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2001 COAL ASSESSMENT REPORT FOR THE DOVE CREEK COAL PROPERTY

VOLUME 1: GEOLOGY

PREPARED FOR

PRIORITY VENTURES LTD.

#872

WESTWATER MINING LTD.

2001 Coal Assessment Report for the
Dove Creek Coal Property

Volume 1: Geology

Coal Licence Nos. 383367 to 383374, inclusive
Vancouver Island – Comox Land District

NTS 92 F/11
Latitude: 49° 43' north
Longitude: 125° 04' west

Licences held by: Neil Swift

Operator: Priority Ventures Ltd.

Consultants: Westwater Mining Ltd.

Authors: C.G. Cathyl-Bickford, P.Geo., D. Meckert, Ph.D. and K.V. Slater

Work performed: June-August 2001
Date submitted: September 9, 2002

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1 SUMMARY

The Dove Creek coal property is situated on Vancouver Island in south-western Canada near the city of Courtenay, British Columbia. The property is served by a network of paved roads with subsidiary gravelled roads. Most elements of mining infrastructure are available within reasonable distances.

The aggregate area of the Dove Creek coal licences, as reported by the Ministry of Energy and Mines, is 2204 hectares. The Dove Creek area has been sporadically explored for coal from 1911 onwards. Other than Priority Ventures, major historic explorers of the property have been Canadian Collieries (Dunsmuir) Ltd., and its successor company, Weldwood of Canada Ltd.

Priority Ventures' summer 2001 exploration programme, which forms the basis for the present report, entailed a limited amount of geological mapping followed by drilling of three cored boreholes. 96 samples were taken for analysis of the coal quality and coalbed gas content of the Comox coal beds found in the boreholes. Coal beds of possible interest for underground mining were sampled in greatest detail, including taking samples of immediately-adjacent roof or floor material which might be reasonably expected to form part of the mined product.

In all, 93 proximate analyses were done. Based on their results, three composite samples were assembled for sink-float testing and analyses of clean coal products. Results suggest that the coals can be more readily washed for ash reduction than for sulphur reduction. This appears to be characteristic of coals from the Comox coalfield, as reported by earlier workers. The Dove Creek coals probably have greater potential for thermal power generation than for metallurgical coke-making.

The Dove Creek coals are of high volatile 'A' bituminous rank, with moderate to high free swelling index (FSI) values indicative of strong caking tendencies. Ash yields and sulphur contents of the coals are moderate to high by world standards.

Results of the 2001 exploration programme, taken together with results of earlier drilling by Canadian Collieries and Weldwood, serve as the basis for coal resource estimates covering the Dove Creek coal licences. Coal resource estimates presented in this report were based on borehole intersections of correlatable coal beds only. Drilling results to date indicate the Dove Creek coals tend to contain numerous rock partings. Their gross thickness and net-to-gross ratios are marginal for underground mining, but acceptable for coalbed gas development.

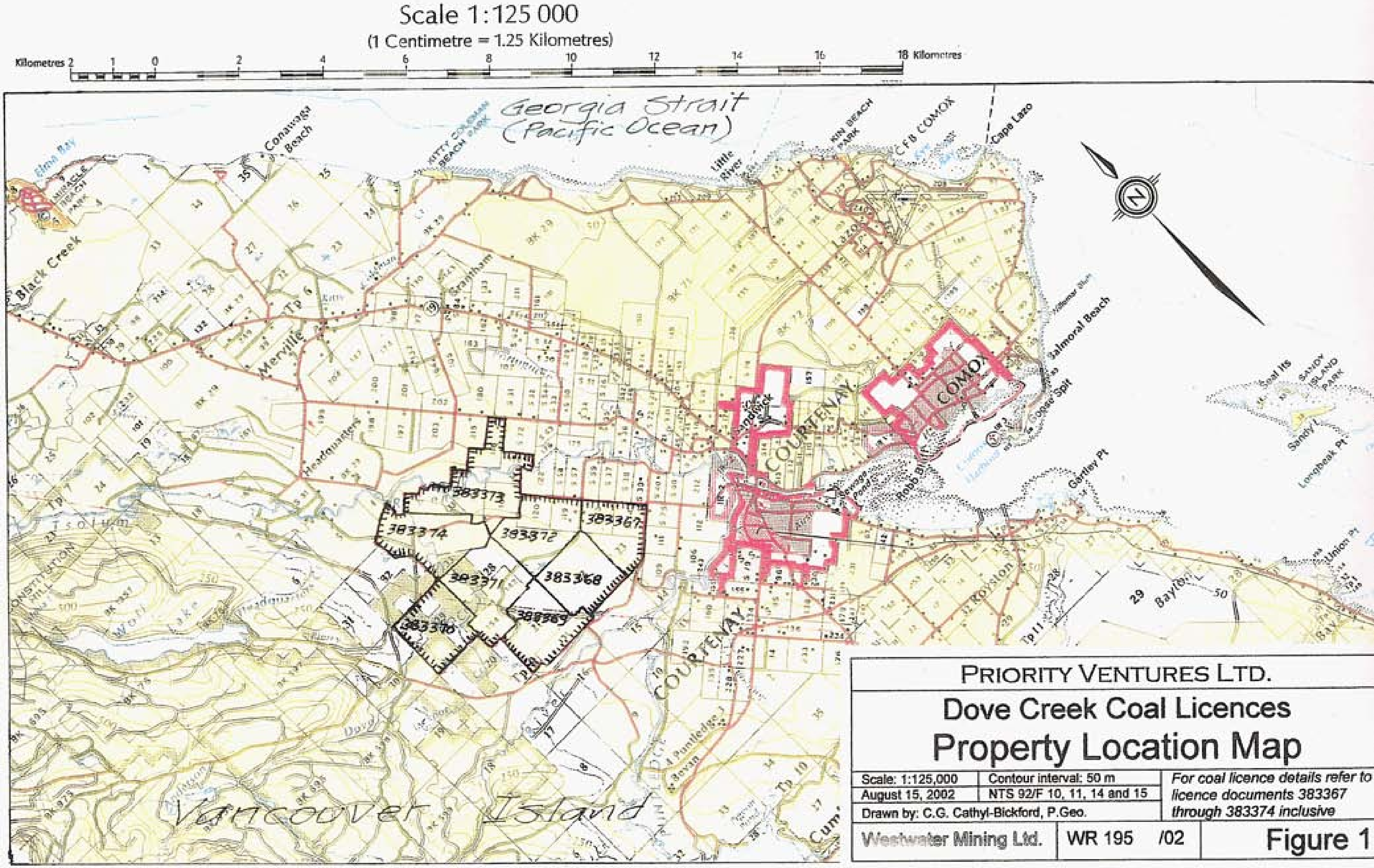
Estimates were made for four cases:

- **Case A** for underground-mineable coals of immediate interest;
- **Case B** for underground-mineable coals of future interest;
- **Case C** for coals of interest for isolated-bed coalbed gas development; and
- **Case D** for coals of interest for multiple-zone coalbed gas development.

Measured and indicated coal resources of immediate interest for underground mining (**Case A**) total 2.3 megatonnes; measured and indicated coal resources of future interest for underground mining (**Case B**) total 9.2 megatonnes; , measured and indicated coal resources of immediate interest for isolated-bed coalbed gas development (**Case C**) total 26.9 megatonnes; measured and indicated coal resources of immediate interest for multiple-zone coalbed gas development (**Case D**) total 40 megatonnes.

Drilling to date has disclosed good potential for coalbed gas development, and a lesser but significant potential for coal development. Further work should focus on confirming and extending areas of thick coal development, as well as outlining paleotopographically-low areas which may contain additional coal beds.

As part of a proposed exploration programme budgeted at $943,690, we recommend the drilling of seven additional partially-cored boreholes within the Dove Creek coal licences.


Scale 1:125 000
(1 Centimetre = 1.25 Kilometres)
Kilometres 2 1 0 2 4 6 8 10 12 14 16 18 Kilometres
Georgia Strait (Pacific Ocean)
Vancouver Island
COURTENAY
COMOX
CFB COMOX
Cape Lazo
Little River
Merville
Black Creek
Headquarters
Royston
Goose Spit
Balmoral Beach
Gartley Pt
Comox Harbour
Sandy Island Park
383367
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PRIORITY VENTURES LTD.
Dove Creek Coal Licences
Property Location Map
Scale: 1:125,000
August 15, 2002
Contour interval: 50 m
NTS 92/F 10, 11, 14 and 15
Drawn by: C.G. Cathyl-Bickford, P.Geo.
For coal licence details refer to licence documents 383367 through 383374 inclusive
Westwater Mining Ltd.
WR 195 /02
Figure 1

2 LOCATION, ACCESSIBILITY AND INFRASTRUCTURE

In comparison with most coal properties in British Columbia, the Dove Creek coal licences are relatively easy to access for exploration purposes, since they lie within a settled area adjacent to a small city. This accessibility comes with the concomitant drawback of high public visibility, requiring increased attention to visual and acoustic impacts of exploration activities.

Having many neighbours at Dove Creek, Priority Ventures Ltd. must accept the challenge of being a good neighbour amongst rural residences, dairying and hobby farms, and woodlots and other silvicultural operations.

2.1 TOPOGRAPHY, ELEVATION AND VEGETATION

The Dove Creek coal property lies along the western side of the Comox Valley, in gently-rolling country incised by stream and river channels (**Figure 2**). The property is bounded on the south by the bedrock-floored canyons of Browns and Puntledge rivers, on the east by the alluvial meander-belt of Tsolum River, and to the west by the partly-incised, partly-meandering courses of Dove and Jackpot creeks. Several smaller meandering creeks drain the eastern half of the property. The western half of the property contains numerous large and small wetlands, some of which have been drained for use as hay-meadows.

Elevations within the coal licences range from about 15 metres above mean sea level in the east near Tsolum River, to about 100 metres above sea level in the rolling hills between Browns River and Jackpot Creek.

The Dove Creek coal licences are checkerboarded by a patchwork of small farms, woodlots and provincial or private forest lands. As such, vegetation cover ranges from grasses, other forage crops and brush in the farmlands, to second-growth forest.

No old-growth forests are known by the authors to be present within the Dove Creek coal property, but Ministry of Forests inventory maps show some areas of mature second-growth forest ranging up to 101 to 120 years. Forest tree species are mainly western hemlock and Douglas-fir, with lesser amounts of red alder, balsam (true fir), western white pine, broadleaf maple and spruce, with cottonwood and western red-cedar in wetter sites. Undergrowth consists of salal and Oregon-grape, with a noteworthy component of red huckleberry which is often found growing from the tops of large stumps left over from first-growth harvesting. Baldhip roses and blackberries grow in profusion in abandoned clearings.

Some logging has recently occurred on provincial forest lands, and extensive harvesting has been done on the private forest lands during the past 5 years.

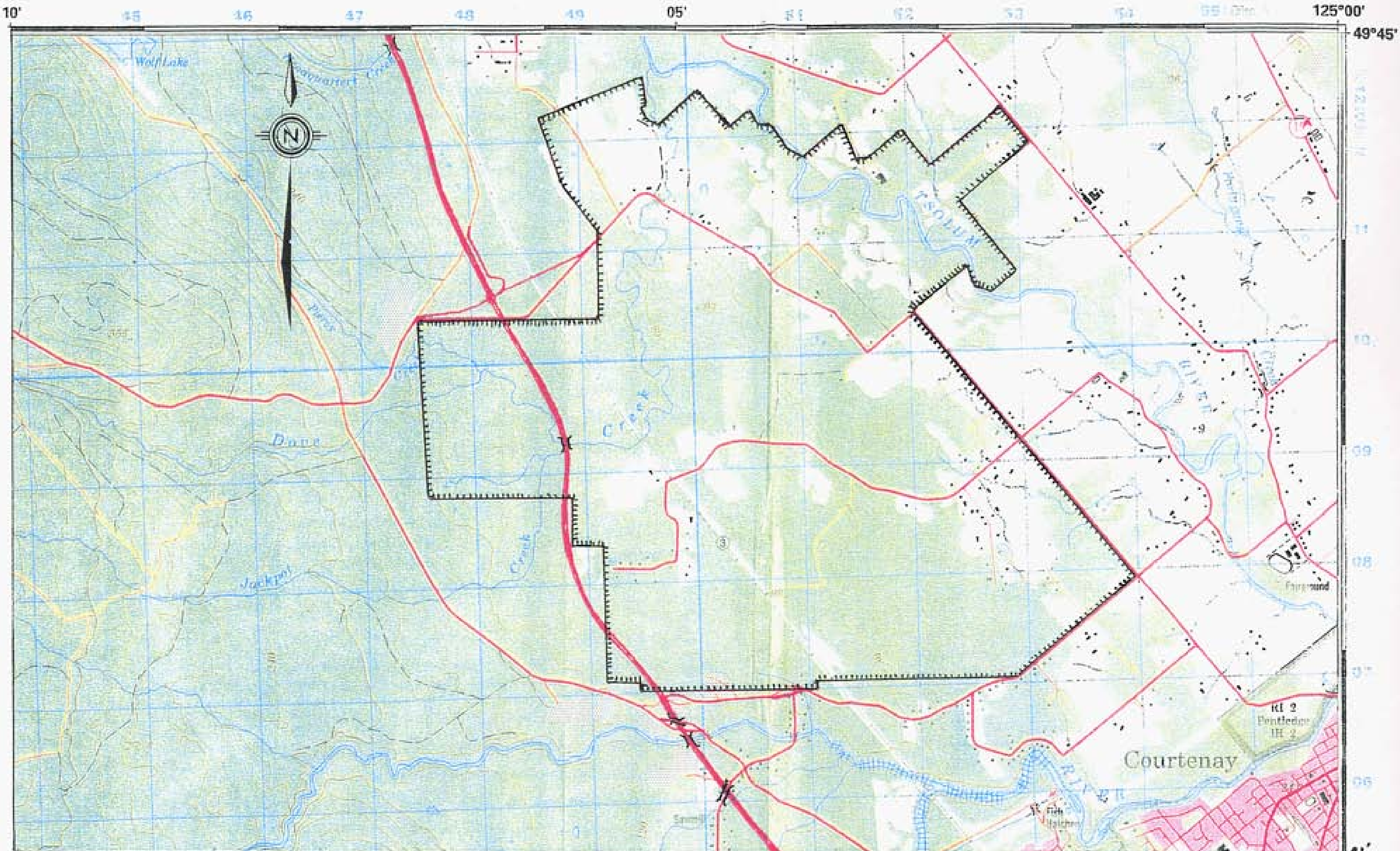
2.2 ACCESS

The Dove Creek coal property is well-served by a network of paved rural roads with subsidiary gravelled logging-roads, subdivision roads and farm access roads (as shown on **Figure 2**). The local road network is in turn connected to the Inland Island Highway, a four-lane divided highway which crosses the western side of the coal licences.

2.3 POPULATION CENTRES AND MEANS OF COMMUNICATION

The nearest incorporated municipality is the city of Courtenay, located 2 kilometres southeast of the Dove Creek coal licences. The coal licences lie within Area 'C' of the Regional District of Comox-Strathcona, with a local population centre at the unincorporated hamlet of Dove Creek, situated along the north-eastern edge of the property.

Dove Creek, Courtenay and the Comox Valley in general are served by a regional airport at Canadian Forces Base Comox (IATA airport code: YQQ), about 10 kilometres east of the coal property.



1/50 000

Kilometres 1 0 1 2 3

Miles 1 0 1 2 3

PRIORITY VENTURES LTD.

Dove Creek Coal Licences

Topography and Access Map

Scale: 1:50,000	Contour interval: 40 m	*For coal licence details refer to licence documents 383367 through 383374 inclusive*
August 15, 2002	NTS 92/F 11	
Drawn by: C.G. Cathyl-Bickford, P.Geo.		

Westwater Mining Ltd.	WR 195 /02	Figure 2

and a ferry terminal at Little River, northeast of the property. Most industrial supplies are brought to the Valley via the Inland Island Highway, which provides an all-weather link to the regional supply and warehousing centres of Campbell River and Nanaimo, via an interchange located just outside the south-western corner of the property.

Landline telephone services are provided to the settled areas of the Dove Creek coal property by Telus, from a switching office in Courtenay. Cellular telephone services are provided by Telus and by Rogers-AT&T. Internet access is provided via dial-up lines by Telus and Island Internet.

2.4 CLIMATE

The Dove Creek property lies within the Coastal Western Hemlock very dry maritime biogeoclimatic subzone (Green and Klinka, 1994). Characteristic of this subzone is a temperate climate of Mediterranean type, with cool, wet winters and warm, dry summers. Minimum temperatures are −10 to −15 C, with the coldest temperatures confined to brief 'Squamish outbreak' periods in mid-winter. Maximum temperatures are 33 to 38 C, typically found during extended periods of clear weather in mid- to late-summer.

Snowfalls or freezing rain may occur at any time between November and April, with the bulk of snow falling in January and February. Snowfalls up to 90 cm are possible in a single intense mid-winter storm, but snow seldom accumulates to depths greater than 30 cm. The autumnal rainy season usually sets in during early October and continues into early April, resulting in poor off-road trafficability on undrained soils.

Extended periods of dry weather during July, August and September can bring extreme forest-fire hazard conditions, occasionally requiring that industrial operations including drilling must be confined to early morning working hours or shut-down altogether. High forest-fire hazards occurred during parts of July and August 2001, but drilling continued without interruption since the hazard never reached an extreme level. A forest fire hazard board is located at the Timberwest logging-camp, west of Courtenay.

2.5 MINING INFRASTRUCTURE

Although mining other than gravel-pitting has not previously been done at Dove Creek, most elements of mining infrastructure are available within reasonable distances from the property, as discussed below.

2.5.1 SURFACE ACCESS FOR MINING PURPOSES

Surface rights are mostly privately held by small landowners or by timber companies such as Timberwest and Weyerhaeuser, but some parcels of Crown forest land are present in the Southwestern half of the Dove Creek coal property. Most of the smaller landowners have been very welcoming to Priority Ventures, affording access for drilling during the summer 2001 programme. Other landowners have expressed a desire to not have drilling done on their land, despite the Crown's ownership of coal rights beneath their properties.

Many local residents believe that the Crown forest lands could become part of an aboriginal land settlement with the Comox First Nation, and indeed some of these lands are sign-posted as being First Nations property. However, no confirmation of a proposed settlement has been obtained, and the Province's ultimate intentions for Crown forest lands at Dove Creek are not known by the author.

For reasons of prudence, it would be best to not presume that surface access to Crown forest lands will remain available for mining purposes.

2.5.2 ELECTRICAL POWER SUPPLY

Electrical power is available along most public roads, from B.C. Hydro's Puntledge substation. Primary sub-transmission voltage is 25 KV, with local distribution at 14.4 KV. Some of the power is generated on-Island, at Hydro's Puntledge generating station, or at the John Hart plant near Campbell River. These plants do not provide sufficient power for the Island's needs, and use is also made of submarine cables from the Lower Mainland.

2.5.3 WATER SUPPLY

Water is in short supply for domestic, agricultural and industrial purposes. Owing to fisheries concerns, diversions of water from surface streams is likely impracticable, and groundwater supplies would have to be sought for mining purposes. Near-surface groundwater quality varies: some unconsolidated aquifers contain high levels of coliform contamination, and shallow bedrock aquifers locally contain brackish or saline water. Artesian saline water was found in one of Priority's summer 2001 boreholes at site D-2A, immediately east of the coal licences.

2.5.4 MINERS AND TRADESPEOPLE

Mining personnel are readily available in the Comox Valley, and on northern Vancouver Island in general, owing to recent drawdowns of production at Boliden's Buttle Lake copper-mine and Hillsborough's Quinsam colliery. Other tradespeople are also readily available owing to the prevailing depression in local economic conditions.

2.5.5 MINE WASTE AND TAILINGS DISPOSAL

Mine wastes and tailings could be readily stored at on the ground within the Dove Creek property, but care would have to be taken to ensure that groundwater supplies were not contaminated by leaching or acid rock drainage. Since the Dove Creek property lies within an area of high seismic risk, waste and tailings impoundments would have to be designed to a high standard in order to ensure stability during earthquakes.

2.5.6 EQUIPMENT AND SUPPLIES

Heavy industrial and construction equipment, including excavation and road-building equipment, is available in the cities of Campbell River and Courtenay. Mining and drilling supplies are available from distributors in Greater Vancouver, approximately six hours away from Dove Creek by road and ferry.

