SHERWOOD PROJECT COSTS AND REVENUE

Vancouver Island **British Columbia**

Project 1947

September 25, 1991

Wright Engineers Limited
Vancouver British Columbia
Canada

FLUOR DANIEL WRIGHT

Wright Engineers Limited
1444 Alberni Street
Vancouver, B.C.
V6G 2Z4 Canada
Telex 04-54367
(604) 684-9371 Fax (604) 687-6130

Mining and Metallurgy

Project No. 1947
September 23, 1991

Province of British Columbia
Ministry of Attorney General
609 Broughton Street
Victoria, B.C.
V8V 1X4

Attention: Mr. W. Pearce Q.C.

Dear Sirs:

re: Sherwood Project
Capital and Operating Costs

As requested we have estimated the capital and operating costs for a proposed Sherwood Project. We have also speculated what the revenues might be based upon reserves and grades offered by Heard, Barr and Glanville.

The costs are considered to be preliminary since there is insufficient data on the orebody and the metallurgy in order to produce a more accurate estimate. These estimates, however, are still somewhat more accurate than earlier estimates since they take into account known conditions specific to the Sherwood Project, such as the location and type of mineralization, the site conditions and the environmental constraints. They have also included the costs of exploration to develop sufficient reserves to support a mining operation. This latter statement assumes that the ore does in fact exist and can be found - there are very good indications that it does not. This issue will be addressed by others.

We have prepared the base cost estimate assuming a nominal 18,000 tonne annual production rate (50 tpd) but have also considered the costs associated with a 72,000 tonne per year (200 tpd) operation.

We trust this will be satisfactory.

Yours very truly,

FLUOR DANIEL WRIGHT

W.E. Norquist

W.E. Norquist
Project Manager

WEN:srm
Encl.

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SECTION 1

R

INTRODUCTION

The proposed Sherwood Project is located at the southern end of Strathcona Park in the Drinkwater Valley. The park status was changed in 1988 and, as a consequence, mining development was no longer possible. Based upon the hypothesis that mine development is possible and that sufficient reserves will be developed to support a mining operation, we have prepared capital and operating cost estimates for the proposed project.

Earlier capital and operating cost estimates used by Wright in their valuation, by Heard/Carter and by Glanville, were factored estimates based on generic mines. These did not specifically consider the Sherwood Project and how it would be developed and executed. It is the intention here to prepare capital and operating costs for the Sherwood Project based on the assumption that there is sufficient reserves to support an 18,000 tonne per year operation (nominal 50 tonnes per day) for three years and base these costs on the prevailing site conditions. In order to determine the project costs we have attempted to produce a project plan which would be the most favourable from an environmental and cost standpoint.

The revenues for the proposed project are based on several different reserve estimates:

51,632 tonnes @ 40.97 grams/ton	*Heard/Carter (October 9, 1989)
30,510 tonnes @ 0.65 OPT	Barr (October, 1990)
(27,620 tonnes @ 22.4 grams/tonne)	

Revenues have also been determined at other ore grades and have been tested at several different gold values. The summary design criteria used for the estimate is contained in Appendix 1.

* Heard/Carter earlier estimated 46,630 tons @ 0.409 OPT (14 grams per tonne) in an estimate completed in March, 1989 based on the same data available in the October 9, 1989 estimate but using zero dilution in projecting assay data to a selected mineable width of five feet.

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We have also prepared capital and operating cost estimates for a 200 tonnes per day nominal throughput. The main difference between the 50 tpd and 200 tpd projects, other than the size of facilities, is that we have assumed a two lane road and a 12 month per year operation.

SECTION 2

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SUMMARY

GENERAL

In this report we have estimated capital and operating costs and estimated annual revenues for the proposed Sherwood Project. In order to do this we have attempted to prepare a project plan which is most cost effective based on two different production levels of 18,000 tonnes per year (50 tpd) and 72,000 tonnes per year (200 tpd). In executing the work we have also attempted to prepare a mine plan which we feel has the best chance of being accepted by Provincial and Federal environmental authorities given the sensitive nature of the project area. We have also made assumptions with respect to reserves, exploration costs, ore body and metallurgical recoveries.

The fact that we have determined capital costs, operating costs and potential revenues for a 200 tpd operation should not be construed that sufficient reserves exist to support an operation of this size. Indications are that these reserves simply do not exist - this issue will be addressed by others.

CAPITAL COST

The capital costs for the Sherwood Project are summarized as follows:

Table 2-1

Capital Cost Summary

	Case 1 50 tpd Operation	Case 2 200 tpd Operation
Mine	7,200,000	10,000,000
Plant Site	2,490,000	5,410,000
Offsite Costs	1,690,000	2,960,000
Engineering & Construction Management	1,000,000	1,800,000
*Sunk Costs	1,150,000	13,200,000
Operating Capital	1,100,000	2,600,000
Contingency	2,870,000	7,130,000
Total Pre-Production Costs	**17,500,000**	**43,100,000**
Bonding Costs	200,000-900,000	400,000-1800,000

Note:

1. We have included Sunk Costs in Capital Costs because, unlike a normal feasibility study, these costs have yet to be spent.

OPERATING COSTS

The operating costs for the project are summarized in the following table:

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Table 2-2

Operating Cost Summary

	Case 1 50 tpd Operation	Case 2 200 tpd Operation
Mining	1,620,000	4,950,000
Milling	770,000	1,770,000
Plant and Administration	1,010,000	2,245,000
Head Office	200,000	300,000
Contingency	540,000	1,390,000
Total Annual Operating Cost	**4,120,000**	**10,655,000**
Total Cost per Tonne	**$230**	**$148**

REVENUE

Based upon the following assumptions we have estimated the gross revenue for the proposed project.

Assumptions

Grade - 50 tpd - 40/22 grams/tonne
- 200 tpd - 31/22 grams/tonne

Net Smelter Return (per ounce)

Price	Return
$US 350/ounce	$Can 335/ounce
$US 375/ounce	$Can 363/ounce
$US 400/ounce	$Can 391/ounce

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Table 2-3

Annual Gross Revenue

Case 1 - 50 tpd

Gold Price $US/ounce	Grade (Grams/tonne)	
	40	22
$400	$7,224,000	$3,988,000
$375	6,716,000	3,703,000
$350	6,198,000	3,417,000

Table 2-4

Annual Gross Revenue

Case 2 - 200 tpd

Gold Price $US/ounce	Grade (Grams/tonne)	
	31	22
$400	$21,600,000	$15,914,000
$375	22,100,000	14,744,000
$350	18,500,000	13,635,000

CYANIDE LEACHING

We have prepared the costs assuming that the milling process will be gravity flotation with 80% recovery. If cyanide leaching were permissible a higher recovery would be likely - possibly 90%. If this were the case the impact would be as follows:

Capital Cost

50 tpd	-	$1,300,000 increase
200 tpd	-	$3,000,000 increase

Operating Cost

50 tpd	-	$27.00/tonne
200 tpd	-	$9.50/tonne

Revenue

Increases by an average of 35 - 38%.

