



Curragh
Resources Inc.

VANGORDA PLATEAU DEVELOPMENT

INITIAL ENVIRONMENTAL EVALUATION

VOLUME III STAGE II FIGURES

JULY 1989



VANGORDA PLATEAU

DEVELOPMENT

INITIAL ENVIRONMENTAL EVALUATION

VOLUME III

STAGE II FIGURES

Prepared for:

CURRAGH RESOURCES INC.

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Y1A 2Tb

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July 1989

CURRAGH RESOURCES INC.
VANGORDA PLATEAU DEVELOPMENT
INITIAL ENVIRONMENTAL EVALUATION

VOLUME III
STAGE II FIGURES

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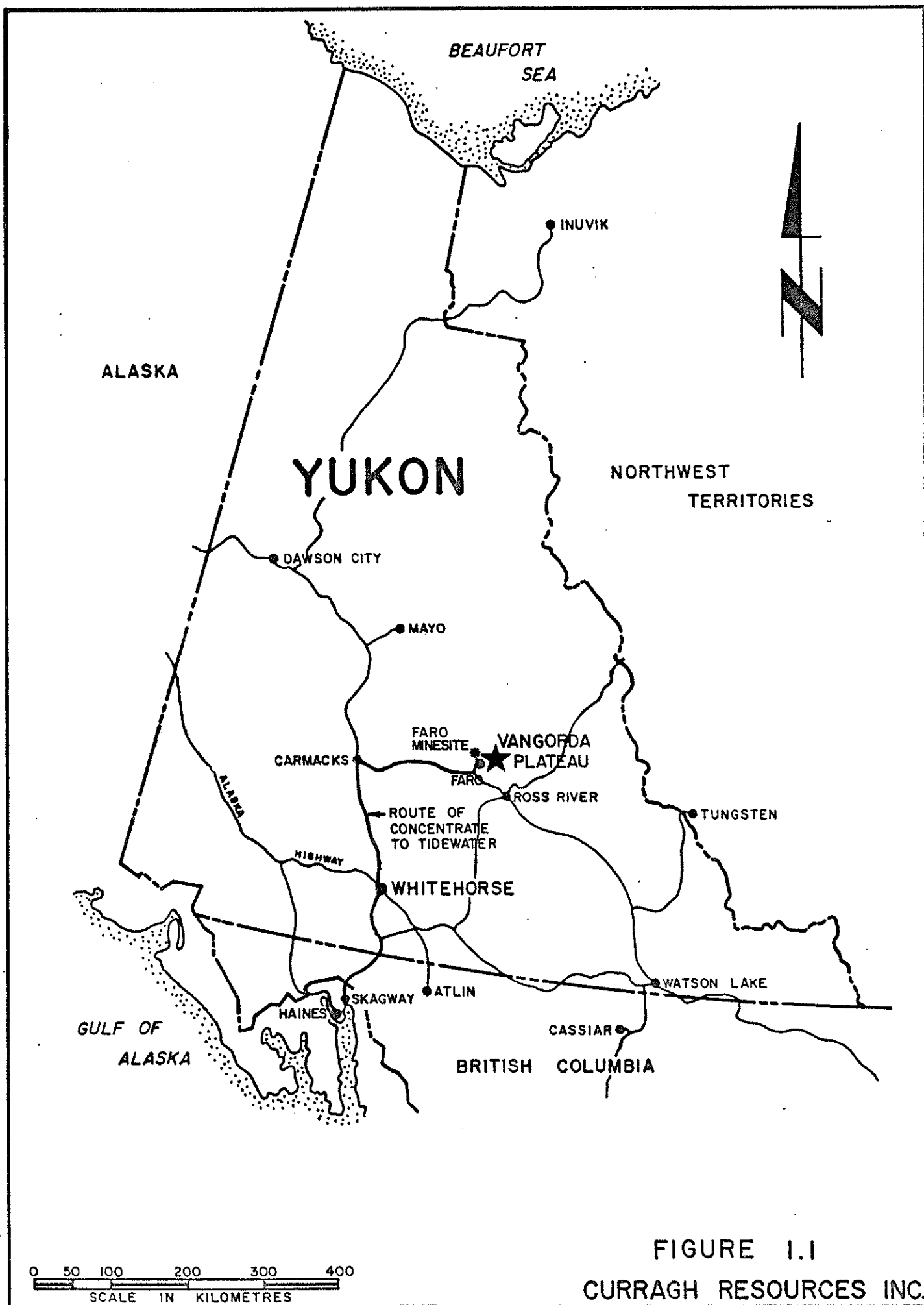
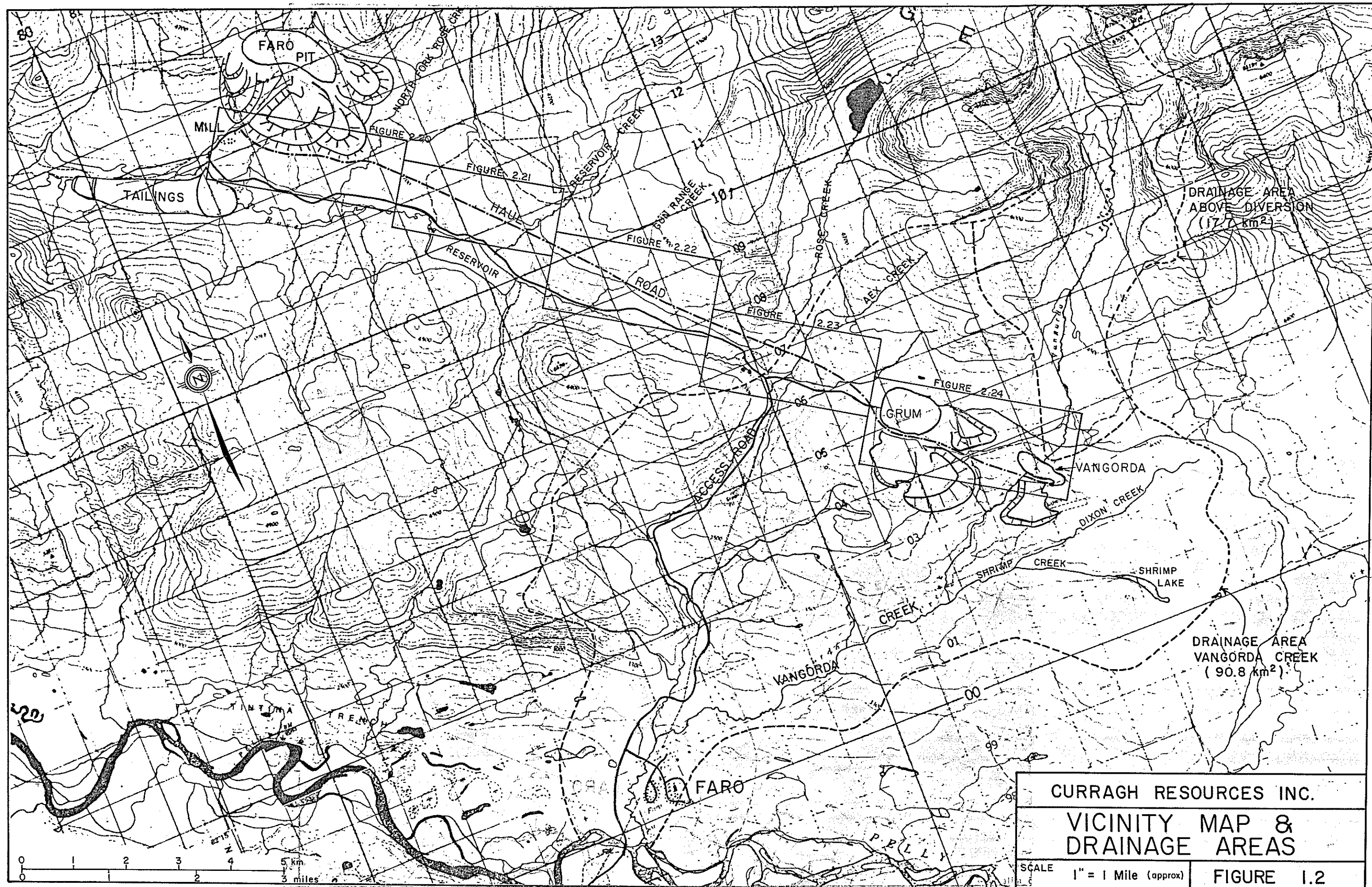


FIGURE 1.1
CURRAGH RESOURCES INC.



CURRAGH RESOURCES INC.

VICINITY MAP &
DRAINAGE AREAS

SCALE 1" = 1 Mile (approx)

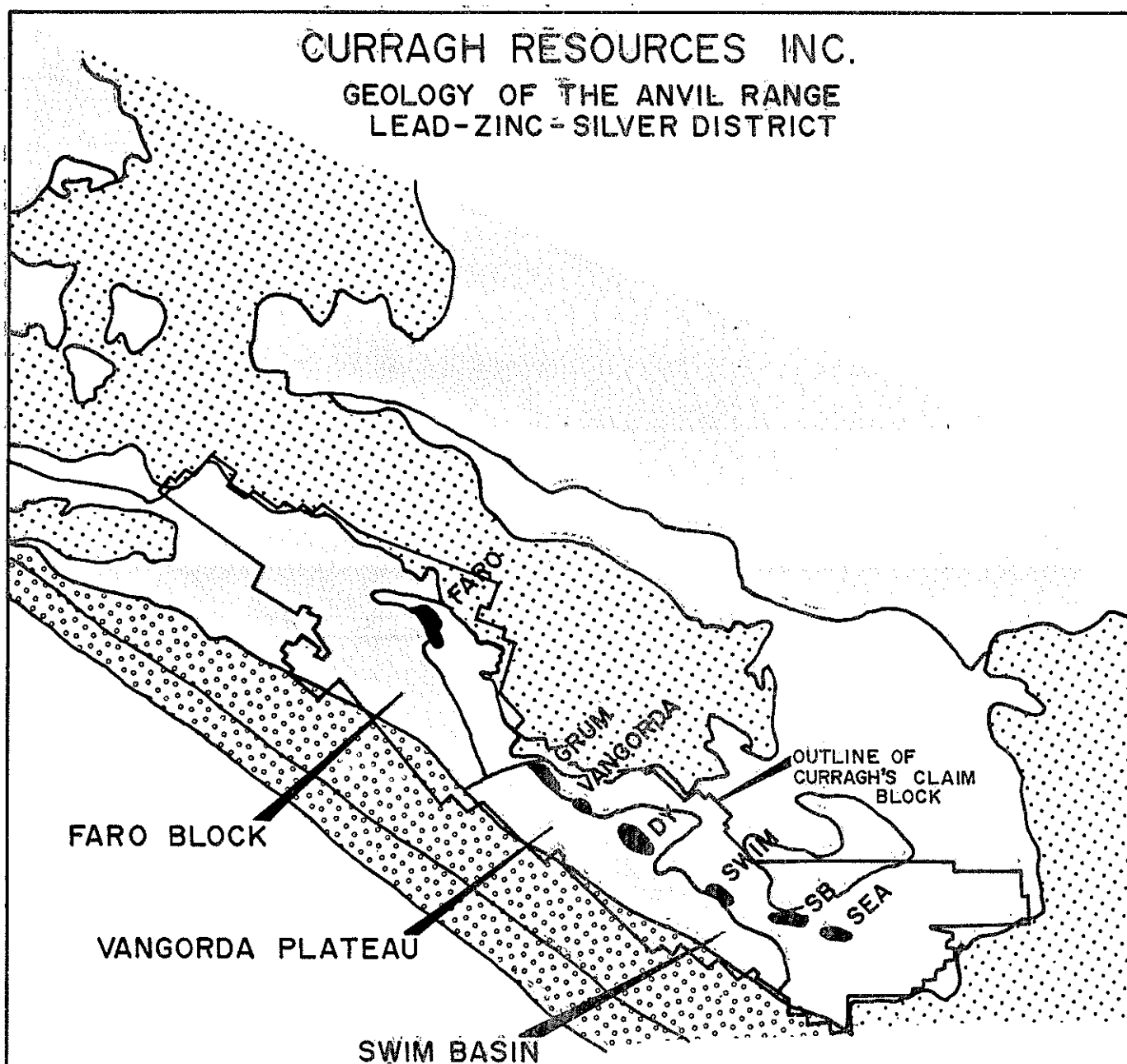
FIGURE 1.2

SECTION 2.0

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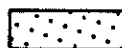
CURRAGH RESOURCES INC.

GEOLOGY OF THE ANVIL RANGE LEAD-ZINC-SILVER DISTRICT

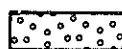


LEGEND:

CRETACEOUS

 ANVIL BATHOLITH: granite, granodiorite

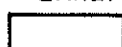
PALEOZOIC and MESOZOIC

 YUKON TANNANA TERRANE and related units

CAMBRIAN to PERMIAN

 VANGORDA FORMATION and younger formations
-undifferentiated sedimentary and volcanic rocks

EARLY CAMBRIAN

 MT. MYE FORMATION: non-calcareous phyllite and schist

 SULPHIDE DEPOSIT - all Pb, Zn, Ag bearing
except SB and SEA

 FAULT

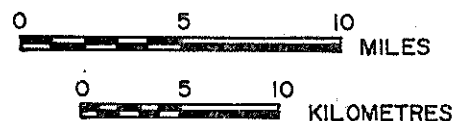
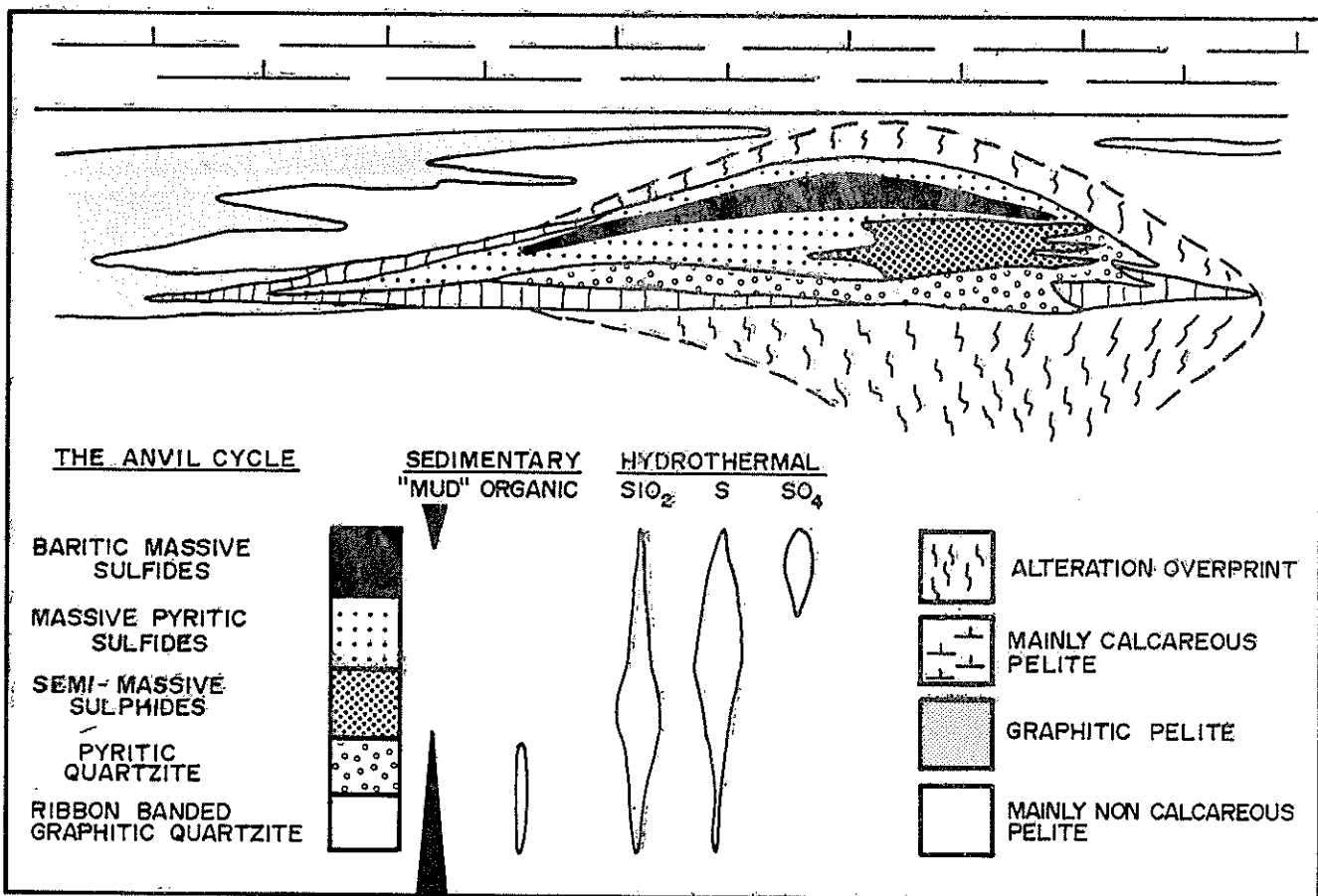
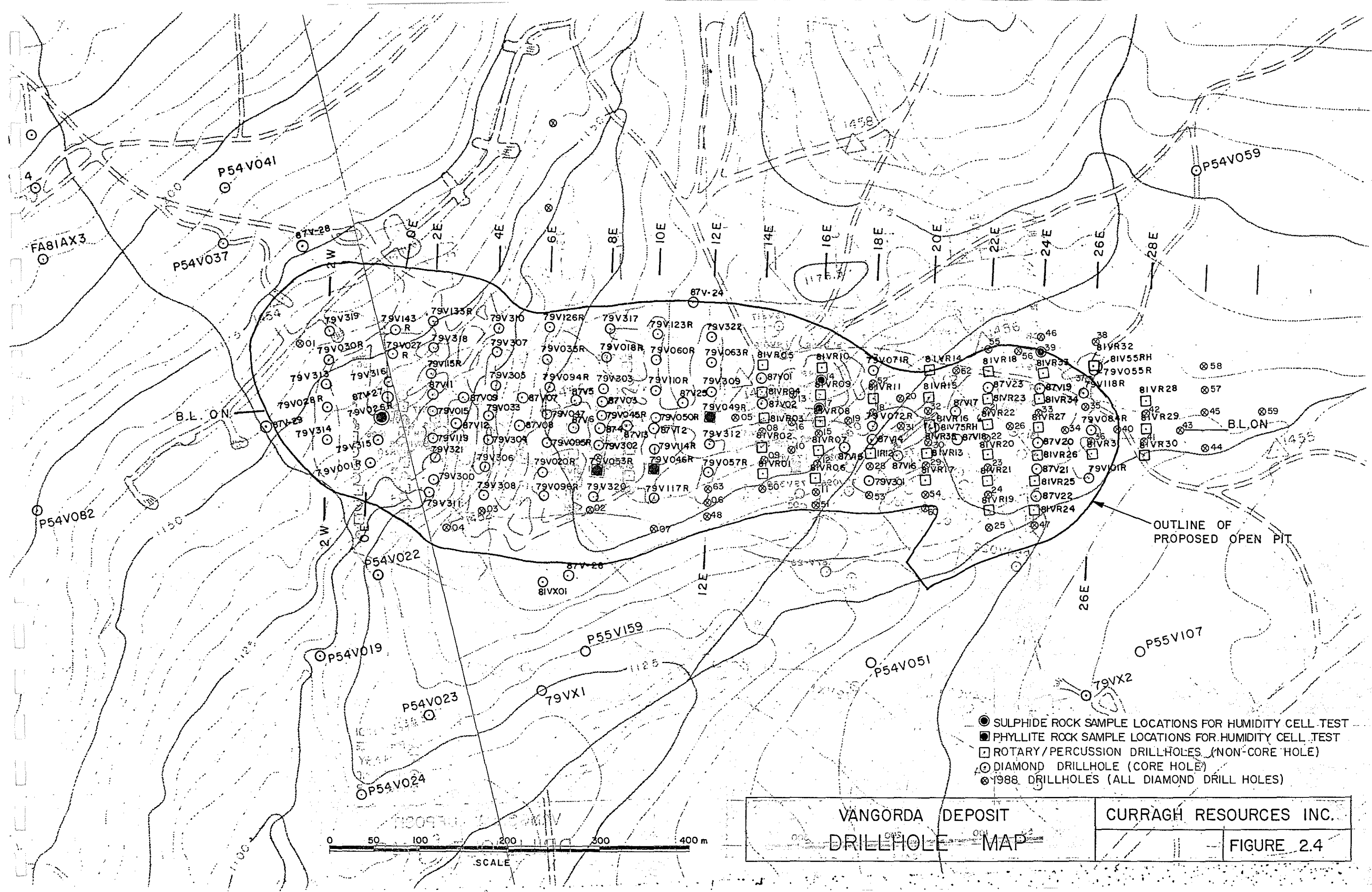


FIGURE 2.1



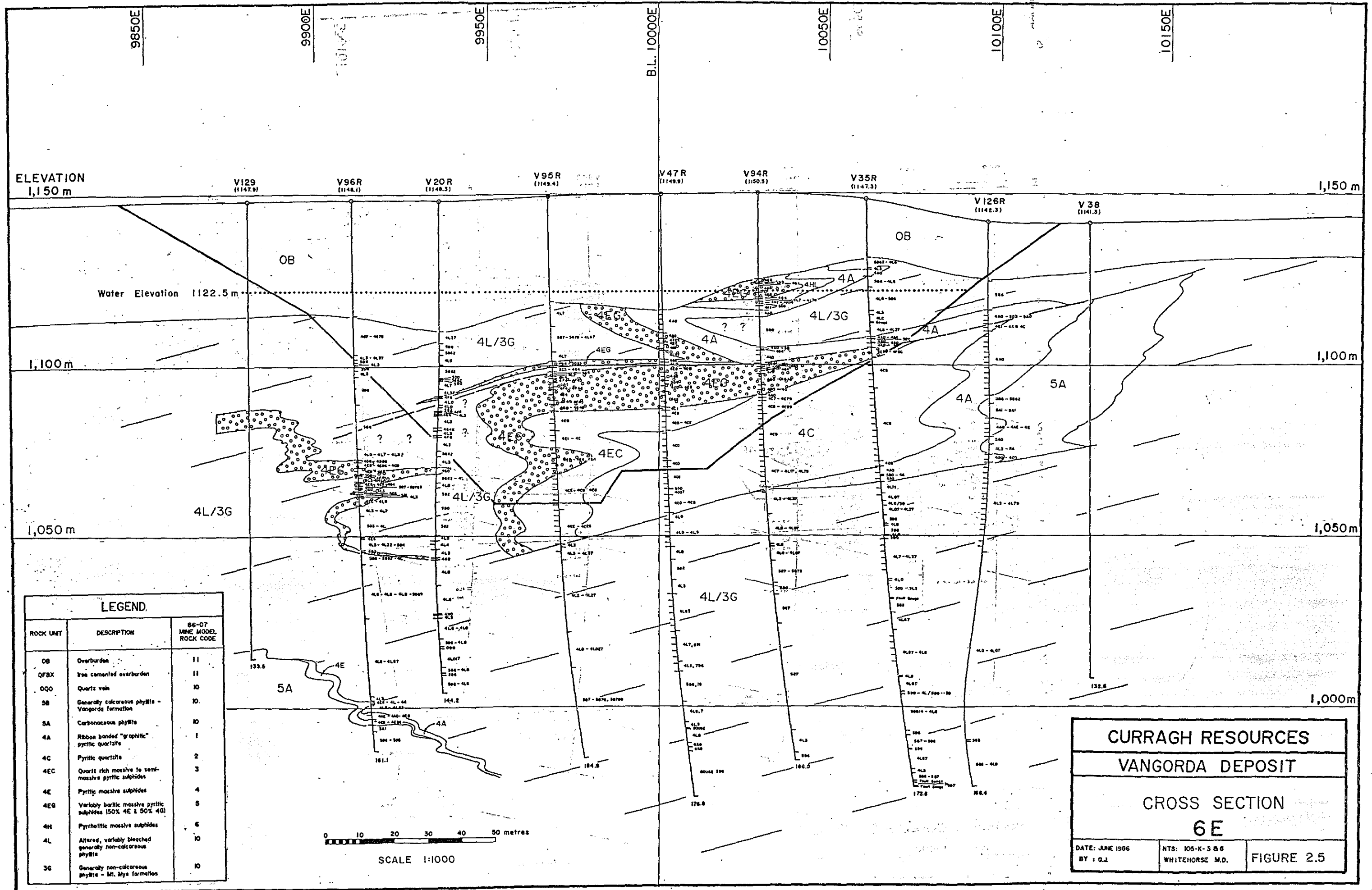
B C B Drafting Service

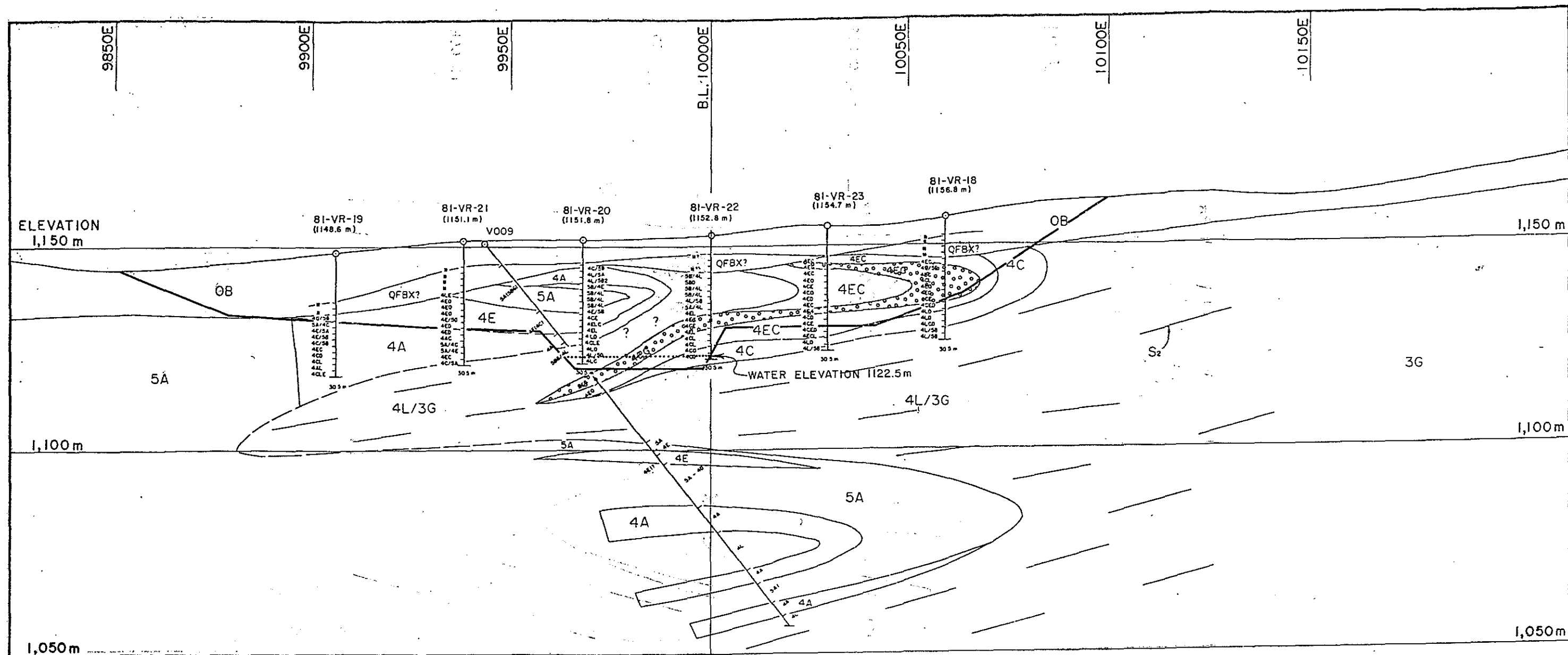
IDEALIZED ANVIL CYCLE



- SULPHIDE ROCK SAMPLE LOCATIONS FOR HUMIDITY CELL TEST
- PHYLLITE ROCK SAMPLE LOCATIONS FOR HUMIDITY CELL TEST
- ROTARY/PERCUSSION DRILLHOLES (NON-CORE HOLE)
- ⊗ DIAMOND DRILLHOLE (CORE HOLE)
- ⊗ 1988 DRILLHOLES (ALL DIAMOND DRILL HOLES)

