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105-A-2,3,6

PLACER DEVELOPMENT LIMITED

A REPORT ON THE EXPLORATION OF
LIARD COAL BASIN, WATSON LAKE, M.D.,
YUKON TERRITORY

REPORT ON THE EXPLORATION OF
THE EXPLORATION LICENCES
61, 62, 66, 67, 68, 69,
70 & 71

This report has been examined; declared acceptable as Representation Work under Section 32 and Schedule B of the Canada Mining Regulations and valued in the amount of $113,022.00

Chief: J. Matheson

Date: June 22, 1978

N.T.S. 105-A-2-SEQ & SWQ
105-A-3-SEQ, SWQ, NEQ, NWQ
105-A-6-SEQ, SWQ

FOR: Placer Development Limited
BY: I. Borovic - P. Eng.,
Geologist

FIELD WORK: Nov.-Dec. 1977
REPORT: May, June 1978

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A REPORT ON THE EXPLORATION OF LIARD COAL BASIN, WATSON LAKE, Y.T.

Liard Coal Summary

1. Extent

Coal outcrops were found on the banks of Frances River on the northeast edge of the Basin and on the banks of the Liard River, south of the Watson Lake area near the south end of the Basin. The strike length of about 50 km. and width of 20 km. make an area of 1,000 $km.^2$ underlain by Tertiary sediments containing coal.

2. Exploration Results

Coal seams of 3.6 m. and 2.5 m. are present in trenches T-2 and T-3, while trench T-4 and T-4a contained thinner coal seams ranging from 0.3 m. to 0.6 m.

Coal intersected in the diamond drill hole LC#1 was of high ash, low sulphur and low calorific value, but close to the surface. Intersections of coal seams in the diamond drill holes LC #2, - LC #3 are of good mining width, and close enough to the surface to be mined by open pit methods. The analyses show ash content from 8% to 48% with low sulphur content from 0.10 to 0.4% and calorific value from 5600 to 10.700 BUT/lb. (Dry Basis).

3. Quality

All analyses to date are showing that the coal of low sulphur lignite to sub-bituminous B rank (ASTM), are present in the Liard Coal Basin (see Analyses Part 2 & Figs. 6, 7 & 8).

Assessment of Results

It is felt that a coal property should fulfil certain geological - engineering criteria before considering further exploration and development expenditures.

Therefore some basic criteria for selecting coal property (I.B., March 6th, 1974) are set out here as follows:

Geological Criteria

a) Simplicity of structure
b) Thickness, spacing and persistency of coal seams
c) Quality of coal
d) Depth of burial

Engineering Criteria

a) Open pit vs. underground
b) Power
c) Water
d) Transportation - highways, railroads, loading facilities
e) Accommodation

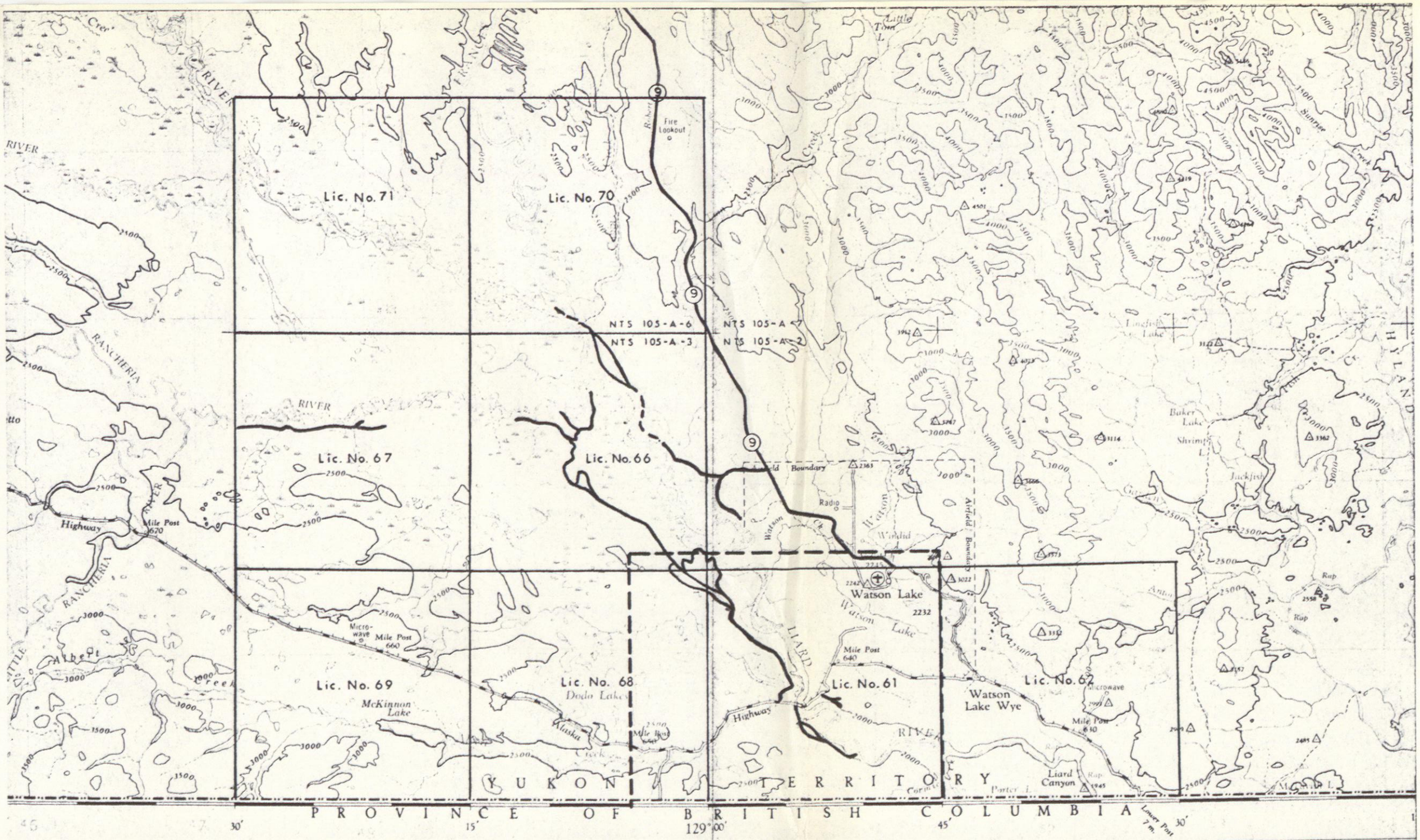
In the author's opinion most of the basic criteria as outlined were fulfilled.

Geological

a) The detail structure is still unknown
b) The coal seams are sufficiently thick and closely spaced; the lateral extent appears to be at least 50 km.
c) Coal is low sulphur lignite to sub-bituminous B suited for thermal use.
d) Depth of burial is relatively shallow

Engineering

a) The open pit mining possibility exists
b) Self-sufficiency of power for the southern Yukon-Northern B.C. and Howards Pass is the target set for this exploration venture.



PLACER DEVELOPMENT LIMITED

LIARD COAL EXPLORATION LICENCES

WATSON LAKE, YUKON TERRITORY

Scale 1:250,000

1 Inch to 4 Miles Approximately

Miles 5 0 5 10 15 20 Miles

Kilometres 5 0 5 10 15 20 25 30 Kilometres

Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys Ottawa.

REFERENCE

Road, Hard Surface, Heavy Duty ..... 3 or more Lanes / Partially completed
,, Hard Surface, Heavy Duty ..... 2 Lanes / (12) Route No.
,, Hard Surface, Medium Duty ..... 3 or more Lanes / 2 Lanes
,, Loose Surface, Graded and Drained ..... 3 or more Lanes / Not less than 14 ft. wide
Other Roads ..... / Poor condition
Trail .....
Railway, Double Track ..... Stanton Stop
,, Single Track .....
Boundary, International .....
,, Provincial .....
,, County or Land District .....
,, Reservation, Military, etc. .....
Electric Power Line ..... on Steel Towers / on Wood Poles

ROADS - *ROUTES*

hard surface - *pavée* .....
loose surface - *de gravier* .....
cart track - *de terre* .....
trail - *sentier* .....
Deletions - *Suppressions* ..... x x x x x

LEGEND

(9) THE CAMPBELL HIGHWAY

LOGGING ROADS

OUTLINE OF THE LOCATION MAP
1:50 000 SCALE

REFERENCE

Triangulation Station ..... △
Contours, Elevation ..... 1500 / 2000
,, Depression ..... 2000 / 1500
Form Lines .....
Stream, Intermittent .....
Dam .....
Falls .....
Rapids .....
Airfield, Military, El. in feet 765
,, Civil .....
,, Auxiliary .....
Building .....
Church .....
School .....

Spot Elevation, in feet 821
Wooded Areas .....
Swamp or Marsh .....
Cliff
W.L. 631
Navigation Light
Mud or Sand
Seaplane Base .....
Seaplane Anchorage .....
Fire Lookout Tower .....
Bench Mark ..... BM 752
Telephone, Trunk Route .....

Liard coal's main use would be thermal power generation for existing communities, Yukon gas pipeline and Howards Pass.

c) Water table does not seem to exist away from the river Artesian water and some aquiferous sands are present and would eventually have to be drained.

d) Only transportation of the Liard coal would be to Howards Pass on a back haul. The coal would be used for drying concentrate, and eventually for generation of power at the future mine site.

e) Location of the coal basin is ideal. Watson Lake community is 11 km. to the east and provides accommodation, hospitals, and schools. The Alaska Highway passes through the basin on the southern end and Campbell Highway is leading from Watson Lake toward north on the northeastern boundary of the basin.

Conclusion & Recommendation

The results achieved to date show that Liard Basin area has great potential for containing a large size coal deposit amenable to open-pit, strip mining and that lignite-sub-bituminous B coal could be effectively used for generating power to supply power needs of the Yukon gas pipeline, existing communities in Northern B.C., Southern Yukon and Western N.W.T., namely Cassiar, B.C., Upper Liard, Watson Lake (Y.T.) Lower Post (B.C.), Cantung (N.W.T.). Teslin Y.T., and to supply inexpensive coal for Placer's own use at the Howards Pass lead and zinc property.

It is strongly recommended that Placer not only continues but expands exploration drilling programme of Liard coal as proposed in previous and in this report.

INTRODUCTION:

This report describes the exploration work done to date; the results of regional mapping and sampling and gives the results of proximate analyses of 13 coal samples - from the area of Liard Basin south and west of Watson Lake, Yukon Territory. Furthermore it describes and discusses results of trenching and diamond drilling, gives results of core analyses and proposes an expanded drilling programme.

Property & Location (See map, Liard Coal Exploration Licences 1:250,000)

The eight exploration licences 61, 62, 66, 67, 68, 69, 70 and 71 covering the area of NTS Map Sheets 105-A-2, 3 & 6, were granted to Placer Development Limited in October, 1976 and July, 1977. The licences are:

61-105A-2-SWQ	Anniv Date	October, 1977
62-105A-2-SEQ	Anniv Date	October, 1977
66-105A-3-NEQ	Anniv Date	July, 1978
67-105A-3-NEW	Anniv Date	July, 1978
68-105A-3-SEQ	Anniv Date	July, 1978
69-105A-3-SWQ	Anniv Date	July, 1978
70-105A-6-SWQ	Anniv Date	July, 1978
71-105A-6-SEQ	Anniv Date	July, 1978

The licenses 66, 67, 68, 69, 70, and 71 are bounded by $60^{o}00'$ to the south, $60^{o}17.5'$ to the north. $129^{o}30'$ to the west and $129^{o}00'$ to the east. The licenses 61 and 62 are bounded by $60^{o}00'$ to the south, $129^{o}00'$ to the west, $60^{o}7.5'$ to the north and $128^{o}30'$ to the east.

Access

The area of licenses is traversed by Alaska and Campbell Highways and has a well developed and growing community of Watson Lake located right in the middle of the Licences 61 and 62, with schools, a hospital, an airport and other modern facilities available. A main logging road owned by the Yukon Forest Products, passes through the middle of the coal basin.

History of Exploration

During the months of March and April, 1976 the author collected and studied the available data on coal resources of the Yukon and the Northwest Territories.

"The composite file on the coal occurrences and production in the Yukon and the Northwest Territories" was assembled. (I. Borovic, April, 1976).

B. Ainsworth and D.M. Jenkins traversed the Upper Liard during late August, 1976 (B. Ainsworth, September, 1976) and noted coal bed exceeding 20 feet in thickness, approximately 5 km. south of Watson Lake. Two samples of surface material were taken. Some "trace coal occurrences were noted in the banks of the Liard River"... and a thicker (10-12') but steeply dipping seam was found 12 km. downstream from the confluence of the Liard and the Frances Rivers. The proximate analyses of the coal samples showed high ash, low sulphur and a colorific value from 3,700 to 7,029 BTU's/lbs. Coal was classified as lignite (ASTM classification) equivalent to the B.C. Hydro's Hat Creek coal. Consequently exploration licenses were taken for two areas around Watson Lake.

During May and early June, 1977, the author assisted by Percy Pacor, prospected the areas of Placer's Liard River coal licences 61 and 62 as a followup program to 1976 research and discovery of the coal in the area of Liard River.

The prospecting encompassed a larger area along Liard, Rancheria and Frances Rivers. Four additional coal outcrops were found and sampled.

A large area of the Liard Basin underlain by thermal coal, ideal location of the basin traversed by Alaska and Campbell Highways, and ease of access to the heart of the area by established logging roads has given enough justification for taking six more exploration licenses in early summer of 1977. Mapping, prospecting and sampling continued in late September on old and newly acquired licenses and more coal outcrops were found, sampled and analyzed.

During November and December, 1977 and March - April 1978, four trenches were excavated and three holes drilled (see 1:50,000 Liard Coal, Location Map).

Geology:

The oldest geological notes on the Upper Liard coal were written by G.M. Dawson. Following are excerpts from D.B. Dowling's "Coal Fields of B.C., G.S.C. Memoir 69 of 1915:"

> "The Upper Liard was traversed by Dr. G.M. Dawson, who notes Tertiary rocks on the Dease River and again on the Upper Liard and Frances Rivers and on his map joins them all into one rather large area. His description of the rocks in the Liard is here incorporated:
>
> "'Six miles from the canyon Tertiary clays of whitish and grey colours, and associated with impure lignite, are first met with, and these continue to appear here and there along the river as far as the Frances.
>
> "The thickest bed of lignite observed was about three feet, four miles below the Frances. The lignite is generally impure and often very distinctly laminated. It resembles in character the lignites of the Miocene of British Columbia, and the associated clays and soft shales are similar in character to those of that formation. Numerous boulders of basalt are found along this part of the river, and the basalt was observed to form a mural cliff, at a height of about 300 feet above the river, at a place just below the mouth of the Rancheria river. This rock evidently overlies the lignite-bearing beds. The shaly clays and lignites show evidence of considerable disturbance, and dip in some places at rather high angles. This may be due to the action of old land-slides along the banks of the river; but appears to be rather too constant to be satisfactorily accounted for in this way."'

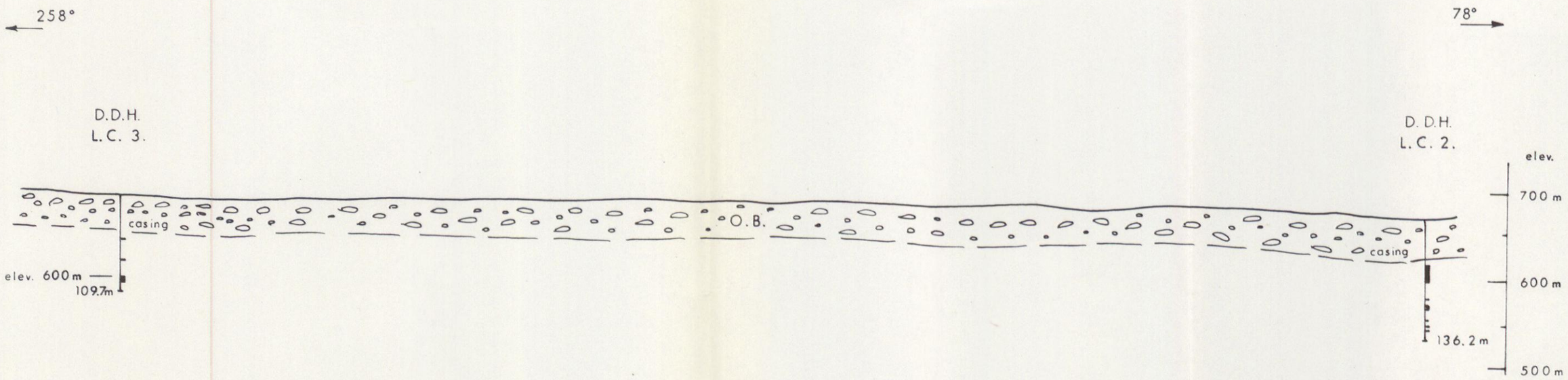


Figure 1.

Placer Development Limited

LIARD COAL V-162

SECTION THROUGH L.C.-2 — L.C.-3

Scale 1:5000 — May 23, 1977 — I.B. — A.K.

Property Geology:

The Paleocene lower Eocene sediments containing lignite are outcropping along the Liard River and its tributaries. Their stratigraphic position was determined by W.S. Hopkins, Jr. of I. of Sed. & Pet. Geology (G.S.C. Calgary). See attached reports, Part 2.

Basin (See Liard Coal 1:50,000 map in pocket)

Lower Tertiary sediments occur in an elongated trough, approximately outlined on the 1:50,000 scale map, 105-A-2, 3 and 6. The outline of the trough is based on the 1" = 4 miles G.S.C. geology map 105A and correlation supported by the airborne magnetic survey (1961), shown on the sheet 105-A-2, 3 and 6. The trough (basin) is elongated in NW-SE direction more or less along the Liard River and probably cut by two or more cross faults of obscure nature. The airborne magnetic survey shows existence of tertiary volcanic rocks, which was verified by field examination of the area. The thickest (?) portion of the trough appears to be located around Dodo Lakes and Upper Liard.

