

00 126 7/8 A FILLIOROGED BATHROLD This symbol that for the new graphic lag form, adepted Joly 1, 1957, is to be used on all lags with numbers including and subsequent to make listed below:

## (GURRENT)

### ACCESSORIES THAT CAN

Denver, Colorado	0.676
Casper, Wyoming	
Billings, Montana	M-432
Colgary, Alberta	C-1006
Regina, Saskatchewan	R-1025

Denver, Colorado	D-876
Casper, Wyoming	CW-882
Billings, Montana	M-432
Colgary, Alberta	C 1036
Regina, Saskatchewait	R-1025

ROCK TY	PES	BECOME	A ROCK TYPE	ROCK BI	UILDERS
	SIDERITE, bedded	peri	centage use of accessory symbols per ten-foot intervals		percentage use of rock builder symbols per ten-foot intervals
	SANDSTONE	0 to 5% = 5 to 20%	e no symbols   20 to 40°o · 2 symbols		20° o F 50 to 70° 5 -= 2 symbols 70 to 100° == 3 symbols
	SILTSTONE	+	ARKOSIC		1
Barbara 1773	BENTONITE		ARGILLACEOUS, disseminated		ALGAL, nondescript
	COAL		DOLOMITIC	(A)	ALGAL, encrusting
Hittitt	SALY			[ PA	ALGAL, oötoid
777777	GYPSUM		CALCAREOUS		ALGAL, coralline
TT 27	MARESTONE, limy-dolumitic		ANHYDRITIC		BIOCLASTIC or FRAGMENTAL
	LIMESTONE		GYPSIFEROUS	β	PSEUDO OOLITES or PELLETS
	DOLOMITE, primary	•	FLOATING SAND GRAIN	<u> </u>	CORAL
	DOLOMITE, secondary		SILTY	_=	STROMATOPOROID
	ANHYDRITE, primary		SANDY	<u> </u>	BRYOZOA
	ANHYDRITE, secondary		ARGILLITE GRAIN		FORAMINIFERA
	SHALE, light gray		CHERT, light and dark	©	CRINOID
	SHALE, medium gray		CHERT, tripolitic	<u> </u>	OÖLITES
	SHALE, dark gray		CHERT, sandy and politic	□ □	MOLLUSKS
	SHALE, block	0	NODULES, Fe-st		
	COLORED SHALES, light hue	θ	NODULES, fimy	ACCESSO	PRIES
	COLORED SHALES, medium hue	0	NODULES, dolomític	丁	MARL, limy
	COLORED SHALES, dark hue	**	NODULES, phosphatic	7	MARL, dolomitic
	CLAYSTONE, light gray	69	NODULES, siderite		LIMESTONE STREAKS
===	CLAYSIONE, medium gray	•	SIDERITE PELLETS	77	DOLOMITE STREAKS
	CLAYSTONE, dark gray	~	GLAUCONITIC	P	PYRITE
	CLAYSTONE, black	æ	SALT CAST or INFILL	6	BENTONITIC
3-5	COLORED CLAYSTONE, light hue	TEXTURE		$\triangle$	SILICEOUS
	COLORED CLAYSTONE, medium hue	L	LITHOGRAPHIC		SHALE, Iominae
	COLORED CLAYSTONE, dark hue	СХ	CRYPTOCRYSTALLINE		SIDERITE CEMENT
9/3.8/3	GLACIAL TILL	е	EARTHY	S	PLANT SPORES
. & c 6	CONGLOMERATE, example, 40% cht. 40% is, 10% doi pbi, 10% sgnd	С	CHALKY	*	MINERAL CRYSTALS
5000 E	BRECCIA	MISCELLA	ANEOUS		CALCITE CRYSTALS
8+	GRANITE WASH	臣纽	KARST TOPOGRAPHY	Ø	PLANT REMAINS
	IGNEOUS, basic	<u> </u>	VERY POOR SAMPLES (Questionable Interpretation)		FISH REMAINS
36.63E	IGNEOUS, acidic			F	FOSSILS
<u> </u>	VOLCANIC		CAVINGS, connot interpret		
	METAMORPHIC		NO SAMPLES		4

#### abdreviations of depositional environments

R Residuot	LACUSTRINE	LACUSTRINE STRAND	TRANSITIONAL	MARINE
E — Eolian	Lt — Turbulent	t's — Turbulens	or STRAND	Mt — Turbulent
G — Glacial	La Agizated	Po Agitoted	It — Turbulent	Ma Agitated
C — Colluvial	Li Intermittent	Ui - Intermittent	Ta Agitated	Mi — Intermittent
	Lq Quiet	isq — Quiet	Ti — Intermittent	Mg — Quiet
FLUVIAL	lb Bog	₽b Bog	Iq — Quiet	Me — Euxinie
Ft Yurbulent	Lp — Penesoline		7b — Bog	Mp Penesaline
Fa Agitated	Ls — Salina		Tp - Ponesoline	Mr - Reef
Fi — Intermittent	Lh Hypersaline		Ts — Soline	Ms — Spline
Γq Quiet	tr Reef	•	Th — Hypersaline	Mh Hypersaline
Fb Bog	lo Organic			Mo Organic