VANGORDA DEPOSIT		CURRAGH RESOURCES INC.
DRILLHOLE MAP		FIGURE 2.4

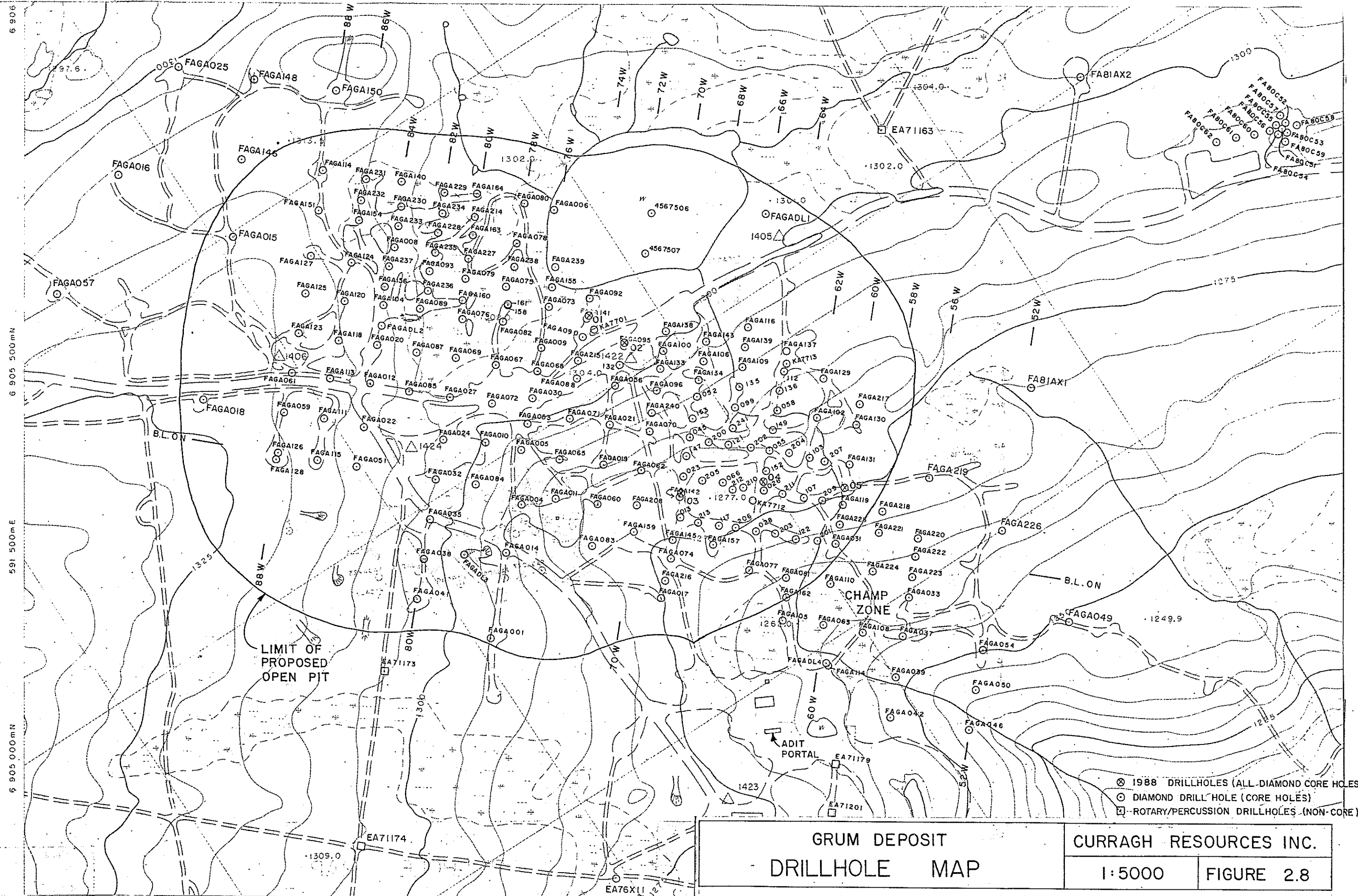


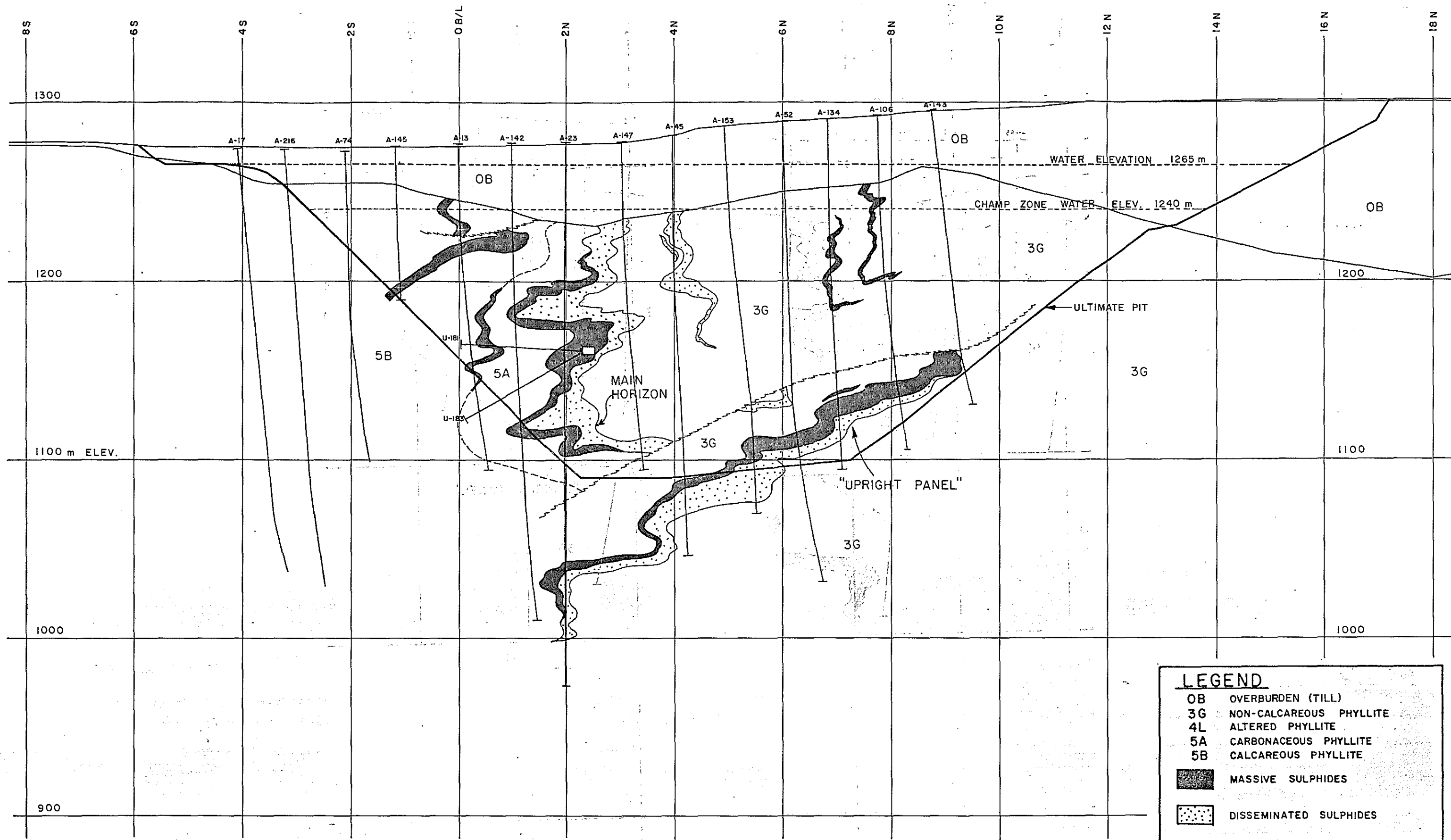


LEGEND		
ROCK UNIT	DESCRIPTION	86-07 MINE MODEL ROCK CODE
OB	Overburden	11
QFBX	Ken cemented overburden	11
QOQ	Quartz vein	10
5B	Generally calcareous phyllite - Vangorda formation	10
5A	Carbonaceous phyllite	10
4A	Ribbon banded "graphitic" pyritic quartzite	1
4C	Pyritic quartzite	2
4EC	Quartz rich massive to semi-massive pyritic sulphides	3
4E	Pyritic massive sulphides	4
4EG	Variably baritic massive pyritic sulphides (50% 4E & 50% 4G)	5
4H	Pyrrhotitic massive sulphides	6
4L	Altered, variably bleached generally non-calcareous phyllite	10
3G	Generally non-calcareous phyllite - Mt. Mye formation	10

0 10 20 30 40 50 metres
SCALE 1:1000

CURRAGH RESOURCES		
VANGORDA DEPOSIT		
VERTICAL CROSS SECTION 22 E		
DATE: JUNE 1986 BY: G.J.	NTS. 105-K-3 & 6 WHITEHORSE M.D.	FIGURE 2.6





LEGEND

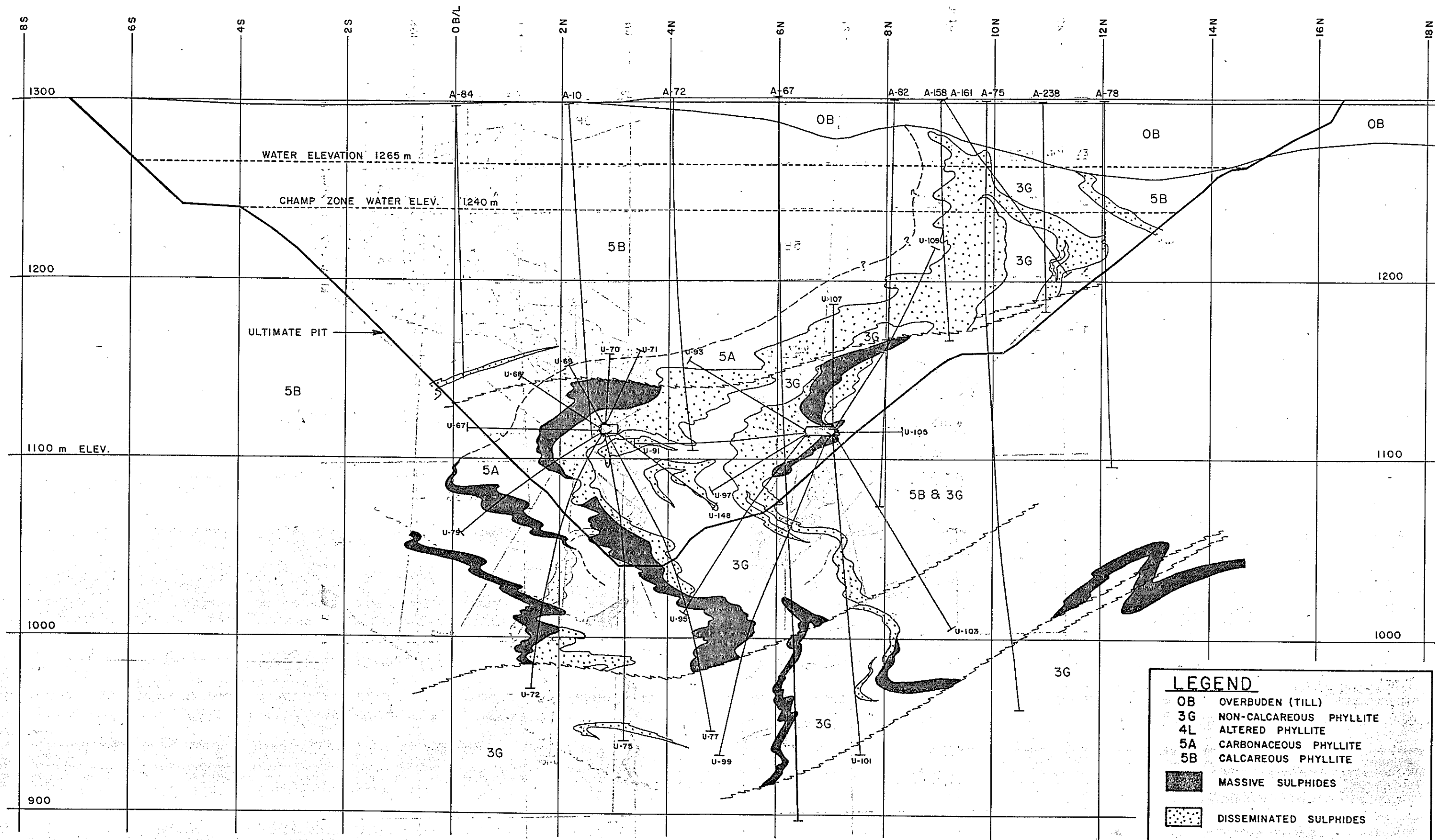
- OB OVERBURDEN (TILL)
- 3G NON-CALCAREOUS PHYLLITE
- 4L ALTERED PHYLLITE
- 5A CARBONACEOUS PHYLLITE
- 5B CALCAREOUS PHYLLITE
- MASSIVE SULPHIDES
- DISSEMINATED SULPHIDES

GRUM DEPOSIT
CROSS SECTION 68W

CURRAGH RESOURCES INC.

1:2000

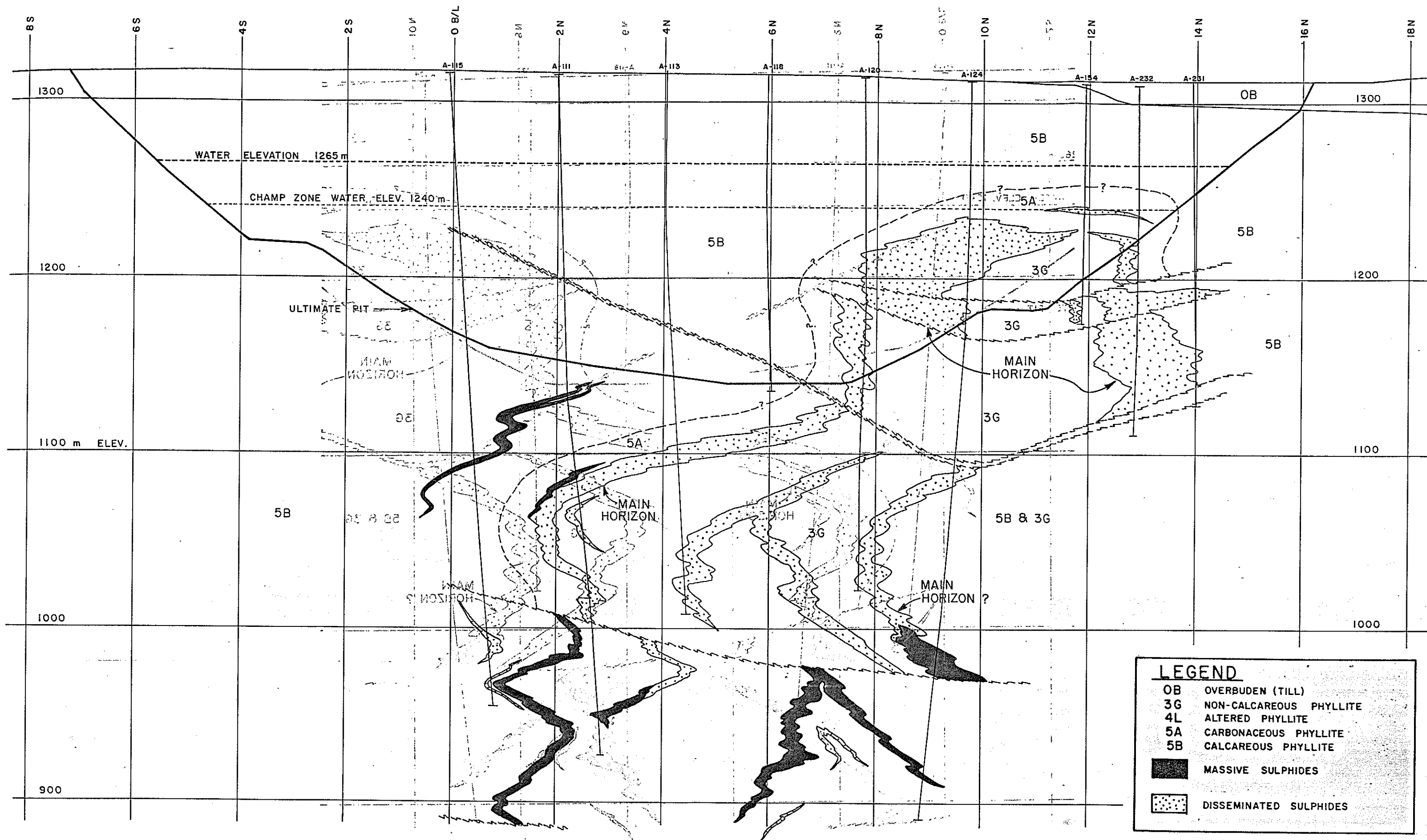
FIGURE 2.9



LEGEND

OB	OVERBUDEN (TILL)
3G	NON-CALCAREOUS PHYLLITE
4L	ALTERED PHYLLITE
5A	CARBONACEOUS PHYLLITE
5B	CALCAREOUS PHYLLITE
	MASSIVE SULPHIDES
	DISSEMINATED SULPHIDES

CROSS SECTION 78W
GRUM DEPOSIT



CROSS SECTION 86W
GRUM DEPOSIT

GRUM DEPOSIT
CROSS SECTION 86W

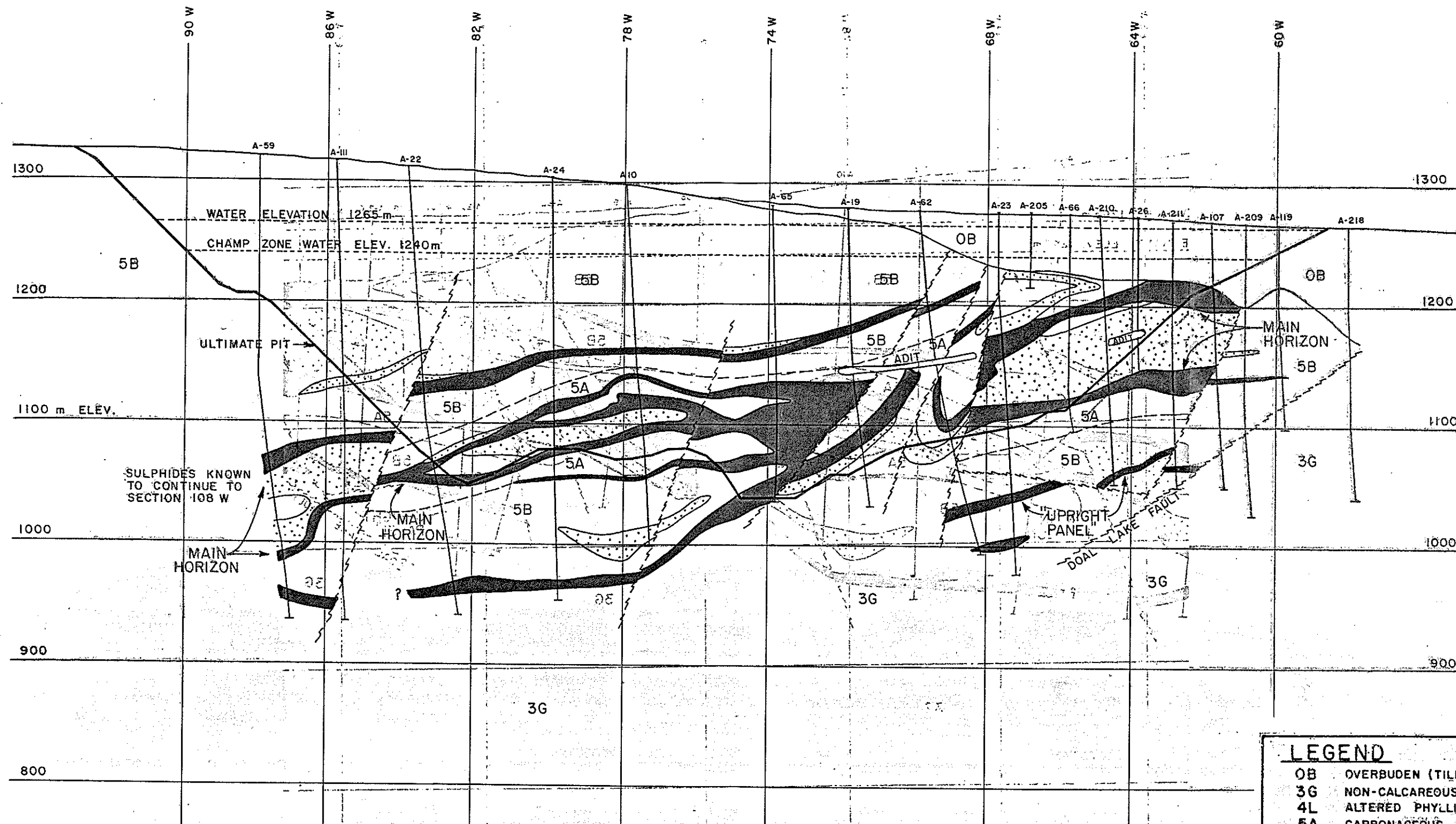
LEGEND

- OB OVERBUDEN (TILL)
- 3G NON-CALCAREOUS PHYLLITE
- 4L ALTERED PHYLLITE
- 5A CARBONACEOUS PHYLLITE
- 5B CALCAREOUS PHYLLITE
- MASSIVE SULPHIDES
- DISSEMINATED SULPHIDES

CURRAGH RESOURCES INC.

1:2000

FIGURE 2.11



LEGEND

- OB OVERBUDEN (TILL)
- 3G NON-CALCAREOUS PHYLLITE
- 4L ALTERED PHYLLITE
- 5A CARBONACEOUS PHYLLITE
- 5B CALCAREOUS PHYLLITE
- MASSIVE SULPHIDES
- DISSEMINATED SULPHIDES

LONG SECTION 02N
GRUM DEPOSIT

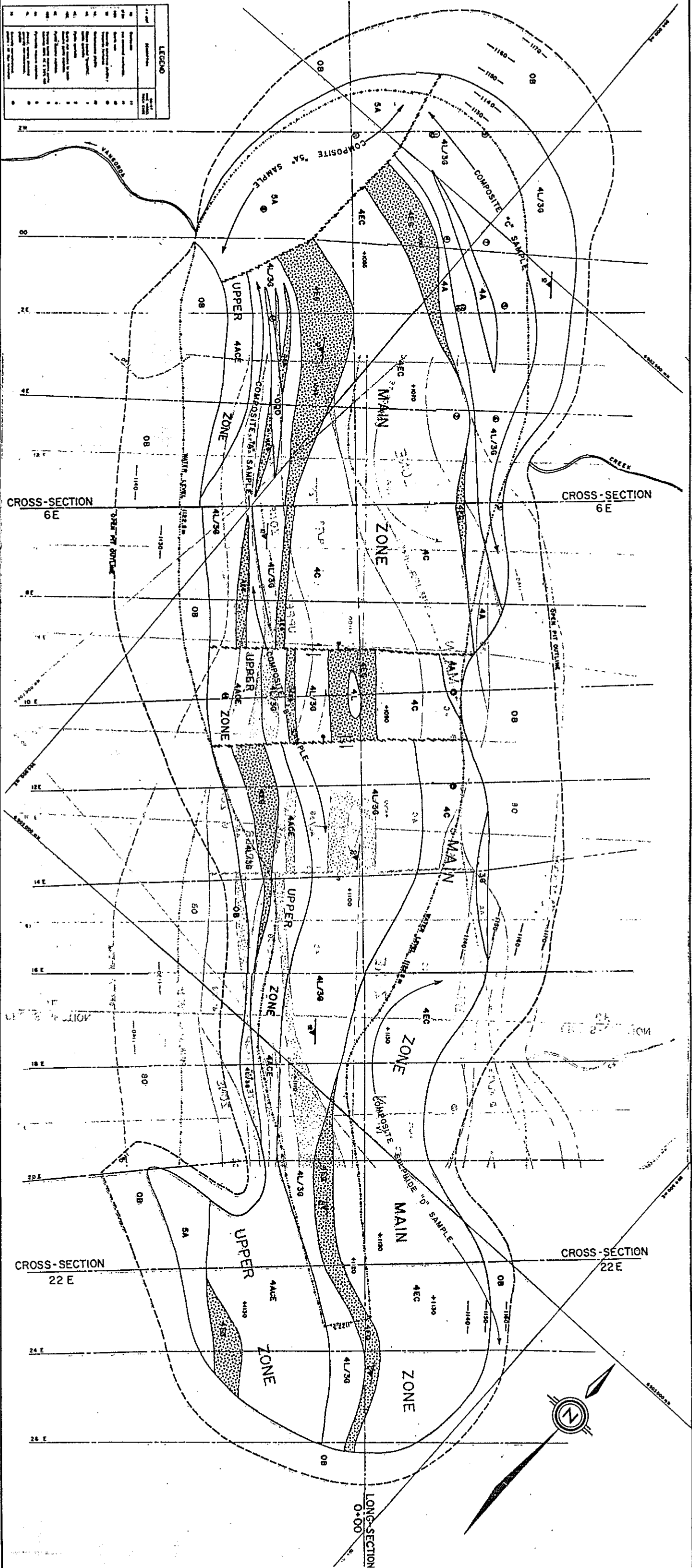
GRUM DEPOSIT LONG SECTION 02N		CURRAGH RESOURCES INC.	
		1:3500	FIGURE 2.13

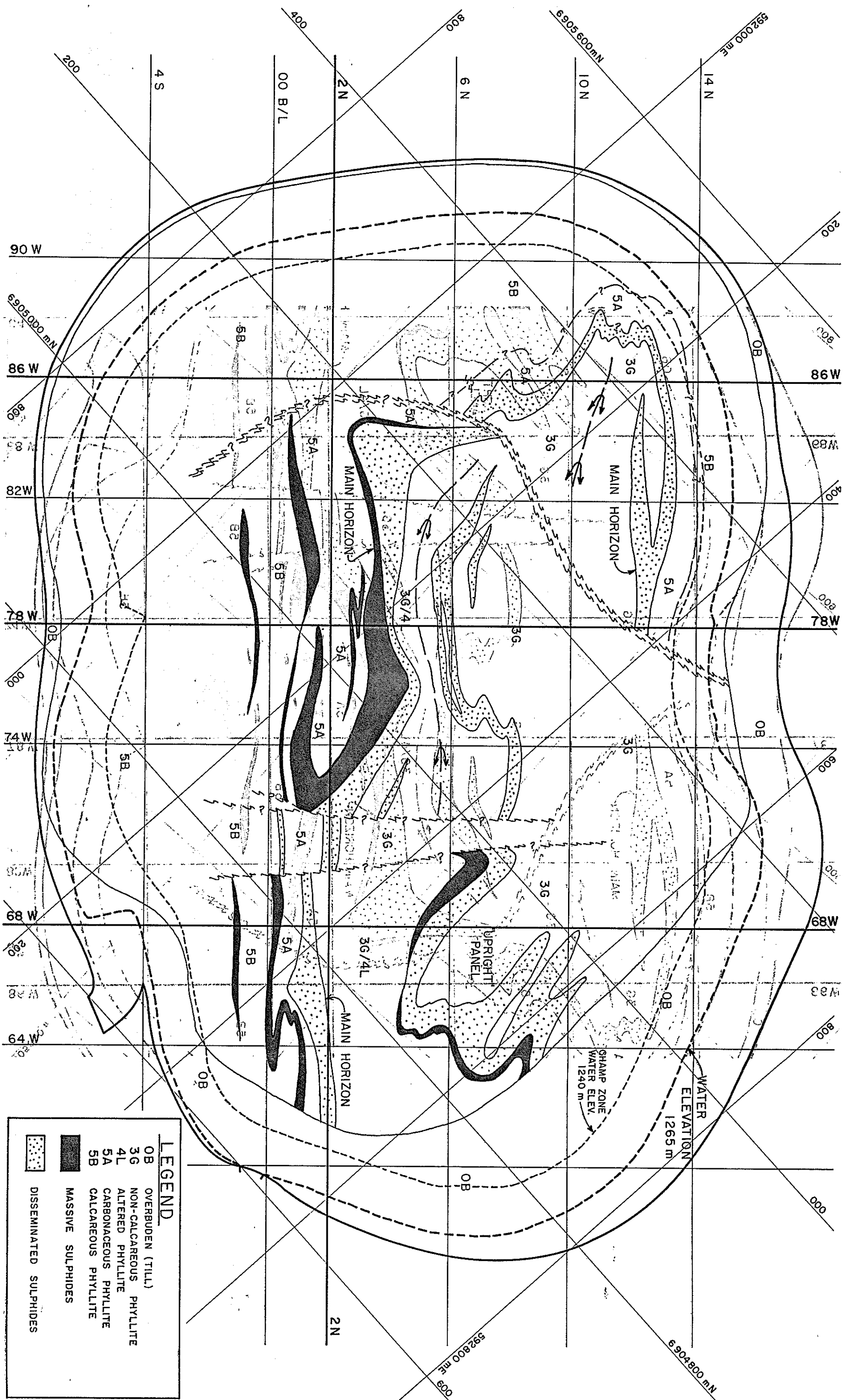
○ SLAKE TEST SAMPLE
 — COMPOSITE X SAMPLE —
 — GENERAL LOCATION OF BLOCK SAMPLES FOR ACID/SLAKE TESTS —
 — 1120 — ELEVATION IN FEET
 — 1130 —

VANGORDA OPEN/PIT GEOLOGY



FIGURE 2.14





LEGEND

OB	OVERBUDEN (TILL)
3G	NON-CALCAREOUS PHYLLITE
4L	ALTERED PHYLLITE
5A	CARBONACEOUS PHYLLITE
5B	CALCAREOUS PHYLLITE
	MASSIVE SULPHIDES
	DISSEMINATED SULPHIDES

714 1390 MURD
Y001030

GRUM OPEN PIT
GEOLOGY

CURRAGH RESOURCES INC.
1:3500
FIGURE 2.15

CURRAGH RESOURCES INC.
PLATEAU DEVELOPMENT ACTIVITIES

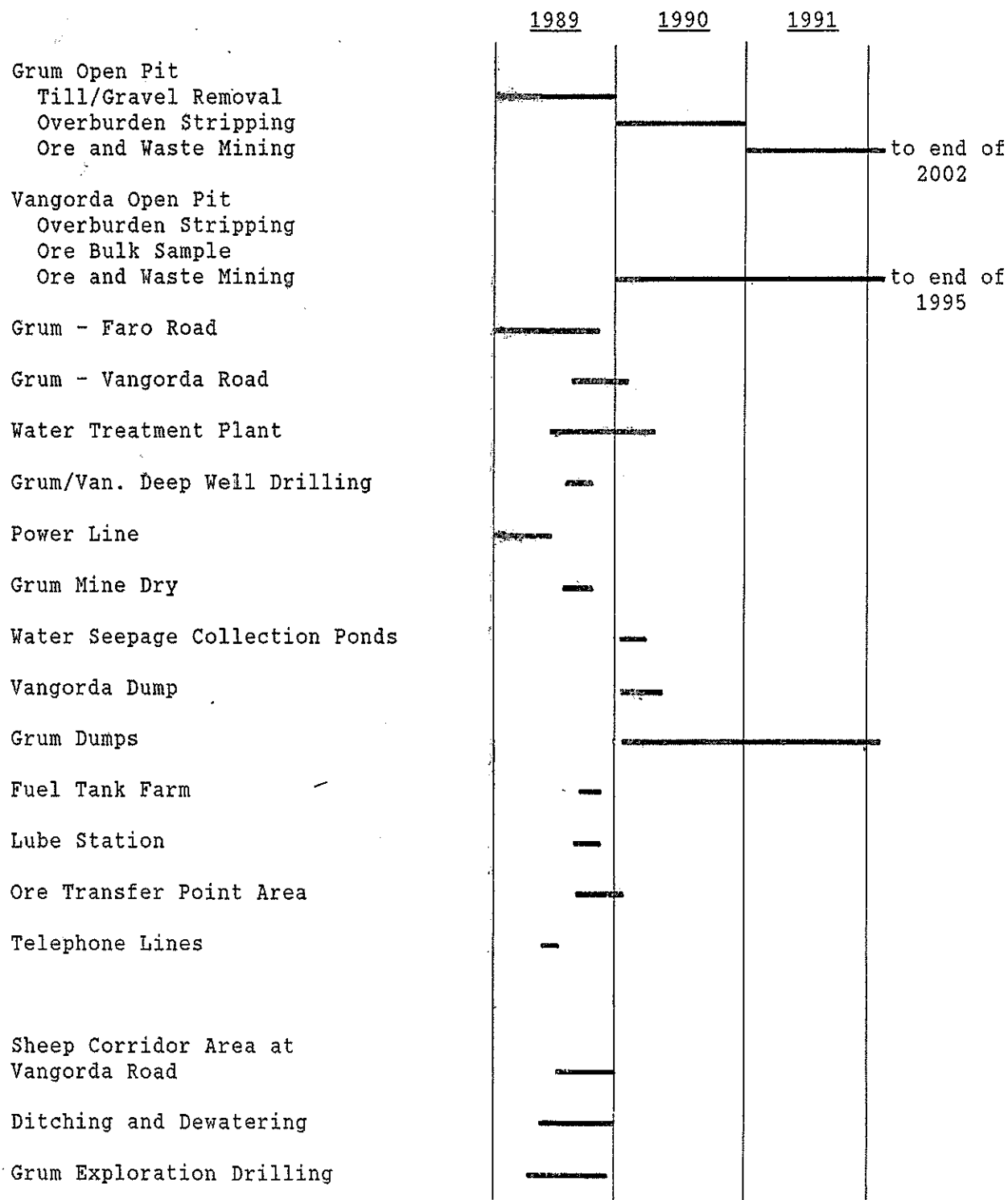


FIGURE 2.17

CURRAGH RESOURCES INC.