SECTION 3

DESCRIPTION OF FACILITIES

A description of the proposed project is summarized in the following text. The overall plan of the project is illustrated in Dwg. 1947-200-1201 attached. The drawings and mine layouts shown reflect an 18,000 tonne per year (50 tpd) production rate.

MINE

To provide access to the mine workings an adit will be driven from Drinkwater Creek for 600 metres and a vertical shaft will be driven to the mine workings 600-800 metres above.

An adit was used to gain entry to the mine workings because the steep terrain makes road construction impossible without the use of trestles and the destruction of the mountainside.

The mining method used in the evaluation is shrinkage stoping with ore carried by ore pass to the main haulage adit. The proposed mine plan is illustrated on the attached drawings: 1947-100-1202, -1203, -1204, -1205.

Because of the extremely heavy snowfall in the area we have assumed the mine does not operate in the winter months for the 50 tpd Case. In the 200 tpd Case we have assumed a 12 month per year operation to reduce the mine development cost and to stabilize the work force.

PLANT SITE

The 50 tpd mill and all project ancillary facilities will be located outside the park at the head end of Great Central Lake.

The milling process used will be gravity separation/flotation since this process will be less hostile to the environment than other alternatives, notably cyanide leaching. We have assumed an 80% recovery. Typically, if an ore is amenable to gravity/flotation, recoveries range from 60% to 90%.

Other facilities located at the plant site will include shop, offices, power plant and a camp. The plant site buildings will be of pre-engineered construction except the camp and office which will be located in trailers.

PROJECT AND MINE ACCESS

The project site will be reached by barge and boat along Great Central Lake to a dock located at the north end. The plant site will be connected by road to the dock.

To reach the mine from the plant site a single lane road will be constructed along Drinkwater Creek to an area below the mine. An estimate for this road was prepared by Piteau Associates. The underground workings will be reached by adit from the level of Drinkwater Creek.

Other facilities for the proposed Sherwood Project include sedimentation ponds at the mine portal and plant site, sewage treatment, waste incineration, water supply at the mine and mill and a tailings pond. The tailings pond will be lined with impermeable material.

SECTION 4

ENVIRONMENTAL CONSIDERATIONS

The proposed Sherwood Mine site is in an environmentally sensitive area. The project is located adjacent to Drinkwater Creek upstream of Great Central Lake which is one of the most important salmon spawning areas on Vancouver Island and the mine itself is located in a valuable recreation area within Strathcona Park.

For this reason the review process for the project will be long and costly, will involve extensive field work and will almost certainly require public hearings. Reclamation of the project sites both inside and outside the park will be required and bonding will be requested by the Ministry of Parks, Ministry of Mines and the Ministry of the Environment. The costs and difficulties associated with the approval process, ongoing monitoring and the requirements for bonding have been examined by Hatfield Associates.

In the project plan we have utilized a strategy and made assumptions which would make the project as environmentally acceptable as possible. These measures included:

- Included sedimentation and run-off ponds
- Located mill and tailings pond outside the park
- Assumed a process not requiring cyanide
- Designed road (50 tpd case) as a single lane road using end-haul construction to minimize impact on park and reduce costs
- Designed the tailings pond with an impermeable liner
- Assumed use of groundwater (rather than surface water) for the mine and mill.

SECTION 5

COSTS AND REVENUE

CAPITAL COSTS

The details of our capital cost calculations for 18,000 tonnes per year (50 tpd) and 72,000 tonnes per year (200 tpd) operations are contained in Appendix II. These are summarized in the following:

Table 5-1

Capital Cost Summary

	Case 1 50 tpd Operation	Case 2 200 tpd Operation
Mine	7,200,000	10,000,000
Plant Site	2,490,000	5,410,000
Offsite Costs	1,690,000	2,960,000
Engineering & Construction Management	1,000,000	1,800,000
Sunk Costs	1,150,000	13,200,000
Operating Capital	1,100,000	2,600,000
Contingency	2,870,000	7,130,000
Total Pre-Production Costs	**17,500,000**	**43,100,000**
Bonding Costs	200,000-900,000	400,000-1,800,000

Comment

1. Sunk Costs - Sunk Costs (as outlined in the Appendix) are normally not included in the capital costs for a project since these costs, at the time of project financing, have

been spent. For this project these costs must be included because these costs must and will be spent in order for the Sherwood Project to be executed.

2. Sunk Costs/Exploration Costs - contained in the Sunk Costs is a cost for exploration to develop 200,000 ounces of reserves beyond the 20,000 ounces already developed. Costs to develop reserves in narrow vein deposits typically range from $50 - $100 per ounce of gold reserve developed. We have used a cost of $60 per ounce but the cost would probably be much higher because there is only one vein at Sherwood and it is very narrow. This presumes, of course, that the ore is available to be developed into reserves - indications are that it is not.

3. Bonding Costs - the cost of the bond is a function of the environmental risk of the project and varies accordingly. It should be noted that bonding requirements have increased somewhat in recent years and all existing mines are having their bonding requirements re-assessed.

   It should also be noted that for a small operation in a high risk area it may not be possible to buy bonding. Thus the bonding requirements may have to be borne as a pre-production cost to the project.

