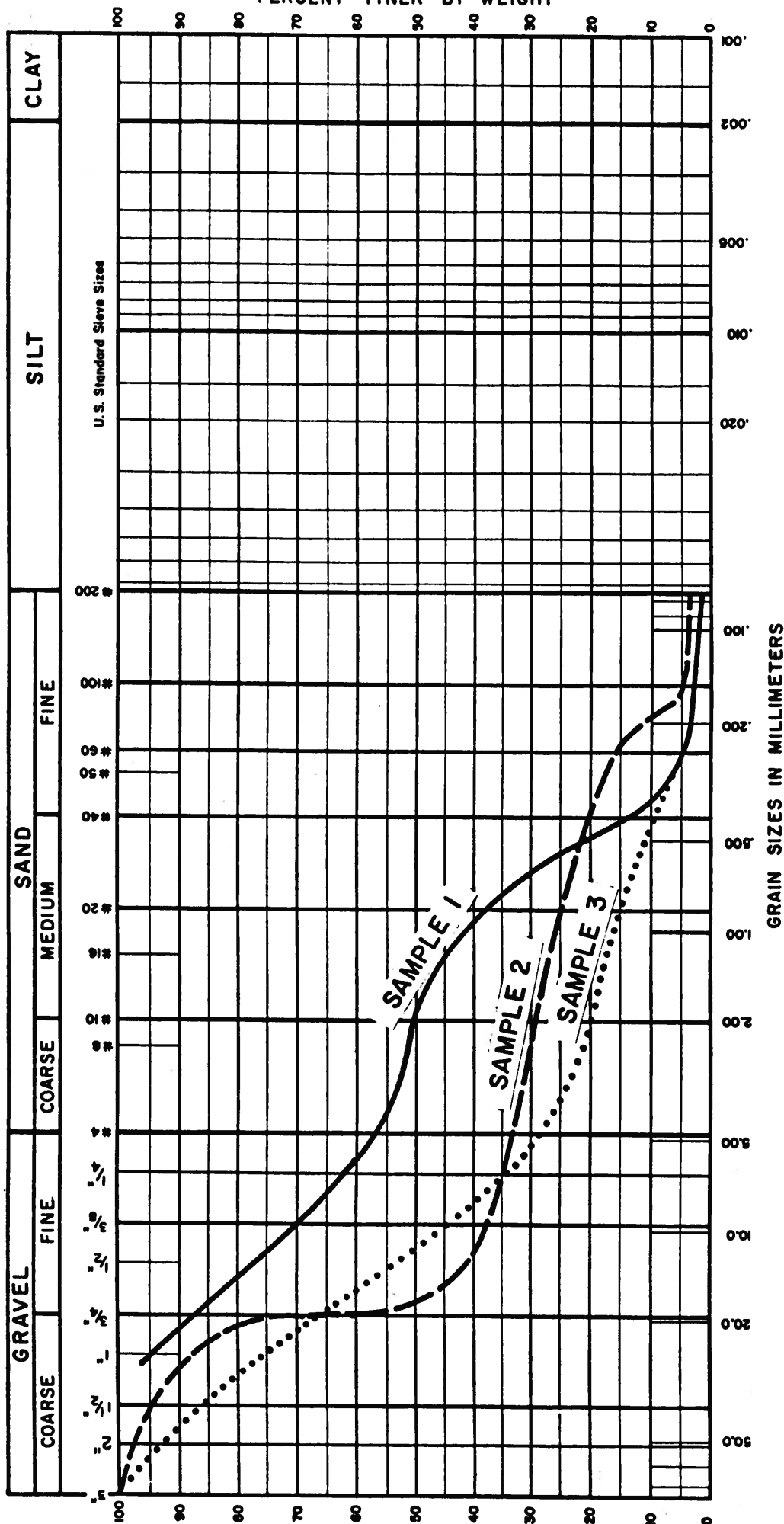
ICE

Refusal at 0.66 m in
gravelly organic SILT

FROZEN GROUND

TEST HOLE ABANDONED

UNIFIED SOIL CLASSIFICATION SYSTEM



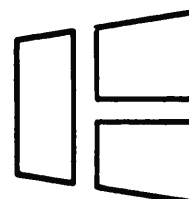
	1	2	3
Clay	-	-	-
Silt	2	4	2
Sand	55	40	26
Gravel	43	56	72

