HAT CREEK PROJECT MINING FEASIBILITY REPORT

VOLUME VI

CAPITAL AND OPERATING COSTS

prepared for British Columbia Hydro and Power Authority

.

by Cominco-Monenco Joint Venture

1978

# HAT CREEK PROJECT

# MINING FEASIBILITY REPORT

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- VOLUME II GEOLOGY AND COAL QUALITY
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# VOLUME VI

# CAPITAL AND OPERATING COSTS

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SECTION 1

SUMMARY

#### SUMMARY

Following selection of the shovel/truck/conveyor mining system, a detailed coal production schedule was developed to meet the annual fuel requirements of the proposed generating station over the 35-year project life. The costs associated with all mining operations necessary to deliver plant feed coal in accordance with this schedule are presented in this volume.

The capital and operating cost estimates for the recommended system are presented in Sections 2 and 3, respectively. In Section 4, these costs are compared to a preliminary estimate for a combined bucket wheel/shovel/truck/conveyor system which was developed in conjunction with North American Mining Consultants Inc. (NAMCO).

All estimates have been prepared in unescalated October 1977 Canadian dollars. For conversion from foreign currencies, the following exchange rates have been used where appropriate:

> \$1.00 U.S. = \$1.08 Canadian 2.15 DM = \$1.00 Canadian

In accordance with instructions from B.C. Hydro, operating costs incurred in the pre-production years have not been transferred to capital costs.

On the basis of the recommended mining system, the total estimated capital costs of this project are \$508,979,000. The estimated operating costs total \$2,077,614,000, and estimated capital requirements to full production, i.e., to the end of Year 3, are \$257,990,000. Table 1-1 provides an overall project cost summary, including annual coal production, capital and operating costs, cumulative cash flow, and unit costs. A breakdown of the major cost centres included in the capital and operating costs is given in Table 1-2.

#### TABLE 1-1

#### Annual Cost Summary Canadian \$ 000's October 1977 eek Project Mining Feasibility Repo ct 1078 UAE C.

lear	<u>C</u> tonnes x 10 <sup>6</sup>	A L Btu x 10 <sup>12</sup>	Annual Operating Cost	Annual Operating Cost/tonne	Annual Operating Cost/ million Btu	Annual Capital Costs	Total Annual Capital + Operating Cost	Annual Operating + Capital Cost per million Btu	Total Cumulativ Operating + Capital Cost
-6						2,350	2,350		2,350
-5			2,402			6,057	8,459		10,809
- 4			2,2'1			15,398	17,609		28,418
- 3			10,764			65,473	76,237		104,655
- 2			27,505			89,197	116,702		221,257
-1	1.03	13	35,1'6	34.09	2.701	48,060	83,176	6.398	304,533
1	3.08	37	45,662	14.82	1.234	12,231	57,893	1.565	362,426
2	5.43	66	47,957	8.83	0.726	13,235	61,192	0.927	423,618
3	8.20	100	50,686	6.18	0.507	5.989	56,675	0.567	480,293
4	10.66	129	54,822	5.14	0.425	9,946	64,768	0.502	545,061
5	11.30	137	57,230	5.06	0.417	16,968	74,198	0.542	619,259
6	11.32	137	57,938	5.12	0.423	3,884	61,822	0.451	681.081
7	11.36	138	57,304	5.04	0.415	6,826	64,130	0.465	745,211
8	11.36	138	58,322	5.13	0.423	9,303	67,625	0.490	812,836
y	11.36	138	58,023	5.11	0.420	12,958	70,981	0.514	883,817
10	11.36	138	59,225	5.21	0.429	7,464	66,689	0.483	950,506
11	11.40	138	59,505	5.22	0,431	9,034	68,539	0.497	1,019,045
12	11.40	138	59,895	5.25	0.434	2,625	62,520	0.453	1,081,565
13	11.40	139	59,499	5.21	0.428	14,766	74,265	0.534	1,155,830
14	11.40	138	60,964	5.34	0.442	7,740	68,704	0.498	1,224,534
15	11.40	138	60,162	5.27	0.436	7,150	67,312	0.488	1,291,846
16	10.92	132	71,388	6.53	0.541	9,315	80,703	0.611	1,372,549
17	10.68	128	69,263	6.48	0.541	5,078	74,341	0.581	1,446,890
18	10.68	128	61,520	5,76	0.481	12,159	73,679	0.576	1,520,569
19	10.68	128	63,033	5.90	0.492	21,399	84,432	0.660	1,605,001
20	10.68	128	61,971	5,80	0.434	22,926	84,897	0.663	1,689,898
21	10.68	128	61,457	5.75	0.480	2,505	63,962	0.500	1,753,860
22	10.41	128	61,892	5,94	0.484	2,938	64,830	0,506	1,818,690
23	10.41	128	61,930	5.95	0.484	9,173	71,103	0.555	1,889,793
24	10.41	128	62,066	5.96	0,485	4,502	66,568	0.520	1,956,361
25	10.40	128	62,577	6,01	0.489	5,394	67,971	0.531	2,024,332
26	8.89	109	53,405	6.00	0,490	5,037	58,442	0.536	2,082,774
27	9.02	109	50,325	5.58	0.462	6,787	57,112	0.524	2,139,886
28	9.02	109	50,648	5.62	0.465	5,020	55,668	0.511	2,195,554
29	9.02	109	50,128	5.56	0.460	11,371	61,499	0.564	2,257,053
30	9.02	109	51,240	5.68	0.470	3,801	55,041	0.505	2,312,094
31	9.02	109	49,978	5,54	0.459	7,461	57,439	0.527	2,369,533
32	9.02	109	49,966	5,54	0.459	4,486	54,452	0.500	2,423,985
33	9.02	109	49,987	5.54	0.459	685	50,672	0.465	2,474,657
34	9.02	109	49,981	5.54	0.459	1,232	51,213	0.470	2,525,870
35	9.02	109	49,998	5.54	0.459	693	50,691	0.465	2,576,561
36			2,319			98	2,417		2,578,978
37			2,319			29	2,348		2,581,326
38			1,924			24	1,948		2,583,274
39			1,350			98	1,448		2,584,722
40			584			46	630		2,585,352
41			371			10	381		2,585.733
42			371			34	405		2,586,138
43			259			2	301		2,586,439
44			56			21	87		2,586.526
45			£.6			1	67		2,586,593

# TABLE 1-2

# Breakdown of Estimated Capital and Operating Costs by Major Cost Centres (\$000's October 1977)

Cost Centre	Amount	Unit Cost/ Million Btu's
CAPITAL COSTS		
Engineering and Construction	45,831	0.011
Mine Property Development	79,379	0.019
Buildings and Structures	15,581	0.004
Pit Services	2,308	0.001
Mining Equipment	178,146	0.042
Coal Conveying, Crushing, and Blending Equipment	45,034	0.011
Waste Disposal Equipment	81,312	0.019
Reclamation and Environmental Protection	1,879	0.001
Contingency	59,509	0.014
TOTAL	508,979	0.122

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# OPERATING COSTS

Direct Mining

Mining Waste above Bedrock Mining Bedrock Waste	198,583	0.047
Conveying Waste	71,768	0.017
Mining Coal	140,248	0.033
Conveying Coal	29,475	0.007
Coal Stockpiling and Blending	30,613	0.007
Pit Maintenance	197,483	0.047
Operation of Mobile Dump Equipment	62,275	0.015
Operation of Mine Service Vehicles	58,559	0.014
Maintenance of Electrical Services	46,056	0.011
Operation of Fueling Stations	32,470	800.0
Reclamation and Environmental Protection	46,267	0.011
General Mine Expense	157,092	0.037
Local Overheads	284,229	0.067
Power	86,784	0.020
Royalties	255,130	0.060
Contingency	261,774	0.062
TOTAL 2	,077,614	0.491

SECTION 2

CAPITAL COST ESTIMATES

## 2.1 INTRODUCTION

This part of the report presents and discusses the development of the capital cost estimate for the recommended mining scheme, which was prepared following selection of the mine plan, production schedule, equipment schedule, and layout of surface facilities. The following major cost centres have been identified and are discussed separately:

> Engineering and Construction Costs Mine Property Development Buildings and Structures Pit Services Mining Equipment Coal Conveying, Crushing, and Blending Equipment Waste Disposal Equipment Reclamation and Environmental Protection Contingency

The capital cost estimate was prepared in accordance with a code of accounts, the complete listing of which is given in Section 2.2. Items in the code are numbered sequentially according to cost requirements projected at the beginning of the study. Certain of these accounts have subsequently been modified or excluded as noted in the code listing and on the cash flow tables attached at the end of the section. It should be noted that the project decision against coal beneficiation precludes use of Account 96000.

A discussion of the capital cost estimating criteria, primarily concerning major equipment cost and utilization factors, is provided in Section 2.3.

The construction schedule for the project is included and discussed in Section 2.4, as well as the estimated manpower requirements.

The major cost centres and the accounts included in each are described in Sections 2.5 through 2.13, in sequence according to the code of accounts.

All cash flow tables have been grouped together and are included at the end of this section. Table 2-3 summarizes the project cash flow for the nine major cost centres over the six-year preproduction period, 35-year production period, and 10-year postproduction reclamation period. Tables 2-4, 2-5, and 2-6 provide cash flow summaries for each account code within each major cost centre.

Three detailed equipment purchase and replacement schedules follow these cash flow summaries, with all items categorized according to their designated cost codes. Table 2-7 lists mobile mining and auxiliary equipment, Table 2-8 provides the coal conveying, crushing, and blending equipment, and Table 2-9 lists the equipment used for waste materials handling and disposal. Tables 2-10, 2-11, and 2-12 correspond with the equipment lists and show the annual capital requirements associated with the purchase schedules.

In accordance with instructions from B.C. Hydro, the following items are not included in the estimated total capital cost of \$508,979,000:

- escalation
- interest during construction
- B.C. Hydro corporate overhead
- land purchase or lease
- mineral rights purchase or lease
- operating costs incurred in the pre-production years
- capital costs for mine personnel housing onsite or offsite.

Throughout this section, all figures are shown to the nearest thousand dollars.

# 2.2 CAPITAL COST CODE OF ACCOUNTS

# 221 MAJOR COST\_CENTRES

90000	ENGINEERING AND CONSTRUCTION
91000	MINE PROPERTY DEVELOPMENT
92000	BUILDINGS AND STRUCTURES
93000	PIT SERVICES
94000	MINING EQUIPMENT
95000	COAL CONVEYING, CRUSHING, AND BLENDING EQUIPMENT
96000	PROCESSING AND PREPARATION PLANT (NOT USED)
97000	WASTE DISPOSAL EQUIPMENT
98000	RECLAMATION AND ENVIRONMENTAL PROTECTION
99000	CONTINGENCY

# 222 ACCOUNT ITEMS

ACCOUNT 90000 - ENGINEERING AND CONSTRUCTION

90100	Other Consultants (included in 90200)
90200	Project Management and Engineering Design
90300	B.C. Hydro Project Management
90400	Survey and Drilling Programs
90500	Construction Costs
90600	Insurance
90700	Interest During Construction (not used)
90800	B.C. Hydro Corporate Overhead (not used)

ACCOUNT 91000 - MINE PROPERTY DEVELOPMENT

91100	Land and Mineral Rights Purchase or Lease (not used)
91200	Access to Property (not used)
91300	Roads and Bridges - Equipment
91400	Power Distribution System
91500	Water Supply, Sewers, and Drainage Systems
91600	Site Improvements

ACCOUNT 92000 - BUILDINGS AND STRUCTURES

92100	Townsite (not used)
92200	Administration and Office Building
92300	Maintenance Shops and Warehouse
92400	Mine Dry
92500	Mine Service Buildings
92600	Bulk Fuel and Lube Storage
92700	Buildings - Equipment and Furnishings

ACCOUNT 93000 - PIT SERVICES

93100	In-Pit Electrical Distribution (included in 91400)
93200	In-Pit Drainage
93300	Pit Dewatering Facilities (included in operating costs)
93400	Water Supply - Pit Distribution (included in 91500)
93500	Fuel Distribution Station
93600	Pit Communications - Radio and Telephone

ACCOUNT 94000 - MINING EQUIPMENT

94100	Electric Shovels
94200	Specialized Excavators
94300	Specialized Excavators - Partings (not used)
94400	Haulage Trucks
94500	In-Pit Conveyors (included in 95000 and 97000)
94600	In-Pit Material Sizing (included in 95000 and 97000)
94700	Auxiliary Mining Equipment
94800	- (not used)

ACCOUNT 95000 - COAL CONVEYING, CRUSHING, AND BLENDING EQUIPMENT

95100	Transport Vehicles (not used)
95200	Coal Conveying Systems
95300	Crushing Plant
95400	Stacking, Blending, and Reclaim
9500	Civil Works

ACCOUNT 96000 - PROCESSING AND PREPARATION PLANT (NOT USED)

# ACCOUNT 97000 - WASTE DISPOSAL EQUIPMENT

- 97100 Dump Site Preparation (included in 94000)
  97200 Waste Dump Embankments Equipment (included in 97400)
  97300 Ponds and Dykes Construction (included in 91000)
  97400 Mobile Hauling Equipment
  97500 Conveying Equipment
- 97600 Civil Works

ACCOUNT 98000 - RECLAMATION AND ENVIRONMENTAL PROTECTION

98100 Buildings and Structures
 98200 Mobile Equipment - Pickups

 Field Equipment
 98300 Laboratory, Greenhouses, and Office Equipment
 98400 Seed and Plant Stocks

ACCOUNT 99000 - CONTINGENCY

## 2.3 CAPITAL COST ESTIMATING CRITERIA

## 231 BUILDINGS AND CIVIL WORKS

The costs of civil works are developed taking into account prevailing labour agreements and productivity in the B.C. construction industry. Unit costs of major building components have been reviewed with trade contractors.

## 232 MAJOR EQUIPMENT

The capital costs for the major mobile mining equipment and the coal conveying, crushing, and blending equipment are developed based on manufacturers' listed prices and quotations in October 1977 dollars. The capital unit cost for each item of equipment includes:

- purchase cost of equipment FOB factory
- allowance for optional extras
- freight and insurance to site
- Provincial sales tax at 7% of FOB site cost
- erection costs at site

Where manufacturers' quotations are in U.S. dollars, an exchange rate of \$1.08 Canadian to \$1.00 U.S. is used. A summary of the capital costs and service lives of the major equipment is presented in Table 2-1 following this section. Service lives are given in total operating hours, along with calculated percentages for effective utilization and mechanical availability. These figures are based partly on suppliers' recommendations and partly on actual figures obtained from a survey of similar operations.

Working hours (or operating hours) include all the hours an operator is assigned to the equipment and takes into account all delays such as fueling, lubricating, travel time, delays, etc. Effective utilization (%) is defined as:

 $\frac{\text{working hours}}{\text{scheduled hours}} \times 100\%$ 

and gives an indication of the overall operating efficiency of a particular piece or type of equipment.

Mechanical availability is used in determining the size of the maintenance facilities required. Mechanical availability is defined as:

working hours x 100% working hours + repair hours

# TABLE 2-1

# Capital Costs and Service Lives of Major Items of Equipment

Capital Cost FOB Hat Creek \$ 1977	Service Life Operating Hours	Effective Utilization %	Mechanical Availability %
<b>NGU</b>	· · · · · · ·		<u> </u>
185,000	15,000	68	75
122,000	15,000	50	75
2,960,000	120,000	68	85
285,000 445,000 550,000	15,000 15,000 25,000	60 60 55	65 65 65
226,500	25,000	60	70
622,000	50,000	57	70
713,000	50,000	57	70
358,000	15,000	57	70
113,000 205,000 223,000 300,000 312,000	15,000 15,000 15,000 15,000 15,000	57 57 57 57 57 57	70 70 70 70 70
	Capital Cost FOB Hat Creek \$ 1977 185,000 122,000 2,960,000 2,960,000 285,000 445,000 550,000 226,500 622,000 713,000 358,000 113,000 205,000 223,000 300,000 312,000	Capital Cost FOB Hat Creek \$ 1977         Service Life Operating Hours           185,000         15,000           122,000         15,000           2,960,000         120,000           2,960,000         120,000           285,000         15,000           445,000         15,000           550,000         25,000           226,500         25,000           622,000         50,000           713,000         50,000           358,000         15,000           113,000         15,000           223,000         15,000           358,000         15,000           312,000         15,000	Capital Cost FOB Hat Creek \$ 1977         Service Uperating Hours         Effective Utilization %           185,000         15,000         68           122,000         15,000         50           2,960,000         120,000         68           285,000         15,000         60           445,000         15,000         60           550,000         25,000         60           226,500         25,000         55           226,500         25,000         57           713,000         50,000         57           358,000         15,000         57           113,000         15,000         57           113,000         15,000         57           300,000         15,000         57           312,000         15,000         57

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(Continued)

Item I	Capital Cost FOB Hat Creek \$ 1977	Service Life Operating Hours	Effective Utilization %	Mechanical Availability %
Dozer (wheel)				
CAT 824B	196,000	25,000	68	70
Compactor				
CAT 825B	213,000	20,000	60	70
Grader				
CAT 16G	204,000	25,000	68	70
<u>Crane</u>				
15 tonne 45 tonne 70 tonne 90 tonne	126,000 237,000 355,000 477,000	20,000 20,000 35,000 35,000	75 35 35 35	80 85 85 85
<u>Trucks (</u> miscellan	eous)			
5 tonne service 3 tonne flatdeck (c/w 2 tonne cr	18,000 25,000 ane)	20,000 20,000	75 75	80 80
Tire truck Line truck Lube truck Fuel truck (13.6 Dump truck	35,000 65,000 55,000 kL) 85,000 30,000	20,000 32,000 20,000 20,000 25,000	75 75 75 75 75 75	80 80 80 80 80
(10 tonne) Sanding truck (10 tonne)	32,000	25,000	75	80
Blasting truck Fire truck Ambulance Personnel bus	62,000 60,000 17,000 18,000	20,000 50,000 20,000 20,000	75 10 10 75	85 95 95 80
(24 passenger) Pick-up (1 tonne) Pick-up (3/4 tonn Lo-boy and tracto Hi-boy trailer	10,500 9,500 9,500 9,000 40,000	15,000 15,000 32,000 32,000	90 90 75 75	80 80 80 80

(Continued)

Item	Capital Cost FOB Hat Creek \$ 1977	Service Life Operating Hours	Effective Utilization %	Mechanical Availability %	
Pumps				<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	
10 cm diesel 15 cm diesel	4,000 6,500	13,000 13,000	75 75	85 85	
Welders (portabl	e)				
600 A diesel 600 A electric	5,500 2,700	13,000 20,000	75 75	85 85	
<u>Miscellaneous</u>					
Backhoe (1 m <sup>3</sup> ) Compressor (17 m <sup>3</sup> /min)	150,000 59,200	30,000 25,000	68 70	75 80	
Compressor (30 m <sup>3</sup> /min)	90,000	25,000	70	80	
Steam cleaner (mobile)	60,000	20,000	50	60	
Lighting plant ( Gradall 50 kW generator Water wagon	3 kW) 10,000 125,000 20,000 270,000	10,000 32,000 32,000 25,000	50 75 75 68	60 80 85 75	
(45.5 kL) Crushing plant Calcium chloride spreader (box	300,000 7,000 only)	25,000 20,000	70 75	80 85	
Lube island	°´ 80,000	60,000	75	90	

TABLE 2-1 (Continued)

## 2.4 CONSTRUCTION SCHEDULE AND MANPOWER

## 241 INTRODUCTION

The construction schedule for the mine development is shown in Figure 2-1.

Key dates are outside the terms of reference of this report; however, flagged dates such as authorization to proceed, diversion of Hat Creek, and commercial operation of the generating station are critical to development of the mine. Diversion of Hat Creek must be completed before any mine work starts to avoid flood damage or contamination of the Hat Creek watercourse.

Allowance has been made in the schedule for an early start on the close-spaced drilling required so that detailed mine planning and equipment selection may proceed. It is essential that this planning and selection be done as early as possible due to the constraints associated with long-delivery items such as mining equipment, power transformers, and materials handling equipment.

## 242 CONSTRUCTION AND PROJECT MANAGEMENT MANPOWER

Table 2-2 shows the average annual staff and manpower required in the pre-production years.

The areas of work covered are:

- project management and design engineering (office)
- field engineering (construction supervision)
- construction labour for waste removal (Year -3 only) and mine site development



BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

CONSTRUCTION SCHEDULE

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

DESCRIPTION	YEAR -7 (1979)	YEAR -6 (1980)	YEAR -5 (1981)	YEAR -4 (1982)
KEY DATES (BY OTHERS)				
I-I CONSTRUCTION AUTHORIZATION				
1-2 CONSTRUCTION CAMP			4	
1-3 PERMANENT ACCESS ROAD				
I-4 HAT CREEK DIVERSION				
I-5 Nº I BOILER IN COMMERCIAL SERVICE				
2 PROJECT MANAGEMENT & ENGINEERING				
2-1 PROJECT MANAGEMENT				
2-2 DETAILED MINE PLANNING				
2-3 DESIGN MATERIALS HANDLING SYSTEMS & SUPPORT FACILITIES				
2-4 EQUIPMENT SELECTION & SPECIFICATIONS				
3 OPEN PIT MINE DEVELOPMENT				
3-1 FIELD DRILLING PROGRAMS				
3-1-1 OPEN PIT MINE CLOSE SPACED DEVELOPMENT & GEOTECHNICAL DRILLING				
3-1-2 OPEN PIT MINE SLOPE DEPRESSURIZATION DRILLING				
3-2 WASTE DISPOSAL				
3-3 COAL PRODUCTION				
4 PROCUREMENT & ASSEMBLY OF INITIAL UNITS OF MINE EQUIPMENT				
4-I ELECTRIC SHOVELS				
4-2 HAULAGE TRUCKS				
4-3 CONVEYORS				
4-4 WASTE SPREADERS				
4-5 BLENDING EQUIPMENT				
4-6 CRUSHING PLANT				
4-7 ANCILLARY EQUIPMENT				
5 MINE SITE DEVELOPMENT				
5-1 TEMPORARY CONSTRUCTION FACILITIES				
5-2 WATER TREATMENT DAMS & FACILITIES				
5-3 SURFACE DRAINAGE SYSTEMS				
5-4 POWER SUPPLY & DISTRIBUTION				
5.5 WATER, SEWER & FIRE PROTECTION				
5-6 MAINTENANCE & WAREHOUSE FACILITIES				U
5-7 ADMINISTRATION FACILITIES & MINE DRY				



FIGURE 2-1

YEAR -3	(1983)		YEAR -2	(1984)			YEAR -	(1985)			YEAR I	(1986)	
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# TABLE 2-2

# Summary of Manpower Requirements for Mine Construction and Project Management

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	YEAR		0 F		PROJE		СТ
	-6	-5	-4	-3	-2	-1	1
Project Management and Design Engineering	10	40	65	45	45	20	10
Field Engineering	-	-	20	40	40	20	10
Construction Labour	-	-	210	235	140	65	50
TOTAL MANPOWER REQUIREMENTS	10	40	295	320	225	105	70

Hat Creek Project Mining Feasibility Report 1978

# 2.5 ENGINEERING AND CONSTRUCTION COSTS (Account 90000)

Included in the engineering and construction costs of \$45,831,000 as listed in Table 2-4 are the capital costs of project management and design, pre-production survey and drilling, construction costs, and insurance during the construction Years -6 to 1 inclusive. The construction schedule and manpower requirements during this time are discussed in Section 2.3.

## Project Management and Engineering Design (Account 90200)

These costs provide for consultants, project and construction management, and engineering design for all major capital works and equipment erection until such time as the mine operating staff will perform these functions. It is assumed that the mine operating staff will take over management of stripping operations commencing in Year -2, and will continue to manage all mining operations thereafter.

