

B. C. HYDRO
THERMAL GENERATION PROJECTS DIVISION
MINING DEPARTMENT
BOX 12121
555 WEST HASTINGS STREET
VANCOUVER, B. C. V6B 4T6

Assessment Report for the
HAT CREEK
COAL EXPLORATION PROJECT
1981

On Coal License Numbers
12, 144, 2753-2762, 3003-3004, 3009-3013

NTS AREA 92 1/12 & 13
Between
Latitude $50^{\circ}36'20''$ - $50^{\circ}47'43''$
Longitude $121^{\circ}34'9''$ - $121^{\circ}34'47''$

by
B. Dutt, Ph.D., P.Geol.

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

MAY 1982

00 144

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INTRODUCTION

This report summarizes the exploration and development work carried out by B. C. Hydro on coal licences in Upper Hat Creek Valley from May 1981 to May 1982. For the two major studies - Golder Associates were consultants for the Construction Water Supply Program while Hydro-electric Generation Projects Division (HGPD) of B. C. Hydro were consultants for the Hat Creek Diversion Program 1981.

Extensive drilling and mapping work carried out by the Mining Department are not reported here because they were on Crown Grant land.

The project has been administered by W. C. Fothergill, P.Eng., Site Manager, B. C. Hydro. B. Dutt, Ph.D., P.Geol. (Alberta) was responsible for the technical coordination and supervision.

Detailed exploration costs have been presented in the Application to Extend Term of Licences. A summary is presented in Schedule B, as required under the Coal Act.

As the two programs comprise the work credit claimed for this Assessment Report, the results of the investigations, as presented by the consultants are submitted herewith.

As all the work including the geology are fully described in these reports it is not considered necessary to make an abstract of the findings in this report. However, a bedrock geology map (Figure 1A) is included herein as required by the Coal Act.

The lab analyses of the overburden samples and other data have been presented and discussed in these reports as well and therefore not presented separately.

LOCATION

Upper Hat Creek Valley, in which the coal licences are situated, is located 192 km northeast of Vancouver, B. C., midway between the towns of Lillooet and Ashcroft (Figure 1). Railheads can be reached at Pavilion, on the B. C. Railroad, 24 km to the northeast, and at Ashcroft, on the C. P. and C. N. railroads, 48 km to the east. Easiest access to the property is from the Trans-Canada Highway at Cache Creek, 37 km to the east, via the secondary highway (No. 12) between Cache Creek and Pavilion. The closest regularly serviced airport is at Kamloops, 109 km to the east.

The coal licences are situated in the broad, north-trending, grassland valley, about 24 km in length, through which flows the upstream portion of Hat Creek. From the north end of this valley Hat Creek flows northeastward through a narrow valley into the Bonaparte River, which flows south to join the Thompson River at Ashcroft.

Upper Hat Creek Valley lies within the Interior Dry Belt of British Columbia at a mean elevation of about 1067 m. The valley is flanked by somewhat subdued mountains that rise to elevations of 1830-2130 m 6.5 km to the west of Hat Creek and to elevations 1525-1830 m 9.7 km to the east. The uplands are covered by thin forests and the valleys are sparsely-treed open ranges of grass and sage.

COAL LICENCES

The coal licences held by B. C. Hydro have been regrouped into three groups as shown in Figure 2.

Table 1 shows the licence numbers and areas in hectares and acres, and their locations.

