

HC-HAT CREEK 75(1)D
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B.C. Hydro and Power Authority

Progress Report No. 1

NO. 2 COAL DEPOSIT

Hat Creek Project

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

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September 19, 1975

DOLMAGE CAMPBELL & ASSOCIATES LTD.
VANCOUVER, CANADA



DOLMAGE CAMPBELL & ASSOCIATES LTD.
CONSULTING GEOLOGICAL & MINING ENGINEERS
1000 GUINNESS TOWER
VANCOUVER 1, B.C.

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OPEN FILE

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SUMMARY

An apparent continuation of the thick coal sequence that has been extensively drilled in the No. 1 Deposit in Upper Hat Creek has been discovered in suboutcrop, by means of drilling, to lie three miles south of No. 1 Deposit, between Section 10,000 S and Section 22,000 S, a length of approximately 3 miles. The geological setting of this deposit, designated No. 2, is essentially the same as that of No. 1 Deposit in all major respects.

No. 2 Deposit has been explored by 24 widely spaced drill holes the results from which strongly suggest the following features of the deposit:

(i) The deposit consists of a main coal layer with a true thickness in excess of 1500 feet, but whose bottom contact has not been reached by drilling, and a possible lower grade subsidiary coal layer up to about 700 feet in thickness. The two coal layers appear to be in fault contact in much the same relationship as the No. 1 and No. 2 seams are in the No. 1 Deposit.

(ii) The main coal layer in the No. 2 Deposit is evidently folded into a north trending, broad anticline whose eroded crest forms the coal suboutcrop, (beneath 50-250 feet of overburden.), and whose west limb is truncated by a major north-south fault, (NNW #3).

(iii) The eastern openpit limits of the deposit have not been determined.

The coal reserves of No. 2 Deposit that are tentatively estimated as mineable by openpit methods are divisible into two general blocks, on the basis of their possible different stripping ratios:

(i) North section (10,000 S-16,000 S) - contains roughly 600 million in situ gross coal tons. The stripping ratio is about 1:1, at 45° pit slopes, to a depth of 1500 feet.

(ii) South section (16,000 S-22,000 S) - contains roughly 1.5 billion in situ gross coal tons to a pit depth of 2000 feet. The stripping ratio cannot be determined from present data.

The proposed next stage of exploratory drilling of No. 2 Deposit consists of 15,000 feet in about 14 holes. The sole purpose of this program, designated Stage 2C, is to determine the east and west parameters of the deposit in order to provide the basis for a preliminary economic comparison of No. 2 Deposit with No. 1 Deposit. The recommended holes are described in this report, along with the present hypothesis of the structure of No. 2 Deposit.

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INTRODUCTION

In course of the Stage 2 diamond drill exploration of Upper Hat Creek Valley in 1975 a new major coal deposit has been discovered about 3 miles south of the previously-drilled No. 1 Deposit. This new deposit, now designated No. 2 Deposit, appears to be economically feasible to mine by open pit methods. Although the total amount of coal in No. 2 Deposit, in a north-trending elongate body, is considerably greater than that in No. 1 Deposit, it is not yet possible to determine whether the No. 2 Deposit would be cheaper or more costly to mine than the No. 1 Deposit. The present inability to estimate a realistic mining cost for the No. 2 Deposit is due to the fact that the exact east and west boundaries of the coal deposit have not been determined, either at depth or on the suboutcrop surface. (All of the deposit is covered by overburden.)

This report summarizes the present structural geological knowledge of No. 2 Deposit and discusses the proposed additional exploratory drill holes that are considered necessary to define the general openpit parameters of the deposit. This drilling has recently been started as Stage 2C.

The detailed data from the exploration of No. 2 Deposit, such as drill logs, magnetometer and gravity survey results and coal analyses, are not included with this report but have been made available in separate submissions. All of this data has been utilized in the preparation of this report, along with a selective checking of the drill core in the field and examination of pertinent outcrops.

GEOLOGICAL SETTING

OVERBURDEN:

All of the area of No. 2 Deposit is blanketed by surficial deposits of glacial till that range in depth from 50 to 250 feet. There is some suggestion from the drilling that the overburden east of Hat Creek in this area may consist largely of silt, sand and/or gravel, as it does east of the area of No. 1 Deposit.

Glacial till extends to the west side of Upper Hat Creek Valley for the full length of the valley and ranges in consistency from a well compacted, relatively impermeable, basal-type boulder-silt till along the centre of the valley to a loosely compacted ablation till toward the west.

In all available till exposures, which are few and largely man-made, the till maintains steep, stable slopes.

GENERAL STRATIGRAPHY:

The general geological setting of the No. 2 Deposit is essentially the same as that of No. 1 Deposit. The coal occurs within a sequence of predominantly fined grained sedimentary, poorly cemented rocks belonging to the Coldwater Formation.

The core available from the exploratory holes drilled to date indicates that the coal sequence is overlain by a thick section of uniform siltstone, at least 1000 feet in stratigraphic thickness, which may or may not have thin coal or coaly beds intercalated with it immediately above the main coal layer.

The west side of the near-surface portion of the main coal sequence in the No. 2 Deposit is truncated by a steeply-dipping major fault, as is the main coal in the No. 1 Deposit. West of this fault, to the west edge of the valley, the Coldwater strata are predominantly comprised of a very thick, monotonous section, (1000-2000 feet), of claystone that is apparently overlain by a sequence of interbedded siltstone and conglomerate on which an eroded surface was developed before late Tertiary (flat-lying) volcanic rocks covered the Coldwater rocks at the close of Tertiary time.

The eastern extension of the near-surface portion of the coal sequence in the No. 2 Deposit appears to be either down-faulted or down-folded or both; however, geological data is presently meagre from that area. The central portion of the No. 2 Deposit is overlain along its east side by flat-lying rhyolitic volcanic tuffs and clastic rocks which were deposited onto an irregular surface that was eroded into deformed Coldwater strata, including coal.

COAL SEQUENCE:

No drill holes have succeeded in penetrating the full stratigraphic thickness of the coal sequence in the No. 2 Deposit; nor has any line of holes drilled on the same section succeeded in accumulating a total stratigraphic sequential overlap of the entire coal sequence. For this reason, our present hypothesis of the nature of the coal sequence is based on the relatively small amount of corroborative data that is presently available and is extrapolated from that base in accordance with the knowledge of the geology gained from other parts of the valley, including No. 1 Deposit. The major geological features available from the existing drill holes are presented in the eight cross sections accompanying this report. Superimposed on a second set of these sections are the extrapolations that form our present general structural hypothesis for the deposit, as well as our suggested drill holes to test this hypothesis.

One particular feature in the drill core provides the basis from which the determination of the nature of the coal sequence in No. 2 Deposit can be started. This is the identification of a consistently gradational contact of the top of the main coal layer with the overlying relatively monotonous sequence of clayey siltstones. This top surface of the main coal is neither a faulted nor an erosional one; therefore, it provides a positive horizon to which other data can be correlated. The holes that locate this upper surface of the main coal are:

<u>DH</u>	<u>SECTION</u>
75-80	7,000 S
75-84	10,000 S
75-68	16,500 S
(75-78) Possibly	16,500 S
75-60	22,000 S
75-79	25,000 S

All other coal holes in the No. 2 Deposit have either intersected coal directly at the erosional surface underlying the overburden or intersected what appears to be a narrower coal layer to the west.

GEOLOGICAL CORRELATIONS:

Correlation of intersections of the top of the main coal layer is suggested by geological and geophysical data in holes 75-68 (Sect. 16,500 S) and 75-60 (Sect. 22,000 S). In both of these holes, one mile apart, the top of the coal is gradational through coaly layers into the overlying clayey siltstone; the intercalated siltstone and claystone beds within the upper one thousand feet of the coal layer are essentially identical in character, thickness and stratigraphic position in the two holes; and, finally, three sharply distinctive geophysical (gamma) correlations occur in both holes at exactly the same stratigraphic positions, one in the rock 100 feet above the coal and two in the coal at 150 and 400 feet below the top. It is anticipated that this distinctive top coal sequence at 16,000-22,000 S will be recognizably reproducible in other holes to be drilled to the north and south, and possibly can be extrapolated through holes in which the top of the coal is not intersected.

One other geological feature in the coal that has provided local correlation between closely spaced holes is the occurrence of concentrations of resin beads. In holes 75-62, -81 and -88 on Section 15,000 S very good correlation of siltstone beds intercalated in the coal is evident, since holes 75-88 and 75-62 have established the dip of the strata. (One hole is vertical and the other at a dip angle to it across the known strike, north-south, thus identifying the direction of dip of the strata on this section from the angle of bedding intersections in the cores.) Using the siltstone beds to establish the structure on this section, it has been found that a fairly distinct layer of resin beads also follows the structure through all three holes.

