

CURRAGH RESOURCES INC.
DETAILED WASTE ROCK MANAGEMENT PLAN
FARO DEPOSIT
OCTOBER 1987

Y/FA/WD/RPT

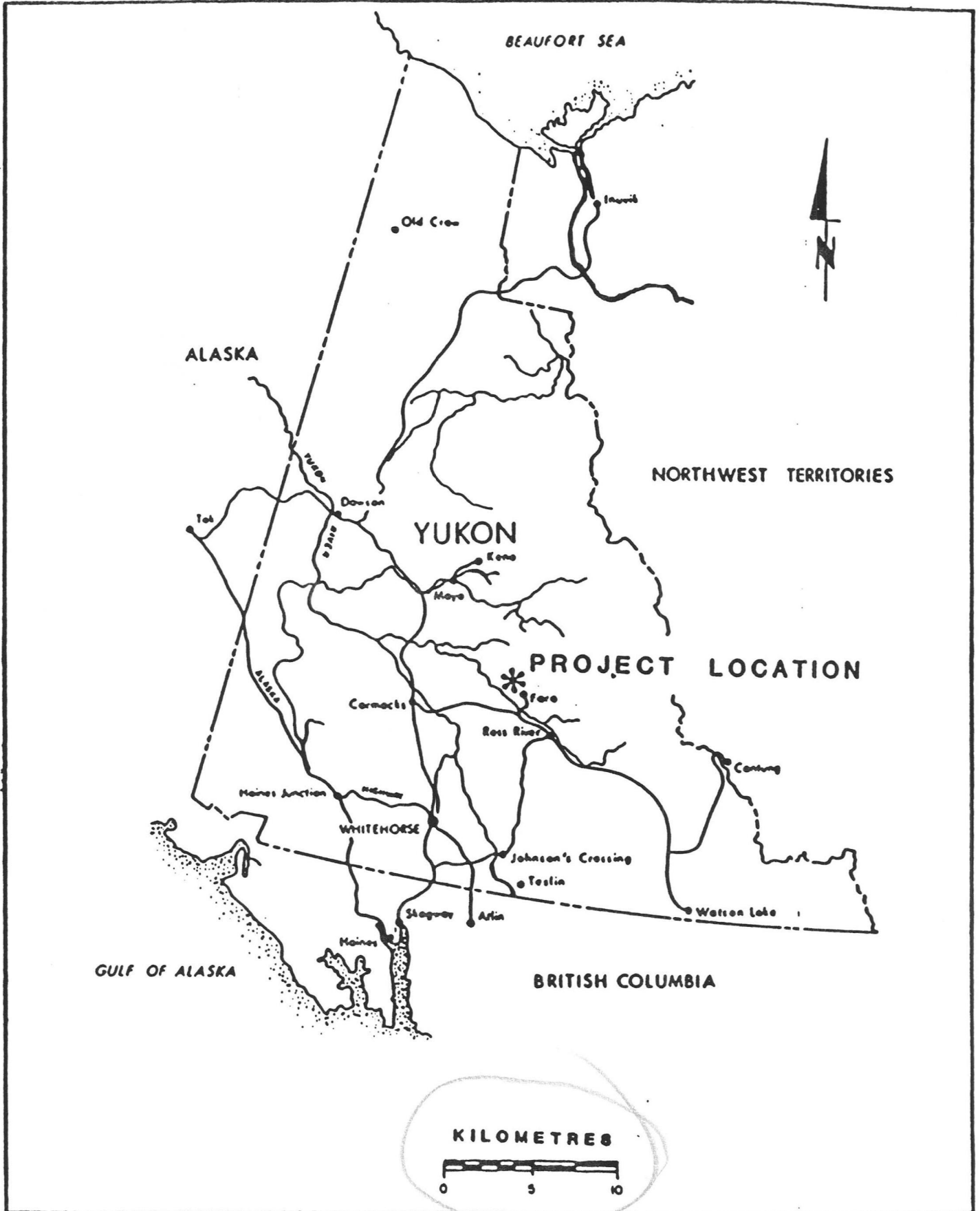
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Mine Engineer

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**CURRAGH RESOURCES
LOCATION PLAN**

FIGURE I.