The engineers' management function will be phased out over the period Year -2 to the end of Year 1 as construction work is completed and major equipment commissioned.

#### B.C. Hydro Project Management (Account 90300)

These costs provide an allowance for salaries and expenses of approximately 25 B.C. Hydro engineering personnel directly engaged in the development of the Hat Creek mine.

It has been assumed that these engineering functions will also terminate at the end of Year 1 when the mine operating staff take over all managerial functions.

#### Survey and Drilling Programs (Account 90400)

These costs provide for the capital and replacement costs of one auger drill and one vehicle required for geotechnical drilling throughout the life of the mine. Also included are the costs of fill-in drilling and geotechnical drilling required in Years -6 and -4. The costs of survey work required during the construction period are covered in Account 90200.

# Construction Costs (Account 90500)

These costs provide an allowance for camp operation, temporary construction facilities, and reasonable start-up expenses. Details are provided below.

1. Camp Operation

Provision has been made for operation of the construction camp, provided by others, with a peak capacity of 485 people including construction and project management personnel. The total camp operating cost estimate provides for 1355 manyears in camp at an average cost of \$15.00 per man-day.

## 2. Temporary Construction Facilities

Provision has been made for construction and maintenance of the following:

- temporary roads in the construction area
- temporary water supply for camp and construction use
- temporary power distribution in the construction area
- temporary buildings and equipment for the project management group, sanitary facilities, and a temporary warehouse
- maintenance of the above facilities

Contractors' costs, other than those listed above, are included in the unit costs used for contract work.

3. Security

Provision has been made for security guard service during the construction period.

# 4. Start-up Expenses

A lump sum allowance of \$2,000,000 has been provided to cover additional costs anticipated during start-up of all facilities.

Insurance (Account 90600)

\* General

An allowance has been provided for the costs of all risk insurance during the Years -5 to -1, inclusive. Thereafter insurance costs are allowed for in the operating costs. Included in the estimated mine property development costs of \$79,379,000 as shown in Table 2-4 are the estimated capital costs of road maintenance equipment, construction costs of the mine water supply, sewer and drainage systems, in-pit electrical distribution, and the estimated costs of site improvements. Not included in the development estimates are the costs of land and mineral rights purchase, or the permanent access road to the property. Provision for improvement of the existing Hat Creek road from Route 12 to the site has been made in Account 90500. This temporary access will be abandoned upon completion of the main access road at the end of Year -4.

## Roads and Bridges (Account 91300)

This item provides an allowance for the initial capital and replacement costs of road maintenance equipment, as well as the construction costs of permanent roads in the service area.

## Power Distribution System (Account 91400)

This account provides the estimated capital cost of the complete power distribution system requirements over the life of the mine, including distribution to the service area, the pit, and the waste dumps. Distribution within service buildings is included in Account 92000, Buildings and Structures.

## Water Supply, Sewers, and Drainage Systems (Account 91500)

This account provides the estimated capital costs of the mine water supply system, area drainage system, and the sanitary and storm sewerage system. More specifically this account includes:

## 1. Mine Water Supply

Provision has been made for pumping and treatment facilities, and the underground distribution system. The costs of in-pit distribution are

ongoing as the pit expands over the life of the mine.

# 2. Area Drainage System

This item includes the estimated cost of construction of drainage ditches, conduits, and treatment lagoons for cut-off drainage around the mine, service area, and waste dumps. Ongoing costs are incurred in Years 5,13,15,24, and 30 as the drainage system is expanded and Medicine Creek dump is opened.

3. <u>Sewers</u>

Provision has been made for the construction cost of the main sewer system within the service area including treatment and disposal.

#### Site Improvements (Account 91600)

The estimated capital costs of clearing, excavating, grading, and finishing the mine service area are provided, including yards and parking areas, the blending area, and the equipment erection area; security fencing of service area and ranch type fencing of the mine and dump sites are also allowed for. Additional capital costs are incurred in Year 15 when the Medicine Creek dump area is fenced.

# 2.7 BUILDINGS AND STRUCTURES (Account 92000)

The estimated capital costs of buildings and structures amount to \$15,581,000, as shown on Table 2-4. No allowances have been made for a townsite, the construction of offsite housing, nor onsite accommodation of mine personnel at any stage of construction or operation.

Administration and Office Building (Account 92200) Maintenance Shops and Warehouse (Account 92300) Mine Dry (Account 92400)

Detailed conceptual estimates for these main buildings were prepared from the preliminary building layouts, dimensions, and outline specifications.

## <u>Mine Service Buildings</u> (Account 92500) Bulk Fuel and Lube Storage (Account 92600)

Included in these accounts are the assay lab, core sheds, carpenter, paint, and pipefitter shops, conveyor and tire shop, explosives magazine, guard house, field service centre, in-pit offices and lunch rooms, oil and grease storage, and the main fuel station.

The costs of these buildings are estimated on a unit cost basis per square metre of floor area.

#### Buildings - Equipment and Furnishings (Account 92700)

This account provides for the estimated costs of office furnishings and equipment, shelving and storage bins, and the initial and replacement cost of shop service equipment including overhead cranes, machine tools, and floor and bench equipment.

## 2.8 PIT SERVICES (Account 93000)

Included in the pit services cost estimate of \$2,308,000 as shown in Table 2-5 are the construction costs of a telephone line to the pit, initial capital costs of a radio communications system, and the initial capital and replacement costs of in-pit drainage equipment and the in-pit fueling station.

#### In-Pit Drainage (Account 93200)

This account provides for the initial capital and replacement cost of diesel pumps, one backhoe (1  $m^3$  capacity) and a 3-5 ton Hiab truck.

#### Fuel Distribution Station (Account 93500)

This account provides for initial and replacement costs of tankage, pumps, piping, sheds, and miscellaneous equipment required for the in-pit fuel distribution station.

#### Pit Communications (Account 93600)

Included in this account are the construction costs of a telephone line to the pit and the initial capital costs of a radio base station, radios for shovels, haulage trucks and pick-ups, and portable radios.

Included in the estimated mining equipment costs of \$178,146,000 as shown in Table 2-5 are the initial and capital replacement costs of the major mobile mining equipment, auxiliary and support equipment, and initial spare parts. The estimated capital costs of road maintenance equipment and mobile dump control equipment are included in Accounts 91000 and 97000, respectively.

Table 2-7 provides a complete listing of the mobile mining equipment, categorized according to the sub-codes contained within Account 94000. Also listed on this table are the mobile road maintenance and dump control equipment referred to above, and pit drainage equipment. The table shows the year of purchase or replacement, together with the total mobile fleet size and number of units purchased over the life of the mine.

The estimated annual capital requirements for the scheduled equipment purchases are given on Table 2-10, as well as estimated unit costs.

#### Electric Shovels (Account 94100)

This account includes the initial capital and replacement cost of the 16.8 cubic metre electric shovels.

Specialized Excavators (Account 94200)

This account includes the initial capital and replacement cost of 24 cubic metre scrapers for topsoil removal.

#### Haulage Trucks (Account 94400)

This account includes the initial capital and replacement cost of the 109-tonne coal haulers and the 136-tonne waste haulers.

#### Auxiliary Mining Equipment (Account 94700)

This account includes the initial capital and replacement cost of auxiliary mining equipment, as listed in detail in Table 2-7.

## 2.10 COAL CONVEYING, CRUSHING, AND BLENDING EQUIPMENT (Account 95000)

Included in the estimated total account costs of \$45,034,000 as shown in Table 2-6 are the estimated capital costs of the coal conveying, crushing, blending, stacking, and reclaim equipment. Also included are the estimated construction costs of the crushing plant, conveyor foundations and supports, conveyor corridor, and service road for the overland coal conveyor.

Table 2-8 lists the equipment covered in this account and shows the number of units or, in the case of conveyors, the number of linear metres purchased in each year. Table 2-11 shows the estimated yearly capital requirements for the purchase of this equipment.

#### Coal Conveying Systems (Account 95200)

Provision is made for the estimated capital costs of the coal conveyor within the pit, truck unloading station equipment, the overland coal conveyor from the blending yard to the generating station, and clean-up equipment. Also included are the capital costs of the low-grade coal handling equipment. Ongoing costs are incurred in Years 4 and 19 as the coal conveyor is extended into the pit and in Years 7, 14, and 21 for replacement of clean-up equipment. The capital equipment costs include initial spare parts.

## Crushing Plant (Account 95300)

The estimated construction cost of the coal crusher building is included in this item, as well as the capital cost of the crushing, screening, and conveying equipment within the crusher building. The cost of initial spare parts is also included.

#### Stacking, Blending, and Reclaim (Account 95400)

This item includes the estimated capital cost of transfer conveyors, yard belt conveyors, stackers, reclaimers, transfer car, sampling system, and weigh scale. The capital costs of a clean-up bulldozer and initial spare parts for all equipment are also included. Ongoing capital costs are incurred in Years 7, 14, 21, and 28 for replacement of the clean-up equipment. Civil Works (Account 95500)

This account includes the estimated civil construction costs of truck unloading stations, overpasses, crusher and transfer houses, conveyor corridors, access roads, and conveyor supports.
### 2.11 WASTE DISPOSAL EQUIPMENT (Account 97000)

Included in the estimated waste disposal costs of \$81,312,000 as shown in Table 2-6 are the initial and replacement capital costs of mobile hauling equipment and the capital costs of:

- mine waste conveyors and clean-up equipment
- truck unloading station equipment
- overland waste conveyors and clean-up equipment
- waste dump transfer conveyors, shiftable conveyors, portable belt conveyors, trippers, and spreaders
- initial spare parts
- construction costs of conveyor foundations and supports, conveyor corridors, service roads, and truck unloading stations.

Table 2-9 lists the equipment covered in this account (excluding the mobile hauling equipment listed on Table 2-7) and shows the number of units or, in the case of conveyors, the number of linear metres purchased in each year. Table 2-12 lists the corresponding capital requirements for the purchase of this equipment.

#### Mobile Hauling Equipment (Account 97400)

The initial capital and replacement costs of 32-tonne haul trucks, front-end loaders, dozers, and compactors are provided.

#### Conveying Equipment (Account 97500)

Included are the initial capital costs of mine waste conveyors, truck unloading station equipment, overland waste conveyors, transfer conveyors, shiftable conveyors, portable conveyors, trippers, spreaders, and traxcavators for both the Houth Meadows and Medicine Creek dumps.

#### Civil Works (Account 97600)

This account includes the estimated civil construction costs of truck unloading stations, overpasses, conveyor corridors and access roads, and conveyor supports.

#### 2.12 RECLAMATION AND ENVIRONMENTAL PROTECTION (Account 98000)

Included in the total estimated costs of \$1,879,000 as shown in Table 2-6 are the initial capital costs of the reclamation complex including greenhouses, machinery shed, and equipment for these buildings, and the estimated initial capital and replacement costs of light vehicles, agricultural equipment, laboratory and testing equipment, office equipment, and seed and plant stocks.

#### Buildings and Structures (Account 98100)

This account includes the estimated costs of greenhouses, machinery shed, bulk fertilizer bins, and fencing of the reclamation complex and the abandoned pit.

#### Mobile Equipment (Account 98200)

This account provides for the initial capital and replacement costs of pick-ups and agricultural equipment such as farm tractors, seed drills, fertilizer applicator, tree planter, disc harrow, sheepsfoot roller, irrigation system, and miscellaneous tools.

Lab, Greenhouse, and Office Equipment (Account 98300)

This account includes initial capital and replacement costs of laboratory and greenhouse shelving, laboratory and field testing equipment, and office equipment.

Seed and Plant Stocks (Account 98400)

This allows for the annual capital cost of seed and plant stocks.

#### 2.13 CONTINGENCY

The contingency allowance was developed following assessment of the variable risks involved in the major cost centres, as well as consideration of the degree of completeness of information on which estimates were based, reliability of cost information, and the labour portion of the cost.

A lower risk factor was applied to mobile mining equipment, conveying equipment, and vehicles since it was considered possible that the preliminary manufacturers' budget quotations for these items could be improved upon at the time of purchase. Higher risk factors were applied to cost centres involving high labour content such as construction work.

The total estimated contingency of \$59,509,000 was based on the following factors:

Category	Conti Fac	ngency tor
Mobile Mining and Auxiliary Equipment		10%
Conveying, Crushing, Stacking, and Blending Equipment	• • • •	15%
Buildings and Structures	• • • •	20%
Site Preparation and Roads		15%
Insurance and Construction Costs	• • • •	20%
Reclamation and Environmental Protection - Equipment and Light Vehicles		10%
Project Management and Engineering		20%

The contingency allowance provides only for those risks described above, and is not intended to be a provision against unforeseeable risks such as foreign exchange fluctuations on foreign purchases (approximately \$180,000,000), lengthy industrial disruptions, or events of force majeure of any type.



# SCHEDULE OF CAPITAL COSTS SUMMARY CASH FLOW TABLE 2-3

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

ACCOUNT		PR	E-PR		СТЮ	N PE	RIOD													P	RODU	CTION	PER	ЮD																			PO!	ST PR	ODUC	TION	PERIC	, D		
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97000	WASTE DISPOSAL EQUIPMENT	L	ļ		85	591 16	5810 86	29	3775	9 285	5 2908	6532	906	363	3763	426 2	13 6	95 453	653	9 992	695	I	410	410	3442	7600	566	69	5 836	6	86	3 160	01 156	836	623	285 .	410						$\rightarrow$	<u> </u>		<u> </u> '			'	81312
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98000	RECLAMATION AND ENVIROMENTAL PROTECTION			70	44	ı   7	79 64	15	6	59_	20	21	57	16	23	84 1	3 1	52	19	32	93	22	38	56	48	32	83	12 12	84	4 25	6	73	5 7	42	79	15	21	71 2	20 31	89	26	5 22	89	42	9	31	2	19 1		1879
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TABLE 2-3



	SCHEDULE OF CAPITAL COSTS
ACCOUNT	90000 - ENGINEERING AND CONSTRUCTIO
ACCOUNT	91000 - MINE PROPERTY DEVELOPMENT
ACCOUNT	92000 - BUILDINGS AND STRUCTURES
	TABLE 2-4

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

ACCOUNT		PRE-PR	ODUC.	TION PE	RIOD											_	PF	RODU	CTION	PERIO	D																		POS	T PRO	DUCTK	ON PE	RIOD		
CODE	DESCRIPTION	-6 -5	-4	-3 -	2 -1	1	2	3 4	5	6	7	8 9	10	11	12	13	14	15	16	17 1	3 19	20	21	22 2	23 24	4 2	25 26	6 27	28	29	30	31	32 3	33 3	4 35	36	; 37	38	39	40	41 4	12 4	3 44	4 45	TOTAL
90000	ENGINEERING AND CONSTRUCTION																																	Ī							Ī				
										11					Ī																							Τ					Τ		
90100	Other Consultants	INCLUDED IN	ACCOUNT	90200																				ſ																				7	
90200	Project Management and Engineering Design	1000 3500	5500	4500 35	500 1000	1000					1																																		20000
90300	B.C. Hydro Project Management	1000 1000	1000	1000 10	00 1000	1000																																							7000
90400	Survey and Drilling Programs	113	60		100								100									100																							473
90500	Construction Costs		1615	2734 33	5049	,																																					ŀ		12775
90600	Insurance	7	105	980 19	991 2500																					[																			5583
90700	Interest During Construction	NOT USED																																			<u> </u>								O
90800	B.C. Hydro Corporate Overhead	NOT USED																									_				_														O
	TOTAL ACCOUNT 90000	2000 4620	8280	9214 98	368 9649	2000							100									100																							45831
																																_													
																																												1	
																																							1				- <b>-</b>		
91000	MINE PROPERTY DEVELOPMENT																																												
91100	Land and Mineral Rights - Purchase or Lease	NOT USED				Ι																																	,						D
91200	Access to Property	NOT USED									1			-																	_								, T				T		0
91300	Roads and Bridges - Equipment			42	276	867	508	2125 516	1684	678	2707	712 58	5 312	3298	3 430	1545	508	2125	720	1458	3233	1594	285 3	312 3	3298 4	08 86	67 73	4 2803	720	1758	2	707 9	916												44689
91310	Roads in Service Area				419	1							1		T																														419
91400	Power Distribution System				176 955	340	1+	102 574		180	20	170 80	5 339	50	30	1631	616			60					2!	52				1			j				-	1	1						14501
91500	Water Supply, Sewers, and Drainage Systems	360	2065	3406	/14				170				18		150	864		193				18				20 12	28			1 1	20								1					++	8126
91600	Site Improvements		2690	8734	100						1				1			20																					,						11544
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	TOTAL ACCOUNT 91000	360	4755	12140 13	885 1055	1207	508	2227 1090	1854	858	2727	882 139	1 669	3348	610	4040	1124	2338	720	1518	3233	1612	285 3	312 3	3298 6	80 99	95 73	4 2803	720	1758	20 2	707	916												79379
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92000	BUILDINGS AND STRUCTURES					1																		Ī																					
					_	1																																	1					11	
92100	Townsite	NOT USED										1	$\top$			1																					<b>—</b>		1						0
92200	Adminstration and Office Building			947		1							+-			1						-							1								1		1 1				1		947
92300	Maintenance Shops and Warehouse			3000 24	479									-	-										_							~							1						5479
92400	Mine Dry		$\uparrow$		347 800	1								1											_														1		**		-		1147
92500	Mine Service Buildings		1	500 1:	225 1142	1					†																												[						2867
92600	Bulk Fuel and Lube Storage		1	440		1							$\top$			1																													440
92700	Buildings - Fourigment and Furnishings		1	465 11	068 359	78	60	110	60		114	106 24	7 78	60	1	78	116		114	60 4	6 355	60		78 6	60 3	2 11	14 60		130	325		8 6	\$0	11	0 19		1	1	1						4701
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TABLE 2-4

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SCHEDULE OF CAPITAL COSTS ACCOUNT 93000 - PIT SERVICES ACCOUNT 94000 - MINING EQUIPMENT TABLE 2-5

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

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<u>├──                                   </u>
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1781
1761-
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TABLE 2-5



### SCHEDULE OF CAPITAL COSTS ACCOUNT 95000 - COAL CONVEYING, CRUSHING, AND BLENDING ACCOUNT 97000 - WASTE DISPOSAL EQUIPMENT ACCOUNT 98000 - RECLAMATION AND ENVIRONMENTAL PROTECTION TABLE 2-6

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

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95000 COAL CONVEYING, CRUSHING AND BLENDING EQU	IPMENT					1-		+-+							_																_					-							<del></del>		+	
95100 Transport Vehicles		NOT US	ED ED																																					+		i		-+	-	
95200 Coal Conveying Systems				3400	6898 28	90	1		722 16	69	78	3					78		_			185	52 78						7	8												i –			17	743
95300 Crushing Plant					1784																	1																		1		,			1	.784
95400 Stacking, Blending, and Reclaim				4815	5299 85	<b>;4</b> 6	1	1			311	1					311						311						31	1									_			·	-		19	/904
95500 Civil Works				1068	1988 2	12	T.		89 11	18												112	28														_					1			5	,603
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TOTAL ACCOUNT 95000		+-		9283	15969 116	48		++	811 27	87	389	9	┼─┼				389				_	298	0 389	$\left  \right $					38	9		+		┝──┼			-+-				┥──┤				45	034
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97000 WASTE DISPOSAL EQUIPMENT							-	++			+	+	┼──┼		-	+		+				+		+		+ +					+	+				+-				+	┢──┤					
97100 Dump Site Preparation	1	INCLUD	ED IN A	COUNT 940	00		+	++					1+									1	1								_	1		ŀ					-+	11	<b> </b>	<b>f</b>			1	
97200 Waste Dump Embankments - Equipment		INCLUD	ED IN A	COUNT 974	00		1	† †																																						
97300 Ponds and Dykes - Construction		INCLUD	ED IN A	COUNT 910	00							Ī																						,												
97400 Mobile Hauling Equipment					2027 21	.3	410	285	426 8	63 906	5 285	5 410	426	213 69	5 453	906	836	695	4	10 410	0 1164	152	9 410		695	836		863 16	601	836	623	285	410									ιT	[		20	121
97500 Conveying Equipment			-	5677	14023 831	1	3264		2482 35	33	78	8 3353				4693	156		_		2278	393	5 156						15	6															52'	095
97600 Civil Works				2914	760 10	15	105	1	21	36						940						213	6																						9	096
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TOTAL ACCOUNT 97000				8591	16810 862	9	3779	285	2908 65	32 906	363	3 3763	426	213 69	5 453	6539	992	695	4]	10 410	0 3442	760	0 566		695	836		863 16	601 15	6 836	623	285	410							!		+			81	312
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98000 RECLAMATION AND ENVIRONMENTAL PROTECTION				<u> </u>				+ +	-		+		+ +									-		+		+ +								+							┝──┼	<del>_</del>		_		
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98100 Buildings and Structures				36	15 6	6		1		1	1		1	1		1		1	2	28	2		2		1		1	1	1	1		2		2		2 7	38	2 9	2	10	1	9	,	10 1		194
98200 Mobile Equipment - Pickups				38	38			38		48	1		48		48			48	_	4	7		47			48		47	7		47	<u> </u>		47		ť	47		19			19			<u> </u>	674
- Field Equipment					56	_	4		15	4		4	15	4		ļ	23	20		4	41	24	۱		4	15	20	4		24	20		4		15 2	:4		4	41	20	4	<b>_</b>		9	<u> </u>	422
93000 Laboratory, Greenhouses and Office Equips	ment			32 8	7 20	7	2	19	5 1	5 9	) 14	19	19	8 4	4	17	17	24	19	6 (	6 5	5	i 34	9	7	19	4	2 23	3	7 15	12	11	17	19	5	2	4 2]	<u>1 9</u>	24	12	2		1		!	543
98400 Seed and Plant Stocks					1	2		1		1	1		1	1		1	2		3		3	3	;   	3		2				2	<u>'</u>	2		3		3		5	3	-+!	2	<del></del>	1			46
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TOTAL ACCOUNT 98000				70 44	79 64	15	6	59	20 2	1 57	16	23	84	8 10	52	19	32	93	22 3	58 50	6 48	32	83	12	12	84	25	6 73	3 1	7 42	79	15	21	71	20 3	<u>1</u>	89 26	3 22		42	9	31	2 ] ]	.9 1		379
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CANADIAN \$ 000'S OCTOBER 1977



TABLE 2-6





# MOBILE MINING AND AUXILIARY EQUIPMENT PURCHASE AND REPLACEMENT SCHEDULE TABLE 2-7 (SHEET I)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