LONG RANGE PRODUCTION ALTERNATIVE

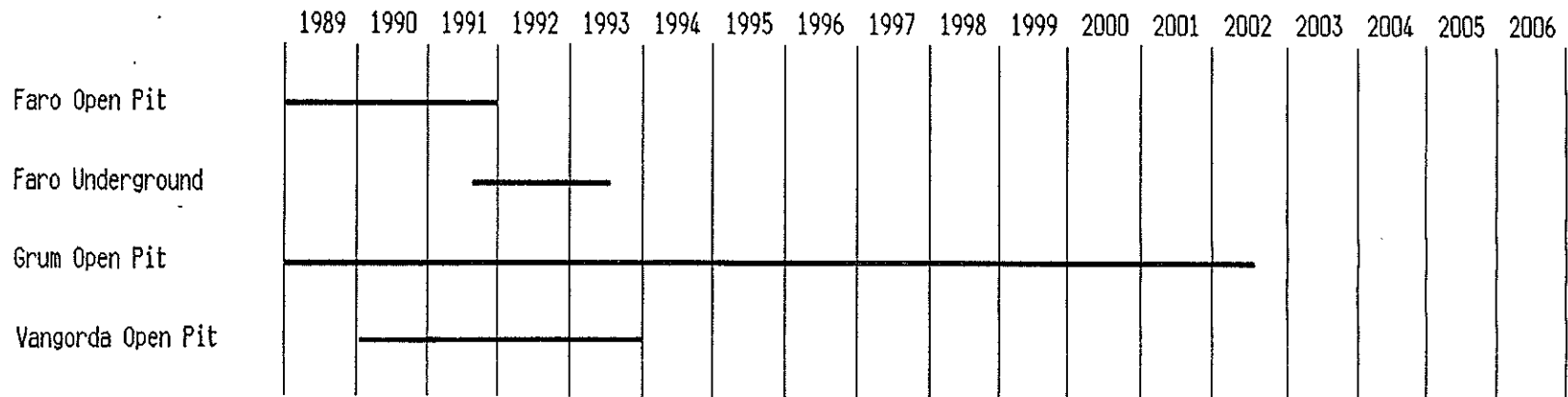
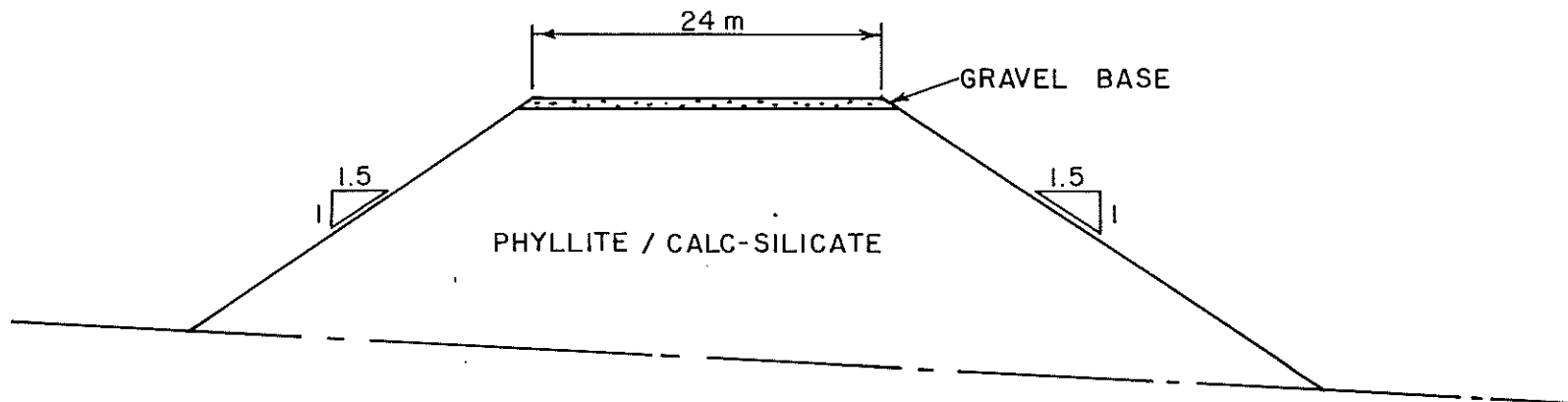
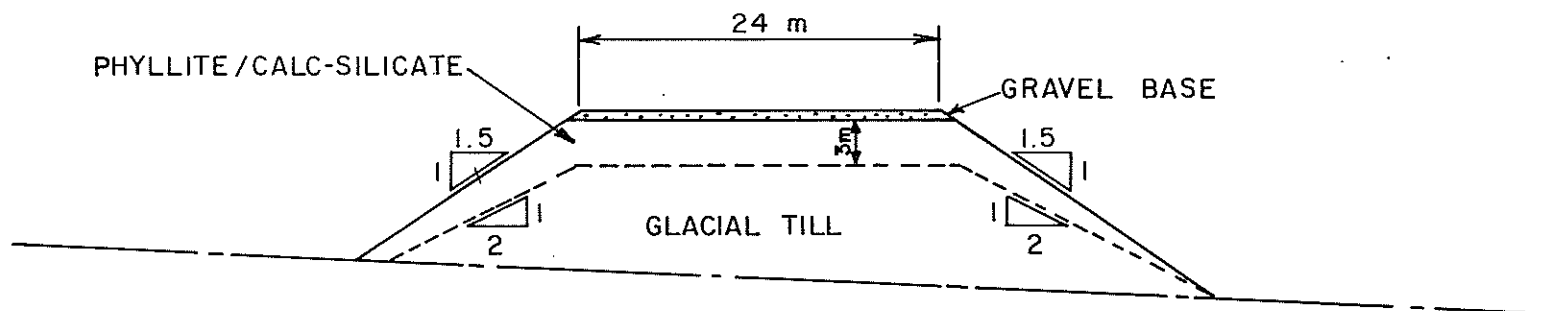


FIGURE 2.18

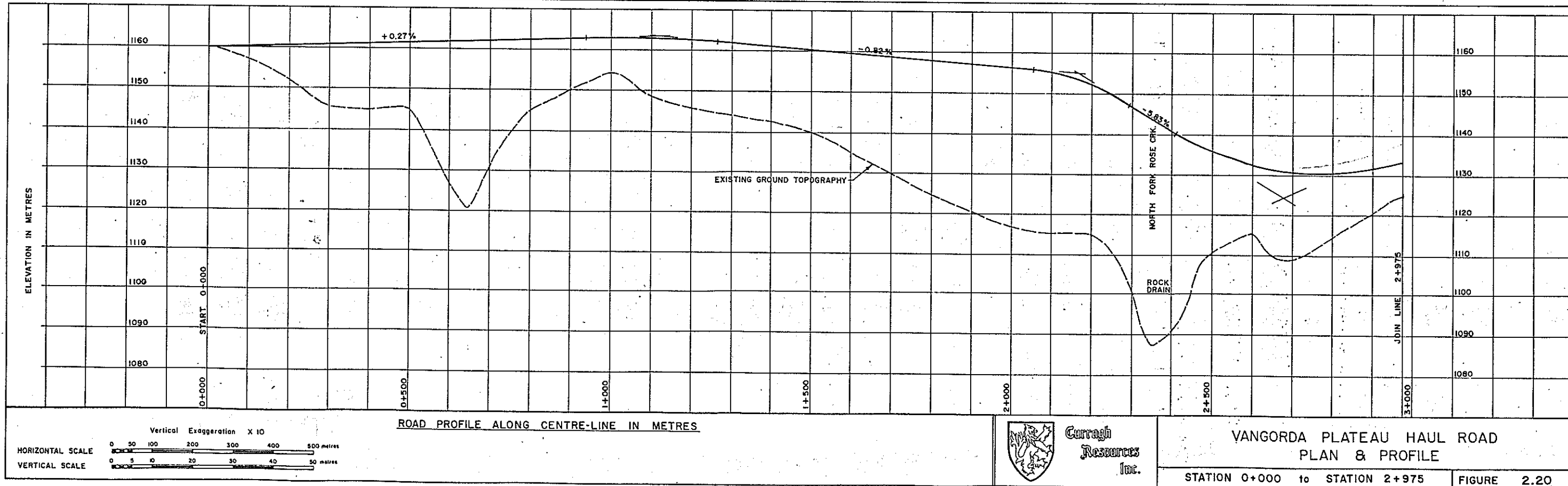
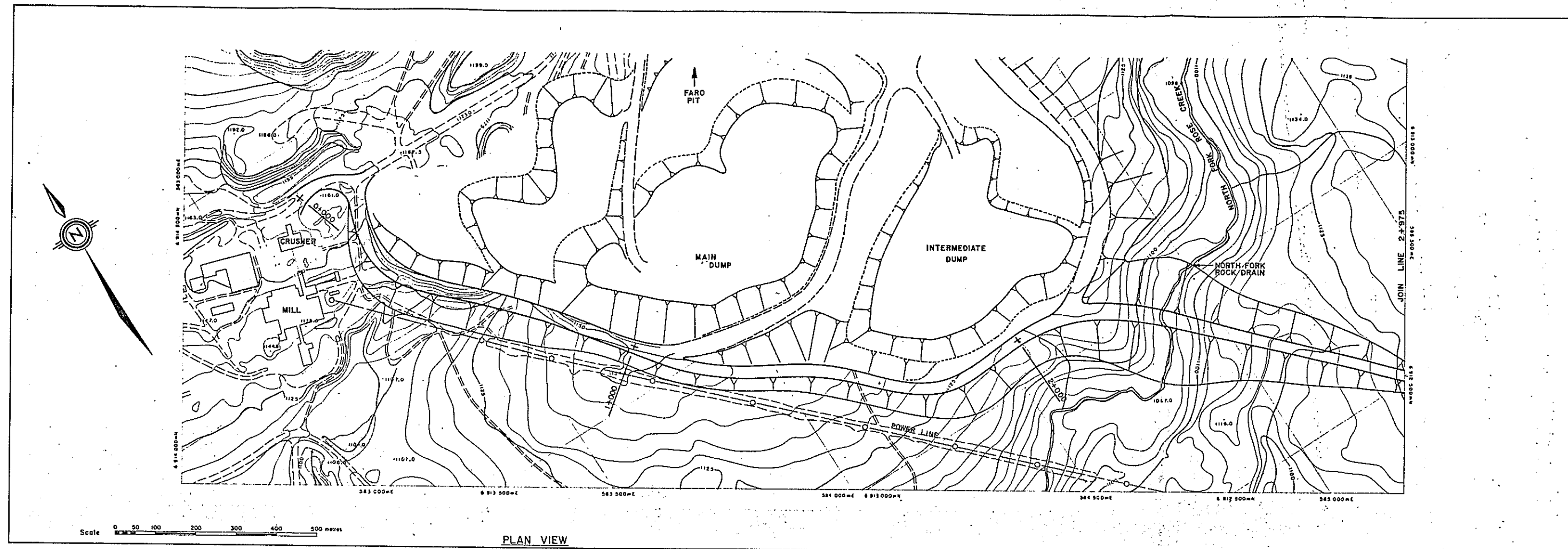


TYPICAL ROAD SECTION
STATION 0+000 to 10+000



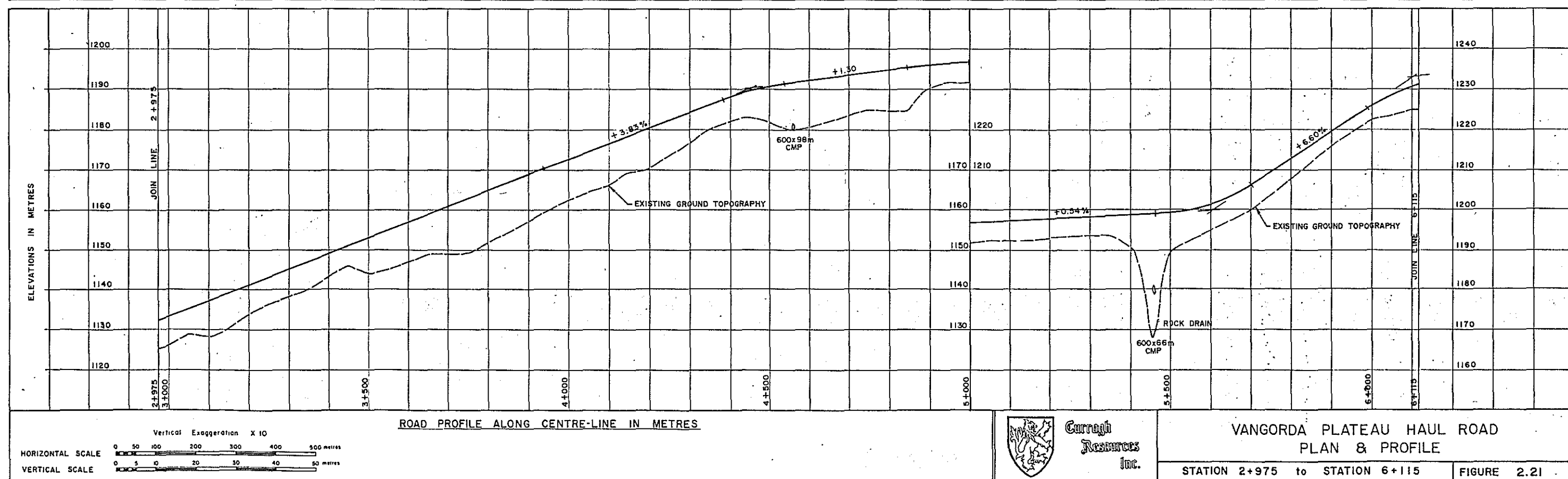
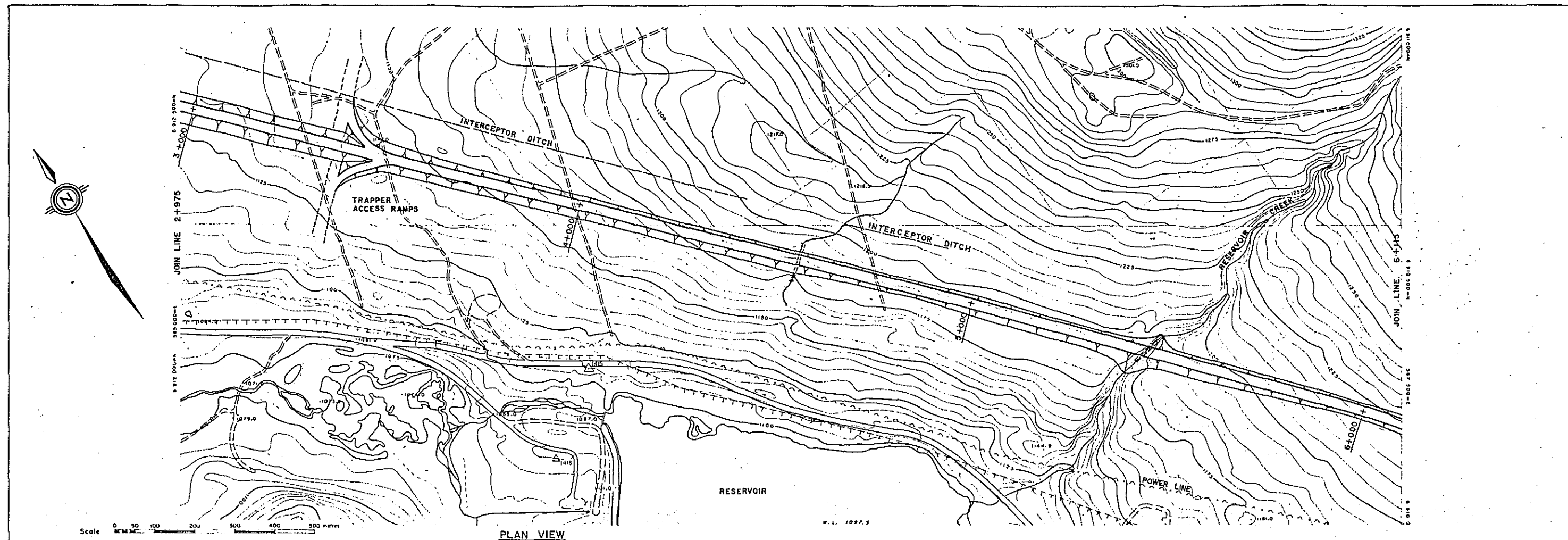
TYPICAL ROAD SECTION
STATION 10+000 to 16+000

TYPICAL HAUL ROAD SECTIONS	CURRAGH RESOURCES INC.	
	1:500	FIGURE 2.19



VANGORDA PLATEAU HAUL ROAD
PLAN & PROFILE

STATION 0+000 to STATION 2+975 FIGURE 2.20

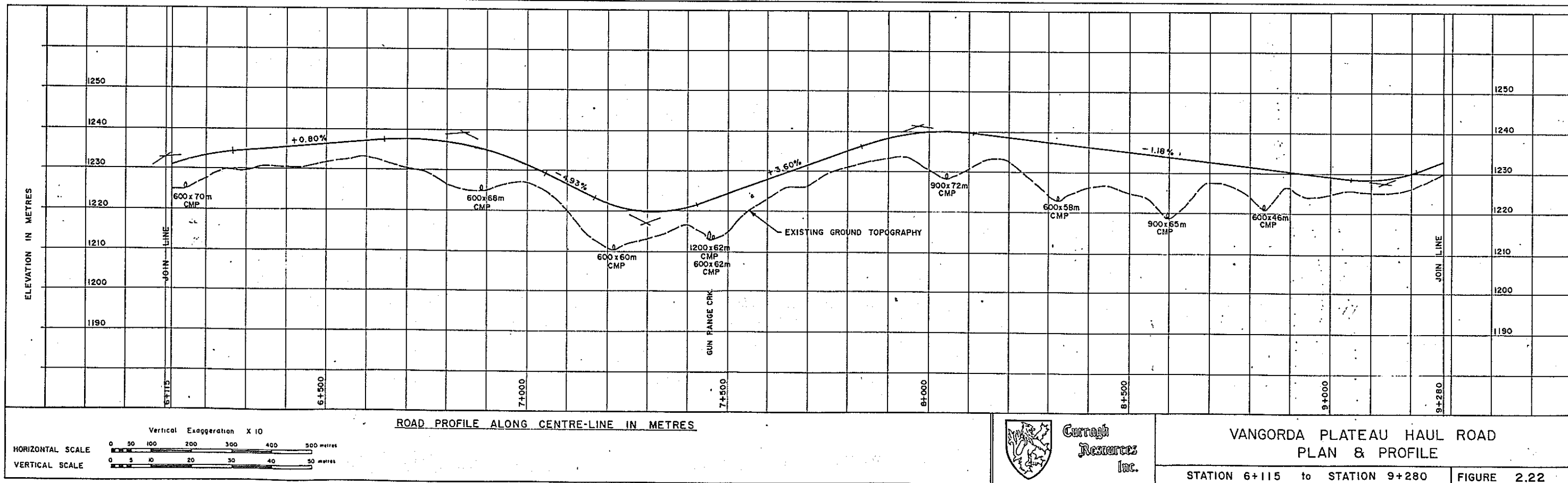
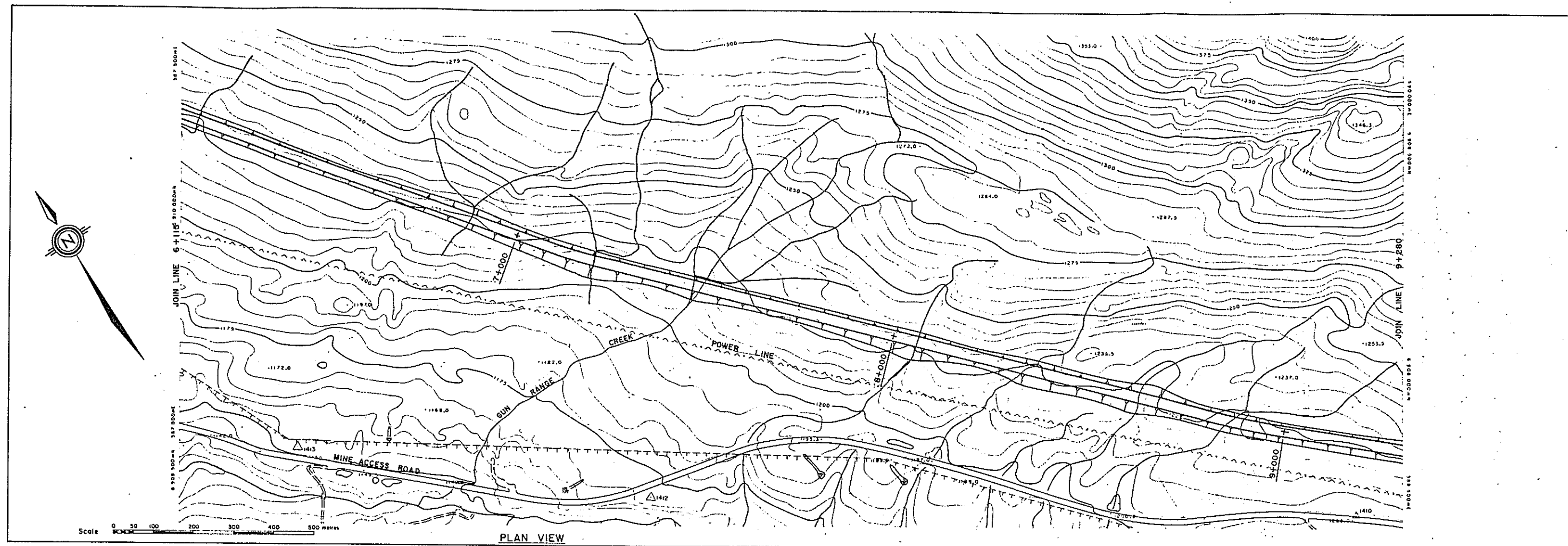


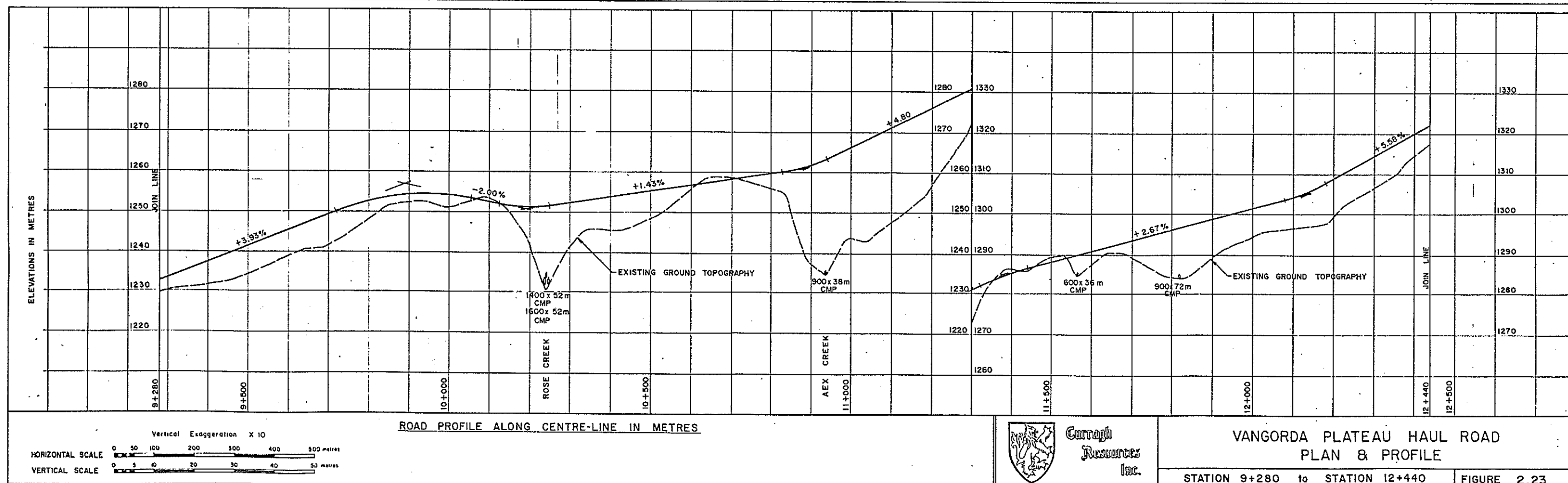
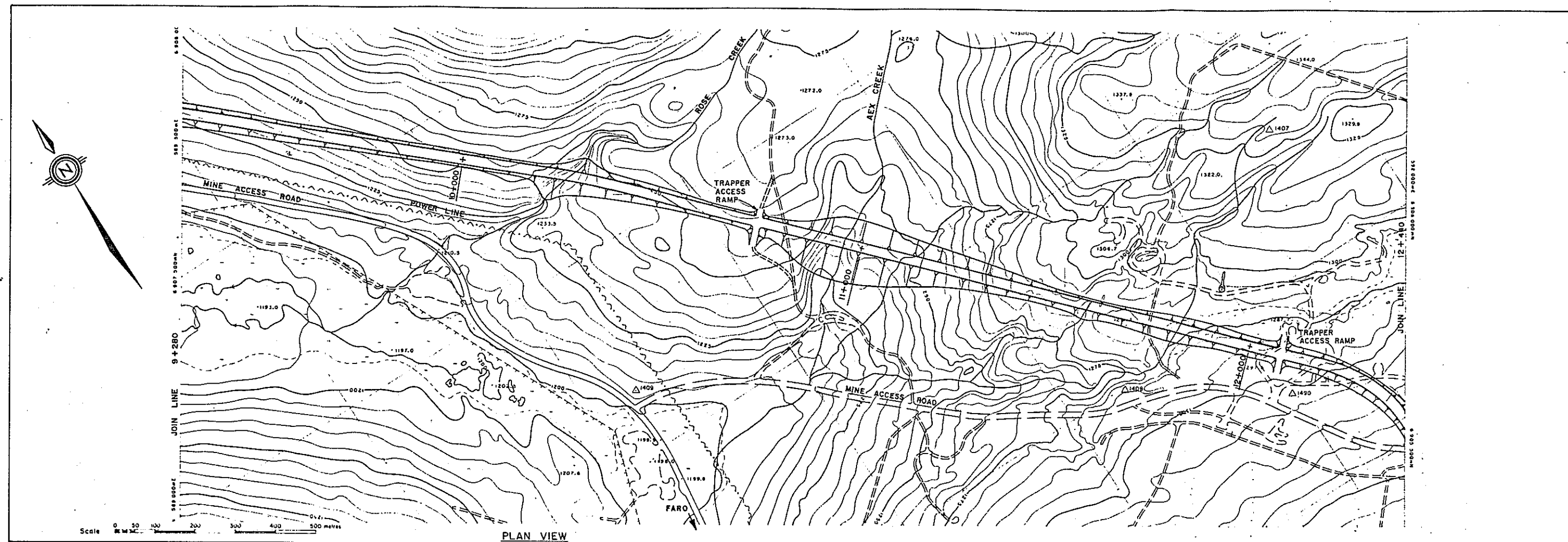
Curragh
Resources
Inc.

