

# C.M. OLIVER RESEARCH REPORT

## Getty Copper Corp.

### *Exploring In Elephant Country For A Large Porphyry Copper Deposit*

Bryan Wilson, B.Sc.

**December 4, 1996**

**SYMBOL: GTY**

**EXCHANGE: VSE**

**RECENT PRICE: C\$0.92**

**SHARE CAPITAL:**

**Issued: 23.8 million**

**Fully Diluted: 31.6 million**

**MARKET CAP. (F/D): C\$29.1 million**

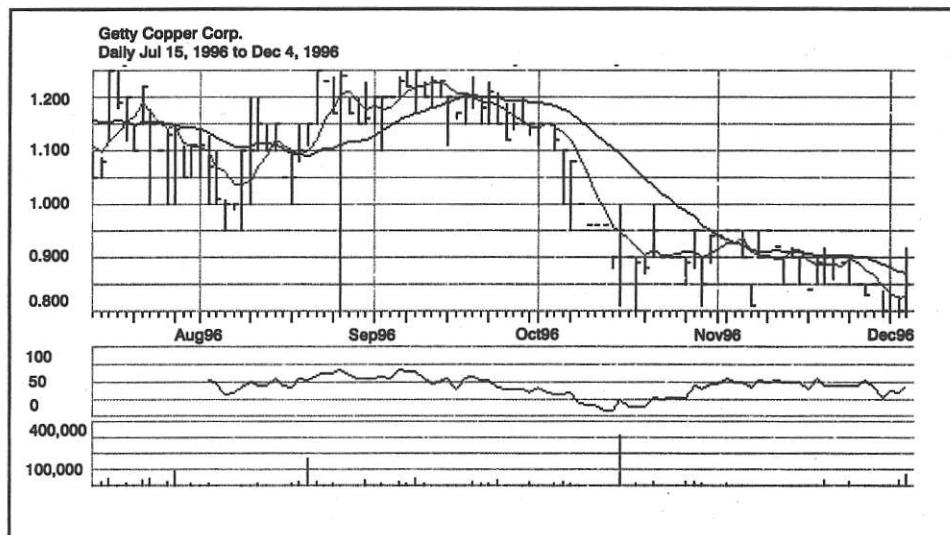
**RECOMMENDATION: BUY — For**

**Sophisticated & Aggressive Investors**

**TARGET PRICE (12 MON.): C\$2.50-\$3.00**

### Summary

- Getty Copper holds varying interests in over 100 square kilometers of property in the Highland Valley area of British Columbia. More than 830 million tonnes of copper-molybdenum ore grading 0.42% copper and 0.006% molybdenum have been mined on the adjoining Highland Valley property.
- All the necessities for mining — power, water, permits, and access — are available on a year-round basis to support mine development activity.
- Development of the property is advancing to the point where there is sufficient drilling completed to estimate a preliminary resource calculation and scoping study to determine the feasibility of producing copper cathodes for the oxide ore. Additional potential for oxide ore exists on the property.
- Getty is contemplating the recovery of copper from the oxide ore using low-cost heap leaching, solvent extraction and electro-winning (SX-EW) to produce high quality cathode copper.
- Bottle roll tests and column tests on the oxide ore have indicated that recoveries of 70% to 90% can be achieved with acid leaching. Ample space for leaching sites is available within easy reach of the deposits. The economics of this scenario are very attractive.
- At the current price level of the shares, we would encourage accumulation of Getty's shares by sophisticated and aggressive investors.



Published by C.M. Oliver & Co. Ltd.



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### Introduction

The Highland Valley of British Columbia is Canada's porphyry copper region (*see Map 1*). Since the early 1960's, the area has produced 8.2 billion pounds of copper from 830 million tons of ore from four orebodies.

At present, only the Valley Copper and the Lornex orebodies are in production at a mill throughput of 138,000 tonnes per day. This is the second largest operating throughput in the world. The Valley Copper mine currently has an estimated eight-year mine life.

Copper was first discovered in the Highland Valley in 1896 when gold prospectors wandered into the valley looking for gold. During the 1950's disseminated copper mineralization was located by diamond drilling.