Timber for mining purposes is readily available from private woodlots within and adjacent to the Dove Creek coal licences. Commercial sawmills are located in Courtenay and Campbell River.

2.5.7 PLANT SITES

Potential plant sites for mining and coal preparation have not been identified in detail. The Southwestern corner of the Dove Creek property has been the site of extensive gravel-mining operations connected with civic and highway construction, and this may be a suitable area for a mine-mouth or a preparation plant. Road access to this area is excellent, via the Piercy Road connection to the Inland Island Highway.

3 COAL LANDS

3.1 PROPERTY HISTORY

The Dove Creek coal property was initially obtained by the Dunsmuir interests as part of the Esquimault & Nanaimo Railway land grant in the late 19th century (Buckham, 1966). The original Dunsmuir coal holdings extended along the eastern foothills of the Beaufort Range, from Parksville in the south to Campbell River in the north. Only selected parts of the original land grant, including the Dove Creek lands, were transferred from the railway company to Dunsmuir's mining company, the Wellington Colliery Company (WCC). In 1910, the Dunsmuir family sold WCC to Canadian Collieries (Dunsmuir) Limited (CCD), a publicly-traded company headquartered in Victoria, B.C. During the following 50 years, CCD expanded Dunsmuir's original small underground mines and developed two new mines, near Courtenay and at Tsable River.

CCD's successor company, Weldwood of Canada Ltd., holds coal rights to the lands immediately south of the Dove Creek coal property, and has also in the past held coal licences to the west of the property.

3.2 DESCRIPTION OF THE CURRENT PROPERTY

The Dove Creek coal licences are located in the Comox Land District, within the regional district of Comox-Strathcona, situated in the Comox Valley of eastern Vancouver Island, northwest of the city of Courtenay. All of the coal licences lie within a rectangular area bounded by 47 and 54 easting, and 07 and 13 northing (UTM NAD 83, in cell CA of grid zone 10U). National topographic map sheet 92F/11 and provincial TRIM map sheets 92F.065 and 92F.075 cover the coal licence area.

The aggregate area of the Dove Creek coal licences, as reported by the Ministry of Energy and Mines, is 2204 hectares. **Table 1** (below) lists the areas of each coal licence.

3.2.1 COAL LICENCE DETAILS

The Dove Creek coal licences form a contiguous block. All of the coal licences were granted on January 10, 2001, to Mr. Neil Swift, who is presently serving as President of Priority Ventures Ltd. Details of each licence are presented below:

Table 1: Coal Licence Details

C.L. No.	Area in Hectares	Land Lots	Date Granted	C.L. No.	Area in Hectares	Land Lots	Date Granted
383367	217	Fractional Section 23, Township 9; Lots 73 and 74.	Jan. 10, 2001	383371	300	Fractional Section 28, Township 9; Lots 142 E&N and 154 E&N.	Jan. 10, 2001
383368	250	Fractional Section 22, Township 9.	Jan. 10, 2001	383372	281	Fractional Section 27, Township 9; Lots 119 E&N and 120 E&N.	Jan. 10, 2001
383369	256	Fractional Section 21, Township 9; Lot 131 E&N	Jan. 10, 2001	383373	328	Lots 108 E&N, 116 E&N and 176A E&N, and adjoining areas to northwest.	Jan. 10, 2001
383370	249	Fractional Section 29, Township 9.	Jan. 10, 2001	383374	323	Fractional Section 33, Township 9, and adjoining area to northeast.	Jan. 10, 2001

3.2.2 CURRENT STATUS OF THE COAL LICENCES

Annual rentals for the Dove Creek coal licences are reported to have been kept up to date through 2002 (Lynne Sam, Coal Titles Administrator, personal communication in March 2002) and the licences are thus continued until January 10, 2003. Extension beyond that time will require payment of an annual fee, as discussed below.

3.3 COMPANY'S INTERESTS IN THE PROPERTY

As mentioned in section 3.1 above, the Dove Creek coal licences are held by Mr. Neil Swift, who is presently serving as president of Priority Ventures Ltd. Details of the arrangements between Mr. Swift and the Company are not known to the author.

Crown coal licences, as granted by the B.C. Ministry of Energy and Mines, carry with them the exclusive right to explore for coal within the licensed lands during the active term of the licence. Coal licences have one year terms, which are renewable upon application to the Minister of Energy and Mines. Application for renewal must be made in advance of the expiry of the coal licences.

Work programmes on coal licences must be conducted in accordance with the provisions of the *Mineral Exploration Code*, including the requirement to submit proposed programmes of exploratory work and reclamation for review and approval by the provincial Mines Branch.

Coal licences *do not* convey surface rights to the lands, and access upon the lands must be negotiated with individual land owners. Some land owners at Dove Creek have been very welcoming and accommodating to exploration activities, and have allowed drilling on their lands. Other land owners have requested that drilling not be done upon their lands.

Crown coal licences do not have work commitments upon them, but they require the payment of an annual rental of $7 per hectare for the first five years, increasing to $10 per hectare in the second five years, and further increasing at $5 annually per hectare per five year period thereafter.

The annual rental due for the Dove Creek coal licences, based on the full area of 2204 hectares, will be $15,428 until 2006, at which time it will increase to $22,040. The annual expiry date of the coal licences, before which they must be renewed for the succeeding year's term, is January 10th.

3.4 DISCLAIMER CONCERNING MINERAL TITLES

An independent title search of mineral rights covering the Dove Creek coal property has not been conducted by the author. and any or all responsibilities concerning mineral titles are hereby disclaimed. Reliance has been placed upon the outline maps of Coal Licences 383367 through 383374, inclusive, as provided by the B.C. Ministry of Energy and Mines (copies of which are presented in ***Annex C*** *to this report)..*

4 SUMMARY OF EXPLORATION WORK

The Dove Creek area has been sporadically explored for coal from 1911 onwards (see borehole map, **Figure 3**). In general terms, the property is only partially explored, and delineation of its mineral resources is still incomplete. Other than Priority Ventures, major historic explorers of the property have been Canadian Collieries (Dunsmuir) Ltd., and its successor company, Weldwood of Canada Ltd.

4.1 PRE-2001 EXPLORATION

In 1911, Canadian Collieries (Dunsmuir) Ltd. drilled three boreholes within the current confines of the Dove Creek property, and eight more boreholes close nearby. In 1924, company geologist H.A. Rose reported on the coals exposed along Browns River, as part of a regional survey of coal resources (Rose, 1924).

To the east of the Dove Creek property, along the course of the Tsolum River, several other firms held coal licences or freehold leases at various times in the late 19th century and throughout the 20th century. The most active exploration was done by the Vancouver Coal Prospecting Company (VCP), which drilled one deep borehole on the western side of Tsolum River, near Dove Creek Road.

In 1975, Weldwood of Canada Ltd. (Weldwood) drilled two boreholes to the west of the Dove Creek property, along the courses of Browns River and Dove Creek. Both of these boreholes were geophysically logged.

In the early 1980s, Canadian Occidental Petroleum Ltd. conducted regional geological mapping of the eastern fringe of the property, but did not drill any boreholes near Dove Creek.

In 1984 and 1985, BP Canada acquired reflection seismic data in the Comox coalfield, including two Vibroseis lines which cross or adjoin the Dove Creek property. Locations of these seismic lines are shown on **Figure 4**, and their interpretations are shown as **Figures 4-A** (dip line BP 84-19) and **4-B** (intersecting strike line BP 84-22). BP's interests at that time were to search for oil and gas, and no attempt was made to consider the coal potential of the area. The seismic records of these two lines are held as proprietary by BP's successor company, Talisman Energy, but they are available for purchase as trade data. Rights to both seismic lines were purchased by Priority Ventures Ltd.

In 1987 through 1991, Gwyneth Cathyl-Bickford and Georgia Hoffman mapped the bedrock geology of the Comox Coalfield, including the Dove Creek area, under contract to the B.C. Geological Survey Branch; results of the mapping have been published as an open file (Cathyl-Bickford and Hoffman, 1998) by the B.C. Ministry of Energy and Mines. This work was incorporated in compilation of the geological map which accompanies the present report.

No further exploration is known to have been done at Dove Creek until Priority Ventures applied for Crown coal licences and drilled its boreholes during the summer of 2001.

4.1.1 DETAILS OF CANADIAN COLLIERIES (DUNSMUIR) LTD.'S BOREHOLES

As part of their 1911 regional coal prospecting programme, CCD drilled three diamond-drill holes (CX-105, -107 and -120) within the Dove Creek property, and an additional eight boreholes (CX-109, -110, -111, -113, -114, -117, -118 and -121) close nearby to the south and west of the property (**Figure 3**).

The aggregate depth of the three boreholes within the property was 925 metres, with the deepest hole being CX-120 at 397 metres. Best results were obtained from hole CX-105, the first hole in the series, which intersected 173 cm of bony coal mixed with shale at a depth of 338 metres. None of the other coal intersections within the property were as good, and it is probable that CCD forfeited the property on the grounds of having more attractive development prospects elsewhere within the Comox coalfield.

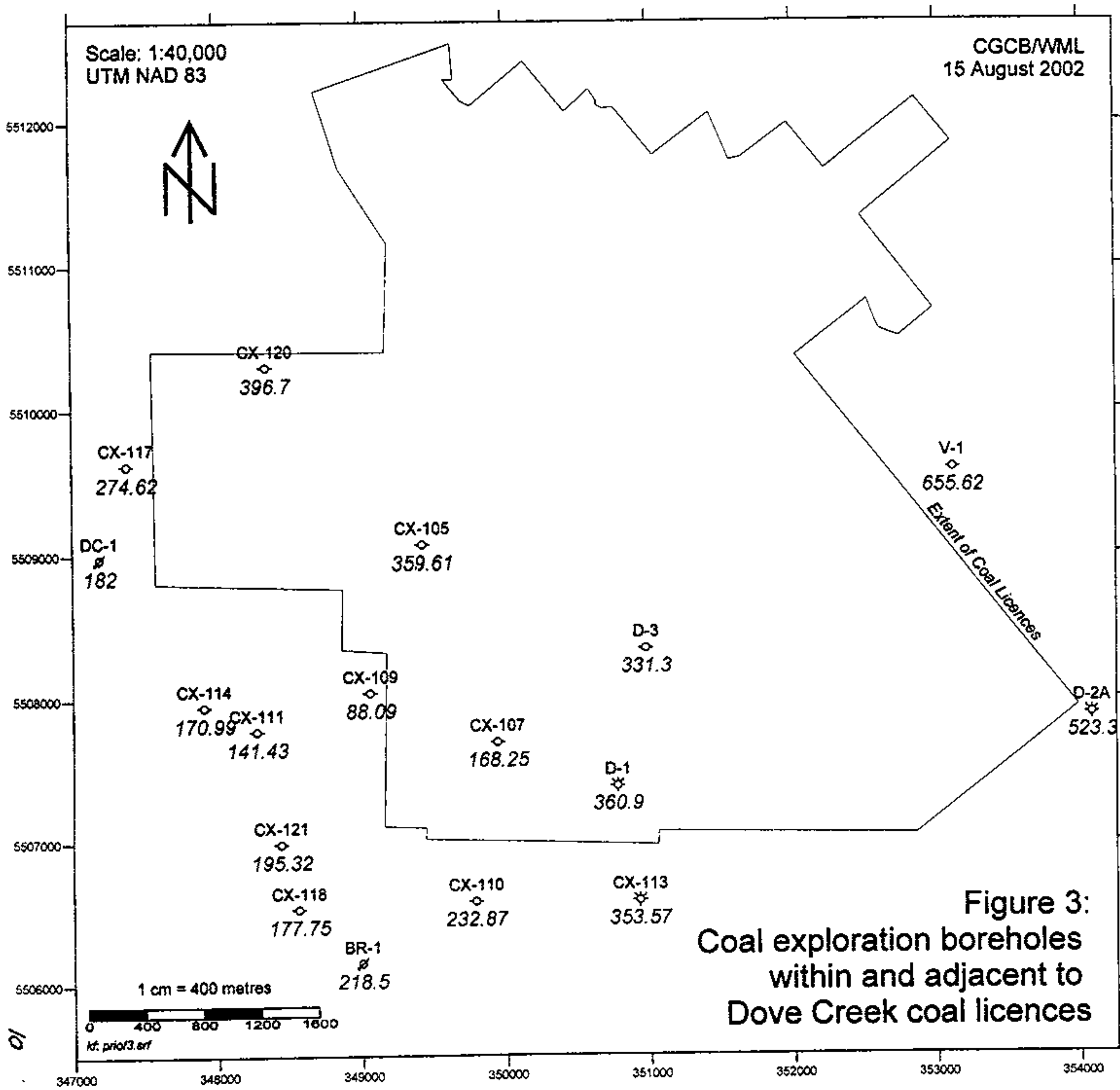


Figure 3:
Coal exploration boreholes within and adjacent to Dove Creek coal licences

Vancouver Coal Prospecting Co.		
borehole	commenced	total depth
V-1	1907	655.62 m
Canadian Collieries (Dunsmuir) Ltd.		
borehole	commenced	total depth
CX-105	Feb. 25, 1911	359.61 m
CX-107	April 11, 1911	168.25 m
CX-109	May 19, 1911	88.09 m
CX-110	May 25, 1911	232.87 m
CX-111	June 20, 1911	141.43 m
CX-113	July 3, 1911	353.67 m
CX-114	July 21, 1911	170.99 m
CX-117	Aug. 1, 1911	274.62 m
CX-118	Sep. 20, 1911	177.75 m
CX-120	Oct. 26, 1911	396.70 m
CX-121	Nov. 7, 1911	195.32 m
Weldwood of Canada Ltd.		
borehole	commenced	total depth
BR-1	June 1975	218.5
DC-1	June 1975	182.0
Priority Ventures Ltd.		
borehole	commenced	total depth
D-1	July 10, 2001	360.90 m
D-2A	July 16, 2001	523.30 m
D-3	July 31, 2001	331.30 m

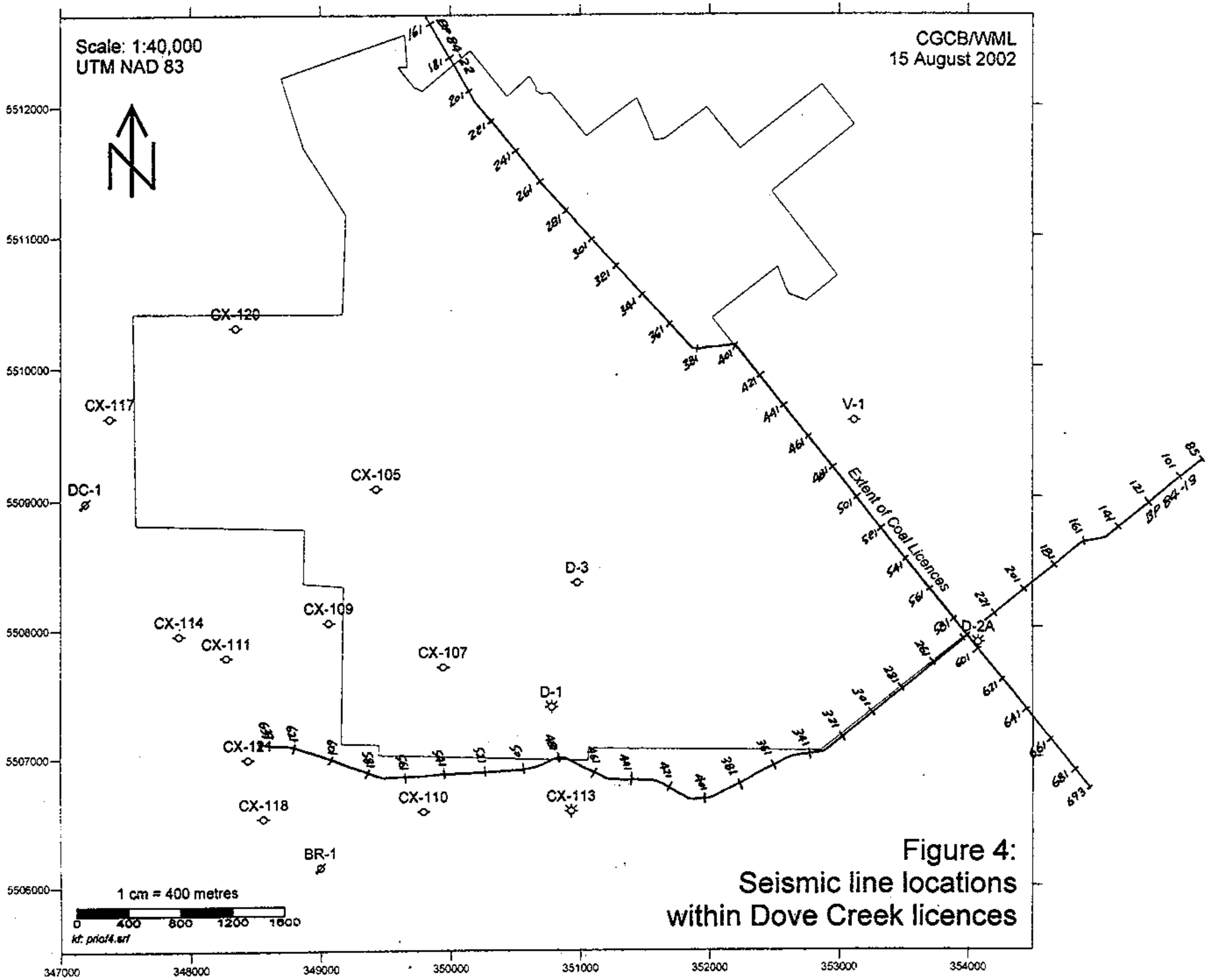


Figure 4:
Seismic line locations
within Dove Creek licences

Figure 4-A:
Interpreted seismic line BP 84-19

Figure 4-B:
Interpreted seismic line BP 84-22

Logs of the CCD boreholes are held in the Coal Assessment Report files (as CAR 694: Kenyon, 1987) of the B.C. Ministry of Energy and Mines in Victoria, B.C. Interpreted copies of these logs are presented in **Annex A** of this report.

4.1.2 DETAILS OF VANCOUVER COAL PROSPECTING COMPANY'S BOREHOLE

In 1907, VCP obtained a lease of the Hodgson freehold estate in Section 57 of Comox land district along the western bank of Tsolum River, a few hundred metres northeast of the current Dove Creek property boundary (**Figure 3**). VCP drilled a single borehole (V-1: Campbell-Johnston, 1908) to a depth of 656 metres. V-1 encountered numerous coal beds, but was stopped prior to reaching the base of the Comox Formation, and thus is not a valid test of the complete coal-measures section.

The log of V-1 was collected by the Consolidated Mining and Smelting Company (Gwillim, 1908) during a regional survey of coal development opportunities for the Canadian Pacific Railway Company (CPR); the log passed into history as part of the CPR archives, and is now held by the Glenbow-Alberta Institute Archives in Calgary, Alberta. An interpreted copy of the log is presented in **Annex A** of this report.

4.1.3 DETAILS OF WELDWOOD'S BOREHOLES

In 1974, Weldwood commenced a regional survey of coal resources within their extensive freehold coal holdings in the Comox coalfield. During their stratigraphic drilling programme, they drilled two boreholes to basement (BR-1 near Browns River, and DC-1 near Dove Creek), and ran a basic suite of downhole geophysical logs. BR-1 and DC-1 were both valid tests of the Comox Formation, encountering numerous coal beds.

Logs of the two Weldwood boreholes are held in CAR 694 in Victoria (Kenyon, 1987).

4.2 EXPLORATION WORK DURING THE SUMMER OF 2001

The summer 2001 exploration programme, which forms the basis for the present report, consisted of a limited amount of geological mapping followed by drilling of three boreholes (D-series on **Figure 3**, see also **Table 2**) by Priority Ventures.

Table 2: Location data for summer 2001 boreholes

Borehole	Legal description of site	UTM 83 coordinates	Elevation (m)
D-1	Lot A, District Lot 131, Comox Land District, Plan VIP 69623, PID 024-603-619 (Winnig Estate)	350780 E, 5507390 N	91.5
D-2A	Section 40, Comox Land District, Plan DD 18633-F, PID 009-518-002 (Lloydshaven Farm)	354080 E, 5507886 N	18.0
D-3	Lot 1, Sections 22 and 27, Township 9, Comox Land District, Plan VIP 55092, PID 017-932-335 (Swansong Estate)	350980 E, 5508350 N	91.0

Note: all boreholes are within grid cell CA of UTM grid zone 10U

Results of borehole D-2A have been used, together with those of D-1 and D-3, to develop the geological map of the Dove Creek coal property, and to define coal resources within the coal property.