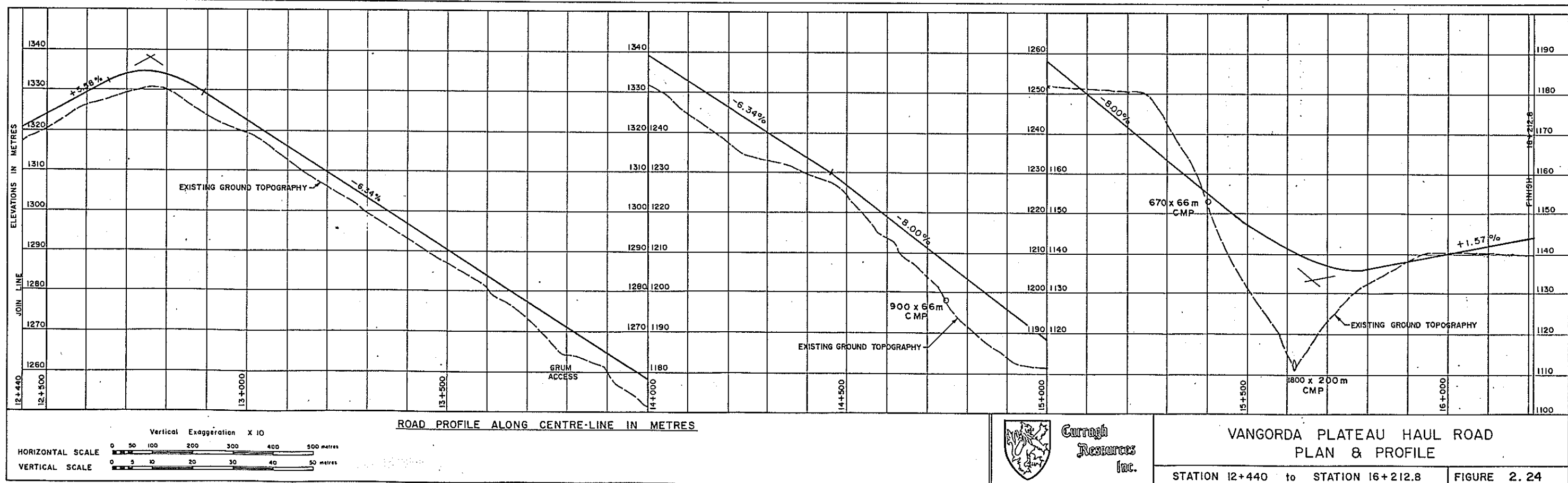
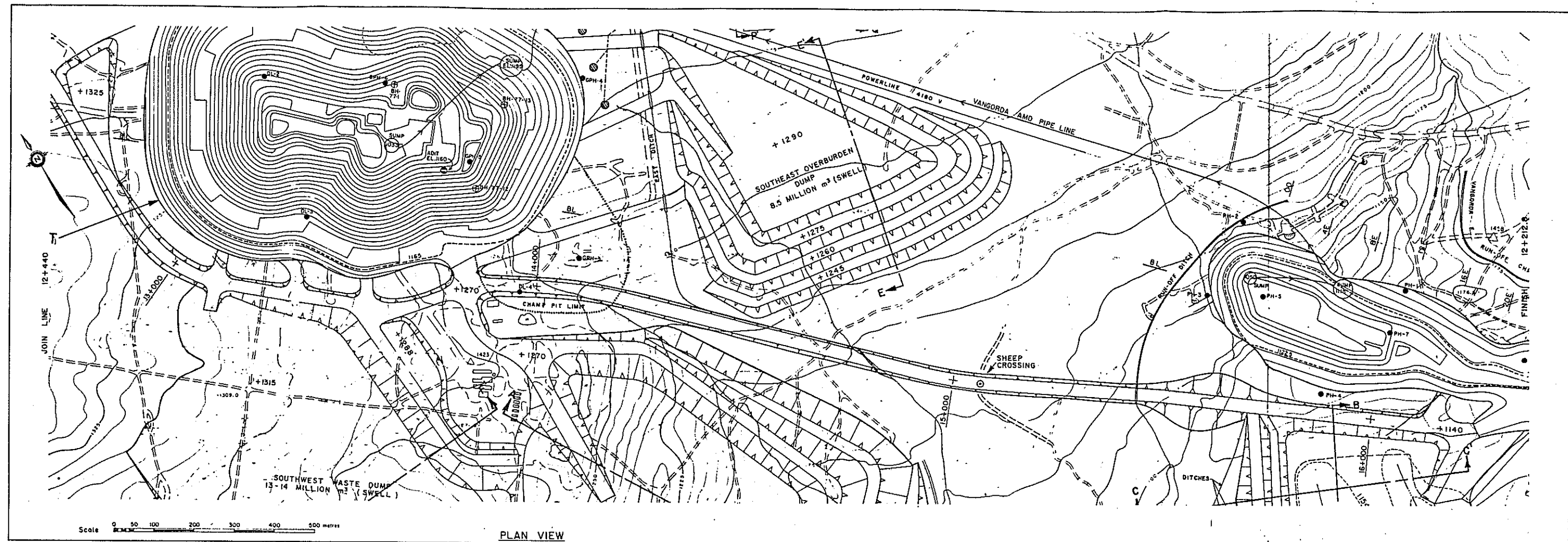
VANGORDA PLATEAU HAUL ROAD
PLAN & PROFILE

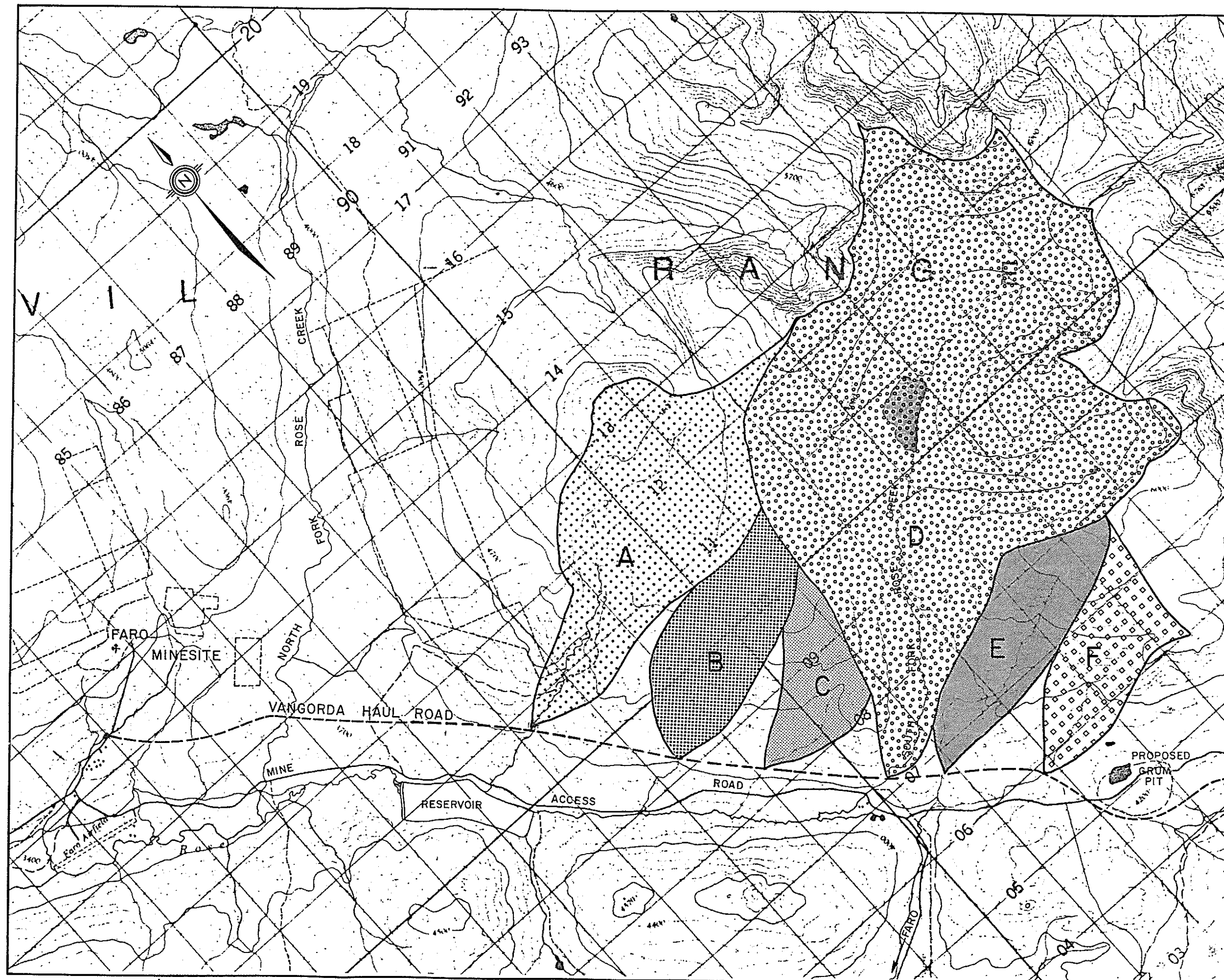
STATION 2+975 to STATION 6+115

FIGURE 2.21









WATERSHED AREAS

WATERSHED	AREA (km ²)
A RESERVOIR CREEK	7.6
B GUN RANGE CREEK	3.4
C UN-NAMED CREEK	1.9
D SOUTH FORK ROSE CREEK	24.9
E AEX CREEK	3.3
F SOUTH FORK AEX CREEK	2.7

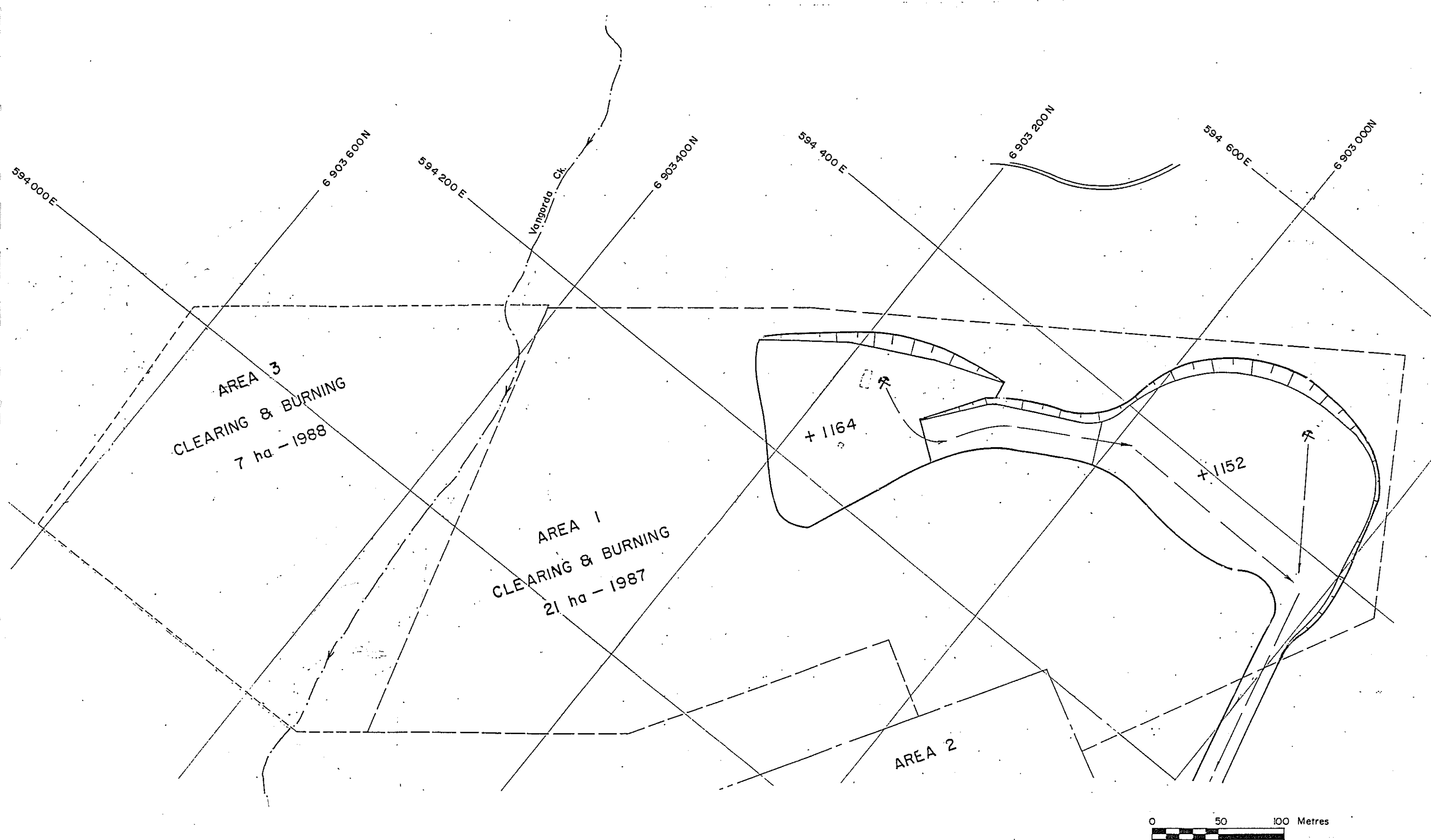
CURRAGH RESOURCES INC.

WATERSHED AREAS
of
CREEK & STREAMS
crossing
VANGORDA HAUL ROAD

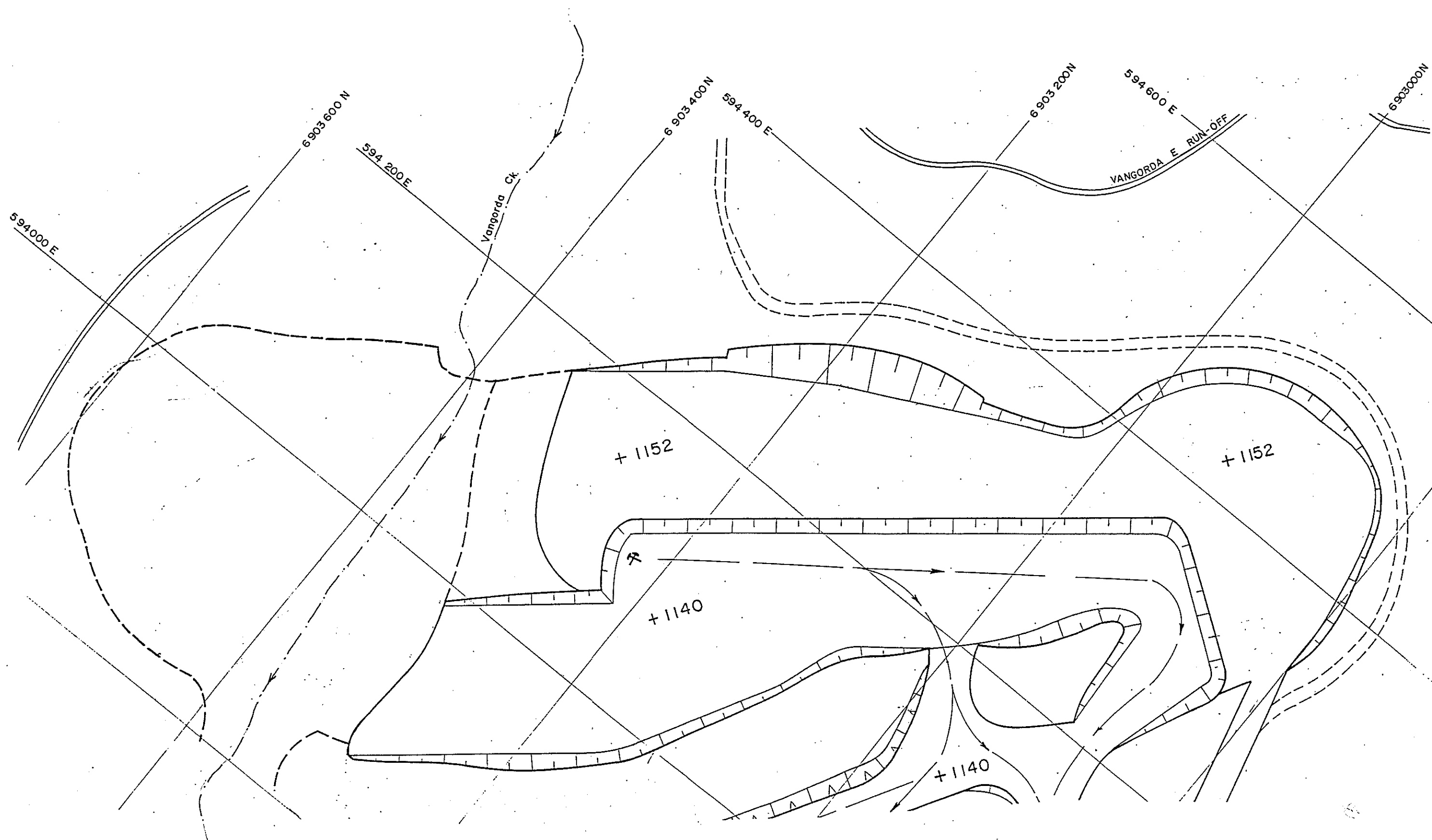
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DATE
88-06-29

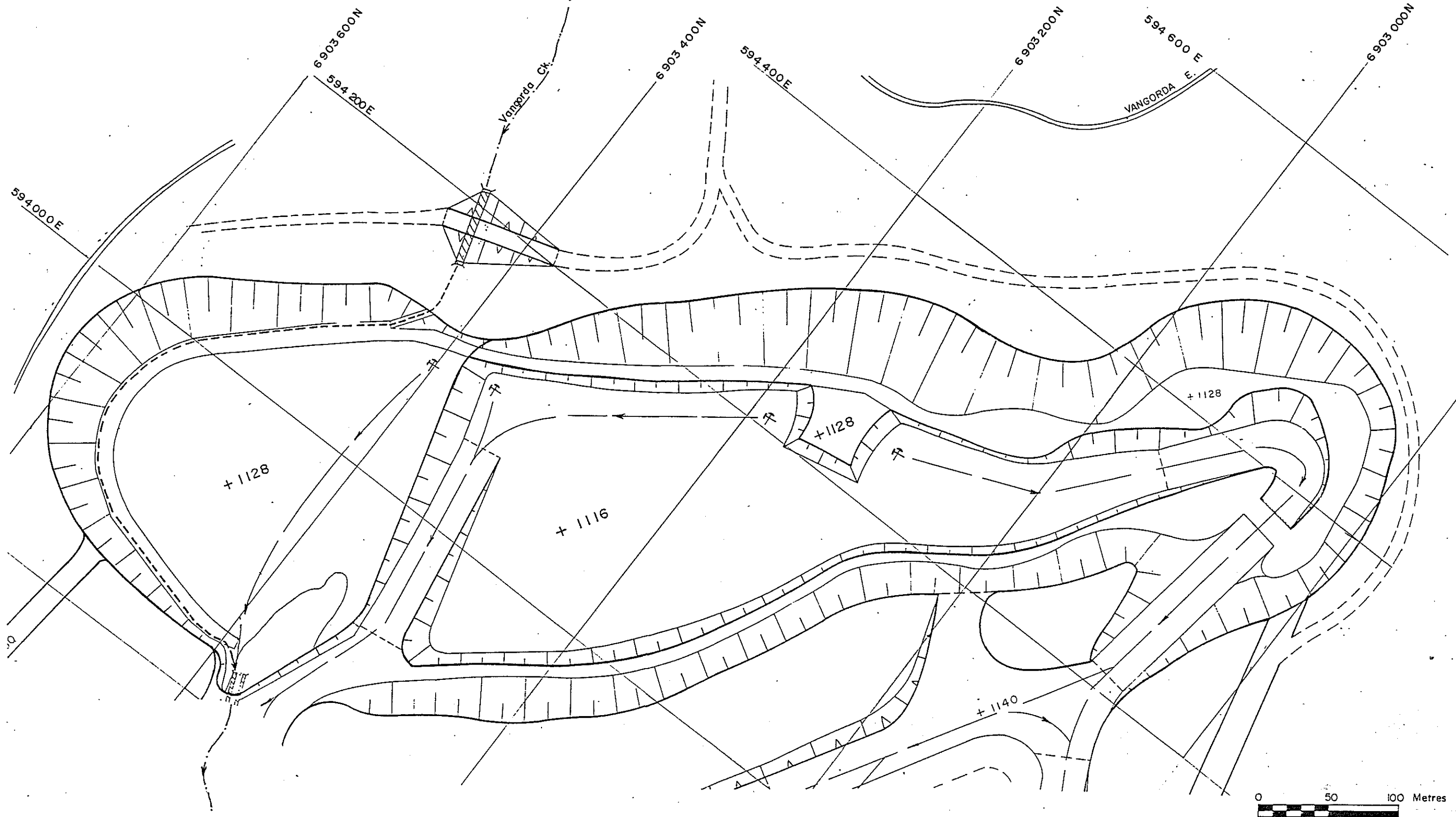
FIGURE 2.25



VANGORDA PIT PHASE I OF 14		CURRAGH RESOURCES INC.	
SCALE: NOT TO SCALE		FIGURE 2.26	



VANGORDA PIT PHASE 3 OF 14		CURRAGH RESOURCES INC.	
SCALE: NOT TO SCALE		FIGURE 2.27	

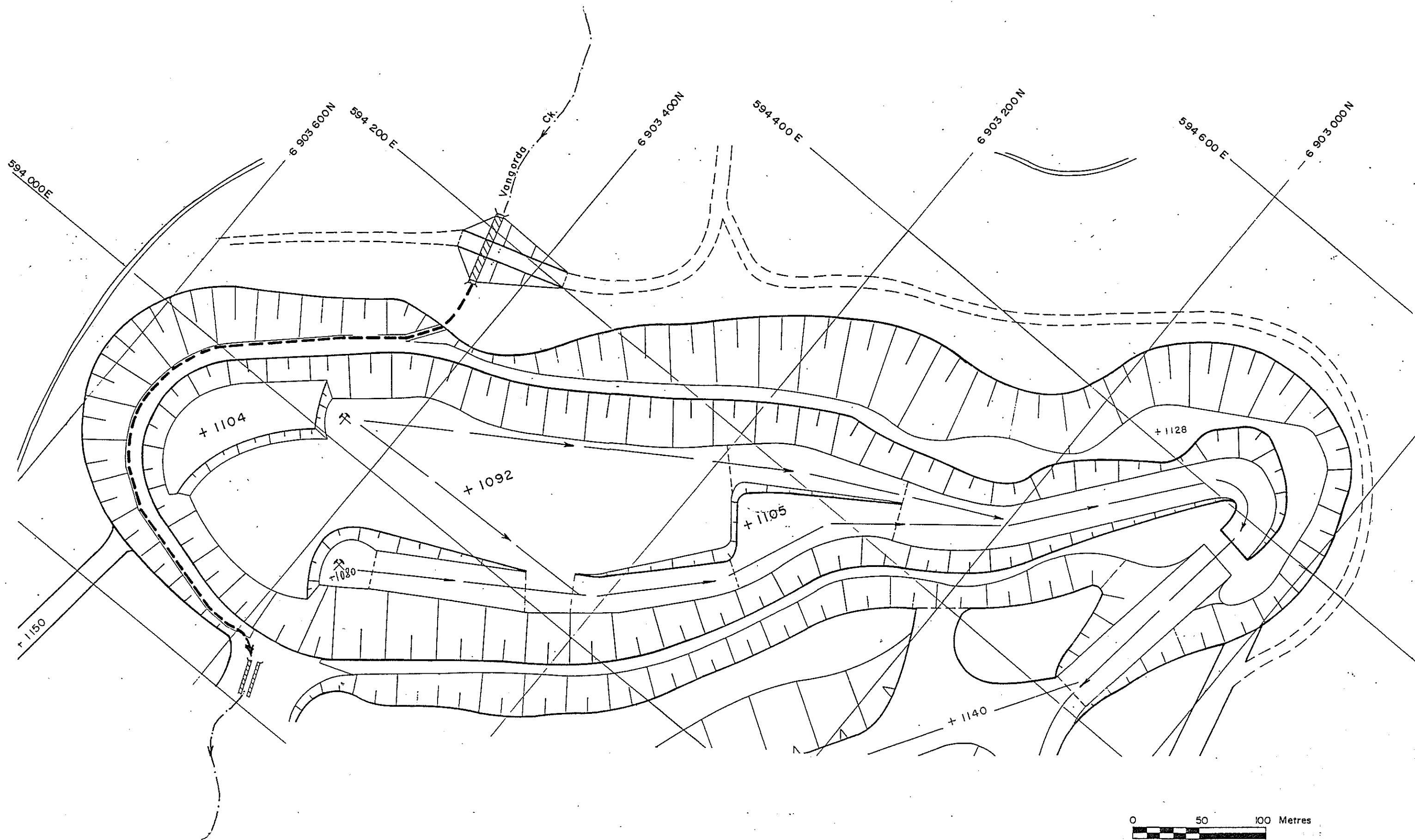


VANGORDA PIT
PHASE 6 OF 14

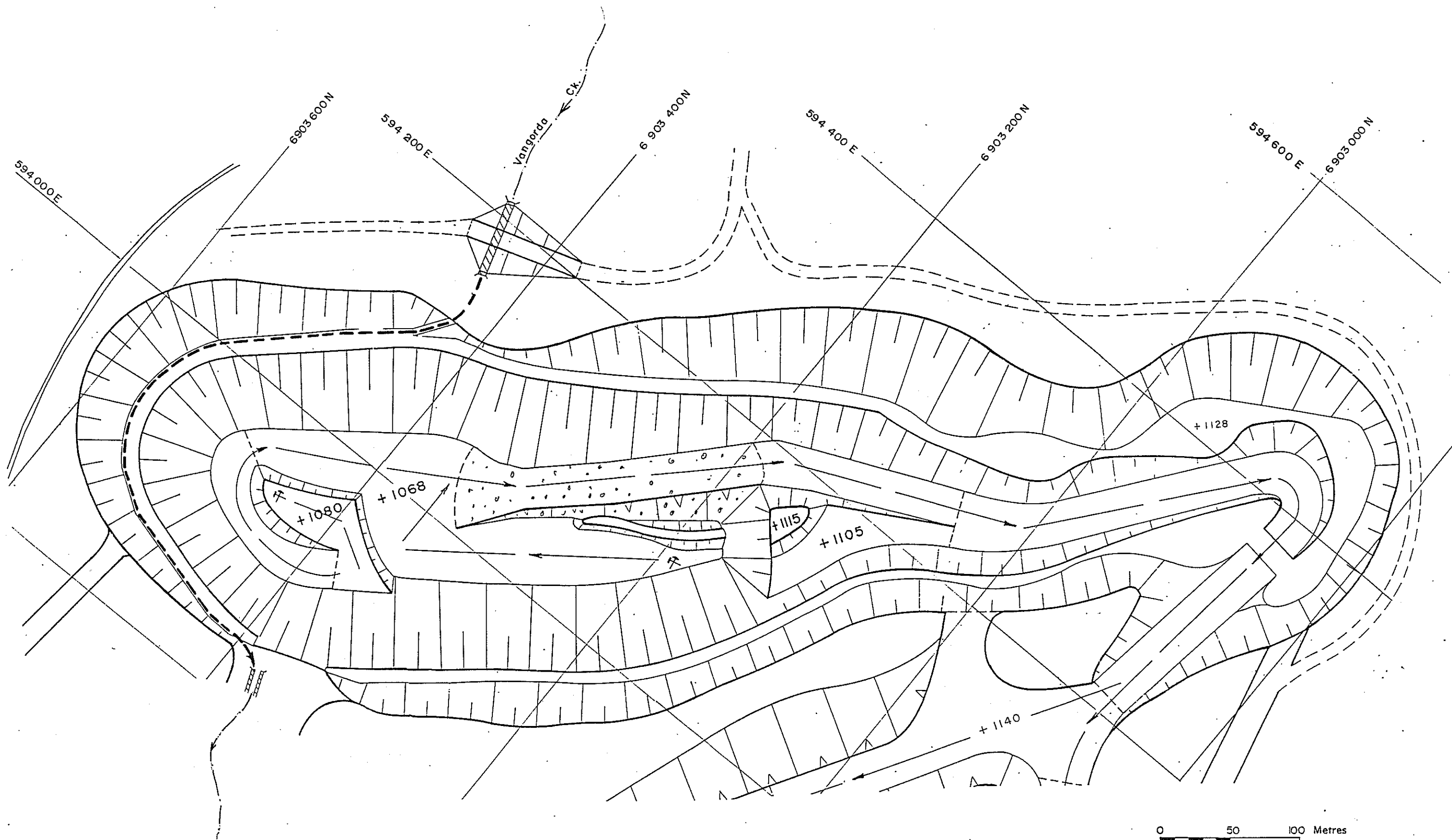
CURRAGH RESOURCES INC.

SCALE:
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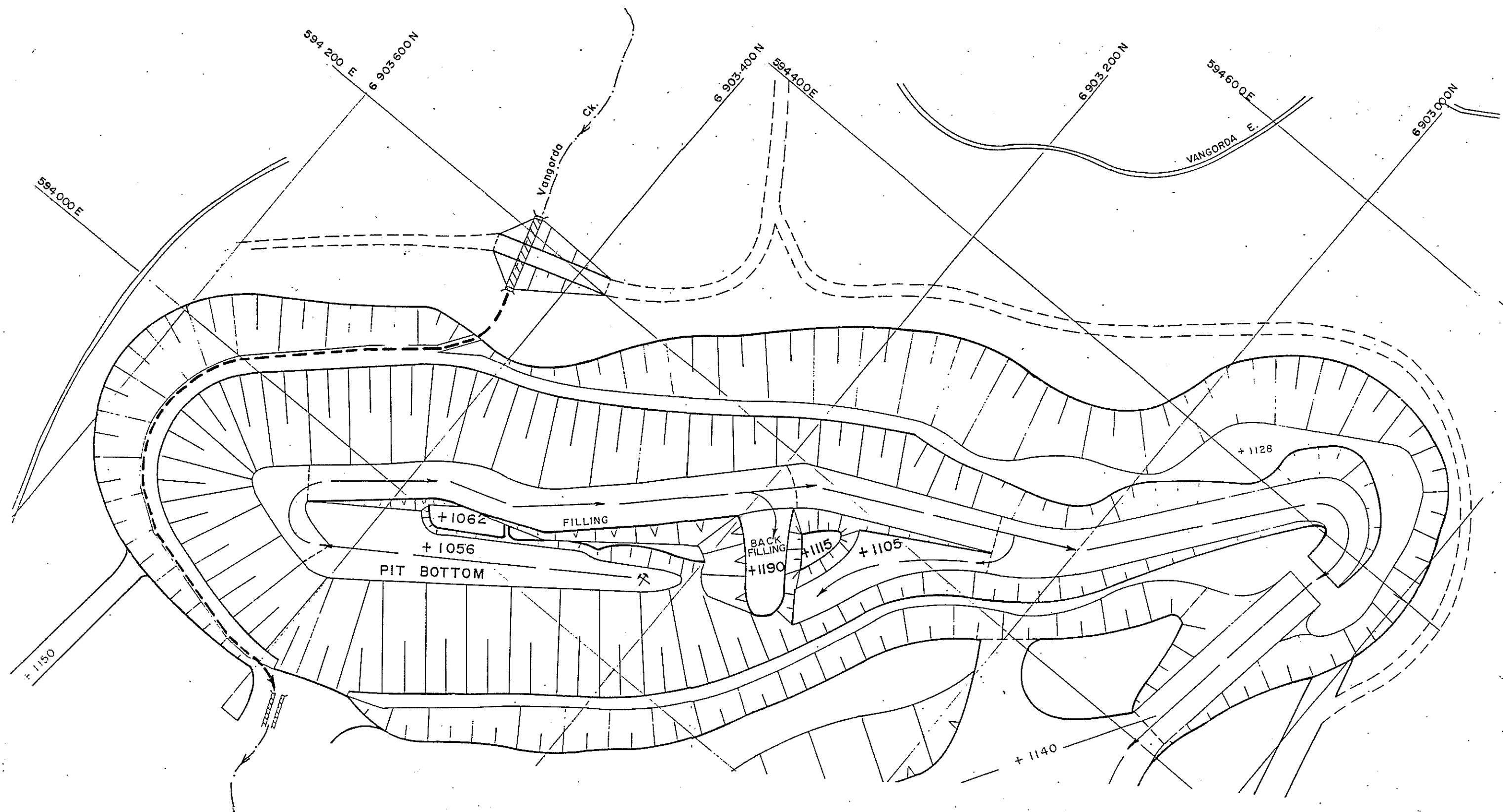
FIGURE 2.29



