DY
EXP

CURRAGH RESOURCES INC.

003624

Inter-Office Memorandum

TO: Kelvin Dushnisky
Rescan Environmental Services

FROM: Gregg A. Jilson
Vice-President, Exploration
Whitehorse Office

RE: Dy Project Description

DATE: 01 21 1991

We return herewith an amended copy of your fax dated January 9, 1991. We also enclose a revised section 4.0 Proposed Mining Plan as well as four page project schedule matrix.

P.S. Should not finalize sections on Permit requirements now - we will have to discuss these with Legal counsel

CURRAGH RESOURCES INC.

117 Industrial Road
Whitehorse, Yukon
Y1A 2T8

TELEFAX TRANSMISSION

TO: Graham Scott
416-865-7048

FROM: Greg A. Hilson, Vice-President, Exploration
WHITEHORSE OFFICE

DATE: 21 Jan 91 TIME:

SUBJECT: DY Project - Strategy

Once you have had a chance to digest this matrix summary of the DY Project and our previous reports could you give me a call with respect to planning for the DY project. At the outset it appears that we will have at least one request for a legal opinion & Does the driving of a tunnel into the ground and the interception of groundwater by the tunnel with consequent dewatering by Curragh, constitute a use of water under YWA

I have also sent along a revised mine plan section for the Rescan Report forwarded previously to you directly by Rescan.

If all pages are not received, please contact Bette at 668-8034

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TO: Graham Scott

416-865-7048

FROM: **Gregg A. Jilson, Vice-President, Exploration**

WHITEHORSE OFFICE

DATE: 21 Jan 91 **TIME:**

SUBJECT: Dy Project - Strategy

Once you have had a chance to digest this "matrix summary" of the Dy Project and our previous reports could you give me a call with respect to planning for the Dy Project. At the outset it appears that we will have at least one request for a legal opinion & Does the driving of a tunnel into the ground and the interception of groundwater by the tunnel, with consequent dewatering by Curragh, constitute a use of water under YIWA

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(including cover page)

	TIMING AND DESCRIPTION	PERMITS REQUIRED	EARP SCREENING	ENVIRONMENTAL ISSUES	DEWATERING FLOW(igpm)	WATER USE(gpm)	POTENTIAL CONTAMINANTS	MITIGATION	SEDIMENTATION POND	WATER TREATMENT
SURFACE DRILLING	Jan-Mar 91	nil	nil	nil	nil	10-20 gpm	susp. sol.	settling ponds	small at drill site	Settling
SURFACE SETUP	Jan-Feb 91 Road to Portal site, trench for portal, flat bench for shops, gensets, offices, fuel, collar. Sump for domestic water	None (Environmental Operating Conditions will be voluntarily accepted)	Level 1	-Site runoff, total suspended solids -Fuel Storage -Increased Access -Encroachment on wildlife habitat -Sediment pond sizing, stability especially in light of time of year	0 site runoff 1:10 year 530 igpm	0	Suspended solids oils fuel spills	Sediment Pond Commitment to Environmental Operating Conditions Fuel Berms Interceptor Ditches	Small pond cut into hillside below portal 10m x 43m=430 m2	Clarification Only
UPPER DECLINE	Feb 91-Oct 91 First 800m of decline 4m x 5m produce 25,000 tonnes of non acid generating waste - stockpile at collar to build up site	As above No Env. Permits Operational Permits: -Explosives magazine -blasters certificates -diesel engine underground	Level 1	As above -rock waste weathering characteristics -spoil pile stability -water discharge from decline	0-100 igpm	10-20 igpm cooling water for drill jumbos (recycle possible)	-suspended solid -NH3 -oil	-large sediment sump 100m from portal UG -bioassays & monitoring -provision for cationic flocculation to improve settling	-after 100-200m of drift construct 40 x 20m pond uphill from portal -pump water up drill hole	Clarification and retention only
C ZONE DRIFT & EXPLORATION	Oct 91-Dec 91 turn to north west to drift along ore zone layers drill off ore from under ground workings conveyor installation vent raise to surface	As above plus Exploratory Water License?	Level 1	-waste rock management; identification# of potential acid generating rocks -site drainage and stockpile for waste and ore -mine water	50-100 igpm	20-30 igpm	-suspended solid -NH3 -total Zn -total Pb -total Cu -total Ba -dissolved Zn -oil	-larger sediment pond -contingency for treatment by pH increase for dissolved Zinc -reslope portal area towards sump -line stockpile area -rehandle potential acid generation waste underground or to surface stockpile out of Blind Creek drainage -commitment to monitor	pond as above with possible enlargement as needed to account for actual flow and particle size distribution/settling time - addition of holding pond to allow batch treatment?	mainly clarification and retention but provision for lime or soda ash addition to increase pH if dissolved metals become problematic Batch plant with holding pond possible

	TIMING AND DESCRIPTION	PERMITS REQUIRED	EARP SCREENING	ENVIRONMENTAL ISSUES	DEWATERING FLOW(igpm)	WATER USE(gpm)	POTENTIAL CONTAMINANTS	MITIGATION	SEDIMENTATION POND	WATER TREATMENT
LOWER DECLINE EXCAVATION	Oct 91?-Feb 92? -delay if conveyor installed -Complete decline to bottom at 1700m; will cross some zones of altered phyllites and sulphide waste	Exploratory Water License?	Level 1	-waste rock management; identification of potential acid generating rocks -site drainage and stockpile for waste and ore -mine water	50-100 igpm	20-30 igpm	-suspended solid -NH3 -total Zn -total Pb -total Cu -total Ba -dissolved Zn -oil	as above	pond as above with possible enlargement as needed to account for actual flow and particle size distribution/settling time	mainly clarification and retention but provision for lime or soda ash addition to increase pH if dissolved metals become problematic Batch plant with holding pond possible
B ZONE DRIFT EXPLORATION	Mar 92-Sept 92 turn to northwest and drift along strike of ore body - will drift in ore, altered phyllite and some sulphide waste	Exploratory Water License?	Level 1	-increasing water flows -waste rock management; identification of potential acid generating rocks -site drainage and stockpile for waste and ore -mine water	-up to 300 igpm?	20-30 igpm	-suspended solid -NH3 -total Zn -total Pb -total Cu -total Ba -dissolved Zn -oil	-as above	pond as above with possible enlargement as needed to account for actual flow and particle size distribution/settling time	mainly clarification and retention but provision for lime or soda ash addition to increase pH if dissolved metals become problematic Batch plant with holding pond possible
C ZONE TEST MINING & BULK SAMPLE	Jan 92 onward mining of 20,000 tonne sample - test stopes and rock mechanics	Exploratory Water License ?	Level 1	-increasing water flows -waste rock management; identifications of potential acid generating rocks -site drainage and stockpile for waste and ore -mine water	up to 300 igpm	50 igpm	-suspended solid -NH3 -total Zn -total Pb -total Cu -total Ba -dissolved Zn -oil	-as above	pond as above with possible enlargement as needed to account for actual flow and particle size distribution/settling time	mainly clarification and retention but provision for lime or soda ash addition to increase pH if dissolved metals become problematic Batch plant with holding pond possible

	TIMING AND DESCRIPTION	PERMITS REQUIRED	EARP SCREENING	ENVIRONMENTAL ISSUES	DEWATERING FLOW(igpm)	WATER USE(gpm)	POTENTIAL CONTAMINANTS	MITIGATION	SEDIMENTATION POND	WATER TREATMENT
B ZONE TEST MINING & BULK SAMPLE	Mining of 100,000 tonne sample - test stopes and rock mechanics rates up to 1500 tonnes per day	Exploratory Water License ?	Level 1	-increasing water flows -waste rock management; identifications of potential acid generating rocks -site drainage and stockpile for waste and ore -mine water	up to 300 igpm	50 igpm	-suspended solid -NH3 -total Zn -total Pb -total Cu -total Ba -dissolved Zn -oil	-as above	pond as above with possible enlargement as needed to account for actual flow and particle size distribution/settling time	mainly clarification and retention but provision for lime or soda ash addition to increase pH if dissolved metals become problematic Batch plant with holding pond possible
ACCESS ROAD HAUL ROAD	May-Oct 91 construct 100' wide haul road from Vangorda to lower portal and shaft site using mine waste?	None	Level 2? & I.E.E. or Vangorda Screening? (causes big timing problem)	-location of road with respect to sheep migration -use of road across sheep migration route -acid generated metals from road fill -crossings	N/A	N/A	-suspended solid	-location of pad away from known sites -continuation of mitigation for Vangorda Plateau	N/A	N/A
MINE DEVELOPMENT	powerline & access road - drive pilot drifts and prepare stopes - ore passes, draw points, ventilation raises, underground shops, offices, crusher	Production Water Licence	Level 2 & I.E.E.	powerline right-of-way, access road, waste rock handling -living accommodation -mine closure plan	up to 500 igpm	75 igpm	-suspended solid -NH3 -total Zn -total Pb -total Cu -total Ba -dissolved Zn -oil	-as above for C Zone and Access Road -further mitigation may be needed -details to be defined later	pond as above with possible enlargement as needed to account for actual flow	as above level present continuous water treatment and clarification pond
PRODUCTION CONVEYOR MINING	mining at rates up to 3500 tonnes per day	Production Water Licence	Level 2 & I.E.E.	-ore haul -tailings disposal -living accom -sheep migration -mine closure	up to 1000 igpm	100 igpm	-suspended solid -NH3 -total Zn -total Pb -total Cu -total Ba -dissolved Zn -oil	-as above for C Zone and Access Road -further mitigation may be needed -details to be defined later	pond as above with possible enlargement as needed to account for actual flow integration with clarification system, dredging	continuous water treatment plant

	TIMING AND DESCRIPTION	PERMITS REQUIRED	EARP SCREENING	ENVIRONMENTAL ISSUES	DEWATERING FLOW(igpm)	WATER USE(gpm)	POTENTIAL CONTAMINANTS	MITIGATION	SEDIMENTATION POND	WATER TREATMENT
SHAFT MINING PRODUCTION	shaft raising headframe installtion mining at rates up to 7500 tonnes per day	Production Water Licence	Level 2 & I.E.E.	as above	up to 2000 igpm	200 igpm	-suspended solic -NH3 -total Zn -total Pb -total Cu -total Ba -dissolved Zn -oil	-as above for C Zone and Access Road -further mitigation may be needed -details to be defined later	pond as above with possible enlargement as needed to account for actual flow integration with clarification system, dredging	continuous water treatment plant

THE YUKON

Curragh proceed

By SARAH DAVISON
Star Reporter

It's time to lace up those boxing gloves.