The above-described geological and geophysical features are now being traced through all of the holes in the No. 2 Deposit in an endeavour to firmly establish the basic structure of the main coal layer.

The possible existence in No. 2 Deposit of a subsidiary, thinner, coal layer to the west of the main layer is strongly suggested by the coal intersections in holes 75-82 (Sect. 10,000 S) and 75-61 (Sect. 30,000 S). The coal intersections in these holes show no similarity in character, stratigraphy or thickness to the coal intersections in the main coal layer. This subsidiary coal layer appears to be about 1000 feet in total thickness, including intercalated siltstone beds that comprise up to 50 percent of the section, and is

underlain by conglomeratic beds. The coal layer is very similar in all respects to the No. 1 Seam that was intersected west of No. 1 Deposit in holes 74-44, -46, -48, -51 and -52.

STRUCTURE OF COAL LAYER:

The present holes in the No. 2 Deposit are widely spaced; therefore, a definitive simulation of the structure of the main coal layer cannot be made, nevertheless by extrapolating the above-described geological and geophysical correlations it is possible to derive the following general features of the coal structure:

(i) The main coal layer is folded into a broad anticlinal form with a steeply dipping western limb, in the north (Sect. 15,000 S), but a more gentle one in the south, (Sect. 22,000 S).

(ii) The coal top of the anticlinal structure reaches the bedrock surface, or very close to it, across a width of about 1500 feet for a known length of over two miles (10,000 S to 22,000 S), with possible extensions of as much as a mile to the north and an unknown length to the south.

(iii) This suboutcrop trace of the coal layer appears to be truncated by a steeply-dipping fault along its west side between 10,000 S and 16,500 S. North of 10,000 S the coal suboutcrop may curve east of hole 75-54 on 5000 S; this area is capped by volcanics and has not been drilled. South of 16,500 S the coal suboutcrop trends southeastward, away from the fault, and may or may not plunge beneath the surface by 25,000 S.

FAULTING:

It is evident from air photo interpretation, field mapping and from the results of the drilling of No. 1 Deposit that the Coldwater strata that underlie the Upper Hat Creek Valley are extensively dislocated by steep, normal faults that appear to be related to the block faulting that apparently formed the Hat Creek graben of Tertiary formations. Also, a flat-lying thrust fault is exposed in an outcrop of Coldwater siltstones at the north end of No. 1 Deposit. The displacement of this fault is evidently in the range of tens or hundreds of feet, but not thousands. The distribution of such thrust faults is not known and is extremely difficult to determine from drilling.

With the above background, it is expected that faults also dislocate the No. 2 Deposit, although perhaps not as severely as they do the No. 1 Deposit since the latter is located in the interior angle of the junction of several regional faults. The initial guide to such possible faulting in No. 2 Deposit was provided by the lineaments derived from air photos. These have been used to some extent in locating the exploratory drill holes but, because of their conjectural nature, they have not been accepted as definitive structures. Now that two dozen drill holes have been cored along a 3-mile length of the coal structure, it is possible to further define the framework of the principal faulting in the vicinity of the deposit.

The Hat Creek graben is bounded to the west by the north-trending West Boundary Fault and to the east, at least along its southern portion by the East Boundary Fault, (Fig. 1). Between these boundary faults occur two sets of possible faults that appear as distinct lineaments on the air photos of the No. 2 area; one set, of four lineaments, strikes northnortheast, and the other, three lineaments, strikes northnorthwest. The first set is designated on Figure 1, from east to west, as Crater Fault, NNE #1, NNE #2 and NNE #3. Drilling to date has produced no evidence of the existence of faults along these lineaments, nor suggests any displacements at their locations. However; the second set of lineaments, designated on Figure 1, from east to west, as NNW #1, NNW #2 and NNW #3, appears to be a reflection of major fault structures. At least two drill holes have intersected sheared rock and gouge at NNW #3 and all of the structural evidence from other holes indicates that the main coal layer is truncated to the west on this fault. Structural indications from a few eastern holes in the No. 2 area also suggest that some displacement of the coal could occur on a fault at NNW #2; however, data from this area is sparse and structural postulations are necessarily tenuous.

It is suggested that the suboutcrop of the main coal layer in the No. 2 Deposit area north of 10,000 S may be trending southsouthwestward past Fishhook Lake, (Figure 1). This portion of the coal layer dips about 45° to the west, and is intersected at depth in DH 75-80 on 7000 S. At or north of 10,000 S the coal suboutcrop meets and is truncated by the NNW #3 Fault. From 10,000 S south to about 20,000 S the coal suboutcrop trends southward with the NNW #3 Fault being its western boundary. South of 20,000 S the coal trends southsoutheastward, away from the fault, and dips at about 30° to the west, (See Sect. 22,000 S).

Since it is suggested from the drilling to date that the main coal layer appears to be folded into an anticline, the eastern limb of the folded coal probably dips down to the east beneath the volcanic cap rocks.

(If this is the case, it may explain the disappearance of the magnetometer anomaly both north of 10,000 S and south of 20,000 S.). It is conjectured that a fault along the general location of NNW #2 may possibly truncate the down-dip eastward extension of this limb of the folded coal.

It is of interest that the northern projection of the inferred NNW #3 fault exactly meets the southern projection of the 20 Fault from the No. 1 Deposit. The 20 Fault is reasonably well confirmed in No. 1 Deposit as the truncating structure of the western extension of the main coal layer, (No. 2 Seam), in that deposit. Further, the insertion of the NNW #3 fault on 10,000 S of No. 2 Deposit results in an identical structural picture as that postulated for the south end of the west side of No. 1 Deposit, such as shown on Sect. 7000 N, included with this report.

Thus, at this time it is suggested that:

- (i) The dominant faults that dislocate both the No. 1 and No. 2 coal deposits in Upper Hat Creek are those trending northnorthwestward in the No. 2 area and northward in the No. 1 area. These faults are steep to vertical and are apparently related to the boundary faulting of the graben.
- (ii) The 20 Fault in No. 1 Deposit and the NNW #3 Fault in No. 2 Deposit truncate the suboutcrop of the main coal layer to the west in both deposits. They may be the same fault.
- (iii) The NNW #2 Fault appears to either truncate or locally dislocate the eastward (downdip) extension of the No. 2 Deposit main coal layer.
- (iv) Other, intraformational, faults have been intersected in a number of holes in No. 2 Deposit, particularly in DH 75-73. Some of these faults appear to be local thrust faults, others may be subsidiary branches of the above-described main faults, but none appear to have caused major dislocations of the major coal layer.

POSSIBLE OPENPITS

The most practical method of exploiting the No. 2 coal deposit at Upper Hat Creek is by one or more openpits extending along the strike of the suboutcrop. From the results of the reconnaissance drilling completed to date it appears that several possibilities for openpits may exist along the three-mile length of the No. 2 Deposit suboutcrop:

(i) There is a possibility, tenuous at this time, that openpit coal may occur on a northnortheast trend from 10,000 S.

This postulation requires basic drill exploration to confirm or disprove.

(ii) A major mass of suboutcrop openpit coal occurs from approximately 10,000 S to about 16,000 S. The drilling results indicate that this mass is approximately 1500 feet in width at the suboutcrop) surface and is probably steep-sided to both the east and west due to bounding faults. The average depth of this coal body is at least 1500 feet.

The estimated gross in situ tonnage of this coal body, to a depth of 1500 feet, is in the range of 600 million tons.

The detailed parameters of this coal body must be determined by development drilling in order to permit basic openpit design.

(iii) Widely-spaced drill holes indicate the good possibility that a thick, possibly wide (2000 feet), coal body occurs at or just below suboutcrop from 16,000 S to at least 22,000 S, for an actual strike length of about 9000 feet. The depth of this coal body along its central axis (anticlinal?) is in excess of 2000 feet.

An estimated gross in situ tonnage of the possible coal in this body, to a depth of 2000 feet, with a 2000-foot width, is in the range of 1.5 billion tons.

The configuration of this southern coal body is tenuous at this stage and requires more exploratory drilling to define its openpit potential; however, it would appear that a viable openpit, comparable to that north of 16,000 S, could be realized on this southern coal.

In order to provide a rough comparison of an openpit on the No. 2 Deposit, (North end), with those suggested for No. 1 Deposit, an outline of a cross section through a pit with 45° sloping walls, to a depth of about 1500 feet, (Elev. 2000 feet), is shown on Figure 14. A similar pit outline on No. 1 Deposit is shown on Figure 11.

