Monkman [illegible]
Proj[illegible]

Q[illegible] + Reserve
[illegible]

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TABLE 2

NORTH WAPITI DIP SLOPE RESERVES SUMMARY

PIT A

SEAM	THICKNESS	SECTION 1000S	000	1000N	2000N	3000N	4000N	5000N	6000N	7000N	8000N	TOTAL
10	1.52	161,728	157,472	1,100,176	210,672	193,648	451,136	397,936	472,416	525,616	0	3,670,800
9	0.00	0	0	0	0	0	0	0	0	0	0	0
8	0.00	0	0	0	0	0	0	0	0	0	0	0
7	3.00	609,000	680,400	2,746,800	890,400	768,600	1,927,800	1,545,600	1,596,000	1,621,200	0	12,385,800
6	2.73	741,468	817,908	2,721,264	1,047,228	1,054,872	2,006,550	1,658,748	1,658,748	1,723,722	386,022	13,816,530
5	1.08	349,272	373,464	1,114,344	498,960	598,752	860,328	749,952	690,984	716,688	237,384	6,190,128
4	4.72	1,751,120	1,830,416	5,081,552	2,253,328	3,277,568	3,938,368	3,442,768	3,198,272	3,270,960	885,472	28,929,824
	TOTAL PIT A TONNAGE	3,612,588	3,859,660	12,764,136	4,900,588	5,893,440	9,184,182	7,795,004	7,616,420	7,858,186	1,508,878	64,993,082
	RATIO	5.25	4.86	6.16	4.93	4.27	5.72	5.24	5.39	5.59	3.51	5.38

PIT B

SEAM	THICKNESS	1000S	000	1000N	2000N	3000N	4000N	5000N	6000N	7000N	8000N	TOTAL
3u	1.65	880,110	845,460	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	702,240	12,289,200
31	1.01	583,982	533,078	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	448,238	7,762,860
2	2.02	1,303,708	1,204,728	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,719,424	1,753,360	1,085,952	17,194,240
1	3.10	2,178,680	2,031,120	[illegible]	[illegible]	[illegible]	3,480,680	3,263,680	2,821,000	2,773,260	1,896,580	27,962,620
	TOTAL PIT B TONNAGE	4,946,480	4,614,386	9,207,828	6,086,836	7,156,926	8,211,490	7,554,036	6,648,488	6,649,440	4,133,010	65,208,920
	RATIO	7.66	7.32	7.83	7.68	8.56	8.35	7.73	8.81	8.33	7.98	8.06

	1000S	000	1000N	2000N	3000N	4000N	5000N	6000N	7000N	8000N	TOTAL
GRAND TOTAL TONNAGE	8,559,068	8,474,046	21,971,964	10,987,424	13,050,366	17,395,672	15,349,040	14,264,908	14,507,626	5,641,888	130,202,002
OVERALL RATIO PITS A AND B	6.64	6.20	6.86	6.45	6.62	6.96	6.47	6.99	6.84	6.79	6.72

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WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

SECTION
1000 S

	PIT A	PIT B	TOTAL
AREA	21,538	41,404	62,942
TOT VOL	21,538,000	41,404,000	62,942,000
WASTE VOL	18,957,580	37,870,800	56,828,380
TONNAGE	3,612,588	4,946,480	8,559,068
RATIO	5.25	7.66	6.64

SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52	76	115,520	161,728
11	0.00		0	0
10	0.00		0	0
9	3.00	145	435,000	609,000
7	2.73	194	529,620	741,468
5	1.08	231	249,480	349,272
4	4.72	265	1,250,800	1,751,120
3u	1.65	381	628,650	880,110
3l	1.01	413	417,130	583,982
2	2.02	461	931,220	1,303,708
1	3.10	502	1,556,200	2,178,680
			6,113,620	8,559,068

WAPITI DIP SLOPE DEVELOPMENT ANALYSIS

PRODUCTION SCHEDULE AND CASH FLOW MODEL
ASSUMES APPROXIMATELY 95% RECOVERY OF DILUTED COAL

	PREPRODUCTION CAPITAL			PRODUCTION YEAR 1	2	3	4	5	6 - 10	11 - 18	TOTALS
PRODUCTION SCHEDULE											
RAW COAL PRODUCED				379	3,030	3,788	3,788	3,788	18,939	28,030	61,742
WASTE REMOVED				2,158	17,260	21,575	21,575	21,575	107,876	159,656	351,675
CLEAN COAL PRODUCED @ YIELD = 66				250	2,000	2,500	2,500	2,500	12,500	18,500	40,750
WASTE TO RAW COAL RATIO				5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70
CAPITAL COST ESTIMATE											
Mine Development	500.00	8,075.00	13,725.00	2,900.00	50.00						
Major Equipment				20,080.00	34,110.00	18,310.00					
Mine Facilities	1,600.00	9,350.00	5,630.00						4,700	4,100	
Service Equipment			5,856.00	2,445.00	192.00	380.00	450.00	2,346.00	10,396	13,946	
Rom Handling & Prep Plant	5,000.00	28,000.00	36,620.00	4,500.00							
Power Distribution	500.00	2,500.00	1,300.00						2,700	3,400	
Warehouse Inventory			1,500.00	1,850.00	1,270.00	20.00	2,220.00				
TOTAL CAPITAL COST	7,600.00	47,925.00	64,631.00	31,775.00	35,622.00	18,710.00	2,670.00	2,346.00	24,146	47,406	282,831.00
Initial Cumulative	7,600.00	55,525.00	120,156.00	151,931.00	187,553.00	206,263.00					206,263.00
Replacement Cumulative							2,670.00	5,016.00	29,162	76,568	76,568.00
OPERATING COST ESTIMATE											
Major Equipment Fuel Maint & Parts				2,058,994	13,323,211	16,391,619	16,391,619	16,391,619	81,958,094	121,402,938	
Major Equipment Operating Labour Cost				1,801,116	10,900,329	13,333,029	13,333,029	13,333,029	66,665,144	98,781,366	
Service Fleet Operating Cost				3,298,539	3,298,539	3,298,539	3,298,539	3,298,539	20,890,749	35,184,420	
Service Operating Labour				6,953,850	6,953,850	6,953,850	6,953,850	6,953,850	44,041,050	74,174,400	
Blasting Costs				617,050	4,936,399	6,170,499	6,170,499	6,170,499	30,852,493	45,661,689	
Administrative And Engineering Manpower Cost				4,228,125	4,228,125	4,228,125	4,228,125	4,228,125	26,778,125	45,100,000	
Processing Charge				1,136,364	9,090,909	11,363,636	11,363,636	11,363,636	56,818,182	84,090,909	
Clean Coal Haulage & Load Out				625,000	5,000,000	6,250,000	6,250,000	6,250,000	31,250,000	21,250,000	
TOTAL OPERATING COST				20,719,037	57,731,363	67,989,297	67,989,297	67,989,297	359,253,837	550,645,722	
Operating Cost/t Raw Coal				54.70	19.05	17.95	17.95	17.95	18.97	19.64	
Operating Cost/t Clean Coal				82.88	28.87	27.20	27.20	27.20	28.74	29.76	
NET REVENUE AT LOADOUT $45.00				11,250,000	90,000,000	112,500,000	112,500,000	112,500,000	179,100,163	234,448,278	
NET CASH FLOW	-7,600,000	-47,925,000	-64,631,000	-41,244,037	-3,353,363	25,800,703	41,840,703	42,164,703			
NET PRESENT VALUE @ DISCOUNT 15.00%	-9,881,589										

parameters: rom haul dist 10.00
clean coal haul dist 15.00
full prep plant cost, no rail or rail loadout capital cost
plant located close to Onion Syncline South Pit. Clean coal hauled to Duke plant loadout

LAS ENERGY ASSOCIATES LTD

NORTH WAPITI DIP SLOPE

DEVELOPMENT SCENARIO 1

TABLE 4

WAPITI DIP SLOPE DEVELOPMENT ANALYSIS

PRODUCTION SCHEDULE AND CASH FLOW MODEL
ASSUMES APPROXIMATELY 95% RECOVERY OF DILUTED COAL

	PREPRODUCTION CAPITAL			PRODUCTION YEAR 1	2	3	4	5	6 - 10	11 - 18	TOTALS
PRODUCTION SCHEDULE											
RAW COAL PRODUCED				379	3,030	3,788	3,788	3,788	18,939	28,030	61,742
WASTE REMOVED				2,158	17,260	21,575	21,575	21,575	107,876	159,656	351,675
CLEAN COAL PRODUCED @ YIELD = 66				250	2,000	2,500	2,500	2,500	12,500	18,500	40,750
WASTE TO RAW COAL RATIO				5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70
CAPITAL COST ESTIMATE											
Mine Development	500.00	8,075.00	13,725.00	2,900.00	50.00						
Major Equipment				20,080.00	34,110.00	18,310.00					
Mine Facilities	1,600.00	9,350.00	5,630.00						4,700	4,100	
Service Equipment			5,856.00	2,445.00	192.00	380.00	450.00	2,346.00	10,396	13,946	
Rom Handling & Prep Plant	4,000.00	26,400.00	31,696.00	3,913.60							
Power Distribution	500.00	2,500.00	1,300.00						2,700	3,400	
Warehouse Inventory			1,500.00	1,850.00	1,270.00	20.00	2,220.00				
TOTAL CAPITAL COST	6,600.00	46,325.00	59,707.00	31,188.60	35,622.00	18,710.00	2,670.00	2,346.00	24,146	47,406	274,720.60
Initial Cumulative	6,600.00	52,925.00	112,632.00	143,820.60	179,442.60	198,152.60					198,152.60
Replacement Cumulative							2,670.00	5,016.00	29,162	76,568	76,568.00
OPERATING COST ESTIMATE											
Major Equipment Fuel Maint & Parts				2,058,994	13,323,211	16,391,619	16,391,619	16,391,619	81,958,094	121,402,938	
Major Equipment Operating Labour Cost				1,801,116	10,900,329	13,333,029	13,333,029	13,333,029	66,665,144	98,781,366	
Service Fleet Operating Cost				3,298,539	3,298,539	3,298,539	3,298,539	3,298,539	20,890,749	35,184,420	
Service Operating Labour				6,953,850	6,953,850	6,953,850	6,953,850	6,953,850	44,041,050	74,174,400	
Blasting Costs				617,050	4,936,399	6,170,499	6,170,499	6,170,499	30,852,493	45,661,689	
Administrative And Engineering Manpower Cost				4,228,125	4,228,125	4,228,125	4,228,125	4,228,125	26,778,125	45,100,000	
Processing Charge				1,136,364	9,090,909	11,363,636	11,363,636	11,363,636	56,818,182	84,090,909	
Clean Coal Haulage & Load Out				625,000	5,000,000	6,250,000	6,250,000	6,250,000	31,250,000	21,250,000	
TOTAL OPERATING COST				20,719,037	57,731,363	67,989,297	67,989,297	67,989,297	359,253,837	550,645,722	
Operating Cost/t Raw Coal				54.70	19.05	17.95	17.95	17.95	18.97	19.64	
Operating Cost/t Clean Coal				82.88	28.87	27.20	27.20	27.20	28.74	29.76	
NET REVENUE AT LOADOUT $45.00				11,250,000	90,000,000	112,500,000	112,500,000	112,500,000	179,100,163	234,448,278	
NET CASH FLOW	-6,600,000	-46,325,000	-59,707,000	-40,657,637	-3,353,363	25,800,703	41,840,703	42,164,703			
NET PRESENT VALUE @ DISCOUNT 15.00%	-3,381,465										

parameters: rom haul dist 10.00
clean coal haul dist 15.00
80% of full prep plant and rail loadout capital cost
plant shared with Onion Syncline South Pit. Clean coal hauled to Duke plant loadout