4.2.1 GEOLOGICAL MAPPING

Geological mapping during the summer 2001 programme was confined to cursory reconnaissance of geologic structure of the immediate vicinities of the borehole sites. With the exception of a low bedrock ridge found along an abandoned logging-railway grade in Winnig's farmyard southwest of borehole D-2, no additional bedrock exposures were found within the Dove Creek property, as indeed none had been expected owing to pervasive thick Drift cover within the property.

Figure 5 presents our current interpretation of the bedrock geology of the Dove Creek coal property, drawing heavily on published work by Cathyl-Bickford and Hoffman (1998) but incorporating new data disclosed by Priority Ventures' exploration work during 2001.

4.2.2 DETAILS OF PRIORITY VENTURES' DRILLING

Of the three boreholes drilled by Priority Ventures, D-1 and D-3 were drilled on the Winnig and Swansong estates within the Dove Creek coal licences; a third hole, D-2A, was drilled on freehold coal lands within the Lloydshaven farm, about 100 metres east of the Dove Creek property. The location of borehole D-2A, within farmland outside the coal licences, was chosen for reasons of easy access and minimal environmental impact as compared with alternative forested locations within the coal licences.

Boreholes D-1, D-2A and D-3 were mostly cored with a truck-mounted diamond-drill, with the exception of near-surface bedrock which was rotary-drilled or percussion-drilled by a water-well rig.

4.2.2.1 BOREHOLE DESIGN

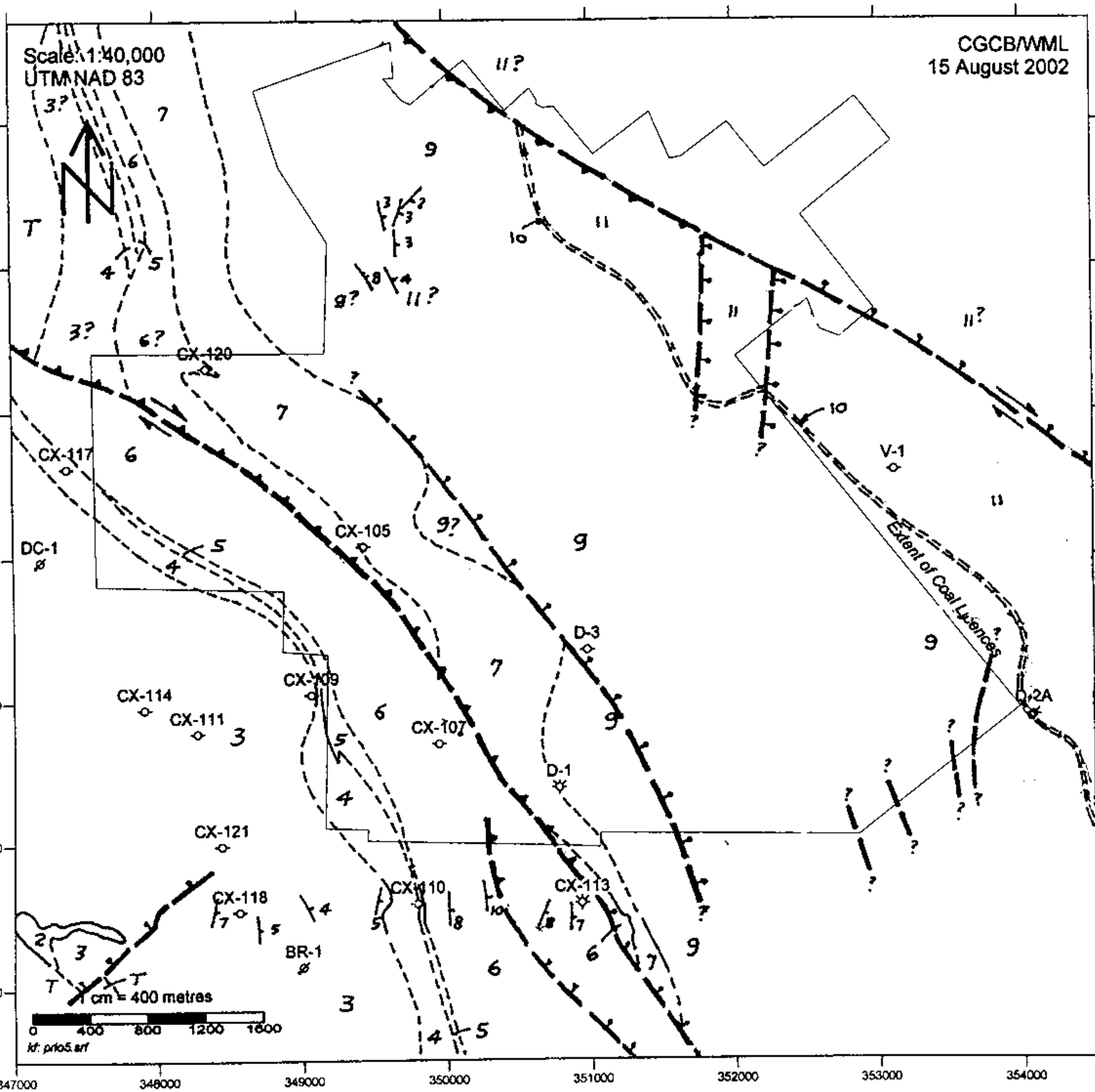
Boreholes were planned and sited to minimise environmental impacts, both at ground surface and in the subsurface. A dual surface-casing design was adopted, entailing installation of a conductor pipe through the Drift and into a nominal 3-metre socket within the underlying rockhead. Once this pipe had been installed, a narrower hole was drilled into the bedrock to a planned base of surface casing. The length of surface casing was selected according to the local depth of developed or potential domestic bedrock aquifers, so that domestic groundwater resources would be protected from invasion by sub-quality deeper groundwater which might be encountered by the boreholes. Once the surface casing was run into its planned depth, both it and the concentric conductor pipe were cemented into place, thus securing them against uplift forces.

The water-well rig, which drilled the near-surface portions of the boreholes, used a diverter and flexible hose to redirect any produced water or gas away from the rig and workers. The diamond-drill, which drilled the main portion of the boreholes, used a small blowout preventer, which afforded the option of shutting-in the borehole, or flowing any produced fluids into a flare pit.

4.2.2.2 NEAR-SURFACE DRILLING BY WATER-WELL RIG

A truck-mounted water-well drilling rig was provided by Fyfe's Drilling of Qualicum, B.C. The rig was mounted on a three-axle crane carrier, with on-board air compressor, sandline and strawline hoists, and light plant. Accompanying the rig was a flatdeck service truck which carried drill-rods and sufficient water tankage to allow for drilling a shallow well, a skid-steer Bobcat loader, and a pickup truck for crew transport. Fyfe's also provided a small holiday-trailer which served as a lunch-room, first-aid station and site office. No difficulties were had in moving Fyfe's equipment to the borehole locations, owing to the good cross-country performance of the drilling rig and other vehicles.

Fyfe's drill was capable of drilling in three modes: top-drive hammer, downhole percussive air-motor, and triconing. Surface conductor pipes and aquifer-protection casings were hammered into place within holes drilled by percussive-drilling or triconing, as appropriate to the formation being drilled. The drill penetrated bedrock and most Drift materials with ease, but encountered difficulties in working through isolated large boulders (to 1.8 metres thick?) of basalt which lay within some of the tills. Owing to buckling of the conductor pipe while drilling through a boulder at the Lloydshaven farm, borehole D-2 was abandoned before reaching bedrock and the rig was skidded over within the drillsite, to successfully drill a replacement hole, D-2A.



Stratigraphic Legend

Mount Washington Intrusive Suite:
T: Anderson Hill Laccolith

Trent River Formation:
11 Willow Point Member
10 Baynes Sound Member
9 Royston Member
7 Browns Member
6 Puntledge Member
5 Cowie Member
4 Cougarsmith Member

Comox Formation:
3 Dunsmuir Member
2 Cumberland Member

Note: regional map-units V, 1 and 8 are not exposed within the map-area

Figure 5: Bedrock geological map of Dove Creek coal property

4.2.2.3 DIAMOND CORE DRILLING

A truck-mounted Boyles Brothers BBS-56 diamond-drill rig was provided by Aggressive Drilling of Kelowna, B.C. The rig was mounted on the back of a ten-tonne straight truck, and incorporated integral main and wireline hoists, mud-pumps, and a small on-board mud-mixing tank. A supplementary in-ground mud-tank and auxiliary pump were used to augment the rig's inherent mud-handling capacities.

Standard HQ core-barrels and rods were used, both in 10-foot (3.05-metre) lengths. A very hard Longyear type 1 coring bit was used; the hard bit was chosen in anticipation of very abrasive sandstones within the Browns and Dunsmuir members. The bit drilled all three boreholes without showing appreciable wear. In addition to coring the main rock section of each borehole, the diamond-drill also cored through the float-shoe and cement left at the bottom of the surface casing by the water-well rig.

4.2.2.4 CORE-LOGGING METHODS

Diamond-drill core was logged on-site as much as possible; this task was markedly eased by the glorious weather during the drilling programme. Core was logged according to general coal-industry practice, by factually logging all cores in terms of recovery, recovered condition, and positions of rock units vis-à-vis drillers' depth-blocks and core-box ends. The Australian dull-bright ("Diessel" or "JCB") method was used for logging coal cores according to their relative proportion of bright and dull bands. The following key was developed for use in logging carbonaceous rocks:

Table 3: Core-logging key for carbonaceous rocks

If core is black, dark brown, or dark brownish-grey, and lacks visible sediment grains ...

- and it has a grey streak ...
    - and it has a distinctly gritty texture when cut, it is a silty mudstone;
    - and it lacks a distinctly gritty texture when cut, it is a mudstone.
- and it has a dark brown streak...
    - and it can be easily split perpendicular to its stratification, and has a low density, it is a canneloid mudstone.
    - and it cannot be easily split perpendicular to its stratification ...
        - and it resists cutting by a wood-chisel parallel to its stratification, it is a carbonaceous mudstone.
        - and it can be cut easily by a wood-chisel parallel to its stratification...
            - and it has a low density, it is a canneloid mudstone.
            - and it has a moderate density, it is a coaly mudstone.
- and it has a black streak ...
    - and it has visible bright bands ...
        - if the bright bands form more than 80% of the rock by length, it is a bright coal.
        - if bright bands form more than 60% but not more than 80% by length, it is a bright banded coal.
        - if bright bands form more than 40% but not more than 60% by length, it is a dull and bright coal.
        - if bright bands form more than 20% but not more than 40% by length, it is a dull banded coal.
        - if the bright bands form not more than 20% by length, it is a dull coal.
    - and it lacks visible bright bands ...
        - and it resists cutting by a wood-chisel parallel to its stratification, it is a canneloid mudstone.
        - and it can be cut easily by a wood-chisel parallel to its stratification...
            - and it has a low density, with an earthy lustre, it is a dull coal.
            - and it has a low density, with a submetallic lustre, it is a dull lustrous coal.
            - and it has a moderate density, it is a stony coal.

4.2.2.5 LESSONS LEARNED DURING DRILLING

Fyfe's water-well rig proved itself to be quite adaptable to changing downhole conditions. Given the option of three different methods of drilling, the rig was able to handle loose granular materials such as water-bearing sand and gravel, without having to resort to the use of drilling-mud or other additives. The tricone dealt comfortably with the shales and siltstones of the Royston and Willow Point Members, but made slower going in the strong, well-cemented Browns sandstone. The water-well rig was able to chop through small boulders, but had difficulty in handling larger boulders, especially if the boulder subsequently shifted position owing to flow of underlying granular materials (as happened at D-2).

The diamond-drill had a claimed depth rating of 760 metres, but had trouble getting below 425 metres (about 1400 feet). The major difficulties lay in the strength and condition of the mainline and wireline, both of which were severely strained by pulling rods or core from great depths. As well, the diamond-drill would have benefited from having a much larger supplementary water-tank and in-ground mud-tank, and a rod-slide along which the drilling rods and casing could be moved up to the rig floor.

The diamond-drill used a great deal of water, and produced a great deal of sludge-rich mud. If larger mud-tanks and an effective mud-screening or filtration system had been available, water consumption (as well as volume of mud requiring trucking and disposal) would have been greatly reduced. Always having enough water on hand, as well as having large enough mud pits, would have allowed for faster penetration rates by the drill, resulting in lowered overall costs.

Diamond core-drilling would in virtually any case have been more expensive than open-hole drilling to comparable depths, but the diamond-drill did provide a superior quality and quantity of samples, allowing for the recognition of diagnostic fossils, faults and formation tops. Core from the diamond-drill was boxed in 1.5-metre (5-foot) triple-row wooden boxes. While these boxes were convenient for the drillers, in that fewer boxes needed to be handled, the less-brawny geological staff found them rather hard to handle in the core-shed. Shorter core-boxes would have definitely eased the task of logging and sampling the cores.

If boreholes are left to stand by themselves awaiting geophysical logging, there is a risk of caving, squeezing or bridging. If reaming of squeezed coals is necessary, they may spontaneously burst into the borehole's annulus (as happened in borehole D-1), possibly accompanied by flows of gas.

4.2.3 COAL ANALYSES

Numerous samples were taken for analysis of the coal quality and coalbed gas content of the Comox coal beds found in the three summer 2001 boreholes. In all, 93 proximate analyses were done by Birtleys in Calgary, Alberta (summarised in **Table 9** and presented in facsimile form in **Annex B**). Based on the results of proximate analyses, three composite samples were assembled for sink-float testing and analyses of clean coal products. Results of these advanced analyses are presented in **Volume 3** of this report.

Two types of samples were taken of coals and associated rock partings from the Dove Creek coal property. The first type of sample, of which 81 samples were collected, was successive ply samples of coals and rock partings within individual coal beds. The second type of sample, of which 12 samples were collected, was canister samples of material which was visually-identified at the wellsite to be predominantly coaly.

4.2.3.1 PLY SAMPLES

Samples of coals and associated rock parting materials were taken from the diamond-drill cores recovered from boreholes D-1 and D-2A. Ply samples were not taken from cores recovered from borehole D-3, as the geological structure appeared during first consideration to be too complex to allow for significant potentially-mineable resources in the borehole's area of influence.

All correlatable coal beds of within boreholes D-1 and D-2A were sampled. Coal beds of immediate or future interest for mining were sampled in greatest detail, including taking samples of immediately-adjacent roof or floor material which might be reasonably expected to form part of the mined product.

Selection of ply sample intervals and the actual sampling of the plies was done in Priority's core warehouse in Courtenay, B.C., under relatively comfortable and well-illuminated conditions. Ply sample intervals were selected to follow the megascopic banding of coal and rock within each coal bed.

4.2.3.2 CANISTER SAMPLES

Since the Dove Creek coals were in-process of being investigated by the B.C. Geological Survey Branch for their contained desorbable gas content (Ryan, 2002), canister samples of some of the coals from boreholes D-1, D-2A and D-3 were taken at the drillsite as soon as practicable after retrieval of the core.

Selection of sample intervals was made by visual examination of the newly-cut core, to identify predominantly-coaly sections of core which would be suitable for desorbtion tests. These sections were then cut free with a wood chisel (if the core was unjacketed) or with a hacksaw (if the core was jacketed in a plastic tube), and the entire selected section placed within a canister.

4.2.4 GEOPHYSICAL LOGGING

A basic suite of downhole geophysical logs, comprising gamma ray/density/caliper, quad neutron/dual gamma, resistance and deviation logs, were run in Priority Ventures' three boreholes. Details of geophysical logs for each hole, and their respective enclosure numbers within **Annex A**, are presented below as **Table 4**.

Table 4: Geophysical logs run in summer 2001 boreholes

BOREHOLE	LOG ACRONYM AND NAME	VERTICAL SCALE	DEPTH RANGE	ENCLOSURE
				see Annex A-1:
D-1	GDC: Gamma/density/caliper	1:200	1.0 to 355.3	A-1
"	CBMM: Quad neutron/dual gamma	1:200	35.0 to 356.5	A-2
"	DIR: Deviation	1:200	20.0 to 355.0	A-3
				see Annex A-2:
D-2A	GDC: Gamma/density/caliper (uphole)	*1:240 (note below)*	1.0 to 520.0	A-4
"	GDC: Gamma/density/caliper (downhole)	1:200	1.0 to 519.0	A-5
"	CBMM: Quad neutron/dual gamma	1:200	180.0 to 521.2	A-6
"	RES: Resistance	1:200	180.0 to 520.0	A-7
"	DIR: Deviation	1:200	20.0 to 520.0	A-8
				see Annex A-3:
D-3	Gamma/density/caliper	1:200	1.0 to 327.5	A-9
"	CBMM: Quad neutron/dual gamma	1:200	40.0 to 329.7	A-10
"	RES: Resistance	1:200	40.0 to 328.5	A-11
"	DIR: Deviation	1:200	20.0 to 320.0	A-12

Note: uphole GDC log of borehole D-2A was run as a field print at 1:240 scale at client's request, for use in correlation with columnar sections drawn at that scale. The uphole log was not included in Roke's final presentation of the log suite for D-2A.

4.2.5 TRENCHES, PITS AND ADITS

No trenches or adits were dug during the summer 2001 exploration programme. Mud pits were dug at each drill site as an integral part of drilling (and ultimately backfilled as part of the site-restoration process), and the opportunity was taken to observe the remarkable range in sizes of cobbles and boulders within the near-surface Drift. No pits were dug for any other purpose.

4.2.6 ROAD CONSTRUCTION AND MAINTENANCE

Existing roads were used for virtually all the summer 2001 exploration activities, and no new roads were built during the programme.

Access to borehole D-2A required cross-country driving, traversing the open field of Lloydshaven Farm. The access route across the field was chosen to keep to the high ground, avoiding the chance of vehicular bogging during wet weather (a moot point since the weather was fine and dry throughout the time that the field was being driven upon).

An array of vehicles, which ranged in size and ground pressure from a bobcat tractor and the geologist's elderly Toyota sedan through to the water-well rig, diamond-drill and heavily-laden water trucks, crossed the field without forming ruts. In the interests of undoing any soil compaction which might have taken place, the farmer harrowed the drillsite and access route and planted it to grass, thus restoring it to agricultural production.

4.3 RECLAMATION

In keeping with the requirements of the provincial *Mines Act*, all three of the summer 2001 drillsites were properly reclaimed following cementing of each borehole. All sites were cleared of junk, trash and debris left behind by the drillers. Not much of this refuse was found, owing to the drillers having a solid 'clean as you go' attitude. Each site was then restored to original use and condition, as follows:

- Borehole D-1 (drill site 'C'): mud pit and flare pit backfilled and compacted, and casing cut off below ground. Site was planted to fir trees by the landowner's son, as desired by the landowner.
- Boreholes D-2 and D-2A (drill site 'B'): mud pit backfilled and compacted, and casings cut off below plough depth. Harrowed and seeded to grass by the landowner; successfully cropped during the spring of 2002. There was no flare pit at this site, the flare line being simply run out into the field, with a drum below its end.
- Borehole D-3 (drill site 'A'): mud pit and flare pit backfilled and compacted, and casing cut off below ground. Gravel was spread over working area, to restore site to original use as motocross parking lot.

5 COAL RESOURCES

Results of the 2001 exploration programme, taken together with results of earlier drilling by Canadian Collieries and Weldwood, serve as the basis for coal resources estimates covering the Dove Creek coal licences. Coal resource calculations are based on borehole intersections of correlatable coal beds only, as presented in **Table 5.**

Coal resources at Dove Creek are hosted by the Cumberland and Dunsmuir members of the Comox Formation. Coal is not known to outcrop within the Dove Creek coal licences, but may subcrop below Drift along the extreme southwestern margin of the property.

5.1 COAL DEPOSIT MODEL

Coal deposits, for which exploration has been conducted in the Dove Creek area, are thought to have formed through coalification of coastal-plain peat deposits, which were deposited in sheltered environments on the north-eastern (paleo-landward) sides of basement paleohills. Although peat probably accumulated in other positions relative to paleohills, the north-eastern sides of the paleohills are regarded as being most conducive for the formation of thick peats, unbroken by intercalations of sediment brought into the peat-forming mires by major coastal storms or by seismic sea waves.