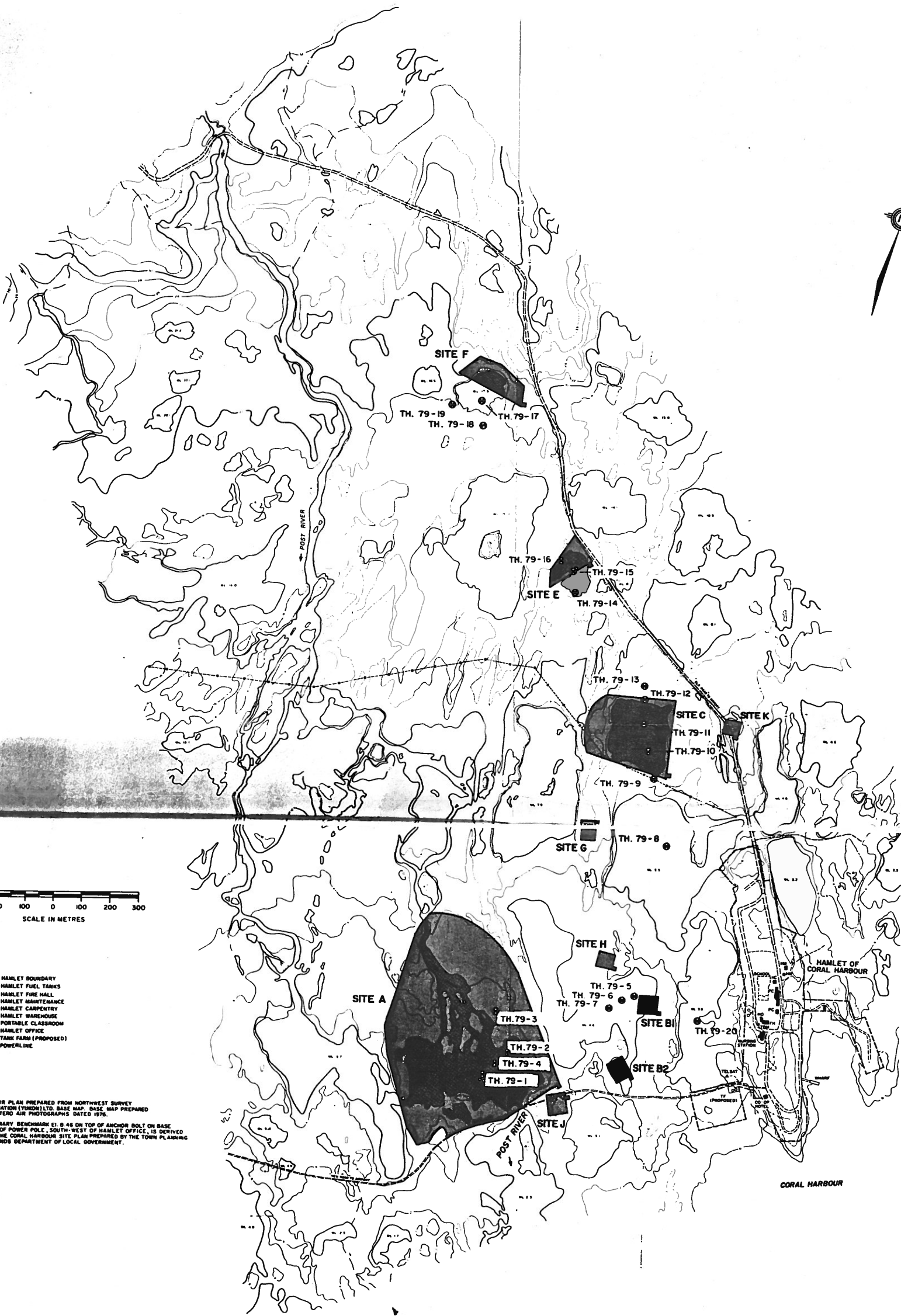
Nat. Water Content
Liquid Limit
Plastic Limit
Plastic Index

Classification

Three granular samples obtained from
Snafu borrow area, approximately 6
kilometres west of hamlet on "new"
airport road.