s2

LAS ENERGY ASSOCIATES LTD

NORTH WAPITI DIP SLOPE

DEVELOPMENT SCENARIO 2

TABLE 5

WAPITI DIP SLOPE DEVELOPMENT ANALYSIS

PRODUCTION SCHEDULE AND CASH FLOW MODEL
ASSUMES APPROXIMATELY 95% RECOVERY OF DILUTED COAL

			PREPRODUCTION CAPITAL		PRODUCTION YEAR 1	2	3	4	5	6 - 10	11 - 18	TOTALS
PRODUCTION SCHEDULE												
RAW COAL PRODUCED					379	3,030	3,788	3,788	3,788	18,939	28,030	61,742
WASTE REMOVED					2,158	17,260	21,575	21,575	21,575	107,876	159,656	351,675
CLEAN COAL PRODUCED @ YIELD =	66				250	2,000	2,500	2,500	2,500	12,500	18,500	40,750
WASTE TO RAW COAL RATIO					5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70
CAPITAL COST ESTIMATE												
Mine Development		500.00	8,075.00	13,725.00	2,900.00	50.00						
Major Equipment					20,080.00	39,310.00	19,610.00					
Mine Facilities		1,600.00	9,350.00	5,630.00						4,700	4,100	
Service Equipment				5,856.00	2,445.00	192.00	380.00	450.00	2,346.00	10,396	13,946	
Rom Handling & Prep Plant		4,000.00	26,400.00	31,696.00	6,736.00							
Power Distribution		500.00	2,500.00	1,300.00						2,700	3,400	
Warehouse Inventory				1,500.00	1,850.00	1,270.00	20.00	2,220.00				
TOTAL CAPITAL COST		6,600.00	46,325.00	59,707.00	34,011.00	40,822.00	20,010.00	2,670.00	2,346.00	24,146	51,386	288,023.00
	Initial Cumulative	6,600.00	52,925.00	112,632.00	146,643.00	187,465.00	207,475.00					207,475.00
	Replacement Cumulative							2,670.00	5,016.00	29,162	80,548	80,548.00
OPERATING COST ESTIMATE												
Major Equipment Fuel Maint & Parts					2,259,959	14,930,931	18,926,059	18,926,059	18,926,059	94,630,296	140,472,670	
Major Equipment Operating Labour Cost					1,939,427	12,006,819	15,300,907	15,300,907	15,300,907	76,504,535	113,694,525	
Service Fleet Operating Cost					3,298,539	3,298,539	3,298,539	3,298,539	3,298,539	20,890,749	35,184,420	
Service Operating Labour					6,953,850	6,953,850	6,953,850	6,953,850	6,953,850	44,041,050	74,174,400	
Blasting Costs					617,050	4,936,399	6,170,499	6,170,499	6,170,499	30,852,493	45,661,689	
Administrative And Engineering Manpower Cost					4,228,125	4,228,125	4,228,125	4,228,125	4,228,125	26,778,125	45,100,000	
Processing Charge					1,136,364	9,090,909	11,363,636	11,363,636	11,363,636	56,818,182	84,090,909	
Clean Coal Haulage & Load Out					250,000	2,000,000	2,500,000	2,500,000	2,500,000	12,500,000	8,500,000	
TOTAL OPERATING COST					20,683,314	57,445,573	68,741,615	68,741,615	68,741,615	363,015,430	556,878,613	
	Operating Cost/t Raw Coal				54.60	18.96	18.15	18.15	18.15	19.17	19.87	
	Operating Cost/t Clean Coal				82.73	28.72	27.50	27.50	27.50	29.04	30.10	
NET REVENUE AT LOADOUT	$45.00				11,250,000	90,000,000	112,500,000	112,500,000	12,500,000	175,338,570	224,235,387	
NET CASH FLOW		-6,600,000	-46,325,000	-59,707,000	-43,444,314	-8,267,573	23,748,385	41,088,385	41,412,385			
NET PRESENT VALUE @ DISCOUNT	15.00%	-11,493,373										

parameters: rom haul dist 25.00
clean coal haul dist 0.00
80% of full prep plant capital cost, and rail loadout capital cost
shares Duke Plant with operations at Duke Mountain

s3

LAS ENERGY ASSOCIATES LTD
NORTH WAPITI DIP SLOPE
DEVELOPMENT SCENARIO 3
TABLE 6

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REVIEW OF MINING AND DEVELOPMENT POTENTIAL OF THE NORTH WAPITI DIP SLOPE

PERMIT TO PRACTICE
LAS ENERGY ASSOCIATES LTD.
Signature
Date 2 Dec 1988
PERMIT NUMBER: P 4873
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

Prepared for: Petro-Canada Inc.
Prepared by: LAS Energy Associates Ltd October 1988

B.C. Government Title Page

Monkman Coal Project

Petro-Canada Inc. as Operator

REVIEW OF MINING AND DEVELOPMENT POTENTIAL OF THE NORTH WAPITI DIP SLOPE

Property Ownership: Petro-Canada Inc.
Smoky River Holdings Ltd.
Mobil Oil Ltd.
Sumitomo Canada Ltd.

Peace River Land District
NTS 93I/15
Lat. 54 38'N
Long. 120 43'W
Coal Licences 3182, 3183, 3184, 3187, 3188, 3189, 3190, 3206, 3207, 3936, 3937, 3938, 3939, 5159.

Work completed in September, 1988
Report submitted in October, 1988

Original author (1988): E. J. Allen, P. Eng.

October, 1988 Prepared for Petro-Canada Inc.
Prepared by LAS Energy Associates Ltd.

File: VX\W\ENERGY\MONKMAN\BCTITLE

MONKMAN COAL PROJECT
REVIEW OF
MINING AND DEVELOPMENT POTENTIAL
OF THE
NORTH WAPITI DIP SLOPE

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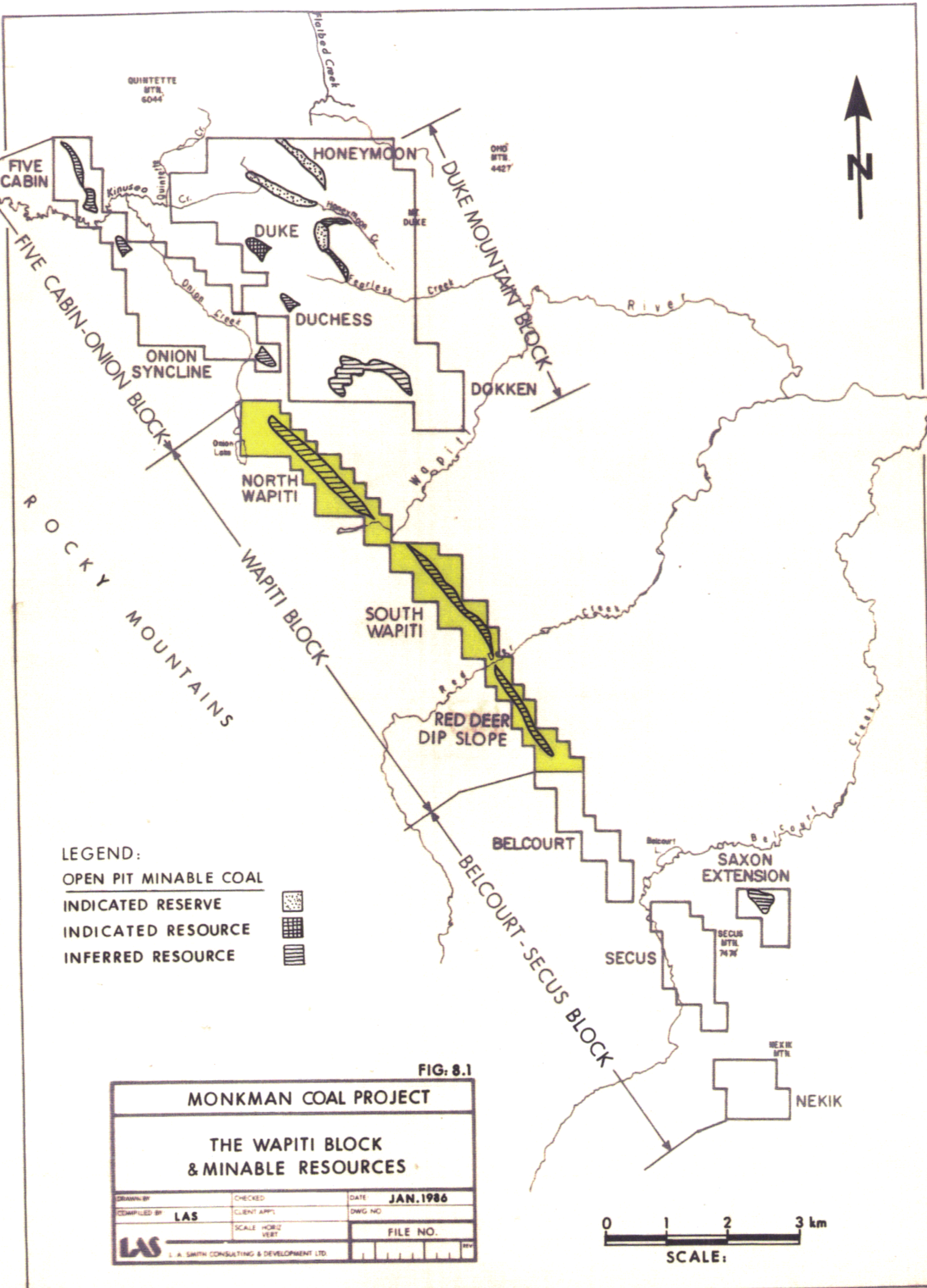


Flatbed Creek
QUINTETTE MTN. 6044
FIVE CABIN
HONEYMOON
Kinuseo
Quintette Cr.
Honeymoon Cr.
DUKE
MT. DUKE
DUKE MOUNTAIN BLOCK
Fearless Creek
River
Onion Creek
DUCHESS
ONION SYNCLINE
DOKKEN
FIVE CABIN-ONION BLOCK
Onion Lake
NORTH WAPITI
Wapiti
ROCKY MOUNTAINS
WAPITI BLOCK
SOUTH WAPITI
Red Deer
Creek
RED DEER DIP SLOPE
BELCOURT
Belcourt L.
Belcourt
SAXON EXTENSION
BELCOURT-SECUS BLOCK
SECUS
SECUS MTN.
NEKIK MTN.
NEKIK
N
LEGEND:
OPEN PIT MINABLE COAL
INDICATED RESERVE
INDICATED RESOURCE
INFERRED RESOURCE
FIG: 8.1
MONKMAN COAL PROJECT
THE WAPITI BLOCK & MINABLE RESOURCES
DRAWN BY
CHECKED
DATE JAN. 1986
COMPILED BY LAS
CLIENT APP'L
DWG NO
SCALE HORIZ VERT
FILE NO.
REV
LAS L. A. SMITH CONSULTING & DEVELOPMENT LTD.
0 1 2 3 km
SCALE:

Review of Mining and Development Potential of the North Wapiti Dip Slope

Introduction

This study of the mining potential of the North Wapiti Dip Slope coal deposit was requested by PCI after a review of the of the whole Monkman property had indicated that a substantial reserve of high volatile coking coal existed at low waste stripping ratios in the Wapiti area. The present study is the first engineering assessment of the North Wapiti Dip Slope to be carried out.

Current longer term coal market trends show an increasing demand for higher volatile content coking coals and there is also a demand for the type of coal present in the North Wapiti Dip Slope as a high quality thermal coal. This review of the mining potential of the North Wapiti Dip Slope is timely relative to these market conditions.

Reserves estimates and the preliminary engineering evaluations carried out in this study are intended to provide a means for comparing the North Wapiti Dip Slope with other similarly evaluated blocks on the Monkman Property preliminary to an overall strategic exploration and development plan. All previous engineering studies at Monkman were conducted on the Duke and Honeymoon Pits. The present work will allow informed decision making with regard to further exploration on the North Wapiti Dip Slope and inclusion of production from Wapiti into the overall production plan.

Study Objective and Scope

The study objective is to complete an engineering evaluation of the open pit mining potential of the North Wapiti Dip Slope. The scope of the study includes:

- estimation of the reserves and resources amenable to open pit mining
- estimation of the coal quality, rank and marketability
- estimation of mining costs for a deposit of sufficient size to warrant development
- estimation of alternate development scenarios:
    - development as a stand alone project
    - development in conjunction with Onion Syncline
    - development in conjunction with Duke Pits

Data Base

The data available is consistent with that for a deposit in the very early stages of exploration. The existence of a long, continuous dip slope is confirmed by observation in the field, from aerial photographs and by sufficient geological mapping to justify confidence in the general interpretation.

Data used in the study was from the following:

- 1:5000 scale geologic mapping by PCI
- drill hole BWD 76-5 which intersected the entire Gates section and for which geophysical logs and some coal quality data are avail able
- Government and PCI topographic mapping
- cost estimates from the 1986 engineering study of the Duke Pits

Geological Summary

The Wapiti Trend consists of a sequence of southwest dipping Lower Cretaceous strata that extends from Onion Lake (Section 8000N) to near Belcourt Mountain (Section 23000S). This trend contains 27 km of continuous outcropping of coal seams in the Gates Formation. The Gates Formation coals have been extensively explored on the Duke Mountain Block. The Wapiti Trend is crossed by two major drainages; the Wapiti River and Red Deer Creek.

> The North Wapiti Dip Slope has a strike length of 10 km and occurs between Sections 8000N and 2000S north of the Wapiti River.
>
> The South Wapiti Dip Slope lies south of the Wapiti River and north of Red Deer Creek between Sections 4000S and 14000S.
>
> The Red Deer Dip Slope is south of Red Deer Creek between Sections 15000S and 23000S.

There are three drill holes intersecting the Gates Formation in the Wapiti Trend. One hole is located in each of the above noted blocks.

The North Wapiti Dip Slope has the ridge top capped with Cadomin Conglomerate and is bounded by Minnes Group strata to the northeast. To the southwest lie the Gething and Moosebar Formations and the southwest flank of the hill is an elongate dip slope with Gates Formation sandstone units forming the dip slope over a 10 km strike length. Coal seams outcrop along the western dip slope portion of the ridge and also in shallow creek cuts along the dip slope. The dip slope is terminated to the north by a ridge cutting up section at the very north end of the property.