This deposit model was first suggested by Buckham (1947) to explain the pattern of thick coal bodies in the Wellington coal bed of the Nanaimo coalfield, farther south on Vancouver Island. In contrast to present understanding, Buckham considered that the ocean was situated to the northeast of the coalfield, under the present Georgia Strait. More recent paleocurrent studies of the Comox Formation suggest that, in the Comox coalfield during the deposition of the Comox coal-measures at least, the ocean was situated to the southwest (Mustard, 1994).

5.2 HISTORICAL COAL PRODUCTION

No coal is known to have been produced from the Dove Creek coal property. The closest known coal-mine workings are several prospect tunnels driven into coal outcrops within the canyon of Browns River (Daniels, 1920).

5.3 HISTORICAL COAL RESOURCE ESTIMATES

Only two historical coal resource estimates are known to have been made of the Dove Creek area, by H.A. Rose (1924) and by F.W. Gray (1952), both for Canadian Collieries (Dunsmuir) Ltd.

5.3.1 H.A. ROSE'S 1924 ESTIMATE

Rose's estimate covers a coal-bearing area of 10 square miles under the title of 'Browns River Dove Creek Area', based on Canadian Collieries' boreholes along with coal outcrops on Browns River, Dove Creek and Anderson Creek. Although the estimate was not done to modern standards, Rose reported 'possible coal' of 40 million tons (long vs. short tons not stated) from a 5-foot coal bed, and 52.3 million tons from several 1- to 3-foot coal beds.

5.3.2 F.W. GRAY'S 1952 ESTIMATE

Gray's estimate covers an area of 1200 acres under the title of 'Dove Creek – Brown R. Area', within which no attempt was made to designate particular coal beds. Although again the estimate was not done to modern standards, Gray reported 'possible reserves' of 7.35 million short tons from 3.5 feet of coal.

borehole	utm 83 e	utm 83 n	symbol	collar-elev	Drift	rockhead
BR-1	349001	5506152	107	123.44	14.02	109.42
CX-105	349431	5509072	91	79.25	27.13	52.12
....	reverse	fault	@218.85			
CX-105	349431	5509072	91	79.25		
CX-107	349946	5507702	91	87.48	5.18	82.3
CX-109	349066	5508047	91	92.96	10.97	81.99
CX-110	349791	5506582	91	82.3	3.05	79.25
CX-111	348276	5507782	91	110	8.53	101.47
CX-113	350931	5506582	85	53.34	5.18	48.16
....	fault	@313.33				
CX-113	350931	5506582	85	53.34		
CX-114	347911	5507952	91	112.78	2.13	110.65
CX-117	347381	5509622	91	102	7.62	94.38
CX-118	348561	5506532	91	112.78	3.05	109.73
CX-120	348351	5510302	91	93	4.57	88.43
CX-121	348441	5506992	91	132.59	14.02	118.57
D-1	350780	5507390	85	91.5	7.3	84.2
....	fault	@214.39				
D-1	350780	5507390	85	91.5		
D-2A	354080	5507886	85	18	27.8	-9.8
....	fault	@202.65				
D-2A	354080	5507886	85	18		
D-3	350980	5508350	91	79.5	12.5	67
....	fault	@70.9				
D-3	350980	5508350	91	79.5		
DC-1	347191	5508982	107	120.7	6.2	114.5
V-1	353121	5509582	91	29	32.92	-3.92

WLPT	OYST	BYNS	RYST	TSAB	BRNS	PUNT	COWI	COUG	UDUN	borehole	X-roof	X-gross	X-net	XL-roof	XL-gross	XL-net	MDUN	Y-roof	Y-gross	Y-net	YL-roof	YL-gross	YL-net	LDUN	Z-roof	Z-gross	Z-net	1R-roof	1R-gross	1R-net
									starts	BR-1	24.69	0.91	0.55	31.39	0	0	52.27	52.27	0.61	0.61	54.83	0	0	56.8	73.27	1.4	0.88	NP	0	0
					starts	29.26	157.58	159.41	164.59	CX-105	194.9	1.47	0.84	197.21	0.1	0.1														
										....																				
									starts	CX-105	219.76	0.2	0.2	220.68	0.15	0.15	237.44	238.3	0.61	0.51	NP	0	0	238.81	266.17	0.43	0.43	289.76	0.91	0.71
						starts	13.72	29.57	50.6	CX-107	74.98	0.3	0.3	NP	0	0	98.76	100.58	0.3	0.3	103.33	0	0	103.33	135.64	0.46	0.46	NP	0	0
									starts	CX-109	24.08	0	0	NP	0	0	48.16	48.16	0.91	0.91	NP	0	0	49.67	76.35	0	0	NP	0	0
						starts	NP	NR	52.12	CX-110	55.63	1.14	0.59	NP	0	0	84.15	84.3	0.25	0.25	86.13	0.25	0.25	86.39	106.05	0.97	0.69	123.75	0	0
									starts	CX-111				starts@floo			35.36	35.66	0.3	0.3	NP	0	0	35.97	56.79	0.82	0.41	75.29	0	0
						starts	NP	NR	128.02	CX-113	167.03	0.3	0.3	NP	0	0	193.55	193.55	0.3	0.3	197.36	0.33	0.33	197.69	218.18	1.19	1.07	231.65	0	0
										....																				
										CX-113																				
										CX-114														starts	21.95	0.36	0.36	NP	0	0
								starts	26.21	CX-117	56.39	0.56	0.33	NP	0	0	94.59	94.59	0.81	0.71	NP	0	0	95.4	106.98	1.17	0.63	144.17	0	0
										CX-118											starts@floo			starts	20.35	0.89	0.89	NP	0	0
						starts	NP	NR	78.64	CX-120	NP	0	0	NP	0	0	158.5	162.41	0.56	0	NP	0	0	165.1	187.15	0	0	NP	0	0
									starts	CX-121	NP	0	0	20.42	1.01	0.71	39.57	39.57	0	0	NP	0	0	42.92	71.27	0.2	0.2	NP	0	0
			starts	NP	8.55	24.7	139.35	168.6	179.1	D-1	206.03	0.59	0.01	211.58	0.03	0.03														
									starts								230.56	230.56	0.74	0.305	235.63	0.35	0.33	235.98	254.13	1.57	1.09	274.07	0.57	0.54
starts	NP	28.55	33.6							D-2A																				
										....																				
			starts	NP	218.9	315.1	362.89	380.1	386.46	D-2A	416.4	1.23	0.48	424.75	0.63	0.55	443	443	0.55	0.53	448.31	0.03	0.03	448.81	460.38	1.77	0.98	477.14	1.56	1.08
			starts	NP	23					D-3																				
										....																				
						starts	183.35	196.6	208.1	D-3	236.12	1.46	0.52	NP	0	0	255.39	255.52	0.19	0.12	259.96	0.27	0.27	260.27	271.5	0.15	0.15	295.98	0.6	0.6
									starts	DC-1	19.14	0.21	0	19.96	1.01	0.76	36.9	37.25	0.27	0.27	38.77	1.31	1.01	42.5	60.14	2.5	0.58	76.66	0.18	0.18
starts	NR	124.05	129.84	NP	292.61	339.24	369.42	413.61	420.62	V-1	483.41	0	0	NP	0	0	NR	NP	0	0	NP	0	0	NR	541.32	0	0	569.37	0.3	0.3

borehole	1-roof	1-gross	1-net	1L-roof	1L-gross	1L-net	CUMB	2R-roof	2R-gross	2R-net	2-roof	2-gross	2-net	2A-roof	2A-gross	2A-net	3-roof	3-gross	3-net	3A-roof	3A-gross	3A-net	4-roof	4-gross	4-net	BENS	BSMT	TD	borehole
BR-1	93.94	0.4	0.4	104.24	0	0	123.7	123.84	0.24	0.24	131.89	1.28	0.98	153.38	0.21	0.21	171.69	0.67	0.67	196.35	3.02	2.23	NP	0	0	NP	212.81	218.5	BR-1
CX-105																													CX-105
....																													....
CX-105	291.29	0.38	0.38	NP	0	0	306.63	306.73	0.84	0.53	310.82	0.66	0.3	320.04	0.36	0.36	337.62	1.73	0.86	NP	0	0	NP	0	0	345.9	349.86	359.61	CX-105
CX-107	156.97	1.07	1.07	NP	0	0	NP	NP	0	0	NP	0	0	NP	0	0	NP	0	0	NP	0	0	NP	0	0	NP	161.54	168.25	CX-107
CX-109	NP	0	0	NP	0	0	NP	NP	0	0	NP	0	0	NP	0	0	NP	0	0	NP	0	0	NP	0	0	NP	85.34	88.09	CX-109
CX-110	128.47	0.46	0.46	131.98	0.38	0.27	150.27	150.27	0.23	0.23	159.21	1.01	0.89	179.88	0.3	0.3	199.03	0.3	0.3	220.52	3.2	2.31	NP	0	0	NP	227.99	232.87	CX-110
CX-111	81.53	0.56	0.36	82.81	0.36	0.28	117.5	117.5	0.08	0.08	121.31	1.52	0.76	DNR	DNR	DNR	DNR	DNR	DNR	DNR	DNR	DNR	DNR	DNR	DNR	DNR	DNR	141.43	CX-111
CX-113	237.67	0.46	0.46	NP	0	0	265.48	265.48	0.38	0.38	276.45	1.96	1.4	303.28	0.46	0.46													CX-113
....																													....
CX-113							starts										316.28	0.71	0.63	340.61	1.68	0.76	NP	0	0	NP	346.25	353.57	CX-113
CX-114	48.69	0.48	0.38	49.78	0.42	0.25	73.76	76	0.36	0.36	87.43	0.28	0.28	106.53	0.48	0.41	130	0.18	0.18	162.15	1.32	0.79	164.44	0.63	0.41	NP	167.94	170.99	CX-114
CX-117	161.24	0.46	0.46	164.59	0.3	0.3	183.72	184.46	0.2	0.2	200.18	0.69	0.69	217.07	0.46	0.33	229.97	0.25	0.25	261.21	0.46	0.46	NP	0	0	NP	270.05	274.62	CX-117
CX-118	40.54	0	0	57.91	0	0	77.42	77.42	0.51	0.51	85.65	1.75	0.81	104.09	1.09	0.55	120.65	0.59	0.59	151.39	2.39	1.55	165.56	0.53	0.53	NP	170.59	177.75	CX-118
CX-120	213.06	0.3	0	NP	0	0	238.35	NP	0	0	262.59	1.07	1.07	265.48	0.3	0.3	300.69	3.05	0	328.27	0.76	0.76	349.45	0.3	0.3	DNR	DNR	396.7	CX-120
CX-121	91.26	0.18	0.18	108.76	0	0	119.73	119.73	0.15	0.15	126.24	0.74	0.59	144.73	0	0	156.92	0.43	0.2	187.7	0	0	187.1	0	0	NP	192.28	195.32	CX-121
D-1																													D-1
....																													....
D-1	276.2	0.38	0.22	NP	0	0	290.97	291	0.35	0.35	298.85	1.35	0.9	325.28	1.25	0.51	347.49	1.52	0.6	NP	0	0	NP	0	0	NP	351.55	360.9	D-1
D-2A																												523.3	D-2A
....																													....
D-2A	484.65	1.77	1.19	490.73	0.49	0.47	503.95	503.95	0.62	0.55	512.38	0.28	0.28	NP	0	0	NP	0	0	NP	0	0	NP	0	0	NP	515.34	523.3	D-2A
D-3																													D-3
....																													....
D-3	297.5	0.56	0.51	298.88	0.35	0.35	309.4	309.4	0	0	314.45	0.93	0.315	NP	0	0	NP	0	0	NP	0	0	NP	0	0	NP	315.98	331.3	D-3
DC-1	84.55	0.49	0.49	91.01	0.3	0.3	111.56	112.07	0.4	0.4	114.79	0.98	0.67	126.34	0.4	0.4	147.52	3.66	1.37	162.21	0.24	0.24	NP	0	0	172.82	175.26	182	DC-1
	577.29	0.66	0.51	586.13	0.36	0.36	598.47	598.47	0.46	0.23	606.5	1.88	0.94	623.32	0.3	0.3	632.76	1.22	0.61	650.75	0.3	0	653.19	1.22	1.22	DNR	DNR	655.62	V-1

Table 5:

Stratigraphic data summary for Dove Creek coal property

Using this table:

All numeric values are in metres.

Information for each borehole is presented in stratigraphic order from left to right. Successively-deeper stratigraphic horizons are shown to the right. Borehole location and elevation data are given at the extreme left side of the table, and total depth of each borehole is given at the extreme right.

Some boreholes are faulted. Only 'major' faults are shown in this table: this is a subjective selection, and reference should be made to individual borehole records for information concerning other faults which are interpreted to have 'minor' stratigraphic offset.

Explanation of symbols:

DNR: borehole did not reach this horizon
NP: this horizon is not present
NR: this horizon is not recognised

.....: fault position marker
TD: total depth of the borehole

Stratigraphic unit abbreviations:

WLPT: Willow Point Member
OYST: Oyster River Member
BYNS: Baynes Sound Member
TSAB: Tsable Member
BRNS: Browns Member
PUNT: Puntledge Member
COWI: Cowie Member

COUG: Cougarsmith Member
UDUN: Dunsmuir Member
MDUN: Middle division of Dunsmuir Mb.
LDUN: Lower division of Dunsmuir Mb.
CUMB: Cumberland Member
BENS: Benson Member
BSMT: Basement (Karmutsen Formation)

Coal bed nomenclature:

Coals in the Dunsmuir Member are lettered progressively downward from X through Z, with the No.1 group of coals at the member's base. Coals in the Cumberland Member are numbered progressively downward from No.2 through No.4. 'R' and 'L' refer to 'Rider' and 'Lowerr' respectively.

5.4 SUMMARY OF RESOURCE EVALUATION

The procedure set forth in GSC Paper 88-21 (Hughes *et al*, 1989) was used, with some modifications as discussed below, to define coal resources within the Dove Creek coal property.

Estimates have been made for four cases:

- **Case A** for underground-mineable coals of immediate interest;
- **Case B** for underground-mineable coals of future interest;
- **Case C** for coals of interest for isolated-bed coalbed gas development; and
- **Case D** for coals of interest for multiple-zone coalbed gas development.

Estimates for each case were constrained as set forth in **Table 6**, below. The resource estimates for each case are presented as **Tables 7-A, 7-B, 7-C and 7-D**.

To summarise, measured and indicated coal resources of immediate interest for underground mining (**Case A**) total 2.3 megatonnes; measured and indicated coal resources of future interest for underground mining (**Case B**) total 9.2 megatonnes; , measured and indicated coal resources of immediate interest for isolated-bed coalbed gas development (**Case C**) total 26.9 megatonnes; measured and indicated coal resources of immediate interest for multiple-zone coalbed gas development (**Case D**) total 40 megatonnes.

Table 6: Coal resource evaluation constraints:

Constraints	***Case A**: Resources of immediate interest for underground mining*	***Case B**: Resources of future interest for underground mining*	***Case C**: Resources of immediate interest for isolated-bed coalbed gas development*	***Case D**: Resources of immediate interest for multiple-zone coalbed gas development*
Coal-rock thickness ratio	2:1 (66⅔% by thickness)	1.5:1 (60% by thickness)	1:1 (50% by thickness)	
Maximum rock parting thickness	50 cm	50 cm	65 cm	(at least one coal within
Minimum coal bed thickness	60 cm	45 cm	30 cm	the zone must satisfy
Minimum aggregate seam thickness	150 cm	90 cm	60 cm	**Case C** criteria)
Minimum cover depth	30 m	30 m	150 m	150 m
Maximum cover depth	600 m	900 m	800 m	800 m

Source: modified after GSC Paper 88-21 by Hughes and others (1989). The following changes have been made from the standard set forth in Paper 88-21: For Case A and Case B, maximum included rock parting thickness has been increased to 50 cm from the GSC-recommended 30 cm; this follows recent mining practice on Vancouver Island (Cathyl-Bickford, 1992); Cases C and D are not covered in GSC Paper 88-21, but represents constraints thought by the authors to be realistic for gas development.

5.4.1 COAL RESOURCE BLOCKS

Coal resource blocks were defined by drawing polygons around each borehole, such that the boundaries of adjoining polygons are straight lines equidistant between pairs of boreholes. Each polygon was then subdivided according to distance from the nearest borehole, with successively-greater distances ascribed to measured (0 to 450 m), indicated (450 to 900 m) and inferred (900 to 2400 m) assurance-of existence of coal resources.

Each block was given a unique serial number, as shown on **Figure 6**. Blocks 1 through 3, although numbered on the map, are excluded from consideration for coal resources, on the grounds of excessive (greater than 2400 m) distance from points of measurement.

Figures 6-A and **6-B** depict the polygons which are interpreted to contain coal resources of interest for underground coal-mining and coalbed gas development, respectively, within the Dove Creek property.

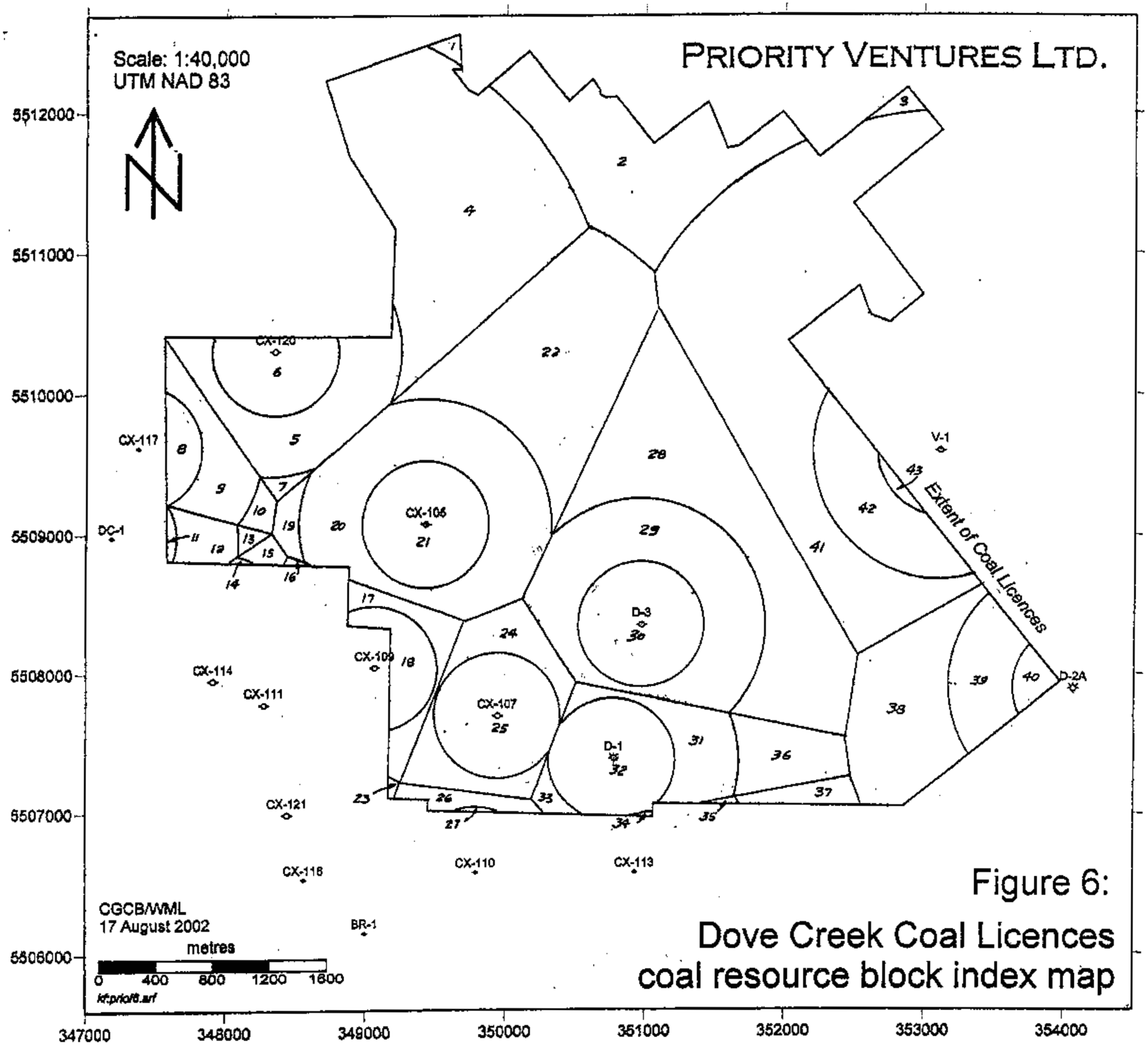


Figure 6:

Dove Creek Coal Licences coal resource block index map

Level of assurance:	Distance from control point:
Measured	0 to 450 m
Indicated	450 to 900 m
Inferred	900 to 2400 m

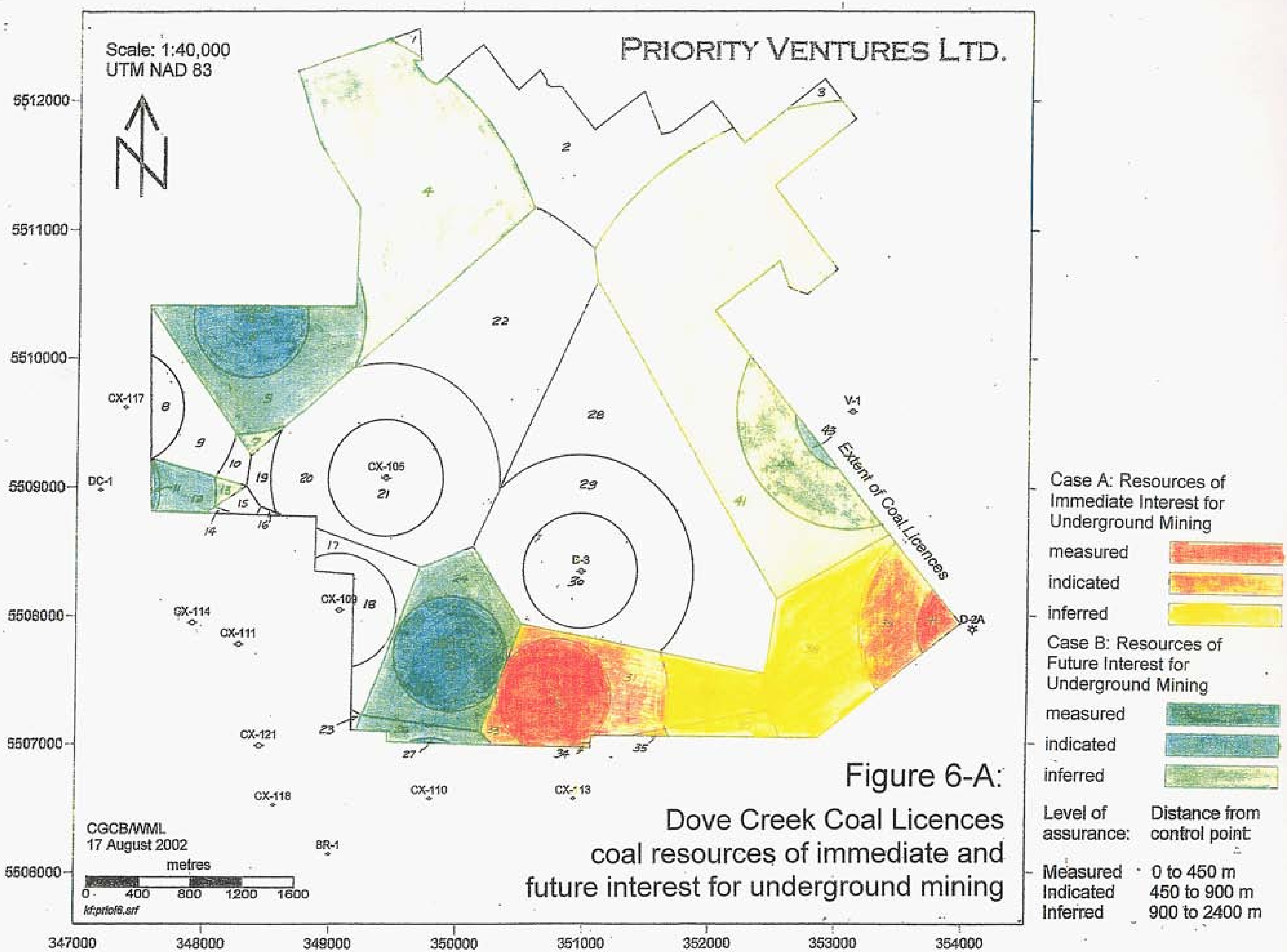


Figure 6-A:
Dove Creek Coal Licences
coal resources of immediate and future interest for underground mining

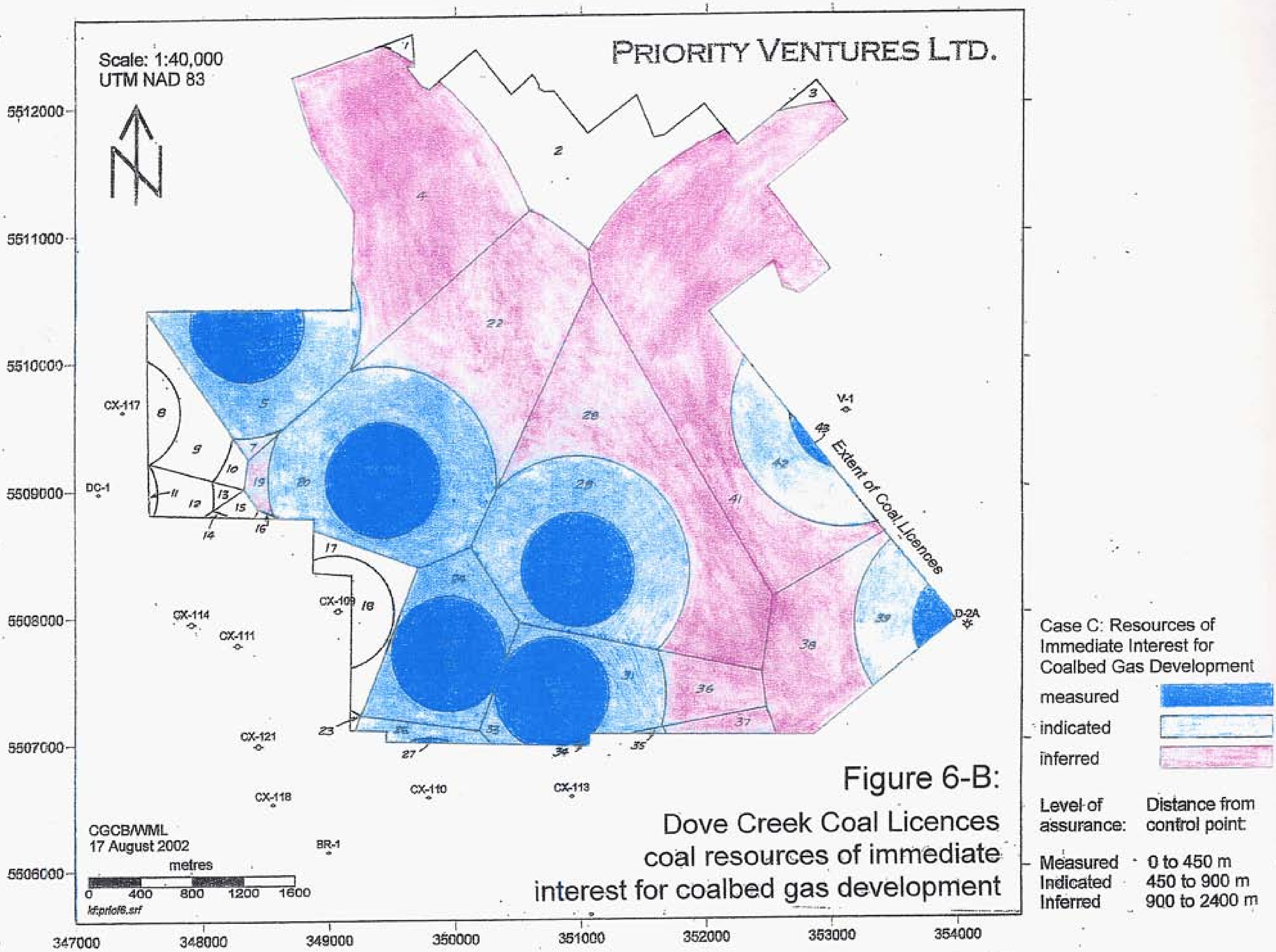


Figure 6-B:

Dove Creek Coal Licences coal resources of immediate interest for coalbed gas development

5.4.2 METHOD OF RESOURCE CALCULATION

Coal resources for each block were determined by:

a) multiplying the net thickness of coal (in metres) by

b) the area of the block (in hectares)

c) by a specific gravity factor (assumed to be 1.4 tonnes per cubic metre)

d) by 10,000 (dimensional conversion from hectares to square metres).

Each of these constituent numbers were determined as follows:

a) net coal thickness was taken from core descriptions and geophysical logs (where available) for each borehole. Bulk density logs were preferred for geophysical interpretation, supplemented by gamma-ray and electric logs where available. Coalbed thickness were interpreted from density logs by taking the midpoint of inflection zones (Hoffman and others, 1982).

b) area of blocks was calculated by overlaying a transparent grid of squares of known area over each block, counting the squares and fractions thereof, and then converting the number of squares to an area in hectares.

c) specific gravity factor was determined by constructing a step-plot of all single-lithology coal and rock samples from Priority's boreholes (**Chart 1**) and calculating the mean and median ash yield of all coals which were correctly identified as such. From the mean and median ash yield, an entry point of 20%, thought to represent a 'typical' Dove Creek coal, was applied to a crossplot (**Chart 2**) of measured specific gravity of several coal and rock samples from Priority Ventures' boreholes against the ash yield of the samples. From the crossplot, a 'typical' coal was thus estimated to have a specific gravity of 1.40 tonnes per cubic metre.

d) conversion from hectares to square metres was by simple unit conversion: 1 hectare = 10,000 square metres.

Table 7-A: Coal resources of immediate interest for underground mining at Dove Creek

Constraints:
minimum gross thickness 1.50 metres; minimum net:gross thickness ratio 1:1.5, maximum rock parting 0.50 m

Assumption:
specific gravity 1.40 Te/m³

Block	Borehole	Coal bed	Net coal (m)	Area (Ha)	Measured resource (Te)	Indicated resource (Te)	Inferred resource (Te)
31-d	D-1	Z	1.09	32.5		495,950	
32-m	D-1	Z	1.09	62.3	950,698		
33-d	D-1	Z	1.09	4.9		74,774	
34-m	CX-113	2	1.40	0.4	7,840		
35-d	CX-113	2	1.40	0.9		17,640	
36-f	D-1	Z	1.09	34.5			526,470
37-f	CX-113	2	1.40	12.0			235,200
38-f	D-2A	1R	1.08	89.4			1,351,728
39-d	D-2A	1R	1.08	41.2		622,944	
40-m	D-2A	1R	1.08	10.7	161,784		
					1,120,322	1,211,308	2,113,398
				Total (Te):	2,331,630		

assurance:
m: measured
d: indicated
f: inferred

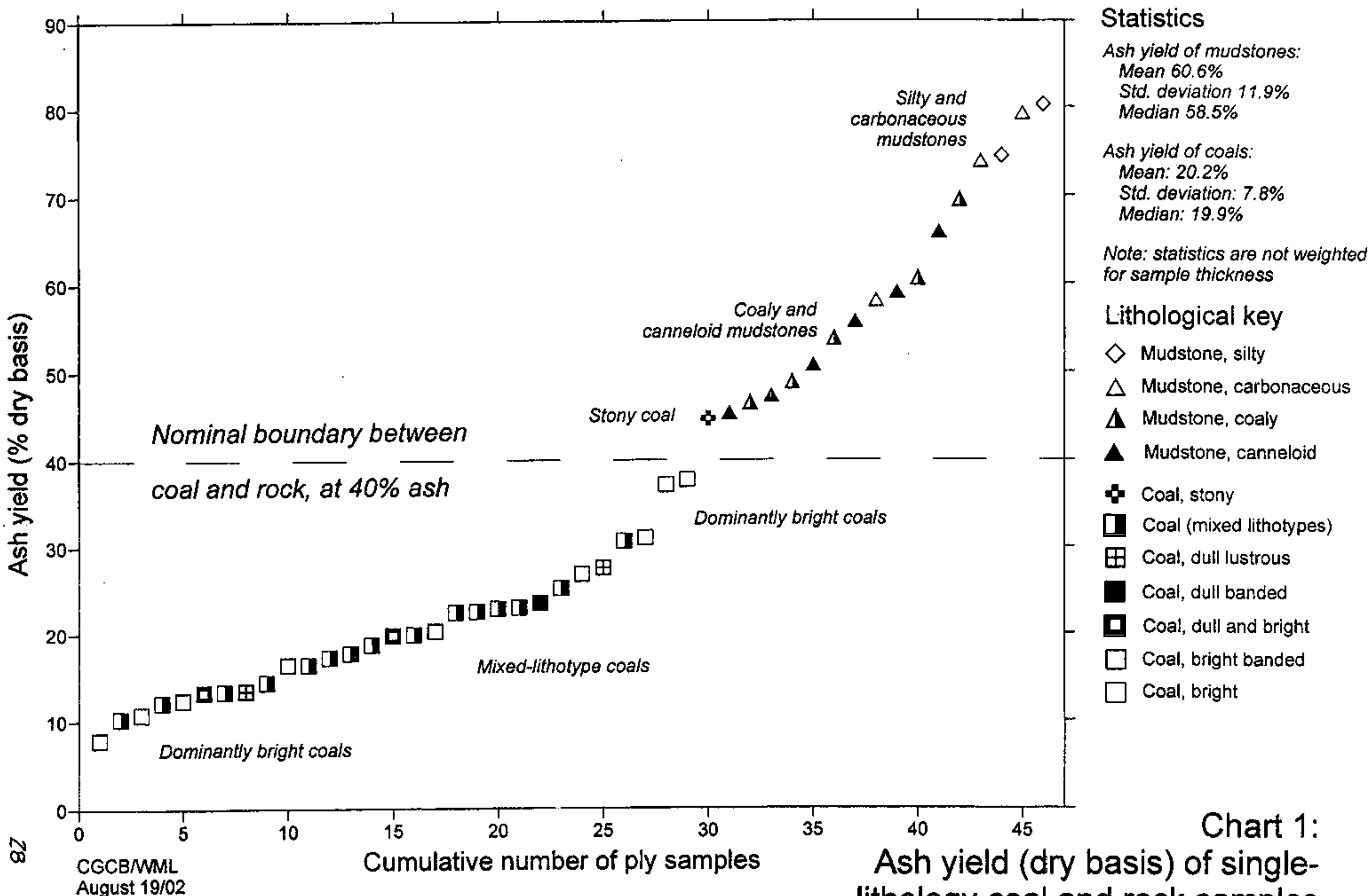


Chart 1:
Ash yield (dry basis) of single-lithology coal and rock samples from Dove Creek D-1 and D-2A

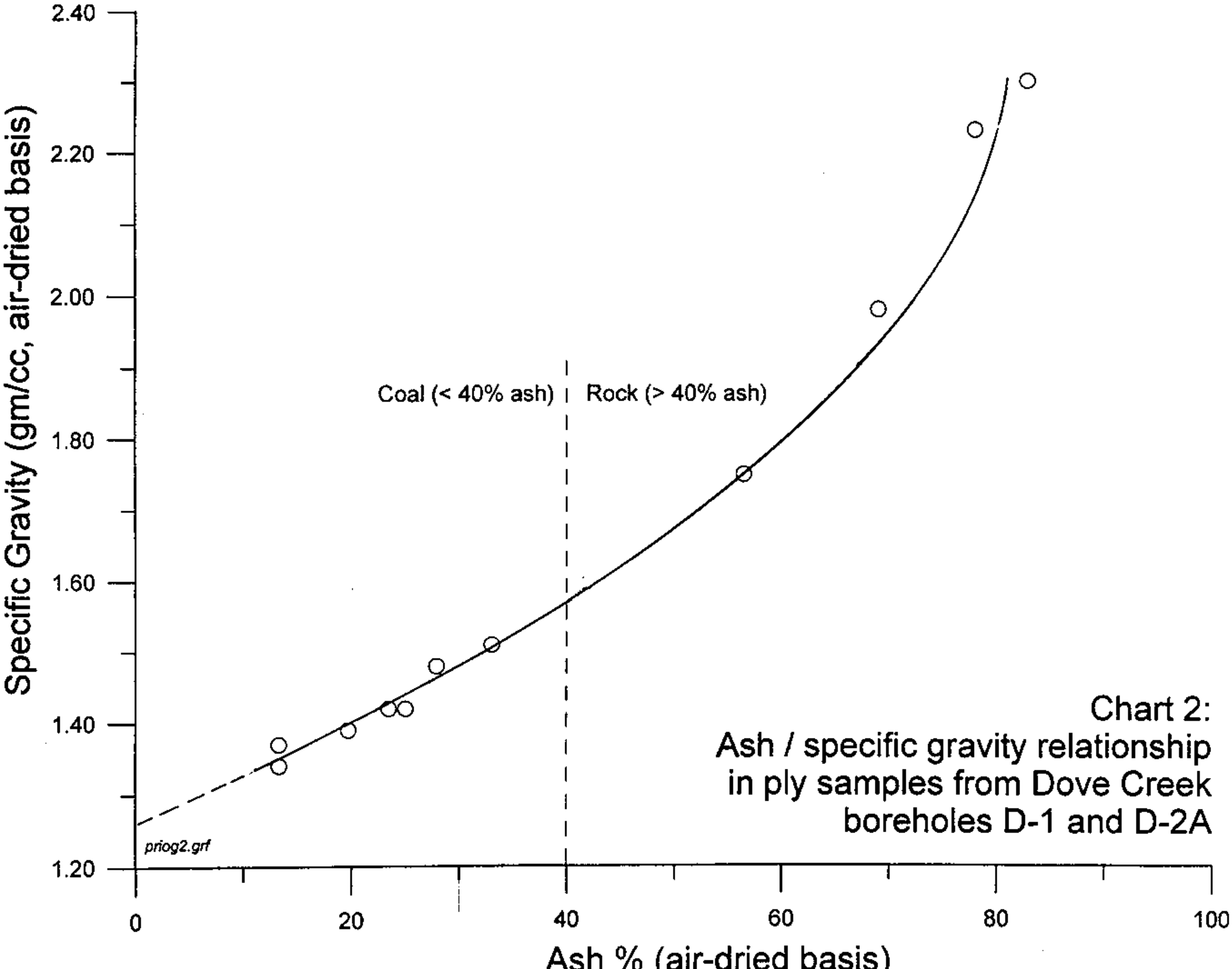


Chart 2:
Ash / specific gravity relationship
in ply samples from Dove Creek
boreholes D-1 and D-2A

Table 7-B: Coal resources of future interest for underground mining at Dove Creek

Constraints:
minimum gross thickness 0.90 metres; minimum net:gross thickness ratio 3:5, maximum rock parting 0.50 m

Assumption:
specific gravity 1.40 Te/m³

Block	Borehole	Coal bed	Net coal (m)	Area (Ha)	Measured resource (Te)	Indicated resource (Te)	Inferred resource (Te)
5-d	CX-120	2	1.07	71.7		1,074,066	
6-m	CX-120	2	1.07	39.2	587,216		
7-f	CX-120	2	1.07	3.1			46,438
11-m	DC-1	2	0.67	2.4	22,512		
12-d	DC-1	2	0.67	14.7		137,886	
13-f	DC-1	2	0.67	2.5			23,450
24-d	CX-107	1	1.07	49.9		747,502	
25-m	CX-107	1	1.07	63.2	946,736		
26-d	CX-110	2	0.89	11.5		143,190	
27-m	CX-110	2	0.89	0.4	4,984		
31-d	D-1	Z	1.09	32.5		495,950	
32-m	D-1	Z	1.09	62.3	950,698		
33-d	D-1	Z	1.09	4.9		74,774	
31-d	D-1	2	0.90	32.5		409,500	
32-m	D-1	2	0.90	62.3	784,980		
33-d	D-1	2	0.90	4.9		61,740	
34-m	CX-113	2	1.40	0.4	7,840		
35-d	CX-113	2	1.40	0.9		17,640	
36-f	D-1	Z	1.09	34.5			526,470
36-f	D-1	2	0.90	34.5			434,700
37-f	CX-113	2	1.40	12.0			235,200
38-f	D-2A	1R	1.08	89.4			1,351,728
39-d	D-2A	1R	1.08	41.2		622,940	
40-m	D-2A	1R	1.08	10.7	161,784		
38-f	D-2A	1	1.19	89.4			1,489,404
39-d	D-2A	1	1.19	41.2		686,392	
40-m	D-2A	1	1.19	10.7	178,262		
41-f	V-1	4	1.22	332.2			5,673,976
42-d	V-1	4	1.22	63.1		1,077,748	
43-m	V-1	4	1.22	2.4	40,992		
					3,686,004	5,549,432	9,781,366
				Total (Te):	9,235,436		