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ACCOUNT	DESCRIPTION	LIFE	P	RE-PR	ODUC		PER	IOD																	PRO	DUCTI	ON P	ERIO	D															
CODE	DESCRIPTION	1N YEARS	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	TOTAL
91000	MINE PROPERTY DEVELOPMENT			1									T	İ					$\square$																									
						†		1		<u> </u>	1	1		1		1		$\square$							- 1																			
91300	ROADS AND BRIDGES						1	<b></b>	1		1																																	
91310	HAUL ROADS			-			ŧ			<u> </u>	<u>+</u>		t			1		$\square$										-																
	16 G Grader	4				ţ	20				0 2	1 0			0,3	0 1			0 2	0 1			0,2	1 1			0 2	0 2			02	0 2		1	02	02			0 2 4	02		_		4 27 31
	Water Wagon	6	1				2 0	1	1,0		1		0 2	1				1	02		0 1				0 2		01				0 2 3		0 1	1			02		01		,			3 15 18
	D-9 Dozer c/w Ripper	3		-	<b>•</b>		1,0		1,0	$\frac{0}{2}$	1	0,1	0,1		0,1	0 1		0 1	0 1		01	0,1		0,1	0 1	_	0,1	0,1		01				2			01		2	01	,t			2 21 23
	824 Wheeled Dozer	3	1				1,0			0,1	†		0,1	<u> </u>	-	0,1		$ \rightarrow $	0,1					-	0,1			$\overline{0,1}$						01						01	, <u> </u>			111
	Mobile Crusher	10	1	-	1	+	1,0		1	<b></b>						1	0 1								•		0 1	-			- <u>-</u>													1 <u>3</u> 4
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	24 LCM Scraper	4	1			l	4 0 4		l i		0 4				04				04				0 4				0 4 4				04				04				4					4 32 36
	32 tonne Dump Truck	7				Ţ	30						104	03						0 1	034						01	03						0 1	034									4 15 19
	5.4 m <sup>3</sup> Front-End Loader	4	1				10		$\frac{1}{2}$		01		0 1	-	01		01		0 1		01		0 1		0 1		0 1		0 1		2		0 1 2		0 1		2	7	2					2 15 17
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93000	PIT SERVICES					ĺ																					Ī																	
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93200	IN-PIT DRAINAGE	-	1				-		1																																			
	Diesel Pumps	10				1	10 0										0 10 10						Ī				0 10										0 10							10 30 40
	1 m <sup>3</sup> Backhoe	5	1	10							]													01					01					0 1										17 8
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94000	MINING EQUIPMENT																																										Γ	
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94100	ELECTRIC SHOVELS																						ĺ																					
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94200	SPECIALIZED EXCAVATORS					1																																			i			
	24 LCM Scraper	4					202			•	02	<b>-</b>	+		02	•	† <b>†</b>		02				22				2				2				02				2		,			2 16 18
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94300	SPECIALIZED EXCAVATORS - PARTINGS		NOT	USED	•		<u> </u>						<u> </u>			1							ſ																					
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94400	HAULAGE TRUCKS					1		<b>-</b>						T			<b>,</b>																						!					
ľ	109 tonne Coal Truck	10				1		40		10	0 1	10	10 8	1				04		10		01	0 1					03				7	7				_	6						9 13 22
	136 tonne Waste Truck	10		<b>†</b>	<u>†</u>		10 0	-	3,0	20	ļ,		, <u> </u>	+		<u> </u>	0 10		<del> </del>					30						+			· · · ·		······	·····	0 4	-	+		, <b>†</b>		, <b>†</b>	18 24
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# TABLE 2-7

SHEET I OF 3





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# MOBILE MINING AND AUXILIARY EQUIPMENT PURCHASE AND REPLACEMENT SCHEDULE TABLE 2-7 (SHEET 2)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

	DESCRIPTION	LIFË	PR	E-PR	ODU	CTION	PE	RIOD																	PRO	DUCTK	ON P	ERIOD	)															
CODE	DESCRIPTION	IN YEARS	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23 2	24   :	25	26	27	28	29	30	31	32	33	34	35 T	OTAL
94000	MINING EQUIPMENT ( continued )					1																																						
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94500	IN-PIT CONVEYORS		INCL	UDED IN	ACCOU	NTS 950	DO AND	97000																													-							
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94600	TN-PTT MATERIAL SIZING		TNCL	UDED IN	ACCOU	NTS 950	DO AND	97000			-																							-			-							
																					+	+											i											
04700		· · · · ·					+																						+										-+					
94710	NOTEDS				1	+	+	- + ··													- 1		1											+		- +								
				<u> </u>		+	1,0	1		0,1			0,1			0,1			0,1	- †		0,1			0,1		+	0,1			1			0,1			5 1		7	0,1				1 11
		3	┝ ──	+	+	·	3,0	; † —	2_0	0_3		0_2	0_3	<u>  </u>	0_2	0_3		0_2	03	- · ł	0 2	0_3		0_2	0_3		0_2	្នំថ	ł	0 2 0	3		52	0_3	†	02 (	5		J 2 1	03				5 53 58
	824 Wheeled Dozer	3		1			1,0	)		0,1			0,1	† - †	<u>.</u> .	0,1			0,1			0,1			0,1		t	0,1	1	<u> </u>					1		<u>ז ר</u>	-		<u>ן ז</u>				1 11 12
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94715	CRANES			+			1 0	)						<b> </b>			0 1				+											-					5,1+		-+			-		1_3
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	45 tonne	10				120	+	10	1_1		0_1	0_2		0_1	0_2	2	01	0_2		0_1	0_2		01	0_2		0 1	0,2		0,1	0_2		Ţ t	2		0,1			זינס	5,2		<u>,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			3,32
<u> </u>	15 tonne				<u>+-</u>	+1	+	2	<u> </u>			5		5	3		3	. 3	•••••	3			3	3		- <u>-</u> -+		+				-	-			<u> </u>		- <b>-</b>	<b>*</b>		<u> </u>			
	· · · · · · · · · · · · · · · · ·			+	ł		2 0		1		0 2	+		<u> </u>	0 2	+ ·			0 2	- +			0 2				0 2				2				0_2	-+		·   r	0_2	-				2 16
_94720	16 G GRADERS	4		+	+	-+	2.	+		·	2	+ -			2	<u> </u>			2				2		<u> </u>	$\vdash$	2				2				2				2		-+			
				+		-	+						+	<u> </u>		+			<u> </u>					+		↓ ↓.	• • • • • • • • • • • • • • • • • • • •			-+									+-	+				
94725	LIGHT VEHICLES		-	+	<u> </u>	1 0	+		1 0		· · ·					0 1	+·		0 1							0 1		+	0 I +							<u>v1</u>			0 2 ·				<u> </u>	2 6
	Fire Truck	10		<u> </u>			+	1 0	2		0 1	-0 1		0 1	0 1	2	0 1	0 1	2	0 1	01		0 1	0 1		2	0 1		2 0 1	01		<u>-</u>	, 1		┯┰┼	2		<del>.</del>	$\frac{2}{01}$					8
	Ambulance	3		+		1	15 0	2	2	05		2	0 5	2	2	0 5	2	2	0 5	2	2	0 5	2	2	05	2	2	0 5	2	2	5	2	2	0 5	2	2	05	_2	2	05				5 55
-	Personnel Bus (24 passengers)	3		ł	+ -	_ <b>_</b>	5	5	₽ .	5	-	L .	5	ļļ		5	I	-	5			5			5			5	— †	-+	2			5			5			5 0_2		-+		60 2 22
<b>–</b>	Personnel Bus (8 passengers)	3					2	-	-	2	<b></b>	+	2			2	+		2			2.			2	+		2			2		+	2			2		-+	2		<u> </u>		
				+			+	_		+ · •			<u> </u>			<u> </u>	•	•		-		i				+ +												·	$\rightarrow$			<u> </u>		
				<u> </u>			10	10	┠──	•	- <del>.</del>	01	01			·	+ 0 1	01				01	0 1	<u>↓</u>		$\left  \right $	01	01				5-1-0	51				01	0 1	-+	+			<u> </u>	2 12
94730	FRONT-END LOADER - 11.5 m <sup>3</sup>	5	-	ł	ļ	Ļ	1	2	<b>-</b>	•		2	2				2	2			+	2	2		 		2	2			- +	2	2				2	-2	+					14
94735	RECOVERY VEHICLES			+	Í	ł	1, 1		ļ	t	ł	].	į .	+		ļ	01	Ļ	ł	• •	• • ••••		·	+	+ -		01		I I	ł	+						01	—- <b>h</b>					<u> </u>	1 3
<b> </b>	Hi-Boy	10		↓ ┿	+			,	┟					ļi		<b>.</b>		ļ				+		<b> </b>	ļ	••••••	1							+		+					<u> </u>			$\frac{4}{13}$
	Lo-Boy c/w Tractor	10			ļ	+	.↓îĭ	′↓				ļ	ļ	ļ			<u>1</u>							<b> </b>	†		1			_+							1					-+		_4
				+		+	<u> </u>			<b>├</b>			 + ·	 		; ;	Ļ	•		+					⊷—													<del> </del> -						
94740	ORILLING AND BLASTING EQUIPMENT		L	+	1 †	ļ	÷.,	,	<b> </b>		ļ	1 n 1	÷	<u> </u>			ļ						·	<u> </u>												;+							<b> </b> _	1 1
ļ	Air Track c/w Compressor	5	ļ		: †	· · · ·	11	,   			<b>.</b> .	ļĭ	ļ		Ļ.	 ↓		<b></b>	<b> </b> .	<u> </u>	_			+ -	t	<b> </b>						<u>5-</u> 1 +							+-		$\rightarrow$	$\rightarrow$	∔	· 2
Ļ ,	Truck-Mounted Drill	9	ļ		ł	11			ļ	ļ .	ļ	ļ	ļ	11		÷	-	<del></del>	<u> </u>	$\downarrow$	-		1	<b>_</b> ·		<b>├∔</b>	01		ļ			1					<u>,</u>	· .	<u> </u>				<b> </b> -	4
	Blasting Truck	10	l	ļ	ļ	ļ		<u>'</u>	ļ	ļ	ļ		ļ	ļ	ļ	+		<b> </b>	ļ	$\mid \mid$			ļ	ļ	ļ	┝───- ┤			· +		,	 • • ⁺			]		1		+					<u>4</u>
	Auger Truck-Mounted Drill	5			1			<b>'</b>				1					1					1	L		<u> </u>		<u> </u>				`	1	$\_\bot$				1						$\square$	7
			1		-		[		]																						1	<u> </u>					_							
	· · · · · ·		T <sup></sup>	1	1	1	ţ	1	[				Γ			[																	Ţ											
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			L	L	1		L	I	1	L	L	1	I	1	1	1	<u>i</u>	L	)				L	L	L						L		_			<u></u>	_		<u> </u>			<u> </u>		

# TABLE 2-7

SHEET 2 OF 3





# MOBILE MINING AND AUXILIARY EQUIPMENT PURCHASE AND REPLACEMENT SCHEDULE TABLE 2-7 (SHEET 3)

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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

ACCOUNT		LIFE	PR	E-PR	oduc	TION	PER	IOD																	PRO	DUCT	ION F	ERIO	D															
CODE	DESCRIPTION	IN YEARS	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	TOTAL
94000	O MINING EQUIPMENT ( continued )						[`																																					
94700	0 AUXILIARY MINING EQUIPMENT (Continued)																																											
94745	5 MOBILE SERVICING EQUIPMENT																																											
	5 tonne Service Truck	3				202		20	02		02 4	0 2		4	02		4	4		4	02 4		02 4	4		4	02 4		02	02		02 4	02 4		02 4	0 2 4		4	02		4			4 44 
	Tire Truck	3					1 0			01						01		ļ				0 1						1 1			0 1			01						$     \begin{array}{c}       0 \\       1     \end{array} $				1 11 12
	Line Truck	5				10	2 0 3				01	02				01 3	02 3				0 1 3	0 2 3					02				01 3	02				0 1 3	02	$\square$						$     \begin{array}{r}       3 \\       21 \\       21 \\       21 \\       3 \\  $
	Fuel Truck	3					2 0 2			0_2 _2			02			0 2 2	L		02			0_2 2			0_2 2			02			02 2			02			22	<u>                                     </u>		2			$\rightarrow$	24
	3-5 tonne Hiab Truck	3				202			02	<u> </u>		2	<b>_</b>		2			0 2 2	Ļ		2			2		ļ	2			2			2			2	$\square$	$\square$	2					24
	Lube Truck	3				20			2		ļ	2		ļ	2			2	<u> </u>		2			2		L	2			2			2			2		$\vdash$	2					24
	· · · · · · · · · · · · · · · · · · ·	_					<u> </u>	<u> </u>		<b>—</b> —	<u> </u>			<b> </b>	<u> </u>		<u> </u>		<b> </b>							<u> </u>									ļ		<u> </u>	┟───┘	$\vdash$				-+	
94750	O WAREHOUSE MOBILE EQUIPMENT				-			<u> </u>		<u> </u>	0.7	ļ		<b> </b>		0.7		0 1	<u> </u>		0 3		0.1			0.3		01			0.3		0 1			0.2	<u> </u>	—	┢──┥				—	4 22
	Forklift	5				3		4			4		4	<u> </u>		4		4			4		4			4		4			4		4			3		$\vdash$	┢					26
0475								+					┢──	<b> </b>	<u> </u>	<b></b>									:													$\vdash$	<u>├</u> ───┤					
9475	Calcium Chloride Soreader	5				2,0		2 0		├──	0,2	<u>  ···</u>	0_2	1		0_2	├	0_2	1		0_2		0_2			0 2		02			02		0_2 _4			0 2		0 2					<u> </u>	4 24 28
<u> </u>	Steam Chaper	5				2,0		2 0		<u> </u>	0 2		0_2			0 2		0 2			0 2		0 2			0_2	<u> </u>				024		0 2			0,2		0 2 4						4 24 28
	Field Evel and Lube Station	10				-		1		10		1						<u> </u>	<u> </u>	0 1										01										01				134
	Skid-Mounted Light Towers	10				<b>•</b>	60	+		<u> </u>				1	†	<u>+-</u>	06									<u> </u>	06										06	[						6 18 24
	Pickup Fleet	1/3					33 0 33	11 21 32	45 24 89	0 43	0 39	0 69	0 43	0 39	069	043	0 39	0 69	0 43 89	0 39	0 69 89	0 43 89	0 39	0 69 89	0 43 89	0 39	0 69 89	0 43 89	0 39 89	0 69 89	0 43 89	039 89	0 69 89	043 89	039 89	069 89	0 43 89	039	0 69 89	D 43 89	0 39 89	0 69 (	0 43 89	89 1749 1838
	Truck fleet - aver 1 tonne	5					15 0 15	8 0 23	70 30			015	08 30	07			0 15 30	08 30	07 30			0 15 30	08	07 30			0 15 30	08 30	07 30			0 15 30	08	07 30			0 15 30	08	D7 30			0 15 ( 30	08 30	30 203 233
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		-						1		<u> </u>	<u>† ·</u>				<u> </u>											1	1																	
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		_								L.	L						L																					$\square'$						
											ļ .						L																	<u> </u>				<u> </u>	$\square$					
97000	O WASTE DISPOSAL EQUIPMENT										L						L									Ĺ	L										L	<b>↓</b> '	$\square$					
						• · · · · · · · ·		ļ	L								L									<b>_</b>	L	ļ										<u> '</u>						
97400	O MOBILE HAULING EQUIPMENT								<b></b>		L	[ 	10		<b> </b>		Ļ	L	ļ	0.2						<b>_</b>								0.2	<u>.</u>	<b> </b>		<b>└──</b> ′	┟╍╌╌┨					6 22
	32 tonne Dump Trucks	7					4 0				<u> </u>	ļ	6	6			L	L		6	6						6	6						6	6	<b> </b>	<b></b>	<b>└──</b> ′						28
	5.4 m <sup>3</sup> Front-End Loader	4					110								<u>1</u>		L		1				1			ļ	1				<u>1</u>				1		<u> </u>	'						<u>_9</u>
		. <b> </b>				 		- <b> </b>	I	L	ļ	ļ			<u> </u>		└──	· · ·	<u> </u>							<b> </b>	<u> </u>									<u> </u>	ļ	<b>↓</b> ′	┟──┤					
<b> </b>		_					2 0		<u> </u>	0.2		<b> </b>	0.2		<b> </b>	0.2	┣──		0.2			0.2	2 0		0.2	0.2	-	0.2	0.2		0 2	0 2		0 2	0.2		0 2		$\vdash$	02		<del> </del>		4 32
97470	0 DOZERS - D-8	3					2		Į	2			2			2	┣		2			2	4		4	4	<b> </b>	4	4		4	4		4	4	<u> </u>	4	4	├	4		+		36
								<u> </u>	<b> </b>		<u> </u>				<u> </u>		┣		<u> </u>								<u> </u>									<u> </u>		┞──┘	┢──┤				-+	
97480	O COMPACTION EQUIPMENT						L	<u> </u>		L				<u> </u>	ļ	ļ			<u> </u>	ļ															ļ	<u> </u>	<u> </u>	$\left  \frac{1}{1 + 1} \right $	<b>↓</b>		$ \rightarrow $			<u>_</u>
	Wheeled Type	10						1		L	<u> </u>		<b> </b>	<u> </u>	L	<b>_</b>			ļ	ļ						<b>_</b>	10-3-	1 1				0.5					0,2		$\vdash$					<u>4</u>
	Vibrating Type	5	.    -		-		20		<b> </b>	<u> </u>	ļ	2	<u> </u>	- <u> </u>	<u> </u>	ļ	2	<u> </u>	<u> </u>	<b> </b>		2				ļ	2 <sup>2</sup>	ļ				2				<u> </u>	2	′				<u> </u>	<b> </b>	<u>14</u>
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### TABLE 2-7 SHEET 3 OF 3





# COAL CONVEYING, CRUSHING, AND BLENDING EQUIPMENT PURCHASE AND REPLACEMENT SCHEDULE TABLE 2-8 (SHEET 1)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

4000101			PR	E-PR	ODUC	TION	PER	IOD																	PRO	DUCTI	ION F	PERIO	D															
CODE	DESCRIPTION	UNIT	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	TOTAL
95000	COAL CONVEYING, CRUSHING, AND BLENDING EQU	PMENT						t																						_														
95200	COAL CONVEYING SYSTEMS										1	1			1																													
							1	<u>                                      </u>			t.	1			1																						Τ					i		
95210	TRUCK UNLOADING STATION #1						1	†			1	1								†					ĺ																	1		
	Reciprocating Feeder	EA				1		1			1	1			<b>—</b> ——	1																												1
	Crusher	EA				1	<u> </u>	<u> </u>								-		İ		1										_						1								1
	Mine Conveyor with Moveable Head M1-1	м					360	<u> </u>				<u> </u>		1	1	<u> </u>			1															1			T							360
	<del></del>						<u> </u>	1		-				1	1				1																									
95220	TRUCK UNLOADING STATION #2							1			1				1																							Ι						
	Reciprocating Feeder	EA					1						1		Ì																													1
	Crusher	EA									[		1																													<b></b>		1
	Mine Conveyor M2-1	м											470																															470
								Ι																																L				]
95230	TRUCK UNLOADING STATION #3										[																																	
	Reciprocating Feeder	EA						<u> </u>				1		1														1																1
-	Crusher	EA				<u> </u>								T	1													1																1
	Mine Conveyor M3-1	м					1				Γ			Γ	[													600									]							600
																																										L		
95240	OVERLAND COAL CONVEYORS					1										Γ																										1		
	0C-1	м				2100																															]							2100
	0C-2	м					1900				1			T																				ĺ										1900
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95250	TRAXCAVATOR 955	EA					1	1			İ.	[			1					İ		1							1	_						1								5
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				1							[																									<u></u>	1	1					<b></b> _	
95260	LOW-GRADE COAL HANDLING																																			<b>_</b>								
	Transfer Conveyor LG1	м						[				150																										_						150
	Stacking Conveyor LG2	м										75																							1			$\perp$					<u> </u>	75
	Crusher	EA										1						L														L	<b></b>	L	.L	<u> </u>		$\perp$	$\perp$	ļ	Ļ]			1
	Transfer Conveyor LG3	м										30			Į. –		 	1		<u> </u>															<u> </u>			$\downarrow$	$\perp$	ļ		<b>_</b>		30
	Truck Loading Conveyor LG4	м	L									100																					L				ļ							100
	Loading Hopper	EA										1																									_	$\downarrow$					i I	1
																																		ļ				$\perp$			ļ		$\square$	
																ļ	ļ	<u> </u>	<b>_</b>	L													ļ			<u> </u>		$\downarrow$	<u> </u>				<b></b>	
95270	INITIAL SPARE PARTS										<u> </u>			ļ				<u> </u>	<u> </u>														L	<u> </u>	<b> </b>	<b> </b>		<b>_</b>	<u> </u>	ļ			<b> </b>	
	ACCOUNTS 95200, 95300, 95400	SET						1						ļ					<u> </u>	<u> </u>																		<u> </u>	$\perp$	ļ	$\square$			1
				<u> </u>	†	1	1		1	<u> </u>	ľ			1		<u> </u>		1																										
			<u> </u>		<u> </u>	+		1			1	1					L.			[																								
			t —				1	1		[	1		1	1												1			·															
		1	L	L	(	L	1	1	L	L	1	I		1	1	L	1	1	<u> </u>	L									<u> </u>	_				_		1	<u> </u>	<u> </u>		1	<u> </u>		<b>i</b>	فسيبسب

# TABLE 2-8

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SHEET I OF 2



# COAL CONVEYING, CRUSHING, AND BLENDING EQUIPMENT PURCHASE AND REPLACEMENT SCHEDULE TABLE 2-8 (SHEET 2)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