The strata dips at a relatively consistent 30° to 45° to the southwest with gradual shallowing towards the southwest. The strike is parallel to the trend of the ridges in the area at about 125°. There are no known faults in the area that affect the coal seams.

In the North Wapiti Dip Slope area the Gates Formation contains 9 mineable coal seams as shown by drill hole BWD 76-5. Table 1 shows the mineable thickness by seam.

Table 1
Hole BWD 76-5
Seam Thickness

Seam	True Thickness m
B12	1.52
B9	2.99
B7	2.73
B5	1.08
B4	4.72
B3U	1.65
B3L	1.01
B2	2.02
B1	3.10

The coal seam thickness data from Table 1 is used for all areas of the North Wapiti Dip Slope.

Reserves

Reserves estimates have been prepared by the cross-section method. Check estimates were made by plan measurements over 3 contiguous sections and good correlation (errors of less than 6%) was obtained.

A series of 10 cross sections at 1 kilometre spacing were drawn from the 1:5000 scale mapping. Coal thickness data was projected north onto 4 sections and south onto 6 sections from drill hole BWD 76-5. Seam thickness data from outcrop mapping was not used. The outcrop occurrences were used as a guide for assessing the continuity of the seams but outcrop thickness measurements are not sufficiently reliable to be used for reserves calculations.

A computer graphics package was used to draw the final cross sections and to measure seam lengths and cross-sectional areas. Reserves calculations were made using a computer spread sheet.

Two potential pits were examined; the first pit identified as Pit A includes all mineable seams down to and including B4 Seam. The second pit, Pit B, includes all seams below B4 down to B1, the lowest seam in the section. Reserves and ratios were calculated for each of the pits separately and for the total pit. In practice the lower pit could not be mined independently of the upper pit; calculation of the ratios separately shows the marginal ratio to be greater than 8 BCM/t.

The down dip extent of the pits was selected so that the pit bottom elevation would not change by more than 100 m in 1000 m along strike from section to section. Within this limitation there is considerable opportunity to adjust the pit limits and the pit wall location has been adjusted to bring the overall waste to in-situ coal ratio below 5.5:1 in Pit A.

Pit A is estimated to contain 65.99 million tonnes in-situ coal at an overall waste to coal ratio of 5.38:1 BCM/t. Extension of the pit limit to an overall ratio of 5.66:1 increases the quantity of in-situ coal to 72.4 million tonnes.

Pit B contains an additional 65.21 million tonnes of in-situ coal at an overall waste to coal ratio of 8.06:1 BCM/t. Extension of the pit limit in this lower pit provides an increase in coal quantity at a marginal ratio very slightly higher than the overall ratio. Pit B can be extended to contain 69.9 million tonnes of in-situ coal at an overall waste to coal ratio of 8.08:1 BCM/t.

The total quantity of in-situ coal in Pits A and B at a ratio of 6.72:1 BCM/t is 130.2 million tonnes. Additional coal exists down dip from the areas measured. This would be recoverable at a marginal ratio higher than the overall ratio for the deposit but a considerable quantity of additional coal is believed to be present at ratios less than 10:1 BCM/t.

The cross sections and reserves estimates by seam and section are presented in Appendix 1. A summary of the reserves is shown in Table 2.

Coal Quality

The coal quality data is limited to the 1976 analyses of samples from drill hole BWD 76-5. Raw coal analyses and some estimates of clean coal quality are available for 8 of the 17 coal intersections recorded in the hole. Table 3 summarizes the coal quality data.

Table 3

Drill Hole BWD 76-5
Coal Quality data

Seam	True Thickness M	Core Recovery %	Raw Coal % Ash	Raw Coal FSI	Clean Coal VM	Clean Coal FSI coarse	Clean Coal FSI fine	Clean Coal Est. Yield*
B12	1.52							
B11	<1.0	86	42.6	1	HV	3.5	2-3.5	40-45
B10	<1.0							
B9	2.99	95	25.4	1.5	HV	3	2.5	55-60
B7	2.73	92	20.0	4.5	HV	7	6.5	55-60
B5	1.08							
B4	4.72	87	16.6	4	HV	5	7-7.5	70-75
B3U	1.65	53	10.5	3.5	MHV	3.5	5	75-80
B3L	1.01	83	18.5	6	HV	7	6-7.5	60-65
B2	2.02	100	18.8	5.5	HV	7	6.5-7	70-75
B1	3.10	95	19.1	4	HV	6	6-7.5	70-75

* Yield estimated at 1.45 SG

The information available from BWD 76-5 indicates that the coal has a higher volatile matter content than the coals in the Duke and Honeymoon Pits on the Duke Mountain Block. A high volatile coking coal product averaging approximately 30% volatile matter is projected for the Wapiti area. In situ ash levels are approximately the same as those occurring in the Duke pits and wash plant yields are expected to be similar to those estimated for the Duke area. An average yield of 66% has been used for estimating purposes.

Coal Marketing

Demand in Japan for the higher volatile coking coals has increased over the last decade while demand for low to medium coking coals has declined. The growing demand for higher volatile coals is caused by the reduction in output from the Japanese domestic coal mining industry which has been a producer of high volatile coals and by the use of some higher volatile coals for fuelling rather than for coking purposes. It is anticipated that higher volatile coals will continue to be more readily marketable to the steel industry than lower volatile coals of similar thermal and coking properties.

At present some coking coals with medium to high volatile content are being consumed in blends for thermal power generation. The small price differential between thermal and coking coals on a thermal content basis and soft demand for coking coals generally through the early 1980's has encouraged use of coking coals for power station fuels. It is anticipated that this marketing opportunity will persist as boiler technology changes and thermal coal blending techniques become more common to accommodate the less traditional coals for power generation.

Potential consumers of a high volatile thermal coal from Wapiti could accept ash levels up to 12%. Production of a 12% ash coal can be achieved with higher plant yields than those assumed in this study. There is insufficient data available to accurately estimate at what yield a 12% ash product would be obtained; it is anticipated that yields between 70% and 75% should be achievable.

The availability of different market sectors for the potential product from Wapiti is a definite benefit in terms of overall project stability. Demand and price swings in the metallurgical coal market may be offset by steady demand from electricity generation and chemical industries. A diverse market will allow the mine production level to be independent of the demands of one large consumer group which can control the market share of its effectively dedicated suppliers.

Mining Costs

The quantity and quality of the geologic information available has been taken into consideration in preparing a mining schedule and estimating mining costs. The data is sufficient to warrant a simple pre-feasibility plan in which overall stripping ratios and haulage distances are used. Mining plans showing bench by bench sequencing and detailed changes in stripping ratio are not justified by the data available.

LAS Energy Associates Ltd. has considerable experience in mine modelling and has demonstrated the usefulness of preliminary mine costing models in predicting actual mining costs. The level of confidence placed in the results of the models varies with the quality of the data available for mine design. In this study the models are used as a tool for strategic planning and optimization of conceptual planning.

The estimates from pre-feasibility models are compared with known examples of costs for operations in similar conditions. The model productivity and unit cost inputs are adjusted to produce estimates which conform reasonably well with known costs. The mine parameters can then be varied to optimize results, examine different production levels and produce preliminary cash flow analyses for strategic planning.

Exploration of the North Wapiti Dip Slope is in a very early stage. From the interpretation of the geology it is evident that optimization of the mining sequence could probably reduce stripping ratios in the first years of mining. Optimization of mining the sequence has not been attempted at this stage in planning but should be carried out after the next stage of exploration is complete.

The absolute accuracy of the costs developed from the models has been shown in tests on Alberta Plains coal mines to be within the 25% to 30% accuracy normally associated with pre-feasibility estimates. The relative accuracy of the costs from a single model used to examine changes in mining parameters (for example coal haulage distance) is considerably better than the absolute accuracy.

The basic mine model used the following parameters:

insitu reserve	64.99 million tonnes
recovery of diluted coal	95%
plant yield	66%
clean coal production rate	2,500,000 tpa
net revenue at the loadout	$45

Railway loop construction costs which would be common to all three scenarios have been omitted from the estimates.

Operating costs derived from the models are very close to current actual operating costs for coal mines in BC and Alberta. Capital costs are based on those estimated by PCI Mining Department in 1986, updated where significant price or performance changes have occurred. Some of the capital costs estimated by PCI, particularly those for mine facilities, raw coal handling, prep plant and load out costs appear to be conservatively high at the start of development but rather light on replacements and rebuilds. Some additional capital has been allowed for replacement and rebuilds in this study but the initial capital costs for the categories concerned have not been reduced. The capital cost estimates are considered to be high for a mine development which is envisioned to occur in concert with other similarly sized developments on the property. The present estimates are suitable for comparative study of alternate development plans but do not fully reflect the full economies of scale which would occur in a large multi pit mine.

In the scenarios where clean coal is trucked to the Duke loadout it has been assumed that a contracted fleet of equipment would be used. No capital costs for clean coal haul trucks have been included, the cost is treated as a direct expense at a rate per tonnne kilometre approximately equivalent to the overall project haulage costs.

Development Scenarios

Three development scenarios have been compared using the results from the mine cost model.

Scenario 1: Wapiti as a stand alone operation

Development of the North Wapiti Dip Slope as a stand alone mine with a local coal preparation plant independent of the Duke plant. Clean coal is trucked to the loadout at the Duke plant site

Scenario 2: Wapiti and Onion Syncline South joint operation
Development of the North Wapiti Dip Slope in conjunction with Onion Syncline South Pit, sharing a local coal preparation plant. Clean coal is trucked to the loadout at the Duke plant site.

Scenario 3: Wapiti coal hauled to Duke Preparation Plant
Development of the North Wapiti Dip Slope in conjunction with mining at Duke Pits, all mines sharing the Duke preparation plant and loadout facility. Raw coal is trucked to the Duke plant.

Results of the model runs for the three scenarios are presented in Tables 4, 5 and 6 which are located at the back of this report.

Of the three development scenarios examined the one which produces the best net present value (NPV) assumes simultaneous development of Wapiti North and Onion Syncline South. Table 7 shows a summary of the output from the three scenarios.

Table 7
Summary of Capital and Operating Costs and Comparative NPV

	Senario		
	1	2	3
Capital Cost $\$x10^3$	282.8	272.7	288.0
Operating Cost/t clean coal, yr 5	27.2	27.2	27.5
NPV @ 15% discount $\$x10^3$	-9.9	-3.4	-11.5

Note: NPV values are calculated for the first year of project expenditure and used only as a means of comparison in this study. These NPVs do not represent the actual value of the property today.

Mining at Wapiti in conjunction with mining at the Duke Pits appears to be the least attractive alternate examined in the study. This result should however be interpreted together with the results from a similar evaluation of the Duke pits which will show an improvement in the economics as coal handling and preparation plant scale is increased.

The sensitivity of the project model is such that a change of $1.00/t in the revenue causes a change of about $10,000,000 in NPV. This sensitivity indicates that the model responds to quite small changes in operating cost or revenue. The variation in NPV caused by changes in the parameters examined is in the same order of magnitude as changes caused by a $1.00/t error in operating cost or revenue estimates. A substantial amount of exploration and engineering work remains to be completed before a development decision can be made but the results from the modelling do provide useful guidelines for planning the future work and also ensure that appropriate alternative development scenarios are evaluated.

The difference in capital cost between Scenarios 1 and 2 is due to the sharing of the preparation plant which is estimated to result in a saving of approximately 20% of the cost of a dedicated plant. The difference between the capital cost of Scenarios 2 and 3 is due to the cost of coal haulage trucks required to deliver raw coal from the mine to Duke Plant. Scenarios 1 and 2 have identical operating costs, Scenario 3 has a higher operating cost due to the larger tonnage of coal transported over the haul to Duke Plant (61.7Mt of raw coal compared with 40.7Mt of clean coal).

Conclusions

The interpreted coal resources of the North Wapiti Dip Slope can support a 2.5 million tonne clean coal per year mine at a waste to in-situ coal ratio of 5.38:1 BCM/t. An approximate run of mine coal ratio of 5.7:1 BCM/t after dilution and mining losses has been estimated.

Changes in the interpretation as exploration proceeds are inevitable and will almost certainly have a more significant effect on the economics of the property than the scheduling and sequencing examined in this study.

The coal quality is high volatile A bituminous coking coal. This rank and quality of coal is in increasing demand for cokemaking and for consumption as a thermal coal.

Preliminary examination of the available topographic mapping shows that a road haulage from the north end of the Wapiti Pit to the proposed Duke plant site should be feasible. A potential plant site location on reasonably flat terrain exists at the north end of the Wapiti Pit. This site is considered to be potentially suitable for a plant to treat coal from all the deposits south and west of Fearless Creek as far south as the Wapiti River. A Wapiti River plant site would be less central to the deposits and require substantially longer haul distances.

Preliminary cost estimates for mining the Wapiti deposit indicate that there is a good probability that production costs would be approximately competetive with those from other coal mines in Canada. Scheduling production from Wapiti in conjunction with other developments on the Monkman property will improve the overall economic performance of the project. As a stand alone development Wapiti would require coal prices over $75/t or a production level in excess of the 2.5 Mt/year used in this study.