Structure:

Structure and relations to the other formations are not yet well understood. The attitude of the sediments does not follow any visible structural pattern. The beds are sometimes steeply dipping and sometimes horizontal or gently dipping (5^{o}-10^{o}).

Most of the contacts intersected in diamond drill holes range from horizontal to 25^{o}. (See section through L.C.#2 and #3, Figure 1).

A definite angular unconformity was observed at the outcrop RC-77-35 and 36, near the confluence of the Rancheria and Liard Rivers. Coal measures dip 50^{o} SE and are overlain with horizontally lying basal conglomerates followed by deposition of cross-bedded sandstones.

The relative age of the unconformity is possibly post Eocene.

Work Done in the Period -- November, December 1977 & March, April, 1978

Trenching:

Trenching was done by D8 bulldozer near known coal outcrops and a variety of coal seams were exposed. In the trench (T-4) two 0.5 m. coal seams were continuous at depth and one coal seam was a short lense in the overburden (Fig. 2).

Trench T-4a cut beside the locations RC-77-45 and 46 opened the claystone bed of up to 1 m. thick. The bed has about 60% coal "clasts" mainly parts of the tree trunks mixed with 40% clay. (Fig. 3 & photograph 1).

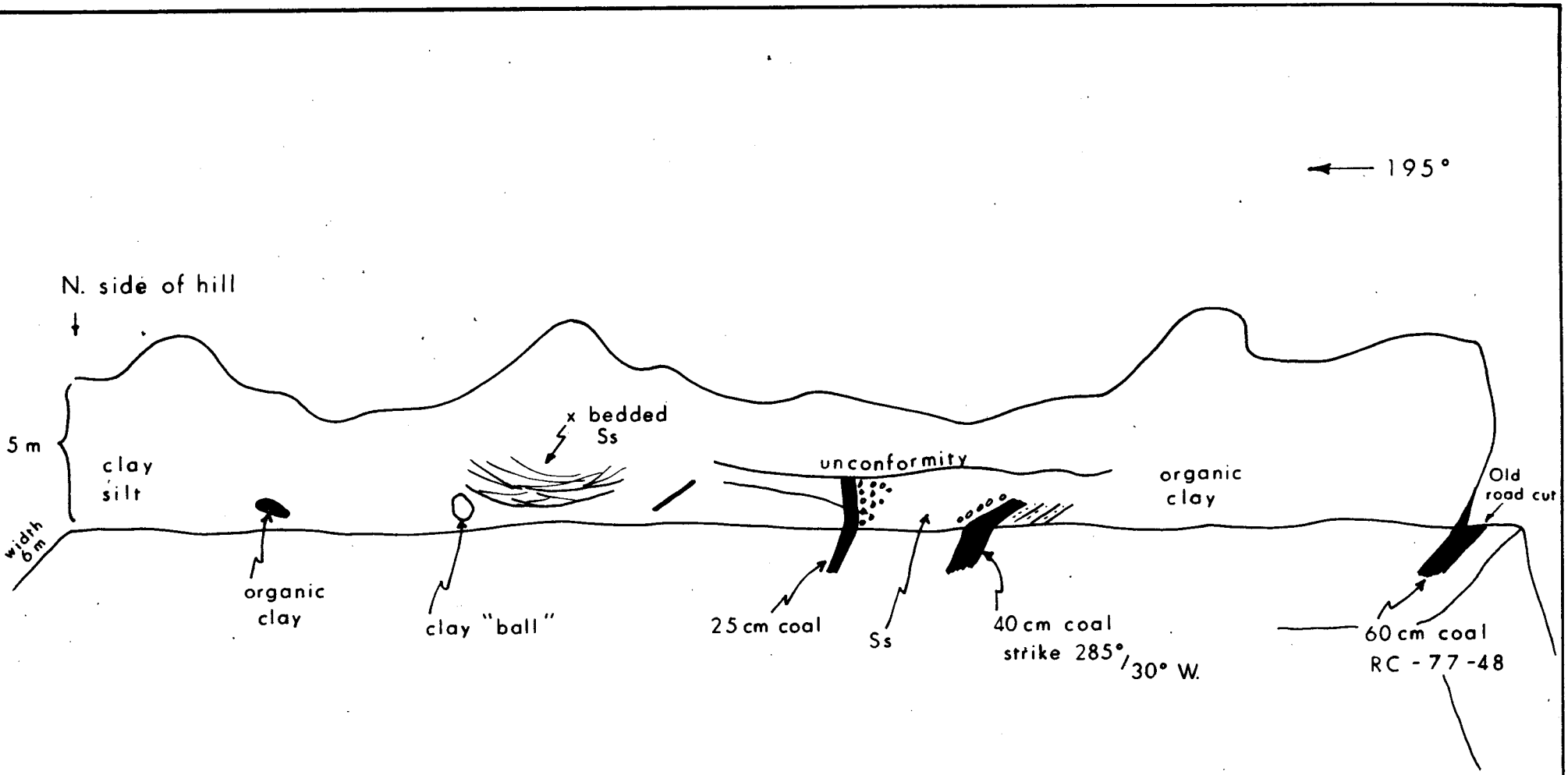
The T-3 trench has exposed horizontally lying coal seam 3.6 m. thick consisting of upper 2.5 m. and lower 1.1 m. thick seam with claystone partition ranging from 0-30 cm. in thickness (Fig. 4 & photograph 2).

Trench T-2 cut a slightly undulated 2 m. coal seam with abrupt washout at the western end of the trench (Fig. 5 & photograph 3).

Proximate analyses show good thermal quality lignite. (See location map 1:50,000).

Diamond Drilling:

The first diamond drill hole L.C. #1 was started on November 25, 1977, and stopped on December 6th, 1977 at the depth of 167.5 meters from the collar. The hole intersected(from 30.0 m. to 37.7 m.) 7.7 m.,of coal and clay. With 50% recovery it was difficult to assess real quality of the coaly material. Proximate analyses show very high ash of 53.26% low sulphur 0.58 and calorific value of 4987 BTU/lb. Bulk density and gamma ray logs show lower 3 m. out of 7.7 m. intersection to be lower ash and consequently of higher calorific value. Analyses of other coal-clay intersections in the hole were even of lower rank. The detailed analyses are plotted on the Figure 6.



1:200

0 1 2 m

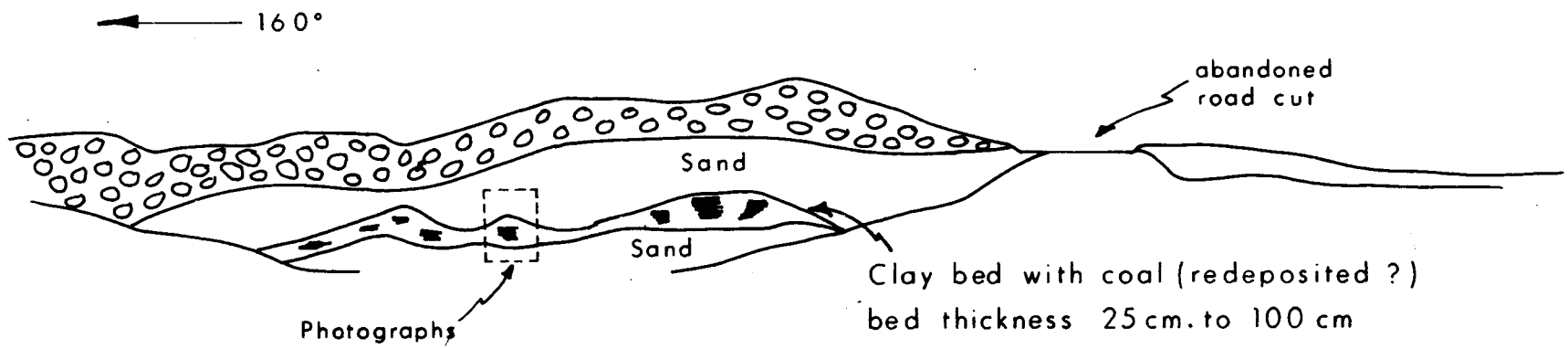
Figure 2.

Placer Development Limited

LIARD COAL V-162

SECTION VIEW OF TRENCH T-4

May 23, 1978 — I.B. — A.K.



1: 200

0 1 2 m

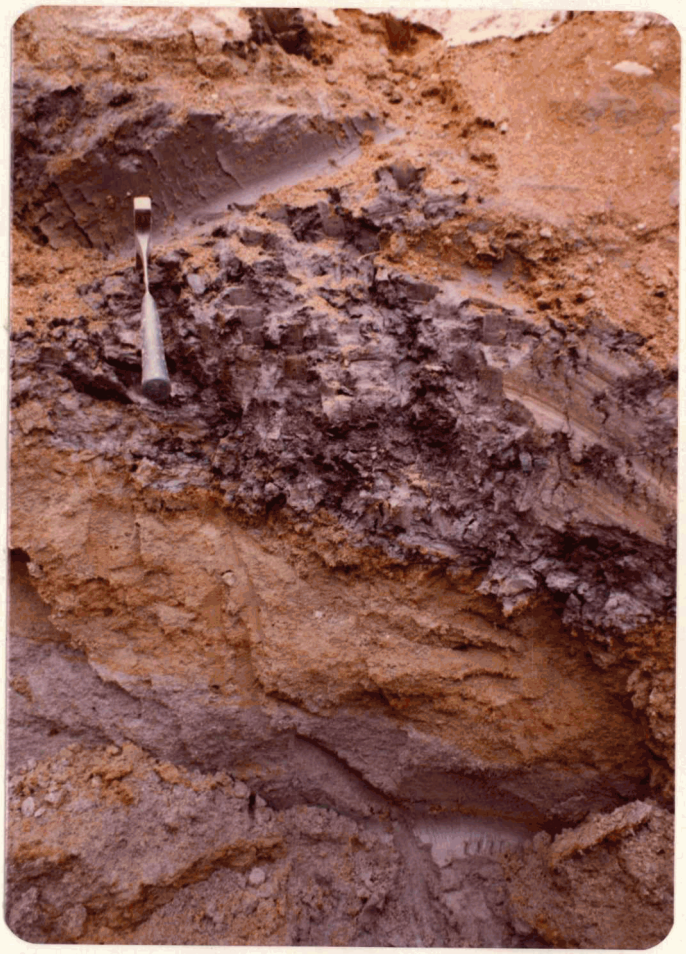
Figure 3.

Placer Development Limited

LIARD COAL V-162

SECTION VIEW OF TRENCH T-4a

May 23, 1978 —— I.B.—A.K.



SAND

COAL "CLASTS" IN CLAY BED

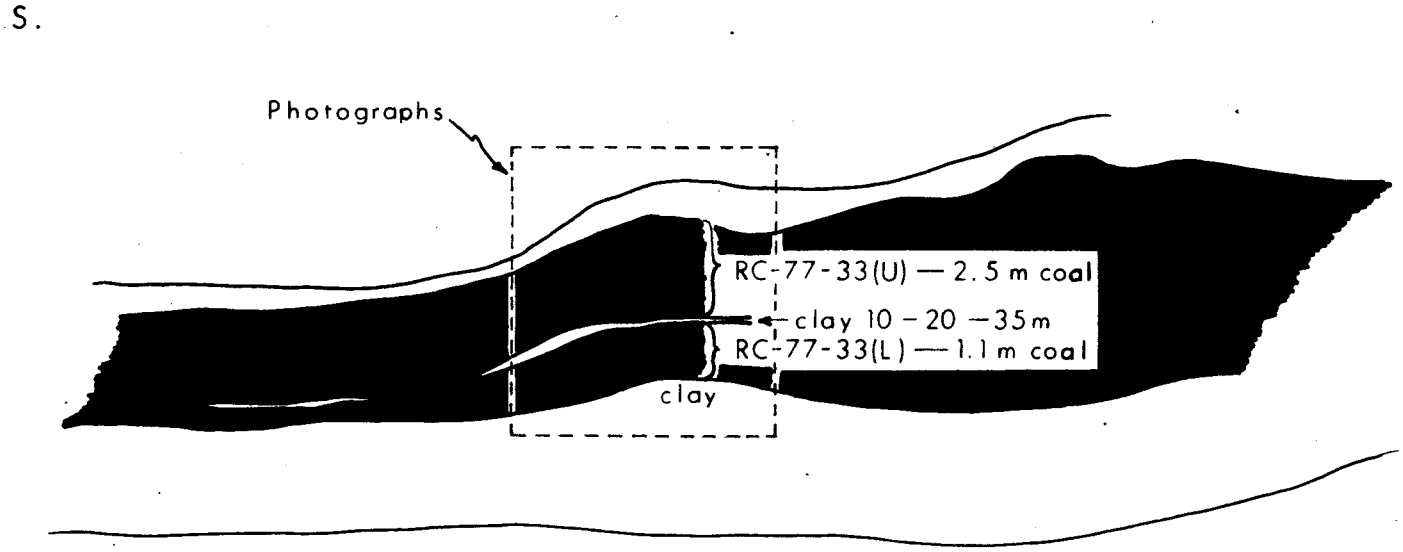
SAND

Photograph 1.

PLACER DEVELOPMENT LIMITED

LIARD COAL

DETAIL T-4a



looking West

1 : 100

0 0.5 1m 2m

Figure 4.

Placer Development Limited

LIARD COAL V-162

SECTION VIEW OF TRENCH T-3

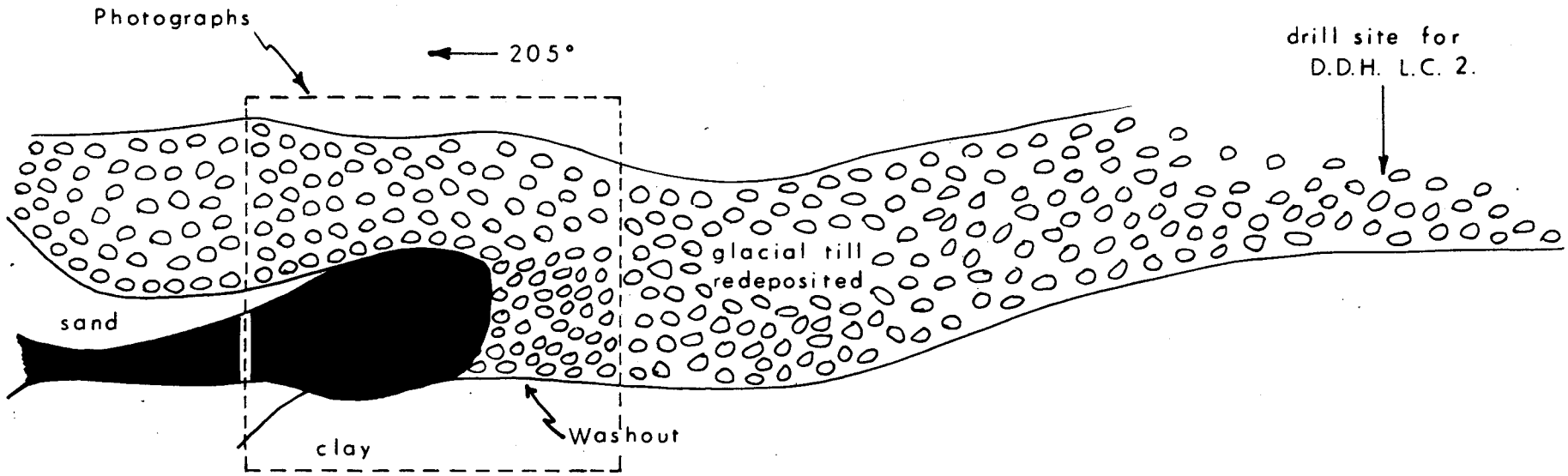
May 23, 1978 —— I.B. —A.K.

Photograph 2.

PLACER DEVELOPMENT LIMITED

LIARD COAL

DETAIL T-3



1 : 100

0 0.5 1m 2m

Figure 5.

Placer Development Limited

LIARD COAL V-162

SECTION VIEW OF TRENCH T-2

May 23, 1978 — I.B. — A.K.

Photograph 3.

PLACER DEVELOPMENT LIMITED

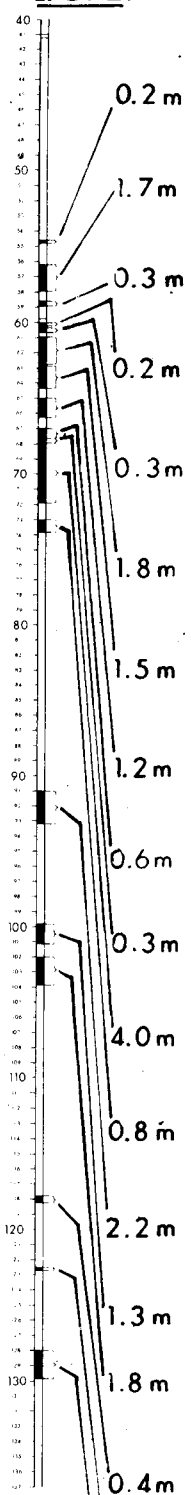
LIARD COAL

DETAIL T-2

WASHOUT

Depth in Metres from collar L.C.-1.	Moisture %	Ash %	Volatile Matter %	Fixed Carbon %	Sulphur %	Calorific Value BTU/lb.
— 7.7 m	26.68 as recvd.	39.05	30.63	3.64	0.43	3,656
	dry basis	53.26	41.77	4.97	0.58	4,987
— 0.3 m	24.65	43.65	27.89	3.81	0.30	2,371
		57.93	37.01	5.06	0.40	3,147
0.7 m	22.51	54.07	13.83	9.59	0.24	1,639
		69.78	17.85	12.37	0.31	2,115
— 0.3 m	19.52	55.89	14.22	10.37	0.21	1,631
		69.45	17.67	12.88	0.26	2,027
0.4 m	22.72	54.95	13.27	9.06	0.23	1,561
		71.11	17.17	11.72	0.30	2,020

Figure 6.
Placer Development Limited
LIARD COAL - V-162
D.D.H. L.C.-1 graphic log showing coal intersections and proximate analyses
May 15, 1978 — Scale 1:500 — I. B - A.K.