# COMMON ADBREVEATIONS

ns'	1, 1957, publico, 2103-07,	bbreviotions for the A.A. will be used on those listed below those below these listed below.	P.G., Sentemberali logs with	t log form; edopted July ar, 1957, Vol. 41, No. 9, numbers including and
		Denver, Colorado Cosper, Wyoming Billings, Mantana		. CW-8§2 
		Calgory, Alberta Regina, Saskatche		. C-1036
ise	Laose Lustre Light (er)		sol s&p sof	Salt & pepper
ht	Little		16	Sub Sector
mor	Magnetik Maroon		scol	Scottered Schist Scolecodonts
mas	Massive Material, Member	matter	1d	, , 5 and (1/10-2 mm) , , 5 andy
mdit	Mudstone Metamorp Metasoma	ohic	sed	
	Mica (reas Microfossi Micro-Mic		sh	Skale Shadow
micxl mid	Microcrysi	oceous offine	shy	Silice (sout)
mky	Milky Minor Minerol (i	zeď)	sks sl sky	, , Slickensided , , Slight (ly) , , Silky
mod	Minute Maderate		sit	, , Silt , , Siltstone
mol	. , , . Marlston#		im	, , Smooth , , Solution
mtx	Matrix		spec	Spot (ted) (ty) Speck (ied) Spirifers
n not	No, non Nacreous Nadule (a		Spg sph sphol	Spherules
num	Numerous		apie	Spicule (ar) Sample
obi	Object Occasions Ochre	sl .	spity Spr sy-Ca	Sparry colcite
ech ed	Qdor		srtd	Sorted
oot	Oolicast ( Oolite (ic) Oomold (	)	srig	.,Sondstone .,Stone .,Stoin (ed) (ing)
ord	Opoque	,	str	. , Streak . , Strota (ified)
Orth	Orange Orthoclas Ostracad	•	stri Strom	, , Striuted
9X	Oxidized		styl	Sucrosie
Poro	, , , , Paper (y) Parapard , Pabble (4	nites -64 mm)	surf	Surface
pbly pch	Pebblγ		iah	
pei	Peliet Permeobi Petroleum	lisy	Tent tex Igh	Tentaculites
phot	Phosphate Pisolite (i	n lich	the	Thick Thin
pit pk	Piak Planicela	S <b>.</b>	trilo	Throughout Trace Trilobite
pifos	, , , , Palacypos , , , . Plant for:	iils ,	trasp	Translucent
pol	Platy Palish (ec Parous (s	l) (by)	froc tub	Trochiliscus Tight (ly)
port	Porcelone Possible Pin point	ious Glity)	tul	Tuffaceous
pred	Predomin Preserved Primary	ata (IV)	uncons	Unconformity Unconsolidated Uniform
pris	Prism (at		υp ,	Verv
prom	Probable Prominen Pseudo	rt (gA) (gA)	var	Variable
pt	Part (ly)		veel	Varigated Vitreous
pyr pychit	Pyrita (ic Pyrobitus Pyroclast	man	WD4	. Very poor samples
qiz	Quartz Quartziti	le.	vrtf	Varved
dist	Quarteet		YU9	Yug (gy) (ular)
rd	Rodiate	d)	wh	· · · Astarem
reid	Regular Replaced Residue	OL]	wthr	, , . Weather , , . Weathered
rk	Remains	(nant)	wir wry	, , . Wavy
f0	Rore	•	abd	Cross-bedded
rthy	Resinous	·	xl	Crystal (line) Cross-laminated
6	Small		4	

yel .....Yellow zeo .......Zeolite zn .....Zone

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Specimens marked . ank N. Church (Boretver 37A, 57, 61, 62, 73) HE HAT CREEK 25(2)6