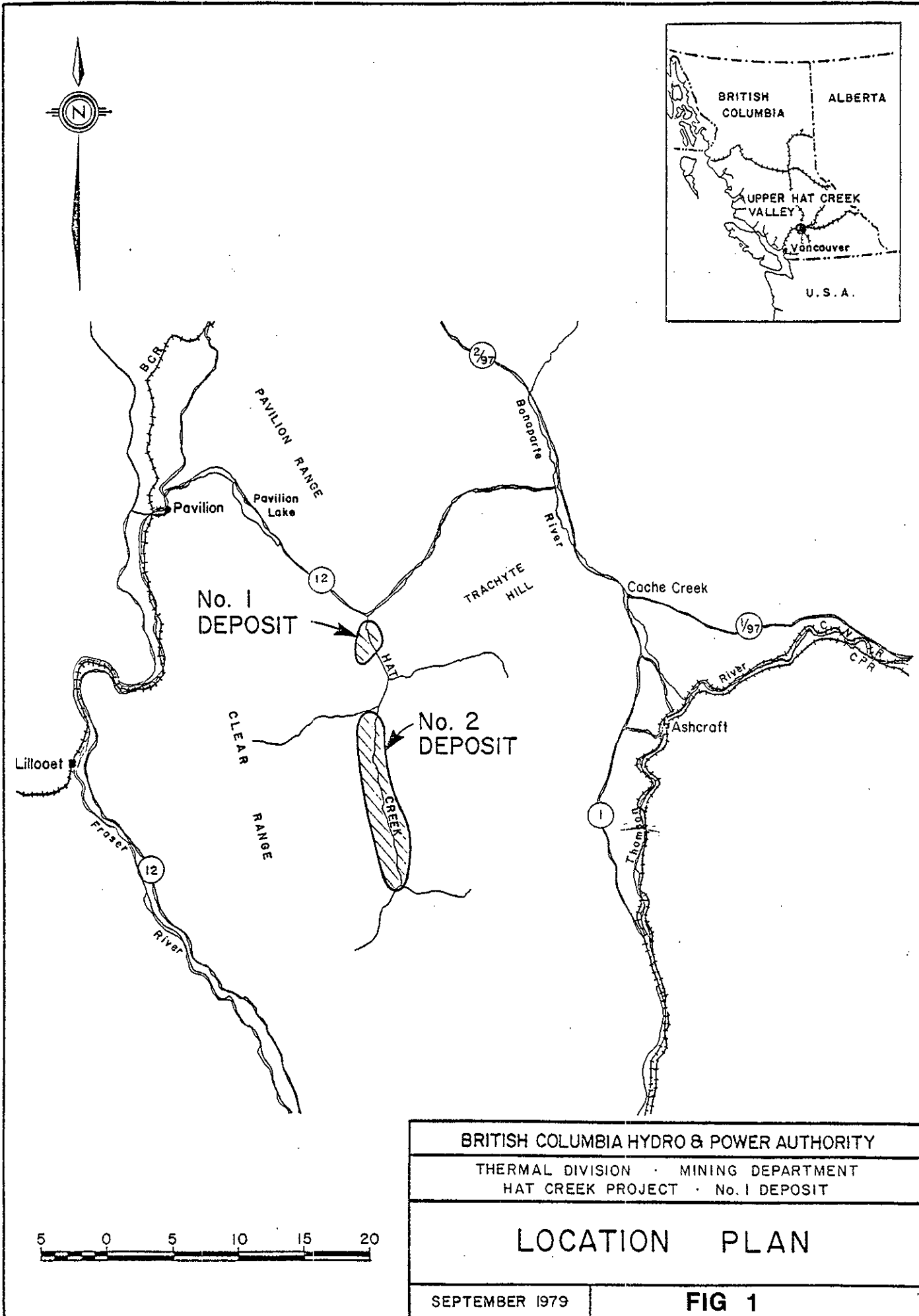


Table 1

	<u>Licence No.</u>	<u>Acres</u>	<u>Hectares</u>	<u>Location*</u>
	2757	636	257.4	14/21/27
	2758	630	255.0	11/21/27
	2759	588	238.0	2/21/27
	2761	640	259.0	35/21/27
<u>Blue</u>	3013	640	259.0	26/20/27
<u>Group</u>	3010	320	129.5	E $\frac{1}{2}$ of 23/20/27
	3009	640	259.0	13/20/27
	3008	640	259.0	12/20/27
	3007	640	259.0	1/20/27
	3006	640	259.0	36/19/27
	<u>3005</u>	<u>320</u>	<u>129.5</u>	N $\frac{1}{2}$ of 25/19/27
	11 licences	6334	2563.4	
	144	320	129.5	E $\frac{1}{2}$ of W $\frac{1}{2}$ of 6/21/26+E $\frac{1}{2}$ of W $\frac{1}{2}$ of 7/21/26
	2754	638	258.2	E $\frac{1}{2}$ of 6/21/26 + E $\frac{1}{2}$ of 7/21/26
	2755	636	257.4	18/21/26
	2753	640	259.0	31/20/26
	3004	640	259.0	30/20/26
<u>Green</u>	3003	640	259.0	19/20/26
<u>Group</u>	3655	641	259.4	W $\frac{1}{2}$ of 8 + 17/20/26
	2999	320	129.5	W $\frac{1}{2}$ of 5/20/26
	2998	320	129.5	W $\frac{1}{2}$ of 32/19/26
	2995	320	129.5	W $\frac{1}{2}$ of 29/19/26
	2994	321	129.9	W $\frac{1}{2}$ of 20/19/26
	<u>2991</u>	<u>320</u>	<u>129.5</u>	W $\frac{1}{2}$ of 17/19/26
	12 licences	5756	2329.0	