4. Cyanide Leaching - If the ore is amenable to cyanide leaching and it is possible to obtain a permit to operate using cyanide the capital costs would be affected as follows:

Case 1 (50 tpd)	-	$1,300,000 increase
Case 2 (200 tpd)	-	$3,000,000 increase

OPERATING COSTS

The details of our operating cost calculations for 18,000 tonnes per year (50 tpd) and 72,000 tonnes per year (200 tpd) operations are contained in Appendix III. These are summarized in the following:

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Table 5-2

Operating Cost Summary

	Case 1 50 tpd Operation	Case 2 200 tpd Operation
Mining	1,620,000	4,950,000
Milling	770,000	1,770,000
Plant and Administration	1,010,000	2,245,000
Head Office	200,000	300,000
Contingency	540,000	1,390,000
Total Annual Operating Cost	**4,140,000**	**10,655,000**
Total Cost per Tonne	**$230**	**$148**

Comment

1. Cyanide leaching - If the ore is amenable to cyanide leaching and it is possible to obtain a permit to operate using cyanide the operating costs would be affected as follows:

   Case 1 (50 tpd) - $490,000 per year
   or $27.00/tonne

   Case 2 (200 tpd) - $680,000 per year
   or $9.50/tonne

REVENUE

In the following we have summarized the revenue for the Sherwood Project based upon the following:

a) Gold Price $350/ounce, $375/ounce, and $400/ounce

b) Concentrate grade 8 ounces/tonne Gold

c) Mill recovery to concentrate - 80% R

d) Ore grades:

50 tpd Operation

40 grams per tonne - latest Heard

22 grams per tonne - Barr (This also corresponds to Heard's earlier estimate in total ounces of gold reserve - Barr report October, 1990)

200 tpd

31 grams per tonne - Glanville report

22 grams per tonne - Barr*

Table 5-3

Revenue - Case 1

18,000 tonnes per year (50 tpd)

Annual Production (tonnes)	18,000	18,000	18,000	18,000	18,000	18,000
Grade (grams/tonne)	40	40	40	22	22	22
Recovery (%)	80	80	80	80	80	80
Gold Production (grams)	576,000	576,000	576,000	316,800	316,800	316,800
Gold Production (ounces)	18,500	18,500	18,500	10,200	10,200	10,200
Net Smelter Return per ounce	$391	$363	$335	$391	$363	$335
Annual Revenue $ Cdn.	7,224,000	6,716,000	6,198,000	3,988,000	3,703,000	3,417,000

* The fact we have used this grade in the analysis does not indicate that Barr believes sufficient reserves at this grade exist to support an operation of this size. He, in fact, does not.

Table 5-4 R

Revenue - Case 2

72,000 tonnes per year)200 tpd)

Annual Production (tonnes)	72,000	72,000	72,000	72,000	72,000	72,000
Grade (grams/tonne)	*31	31	31	22	22	22
Recovery (%)	80	80	80	80	80	80
Gold Production (grams)	1,786,000	1,786,000	1,786,000	1,267,000	1,267,000	1,267,000
Gold Production (ounces)	55,300	55,300	55,300	40,700	40,700	40,700
Net Smelter Return per ounce	$391	$363	$335	$391	$363	$335
Annual Revenue $ Cdn.	21,600,000	20,100,000	18,500,000	15,914,000	14,774,000	13,635,000

* Grades corresponding to .89 ounces/ton or .98 ounces/tonne (Glanville)

Comment:

1. Net Smelter Return

   Cost of transportation and smelting of concentrate is $50/ounce and credit obtained is 95%. These values have been converted to Canadian $, thus:

   $US 350/ounce = $Cdn 335/ounce

   $US 375/ounce = $Cdn 363/ounce

   $US 400/ounce = $Cdn 391/ounce

2. Cyanide Leaching - If the ore is amenable to cyanide leaching and it is possible to obtain a permit to operate using cyanide, then mill recoveries would increase and

smelter charge and transport costs would be eliminated. If 90% mill recovery was possible the gross annual revenues would increase by 35-38% above those shown.

APPENDIX I

DESIGN CRITERIA

APPENDIX I

DESIGN CRITERIA

SHERWOOD PROJECT

Issued July 12, 1991

CASE 1 (Base Case)

Based upon 18,000 tonnes per year average annual production rate
(50 tonnes per day)

General

1. It is the intention of Wright Engineers and their sub-consultants (Piteau and Hatfield) to review the project in the same manner they would examine any similar mining project. It will be treated as a preliminary prefeasibility type study examining the issues and alternatives and selecting the most practical and cost effective options.

2. The scope and depth of study will, of course, be limited by the time and data available.

3. The perspective will be that existing at a time prior to the upgrading of the Sherwood area to Class A park status. Strathcona was upgraded in November of 1988.

A. MINE

1. Ore reserves - 50,000 tonnes at 0.4 opt gold (Carter, Heard Oct. 9/89).

2. Operating year, 7 months (summer only) plus one month start-up and shut-down. Operating day, 2 shifts/5 days per week.

3. Average annual production to be 50 tpd or about 120 tpd based on actual operating day. Annual production to be 18,000 tonnes per year.

4. Power generation to be diesel at mine. Stream flows too unreliable for hydro and distance too great for transmission from mill.

5. The only practical access is by adit from Drinkwater Creek, directly opposite Della Falls.

6. Mining method to be shrinkage stoping with access to levels by shaft/hoist.

7. Ore and waste by ore pass to access adit.

8. Ore to be loaded onto trucks at or in portal and hauled to mill on road down Drinkwater Creek.

9. Mining and ore truck haulage to mill possibly by contractor. (Note: Golden Bear uses Volvo BM 25 tonne trucks to haul ore down mountain from pit).

10. Compressor and fans probably located underground to help reduce visual impact and noise. There appears to be no officially published noise level requirements for mines or for parks. However, a best effort must be made to mitigate noise to preserve Park values.

11. Other facilities, such as sedimentation pond and maintenance area, may have to be located underground as well.

12. We must comment on snowfall and avalanche potential. Snowfall information is not available for Sherwood but is available for Westmin.

13. Ground is potentially quite bad. We will comment on tunnel development problems.

14. There are sulphides in ore but expected to be minimal.

15. Will comment on winter operation citing precedents for mines operating in summer only (Cantung pit, Premier, etc.)

16. We will assume development waste trucked out to be used as fill at mill site.

B. <u>SEDIMENTATION POND/MINE DRAINAGE</u>

1. Natural flows expected to be minimal.

2. Assume 10-15 gpm flows during operation. These flows through ore are potentially acid generation. Acid generation potential in uncrushed unground ore expected to be minimal because sulphide levels are expected to be less than 4%.

   Acid mine drainage can simply be treated with lime.

C. <u>MILL</u>

1. We will assume mill to be at head end of Great Central Lake but comment on reasons for selecting this over other sites. This site appears to be most cost effective because it minimizes road construction and maintenance.

2. Process assumed is flotation/gravity but we may comment on cyanidation and cyanide destruction. (Note: Golden Bear having problems with cyanide destruction).

   Mill recovery to be 80%. Assume 8 ounce per tonne concentrate grade.

3. Milling to be 12 month operation with ore stockpiled at mill site for winter operation.

4. Average annual milling rate to be 50 tpd with assumed head grade of 0.4 opt gold (Carter, Heard, October 1989). Other grades may be considered.