1.0 Introduction

The adoption of a Final Mine Plan for the Faro Deposit has made it possible to define in detail the timing and location of the disposition of waste rock. The objectives of the waste rock management plan are as follows:

1. To optimize the haultruck cycle times through the life of the mine.
2. To manage the deposition of waste rock in such a manner as to be consistent with the long term goals of the Mine Abandonment Plan.

The plan presented defines the stages of progress of the active dump faces as well as the ultimate limits of each Dump.

2.0 Summary

The final limits of the dump areas as shown reflect the optimum limit each dump face should be developed to, given the present mine plan. The waste dump limits are subject to change, should the mine plan change.

Approximately 15,000,000 tonnes of non-sulfide bearing waste rock are needed to complete the haulroad between the Faro and Vangorda Deposits. This road must be completed by the end of June, 1989. Serious deviation from the waste rock management schedule could result in lost continuity in ore supply between the Faro and Vangorda deposits.

Final dump faces established prior to Curragh's ownership of the Faro deposit will remain as built. The final dump faces completed following this period will have an overall slope of 2:1.

Sulfide waste from the second quarter of 1989 will be dumped back in the pit. All waste as of January 1st, 1990 can be dumped back in the pit. This accounts for approximate 16% of all remaining Waste Rock.

3.0 Design Parameters

The design limits of the Dumps are defined by their proximity to the Pit, the north fork of Rose Creek and the main power line supplying the Mine.

The limit for the toe of the dump parallel to the North Fork of Rose Creek remains at 400 feet. This limit will keep the toe of the dump approximately 100 feet above the level of the creek.

The total waste rock to be removed from the pit as of October 1st, 1987 is 44,496,000 tonnes. Using the density of 2.1 tonnes/BCY for non sulfide waste, and 3.0 tonnes/BCY for sulfide waste, a total dump volume of 26,100,000 cubic yards is required through mine life. A swell factor of 25% was used to account for blasting and handling.

TABLE 2. A COMPARISON OF WASTE HAUL DISTANCES VS. TONNAGE

PERIOD	WASTE DUMP	PHASE	(TONNES x 1000)		SULFIDE DUMP AREA		NON-SULFIDE DUMP AREAS	
			TONNES WASTE Rx		DISTANCE (ONE-WAY) FT		DISTANCE (ONE WAY) FT	
			SULFIDE	NON-SULFIDE	HORZ. DIFF.	VERT. DIFF.	HORZ. DIFF.	VERT. DIFF.
4TH QTR/87	N.W.D.	AY	127	86	10,900	590	8,900	620
	R.Z.D.	BZ	1380	1380	10,100	480	9,100	480
	N.W.D.	BZ	-	3178	-	-	9,100	520
	ZN.II.D.	BZ	-	2226	-	-	8,700	400
	V.R.	BZ	-	1000	-	-	10,900	400
1ST QTR/88	ZN.II.D	BZ	649	480	10,400	550	9,600	480
	ZN.II.D	CZ	32	1664	5,400	230	5,200	160
	V.R.	CZ	-	3000	-	-	7,100	160
2ND QTR/88	I.D.	BZ	292	37	12,100	590	12,100	620
	ZN.II.D	CZ	140	455	7,000	310	6,400	240
	V.P.R.	CZ	-	1411	-	-	9,600	310
	V.R.	CZ	-	3000	-	-	8,300	240
3RD QTR/88	ZN.II.D	BZ	102	41	13,400	660	13,000	660
	ZN.II.D	CZ	302	808	8,500	440	7,900	340
	V.R.	CZ	-	2000	-	-	14,200	340
		BZ	120	-	13,700	680	-	-
4TH QTR/88	ZN.II.D	CZ	282	745	10,600	480	11,000	480
	ZN.II.D	DZ	-	577	-	-	5,000	20
	V.R.	DZ	-	2000	-	-	22,600	130
		BZ	204	-	14,100	700	-	-
1ST QTR/89	I.D.	CZ	103	693	11,100	500	11,500	520
	ZN.II.D	DZ	-	287	-	-	5,100	40
	V.R.	DZ	-	2000	-	-	35,800	40
2ND QTR/89	I.D.	CZ	116	88	12,900	600	13,100	600
	ZN.II.D	DZ	-	202	-	-	5,300	120
	V.R.	DZ	-	2000	-	-	45,700	120
3RD QTR/89	DBIP	CZ	157	-	10,000	580	-	-
	ZN.II.D	DZ	-	1263	-	-	7,200	180
	I.D.	DZ	-	693	-	-	14,100	300
4TH QTR/89	DBIP	DZ	44	-	8,200	300	-	-
	I.D.	DZ	-	3043	-	-	12,100	390
1ST QTR/90	DBIP	DZ	132	2378	8,100	380	8,100	380
2ND QTR/90	DBIP	DZ	907	1013	8,900	440	8,900	440
3RD QTR/90	DBIP	DZ	1162	226	9,100	520	9,100	510
4TH QTR/90	DBIP	DZ	894	117	9,600	580	9,600	580
1ST QTR/91	DBIP	DZ	236	24	10,500	660	10,500	660