HAT CREEK BOREHOLE 74 - 23

#### Specimens

•	
246 268 279	pale grey clay with plants pale grey clay with plants black irregular carbonaceous shale, (? coal) some resin
326 337	poor coal pale grey clay with plants
341 344'5	specimen of <u>plant</u> could be part of plant or volcanic ash, pale brown silty
352	pale brown silty clay (hard) with plants (? ash)
363	hard pale brown, with plants (silty clay? with siltstone perhaps)
374'5	clay, disintegrates (? bentonite) pale brown
380 383'5	clay, pale brown, listric surfaces pale brown coherent clay, banded, with plant fragments (? ash)
395	probably poor variety of Hat Creek coal
405 415 418	pale brown clay with plants 'poor' coal pale brown silty clay (hard) interbanded irregularly with planty material
420 450 455	pale grey-brown clay with plant fragments peculiar clay, dark, planty carbonaceous, dark planty shale, almost coal?
475 479 497'5 498'500 518 524 541 546 550	pale clay parting with plants (? ash) probably 'poor' coal pale brown silty, white fragments (? ash) ? plant fragment ? plant fragment coal coal coal coal (resin) brown clay, listric surfaces, plants (? seatearth) pale grey-brown clay, plants, probably ash coal with resin dark clayey parting with lots of small bright plant fragments
576	pale grey-brown silty clay with white spots interbedded with coal (? ash)
588	pale brown silty clay banded in coal (? ash) (2")
607	<pre>very distinctive pale brown banded silty with white spots (? ash) also ? plant fragments</pre>
609	pale brown silty clay with white spots (? ash)
615 615'6	coal with resin 'poor coal' or clayey parting
638 639	? plant fragments plant fragments dark clay with resin fragments
669'6	dark clay with resin fragments
718 723 727	ground-up clay plant fragments ?, (? 733') coal (? broken-up)
740 743	? plant fragments plus coal specimen pale brown clay banded with white spots (? ash)

..../2

### HAT CREEK BOREHOLE 74 - 23 continued...

757 771 773 783	<pre>coal, banding irregular pale grey clay parting with plants; (? ash) coal ? seatearth, dark brown listric surfaces, plants</pre>
795'6 797 797'2 809'6	<pre>pale grey clay with plants, (? seatearth, ? bentonit ?) 'grit' plants ? silty clay (? bentonitic) 'sandstone'(?)</pre>
810	sandstone
813	could be seatearth or slickensided
818	pale grey disintegrated clay
835	conglomerate (pebbles up to ½ inch)
856	conglomerate (peobles up to 1" or 1 1/2")
911	pale grey seatearth
977	structureless buff claystone, rare plant
1282	broken up buff claystone
1242	? seatearth

# 00/26

176 193 232	pale brown claystone pale brown claystone pale brown claystone (more compact)
246 289'6	pale brown claystone (more compact) pale brown claystone (some staining around carbonaceous fragments)
313	off-white band in pale brown clay
324'5	pale brown clay with dark grey portion
358 456	pale brown claystone, disintegrated pale brown claystone with plant fragments
654'6	pale brown claystone with 1/2" paler band (? ash)
661 667 703	pale brown claystone, disintegrating brown claystone (? fish fragment) (? conodont) yellow-brown band in brown claystone (? ash)
723'5 725'5 726 728 729	dark brown-grey mudstone with brown streak similar to 723'5 perhaps siltier but sulphury as 723'5 but plant fragments coal, ? canneloid pale yellow-brown clay (? ash)
762	slickensided grey-brown clay (? seatearth)
778 797 798 808'5 826 827 867 882 890	coal with resin slickensided grey clay with plants?, seatearth (broken up) slickensided grey clay with plants, (? seatearth) broken up fossil plant in coal? grey clay with partings, ? seatearth (listric surfaces) pale brown claystone with plants (cf. stuff at beginning of hole) coal (? vitrain) coal (dull with occasional bright streak) resin coal (heavier?) fossilized plant fragments and FeCO <sub>3</sub>
958	carbonaceous silt with coalified plant fragments ? some kind of seatearth, slightly silty and a brownish look to it
997 1025 1070'5	grey silty sandstone with occasional vertical rootlet (?) calcified plant fragment pale grey sandstone (? ashy) plant fragments
1288 . 1295	coaly material with irregular pale grey-brown partings (could these be ash ?) similar to 1288 but more clayey material (? ash)
1345	pale brown clay with white flecks (? ash) sticks to tongue
1351 1355	coal, one piece like cannel other piece shows banding near or parallel to core axis brown clay with planty listric surfaces (? seatearth)
1411'3	coaly material with interbanded (irregularly) pale grey clayey material (? ash)
>1553'1 1615 1640	pale brown clay with white flecks (? ash) coal with resin (heavy) probably mainly fossilized material but check for ash
1648	pale brown clay with white specks, planty material (? ash)

## HAT CREEK BOREHOLE 74 - 37A continued....

1736	breccia, cemented together
1765	fossilized plant
1766'3	
	fine carbonized plants sometimes cutting bedding
1991	(? seatearth)
1771	? brecciated silty pale brown claystone with plant fragments and calcite veining
1777	silty grey clay with plants
1790	'pelletal' looking pale grey clay with plant material
1791	cf. 1790 ?, also fossilized plant fragments
1796	interbanded pale grey (pelletal) and dark grey clay with
	plant material
1801	pale brown-grey silty clay with lots of fine plant
٠.	fragments and some larger (vertical) ? seatearth
1819	dark drey silty mudstone with fragments of pale grey-
	brown clay and plant debris, looks like breccia
	(? contemporaneous)
1821'6	? plant fragments or 'pelletal' rock \
1838'6	? breccia
1851	brown claystone
1868	interbedded pale brown clay with coal material (this might be thin ashy material)
1876	pale brown claystone (white spots) (? ash)
1070	N.B. contact
1891	brown clayey material with carbonaceous shale,
	fairly heavy (? FeCO <sub>2</sub> )
1927	brown clayey material interbedded with coaly material
•	mixture, lots of fine plant debris also perhaps
	fossilized large plant
1968	brown clay parting in coal (? ash)
2007	pale brown clay parting with white spots (? ash)
2061	fossilized plant (but test for ash !)
2087	coal with resin
2166'8	brown-grey clay banded in dark shale
2167'€	decomposing sandstone with grains in clay
2175	decomposing pale brown clay