It is evident from a study of the present cross sections through the No. 2 Deposit that the next stage of drilling must be concentrated along the east and west sides of the deposit in order to establish the side pit parameters of the coal body. Because the structural geology along the east and west sides of the No. 2 Deposit is as yet largely conjectural, and because it could be complex, it is critical for the determination of openpit stripping ratios that the east and west parameters must now be established. Only with this data can No. 2 Deposit then be economically compared with No. 1 Deposit in terms of mining costs.

PROPOSED DRILLING, STAGE 2C

On the basis of the geological concepts described earlier in this report, a drill program has been conceived to determine the basic east-west parameters of the main coal layer of the No. 2 Deposit. This program consists of 15,000 feet of drilling, which is distributed in 14 holes, all but a few of which are categorized as generally critical in attaining the objective of the program. The fourteen recommended holes are shown on the accompanying seven cross sections that depict the earlier-described concept of the gross structure of the No. 2 Deposit. For the purpose of this presentation, all of the proposed holes are shown on cross sections that have been previously drilled; however, because of property owners' restrictions and the need to explore undrilled areas, several of the indicated holes will probably be located on undrilled sections, although in the same structural positions as depicted in the accompanying cross sections.

Several of the proposed holes have been started and two have been completed. These are shown on the cross sections as proposed holes, but with their general logs on them.

OBJECTIVES OF PROPOSED HOLES:

All of the proposed holes are designed either to determine the east or west side of the main coal deposit or, in a few cases, to explore for possible openpit coal that is projected from known intersections.

The location of each hole is described below, in the order that they are shown on the accompanying cross sections, from north to south:

North extensionSect. 7000 S

(1) 500 feet; Low priority vertical prospect hole to explore the possible trend of the coal suboutcrop to the northeast.

North pitSect. 8500 S - (No cross section included in report)

(1) DH 75-91; Completed in coal at 965 feet. To probe northern extension of north part of deposit.

Sect. 10,000 S - (Holes can be drilled north or south of section)

- (1) 2000 feet: Angle hole to be drilled to determine western extent of subsidiary coal seam west of NNW #3 Fault.
- (2) 1000 feet: Vertical hole to determine stratigraphic structure and nature of east side of coal deposit.

Sect. 15,000 S - (Both holes completed)

- (1) DH 75-90: Completed at 1508 feet. Confirmed location of NNW #3 Fault.
- (2) DH 75-89: Completed at 706 feet. Confirmed location of Crater Fault, which truncates east side of coal body.

Sect. 16,500 S - Two holes to probe coal boundaries

- (1) 800 feet: Angle hole to locate NNW #3 Fault and possible coal on west side of it.
- (2) 1500 feet: Angle hole to establish east side of coal body.

South pitSect. 19,000 S - (Holes in progress)

- (1) DH 75-92 (1500 feet): Angle hole west from DH 75-73 to determine coal structure and west side of body, (NNW #3?).
- (2) DH 75-93 (1500 feet): Angle hole to east to determine east side of coal body.

Sect. 22,000 S

- (1) 1500 feet: Angle hole to determine west side of coal body.
- (2) 1000 feet: Angle hole to correlate coal structure at mid pit.
- (3) 1000 feet: Angle hole to determine east side of coal body.

Sect. 25,000 S - Two low priority prospect holes.

- (1) 1000 feet: Vertical hole to probe west extension of coal.
- (2) 1000 feet: Vertical hole to probe east extension of coal.

The recommended 15,000 feet of priority drilling is contained in those holes on and between Sections 8,500 S and 22,000 S. The one hole on Sect. 7000 S and the two holes on Sect. 25,000 S are included here as reserve, low priority holes that will be useful to drill if extra footage becomes available in the program.

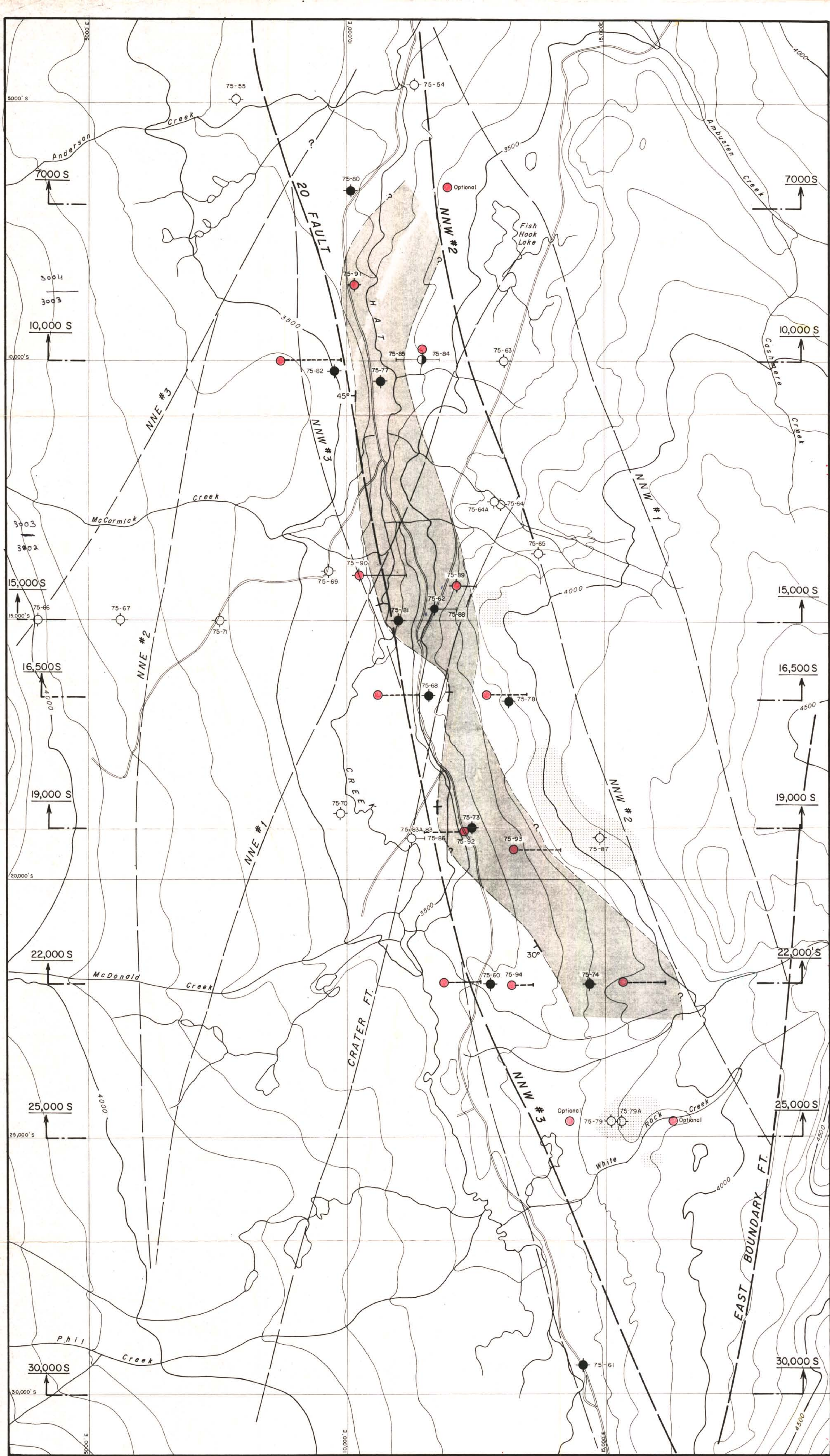
The above program is designated as Stage 2C. The results of this drilling should provide the broad parameters of the possible openpits on the No. 2 Deposit. These data will provide the basis for a sensible comparison of the No. 2 Deposit pits and that of No. 1 Deposit.

Respectfully submitted,

DOLMAGE CAMPBELL & ASSOCIATES LTD.

A handwritten signature in black ink, appearing to read 'D. D. Campbell', written in a cursive style.

Douglas D. Campbell, P.Eng., Ph.D.