FIGURE 2. MAIN WASTE DUMP PROFILE

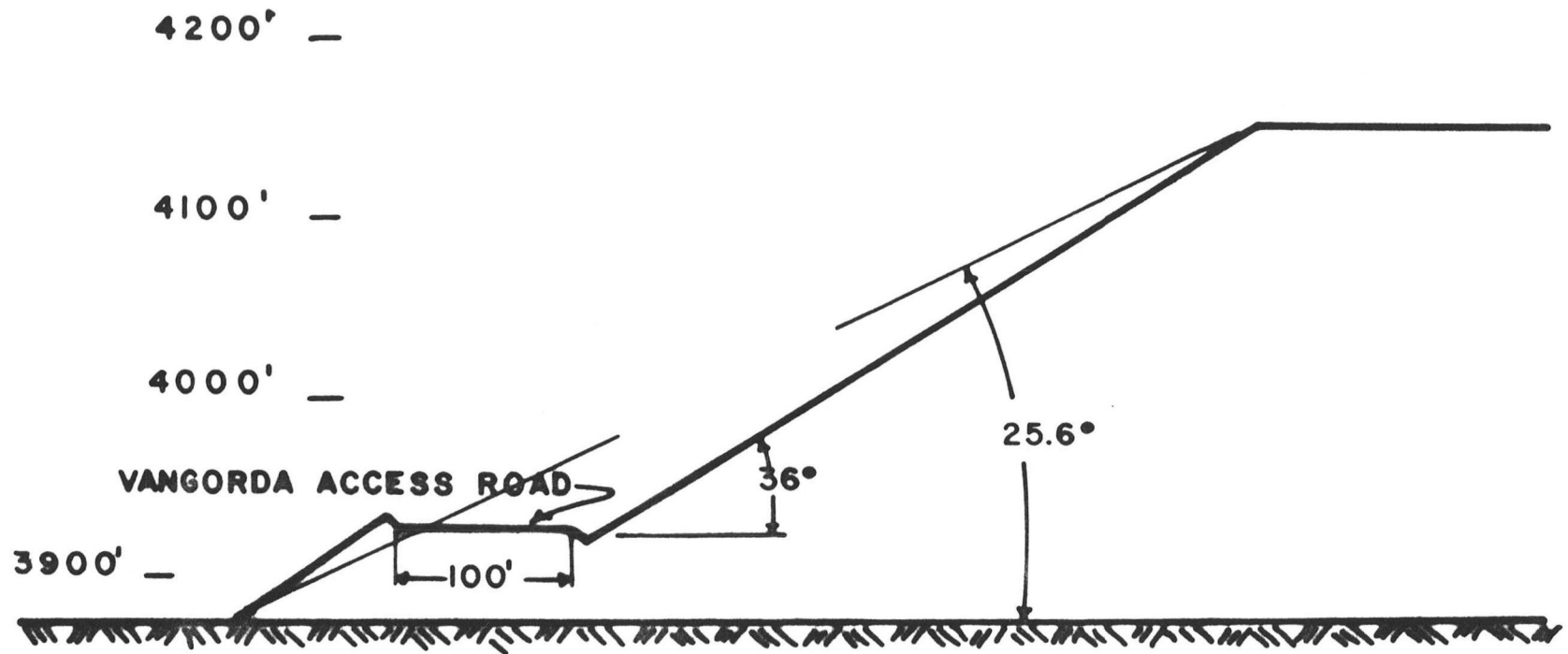


TABLE 1.

CURRABH RESOURCES INC.

WASTE ROCK MANAGEMENT SCHEDULE - OCTOBER, 1987
(TONNES x 1000)

PERIOD	SULFIDE DUMP	RAMP ZONE D.	NORTH WEST DUMP	INTERMEDIATE DUMP	ZONE II DUMP	VANGORDA PERIMETER RD.	VANGORDA HAUL ROAD	DUMP BACK IN PIT	TOTAL
					TO 3950 LEVEL		(82 EU ₅ /DAY)		
4TH QTR. 1987	507	1,380 FINISHED	3,264 FINISHED		2,226		1,000		8,377
1ST QTR. 1988	681				2,144		3,000		5,825
2ND " "	432			37	455	1,411	3,000		5,335
3RD " "	404			41	808		2,000		3,253
4TH " "	402			745	577		2,000		3,724
1ST QTR. 1989	307			693	287		2,000		3,287
2ND " "	116			88	202		2,000		2,406
3RD " "				693	1,263			157	2,113
4TH " "				3,043				44	3,087
1ST QTR. 1990								2,510	2,510
2ND " "								1,920	1,920
3RD " "								1,388	1,388
4TH " "								1,011	1,011
1ST QTR. 1991								260	260
	2,849	1,380	3,264	5,340	7,962	1,411	15,000	7,290	44,496

4.0 Active Dump Locations and Description

There are six active dump faces to be used through the life of the Faro deposit. The Vangorda Access Road, although accounting for 34% of all waste to be mined, is not to be considered as a dump face, but as a haulroad.

Through the completion of each mining phase, haulroad and ramp locations in the active mining areas constantly change. Each phase of mining was examined quarterly and distances to the appropriate dump face measured. Dump selection for each phase was determined according to the optimum haul.

4.1 The Northwest Dump

This dump is situated near the intersection of the main access road with the crusher access road. It is ideally suited for use during the final quarter of 1987 as it provides the shortest haul when mine tonnage requirements are at their highest level. Approximately 3,264,000 tonnes are scheduled for this dump. It is to be taken to the 4075 elevation and it is scheduled for completion by the end of 1987.

4.2 The Ramp Zone Dump

The Ramp Zone Dump has a capacity for 1,380,000 tonnes. It is scheduled for the final quarter of 1987, again, because it provided the shortest haul out of the south access for "BZ" and "CZ" phase waste rock, during the period of highest stripping.

4.3 The Sulfide Waste Dump

The Sulfide Waste Dump is being constructed according to the procedures set out in the report entitled "Waste Rock Management plan- at the Faro Mine". Prepared by Gordon Grams, Chief Engineer, May, 1987.

This dump is scheduled for an additional 2,819,000 tonnes of Sulfide waste and is expected to be completed by the end of June 1989. A phyllitic cover will be placed on the sulfides to help shed water away from the sulfides once this dump is completed.