			PR	E-PRC	ODUC	TION	PERIOD	T								_								PRO	DUCT	ION P	ERIO	)															
ACCOUNT CODE	DESCRIPTION	UNIT	-6	-5	-4	-3	-2 -1	1 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33 3	4 35	TOT	AL
95300	CRUSHING PLANT																																										
	Transfer Conveyor - Cl	м					60																																			60	)
	- C2	м					115		<u> </u>							Γ								Ī																		115	15
	- C3	м					40		1							1																										40	3
	Feeder - #1	EA					1		<u> </u>																																	1	L .
-	- #2	EA					1									Γ																										1	1
	- #3	EA					1																																			1	<u>د</u>
	Screen - #1	EA		Ī			1																										ļ									1	L
	- #2	EA					1			ļ	ļ					ļ	ļ										$ \rightarrow $							ļ	ļ	<u> </u>				$ \rightarrow $	$\rightarrow$	1	L
	- #3	EA					1		<u> </u>		ļ	1	ļ																				ļ									1	L
	Crusher - #1	EA					1					ļ	ļ			ļ						ł											ļ	ļ	ļ	<u>+</u>						1	<u>د</u>
	- #2	EA					1		1	<u> </u>	ļ			L		<u> </u>		ļ								ļ									<b>_</b>	┝──┤					$\rightarrow$	1	L
	- #3	EA					1										ļ	<b> </b>																ļ	ļ								L
	Sampling System	UNIT					1								ļ	Ļ																		<b> </b>		<u> </u>	.				$\rightarrow$	1	L
	Dust Control System	UNIT					1					<u> </u>	<u> </u>		ļ	<b> </b>	<b> </b>		L																ļ	$\vdash$			$\longrightarrow$	$\square$		<u> </u>	<u>ا</u>
	Tramp Iron Magnet	EA					1		<u> </u>		ļ	ļ	ļ			<b> </b>	<u> </u>	<u> </u>	- 1										+				<u> </u>	<u> </u>	<u> </u>	┢──┤				$\rightarrow$	_ <b></b>		<u>ا</u>
	Weighing Scales	EA	L				1		<u> </u>		ļ	<u>                                     </u>	<u> </u>		1		<u> </u>	<u> </u>				ł							+							+ - +							£
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			<b>_</b>						<u> </u>	<u> </u>		<u> </u>		<u> </u>		<b> </b>	<u> </u>																<u> </u>		ļ	+					<u> </u>		
95400	STACKING, BLENDING, AND RECLAIM								<u> </u>		<b>_</b>	<u> </u>	<b> </b>		ļ		ļ	ļ													<u> </u>		<u> </u>			<u> </u>							
	Transfer Conveyor								<u> </u>	<u> </u>	<u> </u>	<b> </b>				ļ		<b> </b>															<b> </b>		<u> </u>	.++				$\rightarrow$	_	_	
	with Moveable Head - C-4	M		ļļ			70		<u> </u>	<u> </u>		<b> </b>	ļ	ļ	<u> </u>	<b> </b>		ļ															<b> </b>			┼──┼							<u>,</u>
	Transfer Conveyor - C-5	м					70					+		<u> </u>		┨		+				<u> </u>														+ $-+$							<u></u>
·	- C-6	м	┞───				13	5	+	<u> </u>	<u> </u>	. <u> </u>		<b> </b>		+																				+			<del>_</del>	<u> </u>	_ <del></del>		<u>,,,</u>
L	Yard Conveyor - C-7	м	┣			ļ	670	_	+		<u> </u>	<u> </u>			<b> </b>		<u> </u>																┼──		+	+			<del>_</del>	$\rightarrow$	<u> </u>		
	- C-8	M		<b>  </b>	ļ		670	_				<u> </u>		<b> </b>																				+	÷	┼╌╌┼						- 67	
	- C-9	м					67	ro 	<u> </u>	+				<u> </u>	<u> </u>	<u> </u>																	<u> </u>	+						<u> </u>		670	70
	- C-10	м			·	<u> </u>	57	10		- <b> </b>	<u> </u>		<u> </u>	<u> </u>		+																		+		┼──┦					· +		<u>~</u>
	Slewing Stacker	EA	<b> </b>			1	1	L		+			<u> </u>	<u> </u>	<u> </u>		ļ				<u>+</u>													+		+					<del></del>	- 2	<u>-</u>
	Bridge-Type Reclaimer	EA	<b> </b> _			1		L	<u> </u>	<u> </u>	+	<u> </u>	+	<u> </u>															<u> </u>				<u> </u>		+	╂╍──┤				<u> </u>		$-\frac{2}{3}$	<u></u>
	Transfer Car	EA	<u> </u>	 	<b> </b>	ļ		L		<u> </u>		+			<u> </u> .	+																	<u> </u>	+	+	┢┈┝	+		<del>_</del>				<u>1</u>
	Collecting Conveyor - C-11	M	<u> </u>	·	<b> _</b>		220		+		+	-				┨───															· · · · ·		+		+	╉╼╌╌┤				$\rightarrow$	<u> </u>		20
	Sampling System	UNIT	<b>_</b>			ļ	1	_				<b> </b>	+				+																-		-	┼─┤				+	——	-+	<u>+</u>
	Tramp Iron Magnet	EA	<b> </b>		ļ	<b></b>	1			<u> </u>		+			-		- <b> </b>																+	<u>+</u>	+	┼──┤			<del> </del>				<u>•</u>
	Weighing Scale	EA			ļ	ļ	1		_				<u> </u>	L	1	_	<u> </u>	<u> </u>	<b> </b>															<u> </u>	<b>_</b>	+			<del> </del>	<del></del>		_ <u>_</u>	<u> </u>
	Bulldozer D-8 with Compactor	EA	L					ı	<u> </u>		<u> </u>	<u> </u>	1	1	<b>_</b>	<b>_</b>	<u> </u>	<u> </u>			1							1					<b> </b>	<b> </b>	1	∔				$\rightarrow$		5	5
			<u> </u>		<u> </u>	ļ	<b> </b>		<u> </u>	<u> </u>		<u> </u>				<b>_</b>		<u> </u>	<b> </b>														┼──		<u> </u>	┝╌╌╽			┌───┼─				
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### TABLE 2-8 SHEET 2 OF 2





# WASTE CONVEYING AND SPREADING EQUIPMENT PURCHASE AND REPLACEMENT SCHEDULE TABLE 2-9 (SHEET 1)

.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

			PR	E-PR	ODUC	TION	PER	IOD																	PRO	DUCI	TION	PERIC	D															
CODE	DESCRIPTION	UNIT	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	TOTAL
97000	WASTE DISPOSAL EQUIPMENT																																											i.
97500	CONVEYING EQUIPMENT						1				<b>_</b>																				Ι						I							
				l																																								
97510	HOUTH MEADOWS																$\Box$		[											[	[										<u> </u>	ļ'		
	TRUCKING UNLOADING STATION #1										<u> </u>				<b>_</b>		L	<u> </u>	<u> </u>	ļ						ļ	<u> </u>		ļ	<u> </u>						ļ	<b>_</b>		<u> </u>	┥	1	<b> </b> '	┝	
	Reciprocating Feeders	EA				2		ļ		<u> </u>							<u> </u>	<u> </u>	<b> </b>													.					<u> </u>		<u>.</u>			<b> </b> '	┝	2
	Crushers	EA			L	2		<u> </u>			ļ						_		<u> </u>					<b></b>					ļ									+	+	∔		<b> </b> '	┟───┨	2
ļ	Mine Conveyor with									<u> </u>							ļ	ļ		ļ				ļ		ļ	<u> </u>		Ļ	ļ						<u> </u>	<u> </u>	+			ļ	<b> </b> '	┝──┦	
l	Moveable Head - M1-2	M					360			ļ	<b>_</b>		ļ			ļ	_	<b> </b>			ļ					<b> </b>	+	ļ	ļ											-	<u> </u>	<u>                                     </u>	-	360
	Mine Conveyor with	_		<b>.</b>				ļ		ļ	<u> </u>	<b> </b>	ļ					<u> </u>	<u> </u>	. 				<u> </u>		<b> </b>		<b> </b>	<b> </b>						ļ	<b> </b>	<u> </u>				ļ	<u>                                     </u>	┥──┤	
	Moveable Head - M1-3	. м.					360		<b> </b>	<b> </b> _	<u> </u>						<u> </u>	<u> </u>	<u> </u>				-							ļ					 	ļ					<u> </u>	<b>}'</b>	┝──┨	
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	TRUCK UNLOADING STATION #2		<u> </u>			<u> </u>											+-	+	+	+					<u> </u>			+	<u> </u>	<u> </u>		┝──╂				+	+	+			+	<b> </b> '	├	
	Reciprocating Feeders	. EA .				<u> </u>		<u> </u>		┣──			2	+			┼──	+								-	+			╀───		╞					+		1	+	+	╞───┘	┟───╊	~
	Crushers	EA					<u> </u>	ļ	I	<u> </u>	<u> </u>		2	<u> </u>	<b> </b>	<u> </u>	┼──	<del> </del>									+	+	<u> </u>	┣━━		<b> </b>			<b> -</b>	+		+		+		<u> </u> '	├	2
	Mine Conveyor - M2-2	м.			<u> </u>			<b> </b>	I	<u> </u>	<u> </u>		470			· · -	<u> </u>	ļ		<b> </b> .		┡						+	<b> </b>									+	<b> </b>			┢'	┝───┨	470
	Mine Conveyor - M2-3	. м				<b>.</b>			_	<u> </u>			470	<u> </u>			╂—			-				<u> </u>			+											<u> </u>			-	──'	┝	470
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	TRUCK UNLOADING STATION #3								<b> </b>	<u> </u>	<b> </b>			<u> </u>			╂—	ļ	<u> </u>			<b> </b>				<u>†</u>		-		┼───							+		+		<b> </b>	──′	┝───┨	
	Reciprocating Feeders	EA			<b>_</b>	<b> </b>		ļ	<b> </b>	<u> </u>	<u> </u>	<u> </u>	ļ		·			<b> </b>										2		<u> </u>	<u> </u>		-				+		<u> </u>			──′	┝───╂	
	Crushers	ÉA								<u> </u>						<b> </b>	<b> </b>	<u> </u>	-	<b> </b>				<u> </u>				2		<u> </u>								+			ļ	<b> </b> '	⊢−−	2
	Mine Conveyor - M3-2	M				1		ļ	<b></b> _	<u> </u>	<u> </u>			<b> </b>	<b> </b>		_		<b> </b>	<u> </u>		<b> </b>		<u> </u> .		<u> </u>		600	<b> </b>	_−		<u> </u> -				ļ	<u> </u>	<u> </u>			<u> </u>	<b> </b> '	$\vdash$	
	Mine Conveyor - M3-3	м			<u> </u>	<u> </u>		<u> </u>		<u> </u>	<u> </u>			<b>ļ</b>												<b>i</b>		600	<b> </b>	┼───						+					<u> </u>	┝──┘	┝──┨	600
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	OVERLAND WASTE CONVEYORS	_						ļ				ļ		Ļ		<u> </u>			ļ					ļ		<b> </b>	<b> </b>		<b> </b>						ļ				┿──		<b> </b>	<b>↓</b> '	┝───┨	
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	H0-2	м						1250				400					L				L							<u> </u>														$\square$		1650
	H0-3	м								600						550														L														1150
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	TRAXCAVATOR 955	EA		- 1		1		1							1							1							1							1						[]		5
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97520	WASTE DISPOSAL AREA																Γ																				L							
	Transfer Conveyors - HT-1	м					1000																				350			L											<u> </u>	L		1350
	- HT-2	м						900				250																		<u> </u>					L				L .		<u> </u>	$\square$		1150
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	- HT-4	м														700														<u> </u>							<u> </u>		L					700
	- HT-5	м																									1000			L													$\Box$	1000
																	<u> </u>							<u> </u>	ļ			<u> </u>		ļ					L		<u> </u>	<b>_</b>	ļ		.	<b></b>		
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TABLE 2-9 SHEET 1 OF 2





# WASTE CONVEYING AND SPREADING EQUIPMENT PURCHASE AND REPLACEMENT SCHEDULE TABLE 2-9 (SHEET 2)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

ACCOUNT	DECODIDITION		PR	E-PR	ODUC	TION	PERI	OD	1														PRO	DUCT	ION PE	ERIOD																
CODE	DESCRIPTION	UNIT	-6	-5	-4	-3	-2	-1	1	2 3	4	4	5 6	7	8	9	10	11 12	13	3 14	15	16	17	18	19	20	21 2	2 2	3 2	24	25	26	27	28	29	30	31	32	33	34 35	TC	OTAL
97500	CONVEYING EQUIPMENT ( continued )																		-																							
			· ·												1							1																				
<b>9</b> 7520	WASTE DISPOSAL AREA (continued)	1-1													1						-															,,						
	Shiftable Conveyors - MS-1	M				t	1000			400					400																			<u>†</u>		1					1	1800
	- H\$-2							1250			35	50	1																	1							[				1	1600
	- HS-3					<b></b>				500	-				200			**** <b>*</b>   ···-																								700
	Portable Conveyors - #1	FA				•••••	1								+																,					,						1
	- #2	EA						1						1	<u> </u>																											1
	Trippers on Transfer Conveyors	EA					1	1																																		2
	Trippers on Shiftable Conveyors	EA					1	1																																		2
	Crawler - Mounted Spreader - #1	EA				1											-																			'		<b>.</b>				1
	- #2	EA					1										L				L												ļ	<u> </u>		ļ'	1					1
	Initial Spare Parts	SET						1																									<u> </u>		$\square$	ļ	<b>.</b>					1
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																					L	<u> </u>											ļ	ļ	<u> </u>		<u> </u>					
97530	MEDICINE CREEK																				<u> </u>														<u> </u>		<u> </u>	ļ				
*	Overland Waste Conveyors - MO-1	м		<u> </u>													ļ	<b>↓↓</b>			150							_+				<u> </u>				<b>_</b> '	<u> </u>	<b> </b>			4	150
*	- MO-2	м													<u> </u>					_	250											ļ		<u> </u>	<u> </u>		<u> </u>			···•	-	250
•	- MD-3	м														_			25	io 📃	1650			-						$ \rightarrow $		ļ			<b> </b>	<u> </u>	<u> </u>					1900
*	- MD-4	м			L						_								140	0	ļ							_				ļ			<b> </b>	+	<b> </b>	<b> </b>			_	1400
	Connecting Conveyor - MT-1	м									_				$\downarrow$				120	0												<b> </b>			<u> </u>	<u> </u>	<u> </u>	ļ				1200
•	Transfer Conveyor - MT-2	м																L	_		250		150	400								<u> </u>		<u> </u>	Ļ		Ļ	 -+				800
•	Shiftable Conveyor - MS-1	м			<b>_</b>									_ <b>_</b>							750	<b>_</b>	200	50		500						100			÷	+	+	<u>+</u>			_	1600
*	Portable Conveyor	EA													<u> </u>			<b>   </b>	_		1	1		ļ	<b>↓</b>								-	-		<u> </u>	<u> </u>				_	1
•	Trippar for Transfer Conveyor	EA		<u> </u>	ļ				<b>.</b>							_					1_1											─		+		+	+				_	_1
. *	Tripper for Shiftable Conveyor	EA							<b>.</b>		_			-					_	-	1													+		+	–				_	
٠	Crawler - Mounted Spreader #2	EA			ļ										<del>.</del>	-		<u>↓</u>			1			<u> </u>	<u> </u>											+	+	+				
	Traxcavator 955	EA																+	_	1	ļ	+		ļ	<u>├</u>		1		-+				ļ	1	+	+	+	+ • ••				3
	Initial Spare Parts	SET		÷	<b> </b>							_					<u> </u>	+	1		<u> </u>											<u> </u>	+					· <del> </del>			_	
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· ·	This equipment is relocated from Houth Meado	ws	<u> </u>	<u> </u>													-				+			-	<u> </u>					-+		<u> </u>	+	-	ł	+	+	•			-[	
	waste disposal area.	┞──┤												_				++			+			<b> </b>	┢━┥		+-						+	+	+	+	+	+	┝──╄			
		┞─┤	L		<b></b>	┝──┤			1		+						<u> </u>	┝──┤──	_		<u> </u>	+	<u> </u>	<u>+</u>	<u> </u>							<b> -</b>	+		4	+	+	┨───				
		╞╴┤		- <b>-</b>	<u> </u>	+ - +					+							+ $-$	_	_	<u> </u>	+	<u> </u>		┟╌╌╌┝		+-					·   · ·			+	+	+	-				
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### TABLE 2-9 SHEET 2 OF 2



# MOBILE MINING AND AUXILIARY EQUIPMENT CAPITAL COST SCHEDULE TABLE 2-10 (SHEET 1)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

		INTT	PR	E-PRO	рист	ION F	PERIO	D		· · ·														PRO	DUCTI	ON P	ERIOD	)															
CODE	DESCRIPTION	COST	-6	-5	-4	-3	-2	-1 1		2 3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	TOTAL
91000	MINE PROPERTY DEVELOPMENT											-		+	1	1																		1									
	<u> </u>											1																						1	· · · ·	1	1		1	<u> </u>			
91300	RDADS AND BRIDGES														<u> </u>							<u> </u>											-	F					1				
91310	HAUL ROADS											1		1	<u> </u>	1								-				Ì				· · ·	<u> </u>			1	1						
	16 G Grader	204	-				408			408	204			408	204			408	204			408	408			408	408		_	408	408		<b> </b>	408	408	$\uparrow$	<b>—</b>	408	408				6324
	Water Wagon	270					540	2	70			540	,	270		1		540		270				540		270		İ		540		270			<b></b>	540		270					4860
	D-9 Dozer c/w Ripper	312					312	3	12	312	312	312	:	312	312	1	312	312		312	312		312	312		312	312		312	312		312	312	İ	312	312		312	312				7176
	824 Wheeled Dozer	196					196			196		196	;		196			196			196			196			196	Ì		196			196	1		196			196				2352
	Modile Crusher	300					300							I		300										300										300							1200
	Gradall	125					125					125	;					125						125						125						125							750
	24 LCM Scraper	358				t	1432			143:	2			1432				1432				1432				1432			_	1432				1432				1432					12888
	32 tonne Dump Truck	226					678					226	678						226	678						226	678						226	678								1	4294
	5.4 m3 Front-End Loader	285					285	2	85	285		285		285		285		285		285		285		285		285		285		285		285		285		285		285					4845
	SUB - TOTAL					4	276	66	57 5	108 2125	5 516	168	4 678	2707	712	585	312	3298	430	1545	508	2125	720	1458		3233	1594	285	312	3298	408	867	734	2803	720	1785		2707	916				44689
93000	PIT SERVICES																																										
																													_														
93200	IN-PIT DRAINAGE																																										
	Diesel Pumps	6					65									65										65										65							260
	1 m <sup>3</sup> Backhoe	150		150				19	50				150	T	[			150					150					150					150					150					1200
	3-5 tonne Hiab Truck	25		25					25				25					25					25					25					25					25					200
	SUB - TOTAL			175			65		5				175			65		175					175			65		175					175			65		175					1660
																						<u> </u>														-	1			<b>_</b>			
94000	MINING EQUIPMENT												_		ļ																	-		ļ						<u> </u>			
																. <u>.</u>																	-										
94100	ELECTRIC SHOVELS														<u> </u>																						<b>_</b>						
	16.8 m <sup>3</sup> Shovel	2960	_			8880	2	2960 296	50	2960	<b>)</b>					L						2960	2960		8880		2960																32560
							_								<u> </u>		<u> </u>						ļ ļ												<b>_</b>		<b>_</b>		ļ				
94200	SPECIALIZED EXCAVATORS																																										
	24 LCM Scraper	358					716			716				716				716				716				716				716				716		_		716					6444
																																				$\perp$	<u> </u>						
94300	SPECIALIZED EXCAVATORS - PARTINGS			NOT USED	<u> </u>																	L											<u> </u>						L				
												. <u> </u>				ļ	ļ																<u> </u>			4	ļ	<u> </u>		<u> </u>	<u> </u>		
94400	HAULAGE TRUCKS													1			ļ																<u> </u>	<u> </u>	<b>_</b>	1	<b>_</b>			$\perp$			
	109 tonne Coal Truck	622					2	2488		622 622	622	622					2488		622		622	622					1866				622	622					1244						13684
	136 tonne Waste Truck	713				1	7130	2	139 1	426						7130							2139			7130										2852						T	29946
	SUB - TOTAL					7	7130 2	488 21	39 20	048 622	622	62	2			7130	2488		622		622	622	2139			7130	1866				622	622	ļ			2852	1244						43630
					T	T		Т																		T	Í	Ι	T		Ī												
i		L .	L			, <b>k</b>								<b>.</b>		L	h	1	L	ι I		<u> </u>			. <u> </u>	4	<u> </u>			,			·	·	<u> </u>		<u> </u>		·	<u> </u>	غـــــــــــــــــــــــــــــــــــــ		<b>.</b>

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# TABLE 2-10 SHEET I OF 3



MOBILE MINING AND AUXILIARY EQUIPMENT CAPITAL COST SCHEDULE TABLE 2-10 (SHEET 2)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

ACCOUNT		UNIT	PRE	E-PR	ODUC	TION	PER	RIOD																	PRO	DUC	ION I	PERIC	)D									<u> </u>	<u> </u>			·		
CODE		COST	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	ΤΟΤΔΙ
94000	MINING EQUIPMENT ( continued )																										<u> </u>	-						1		<u>⊢</u>	+	$\square$	1	<u> </u>	<u> </u>			
																											T									h	+			+	† †	i +	- 1	
94500	IN-PIT CONVEYORS	-	INCLU	DED IN	i accou	NTS 950	do and	97000	[												+]					-													<u> </u>			┝╍╍╍╋		
94600	IN-PIT MATERIAL SIZING		INCLU	DED IN	ACCOU	NTS 950	DO AND	97000									<u> </u>				++						<u> </u>							•		$\vdash$	<u>├</u> ──┤			+	├──┤		<u> </u>	
																	[													-				+ 		· · ·	<b></b>				[ ]	, <del> </del>		
94700	AUXILIARY MINING EQUIPMENT					ļ											<u> </u>			$\square'$																								
94710	DOZERS																			L'																<b>–</b> 7						,		
	D-9 c/w Winch	300					300			300			300			300			300	L_ '		300			300			300			300			300			300	[		300				3600
	D-9 c/w Ripper	312					936		624	936		624	936		624	936	L	624	936	$\square'$	624	936		624	936		624	936		624	936		624	936		624	936	[ '	624	936		, <u> </u>	Ĩ	18096
┝╴╽	824 Wheeled Dozer	196					196			196			196			196			196			196			196			196	[		196			196		1	196			196		,	h	2352
	D-8	205		_			410		410	410		410	410		410	410		410	410	$\Box$	410	410		410	410		410	410		410	410		410	410		410	410	ŀ	410	410				9430
	SUB - TOTAL						1842		1034	1842		1034	1842		1034	1842		1034	1842		1034	1842		1034	1842	Ţ	1034	1842	Ī	1034	1842		1034	1842		1034	1842	[	1034	1842	11			33478
94715	CRANES				[										[		Γ											1						• ···						1				
	90 tonne	477					477							1	1		477			i – 1			t				477	t									477		<u> </u>	+				1908
	45 tonne	237				474								1		474					<u>†</u> - −†		t		-	474	t		<b> </b>							474	+			+	† †		l I	1896
	15 tonne	126				126		126	252		126	252		126	252		126	252		126	252		126	252		126	252	1	126	252		126	252	<u> </u>	126	252		126	252		126	+		4410
	SUB-TOTAL					600	477	126	252		126	252		126	252	474	603	252		126	252		126	252		600	729		126	252		126	252		126	726	477	126	252		126	, — †		8214
94720	16 G GRADERS						408	+	t i		408	-			408	1		† · · ·	408	F '	† · −+		408			1 -	408	1	†		406			<u> </u>	408			F - '	408	+	+ +	i l	⊢	3672
												1	1	<u> </u>	T					<u> </u>	++					-									,	<u>├</u> ──┦	+	<u> </u>		+	<u>├</u>	·+		3012
94725	LIGHT VEHICLES														1	1		† —		[	1		†		<b>+</b>	† ·	1		+	<u> </u>						<u></u>	<u>├</u> ─-†	[	<u> </u>	+	<u>├</u> }		- +	
	Fire Truck	60				60		1	60				<b>-</b> .			60	<u>+</u>	† · · · ·	60	[					<u>+</u>	60	<u> </u>	+	60							60		'	60	<u></u> +−−−−'	├──┦	+		480
	Ambulance	17				17		17	17		17	17	1	17	17		17	17		17	17		17	17		17	17	1	17	17		17	17		17	17	├	17	17	•	<u>+</u> }			
	Personnel Bus (24 passengers)	18					90			90			90			90			90	[		90			90	† <u> </u>	†	90			90			90			90			90				1080
	Personnel Bus (8 passengers)	12					24		• • • • • •	24			24	†- —		24		•	24	[	1 1	24	<b>+</b> · · · ·		24	* <del> </del>	<u> </u>	24			24			24		h	24	<i>i</i>	t	24	t t			288
	SUB-TOTAL					77	114	17	77	<u>114</u>	17	17	114	17	17	174	17	17	174	17	17	114	17	17	114	77	17	4	77	17	114	17	17	114	17	77	114	17	77	114	<u>├</u> }	·+		2239
94730	FRONT END LOADER - 11.5 m3	555					555	555				555	555				555	555			+	555	555				555	555				555	555				555	555				, — _ †		7770
								L							 			ļ		<u> </u>																								
94735	RECOVERY VEHICLES																	   		l'	1																	$\square$				,		
	Hi-Boy	40					40										40	]							[		40										40	[]						160
	Lo-Boy c/w Tractor	80					80	[									80			,							80										80						_	320
	SUB - TOTAL						120							1	1	-	120	1			1		1		1		120	t		<u> </u>				t			120			1	<u>├</u> ──┤	, ——†		480
94740	DRILLING AND BLASTING EQUIPMENT							1					T .				1 -			[]	1		1		<b>—</b> —-	<u> </u>	1										<u> </u> †							
	Air Track c/w Compressor	122					122					122			1	1				[	1				!		1	<u> </u> –						•••••	<u> </u>		<b>  - · · †</b>	[]		+	<b>├</b> ───┤			244
LI	Truck Mounted Drill	100	T			100								100			T				1 1		100					1		<b> -</b>		100				[				•		·+		400
	Blasting Truck	62	1	Ť			62					1	T	Ì		1	62	• 		[ · /	<u>↑</u>				1		62	†	<b> </b>	<u>├</u> ── ──			-	1			62	[	<b>—</b> —			, <del> </del>		249
	Auger Truck-Mounted Drill	185					165	1	-			185		†		1	185				+ +	185				<u>†</u>	185	+	†			185					185		†	†		+		1295
	SUB-TOTAL				_	100	369	1		ł		307		100		†—–	247		<u> </u>		++	185	100			+	247					285		<b> </b>			247		<u>†</u>	+	<b>∤</b> <del> </del>	<b>—</b> †		2187
								1				1				1					<u>†</u>		<u> </u>		1	1	<u>†</u>	†	†	†				•		•			<u> </u>		<u>+</u> ↓	+		
														[														1						•		· ·	1			<b> </b>	·			
								I				L	1	1	L	1		L	L	<u> </u>			1		<u> </u>		1	1		L	<u> </u>			<b>.</b>		ــــــا	·`		<u> </u>	<u>لــــــــــــــــــــــــــــــــــــ</u>	L		<b>L</b>	