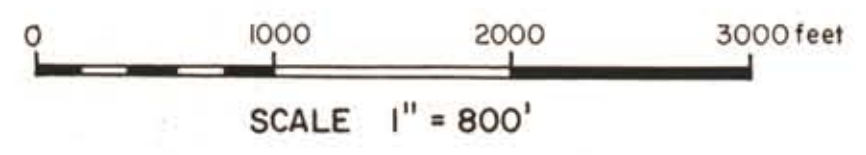


DRILL HOLES

- Proposed
- Drilling
- Completed
- No Coal
- Minor Coal
- Poss. Economic Coal

LEGEND

- Coal Suboutcrop
- - - Presumed Fault (Weak Lineament)
- - - Assumed Fault (Strong Lineament)
- ▨ Post-Coal Volcanic Cap Rocks



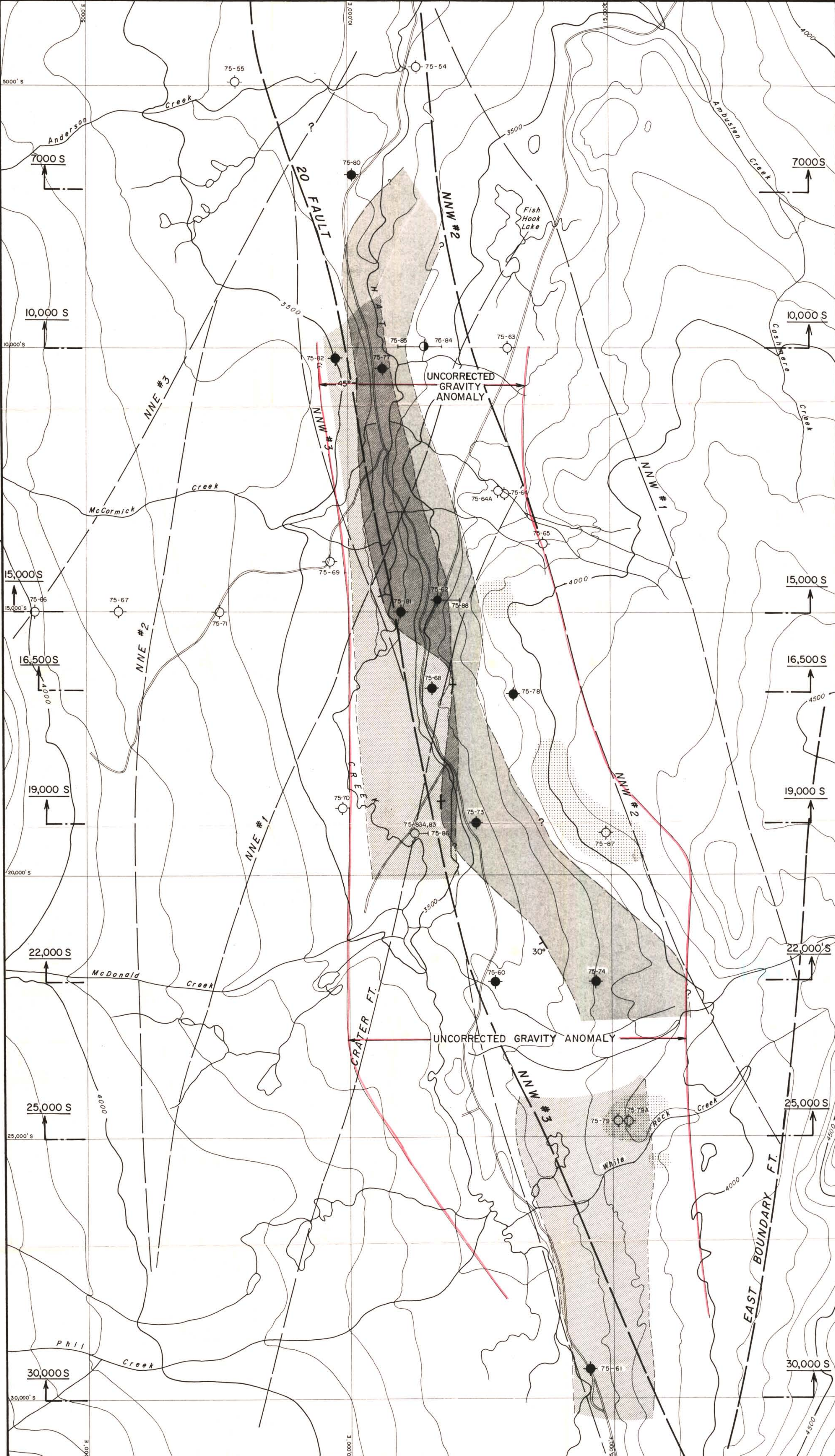
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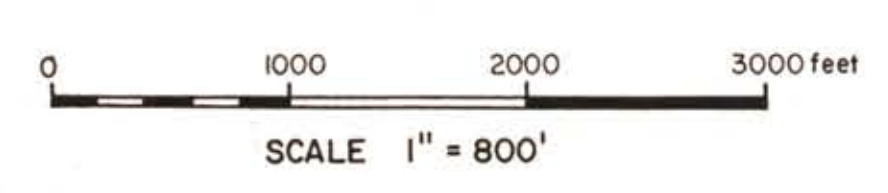
HAT CREEK PROJECT
No. 2 DEPOSIT
DRILL EXPLORATION

SCALE 1" = 800' SEPT. 1975 FIG. 1



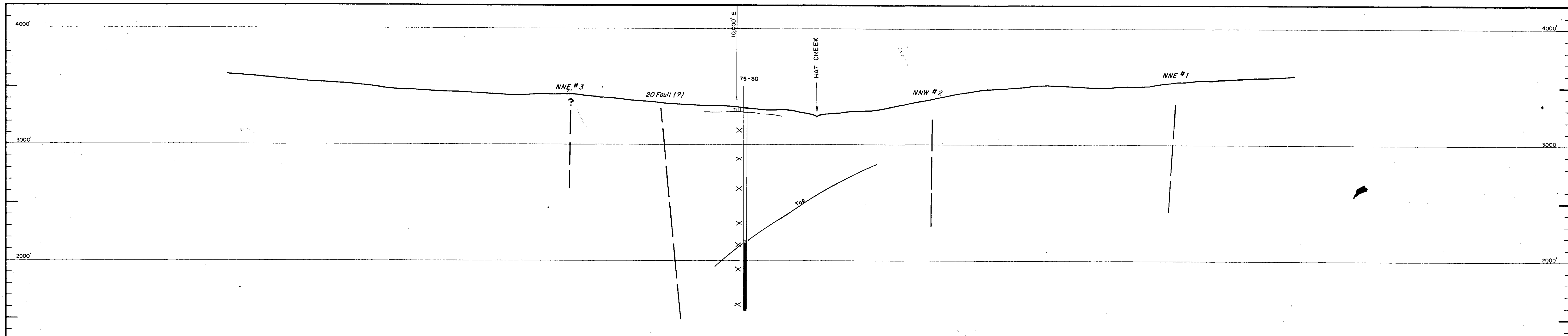
- DRILL HOLES**
- Proposed
 - Drilling
 - Completed
 - No Coal
 - Minor Coal
 - Poss. Economic Coal

- LEGEND**
- Coal Suboutcrop
 - - - Presumed Fault (Weak Lineament)
 - - - Assumed Fault (Strong Lineament)
 - ▨ Post - Coal Volcanic Cap Rocks
 - ▨ Magnetometer Lows



130 (2)

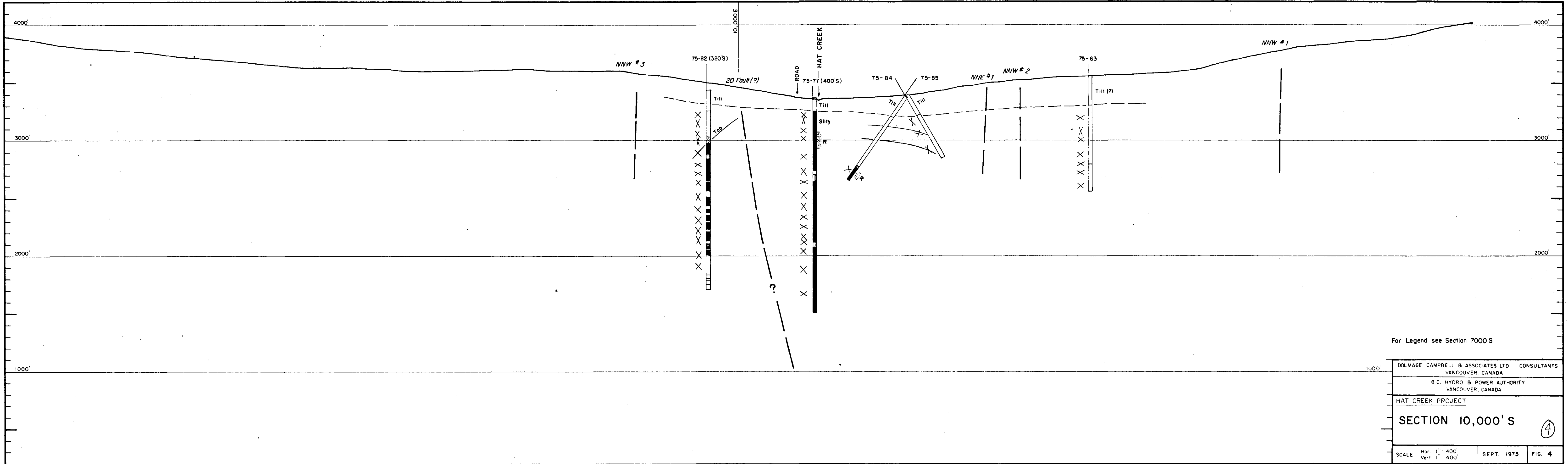
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No. 2 DEPOSIT	
GEOPHYSICAL ANOMALIES	
SCALE 1" = 800'	SEPT. 1975 FIG. 2