CLIENT DEPARTMENT OF PUBLIC WORKS, N.W.T.
PROJECT CORAL HARBOUR WATER SUPPLY
LOCATION
SAMPLE
TEST DATE February 13, 1979 FILE NO 15-22-3





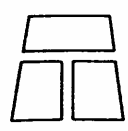
300 200 100 0 100 200 300
SCALE IN METRES

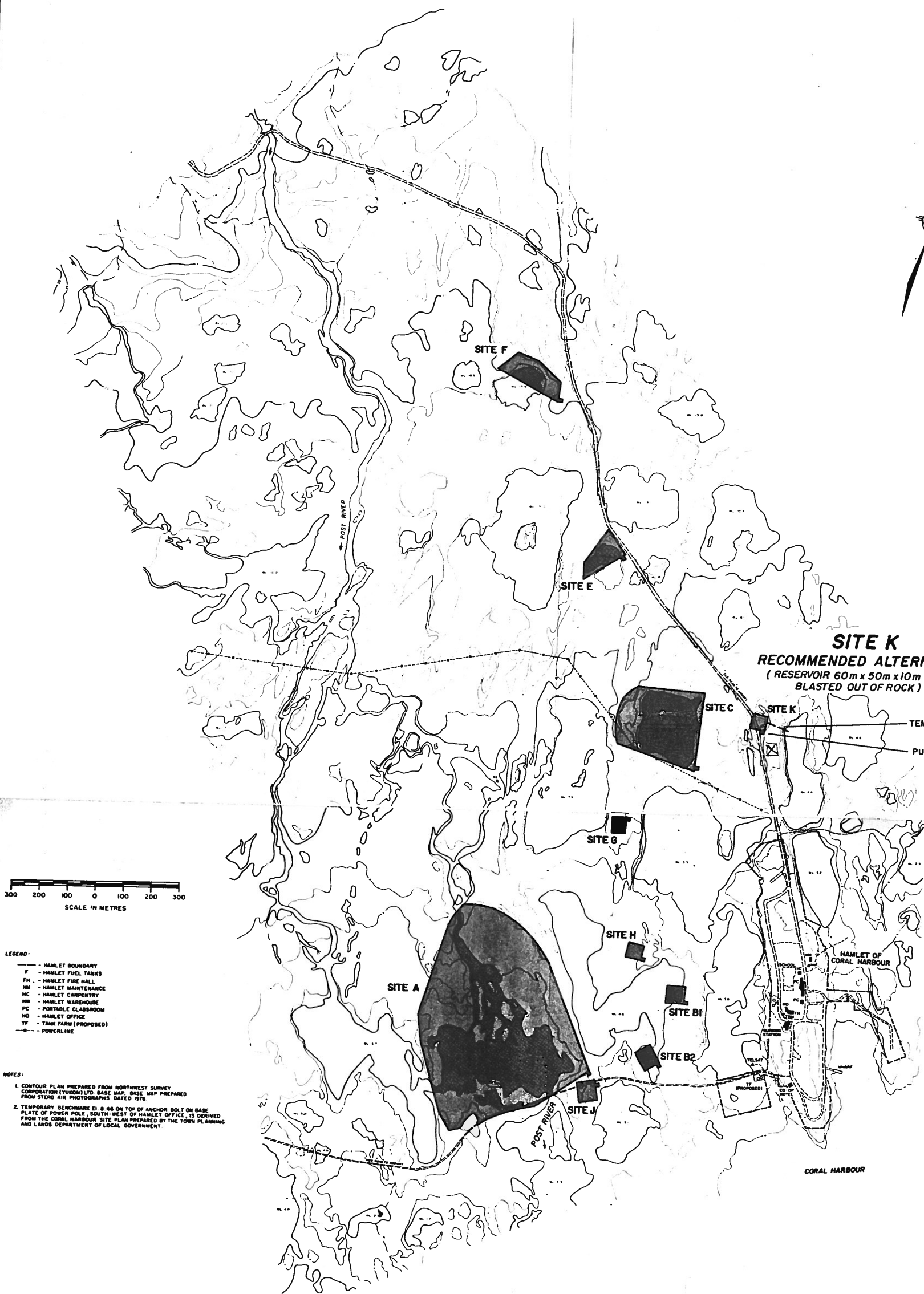
- LEGEND:
- HAMLET BOUNDARY
 - F HAMLET FUEL TANKS
 - PH HAMLET FIRE HALL
 - HM HAMLET MAINTENANCE
 - HC HAMLET CARPENTRY
 - HW HAMLET WAREHOUSE
 - PC PORTABLE CLASSROOM
 - HO HAMLET OFFICE
 - TF TANK FARM (PROPOSED)
 - POWERLINE

NOTES:

1. CONTOUR PLAN PREPARED FROM NORTHWEST SURVEY CORPORATION (THURBER LTD) BASE MAP. BASE MAP PREPARED FROM STEREO AIR PHOTOGRAPHS DATED 1976.