Table 1

<b>Mine Name</b>	<b>Status</b>	<b>Tonnage</b>	<b>Grade</b>
Bethlehem	Past Producer	100,000,000	0.47%
J.A. Deposit	Undeveloped	266,000,000	0.46%
Highmont	Past Producer	150,000,000	0.37%
Lornex	In Production	425,000,000	0.43%
Valley Copper	In Production	1,000,000,000	0.42%

By 1962, the Bethlehem copper mine was placed into production. This led to additional exploration in the area and in 1962 the Lornex mine was discovered which in turn led to the discovery of the Valley Copper deposit in 1967.

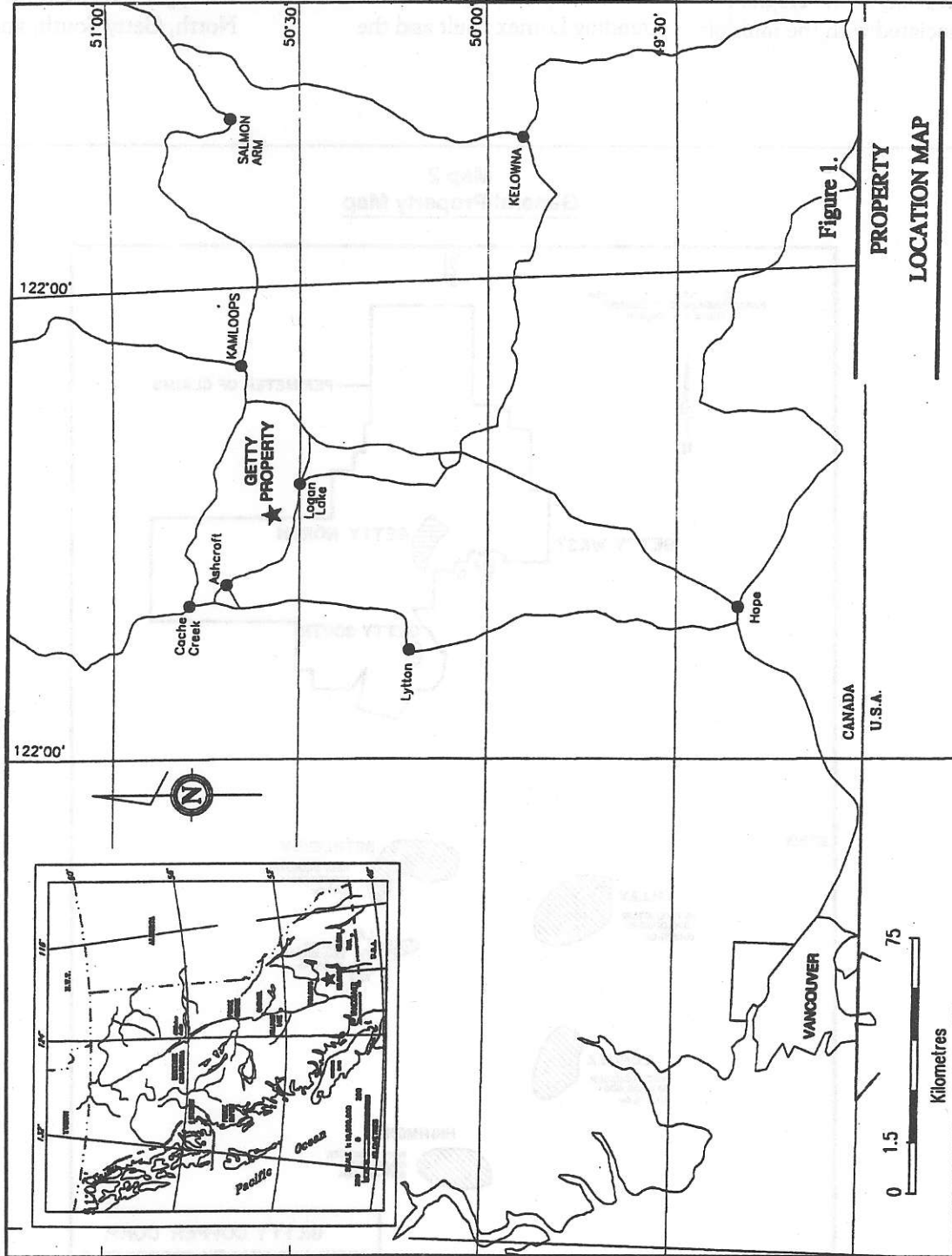
The Getty Copper property adjoins the former Bethlehem copper mine site which was discovered in 1955. Access and all the necessary items for

establishing and running a mining operation on a year-round basis are available at the mine site.