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392'6 352'4 353'4	disintegrated pale brown claystone yellowish claystone pale buff claystone
542	buff claystone with plants
612 621 623'5 689'6 690'3 692'6	dark grey mudstone with ? spores pale brown clay plants, white spots (? ash) brown claystone, fine planty material in core (? ash) probably fossilized plant coal with resin probably fossilized plant
718'6	grit with coalified plants
834	darkish grey seatearth
95719	buff clay with plant fossils
962	coal with dark grey clay containing coalified plants
1035	coarse grit (up to 1/8") grey and white speckled
1089	pale brown clay with white specks (? ash)
1159'5 1160'3 1161	grey clay (broken up) with plant fragments grey sandstone with plant fragments broken up buff clayey grit
1172	conglomerate on top of 'sandstone', most pebbles $1/8  \text{th}$ , $1/4  \text{th}$ , or $1/2  \text{"}$
1207	pale grey clay 3/4" in middle of dark grey seatearth (? ash)
1212	banded pale grey and dark grey clay but with fine coalified plant fragments, slickensided
1378'6	pale brown clay (yellowish stain) (? ash)
1404 1476'5	dark grey seatearth clayey grit on top of silty clay (pale grey) with plants (N.B. soft clay between them)
1510	conglomerate average 1/4 - 1/2", some 3/4", clayey
1524'6	matrix, some pink pebbles buff, irregularly banded clay with plants, compact
1617 1617'5	grey pellety clay with lots of plants (broken up) brecciated and pellety, grey to darker clay with plants and white specks (? ash)
1527	pellety buff clay with plants in coal
1631	? some sort of sandstone or siltstone, pale grey clay at one end, white specks and fine veining
1636'5	pale grey clay with lots of small plant fragments
1642'3	hard brown (?) silty material with plant fragments (heavy ? FeCO <sub>2</sub> )
1699	pale irregularly bedded clay with fine plants, looks 'ashy'
1734	pale grey-buff clay, slightly silty, looks 'ashy'
1754	graded bedding in silty pale grey and grey clay with slight faulting, plant fragments
1784	peculiarly bedded pale grey clay and silt with plants

### HAT CREEK BOREHOLE 74 - 44 continued....

1788'5	<pre>irregularly bedded pale grey and silty clay with plants (? bioturbation)</pre>
1807	grey mudstone with white pellets, plant fragments
1876	grey silty mudstone with plants
<b>1916'</b> 6	pale claystone with white pellets (? ash)
1925	<pre>black oolitic looking material, brown on outside (? sphaerosiderite)</pre>
2046	darkish grey mudstone with white specks (? ash)
2052	top layer grey with white specks (? ash) most of specimen is brown with plant fragments ? canneloid coal or shale
2064'1	brown 'mudstone' with coal fragments and resin
2065	buff clay with plants and white specks (? ash)
2216	conglomerate pebbles up to 3", pale clay matrix

446	pale grey claystone with some carbonaceous laminations						
670 672	pale grey claystone, sometimes laminated						
728	laminated grey claystone						
<b>751'</b> 7	pale brown claystone (? ash)						
762	laminated grey claystone (? varves)						
816	? worm burrows (sandstone in clay below)						
955	pale brown claystone in coal (? ash)						
• 994	as above (? ash)						
1064	pale brown silty claystone (? ash)						
• 1091	coarse speckled silty claystone (? ash)						
• 1150'5 • 1337 • 1428	type of seatearth coal with bedding parallel to core axis coarse grit eroding into carbonaceous mudstone and pale grey claystone (irregularly interbedded) it appears erosive surface and bedding are parallel to core axis						

20/26

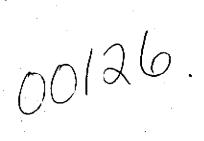
#### Specimens

• 542'8 • 544'5 • 545 • 546 • 547 • 547'3	black mudstone with (? fish) black mudstone with (? fossils) black mudstone with (? fish) brownish-black mudstone with (? fossils) brownish-black mudstone with (? fish) brownish-black mudstone with (? fish) brownish-black mudstone with (? fish) or ? small bivalve					
552'6	pale buff claystone (? volcanic ash)					
• 594'8	grey-brown mudstone with (? fish)					
612	buff claystone (? volcanic ash)					
1057	pale grey mudstone with plant fragments interbedded irregularly with silty material (? bioturbation)					
1235	? poor coal with clay partings					
1278	pale brown claystone (? ash)					