Depth in Metres from collar. L.C.-2.		Moisture %	Ash %	Volatile Matter %	Fixed Carbon %	Sulphur %	Calorific Value BTU/lb.
0.2 m	as recv'd.	36.61	19.00	24.42	19.97	0.16	5,114
	dry basis		29.98	38.53	31.49	0.26	8,067
1.7 m		40.50	12.36	27.19	19.95	0.14	5,482
			20.78	45.70	33.52	0.24	9,214
0.3 m		44.46	4.79	28.53	22.22	0.14	5,946
			8.62	51.36	40.02	0.25	10,706
0.2 m		44.21	8.64	26.30	20.85	0.16	5,493
			15.48	47.14	37.38	0.28	9,846
0.3m		41.78	5.42	30.09	22.71	0.17	6,158
			9.31	51.68	39.01	0.29	10,567
1.8 m		42.76	7.69	28.31	21.24	0.13	5,757
			13.44	49.47	37.09	0.22	10,058
1.5 m		42.23	5.33	29.26	23.18	0.13	6,139
			9.22	50.65	40.13	0.23	10,627
1.2 m		41.14	9.47	28.10	21.29	0.14	5,741
			16.09	47.73	36.18	0.24	9,754
0.6m		39.22	11.49	27.99	21.30	0.14	5,676
			18.91	46.05	35.04	0.23	9,338
0.3m		41.25	23.95	20.05	14.75	0.10	3,855
			40.76	34.13	25.11	0.17	6,562
4.0m		35.59	11.36	29.80	23.25	0.15	6,217
			17.63	46.27	36.10	0.23	9,652
0.8 m		27.42	20.45	29.23	22.90	0.22	5,896
			28.18	40.28	31.54	0.31	8,123
2.2 m		36.58	5.68	31.94	25.80	0.15	6,734
			8.95	50.37	40.68	0.24	10,619
1.3 m		37.38	14.18	28.05	20.39	0.16	5,704
			22.65	44.80	32.55	0.26	8,994
1.8 m		33.76	17.57	28.26	20.41	0.20	5,640
			26.53	42.66	30.81	0.31	8,514
0.4m		35,06	14.70	28.34	21.90	0.21	5,832
			22.64	43.64	33.72	0.33	8,980
0.2 m		23.61	37.11	23.62	15.66	0.24	4,364
			48.58	30.92	20.50	0.32	5,713
1.7m		23.65	21.74	33.23	21.38	0.18	6,301
			28.47	43.53	28.00	0.23	8,253

Figure 7

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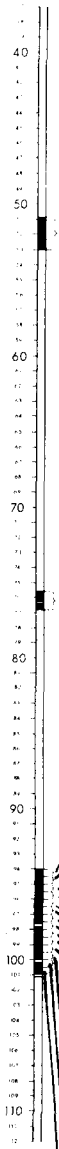
LIARD COAL-V-162

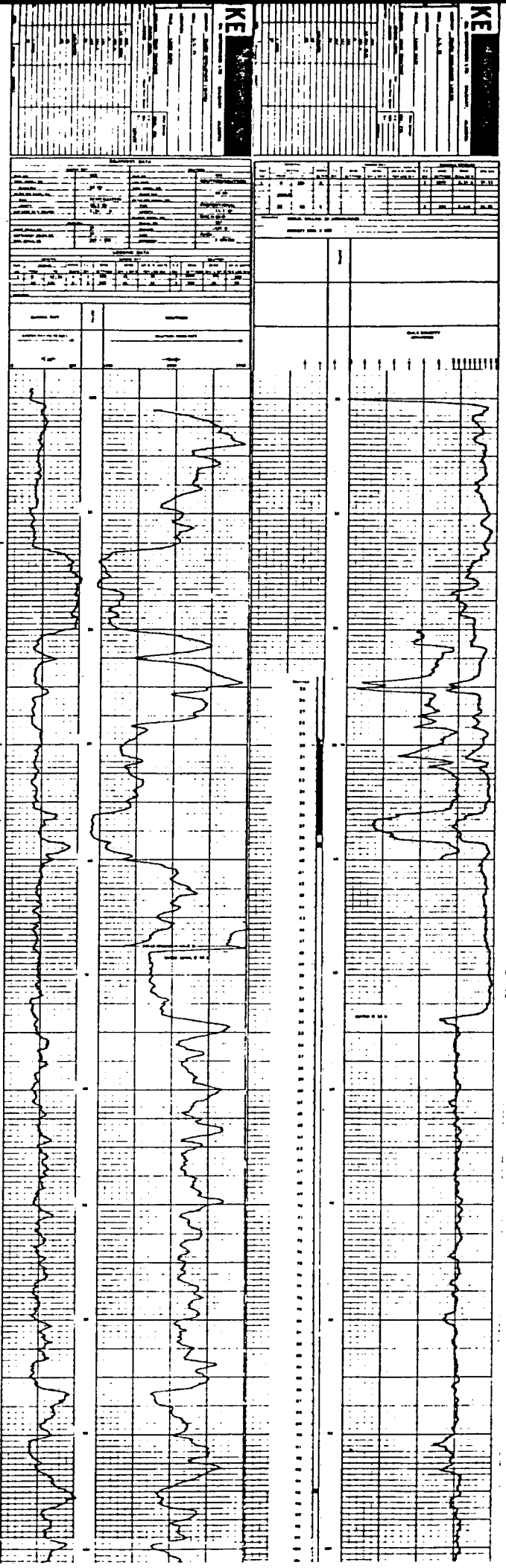
D.D.H. L.C.-2 graphic log showing coal intersections and proximate analyses

May 15, 1978 — Scale 1:500 — I.B.— A.K.



Depth in Metres from collar	L.C-3.	Moisture %	Ash %	Volatile Matter %	Fixed Carbon %	Sulphur %	Calorific Value BTU/lb.
— 2.1m		35.13 as recv'd.	15.41	29.40	20.06	0.21	5,747
		dry basis	23.75	45.33	30.92	0.33	8,859
— 1.2m		35.97	18.36	25.87	19.80	0.26	6,319
			28.68	40.41	30.91	0.40	8,200
	0.5m	27.58	47.73	18.90	5.79	0.09	2,641
			65.91	26.10	7.99	0.13	3,647
	0.5m	30.41	36.67	21.61	11.31	0.14	3,735
			52.69	31.05	16.26	0.20	5,367
	0.5m	26.15	51.37	17.04	5.44	0.07	2,348
			69.55	23.07	7.38	0.10	3,180
	0.5m	27.95	41.86	22.25	7.94	0.13	3,286
			58.10	30.88	11.02	0.18	4,561
	0.5m	31.06	31.97	24.21	12.76	0.14	4,087
			46.37	35.11	18.52	0.21	6,016
	0.5m	37.40	19.95	25.30	17.35	0.17	4,884
			31.87	40.41	27.72	0.28	7,802
	0.5m	32.80	33.13	22.49	11.58	0.11	3,766
			49.30	33.47	17.23	0.17	5,604
	0.5m	36.70	20.49	25.42	17.39	0.20	4,859
			32.36	40.16	27.48	0.31	7,676
	0.5m	41,11	9.78	29.80	19.31	0.18	6,020
			16.61	50.60	32.79	0.30	10,222
	0.5m	39.68	10.27	30.41	19.64	0.19	6,124
			17.03	50.41	32.56	0.32	10,153
	0.5m	35.06	30.77	19.81	14.36	0.15	3,845
			47.38	30.50	22.12	0.23	5,921
	0.5m	39.87	14.92	26.46	18.75	0.16	5,258
			24.81	44.00	31.19	0.27	8,744
	0.5m	38.17	15.47	30.18	16.18	0.20	5,376
			25.03	48.81	26.16	0.32	8,695
	0.4m	40.53	11.66	27.32	20.49	0.23	5,716
			19.61	45.94	34.45	0.39	9,611

Figure 8.
Placer Development Limited
LIARD COAL-V-162
D.D.H. L.C.-3 graphic log showing coal intersections and proximate analyses.
May 15, 1978 — Scale 1:500 — I.B. – A.K.



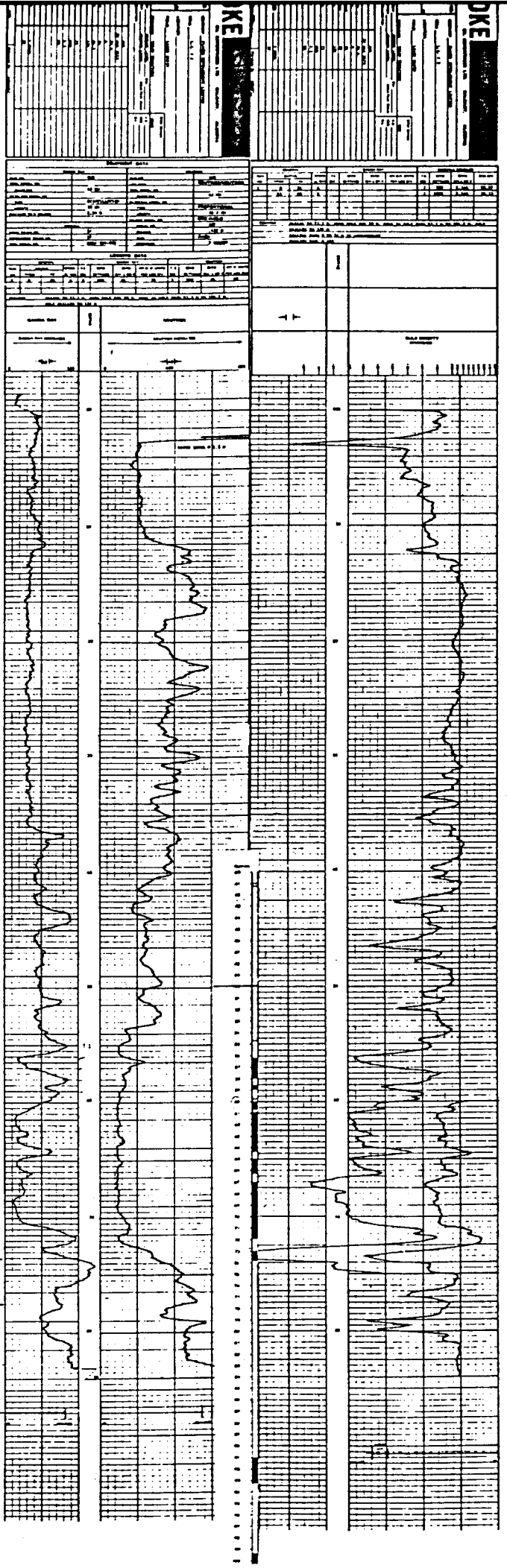
1 : 500

Placer Development Ltd.

Figure 9.

L.C. No. 1

LIARD COAL



1:500

Placer Development Ltd

Figure 10

L.C. No.2

LIARD COAL

Second diamond drill hole L.C. #2 was drilled 50 m. south of Alaska Highway about 3 km. west of the Upper Liard Village.

The hole intersected from(56.2 m. to 73.8 m.),16.6 m. thick coal seam with seven partitions ranging from 0.2 m. to 1.1 m. Another five seams ranging from 1.2 to 2.2 m. were intersected from 91.0 m. to 120.7 m. The proximate analyses show good quality thermal coal. Figure 7 shows coal intersections and related analyses.

The electrical logs of L.C. #1 and L.C. #2 show good correlation with results of coal analyses (Fig. 9 & 10).

The third diamond drill hole L.C. #3 was drilled beside the Alaska Highway about 1.5 km. from the L.C. #2. The hole intersected three coal seams.

From	50.9 m. to 53 m.	2.1 m.
	75.6 m. to 76.8 m.	1.2 m.
and	94.0 m. to 100.9 m.	6.9 m.

Proximate analyses show good thermal coal. The high ash is contained in upper 2.0 m. of the lowest 6.9 m. seam. Figure 8 shows proximate analyses and related coal seams.

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PROPOSED EXPLORATION DRILLING PROGRAMME
ON PLACER'S COAL LICENCES #61, 62, 66, 67, 68, 69, 70 & 71
IN THE LIARD COAL BASIN, WATSON LAKE, Y.T.

The programme will consist mainly of rotary drilling, because diamond drilling showed to be too slow and troublesome to continue. Every hole will be surveyed with electrical logging equipment.

Surface geophysical surveys will be used in later phases of exploration to help determine the detail structure of the possible mine area.

Two groups of rotary holes around L.C.#1 and T-3, and L.C.#2 and #3 are located and shown on the Figure #11. The following budget breakdown for 1978 is proposed:

BUDGET BREAKDOWN 1978

Project Name & Number:
LIARD COAL, V-162

Location: Liard River, Watson Lake, Yukon Territory

Charge Number 375	Expenditures		Cost Estimate
118	Drilling, Outside Contractor: 50 holes @ 200m/hole Rotary Drilling: 10,000 m. @ $80 Contractor Bid @ $50.00 Note: $80/m. overall cost (electrical logging included)		$800,000
170	Assaying Rock Chip — 250 spl. @ $100/sample	$25,000	
	Misc. & Check Assays — 10 spl. @ $100/sample	1,000	
	Price includes current costs of proximate analyses + sulphur & BTU/lbs.		$26,000
139	Geological Expense		
	A. Geology In house mapping, Logging, sample prep., geological supplies, report writing and drafting		$20,000
164	B. Property Expense, Contract Work		
	Claim Staking 500 claims @ $100/claim	$50,000	
	Recording Fees $5/claim	$ 2,500	
			2,500

BUDGET BREAKDOWN 1978 (continued)

Charge Number	Expenditures		Cost Estimate
105	Food & Shelter 500 man days @ $40/man/day This price includes room and board in Watson Lake and Upper Liard, Y.T.		$20,000
101	Salaries (only administrative salaries included) Administrative Salaries @ $2,000/mo...3 mo. Burden - 50% includes fringe benefits, insurance, unemployment, hospitalization, etc.	$6,000 3,000	
	Note: The salaries of the supervising Placer personnel & drilling crew are accounted for in Geological & Drilling Expenses		$9,000
947	Helicopter Costs - Contract price based on 10 hr./@ $350/hr.	$3,500	$3,500
947	Frieght A.Truck Various transfer companies	$1,000	
	B.Air Sample shipment and emergency frieght	$1,000	$2,000
947	Transportation - Travel Salaried travel to-from project (various reasons) and supervisory travel. Includes commercial air fare, special charters, motel expenses, time off, etc.	$3,000	$3,000
925	Supplies A.Office B.Medical	$1,000 100	$1,100
107	Sundries		$4,000
107	General Office & Communications Telephone, report writing, miscellaneous studies		$5,000
107	Environmental A. Public Relations B. Ecological C. Legal	$1,000 1,000 3,000	$5,000

Charge Number	Expenditures	Cost Estimates
	Administrative Costs 3% of budget total	$28,800
	Contingencies 10% of budget total	$96,000

BUDGET SUMMARY
1978

Charge Number	Expenditures	Cost Estimates
118	Drilling, Outside Contractor Rotary Drilling, Electrical Logging 10,000 M. @ $80/M.	$800,000
170	Assaying 250 spl. - rock chip @ $100/spl. Check assays 10 spl. @ $100/spl.	$ 26,000
139	Geological Geology	$ 20,000
164	Property Expense Land	$ 52,500
105	Food and Shelter	$ 20,000
101	Salaries - Administrative Only	$ 9,000
947	Helicopter	$ 3,500
947	Freight a. Truck) b. Air)	$ 2,000
947	Transportation - Travel Salaried & Supervisor Travel	$ 3,000
925	Supplies	$ 1,100
107	Sundries	$ 4,000
	General Office	$ 5,000
	Environmental (Public Relations, Ecological, Legal)	$ 5,000
	SUB TOTAL	$960,000
	Administrative Costs 3% of budget	28,800
	Contingencies 10% of budget	$96,000
	GRAND TOTAL:	$1,084,900

STATEMENT OF EXPENSES

The following is a breakdown of expenses incurred in carrying out the work on the area of Placer's Coal Exploration Licences #61, 62, 66, 67, 68, 69, 70 & 71, during November - December 1977 and March - April, 1978.

1. Field Work

- Diamond Drilling, Contractor: E. Caron Diamond Drilling Whitehorse, Y.T.	$85,191.00
- Electrical Drill Hole Survey Contractor: Roke Oil Enterprises Ltd. Calgary, Alta.	$ 3,622.00
- Trenching Contractor: Grant Stewart Construction Calgary, Alta., Watson Lake, Y.T.	$ 5,659,00
- Personnel I. Borovic, Geologist, Project Supervisor (Nov. 17 - Dec. 6 & March 9 - April 3) 45 days @ $150/day	$ 6,750.00
- Food and Shelter, 45 days @$40/day	$ 1,800.00
- Transportation 4 x 4 truck rental (Tilden W.L.)	$ 2,000.00
TOTAL FIELD WORK:	$105,022.00

2. Office Work

- Personnel I. Borovic, Geologist (May 10 - May 30) 20 days @ $150/day	$ 3,000.00
A. Kemp, Chief Draftsman (May 10 - May 30) 20 days @ $100/day	$ 2,000.00

2. Office Work (continued)

- Proximate Analyses General Testing Laboratories Vancouver, B.C.		$ 3,000.00
	TOTAL OFFICE WORK:	$ 8,000.00

Recapitulation

Field Work:		$105,022.00
Office Work:		8,000.00
	TOTAL:	$113,022.00

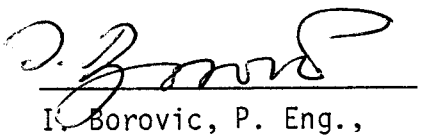
CERTIFICATE

I, I. Borovic, with business address in Vancouver, British Columbia, do hereby certify:

1. That I have personally supervised the trenching and diamond drilling programe performed in the area of the Liard Coal Basin, covered by Placer Development Limited Exploration Licences #61, 62, 66, 67, 68, 69, 70 and 71 in the Watson Lake Mining Division, Yukon Territory.