Table 1 (continued)

	<u>Licence No.</u>	<u>Acres</u>	<u>Hectares</u>	<u>Location*</u>
	12	640	259.0	E $\frac{1}{2}$ of E $\frac{1}{2}$ of W $\frac{1}{2}$ of 1/21/27 + W $\frac{1}{2}$ of W $\frac{1}{2}$ of 6/21/26
	2756	639	258.6	13/21/27
	2760	319	129.1	W $\frac{1}{2}$ of W $\frac{1}{2}$ of 12/21/27 + W $\frac{1}{2}$ or W $\frac{1}{2}$ of 1/21/27
	2762	640	259.0	36/20/27
	3012	640	259.0	25/20/27
	3011	640	259.0	24/20/27
<u>Black</u>	3002	640	259.0	18/20/26
<u>Group</u>	3001	642	259.8	7/20/26
	3000	642	259.8	6/20/26
	2997	642	259.8	31/19/26
	2996	635	257.0	30/19/26
	2993	640	259.0	19/19/26
	2992	316	127.9	N $\frac{1}{2}$ or 18/19/26
	<hr/>			
	13 Licences	7675	3106.0	
Totals:	36 Licences	19765	7998.4	

* Section/Township/Range (West of the 6th Meridian, Kamloops Land District)

HAT CREEK DIVERSION EXPLORATION PROGRAM

Prior to 1977 about 350 holes were drilled for the exploration of the coal deposit and the design of the proposed open pit mine. Only about 17 holes were near the proposed Hat Creek diversion and exploration had previously been done for an access route to the powerplant. Samples from these holes were tested in a commercial laboratory.

During 1977 about 21 holes were drilled by Becker hammer rig at the headworks and the pit rim damsite, and along the Hat Creek and Finney Creek canal-conduit routes. Samples at 1.5 to 3 m intervals were taken and in situ permeability tests were carried out. In addition to the drill holes, 16 test pits were dug in the above diversion areas.

At the headworks damsite unconformities from siltstone to volcanic rocks in the left abutment area were encountered during 1977 drilling. Also during this early exploration the bedrock horizon at the right abutment of the pit rim damsite was not defined. Further, the discovery of a bentonitic material along the canal route near the south side of Medicine Creek indicated that further investigation by drilling and test pitting was needed to define the geological conditions in these areas.

In the Preliminary Design Report (Report No. 913) it was recommended that the following investigations be carried out for final design:

1. Drill holes and test pits at headworks.
2. Drill holes at pit rim damsite.
3. Drill holes at Finney Creek canal.
4. Drill holes at Ambusten and Medicine Creek crossings and conduit route.
5. Test pits along the canal routes.

The results of these investigations are presented in the accompanying reports by B. C. Hydro, Hydrogeneration Power Division, and Thurber Consultants.

CONSTRUCTION WATER SUPPLY PROGRAM

This report describes the work carried out by Golder Associates at Hat Creek, British Columbia, towards the groundwater exploration for potential aquifers and the design, construction and testing of water supply wells for construction purposes. A supply of water for the concrete batching plant and potable water for camp requirements up to a maximum of 1700 m³/d (19.7 l/s, 311 U.S. gpm) was specified. Three target areas considered to have groundwater potential were selected for investigation.

The contractual part of the program was carried out during June and July, 1981, by A and H Construction Ltd. of Abbotsford, British Columbia. Golder Associates' hydrogeological staff maintained fulltime supervision throughout the entire field operation, analyzed the results and made recommendations for the siting and design of the production wells and the specifications for the pumps.