VANGORDA PIT PHASE 9 OF 14		CURRAGH RESOURCES INC.	
		SCALE: NOT TO SCALE	FIGURE 2.30



VANGORDA PIT PHASE 12 OF 14		CURRAGH RESOURCES INC.	
SCALE: NOT TO SCALE		FIGURE 2.31	

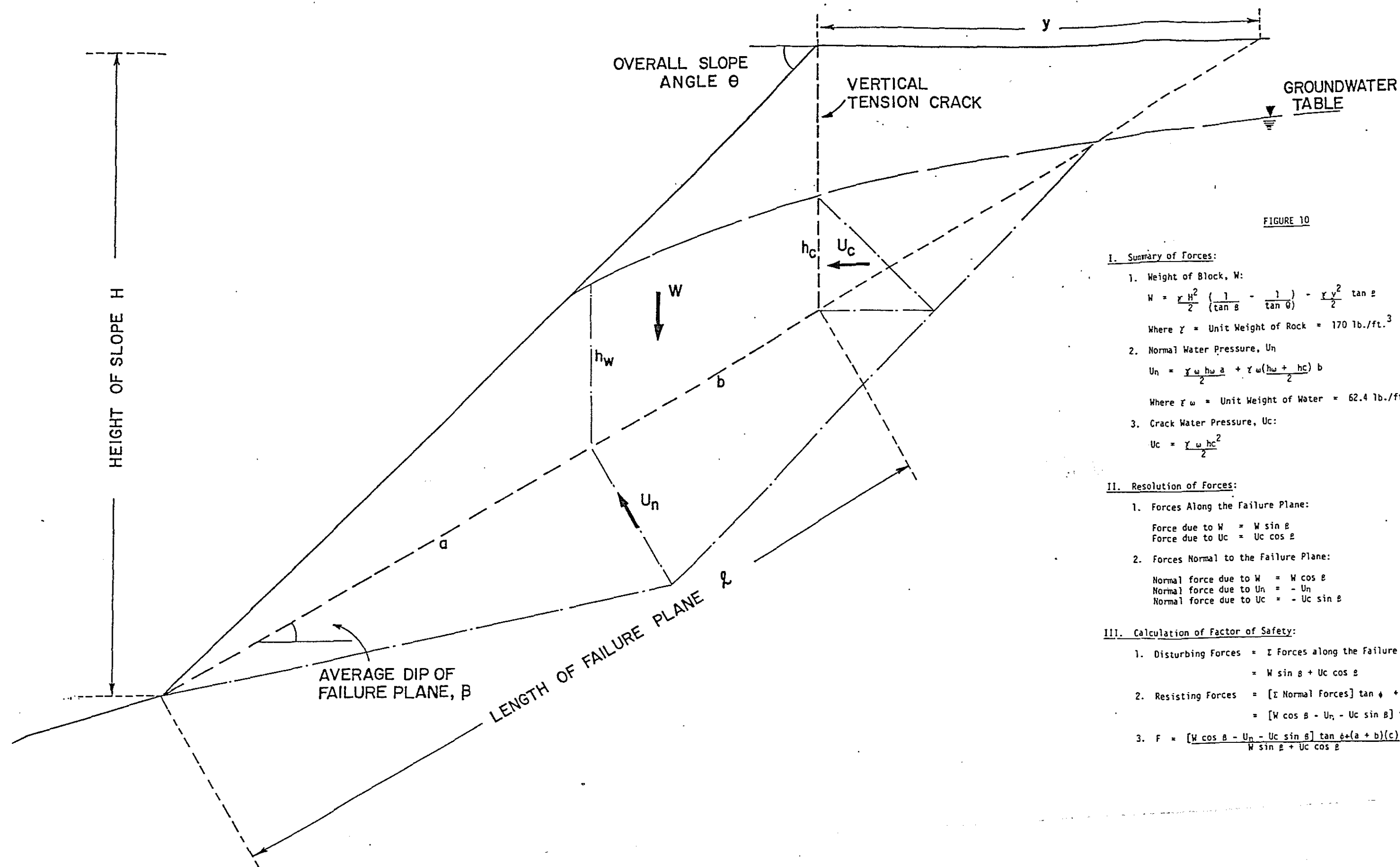


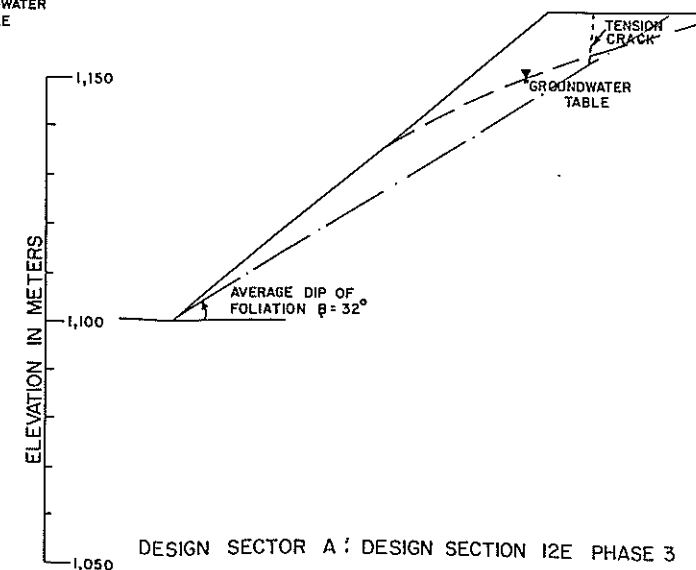
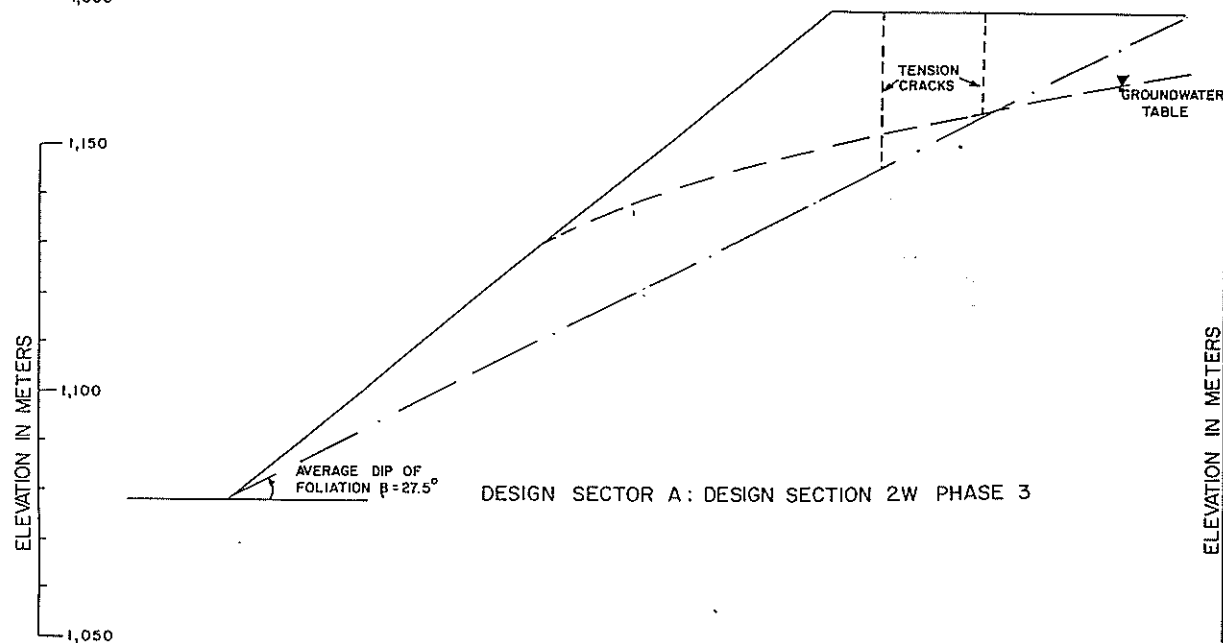
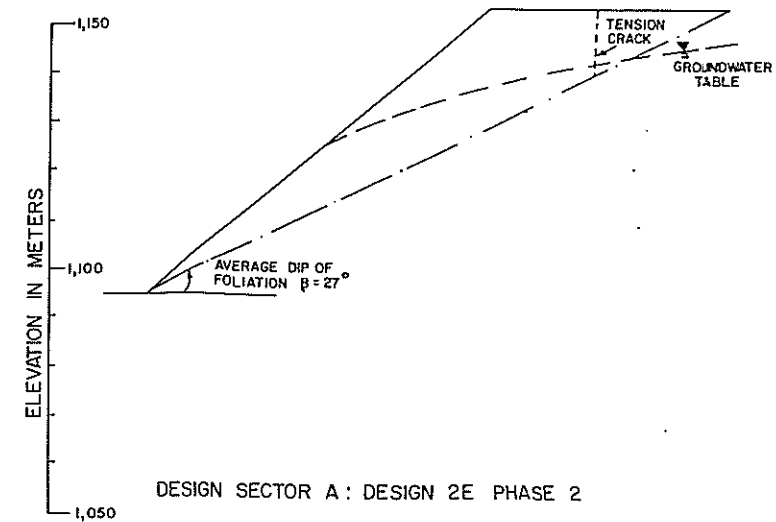
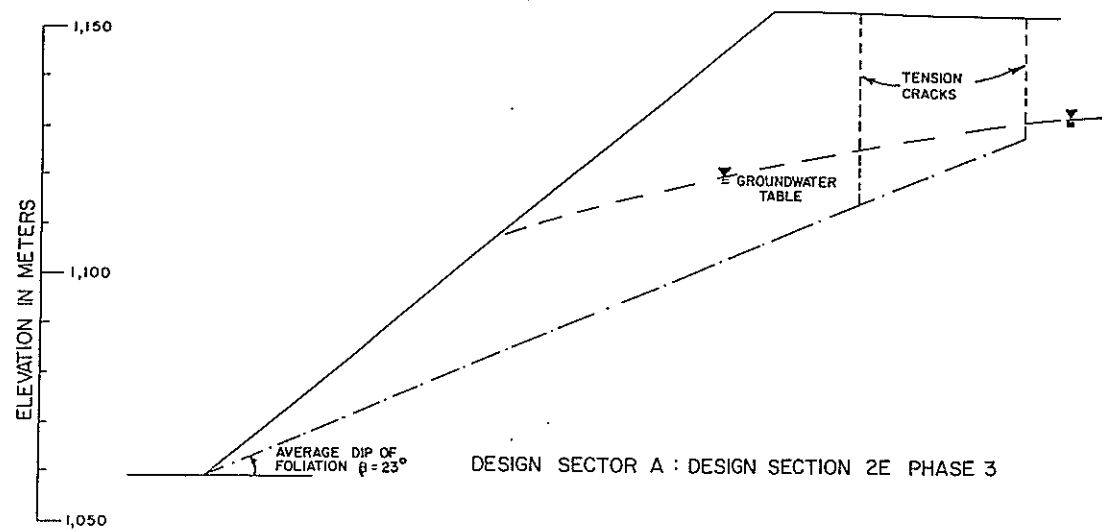
VANGORDA PIT
PHASE 14 OF 14

CURRAGH RESOURCES INC.

SCALE:
NOT TO SCALE

FIGURE 2.32



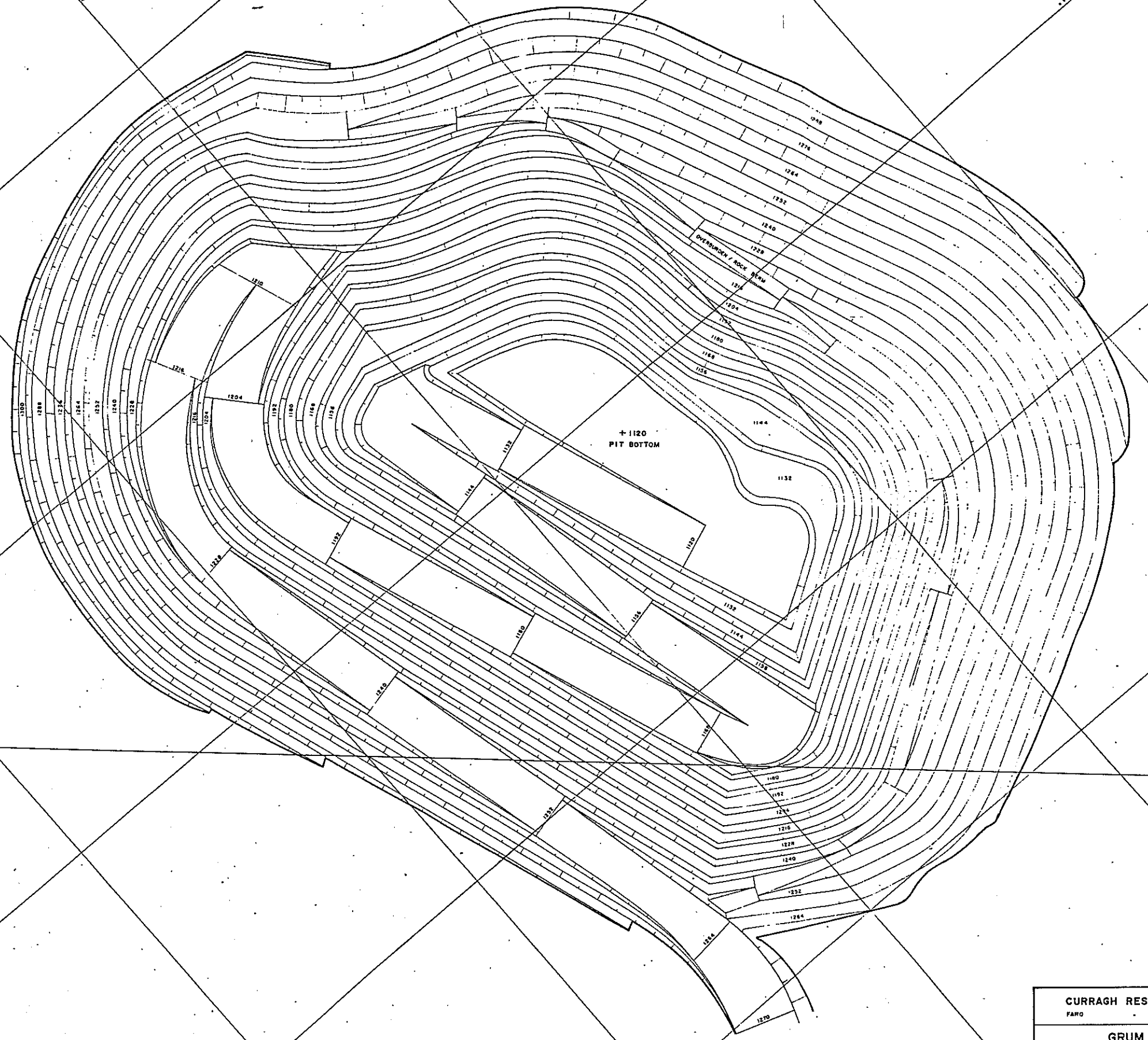


0 10 20 30 40 50 Meters
SCALE

ROCK STABILITY ANALYSIS
FAILURE PLANES

CURRAGH RESOURCES INC.

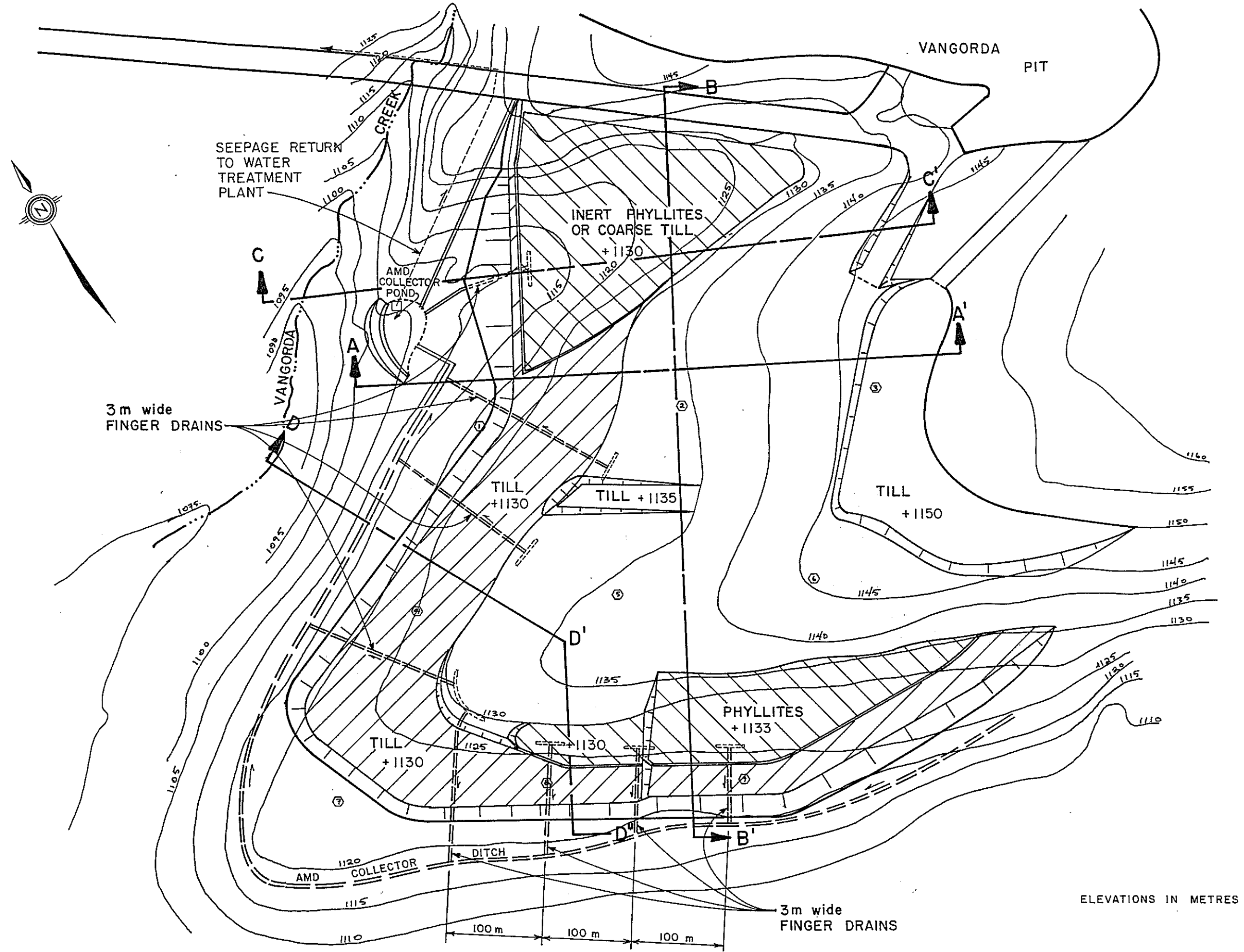
FIGURE 2.34



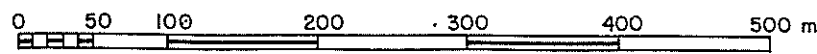
CURRAGH RESOURCES INC.	
FARGO YUKON TERRITORY	
GRUM PIT	
STAGE I PIT LIMITS	
BY 12m BENCHS	
Scale 1:1000	Drawn by B C BODDIE
Date MAY 1988	Checked by J. VINTILA
FIGURE 2.35	



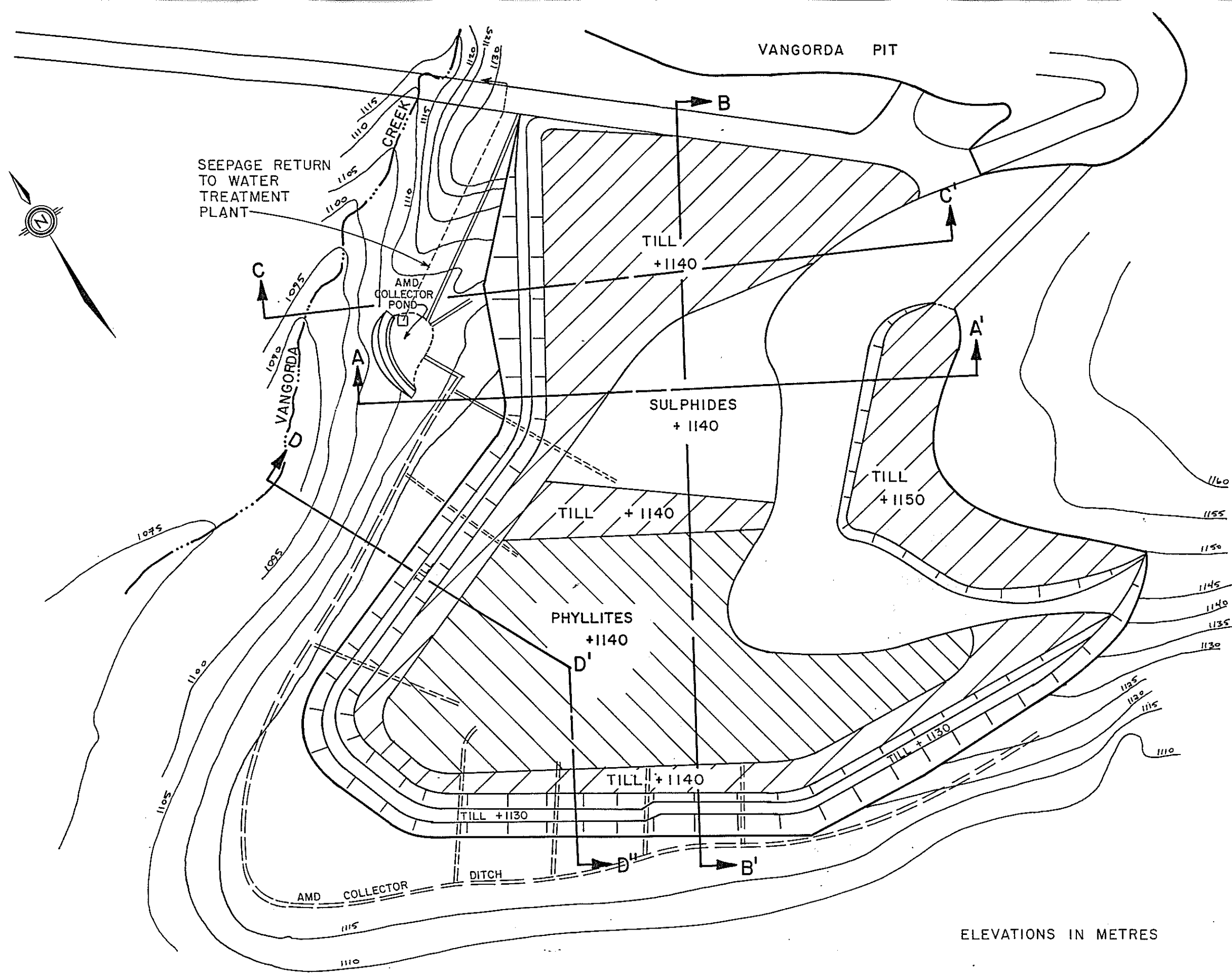
CURRAGH RESOURCES INC.	
FARO	TUKON TERRITORY
GRUM PIT	
STAGE II PIT LIMITS	
BY 12m BENCHS	
Scale 1:1000	Drawn by B. C. BOORSE
Date MAY 1988	Checked by J. VINTILA
FIGURE 2.36	



ELEVATIONS IN METRES

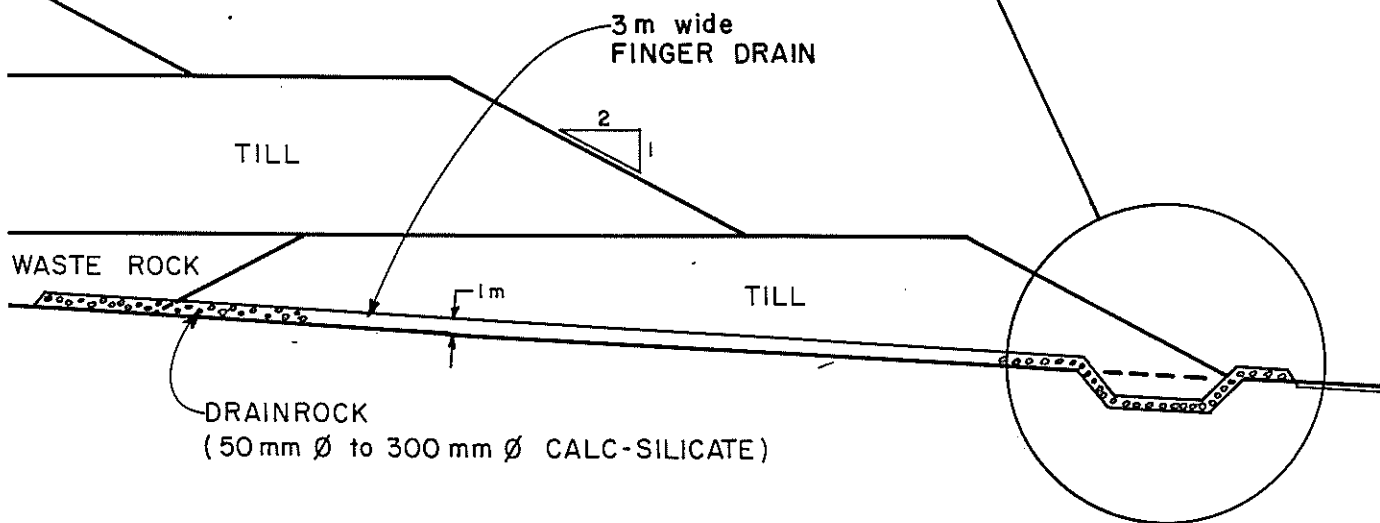
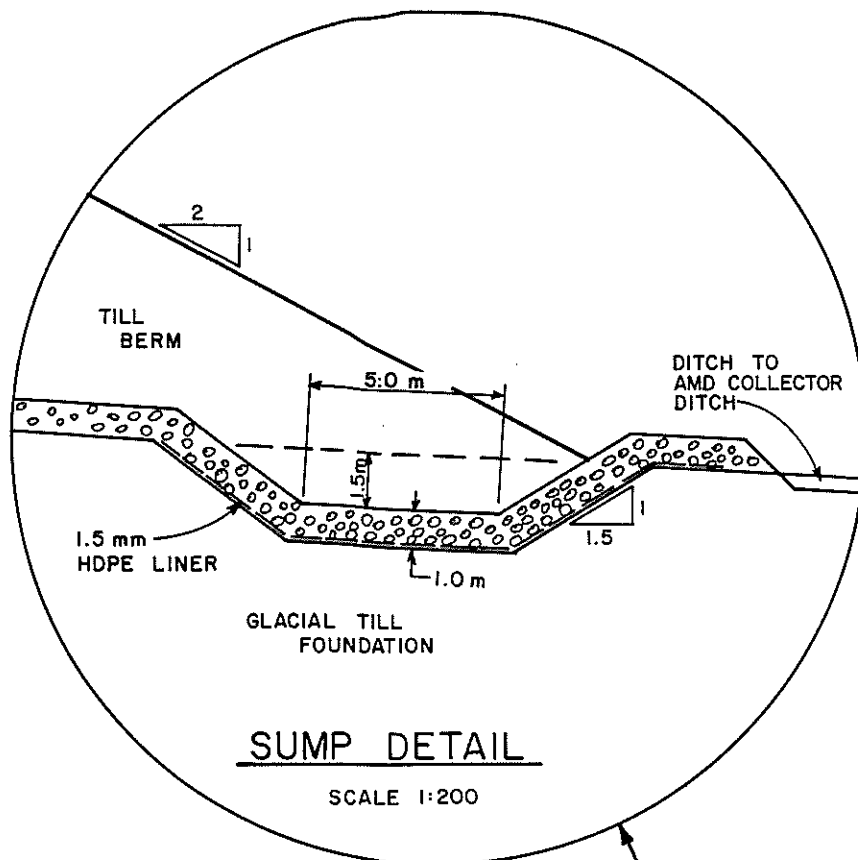


VANGORDA WASTE DUMP STAGE I at ELEV. 1130		CURRAGH RESOURCES INC.	
		SCALE 1:5 000	FIGURE 2.38



VANGORDA WASTE DUMP
STAGE 2 at ELEV. 1140

CURRAGH RESOURCES INC.	
SCALE 1:5000	FIGURE 2.39

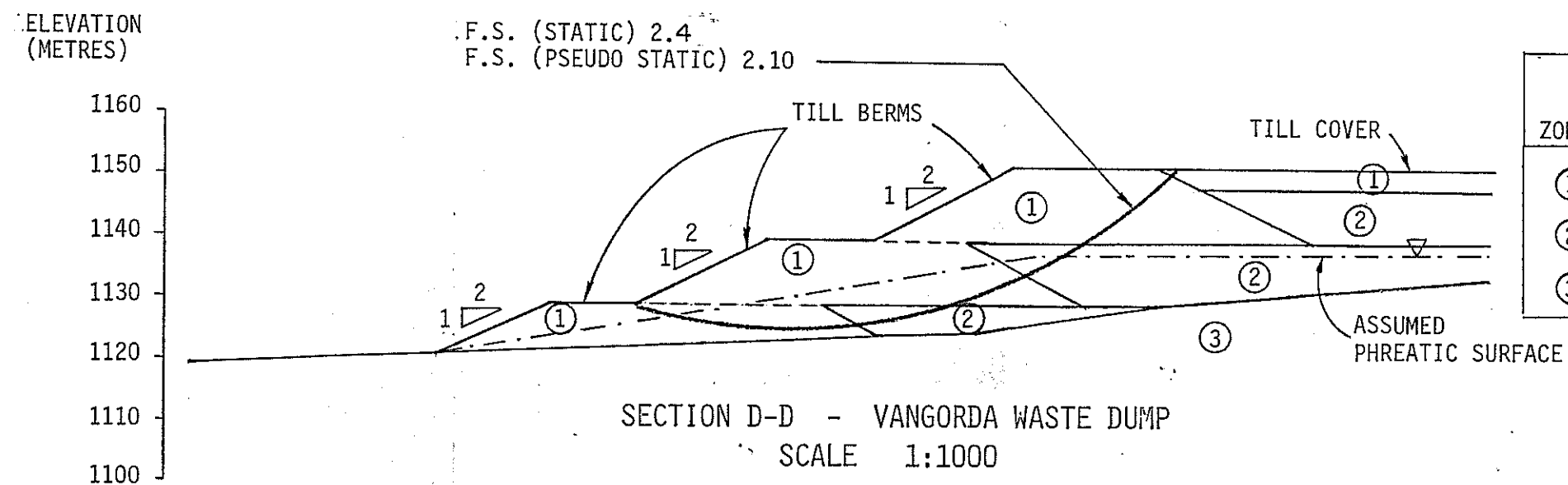
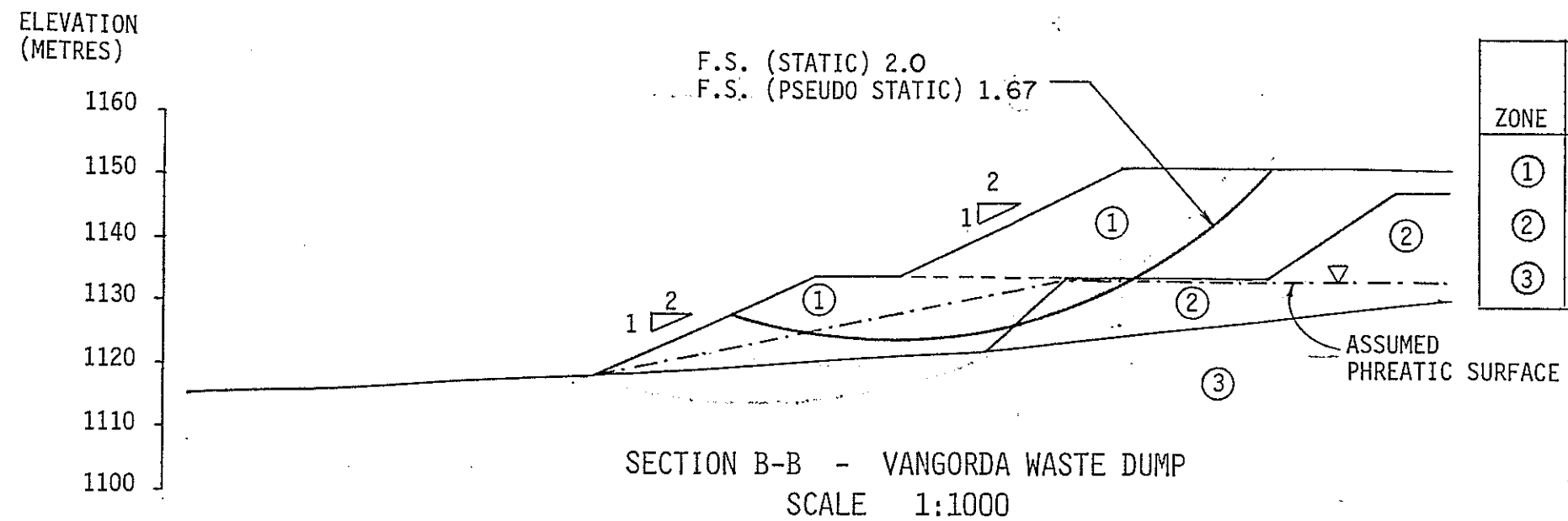


TYPICAL DETAILS
FINGER DRAIN & SUMP

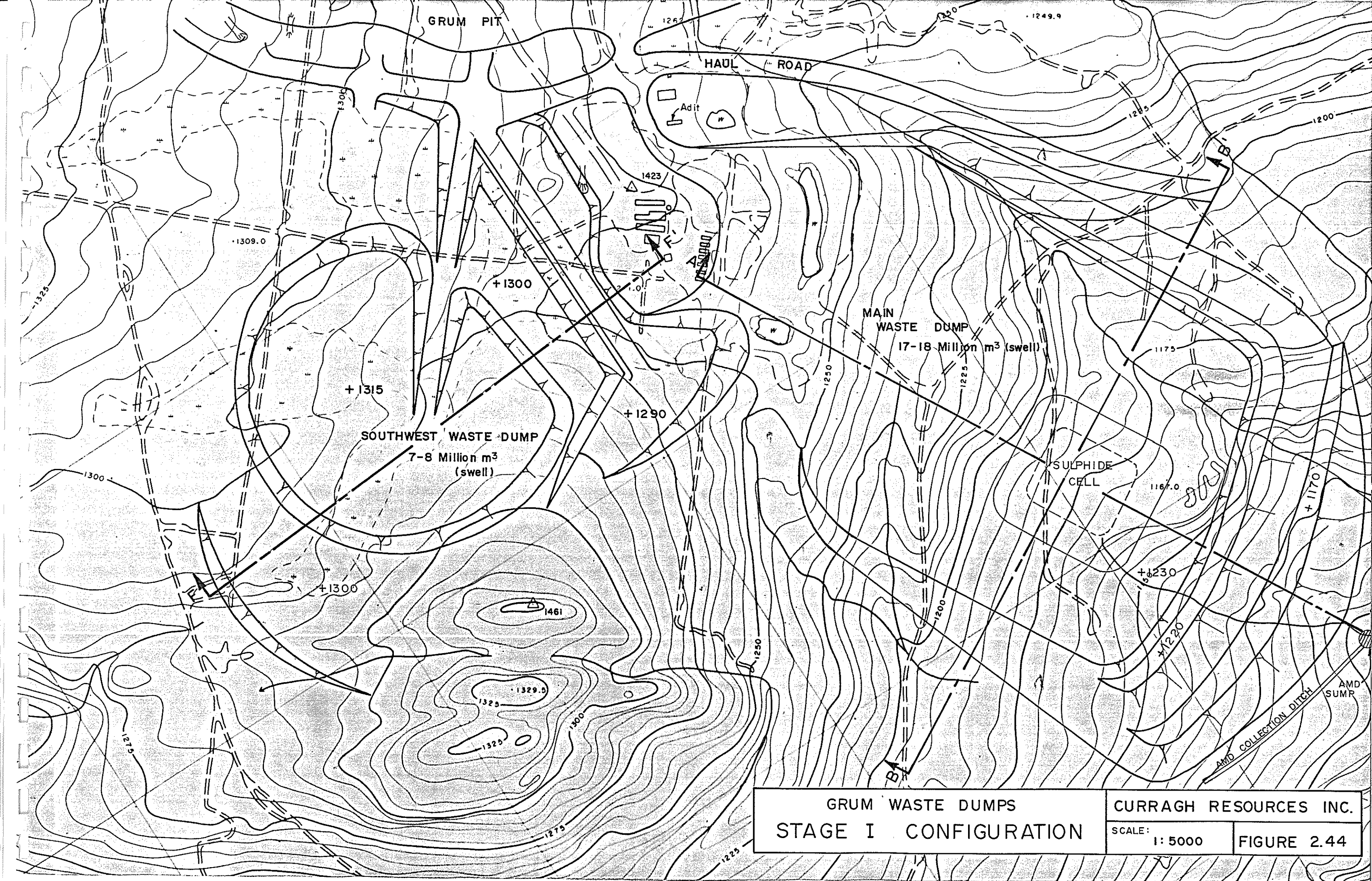
CURRAGH RESOURCES INC.