2. That the expenditures claimed for the performance of the work are correct.

Respectfully submitted,



I. Borovic, P. Eng.,
Geologist

Coal Analyses
Certificates
1977, 1978

TABLE I

ANALYSIS:	RC 77 - 30		RC 77 - 31		RC 77 - 33		RC 77 - 35		RC 77 - 36	
	as received	dry	as received	dry	as received	dry	as received	dry	as received	dry
Moisture (%)	39.7	---	50.0	---	33.8	---	35.9	---	36.8	---
Ash (%)	19.36	32.06	4.11	8.21	37.48	56.61	12.35	19.27	23.61	37.35
Volatile Matter (%)	27.57	42.42	27.96	55.92	20.42	30.84	29.83	46.53	23.52	37.22
Fixed Carbon (%)	13.37	25.52	17.93	35.87	8.30	12.55	21.92	34.20	16.07	25.43
Calorific Value (BTU's/lb.)	4049	6714	5006	10012	2734	4130	5454	8509	4215	6669
Sulphur (%)	0.11	0.19	0.12	0.24	0.44	0.67	0.42	0.66	0.57	0.90

Proximate Analyses, June 1977

TABLE II

ANALYSES	RC-77-31		- 45		- 46		- 46A		- 48		- 52		- 53	
	as rec'd	dry	as rec'd	dry	as rec'd	dry	as rec'd	dry	as rec'd	dry	as rec'd	dry	as rec'd	dry
Moisture %	48.16		39.09		37.17		35.83		34.20		31.87		48.54	
Ash %	10.70	20.64	10.43	17.13	14.37	22.87	7.36	11.47	16.36	24.87	24.51	35.97	7.20	13.99
V.M. %	24.21	46.70	26.73	43.89	31.65	50.38	31.20	48.62	28.59	43.45	26.12	38.34	26.61	51.71
F.C. %	16.93	32.66	23.75	38.98	16.81	26.75	25.61	39.91	20.85	31.68	17.50	25.69	17.65	34.30
Cal. Value (B.T.U.'s/lb)	4413	8512	5733	9412	4987	7937	6450	10052	4929	7481	5224	7667	4730	9106
S %	0.11	0.22	0.67	1.00	0.65	1.09	0.59	0.91	0.45	0.68	0.45	0.66	0.14	0.26

Proximate Analyses, October 1977

GENERAL TESTING LABORATORIES

DIVISION: SUPERINTENDENCE COMPANY (CANADA) LTD.
1001 EAST PENDER STREET, VANCOUVER, B.C., CANADA
V6A 1W2
PHONE (604) 254-1647 TELEX 04-507514 CABLE SUPERVISE

CERTIFICATE OF ANALYSIS

TO:
CANEX PLACER EXPLORATION,
#700 - 1030 West Georgia Street
Vancouver, B.C. V6B 3H8

No.:	DATE:
FILE: 7801-1105	January 20, 1978

WE HAVE ANALYZED the herein described samples, received by us on January 11, 1978 and report as follows:

DESCRIPTION: Four (4) submitted DRILL CORE COAL SAMPLES

	MOISTURE %	ASH %	VOLATILE MATTER %	FIXED CARBON %	SULPHUR %	CALORIFIC VALUE BTU/LB
Tag 30221 T-4a						
as received:	38.3	5.06	31.56	25.11	0.62	6,540
dry basis :	--	8.19	51.13	40.68	1.00	10,594
Tag 30222 T-2						
as received:	18.4	18.38	38.96	24.31	0.29	7,046
dry basis :	--	22.51	47.72	29.77	0.36	8,629
Tag 30223 T-3-L						
as received:	24.1	24.05	29.98	21.88	0.86	5,743
dry basis :	--	31.68	39.49	28.83	1.13	7,566
Tag 30224 T-3-U						
as received:	40.9	12.75	25.90	20.44	1.02	5,256
dry basis :	--	21.58	43.83	34.59	1.73	8,895

W.B. Sizer - Chief Chemist

SIGNATURE AND TITLE

GENERAL TESTING LABORATORIES

DIVISION: SUPERINTENDENCE COMPANY (CANADA) LTD.
1001 EAST PENDER STREET, VANCOUVER, B.C., CANADA
V6A 1W2
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TO:

PO250
PLACER DEVELOPMENT LTD.

- page 2 -

CERTIFICATE OF ANALYSIS

No.:	DATE:
FILE: 7802-2804	March 13, 1978

L.C. No. 1	ANALYSIS:	MOISTURE %	ASH %	VOLATILE MATTER %	FIXED CARBON %	SULPHUR %	CALORIFIC VALUE BTU/lb.
	9) 30561						
	as received	6.32	9.10	39.33	45.25	0.81	11,243
	dry basis	----	9.71	41.98	48.31	0.87	12,002
30.2-37.9	10) 30583						
7.7 m	as received	26.68	39.05	30.63	3.64	0.43	3,656
	dry basis	----	53.26	41.77	4.97	0.58	4,987
	11) 30584						
	as received	17.05	68.67	9.66	4.62	0.22	-----
	dry basis	----	82.79	11.65	5.56	0.26	-----
	12) 30585						
	as received	20.78	64.52	9.30	5.40	0.13	-----
	dry basis	-----	81.44	11.74	6.82	0.16	-----
	13) 30587						
	as received	18.78	66.06	9.58	5.58	0.12	-----
	dry basis	----	81.34	11.79	6.87	0.15	-----
147.6 -148.3	14) 30588						
0.7m	as received	22.51	54.07	13.83	9.59	0.24	1,639
	dry basis	----	69.78	17.85	12.37	0.31	2,115
148.8 -149.1	15) 30589						
0.3 m	as received	19.52	55.89	14.22	10.37	0.21	1,631
	dry basis	----	69.45	17.67	12.88	0.26	2,027
149.7 -150.1	16) 30590						
0.4 m	as received	22.72	54.95	13.27	9.06	0.23	1,561
	dry basis	----	71.11	17.17	11.72	0.30	2,020
	17) 30591						
	as received	17.30	69.32	9.10	4.28	0.25	-----
	dry basis	----	83.83	11.01	5.16	0.30	-----
94.7 -95.0	18) 30592						
0.3 m	as received	24.65	43.65	27.89	3.81	0.30	2,371
	dry basis	----	57.93	37.01	5.06	0.40	3,147

LL:AT

L. Lakosil - Industrial Chemist.

SIGNATURE AND TITLE

GENERAL TESTING LABORATORIES

DIVISION: SUPERINTENDENCE COMPANY (CANADA) LTD.
1001 EAST PENDER STREET, VANCOUVER, B.C., CANADA
V6A 1W2
PHONE (604) 254-1647 TELEX 04-507514 CABLE SUPERVISE

TO:
PLACER DEVELOPMENT LTD.
#700 - 1030 West Georgia St.,
Vancouver, B.C. Canada
V6E 3A8

CERTIFICATE OF ANALYSIS

No.:	DATE:
FILE: 7804-1114	May 1, 1978

Att: I.R. Borovic, P.Eng., Geologist, Exploration Department

WE HEREBY CERTIFY that we have analyzed the herein described 35 Lignite Samples submitted by you and report as follows:

L.C. No.2	ANALYSIS:	MOISTURE %	ASH %	VOLATILE MATTER %	FIXED CARBON %	SULPHUR %	CALORIFIC VALUE BTUs/lb
54.6 - 54.8	# 58 851						
0.2 m	As received	36.61	19.00	24.42	19.97	0.16	5114
	Dry basis	---	29.98	38.53	31.49	0.26	8067
56.2 - 57.9	# 58 852						
1.7 m	As received	40.50	12.36	27.19	19.95	0.14	5482
	Dry basis	---	20.78	45.70	33.52	0.24	9214
58.6 - 58.9	# 58 853						
0.3 m	As received	44.46	4.79	28.53	22.22	0.14	5946
	Dry basis	---	8.62	51.36	40.02	0.25	10706
60.0 - 60.2	# 58 854						
0.2 m	As received	44.21	8.64	26.30	20.85	0.16	5493
	Dry basis	---	15.48	47.14	37.38	0.28	9846
60.35 - 60.65	# 58 855						
0.2 m	As received	41.78	5.42	30.09	22.71	0.17	6158
	Dry basis	---	9.31	51.68	39.01	0.29	10567
60.9 - 62.7	# 58 856						
1.8 m	As received	42.76	7.69	28.31	21.24	0.13	5757
	Dry basis	---	13.44	49.47	37.09	0.22	10058
62.8 - 64.3	# 58 857						
1.5 m	As received	42.23	5.33	29.26	23.18	0.13	6139
	Dry basis	---	9.22	50.65	40.13	0.23	10627
65.0 - 66.2	# 58 858						
1.2 m	As received	41.14	9.47	28.10	21.29	0.14	5741
	Dry basis	---	16.09	47.73	36.18	0.24	9754
67.0 - 67.6	# 58 859						
0.6 m	As received	39.22	11.49	27.99	21.30	0.14	5676
	Dry basis	---	18.91	46.05	35.04	0.23	9338

Cont'd.

GENERAL TESTING LABORATORIES

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TO:

PLACER DEVELOPMENT LTD.

- page 2 -

CERTIFICATE OF ANALYSIS

No.:	DATE:
FILE: 7804-1114	May 1, 1978

L.C. No.2 (cont'd)		MOISTURE %	ASH %	VOLATILE MATTER %	FIXED CARBON %	SULPHUR %	CALORIFIC VALUE BTUs/lb
67.6-67.9	# 58 860						
0.3 m	As received	41.25	23.95	20.05	14.75	0.10	3855
	Dry basis	---	40.76	34.13	25.11	0.17	6562
67.9-71.9	# 58 861						
4.0 m	As received	35.59	11.36	29.80	23.25	0.15	6217
	Dry basis	---	17.63	46.27	36.10	0.23	9652
73.0-73.8	# 58 862						
0.8 m	As received	27.42	20.45	29.23	22.90	0.22	5896
	Dry basis	---	28.18	40.28	31.54	0.31	8123
91.0-93.2	# 58 863						
2.2 m	As received	36.58	5.68	31.94	25.80	0.15	6734
	Dry basis	---	8.95	50.37	40.68	0.24	10619
9[illegible] 101.1	# 58 864						
1.3m	As received	37.38	14.18	28.05	20.39	0.16	5704
	Dry basis	---	22.65	44.80	32.55	0.26	8994
102.0-103.8	# 58 865						
1.8 m	As received	33.76	17.57	28.26	20.41	0.20	5640
	Dry basis	---	26.53	42.66	30.81	0.31	8514
117.8-118.2	# 58 866						
0.4 m	As received	35.06	14.70	28.34	21.90	0.21	5832
	Dry basis	---	22.64	43.64	33.72	0.33	8980
122.5-122.7	# 58 867						
0.2 m	As received	23.61	37.11	23.62	15.66	0.24	4364
	Dry basis	---	48.58	30.92	20.50	0.32	5713
128.0-129.7	# 58 868						
1.7m ?	As received	23.65	21.74	33.23	21.38	0.18	6301
	Dry basis	---	28.47	43.53	28.00	0.23	8253
L.C. No. 3							
50.9-53.0	# 58 876						
2.1m	As received	35.13	15.41	29.40	20.06	0.21	5747
	Dry basis	---	23.75	45.33	30.92	0.33	8859
7[illegible] 6-76.8	# 58 877						
..2 m	As received	35.97	18.36	25.87	19.80	0.26	6319
	Dry basis	---	28.68	40.41	30.91	0.40	8200

Cont'd.

GENERAL TESTING LABORATORIES

DIVISION: SUPERINTENDENCE COMPANY (CANADA) LTD.
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PHONE (604) 254-1647 TELEX 04-507514 CABLE SUPERVISE

TO:

PLACER DEVELOPMENT LTD.

CERTIFICATE OF ANALYSIS

No.:	DATE:
FILE: 7804-1114	May 1, 1978

L.C. No. 3 (cont'd)	MOISTURE %	ASH %	VOLATILE MATTER %	FIXED CARBON %	SULPHUR %	CALORIFIC VALUE BTUs/lb.
94.0-94.5# 58 878						
0.5m As received	27.58	47.73	18.90	5.79	0.09	2641
Dry basis	---	65.91	26.10	7.99	0.13	3647
94.5-95.0# 58 879						
0.5m As received	30.41	36.67	21.61	11.31	0.14	3735
Dry basis	---	52.69	31.05	16.26	0.20	5367
95.0-95.5# 58 880						
0.5m As received	26.15	51.37	17.04	5.44	0.07	2348
Dry basis	---	69.55	23.07	7.38	0.10	3180
95.5-96.0# 58 881						
m As received	27.95	41.86	22.25	7.94	0.13	3286
Dry basis	---	58.10	30.88	11.02	0.18	4561
96.0-96.5# 58 882						
0.5m As received	31.06	31.97	24.21	12.76	0.14	4087
Dry basis	---	46.37	35.11	18.52	0.21	6016
96.5-97.0# 58 883						
0.5m As received	37.40	19.95	25.30	17.35	0.17	4884
Dry basis	---	31.87	40.41	27.72	0.28	7802
97.0-97.5 # 58 884						
0.5m As received	32.80	33.13	22.49	11.58	0.11	3766
Dry basis	---	49.30	33.47	17.23	0.17	5604
97.5-98.0# 58 885						
0.5m As received	36.70	20.49	25.42	17.39	0.20	4859
Dry basis	---	32.36	40.16	27.48	0.31	7676
98.0-98.5# 58 886						
0.5m As received	41.11	9.78	29.80	19.31	0.18	6020
Dry basis	---	16.61	50.60	32.79	0.30	10222
98.5-99.0# 58 887						
n As received	39.68	10.27	30.41	19.64	0.19	6124
Dry basis	---	17.03	50.41	32.56	0.32	10153

Cont'd.

SIGNATURE AND TITLE

GENERAL TESTING LABORATORIES

DIVISION: SUPERINTENDENCE COMPANY (CANADA) LTD.
1001 EAST PENDER STREET, VANCOUVER, B.C., CANADA
V6A 1W2
PHONE (604) 254-1647 TELEX 04-507514 CABLE SUPERVISE

TO:

PLACER DEVELOPMENT LTD.

- page 4 -

CERTIFICATE OF ANALYSIS

No.:	DATE:
FILE: 7804-1114	May 1, 1978

L.C. No. 3 (cont'd)		MOISTURE	ASH	VOLATILE MATTER	FIXED CARBON	SULPHUR	CALORIFIC VALUE
		%	%	%	%	%	BTUs/lb.
99.0-99.5	# 58 888						
0.5m	As received	35.06	30.77	19.81	14.36	0.15	3845
	Dry basis	---	47.38	30.50	22.12	0.23	5921
99.5-100	# 58 889						
0.5 m	As received	39.87	14.92	26.46	18.75	0.16	5258
	Dry basis	---	24.81	44.00	31.19	0.27	8744
100.0 -	# 58 890						
100.5	As received	38.17	15.47	30.18	16.18	0.20	5376
0.5 m	Dry basis	---	25.03	48.81	26.16	0.32	8695
100.5 -	# 58 891						
100.9	As received	40.53	11.66	27.32	20.49	0.23	5716
0.4 m	Dry basis	---	19.61	45.94	34.45	0.39	9611

L. Lakosil

L. Lakosil - Industrial Chemist.

SIGNATURE AND TITLE

Report No. T-11-WSH-1978

Polynology report on four diamond drill hole samples from the Laird Coal Basin, Yukon Territory, submitted by D. Long, 1978, (NTS 105A).

The relevant parts of any manuscript prepared for publication that paraphrase or quote from this report should be referred to the Paleontology Subdivision, Calgary, for possible revision.

COMMENTS

These four samples are from a single drill hole located at approximately 60°N; 129°W. Relevant data is given on the accompanying stratigraphic range chart. The figure given under "Sample Interval" is the depth in metres. Estimate of palynological frequency is purely subjective and is not based on actual counts. As a consequence of the rough and ready processing technique used, a complete and detailed examination of the residue is not possible at this time, but will be done at a later date.

Although the section is certainly Paleogene, any conclusive age interpretation remains ambiguous. The lack of characteristic Eocene-Oligocene forms is striking, but equally striking is the absence of lower or middle Paleocene forms. Some of the genera are rather "primitive" looking, thereby suggesting an early Paleogene age. Consequently I will suggest, tentatively, an upper Paleocene or possibly lowest Eocene age. More samples and better processing will be required in order to enlarge the recorded microflora.

The possibility remains here that we are dealing with specific environmental conditions rather than age variations. But more work will be required before we can consider the various possibilities.

W. S. Hopkins, Jr.

Paleontology Subdivision
Institute of Sedimentary and Petroleum Geology
Calgary, April 17, 1978

WSH/riq

TO ACCOMPANY REPT. NO: T-11-WSH-1978

REQUESTED BY: D. Long

EXPLANATION OF SYMBOLS

X Present
S Single spec.
R Uncommon
C Common
D Dominant

Biostratigraphy	Prep No.	GSC Loc. No.	Sample Interval	Alnus sp.	Laevigatosporites spp.	Castanea-type	Glyptostrobus sp.	Pterocarya spp.	Osmunda sp.	Betula sp.	Juglans sp.	Ulmus sp.	Platycarya sp.	Sphagnum spp.	Lycopodium sp.	Taxodiaceae-Cupressaceae	cf. Santalaceae	cf. Sapotaceae	Sequoiapollenites sp.	cf. Corylus sp.	cf. Nyssa sp.	Tsuga sp.	Liliaceae	Syncolpate B	Pleurisellaesporites sp.	Baculatisporites sp.	cf. Podocarpus sp.	Deltoidospora sp.	Tetrad	Fusiformisporites sp.	cf. Tilia sp.	Typha sp.	Pinaceae
TERTIARY		C-68288	38.7 m	D	C	R	C	C	C	R	R	R	S	R	R	C	R	R	R	R	S												R
"		"	128.7m	D	C		C	R	C							R						R	S	S									R
"		"	136.0m	D	C	R	C							R	R	C						R			C	R	S	R					R
"		"	153.3m	D	C	R	C	C	C		R					C	R	R			S								S	R	S	S	R

Palynology report on five diamond drill hole samples from the Laird Coal Basin, Yukon Territory, submitted ~~and collected~~ by D. Long, 1978 (NTS 105A).