LEGEND

- | | | |
|----------------|-----------------------------------------|------------|
| CLAYSTONE | COAL (Clean) | OVERBURDEN |
| SILTSTONE | MIXED COAL & ROCK | COAL |
| SANDSTONE | COALY ROCK | |
| CONGLOMERATE | FAULT ZONE | |
| CARBONATE BEDS | R RESIN ZONE | |
| VOLCANIC | GEOPHYSICAL CORRELATION (* 2 in DDH-60) | |

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SECTION 7000' S		③
SCALE: Hor. 1" = 400'	SEPT. 1975	FIG. 3

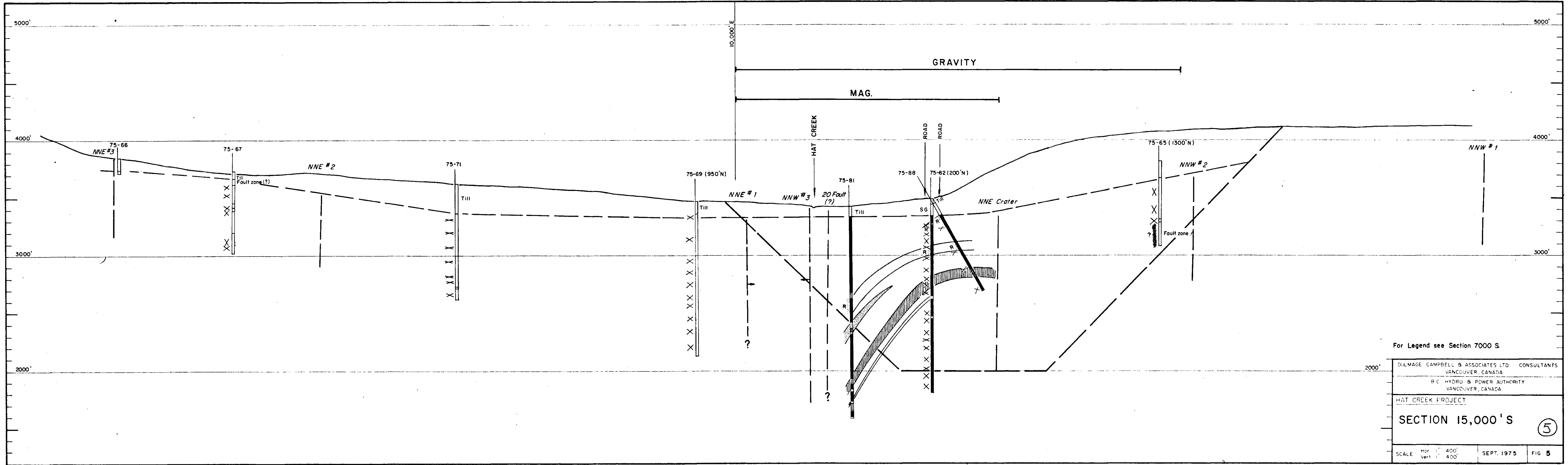


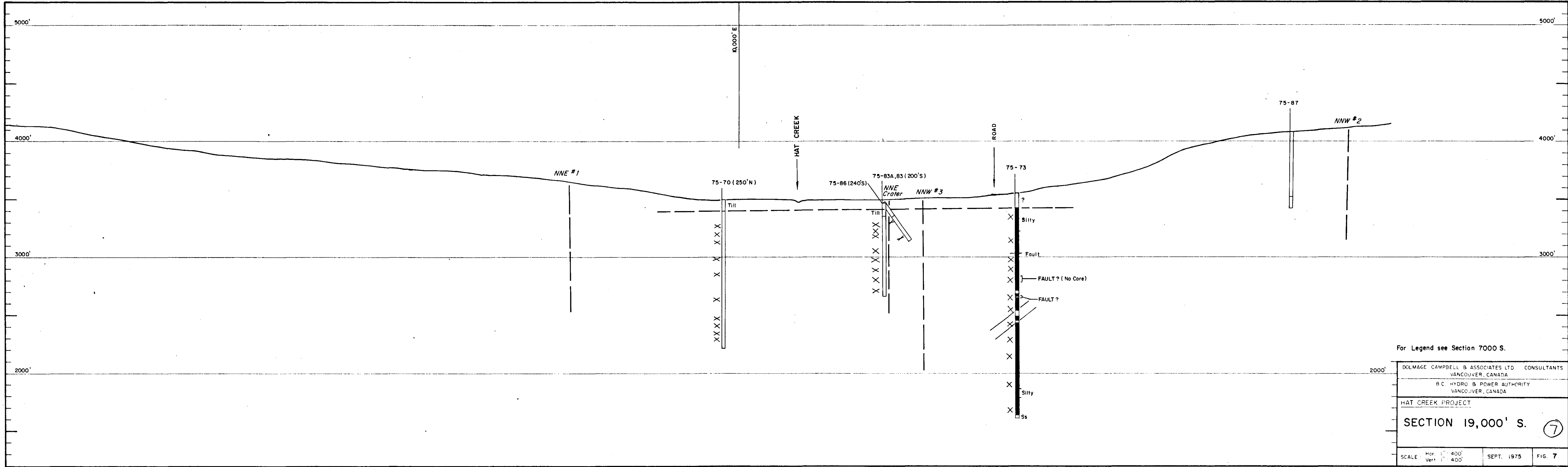
For Legend see Section 7000 S

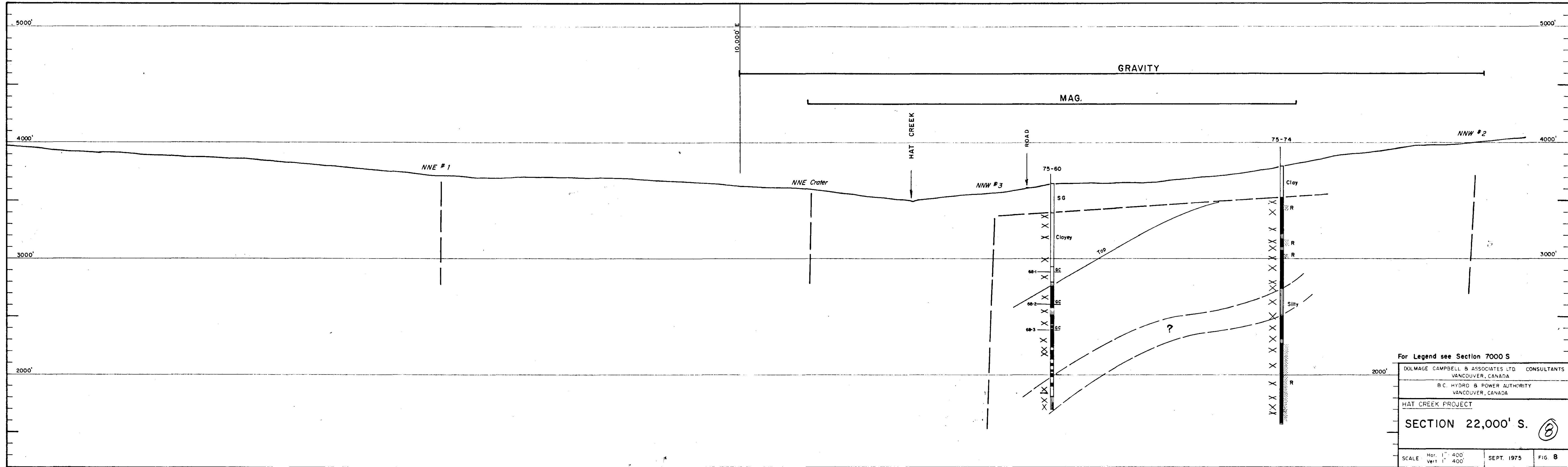
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HAT CREEK PROJECT
SECTION 10,000' S 4