2. TEMPORARY BENCHMARK (1) 8.46 ON TOP OF ANCHOR BOLT ON BASE PLATE OF POWER POLE, SOUTH-WEST OF HAMLET OFFICE, IS DERIVED FROM THE CORAL HARBOUR SITE PLAN PREPARED BY THE TOWN PLANNING AND LANDS DEPARTMENT OF LOCAL GOVERNMENT.

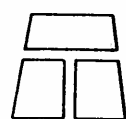
	N.W.T., DEPARTMENT OF PUBLIC WORKS		DRAWN	SD.
	WATER SUPPLY RESERVOIR - CORAL HARBOUR, N.W.T.		TRACED	
	LOCATION OF TEST HOLES		DATE	AUG., 1979
	THURBER CONSULTANTS LTD., Geotechnical Engineers		APPROVED	
			SCALE	1:10,000
			DRAWING NO. 15-22-3-2	



300 200 100 0 100 200 300
SCALE IN METRES

LEGEND:
--- HAMLET BOUNDARY
F - HAMLET FUEL TANKS
FH - HAMLET FIRE HALL
HM - HAMLET MAINTENANCE
HC - HAMLET CARPENTRY
HW - HAMLET WAREHOUSE
PC - PORTABLE CLASSROOM
HO - HAMLET OFFICE
TF - TANK FARM (PROPOSED)
--- POWERLINE

NOTES:
1. CONTOUR PLAN PREPARED FROM NORTHWEST SURVEY CORPORATION (YUSON) LTD. BASE MAP. BASE MAP PREPARED FROM STEREO AIR PHOTOGRAPHS DATED 1976.
2. TEMPORARY BENCHMARK EL. 8.46 ON TOP OF ANCHOR BOLT ON BASE PLATE OF POWER POLE, SOUTH-WEST OF HAMLET OFFICE, IS DERIVED FROM THE CORAL HARBOUR SITE PLAN PREPARED BY THE TOWN PLANNING AND LANDS DEPARTMENT OF LOCAL GOVERNMENT.



THURBER CONSULTANTS LTD., Geotechnical Engineers

N.W.T., DEPARTMENT OF PUBLIC WORKS
WATER SUPPLY RESERVOIR - CORAL HARBOUR, N.W.T.
**PLAN SHOWING ALTERNATIVE
RESERVOIR SITES STUDIED**

DRAWN	SD.
TRACED	
DATE	AUG., 1979
APPROVED	
SCALE	1:10,000
DRAWING NO.	15-22-3-1

APPENDIX C
MECHANICAL SYSTEMS

TABLE OF CONTENTS

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2.2 Alternative B	C-2
2.3 Alternative C	C-2
3. DISCUSSION	C-3
4. CONCLUSIONS	C-4

1. INTRODUCTION

In February, 1979, representatives from the Government of the Northwest Territories, Thurber Consultants Ltd. and W.L. Wardrop & Associates Ltd., conducted a site visit to Coral Harbour to assess alternative water supply sources for the Settlement. A preliminary engineering study conducted by the Department of Public Works of the Government of the Northwest Territories established that the most feasible method of assuring the Settlement with a year round water supply was to construct a reservoir which could be filled at appropriate times during the year from the neighboring Post River or one of the existing lakes in the area.

Subsequently, W.L. Wardrop & Associates Ltd. was commissioned to prepare this report, which investigates the various applicable mechanical systems to compliment this concept. This report has been prepared with the intent that it will form an Appendix and a part of the report being prepared by Thurber Consultants Ltd.

2. ALTERNATIVE MECHANICAL SYSTEMS

The alternative mechanical systems investigated were based on the premise that the water supply system must be capable of supplying 500 IGPM for a duration of two hours to ensure adequate fire protection for the Settlement School. The various alternatives investigated are described conceptually as follows:

2.1 Alternative A

Alternative A consists of the following components:

- (a) a pumphouse located near the reservoir and housing a wetwell, a diesel driven fire pump, two water circulation pumps, a chlorinator, and preheating equipment.
- (b) A 150 mm diameter insulated polyethylene supply line from the pumphouse to the school, and a 38 mm diameter supply line from the school to the nursing station.
- (c) A 38 mm diameter insulated polyethylene return line from the nursing station to the wetwell.