The relevant parts of any manuscript prepared for publication that paraphrase or quote from this report should be referred to the Paleontology Subdivision, Calgary, for possible revision.

Comments

This report deals with the same samples discussed in report T-11-WSH-1978, and should be read in conjunction with this report. The samples were reprocessed and examined in considerable detail, including the counting of specimens. This was undertaken with the hope a correlation would be possible and also more specific age determinations arrived at.

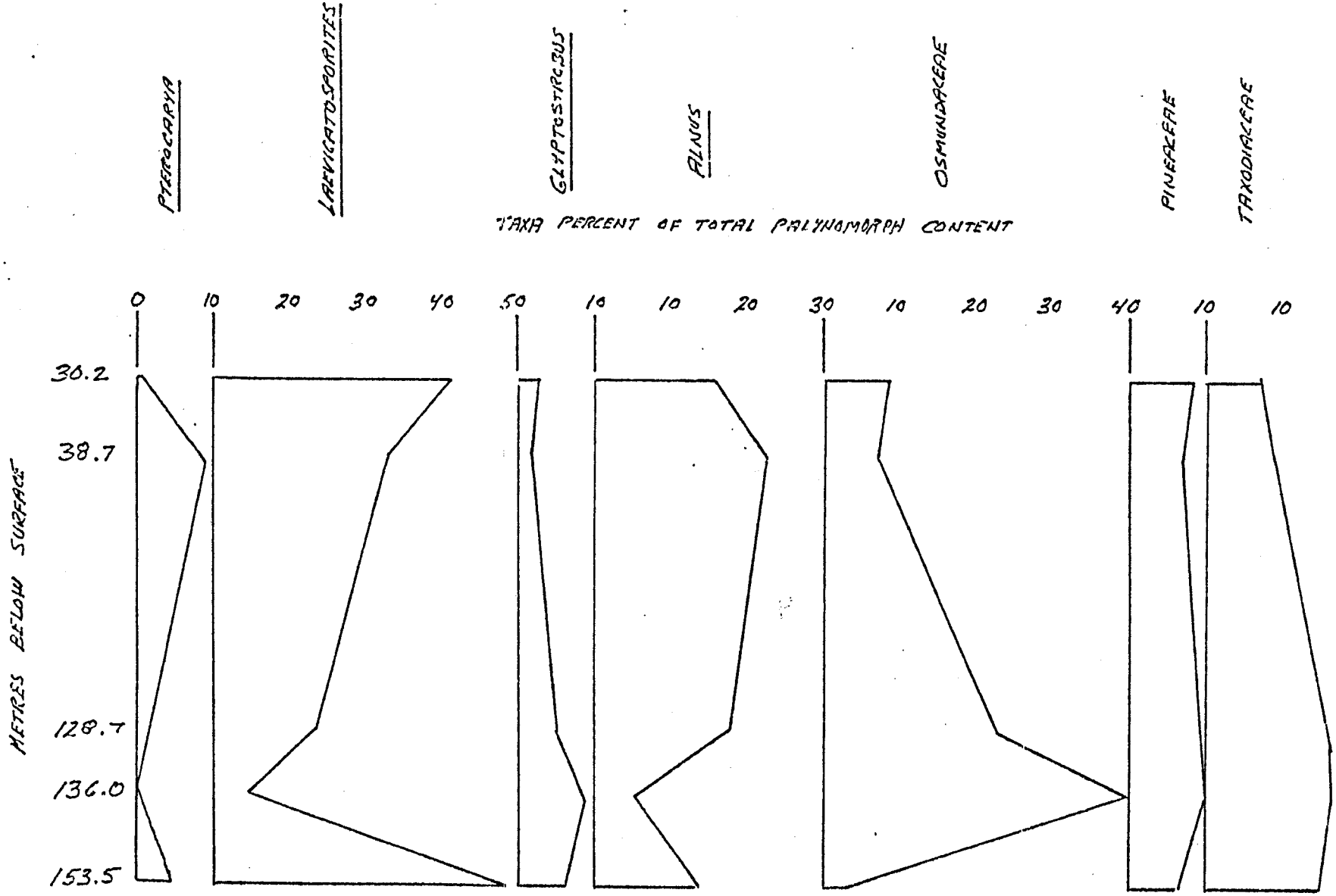
I prepared various types of range charts, none of which proved to be particularly helpful. Several of these range diagrams accompany this report (two pages) and as can be seen, results are inconclusive. The variations which do occur are probably the result of local environmental variations, and not to a significant change in flora or age.

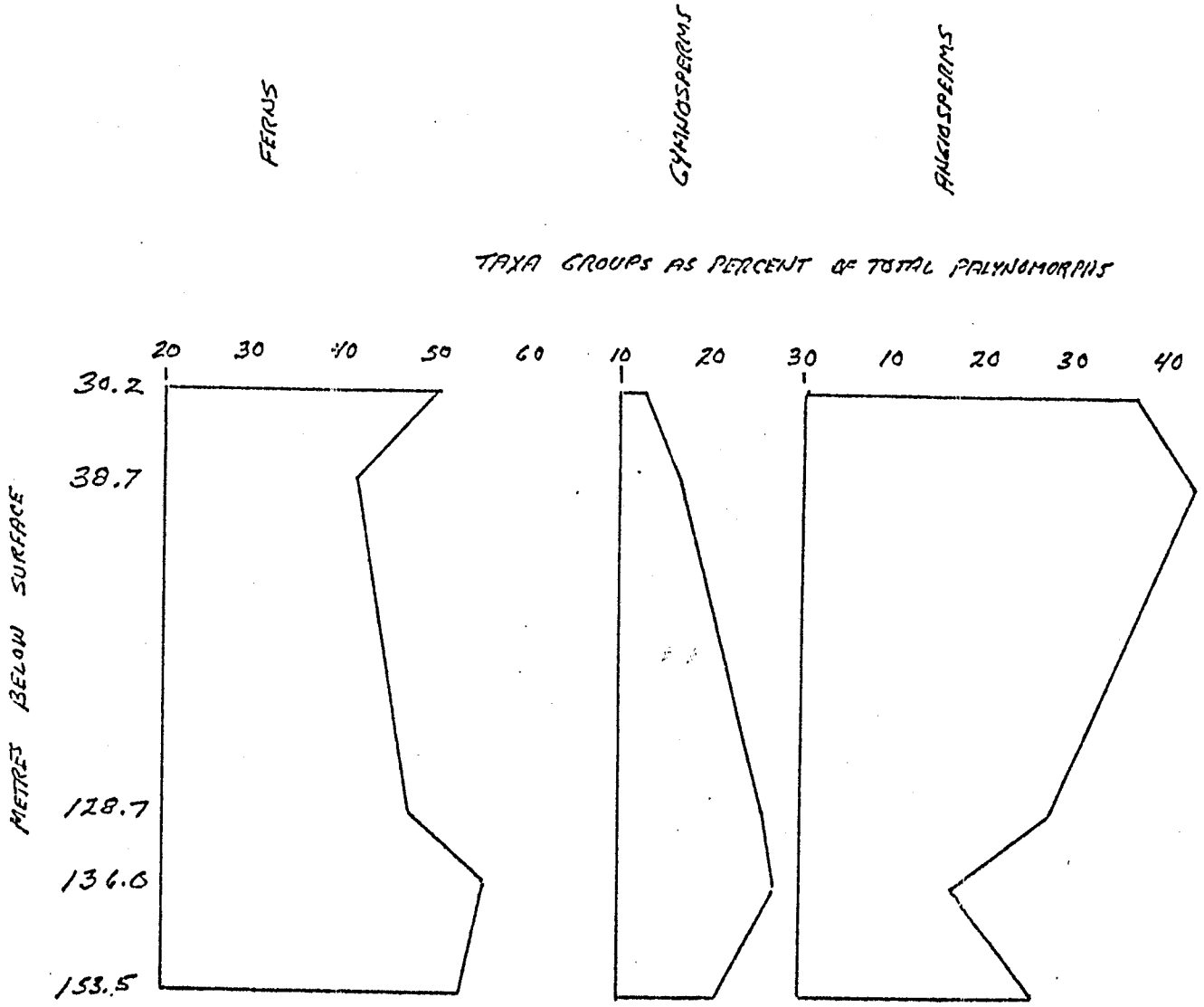
I suspect that this section represents a comparatively short time span and that palynomorph subdivisions will not be meaningful. However, it would be worthwhile to examine samples from other boreholes to see whether the plotted variations are persistent. If they are, then these variations may prove to be significant and possibly correlations within the unit may be possible.

Otherwise the conclusions expressed in report T-11-WSH-1978 stand as expressed.

W. S. Hopkins, Jr.

Paleontology Subdivision
Institute of Sedimentary Petroleum and Geology
Calgary, April 26, 1978


PTEROCARYA
LAEVIGATOSPORITES
GLYPTOSTROBUS
ALNUS
OSMUNDACEAE
PINEACEAE
TAXODIACEAE
TAXA PERCENT OF TOTAL PALYNOMORPH CONTENT
0 10 20 30 40 50 10 10 20 30 10 20 30 40 10 10
30.2
38.7
128.7
136.0
153.5
METERS BELOW SURFACE


FERNS
GYMNOSPERMS
ANGIOSPERMS
TAXA GROUPS AS PERCENT OF TOTAL PALYNOMORPHS
20 30 40 50 60
10 20 30
10 20 30 40
30.2
38.7
128.7
136.6
153.5
METERS BELOW SURFACE

- Contractor's Invoices

1. E. Caron Diamond Drilling Ltd.
2. Grant Stewart Construction
3. Roke Oil Enterprises Ltd.
4. General Testing Lab.

E. Caron Diamond Drilling Limited

CONTRACT DIAMOND DRILLING

HEAD OFFICE:
7 ROUNDEL ROAD
TEHORSE, Y.T. Y1A-3H3
PHONE 668-2424 - 668-2425
TELEX 036-8-337

VANCOUVER OFFICE:
625 HOWE STREET
VANCOUVER, B.C. V6C 2A9
PHONE 687-4634

November 30, 1977

Invoice #-338

IN ACCOUNT WITH:

Canex Placer Limited,
700 Burrard Building,
1030 West Georgia Street,
Vancouver, B. C.

Drilling Charges November 22 to 30, 1977 (Coal Property)

Hole: LC-1/90°/HQ				
Moving				
64 man hrs.	@ $14.50 per hr.	=	$ 928.00	
Mud Time				
37 man hrs.	@ $14.50 per hr.	= $ 536.50		
18½ machine hrs.	@ $10.00 per hr.	= $ 185.00	$ 721.50	
Standby Time				
44 man hrs.	@ $14.50 per hr.	= $ 638.00		
32 truck standby hrs.	@ $25.00 per hr.	= $ 800.00	$1,438.00	
Casing				
0 - 174 = 174 ft.	@ $17.50 per ft.	=	$3,045.00	
Coring				
20 - 264 = 244 ft.	@ $19.50 per ft.	=	$4,758.00	$10,890.50
Mobilization				
Drill and Equipment	@ $1,400.00	=	$1,400.00	
Drill Crew	@ $400.00	=	$ 400.00	$ 1,800.00
Materials Supplied at Cost plus 15%				
30 lbs propane	@ $8.00 each	= $ 16.00		
25 bottles propane	@ $16.75 each	= $ 418.75		
6 small bottles propane	@ $6.00 each	= $ 36.00		
5 bottles propane (from stock)	@ $16.75 each	= $ 83.75		
16 fuel drums	@ $15.00 each	= $ 240.00		
Diesel Fuel		= $ 659.50		
187 HQ core boxes	@ $7.00 each	= $ 259.00		
		$1,713.00		
	+ 15%	= $ 256.95		$ 1,969.95
Mud & Quik Trol				
76 bags of mud	@ $10.75 per bag	= $ 817.00		
9 bags of Quik Trol	@ $7.75 per bag	= $ 69.75		$ 886.75

E. Caron Diamond Drilling Limited

CONTRACT DIAMOND DRILLING

HEAD OFFICE:
7 ROUNDEL ROAD
WHITEHORSE, Y.T. Y1A-3H3
PHONE 668-2424 – 668-2425
TELEX 036-8-337

VANCOUVER OFFICE:
[illegible]
VANCOUVER, B.C. V6C-2A9
PHONE 687-4634

Room/Board			
4 men x 9 days	@ $25.00 per day	= $ 900.00	
T. Caron 4 days	@ $25.00 per day	= $ 100.00	$ 1,000.00
		Total Invoice	$16,547.20

E. Caron Diamond Drilling Limited

CONTRACT DIAMOND DRILLING

HEAD OFFICE:
7 ROUNDEL ROAD
TEHORSE, Y.T. Y1A-3H3
NE 668-2424 – 668-2425
TELEX 036-8-337

VANCOUVER OFFICE:
[illegible]
VANCOUVER, B.C. V6C A2B9
PHONE 687-4634

December 31, 1977

Invoice #-340

IN ACCOUNT WITH:

Canex Placer Limited,
700 Burrard Building,
1030 West Georgia Street,
Vancouver, B. C.

Drilling Charges December 1 to 6, 1977 (Coal Property)

Hole: LC-1/90°/HQ				
Moving				
32 man hrs.	@ $14.50 per hr.		$ 464.00	
Reaming Cave				
6 man hrs.	@ $14.50 per hr.	= $ 87.00		
3 machine hrs.	@ $10.00 per hr.	= $ 30.00	$ 117.00	
Mud Time				
28 man hrs.	@ $14.50 per hr.	= $ 406.00		
4 machine hrs.	@ $10.00 per hr.	= $ 140.00	$ 546.00	
Travelling Time (Whse)				
32 man hrs.	@ $14.50 per hr.	=	$ 464.00	
Casing				
174 - 177 = 3 ft.	@ $17.50 per ft.	=	$ 52.50	
Coring				
64 - 500 = 236 ft.	@ $19.50 per ft.	= $4,602.00		
00 - 549 = 49 ft.	@ $21.00 per ft.	= $1,029.00	$5,631.00	$ 7,274.50
ad				
4 bags of mud	@ $10.75 per bag	= $ 473.00		
uik Trol				
5 bags	@ $7.75 per bag	= $ 271.25		$ 744.25
om/Board				
men x 6 days	@ $25.00 per day	= $ 600.00		
men x 1 day	@ $25.00 per day	= $ 50.00		
ew extras		= $ 81.28		$ 731.28
ipment Left in Hole				
ft. HW Casing	@ $33.60/2 ft. length	$2,956.80		
	+ 15%	= $ 443.52		$ 3,400.32
1 HW Casing Shoe	@ $378.50	= $ 378.50		
	+ 15%	= $ 56.78		$ 435.28
			Total Invoice	$12,585.63

E. Caron Diamond Drilling Limited

HEAD OFFICE:
7 ROUNDEL ROAD
WHITEHORSE, Y.T. Y1A-3H3
PHONE 668-2424 - 668-2425
TELEX 036-8-337

CONTRACT DIAMOND DRILLING

VANCOUVER OFFICE:
XX3-475 HOWE STREET XX
VANCOUVER, B.C. V6C-2A2
PHONE 687-4634

March 15, 1978

Invoice #-351

IN ACCOUNT WITH:

Canex Placer Limited,
700 Burrard Building,
1030 West Georgia Street,
Vancouver, B. C.

Drilling Charges March 10 to 15, 1978 (Watson Lake - Coal)

Hole LC-2/90°/HQ

Mobilization of Crew Whitehorse to Watson Lake		=		$ 400.00
Moving 116 man hrs.	@ $14.50 per hr.	=	$1,682.00	
Truck Time 4 machine hrs.	@ $35.00 per hr.	=	$ 140.00	
Casing 0 - 98 = 98 ft.	@ $17.50 (HW) per ft.	=	$1,715.00	$3,537.00
Propane Invoice #-138705 13 bottles	@ $17.95 each	=	$ 233.35	
	+ 15%	=	$ 35.00	$ 268.35
Fuel & Gas Watson Lake Texaco #9210/9233/9244				
81.8 gal. gas	=	=	$ 92.65	
85 gal. diesel		=	$ 79.90	
	+ 15% (diesel)	=	$ 11.99	$ 184.54
			Total Invoice	$4,389.89

E. Caron Diamond Drilling Limited

HEAD OFFICE:
7 ROUNDEL ROAD
WHITEHORSE, Y.T. Y1A-3H3
PHONE 668-2424 – 668-2425
TELEX 036-8-337

CONTRACT DIAMOND DRILLING

VANCOUVER OFFICE:
[redacted]
PHONE 687-4634

March 31, 1978

Invoice #-352

IN ACCOUNT WITH:

Canex Placer Limited,
700 Burrard Building,
1030 West Georgia Street,
Vancouver, B. C.