Curragh Resources Inc. has followed through with its stated intention, and is suing the federal government in the Federal Court of Canada.

The company filed a Statement of Claim in Toronto on Dec. 31.

Curragh is upset that the federal government made a $15-million financial assurance package a condition of approva for the Vangorda Plateau mine expansion near Faro.

The money would ensure that enough funds are on hand at any time during operation to abandon the mine in an environmentally-safe manner.

The federa government asked for the money in two ways: through a water licence, and through a mine reclamation agreement.

Curragh accepts the conditions of the water licence. It cal s for $943,000 in up-front security and 13 annual payments of $560,000 into an abandonment trust.

The company does not, however, accept the mine reclamation agreement. It calls for $4,406,000 in upfront security, and three equal trust payments in 1994, 1995, and 1996 of amounts to be decided once Curragh files a detailed abandonment plan in 1994.

Curragh claims the federal government does not have the authority, under the Environmental Assessment and Review Process (EARP) guidelines order, to demand financial assurance through a mine reclamation agreement.

It only agreed to sign the document, says Curragh, because the federal government made it a condition of the water licence.

"In order to obtain the water use licence ... additional security in the estimated value of $4,406,000 was provided, under protest, and pursuant to agreement of the parties hereto that the determination of the Government of Canada's right to impose additional conditions and security would be determined by this Honourable Court," reads the statement of claim.

Curragh wants its money back, and costs.

The statement of claim clearly outlines Curragh's arguments which concur with those set forward by the Yukon Territory Water Board in its reasons for decision attached to the Vangorda water use licence.

The provisions of the licence fulfil the conditions of the EARP screening and the Northern Inland Waters Act, says the water board. The environment has been protected by the terms of the licence, and an opportunity for public review provided.

"The water board also concluded that the financial responsibility of the plaintiff was adequate for the undertaking," reads Curragh's statement.

The board argued that EARP is subordinate legislation.

And Curragh points out that the federal government failed to appeal the water board decision. It had one month to do so.

For its side, the federal government will likely argue that prior Federal Court decisions concerning the Rafferty-Alameda dams in Saskatchewan prove that Ottawa has a "superadded" responsibility under

s with suit against Ottawa

EARP to ensure the environment is protected.

No court date has been set yet.

The outcome of the case will add to the increasing body of case law concerning the EARP guidelines order. Curragh says it hopes to have the case decided within six months.

The federal government is trying to hurry through Bill C-78, or the Canadian Environmental Assessment Act, which will replace the EARP guidelines.

There have been problems interpreting the guidelines because they're written as a cabinet order, not as legislation.

Curragh is using McMillan Binch of Toronto as its solicitors in this case. Former prime minister John Turner, Curragh's newest director, used to be a partner at McMillan Binch, along with George Whyte, Curragh's vice-chair and secretary.

Information release called normal

By SARAH DAVISON
Star Reporter

The Yukon Territory Water Board did nothing unusual in providing Curragh Resources Inc. with advance notice of the terms and conditions of the Mount Hundere water licence.

That's the view of Grant Livingston, the board's chair.

"Certainly, it has been board practice to release information to licence applicants as soon as possible," he said in a recent interview.

The information was released in a letter responding to a request from Curragh for a water licence for Hundere by the end of December. The lead-zinc mine near Watson Lake is Curragh's newest venture, and will employ some 150 people when it starts production later this year.

In a letter to the water board in December, Curragh chair Clifford Frame said work at Hundere would have to cease unless the board issued the water licence by the end of December. Permanent shutdown could result from further delays, he said.

In its response, the board told Curragh the terms and conditions it proposes attaching to the licence, even though that licence hasn't been issued yet.

And it refuses to make that information public until Northern Development Minister Tom Siddon signs and approves the licence. His consent is needed before water licences are issued.

There's not much value to anyone except the applicant in knowing those terms and conditions, said Livingston.

"One of the reasons we do it is the applicant could reasonably assume what might be in the licence for lead-time in planning. But there's a major risk on their part," he said.

"Whether our decisions are made public at the time we make them or when the minister approves might be a moot point."

Work at the minesite has continued regardless of the passed deadline.

"It wasn't a threat, it was just a fact," a Curragh spokesperson said when asked if the company was crying wolf by threatening a shutdown.

"Our lenders had deadlines on us that licences be in place," said George Whyte, Curragh's vice-chair and corporate secretary. But those lenders have not withdrawn.

Earlier in the year, the Yukon Conservation Society threatened to sue the company over the construction work at Hundere. It objected to the company's decision to ignore the Environmental Assessment and Review Process (EARP).

Curragh responded that it was entitled to do the work under Section 3.3. of the Territorial Lands Act, which excuses miners on quartz claims in the Yukon from land use regulations.

Last week, the federal government approved the project under EARP, clearing the way for the licence and a surface lease to be issued.

The water board says the Hundere water licence won't be ready for Siddon's signature until the end of January.

Jim
Fitzpatrick, Dept.
See St. Marie

RESCAN 001

FACSIMILE MESSAGE

RESCAN ENVIRONMENTAL SERVICES LTD.
Suite 510 - 1111 West Hastings Street
Vancouver, B.C., Canada V6E 2J3
Phone (604) 689-0460
Fax (604) 687-4277

DATE	9/1/91	TIME	OPERATOR
TO	Current	LOCATION	Faro
ATTENTION	Messrs. G Jilson / G. Scott	FAX NO.	403-994-2667
FROM	Kevin Dushwisky		
COPY TO	McMillan, Fuhr	LOCATION	Toronto
ATTENTION	Mr. Graham Scott		416-865-7043
PROJECT NAME	DY	PROJECT #	304
FOLLOW UP BY MAIL	☐ YES	☑ NO	
TOTAL NUMBER OF PAGES INCLUDING THIS TITLE PAGE			

MESSAGE

Gentlemen,

The Dy Project Dscaption for your meeting as discussed. Mapping revisions are underway, Scheduling changes will be completed once finalized.

Best Regards,

K Dushwisky

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p 4-2

ADVANCED EXPLORATION AND DEVELOPMENT OF THE DY UNDERGROUND MINE

PROJECT DESCRIPTION

Prepared for:

Curragh Resources Inc.
Whitehorse, Yukon

Prepared by:

Rescan Environmental Services Ltd.
Vancouver, British Columbia

October 1990

Rescan

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PROJECT FACT SHEET

CORPORATE DATA

Project Name:	Dy (Lead-Zinc-Silver) Project
Company Name and Address:	Curragh Resources Inc. #1900 - 95 Wellington St., West Toronto, Ontario
Contact/Title:	Mr. Colin Benner, P.Eng. Executive Vice-President, Operations Toronto, Ontario Tel: (416) 363-7111 Mr. Gerry Acott Manager, Environmental Affairs Whitehorse, Yukon Tel: (403) 668-8021

PROJECT DETAILS

Project Location:	200 km northeast of Whitehorse, YT 62° 13'N Latitude 133° 08'W Longitude
Exploration Cost to Date:	Approximately $12 million
Development Cost:	Approximately $35 million
Estimated Total Capital Cost:	Approximately $50 million
Minerals:	Pyrite, sphalerite, galena, chalcopyrite, barite, quartz.
Mining Method and Production Rate:	Combination of room and pillar, longhole stope cut and fill maximum 7,500 tpd Initially 1,500 tpd
Process Plant/Mill:	Use existing mill at Faro, truck or conveyor haulage to concentrator.

Ore Beneficiation Process:	Conventional differential flotation
Proposed Mine Life:	15 years

MINERAL RESERVES

Reserves:	Geological: 21.0 x 10^6 tonnes 5.5% Pb, 6.7% Zn, 84 g/t Ag
	Preliminary 11.3 x 106 tonnes Mineable: 5.8 % Pb, 6.8 % Zn, 83 g/t Ag
Cut-off Grade:	9% lead ~~and~~ plus zinc for preliminary mineable 0.94 g/t Au
Potential for Additional Reserves:	Potential for significant (10 mt) extensions to Dy deposit; 5 million tonnes indicated at Swim Basin and good potential for additional discovery.

ACCESS/TRANSPORTATION

Road:	All weather Highway access to site Main Mine Access Road from Faro mill - Vangorda Plateau site and Blind Creek Road from town site
Air Access:	Scheduled service to Whitehorse; charter to Faro Airstrip

POWER SUPPLY:	On-site diesel generation during initial exploration, tie into power grid for production.

WORKFORCE INFORMATION:

Construction Workforce: (Annual Average)	40
Operation Workforce: (Annual Average)	75
Housing Options:	Existing facilities in town of Faro, YT

Workforce Rotation/Schedule:	Operational workforce based in Faro, YT - construction and development workforces based in a camp in Faro with 6 weeks on and 2 weeks off station from elsewhere.