The Getty property covers over 100 square kilometers and is comprised of claims that are 100% controlled by Getty (on the Getty North claims) and 50% on the Getty South in joint venture with Robak, a private corporation.

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**Map 1  
Property Location Map**



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## Geology Of The Getty Copper Deposits

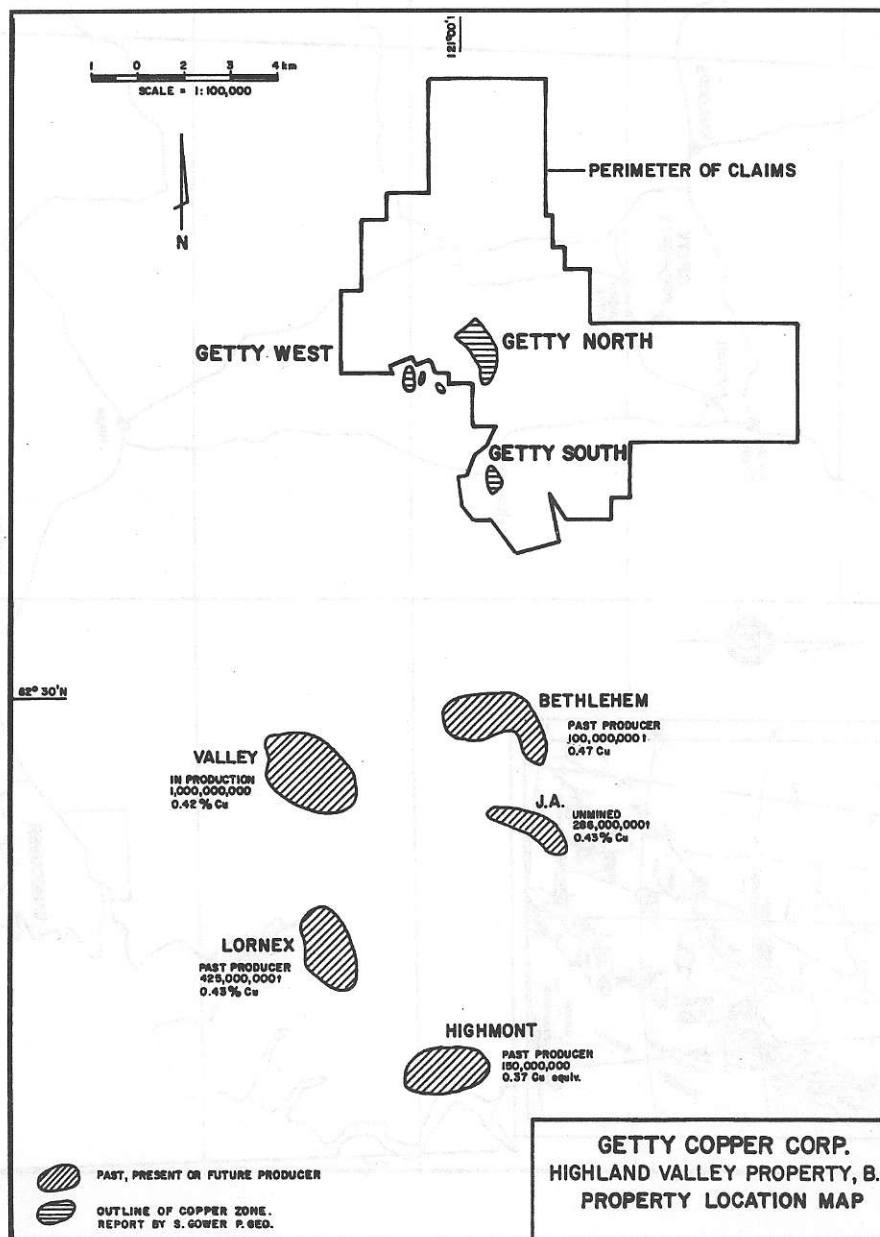
The copper deposits of the Highland Valley are associated with the multiple

phases of the Tertiary aged Guichon batholithic complex. Most of the deposits in the region are spatially related to porphyry stocks and dike swarms in proximity to the north trending Lornex Fault and the

northwest trending Highland Valley Fault.