The approach taken in this groundwater program was a combination of exploratory and testing procedures. The following steps were undertaken:

- selection of preferred areas for drilling;
- drilling of production-type observation wells to identify potential aquifers;
- air-lift test pumping during drilling to obtain an initial estimate of water availability;
- placement of permanent screened installations to permit the aquifers to be test-pumped by temporary submersible pump and such that those installations could be left as production and/or observation wells;

- test pumping of most likely aquifers;
- drilling of permanent production wells, installation of screens and development;
- test pumping of production wells;
- specification of permanent pumps.

The results of these procedures are presented in the accompanying "Report on Hat Creek Construction Water Supply, British Columbia", by Golder Associates.

SCHEDULE B

Category of Work	Dimensions (where applicable)	Unit Cost (where applicable)	Cost
<i>Geological Mapping</i>			
Reconnaissance	_____	_____	_____
<i>Detail—</i>			
Surface	_____	_____	_____
Underground	_____	_____	_____
Other (specify)*	_____	_____	_____
<i>Geophysical/Geochemical Surveys</i>			
Method	_____	_____	_____
Grid	_____	_____	_____
Topographic	_____	_____	_____
Other (specify)*	_____	_____	_____
<i>Road Construction</i>			
On licences Nos.	_____	_____	_____
Access to	_____	_____	_____
<i>Surface Work</i>			
Trenching	_____	_____	_____
Seam tracing	_____	_____	_____
Crosscutting	_____	_____	_____
Other (specify)*	11 Test Pits	_____	6,000
<i>Underground Work</i>			
Test adits	_____	_____	_____
Other workings*	_____	_____	_____
<i>Drilling</i>			
<i>Core—</i>			
Diamond	_____	_____	_____
Wireline	_____	_____	_____
<i>Rotary—</i>			
Conventional	_____	_____	_____
Reverse circulation	40	_____	15,176
Other (specify)*	Water Well Drilling	_____	43,772
Contractor	NorWest Water Well Drilling and A. & H. Construction		_____
Where core stored	Hat Creek		_____
Logging	_____	_____	_____
Sampling	_____	_____	_____
Testing	lab Testing Overburden samples	_____	2,052
Other work: (specify details)*	Site Maintenance & Transport	_____	107,607
Reclamation work (Permit No.)	8,070	_____	_____
ON-PROPERTY COSTS	\$	182,677	_____
OFF-PROPERTY COSTS	\$	82,150	_____
TOTAL EXPENDITURES	\$	264,827	_____

(Date) _____
(Signature and position)

*A full explanation of "Other" work is to be included.

Reprinted from *The British Columbia Gazette—Part II, December 31, 1979.*

SCHEDULE B

Category of Work	Dimensions (where applicable)	Unit Cost (where applicable)	Cost
<i>Geological Mapping</i>			
Reconnaissance	_____	_____	_____
<i>Detail—</i>			
Surface	_____	_____	_____
Underground	_____	_____	_____
Other (specify)*	_____	_____	_____
<i>Geophysical/Geochemical Surveys</i>			
Method	_____	_____	_____
Grid	_____	_____	_____
Topographic	_____	_____	_____
Other (specify)*	_____	_____	_____
<i>Road Construction</i>			
On licences Nos.	_____	_____	_____
Access to	_____	_____	_____
<i>Surface Work</i>			
Trenching	_____	_____	_____
Seam tracing	_____	_____	_____
Crosscutting	_____	_____	_____
Other (specify)*	109 Test Pits	_____	63,000
<i>Underground Work</i>			
Test adits	_____	_____	_____
Other workings*	_____	_____	_____
<i>Drilling</i>			
<i>Core—</i>			
Diamond	HQ	_____	28,175
Wireline	_____	_____	_____
<i>Rotary—</i>			
Conventional	_____	_____	_____
Reverse circulation	HQ	_____	73,545
Other (specify)*	_____	_____	_____
Contractor	NorWest Water Well Drilling and A & H Construction		_____
Where core stored	Hat Creek		_____
Logging	_____	_____	_____
Sampling	_____	_____	_____
Testing	Lab Testing Overburden Samples	_____	14,363
Other work: (specify details)*	Site Maintenance & Transport	_____	117,847
Reclamation work (Permit No.)	8,070	_____	_____
ON-PROPERTY COSTS	\$ 305,000	_____	_____
OFF-PROPERTY COSTS	\$ 61,626	_____	_____
TOTAL EXPENDITURES	\$ 366,626	_____	_____

(Date) _____ (Signature and position)

*A full explanation of "Other" work is to be included.