1:500

FIGURE 2.41



STABILITY ANALYSES
VANGORDA WASTE DUMPS
SECTIONS B-B AND D-D

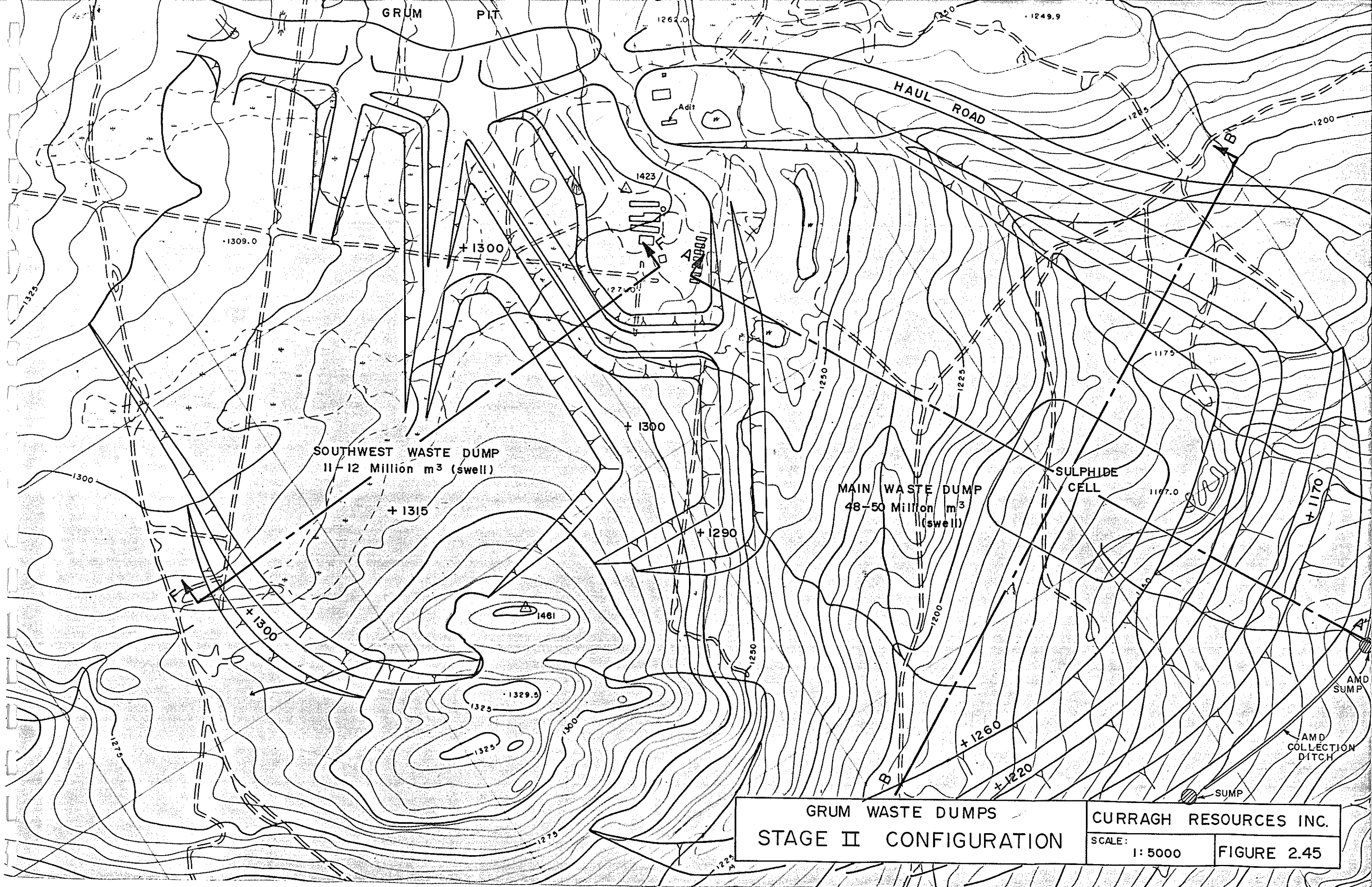


GRUM WASTE DUMPS
STAGE I CONFIGURATION

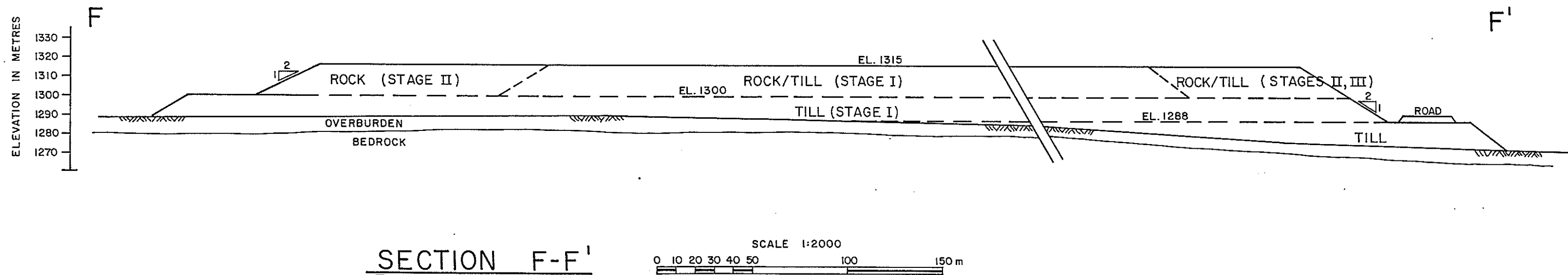
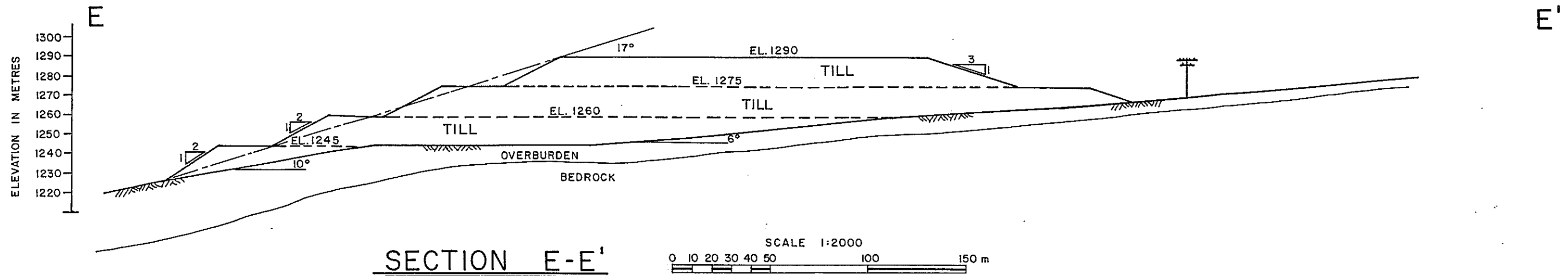
CURRAGH RESOURCES INC.

SCALE:
1: 5000

FIGURE 2.44



GRUM WASTE DUMPS STAGE II CONFIGURATION		CURRAGH RESOURCES INC.	
SCALE:		1: 5000	FIGURE 2.45



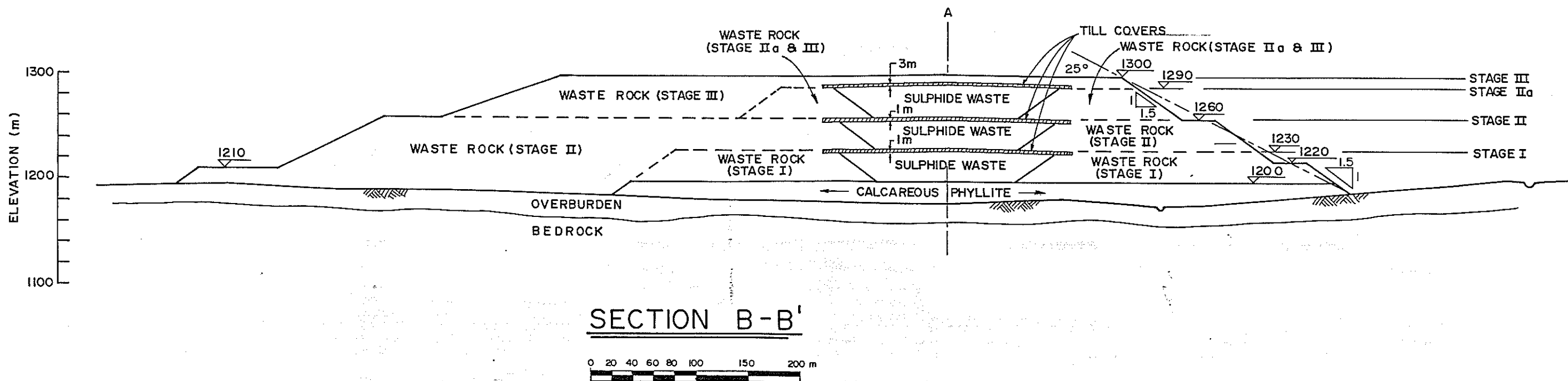
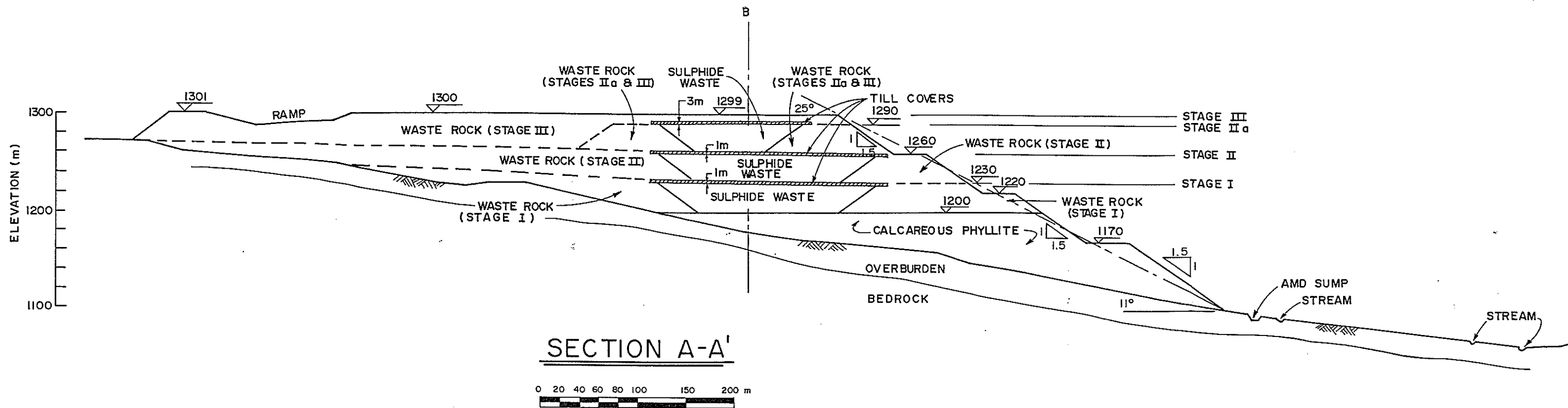
NOTE: SEE FIGURE 2.16
FOR LOCATION OF SECTIONS

GRUM WASTE DUMPS
SECTIONS E-E, F-F

CURRAGH RESOURCES INC.

SCALE: AS SHOWN

FIGURE 2.46



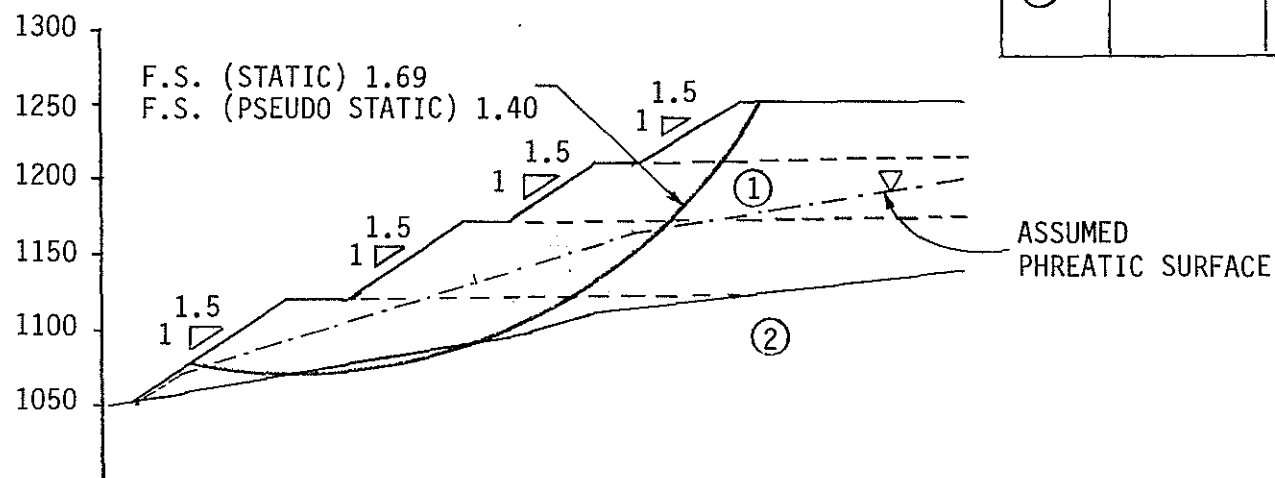
GRUM WASTE DUMPS
SECTIONS A-A' AND B-B'

CURRAGH RESOURCES INC.

AS SHOWN

FIGURE 2.47

ELEVATION,
METRES

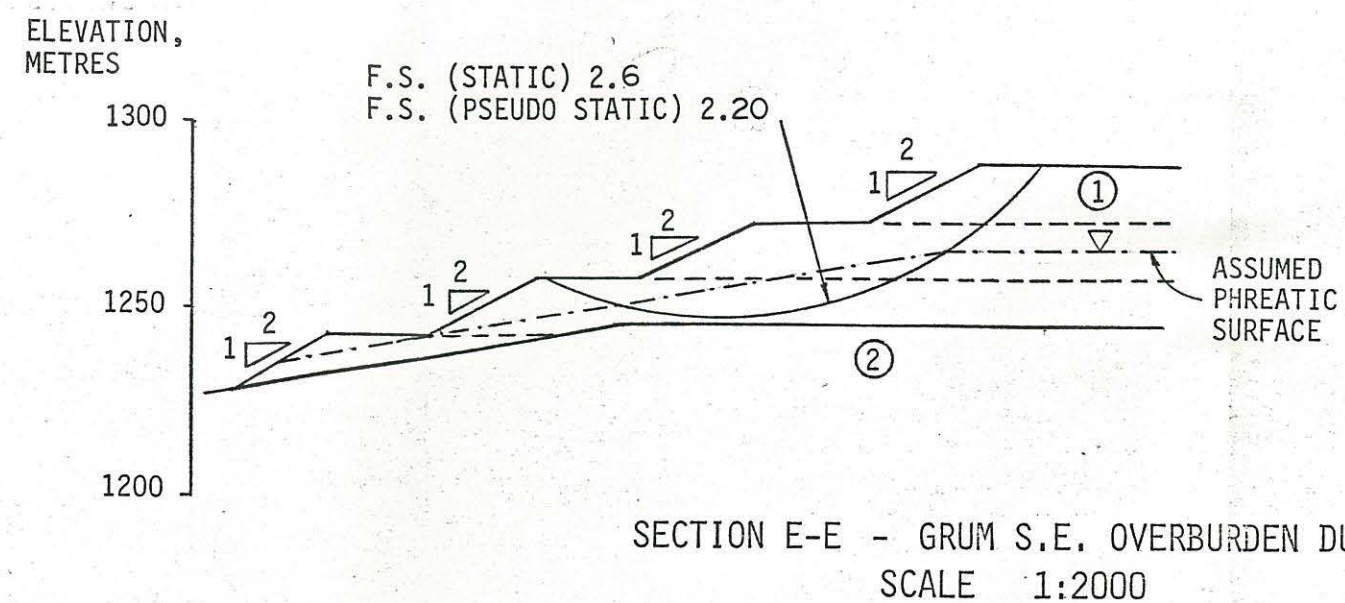


SECTION A-A - GRUM MAIN WASTE DUMP
SCALE 1:5000

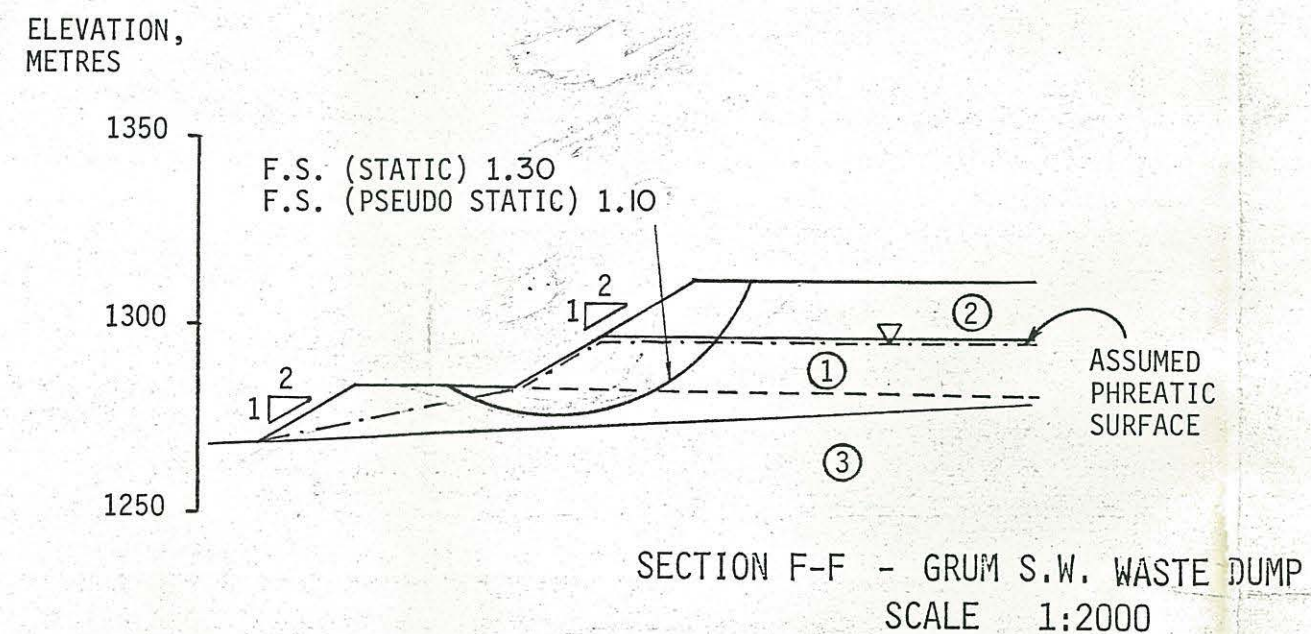
ZONE	TOTAL DENSITY Kg/m ³	COHESION Kg/m ²	FRICTION ANGLE	MATERIAL
①	2200	0	35	WASTE ROCK
②	2300	2000	38	FOUNDATION TILL

STABILITY ANALYSES
GRUM WASTE DUMP
SECTION A-A

FIGURE 2.48



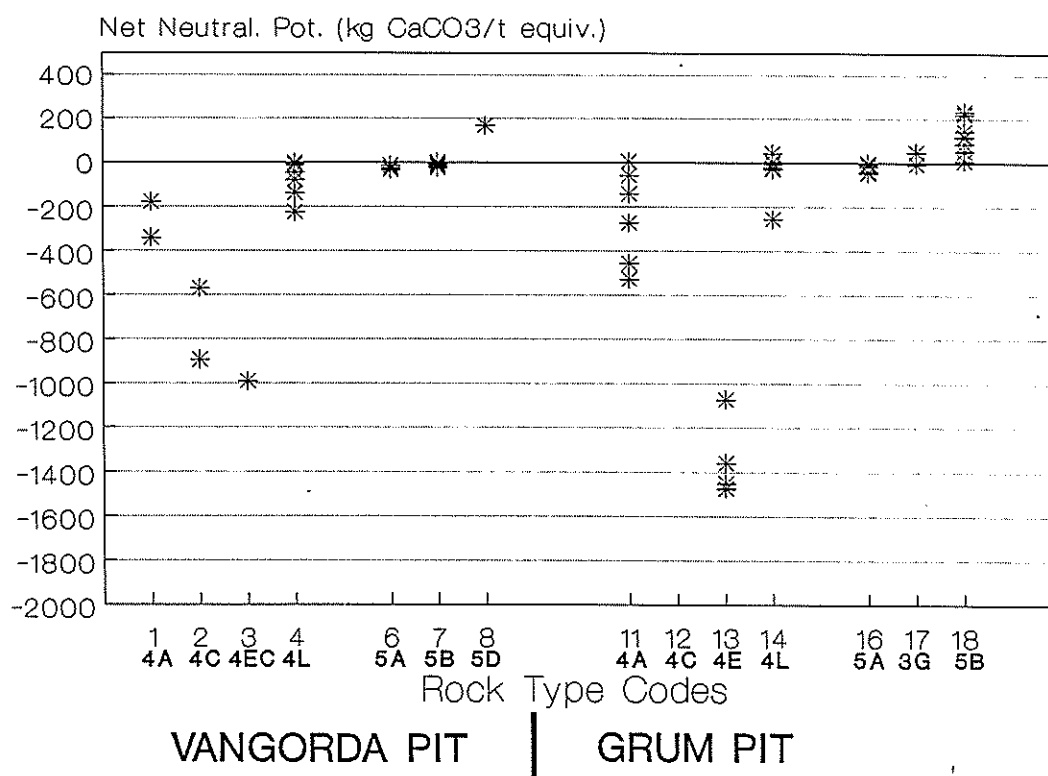
ZONE	TOTAL DENSITY Kg/m ³	COHESION Kg/m ²	FRICTION ANGLE	MATERIAL
①	2200	0	32	TILL COVER/BERMS
②	2300	2000	38	FOUNDATION TILL



ZONE	TOTAL DENSITY Kg/m ³	COHESION Kg/m ²	FRICTION ANGLE	MATERIAL
①	2200	1760	30	TILL COVER/BERMS
②	2200	0	35	WASTE ROCK
③	2300	2000	30	FOUNDATION TILL

STABILITY ANALYSES
GRUM WASTE AND OVERBURDEN DUMPS
SECTIONS E-E AND F-F

NET NEUTRALIZATION VS ROCK TYPE

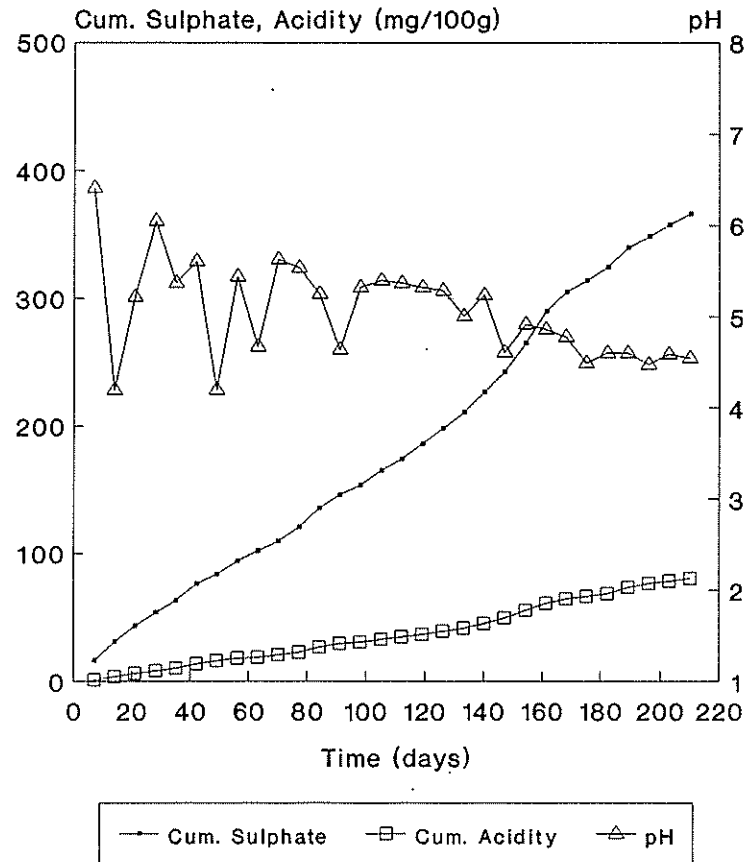


Note: See Table 2.15 in Volume I for Code Definitions

FIGURE 2.50

HUMIDITY CELL TEST RESULTS - SULPHIDE COMPOSITES

HUMIDITY CELL TEST SULPHIDE COMPOSITE



HUMIDITY CELL TEST SULPHIDE COMPOSITE II (Inoculated)

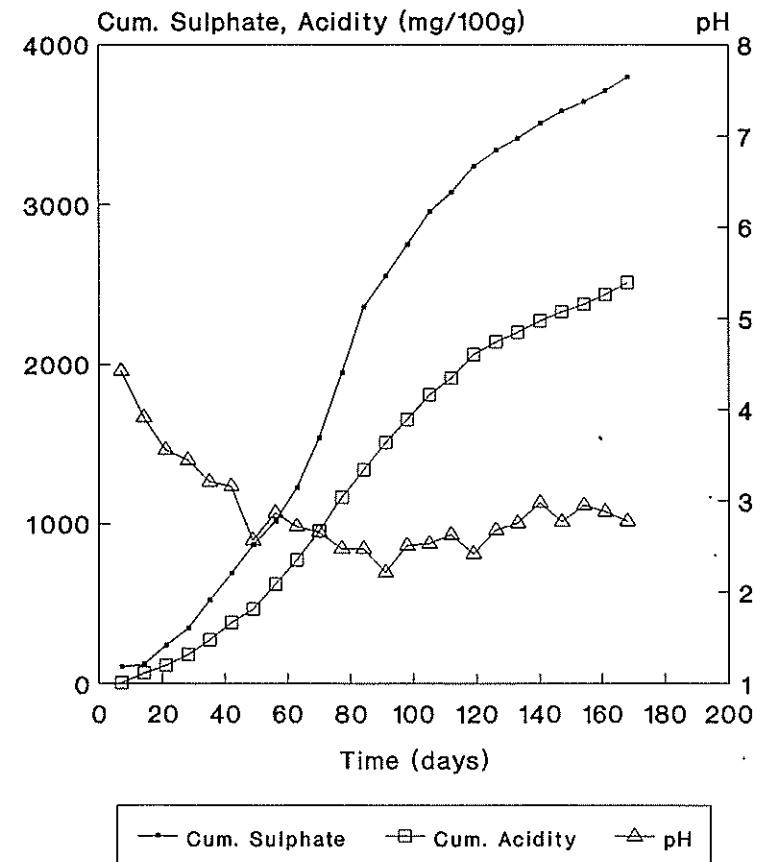
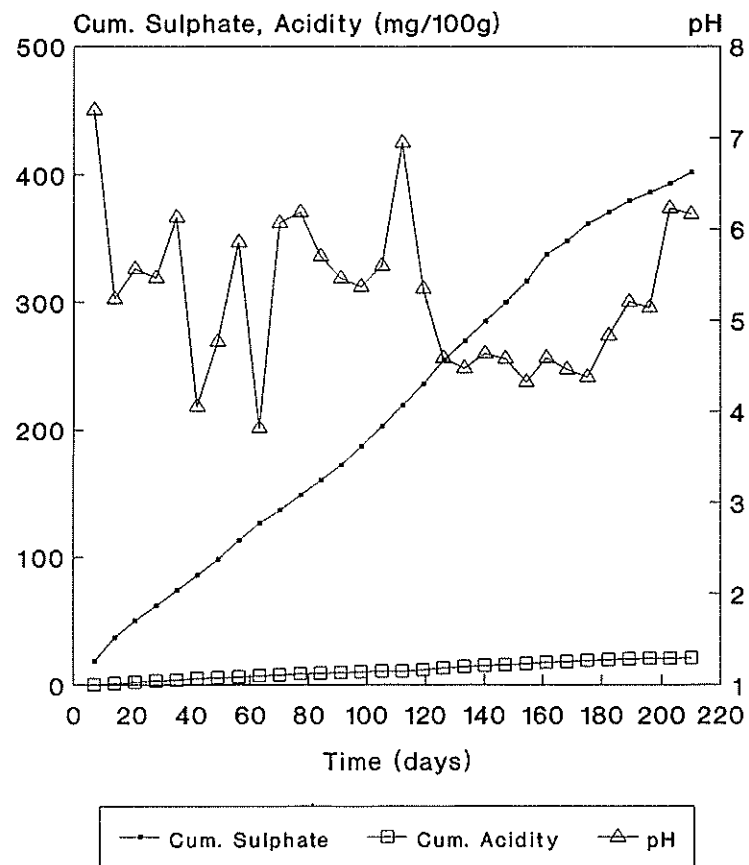