Assurance:
m: measured
d: indicated
f: inferred

Table 7-C: Coal resources of immediate interest for isolated-bed coalbed gas development at Dove Creek

Constraints: minimum net coal: 0.50 m; minimum net:gross ratio of 1:2 (50% net coal by thickness); minimum depth at point of measurement: 150 m; maximum depth at point of measurement: 800 m

Assumption: specific gravity 1.40 Te/m^3

Block	Borehole	Coal beds	Net coal (m)	Area (Ha)	Measured coal resource (Te)	Indicated coal resource (Te)	Inferred coal resource (Te)
5-d	CX-120	2, 3A	1.83	71.7		1,836,954	
6-m	CX-120	2, 3A	1.83	39.2	1,004,304		
7-f	CX-120	2, 3A	1.83	3.1			79,422
8-m	CX-117	2 (only)	0.69	16.7	161,322		
9-d	CX-117	2 (only)	0.69	35.0		338,100	
10-f	CX-117	2 (only)	0.69	6.0			57,960
14-d	CX-114	3A (only)	0.79	0.4		4,424	
15-f	CX-114	3A (only)	0.79	4.2			46,452
19-f	CX-105	X, Y, 1R, 2R, 3	3.13	6.2			271,684
20-d	CX-105	X, Y, 1R, 2R, 3	3.13	134.2		5,880,644	
21-m	CX-105	X, Y, 1R, 2R, 3	3.13	63.6	2,786,952		
22-f	CX-105	X, Y, 1R, 2R, 3	3.13	162.5			7,120,750
24-d	CX-107	1 (only)	1.07	49.9		747,502	
25-m	CX-107	1 (only)	1.07	63.2	946,736		
26-d	CX-110	2, 3A	3.20	11.5		515,200	
27-m	CX-110	2, 3A	3.20	0.4	17,920		
28-f	D-3	1R, 1	1.11	202.6			3,148,404
29-d	D-3	1R, 1	1.11	129.2		2,007,768	
30-m	D-3	1R, 1	1.11	63.6	988,344		
31-d	D-1	Z, 1R, 2	2.23	32.5		1,014,650	
32-m	D-1	Z, 1R, 2	2.23	62.3	1,945,006		
33-d	D-1	Z, 1R, 2	2.23	4.9		152,978	
34-m	CX-113	Z, 2, 3, 3A	3.86	0.4	21,616		
35-d	CX-113	Z, 2, 3, 3A	3.86	0.9		48,636	
36-f	D-1	Z, 1R, 2	2.23	34.5			1,077,090
37-f	CX-113	Z, 2, 3, 3A	3.86	12.0			648,480
38-f	D-2A	XL, Y, Z, 1R, 1, 2R	4.88	89.4			6,107,808
39-d-	D-2A	XL, Y, Z, 1R, 1, 2R	4.88	41.2		2,814,784	
40-m	D-2A	XL, Y, Z, 1R, 1, 2R	4.88	10.7	731,024		
41-f	V-1	1,2,3,4	3.28	332.2			15,254,624
42-d	V-1	1,2,3,4	3.28	63.1		2,897,552	
43-m	V-1	1,2,3,4	3.28	2.4	110,208		
					8,713,432	18,259,192	33,812,674
			Total (Te):		26,972,624		

assurance:

m: measured d: indicated f: inferred

Table 7-D: Coal resources of immediate interest for multiple-bed coalbed gas development at Dove Creek

Constraints: correlatable coal beds only; at least one coal bed must meet isolated-bed standards (per **Table 8A**); minimum depth at point of measurement: 150 m; maximum depth at point of measurement: 800 m

Assumption: specific gravity 1.40 Te/m³

Block	Borehole	Coal beds	Depth to top of coals (m)	Net coal (m)	Area (Ha)	Measured coal resource (Te)	Indicated coal resource (Te)	Inferred coal resource (Te)
5-d	CX-120	2 through 3A	262.59	2.13	71.7		2,138,094	
6-m	CX-120	2 through 3A	262.59	2.13	39.2	1,168,944		
7-f	CX-120	2 through 3A	262.59	2.13	3.1			92,442
8-m	CX-117	1 through 3A	161.24	2.69	16.7	628,922		
9-d	CX-117	1 through 3A	161.24	2.69	35.0		1,318,100	
10-f	CX-117	1 through 3A	161.24	2.69	6.0			225,960
14-d	CX-114	3A (only)	162.15	0.79	0.4		4,424	
15-f	CX-114	3A (only)	162.15	0.79	4.2			46,452
19-f	CX-105	X through 3	194.9	4.725	6.2			410,130
20-d	CX-105	X through 3	194.9	4.725	134.2		8,877,330	
21-m	CX-105	X through 3	194.9	4.725	63.6	4,207,140		
22-f	CX-105	X through 3	194.9	4.725	162.5			10,749,375
24-d	CX-107	1 (only)	156.97	1.07	49.9		747,502	
25-m	CX-107	1 (only)	156.97	1.07	63.2	946,736		
26-d	CX-110	2 through 3A	159.21	3.80	11.5		611,800	
27-m	CX-110	2 through 3A	159.21	3.80	0.4	21,280		
28-f	D-3	1R through 1L	295.98	1.46	202.6			4,141,144
29-d	D-3	1R through 1L	295.98	1.46	129.2		2,640,848	
30-m	D-3	1R through 1L	295.98	1.46	63.6	1,299,984		
31-d	D-1	Y through 3	230.56	4.845	32.5		2,204,475	
32-m	D-1	Y through 3	230.56	4.845	62.3	4,225,809		
33-d	D-1	Y through 3	230.56	4.845	4.9		332,367	
34-m	CX-113	Y through 3A	193.55	5.79	0.4	32,424		
35-d	CX-113	Y through 3A	193.55	5.79	0.9		72,954	
36-f	D-1	Y through 3	230.56	4.845	34.5			2,340,135
37-f	CX-113	Y through 3A	193.55	5.79	12.0			972,720
38-f	D-2A	X through 2	416.40	6.14	89.4			7,684,824
39-d-	D-2A	X through 2	416.40	6.14	41.2		3,541,552	
40-m	D-2A	X through 2	416.40	6.14	10.7	919,772		
41-f	V-1	1R through 4	569.37	4.47	332.2			20,789,076
42-d	V-1	1R through 4	569.37	4.47	63.1		3,948,798	
43-m	V-1	1R through 4	569.37	4.47	2.4	150,192		
						13,601,203	26,438,244	47,452,258
					Total (Te):	40,039,447		

assurance: m: measured
d: indicated f: inferred

5.5 DISCUSSION

As **Table 7-A** shows, the Dove Creek coal licences contain measured and indicated coal resources of 2.3 million tonnes of immediate interest for underground coal mining. Most of the coals at Dove Creek are either thinner than the requisite gross thickness of 1.5 metres, or they contain too many rock partings to meet the requisite 2-to-1 coal-to-rock ratio.

The situation for coals of <u>future</u> interest for underground coal mining is somewhat better. **Table 7-B** shows that measured and indicated coal resources of 9.2 million tonnes of coal of future interest (at gross bed thickness of at least 0.9 metres) are present within the coal licences. **Figure 6-A** shows that these resources are concentrated along the southern and eastern sides of the property. The central part of the property lacks identified mineable coal resources, largely due to the poor results of borehole D-3.

Tables 7-C and **7-D**, and **Figure 6-B**, show the broader distribution of coals of interest for coalbed gas development. On an isolated-bed basis (**Table 7-C**), considering only those individual coals with a minimum net coal thickness of 0.5 metres and coal-to-rock ratio of at least 1-to-1 (in other terms, at least 50% or more net coal by thickness), 26.9 million tonnes of coal are measured and indicated resources. On a multiple-zone basis (**Table 7-D**), for sections of the Comox Formation which contain at least one coal which would satisfy individual-bed criteria, 40 million tonnes of coal are measured and indicated resources.

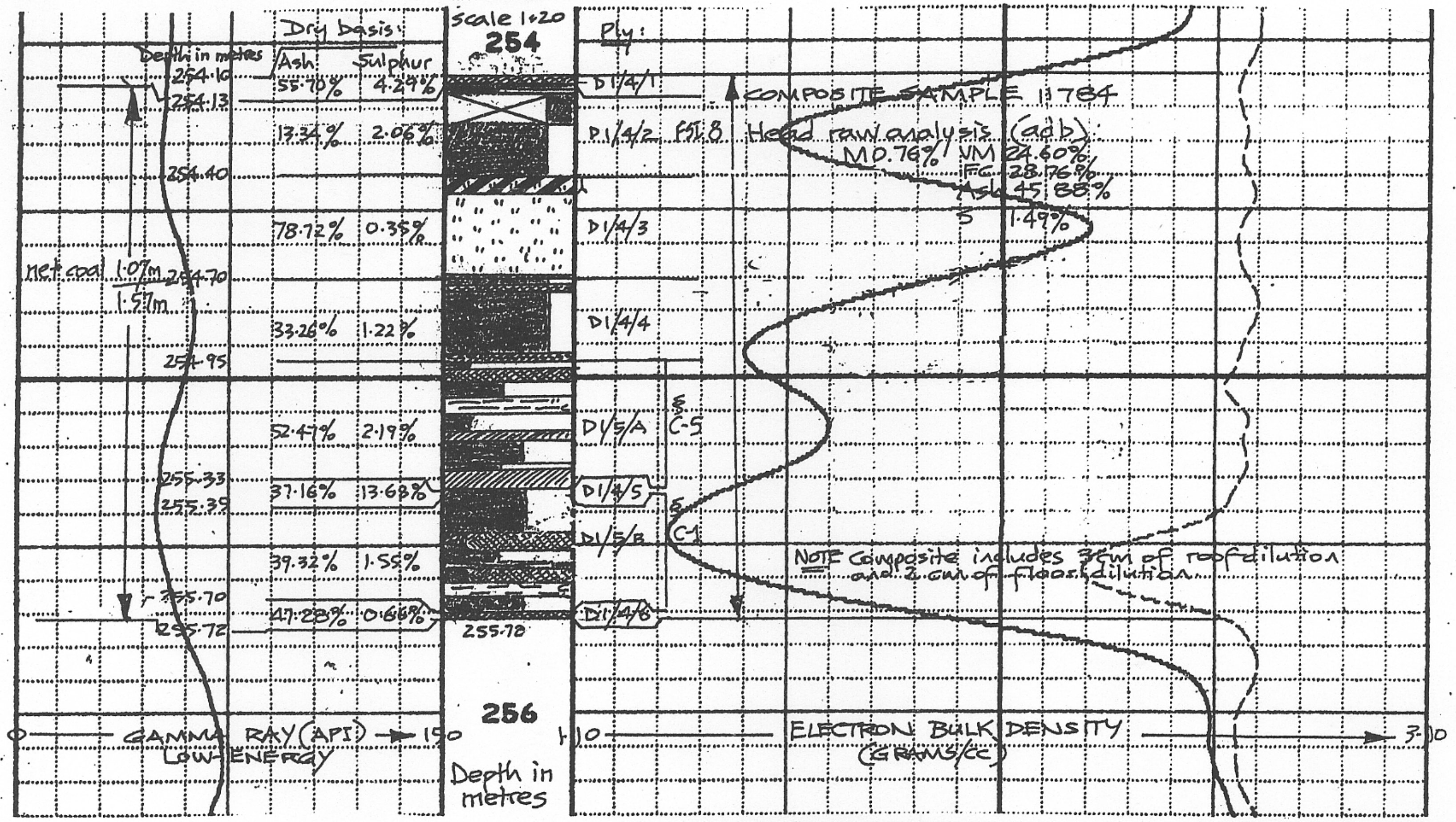
5.6 CAVEATS

In considering the coal resources at Dove Creek, it must be borne in mind that the coals which have to date been identified as being of interest for underground mining tend to be dirty, with numerous rock partings. Their gross thickness and net-to-gross ratios are marginal for mineability.

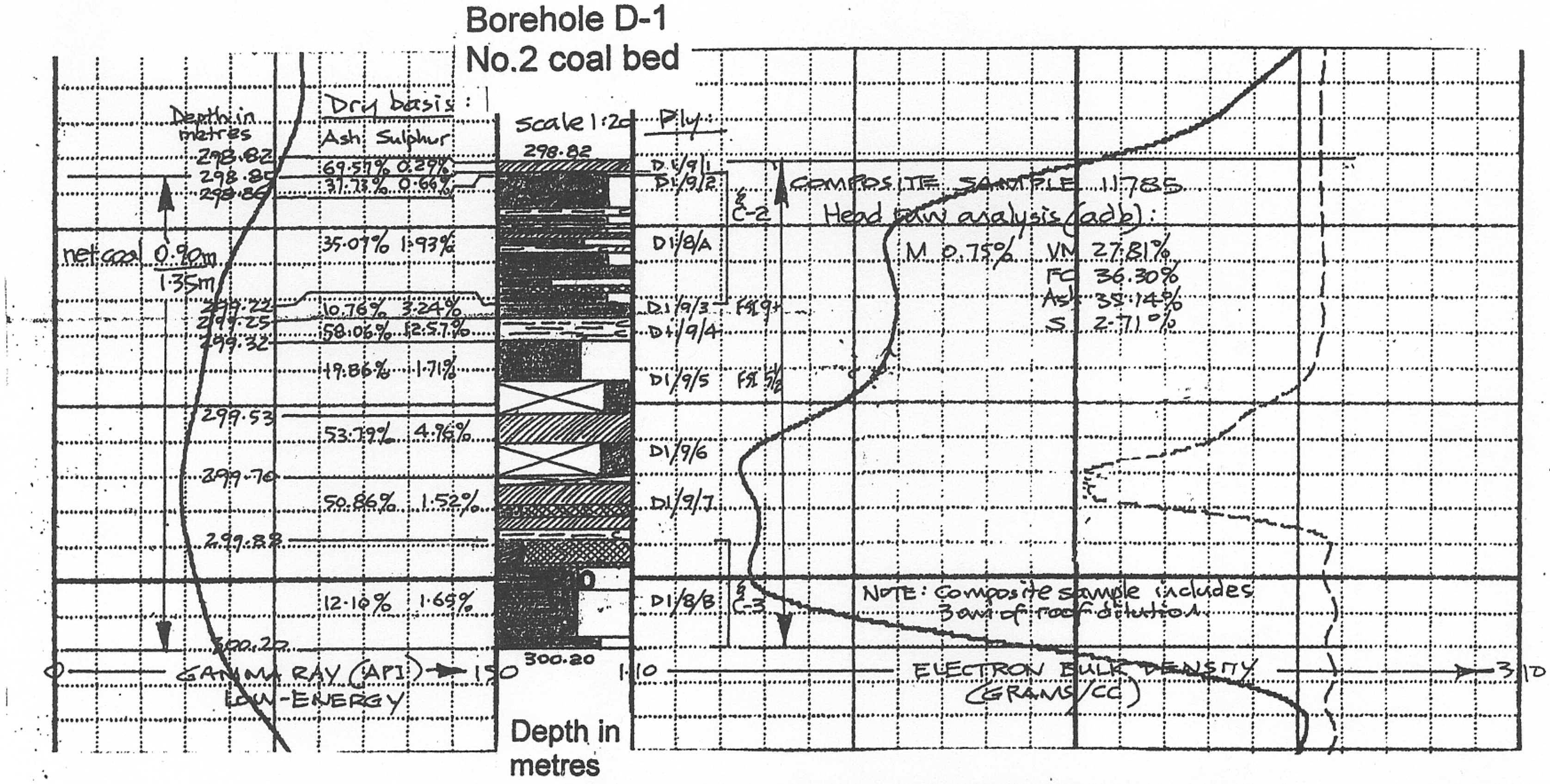
Figures 7-A through **7-E** show detailed sections of the major coal beds found during the summer 2001 drill programme: all of these coals contain rock partings, which would act to reduce the yield of clean coal out of run-of-mine production. The prospect of reduced clean coal yield is borne out by the results of sink-float tests presented in **Volume 3** of this report.

Basement paleotopography appears to have a substantial impact on the extent, thickness, and structure of the Comox coals at Dove Creek. Coal resource blocks (mapped polygons) presented in **Figures 6, 6-A** and **6-B**, in some cases may overlap the inferred extent of basement hills which would cause the absence (due to non-deposition) of a particular coal bed. In other cases, conversely, areas of thick coal might well extend into the paleovalleys between the hills, and be as yet undisclosed by the existing set of exploratory boreholes.

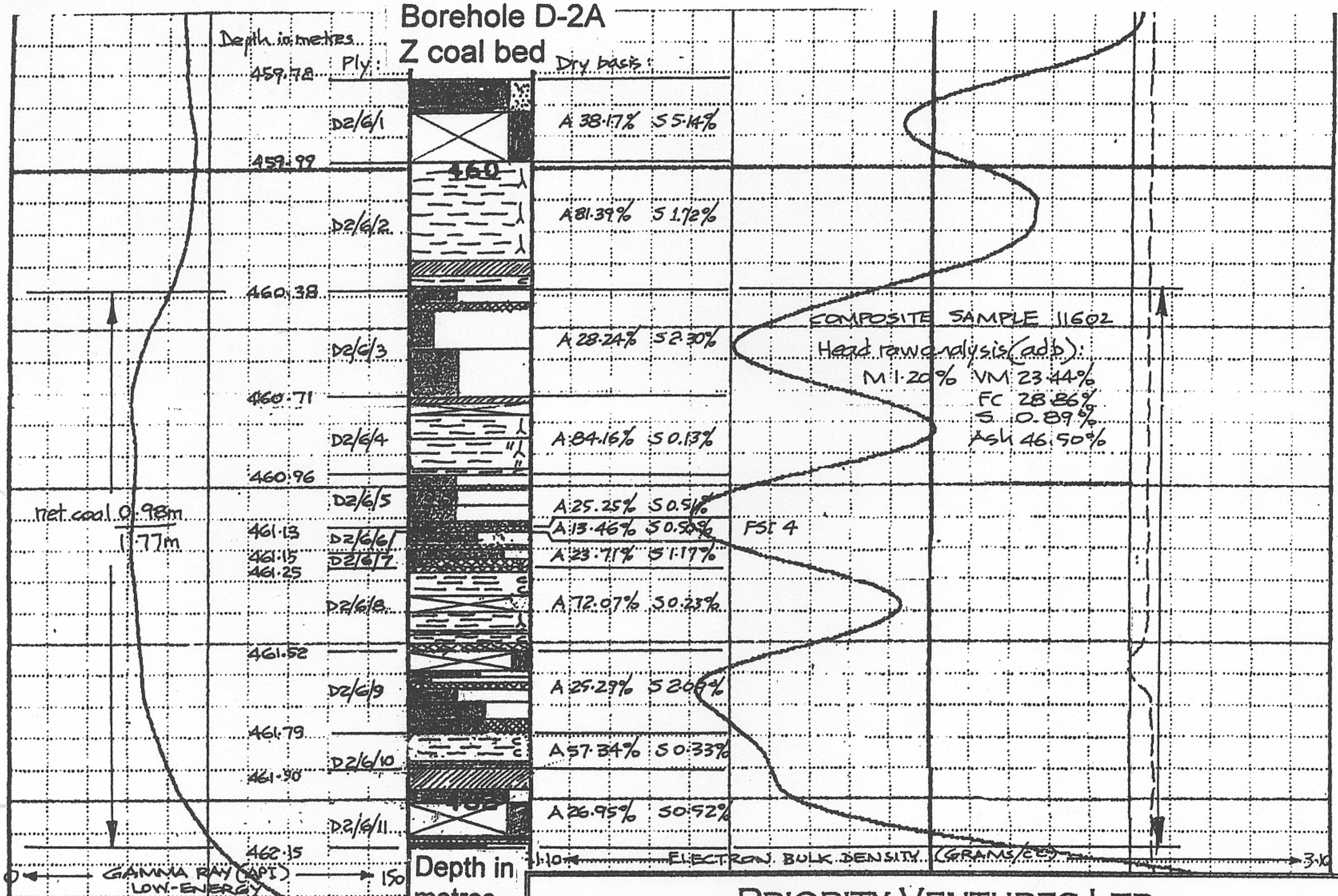
Borehole D-1
Z coal bed



PRIORITY VENTURES LTD.		
Dove Creek Coal Licences **Borehole D-1** **Section of Comox Z coal bed**		
Scale: 1:20	By: C.G. Cathyl-Bickford, P.Geo.	For symbolic key: see Fig. 7-F
Date: Feb. 18, 2002	Analytical data: Birtley	Base: Roke GDC log for D-1
Westwater Mining Ltd.	Dwg.: WR 19511/02	Fig. 7-A



PRIORITY VENTURES LTD.			
Dove Creek Coal Licences **Borehole D-1** **Section of Comox No.2 coal bed**			
Scale: 1:20	By: C.G. Cathyl-Bickford, P.Geo.	For symbolic key: see Fig. 7-F	
Date: Feb. 18, 2002	Analytical data: Birtley	Base: Roke GDC log for D-1	
Westwater Mining Ltd.		Dwg.: WR 19512/02	Fig. 7-B



PRIORITY VENTURES LTD.