4.4 The Zone II Dump

The Zone II Dump represents the most significant, in terms of volume, of all the dumps. It is scheduled to provide 7,962,000 tonnes storage capacity and is expected to be completed by the 4th quarter of 1989. This dump is strategically located to provide a short haul for waste exiting the pit from the south access. A report entitled "Development of the Zone II Waste Dump", September, 1987, has been prepared to explain in detail the preparatory work necessary to develop this dump.

4.5 The Intermediate Dump

The Intermediate Dump refers to the dump area south of Cyprus Anvil's old main dump, bounded by the main powerline to the west and the dump access haulroad to the east. It represents approximately 5,339,000 tonnes of dump capacity. This dump is 80% completed and will have three active dumping faces through its completion. Apart from the Vangorda haulroad, it has the longest haul distance to the Pit.

4.6 The Vangorda Access Road

The purpose of this road is to provide access to the mill for haultrucks hauling ore from the Vangorda Plateau deposit. Approximately 18,600,000 tonnes of mine run waste rock are required to construct 14.6 kilometers of road, of which 3,600,000 tonnes are in place. The road is to be constructed entirely out of mine run waste rock. The road width is 100 feet and averages 5 feet of fill. The first 1.6 kilometers, the rock drain crossing the north fork of Rose Creek, requires 12,500,000 tonnes or two-thirds of the total fill.

All but 0.9 kilometers of haulroad will likely be constructed using fill hauled from the Faro deposit. Approximately 500,000 tonnes of mine run waste rock is scheduled for the road from the Vangorda deposit itself.

4.7 Dumping Back in Pit

The south west corner of the Faro pit is ideally suited for back filling. Approximately 3,532,000 tonnes of Sulfide waste out of a total of 7,290,000 tonnes is scheduled to be dumped back in pit. Starting in the 3rd quarter of 1989 all Sulfide waste will be dumped here, followed by the non-sulfide waste rock starting January 1st, 1990.

What will the dumping elevation be to ensure that waste is under water.
3990 - 60 high

TABLE 3. FARO DEPOSIT - DUMP ZONE CAPACITIES

<u>DUMP ZONE</u>	<u>CAPACITY</u> (tonnes)	<u>DESIGN ELEVATION</u> (ft)
NORTH WEST DUMP	3,264,000	4075
RAMP ZONE DUMP	1,380,000	4025
SULFIDE WASTE DUMP	2,865,000	4075
ZONE II DUMP	9,970,000	4050
INTERMEDIATE DUMP	10,116,000	4075
DUMP BACK IN PIT	8,604,000	3990

TABLE 4. VANGORDA HAULROAD TONNAGES

<u>ROAD SEGMENT</u> (km)	<u>DESCRIPTION</u>	<u>TONNAGE</u> (t x 1000)	<u>CUMULATIVE TONNAGE</u> (t x 1000)
0.0 - 1.6	Vangorda Creek crossing	12,501	12,501
1.6 - 3.3		473	12,974
3.3 - 3.6	Creek crossing	477	13,451
3.6 - 8.1		1,745	15,196
8.1 - 8.3	Creek crossing	261	15,548
8.3 - 8.8		139	15,597
8.8 - 9.4		1,300	16,987
9.4 - 9.8		511	17,408
9.8 - 12.2		370	17,778
12.2 - 13.7	End of fill from Faro deposit	231	18,009
13.7 - 13.9	Hair pin valley	491	18,301
13.9 - 14.6	Vangorda mine entrance	102	18,603

Review of Detailed Waste Rock Management Plan

for Jack Bowers

from Joan Eamer

November 18, 1987

[I am trying to ask the questions that I think this plan would generate from the government agencies]

The section on Design Parameters should be expanded:

-Slope

What are the slopes of the old dumps? Are these dumps stable? What evidence have you to support this?

If the "overall slope" of the new dumps is 2:1, but the actual slope of the rock is steeper, is the waste rock in benches? How wide and high are the benches? Figure 2 would indicate that there are no benches, just the road width to achieve the 2:1 slope. What about dumps that the road does not intersect? Have the dump profiles shown in Figure 1 of the old plan been followed? What will the slope be on the Vangorda Access Road, particularly in the North Fork valley?