Drilling Charges March 16 to 31, 1978 (Watson Lake - Coal)

Hole: LC-2/90°/HQ				
Casing over 50 ft.				
97 man hrs.	@ $14.50 per hr.	= $1,406.50		
48.5 machine hrs.	@ $10.00 per hr.	= $ 485.00	$1,891.50	
Reaming Cave				
128 man hrs.	@ $14.50 per hr.	= $1,856.00		
64 machine hrs.	@ $10.00 per hr.	= $ 640.00	$2,496.00	
Waterline				
2 man hrs.	@ $14.50 per hr.	= $ 29.00		
machine hrs.	@ $10.00 per hr.	= $ 10.00	$ 39.00	
Testing				
6 man hrs.	@ $14.50 per hr.	= $ 87.00		
3 machine hrs.	@ $10.00 per hr.	= $ 30.00	$ 117.00	
Casing				
138 - 240 = 102 ft.	@ $17.50 per ft.	=	$1,785.00	
Coring				
138 - 456 = 318 ft.	@ $19.50 per ft.	=	$6,201.00	$12,529.50
Hole: LC-3				
Moving				
35 man hrs.	@ $14.50 per hr.	=	$ 507.50	
Casing				
0 - 38 = 38 ft.	@ $17.50 per ft.	=	$ 665.00	$ 1,172.50
Material Consumed in Hole LC-2 at Field Cost				
1 2 ft. HW casing	@ $33.60 per length	= $ 33.60		
2 HW casing shoe	@ $378.50 each	= $ 757.00		
3 HQ bits	@ $564.30 x 40%	= $ 677.16		
110 ft. HQ rods	@ $84.15/10 ft. length	= $ 925.65		
1 HQ core barrel complete minus tube		= $ 275.20		
1 HQ bit	@ $564.30	= $ 564.30		
1 HQ shell	@ $393.85	= $ 393.85	$3,626.76	
	+ 15%	=	$ 544.01	$ 4,170.77

APR 14 1978

CHEQUE

E. Caron Diamond Drilling Limited

CONTRACT DIAMOND DRILLING

HEAD OFFICE:
7 ROUNDEL ROAD
WHITEHORSE, Y.T. Y1A-3H3
PHONE 668-2424 – 668-2425
TELEX 036-8-337

VANCOUVER OFFICE:
~~3-425 HOWE STREET~~
~~VANCOUVER, B.C. V6C-2A9~~
PHONE 687-4634

<u>Mud Re: Invoice #-351</u>				
36 bags Mud	@ $10.75 each	= $ 387.00		
23 bags Quik Trol	@ $7.75 each	= <u>$ 178.25</u>	$ 565.25	
<u>Mud Re: This Invoice</u>				
180 bags Mud	@ $10.75 each	= $1,935.00		
81 bags Quik Trol	@ $7.75 each	= <u>$ 627.75</u>	<u>$2,562.75</u>	$ 3,128.00
Water Use Permit # C 05817		=		<u>$ 10.00</u>
		Total Invoice		<u>$21,010.77</u>

APR 14 1978

CHEQUE NO. ______

E. Caron Diamond Drilling Limited

HEAD OFFICE:
7 ROUNDEL ROAD
WHITEHORSE, Y.T. Y1A-3H3
PHONE 668-2424 – 668-2425
TELEX 036-8-337

CONTRACT DIAMOND DRILLING

VANCOUVER OFFICE:
XXX3-475 HOWE STREET X
VANCOUVER, B.C. V6C-2A8
PHONE 687-4634

April 16, 1978
Invoice #-356

IN ACCOUNT WITH:

Canex Placer Limited,
700 Burrard Building,
1030 West Georgia Street,
Vancouver, B. C.

Drilling Charges April 1 to 16, 1978 (Watson Lake - Coal)

Hole: LC-3/90°/HQ-NQ				
Moving				
94 man hrs.	@ $14.50 per hr.	=	$1,363.00	
Casing				
41 man hrs.	@ $14.50 per hr.	= $ 594.50		
20½ machine hrs.	@ $10.00 per hr.	= $ 205.00	$ 799.50	
Reaming Cave				
30 man hrs.	@ $14.50 per hr.	= $ 435.00		
15 machine hrs.	@ $10.00 per hr.	= $ 150.00	$ 585.00	
Standby Time				
35 man hrs.	@ $14.50 per hr.	= $ 507.50		
6 machine hrs.	@ $10.00 per hr.	= $ 60.00	$ 567.50	
Casing - HW				
38 - 66 = 28 ft.	@ $17.50 per ft.	=	$ 490.00	
Casing - NW				
66 - 316 = 250 ft.	@ $15.00 per ft.	=	$3,750.00	
Coring - NQ				
120 - 360 = 240 ft.	@ $18.25 per ft.	=	$4,380.00	
Mud				
118 bags of mud	@ $10.75 per bag	= $1,268.50		
87 bags Quik Trol	@ $7.75 per bag	= $ 674.25	$1,942.75	
Cementing				
52 man hrs.	@ $14.50 per hr.	= $ 754.00		
26 machine hrs.	@ $10.00 per hr.	= $ 260.00	$1,014.00	
Travelling Time				
28 man hrs.	@ $14.50 per hr.	=	$ 406.00	$15,297.75

Material Consumed in Hole			
32 bags of cement (GE -55206)	@ $25.00 per bag	= $ 800.00	
320 ft. HQ rods	@ $84.15/10' length	= $2,692.80	
68 ft. HW casing	@ $33.60/2' length	= $1,142.40	
3 HW casing shoes	@ $378.50 each	= $1,135.50	
2 NW casing shoes	@ $204.25 each	= $ 408.50	

E. Caron Diamond Drilling Limited

HEAD OFFICE:
7 ROUNDEL ROAD
WHITEHORSE, Y.T. Y1A-3H3
PHONE 668-2424 – 668-2425
TELEX 036-8-337

CONTRACT DIAMOND DRILLING

VANCOUVER OFFICE:
~~325 425 HOWE STREET~~
~~VANCOUVER, B.C. V6C 2A9~~
PHONE 687-4634

Black 3½" Tee	@ $40.00 each	= $ 40.00		
1 HW sub	@ $62.00 each	= $ 62.00	$6,281.20	
	+ 15%	=	$ 942.18	$ 7,223.38
Labour in Shop - for valve & attachment sent to Watson Lake				
5 man hrs.	@ $14.50 per hr.	=	$ 72.50	
Freight				
For cement (YFL-rates #10181)		= $ 121.92		
For valve (CPA- #266)		= $ 18.00	$ 139.92	$ 212.42
Demobilization				
Drill		=	$1,400.00	
Drill Crew		=	$ 400.00	$ 1,800.00
Propane (Canadian Propane #138706-138742)				
4 20 lbs refills	@ $5.70 each	= $ 22.80		
9 100 lbs refills	@ $17.95 each	= $ 161.55	$ 184.35	
	+ 15%	=	$ 27.65	$ 212.00
Diesel Fuel (Watson Lake Texaco #12407-9107-12437)				
180 gals.	@ 94¢ per gal.	= $ 169.20		
225 gals.	@ 94¢ per gal.	= $ 211.50		
180 gals.	@ 94¢ per gal.	= $ 169.20	$ 549.90	
	+ 15%	=	$ 82.49	$ 632.39
Gas				
45 gals.	@ $1.07 per gal.	= $ 48.15		
5.12 gals.	@ $1.21 per gal.	= $ 6.20		$ 54.35
Room & Board				
March 10 -17				
8 days - 4 men	@ $25.00 per day	= $ 800.00		
Crew Extras		= $ 24.53		
March 18 - 31				
14 days - 4 men	@ $25.00 per day	= $1,400.00		
Crew Extras		= $ 8.51		
April 1 - 10				
10 days - 4 men	@ $25.00 per day	= $1,000.00		
April 12 - 16				
5 days - 2 men	@ $25.00 per day	= $ 250.00		$ 3,483.04

Total Invoice $28,915.33

E. Caron Diamond Drilling Limited

HEAD OFFICE:
7 ROUNDEL ROAD
WHITEHORSE, Y.T. Y1A-3H3
PHONE 668-2424 – 668-2425
TELEX 036-8-337

CONTRACT DIAMOND DRILLING

VANCOUVER OFFICE:
~~3-425 HOWE STREET~~
~~VANCOUVER, B.C. V6C 2A9~~
PHONE 687-4634

May 29, 1978

Invoice #-371

IN ACCOUNT WITH:

Canex Placer Limited,
700 Burrard Building,
1030 West Georgia Street,
Vancouver, B. C.

Misc. Charges for Watson Lake Coal Drilling:

Watson Lake Texaco Invoice # 12392 - 12,487				
90 gal. diesel	@ 94¢ per gal.	= $ 84.60		
45 gal. gas	@ $1.07 per gal.	= $ 48.15		
225 gal. diesel	@ 94¢ per gal.	= $211.50	$344.25	
	+ 15%	=	$ 51.64	$395.89
Upper Laird Motel Invoice # 356				
5 days - 2 men @ $30.00 rather than $25.00 per day				
= $300.00 less $250.00		= $ 50.00		
Crew extras		= $ 6.87		$ 56.87
Mile 804 Motel Teslin				
Room & Board travelling Watson to Whitehorse during water well crisis April 12 & 16				
Room		= $ 22.00		
Meals		= $ 20.40		$ 42.40
Canadian Propane Invoice # 138762 - 138773				
12 refills	@ $17.95 per refill	= $215.40		
	+ 15%	= $ 32.31		$247.71

Total Invoice $742.87

EXCLUSIVE

GRANT STEWART CONSTRUCTION LTD.

P.O. BOX 160 - CASSIAR, B.C. V0C 1E0

Telephone: 778-7455 Telex: 036-8-8523

Liard

To:

Caney Placer Limited,
Exploration Division,
1030 West Georgia St.,
Vancouver, B.C.

December 15, 1977.

STATEMENT 3116

OK JB

Interest Charged on Overdue Accounts

Date	Details	Charges	Credits	Balance
	Location - Upper Liard			
	Truck #19 ... Moving equipment to job site.			
	4.0 hours @ 45.50 per hour	182.00		
	2.0 hours loading & unloading @ 40.00 per hour	80.00		
	Truk #43 ... Load, unload and install C frame and dozer.			
	5.0 hours @ 40.00 per hour	200.00		
	D8 #28 ... Building road, trenching, building drill sites.			
	55.5 hours @ 80.00 per hour	4,440.00		
	Operator travel time - 16.0 hours @ 17.50 per hour	280.00		
	Swamper - 10.0 hours @ 14.50 per hr.	145.00		
	Truck #19 - Moving D8 to new location.			
	4.0 hours @ 45.50 per hour	182.00		5,509.00

-9894

0W3

ROKE OIL ENTERPRISES LTD.

516 MORAINE ROAD N.E., CALGARY, ALBERTA T2A 2P2 • TELEPHONE 273-5553

O: Placer Development Limited,
800 - 1030 West Georgia Street,
Vancouver, B.C.

INVOICE №

DATE March 20, 1978

PAID APR 7 1978 CHEQUE No.

SERVICES RENDERED Re: Liard Basin Field - Service Order #2669 - Dated March 15, 1978

Total Logging Charges	$ 698.39	
Round-trip mileage from Grande Prairie		
Pavement - 400 mi @ .35/mi	140.00	
Off-pavement - 1100 mi @ .50/mi	550.00	
Meals: 4 days @ 15.00/day	60.00	
Accommodation	25.00	$ 1,473.39

V-162 OK Booth

105001.

INVOICE

DENSITY	126 M	1.65	207.90	
FBL	76 M	1.81	N.C. DEMO	
	TOTAL LOGGING CHG.		698.39	
4 DAYS MEALS @ 15.00 PER DAY			60.00	
ROUND TRIP MILEAGE FROM GRANDE PRAIRIE				
PAVEMENT 400 mi @ .35			140.00	
OFF PAVEMENT 1100 @ .50			550.00	
ACCOMODATION			25.00	
		TOTAL	~~1465.39~~ $1,473.39	

Returned to Station ....

LOGGING DATA

TYPE	SCALE	FROM	TO
			Ft.
			Ft.
			Ft.
			Ft.
			Ft.

PAID APR 7 1978 CHEQUE No.

Completed Perforations with .... Gun

NO. SHOTS	FROM	TO
		Ft.
		Ft.
		Ft.
		Ft.
		Ft.

The Service(s) and equipment covered by this Service order have been performed or received.

J. Booth
Signature of customer's duly authorized representative

David Sim
Roke Engineer

ROKE OIL ENTERPRISES LTD.

516 MORAINE ROAD N.E., CALGARY, ALBERTA T2A 2P2 • TELEPHONE 273-5553

TO: Placer Development Limited.,
800 - 1030 West Georgia Street,
Vancouver. B.C.

INVOICE № 1277

DATE April 10, 1978

Attention: Mr. Borovic.

SERVICES RENDERED Re: Service Order #'s 2670 & 2671

Total Charges $ 2,149.30

PAID
APR 17 1978

OK Borovic
OK DLR
V-162

375118

INVOICE

3 DAYS	MEALS	AT 15 00 PER DAY		
AIR	FARE	ONE WAY		139 00
			TOTAL	984.00

PAID
APR 17 1978

LOGGING DATA

TYPE	SCALE	FROM	TO
			Ft.
			Ft.
			Ft.
			Ft.
			Ft.

Completed Perforations with

..... Gun

NO. SHOTS	FROM	TO
		Ft.
		Ft.
		Ft.
		Ft.
		Ft.

The Service(s) and equipment covered by this Service order have been performed or received.

J. Borovic

Signature of customer's duly authorized representative

Roke Engineer

INVOICE

General Testing Laboratories Division
Superintendence Company (Canada) Ltd.
1001 East Pender St.
Vancouver, B.C. V6A 1W2
Ph (604) 254-1647

INVOICE V29179
DATE January 20, 1978
JOB NO.
LAB NO. 7801-1105

JC	JOB #	CM	G.L.	SR	RE

50
NEX PLACER EXPLORATION
00 - 1030 West Georgia Street,
ncouver, B.C.
V6E 3H8

TO: Testing 4 submitted Coal samples, marked: Tag 30221, 222, 223, 224 for Moisture, Ash Volatile Matter, Sulphur and Calorific Value: - 4 @ 60.50 $ 242.00

DUE AND PAYABLE ON RECEIPT OF INVOICE. 1½% PER MONTH (18%) PER ANNUM CHARGED ON OVERDUE ACCOUNTS.

- PLEASE KEEP THIS PORTION

No

SUB TOTAL	12 80 6
FEDERAL TAX	1 54
SUB TOTAL	14 34
PROVINCIAL TAX	1 00
SHIPPING	
TOTAL	15 34

LIC. NO.

COMPLETE REPRODUCTION
AND SUPPLY SERVICE

10890

PLEASE REFER TO THIS NUMBER WHEN REMITTING

PLEASE PAY THIS AMOUNT

General Testing Laboratories Division
[S]uperintendence Company (Canada) Ltd.
[9]01 East Pender St.
[Va]ncouver, B.C. V6A 1W2
[P]h (604) 254-1647

INVOICE V29689

DATE March 13, 1978

JOB NO.

LAB NO. 7802-2804

[DE]VELOPMENT LTD.
[..]0 West Georgia Street,
[..]r, B.C.
R. Borovic

JC	JOB #	CM	G.L.	BR	RF

Mandatory fields marked

ATCH NUMBER

BATCH DATE

ACCOUN[T]
BATCH

[..]g 18 submitted Coal Samples, marked: 30553 to 61 and
[..] to 92: for Moisture, Ash, Volatile Matter, Sulphur and
[..]fic Value = 13 @ 60.50 | 786.50

[..]ples with out Calorific Value (high Ash) = @ 44.50 | 222.50

$ 1,009.00

DUE AND PAYABLE ON RECEIPT OF INVOICE. 1½% PER MONTH (18%) PER ANNUM CHARGED ON OVERDUE ACCOUNTS.

Yo
air
or

General Testing Laboratories Division
Superintendence Company (Canada) Ltd.
1001 East Pender St.
Vancouver, B.C. V6A 1W2
Ph (604) 254-1647

INVOICE V30142

DATE April 30, 1978

JOB NO. 7804-1114

LAB NO.

JC	JOB #	CM	GL	SR	SE	

TO: PO250
PLACER DEVELOPMENT LTD.
#700 - 1030 West Georgia Street,
Vancouver, B.C. V6E 3A8

Att: Mr. I.R. Borovic
Exploration Department

RE: 35 submitted Lignite samples, 58851 to68 and 58876 to 891 and LC # 2

To:		
Testing samples for Moisture, Ash, Volatile Matter, Sulphur and Calorific Value	35 @ $60.50	$ 2,117.50

DUE AND PAYABLE ON RECEIPT OF INVOICE. 1½% PER MONTH (18%) PER ANNUM CHARGED ON OVERDUE ACCOUNTS.

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

HOLE No. L.C#1

SHEET No. 1 of 9

GRID: _____

LOCATION: LIARD RIVER, Y.T.
DATE COLLARED: Nov. 25, 1977
DATE COMPLETED: DEC, 6, 1977

BEARING: _____
LENGTH: 167.4 m
DIP: -90°

LATITUDE: 60° 6½'
DEPARTURE: 129° ½'
ELEVATION: 2250'

PROPERTY: LIARD COAL
CORE SIZE: HQ / WL
SCALE OF LOG: 1:100

LOGGED BY: J. BOROVIC
DATE: DEC, 6, 1977.

DEPTH m	m block & %rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V.M. as recvd.	% V.M. dry basis	% F.C. as recvd.	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
15	15.0	OB																				
	15.6	GRAVEL																				
6																						
7	17.1																					
		ORG. MUD																				NOT ANALYSED
8																						
	18.6																					
9		GRAY CLAY																				
20	20.0																					
1	21.2																					
2																						
	22.4																					
	22.6																					
3																						
4	24.0																					
5	25.2																					
6																						
7	27.0	GRAVEL																				
	27.6																					
8																						
9																						
30	30.0																					

COAL LOG FORM No. X-1-78, Page 1.

BORHOLE LOG BY: ROKE, CALGARY, ALTA

DATE: _____

GRID: _____

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

LOGGED BY: JB

DATE: Dec 6/78.

HOLE No. LC#1

SHEET No. 2 of 9

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
30	30·0																					
1																						
2																						
3		Coal & org. mud			30583	26·68	39·05	53·26	30·63	41·77	3·64	4·97	3656	4987	@A3 / 0.5B							
4	50																					
5																						
6																						
7	27·2																					
	5° 37·7																					
8		seatearth (some root remnants)																				
	50	siltstone & org. mud																				
	38·1	COAL & 20% clay																				
9	40	siltstone & org. mud																				
	39·6																					
40																						
	90																					
1	41·1																					
2	0																					
	12·6																					
3																						
4	30																					
5																						
	15·6																					
6																						
7																						
8		COARSE SANDSTONE (POORLY CONSOL.) graded bedding →																				

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____

DATE: _____

PLACER DEVELOPMENT LIMITED
EXPLORATION DEPARTMENT

GRID: _____

LOGGED BY: JB
DATE: Dec 6/78.