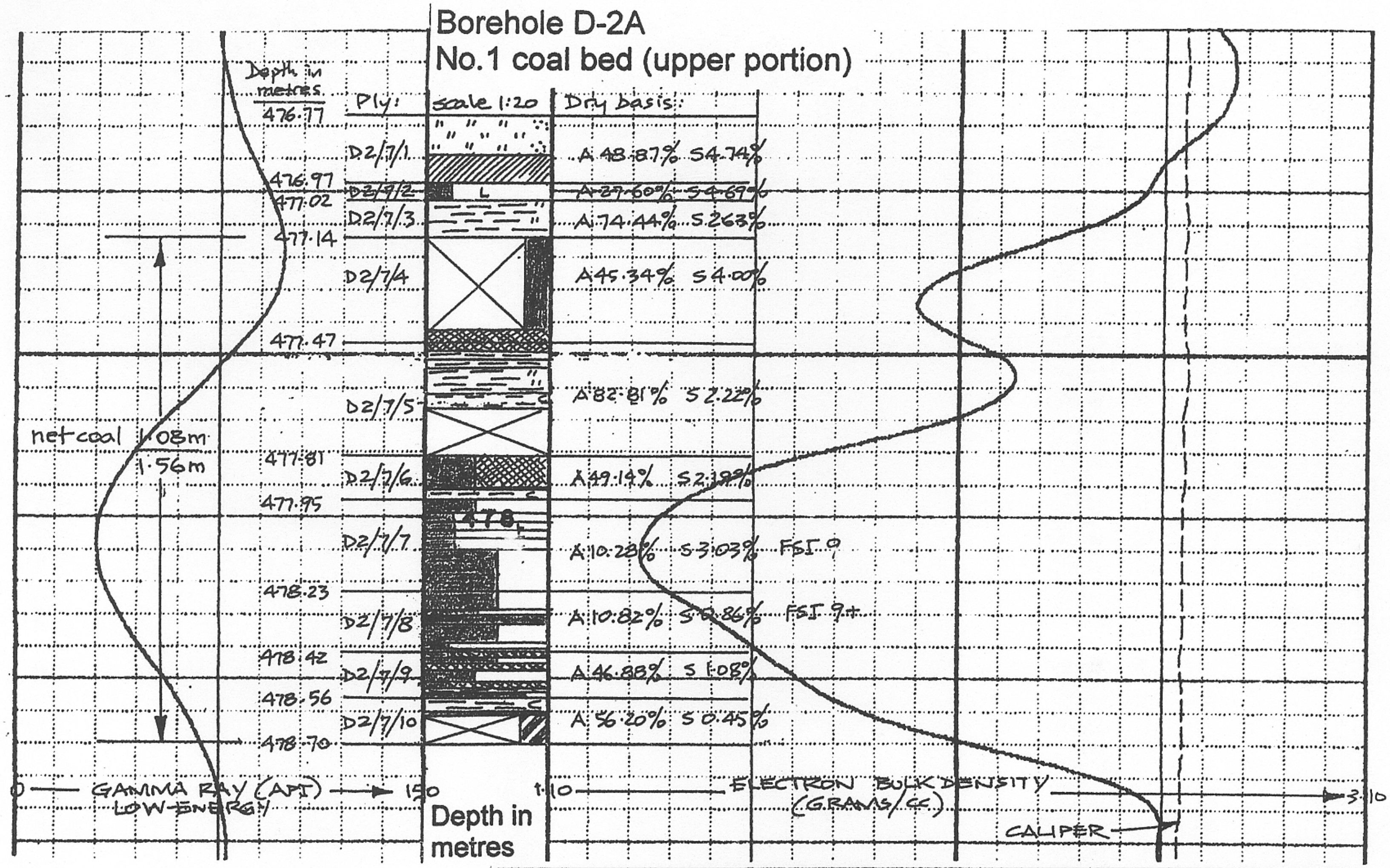
Dove Creek Coal Licences

Borehole D-2A

Section of Comox Z coal bed

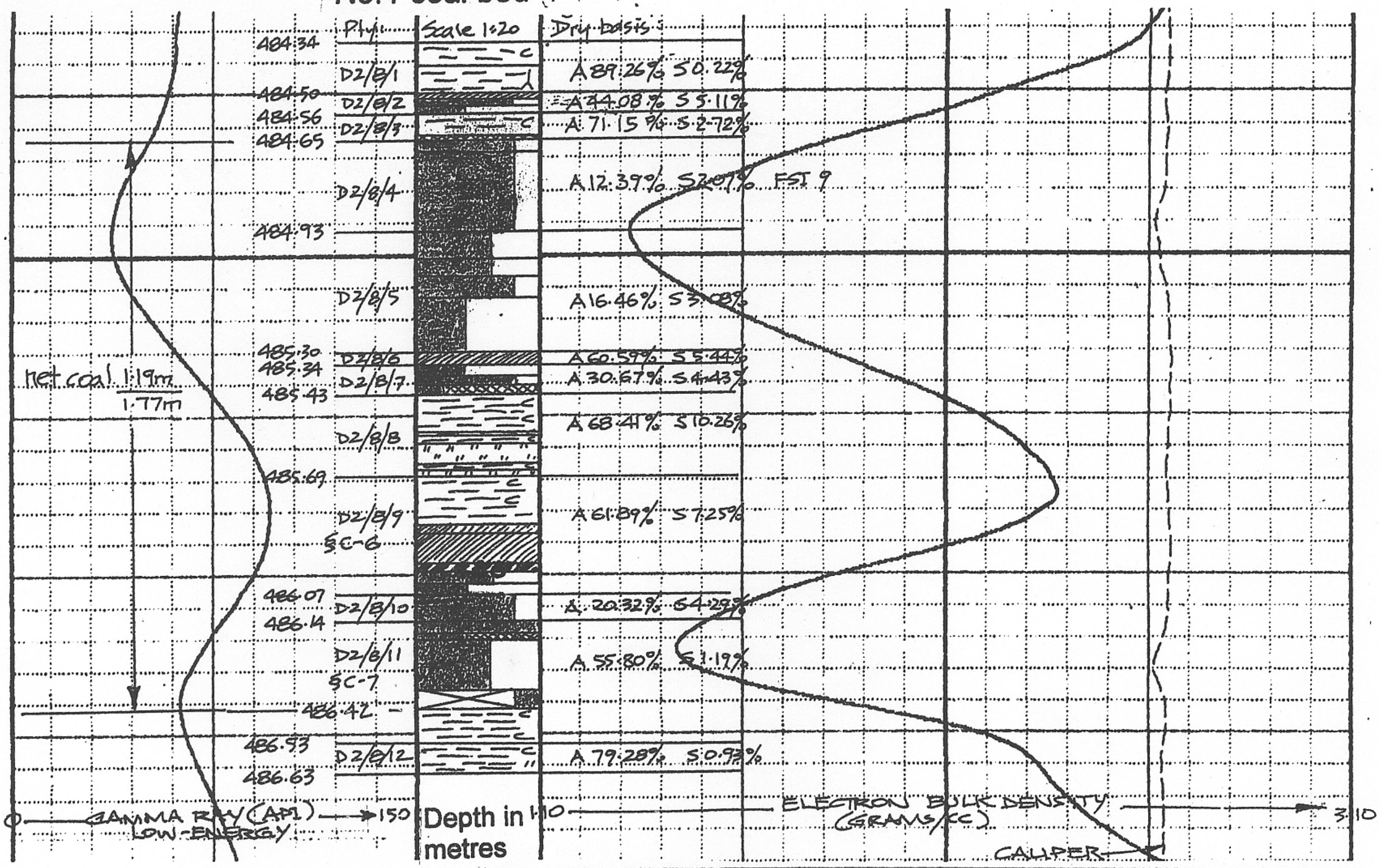
Scale: 1:20	By: C.G. Cathyl-Bickford, P.Geo.	For symbolic key: see Fig. 7-F
Date: Feb. 18, 2002	Analytical data: Birtley	Base: Roke GDC log for D-2A
Westwater Mining Ltd.	Dwg.: WR 19513/02	Fig. 7-C

36



PRIORITY VENTURES LTD.			
Dove Creek Coal Licences **Borehole D-2A** Section of Comox No.1 Rider coal bed			
Scale: 1:20	By: C.G. Cathyl-Bickford, P.Geo.	For symbolic key: see Fig. 7-F	
Date: Feb. 18, 2002	Analytical data: Birtley	Base: Roke GDC log for D-2A	
Westwater Mining Ltd.		Dwg.: WR 19514/02	Fig. 7-D

Borehole D-2A
No.1 coal bed



PRIORITY VENTURES LTD.

Dove Creek Coal Licences

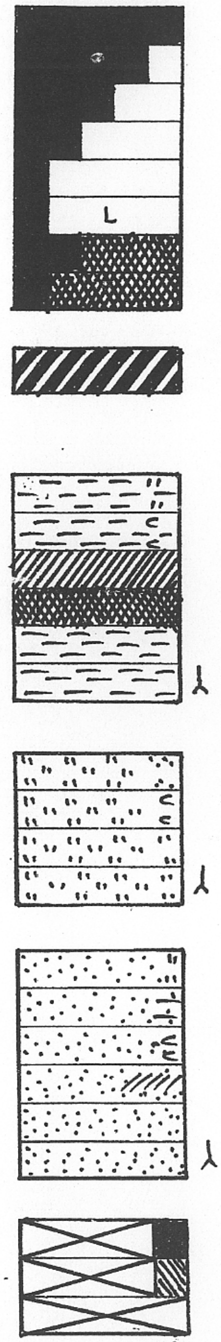
Borehole D-2A

Section of Comox No.1 coal bed

Scale: 1:20	By: C.G. Cathyl-Bickford, P.Geo.	For symbolic key: see Fig. 7-F
Date: Feb. 18, 2002	Analytical data: Birtley	Base: Roke GDC log for D-2A
Westwater Mining Ltd.		Dwg.: WR 19515/02 Fig. 7-E

ABBREVIATION	LITHOLOGY / LITHOTYPE
	Coals:
Co B	Bright
Co Bb	Bright banded
Co D+B	Dull and bright
Co Db	Dull banded
Co D	Dull
Co DL	Dull lustrous
Co Db st	Dull banded, stony
Co st	Dull, stony
Co + Sh	Coal and shale [mixed or interlaminated]
	Mudstones:
Mz	Silty
Mcb	Carbonaceous
Mcoy	Coaly
Mcn	Canneloid
M	[not otherwise specified]
	Rooty [seathearths]
	Siltstones:
Zs	Sandy
Zcb	Carbonaceous
Z	[not otherwise specified]
	Rooty
	Sandstones:
Sz	Silty
Sm	Muddy
Scb	Carbonaceous
Scoy	Coaly
S	[not otherwise specified]
	Rooty
	Core loss:
	Interpreted as coal
	Interpreted as coaly rock
	Interpreted as rock

GRAPHIC



PRIORITY VENTURES LTD.		
Dove Creek Coal Licences Standard Legend for Coal Bed Sections		
Scale: none	Reference Drawings: Figs. 7-A to 7-E	
Date: 18 Feb. 2002	By: C.G. Cathyl-Bickford, P.Geo.	
Westwater Mining Ltd.	Dwg. No.: WR 19513/02 **A**	Fig. 7-F

6 GEOLOGY OF THE DOVE CREEK COAL DEPOSIT

By C.G. Cathyl-Bickford, P.Geo.

Geology of the Dove Creek area is known mainly from boreholes and seismic profiles, since bedrock is largely concealed by a blanket of unconsolidated Quaternary deposits, collectively termed 'Drift'.

6.1 REGIONAL GEOLOGICAL CONTEXT

The Dove Creek coal property lies along the southwestern side of the relatively-unexplored central portion Comox coalfield, which itself lies along the south-western margin of the Comox sub-basin of the Late Cretaceous Georgia Basin (Mustard, 1994). Interpreted bedrock geology of the Dove Creek area is presented as **Figure 5**. The Comox coalfield is hosted by deltaic and fluvial sedimentary rocks of the Comox Formation (**Table 8**), of Late Cretaceous (probably Cenomanian to Santonian) age.

Table 8: Resource stratigraphy of Dove Creek coal property

Age (Epoch or Stage)	Unit (Formation or Member)	Graphic	Typical lithology and thickness range	Gas source potential
Quaternary	*Drift (undivided)*		Stony silty sand over stony to bouldery till over gravelly sand, silt and clay. Thickness up to 33 m.	
Late Eocene to Oligocene	*Mount Washington Intrusive suite*		Dikes and sills of hornblende-feldspar porphyritic dacite and quartz-diorite.	Source of heat for local devolatilisation of coals.
Upper Cretaceous Late Campanian	*Trent River Formation:* Willow Point Member		Dark grey to black siltstone; minor sandstone. Thickness 150 to 200 m?	
	Baynes Sound Mbr.		Sandstone and siltstone. Thickness 5 to 6 m.	
Early Campanian	Royston Member		Mudstone, siltstone and minor cherty sandstone. Thickness 163 to 185 m.	
Late Santonian	Browns Member		Cherty to sublithic sandstone and siltstone. Thickness 16 to 96 m (thickens markedly to northeast).	
	Puntledge Member		Siltstone and sandstone. Thickness 30 to 128 m (thickens to south).	Possible source rock for gas.
Middle Santonian?	Cowie Member		Sandstone; 1.8 to 44 m.	
	Cougarsmith Mbr.		Siltstone and shale; 5.2 to 21 m.	
Early to Middle Santonian	*Comox Formation:* Dunsmuir Member		Sublithic to lithic sandstone, coaly to carbonaceous siltstone and mudstone; coal. *Includes coals X, XL, Y, YL, Z, 1R, 1 and 1L.* Thickness 98 to 177 metres (thickens to northeast).	Coal and shale are widespread regional source rocks for gas.
Cenomanian to Early Santonian?	Cumberland Member		Lithic and feldspathic ("granitic") sandstone, sandy and carbonaceous siltstone; canneloid to carbonaceous mudstone; coal. *Includes coals 2R, 2, 2A, 3, 3A, and 4.* Thickness nil to 158 metres (thickest along axes of west-trending paleovalleys).	Coal and shale are widespread regional source rocks for gas, except in areas of non-deposition due to basement paleohighs.
Turonian?	Benson Member		Basaltic conglomerate and pebbly mudstone. Thickness highly variable: possibly up to 100 m in paleovalleys?	Potential subsurface water-disposal zone (more likely to north?)
LATE TRIASSIC Carnian to Ladinian	*Karmutsen Formation*		Massive dark green to purple basaltic lava and hyaloclastite; intensely weathered into terra rossa at top. Thickness ca. 1200 m.	

6.1.1 BASEMENT

Economic basement beneath the Comox Formation is formed by slightly-metamorphosed basaltic to andesitic volcanic and volcaniclastic rocks of the Karmutsen Formation, of Late Triassic age. The Karmutsen Formation thus is the unit in which most exploratory boreholes have bottomed. The erosional upper surface of the Karmutsen is marked by considerable local paleorelief (Mackenize, 1922; Muller and Atchison, 1970), and is in places deeply weathered, with a well-developed mantle of hematitic or lateritic material, probably formed as a regolith or a paleosol.

Rounded boulders of Karmutsen volcanic rocks form a significant component of the unconsolidated drift cover within the area, and occasionally are seen as large knockers in road-cuts through till sheets.

6.1.2 COAL-MEASURES

Coal-measures in the Dove Creek area are solely contained within the Comox Formation of Late Cretaceous (Cenomanian? to Santonian) age. Although overlying, younger coal-measures are known from the Campbell River area further to the north, they do not appear to extend into the Dove Creek area.

The Comox Formation outcrops in the canyons of Dove Creek and Browns River, west of the Inland Island Highway. Lithologic similarity of borehole cores from the Dove Creek area, as compared with the type section of the Comox Formation along Browns River, forms the basis for subsurface identification of the formation.

6.1.3 COVERING ROCKS

The Comox coal-measures are overlain by shallow- to deep-marine sedimentary rocks of the Trent River Formation, of Late Cretaceous (Santonian to late Campanian) age.

The Trent River Formation is well-exposed along the course of Browns River, and also occasionally outcrops along Dove Creek. Its type section lies along Puntledge River.

6.1.4 POST COAL-MEASURES INTRUSIONS

Younger acidic intrusive rocks, of the Mount Washington Intrusive Suite (Carson, 1973; Massey, 1992) locally cross-cut the Triassic and Cretaceous rocks. Carson (1973, page 46) determined a potassium-argon age of 35±6 Ma for one of these intrusions in the Mount Washington area, northwest of Dove Creek; this date suggests that they are of late Eocene to early Oligocene age.

Adjacent to the intrusions, metasomatic and contact-metamorphic effects on the older strata range from slight hardening of shales and devolatilisation of carbonaceous matter, through to silicification or conversion into hornfels or quartzite, depending upon the country rock's original composition and proximity to the intrusions.

Mount Washington intrusive rocks form prominent massifs at Anderson Hill (Daniels, 1920) and at Constitution Hill (Rose, 1924).

6.1.5 DRIFT COVER

Throughout the Comox coalfield, the ground surface is mostly covered by a variably-thick Drift mantle of glacial, glaciofluvial and glaciomarine sediments. Bedrock exposures are therefore confined to some of the deeper stream channels, and to isolated deep road-cuts.

The most complete exposures of Drift are in the sea-cliffs along Point Holmes and Cape Lazo, at the southeast end of the Comox Peninsula (Fyles, 1960). Smaller, disconnected exposures of glacial, glaciofluvial and glaciomarine drift are common in road-cuts, wherever grading or ditching has cut through agricultural soils and made ground. Additional knowledge of Drift thickness is provided by the numerous domestic and agricultural water-wells in the area.

6.2 LOCAL GEOLOGY OF THE DOVE CREEK COAL LICENSES

Within the Dove Creek coal licenses, the upper two members of the Comox Formation and the basal six members of the Trent River Formation either outcrop, or subcrop below Drift cover (Cathyl-Bickford, 1992). All of these rock-units, as well as the basal Benson conglomerate, the Karmutsen volcanic basement, and possible sills of the Mount Washington Intrusive Suite, have been recognised in drill cores recovered during the summer of 2001.

Table 5 (fold-out) presents formation and member tops, interpreted from borehole records within the Dove Creek area.

Bedrock beneath virtually all of the Dove Creek property consists of shale or interbedded shale, siltstone and sandstone of the Cougarsmith, Puntledge and Royston members of the Trent River Formation. Sandstone of the Browns Member of the Trent River Formation is inferred to underlie a broad northwest-trending ridge in the centre of the property, and sandstones of the Cowie Member of the Trent River Formation and the older Dunsmuir Member of the Comox Formation probably underlie the extreme Southwestern and western parts of the property.

6.2.1 COAL BED MAPS

Maps of net coal thickness and depth to top for each of the correlatable Comox coal beds at Dove Creek are presented as **Figures 8-A** through **8-AB**.

Shown on each of the maps is the projected position of basement paleohills which bound the potential extent of the coals and their correlative horizons. In areas of tight drill control, basement hill position is more confidently placed than in areas where no drilling has done, but in any case the outlines of the basement paleohills is speculative and many other alternative outlines could be drawn.

Guiding the interpretation of basement paleostructure is the exposed configuration of the basement rocks in the northeastern face of the Beaufort Range, southwest of Courtenay and Cumberland. Basement rocks in the mountains appear to be disposed as steep-sided, flat to rolling-topped 'bun-shaped' prominences, perhaps due to original differential erosion of the basement volcanics. In drawing basement hill outlines for the present study, 'bun-shaped' paleotopography was drawn wherever it would be consistent with drill information and seismic records.