The economic viability of a 2.5 million tonne per year mine at Wapiti will probably be maximized by using a local preparation plant which is shared with other nearby mines. Potential pits at Dokken, Duchess and Onion Syncline South are candidates for sharing a plant located close to the Onion South deposit.

The economic viability of a 2.5 million tonne per year mine at Wapiti will probably be minimised if the property is developed in conjunction with mining at the Duke Pits and raw coal is hauled to the Duke Plant. The overall economic benefits of adding this tonnage to operations in the Duke Mountain block may offset the additional cost of raw coal haulage.

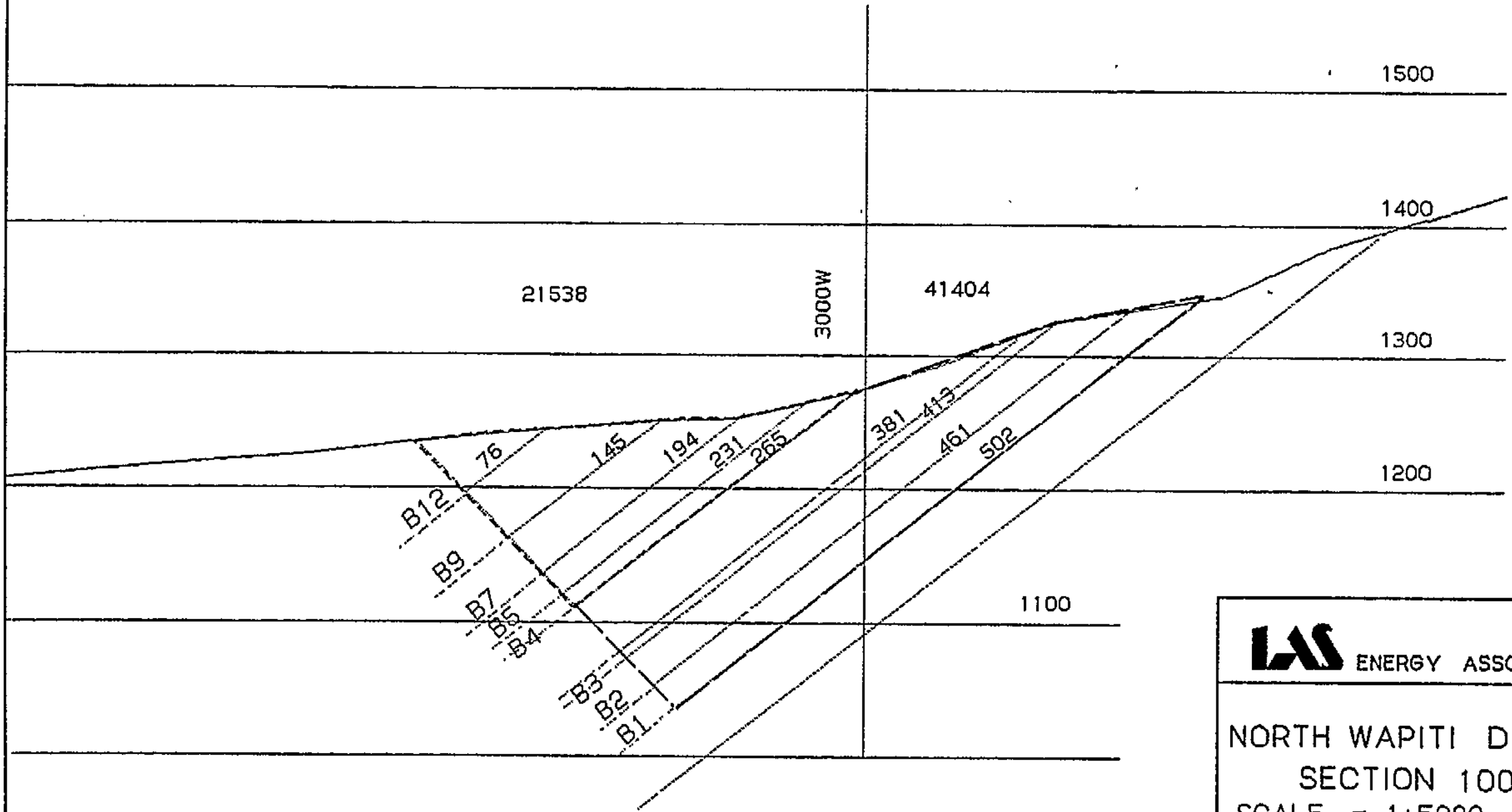
Development of a stand alone 2.5 million tonne per year oparation at Wapiti with its own dedicated preparation plant would probably produce better economic results than hauling raw coal to Duke Plant but worse than sharing a local plant with the other potential pits at Dokken, Duchess and Onion South.

Overall optimization of the development schedule for the Monkman property is beyond the scope of this study and the decision to mine Wapiti together with the Duke pits or together with other potential pits south of Fearless Creek will require careful evaluation in the future.

Further exploration of the North Wapiti Dip Slope is justified by the resource potential and the high probability of an economic deposit being delineated. Drilling is required to confirm the continuity of coal seam thicknesses along the 10 km strike length of the deposit and to confirm the interpretation of the geometry which controls stripping ratio. Detailed geological mapping of outcrops in conjunction with a trenching program will provide necessary data for initial pit design.

APPENDIX 1

Cross Sections
and
Detailed Reserves Calculations



LAS ENERGY ASSOCIATES LTD

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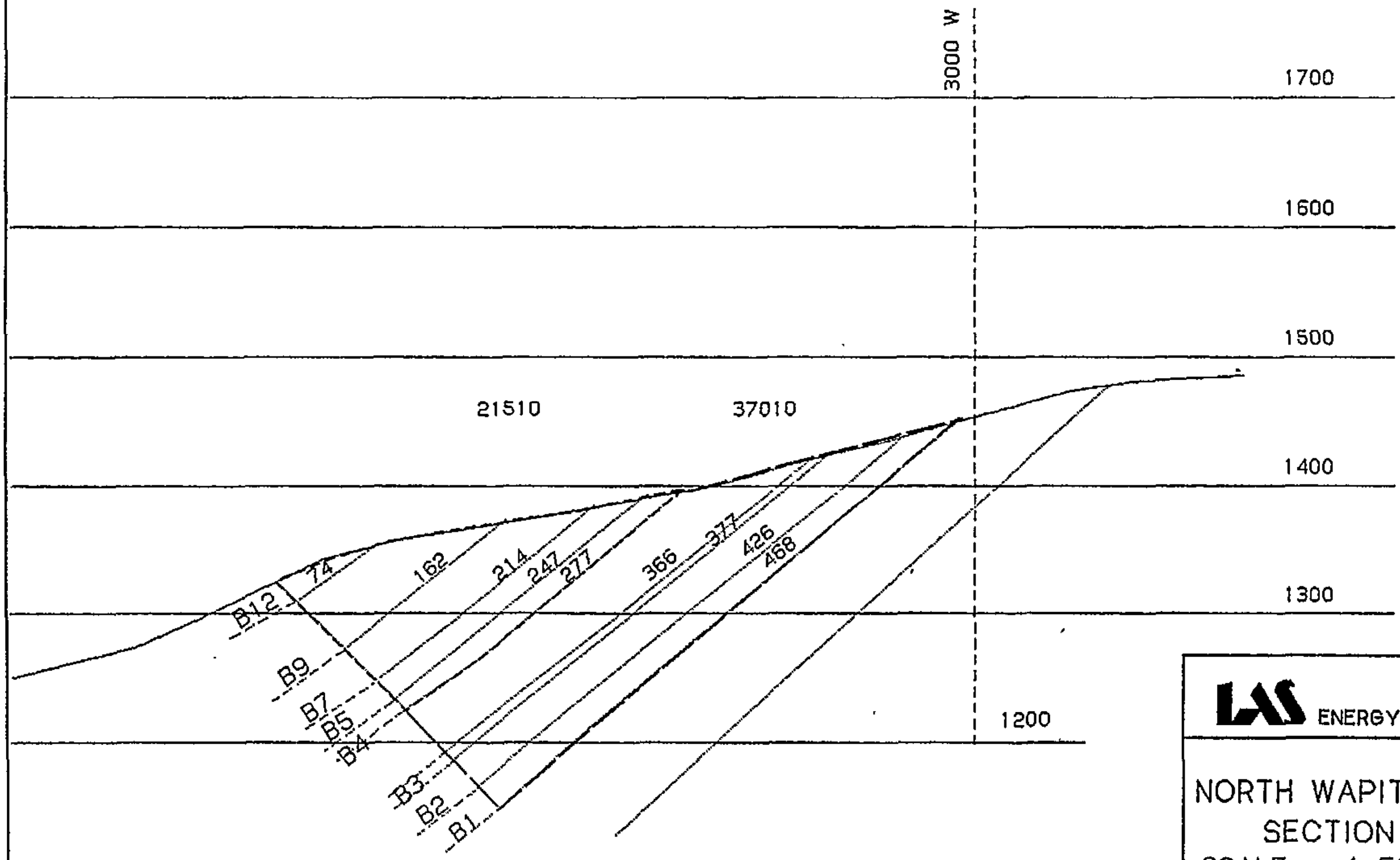

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SECTION 0000

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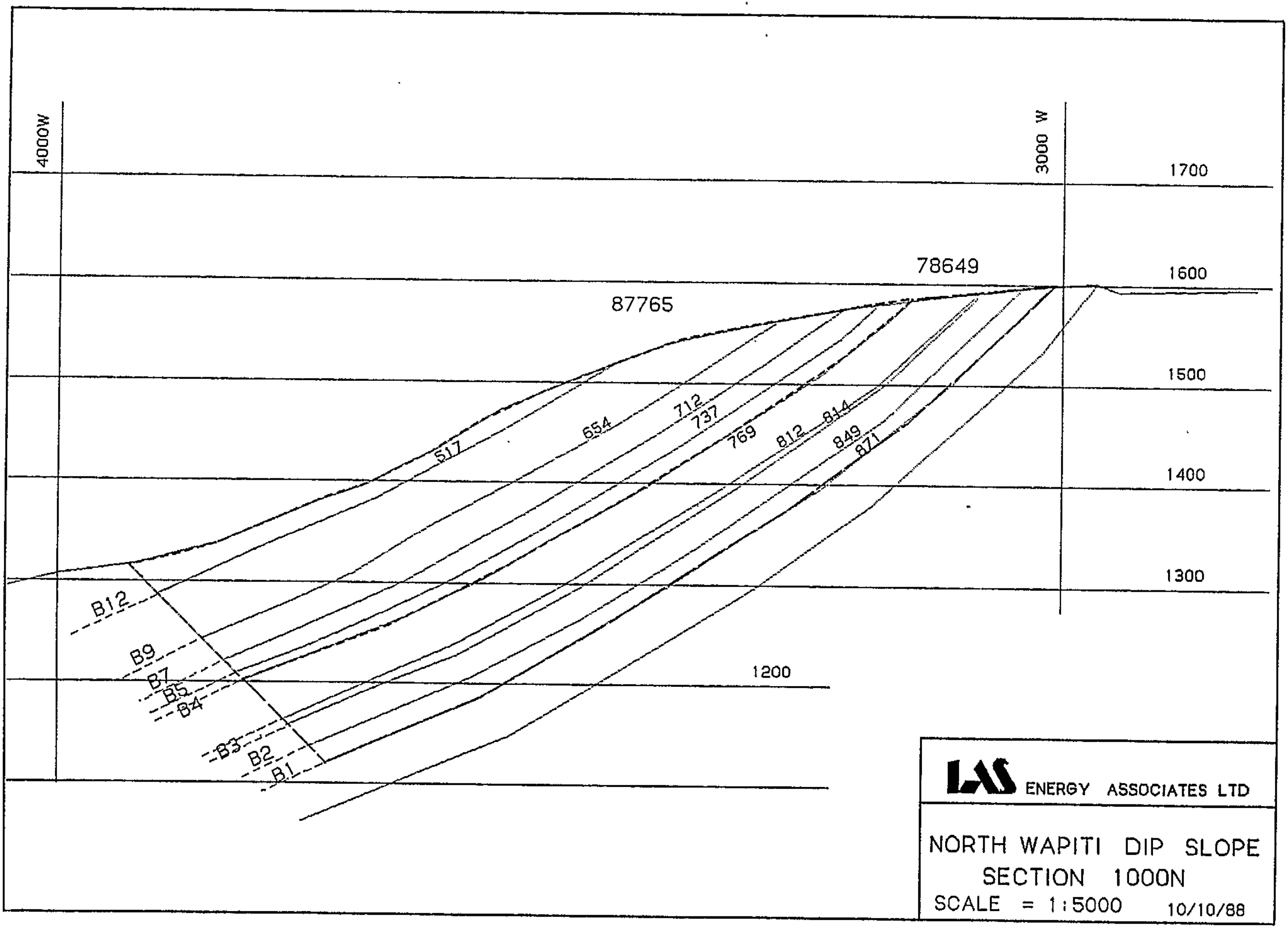

