8282 812138 WEST COAST RESOURCES, LTD .. (N. P. L.) REPORT ON THE ORO DENORO MINERAL DEPOSIT AND MINERAL CLAIM HOLDINGS IN THE GREENWOOD MINING DIVISION 4 BRITISH COLUMBIA 15 FEBRUARY 1966 WILLIAM J. WEYMARK PROFESSIONAL ENGINEER WEST VANCOUVER, B.C.

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WILLIAM J. WEYMARK, P. ENG.

Consulting Engineer

3310 WESTMOUNT ROAD WEST VANCOUVER, B.C. CANADA TELEPHONE WALNUT 2-1536

West Coast Resources Limited (N. P. L.) Suite 104, 569 Howe Street Vancouver, B. C.

Attention: Mr. John Luttin, President

Gentlement

Re: Report on the Oro Denoro Mineral Deposit and Mineral Claim Holdings West Coast Resources, Ltd. Greenwood Mining Division, British Columbia

I am pleased to submit the accompanying report entitled "Report on the Oro Denoro Mineral Deposit and Mineral Claim Holdings of West Coast Resources, Ltd., in the Greenwood Mining Division, British Columbia", dated 15th February 1966 which embodies the results of the evaluation and investigations conducted to date.

In presenting the report, I would like to draw your attention to the interim nature of the assessment conducted to date and to emphasize that the conclusions reached and opinion expressed are based on presently available information. The observation, that a) the presently defined reserves of gold-silver-copper ore of the Oro Denoro mineral deposit, considering provailing economic and technical aspects are of commercial significance and b) it is reasonable to expect that additional ore reserves will be developed in the extensive geological formations, favourable for nonferrous and ferrous mineral deposition, underlying the Oro Denoro and other claim holdings of your organization in the Greenwood Mining Division are believed to be sufficiently reliable to serve as basis for projection of future plans.

It is my hope that the data in the report will be of value, and the opinion that additional investigation and engineering tests are warranted will prove helpful to you in determining the future plans for the development of these mineral claim holdings. In this regard, I would be pleased to review the report in detail with you and to assist in any other consideration.

I wish to take this opportunity to express my appreciation of the many courtesies shown by you and members of your organization during the investigations which have led up to the formulation of this report.

Yours very truly. William J. Weymark, P. Eng.

15 February 1966

REPORT ON THE ORO DENORO MINERAL DEPOSIT AND MINERAL CLAIM HOLDINGS

OF WEST COAST RESOURCES, LTD., (N. P. L.)