5. Mill to be modular construction where possible, to minimize disturbance.

6. Various other facilities to be low cost, easily removable.

   - Trailer offices
   - Pre-engineered shops
   - Semi-portable power generation, etc.
   - Trailer camp

D. ROAD/DOCK

1. We will assume logging road standard or less and road to be single lane with passing lanes.

2. Construction to be end haul to avoid leaving excavated material in park unless used for fill.

3. Road to be reclaimed at end of project.

4. Road from head of Great Central Lake. Expect 5 km flat, 6 km steep.

5. We will assume same standard of dock as now used by loggers in area.

E. TAILINGS

1. Finely ground tails are potentially acid generating.

2. We will assume a pond with impervious liner and supernatant recycle to mill.

3. Pond to be capped and re-vegetated at close of mine.

4. We will assume no cyanide in pond but will comment upon impact if cyanide or other lixivant used.

5. Assume 1.5 dry tonnes per cubic meter for tailings density (SG Solids 2.7 x 77% Solids Density).

F. WATER SUPPLY

1. Assume mine water from Love Creek.

2. Assume mill will be supplied by ground water to simplify permitting.

G. WILDLIFE

1. We will obtain existing wildlife information from The B.C. Ministry of Environment, the Ministry of Parks, etc. and comment on this information in the report. The extent of field environmental studies that would have been required will be determined as will the potential impacts of the mine on wildlife and wildlife habitat, the type of mitigation required, ongoing studies, etc.

H. WASTE DISPOSAL

1. We will comment on sewage, garbage, air emissions, etc., but they are not expected to be a major problem.

   - incinerate non-putrescible wastes, bury putrescible wastes to minimize bear concerns.
   - For sewage use septic tank-tile field system.
   - Controls on crusher and possibly other emissions.

I. FISHERY RESOURCES

1. Fisheries and Oceans Canada and the B.C. Ministry of Environment will be approached regarding the fishery resource information available for the area. The need for extensive fishery resource studies will be determined based upon these meetings. It is known that fisheries and aquatic environmental issues would have been a major concern of the regulatory agencies.

J. REVIEW PROCESS

1. We will prepare a description of the review process required for all areas impacted.

2. We will prepare estimated cost for review/approval process and a schedule.

K. MINE CLOSURE

1. We will possibly prepare a closure plan and schedule.

2. We will determine the cost of the closure plan and estimate the bonding requirement based upon other mines.

L. PREPARATION OF A STAGE 1 REPORT

1. The activities to be undertaken in the preparation of a Stage 1 Report will be addressed.

2. Costs associated with a Stage 1 environmental study will be developed recognizing the important environmental features of the area, i.e. a provincial park, significant recreational values, importance of the fishery resources, etc.

3. Consultant fees and field study and laboratory analysis costs associated with preparing a Stage 1 Report to meet regulatory agency requirements will be addressed.

M. LAND USE

1. Available land use information will be reviewed and, if additional studies e.g. for archaeological resources, recreational usage, etc., are required, study designs will be prepared and the costs to undertake these studies will be determined.

N. PUBLIC INFORMATION PROGRAM

1. As part of the feasibility stage of the project, the proponent would be requested by the Mine Development Steering Committee to undertake a public information program because of the location in a park.

2. The nature of this public information program will be determined and costs will be developed to implement a program consistent with the size, location and environmental sensitivities of the proposed development.

O. ACID GENERATION FROM WASTE ROCK AND ORE

1. Available information with respect to acid-base accounting is very limited.

2. In order to determine the nature and extent of the potential acid generation problem, more extensive sampling of the ore and waste rock would have been required.

3. Sampling and analytical costs associated with this activity will be determined.

DESIGN CRITERIA

SHERWOOD PROJECT

Issued September 19, 1991

CASE 2 (Alternate Case)

Based upon 72,000 tonnes per year average annual production rate
(200 tonnes per day)

General

The design criteria for 200 tpd operation is identical to the 50 tpd operation except for the following changes:

A. MINE

1. Ore reserves greater than 200,000 tonnes.

2. Operating year 12 months to help stabilize work force and reduce mine development costs.

3. Annual production to be 200 tpd or 72,000 tonnes per year.

B. SEDIMENTATION POND/MINE DRAINAGE

2. Assume 20-30 gpm flows during operation.

C. MILL

3. Average annual milling rate to be 200 tpd.

D. ROAD/DOCK

1. We will assume two lane road because of higher traffic and to facilitate snow removal.

APPENDIX II

CAPITAL COST CALCULATIONS

APPENDIX II

CAPITAL COST CALCULATIONS

Costs utilized have generally been obtained from Wright Engineers estimating and mining files.

Where possible we have assumed costs for good used equipment or good used structures, such as that used for the camp.

Some costs were obtained from outside consultants or other sources. These include:

Sedimentation Pond	-	Piteau Associates
Access Road	-	Piteau Associates
Tailings Pond	-	Piteau Associates
Environmental Impact	-	Hatfield Associates
Bonding Costs	-	Hatfield Associates
Exploration Costs	-	Dave Barr

CAPITAL COST - Case 1

18,000 tonnes per year (50 tpd) Operation

CAPITAL COST

Mine

1.	Development	
-	600 m elev. - access - 600 m @ $2,000	$1,200,000
-	600 m elev. to 1200 m elev. - shaft 3 levels - 700 m @ $5,000	3,500,000
-	600 m elev. to 1200 m elev. - ore pass - 600 m @ $2,000	1,200,000
-	1200-1227 m elev. development - 100 m @ $2,000	200,000
-	1200 m elev. to 1277 elev. - vent raise - 80 m @ $1,500	120,000
	Sub-total	$6,220,000
2.	Mining equipment (installed costs)	
-	Hoist	$300,000
-	Locomotive and cars	60,000
-	Rail	80,000
-	Vent fans and duct	30,000
-	Drills	40,000
-	Compressor	50,000
-	Piping	10,000
-	Tools and miscellaneous	80,000
-	Bins and chutework	60,000
-	Haul trucks	120,000
	Sub-total	$830,000
3.	Portal facilities	
-	Power plant, warehouse, water supply	$80,000
-	Sedimentation pond	70,000
	Sub-total	$150,000
	MINING TOTAL	**$7,200,000**

Plant Site

1.	Site development	$170,000
2.	Water supply	30,000
3.	Sewage treatment	30,000

4.	Mill (flotation/gravity)	1,650,000
5.	Power plant (included in mill)	-
6.	Maintenance shop	80,000
7.	Office	30,000
8.	Camp	500,000
	PLANT SITE TOTAL	**$2,490,000**

Offsite Costs

1.	Dock and roadwork	$100,000
2.	Mine access road	800,000
3.	Mobile equipment and vehicles	500,000
4.	Barge	50,000
5.	Helicopter pad	10,000
6.	Tailings pond	230,000
	OFFSITE TOTAL	**$1,690,000**

Engineering and Construction Management **$1,000,000**

Sunk Costs

*Exploration Costs	-
Environmental Impact Studies	$500,000
Administration and Overhead	500,000
Feasibility Study, Testwork etc.	150,000
Total Sunk Costs	**$1,150,000**

Operating Capital (3 Months Operation) **$1,100,000**

Contingency (20%) $2,870,000

TOTAL PRE-PRODUCTION COSTS $17,500,000

Bonding Costs **$200,000 - $900,000**

Bonding costs may be spread over 2 - 3 years.