HOLE No. LC #1
SHEET No. 3 of 9

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
48	48.0																					
9	75																					
50	50.0																					
1	100																					
	51.6																					
2																						
3	0																					
4																						
	54.6																					
5	30																					
6	56.1																					
	0																					
7	57.1																					
8																						
	30																					
9																						
60	60.0	↓																				
1		unconsol. sand, sandstone																				
		0.05 m COAL																				
2	15																					
3		↑																				
	63.6																					
4																						
	25																					
5	65.1																					
6	0																					

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____
DATE:

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

GRID: _____

LOGGED BY: [illegible]

DATE: Dec, 6, 78.

HOLE No. 2C#1

SHEET No. 4 of 9

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
66	0	Sandstone																				
	66.6																					
7																						
8	15																					
9	69.6																					
70																						
1																						
2	20																					
3																						
4	74.1																					
5																						
6																						
7	30																					
8																						
9																						
80																						
	80.5																					
1	50																					
2	92.4																					
3																						
4																						

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____

DATE:

GRID: _____

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

LOGGED BY: RB

DATE: Dec 6, 1978.

HOLE No. LC#1

SHEET No. 5 of 9

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
84		Sandstone																				
5	50																					
6																						
	86.6																					
7	70																					
8																						
	88.5																					
9	75																					
90																						
	90.6																					
1																						
2																						
3	10																					
4																						
	94.6				94.7																	
	100	COAL			30592	24.65	43.65	57.93	28.89	37.01	8.81	5.06	2,371	3,147	0.80/							
5	95.2				95.0										0.40							
6																						
7																						
8		Sandstone																				
	30																					
9																						
100																						
1	101.0	0.05m COAL																				
2																						

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____

DATE:

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

GRID: _____

LOGGED BY: GS

DATE: Dec 6, 1978.

HOLE No. 2C#1

SHEET No. 6 of 9

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
102	90	sandstone																				
3	103.0	COARSE – SANDSTONE → fine breccia ←																				
4		(																				
5																						
6	25																					
7																						
8																						
9	109.2																					
110		↑																				
1	30																					
2																						
	112.7	0.05–0.10 m ~~COAL~~																				
3	50	CLAY & silt																				
	113.3																					
	50	x bedding																				
4	114.1																					
5		clay & silt																				
6																						
7	40	sandstone																				
8																						
9	119.0																					
120																						

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____

DATE:

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

GRID: _____

LOGGED BY: [illegible]

DATE: Dec, 6, 1978

HOLE No. 20#1

SHEET No. 1 of 9

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I	Reflec.	Sp. Gravity	REMARKS
120																						
1	50	Sandstone																				
2	121.9	↓																				
3																						
4																						
5	30																					
6																						
7	127.2	↑																				
8	(10)	CLAY & COAL (ORG. MUD.?)																				
	128.2																					
9		Sandstone																				
130		↓																				
1																						
2	30																					
3		Sandstone																				
4		↑																				
5	135.0	↑																				
6		black org. mud.																				
		COAL.																				
7	65	COAL + 10% CLAY		0'																		
		ORG MUD horiz. bedding		2'																		
8		COAL + 1% CLAY																				

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____

DATE:

PLACER DEVELOPMENT LIMITED
EXPLORATION DEPARTMENT

GRID: _____

LOGGED BY: JB
DATE: Dec, 6, 1978.

HOLE No. LC#1
SHEET No. 8 of 9

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
138	138.5	COAL + 1% CLAY																				
		ORG. MUD - SEATEARTH																				
9	90	↓ CLAY																				
140	140.0	↕																				
		CLAY & SILT																				
1	100	↓ SILT & CLAY																				
	141.5	↓ SANDSTONE																				
2	60	↓																				
3	142.0																					
4		↓																				
5	10	↓																				
6		↓																				
7	147.0	↕																				
	100																					
	147.6																					
8		COAL																				
	90	CLAY, ORG. MUD																				
9		COAL + 1% CLAY																				
	149.4	ORG. MUD & CLAY																				
	100	"DRIFTWOOD"																				
150	150.1	COAL																				
		ORG. MUD																				
		CLAY - SILT																				
1	100	↓ SILTSTONE																				
	151.6	↓																				
2																						
	75	↑																				
3	153.4	↑																				
		CLAY & SILT																				
		COAL																				
4		CLAY																				
		SILT																				
5	155.2	↓																				
6																						

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____
DATE:

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

GRID: _____

LOGGED BY: JB

DATE: Dec. 6/78.

HOLE No. LC#1

SHEET No. 2 of 2

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
156		Sandstone																				
7	25																					
8																						
9	159.2	GRADED BEDDING																				
160																						
1	85	Sandstone		0°																		
2	162.0	DRIFT COAL																				
3	100	sandstone																				
	163.6																					
4																						
5																						
6	20																					
7	167.4	COARSE SANDSTONE																				
8		EOH. LC#1																				

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____

DATE:

PLACER DEVELOPMENT LIMITED
EXPLORATION DEPARTMENT

HOLE No. LC #2
SHEET No. 1 of 6

GRID: ______

LOCATION: ALASKA HWY. BEARING: ______ LATITUDE: 60° 03' PROPERTY: LIARD COAL BASIN

DATE COLLARED: MARCH, 14, 1978 LENGTH: 136.2 m DEPARTURE: 128 56½' CORE SIZE: HQ / WL LOGGED BY: I. Borovic

DATE COMPLETED: MARCH, 29, 1978 DIP: -90° ELEVATION: 2070' SCALE OF LOG: 1:100 DATE: APRIL, 4, 1978

CASSING 73.2 m

DEPTH m	m block & %/rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	MOISTURE %	% ASH as recvd.	% ASH dry basis	% V.M. as recvd.	% V.M. dry basis	% F.C. as recvd.	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
41																						
42	42.6																					
43	30%	grey silt (minor organic matter) (mixed with some clay)																				
44	44.2																					
45																						
46	20%																					
47																						
48	48.2	grey silt contact - bedding → well rounded Q pebbles (½-1 cm) sand		25°																		
49		↓ 1 to 10% Q pebbles (poorly consolidated)																				
50																						
51	16																					
52																						
53																						
54	54.8	← 20 cm coal 0.20 m; — organic clay & silt			54.6 58851 54.8	36.61	19.00	29.98	24.42	38.53	19.97	31.49	5114	8067	.16/.26							
55	100	↓ silty material prevails gradually																				
56	56.4 / 60 / 56.7	← organic silt & clay ↓ COAL 1.7 m			56.2 58852	40.50	12.36	20.78	27.19	45.70	19.95	33.52	5482	9214	.14/.24							
57																						

BORHOLE LOG BY: ROKE, CALGARY, ALTA

DATE:

PLACER DEVELOPMENT LIMITED
EXPLORATION DEPARTMENT

GRID: ______

LOGGED BY: ?B
DATE: April 5, 1978

HOLE No. ?C#2
SHEET No. 2 of 6

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
57	50	COAL 1.7m			58852																	
58	57.9	clay (seatearth?) silt			57.9																	
59	100	COAL silty clay 0.3m			58.6 58853 58.9	44.46	4.79	8.62	28.53	51.36	22.22	40.02	5946	10706	.04/.25							
	59.4	grey organic clay (? grains, where from?) 5cm COAL																				
60	100	organic mud COAL 0.2m			60.0 58854	44.21	8.64	15.48	26.30	47.14	20.85	37.38	5493	9846	.16/.28							
		clay COAL 0.35m		30°	60.2 58855	41.78	5.42	9.31	30.09	51.68	22.71	39.01	6158	10567	.17/.29							
61	60.9	org. mud & wood																				
62	95	COAL 1.8m			58856	42.76	7.69	13.44	28.31	49.47	21.24	37.09	5757	10058	.13/.22							
	62.5 100	CLAY																				
63 64	63.1 100	COAL 1.5m			58857	42.23	5.33	9.22	29.26	50.65	23.18	40.13	6139	10627	.13/.23							
65	64.6	CLAY SPLIT			64.3 65.0																	
66	100	COAL 1.2m			58858	41.14	9.47	16.09	28.10	47.73	21.69	36.18	5741	9754	.14/.24							
67	66.1 60	CLAY		?	66.2																	
		COAL 0.6m			58859	39.22	11.49	18.91	27.99	46.05	21.30	35.04	5676	9938	.14/.23							
68	67.6 100 67.9	"Sandy" COAL 0.3m			58860	41.25	23.95	40.76	20.05	34.13	14.75	25.11	3855	6562	.10/.17							
69 70 71	60 69.2 50 70.1	COAL 4.0m			58861	35.95	11.36	17.63	29.80	46.27	23.25	36.10	6217	9652	.15/.23							
72	71.9	clayish, silty, organic mud			71.9																	
73	75	organic mud			73.0																	
74	73.8	COAL (quality?) 0.8m			58862	27.42	20.45	28.18	29.23	40.28	22.90	31.54	5896	8123	.28/.31							
75		organic silty mud sand			73.8																	

BOREHOLE LOG BY: ______
DATE: ______

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

GRID: _____

LOGGED BY: BS

DATE: _____

HOLE No. 2C#3

SHEET No. 3 of 6

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
75																						
76	50	Sand (minor organic matter)																				
76.8																						
77																						
78																						
79																						
80																						
81																						
82		wash out, caving possible sand																				
83	0%																					
84																						
85																						
86																						
87																						
88																						
89																						
90																						
90.5																						
91		Sand / Coal			91.0																	
92	40%																					
92.9																						
93	20%	>/ Quartz pond (where from?) 2.2 m			58863	36.58	5.68	8.95	31.94	50.37	25.80	40.68	6734	10619	.15/.24							

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____

DATE:

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

GRID: _____

LOGGED BY: JC

DATE: April 5, 1978

HOLE No. CO #2

SHEET No. 4 of 6

Note: mist & sand mix with mica

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
93	95.2	COAL (Q. SAND)			93.2																	
94	75	GRAY (SLIGHTLY ORGANIC) CLAY																				
95	95.41	← 10 cm org. mud																				
	100	GRAY SILT																				
96		GRAY CLAY whitish clay																				
	96.6																					
97	99																					
98	98.1	gray org. clay with drift wood																				
99	95				99.4 98.8																	
	99.7																					
100	50	COAL 10 cm black org. mud 1.3			58864	37.38	14.18	22.65	22.05	44.80	20.39	32.55	5704	8994	.16/.26							
	100.3																					
	99																					
1	101.1	scaleard clay			101.1																	
	75	whitish clay																				
2	102.1				102.0																	
	80	COAL 1.8			58865	33.76	17.57	26.53	28.26	42.66	20.41	30.81	5640	8514	.29/.31							
3	103.0																					
4		gray, clayish silt			103.2																	
	95	whitish clay																				
	105.0																					
5		Sand gray																				
6	6																					
	106.7																					
7		gray silt clay																				
	99	gray silty clay clayish silt																				
8	108.2	silty clay with coaly, woody particles		8°																		
9	99	gray silt (some organic mat.)																				
	109.7																					
110	95																					
111																						

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____

DATE:

PLACER DEVELOPMENT LIMITED
EXPLORATION DEPARTMENT

GRID: ______

LOGGED BY: [illegible]
DATE: April 6, 1975.
HOLE No. LC 72
SHEET No. 5 of 6

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
111	111.3	org. mud (clay, (silt), coal particles)																				
112	25	clay silt & sand																				
	112.8																					
113	113.4																					
114	0%																					
115	114.9	→ drift coal in the sand																				
		sand ↓ clay (org. mud)																				
116	30																					
	116.4	– whitish clay																				
117	100	organic mud / greenish clays gradually changing into org. mud and silt																				
118	118.0	COAL ← 0.40			117.8 58866 118.2	35.06	14.70	22.64	28.34	43.64	21.90	33.72	5832	8980	.21/.33							
		ORGANIC MUD, GRAY CLAY, whitish clay																				
119	95																					
	119.4	gray silt																				
120	100																					
121	121.0	sand with lenticles of "driftcoal" bedding																				
122	100			10°																		
	122.5	coal (too much clay!) 0.20 <			122.5 58867 122.7	23.61	37.11	48.58	23.62	30.92	15.66	20.50	4364	5713	.24/.32							
		seat-earth (org. mud!)																				
123		org. clay																				
	90																					
124	124.1																					
125	30																					
	125.5																					
126	10																					
	126.5																					
127	99																					
128	128.0	org. mud gradually changing into [illegible]																				128.0 S
129	5	COAL recovery?			58868	23.65	21.74	28.47	33.23	43.53	21.38	28.00	6301	8253	.18/.23							

COAL LOG FORM No. X-1-78, Page 2.

1.75

BOREHOLE LOG BY: ______
DATE:

GRID: _____

PLACER DEVELOPMENT LIMITED
EXPLORATION DEPARTMENT

LOGGED BY: I.B.
DATE: Apr 26/78

HOLE No. LC#2
SHEET No. 6 of 6

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
129	5	COAL 1.7m			58868																	
	129.5	?																				
130	30	seat earth? org. mud silt & clay																				
	131.0																					
131		Sand																				
132	0%																					
	132.5																					
133	0%																					
134	134.1	← sand diff coal																				
	25	Sand																				
135	3																					
136	136.2																					
		136.2 m																				
		E.O.H. LC#2																				

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____
DATE:

CASING 18.8 HW

9613 NW

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

HOLE No. LC-78

SHEET No. 1 of 5

GRID: _____

LOCATION: ALASKA HWY. BEARING: _____ LATITUDE: 60° 2¾'

DATE COLLARED: MARCH 30, 78. LENGTH: 109.7 DEPARTURE: 128° 58'

DATE COMPLETED: APRIL 6, 78 DIP: -90° ELEVATION: 2100'

PROPERTY: LIARD COAL BASIN

CORE SIZE: NQ/WL LOGGED BY: I. BOROVIC

SCALE OF LOG: 1:100 DATE: April 8/1978

DEPTH m	m block & %rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V.M. as recvd.	% V.M. dry basis	% F.C. as recvd.	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
37	57.2	light grey, whitish clay																				
38	80	5cm org. mud followed by very fine mud Reddish clay																				
	38.7	clay with driftwood																				
39	50	white clay																				
	39.6																					
40	90	10 cm coal org. mud Grey org. mud White clay																				
	40.3																					
41	20																					
42	42.1																					
43																						
44																						
45																						
46	0%	6 runs - no core																				
47																						
48																						
49																						
50																						
	50.9																					
51																						
52	15	COAL 2.0m			58876	35.13	15.41	23.75	29.40	45.33	20.06	30.92	5747	8859	.21							
	52.5														/1.33							
53																						

COAL LOG FORM No. X-1-78, Page 1.

BORHOLE LOG BY: _____

DATE: _____

PLACER DEVELOPMENT LIMITED
EXPLORATION DEPARTMENT

GRID: ________

LOGGED BY: I. Borovic

DATE: April 8, 1978

HOLE No. LC#3

SHEET No. 2 of 5

1818 –

[illegible]

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F. C. as recvd	% F. C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
53	90	whitish clay																				
	53.9	↓																				
54																						
	17	whitish gray clay																				
55																						
	55.5	silty clay																				
56																						
	20																					
57																						
	57.6	sand (gray, uniform, mica!)																				
58																						
	20																					
59																						
	59.7																					
60 – 70	0/6	7 runs – no core (Sand)																				
	70.7	→ diff[illegible]al chips; sand																				
71																						

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: ________

DATE:

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

GRID: _____ LOGGED BY: _____ HOLE No. LC#3

DATE: _____ SHEET No. 3 of 5

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	COAL ANALYSES: MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	f. S.I.	Reflec.	Sp. Gravity	REMARKS
71	60	grey (mica ?) sand																				
72	71.9																					
73	0	sand ? no core																				
	73.8																					
74	30	sand																				
	74.4	> approx. 20 cm ↑ coaly mat.																				
		org. mud																				
75	90	lt. clay																				
		org. mud																				
	75.9	coal ——— ?			756																	
76	50	COAL 20 cm split →			SB877	35.97	18.36	28.68	25.87	40.41	19.80	30.91	6319	8200	.26/.40 ←							25.8
	76.8	?																				
77					76.8																	
		dark grey sand (mica)		15°																		
78	75	int. bedded with coaly																				
		laminae																				
	78.9	——— ↑																				
79																						
80																						
81																						
82																						
83																						
	0																					
84		no core																				
	0	7 runs																				
85																						
86																						
87																						
88																						
89																						

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: _____

DATE:

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

GRID: ______

LOGGED BY: ______

DATE: ______

HOLE No. LC#3

SHEET No. 4 of 5

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	REMARKS
89–92.0	0	no core	52.2 / 75.8 / 97.7 / 100.25
92.0–93.6	10	coaly mud in grey org. mud of mud, & clay	
93.6–94.0		gradual transition into coal	
94.0–101.0	98 / 95 / 96.0 / 99 / 97.6 / 99 / 99.2 / 95 / 100.9	COAL; spurt; org mud sp[l]it (20 cm) at 97.6; 30 cm split at 99.2; 30 cm split at 100.9; 100.9–101.0 [illegible]; 0°; 5°	97.7; 100.25
101.0–102.5	99	[illegible] earth; whitish clay	
102.5–104.?	80	grey silt clay	
104.?–107	0%	No core, ? sand	