PRELIMINARY DEVELOPMENT SCHEDULE:

Decline Collar and Surface Setup	January and February 1991
Upper Decline Excavation:	February – Sept 1991
Lower Decline Excavation	Sept 1991 – Apr. 1 1992
Advanced Exploration Water License:	July 1991
~~**Test Mining Water License:**~~	~~October 1991~~
Initial Test Mining: (C Zone, B Zone Drilling)	November 1991 Aug 1992
Drifting and Underground [redacted]:	
Upper Zone "C"	October 1991-December 1991
B Zone	February 1992-July 1992
Initial Environmental Evaluation:	? July 1991
Full Production Water License:	June 1992
Phase I Mining:	October 1992
Phase II Shaft Mining:	1993-1994

#=order in list, do not enumerate items however

1.0 INTRODUCTION

1.1 Preamble

Curragh Resources Inc. (CRI) is a Canadian controlled company that owns and operates the lead-zinc-silver mining and concentrating operations located near Faro, Yukon Territory (Figure 1-1). There are five ore deposits with well defined reserves identified in the Anvil District: Faro, Vangorda, Grum, Dy and Swim. In 1983, geological reserves for all five deposits totalled 96 million tonnes. To-date, only three of the deposits are being mined: Faro and the newly developed Vangorda, and Grum deposits. CRI is undertaking advanced exploration of other ore bodies in the area to determine the feasibility of bringing them into production at a later date. This document will detail the planned exploration and development of one of the two remaining unmined ore bodies, namely the Dy deposit

The purpose of this document is to describe the proposed Dy Project with respect to the geology of the ore body and host formation, the plan for exploring the ore body and any related infrastructure development, the phased underground mining of the deposit and an overview of existing land use, environmental setting, and ongoing and proposed environmental and socioeconomic assessments related to the project. The document is intended to help place the project clearly into a regulatory framework with phased in approvals/permits which keep pace with the phased in nature of the project as go/no go feasibility decision points are reached. The Dy project is the first exclusively underground mine project in the Anvil Range. As such, it poses an entirely new situation for the proponent and the regulatory regime who are both accustomed to dealing with large open pits. This deposit can be developed so that it does not cause a significant negative operational environmental impact. Curragh is committed to develop the deposit in such a manner through devising progressive material handling and waste management procedures. The deposit is also unique in that the entire ore body is 300 feet below the regional base water level. Thus, any potential post operational environmental impact will be eliminated as the workings flood with stagnant water.

1.2 Project Location and Setting

The Dy property is located in the Anvil Range lead-zinc-silver district near Faro (approximately 200 km northeast of Whitehorse) Yukon Territory, with coordinates 62° 13' N and 133° 08' W (Figure 1-1). Specifically, it is situated 6 km south and east of the Grum Deposit on the Vangorda Plateau on the south slopes of Mt. Mye and at an approximate elevation of 1,168 m (3,800 ft).

SURFACE Exploratory drilling to delineate the deposit was ~~completed~~ carried out at Dy from 1977 through 1981. Drill indicated ore reserves for this property are estimated to be 21 million tonnes grading 5.5% lead, 6.7% zinc and 0.12% copper. In addition, the ore contains 84.0 g/t

of silver and 0.95 g/t gold. The deposit remains open to extension in several directions

The proposed exploration site is located on morainal landforms. The terrain is rugged with steep slopes that are covered by a thin veneer of overburden. The soil texture ranges from sandy loam at the surface to slightly heavier textures (loam - silt loam) in the subsurface.

The predominant vegetation in the area (Plate 1-2) is shrub to forest-shrub consisting of willow (*Salix* spp.), scrub birch (*Betula glandulosa*), aspen poplar (*Populus tremuloides*), white spruce (*Picea glauca*), and lodgepole pine - *Pinus contorta var. latifolia.* Willow, scrub birch and small poplar dominate on open slopes. The area was subject to a forest fire in recent history and relatively dense, immature stands of lodgepole pine predominate at many sites. White spruce tends to predominate at lower elevations giving way to jack pine at higher altitudes. The tree line is at approximately 1,476 m (4,800 ft).

Access to the property is from the northwest via a secondary road which is an extension of the main mine access road servicing the Faro, Grum and Vangorda open pits. Access can be gained to the site from the southwest from the town of Faro via the Blind Creek Road (Figure 1-1).

1.3 Historical Perspective

The initial mineral discovery in the Anvil Range was that of the Vangorda deposit which was first drilled by a company called Prospector Airways in 1953 through 1955. Systematic geological mapping of the Anvil District was not carried out until 1961 (Roddick and Green 1961; cited in Jennings and Jilson 1984). The locating of the

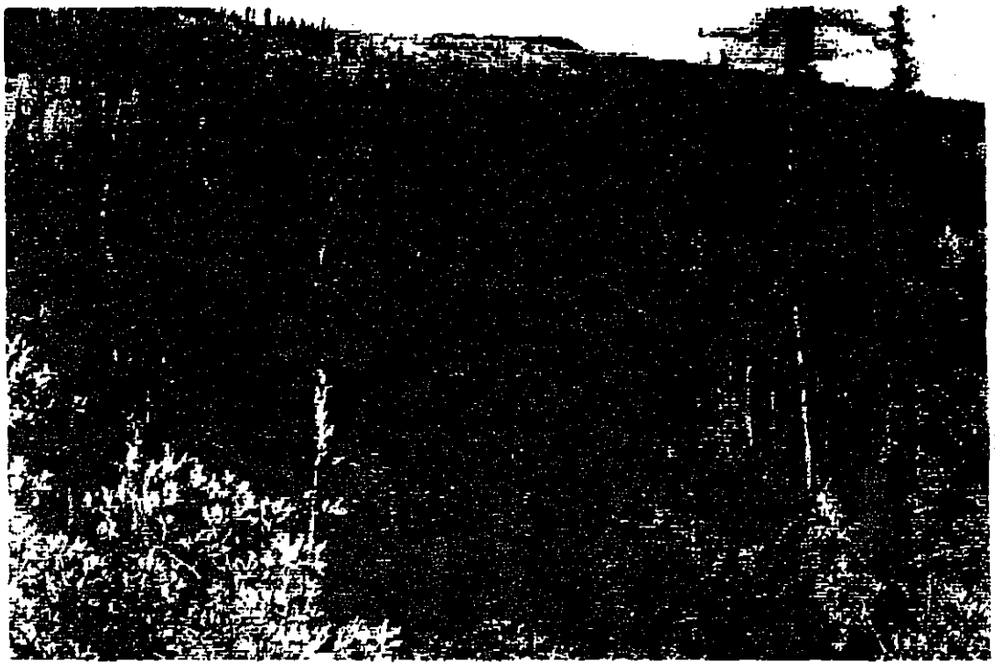

Plate 1-1: Typical Upland Forest in vicinity of proposed mine site.

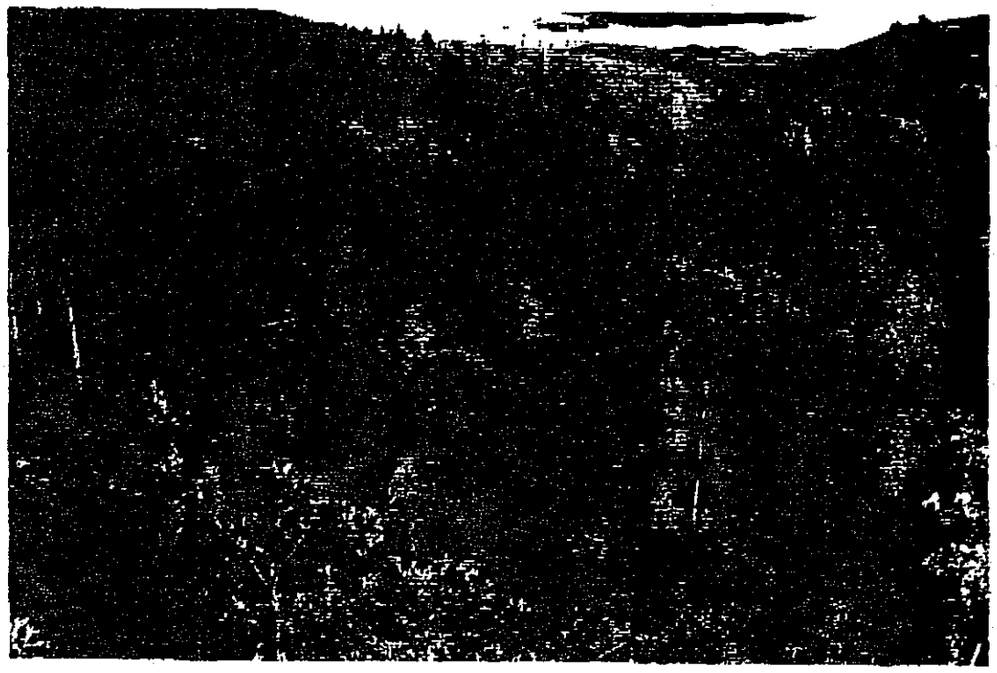

Plate 1-2: Location of proposed storage area for waste rock from exploration ~~adit~~ excavation.

decline

Vangorda deposit was followed by the subsequent discoveries of the Faro (1964), Swim (1964), Grum (1973) and Dy (1976) deposits. Exploration in the area continues.

The Faro deposit was the first of these ore bodies to be developed and brought into production. Mining of the Faro deposit commenced in 1969 under the auspices of the Anvil Mining Corporation later Cyprus Anvil Mining Corporation (CAMC). ~~At that time~~, production of ore reached rates of up to 10,000 tonnes per day. In [redacted] CAMC embarked on a program of expansion which included both an aggressive exploration program, and the acquisition of mineral deposits and claims on the Vangorda Plateau held by Kerr Addison Mines Ltd., including the Grum, Vangorda, and Swim deposits. The objective of the acquisition was to bring other Vangorda deposits into production to supplement the Faro mill feed.

Depressed base metal prices coupled with low productivity and high production costs at Faro and the added burden of the debt load brought about by expansion led to a major slowing of production at Faro and closure of the concentrator by CAMC in 1982. Some open pit waste stripping operations were carried out between June 1983 and October 1984 but production had ceased completely by the end of 1984.

In November 1985, Curragh Resources Inc. acquired the holdings of Cyprus Anvil Mining Corporation and reactivated the Faro operation in January 1986. Concentrator operations resumed in June 1986 and the first concentrates were shipped in July 1986. In 1989, development of the Vangorda Plateau was begun with stripping of the Vangorda and Grum deposits which are to eventually supplement the Faro mill feed. Ore removal is currently under way at the Vangorda pit. Ore removal from the Grum pit is not expected to commence significantly until 1992. It is anticipated that the ore reserves in the Faro Pit ~~will be mined out~~ be exhausted by October 1991.

In early 1990 a small underground operation was initiated just southwest of the Faro Pit from a portal in the pit. This operation will close in 1992. The mill at Faro is currently processing 13,000 tonnes of ore per day. The mine produces two concentrate products; a lead concentrate which includes payable quantities of gold and silver, and a zinc concentrate. The concentrate is hauled via road to Skagway, Alaska where it is loaded on ships for markets in Europe and Asia. Once the Faro Pit is exhausted the anticipated maximum milling rate of the combined Vangorda/Grum ore may be 11,000 tonnes per day however rates up to the full Faro production rate, of 13,000 tpd are possible. Proven

The Faro operations are major producers supplying 3% of the western worlds zinc and 5% of its lead concentrates. Curragh is the sixth largest zinc producer in the world.

open pit mineable ore reserves indicate a project life of 13 years. Development of the Dy property would increase this by five years.