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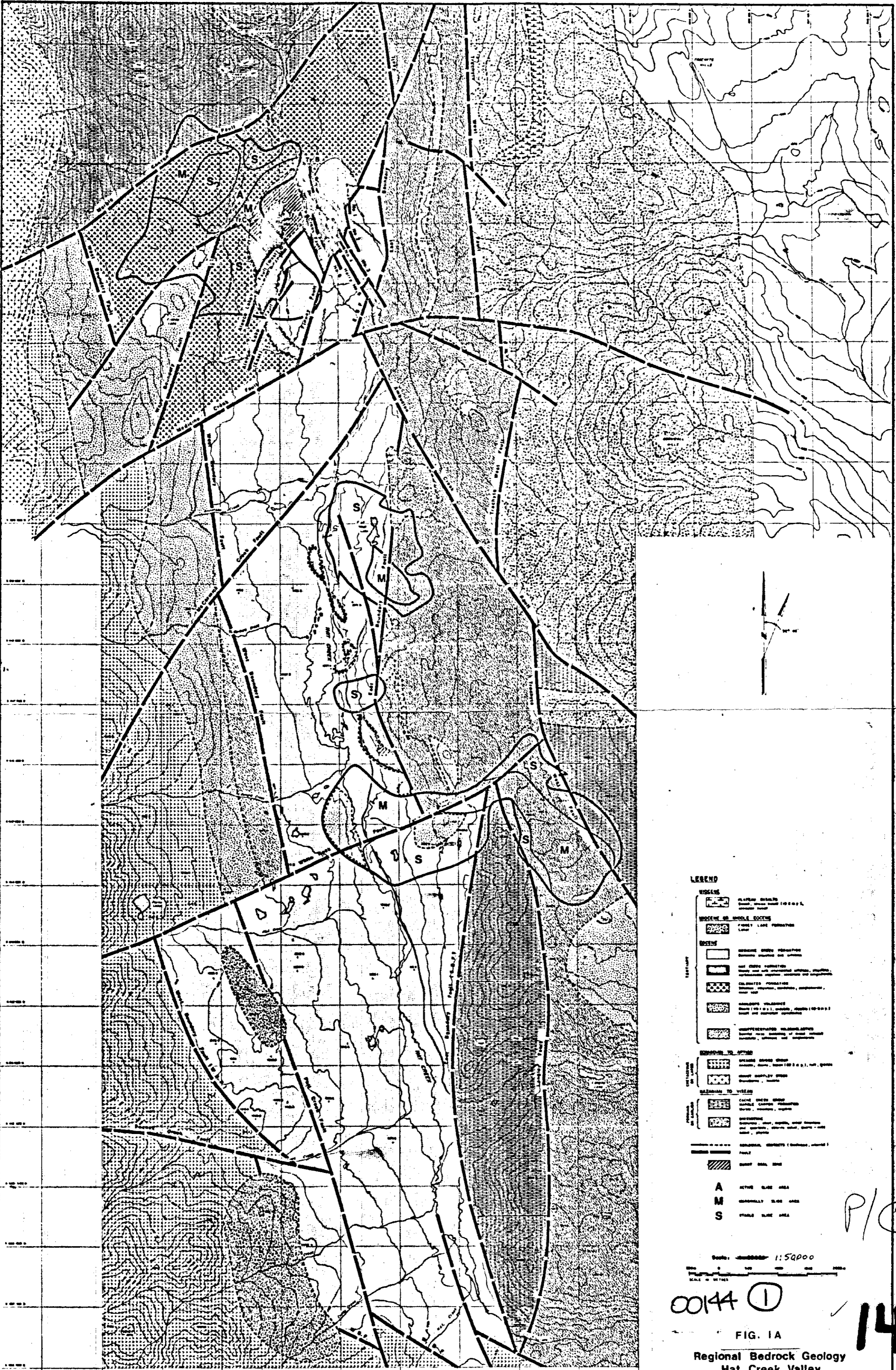
SCHEDULE B