*Exploration Costs - We have included no costs to develop additional reserves in the 50 tpd Case. Since most estimates indicate only 20,000 ounces of reserves are available there is unlikely to be sufficient reserves to support a 50 tpd mining operating. Thus, even for this case additional exploration must be done to increase reserves.

CAPITAL COST - CASE 2

72,000 tonnes per year (200 tpd) Operation

CAPITAL COST

Mine

1.	Development	
	- 600 m elev. - access - 800 m @ $2,000	$1,600,000
	- 600 m elev. to 1200 m elev. - shaft 3 levels - 700 m @ $5,000	3,500,000
	- 600 m elev. to 1200 m elev. - ore pass - 1200 m @ $2,000	2,400,000
	- 1200-1227 m elev. development - 300 m @ $2,000	600,000
	- 1200 m elev. to 1277 elev. - vent raise - 200 m @ $1,500	300,000
	Sub-total	$8,400,000
2.	Mining equipment (installed costs)	
	- Hoist	$300,000
	- Locomotive and cars	90,000
	- Rail	120,000
	- Vent fans and duct	50,000
	- Drills	100,000
	- Compressor	100,000
	- Piping	20,000
	- Tools and miscellaneous	110,000
	- Bins and chutework	100,000
	- Haul trucks	400,000
	Sub-total	$1,390,000
3.	Portal facilities	
	- Power plant, warehouse, water supply	$120,000
	- Sedimentation pond	90,000
	Sub-total	$210,000
	MINING TOTAL	**$10,000,000**

Plant Site

1.	Site development	$350,000
2.	Water supply	40,000

3.	Sewage treatment	40,000
4.	Mill (flotation/gravity)	3,800,000
5.	Power plant (included in mill)	-
6.	Maintenance shop	150,000
7.	Office	30,000
8.	Camp	1,000,000
	PLANT SITE TOTAL	**$5,410,000**

Offsite Costs

1.	Dock and roadwork	$100,000
2.	Mine access ROAD	1,500,000
3.	Mobile equipment	800,000
4.	Barge	50,000
5.	Helicopter pad	10,000
6.	Tailings pond	500,000
	OFFSITE TOTAL	**$2,960,000**

Engineering and Construction Management **1,800,000**

Sunk Costs

Exploration Costs*	$12,000,000
Environmental Impact Studies	500,000
Administration and Overhead	500,000
Feasibility Study, Testwork etc.	200,000
Sunk Costs Total	**$13,200,000**

Operating Capital (3 Months Operation) **$2,600,000**

Contingency (20%) **$7,130,000**

TOTAL PRE-PRODUCTION COSTS **$43,100,000**

Bonding Costs **$400,000 - 1,800,000**

Bonding costs may be spread over 2 - 3 years.

*Exploration Costs - Exploration Costs typically average $50 - $100 per ounce of gold reserve developed. An additional 200,000 ounces will thus require a minimum of $12,000,000 ($60/ounce x 200,000 ounces).

APPENDIX III

OPERATING COST CALCULATIONS

APPENDIX 3

OPERATING COST CALCULATION - CASE 1 (Base Case)

18,000 tonnes per year (50 tpd) Operation

Mine

1.	Labour		Men
	Superintendent		1
	Miners (2 stopes x 2 shifts x 3 men)		12
	Shift Boss		2
	Maintenance		4
	Transport		4
	Development		2
	Survey, Engineering, Sampling, Geology, etc.		2
			27
	Labour cost 27 x $60,000 (including bonus) x	8/12	$1,080,000
2.	Supplies		
	50% of labour cost		$540,000
	MINING TOTAL		**$1,620,000**

Mill

1.	Labour		Men
	Superintendent		1
	Crusher		2
	Operators		4
	Assayer/Refiner		1
	Labourer		1
	Mechanic Electrician		2
			11
	Labour cost 11 x $50,000		$550,000
2.	Supplies and Power		
	18,000 tonnes @ $12.00/tonne		$220,000
	MILLING TOTAL		**$770,000**

Plant and Administration (On-Site)

1.	Labour	Men
	Manager	1
	Accountant	1
	Clerk	1
	Warehouse	1
	Mobile Equipment Operator/Transportation	2
	Maintenance	2
	Environment	1
		9
	Labour cost 9 x $55,000	$490,000
2.	Supplies	
	Fuel, environmental testwork, taxes, equipment parts, helicopter time, barge movement, miscellaneous materials, etc.	
	100% of labour cost	$520,000
	PLANT AND ADMINISTRATION TOTAL	**$1,010,000**

Head Office

Administration, permits, supplies, overhead, etc.	
Allowance	$200,000
HEAD OFFICE TOTAL	**$200,000**
Contingency (15%)	**$540,000**
TOTAL ANNUAL OPERATING COST	**$4,140,000**
TOTAL COST PER TONNE	**$230/tonne**

OPERATING COST CALCULATIONS - CASE 2 - (Alternate Case)

72,000 tonnes/year (200 tpd) Operation

Mine

1.	Labour		**Men**
	Superintendent		1
	Miners (5 stopes x 2 shifts x 3 men)		30
	Shift Boss		2
	Maintenance		8
	Transport		4
	Development		5
	Survey, Engineering, Sampling, Geology, etc.		4
			55
	Labour cost 55 x $60,000 (including bonus) x	8/12	$3,300,000
2.	Supplies		
	50% of labour cost		$1,650,000
	MINING TOTAL		**$4,950,000**

Mill

1.	Labour		**Men**
	Superintendent		1
	Crusher		4
	Operators		8
	Assayer/Refiner		2
	Labourer		2
	Mechanic Electrician		4
			21
	Labour cost 11 x $50,000		$1,050,000
2.	Supplies and Power		
	72,000 tonnes @ $10.00/tonne		$720,000
	MILLING TOTAL		**$1,770,000**