IN THE GREENWOOD MINING DIVISION

BRITISH COLUMBIA

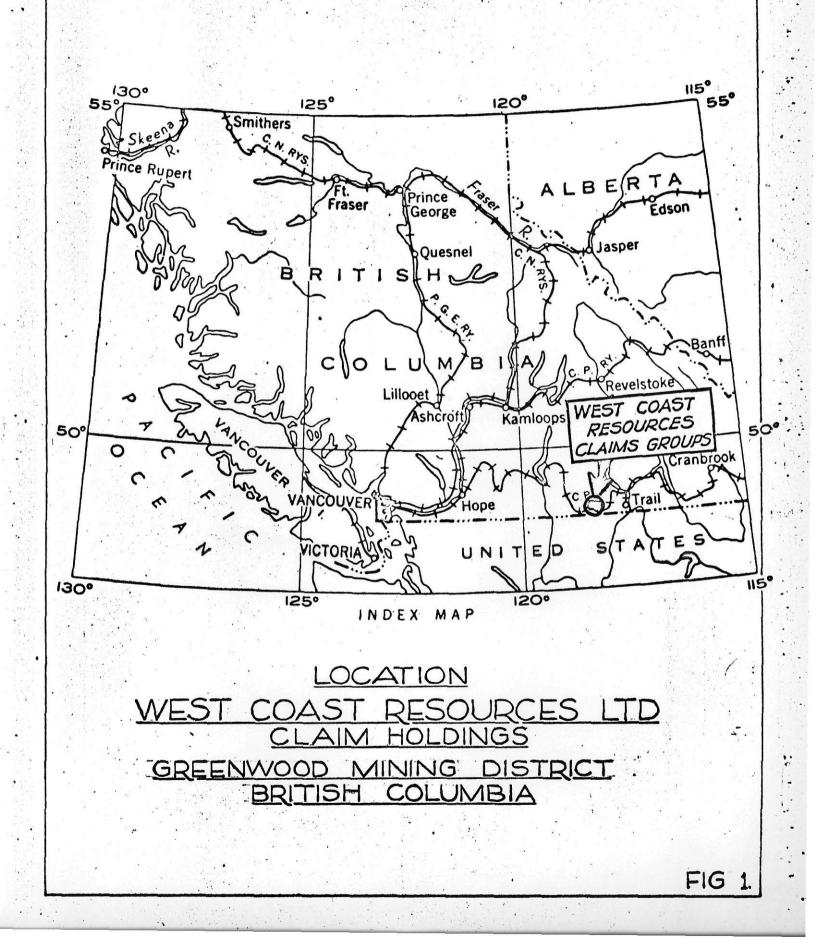
CONTENTS

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		· · · · · · · · · · · · · · · · · · ·	-
	1.0	Introduction. 1	
	2,0	Observations 2	
	8.0	Opinioa 3	
	4.0	Property, Description and Location 4	
	5.0	Accessibility, Climate, and Local Resources 6	
	6.0	History 7	
	7.0	Geology	
	8.0	Mineral Deposits, Ore Reserves and Economics of Production 9	ľ
	9,0	Economic Production 11	
	10.0	Works Programme)
1	CER	13 IS	1

ILLUSTRATIONS

Figure 1	Fontispiece, General Location					
Figure 2	Location, Gem Claim Group					
Figure 3	Location, Oro Denoro Claim Group					
Figure 4	Oro Denoro Mining Property, Plan-Mining Works and Investigations					
Figure 8	Oro Denoro Mining Property. Cross-section -5500W Grid Line					
Figure 6	Emma Mining Property, Longitudinal Section, Surface +150 Ft, Level					



REPORT ON THE ORO DENORO MINERAL DEPOSIT AND MINERAL CLAIM HOLDINGS

OF WEST COAST RESOURCES, LTD., (N.P.L.)

IN THE GREENWOOD MINING DIVISION

BRITISH COLUMBIA

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1.0 INTRODUCTION

This report presents the results of the evaluation of the available information relating to the Copper-Gold-Silver Ore Deposit located on the Oro Denoro Mineral Claim, presently held under option by West Coast Resources Ltd., (N.P.L.) and the mineral possibilities on the remainder of the Claim Holdings of West Coast Resources Ltd., (N.P.L.) in the Greenwood Mining Division of British Columbia.

Supporting data for the evaluation of the Ore Denoro ore deposit and other mineral possibilities on the claim holdings of West Coast Resources in the Greenwood Mining area has been obtained from early operating records, including governmental sources, investigators, and the programme of exploration conducted by West Coast Resources since 1963 to the present date. Supervision of the exploration work conducted on the properties has been under the direction of W.E. McArthur, Jr., of Greenwood. Engineering supervision and evaluation has been under the direction of the writer, William J. Weymark, P. Eng. since 1st September 1965.

Recommendations are included in this report relating to the scope and nature of the continued programme of investigation required to definitively evaluate the ore and latent mineral potentialities of the claim holdings of West Coast Resources Ltd., (N.P.L.) in the Greenwood Mining area of British Columbia.

2.0 OBSERVATIONS

From analysis of the foregoing presentations and the background supporting information, the following general observations are presented:

- (a) Potential ore reserves, including the remnant reserves proven by previous operations are presently estimated to be 8, 600, 000 tons with grades ranging from 0, 50% to 1, 40% copper, 0, 02 ounces of gold and 0, 70 ounces of silver per ton on the Cro Denoro property. Possible reserves on other claim holdings have not been evaluated.
- (b) Although the geometry of the mineral zones has not been defined as yet on the Oro Denoro property, there appears to be a mineralized area of some 480, 000 square feet extending initially to depths of 300-350 feet to an underlying intersecting flatlying diorite sill with a thickness of 100 feet, and thence to a depth of at least 800 feet below the surface.
- (c) The Oro Denoro mining property is favourably located with respect to resources of water, power, access, labour, supplies and equipment to support low-cost mining operations.
- (d) Insufficient investigation has been carried to date to establish definitively the geometry of the ore deposits, the methods of mining, concentrate production, and marketing possibilities, and other economic controlling factors. Continuation of the current exploration programme of diamond drilling, geological mapping and studies, sampling and testing, as well as assessment of mining methods and bene-ficiation treatment studies is required. Continuation of the compilation and correlation of all the data procured to date as well as that to be obtained from current and future investigations in a definitive engineering analysis is essential to the evaluation of the economic and commercial significance of the Oro Denore ore deposits.