HAT CREEK BOREHOLE 74 - 48

#### Specimens

• 497 (? fish fragments in brown claystone)



<b>◆ 607 '</b> 6	pale grey clay with plants
• 994'6	pale grey clay with coalified fragments (? type of seatearth)
1012	? type of seatearth
•1018'3	? volcanic ash (pale grey claystone) 2" band, plant fragments numerous
• 1019'3	? volcanic ash (more plant fragments)
.1041'9	speckled white claystone (? volcanic ash)
1418	? volcanic ash and plant fragments (speckled)
• 1548	grey-buff claystone (? volcanic ash) plant fragments
1615	brown speckled claystone in coal (? ash)
1626 -1620'6	speckled claystone bands in coal (? ash)

He-HC 74 (2) D.

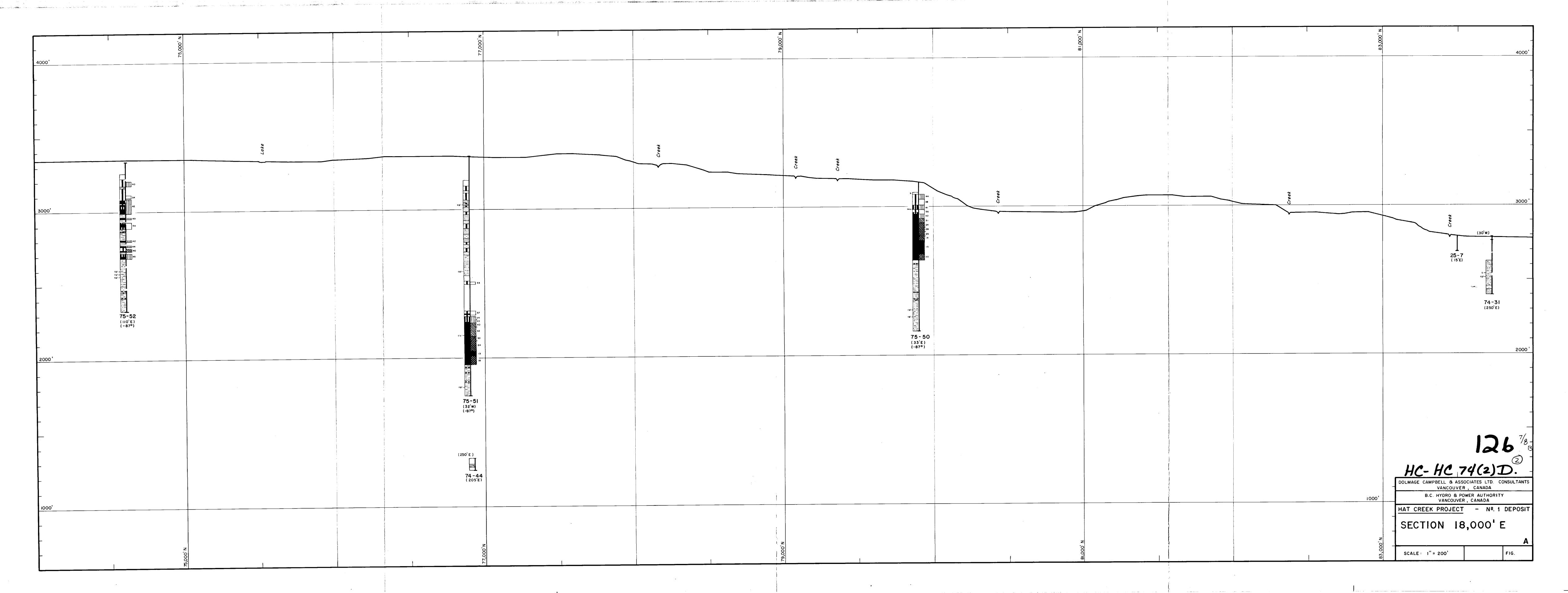
HC "1 Proj. Deposits.