2 - Geology

2.0 GEOLOGY

2.1 District Geology

The Anvil Range lead-zinc-silver district, in central Yukon Territory, lies in the Selwyn Basin tectonic province and the Yukon Plateau physiographic province (Figure 2-1).

The ore deposits of the Anvil district formed in the shale-rich, outboard portion of the early Paleozoic-late Proterozoic North American miogeocline, are located within the southeast portion of the Selwyn Basin sub-province of the Northern Canadian Cordillera (Jennings and Jilson 1984). This basin is bordered on the west and southwest by the Pelly Cassiar Platform and on the east, north, and northeast by the Mackenzie Platform (Figure 2-1).

Geologically, the district is a structurally complex, polydeformational terrane exposed in the Anvil Arch, a northwest trending structural uplift whose core is underlain by a Cretaceous granitic suite. Around the flanks of the Arch is a sequence of late Precambrian to upper Paleozoic metasedimentary and metavolcanic rocks which host the ore deposits.

The [syn-sedimentary, exhalative] massive sulphide~~s~~ [ore bodies] in ~~the Anvil camp show a distinct~~ stratigraphic control. Specifically they are localized within an approximately 150 m thick transition zone between the Precambrian Mt. Mye and lower Paleozoic Vangorda Formations (Figure 2-2).

The Mt. Mye formation is essentially a monotonous sequence of [metamorphosed shales] ~~metapelites~~. It is diagnostically non-calcareous. The formation ranges in thickness up to 2 kilometres and becomes more heterogeneous towards the top with the appearance of some calcareous and [meta-]volcanic members. The Mt Mye formation is only weakly pyritic and static ABA testing in Vangorda Plateau CRI 1989 indicates the rock comprising the formation show no, or only weak, potential for acid generation.

The Vangorda Formation, characterized by calcareous phyllites [(metamorphosed shales)] and [metamorphosed volcanic rocks] ~~metabasite~~, is separated from the underlying Mt. Mye by a complex transition zone. This transition zone is typified by regionally extensive units of graphitic phyllite along with a mixture of

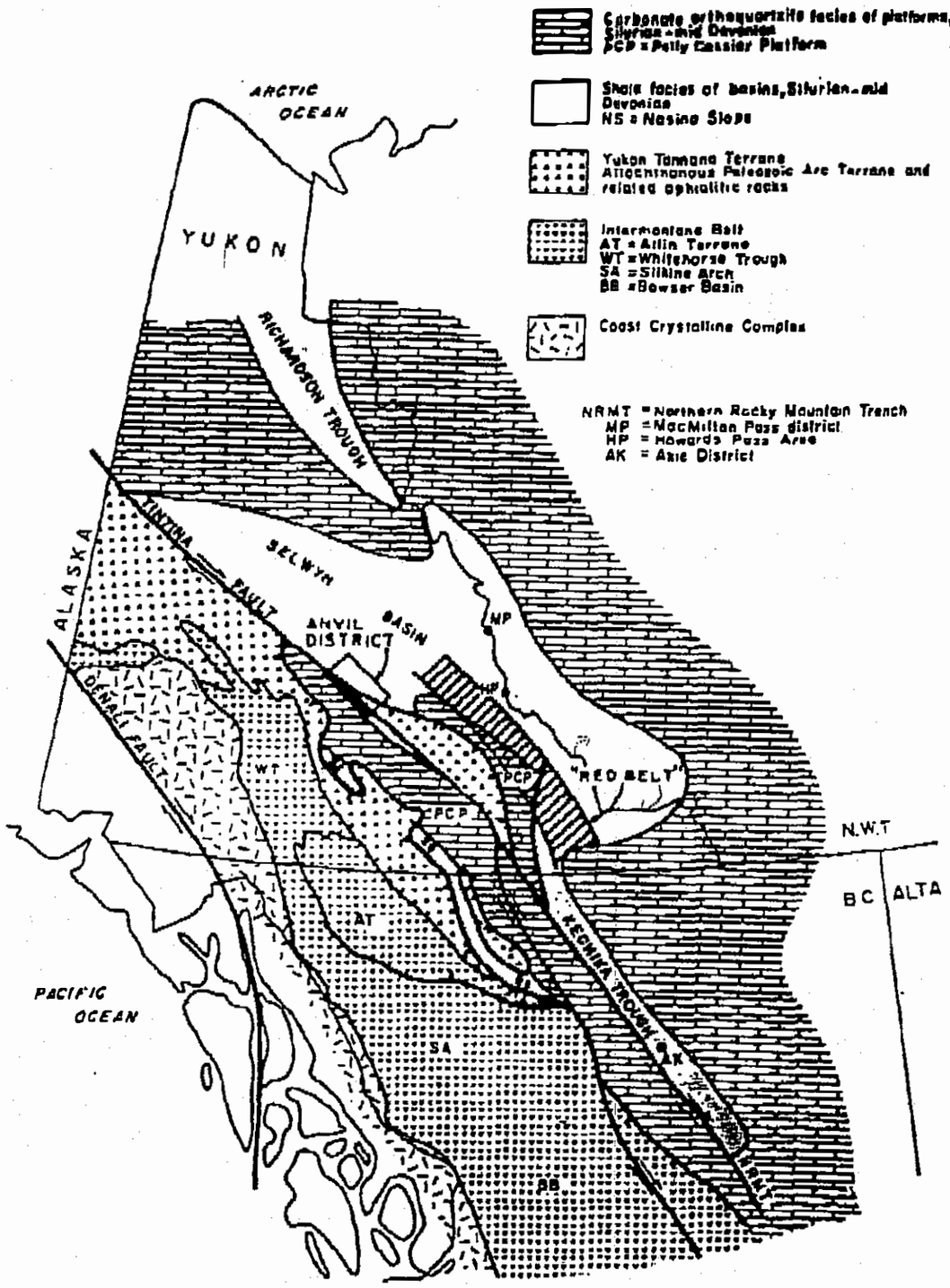

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Figure 2-1 Anvil District Location in Relation to the Regional Geology of the Yukon Territory

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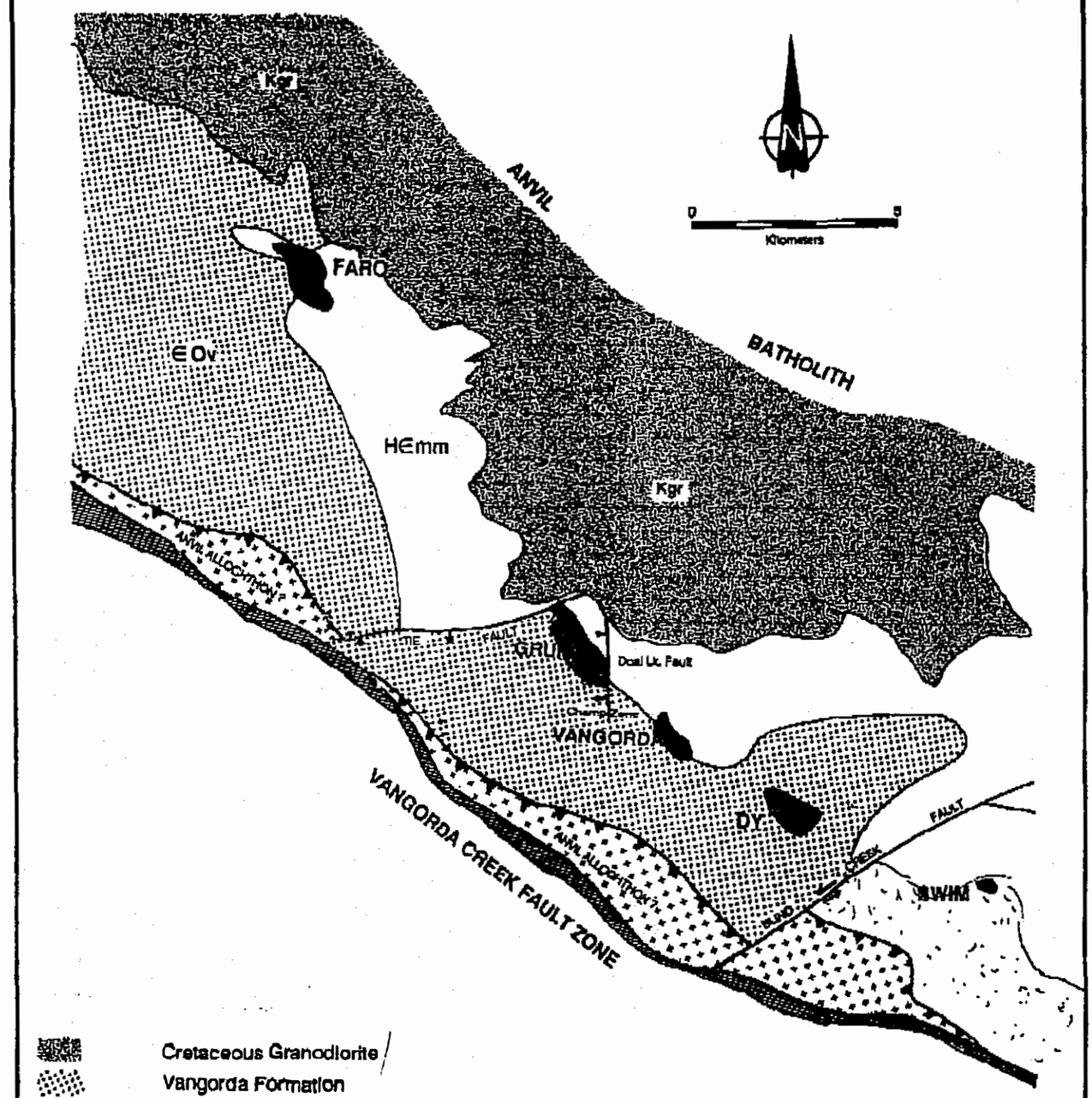

(S.S. Jennings & G.A. Jilson, 1984)

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Figure 2-2 Ore Body Locations Relative to the Mt. Mye and Vangorda Formations

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Curragh Resources Inc.

basaltic meta- meta-

non-calcareous and calcareous phyllites and some ~~mafic~~ volcanic and intrusive units. Rocks of the formation are notable for their calcite content and consequent acid consuming nature. However, the basal unit of the formation may be slightly acid generating locally.