The cost of the requisite definitive investigation and engineering programme to complete the evaluation is estimated at \$80,000.00.

(e) From analysis of the available background data, there are cre opportunities on the other mineral claims of the West Coast Resources Ltd. Mineral Claim Group, particularly the Emma, Gem, R. Bell, the B.C. Mining Fraction, the Erwin, Matabelle and Mountain Rose. Investigation and assessment of these possibilities should be undertaken. An expenditure of \$20,000 would permit a worthwhile study of the possibilities.

8.0 OPINION

15. 1. ...

In my opinion, ore reserves of commercial value have been indicated on the Oro Denoro Mineral Claim of West Coast Resources Ltd. from the investigation programme carried out to date. Further investigations to determine total potential ore reserves and the economics of production and marketing are, considering relating technical and financial aspects, justifiable. Potential mineral possibilities on other claim holdings of West Coast Resources Ltd. in the Greenwood Mining Division of British Columbia, should similarly be investigated.

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4.0 PROPERTY, DESCRIPTION AND LOCATION

The mineral claim holdings of West Coast Resources Ltd., (N. P. L.) are located in the Greenwood Mining District of British Columbia, and divided into two groups designated the GEM and ORO DENORO. They comprise forty-three (43) mineral claims.

The Gem Group consists of thirteen (13) claims, one of which is Crown Granted, eight are held by location and four under lease. These claims, until recently, were held under option by Noranda Exploration Ltd. Reference is to Figure 2 for the claim location.

The Ore Denore Group consists of thirty-one (31), fifteen of which are Crown Granted and the remainder are held by location. Reference is to Figure 3 for the claim location.

The Gem Group of claims consists of the following parcels:

Crown Granted - Alameda, Lot No. 2876

Located Mineral Claims - Copper Basin 1-4, recorded Nos. 15696 to 15699 inclusive; Unknown, No. 13243; Gem No. 2, No. 13244; Gem Fraction, No. 13242

Mineral Lesses - Lease M-105, Gem Lot 697; Hidden Treasure, Lot 896; Lease M-130; Little Buffalo, Lot 1717; Gold Bug #2, Lot 1718

The Oro Denoro Group consists of the following parcels:

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Crown Granted - Oro Denoro, Lot 692; Minnie Moore, Lot 593; Emma, Lot 591; Duplicate, Lot 863; Jumbo, Lot 592; B.C. Fraction, Lot 4645; Mary B, Lot 1568; Norton, Lot 986; Blue Bell, Lot 2136; Erwin, Lot 1691; Cordick, Lot 625; R. Bell, Lot 1506; Vashti, Lot 950; May, Lot 1409; Novelty Fr., Lot 949

Located Mineral Claims - Denoro Fr., No. 16937M; Jeep #1. No. 19066; Jeep #8-18, Nos. 19067 to 19072 inclusive; Jeep #15-16, Nos. 19074 and 19075; Jeep #18, No. 19077; Brayfogle, No. 15819M; Remington, No. 15866M; Chemical, No. 15861; April Fr., No. 15826M; Joiner Fr., No. 15827M

Verification of the legal description, the rights of ownership and the status with regard to assessment work requirements of the B.C. Department of Mines was not made for any of the claims, but, it is reported by the solicitor of West Coast that the Company is the beneficial owner and the claims are in good standing.

From field examinations of the Emma, B.C. Fraction, R. Bell and Oro Denoro mineral deposits and mine workings, verification is made as to the presence of copper mineral deposits and mineral sones on the respective claims. The presence of copper and other economic minerals in mineral zones and deposits on other claims of the group holdings is reported upon in Governmental, Professional, West Coast publications and internal reports.

succession 4.0 Property, Description and Location - Continued

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The claim holdings are located three miles North of the town of Greenwood and extend north and easterly to Mile 12 along the Greenwood-Grand Forks Highway. The Oro Denoro claim is approximately four miles by road, north easterly from the Phoenix Mine owned and operated by Granby Mining Company Limited. Production from this mine, (Phoenix), to date has totalled 32 million pounds of copper. 54,000 ounces of gold and 297,000 ounces of silver with a value of over \$12 million dollars.