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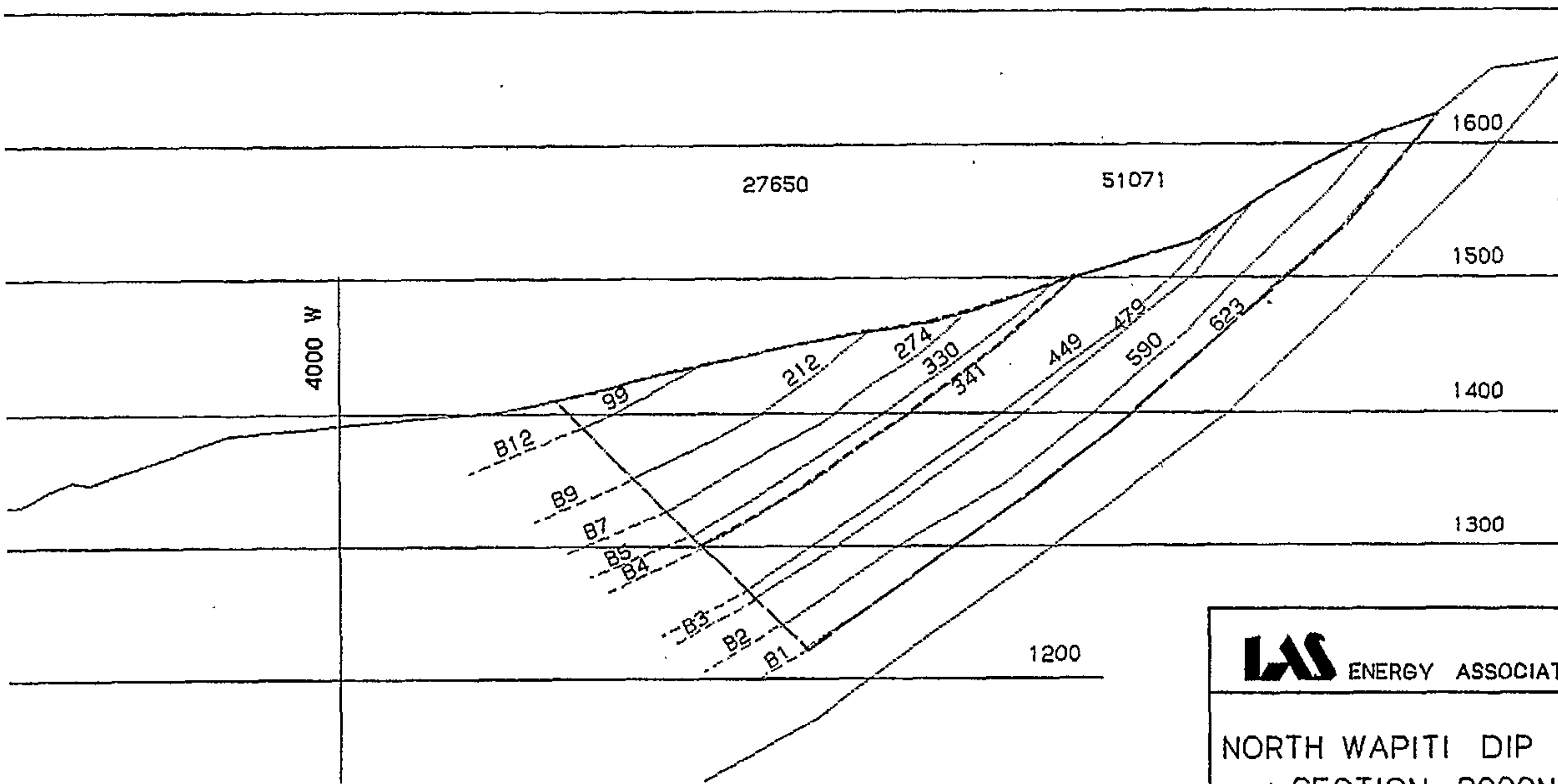

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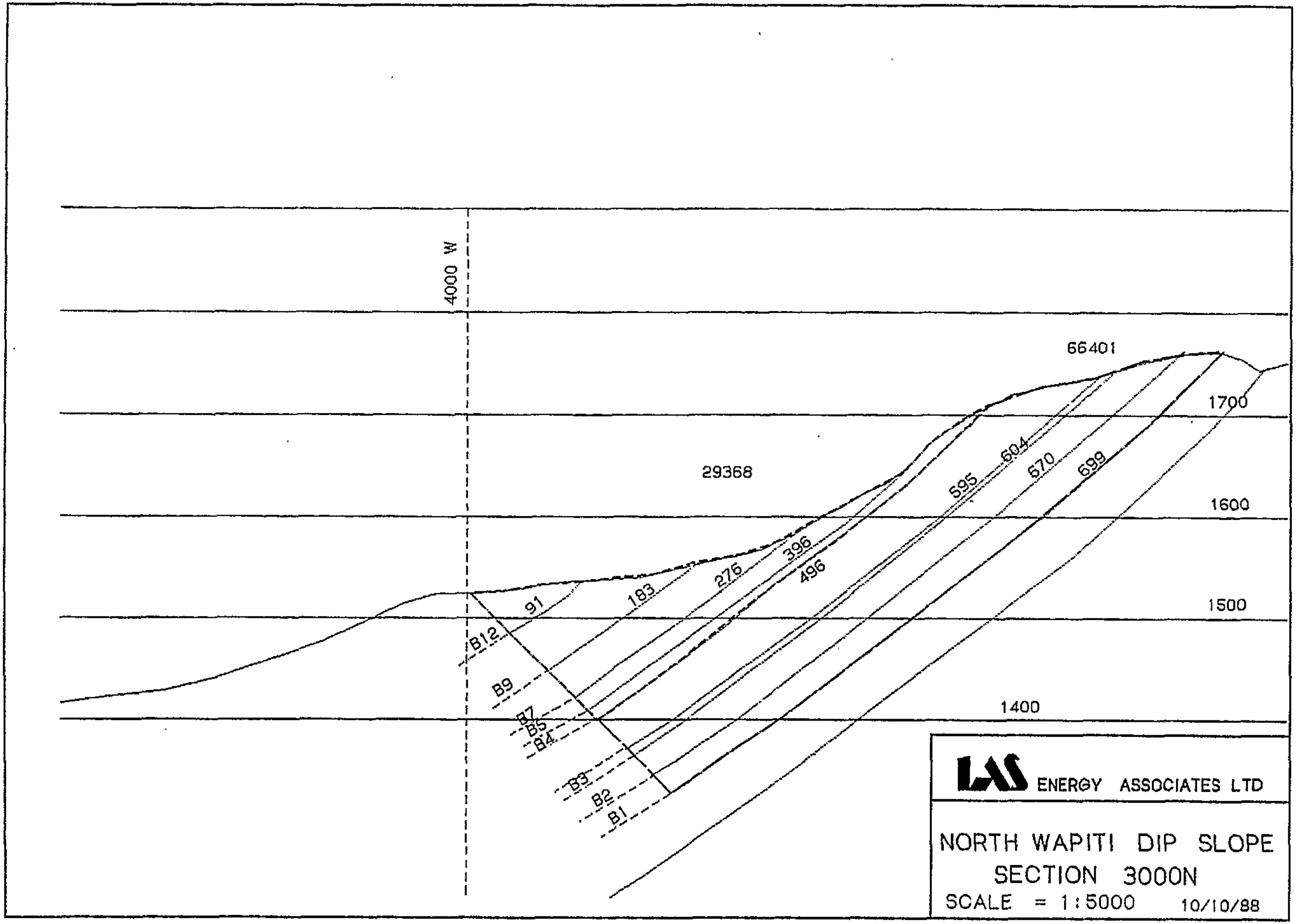

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1600
1500
1400
91
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276
396
496
595
604
670
699
B12
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B7
B5
B4
B3
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B1
LAS ENERGY ASSOCIATES LTD
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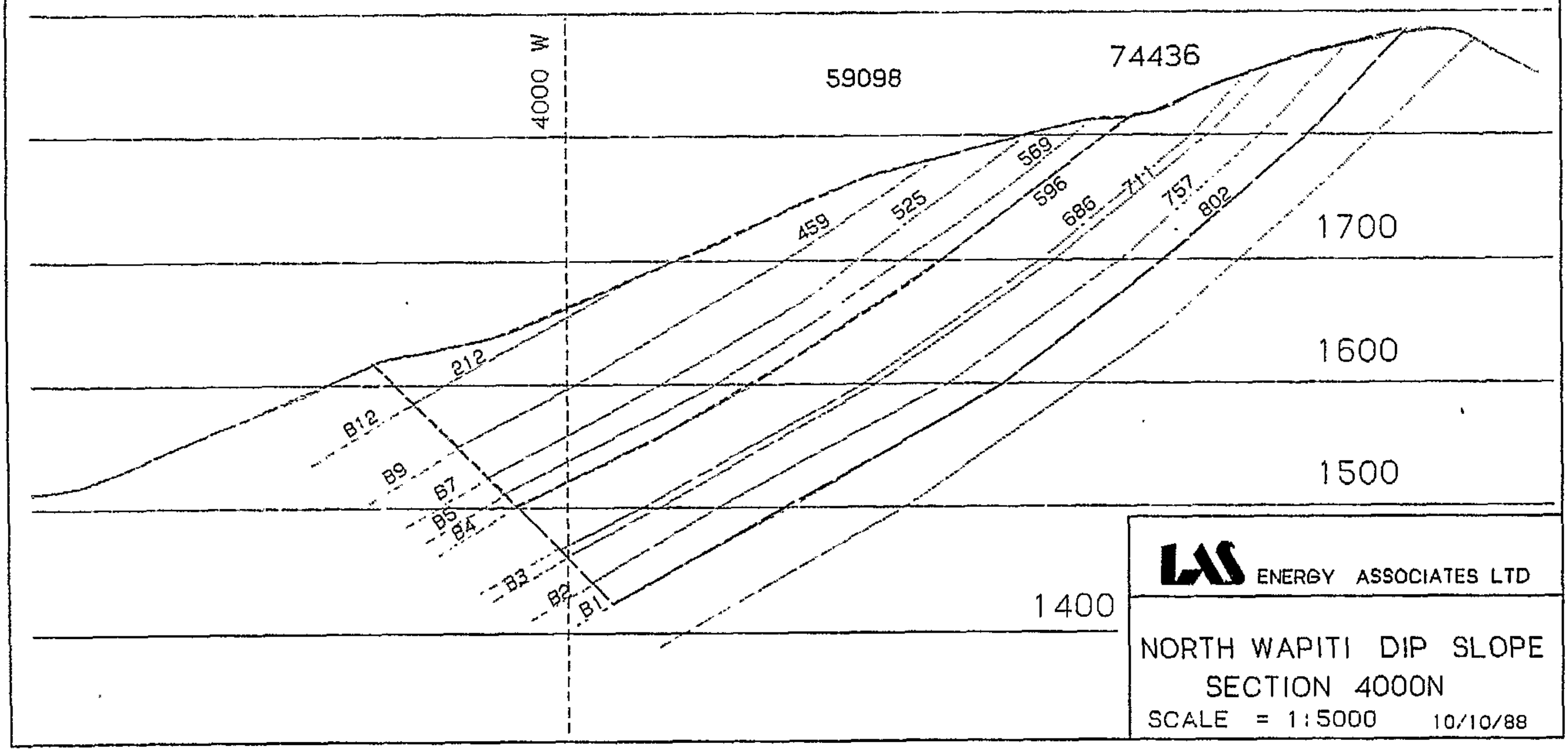
10/10/88