All of the known massive sulphide deposits to date in the Anvil camp are associated with the carbonaceous phyllites within the transition zone. There are five known deposits found along a prominent curvilinear trend in the district with a total premining geological reserve of 120.1 million tonnes averaging 3.7% Pb and 5.6% Zn. They are from northwest to southeast, the Faro, Grum, Vangorda, Dy, and Swim. To date, the Faro, Grum, and Vangorda deposits which represent 95 million tonnes of the above geologic l reserves, have been developed by open pit.

The deposits are thought to have formed from hot metalliferous brines discharged from submarine fumaroles localized along a synsedimentary fault or hinge line which developed in response to late Hadrynian or lower Cambrian extensional tectonism. The sulphide ores in the Anvil Camp occur as massive, sheet-like to lenticular, predominantly pyritic bodies showing distinct lateral and vertical zonation. This zonation of sulphide ~~facies~~ ore types, the Anvil Cycle, is common to all Anvil sulphide deposits. A typified sequence would consist of a ribbon banded graphitic quartzite facies, ove lain by a more massive pyritic sulphide facies in turn overlain by ~~and~~ baritic facies, ~~which would occupy~~ the more central area of the deposit. Each deposit has associated with it a white-mica dominant alteration envelope, which suggests a hot ore fluid/wallrock interaction at the time of sulphide deposition. All ore types and subeconomic sulphide rocks will potentially be acid generating. Some or all altered phyllite may be acid generating.

Laterally the same zonation is commonly seen with the upper most baritic facies occupying the (or bleaching) in the surrounding phyllites

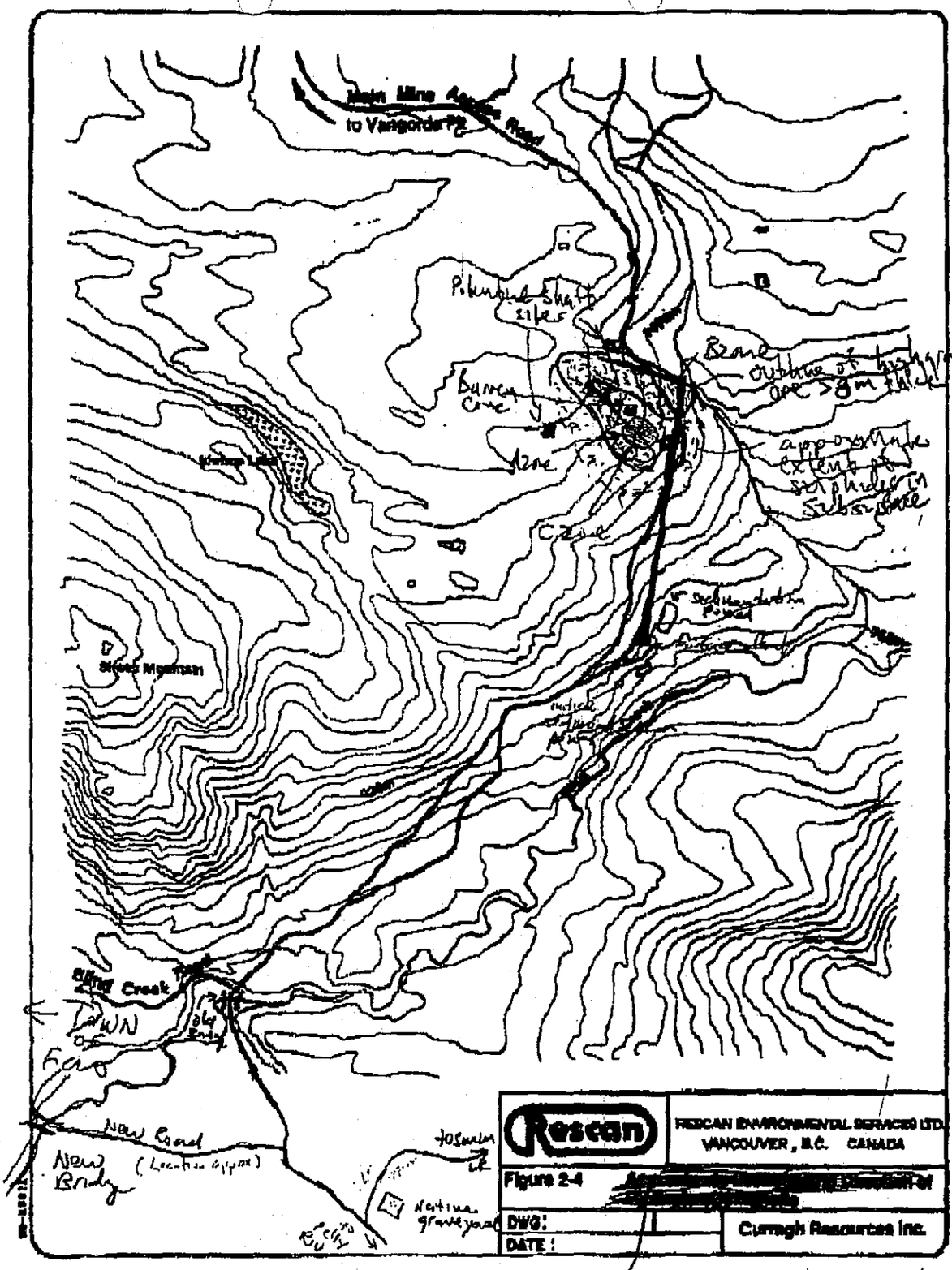
bleached or

2.2 Deposit Geology

In the Dy deposit, there are three, possibly five horizons defined (Figures 2-3 and 2-4). The internal structure of the deposit is too poorly understood to allow for a reasonable evaluation of stratigraphy and thus the deposit ~~facies~~ ore type distribution. However, there does appear to be a predominance of more baritic ~~facies~~ ore type in the southwest (A Zone) compared to a predominance of pyritic massive and of disseminated, ~~and~~ variably graphitic, ores in the northeast (B Zone). The central part of the deposit consists of barren massive and semimassive sulphides. The internal geometry of the deposit is poorly understood. However, the deposit does appear to lie on upper Z symmetry (looking northwest) long

limb of megascopic F1 antiform with local superimposition of moderate scale F2 folds. There also appear to be numerous steep faults that cut the deposit but their orientation is poorly known.

The proposed exploration program will provide for a more accurate definition of the structure and dimension of this ore body. Initial development will focus on the B Zone because of high overall grade and zinc predominance compared to lead predominance of the A Zone. Initial production may actually be from the C Zone, a stratigraphically high ore horizon which may prove to be ore bearing just west of the access decline about 1,200 m from the portal. Fill in drilling is underway from surface to better define the B Zone and test potential of the C Zone.



Dy Project, Vicinity Plan

3 - Environmental Setting and Land Use

3.0 ENVIRONMENTAL SETTING AND LAND USE

3.1 Land Use Overview

Mining presently constitutes the single largest land use in the region. Less prominent land use include trapping; commercial, subsistence and sport fishing; native food and sports hunting; and native woodcutting (firewoo). There is very limited forestry and no agricultural use of land in the region.

Trapping

Trapping is carried out by the native people of the Kaska Dena Nation, Ross River band, who hold the group trapping rights to the area. The species of prime interest to trappers are mink, marten, otter, lynx, fox (for furs) and the snowshoe hare (for food). Other less valuable species include wolf, beaver, muskrat, bear and wolverine. Few details on the number of animals taken during the winter harvest are available.

The Ross River band claims that the area in the vicinity of the proposed exploration portal is regularly trapped for marten and fox and that catches of marten (the most sought after species) have decreased noticeably since the inception of the original Faro mine in 1969 (Peter LeDuc, trapline owner, pers. comm. Sept. 20, 1990). ~~While mining activity may have had some impact on the marten populations in the area, it is more probable that~~ a massive forest fire ~~that~~ swept through the region in 1969 ~~had a far greater impact~~. Forest fires are a serious menace to marten habitat since they are denizens of climax coniferous forest and avoid burned-over or logged areas. A significant portion of the area in the vicinity of the proposed mine was burned in 1969, whereas mining activity in the same area has been minimal.

The impacts of both mining and the fire on native trapping will be investigated.

Commercial, Subsistence and Sport Fishing

No commercial fishing licenses have been issued at Faro or Ross River in the last ten years (Mr. J. Burdek, DFO Fisheries Officer, pers. comm., Oct. 23 1990). However,

3-2
3-3

there are several subsistence fisheries centered at both Pelly Crossing and Ross River which exploit chinook salmon populations in the Pelly River and Blind Creek systems. The subsistence fishery provides food for humans and dogs, and is important culturally in that it maintains a traditional lifestyle. This fishery predominantly exploits chinook salmon (*Oncorhynchus tshawytscha*), but other species such as whitefish (*Prosopium* spp.), northern pike (*Esox lucius*), inconnu (*Stenodus leucichthys*), and Arctic grayling (*Thymallus arcticus*) are also taken. No estimates of the numbers of these species taken are available.

Sports angling takes place in Vangorda and Blind Creeks, the Pelly River and in Blind and Swim Lakes. Angler utilization of the Swim Lakes and Blind Creek system has been described as "considerable" (Monenco 1976). The predominant species angled for include Arctic grayling and chinook salmon.

While it is anticipated that neither advanced exploration program nor mining activities will adversely impact Blind Creek, a detailed environmental assessment related to these activities is being undertaken to ensure the environmental integrity of Blind Creek is maintained coincident with project development.

Subsistence and Sport Hunting

There is little available information on the level of subsistence hunting being conducted by native and/or resident hunters in the vicinity of the proposed exploration portal. However, it is known that hunting activity by local and non-resident hunters in the Faro region is restricted. The area encompassing Faro falls under Big Game Zone Subunit #4.5.1. This area has been closed to hunting of all big game (Mr. N Barichello, YTG Fish and Wildlife Branch, pers. comm., Oct 23 1990). Faro residents wishing to hunt must go farther afield to the Swim Lakes Big Game Zone (#4.4.7) or Mt. Mye Big Game Zone (#4.4.6)

3.2 Biophysical Environment

The Dy property lies within the Blind Creek drainage basin. Blind Creek flows in a southwesterly direction into the Pelly River. The Pelly River drains west into the Yukon River which flows northwest into Alaska to Ft. Yukon where it alters course and flows west, through Alaska, and discharges into the Bering Sea.