CANADIAN \$ 000'S OCTOBER 1977

# TABLE 2-10

SHEET 2 OF 3



# MOBILE MINING AND AUXILIARY EQUIPMENT CAPITAL COST SCHEDULE TABLE 2-10 (SHEET 3)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

ACCOLNT		INTT	PR	E-PR	ODUC	TION	PER	IOD																	PROD	UCTI	ON PE	ERIOD																
CODE	DESCRIPTION	COST	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22 2	3 2	4 2	5 2	6 2	7 2	28 7	29 :	30	31	32	33	34	35	TOTAL
94000	MINING EQUIPMENT ( continued )																				[																							
94700	AUXILIARY MINING EQUIPMENT (continued)						1																																					
94745	MOBILE SERVICING EQUIPMENT													t i																			-											
	5 tonne Service Trucks	18				36	<u> </u>	36	36		36	36		36	36	<u> </u>	36	36		36	36		36	36		36	36		36	36	3	56 36	5	34	6 3	36	3	36	36		36			864
·	Tire Trucks	35				-	35			35			35			35			35			35			35		İ	35			5		3	5			35			35				420
•	Line Trucks	65				65	130				65	130				65	130				65	130				65	130				5 13	50			6	35 J	130							1365
	Fuel Trucks	85					170			170			170		1	170			170			170			170			170			.70		1	יס		1	170			170				2040
-	3-5 tonne Hiab Trucks	25				50			50			50			50	_		50			50			50			50			50			50		5	50			50					600
	Lube Trucks	55				110			110			110			110			110			110			110			110			110		l	10		1	.10			110					1320
	SUB-TOTAL					261	335	36	196	205	101	326	205	36	196	270	166	196	205	36	261	335	36	196	205	101	326	205	36	96 2	70 16	6 19	6 20	)5 3(	6 2	:61 3	35	36	196	205	36			6609
94750	WAREHOUSE MOBILE EQUIPMENT																				Ι																							
	Forklifts	120				360		120			360		120			360		120			360		120			360		120			60	12	20		2	40								3120
															[																													
94755	MISCELLANEOUS EQUIPMENT																											_																
	Calcium Chloride Spreader	7				14		14			14		14			14		14	Ĩ.		14		14			14		14			14		.4			14		14						196
	Steam Cleaners	60				120		120			120		120			120		120			120		120			120		120		1	20	1:	20		1	.20	1	120						1680
	Field Fuel and Lube Station	80								80										80										80										80				320
	Skid Mounted Light Towers	6					39										39										39									3	<u>19</u>							156
	Pickup Fleet	10					330	320	690	430	390	690	430	390	690	430	390	690	430	390	690	430	390	690	430	390	690	430	390	690 4	30 39	0 69	0 43	0 390	) 6	,90 4	130 3	90	690	430	390	690	430	18380
	Truck Fleet - over 1 tonne	20					300	150	150			300	150	150			300	150	150			300	150	150			300	150	150		30	0 15	50 15	0		3	300 1	150	150			300	150	4650
	SUB-TOTAL					134	669	604	840	510	524	990	714	540	690	564	729	974	580	470	824	730	674	840	430	524	029	714	540	770 5	64 69	90 9	74 58	0 39	ю в	;24 7	·69 €	674	840	510	390	990	580	25382
94760	INITIAL MINING EQUIPMENT SPARES																																											
	AT 6 1/2% OF CAPITAL COST					685	1191	485																																				2361
					·	_																																						
	TOTAL ACCOUNT 94700					2217	6080	1943	2399	2671	1536	3481	3550	819	2597	3684	2437	3148	3209	649	2748	3761	2036	2339	2591	1662	4465 3	3550	779 2	269 35	58 18	39 31	48 27	41 97	7 31	167 44	459 14	408 2	2807	2671	552	990	580	95512
97000	WASTE DISPOSAL EQUIPMENT								_																								_											
																_																												
97400	MOBILE HAULING EQUIPMENT																																	_										
	32 tonne Dump Trucks	226					906						453	906						453	906						453	906					45	3 90	<b>x</b> 6									6342
	5.4 m <sup>3</sup> Front-End Loader	285					285				285				285				285				285				285			2	85			28	35				285					2565
	SUB - TOTAL						1191				285		453	906	285	L			285	453	906		285				738	906		2	35		45	3 119	n 📃				285					8907
97470	DOZERS - D-8	205					410			410			410			410			410			410	410		410	410		410	410	4	10 4	10	41	0 41	lo	4	10 .	410		410				7380
97480	COMPACTION EQUIPMENT																		L																									
	Wheelad type	213						213								L		213										213						_			;	213					$\square$	852
L	Vibrating type	213					426	[				426					426					426					426				4	26				4	26			Ī	ſ		ſ	2982
	SUB~TOTAL				[		426	213				426			ſ		426	213				426					426	213			4:	26				4	26 :	213						3834
																																										_		
	TOTAL ACCOUNT 97400						2027	213		410	285	426	863	906	285	410	426	213	695	453	906	836	695		410	410	164	529 4	410	6	95 83	56	86	3 160		6	36 6	523	285	410				20121

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### TABLE 2-10 SHEET 3 OF 3





# COAL CONVEYING, CRUSHING, AND BLENDING EQUIPMENT CAPITAL COST SCHEDULE

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TABLE 2-II (SHEET 1)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

One       Description       6       5       4       3       2       4       5       6       7       8       9       90       10 <th1< th=""><th>ACCOUNT</th><th></th><th>PF</th><th>E-PR</th><th></th><th>TION</th><th>PER</th><th>OD</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>PRO</th><th>DUCT</th><th>TION I</th><th>PERIO</th></th1<>	ACCOUNT		PF	E-PR		TION	PER	OD																	PRO	DUCT	TION I	PERIO
9000000000000000000000000000000000000	CODE	DESCRIPTION	-6	-5	-4	-3	·2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
99200 COLL CONVEYNE SYSTEMS     I	95000	COAL CONVEYING, CRUSHING, AND BLENDING EQUIPMENT		<u> </u>			[																					
1020     Rec: machine 19310h /1     1	95200	COAL CONVEYING SYSTEMS															$\Box$							[				
9930       Model of SHTEN 1       54       5			1								Γ																	
Multicity in Frome         61         1	95210	TRUCK UNLOADING STATION #1		1																								
Drawer       911       920 <t< td=""><td></td><td>Reciprocating Feeder</td><td></td><td></td><td></td><td>64</td><td></td><td></td><td></td><td></td><td>T</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		Reciprocating Feeder				64					T																	
Num Convertor with Househing Hass Hull         PR2		Crusher				511																						
5270         HEXCURLISING STATING 4         1 <td></td> <td>Mine Conveyor with Moveable Head M1-1</td> <td></td> <td></td> <td>1</td> <td></td> <td>992</td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		Mine Conveyor with Moveable Head M1-1			1		992			1																		
9830       1960C, MARCHING ARTING ARRAY       1					1		1																					
Implementation feeter       Implementation fe	95220	TRUCK UNLOADING STATION #2					1																					
Grunner       1 </td <td></td> <td>Reciprocating Feeder</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>64</td> <td></td> <td></td> <td></td> <td> </td> <td>ļ</td> <td></td> <td> </td> <td></td> <td><b>.</b></td> <td></td> <td>L</td> <td>ļ</td> <td></td> <td></td> <td>ļ</td>		Reciprocating Feeder											64					ļ				<b>.</b>		L	ļ			ļ
Hug. Conveyor. 10-1       1       1       109       1       109       1 <td></td> <td>Crusher</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>511</td> <td>L</td> <td></td> <td></td> <td>ļ</td> <td>ļ</td> <td>L</td> <td>ļ</td> <td>ļ</td> <td>L</td> <td></td> <td>ļ</td> <td>ļ</td> <td>Ļ</td> <td>ļ</td> <td></td>		Crusher											511	L			ļ	ļ	L	ļ	ļ	L		ļ	ļ	Ļ	ļ	
6283       True (MALQUIN) STATION 13       6 <td< td=""><td></td><td>Mine Conveyor M2-1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1094</td><td></td><td></td><td></td><td></td><td>1</td><td></td><td></td><td>L</td><td>1</td><td></td><td></td><td></td><td> </td><td></td><td></td></td<>		Mine Conveyor M2-1											1094					1			L	1						
98220       TRUCK UALQUIDE STATURY IS												L			L .						L	<u></u>			Ļ			
Religrowating Feeder       0	95230	TRUCK UNLOADING STATION #3															ļ						_	1		L	L	64
Cruster       Cruster		Reciprocating Feeder											ļ			ļ					L		L	-	<b>.</b>		L	511
Mine Conserver MS-1       Mine Conserver MS-1<		Crusher				[				ļ		ļ		L		ļ	ļ							<u> </u>	ļ			1277
92240       ORER.40 CGL (2004) (054) (		Mine Conveyor M3-1			$\perp$	ļ				ļ	Ļ	ļ		Ļ				İ—	<b></b>	<u> </u>		<u> </u>			<u> </u>	<u> </u>		<u> </u>
98240       DVER.AND COAL CONVEYORS       2828       187       1						ļ	ļ	L	ļ				L	ļ	L		L	L	<u> </u>	1	ļ							<b>_</b>
0C-1       2825       1567       4539       1       <	95240	OVERLAND COAL CONVEYORS			L		L			Ļ	ļ	Ļ	<b>_</b>		L	ļ	L	L		ļ	L		1			-		$\vdash$
02       4533       4533       1		0C-1		ļ		2825	1367				ļ .	ļ	 	<b>_</b>		<u> </u>		Ļ							<b>_</b>	<u> </u>	<u> </u>	<u> </u>
9520       TRAXCAVATOR 955       78		0C-2					4539									L								1		L	ļ	L
9520       TRAXAVATOR 955       1       78 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>																												
SUB-TOTAL COAL CONVEYING       3400       6598       78       78       78       78       78       1852         95260       L0M-GRADE COAL HANDLING       1	95250	TRAXCAVATOR 955						78							78	ļ					ļ	78			ļ	<u> </u>		<u> </u>
95280       LOW-GRADE COAL HANDLING       Image: concept of LG       Image: conc		SUB-TOTAL COAL CONVEYING	l		L	3400	6898	78		1 .	ļ		<b>L</b>	┞	78	<u> </u>	<u> </u>		ļ	ļ	ļ	78		ļ	<b> </b>	ļ		1852
9520       LON-GRADE COAL HANDLING       I		· · · · · · · · · · · · · · · · · ·		L	<b>_</b>	<b>+</b>	<b> </b>			+		İ	<b>.</b>	ļ	 	-	<u> </u>			<u> </u>				<u> </u>	<b>_</b>			<b> </b>
Transfer Conveyor LG1       1       166<	95260	LOW-GRADE COAL HANDLING				<b>.</b>	<b>_</b>	<u> </u>	ļ				<u> </u>	İ			<u> </u>	ļ	ļ		ļ		_	↓		ļ	ļ	<u> </u>
Stacking Conveyor L62       150       15		Transfer Conveyor LG1					L		L	ļ	<b> </b>	166		<u> </u>	ļ	ļ	<u> </u>			ļ	ļ		_					<u> </u>
Crusher       85       85       86		Stacking Conveyor LG2		<u> </u>		ļ		<b> </b>		+	ļ	150	 		 	ļ	ļ	ļ			ļ	-			-			┣
Transfer Conveyor LG3       42 <t< td=""><td>L  </td><td>Crusher</td><td>L</td><td>L</td><td>ļ</td><td>L .</td><td>ļ</td><td>ļ</td><td>ļ</td><td>ļ .</td><td><b>_</b></td><td>85</td><td>ļ</td><td><b> </b></td><td>  · ·</td><td>ļ</td><td>L</td><td>ļ</td><td></td><td></td><td> </td><td>+</td><td></td><td></td><td>ļ</td><td></td><td></td><td>L .</td></t<>	L	Crusher	L	L	ļ	L .	ļ	ļ	ļ	ļ .	<b>_</b>	85	ļ	<b> </b>	· ·	ļ	L	ļ				+			ļ			L .
Truck Loading Conveyor LG4       140       <		Transfer Conveyor LG3		ļ		 		<b>.</b>	<b>_</b>	ا نــــــــــــــــــــــــــــــــــــ	<b>_</b>	42	<u> </u>		ļ	<b>i</b>	<u> </u>	ļ			<del>.</del>		_	∔—				—
Loading Hopper       Image: Coal and Hopper       Image: Co		Truck Loading Conveyor LG4	I	<u> </u>					ļ	1		140			ļ	<u> </u>			ļ	-				<u> </u>			-	$\perp$
SUB-TOTAL LOW-GRADE COAL       688       689       689       722       669       78       78       688       689       6		Loading Hopper	ļ	<u> </u>	<u> </u>	L	-	ļ	<b>_</b>	Ļ		105		L	<b>_</b>	i +	<u> </u>				↓	∔				<u> </u>		<u></u> _
95270       INITIAL SPARE PARTS       Image: constraints of the second s		SUB-TOTAL LOW-GRADE COAL		<b></b> ,	ļ			 	ļ	L _	ļ	688	<b> </b>	-	ļ	<u> </u>	<u> </u>	• • • • • •	<u> </u>	<u> </u>		ļ	-	₋	-	<u> </u>		$\perp$ –
95270       INITIAL SPARE PARTS       2812       34       2812       34       2812       34       2812<			L	<b> </b>		}		ļ	<b>.</b> .	ļ	ļ			ļ	<u> </u>		↓	•		ļ					+	<u> </u>		+
ACCOUNTS 95200, 95300, 95400       2812       34       1	95270	INITIAL SPARE PARTS	l			<u> </u>		<u> </u>	<b>_</b>		+	ļ	<b> </b>	ļ		+	<b> </b>	! • •	<b> </b>		-	+	-		+			<u>∔</u>
TOTAL ACCOUNT 95200     3400 6898 2890     722 1669     78     78     1852		ACCOUNTS 95200, 95300, 95400		<u> </u>		<b> </b>	ļ	2812	L _		↓	34			ļ	<u> </u>			<b> </b>		+		<u> </u>	+		<u> </u>		+
TOTAL ACCOUNT 95200         3400         6898         2890         722         1669         78         78         1852							ļ	ļ	1		ļ	Ļ		<u> </u>	L	L	L	ļ	ļ						<b>_</b>	ļ	<u>+</u>	<b>_</b>
TOTAL ACCOUNT 95200         3400         6898         2890         722         1669         78         78         1852			L				L						L			L	L	ļ		$\downarrow$				-	1			<u> </u>
		TOTAL ACCOUNT 95200				3400	6898	2890		<u> </u>	<u> </u>	722	1669		78		<b>_</b>	ļ	ļ		<b> </b>	78		<b>_</b>	<u> </u>			1852
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CANADIAN \$ 000'S OCTOBER 1977

# TABLE 2-11

SHEET I OF 2

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	TOTAL
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									<u> </u>			+	<b></b> ··	ŧ	511
	<u> </u>											<u>+</u> − '	+-	†	1094
					<u> </u>							1			1
				· · ·											64
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78		L	<u> </u>				78		<b> </b>		i				390
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							 		<u> </u>			<del> </del>		┞	42
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			<u> </u>		<u> </u>	<b> -</b>		<u></u>	+	<b> </b>			<u> </u>		
76		+			<b> </b>		79	<u>.                                    </u>	<u> </u>	<u>├</u>		<b>.</b>	<u> </u>		17747
(6		+	Ļ	<u> </u>	<b> -</b>		10	<u> </u>		<u> </u>	<u> </u>	·	•· ··	┥	11/43



**Cominco** cominco-monenco joint venture



# COAL CONVEYING, CRUSHING, AND BLENDING EQUIPMENT CAPITAL COST SCHEDULE TABLE 2-11 (SHEET 2)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

ACCOUNT		PR	E-PR	ODUC	TION	PER	IOD																	PRC	DUCT	ION	PERIC	D														
CODE	DESCRIPTION	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34 35	TOTAL
95300	CRUSHING PLANT					1	1					<u> </u>	1	<u> </u>			<u> </u>		1	1													†									
	Transfer Conveyor - Cl				1	120	<u> </u>						1		1	1								ľ			1															120
	- 62				1	111						<b> </b>	1	1		1-			1					1						•												313
	- 03				†	55	1				1	1	+	1		<u> </u>		<u> </u>	1		1	1 .					1	1											†			55
	Foeder - \$1			1		28	+					1	1	1		1	<u> </u>	1								<b>_</b>	1	<b>_</b>														28
	- #2				<u>†</u>	27						1	<u> </u>			<u> </u>			1		1	<u> </u>	1	[	1																	27
	- #3				<u> </u>	28						1	1	1		1	1	1									1						<u> </u>					- 1				28
	Screen - #1				† · · · ·	31	1								1	<u> </u>					-	+		1	1		$\square$					<u> </u>										31
	- #2					32						1			1	-			1	1	1				1																	32
	- #3					31	<u> </u>													1																						31
	Crusher - #1					158																																_				158
	- #2					158	T																]																			158
	- #3					158										Γ																										158
	Sampling System					386																																				386
	Dust Control System					206	1																																			206
	Tramp Iron Magnet			[		21																																				21
	Weighing Scales					32					ļ																															32
	TOTAL ACCOUNT 95300					1784									[																											1784
																													l		I											
							T																																			
95400	STACKING, BLENDING, AND RECLAIM											]																														
	Transfer Conveyor with Moveable Head - C4					299										Τ																	<u> </u>									299
	Transfer Conveyor - C5					96																																			/	96
	- C6			ļ			185				<u> </u>			<u> </u>			<u> </u>	1	<u> </u>		-	<u> </u>	<b> </b>	<u> </u>		ļ			ļ			ļ	[		1							185
·	Yard Conveyor - C7				ļ	1329	<u> </u>				<u> </u>					⊥		<b>_</b>	<b></b>				<b> </b>	<b> </b>					ļ		ļ	Ļ	ļ		ļ			$\square$		$ \longrightarrow $		1329
	- C8					1329					ļ					<u> </u>	<u> </u>	<u> </u>					<b>_</b>	<b> </b>		ļ					ļ											1329
-	- 09				L		1329				ļ			ļ			<u> </u>		<b></b>		<u> </u>		<b> </b>	<b> </b>	1	ļ					ļ	ļ	<u> </u>									1329
	- C10						781				ļ			ļ										ļ		$\square$		ļ	ļ		ļ		<u> </u>	Ļ								781
	Slewing Stacker				1605	375	1980		_		ļ		<u> </u>	L		∔	ļ		<b> </b>			+					<u> </u>	ļ	ļ		<u> </u>	ļ	<u> </u>	<u> </u>								3960
	Bridge-Type Reclaimer				3210	750	3960										ļ	<u> </u>											<u> </u>		ļ	ļ										7920
	Transfer Car			ļ		381	ļ									<u> </u>			<u> </u>		<u> </u>		<b>_</b>	<b>_</b>	<u> </u>	<u> </u>		ļ	<u> </u>					ļ								381
	Collecting Conveyor - Cll		L		ļ	301								ļ		<u> </u>	$\downarrow$		1		<b>_</b>			<b> </b>	<u> </u>	<b> </b>			ļ		ļ	ļ	<u> </u>									
	Sampling System					386					ļ	ļ	<u> </u>	ļ		⊥		ļ	<u> </u>		<u> </u>	<u> </u>	ļ		_	<u> </u>			<u>-</u>		<u> </u>	ļ	ļ	ļ								386
	Tramp Iron Magnet			L	<u> </u>	21					ļ		- <b> </b>		-		<u> </u>				_		<u> </u>			<u> </u>	<u> </u>	<u> </u>	<u> </u>		<b> </b>		ļ	ļ	<u> </u>		<b>├</b>			$\longrightarrow$		21
	Weighing Scale	<u> </u>	<u> </u>	<b>_</b>		32	<u> </u>				<u> </u>		- <b> </b>				<u> </u>		<u> </u>			<u> </u>	<b> </b>	<u> </u>	_	<u> </u>		-	<u> </u>		ļ	<b> </b>		<b> </b>	┨					$\longrightarrow$		32
	Bulldozer D-8 with Compactor						311							311							311							311	ļ		Ļ		<u> </u>	<u> </u>	311					$\square$		1555
	TOTAL ACCOUNT 95400				4815	5299	8546							311							311							311			<u> </u>		<u> </u>	L	311					$ \longrightarrow $		19904
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														•				•					-	•		•	•		•			-	-	-	·							

CANADIAN \$ 000'S OCTOBER 1977

### TABLE 2-11 SHEET 2 OF 2



### WASTE CONVEYING AND SPREADING EQUIPMENT CAPITAL COST SCHEDULE TABLE 2-12 (SHEET 1)

.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

		PR	E-PR	ODUC	TION	PER	IOD																	PRO	DUCT	ION F	PERIO	D														
CODE	DESCRIPTION	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	3 29	30	31	32	33	34 35	
97000	WASTE DISPOSAL EQUIPMENT						<u>†</u>		<u> </u>			<u> </u>	1		1	1	1	1	1												1		-				1					1
97500	CONVEYING EQUIPMENT									$\uparrow$	1	<u> </u>		1	†		1			1					<u></u>						1					<u> </u>	1					1
							1		<u> </u>										1	<b></b>											1	<b>—</b> —										1
97510	HOUTH MEADOWS						1		┼─	1.	1					1				1				<u> </u>	<u> </u>						1	<u> </u>					-		1			-
	TRUCK UNLOADING STATION #1											1				1	1		1							-					1	1	-		-		1					
1	Reciprocating Feeders				128		<u> </u>		<u> </u>			1			<u>†</u> .	1			1													1					1					128
	Crushers				1022			1		1	1	1	1	1		1																							Ť			1022
<u> </u>	Mine Conveyor with							1	<b></b>				1		1					1																						
	Moveable Head - M1-2					992		1										I.																								992
	Mine Conveyor with							Γ																																		
	Moveable Head - M1-3					992																																				992
	TRUCK UNLOADING STATION #2																																									
	Reciprocating Feeders											128				T	Ì																									128
	Crushers									Γ.		1022		[																												1022
	Mine Conveyor - M2-2											1094																														1094
	Mine Conveyor - M2-3											1094																														1094
	TRUCK UNLOADING STATION #3															T																										
	Reciprocating Feeders																										128				1											128
	Crushers								Γ		[					T											1022															1022
	Mine Conveyor - M3-2									1					-				Γ								1277					-					T					1277
	Mine Conveyor - M3-3																										1277					Ī			Î							1277
																																	Ī									
	DVERLAND WASTE CONVEYORS																																									
	н0-1					1449																					İ															1449
	н0-2						1977				633																															2610
	н0-3								949						870																											1819
																Τ																										
	TRAXCAVATOR 955						78							78							78							78							78							390
									Γ							T																										
97520	WASTE DISPOSAL AREA																																									
	Transfer Conveyors - HT-1					1581																				559										Ξ						2140
	- HT-2						1423				395																															1818
	- HT-3										791				316																											1107
	- HT-4														1107																											1107
	- HT-5				<b>*</b>			$\square$	<u>+-</u>	1	1	1		1		1	1		1							1581						1	<u> </u>		-		1		1		1	1581
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CANADIAN \$ 000'S OCTOBER 1977

### TABLE 2-12 SHEET I OF 2





# WASTE CONVEYING AND SPREADING EQUIPMENT CAPITAL COST SCHEDULE TABLE 2-12 (SHEET 2)

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

		P	RE-PF	RODU	CTION	PER	IOD	1																PRO	DUCT	ION P	ERIO	D									•						
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	- HS-2		Τ				2582				517																														'		3099
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*	This equipment is relocated from	_		<b>_</b>				<b> </b>	<u> </u>			<u>.</u>		ļ	ļ							_	L	ļ							.							<b> </b>		<b>↓</b> ]	<b> </b> '	<b> </b>	
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CANADIAN \$ 000'S OCTOBER 1977

### TABLE 2-12 SHEET 2 OF 2

SECTION 3

OPERATING COST ESTIMATES

#### 3.1 INTRODUCTION

The development of the operating cost estimate is presented and discussed in this section according to the following major cost centres:

Direct Mining Costs Reclamation and Environmental Protection General Mine Expense Local Overheads Power Royalties Contingency

The operating cost estimate was prepared in accordance with a code of accounts, the complete listing of which is given in Section 3.2. The estimating criteria used in developing the operating costs are presented in Section 3.3, and comprise mainly labour rates and major equipment productivity parameters.