Category of Work	Dimensions (where applicable)	Unit Cost (where applicable)	Cost
<i>Geological Mapping</i>			
Reconnaissance	_____	_____	_____
Detail—			
Surface	_____	_____	_____
Underground	_____	_____	_____
Other (specify)* . . .	_____	_____	_____
<i>Geophysical/Geochemical Surveys</i>			
Method	_____	_____	_____
Grid	_____	_____	_____
Topographic	_____	_____	_____
Other (specify)*	_____	_____	_____
<i>Road Construction</i>			
On licences Nos.	_____	_____	_____
Access to	_____	_____	_____
<i>Surface Work</i>			
Trenching	_____	_____	_____
Seam tracing	_____	_____	_____
Crosscutting	_____	_____	_____
Other (specify)*	_____	_____	_____
<i>Underground Work</i>			
Test adits	_____	_____	_____
Other workings*	_____	_____	_____
<i>Drilling</i>			
Core—			
Diamond	_____	_____	_____
Wireline	_____	_____	_____
Rotary—			
Conventional	_____	_____	_____
Reverse circulation .	_____	_____	_____
Other (specify)*	_____	_____	_____
Contractor _____			
Where core stored _____			
Logging	_____	_____	_____
Sampling	_____	_____	_____
Testing	_____	_____	_____
Other work: (specify details)*	Site Maintenance & Transport		104,944
Reclamation work (Permit No.)			8,070
ON-PROPERTY COSTS	\$	113,014	
OFF-PROPERTY COSTS	\$	61,626	
TOTAL EXPENDITURES	\$	174,640	

(Date) _____
(Signature and position)

*A full explanation of "Other" work is to be included.

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LEGEND	
	RECENT OR MIDDLE COCENE Alluvium
	Lake Level
	Lava
	Eocene Sandstone Shale Siltstone
	Oligocene Sandstone Shale Siltstone
	Mid-Pliocene Sandstone Shale Siltstone
	Upper Pliocene Sandstone Shale Siltstone
	Lower Pliocene Sandstone Shale Siltstone
	QUATERNARY Recent Sandstone Shale Siltstone
	Fault
	A Atypical bedrock area
	M Normally bedrock area
	S Strata bedrock area