3.2.1 Fisheries Resources

Investigations were undertaken during August 1989 to characterize the fisheries resource potential and habitat features of stream reaches on Blind Creek. Populations of slimy sculpin (36.4%), Arctic grayling (29.3%), juvenile chinook salmon (25.4%), burbot (8.4%) and round whitefish (0.4%) were estimated (all percentages based on species biomass g/m^2).

Juvenile chinook were found throughout the Blind Creek drainage. Grayling were captured near the lake-head source, and at the mouth of Blind Creek. None were found between the lake and the creek mouth. Burbot and whitefish were only identified below the lower bridge crossing (approximately 2 km upstream from the confluence with the Pelly River). Slimy sculpins were found throughout the system.

Up to 700 returning chinook salmon spawn in Blind Creek (Harder 1989, 1990, unpublished data). The salmon return to the stream in early-August. Spawning takes place throughout the lower 35 km of Blind Creek.

A baseline water quality survey of Blind Creek was initiated in September 1990. Four (4) sites within the watershed were sampled and analyzed. Generally this watercourse can be described as very slightly alkaline in pH (7.52 - 7.89), clear (< 25 colour units), relatively soft (< 65 mg/l total hardness), and low in total suspended solids (< 8.7 mg/l). Total and dissolved metals were present at very low levels (i.e. < 0.022 mg/l zinc, < 0.01 mg/l lead, < .16 mg/l iron). Results of previous sampling of Blind Creek (Table 3-__) are generally consistent with the above findings, however higher hardness and high metals are evident at times.

A regular water quality monitoring program, designed to fully characterize the pre-development surface water quality in the Blind Creek drainage basin, is now under way.

3.2.2 Wildlife Resources

Wildlife having management, economic or recreational importance in the Dy Project area include ungulates such as moose (*Alces alces*), caribou (*Rangifer tarandus caribou*), and mountain sheep (*Ovis dalli stonei*); carnivores such as grizzly (*Ursus arctos*) and black bear (*Ursus americanus*), wolves (*Canis lupus*), foxes (*Vulpes vulpes*), wolverine (*Gulo gulo*) and lynx (*Lynx lynx*); furbearers such as marten (*Martes americanus*), mink

(*Mustela vison*), otter (*Lontra canadensis*) and beaver (*Castor canadensis*); game birds such as ptarmigan (*Lagopus lagopus*), and blue (*Dendragapus obscurus*), ruffed (*Bonasa umbellus*) and spruce grouse (*Canachites canadensis*); and small mammals like the snowshoe hare (*Lepus americanus*).

Ungulates

Distribution and density of ungulates in the region is seasonal. A formal survey of wildlife in the Faro area, including the proposed exploration portal and surface plant as well as various possible production shaft sites, was conducted in September 1990. During this survey, moose were only found at elevations between 1,756 m (4,500 ft) and 1,950 m (5,000 ft) which is at or slightly above the treeline. However, dense growths of willow, aspen and poplar located in the sub-alpine transition zone, which includes the location of the proposed portal (Plate 3-1), and in the flood plain of the Pelly River suggest that these areas provide summer and winter forage habitat for moose. During the September 1990 survey, a single-transect walk through willow-brush habitat in the vicinity of the proposed portal site resulted in a count of 8 pellet groups over 100 m. This suggests that the area was being heavily utilized by moose.

Caribou were only observed in alpine meadows on Mt. Mye, above 1,950 m (5,000 ft). This is typical of their distribution during summer months (Banfield 1977). These animals are known to overwinter in the Tay River valley to the north of Mt. Mye, far removed from the location of the proposed mine. There have been no reported sightings of caribou on the south-facing slopes of Mt. Mye.

The high alpine on Mt. Mye provides summer range for a population of Fannin sheep (Figure 3-1). During September 1990 only one flock of 11 young rams were seen on Mt. Mye during an extensive aerial survey of the region. The largest portion of the known herd, a flock containing approximately 8 rams and 32 ewes was observed at much lower elevations migrating towards their known wintering grounds on Sheep Mountain near the town of Faro (Figure 3-1). Sheep Mountain is a sparsely treed ridge between 980 m and 1,750 m elevation with a predominantly south-facing aspect where the animals find grasses and other forage under a comparatively thin blanket of snow.

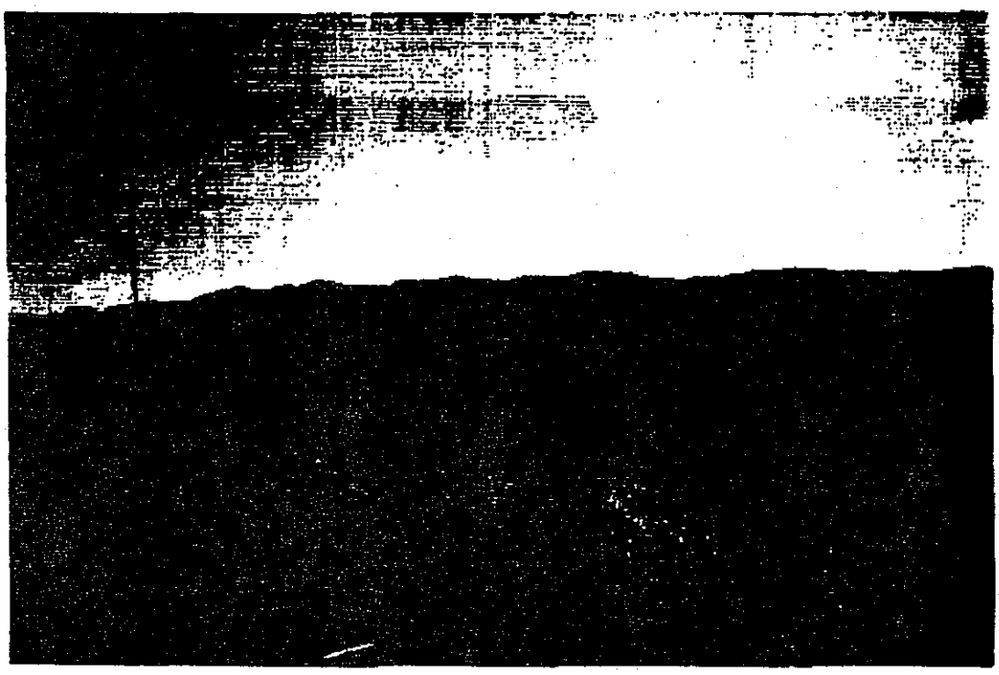


Plate 3-1: Typical Willow-aspen-scrub birch habitat in the vicinity of the proposed mine portal

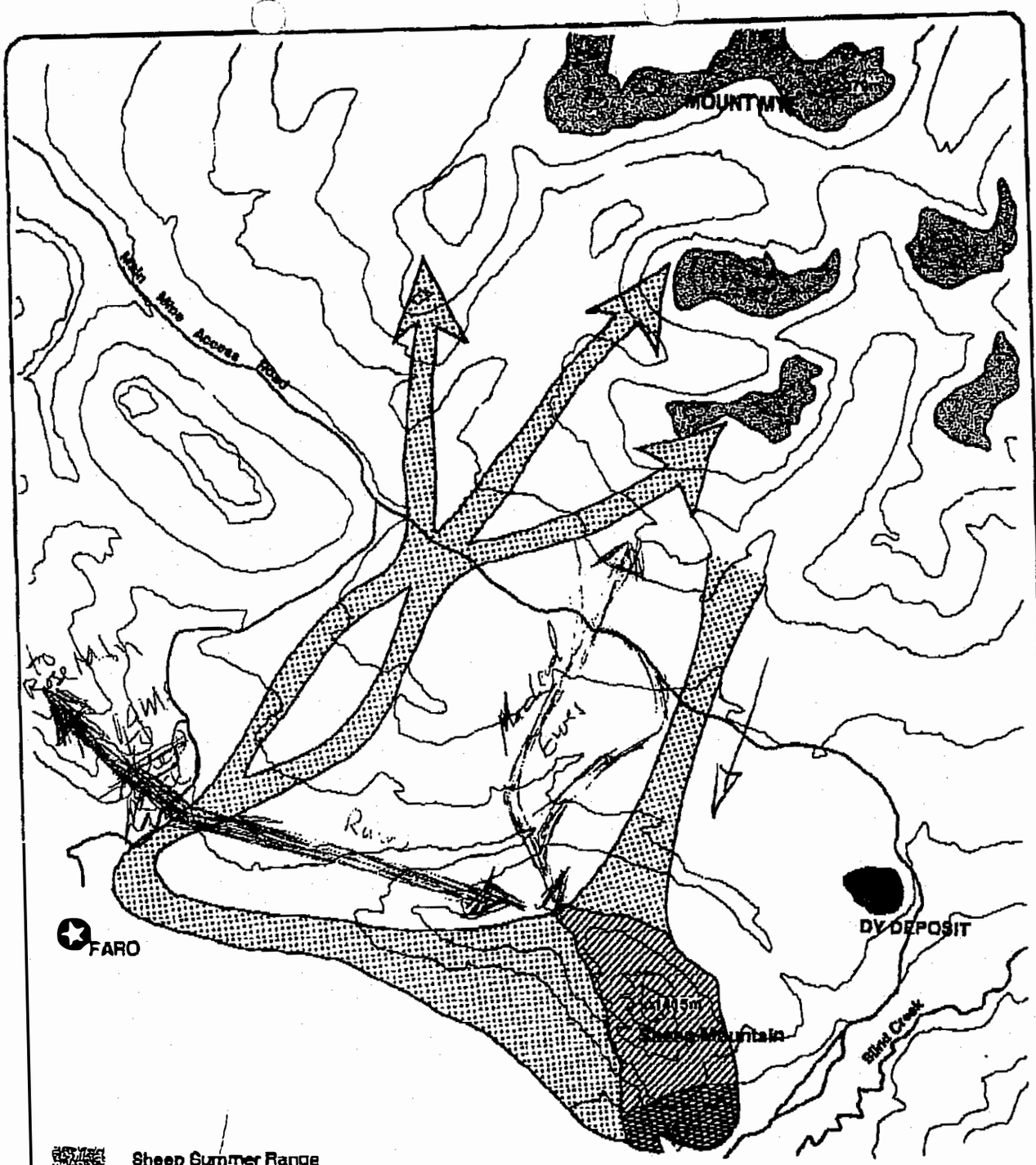


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Figure 3-1 Sheep Distribution in Relation to Dy Deposit

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Curragh Resources Inc.