- (d) a truck fill facility located within the Settlement consisting of two truck filling pumps and a 9100 litre water storage tank, filled via the 150 mm supply line.

Operation of this system involves constant pumping of preheated water through the 150 mm and 38 mm diameter supply lines, and returning back to the wetwell via the 38 mm diameter return line, thereby establishing a recirculation loop to prevent freeze-ups. The 9100 litre water storage tank in the Settlement would be filled automatically by the 150 mm diameter supply line during periods of low demand. The diesel driven fire pump would start on low supply line pressure, resulting from the opening of a fire hydrant at the school.

Filling of the reservoir from the water supply source would be accomplished by the use of a portable pumping unit and a temporary pipeline.

2.2 Alternative B

Alternative B is similar to Alternative A with the exception that the fire pump would be located at the water storage tank at the truck fill point in the Settlement. This would result in the following changes:

- (a) the 150 mm diameter supply line from the pumphouse to the truck fill point would be reduced to a 38 mm diameter line.
- (b) the water storage tank in the Settlement would be increased to 273,000 litres to provide for two hours of fire water storage.

The operation of this system would be essentially the same as that described for Alternative A.

2.3 Alternative C

Alternative C consists of a gravity supply line from the reservoir to a wetwell located in the Settlement. A pumphouse located over the wetwell would house the truck fill pumps, the water circulation pumps, and the diesel driven fire pump. The primary advantage of this system would be to locate all mechanical equipment in one location within the Settlement.



However, after investigation, it was established that no reservoir location existed within a reasonable distance from the Settlement with an elevation sufficient to produce the gravity flows required. Since material to construct berms for an above ground reservoir is unavailable in this area, the gravity system was excluded from any further evaluations.

3. DISCUSSION

On June 7, 1979, representatives of Thurber Consultants Ltd. and W.L. Wardrop & Associates Ltd. met with the Government of the Northwest Territories in Yellowknife, to discuss the location of the reservoir as well as the alternative mechanical systems presented above. At this meeting it was decided that the requirement for fire water supply to the school would be eliminated as a design criteria. Consequently, the piped supply line from the reservoir to the Settlement and a storage tank in the Settlement was no longer a requirement. In pursuance of this development, it was decided that the only requirement was to provide for a truck fill facility for the Settlement. This facility could be located at the reservoir site, or within the Settlement. A general evaluation of these two options indicated that locating the truck fill point at the reservoir is more economical, since the increased capital, operating and maintenance costs associated with constructing and maintaining two facilities versus one facility is greater than the potential savings resulting from the reduction of the truck haul distance.

The truck fill point referenced above consists of the following components:

- (a) a concrete wetwell constructed to be directly connected to the reservoir.
- (b) two submersible or vertical turbine pumps located in the wetwell and connected to a common discharge to serve as truck filling pumps.
- (c) a hypochlorination system.
- (d) a well insulated, heated enclosure located over the wetwell and housing the above equipment.

The estimated capital costs associated with this system are listed below:

<u>Item</u>	<u>Capital Cost Estimate</u>
1. Sitework	\$ 15,000
2. Wetwell & floor slab	30,000
3. Mechanical	15,000
4. Water treatment	5,000
5. Electrical	15,000
6. Building	20,000
7. Mobilization/Demobilization	<u>50,000</u>
Total	\$150,000

While the use of inclined shafts rather than a wetwell was investigated and found to be of comparable cost, it is not recommended for the following reasons:

- (a) a wetwell allows more free access to submerged pumping equipment and greater flexibility with regard to future equipment installations.
- (b) an inclined shaft arrangement would require two shafts, intake screens, and backwashing provisions, all of which involve increased design complexity.

4. CONCLUSIONS

This report concludes that of the various alternative mechanical systems investigated for the Coral Harbour Water Supply, a truck fill facility located at the reservoir is the most desirable method of meeting the requirements of the Settlement. The estimated capital cost of constructing this facility is \$150,000.