Scale: 1:50,000

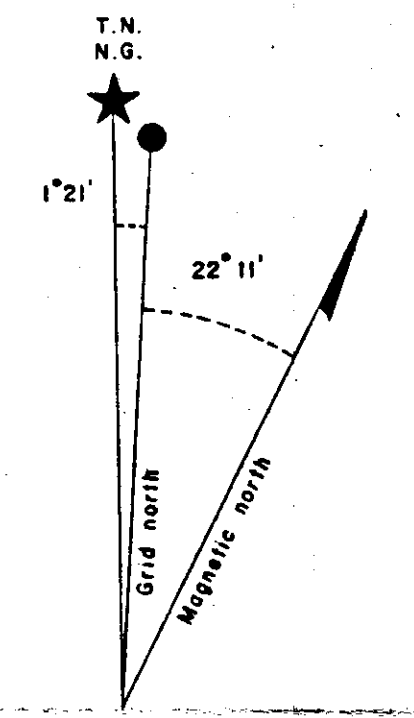
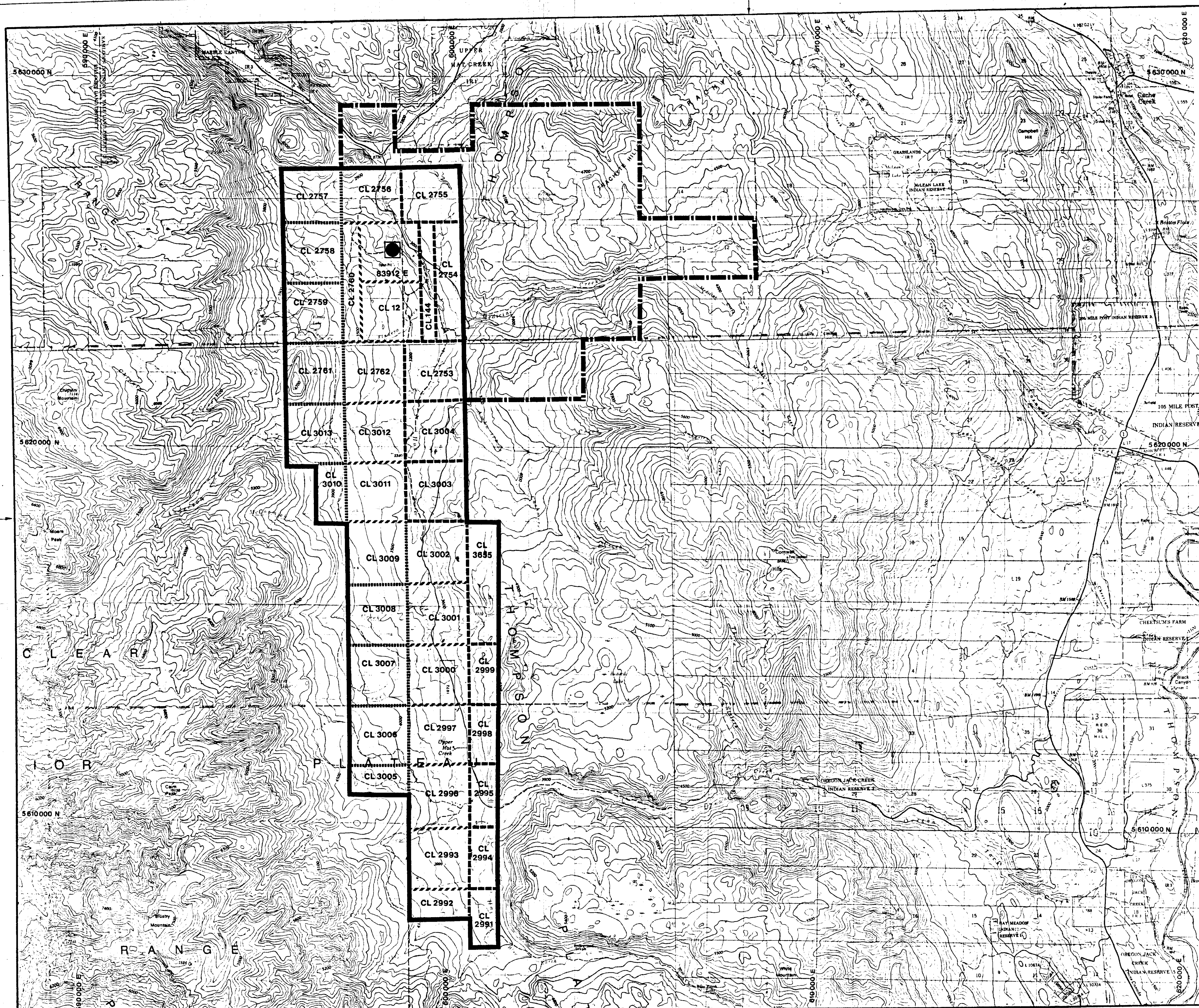
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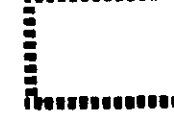


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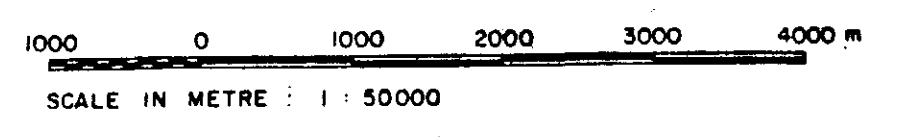
FIG. 1A
Regional Bedrock Geology
Hat Creek Valley

HC Hat Creek B1 (2*1A) * (1)
Source: B.C. Hydro & Power Authority REV. June 1981



-  CROWN GRANT
-  GROUP 1
-  GROUP 2
-  GROUP 3
-  NEW CLAIM BOUNDARIES
-  CL COAL LICENCE

From National Topographic System Maps:
 92-1/11, 92-1/12, 92-1/13, 92-1/14



B.C. HYDRO HAT CREEK PROJECT - MINING DEPARTMENT		
COAL LICENCES		144
UPPER HAT CREEK VALLEY		
00144 (2) H.C. Hat Creek 91(2)A * (1)		
DATE	March 1982	FIG. 2
DWN		R
REPORT No.		DWG No.

REPORT No.