(Montreal Engineering Company Ltd., 1977)

RB-R0121

Carnivores

Both the grizzly bear and the black bear frequent the Faro area. Both species are omnivorous scavengers and are attracted to any easy source of food such as at a camp or dump. Grizzly bears are particularly concentrated in the Faro area. While typical population densities for grizzlies in the Yukon would be approximately one bear for every 80 square kilometers, on a typical night at the Faro dump (approximately 1 km from town), one can see as many as 5 to 8 of these animals scavenging for food. However, no grizzlies were spotted during two extensive ove flights of the proposed location for the exploration portal and surrounding terrain. Two black bears were observed in the alpine meadows of Mt. Mye.

There are no reported sightings of wolves, foxes or lynx in the immediate vicinity of the town of Faro or the proposed exploration site, nor were any sighted during the September 1990 wildlife survey. However, scat of either fox or lynx (or both) were found in and around the area of the proposed project.

Much of the area surrounding the Dy deposit has been burned over and is not suitable for marten. Mink inhabit stream banks, lakeshores, swamps and forest edges (Banfield 1977). None of these habitats exist near the proposed exploration site. Notwithstanding this, native trappers from Ross River claim that the terrain in the vicinity of the Dy deposit is productive habitat for marten and mink.

what about Blind creek

There are no reported trappings or sightings of beaver in this area.

Game Birds and Small Mammals

The dense brush habitat near the proposed exploration portal site is prime habitat for game birds like grouse and ptarmigan and small mammals like the snowshoe hare. A single 150 m transect walk through this habitat resulted in the sighting of 3 ruffed grouse, 1 spruce grouse, 3 blue grouse, 2 willow ptarmigan and 7 snowshoe hares.

4 - Proposed Mining Plan

4.0 PROPOSED MINING PLAN

4.1 Advanced Exploration

Advanced exploration will be carried out over a 75 week period starting in January 1991. Access to the orebody will be gained through a straight, -20%, trackless decline (dimensions approximately 3.5 m x 4 m) collared at elevation 835 m approximately 1 km from Blind Creek (Figure 4-). The decline will be driven 1,700 m north to the 476 m level to a point just east of the B Zone. The decline will pass east of the C Zone at the m level approximately 1,200 m from the portal (Figure 4-) Should the C Zone prove encouraging from surface drilling then drifting to the west into the zone will be carried out and the zone will be drilled in detail and developed for initial test mining from that drift. The decline will proceed to the 476 level and a 600 m drift will be turned off to the west along the length of the B Zone. Approximately 12,000 m of diamond drilling will be carried out from that drift on sections spaced 30 m apart to accurately define the ore horizons of the B Zone. To the extent possible, the drift will be in ore which will be shipped to the Faro concentrator for processing to support the exploration program.

Trackless mining equipment will be used. Initially there will be one drill jumbo, two 5 yd scoop trams and a 13 tonne truck with further trucks added as the decline lengthens. Mining will be on 3 8 hour shifts. The mining crew will total approximately ~~forty~~ (40). Crews will be housed in Faro at a camp facility thus there will be minimal septic requirements at the portal site. Crews will be on a 6 weeks in 2 weeks out rotation to their home base.

During the advanced exploration phase there will be ~~a surface plant~~ infrastructure at the portal consisting of shop facilities, diesel power generation facilities, a dry and office trailer complex, required fuel storage and a greywater septic system. Rock excavated from the first 1,000 m of the decline will be end-dumped to build up a platform at the portal site. As this material will be non-acid generating there will be no need for chemical environmental control measures, there will however be an adequate sedimentation pond with retention sufficient to reduce total suspended particulates and ammonia concentrations to safe levels.

The decline will be collared in January 1991. January and early February activities will consist of establishing the collar trench and a bench for the initial surface plant site, erection of the plant site and upgrading of current temporary road access. In the early stages of the program a sedimentation pond scaled to handle a peak of 50 to 100 gallons per minute will be established by excavation downslope from the portal site. Excavated material will be stockpiled beside the initial excavated pond. This material will be used at a later date to upgrade the pond to hold a larger capacity when temperature conditions are conducive to allow for proper compaction and more runoff water on the site requires that the holding capacity of the ponds be increased. Water used for in the decline will be minimal initially, on the order of 15-20 gallons per minute for the drill jumbo.

Groundwater inflows to the decline will initially be low and the overall exploration activity will be well within the threshold limits for the requirements for a water licence under NIWA. As the decline lengthens, water usage will remain constant, however, it is anticipated that groundwater inflows will increase. EBA Engineering has estimated that, based on double packer percolation tests in 1990 drill holes, the phyllites will be relatively impermeable (10^{-6} cm/sec) whereas fault zones will be significantly more permeable (10^{-4} cm/sec) and water-bearing. EBA estimates that the steady-state flow of groundwater into the 1,700 m decline could be as high as 300 gallons per minute with higher local short-term inflows as new water bearing zones are opened up. Eventually the decline program will require a water license for water disposal. We estimate that this point will not be reached before 1991.

In the advanced exploration stage, as in the production stage, material handling and waste management procedures must be well developed in order to prevent adverse impact on Blind Creek. There is considerable time available to develop the required facilities since the first 1,000 m of the decline will be excavated through benign (non acid generating) rock.

In the summer of 1991 the portal waste rock handling facilities and water management facility will be upgraded. A drill hole approximately 100 m deep 200 m into the decline will be reamed out and a sump established underground beside the drill hole. This will be the main decline collection sump for the decline. Pumps will be established in the sump and 15.0 cm diameter dewatering line will be run up the hole to the surface. It is

felt that this arrangement will simplify winter water handling. There are several good areas downhill from this hole collar where a clarification pond, of any required size, can be established. A pond will be designed which can be built in stages to handle the required dewatering flows. Capacities up to that required to handle 3,000-5,000 mg/l tsp and 300-500 gpm flow will be examined. The pond will be designed with the input of a competent geotechnical engineer.

The next phase of the summer 1991 material handling plan will be to establish a temporary stockpile area for ore and ~~sulphide~~ Potentially acid generating (sulphides and chlorite phyllite) waste at the portal. Ore will be stockpiled only for a short time at the portal before being shipped to the Faro concentrator for processing. It appears that the most cost effective plan for handling sulphide waste will be to haul the material to the Vangorda waste dump for disposal in the sulphide cell (or Grum if Vangorda is not available). This plan will ensure no potential exists for long-term chemical impact from the waste rock dumps to Blind Creek. Once the stockpile area is selected the area will be backsloped towards the decline portal and a layer of compacted till will be placed to limit percolation of water down into groundwater. Portal site drainage will be collected in the above noted main sump and pumped to the clarification pond. As the decline develops and more sulphides are excavated, contamination of mine water may be noted, with increased dissolved zinc levels. Should this occur then a batch style lime treatment plant can be implemented upstream from the clarification pond to suppress dissolved metal levels through precipitation of metal hydroxides/carbonates in the clarification pond.

ore & sulphide waste storage

lime treatment

4.2 Initial Test Mining

PRODUCTION MINING METHOD AND SUITABLE

As soon as sufficient ore can be accessed, an initial test mining operation will be established to finalize stope sizes and to secure sufficient ore to assist in determining the optimum blend of Dy and Grum ores (to be mined concurrently) that can be most effectively handled in the plant. The initial operation will begin at 1,500 tonnes per day.

METALLURGICAL FEATURES OF THE ORE FOR PROCESSING. MUST ALSO BE ASSESSED.

Mining will be by trackless methods using similar, though larger, complements of equipment and personnel as per the advanced exploration phase.

Truck haulage of dense ore up the 20% decline will be impractical. Therefore, a conveyor will be established in the decline for waste and ore haulage to surface.

Material and water handling plans will be as outlined above for the advanced exploration plan with clarification pond and treatment plant capacities scaled up as dictated by the actual mine dewatering rates.

It is likely ~~but~~ THAT much of the initial mining will be by room and pillar in areas of shallow ~~decline~~ dip, ~~some~~ long hole stopes will probably be developed in fold noses and cut and fill in narrow high grade areas. Mining methods and stope sizes will be determined by experience with the initial mining areas.

4.3 Phase I Mining

Once the decline is complete and sufficient ore is outlined and developed, mining rates will be scaled up to 3,500 tonnes per day which is the likely upper limit for conveyor haulage to surface. Methods will be those developed in the initial test mining phase with working faces, personnel and equipment scaled up to provide the larger tonnage.

4.4 Phase II Mining

One of the objectives for the advanced exploration and initial mining phases will be to evaluate the deposit for potential shaft locations close to the deposit center of gravity. Once a suitable site is established and a sufficient reserve base is established, a shaft will be raised from the underground working to the surface and a head frame/hoist system established sufficient to hoist 7,500 tonnes per day. It is likely that the Phase II mining stage will not be reached until 1993 or 1994. At that point mining of up to 2.75 million tonnes per annum will be possible.

During Phase II shaft mining, the decline will/~~can~~ be used for equipment access and ventilation.

It is likely that water management will also be through the decline if treatment and clarification facilities are already fully developed there.

4.5 Surface Ore Haulage

During all mining phases, surface ore haulage will be by truck from the decline portal ~~or~~ two shaft collar to the Faro concentrator. Haulage truck selection is not final but it is clear that economic haulage will require a significantly upgraded access road. Road

alignment is not yet selected however it is likely that a route similar to the existing access road would be followed. The new ore haul road would join the existing Vangorda Plateau haul road at the Vangorda deposit. A portion of the surface haulage may be by conveyor.

4.6 Power Supply

Initial decline excavation will use power generated at the portal by RMW diesel gensets. Eventually given sufficient grid capacity, it will be desirable to tie the Dy minesite into the local power grid. A number of options could be examined including extension of lines from Vangorda, the Faro townsite or the Campbell Highway. Alternatively, the Dy Mine might be a logical candidate to draw its power from small scale Hydro development in the area.