5.0 ACCESSIBILITY, CLIMATE, AND LOCAL RESOURCES

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The principal mineral deposits and claims of the Groups are readily accessible from Highway #3, being a paved and all-weather maintained road by the B.C. Department of Highways. The Oro Denoro mineral deposit is located about one mile southwest from Mile 12 on the Greenwood to Grand Forks Highway. The access road is well graded and gravelled. An old railroad grade connects the mine workings to the operating Phoenix mine. a distance of approximately four miles. The Gem, Emma, R. Bell and other properties are similarly favourably situated. Reference is to Figure 1 for the general location of mining properties.

The climatic conditions are continental in character. Winters are cold and summers hot. Precipitation is light and well distributed over the year. Most of the precipitation is snow in December. January and February. At Greenwood the official climatological records indicate an average of 17 inches of rainfall, 35 inches of mow, and an annual mean monthly temperature of 43° F. with monthly mean extremes of 14° and 64° F.

The Greenwood area is well endowed with resources to support mining operations. Water, timber and power in sufficient quantities is readily available to each mining possibility of the West Coast Groups, the maximum distance of transmission for either water or power being of the order of four miles. Rights to timber are held on the Grown Granted claims belonging to the Company. Skilled labour is available in the area, and the supporting requirements of supplies, equipment, schools and accommodation for mining operations are available at Greenwood, Grand Forks or nearby centers. This region of British Columbia is considered to be economically depressed and is eligible to receive support for economic development undertakings.

6.0 HISTORY

Mining activity commenced in the early 1890's in the Boundary-Greenwood area. The Oro Denoro Copper-Magnetite ore deposit was discovered in the late 1890's and worked until 1917 with the peak production years being 1906-1908. Total recorded production from the mine is reported to be 3, 727, 144 pounds of copper *; 30, 052 ounces of silver *; and 3, 744 ounces of gold *. The gross value of this production would total \$1, 863, 000 on the basis of present day metal prices. The average grade of the previous output on the basis of 135, 447 tons marketed, was approximately \$13, 75 per ton referenced to present metal prices.

In 1959 West Coast Resources Ltd. was formed and in July 1963 acquired the Gem and Oro Denore and other claim groups from W.E. McArthur of Greenwood. Previously, in 1956, Mr. McArthur had opticated the Groups to Noranda Explorations who conducted an extansive exploration programme and subsequently dropped the option. In 1964, Noranda optioned the Gem Group for further investigation from West Coast Resources Ltd. Since 1963, West Coast Resources have conducted an investigation programme on the Oro Denore mineral deposit. To date some \$30,000 has been spent on this work consisting of 10,000 feet of diamend drilling in twenty-eight holes with drilling of the 28th cursently underway, a Geomag survey, engineering and tests. Work conducted by Noranda on the Oro Denoro Group involved approximately 6,000 feet of diamend drilling, aerial and self-potential geophysical surveys, topographic and geologic surveys. The visible mine works completed by the former mine operators involved a main adit, 1,000 feet of tunnels, five "Glory-Holes" or open stopes, a prospect mine shaft, raises and ore passes. There is no mine equipment on the property owned by West Coast Resources.

Recorded mine production at the Emma Mine, between 1901-1921, totalled 254, 597 tons containing 6, 804 cunces of gold, 78, 065 cunces of silver, and 5, 132, 118 pounds of copper. The present-day value of this output would be \$2, 677, 300, 00, equivalent to \$10, 50 per ton.

The recorded production of the R. Bell mine in 1901 was 294 tons containing 3, 559 ounces of silver and 45, 927 pounds of copper. The present-day value of this output would be \$25, 650, 00, equivalent to \$87, 25 per ton.

It is reported that Noranda completed 500 feet of rotary drilling on the Gem Group in addition to other conventional mineral exploration work before dropping their option on this group of claims.

Historical details relating to the other properties of the Greenwood Mining District Holdings of West Coast are available in Governmental and technical publications.

* Copper \$0.45/lb., Silver \$1.40/os., Gold \$38/os.