On the Getty Copper property there are at least three known zones of copper mineralization: Getty North, Getty South, and Getty West.

**Map 2  
General Property Map**



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### Getty North

The Getty North deposit is situated in the north central portion of the Guichon Batholith. Strong copper values occur in zones of chlorite-sericite alteration accompanied by fine grained pyrite. Molybdenite and minor silver occur in silicified zones and in quartz veinlets accompanied by narrow alteration envelopes in or adjacent to the copper zone. The main body of 0.3% - 0.7% total copper occurs in a zone of strong fracturing near the contact between the Bethlehem porphyritic phase and the Guichon granodiorite.

In a portion of the deposit, a well-developed zone of oxidation occurs to a maximum depth of 150 meters. Oxidation of the primary sulphides is generally complete but decreases with depth culminating in primary copper sulphides.

### Getty South

The 500 meter by 300 meter elongate Getty South deposit is located along the east margin of a breccia body. Generally, the higher grade (>1%) copper mineralization occurs in the

phase of the porphyry that is characterized by small fragment size. Previous operators' sampling of underground drifts across the breccia zone returned 0.39% copper over 95 meters and 0.58% copper over 69 meters.

The brecciated nature of the host rock caused early diamond drilling to suffer from poor recovery in the oxide and sulphide zones. However, in spite of this, a geological resource was calculated in 1992 at 36,000,000 tonnes grading 0.47% copper. This deposit is currently being evaluated for further diamond drilling.

### Getty West

The Getty West deposit is located west of the Getty North deposit (*see Map 2*) and is the least explored of the three known zones on the property. In this locality, high grade copper veins were mined after the turn of the century. However, little remains of any of the details.

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## Metallurgy

Secondary copper mineralization occurs as dissemination and fracture fillings in the oxide portion of the Getty North deposit. Testing has indicated that in the oxide zone, 81% to 90% of the contained copper was in the oxide form (i.e., malachite, azurite and chrysocolla) and that 80% of the copper in a composite sample would be extractable by leaching. Column leach testing by Dr. Morris Beattie has determined that the oxide copper leaches very readily with a recovery rate of 70% - 90%.

The mixed ore with a preponderance of sulphide mineralization would require a longer leach time with possible bacterial oxidation first. There is also a large tonnage of low-grade oxide and sulphide mineralization that will be utilized as dump leach.

The primary copper mineralization was tested for floatation recovery. Bench tests on drill core grading 0.41% copper, 0.12 grams of gold per ton and 2.03 grams of silver per ton produced a concentrate grading 33.8% copper, for a recovery rate of 90.6%.

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### Resource Estimate

A preliminary resource estimate has been calculated for the property by the consulting firm, Watts Griffis and McOuat. Table 2 outlines the distribution of the resource.

From Table 2, it can be seen that there is a potential for the Getty property to host a 48.0 million ton deposit with a grade of 0.4 % copper. Within this there is an indicated and inferred resource in excess of 12.0 million tons of oxide ore that is amenable to heap leaching.

Preliminary scoping studies indicate that for a viable leaching operation 15.0 million tons grading 0.45% copper would be needed. A recent drill program (summer of 1996) commenced to determine the extent and continuity of the oxide mineralization and to establish the minimum threshold base for a production decision. At the time of writing, the drilling was in progress and results were being compiled.

### Solvent Extraction / Electro-Winning (SX-EW)

Unlike other producers in the Highland Valley, Getty is contemplating using the SX-EW process to recover the copper metal out of the oxide ore. Previously this material was not considered ore because the technology was not readily available or proven. This has changed over the past 15 years.

Copper metal oxides with the general form of  $Cu^{2+}$  will dissolve in the presence of sulfuric acid ( $H^2SO^4$ ). Crushed and sized ore will be placed on a stack or heap that has a neoprene liner underneath on top of a specially prepared and graded surface.

Sulfuric acid is applied to the top of the heap in a spray. As the acid percolates down through the heap, it dissolves or leaches the copper and carries it away in solution. The solution drains out from under the heap on top of the impervious liner and is collected in a catchment / surge pond.

The pregnant leach solution is then passed through a tank where a voltaic charge is applied across two stainless steel terminals. This causes the dissolved copper to precipitate onto one of the stainless steel terminals to form relatively pure copper metal.