(Book - B1)

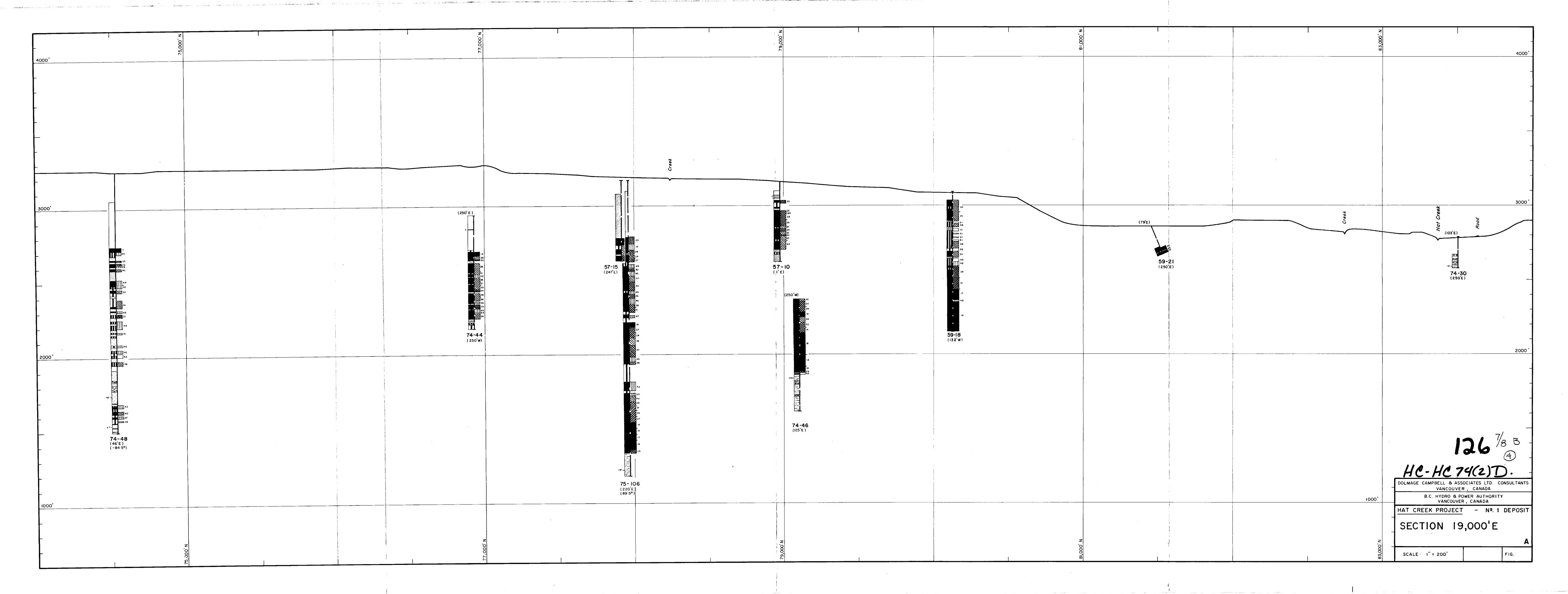
Dolmage Campbell and associates Ltd.