COAL ANALYSES

SAMPLE NO.	MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F. C. as recvd.	% F. C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity
94.0																
58878	27.58	47.73	65.91	18.90	26.10	5.79	7.99	2641	3647	.09/.13						
58879	30.41	36.67	52.69	21.61	31.05	11.31	16.26	3735	5367	.14/.20						
58880	26.15	51.37	69.55	17.04	23.07	5.44	7.38	2348	3180	.07/.10						
58881	27.95	41.86	58.10	22.25	30.88	7.94	11.02	32.86	4561	.13/.18						
58882	31.06	31.97	46.37	24.21	35.11	12.76	18.52	4087	6016	.14/.21						
58883	37.40	19.95	31.87	25.30	40.41	17.35	27.72	4884	7802	.17/.28						
58884	32.80	33.13	49.30	22.49	33.47	11.58	17.23	3766	5604	.11/.17						
58885	36.70	20.49	32.36	25.42	40.16	17.39	27.48	4859	7676	.20/.31						
58886	41.11	9.78	16.61	29.80	50.60	19.31	32.79	6020	10222	.18/.30						
58887	39.68	10.27	17.03	30.41	50.41	19.64	32.56	6124	10153	.19/.32						
58888	35.06	30.77	47.38	19.81	30.50	14.36	22.12	3845	5921	.15/.23						
58889	39.87	14.92	24.81	26.46	44.00	18.25	31.19	5258	8744	.16/.27						
58890	38.17	15.47	25.03	30.18	48.81	16.18	26.16	5376	8695	.20/.32						
58891	40.53	11.66	19.61	27.32	45.94	20.49	34.45	5716	9611	.23/.39						
101.0																

BOREHOLE LOG BY: ______

DATE:

PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

GRID: ______

LOGGED BY: ______ HOLE No. LC43

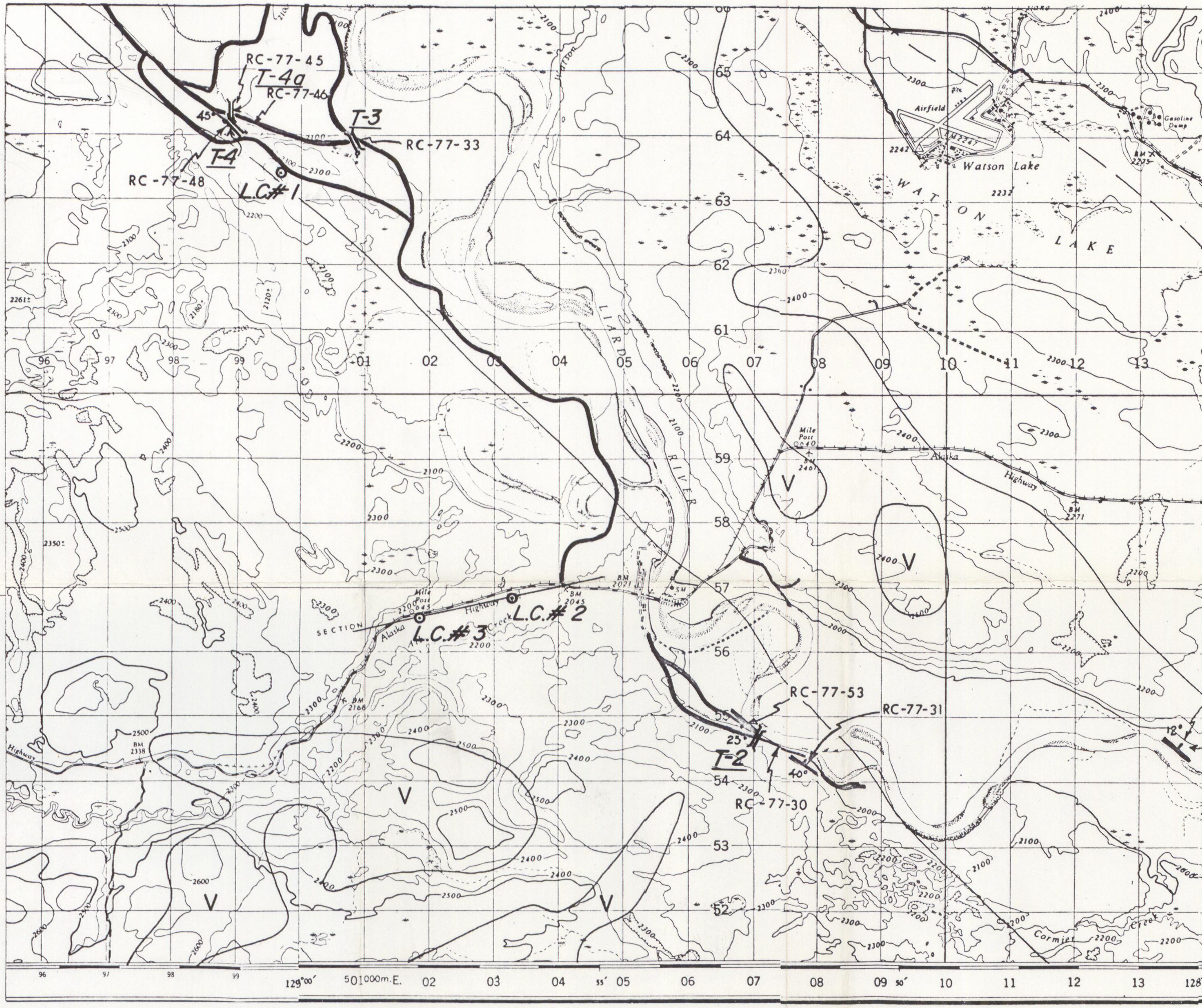
DATE: ______ SHEET No. 5 of 5

DEPTH m	m block & % rec.	ROCK TYPE DESCRIPTION	Graph. log	Structure	SAMPLE NO.	MOISTURE %	% ASH as recvd.	% ASH dry basis	% V. M. as recvd.	% V. M. dry basis	% F.C. as recvd	% F.C. dry basis	CALORIFIC VALUE as recvd.	CALORIFIC VALUE dry basis	% S	% H	% N	% O	F.S.I.	Reflec.	Sp. Gravity	REMARKS
107		3 runs no coal																				
8	108.2	silt w. minor org. matter & clay sand interbedded with coaly lenticles.																				
9				10°																		
	109.7	grey organic mud (some silt)																				
110		C04LC#3																				

COAL LOG FORM No. X-1-78, Page 2.

BOREHOLE LOG BY: ______

DATE: ______



		MOISTURE %	ASH %	V.M. %	F.C. %	S %	BTU/LB
T4a	AS RECEIVED	38·3	5·06	31·56	25·11	0·62	6 540
	DRY BASIS	—	8·19	51·13	40·68	1·00	10 594
T2	AS RECEIVED	18·4	18·38	38·96	24·31	0·29	7 046
	DRY BASIS	—	22·51	47·72	29·77	0·36	8 629
T3L	AS RECEIVED	24·1	24·05	29·98	21·88	0·86	5 743
	DRY BASIS	—	31·68	39·49	28·83	1·13	7 566
T3U	AS RECEIVED	40·9	12·75	25·90	20·44	1·02	5 256
	DRY BASIS	—	21·58	43·83	34·59	1·73	8 895

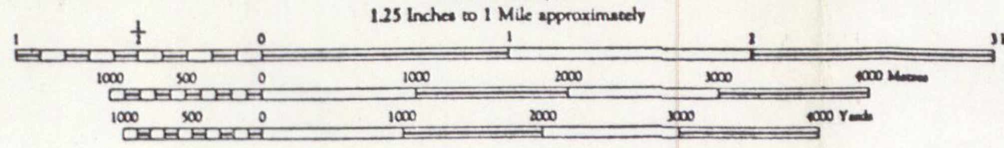
⊙ L.C.# 1 DIAMOND DRILL HOLE

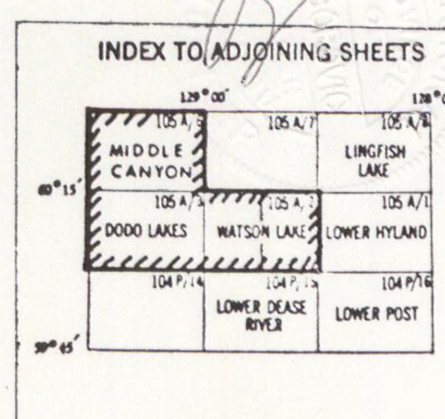
T-2 TRENCH

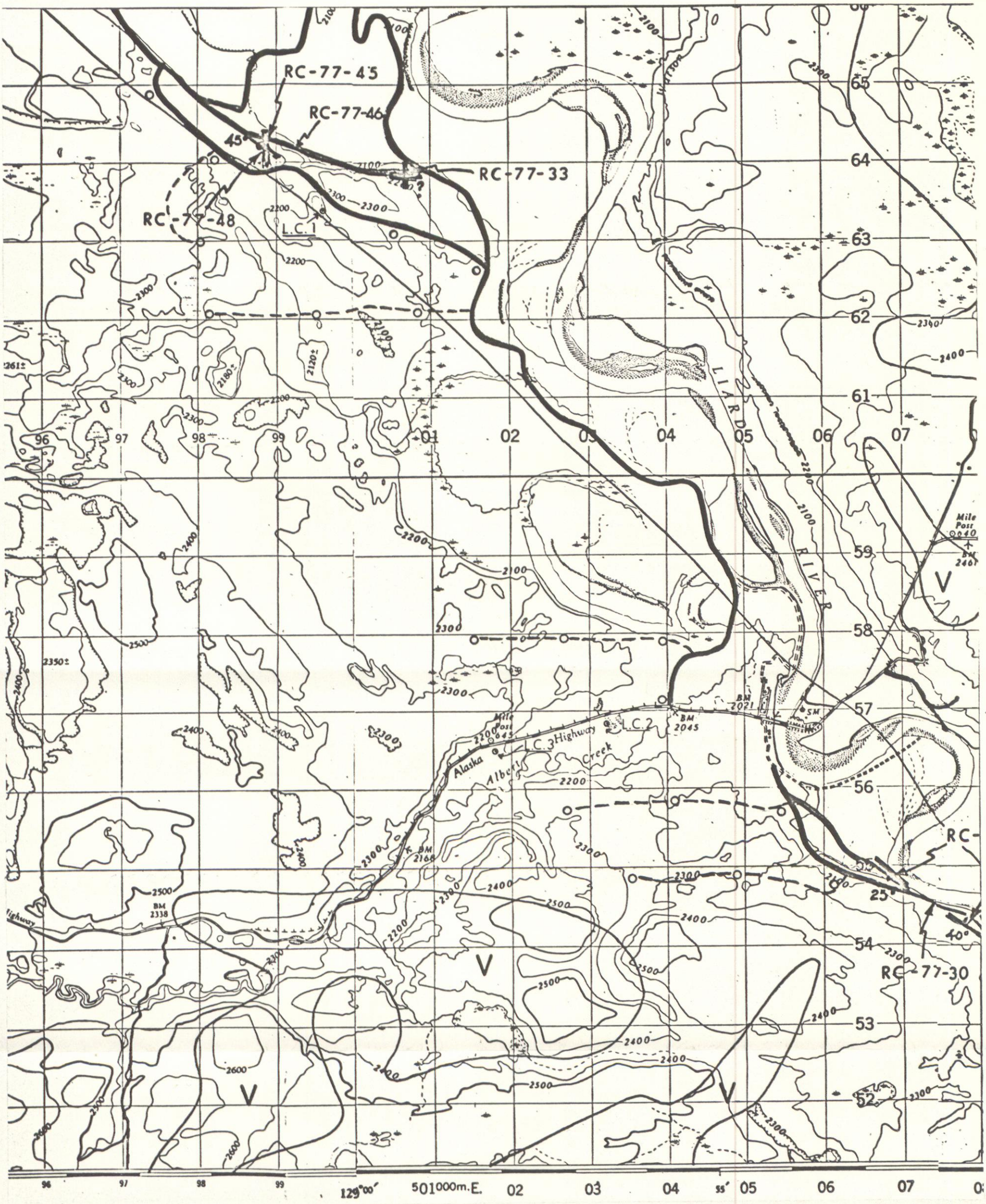
PLACER DEVELOPMENT LIMITED

LIARD COAL LOCATION MAP

Scale 1:50,000
1.25 Inches to 1 Mile approximately







LEGEND

- ● L.C. 1. D.D.H
- o Proposed Rotary Holes
- — — — Access Cat Trail

Scale 1:50,000

1.25 Inches to 1 Mile approximately

1 0 1 2 Miles

1000 500 0 1000 2000 Metres

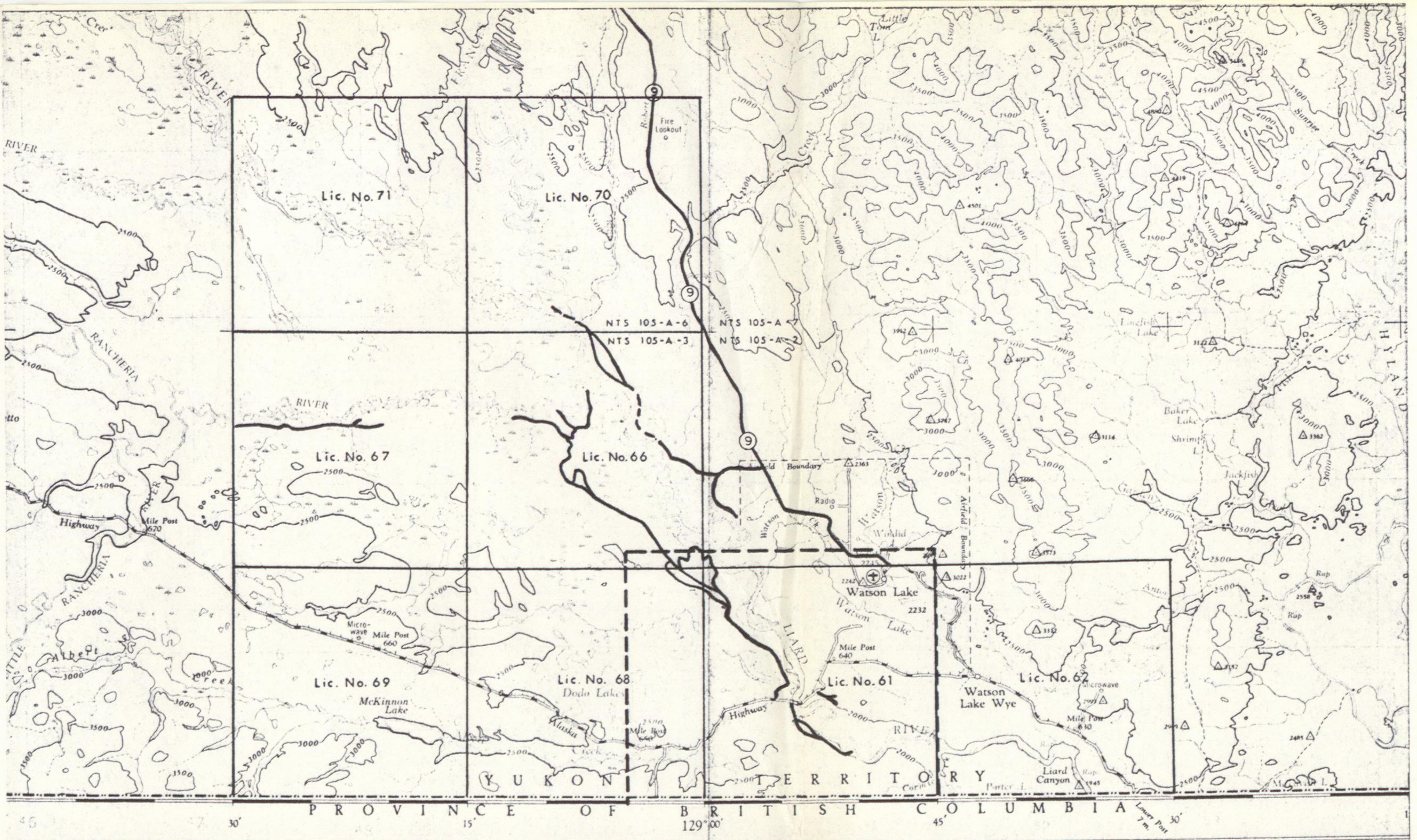
Figure 11.

PLACER DEVELOPMENT LIMITED

LIARD COAL BASIN

Rotary Drilling Proposal

June 1, 1978 — I.B. — A.K.



PLACER DEVELOPMENT LIMITED

LIARD COAL EXPLORATION LICENCES

WATSON LAKE, YUKON TERRITORY

Scale 1:250,000

1 Inch to 4 Miles Approximately

Miles 5 0 5 10 15 20 Miles

Kilometres 5 0 5 10 15 20 25 30 Kilometres

Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys Ottawa.

LEGEND

(9)	THE CAMPBELL HIGHWAY
	LOGGING ROADS
	OUTLINE OF THE LOCATION MAP 1: 50 000 SCALE

ROADS - ROUTES
- hard surface - pavée
- loose surface - de gravier
- cart track - de terre
- trail - sentier
- Deletions - Suppressions x x x x x

REFERENCE

- Road, Hard Surface, Heavy Duty — 3 or more Lanes; Partially completed
- „ Hard Surface, Heavy Duty — 2 Lanes; Route No. 12
- „ Hard Surface, Medium Duty — 3 or more Lanes; 2 Lanes
- „ Loose Surface, Graded and Drained — 3 or more Lanes; Not less than 14 ft. wide
- Other Roads — Poor condition
- Trail
- Railway, Double Track
- „ Single Track — Station; Stop
- Boundary, International
- „ Provincial
- „ County or Land District
- „ Reservation, Military, etc.
- Electric Power Line — on Steel Towers; on Wood Poles

REFERENCE

- Triangulation Station
- Contours, Elevation — 1500, 2000
- „ Depression — 2000, 1500
- Form Lines
- Stream, Intermittent — Dam; Falls; Rapids
- Airfield, Military, El. in feet 765
- „ Civil
- „ Auxiliary
- Building
- Church
- School
- Spot Elevation, in feet .821
- Wooded Areas
- Swamp or Marsh
- Cliff
- W.L. 631
- Mud or Sand
- Navigation Light
- Seaplane Base
- Seaplane Anchorage
- Fire Lookout Tower
- Bench Mark B.M. 752
- Telephone, Trunk Route