SCALE: Hor. 1" = 400'
Vert 1" = 400' SEPT. 1975 FIG. 4







For Legend see Section 7000 S

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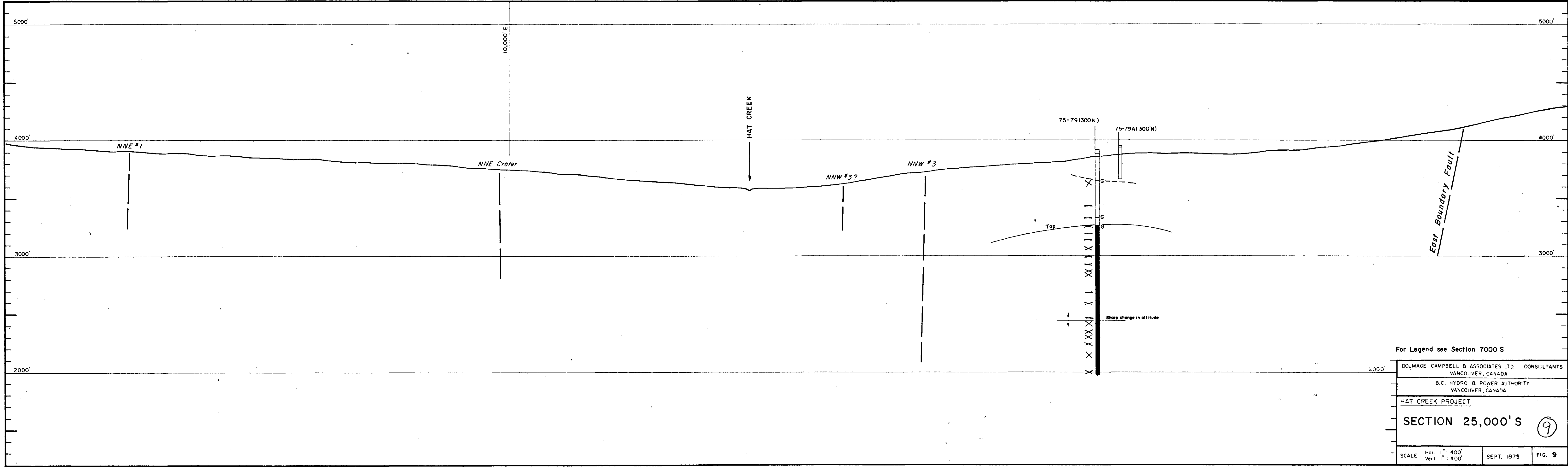
B.C. HYDRO & POWER AUTHORITY
VANCOUVER, CANADA

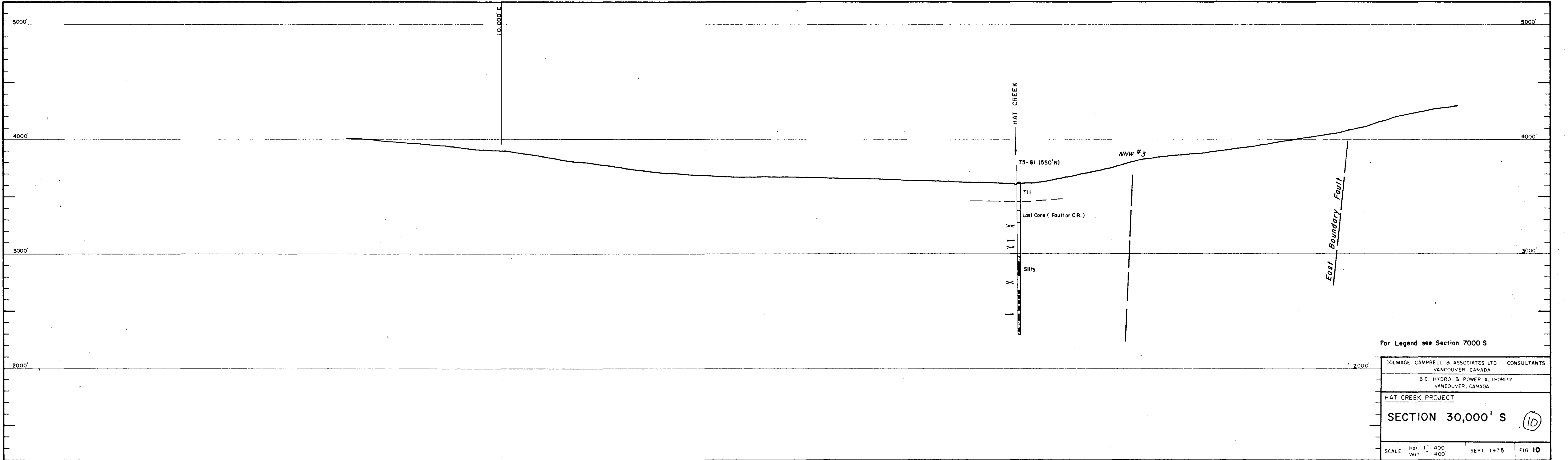
HAT CREEK PROJECT

SECTION 22,000' S. 8

SCALE Hor. 1" = 400'
Vert. 1" = 400'

SEPT. 1975 FIG. 8





For Legend see Section 7000 S

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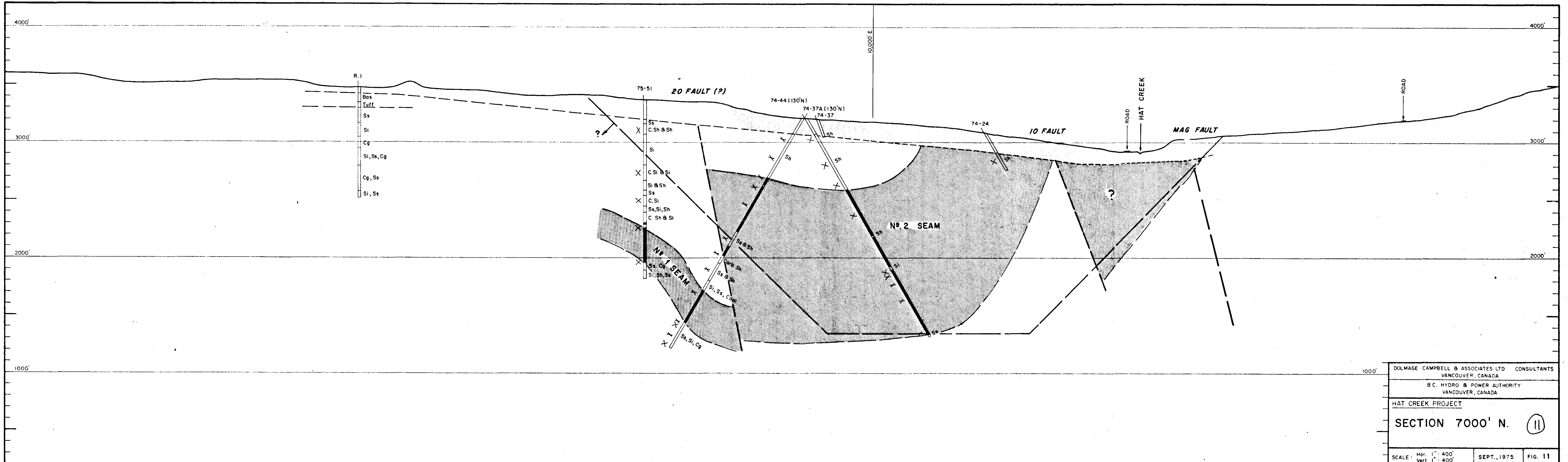
HAT CREEK PROJECT
 SECTION 30,000' S

10

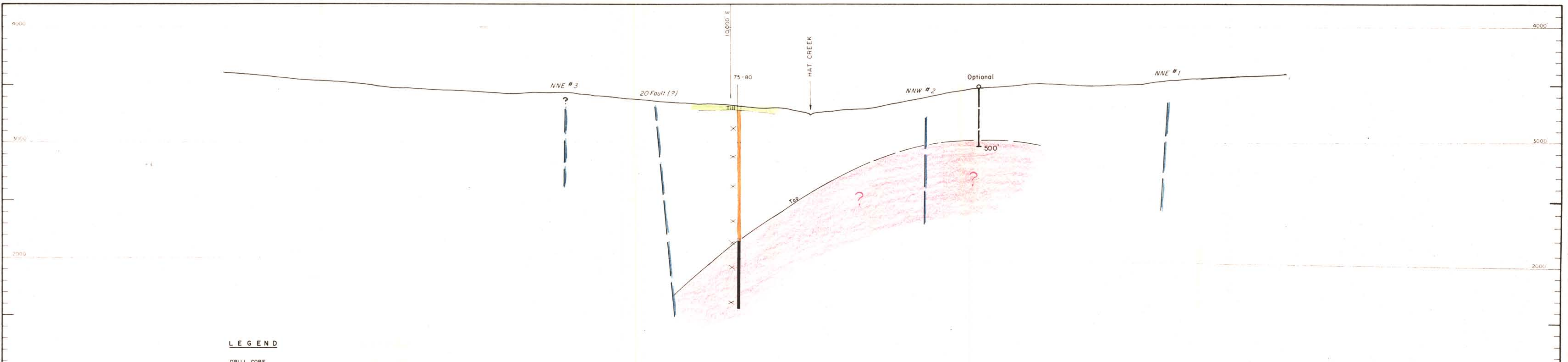
SCALE: Hor. 1" = 400'
 Vert. 1" = 400'