FIGURE 2.51

HUMIDITY CELL TEST RESULTS - PHYLLITE COMPOSITES

HUMIDITY CELL TEST PHYLLITE COMPOSITE



HUMIDITY CELL TEST PHYLLITE COMPOSITE II (Inoculated)

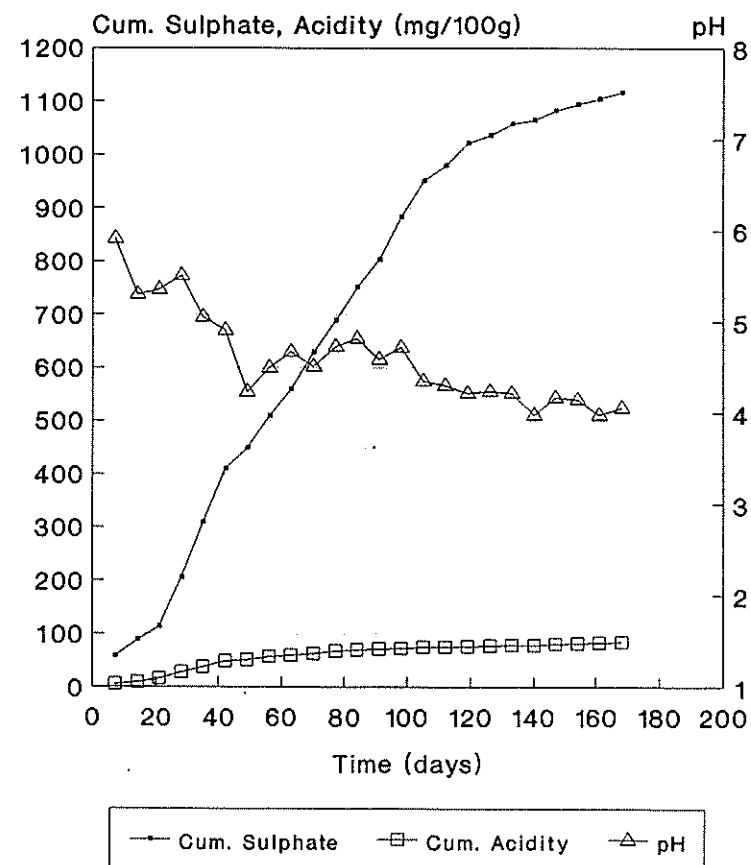
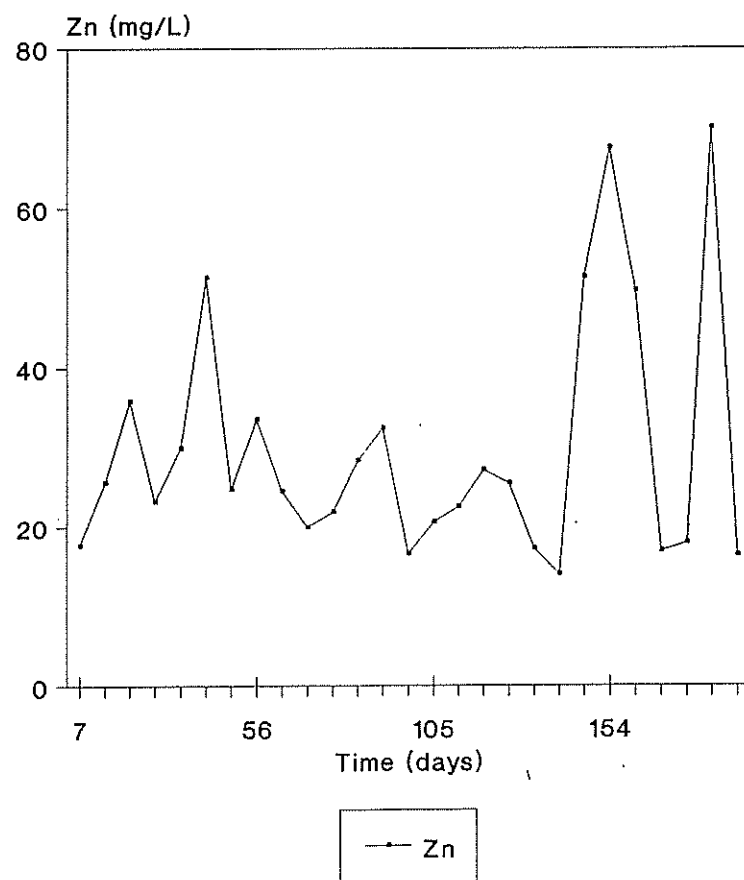


FIGURE 2.52

HUMIDITY CELL TEST SULPHIDE COMPOSITE



HUMIDITY CELL TEST SULPHIDE COMPOSITE II (Inoculated)

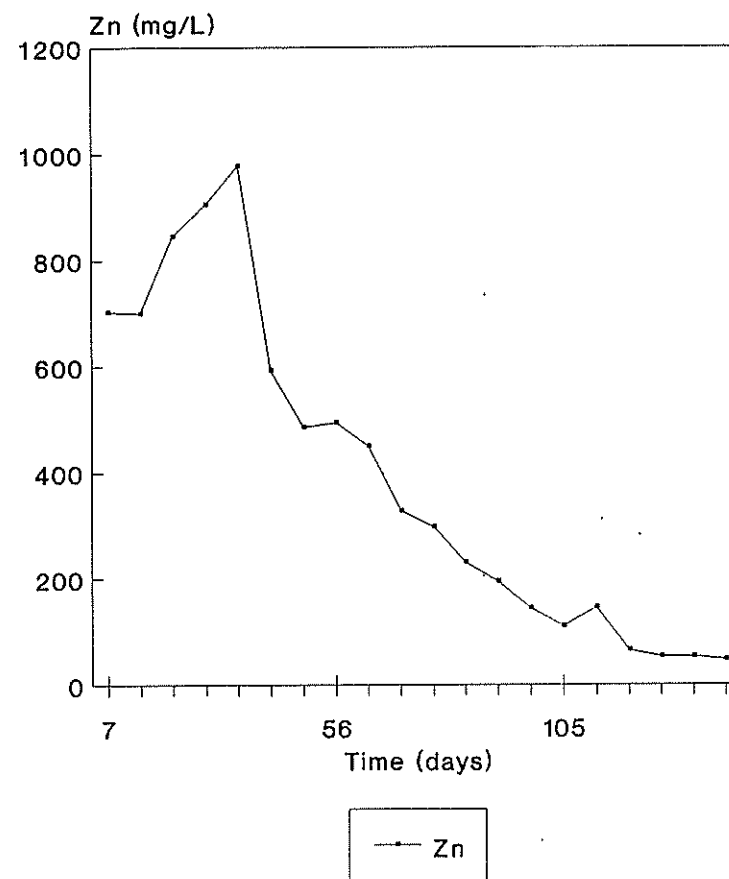
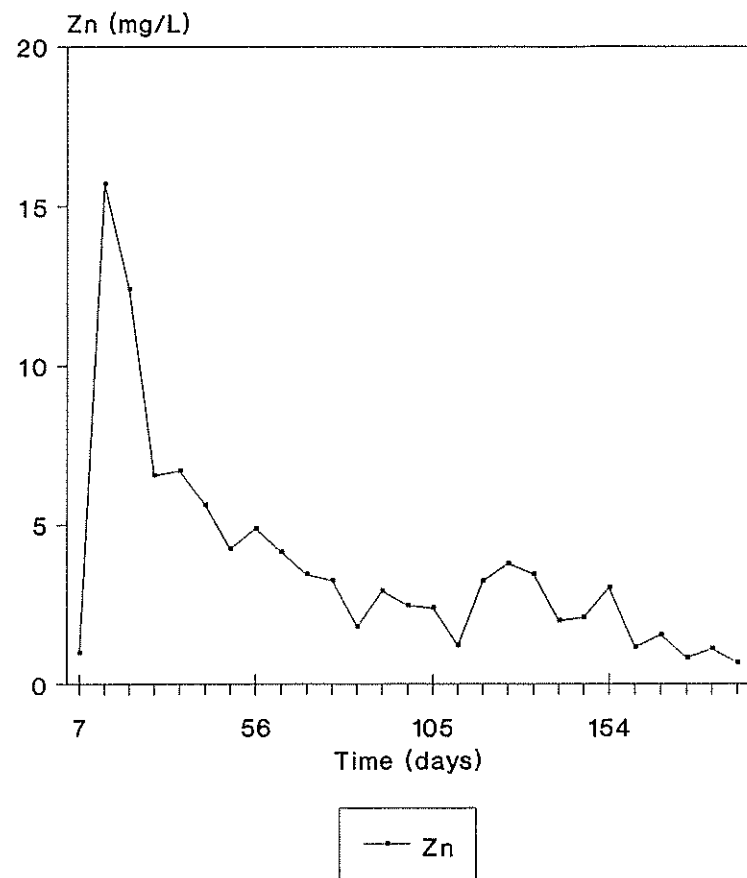


FIGURE 2.53A

HUMIDITY CELL TEST PHYLLITE COMPOSITE



HUMIDITY CELL TEST PHYLLITE COMPOSITE II (Inoculated)

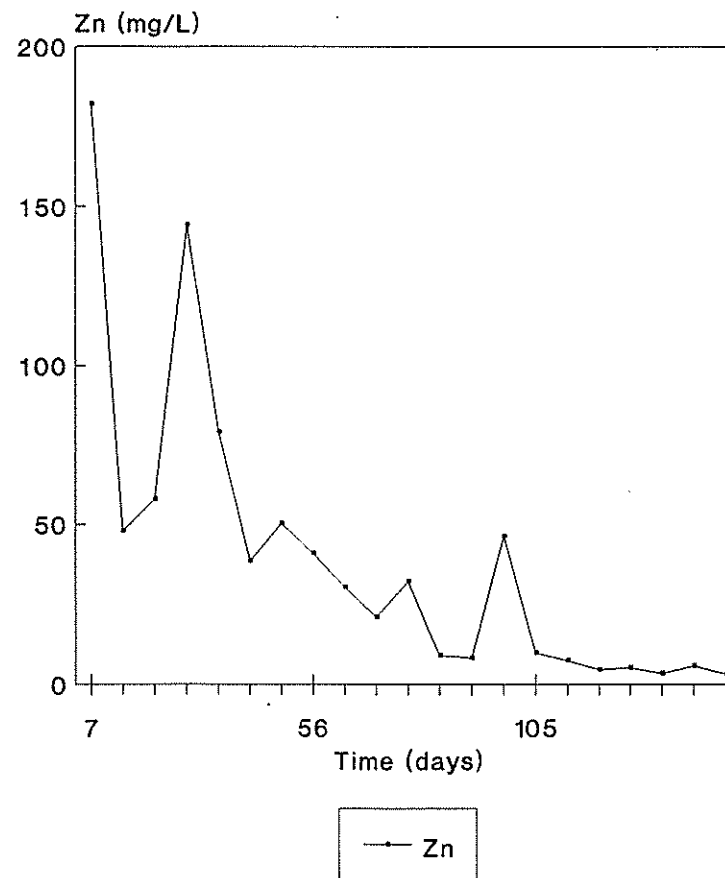
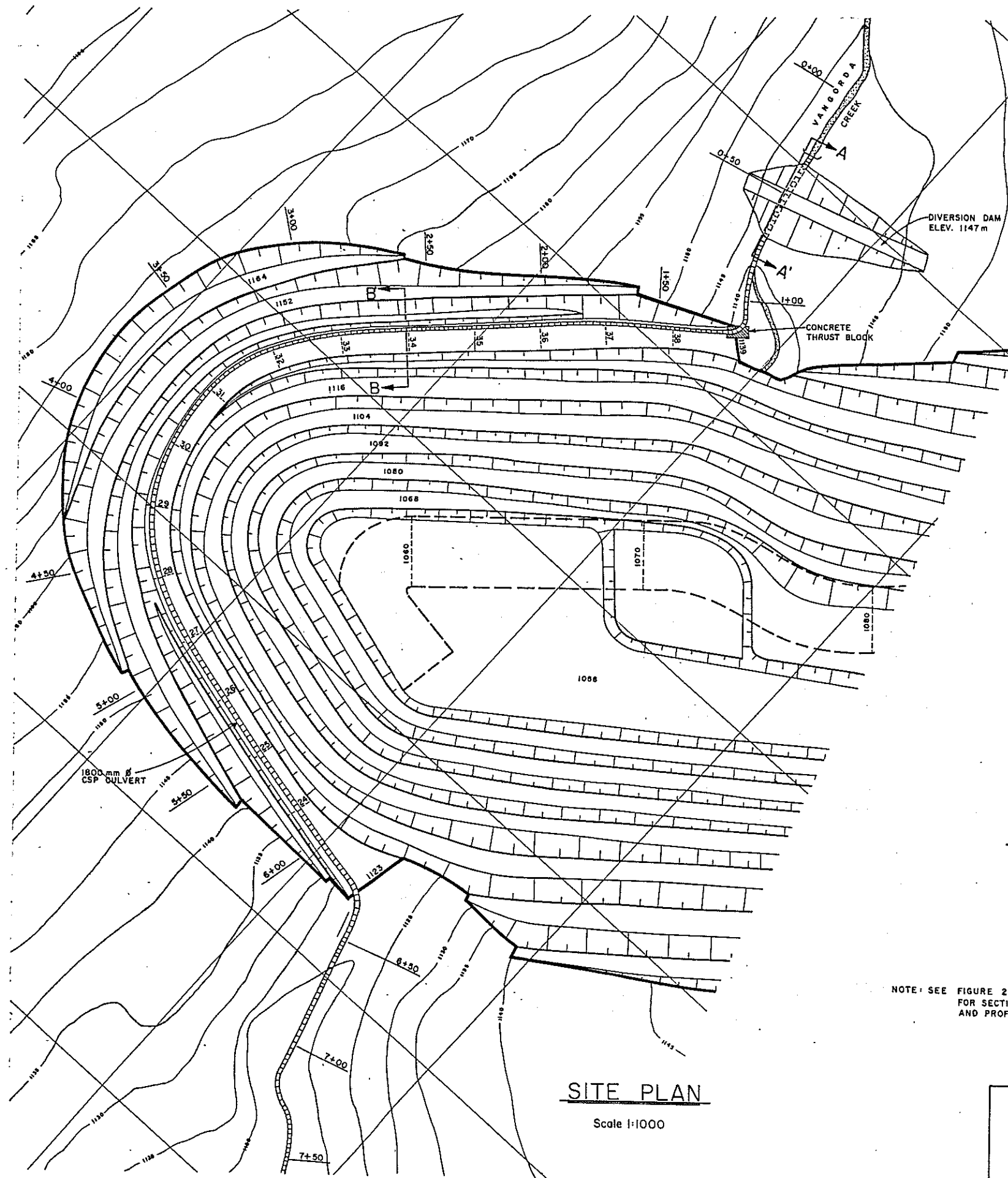
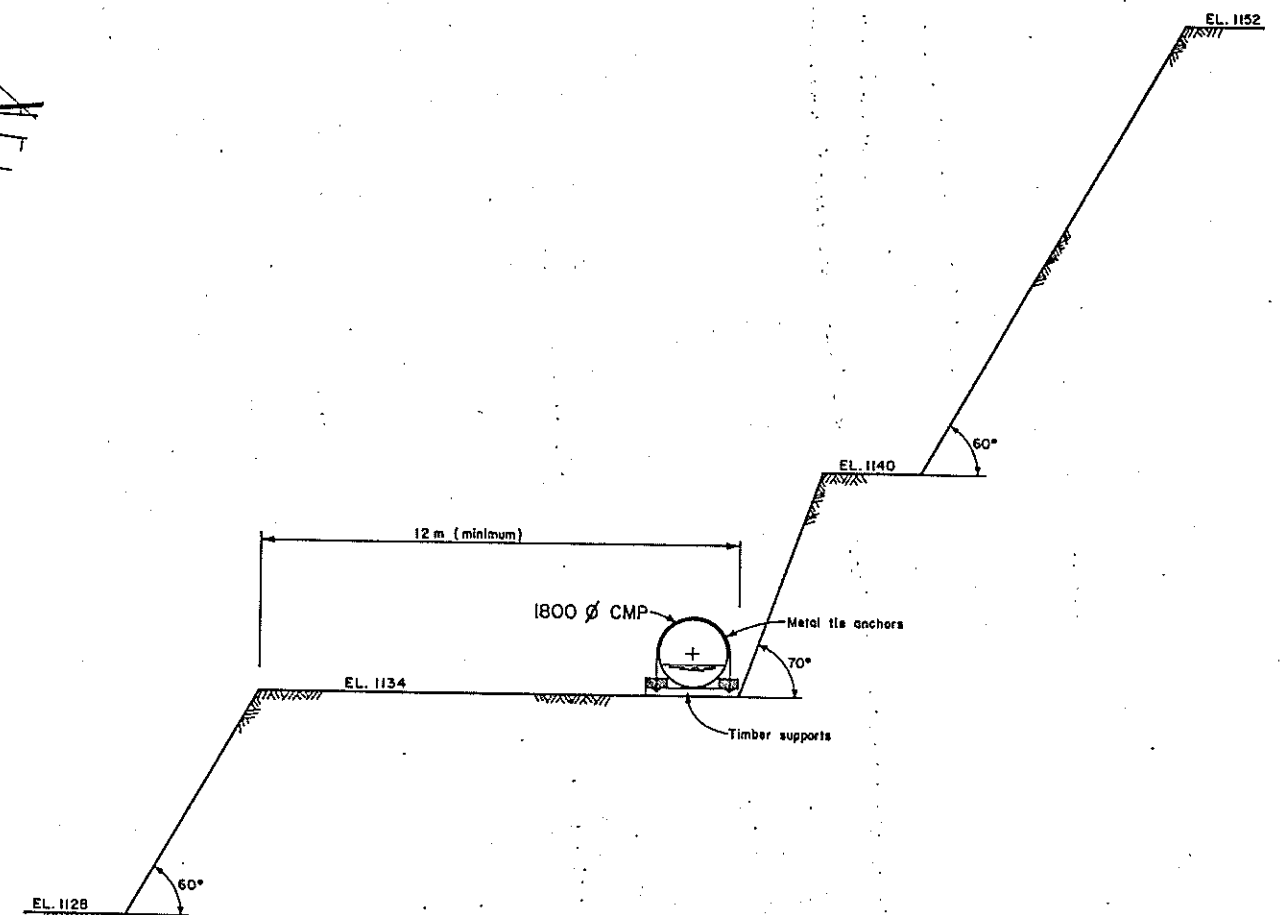


FIGURE 2.53B



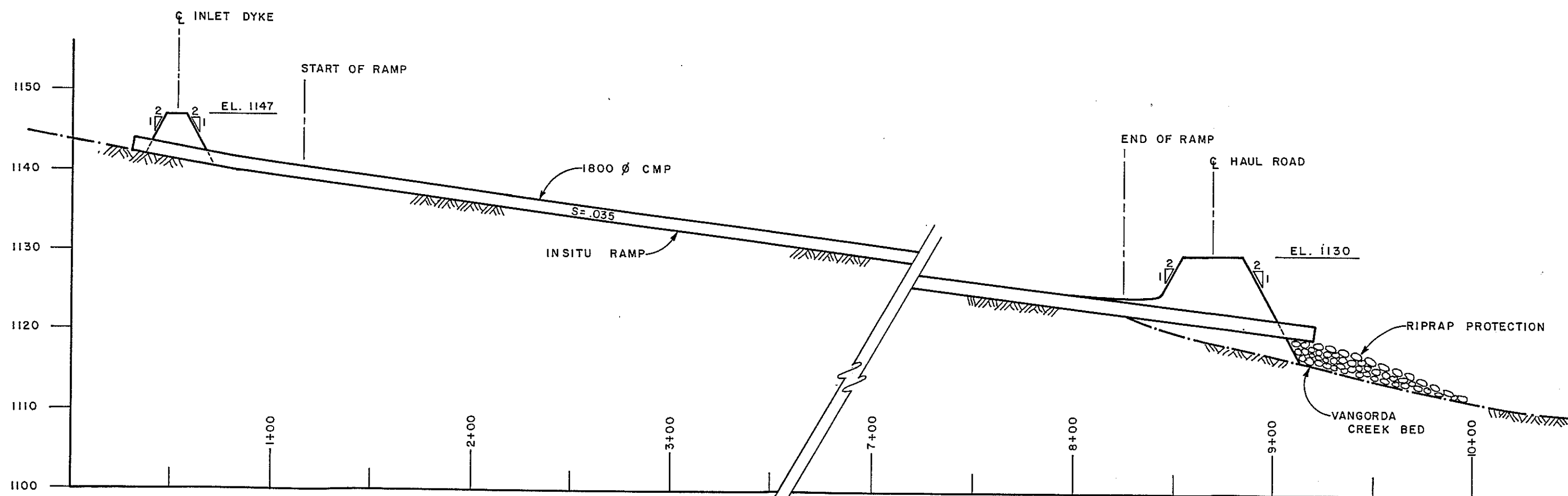
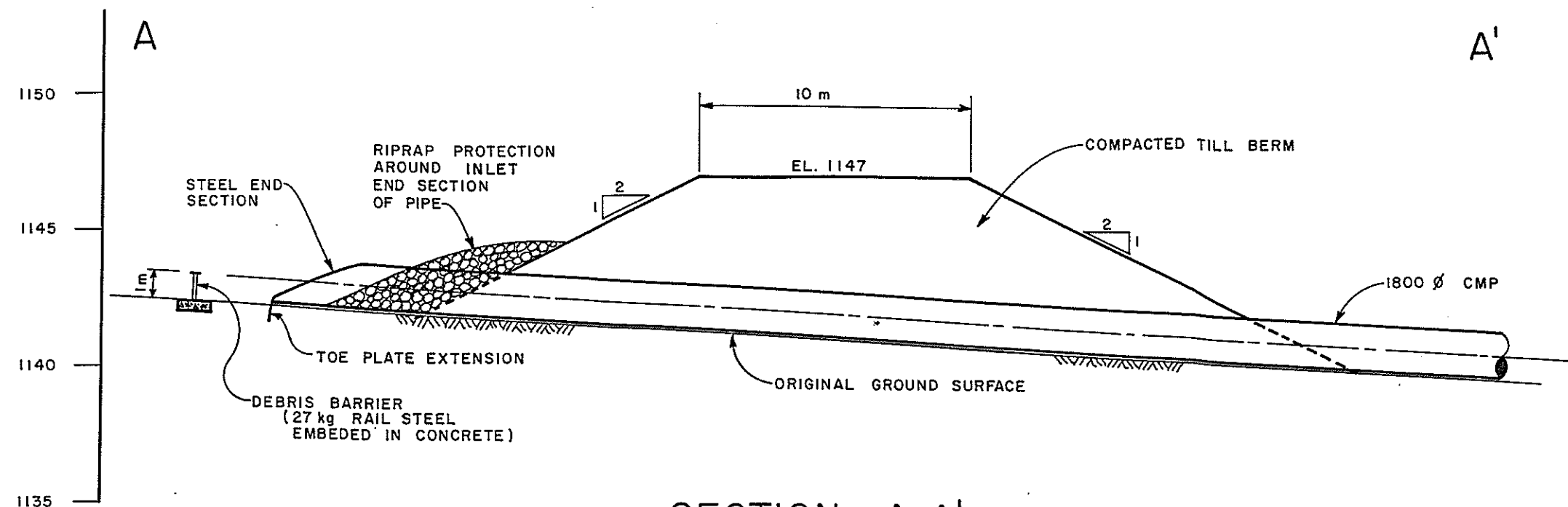
SITE PLAN
Scale 1:1000



SECTION B-B'
Scale 1:100

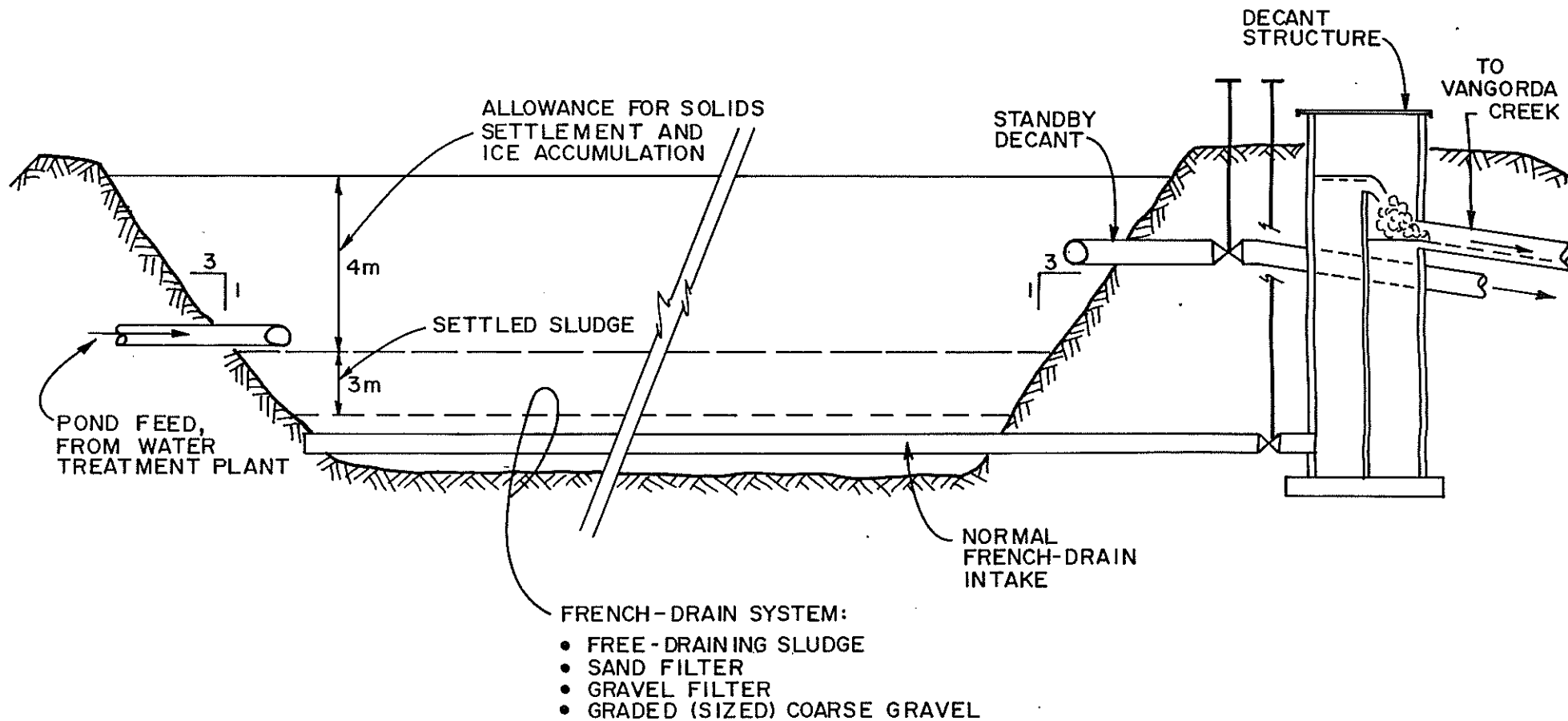
NOTE: SEE FIGURE 2.39
FOR SECTION A-A'
AND PROFILE

VANGORDA CREEK DIVERSION CULVERT SITE PLAN & SECTION B-B'		CURRAGH RESOURCES INC.	
		DATE:	89-01-07
SCALE:		As shown	FIGURE 2.54



VERTICAL SCALE 1:500
HORIZONTAL SCALE 1:2000

VANGORDA CREEK DIVERSION CULVERT		CURRAGH RESOURCES INC.	
PROFILE & SECTION		SCALE: AS SHOWN	FIGURE 2.55



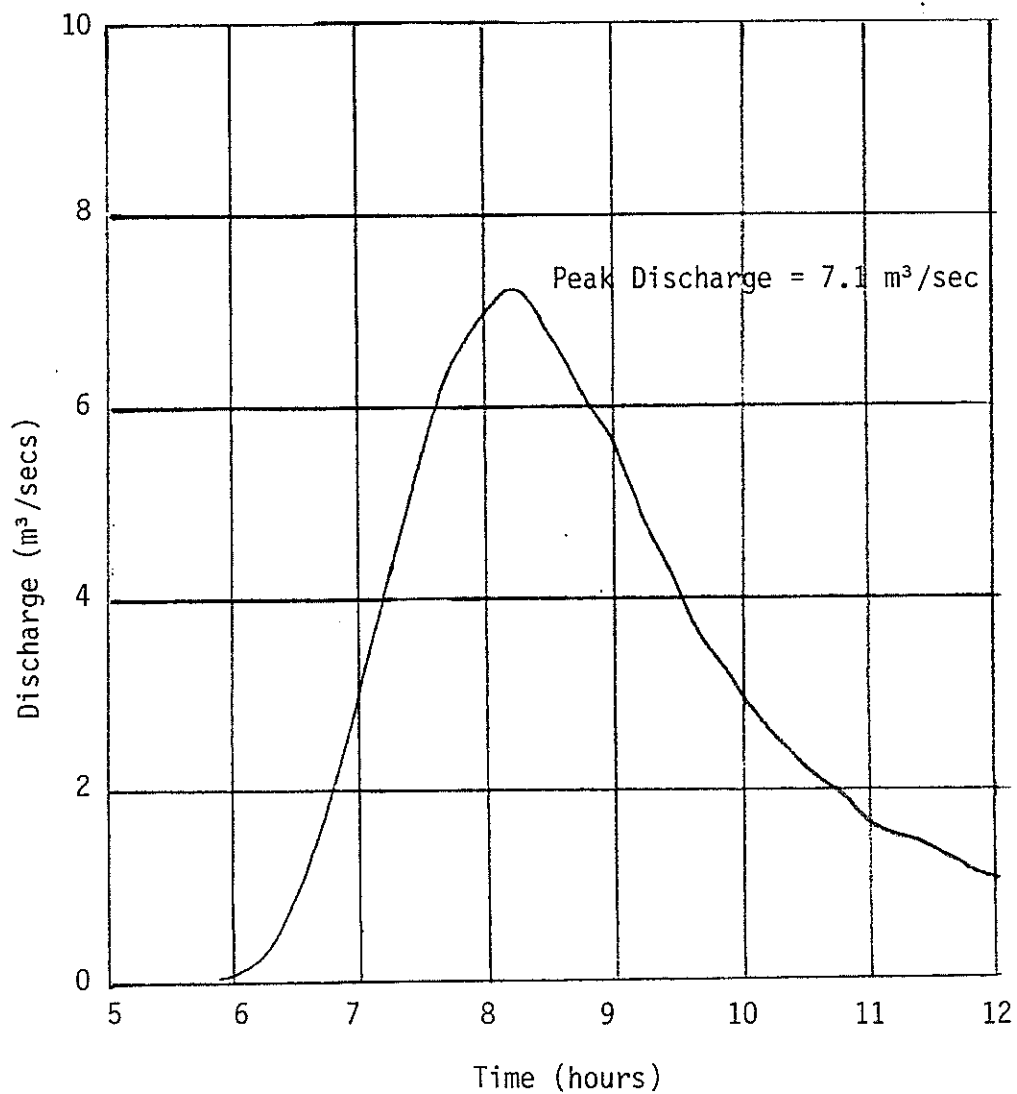
SLUDGE SETTLING/STORAGE POND
TYPICAL SECTION

CURRAGH RESOURCES INC.