Plant and Administration (On-Site)

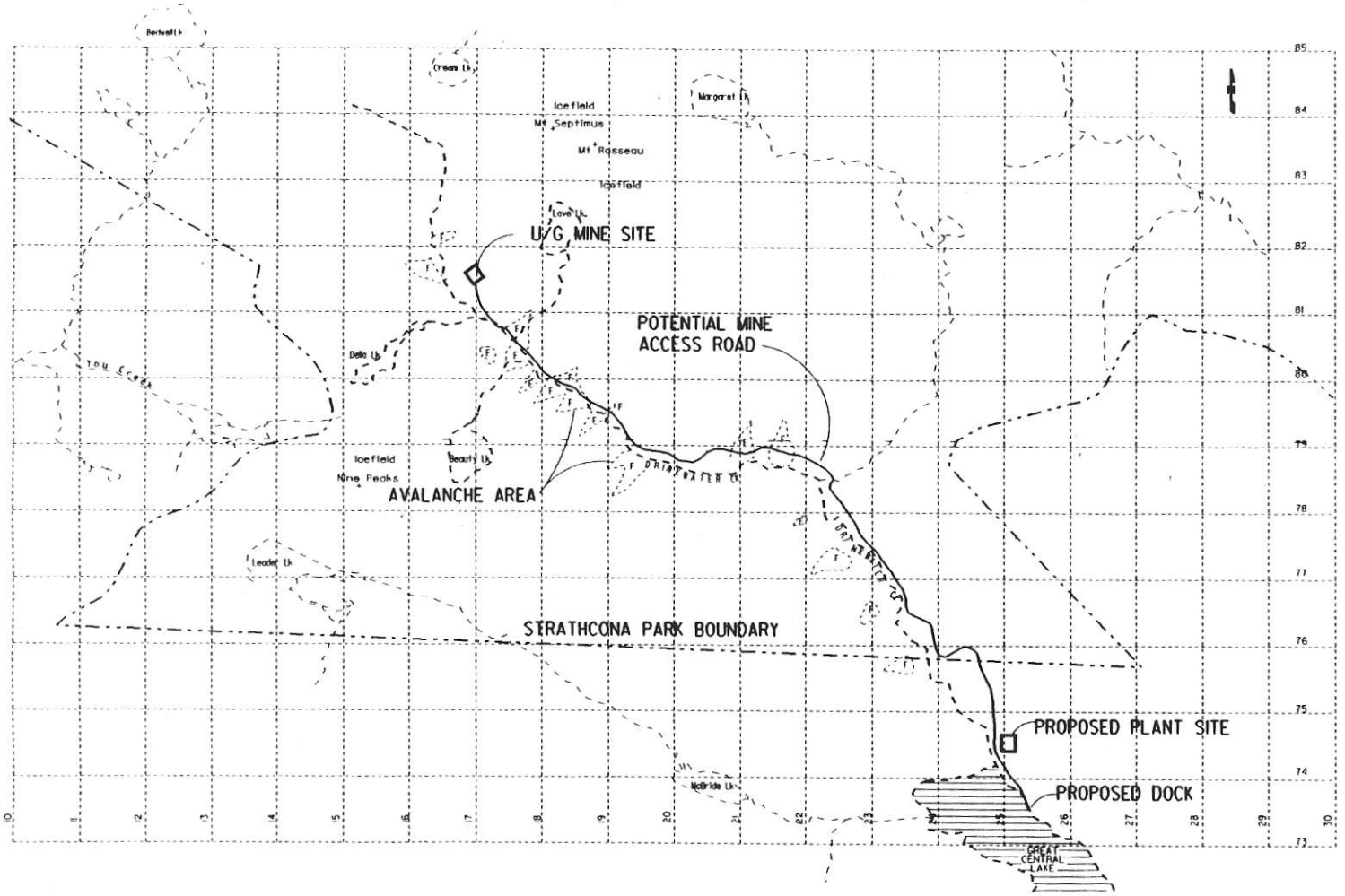
1.	Labour	Men
	Manager	1
	Accountant	1
	Clerk	1
	Warehouse	3
	Mobile Equipment Operator/Transportation (including snow removal)	8
	Maintenance	8
	Environment	1
		23
	Labour cost 23 x $55,000	$1,265,000
2.	Supplies	
	Fuel, environmental testwork, taxes, equipment parts, helicopter time, barge movement, miscellaneous materials, etc.	
	100% of labour cost	$980,000
	PLANT AND ADMINISTRATION TOTAL	**$2,245,000**

Head Office

Administration, permits, supplies, overhead, etc.	
Allowance	$300,000
HEAD OFFICE TOTAL	**$300,000**
Contingency (15%)	**$1,390,000**
TOTAL ANNUAL OPERATING COST	**$10,655,000**
TOTAL COST PER TONNE	**$148/tonne**