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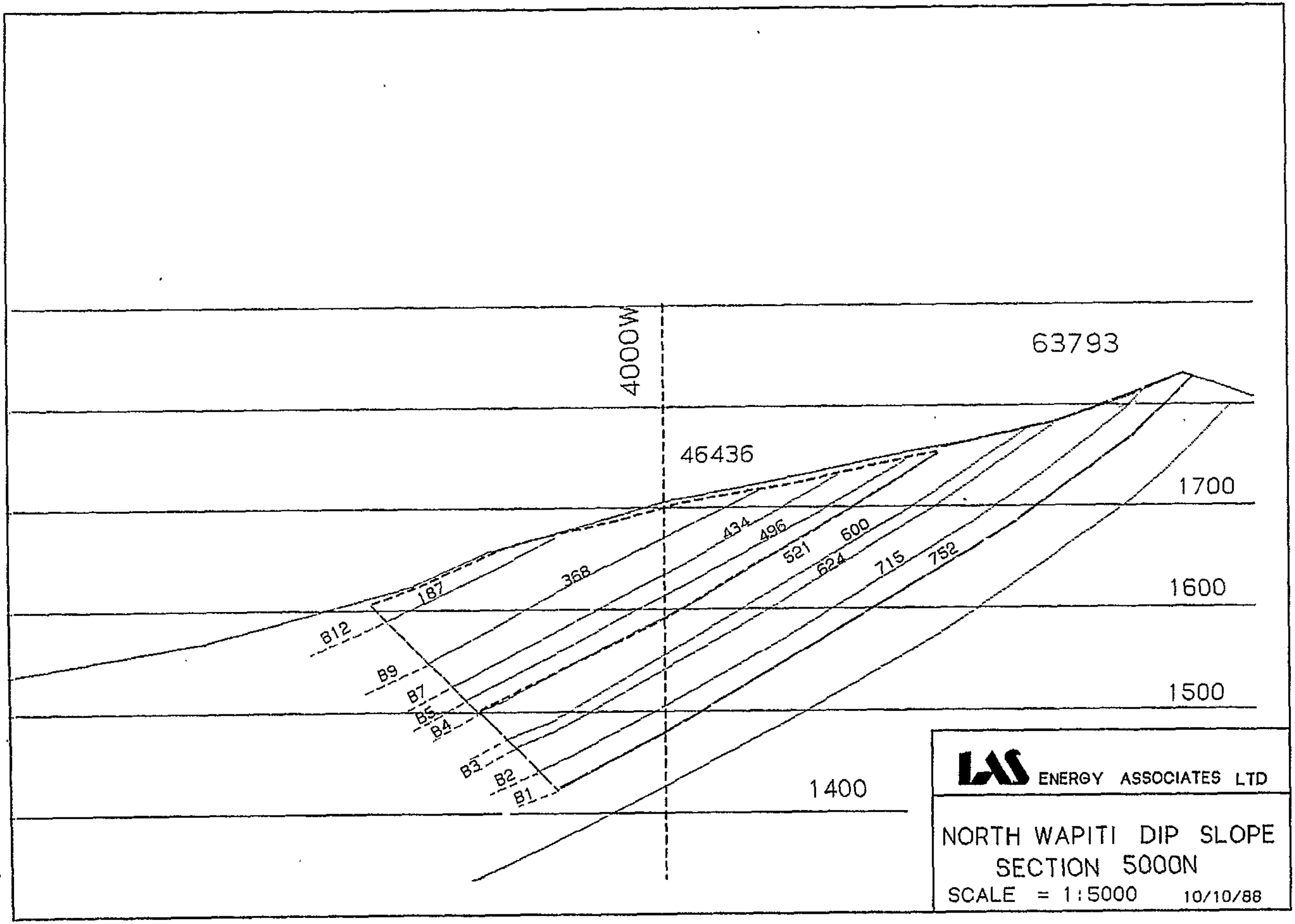

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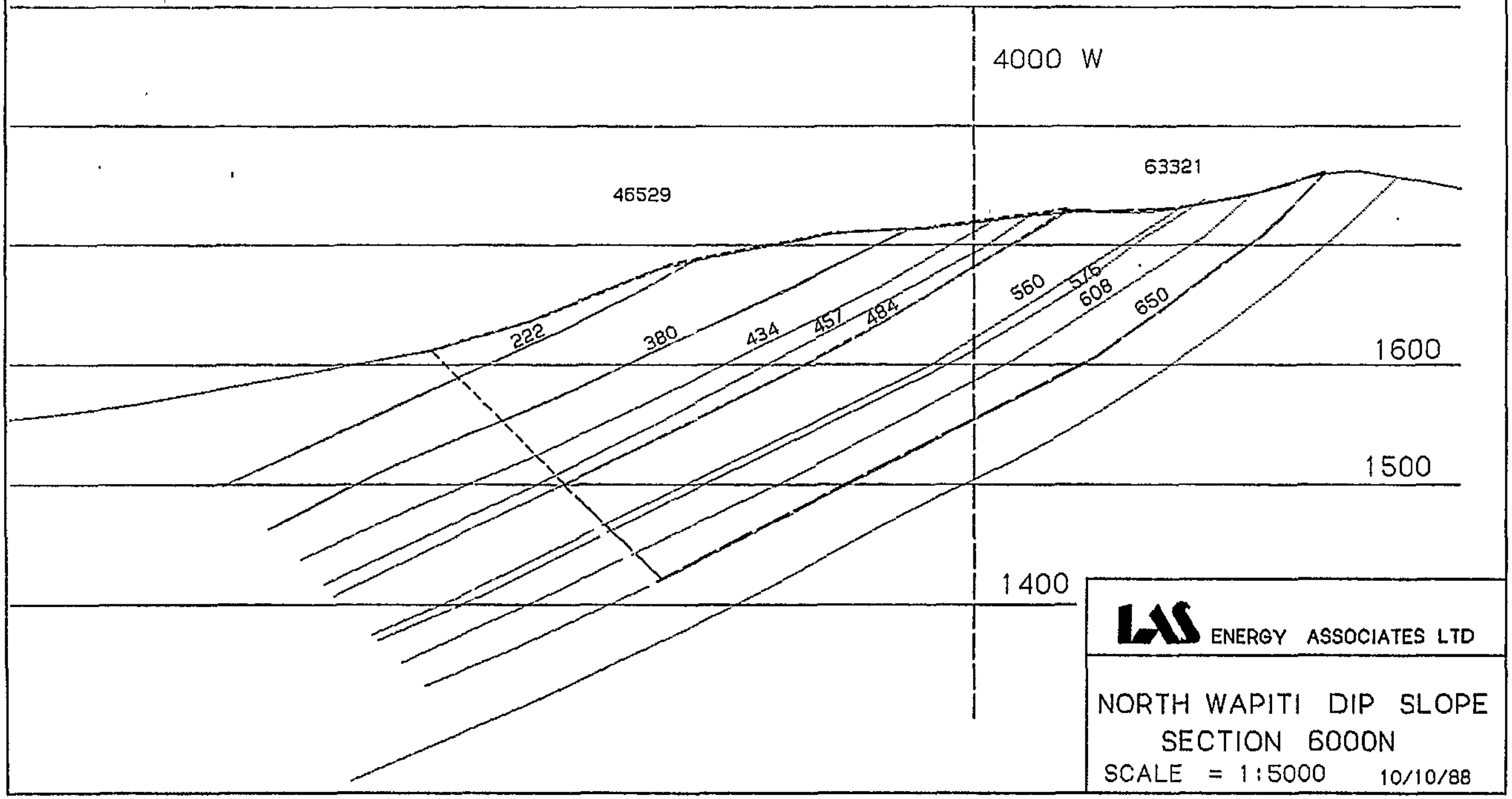

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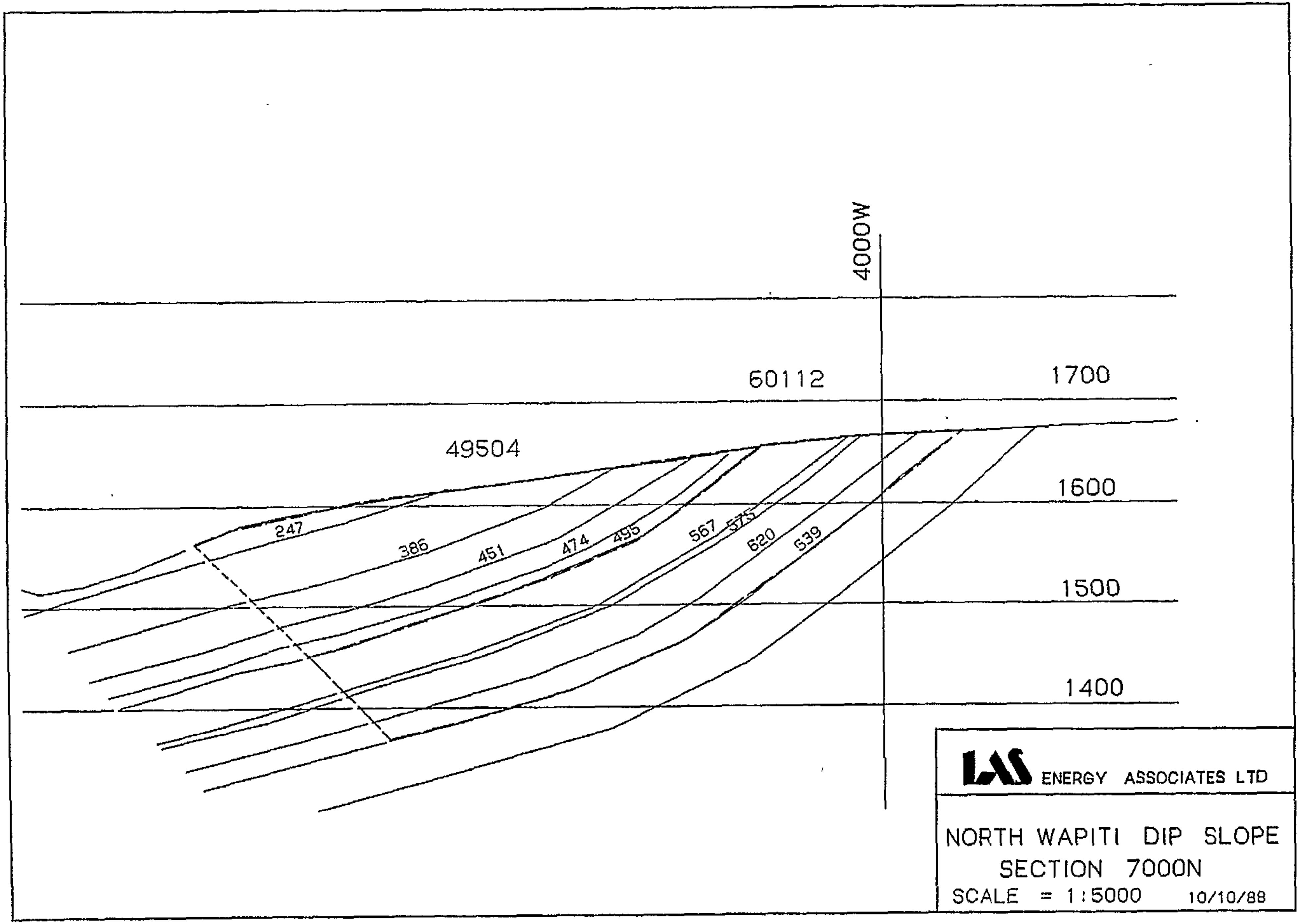
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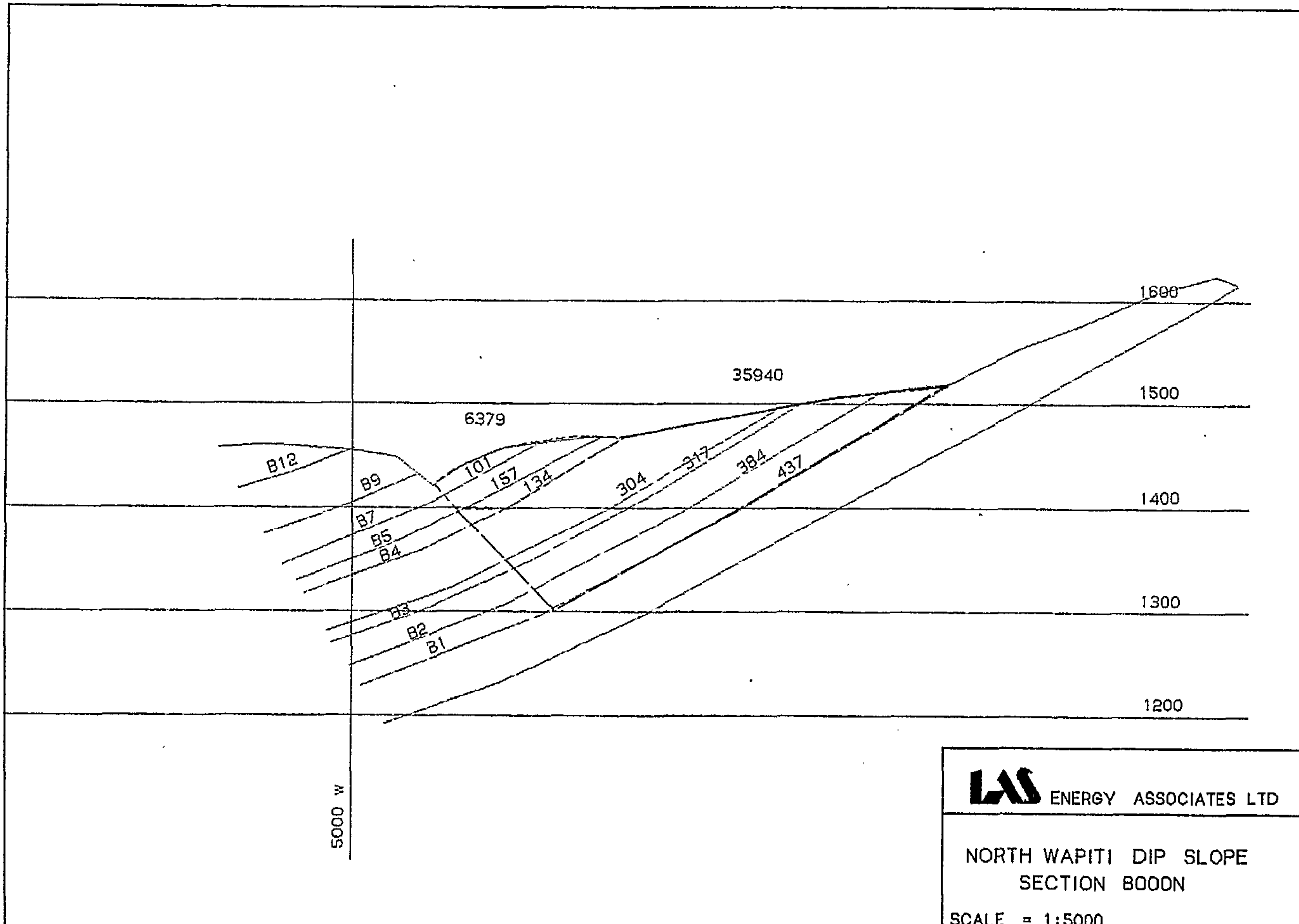
10/10/88