APPENDIX D
WATER QUALITY ANALYSIS

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TABLE D-1
CORAL HARBOUR WATER SUPPLY
WATER QUALITY ANALYSIS

Characteristic	Canadian Drinking Water Standards and Objectives		Sample Number													
			Source 1		Source 2		Source 3		Source 4		Source 5		Source 6		Source 7	
	Objective	Acceptable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Fecal Coliform Bacteria	<10/100ml	<100/100ml	Nil	Nil	Nil	Nil	3/100	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Total Coliform Bacteria	<100/100ml	<1000/100ml	Nil	Nil	Nil	Nil	3/100	Nil	Nil	Nil	18/100	25/100	4/100	6/100	Nil	Nil
Fluoride	<1.5 mg/l	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	Not Detectable	0.01 mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide	Not Detectable	0.01 mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium	Not Detectable	<1.0 mg/l	0.025	<0.005	0.020	0.008	0.009	0.006	0.010	0.036	0.014	0.016	0.008	0.007	0.011	0.008
Cadmium	Not Detectable	<0.01 mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	<0.01 mg/l	0.05 mg/l	<0.005	0.017	0.007	<0.005	0.012	0.010	<0.005	<0.005	<0.005	<0.005	0.006	0.006	<0.005	0.008
Chromium	Not Detectable	<0.05 mg/l	<0.01	<0.01	<0.01	<0.01	0.05	0.04	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07
Lead	Not Detectable	<0.05 mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05
Zinc	<1.0 mg/l	5.0 mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.03	<0.02	0.04	0.03	<0.02	0.04
Silver *	-	<.05 mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury (ppb)*	<1 ppb	-	0.10	0.10	0.14	0.05	0.13	0.12	0.32	0.08	0.14	0.02	0.03	0.04	<0.02	<0.02
Total Hardness	<120 mg/l	-	19.7	18.3	89.8	91.2	88.8	89.0	109.0	109.5	106.8	106.1	109.6	105.7	78.2	77.4
Total Alkalinity	30-500 mg/l	-	19.8	31.0	60.0	64.1	67.0	62.0	86.0	92.0	83.1	83.1	89.1	144.1	61.0	52.0
Total Dissolved Solids	<500 mg/l	1000 mg/l	57.8	77.5	174.2	184.0	187.9	184.6	194.1	201.8	199.2	199.4	315.3	386.4	142.4	129.3
pH	-	6.5-8.3	7.8	7.7	7.6	7.6	7.7	7.7	7.7	7.7	7.8	7.8	7.7	7.8	7.5	7.6
Conductivity	-	-	6.86	9.80	28.8	29.8	29.8	30.7	26.9	27.8	29.8	29.8	51.8	51.8	22.1	22.1
Turbidity	<1 JTU	5 JTU	1	1	1.2	1.1	1.4	1.2	0.64	0.81	1.6	1.6	1.3	1.6	1.0	1.7
Color	<5 TCU	15 TCU	<5	<5	10	10	17	15	12	10	15	12	15	15	8	8
Phosphate as P	<0.2 mg/l	0.2 mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nitrates as N	<10.0 mg/l	<10.0 mg/l	.033	0.033	<0.016	0.172	0.028	0.027	0.026	0.035	0.023	0.024	0.026	0.028	0.032	0.032
Iron	<0.05 mg/l	0.3 mg/l	<0.01	0.02	0.08	0.07	0.19	0.20	0.06	0.06	0.12	0.11	0.19	0.18	0.07	0.07
Saturation Index			-1.3	-1.3	-0.4	-0.4	-0.3	-0.3	0.0	0.0	0.0	0.0	-0.2	+0.1	-0.5	-0.4

* International and Foreign Standards for Water Treatment
World Health Organization Recommendations