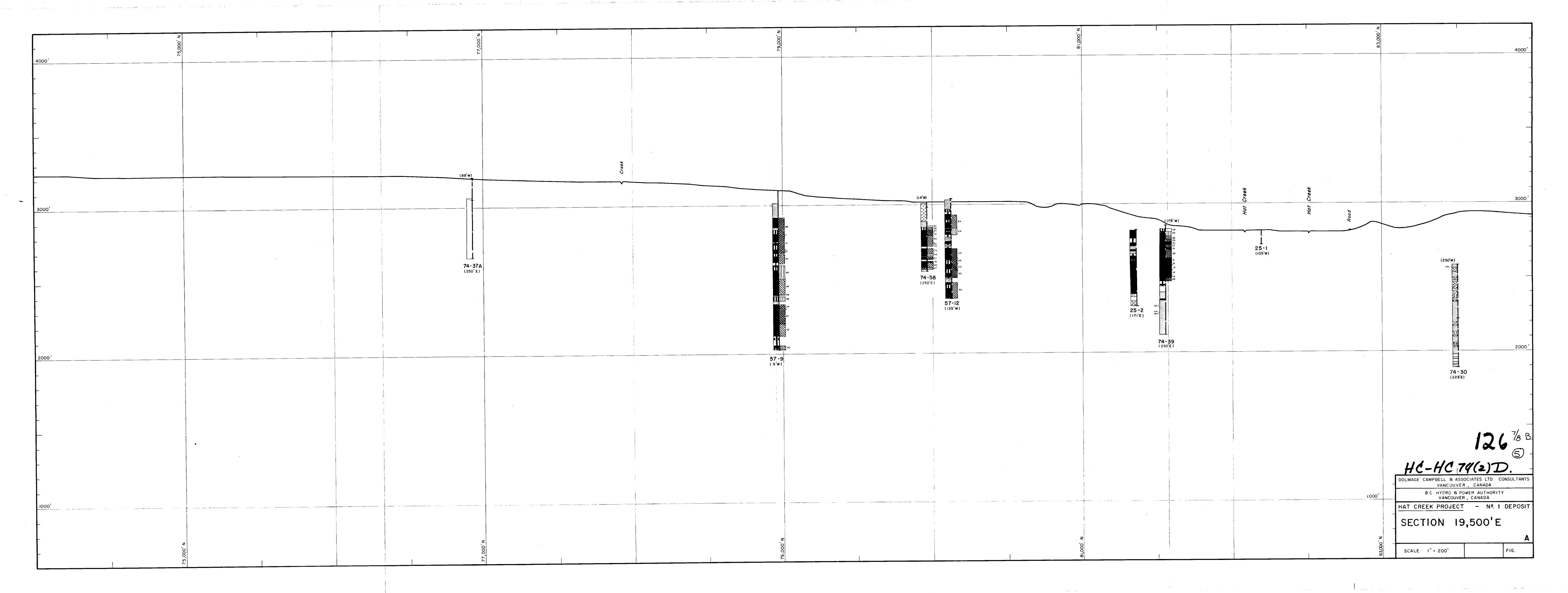
00 126 7/8 B

N ,000,2			N '000,e7	N 000 E	Z - 000 ' 4000 '
4000'					
-					
	i i	cal cal	Crook	Creek .	
		54 1 50 54	52 44 31 27	Creek	3000'
3000'		53 26 34 30 24	21 16 14 20 20 20 20 20 20 20 20 20 20 20 20 20		Creek
-					
-		75-53 (76'E) (-87°)			
2000'					2000'
2000'			74-43	(250'w) cq1	- -
			(77'W) (-88-5°)	74 - 32 ( 170' W)	
					126 7/8 B - 10 - 10 - 10 - 10 - 10 - 10 - 10 -
					DOLMAGE CAMPBELL & ASSOCIATES LTD. CONSULTANTS  VANCOUVER, CANADA  B.C. HYDRO & POWER AUTHORITY  VANCOUVER, CANADA
1000'		z		2	HAT CREEK PROJECT - Nº. 1 DEPOSIT  SECTION 17,500' E
N,000,N		,000,77	000,67	81,000	SCALE: I" = 200' FIG.