APPENDIX IV

DRAWINGS

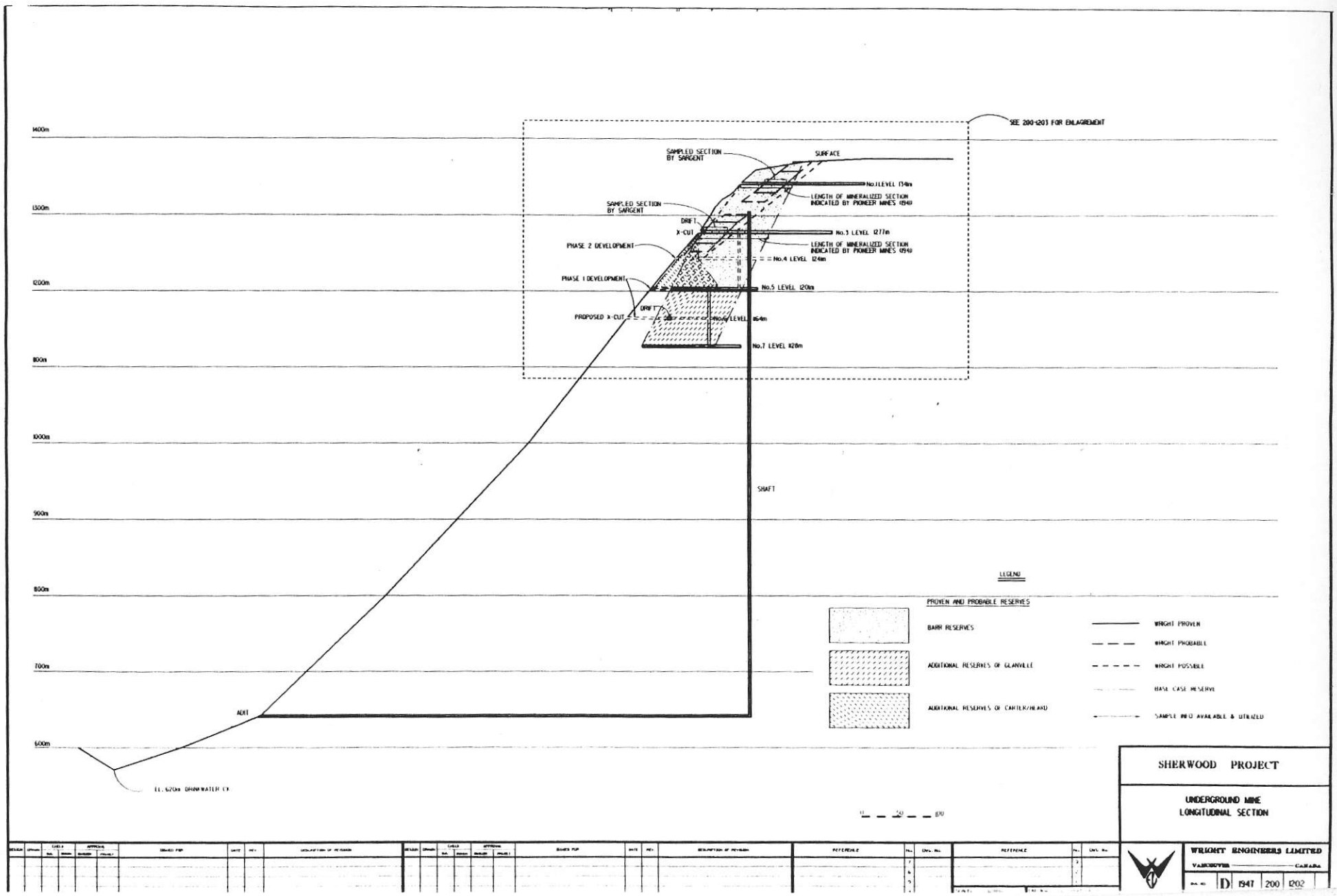


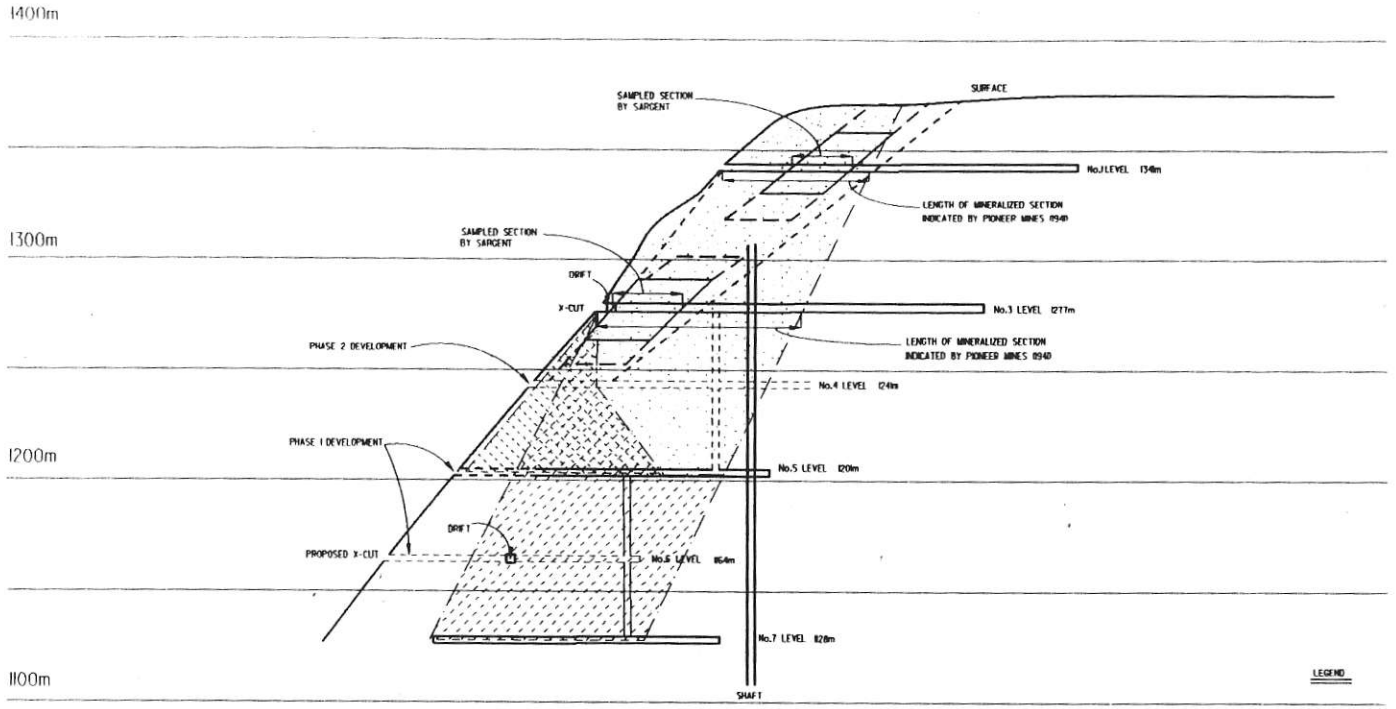
SHERWOOD PROJECT

PROJECT PLAN

WRIGHT ENGINEERS LIMITED
VANCOUVER ——— CANADA

D 1947 200 1201



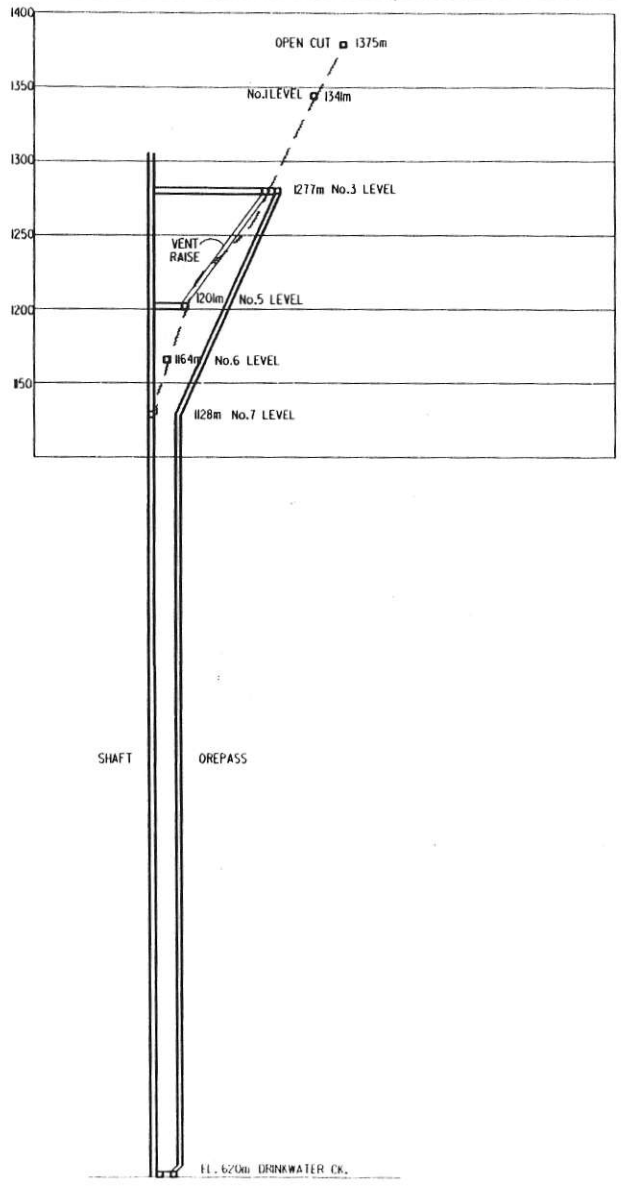


SHERWOOD PROJECT

UNDERGROUND MINE LONGITUDINAL SECTION ENLARGED

WRIGHT ENGINEERS LIMITED
VANCOUVER CANADA

D 1947 200 1203

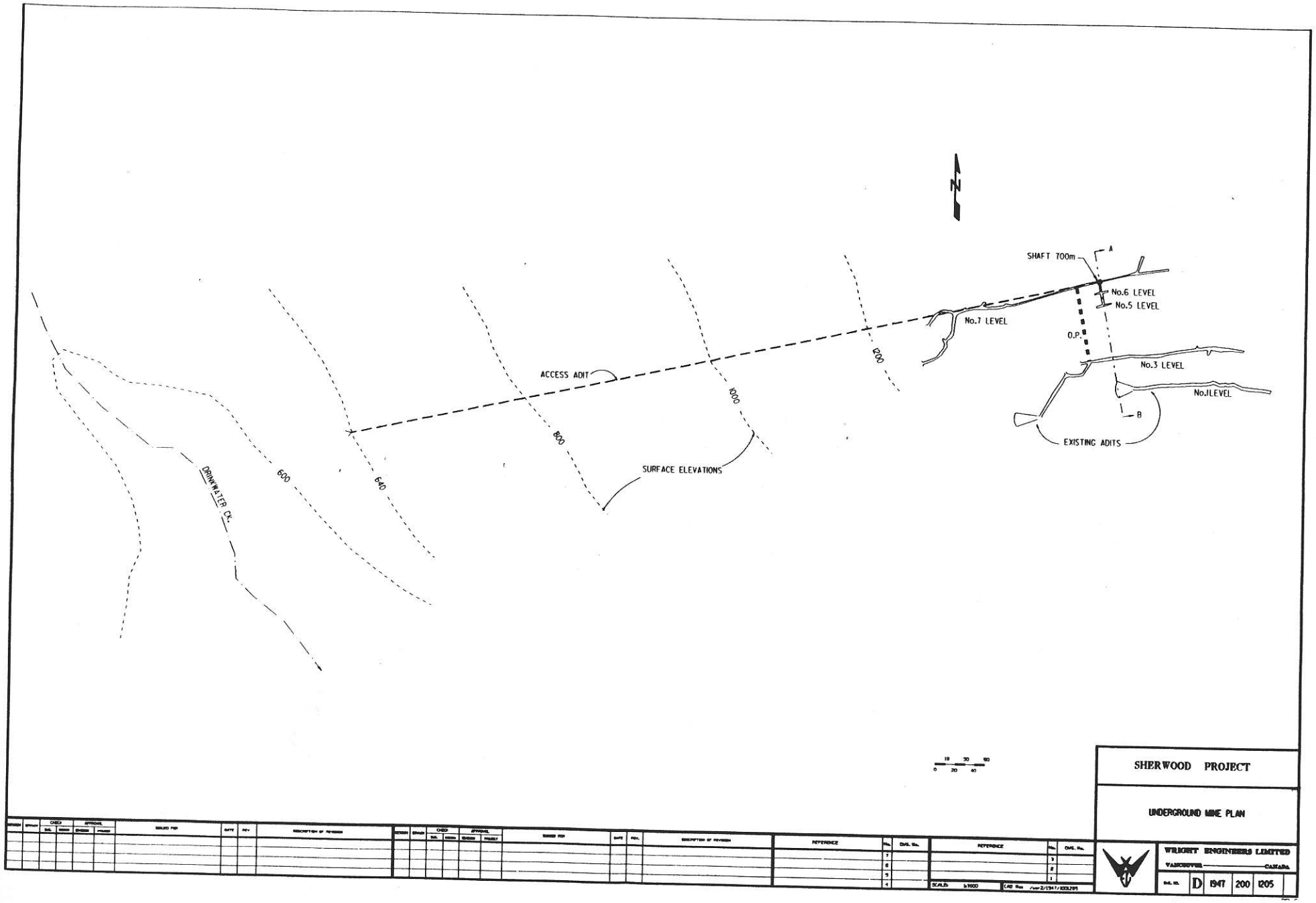


SHERWOOD PROJECT

UNDERGROUND MINE
CROSS SECTION A-B
LOOKING EAST

WRIGHT ENGINEERS LIMITED
VANCOUVER ——— CANADA

D 1947 200 1204



Thesis Daniel Wright.

P. 1-1 - Heard/Carter - Oct 9/89
~1632 tonnes @ 40.97 g/t ?

P 2-1 - Indications that mineable reserves & supply do not exist.

- How can FDN first assume hypothetically that mining could take place and then refer to the "sensitive nature" of the project area?

Cap Costs - 50 tpd $17.5M
200 tpd $43.1M

Operating Costs - 50 tpd - $20/tonne
200 tpd - $14.8 tonne

P 5-2 - indications of only one vein?

Flotation - 80% recovery -
Conc grade 8 oz/ton Au - low?

Cyanide leaching - gross annual revenues would increase 35-53%

Appendix I - Heard/Carter grade est. 0.40 opt?
Oct. 189.

Fig - UG Mine Plan - surface elevations - contours and topsoil!