In the Water Licence, it states that weak or friable rock and overburden should have slopes of 3:1. What is the slope of old dumps containing such material? Are they stable? Will any of the new dumps be composed of this material? If so, what will the slope be?

-Limits

What is the separation between dump toes and power lines? It is 200 feet in the old plan.

-Volume

A swell factor of 35% was used in calculating dump capacity in the old report. Why has this been changed to 25%?

-Are the dumps to be covered in any material, compacted or the tops sloped for drainage control?

-Separation of waste rock types

Is calc-silicate being stockpiled (as it was according to the old plan) or is it all being used in the haul road?

What are the procedures for separating rock types--the plan should include a detailed description of how the waste rock deposition occurs, including the methods used in identifying the type of rock, directing it to a specific dump and method of dumping.

What types of waste rock will be in each dump? There should be a map or chart to show this.

Suggested format:

Phase/bench/ date mined/ waste rock types/ dumps/ acid-generation potential

[If you can tell me when each bench in each phase will be mined and which dump the rock is to go to, Gregg and I can complete this.] Better arranged by dump

Table 2 - needs clarification.

~~From this table it appears that sulphide waste goes to the Northwest dump, the Ramp Zone dump, the Zone II dump, the Intermediate dump and is dumped back in the pit. Is this true?~~

~~There is no dump listed for two rows.~~

In Table 2, the Ramp zone dump receives 1380 Tonnes X 1000 of each of sulphide and non-sulphide waste, yet according to Table 1, the total volume is 1380 to this dump. There are other inconsistencies, unless I am misunderstanding the tables.

-Stockpiles and oxide fines.

What will happen to these? If this plan is supposed to address the "physical and chemical stabilization" of the waste rock dumps (as stated in our Water Licence), these are the most important, as they are the most acid-generating by far. The oxide fines are not on the map.

Section 4

-Why make the distinction that the Vangorda Road is not to be considered as a dump face?

-Sulphide waste dump--These procedures should be repeated here, because Gordon Grams' report was not released to the Board. What is the depth of the phyllite cover? Will it be sloped? How will it be compacted? Will drainage be collected from the dump? If not, where will the water run (there will undoubtedly be some contaminated water seeping from the downslope toe of the dump).

-Vangorda Road

Reference could be made to Golders' report on the haul road, as this was submitted to the Board.

Figure 3 is not labelled as such.

Corrections required to the ~~roads~~ maps

The power line should be marked.

Roads referred to in the report should be labelled on the map.

This map shows Faro Creek in its diversion ditch, and no mention is made of this. We should probably indicate somewhere that alterations will have to be made to the final contours to accommodate the rerouting of the creek through its natural channel to the pit, but that this matter will be addressed in the Faro Pit abandonment plan.

Will all the sulphide wastes that are dumped back in the pit be well below water level when the pit is flooded?

Perhaps mention should be made that the Faro Pit abandonment plan will address the matter of potential contamination of water from the dumps.

Editorial Notes

Table 1 should come before Table 2--they are listed that way in the List of Tables.

The sideways pages should all be read with the binding at the top.

The dump name abbreviations in Table 2 should be defined and "FT" should be typed in.

Is Figure 1 necessary? If it is used, the scale should be corrected (I wish Faro were that close to Whitehorse!)

As someone unfamiliar with the mine, I would rather see a small site plan, indicating the general location of the dumps, pits, mill and creeks. Perhaps the power line could be located on such a map.

Table 1--EUs/DAY define.

The dates of both reports should be altered to the submission date (~~November~~ or December)



CURRAGH RESOURCES - FARO DEPOSIT
PLAN VIEW - ULTIMATE PIT & WASTE DUMPS

SCALE: 1 inch = 200 feet
 DRAWN BY: J. BOWERS
 DATE: OCTOBER, 1987

revised by	checked by