LAS ENERGY ASSOCIATES LTD

NORTH WAPITI DIP SLOPE
SECTION 8000N

SCALE = 1:5000

WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

SECTION
000

	PIT A	PIT B	TOTAL
AREA	21,510	37,070	58,580
TOT VOL	21,510,000	37,070,000	58,580,000
WASTE VOL	18,753,100	33,774,010	52,527,110
TONNAGE	3,859,660	4,614,386	8,474,046
RATIO	4.86	7.32	6.20

SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52	74	112,480	157,472
11	0.00		0	0
10	0.00		0	0
9	3.00	162	486,000	680,400
7	2.73	214	584,220	817,908
5	1.08	247	266,760	373,464
4	4.72	277	1,307,440	1,830,416
3u	1.65	366	603,900	845,460
31	1.01	377	380,770	533,078
2	2.02	426	860,520	1,204,728
1	3.10	468	1,450,800	2,031,120
			6,052,890	8,474,046

WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

SECTION
1000 N

	PIT A	PIT B	TOTAL
AREA	87,765	78,649	166,414
TOT VOL	87,765,000	78,649,000	166,414,000
WASTE VOL	78,647,760	72,071,980	150,719,740
TONNAGE	12,764,136	9,207,828	21,971,964
RATIO	6.16	7.83	6.86

SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52	517	785,840	1,100,176
11	0.00		0	0
10	0.00		0	0
9	3.00	654	1,962,000	2,746,800
7	2.73	712	1,943,760	2,721,264
5	1.08	737	795,960	1,114,344
4	4.72	769	3,629,680	5,081,552
3u	1.65	812	1,339,800	1,875,720
3l	1.01	814	822,140	1,150,996
2	2.02	849	1,714,980	2,400,972
1	3.10	871	2,700,100	3,780,140
			15,694,260	21,971,964

WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

SECTION
2000 N

	PIT A	PIT B	TOTAL
AREA	27,650	51,071	78,721
TOT VOL	27,650,000	51,071,000	78,721,000
WASTE VOL	24,149,580	46,723,260	70,872,840
TONNAGE	4,900,588	6,086,836	10,987,424
RATIO	4.93	7.68	6.45

SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52	99	150,480	210,672
11	0.00		0	0
10	0.00		0	0
9	3.00	212	636,000	890,400
7	2.73	274	748,020	1,047,228
5	1.08	330	356,400	498,960
4	4.72	341	1,609,520	2,253,328
3u	1.65	449	740,850	1,037,190
3l	1.01	479	483,790	677,306
2	2.02	590	1,191,800	1,668,520
1	3.10	623	1,931,300	2,703,820
			7,848,160	10,987,424

WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

SECTION
3000 N

	PIT A	PIT B	TOTAL
AREA	29,368	66,401	95,769
TOT VOL	29,368,000	66,401,000	95,769,000
WASTE VOL	25,158,400	61,288,910	86,447,310
TONNAGE	5,893,440	7,156,926	13,050,366
RATIO	4.27	8.56	6.62

SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52	91	138,320	193,648
11	0.00		0	0
10	0.00		0	0
9	3.00	183	549,000	768,600
7	2.73	276	753,480	1,054,872
5	1.08	396	427,680	598,752
4	4.72	496	2,341,120	3,277,568
3u	1.65	595	981,750	1,374,450
31	1.01	604	610,040	854,056
2	2.02	670	1,353,400	1,894,760
1	3.10	699	2,166,900	3,033,660
			9,321,690	13,050,366

WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

SECTION 4000 N

	PIT A	PIT B	TOTAL
AREA	59,098	74,436	133,534
TOT VOL	59,098,000	74,436,000	133,534,000
WASTE VOL	52,537,870	68,570,650	121,108,520
TONNAGE	9,184,182	8,211,490	17,395,672
RATIO	5.72	8.35	6.96

SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52	212	322,240	451,136
11	0.00		0	0
10	0.00		0	0
9	3.00	459	1,377,000	1,927,800
7	2.73	525	1,433,250	2,006,550
5	1.08	569	614,520	860,328
4	4.72	596	2,813,120	3,938,368
3u	1.65	686	1,131,900	1,584,660
3l	1.01	711	718,110	1,005,354
2	2.02	757	1,529,140	2,140,796
1	3.10	802	2,486,200	3,480,680
			12,425,480	17,395,672

WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

	PIT A	PIT B	TOTAL
SECTION 5000 N			
AREA	46,436	63,793	110,229
TOT VOL	46,436,000	63,793,000	110,229,000
WASTE VOL	40,868,140	58,397,260	99,265,400
TONNAGE	7,795,004	7,554,036	15,349,040
RATIO	5.24	7.73	6.47

SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52	187	284,240	397,936
11	0.00		0	0
10	0.00		0	0
9	3.00	368	1,104,000	1,545,600
7	2.73	434	1,184,820	1,658,748
5	1.08	496	535,680	749,952
4	4.72	521	2,459,120	3,442,768
3u	1.65	600	990,000	1,386,000
3l	1.01	624	630,240	882,336
2	2.02	715	1,444,300	2,022,020
1	3.10	752	2,331,200	3,263,680
			10,963,600	15,349,040

WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

SECTION
6000 N

	PIT A	PIT B	TOTAL
AREA	46,529	63,321	109,850
TOT VOL	46,529,000	63,321,000	109,850,000
WASTE VOL	41,088,700	58,572,080	99,660,780
TONNAGE	7,616,420	6,648,488	14,264,908
RATIO	5.39	8.81	6.99

SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52	222	337,440	472,416
11	0.00		0	0
10	0.00		0	0
9	3.00	380	1,140,000	1,596,000
7	2.73	434	1,184,820	1,658,748
5	1.08	457	493,560	690,984
4	4.72	484	2,284,480	3,198,272
3u	1.65	560	924,000	1,293,600
31	1.01	576	581,760	814,464
2	2.02	608	1,228,160	1,719,424
1	3.10	650	2,015,000	2,821,000
			10,189,220	14,264,908

WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

SECTION
7000 N

	PIT A	PIT B	TOTAL
AREA	49,504	60,112	109,616
TOT VOL	49,504,000	60,112,000	109,616,000
WASTE VOL	43,891,010	55,362,400	99,253,410
TONNAGE	7,858,186	6,649,440	14,507,626
RATIO	5.59	8.33	6.84

SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52	247	375,440	525,616
11	0.00		0	0
10	0.00		0	0
9	3.00	386	1,158,000	1,621,200
7	2.73	451	1,231,230	1,723,722
5	1.08	474	511,920	716,688
4	4.72	495	2,336,400	3,270,960
3u	1.65	567	935,550	1,309,770
3l	1.01	575	580,750	813,050
2	2.02	620	1,252,400	1,753,360
1	3.10	639	1,980,900	2,773,260
			10,362,590	14,507,626

WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

October 12, 1988

SECTION
8000 N

	PIT A	PIT B	TOTAL
AREA	6,379	35,940	42,319
TOT VOL	6,379,000	35,940,000	42,319,000
WASTE VOL	5,301,230	32,987,850	38,289,080
TONNAGE	1,508,878	4,133,010	5,641,888
RATIO	3.51	7.98	6.79

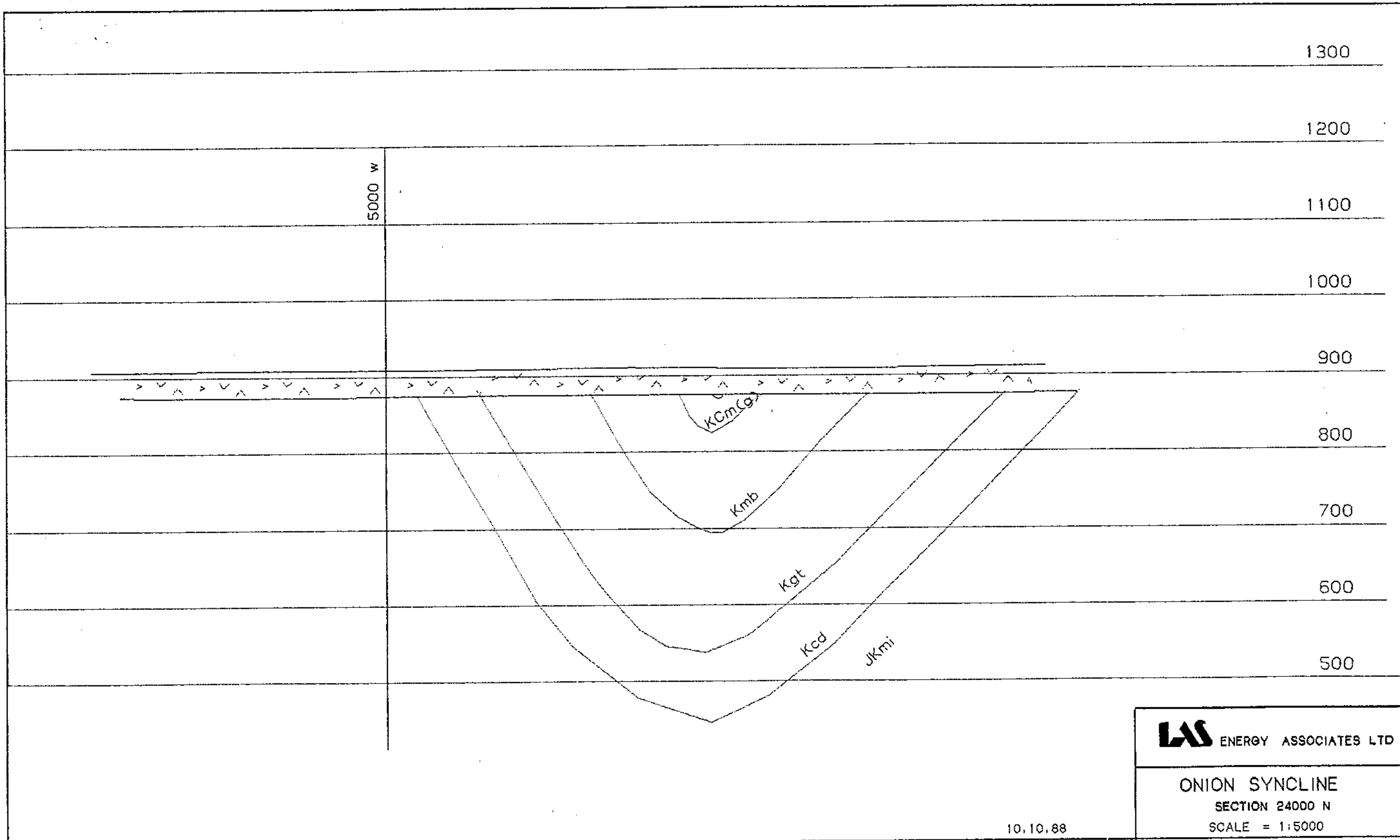
SEAM	THICKNESS	LENGTH M	VOLUME M3	TONNAGE @ SG 1.40
12	1.52		0	0
11	0.00		0	0
10	0.00		0	0
9	3.00		0	0
7	2.73	101	275,730	386,022
5	1.08	157	169,560	237,384
4	4.72	134	632,480	885,472
3u	1.65	304	501,600	702,240
31	1.01	317	320,170	448,238
2	2.02	384	775,680	1,085,952
1	3.10	437	1,354,700	1,896,580
			4,029,920	5,641,888