4) Mine Closure

Mine closure considerations are greatly simplified by the fact that the entire ore body scheduled for mining and all altered phyllite is below the elevation of Blind Creek. ~~Thus~~ At the cessation of operations the workings will be allowed to flood with stagnant water. This will eliminate acid generation and consequent groundwater contamination as a significant issue. The surface facilities will be removed and underground openings sealed. Since no acid generating waste will be left on the surface at the site acid generation from mine waste piles will not be an ~~concern~~ issue. Total mine waste from ~~the~~ Dy mining the Deposit will be limited due to the nature of the

(over)

5 - Proposed Recovery Process

5.0 PROPOSED RECOVERY PROCESS

All ore mined from the Dy Deposit will be trucked or conveyed from the portal or shaft area to the existing stockpiles near the mill site at the Faro Pit. Processing of the ore to produce lead and zinc concentrates will be in the current Faro concentrator using processes of crushing, grinding, selective flotation, dewatering and drying similar to those in use today. Preliminary testing of the Dy ores indicates that they are similar to the ores of the other deposits of the Vangorda Plateau. Thus, grinding and reagent consumption will be similar to that used for Vangorda, and particularly for Grum ores. Tailings disposed will be in the mined out Faro pit although the downvalley scheme at Faro may still be employed as a component of the overall tailings deposition and water management plant for the Faro concentrator effluent. The processing of Dy ore and storage of waste materials generated from the processing will have no significa t incremental environmental impact on the Rose Creek Basin.

6 - Environmental and Socioeconomic Considerations

6.0 ENVIRONMENTAL AND SOCIOECONOMIC CONSIDERATIONS

6.1 Environmental Program

The principal environmental issues associated with the development of the Dy deposit are anticipated to be:

- potential for waste materials to generate acid mine drainage;
- protection of the water quality and fisheries resources in Blind Creek;
- effects on local wildlife populations;
- development of a effective material handling waste rock and waste w ter management plan; and
- mine reclamation and project decommissioning.

Ba ed on the similarity of the massive sulphide deposits comprising the Dy ore body to those of the Faro, Grum and Vangorda deposits, it is likely that the ore and some waste rock will be acid generating. Static and kinetic testwork is planned to determine the acid producing capability of all types of waste rock and to estimate the rate of acid generation. It is important to realize that the first 1,000 m of the proposed decline (the upper decline) will be excavated in non-acid generating phyllites and greenstones of the Vangorda formation. This conclusion is based on drilling results and visual identification of lithotypes as similar to those tested and shown to be net acid consumers and as natural weathering characteristics of the rocks. conducted to establish identity of the drilled rock in relation to the rough similar Grum-Blind horizon that occurs at the Grum deposit (CRI 1989). Altered phyllites, like those that comprise the Vangorda wall rocks (CRI 1989), will not be encountered until excavation reaches the first mineralization beyond 1,000 m (Figure 6-__).

A hydrology and water quality monitoring program commenced at the property in September 1990 and will continue in order to characterize pre-development parameters and provide a baseline for comparison with post-development water quality. Given site conditions and the careful environmental consideration included in preliminary development concepts, it is anticipated that there will be no impact on Blind Creek associated with proposed development.

Preliminary studies to determine the effects on wildlife associated with the proposed project suggest the potential loss of productive wildlife habitat. Further seasonal wildlife surveys are planned for the winter, spring and summer of 1991 in order to characterize the extent of usage of the area by local wildlife. This will be supplemented by government wildlife data for the area and information obtained from natives who hunt and trap in the project area.

Field excursions will characterize the soil and terrain features of the proposed project site for consideration of mine site reclamation and the location and engineering of mine site facilities. A review of existing soils data will support these efforts. Features that will be considered include slope gradient and stabilities, drainage features, particle size, and parent material origin (e.g. colluvium, alluvium, glacial till, etc.).

Seasonal fisheries studies are planned to characterize the extent of use of Blind Creek. Also, federal and territorial government data on fisheries resources and their use within the proposed development area will be utilized. Preliminary studies have already been conducted (August 1989) to characterize the summer fish fauna and their distribution throughout the Blind Creek drainage. In addition, benthic invertebrate studies were undertaken to characterize seasonal changes in abundance and distribution of fish food.

A reclamation and closure plan for the mine site will be developed for the Dy Mine. The plan will examine such options as reseeding disturbed areas, road ditching, culvert repair and cleanout, regrooming of cut slopes, and reseeding of shoulders, cuts and fills. Because of the great depth to ore of the Dy Deposit [illegible] rocks are deeper than the level of Blind Creek), all potentially acid generating rocks will be flooded after the mine is closed. Consequently, closure issues will be limited to surface facilities.

These and other environmental aspects (e.g. waste management, water management, etc.) related to the proposed project will be investigated in depth during 1991.

6.2 Socioeconomic Considerations

In 1975, Kerr Addison Mines Limited commissioned a socioeconomic profile of the Faro and Ross River area in an effort to assess the potential impacts associated with the development and operation of a new mine and mill complex in the Vangorda Creek

area. This study identified numerous potential impacts, both positive and negative, on the residents of both communities and on the Yukon Territory as a whole. However, the proposed Kerr mine never evolved and Curragh Resources has since acquired the mineral rights to all other known lead-zinc deposits on the Vangorda Plateau. Thus, any socioeconomic impacts associated with the proposed project will be in relation to mine expansion rather than the start-up of a new mine or a new mill and will, therefore, be less substantial.

The proposed mine lies within the Ross River group trapping area, and consequently mine development may have an adverse impact on native traplines. It is important to note, however, that additional impacts attributable to Dy are likely to be minor due to the development of the existing Faro pit and the expansion of development to include the Vangorda and Grum ore deposits.

Contact with the Dena Band Council in Ross River was established in August 1990 and again in September 1990 to address native concerns over the proposed exploration program. Discussions were held concerning future access to traditional hunting, trapping and fishing areas, the potential impacts of exploration activities on wildlife, and locations of sites of archaeological/historical significance to the Ross River band. These talks are currently ongoing.

In summary, studies will be undertaken to identify all of the potential socioeconomic impacts associated with the development of the Dy ore body, with particular emphasis on the native peoples from Ross River.

7.0 PRELIMINARY DEVELOPMENT SCHEDULE

Advanced exploration will commence January 1, 1991. Underground mine development will begin with initial test mining perhaps as early as November 1991. Phase I mining by decline and conveyor haulage will reach 3,500 tonnes per day by July 1992. Shaft hoisting of ore at rates up to 7,500 tpd could begin by 1993 or 1994.

Permit applications required for the pilot operation will be submitted in March 1991 for a July license. Approval and licensing for Phase I mining will be required by February 1992.

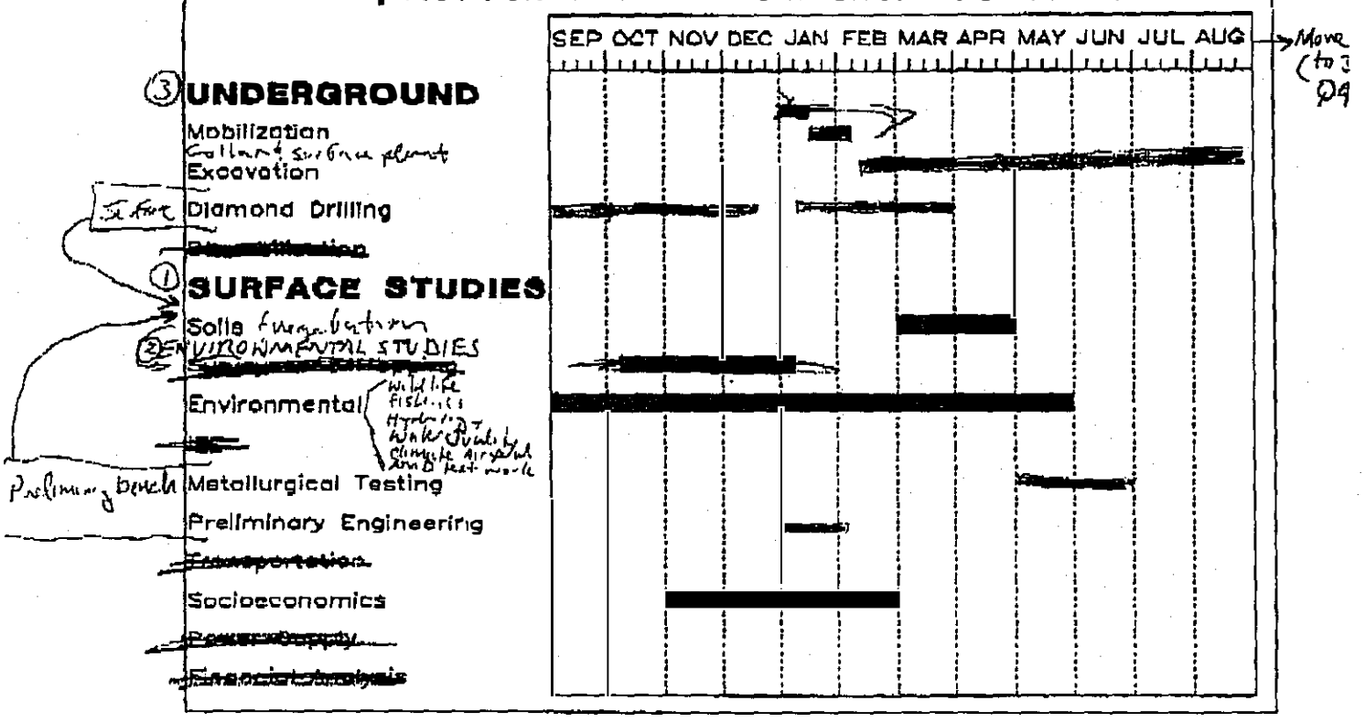
Environmental studies including components such as water quality, fisheries and wildlife resources began in September 1990 and will continue through July 1991. Socioeconomic impact studies have also commenced.

The development schedule is presented in Figure 7-1.

To Be Verified

DY PROJECT

Exploration and Environmental Schedule



Mine Development Schedule