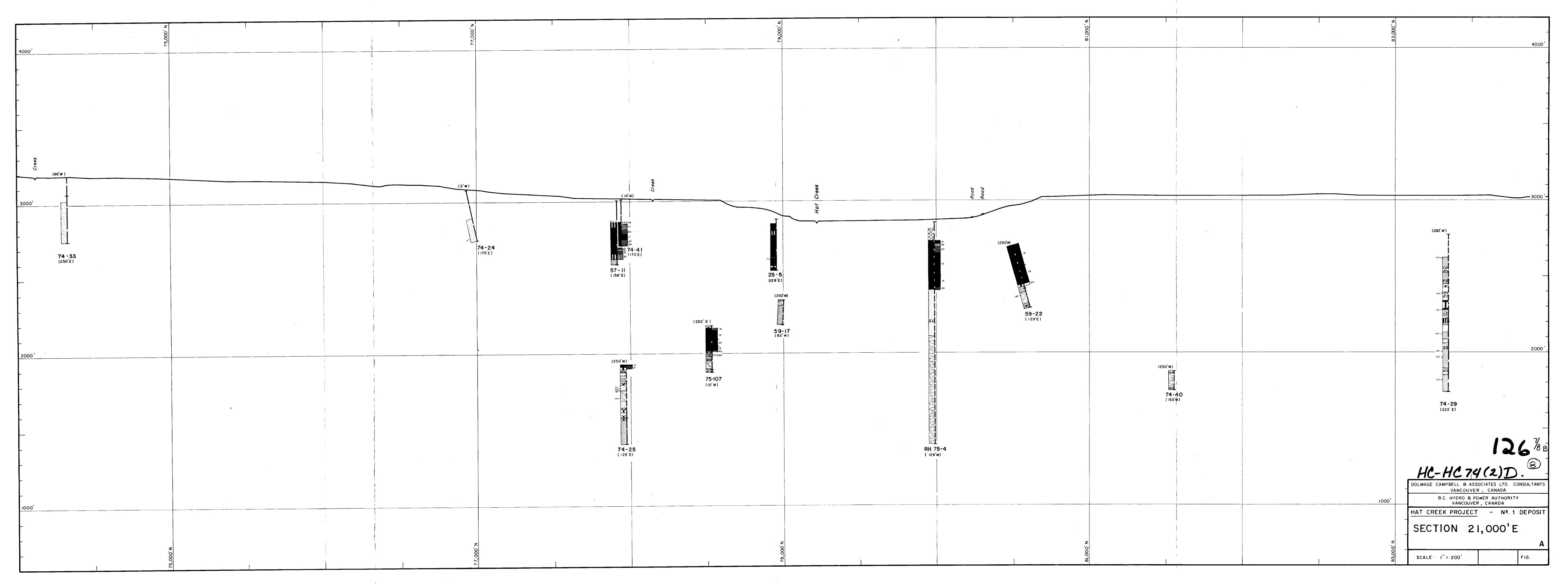


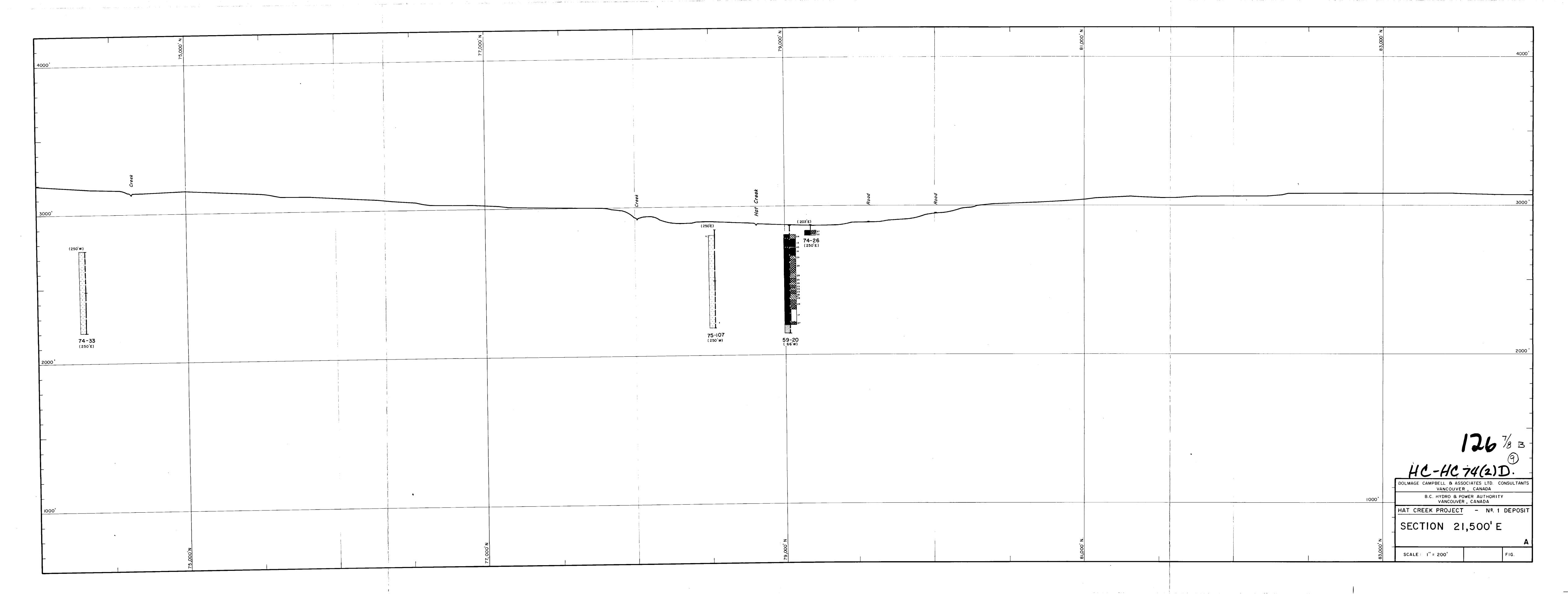




4000	N,00C'22	N ,000°,67	N 000 00 00 00 00 00 00 00 00 00 00 00 0	2 .00 8° 8° 4000'
Creek		(woi)		
3000'		29 29 29 29 34 34 34 35 36 37 38 39 39 30 30 30 30 30 30 30 30 30 30 30 30 30	Hat Creek Hat Creek Hat Creek Hold Creek Hold Creek Hat	3000'
	22	(25° W) (25° W	(250'E)  (250'E)  (250'E)  (250'W)  (250'W)  (250'W)  (250'W)	2000
- 75-49 (37'E)	74-37A (250' E)	59 - I6 (7'w)	74-38 (250'E) 74-39 (48 E)	7/8 B
1000'				HC-HC, 74(2)D.  DOLMAGE CAMPBELL & ASSOCIATES LTD. CONSULTANTS VANCOUVER, CANADA  B.C. HYDRO & POWER AUTHORITY VANCOUVER, CANADA  HAT CREEK PROJECT - Nº. 1 DEPOSIT
N,000°,N	N,000'L	N '000, P	81,000° N	SECTION 20,000'E  SCALE: 1" = 200'  FIG.







4000'	, v, 000°222	7.000°E	N , 000 is	Z
(250'w)	25-3 (48'E)	(2:0°W)  75-107 (2:0°W)  74-26 (2:0°E)  RH 75-3 (6:4'E)		(99W)  3000  74-35 (191'E)  2000
1000°,	N '000'N	79,000'N	N. 1000, N	DOLMAGE CAMPBELL & ASSOCIATES LTD. CONSULTANTS VANCOUVER, CANADA  B.C. HYDRO & POWER AUTHORITY VANCOUVER, CANADA  HAT CREEK PROJECT - Nº 1 DEPOSIT  SECTION 22,000 E  SCALE: 1" = 200' FIG.