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FIG. 10



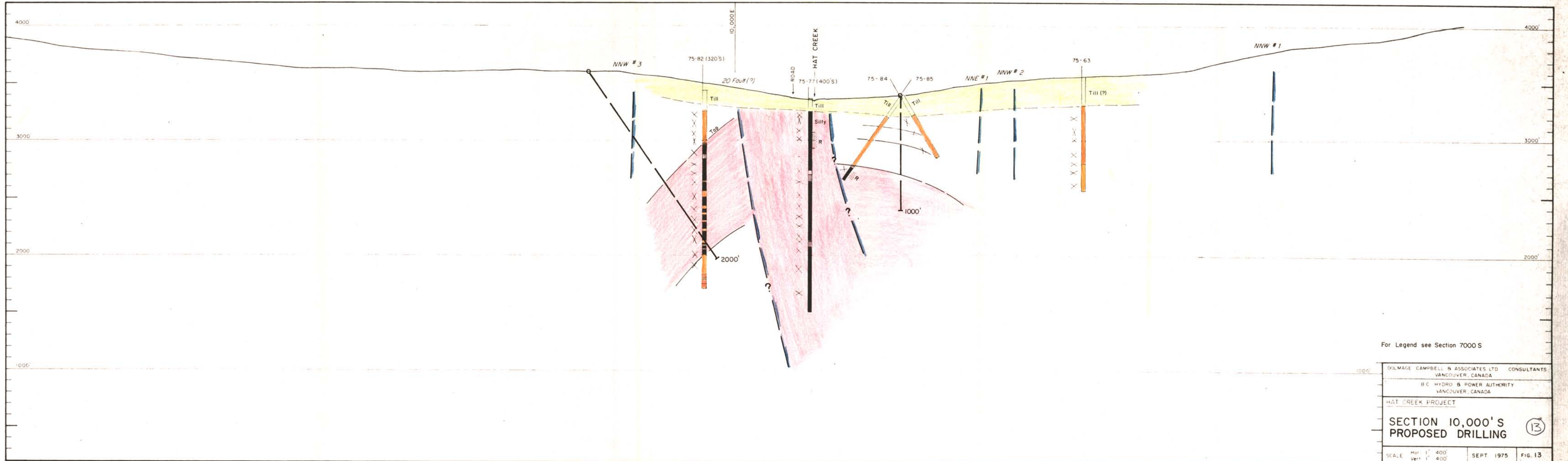
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 VANCOUVER, CANADA
 HAT CREEK PROJECT
SECTION 7000' N. (11)
 SCALE: Hor. 1" = 400'
 Vert. 1" = 400'
 SEPT., 1975 FIG. 11



LEGEND

- | | | |
|----------------|-----------------------------------------|------------|
| CLAYSTONE | COAL (Clean) | OVERBURDEN |
| SILTSTONE | MIXED COAL & ROCK | COAL |
| SANDSTONE | COALY ROCK | |
| CONGLOMERATE | FAULT ZONE | |
| CARBONATE BEDS | RESIN ZONE | |
| VOLCANIC | GEOPHYSICAL CORRELATION (# 2 in DDH-60) | |

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HAT CREEK PROJECT		
SECTION 7000' S PROPOSED DRILLING		(12)
SCALE Hor. 1" = 400' Vert. 1" = 400'	SEPT. 1975	FIG. 12



For Legend see Section 7000 S

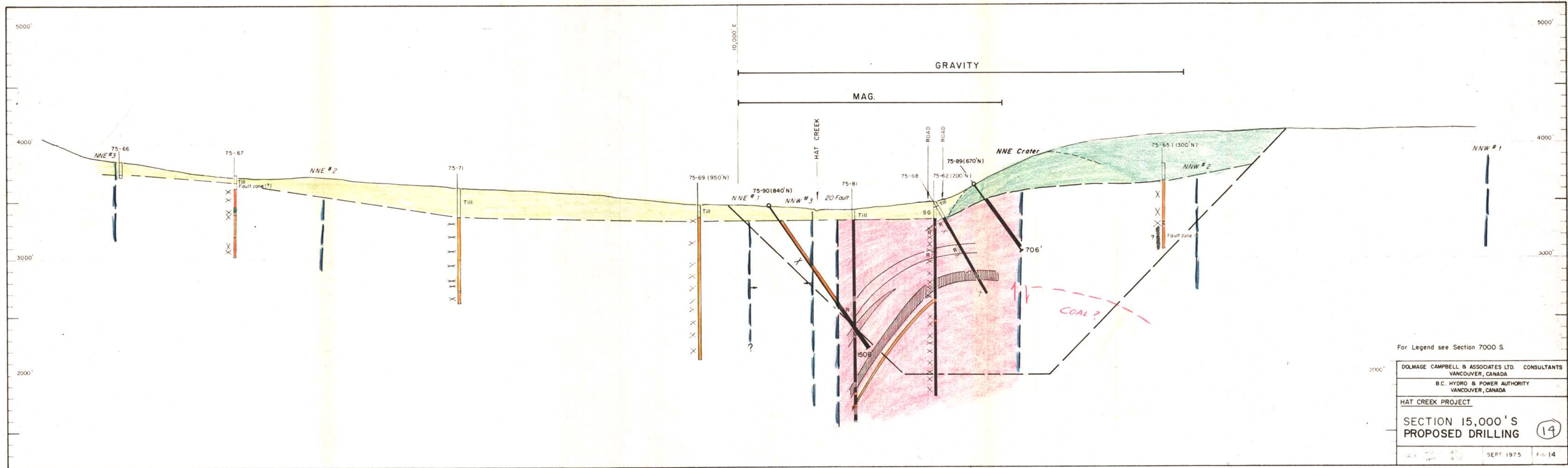
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VANCOUVER, CANADA