7.0 GEOLOGY

Description of the regional geology is well covered in Governmental and Professional Technical publications dating from 1902 to the present time. Briefly the area is underlain by a sedimentary-volcanic rock complex which has been in part altered to chert, jasperiod and lime silicate rocks with sulphides. Subsequent intrusives conxisted of granodiorite, diorite, gabbro, pyroxene and serpentine. Still later intrusions of syenite, and diorite masses and volcanics extrusions cut the basic formations and earlier mineral bearing intrusions.

Structural features include block and thrust faults, shear zones and associated joint planes and fractures. Mineralization has been controlled and affected by these features.

Known ore deposits of the Greenwood-Boundary area are located in the contact zones between the basic formations and the intrusives, locally termed Skam Zones. The copper orebodies occur as replacements of limestones and related rocks. The zones are either of the massive disseminated type as at Phoenix and the Oro Denoro and of fissure types as at the Emma. Economic minerals are copper, iron, gold and silver which occur as chalcopyrite, malachite, bornite, chalcocite, tetrahedrite, pyrite, specular hematite and magnetite. Non-metallic minerals are epidote, carbonate, amphibole, chlorite, quarts, gatnet and pyroxene.

Geological controls in evidence on the Oro Denoro involve a basic limestone formation which has been intruded by diorite and granodiorite stocks. The contact Skarn Zone has been mineralized with copper and iron minerals and minor quantities of silver and gold. Subsequent syenite, prophyry and volcanic intrusives have transacted these basic formations and displaced the mineral zones. Previous mining operations were related to the surface and upper expression of the mineral zones. Present investigations have shown that economic copper mineralization extends to depths of over 700 feet, some 200 to 250 feet below the previously considered horizons. Datails of the geology and structural controls on the Oro Denoro have still to be defined.

Only preliminary examinations have been made of the geological features controlling the Emma, Gem, R. Bell and other ore deposits of the West Coast Resources Mineral Claim holdings in the Greenwood area.

8.0 MINERAL DEPOSITS, ORE RESERVES AND ECONOMICS OF PRODUCTION

Reference is made to the accompanying Figures 4 and 5 for details of the ore intersections and workings established to date on the Oro Denoro. No assessment is made herein of the ore potentialities of the deposits on the other claim group holdings in this analysis.

From analyses of the information presently available regarding the mineral zones on the Cro Denoro, see Figures 4 and 5, it appears that the unmined zone centers in the 4200-4500 South 5400-5900 West Grid location and extends 300 feet to the east and to the north 200 feet, see Figure 4. The limestone-skarn contact is located 200 feet to the south. In addition, the self-potential survey indicates an off-shoot from the main mass anomaly extending between grid lines 5400-5500 West to 3700 South. Copper mineralization outcrops in this area south of the 4000 South line. Remnants in the open pit assayed an average grade of 1.45% copper. Drilling to date indicates that the mineral zones extend to depths ranging from 300 to 350 feet below surface to an intersecting flat-lying diorite sill, with a thickness of the order of 100 Feet. Deeper holes have indicated the continuation of the skarn or mineral bearing formation below this sill and the continuation of copper mineralization. Depths of 300 feet below the diorite sill, Hole #10A have assayed an average 1.0% copper over a core length of 75 feet. Other intersections are yet to be sampled and assayed. Surface and core samples have assayed to 6.6% copper.

Bulk sampling of the ore in the 20 foot end section of the 3500 Crosscut has yielded assays of 1.42% copper, 0.025 ounces of gold and 2.60 ounces of silver per ton. Muck samples of a slash blasted of a similar 20 foot section located 100 feet toward the portal assayed 1.50% copper, 0.02 ounces of gold and 0.52 ounces of silver per ton. Assays of core samples in these respective sections were 0.41% copper and Trace to 0, 13% copper.

Sampling of the crosscut heading on the 3470 sublevel, (4200 South - 540) West) yielded assays of gold 0, 10 ounces, silver 0, 25 ounces, copper 1, 33% copper over five feet on the left wall; gold Trace, silver 0, 24 ounces, copper 0, 85% over six feet of the face; gold 0, 01 ounces, silver 0, 74 ounces, copper 2, 68% over five feet back from the face on the right wall and gold 0, 02 ounces, silver 0, 30 ounces, copper 1, 90% the succeeding five feet back from the face.