The total estimated operating cost is \$2,077,614,000, and includes operating expenses for pre-production and post-production years. Costs incurred in the post-production years are for ongoing reclamation and environmental protection operations which terminate in Year 45. In accordance with B.C. Hydro requirements, no transfer has been made of pre-production operating costs to capital costs.

The major cost centres and the accounts included in each are described in Sections 3.4 through 3.10, in sequence according to the code of accounts. It should be noted that a chart of the management structure foreseen for the project is provided in Section 3.6, General Mine Expense.

All cash flow tables have been grouped together at the end of this section. Table 3-9 summarizes the project operating cash flow for the seven major cost centres over the six-year pre-production period, 35-year production period, and 10-year post-production reclamation period. Tables 3-10 and 3-11 provide cash flow schedules for each account code within each major cost centre.

Throughout this section, all figures are shown to the nearest thousand dollars.

### 3.2 OPERATING COST CODE OF ACCOUNTS

### 321 MAJOR COST CENTRES

100	DIRECT	MINING
-----	--------	--------

- 200 RECLAMATION AND ENVIRONMENTAL PROTECTION
- 300 GENERAL MINE EXPENSE
- 400 LOCAL OVERHEADS
- 500 POWER
- 600 ROYALTIES
- 700 CONTINGENCY

### 322 ACCOUNT ITEMS

ACCOUNT 100 - DIRECT MINING

101	Mining Waste Above Bedrock
	101.1 Drilling
	101.2 Blasting
	101.3 Loading
	101.4 Hauling
	101.5 Dozing
102	Mining Bedrock Waste
	Sub-Codes as in 101
103	Conveying Waste
104	Mining Coal
	Sub-Codes as in 101
105	Conveying Coal
106	Coal Stockpiling and Blending
107	Pit Maintenance
	107.1 Pit Dewatering
	107.2 Electrical Maintenance
	107.3 Snow Control
	107.4 Trailing Cable
	107.5 Road Construction and Maintenance
108	Operation of Mobile Equipment on Dumps
109	Operation of Mine Service Vehicles and Equipment
110	Maintenance of Electrical Services
111	Operation of Eucling Stations
	operation of facting obactions

ACCOUNT 200 - RECLAMATION AND ENVIRONMENTAL PROTECTION

- 201 Staff Salaries
- 202 Vehicles and Buildings
- 203 Earthworks
- 204 Nursery Operation
- 205 Revegetation

ACCOUNT 300 - GENERAL MINE EXPENSE

- 301 Mine Supervision
- 302 Mine Engineering
- 303 Mine Geology
- 304 Mine Communications
- 305 Mine Transportation
- 306 Mine Training
- 307 Close-Spaced In-Pit Drilling
- 308 Safety
- 309 Coal Quality Control
- 310 Light Vehicles Operation

ACCOUNT 400 - LOCAL OVERHEADS

401 Administration 402 Finance 403 Purchasing and Warehousing 404 Personnel General Office Maintenance 405 Fire Protection 406 407 Communications 408 Stationery 409 Data Processing 410 Local Taxes Insurance 411 412 Safety 413 First Aid 414 Job Training Dry Facilities 415 Plant Yard and Road Maintenance 416 Overtime Meals 417 418 **Delivery Service** Garbage Disposal 419 Yard Operation 420 421 Light Vehicles Operation Public Relations 422 423 Vancouver Hiring Office Water, Sewers, and Drainage Maintenance 424

ACCOUNT 500 - POWER

501	<ul> <li>Stockpile and Blending Systems</li> </ul>
502	Coal Conveying System
503	Waste Conveying System
504	Shovels
505	Support Facilities

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ACCOUNT 600 - ROYALTIES

ACCOUNT 700 - CONTINGENCY

#### 3.3 OPERATING COST ESTIMATING CRITERIA

A major component of the estimating criteria presented in this section is the rate of pay for all salaried staff and hourly-paid labour associated with mine operations. Tables\* are therefore provided of staff salaries, hourly labour rates, and equipment maintenance and servicing labour rates, as well as of the manpower requirements throughout the life of the project. Table 3-4 summarizes the manpower schedule for operations and maintenance on which the labour costs are based. Hourly costs of maintenance and equipment repair labour were applied to the operational hours considered necessary to achieve the required annual material movement. Hourly costs of operating labour were applied to scheduled working hours.

Supervision and management costs were estimated separately and are included in Account 300, General Mine Expense, and 400, Local Overheads.

This section also includes a listing of the equipment and materials parameters taken into account in estimating the operating costs of the project.

#### 331 STAFF SALARIES AND BENEFITS

Staff salaries were developed based on "A Survey of Salaries and Benefits in the B.C. Mining Industry at 1 July 1976" prepared for the Mining Association of B.C., with appropriate adjustments to October 1977, as well as in-house experience of current salary levels in operating mines. A summary of the salaries used is presented in Table 3-1.

#### 332 HOURLY LABOUR RATES

Hourly wage rates and benefits are developed from a review of current labour agreements in 10 B.C. mines. The rates used in the study are presented in Table 3-2. The payroll burden was estimated at 33% of the basic rate, and included the following benefits:

<sup>\*</sup> Tables 3-1 to 3-8 are grouped together at the end of the Estimating Criteria section, beginning on page 3-10.

#### % of Base Rate

Company Pension Plan	7.00
Union Pension Fund	1.00
Statutory Holidays	5.00
Vacations	10.00
Group Assurance	0.85
Unemployment Insurance Commission	1.35
Canada Pension Plan	1.05
Medical	1.30
Sick Benefits	1.20
Workers Compensation	2.50
Dental Plan	0.15
Tool and Clothing Allowance and Miscellaneous	1.60
TOTAL	33.0%

#### 333 MAINTENANCE AND SERVICE RATES

Equipment maintenance and service rates and maintenance labour rates, expressed as a cost per operating hour in October 1977 dollars, are shown in Table 3-3.

Allowance has been made in the rates for:

- replacement of tires, based on an estimate of tire life plus an additional 15% to cover the cost of day-to-day repairs and inspections
- repairs and replacement of parts on a day-to-day basis as may be required in a preventive maintenance program
- replacement of parts for major overhaul, whether performed "in-house" or by outside companies, including the use of support equipment such as cranes, etc. necessary to carry out the work
- fuel, oil, grease, filters, etc. based on consumption rates given by suppliers

The maintenance labour rates shown in Table 3-3 provide for shop labour and include an allowance for shop overhead, e.g., services, vehicles, and supervisory staff.

#### 334 FUEL COSTS

Fuel costs are developed from 1977 tenders received by B.C. Hydro for various locations in the Province of British Columbia. On this basis, the cost of gasoline is established at \$0.70 per Imperial gallon, and diesel fuel at \$0.566 per Imperial gallon.

#### 335 MINE OPERATING AND MANPOWER SCHEDULES

The schedule of operating and maintenance shifts at the mine is summarized below:

Operating and maintenance days per year	365 days/year
Mine production shifts	3 shifts/day
Field maintenance shifts	3 shifts/day
Shop maintenance shifts	3 shifts/day
General service shifts	l shift/day
Operating and maintenance hours/shift	8 hours/shift

Estimated peak manpower requirements over the life of the mine are summarized on Table 3-4, and are broken down according to five primary categories on Tables 3-5 to 3-8 as follows:

А. В.	Administration Reclamation and Pollution Control	Table 3-5
с.	Mine Supervision and Engineering	Table 3-6
D.	Mine Operating Labour	Table 3-7
E. F.	Maintenance Supervision Maintenance Labour	Table 3-8

### 336 MATERIALS PARAMETERS

The primary materials parameters, upon which calculations of productivities for the mine production loading equipment are based, are given below:

SWELL FACTORS	
Coal (fuel)	35%
Wastes above bedrock	
- granular surficials	20%
- cohesive surficials	30%
Bedrock wastes	30%
SDECIELC CDAVITY	
SPECIFIC GRAVIT	
Coal (fuel)	1.55
Wastes above bedrock	
- granular surficials	2.2
- cohesive surficials	2.2
Bedrock wastes	2.0

### 337 EQUIPMENT PARAMETERS

LOADING EQUIPMENT

	<u>Shovel</u>	Front-end Loader
Nominal bucket capacity Average fill factor 90° swing cycle (seconds) Cycles per 50 minute hour Scheduled hours/year Mechanical availability Effective utilization	16.8 m <sup>3</sup> 0.8 36 83 8760 85% 68%	11.5 m <sup>3</sup> 0.85 50 60 8760 75% 55%
TRUCKS	<u>Coal</u>	Wastes
Rated capacity Rated diesel/electric	109 tonnes	136 tonnes
wheel drive	1200 HP	1600 HP
Actual capacity used Total fixed cycle time	104 tonnes	128 tonnes
(minutes)	5.25	4,55
Scheduled hours/year	8760	8760
Mechanical availability	70%	70%
Effective utilization	57%	57%
	Nominal bucket capacity Average fill factor 90° swing cycle (seconds) Cycles per 50 minute hour Scheduled hours/year Mechanical availability Effective utilization TRUCKS Rated capacity Rated diesel/electric wheel drive Actual capacity used Total fixed cycle time (minutes) Scheduled hours/year Mechanical availability Effective utilization	ShovelNominal bucket capacity16.8 m³Average fill factor0.890° swing cycle (seconds)36Cycles per 50 minute hour83Scheduled hours/year8760Mechanical availability85%Effective utilization68%TRUCKSCoalRated capacity109 tonnesRated diesel/electric109 tonneswheel drive1200 HPActual capacity used104 tonnesTotal fixed cycle time5.25Scheduled hours/year8760Mechanical availability70%Effective utilization57%

#### DRILLING AND BLASTING

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# TABLE 3-1

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### Annual Salaries for Mine Staff

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Hat	Creek	Project	Mining	Feasibility	Report	1978

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	Base Rate Per Annum	Payroll Burden 26%	Rate Per Annum
	<u>, u u u</u>		
Mine Manager	43,000	11,200	54,200
Assistant Mine Manager	37,000	9,600	46,600
Superintendent - Mine	35,000	9,100	44,100
Superintendent - Maintenance	35,000	9,100	44,100
Superintendent - Mine Engineering	35,000	<sup></sup> 9,100	44,100
Senior Geologist	27,000	7,000	34,000
Geologists	21,000	5,500	26,500
Mine Engineer	25,000	6,500	31,500
Junior Engineer	19,000	4,900	23,900
General Foreman	28,000	7,300	35,300
Foreman	24,000	6,000	30,000
Chief Accountant	28,000	7,300	35,300
Purchasing Agent	24,000	6,200	30,200
Surveyor	19,500	5,100	24,600
Rodmen	15,500	4,000	19,500
Secretaries	15,000	3,900	18,900
Clerks	12,000	3,100	15,100
Typists	12,000	3,100	15,100
Technicians	17,500	4,500	22,000

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#### TABLE 3-2

#### Labour Rates for Mine Operations Staff (October 1977 Dollars)

#### Hourly Rate MINING\* 14.90 Bucket wheel operator ..... Shovel operator ..... 13.95 Belt wagon operator Bucket wheel oiler Stacker operator Rotary drillers ..... Crane operator - 27 tonne + 13.40 Dozer operator I Grader operator I FEL I Bucket wheel helper 13.05 Percussion driller Dozer operator Grader operator F E L operator Certified blaster Haul truck operator Shovel operator II Conveyor operator ..... 12.40 Mobile crane operator - 27 tonne Diamond driller Backhoe operator FEL - 4 cubic yard Personnel driver ..... 12.05 Dump truck driver Hjab truck driver 11.70 Flat deck truck driver ..... Shovel learner 11.35 Equipment learner ..... Blaster helper 11.00 Labourer ..... (Continued) \* hourly rates include: - trade base rate - shift differential - overtime allowance

#### Hat Creek Project Mining Feasibility Report 1978

- payroll burden

### TABLE 3-2 (Continued)

	Hourly	Rate
MAINTENANCE AND SHOPS*		
Certified journeyman - Electrician - Machinist - H.D. mechanic - Pipefitter - Gas mechanic - Welder	. 13.1	95
Boiler maker welder - certified Tradesman - uncertified I Carpenter Radio repair technician	. 13.	95
Tire repairman I Tradesman - uncertified II Boiler maker welder - uncertified Carpenter II Painter Automotive mechanic	. 13.	00
Tradesman - uncertified Tire repairman II	. 12.	65
Utilityman - labourer Lube serviceman Service truck driver	. 11.	95
Trades helper	. 11.	25
Labourer	. 10.	90

(Continued)

- -

hourly rates include:
trade base rate
shift differential

I

- overtime allowancepayroll burden

### TABLE 3-2 (Continued)

······································			
Hour	v.	Ra	te
	J		~~

# SERVICE LABOUR\*\*

Receiver/shipper	11.25
Warehouseman I	10.60
Fire department helper	10.30
Warehouseman II	10.00
Tool crib attendant	10.00
Fork lift operator	10.00
Labourer/janitor	9.40

\*\* above rates include payroll burden and overtime allowance, and assume no shift work.

### TABLE 3-3

### Equipment Maintenance and Service Rates and Maintenance Labour Rates

Item	Equipment M & S (\$/hr)	Maintenance Labour (\$/hr)
Drills	<u></u>	<u> </u>
Auger – truck mounted Air-track c/w compressor	24.00 21.00	16.00 14.00
<u>Shovels</u> (rope)		
16.8 m <sup>3</sup>	53.30	28.70
Front-End Loader		
5.4 $m_3^3$ 7.6 $m_3^3$ 11.5 m <sup>3</sup>	24.00 27.00 33.00	16.00 19.50 27.00
Haulage Trucks		
32 tonne 109 tonne w/coal box 136 tonne w/rock box	13.20 33.80 40.30	8.80 18.20 21.70
Scraper		
24 m <sup>3</sup> (tandem)	30.25	24.75
<u>Dozer</u> (track)		
CAT D6 CAT D8 CAT D9 CAT D9 w/ripper	9.75 17.20 20.50 21.75	5.25 9.30 11.00 11.75
Pumps		
10 cm diesel 15 cm diesel	3.60 4.20	0.90 1.05

### Hat Creek Project Mining Feasibility Report 1978

(Continued)
Item	Equipment M & S (\$/hr)	Maintenance Labour (\$/hr)
<u>Welders</u> (portable)		
600 A diesel 600 A electric	2.80 2.40	0.70 0.60
Miscellaneous Equipment		
Backhoe (1 m <sup>3</sup> ) Compressor (17 m <sub>3</sub> /min) Compressor (30 m <sup>3</sup> /min) Steam cleaner Lighting plant (3 kW) Gradall 50 kW generator Water wagon (45.5 kL) Crushing plant Calcium chloride spreader	6.50 7.50 10.50 6.00 6.50 18.75 6.00 19.50 36.00 2.40	3.50 2.50 4.50 4.00 3.50 6.25 4.00 10.50 24.00 0.60
Trucks (miscellaneous)	<pre>\$/month</pre>	<pre>\$/month</pre>
5-tonne service 3-tonne flatdeck (c/w 2-tonne crane) Tire truck Line truck Lube truck Fuel truck (13.6 kL) Dump truck (10-tonne) Sanding truck (10-tonne) Blasting truck Fire truck Ambulance Personnel bus (24 passenger) Pick-up (1-tonne) Pick-up (3/4-tonne) Lo-boy and tractor Hi-boy trailer	1,400 900 2,450 2,275 1,960 2,610 2,275 2,275 3,150 325 350 1,050 480 480 600 600	600 600 1,050 1,225 1,540 1,890 1,225 1,225 1,225 1,350 1,350 175 150 450 320 320 320 300 300

# TABLE 3-3 (Continued)

### Summary of Peak Operating Manpower Requirements

		Pro-	ΥE	A R		0	F	Р	RO	JE	CT
<u> </u>		Production	]	2	3	4	5	6-15	16-25	26-35	36-45
A.	Administration	72	90	90	90	90	90	90	90	90	-
Β.	Reclamation and Pollution Control	12	19	19	19	19	19	19	23	23	13
С.	Mine Supervision and Engineering	72	85	85	85	85	85	85	85	85	-
D.	Mine Operating Labour	285	328	335	339	351	370	386	412	347	-
E.	Maintenance Supervision	46	50	50	50	50	50	50	50	50	-
F.	Maintenance Labour	262	316	322	324	328	331	332	345	293	-
TOTA	L MANPOWER REQUIREMENTS	749	888	901	907	923	945	962	1005	888	13

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Hat Creek Project Mining Feasibility Report 1978

#### Schedule of Peak Manpower Requirements

#### A. Administration and Services

#### B. Reclamation and Environmental Protection

#### Hat Creek Project Mining Feasibility Report 1978

						• •				
	Y E Pre- Prod.	A 1	R 2	0 3	R 4	F 5	у Е 6- 15	R 16- 25	I 0 26- 35	D 36- 45
A. ADMINISTRATION AND SERVICES										
Mine Manager	1	1	1	۱	1	1	I	1	1	-
Assistant Mine Manager	1	1	۱	1	1	1	1	1	۱	-
Superintendent - Mine Production	1	۱	1	1	1	1	1	1	1	-
" - Mine Engineering	1	1	1	1	1	1	1	1	1	-
" – Maintenance	1	١	1	۱	1	1	1	1	1	-
" – Administration	1	۱	1	1	1	1	1	1	1	-
Comptroller	1	1	۱	1	1	1	1	1	1	-
Accounting	8	11	11	11	11	11	11	13	11	-
Purchasing and Warehousing	13	15	15	15	15	15	15	15	15	-
Personnel, Safety, and Security	17	19	19	19	19	19	19	19	19	-
Clerical, Typing, etc.	24	34	34	34	34	34	34	34	34	-
	69	86	86	86	86	86	86	86	86	-
5% Contingency	3	4	4	4	4	4	4	4	4	-
TOTAL ADMINISTRATION AND SERVICES	72	90	90	90	90	90	90	90	90	-

#### B. RECLAMATION AND ENVIRONMENTAL PROTECTION

Environmental Engineer	r	1	1	1	1	1	2	2	2	2
Environmental Technician	٦	1	1	1	1	1	1	1	1	1
Secretary	1	1	1	1	1	1	1	1	1	1
Pollution Control Supervisor	1	2	2	2	2	2	2	2	2	2
Pollution Control Engineer	1	2	2	2	2	2	2	2	2	2
Pollution Control Technician	1	1	1	1	1	1	1	1	1	1
Field Staff (summer only)	6	8	8	8	8	8	8	12	12	4
	12	18	18	18	18	18	18	22	22	13
5% Contingency	-	1	۱	۱	1	1	1	1	1	-
TOTAL RECLAMATION AND POLLUTION CONTROL	12	19	19	19	19	19	19	23	23	13

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#### Schedule of Peak Manpower Requirements

C. Mine Supervision and Engineering

#### Hat Creek Project Mining Feasibility Report 1978

	Y E Pre-	AR		0 8		Р	ER 6-	I 0	D 26-
	Prod.	1	2	3	4	5	15	25	35
MINE SUPERVISION									
Development Engineer	1	1	1	1	1	1	1	1	1
Shift Supervisor	4	4	4	4	4	4	4	4	4
Pit Foreman	4	8	8	8	8	8	8	8	8
Dumps Foreman	4	4	4	4	4	4	4	4	4
Roads and Pioneering Foreman	4	8	8	8	8	8	8	8	8
Blasting Foreman	1	1	1	1	1	1	۱	1	1
Dewatering Foreman	1	1	1	1	1	1	1	1	1
Conveying and Blending Foreman	8	8	8	8	8	8	8	8	8
Mine Clerk	4	4	4	4	4	4	4	4	4
Secretary	1	1	1	1	1	1	1	1	1
	32	40	40	40	40	40	40	40	40
ENGINEERING									
Mine Engineer	٦	۱	ĩ	1	1	1	r	1	1
Blasting Engineer	1	1	۱	۱	1	1	1	1	1
Contract Engineer	1	۱	۱	1	1	٦	1	1	1
R & D Engineer	-	1	1	1	1	1	1	1	1
Planning Engineer	6	7	7	7	7	7	7	7	7
Geologist	2	3	3	3	3	3	3	3	3
Geological and Grade Control Technician	14	15	15	15	15	15	15	15	15
Training Officer	2	2	2	2	2	2	2	2	2
Surveyor	4	4	4	4	4	4	4	4	4
Rodman	6	6	6	6	6	6	6	6	6
	37	41	41	41	41	4]	41	41	41
Combined Total	69	81	81	81	81	81	81	81	81
5% Contingency	3	4	4	4	4	4	4	4	4
TOTAL MINE SUPERVISION	72	85	85	85	85	85	85	85	85

AND ENGINEERING

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#### Schedule of Peak Manpower Requirements D. Mine Operating Labour Hat Creek Project Mining Feasibility Report 1978

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	Pre- Prod.	1	2	3	4	5	6- 15	16- 25	26- 35
Shovel Operator	12	16	16	16	16	16	16	20	12
Shovel Oiler	12	16	16	16	16	16	16	20	12
11.5 m <sup>3</sup> Front End Loader	8	8	8	8	8	8	8	8	8
Dozer Operator	42	44	44	44	44	45	50	52	54
Haul Truck Operator	40	58	64	64	68	80	84	88	50
Scraper Operator	8	8	8	12	12	12	12	16	18
Grader Operator	16	16	16	16	20	20	20	24	24
5.4 m <sup>3</sup> Front End Loader	6	8	8	8	8	8	8	8	8
Water Truck Operator	4	6	6	6	6	6	6	6	6
Crusher Operator	2	2	2	2	2	2	2	2	2
Gradall Operator	J	1	1	1	1	1	1	1	1
Backhoe Operator	1	1	1	1	1	1	1	1	٦
Compactor Operator	2	2	2	2	2	2	2	2	2
Drill Operator	2	4	4	4	4	4	4	4	4
Blasting Truck Driver	2	2	2	2	2	2	2	2	2
Coal Conveyor System Operator	31	31	31	31	31	31	32	32	32
Waste Conveyor System Operator	23	26	26	26	28	32	36	36	30
Warehouse and Miscellaneous Labour	36	36	36	36	36	36	36	36	36
	248	285	291	295	305	322	336	358	302
15% Contingency	37	43	44	44	46	48	50	54	45
TOTAL MINE OPERATING LABOUR	285	328	335	339	351	370	386	412	347

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	Hat Creek	Project Mining	Feas	ibilit	y Repo	rt 197	8			
		Y E Pre- Prod	A R	2	0 R	4	P E	R I 6- 15	0 D 16- 25	26-
	E. MAIN	TENANCE SUPERVI	SEON							
Equipment Shops										
Maintenance Supervisor		1	1	1	1	1	1	1	1	1
General Foreman		ł	}	1	ł	1	1	1	۱	1
Shop Boss		8	8	8	3	8	8	8	8	8
Field Boss		8	8	8	3	8	8	8	8	8
General Shops										
Shop Supervisor		1	1	1	1	1	1	1	1	1
Shop Boss		9	9	9	9	9	9	9	9	9
Electrical Foremar		2	2	2	Z	2	2	2	2	2
Electrical Boss		5	5	5	5	5	5	5	5	5
Planner		4	7	7	7	7	7	7	7	7
Training Officer		3	3	3	.3	3	3	3	3	3
Clerk			3		3	3.			ک	3
		44	48	48	48	48	48	48	48	48
5% Contingend	cy.	2	2	2	2	2	2	2		2
TOTAL MAINTENANCE SUPERV	ISION	46	50	50	50	50	50	50	50	50
	F. MAIN	TENANCE LABOUR								
Shop Labour										
H. D. Mechanic		50	70	70	70	70	70	67	71	58
Auto Mechanic		17	20	20	20	20	20	20	20	20
Tiremen		10	10	10	10	10	10	10	10	8
Welder		16	20	20	20	20	20	20	20	16
Machinist		10	12	12	12	12	12	12	12	10
Carpenter		8	8	8	8	8	8	8	8	8
Painter		2	2	2	2	2	2	2	2	2
Pipefitter		b 2	0	0 2	0 2	0	2	2	2	2
Sheetmetal Worker		43	43	43	43	2 ۵٦	43	43	43	43
Labourer		11	14	14	14	14	14	13	13	12
Field Labour										
FIELG LADUUM		A.,		~~	<b>C D</b>	0.0	22	22		20
Mechanic		20	22	22	12	12	22 12	12	24 12	20
Lube-Service Uperator		16	14 26	גו ור	31	36	39	44	49	30
Bolt Vulcanicer		2	-0	4	4	4	4	4	4	4
Crane Operator		4	4	4	4	4	4	4	4	4
			275	280	282	285	288	289	300	255
15% Contingen	су	34	41	42	42	43	43	43	45	38
YOTAL MAINTENANCE LADOU	_									

3.4 DIRECT MINING COSTS (Account 100)

The estimated direct mining costs, totalling \$986,338,000, are summarized in Table 3-9 and are discussed in further detail below.