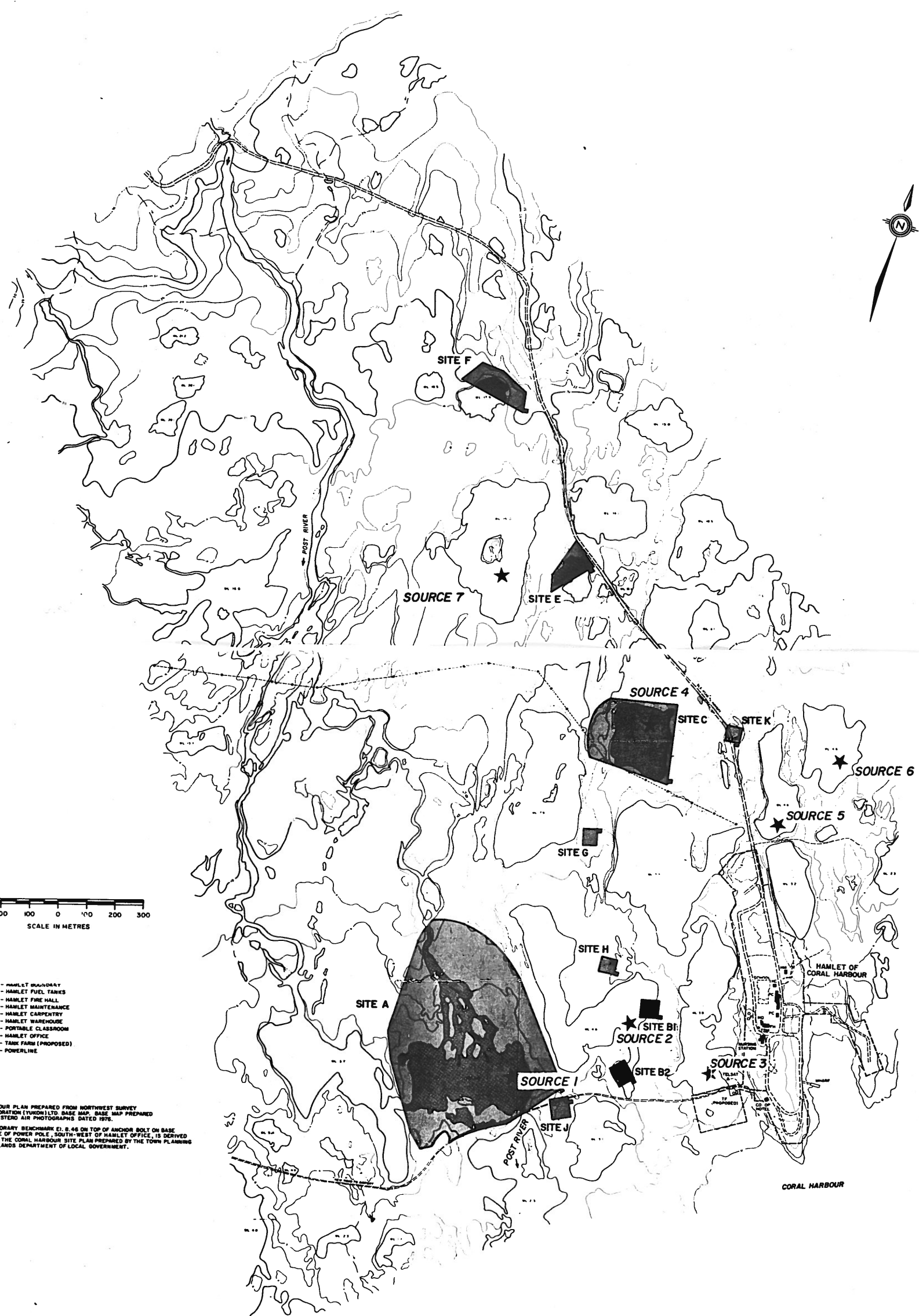
Note: all concentrations are in mg/l (ppm) unless otherwise noted.





- LEGEND:
- HAMLET BOUNDARY
 - F HAMLET FUEL TANKS
 - FW HAMLET FIRE WALL
 - MB HAMLET MAINTENANCE
 - MC HAMLET CARPENTRY
 - HW HAMLET WAREHOUSE
 - PC PORTABLE CLASSROOM
 - HO HAMLET OFFICE
 - TF TANK FARM (PROPOSED)
 - POWERLINE

- NOTES:
1. CONTOUR PLAN PREPARED FROM NORTHWEST SURVEY CORPORATION (YUKON) LTD. BASE MAP, BASE MAP PREPARED FROM STEREO AIR PHOTOGRAPHS DATED 1978.
 2. TEMPORARY BENCHMARK (E) 8.46 ON TOP OF ANCHOR BOLT ON BASE PLATE OF POWER POLE, SOUTH-WEST OF HAMLET OFFICE, IS DERIVED FROM THE CORAL HARBOUR SITE PLAN PREPARED BY THE TOWN PLANNING AND LANDS DEPARTMENT OF LOCAL GOVERNMENT.



	N.W.T., DEPARTMENT OF PUBLIC WORKS		DRAWN	SD.
	WATER SUPPLY RESERVOIR - CORAL HARBOUR, N.W.T.		TRACED	
	LOCATION OF WATER SOURCE ANALYSES		DATE	AUG., 1979
			APPROVED	
			SCALE	1:10,000
THURBER CONSULTANTS LTD., Geotechnical Engineers			DRAWING NO. 15-22-3-3	