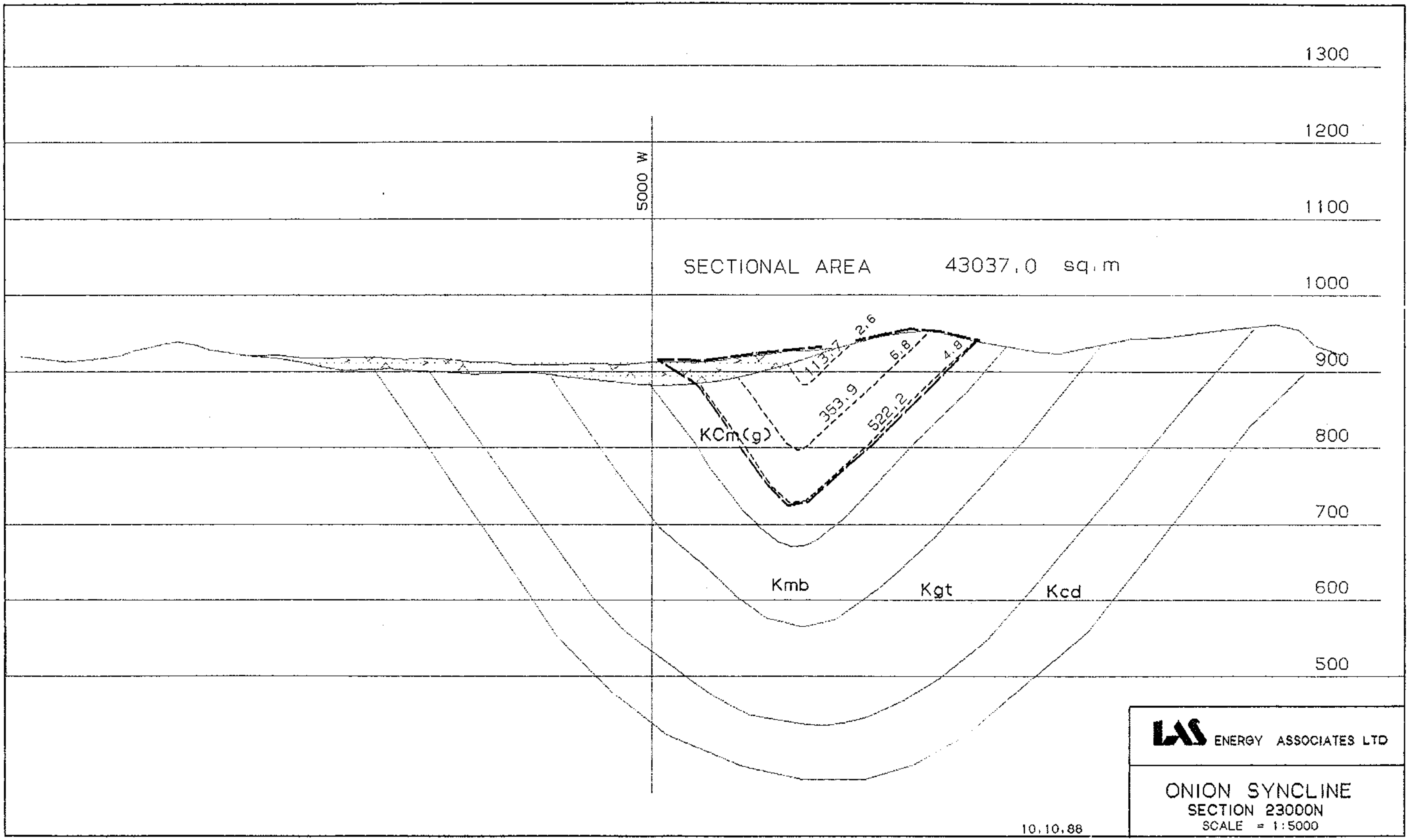
WAPITI DIP SLOPE RESERVES
SEAM AND SECTION DETAIL
CATEGORY: INFERRED RESERVE

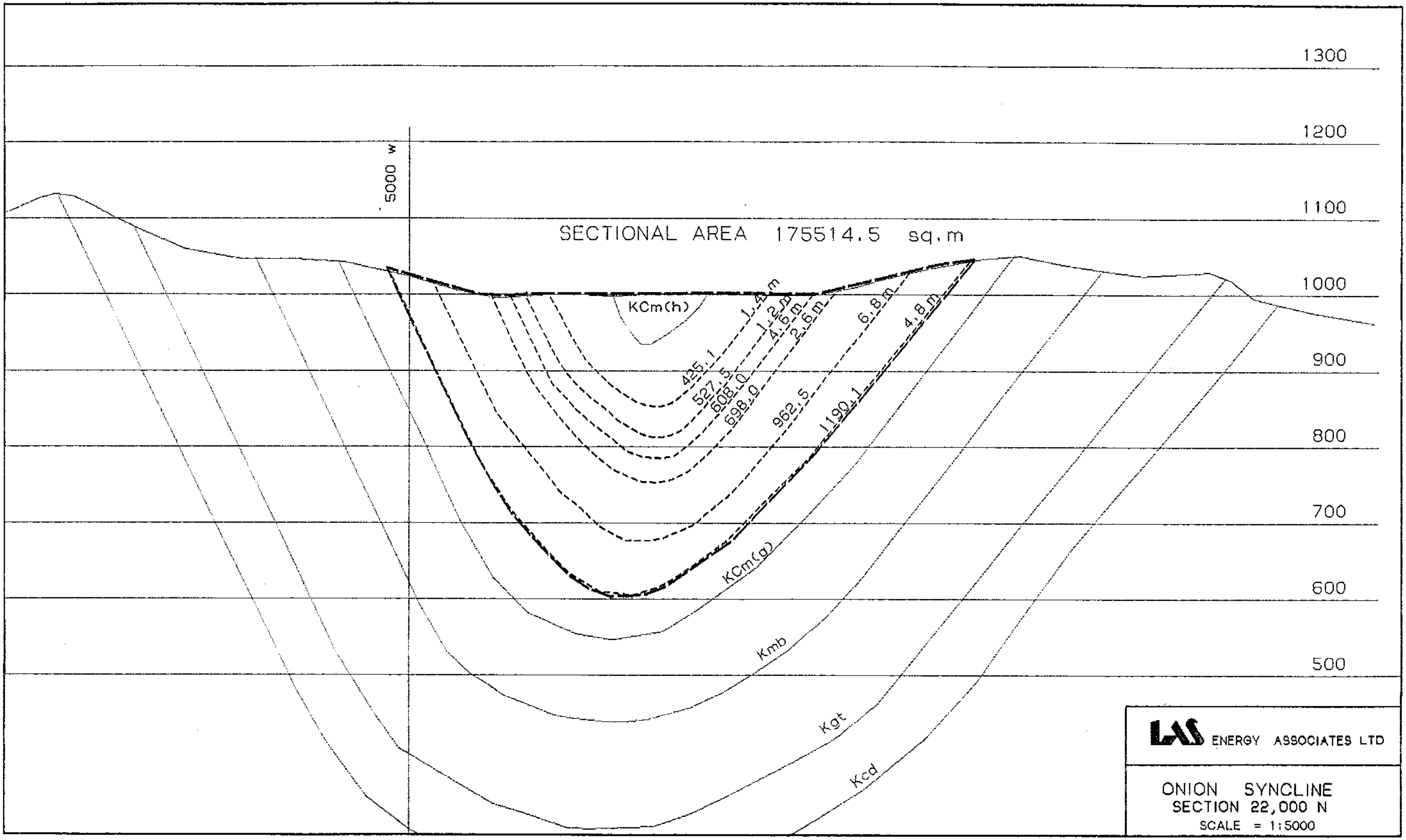
October 12, 1988

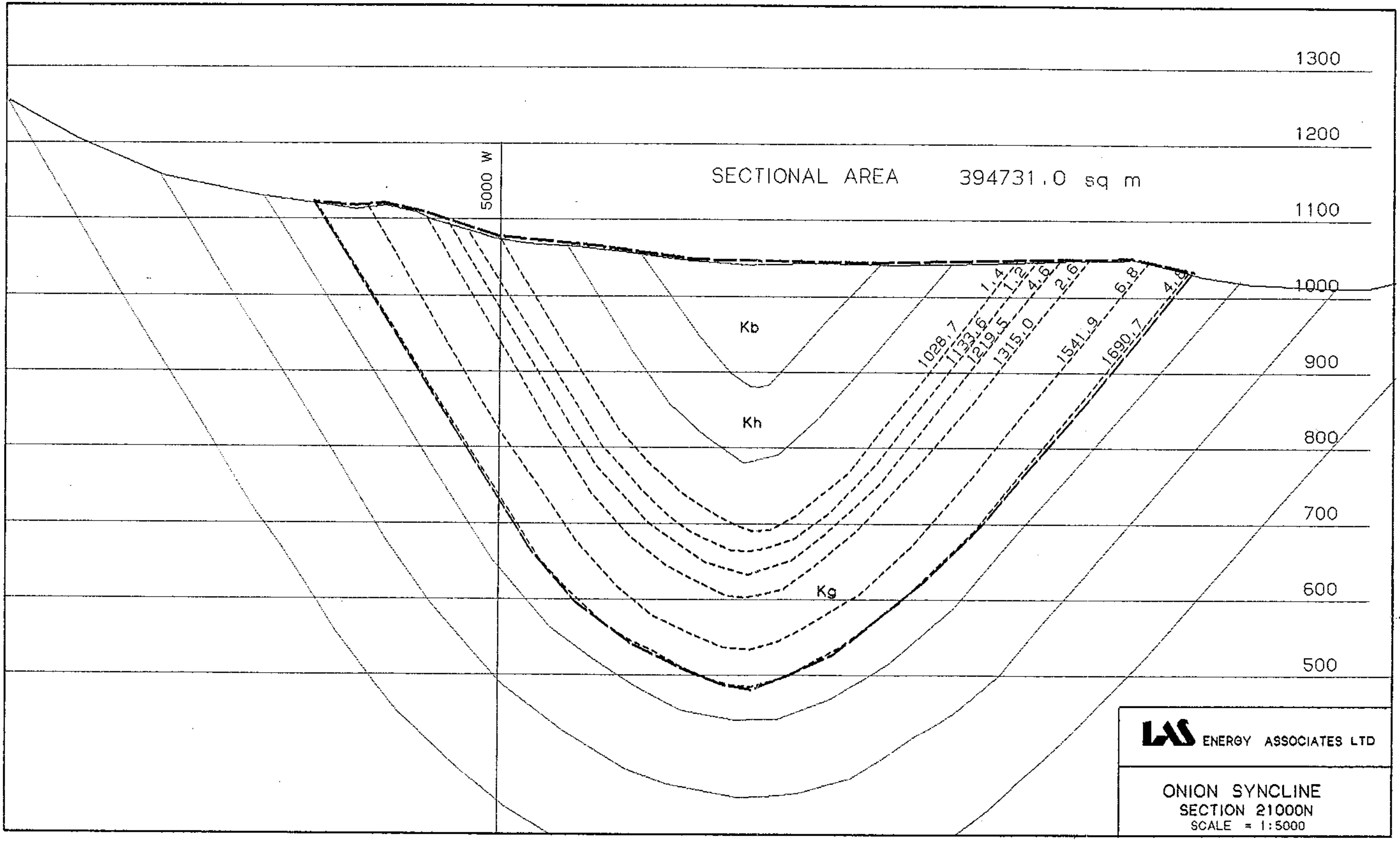
	PIT A	PIT B	TOTAL
TOT VOL	395,777,000	572,197,000	967,974,000
WASTE VOL	349,353,370	525,619,200	874,972,570
TONNAGE	64,993,082	65,208,920	130,202,002
RATIO	5.38	8.06	6.72

SEAM	THICKNESS	TONNAGE @ SG 1.40
12	1.52	3,670,800
11	0.00	0
10	0.00	0
9	3.00	12,385,800
7	2.73	13,816,530
5	1.08	6,190,128
4	4.72	28,929,824
3u	1.65	12,289,200
31	1.01	7,762,860
2	2.02	17,194,240
1	3.10	27,962,620
		130,202,002


1300
1200
1100
1000
900
800
700
600
500
5000 W
KCm(g)
Kmb
Kgt
Kcd
JKmi
LAS ENERGY ASSOCIATES LTD
ONION SYNCLINE
SECTION 24000 N
SCALE = 1:5000
10.10.88


1300
1200
1100
1000
900
800
700
600
500
5000 W
SECTIONAL AREA 43037.0 sq.m
2.6
113.7
5.8
4.8
353.9
522.2
KCm(g)
Kmb
Kgt
Kcd
LAS ENERGY ASSOCIATES LTD
ONION SYNCLINE
SECTION 23000N
SCALE = 1:5000
10.10.88


1300
1200
1100
1000
900
800
700
600
500
5000 W
SECTIONAL AREA 175514.5 sq.m
KCm(h)
1.4 m
1.2 m
4.6 m
2.6 m
6.8 m
4.8 m
425.1
527.5
608.0
698.0
962.5
1190.1
KCm(g)
Kmb
Kgt
Kcd
LAS ENERGY ASSOCIATES LTD
ONION SYNCLINE
SECTION 22,000 N
SCALE = 1:5000



1300
1200
1100
1000
900
800
700
600
500
5000 W
SECTIONAL AREA 394731.0 sq m
Kb
Kh
Kg
1.4
1.2
4.6
2.6
6.8
4.8
1028.7
1133.6
1219.5
1315.0
1541.9
1690.7
ENERGY ASSOCIATES LTD
ONION SYNCLINE
SECTION 21000N
SCALE = 1:5000