Sampling of exposed ore sections on the 3440-foot level drift have yielded assays of 3.96% copper. 3.52% copper and 2.96% copper in the left wall, over a ten foot length in the 4205S. 5160W section, and successively 0.95% copper, and 0.50% copper in the wall extending from 5240 to 5260 West Grid location.

On the basis of current studies, ore reserve potentialities of the Cro Denoro copper-goldsilver ore zone, are estimated to total the amounts indicated in the subjoined tabulation. Grade for each category has been calculated from assay results reported previously by Noranda Explorations and these taken on behalf of West Coast Resources. It is to be noted the grades of the different categories of ore reserves have been based on surface and diamond drill sampling and adjusted in accordance with the results obtained from the larger bulk sample tests. Proven ore reserves are calculated from surveys of the remnant mine workings and blocks probed on four sides by diamond drilling. The other categories of indicated and possible designated ore reserves are calculated on the basis of diamond drill results and do not include any possibilities outside the horizons explored to the

8.0 Mineral Deposits, Ore Reserves and Economics of Production - Continued

15th February 1966. It is to be noted also that considerable disparity has been indicated between diamond drill sludge-core and bulk sampling results. This is considered due to the type and nature of occurrence of the mineralization in the rock formation. Careful analyses are being made to determine a correlation between the two methods of sampling in order to evaluate the obtaining grade of the ore deposits.

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<u>O</u>	e Reserves	- 3 - 1		 Tonnaga	Grade	
Pr	oven			1,850 000	1. 40% Copper .	
In	dicated ••	26	1917 - 191 1919 - 1919	2, 750, 000	1.20% Copper .	
Po	ssible ••			4,000,000	0.50% Copper .	

 Cut-off grade set at 0.20% copper and a 95% probability index level. Average of gold and silver assays indicate a content of 0.02 ounces of gold and 0.70 ounces of silver per ton.

** By diamond drilling.

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The Commercial value of these ore reserves based on the current market price of 45,0 cents per pound for electrolytic copper, gold at \$38,00 per ounce and silver at\$1,40 per ounce is approximately \$90,000,000. Additional values would accrue from the other known zones of mineralization, but as noted previously valuation of these unexplored sections has not been undertaken herein.

Only preliminary sampling of the Emma and R. Bell ore zones has been undertaken to date. Assays of over 1, 0% copper have been obtained from samples taken of remnants of the Emma ore deposit, see Figure 6, and of over 13% copper from samples of ore on the R. Bell. No ore reserves have been calculated for these possibilities at the present time due to the limitations of the available data.

9.0 ECONOMIC PRODUCTION

11

9.1 General

No definitive assessment has been made of the economics of mining and metal production from the ore recorves of the Oro Denoro assessed to date. It is considered, however, that should the massive ore body characteristics, as presently indicated, be confirmed, then low-cost mining methods could be employed. The cost indicated for 1964 at the nearby Phoenix mine, operating on a grade of about 0, 75% copper and low values of gold and silver, for mining, concentrating, and marketing is approximately three (3) dollars per ton. With this guide line, it is possible that Oro Denoro ore metals may be produced on the same tonnage scale and marketed for a similar cost yielding a gross profit, before depreciation, financing and indirect costs of the order of five dollars per ton. This is predicated on present-day metal prices and an overall metal recovery of at least 85% from the ore.

No beneficiation tests, apart from bulk sampling, for the production of copper concentrates have been conducted to date on the ore, but no difficulties or presence of deleterious minerals were reported in treating the ore by previous operators. Similar treatment methods as used on the Fhoenix ores are contemplated,

Preparation of estimates of plant and equipment requirements for development and operation have not been prepared as yet because of the incomplete stage of the engineering assessment of the ore potentialities. It is considered that the experience and financial involvement at the nearby Phoenix mine is an appropriate guide-line.

10.0 WORKS PROGRAMME

10.1 Oro Denoro Mineral Claim

The following schedule of works is required to complete the definitive assessment of the ore potentialities of the Oro Denoro copper-gold-silver mineral deposit and to provide the basic data for design of operation and production plant requirements, considering the controlling technical, financial and economic aspects.