The infrastructure necessary to construct and operate such a mining operation is available on the Getty property and in the immediate vicinity of the proposed mine.

**Table 2**  
**Distribution of Preliminary Resource Estimate**

Type	Tonnage	Grade (%Cu)	Category
<b>Getty North Deposit</b>			
Oxide	5,000,000	0.45	Indicated
Sulphide	16,000,000	0.44	Indicated
Oxide	7,000,000	0.40	Inferred
<b>Getty South Deposit</b>			
Oxide/Sulphide	Currently being evaluated		

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### Valuation

Unlike other companies that have operated in the Highland Valley, Getty Copper will benefit from the production of copper from the oxide ores. Solution Extraction with Electro-Winning recovery of the metal is a cost-effective, efficient method of copper recovery. With the current drill program, Getty should meet the economic threshold of the oxide ore production in the near future. At this point, the company would initiate a feasibility study.

Table 3 gives a preliminary estimate of the impact that the processing of the copper oxide only would have on the value of Getty's shares.

To arrive at these results, we have made the following assumptions:

- The oxide ore will be mined over a period of five years at the rate of 12,000 tonnes per day.
- Recovery rate of 70%, although preliminary tests indicate higher recoveries.
- Slightly escalating copper prices.
- Fixed operating costs of \$0.50 per pound of copper.
- A fully diluted share position of 45 million shares.

The analysis shown in Table 3 does not give any credit to the abundant sulphide mineralization. Getty's management has stated that it wants to develop a drill-indicated resource of 100 million tonnes. Based on our observations and the work completed to date, we believe that this is an achievable objective.

Furthermore, as the giant Valley Copper Mine enters the latter stages of its life, we believe that Highland Valley Copper will be seeking sources of sulphide ore to keep the giant milling complex in operation. We believe that a resource of 100 million tonnes of copper ore would look attractive to any one wishing to keep a milling complex in operation.

**Table 3**  
**Getty Copper Corp.**

*Cash Flow Potential of Processing the Oxide Ore*

	1998E	1999E	2000E	2001E	2002E
Daily Production (tonnes/day)	12,000	12,000	12,000	12,000	12,000
Days of Production	350	350	350	350	350
Annual Production (tonnes)	4,200,000	4,200,000	4,200,000	4,200,000	4,200,000
Grade (%)	0.45	0.45	0.45	0.45	0.45
Pounds of Copper	37,800,000	37,800,000	37,800,000	37,800,000	37,800,000
Recovery @ 70%	26,460,000	26,460,000	26,460,000	26,460,000	26,460,000
Price of Copper (US\$/lb.)	\$0.85	\$0.90	\$1.00	\$1.00	\$1.00
Gross Revenue (US\$)	\$22,491,000	\$23,814,000	\$26,460,000	\$26,460,000	\$26,460,000
Less Operating Cost @ US\$0.50/lb. (US\$)	\$13,230,000	\$13,230,000	\$13,230,000	\$13,230,000	\$13,230,000
Operating Profit (US\$)	\$9,261,000	\$10,584,000	\$13,230,000	\$13,230,000	\$13,230,000
Estimated Capital Cost	(\$6,060,000)	—	—	—	—
Net Cash Flow (US\$)	\$3,261,000	\$10,584,000	\$13,230,000	\$13,230,000	\$13,230,000
Cash Flow Per Share (US\$)	\$0.07	\$0.24	\$0.29	\$0.29	\$0.29
(assumes 45 million F/D)					

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### **Recommendation**

We believe that Getty will soon have the key data that will allow the company to calculate an oxide mine reserve. Getty Copper will soon commence the preparation of a feasibility study that will examine the

economic viability of the oxide ore on the property.

There is usually a transition in the shareholder base of an exploration company as it evolves from an explorer to a developer of a mining property. During this change in the evolutionary phase of a company there is opportunity to acquire under valued equities. We believe that Getty

Copper is entering this phase and recommend the accumulation of Getty's shares during this period.

We recommend the purchase of Getty Copper for those investors seeking an early stage developing copper mining equity. Our 12-month target price is C\$2.50 to C\$3.00 per share.

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C.M. Oliver & Company Limited is acting as fiscal agent for Getty Copper Corp. for which C.M. Oliver will receive a fee of \$35,000.