#### Mining Waste above Bedrock (Account 101)

This account includes the costs of drilling, blasting, loading, dozing, and hauling to truck unloading stations of overburden materials. The costs of topsoil removal prior to overburden stripping are included in Account 104.

It is estimated that drilling and blasting will be required for approximately 31.3 million bank cubic metres of baked zone materials, consolidated tills, and hardpan. The costs of removal by a third party of 2.05 million bank cubic metres of overburden in Year -3 are also included.

#### Mining Bedrock Waste (Account 102)

Included in this account are the costs of loading, dozing, and hauling of waste materials to truck unloading stations. It is assumed that this material will be removed by the 16.8 cubic metre shovels; no provision has been made for drilling and blasting.

#### Conveying Waste (Account 103)

Included are the operating costs of waste conveying system and dump handling systems. The costs of relocating the dump conveying systems as the dumps are developed are also included.

#### Mining Coal (Account 104)

This account provides for the costs of drilling, blasting, loading, dozing, and hauling to truck unloading stations of run-of-mine and low-grade coal. The most severe digging conditions are anticipated in excavating D-Zone coal and provision has been made for the cost of drilling and blasting this material. Allowance has been made for drilling and blasting 105.3 million bank cubic metres of coal, or approximately 45% of the total coal production.

#### <u>Conveying Coal</u> (Account 105)

Included in this account are the operating costs of the inclined coal conveyor, truck unloading stations, the crushing plant, the overland conveyor to the generating station, and the low-grade coal handling equipment.

#### Coal Stockpiling and Blending (Account 106)

This provides the operating costs of the stackers, reclaimers, conveying, and clean-up equipment within the stockpiling and blending area.

#### Pit Maintenance (Account 107)

Included are the costs of pit dewatering, in-pit electrical maintenance, snow control, trailing cable maintenance, and road construction and maintenance. These items are described more fully below.

1. <u>Pit Dewatering</u> - provides for the installation, operation, and maintenance of the pit dewatering well system and in-pit sumps. Two well ring systems are required, the first to operate from the pre-production period to Year 15, and the second system to be phased in between Years 10 and 15 as the first ring system is mined out. Costs allow for repair and replacement of pumps, piping, tankage, well monitoring, and relocation costs of headers and piping as required to support pit development.

2. <u>Electrical Maintenance</u> - includes the cost of repairs, routine maintenance, periodic moves and replacement of the in-pit overhead power distribution system, power distribution system of the dumps, and dewatering.

3. <u>Snow Control</u> - includes costs of snow removal in the pit, along conveyorways, in the mine service area, and on all site roads. The costs also allow for spreading calcium chloride on all roads.

 <u>Trailing Cable</u> - includes the cost of handling, repair, and replacement of trailing cables for shovels, conveyors, stackers, and reclaimers.

5. <u>Road Construction and Maintenance</u> - includes the cost of digging, loading, hauling, placing, and compacting suitable road bases and surface materials, and for the additional costs of crushing road surface materials as required for the construction of the pit ring road, in-pit haul roads, roads to dumps, and indump roads required for truck and conveyor access.

Road maintenance costs provide for the operation of a maintenance fleet consisting of graders, scrapers, dozers, gradalls, and water wagons, supplemented by crushing and hauling equipment as required.

Operation of Mobile Equipment on Dumps (Account 108)

This item includes the operating costs of the fleet of 32-tonne trucks, front-end loaders, dozers, and graders required for the following activities at the dumps:

- loading and trucking construction material directly from the pit for construction of conveyor causeways and access road construction
- trucking material to dump areas inaccessible to spreaders
- levelling and grading spoil piles
- relocation of spreader conveyors

In addition, costs are included for third-party construction of the initial conveyor causeway and pad in the Medicine Creek dump, in-volving hauling and placing of approximately 4.5 million bank cubic metres of material in Years 16 and 17.

### Operation of Mine Service Vehicles and Equipment (Account 109)

The costs of operating mine service vehicles such as cranes, service trucks, tire truck, mobile cable reelers, vulcanizing equipment, steam cleaners, lo-boy and hi-boy, Hiab cranes, forklifts, ambulance, and firetrucks are included in this item.

#### Maintenance of Electrical Services (Account 110)

This provides for the costs of maintaining all site electrical services other than those for the pit and dumps as described in Account 107 above.

#### Operation of Fueling Stations (Account 111)

Included in this account are attendance labour and supplies, and repair labour and parts for the operation of the main fuel dump and in-pit fueling station. Also included are the operating costs of fuel and lube trucks.

### 3.5 RECLAMATION AND ENVIRONMENTAL PROTECTION (Account 200)

The estimated costs included for reclamation and environmental protection requirements amount to \$46,267,000 as shown in Table 3-10, and comprise staff, maintenance of greenhouses and storage buildings, stripping and stockpiling of surface soils, surface regrading, placement of buffer materials and growth media, revegetation, and subsequent maintenance.

Reclamation costs are ongoing to Year 45 and are based on the following schedule:

	Disturbed Land (hectares)	Reclaimed Land (hectares)
Pre-production Years -6 to -1	528	72
Years 1 to 15 inclusive	729	58
Years 16 to 35 inclusive	674	575
Years 36 to 45 inclusive	0	1147
Total	. 1931	1852

Activities associated with environmental protection include sampling, testing, and laboratory analysis involved in effluent and air quality control, together with soils analysis and testing required for the revegetation program.

#### 3.6 GENERAL MINE EXPENSE (Account 300)

The costs included in the general mine expense account total an estimated \$157,092,000. These costs are shown on Table 3-10 and include mine supervision, engineering, and geology, and the costs of such mine support facilities as pit communications and transport, mine training, close-spaced drilling, and pit safety.

An organization chart of the envisaged management structure follows this page. Corresponding staff salaries are included in Section 3.3.

#### Mine Supervision (Account 301)

This account provides for the salaries and expenses of the mine development engineer, shift supervisors, and foremen. The salary and expenses of the mine superintendent are included under administration costs in Account 400, Local Overheads.

#### Mine Engineering (Account 302)

Included are the salaries and expenses of the mine engineer, planning engineers and technicians, the drill and blast engineer, survey supervisor and crews, contracts engineer, and research and development engineer.

The salary and expenses of the superintendent of mine engineering are also included in Local Overheads, Account 400.

#### Mine Geology (Account 303)

The salaries and expenses of the senior mine geologist, geologists and technicians, and grade control technicians are provided for in this account.

#### Mine Communications (Account 304)

Included are the salaries of dispatchers and repair technicians, the costs of radio repair parts, and the annual replacement cost of truck and portable radios.





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Mine Transportation (Account 305)

This account provides for the operating and maintenance costs of personnel buses providing daily transport from the dry to the mine.

#### Mine Training (Account 306)

This account includes the salaries and expenses of mine training officers, the wages of hourly paid personnel while in training, and the costs of training supplies.

#### Close-Spaced In-Pit Drilling (Account 307)

These costs include the operation of drilling equipment and a vehicle required for geophysical logging of seam outline and quality control drilling.

#### Safety (Account 308)

This provides for the costs of hourly paid personnel while attending mine safety and rescue training programs.

#### Coal Quality Control (Account 309)

The cost of technicians engaged in belt sampling and laboratory testing of product is allowed for in this account.

#### Light Vehicles Operation (Account 310)

The operating costs of light vehicles assigned to the mine supervisory and technical personnel included in the general mine expense section are provided.

#### 3.7 LOCAL OVERHEADS (Account 400)

1.1.1.1

The estimated costs of local overheads amount to \$284,229,000. The cash flow for this account is shown in Table 3-11. Overhead costs generally comprise administration and office services and the operating costs of the mine support facilities. Twenty-four items have been identified and costed, and are described below.

Administration (Account 401) - provides for the salaries and expenses of the mine manager, assistant mine manager, superintendents of mine engineering, mine production, maintenance, administration and personnel, and comptroller, together with associated stenographic and secretarial personnel.

Finance (Account 402) - provides for the salaries and expenses of payroll, accounting, and cost supervisors, together with the salaries of stenographic, secretarial, and clerical personnel required for these functions.

Purchasing and Warehousing (Account 403) - provides for the salaries and expenses of the purchasing agent, buyers, expeditors, store foremen, warehouse supervisor, and the clerical and stenographic staff required in support of these functions.

Also included are the wages of hourly paid personnel required to operate the warehouse and the costs of warehouse utilities and supplies.

<u>Personnel</u> (Account 404) - provides for salaries and expenses of the personnel supervisor and assistants, receptionists, and stenographic and clerical personnel associated with this function. Also included are the salaries of the security and safety supervisors, assistant safety supervisors, and security, safety, and first-aid officers.

<u>General Office Maintenance</u> (Account 405) - provides for the costs of general office maintenance and upkeep including the costs of labour, supplies, and utilities.

Fire Protection (Account 406) - provides for the salaries of a fire chief and deputy fire chief, together with the maintenance costs of fire extinguishing equipment. The operating costs of fire trucks are included in the Direct Mining costs (Account 100) under operation of service vehicles.

<u>Communications</u> (Account 407) - provides for the operating costs of telephone, centrex, telegraph, and telex services, postage, and courier service, and includes the salary of one exchange operator.

<u>Stationery</u> (Account 408) - provides for the cost of stationery supplies and printing and duplicating costs.

<u>Data Processing</u> (Account 409) - provides for the cost of data processing service, including line time and supplies for payroll and accounting functions.

Local Taxes (Account 410) - provides an allowance for the payment of local taxes or grants to the municipality. Based on experience at other operating mines in British Columbia, the tax allowance was developed using a rate of 39 mils applied to the capital value of buildings and fixed equipment. The capital value of mobile mining equipment was not considered for local tax assessment.

<u>Insurance</u> (Account 411) - provides for the estimated costs of premiums for all risk insurance. The costs have been assessed at an average annual rate of 0.6% of total capital asset value.

<u>Safety</u> (Account 412) - provides for the costs of operating the mine safety program and includes such costs as safety and rescue training, safety awards, publicity, safety supplies, and medical examinations.

<u>First-Aid</u> (Account 413) - provides for the cost of first-aid supplies, and training, and the maintenance costs of the first-aid station.

<u>Job Training</u> (Account 414) - provides an allowance for staff supervisory training and courses.

<u>Dry Facilities</u> (Account 415) - provides for the operating cost of the mine dry, including costs of utilities and supplies, and main-tenance labour and supplies.

<u>Plant Yard and Road Maintenance</u> (Account 416) - provides for the maintenance of yards, roads, and parking areas in the mine service area. Maintenance of haul roads is included in Account 100, Direct Mining.

<u>Overtime Meals</u> (Account 417) - provides an allowance for the cost of meals for personnel required to work beyond the regular shift or normal working hours.

<u>Delivery Service</u> (Account 418) - provides for the operation of a delivery service between the mine site and local communites. Costs include drivers' wages and expenses. Vehicle operation is included in Light Vehicles Operation, Account 421 below.

<u>Garbage Disposal</u> (Account 419) - provides for the operation of a garbage truck providing daily garbage removal from the mine site and service area.

<u>Yard Operation</u> (Account 420) - provides for the hourly labour costs and supplies required for the daily operation of storage and scrap yards.

<u>Light Vehicles Operation</u> (Account 421) - provides for the operation and maintenance of pickups and crew cabs assigned to the functions included in this Local Overheads account.

<u>Public Relations</u> (Account 422) - provides for the salaries and expenses of a public relations officer, an assistant, and one stenographer.

<u>Vancouver Hiring Office</u> (Account 423) - provides for salaries and expenses, including rental of office space, for one hiring officer and one stenographer to be located in Vancouver to handle hiring of personnel from the Vancouver labour market.

<u>Water, Sewers, and Drainage Maintenance</u> (Account 424) - provides for the cost of maintaining the area drainage ditch system and for operation and maintenance of the water treatment plant, water distribution system, sewage disposal system, and treatment lagoons.

### 3.8 POWER (Account 500)

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The estimated cost of power totals \$86,784,000 as shown in Table 3-11. The costs are developed based on annual estimated kWh consumption at a rate of 15 mils per kWh.

#### 3.9 ROYALITIES (Account 600)

The cost of royalties, amounting to \$255,130,000, is estimated based on the annual tonnage of delivered coal at a cost of \$0.73 per tonne. The royalty cost per tonne is derived from the cost of \$0.75 per long ton provided by B.C. Hydro.

### 3.10 CONTINGENCY (Account 700)

As in the case of the capital cost contingency, the operating cost contingency was estimated following assessment of the variable risks involved in the major cost categories. An operating contingency of \$199,774,000 has been allowed for; the cost areas considered and the contingency factors assessed against each category are listed below.

Category	Contingency Factor
Operating Labour - Staff Operating Labour - Hourly	10% 15% 20%
Repair Supplies	10% 10%
Power Cost Royalties	-

No contingency is assessed on power costs or royalties since both these costs are based on unit costs provided by B.C. Hydro. It is considered that contingency requirements, if any, can therefore be better assessed by B.C. Hydro. In addition to the above categories, it was considered desirable to include a special contingency against possible instability in the slide area or other mine slope areas requiring major earthmoving operations. Provision has been made for removal of 35 000 000 cubic metres of material at a unit cost of \$1.79 per cubic metre, or \$62,000,000, bringing the total contingency allowance to \$261,774,000.

In estimating contingency factors, a higher risk assumption was considered necessary in the hourly paid labour categories where availability of qualified personnel can vary widely depending on market conditions. Repair labour is subject to additional risk proportionate to the degree of care exercised in the operation of the equipment.

The contingency allowance is not intended to cover unforeseeable risks such as major labour disruptions or events of force majeure of any kind.



## SCHEDULE OF OPERATING COSTS SUMMARY CASH FLOW TABLE 3-9

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

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				+ •	$\vdash$				+	┟╴──┾	+	+				•	+ +			-						+	1						1							+		- +	-+	tt	<del> </del> <del> </del>	
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					-																++									÷			+		<u> </u>									<u></u> +	<b> </b>	
TOTA	AL OPERATING COSTS	2402	2 2211	10764	27505 3	5116 45	662 479	957 50686	5 54822	57230 9	57938	57304	58322 5	8023 592	25 5950	59895	59499	50964 60	162 713	88 69263	5 61520	63033 6	51971 6	457 6189	92 61930	62066	62577	53405	50325 5	50648   50	0128 51	240 4997	8 49966	49987	49981	49998 2	2319 2	2319 19	24 13	50 58	34 371	l 371	299	66	66	2077614
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TABLE 3-9



# SCHEDULE OF OPERATING COSTS

## ACCOUNT 100 - DIRECT MINING

# ACCOUNT 200 - RECLAMATION AND ENVIRONMENTAL PROTECTION ACCOUNT 300 - GENERAL MINE EXPENSE

TABLE 3-10

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

ACCOUNT		PRE	-PR	oduc	TION	PERIO	D				_										PRO	DUCTIO	N P	ERIOD									_								$\square$		1	POST	PRO		ION PF			
CODE	DESCRIPTION	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9 1	0   1	1	2 1	3 1	4 1	5 16	17	18	19	20	21	22	23	24 2	5 20	6 27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42 4	, <mark>34</mark> /	4 45	TOTAL
100	DIRECT MINING					[																						Τ																_						
101	Mining Waste Above Bedrock			34	6697	6833	5244	7367	7505	6689	6058	5920	6595	6879	6879 6	879 6	578 55	567 5	557 5	557 55	57 55	67 660	665	4 6654	6654	6653	6484 6	215 9	5839	5839 584	43 349	97 214	42 2008	2026	2026	1896	1898	1898	1894	1894										198583
102	Mining Bedrock Waste					745	1089	1515	1483	1633	1818	2524	2585	2395	2395 2	395 26	521 33	336 33	336 3	336 33	36 33	46 424	9 453	6 4536	4534	4534	4431 4	761	5035	5035 503	35 314	46 322	20 3239	3240	3235	3234	3230	3230	3230	3230										118808
103	Conveying Waste						1203	1961	1617	1566	2070	1934	1759	1744	2566 2	20	258 20	046 20	006 1	797 26	89 20	09 237	5 248	1 2041	3302	2343	2343 2	343 2	2343	2343 286	50 119	56 114	1 1590	1135	2011	1177	1177	1177	1152	1137										68710
104	Mining Coal						411	1310	2163	3164	4346	5346	5089	4398	4398 4	398 49	502 51	.09 5:	119 5	101 51	01 51	11 455	3 413	0 4130	4130	4130	3690 3	835	3876 3	3876 38	376 335	58 351	13 3513	3508	3498	3498	3517	3517	3517	3517										140248
105	Conveying Coal						392	539	602	686	825	899	899	899	899 8	99 89	9 89	9 89	99 8	99 8	99 8	99 89	899	899	899	959	1003 1	.003	1003	1003 10	003 100	03 100	3 1003	1003	1003	1003	1003	1003	1003	1003										32533
106	Coal Stockpiling and Blending						454	642	712	805	875	875	875	875	875 8	75 81	75 87	5 81	75 8	75 8	75 8	75 87	5 875	875	875	875	875	875	875	875 87	75 87	75 875	5 875	875	875	875	875	875	875	875		$\square$								30613
107	Pit Maintenance		1928	838	575	2677	3288	4397	4537	4757	5092	5172	5067	5013	5007 5	142 60	045 62	31 63	57 6	326 64	20 59	08 592	2 579	1 5787	5787	5789	5890 6	043 (	6036	6036 60	038 613	31 471	10 4682	4682	4672	4542	4542	4542	4542	4542										197483
108	Operation of Mobile Equipment on Dumps			ļ		2083	1311	1474	919	694	803	839	876	876	876 8	76 87	16 94	9 94	19 9	49 10	097 13	53 922	767	5 1544	1544	1544	1500 1	.500 :	1500	1500 15	500 150	00 150	0 1500	1500	1500	1500	1588	1588	1588	1588		$ \longrightarrow $			$ \rightarrow $				′	62275
109	Operation of Mine Service Venicles				474	1087	1348	1590	1590	1590	1590	1590	1590	1590	1590 1	590 15	590 15	i <b>90</b> 15	590 1	590 19	590 15	90 159	) 159	J 1590	1590	1590	1590 1	.590 2	1590 2	1590 15	590 159	90 159	20 1590	1590	1590	1590	1590	1590	1590	1590		$ \longrightarrow $			$\rightarrow$				'	58559
110	Maintenance of Electrical Services			ļ			6 <b>96</b>	1296	1296	1296	1296	1296	1296	1296	1296 1	296 12	96 12	96 12	296 1	296 12	296 12	95 129	i 129	5 1296	1296	1296	1296 1	296	1296 :	1296 12	296 129	96 129	6 1296	1296	1296	1296	1296	1296	1296	1296	h	<b>⊢</b> −−−			$\rightarrow$					46056
111	Operation of Fueling Stations			<b> </b>		485	485	900	900	900	900	900	900	900	900 90	<u>xo 90</u>	xo 90	0 90	x0 94	00 90	20 9	00 900	900	900	900	900	900	900 900	900 9	900 90	00 90	00 900	900	900	900	900	900	900	900	900		$\vdash$			$\square$					32470
ļ																								<u> </u>							_		_		$\perp$							<b>⊢</b>							'	L
	TOTAL ACCOUNT 100		1928	872	7746	13910 1	15921	22991	23324	23780	25673	27295	27531 2	26865	27681 27	308 282	40 28	798 28	884 2	8626 297	760 28	854 3849	4 3682	1 30252	31511	5 <b>0613</b>	30002 3	0361 3	30293 30	0293 308	316 244	152 2189	0 2219	6 21755	22606	21599	21616	21616	21587	21572			$ \rightarrow $						'	986338
				L																			-	<b></b> ′											<u> </u>							⊢							'	
200	RECAMATION AND ENVIRONMENTAL PROTECTION			<u> </u>													.   .						_	<u> </u>									_	_	<u> </u>	╞╴╴╞					⊢−−┤	$\vdash$			<u> </u>				/	
																								<u> </u>							_			_	ļ							$ \longrightarrow $			$\rightarrow$					
201	Staff Salaries	L	71	212	212	212	212	276	276	276	276	277	337	337	336 3	36 33	6 3	38 3	37 3	337 33	57 3	37 336	336	336	336	336	374	374 3	374 3	374 37	4 37	74 374	374	374	374	374	374	374	374	374	374	374	374	256 2	256 1	121	<u>121</u> E	7 36	6 36	14973
202	Vehicles and Buildings		41	82	104	124	132	132	132	132	132	132	132	132	132 2	.33 14	5 1	45 1	45 :	145 14	15 1	45 14	145	145	145	145	145	145 ]	145 ]	145 14	15 14	\$5 145	145	145	145	145	145	145	145	145	145	145	145	90	90	48	48 4	<u>1 20</u>	0 20	6234
203	Earthworks			701	652	695	257	190	186	252	182	197	197	288	197 1	99 29	0 1	99 2	177	199 19	9 3	52 486	486	486	486	486	486	664 7	764 7	764 67	5 64	2 642	642	642	735	670	643	661	684	714	1272	1272	937	654	4					22316
204	Nursery Operation				4	3	3	20	20	20	20	20	20	20	20 2	20 2	0 2	0 2	20 2	20 20	3	2 32	32	32	32	32	32	32	32 3	32 32	2 32	2 32	32	32	32	32	32	32	32	32	32	32	32						'	1058
205	Revegetation	. — I		11	11	11	11	4	5	5	5	5	5	5	5	5 5	<u> </u>	5	5	5 5	5	5 20	20	20	20	20	20 2	20	20 2	20 20	20	) 20	20	20	20	20	20	20	20	20	146	146	145	145	146 ]	146 7	146 14	3		1686
<b>_</b>				ļ	└─── │									+								_		<u> </u>	┞				_+					-	<u> </u>							ı							/	<b></b>
	TOTAL ACCOUNT 200		112	1006	983	1045	615	622	619	685	615	631	691	782	690 6	93 79	6 7	07 7	84	706 70	X6 8	31 1019	1019	, 1019	1019	1019	1057 1	235 1	1335 1	1335 12	46 121	3 121	3 1213	1213	1306	1241	1214	1232	1255 1	1285	1969	1969	1634 7	1146	496 3	515 ?	<u>315 2</u>	<u>54 5</u> E	<u>6 56</u>	46267
· • · · · ·				┞—	<u> </u>																			'								_	_		<u> </u>					$\rightarrow$		r		<del>_</del>				_+	<u> </u>	L
300	GENERAL MINE EXPENSE									<del> </del>										+		_	_	<u> </u>	<u> </u>						_		_							$\rightarrow$				$\rightarrow$			$\rightarrow$	_+_	<b>_</b> /	L
																							_{	<u> </u>	<b> </b>			.	_+				+		_—	├						r			<u> </u>	·	$\rightarrow$	_+_	_ <b></b> /	
301	Mine Supervision					662	951	1191	1191	1191	1191	1191	1191	1191	1191 11	.91 11	.91 11	91 11	.91 11	191 11	91 11	91 1191	119	1191	1191	1191	1191 1	191 1	191 1	1191 119	1 119	01 119	1 1191	1191	1191	1191	1191	1191	1191 1	1191		r		<u> </u>	$\rightarrow$			_+	_ <b></b> /	43298
302	Mine Engineering			<b>_</b>	┝╴╶┝	297	560	634	634	634	634	634	634	634	634 6	34 63	4 6	34 63	4 63	54 63	54 6	54 634	634	634	634	634	634 (	634 6	534 6	534 63	4 63	4 63	4 634	634	634	634	634	634	634	634		/						-+-	_ <b></b> /	23047
303	Mine Geology			ļ		64	240	425	425	425	425	425	425	425	425 4	25 42	5 4	25 42	25 42	25 42	25 4	25 425	425	425	425	425	425	425 4	25 4	425 42	25 42	15 42	5 425	425	425	425	425	425	425	425				$\rightarrow$			<u> </u>		/	15179
304	Mine Communications					83	206	299	299	299	299	299	299	299	299 2	99 29	9 2	99 29	9 29	29 29	9 2	9 299	299	299	299	299	299	299 2	299 2	299 29	9 29	9 29	9 299	299	299	299	299	299	299	299		<u> </u>							/	10754
305	Mine transportation	┝		<u> </u>	$\left  \right $	108	161	189	183	183	183	18.9	183	189	19.9	.89 18	a   1	99 18		18   18		189	189	189	169	183	189	199 1	188 1	189 18	9 18	18	9 189	189	189	189	189	189	189	189		+		<u> </u>		-+	<u> </u>		/	6884
306						475	493	492	492	492	492	492	492	492	492 4	92 49		92 49	49	#2   49	12 4	492	492	492	492	492	492 4	492 4	192 4	492 49	2 49	12 49	2 492	492	492	492	492	492	492	492									!	_18188
307	Close-Spaced in-Fit Uniling					47	198	198	198	198	198	198	Tag	198	198 ]	.98 19	8 1	98 19 7 4	19   19 -	48   19	8 1	48 198	198	- 198	198	198	198 :	198 1	.98 1	198 19	8 19	8 19	8 198	198	198	198	198	198	198	198		+			-+-		$\rightarrow$	_+_	_ <b></b> ]	7128
3U8				-		41	41	41	41	41	41	41	41	41	41 4	4	4	4		+r 4	Hr -	¥r 47	47	47	47	47	47	47	47	47 4	7 47	47	47	47	47	47	47	47	47	47			<u> </u>		$\rightarrow$			_+-	/	1739
309	Coal Quality Control				┝╌┝		428	428	428	428	428	428	428	428	428 4	28 42	8 4	28 4	28 42	28 42	8 4	28 428	428	428	428	428	428	428 4	428 4	428 42	28 42	28 428	428	428	428	428	428	428	428	428	<u> </u>	<del> </del>			<u> </u>			_+	_ <b></b> /	15408
310	Light Vehicle Operation	┝──┤				232	395	424	424	424	424	424	424	424	424 4	24 42	4 4	24 4	24 42	24 42	4 4	24 424	424	424	424	424	424	424 4	424 4	424 42	4 42	24 424	424	424	424	424	424	424	424	424						$ \longrightarrow $			_ <b></b> /	15467
				<b>_</b>	┝																			+									_ <u>_</u>		<u> </u>								$\rightarrow$	<b> </b>					]	
	TOTAL ACCOUNT 300					1968	3679	4327	4327	4327 4	1327	4327	4327	4327 4	4327 43	27 43	27 43	27 43	27 43	327 43	27 43	27 4321	4327	/ 4327	4327	4327	4327 4	327 4	4327 43	327 432	27 432	27 432	4327	4327	4327	4327	4327	4327	4327	4327										157092