1.	Diamond Drilling	\$60,000,00	
il.	Testing and Sampling	5,000,00	
	Surveys, topographic	5,000,00	
	Engineering and studies	10,000.00	

Total

\$80,000,00

10.2 Other West Coast Mineral Claim Holdings, Greenwood Mining District

The programme of investigation, required to provide a preliminary assessment of the ore possibilities latent of the Emma, R. Bell, Gem, Erwin, Matabelle and other claims of West Coast Resources Limited in the Greenwood area, would involve the following scale of works.

1.	Geophysical and topographical surveys	\$ 6,000.00	
	Diamond Drilling	10,000,00	
iii.	Testing and Sampling	2,000,00	
iv.	Engineering and studies	2,000,00	

Total

\$20,000,00

Respectfully submitted,

William J. Weymark, P. Big.

15 February 1966

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CERTIFICATE

I, William James Weymark, P. Eng., Consulting Engineer of the Municipality of West Vancouver, of the Province of British Columbia, hereby certify that -

I am a graduate of Mining Engineering of Queen's University, Kingston, Ontario, B. Sc. 1940 and have been practicing my profession for twenty-five years.

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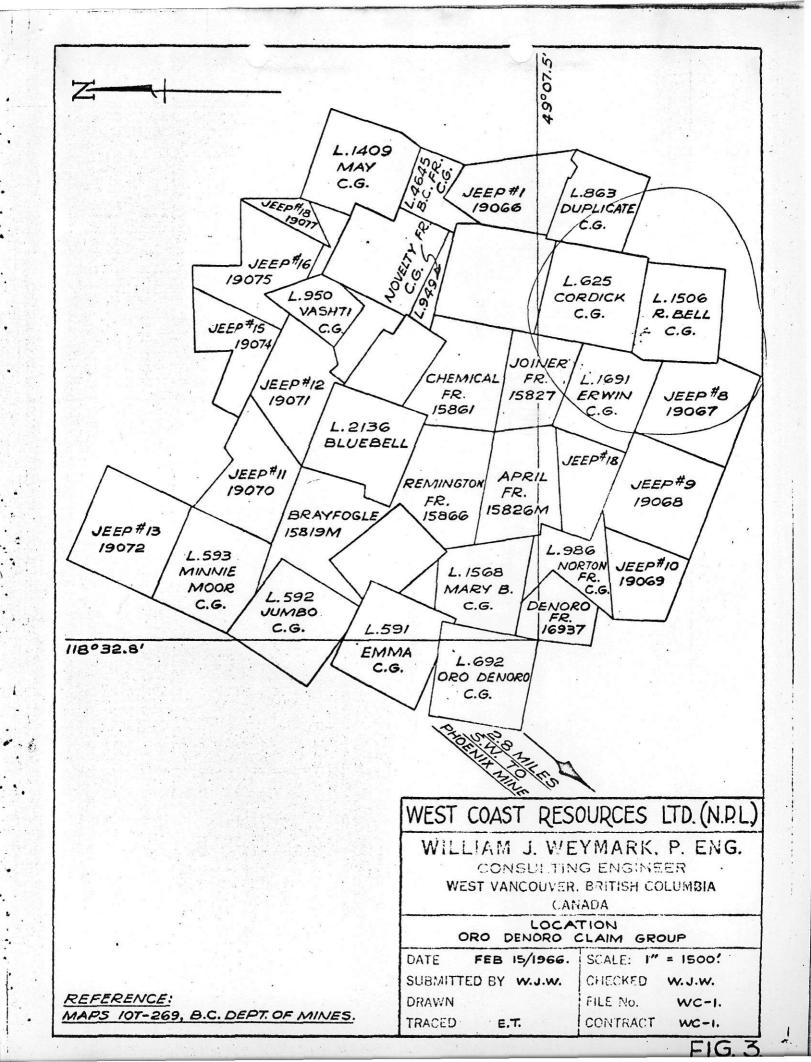
1 am a practicing Consulting Engineer and reside at 3310 Westmount Road, West
Vancouver, Province of British Columbia.