HAT CREEK PROJECT

SECTION 10,000' S
PROPOSED DRILLING

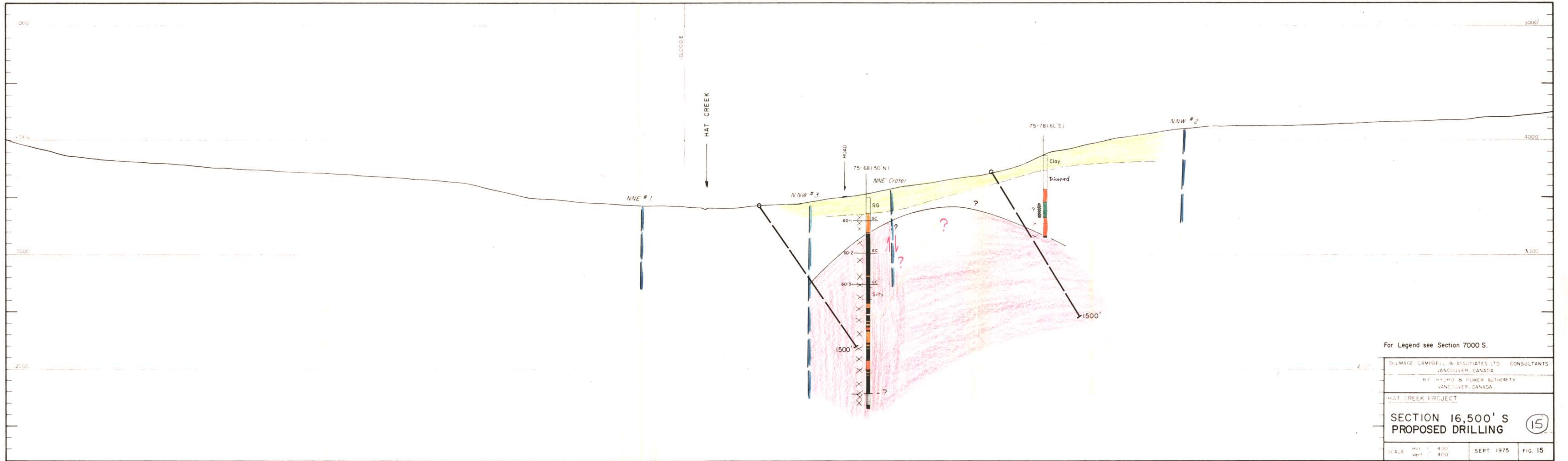
13

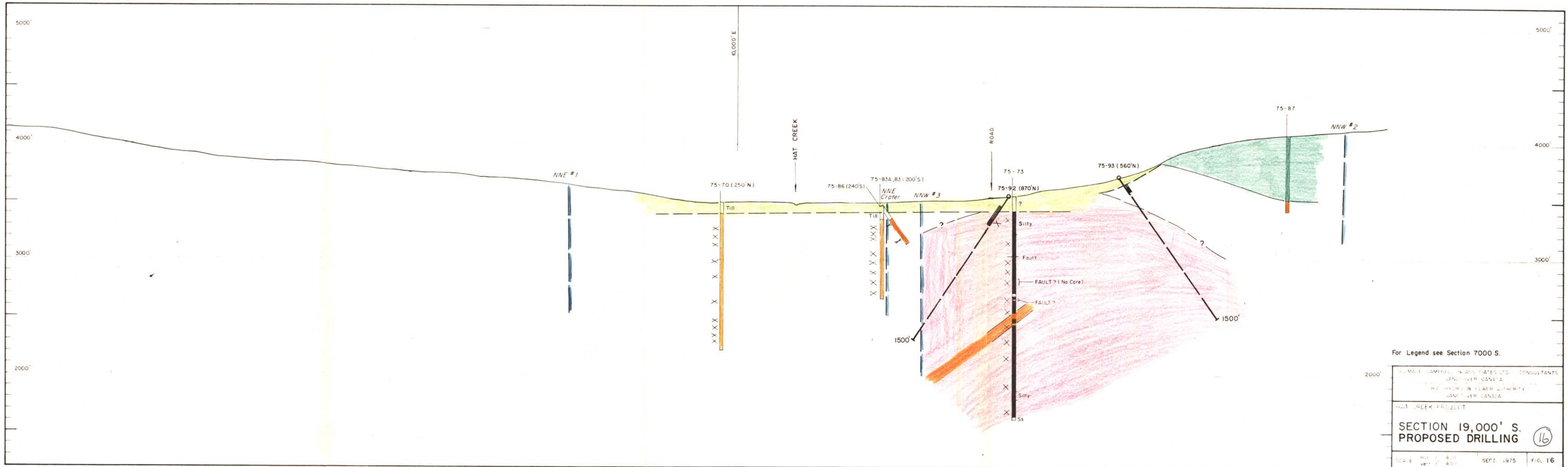
SCALE Hor 1" = 400'
Vert 1" = 400' SEPT. 1975 FIG. 13



For Legend see Section 7000 S.

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HAT CREEK PROJECT	
SECTION 15,000' S PROPOSED DRILLING	
DATE: 4/75	SEPT. 1975
FIG. 14	(14)



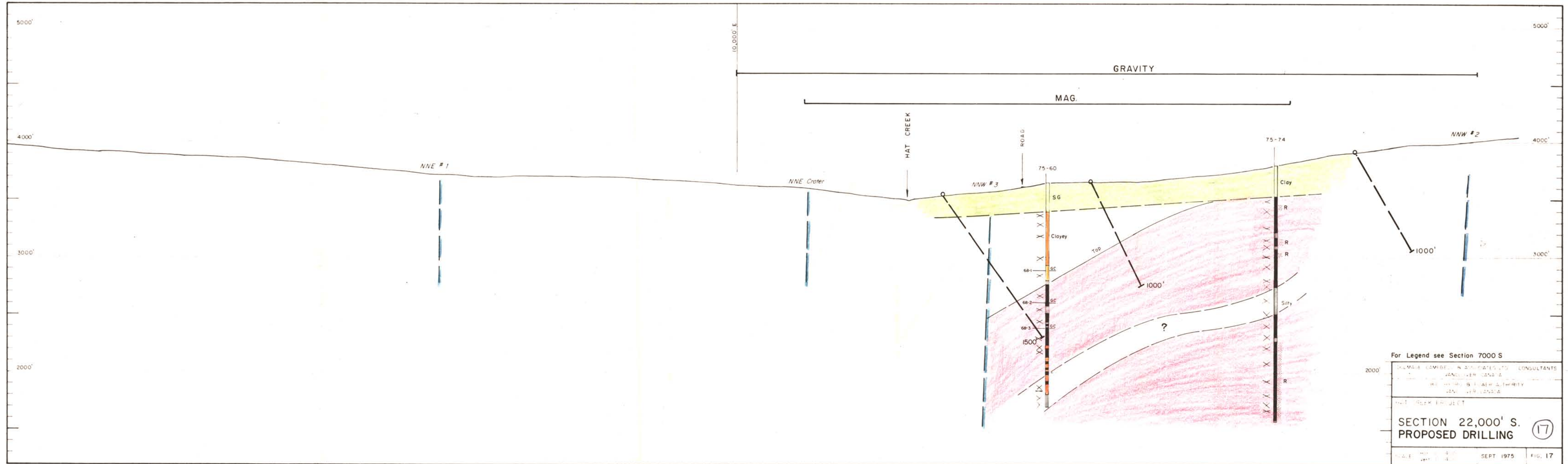


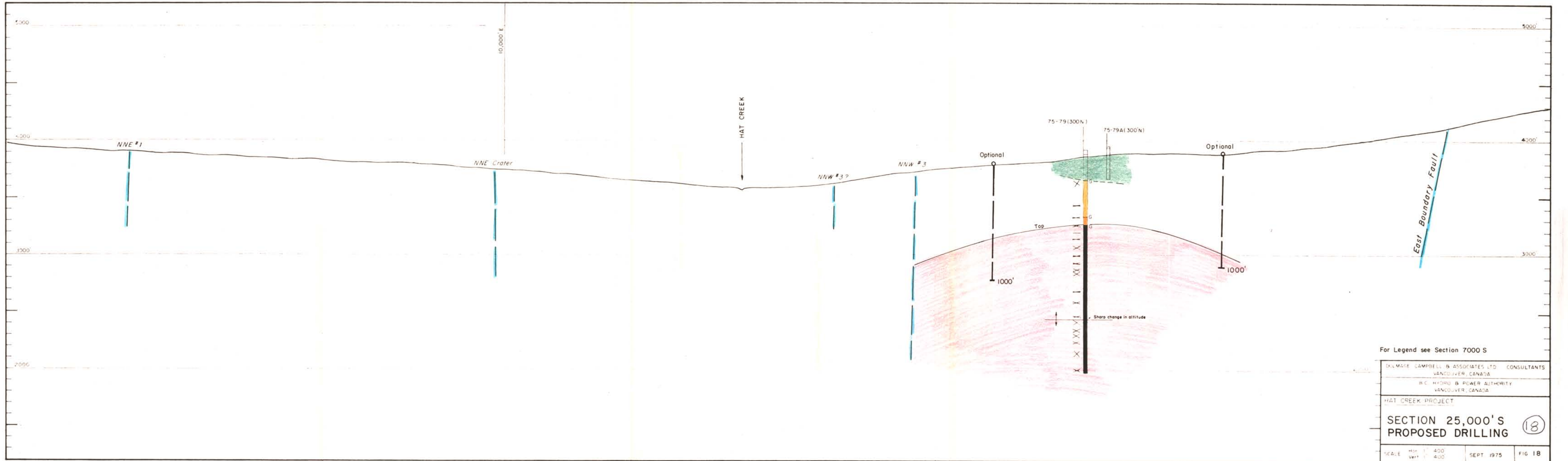
For Legend see Section 7000 S.

DR. M. L. CAMPBELL & ASSOCIATES LTD. CONSULTANTS
 VANCOUVER, CANADA
 W. C. HYND & FLOWERS LIMITED
 VANCOUVER, CANADA

HAT CREEK PROJECT
**SECTION 19,000' S.
 PROPOSED DRILLING** (16)

SCALE: Hor. 1" = 400' Vert. 1" = 400' SEPT. 1975 FIG. 16





For Legend see Section 7000 S

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 B.C. HYDRO & POWER AUTHORITY
 VANCOUVER, CANADA

HAT CREEK PROJECT

SECTION 25,000'S
 PROPOSED DRILLING

18

SCALE Hor: 1" = 400'
 Vert: 1" = 400'
 SEPT. 1975 FIG 18