TABLE 3-10

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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY HAT CREEK PROJECT MINING FEASIBILITY REPORT

## SCHEDULE OF OPERATING COSTS ACCOUNT 400 - LOCAL OVERHEADS ACCOUNT 500 - POWER TABLE 3-11

ACCOUNT		PRE-F	RODU	ICTION	PERIO	D												PRO	DUCTIO	ON PER	RIOD															T			POST PF		TION PEF			
CODE	DESCRIPTION	-6 -	5 -4	-3	-2	-1	1	2 3	3 4	5	6	7 8	9	10	11	12	13	14 19	5 16	17	18	19	20	21 22	23	24	25	26 27	28	29	30	31 32	2 3	3 34	35	36	37	38	39 40	41	42 43	44	45 7	<b>FOTAL</b>
400	LOCAL OVERHEADS																																											
			L																													_												
401	Administration				427	433	433	433 43	33 433	433	433	433 433	433	433	433	433	433	433 43	3 433	433	433	433	433	433 433	433	3 433	433	433 433	433	433	433	433 43	53 4	33 433	433			l l						16015
402	Finance				224	255	318	318 3	18 318	318	318	318 316	318	318	318	318	318	318 31	.6 318	318	318	318	318	18 318	318	3 318	318	318 318	318	318	318	318 31	.6 3	18 318	318									11609
403	Purchasing and Warehousing				691	988 ]	182	1182 110	32 1182	1182	1182 1	182 118	2 1182	1182	1182	1182	1182 1	182 116	82 1182	1182	1182	1182	1182	1182 1182	1182	2 1182 1	1182	1182 1182	1182	1182	1182 1	182   118	12 11	82 1182	1182									43049
404	Personnel				852	946	564	564 56	54 564	564	564	564 564	564	564	564	564	564	564 56	4 564	564	564	564	564	564 564	564	1 564	564	564 564	564	564	564	564 56	64 5	64 564	564									21538
405	General Office Maintenance				95	101	101	101 10	01 101	101	101	101 101	101	101	101	101	101	101 10	1 101	101	101	101	101	101 101	101	l   101	101	101 101	101	101	101	101 10	1 1	01 101	101									3731
406	Fire Protection				92	138	173	173 1	73 173	173	173	173 173	173	173	173	173	173	173 17	3 173	3 173	173	173	173	173 173	173	3 173	173	173 173	173	173	173	173 17	3 1	73 173	173									6285
407	Communications				96	123	210	210 2	10 210	210	210	210 210	210	210	210	210	210	210 21	0 210	210	210	210	210	210 210	210	210	210	210 210	210	210	210	210 21	0 2	10 210	210									7569
408	Stationery				50	60	60	60 (	60 60	60	60	60 60	60	60	60	60	60	60 6	0 60	60	60	60	60	60 60	60	0 60	60	60 60	60	60	60	60 6	0	60 60	60			ட						2210
409	Data Processing				240	276	300	300 30	300 300	300	300	300 300	300	300	300	300	300	300 30	0 300	300	300	300	300	300 300	300	300	300	300 300	300	300	300	300 30	0 3	00 300	300									11016
410	Local Taxes			246	595	802	802	815 8	15 841	841	906	918 958	1074	1074	1074	1074	1074 1	.074 107	4 1074	1086	1086	1112	1112	1126 1126	1226	5 1242	1242	1242 1242	1254	1254	1254 1	254 125	4 12	54 1254	1254									39905
411	Insurance				1660	2000	1194	1265 130	00 1300	1300	1300 1	300 1400	1400	1400	1400	1400	1400 1	400 140	00 1500	1500	1500	1500	1500	1500 1500	1500	1500	1500	1500 1500	1500	1500	1500 1	500 150	0 15	00 150	) 1500									53819
412	Safety				38	49	63	63 63	3 63	63	63	63 63	63	63	63	63	63	63 6	3 63	63	63	63	63	63 63	63	63	63	63 63	63	63	63	63 63	6	3 63	63	Τ								2292
413	First Aid			1	28	33	37	37 3	7 37	37	37	37 37	37	37	37	37	37	37 3	7 37	37	37	37	37	37 37	37	37	37	37 37	37	37	37	37 37	3	7 37	37	1				-		1		1356
414	Job Training				18	22	26	26 26	5 26	26	26	26 26	26	26	26	26	26	26 2	6 26	26	26	26	26	26 26	26	26	26	26 26	26	26	26	26 26	; 21	6 26	26					1				950
415	Dry Facilities			ľ	163	220	294	294 29	94 294	294	294	294 294	294	294	294	294	294 2	94 29	4 294	294	294	294	294	294 294	294	294	294	294 294	294	294	294	294 29	4 2	94 294	294					ŀ				10673
416	Plant Yard and Road Maintenance					150	200	200 20	200 200	200	200	200 200	200	200	200	200	200 2	200 20	0 200	200	200	200	200	200 200	200	200	200	200 200	200	200	200	200 20	0 21	00 200	200	T		, T						7150
417	Overtime Meals				64	96	154	154 1	54 154	154	154	154 154	154	154	154	154	154 1	54 15	4 154	154	154	154	154	154 154	154	154	154	154 154	154	154	154	154 15	4 1	54 154	154					1				5550
418	Delivery Service				94	110	155	155 1	55 155	155	155	155 155	155	155	155	155 2	155 1	.55 15	5 155	155	155	155	155	155 155	155	155	155	155 . 155	155	155	155	155 15	5 1	55 155	155					1				5629
419	Garbage Disposal				69	103	103	103 10	03 103	103	103	103 103	103	103	103	103	103 1	.03 10	3 103	103	103	103	103	103 103	103	103	103	103 103	103	103	103	103 10	3 10	03 103	103	T								3777
420	Yard Operation				136	166	302	302 30	02 302	302	302	302 302	302	302	302	302 3	302 3	602 30	2 302	302	302	302	302	302 302	302	2 302	302	302 302	302	302	302	302 30	12 30	02 302	302			,		1				10872
421	Light Vehicle Operation				163	163	163	163 16	53 163	163	163	163 163	163	163	163	163	163 1	.63 16	3 163	163	163	163	163	163 163	163	163	163	163 163	163	163	163	163   16	3 10	63 163	163	1	++	, —		1				6031
422	Public Relations				125	125	125	125 12	25 125	125	125	125 125	125	125	125	125 1	125 1	.25 12	5 125	125	125	125	125	125 125	125	125	125	125 125	125	125	125	125 12	5 12	25 125	125									4625
423	Vancouver Hiring Office		-		60	60	60	60 (	50 60	60	60	60 60	60	60	60	60	60	60 6	0 60	60	60	60	60	60 60	60	) 60	60	60 60	60	60	60	60 6	0 0	60 60	60									2220
. 424	Water, Sewers, and Drainage Maintenance			166	166	166	166	166 16	5 <b>6</b> 166	166	166	166 166	166	166	166	166	166 1	166 21	6 166	166	166	166	166	166 166	166	166	166	166 166	166	166	166	166 16	6 10	66 166	166									6358
																																								1				
	TOTAL ACCOUNT 400			412	6146	7585	7185	7269 730	7330	7330	7395 7	407 754	7 7663	7663	7663	7663	7663 7	663 77	13 7763	7775	7775	7801	7801	7815 7815	7815	5 7931	7931	7931 7931	L 7943	7943	7943 7	943 794	3 734	43 794	5 7943									284229
	/																																			Γ.								
	/																																			T								
500	POWER																										1									1-				1				
																																			1					1				
501	Stockpile and Blending Systems					7	51	78 11	1 144	156	157 1	157 15	7 157	157	157	157	157	157 1	57 146	146	146	146	146	146 146	146	146	146	123 123	123	123	123	123 12	3 12	3 123	123									4807
502	Coal Conveying System					34	219	336 48	2 626	675	680 6	680 68	0 680	680	680	680	680	680 68	80 632	632	632	632	632	632 632	632	632	632	535 535	535	535	535	535 53	5 539	5 535	535							1		20842
503	Waste Conveying System				1	1061 1	164	1085 95	6 920	858	1120 11	120 112	1120	1120	786	1000 1	1.000 1.	130 113	30 1131	1 1131	1131	1131	1126	1270 1270	1260	1270 1	1270	860 860	820	820	820	820 82	0 820	0 820	820									36970
504	Shovels				39	175	215	241 24	2 264	277	277	277 27	7 277	277	277	277	277	277 27	337	337	337	337	337	337 337	337	337	337	337 179	167	167	167	167 16	7 16	7 167	167				1					9445
505	Support Facilities	<b>f</b> †			300	350	402	402 40	2 402	402	402	402 40	2 402	402	402	402	402	402 40	12 402	402	402	402	402	402 402	402	402	402	402 402	402	402	402	402 40	2 403	2 402	402	1	+	+		+		-		14720
		╏──┤──											-	<u> </u>	<b>†</b>							<u>†          </u> †			+		1		+					<u> </u>	+	1	+ +		<u>+</u>	+		1		
	TOTAL ACCOUNT 500			- <del> </del> -	339 1	1627 2	2051	2142 219	3 2356	2368	2636 26	636 263	5 2636	2636	2302	2516	2516 20	646 264	46 2648	2648	2648	2648	2643	2787 2787	2787	2787 2	2787 2	2257 2099	2047	2047	2047	2047 204	7 204	47 204	2047	1	++					1		86784

CANADIAN \$ 000'S OCTOBER 1977



TABLE 3-11

### SECTION 4

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COST ESTIMATES FOR THE COMBINED BUCKET WHEEL/SHOVEL/TRUCK/CONVEYOR SYSTEM

### 4.1 SUMMARY

A preliminary cost estimate of the combined bucket wheel/shovel/ truck/conveyor system was prepared for comparison with the costs of the shovel/truck/conveyor system.

The bucket wheel portion of the estimate, including capital and operating costs of bucket wheel excavators, belt wagons, in-pit conveyor systems, control and communications centre and distribution, and auxiliary equipment required for the operation of the bucket wheel system was developed by North American Mining Consultants Inc. (NAMCO). The shovel/truck portion of the estimate was prepared by CMJV.

No detailed planning was carried out for the out-of-pit portion of the system. The estimated costs for out-of-pit transport of coal and wastes, dump control, and mine support facilities were derived from the costs developed in the shovel/truck/conveyor study. The development of the capital and operating cost estimates is discussed in Sections 4.2 and 4.3, respectively.

Summarized below are the major costs associated with both the combined bucket wheel/shovel/truck/conveyor system and the recommended shovel/truck/conveyor system. All costs are presented in October 1977 dollars. Where appropriate an exchange rate of 2.15 DM = \$1.00 Canadian has been used.

	Combined Bucket Wheel/ Shovel/Truck/ Conveyor System (\$ 000's)	Shovel/Truck/ Conveyor System (\$ 000's)
Total Operating Cost	\$1,428,082	\$1,473,926
Total Capital Cost	447,856	449,470
Total Power Cost	95,631	86,784
Total Royalty Cost	255,130	255,130
Total Contingency	424,886	321,283
	\$2,651,585	\$2,586,593

It should be noted that after completion of the estimate for the combined system, adjustments were made to the operating cost estimate for the shovel/truck/conveyor system which resulted in a cost increase over the life of the mine of some \$44,000,000. While this increase is reflected in the cumulative cash flow for the shovel/truck/conveyor system shown in Table 4-1, it was not considered necessary in view of the final conclusions to incorporate these adjusted costs into the combined bucket wheel/shovel/truck/ conveyor estimate. Had such adjustments been made the difference in total cash flow between the two systems would have been approximately \$100,000,000, rather than \$64,992,000 as shown above.

#### TABLE 4-1

### Cost Comparison of

#### Shovel/Truck/Conveyor System and Combined Bucket Wheel/Shovel/Truck/Conveyor System

Total Cumulative Capital + Operating Costs

#### (\$000 1977)

#### Hat Creek Project Mining Feasibility Report 1978

	A	B	
Year	Bucket Wheel/Shovel Truck/Conveyor	Shovel/Truck/Conveyor	A Minus B
-6	2,501	2,350	151
-5	10,778	10,809	(31)
-4	28,320	28,418	(23, 922)
-2	249,643	221,357	28,286
-1	376,226	304,533	71,693
1	458,732	362,426	96,306
2	522,673	423,618	99,055
3 4	663 016	545.061	117,955
5	735,930	619,259	116,671
6	807,861	681,081	126,780
7	879,557	745,211	134,346
8	957,928	812,030	151,607
10	1,112,897	950,506	162,391
11	1,181,780	1,019,045	162,735
12	1,245,381	1,081,565	163,816
13	1,314,063	1,155,830	158,233
14	1,448,670	1,291,846	156,824
16	1,524,716	1,372,549	152,167
17	1,592,978	1,446,590	146,388
18	1,659,033	1,520,569	138,464
19 20	1,734,510	1,689,898	114,953
21	1,867,744	1,753,860	113,884
22	1,929,782	1,818,690	111,092
23	1,996,421	1,889,793	106,628
24	2,062,837	2 024 332	103,406
26	2,180,246	2,082,774	97,472
27	2,234,547	2,139,886	94,661
28	2,286,750	2,195,554	91,196
29	2,343,766	2,257,053	80,713
31	2,447,488	2,369,533	77,955
32	2,497,426	2,423,985	73,441
33	2,545,379	2,474,657	70,722
34	2,593,546	2,525,870	6/,6/6 6/ 382
35 36	2,640,943	2,578,978	64,528
37	2,645,997	2,581,326	64,671
38	2,648,065	2,583,274	64,791
39	2,649,600	2,584,722	64,878
40	2,650,268	2,585,352 2,585,733	64,910
41	2,651,102	2,586,138	64,964
43	2,651,422	2,586,439	64,983
44	2,651,514	2,586,526	64,988
45	2,651,585	2,586,593	04,992

#### 4.2 CAPITAL COST ESTIMATES

The capital costs of the combined bucket wheel/shovel/truck/conveyor system have been identified according to the same code of accounts tabulated in Section 2.2. In this section, discussion is given only to those accounts which differ from the shovel/truck/conveyor capital cost estimates. The following cost centres are unchanged:

Account 90000 - Engineering and Construction

Account 92000 - Buildings and Structures

Account 98000 - Reclamation and Environmental Protection

Costs in the following capital cost centres are substantially different from those for the shovel/truck system:

Account 91000 - <u>Mine Property Development</u> In developing these costs, the road construction and maintenance work for the combined system was assumed to be 70% of that of the shovel/truck system.

Account 93000 - <u>Pit Services</u> As the combined system requires a far more complicated communications network than the shovel/truck system, higher capital costs were estimated by NAMCO for this account.

Account 94000 - Mining Equipment The capital costs for the mining equipment were developed in two sections - one by NAMCO and one by CMJV.

The costs estimated by NAMCO included bucket wheel excavators, belt wagons, the belt conveyor system within the pit, control and communications systems, the civil works for the conveyor distribution station and the central control building, and the initial spare parts and auxiliary equipment for the operation of the bucket wheel excavator system.

CMJV developed estimates for the loading equipment, i.e., shovels, and front-end loaders, and the associated truck fleet and auxiliary equipment for the shovel/truck system. Also included were frontend loaders, dozers, trucks, graders, scrapers, drills and blasting equipment, and the necessary support equipment required for conveyor shifting, topsoil removal, drilling and blasting, pit clean-up, dump preparation, and stockpiling of low-grade coal. The criteria used to determine the equipment fleet for these operational functions were identical to those used for the shovel/ truck system.

Account 95000 - <u>Coal Conveying, Crushing, and Blending Equipment</u> The capacities of the hoppers, conveyors to the blending system, stackers, and crushing equipment were increased from those used for the shovel/truck system to reflect the higher peak capacities of the combined system. Capital cost estimates for this account are therefore higher.

Account 97000 - <u>Waste Disposal Equipment</u> The capital costs for this account are separated into two groups conveying equipment, and mobile equipment employed in dump operations.

The capital costs of the latter group were assumed to be the same in the combined system as those developed for the shovel/truck system. However, the capacities of the conveyors, hoppers, and spreaders were increased over those designed for the shovel/truck system to reflect the higher peak capacities of the bucket wheel excavators. Costs were therefore increased accordingly.

#### 4.3 OPERATING COST ESTIMATES

As with the capital cost estimate, the items discussed in this section are identified according to the code of accounts used for the shovel/truck/conveyor system (see Section 3.2 for the complete operating cost code of accounts). The operating costs for the mining equipment developed by NAMCO were added to those developed by CMJV to determine the "order-of-magnitude" total operating costs for the combined system. Costs in the following areas are assumed to be the same:

> Account 108 - Operation of Mobile Equipment on Dumps Account 110 - Maintenance of Electrical Services Account 200 - Reclamation and Environmental Protection Account 300 - General Mine Expense Account 400 - Local Overheads

Development of operating cost estimates for other account items is briefly described below.

101.3 and 101.4 102.3 and 102.4 Loading and Hauling 104.3 and 104.4

The operating costs for the shovel/truck portion of the combined system were determined using the unit costs developed in the recommended shovel/truck/conveyor mining system.

#### Account 102 - Pit Clean-Up

The operating costs of pit clean-up were not included in the NAMCO estimate. These costs were assumed to be the same as those for the shovel/truck system except for dozer costs, which were assumed to be 50% of shovel/truck estimates.

Account 103 - Conveying Waste

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The unit cost for the shovel/truck system in this cost centre was applied to the annual waste quantities removed by the combined system to determine the cash flow of operating expenditures for outof-pit transportation of waste. Accounts 104.1 and 104.2 - <u>Drilling and Blasting</u> The operating costs of drilling and blasting for the combined system were assumed to be 50% of those used in the shovel/truck system.

Account 106 - <u>Coal Stockpiling and Blending</u> The operating costs for coal stockpiling and blending were assumed to be the same as those developed for the shovel/truck system.

Account 107 - <u>Pit Maintenance</u> With the exception of haul road construction and maintenance costs, which were assumed to be 70% of those for the shovel/truck system, pit maintenance costs were assumed to be the same.

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