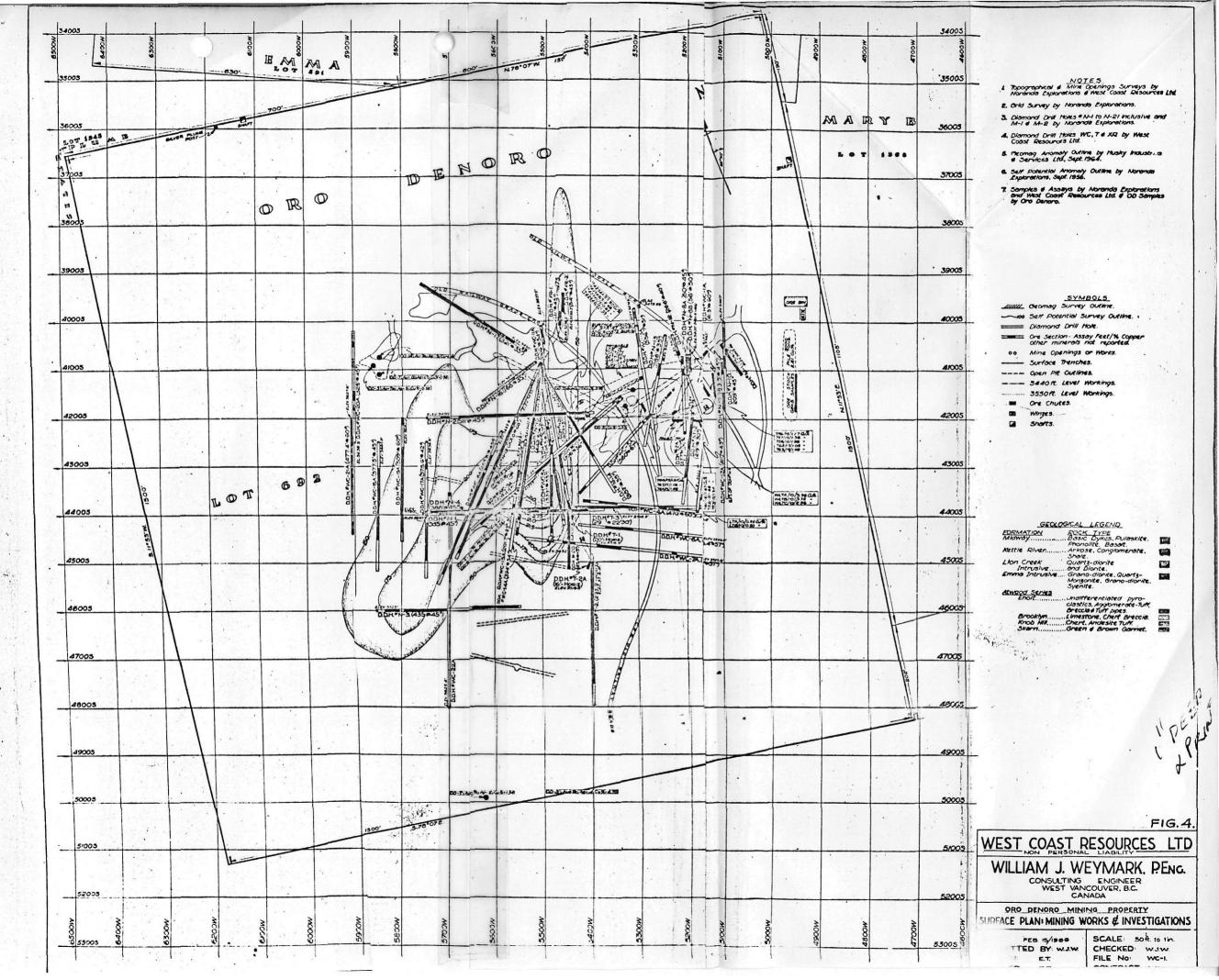
11. I am a member of the Association of Professional Engineers of the Province of British Columbia and also the Consulting Engineers' Division of the Association of Professional Engineers of British Columbia.

- iv. I am a member of the Canadian Institute of Mining and Metallurgy and of the American Institute of Mining, Metallurgical and Petroleum Engineers.
- v. I have no direct or indirect interest whatsoever, in the Oro Denoro property, or in West Coast Resources Ltd., (N.P.L.).
- vi. The findings of the accompanying report is based on my personal examinations of the property on September 3, 4 and 5, 1965 and a review of all available background data obtained from previous operations, investigators and from the investigation programme conducted by West Coast Resources Ltd. to the present date.

DATED at West Vancouver, British Columbia, this 15th day of February, 1966.

William J. Weymark, P. Eng. Province of British Columbia





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