SCALE : NOT TO SCALE

FIGURE 2.56

SECTION 3.0



Catchment Area = 17.7 square kilometres
24-hour 100-year Rainfall = 40 mm
Hydrograph developed from the HEC-1 Computer Package.

FLOOD HYDROGRAPH
FOR 100 YEAR STORM

FIGURE 3.1

WATER QUALITY MONITORING SITES

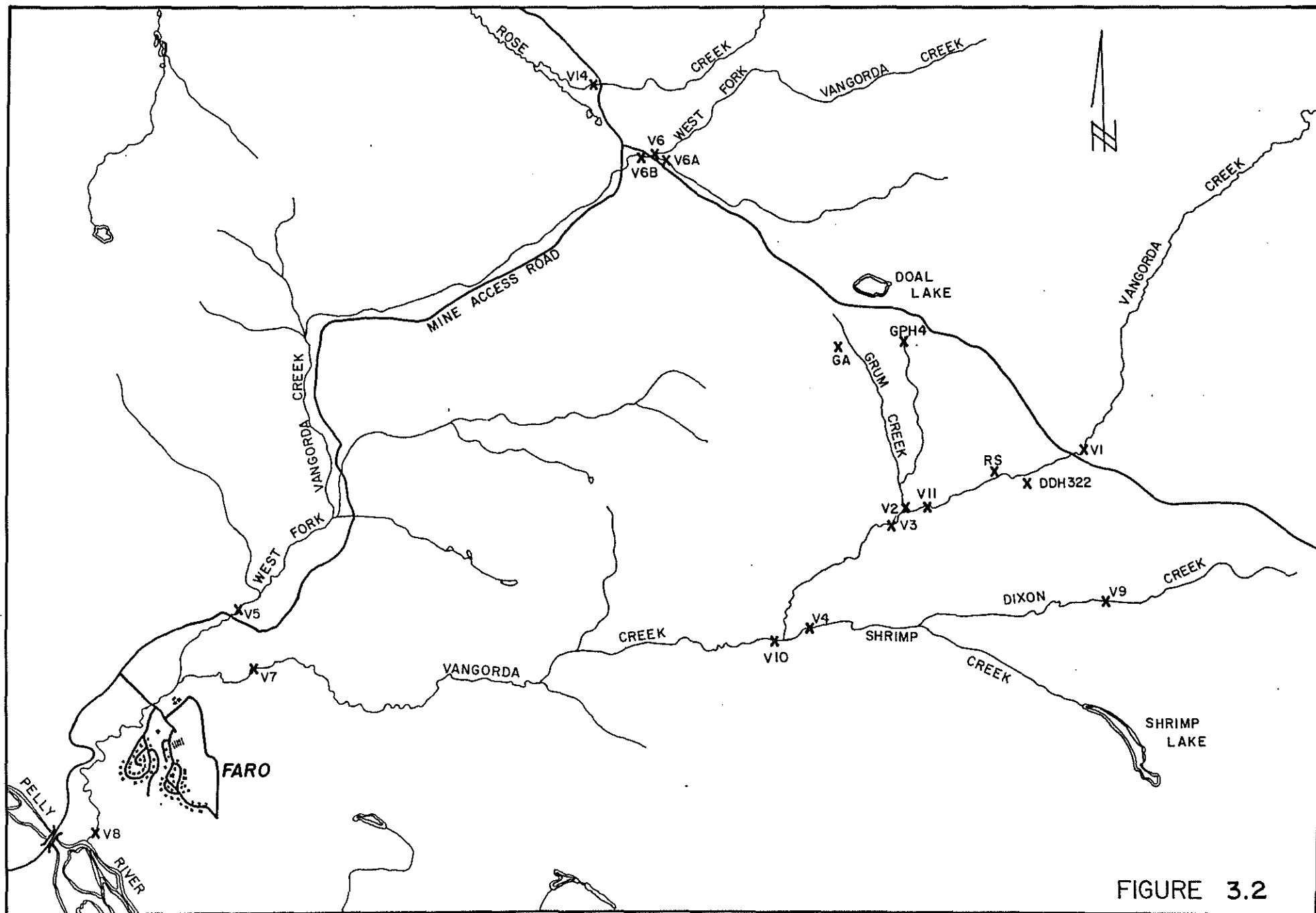
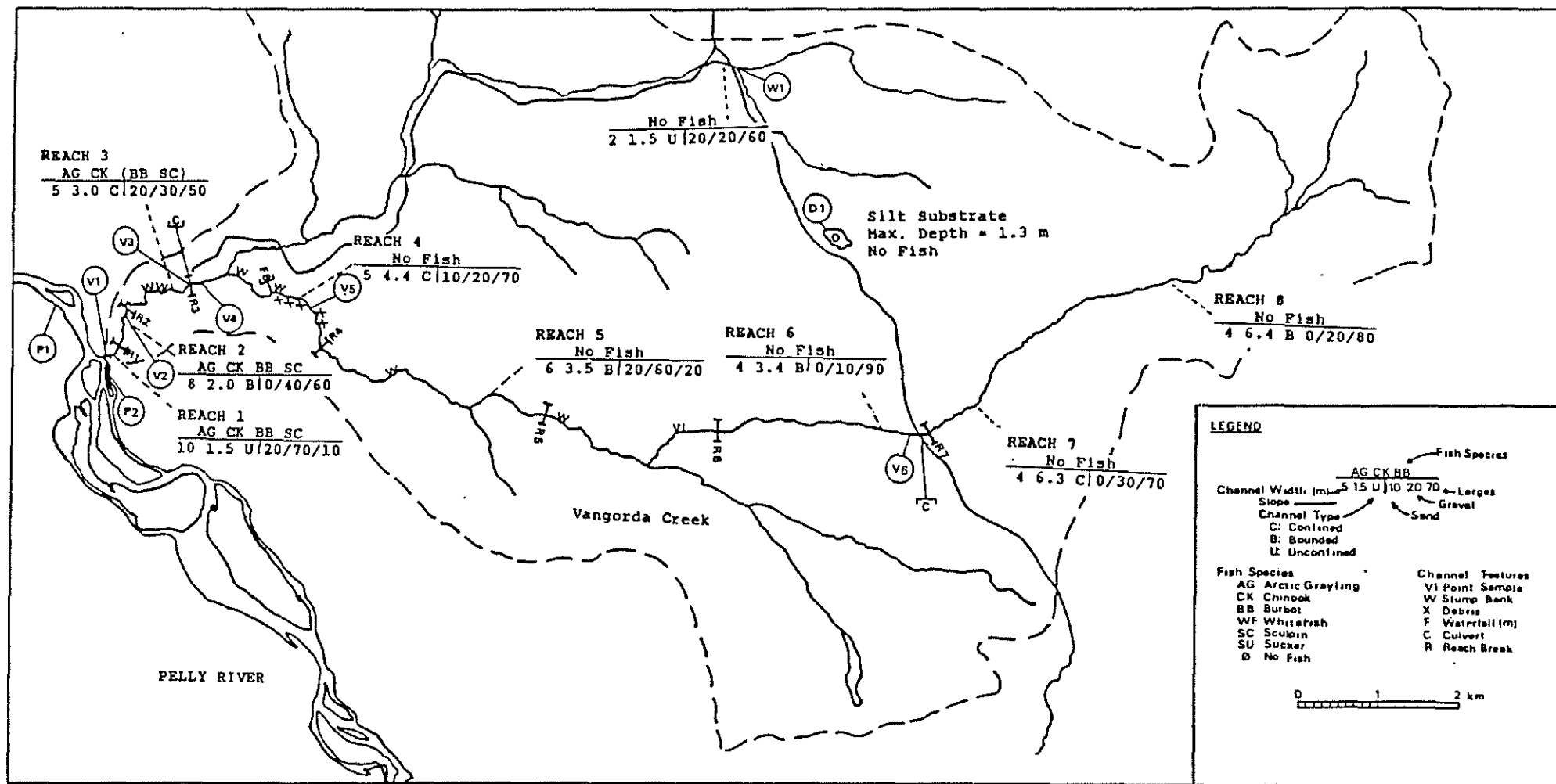


FIGURE 3.2

SCALE 1:50 000

CURRAGH RESOURCES INC.

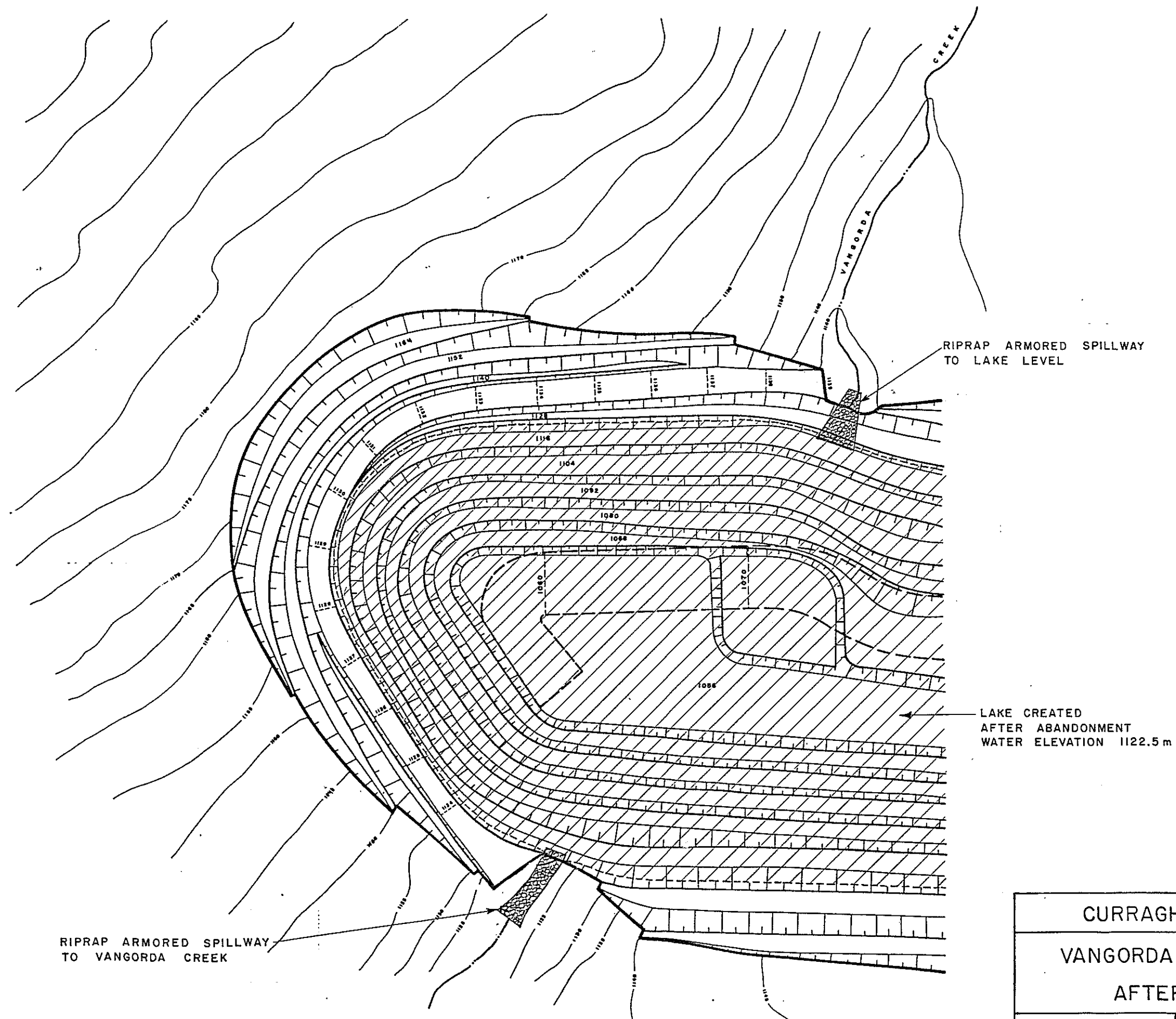


FISH SAMPLING SITE LOCATIONS & BIO-PHYSICAL DATA SUMMARY

(From P.A. HARDER & ASSOC. 1987)

FIGURE 3.3

SECTION 4.0

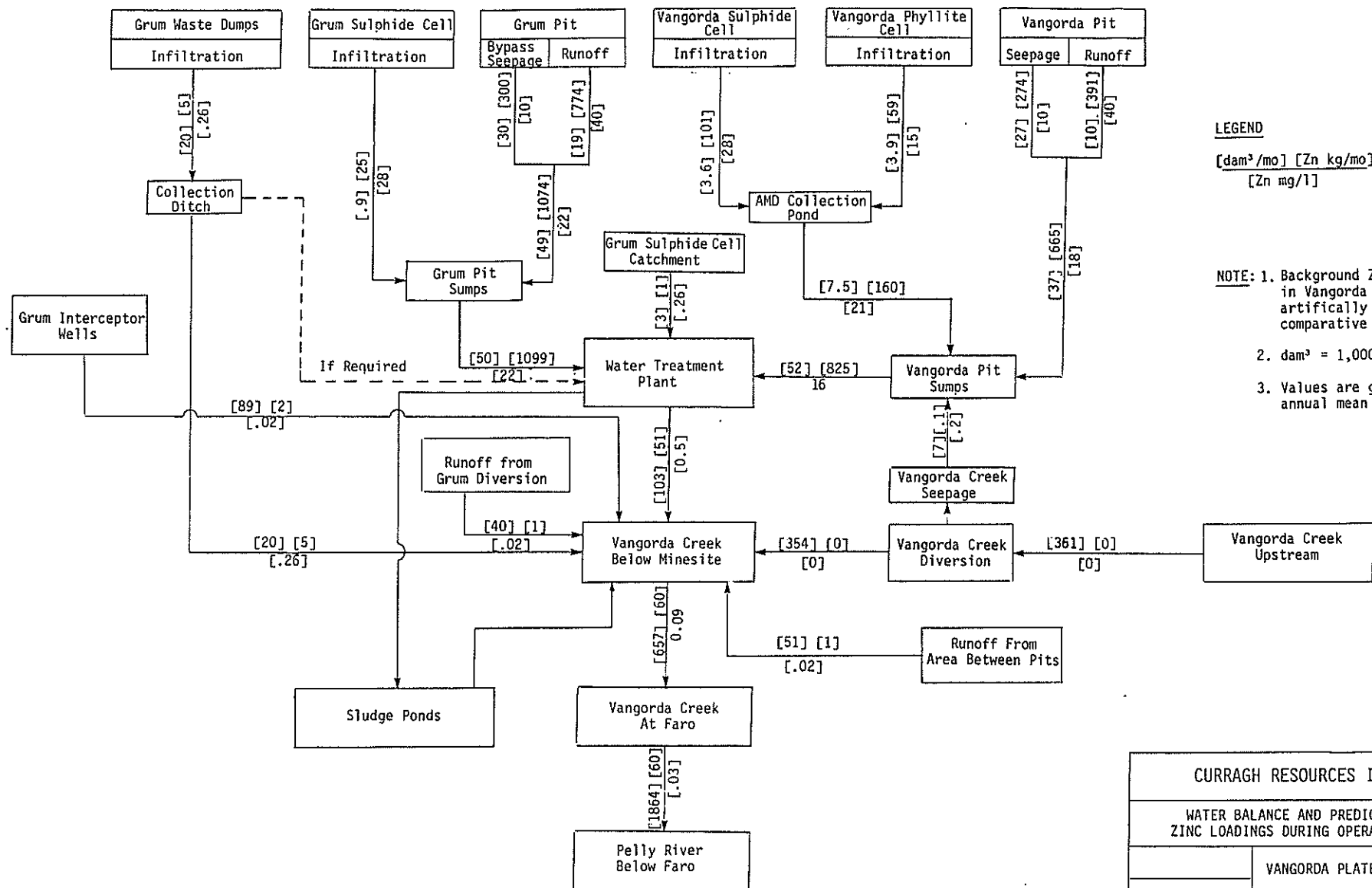


CURRAGH RESOURCES INC.

VANGORDA CREEK REHABILITATION
AFTER ABANDONMENT

1:2000

FIGURE 4.1



CURRAGH RESOURCES INC.	
WATER BALANCE AND PREDICTED ZINC LOADINGS DURING OPERATION	
Figure No. 5.1	VANGORDA PLATEAU PROJECT

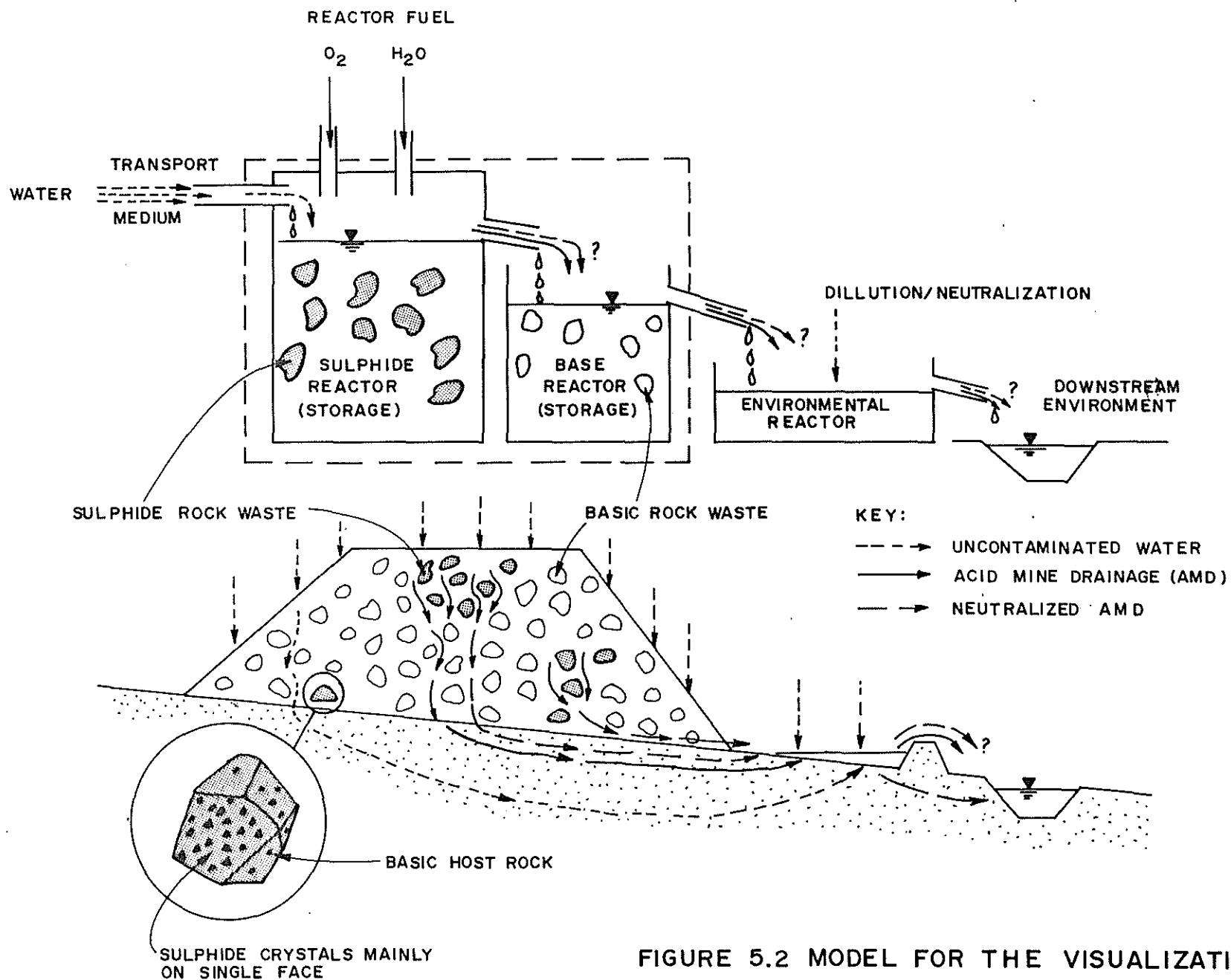
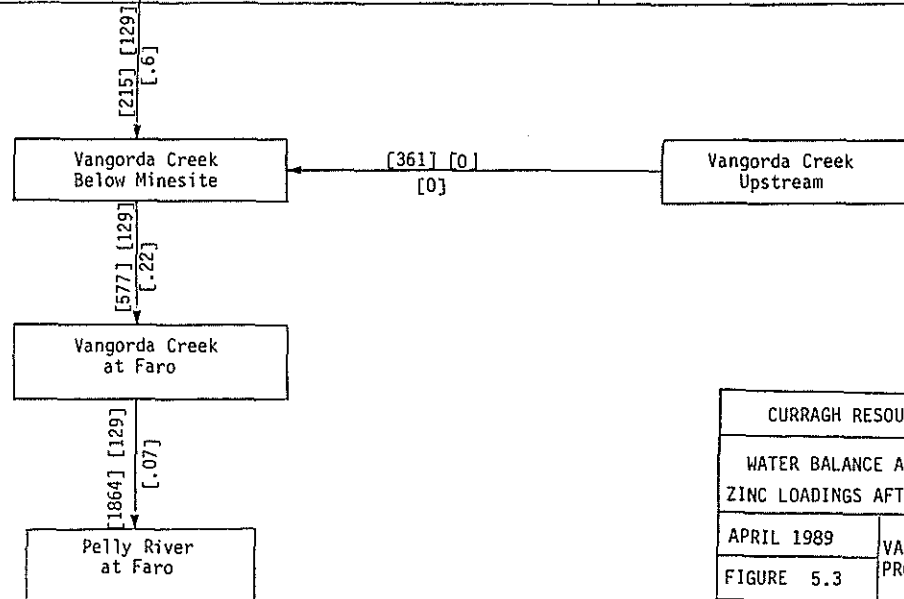
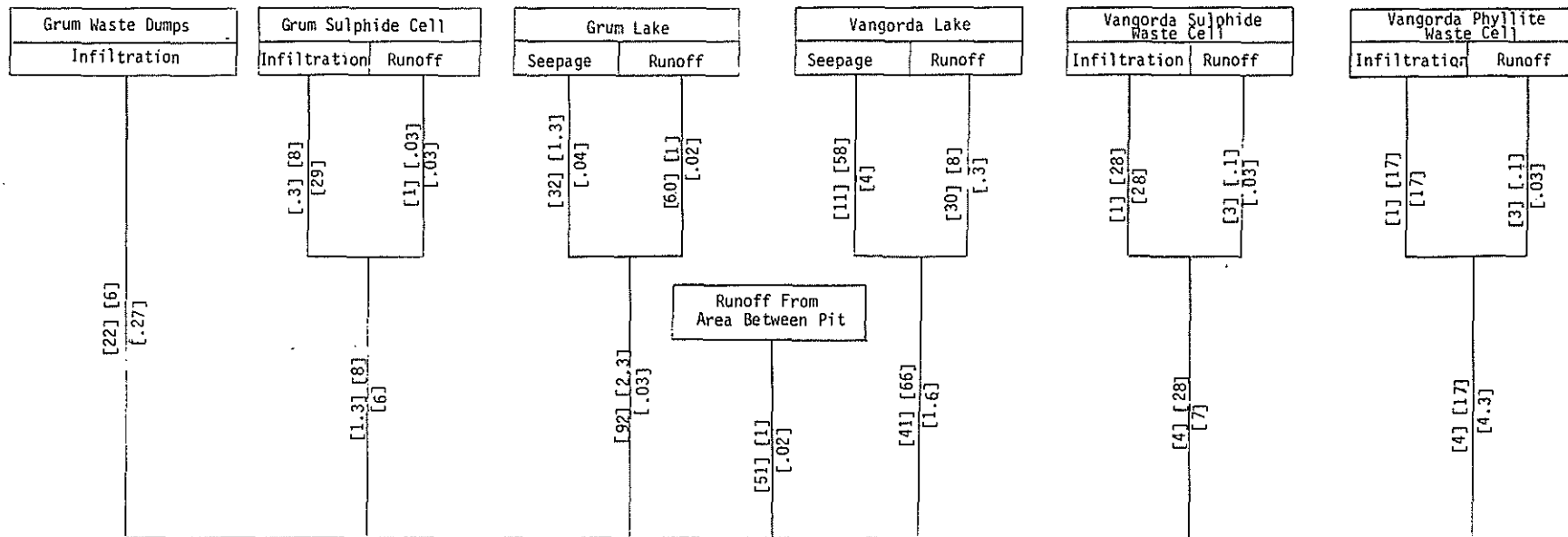


FIGURE 5.2 MODEL FOR THE VISUALIZATION OF LONG TERM AMD

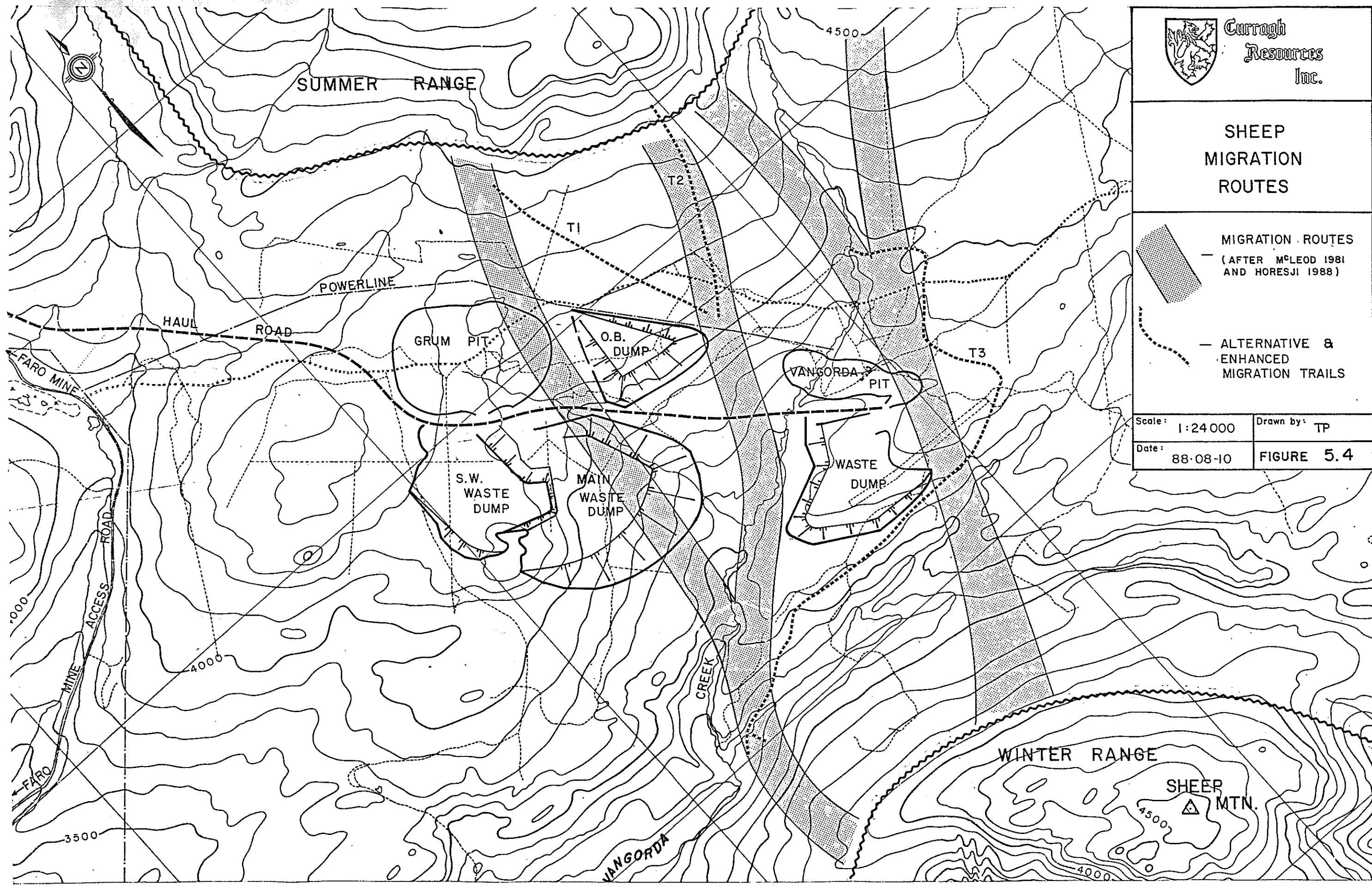


LEGEND

[dam³/mo.] [Zn kg/mo.]
[Zn mg/l]

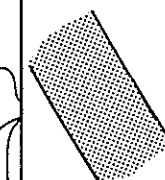
- Note: 1. Background Zinc loading in Vangorda Creek has been artificially set at zero for comparative purposes.
2. dam³ = 1,000 cu. metres.
3. Values are given for the Annual Mean Monthly.

CURRAGH RESOURCES INC	
WATER BALANCE AND PREDICTED ZINC LOADINGS AFTER ABANDONMENT	
APRIL 1989	VANGORDA PLATEAU PROJECT
FIGURE 5.3	



Carraigh
Resources
Inc.

SHEEP MIGRATION ROUTES



MIGRATION ROUTES
(AFTER MCLEOD 1981
AND HORESJI 1988)

— ALTERNATIVE &
ENHANCED
MIGRATION TRAILS

Scale: 1:24 000	Drawn by: TP
Date: 88-08-10	FIGURE 5.4