6.2.2 STRUCTURAL GEOLOGY

Owing to the scarcity of bedrock outcrops, the geological structure of the Dove Creek property is known mainly from fault intersections in cored boreholes, and from the records of two seismic reflection profiles (BP 84-19, shown as **Figure 4-A**, and BP 84-22, shown as **Figure 4-B**).

Line 84-19 adjoins the southeastern side of the property, and runs generally down-dip across Tsolum River to the northeast of the property. Line 84-22 adjoins and locally crosses the northeastern side of the property, and runs generally along strike. Both lines show discontinuities in their reflections, which we have interpreted as being due to faults. The seismic lines also appear to show paleorelief and onlapping geometries against the pre-Cretaceous basement surface.

Borehole cores from Priority Ventures' three holes indicate that bedding generally dips gently northeastward at Dove Creek, at 2 to 11 degrees. Local structural complexity is indicated by borehole D-3, situated in the west-central part of the property, which intersected a zone of downward-steepening dips (up to 40 degrees) in the Comox Formation. These steep dips may either be interpreted as drape over a

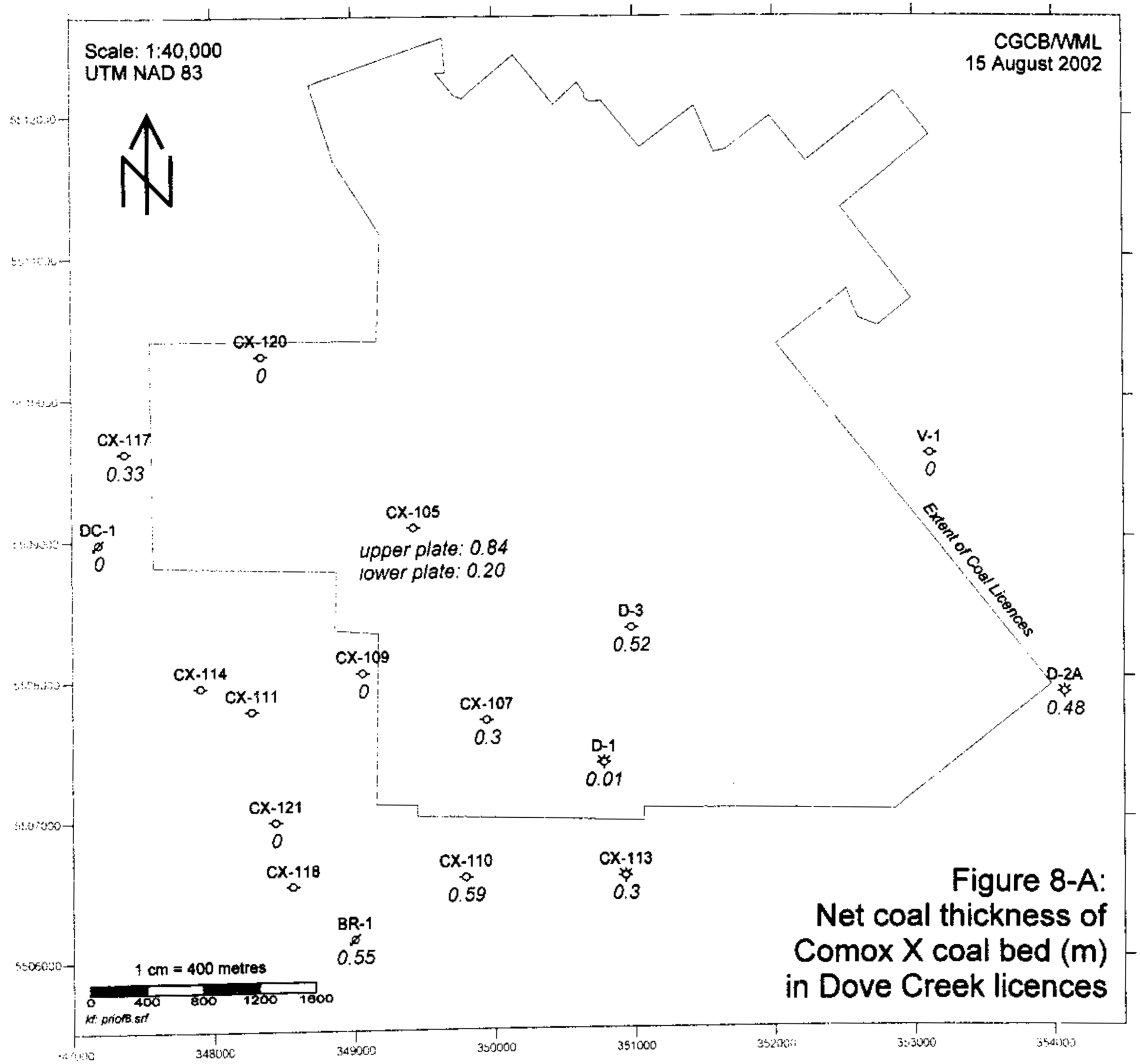


Figure 8-A: Net coal thickness of Comox X coal bed (m) in Dove Creek licences

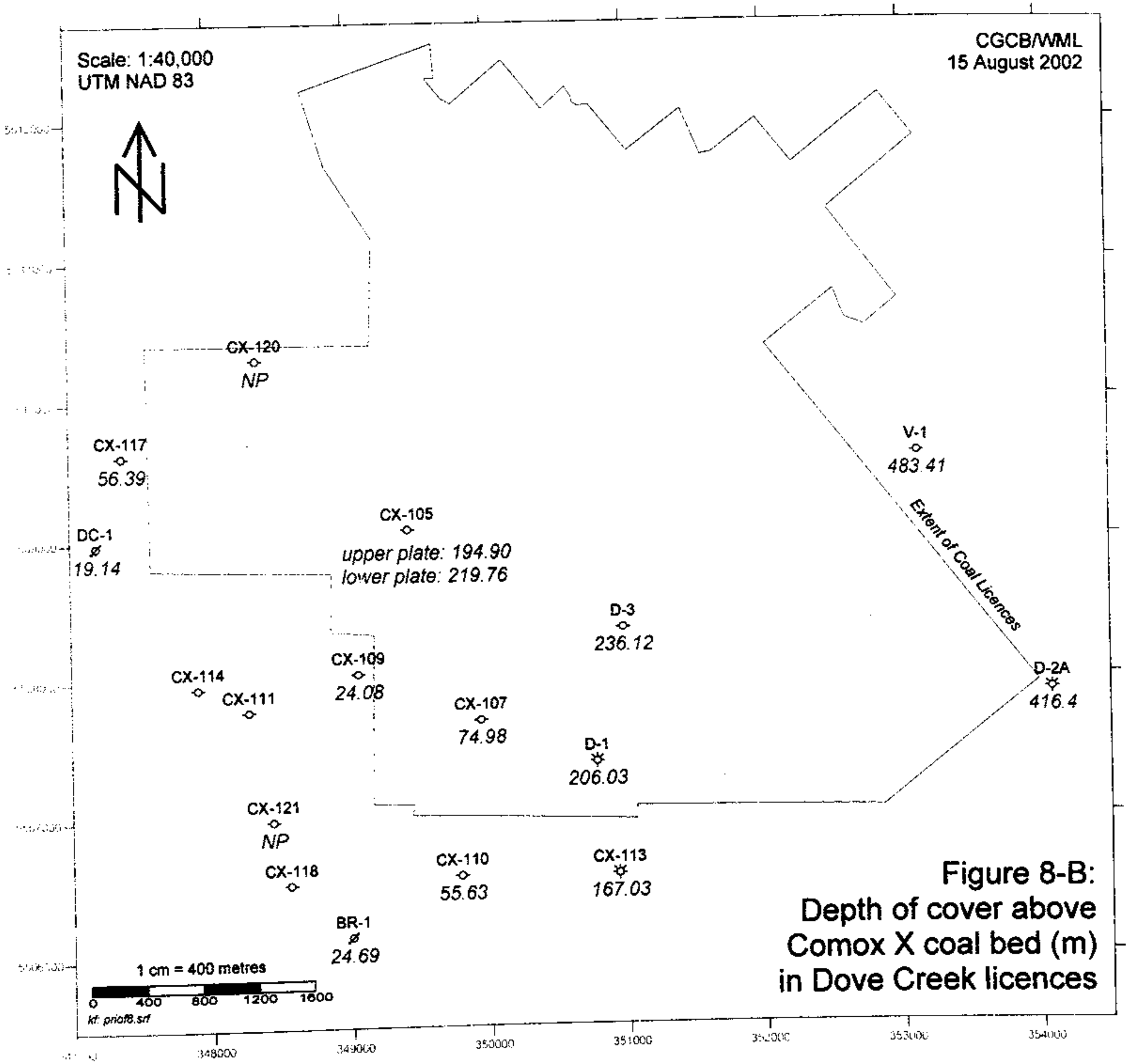


Figure 8-B:
Depth of cover above
Comox X coal bed (m)
in Dove Creek licences

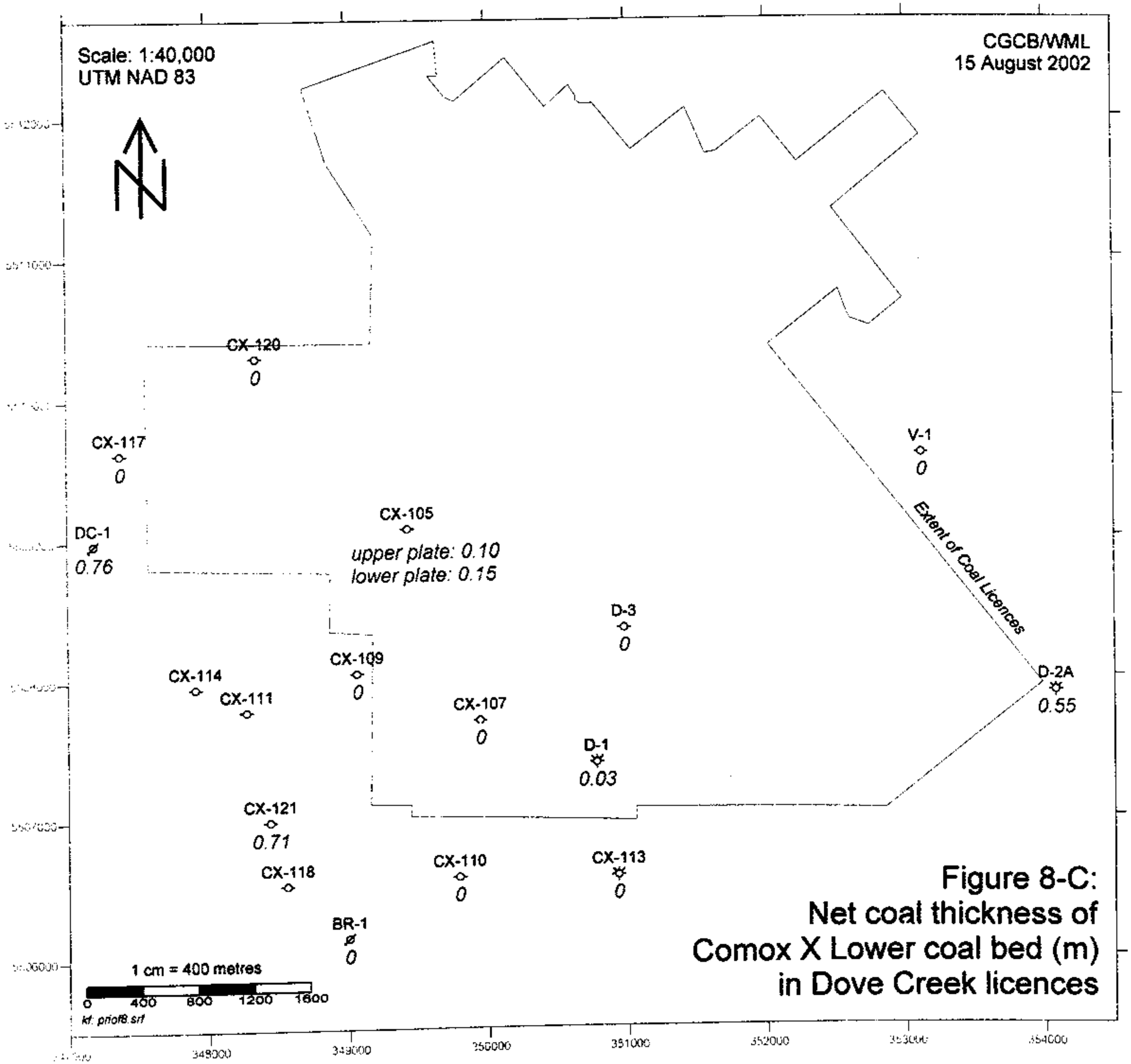


Figure 8-C: Net coal thickness of Comox X Lower coal bed (m) in Dove Creek licences

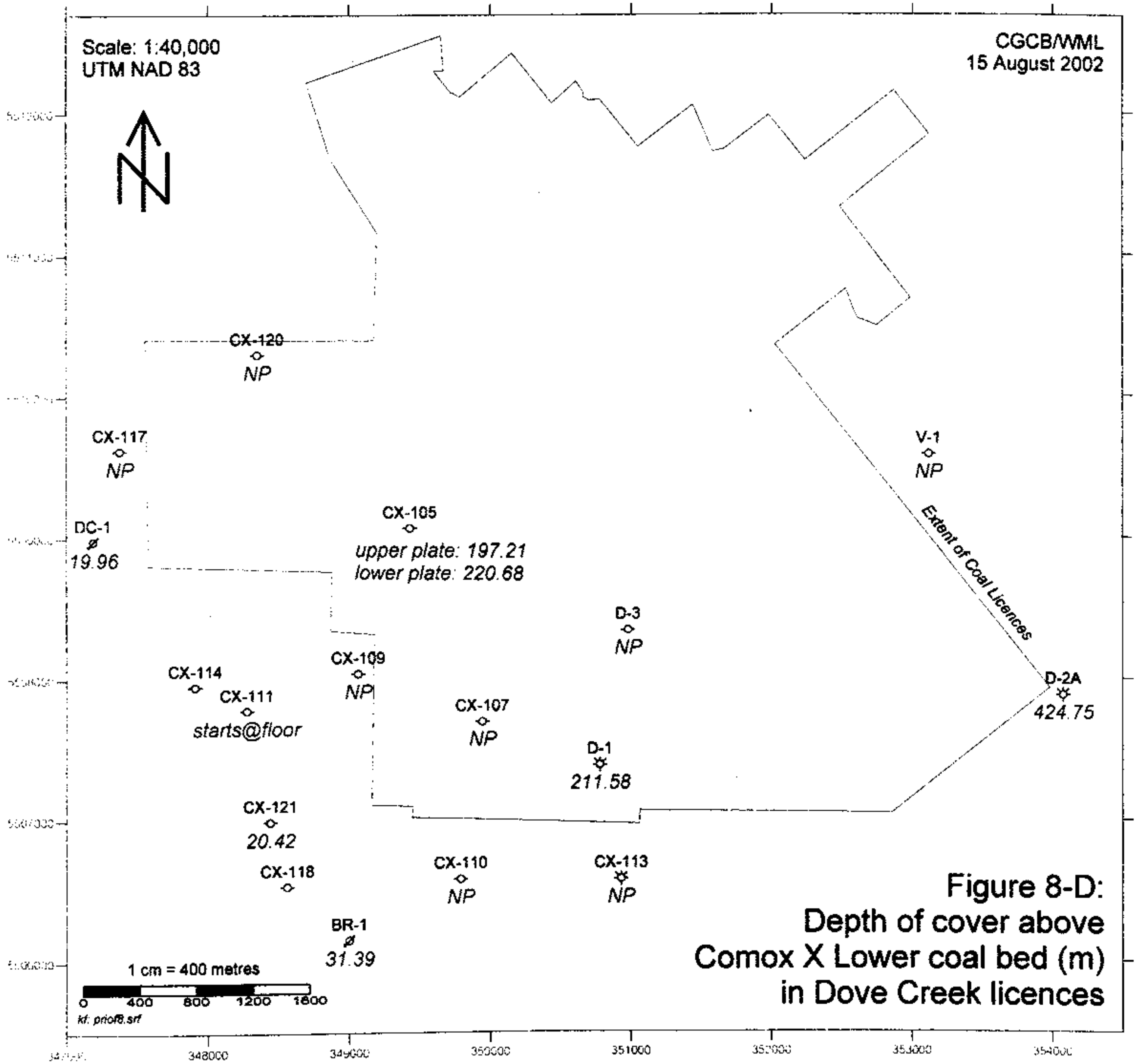


Figure 8-D: Depth of cover above Comox X Lower coal bed (m) in Dove Creek licences

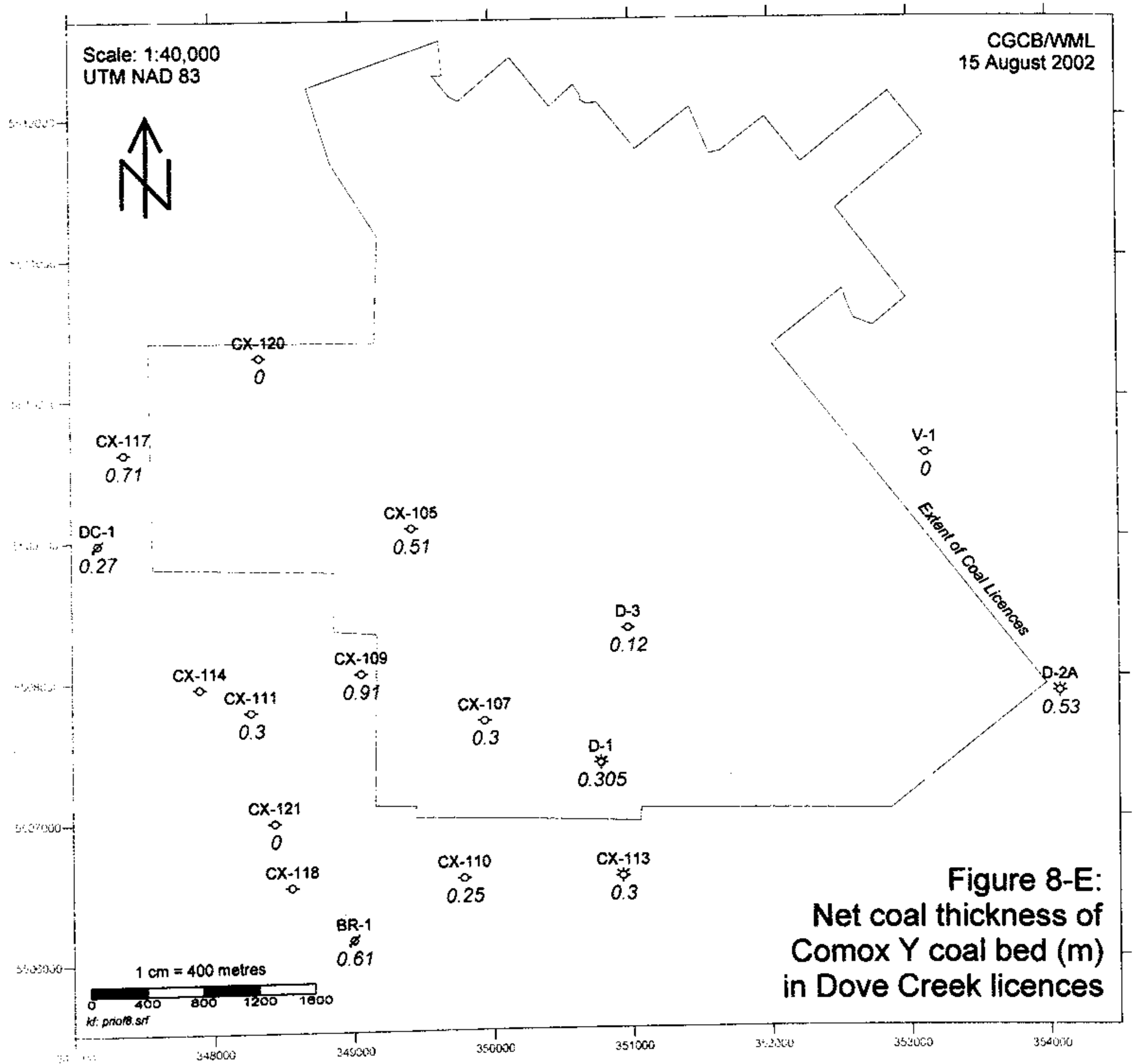


Figure 8-E:
Net coal thickness of
Comox Y coal bed (m)
in Dove Creek licences

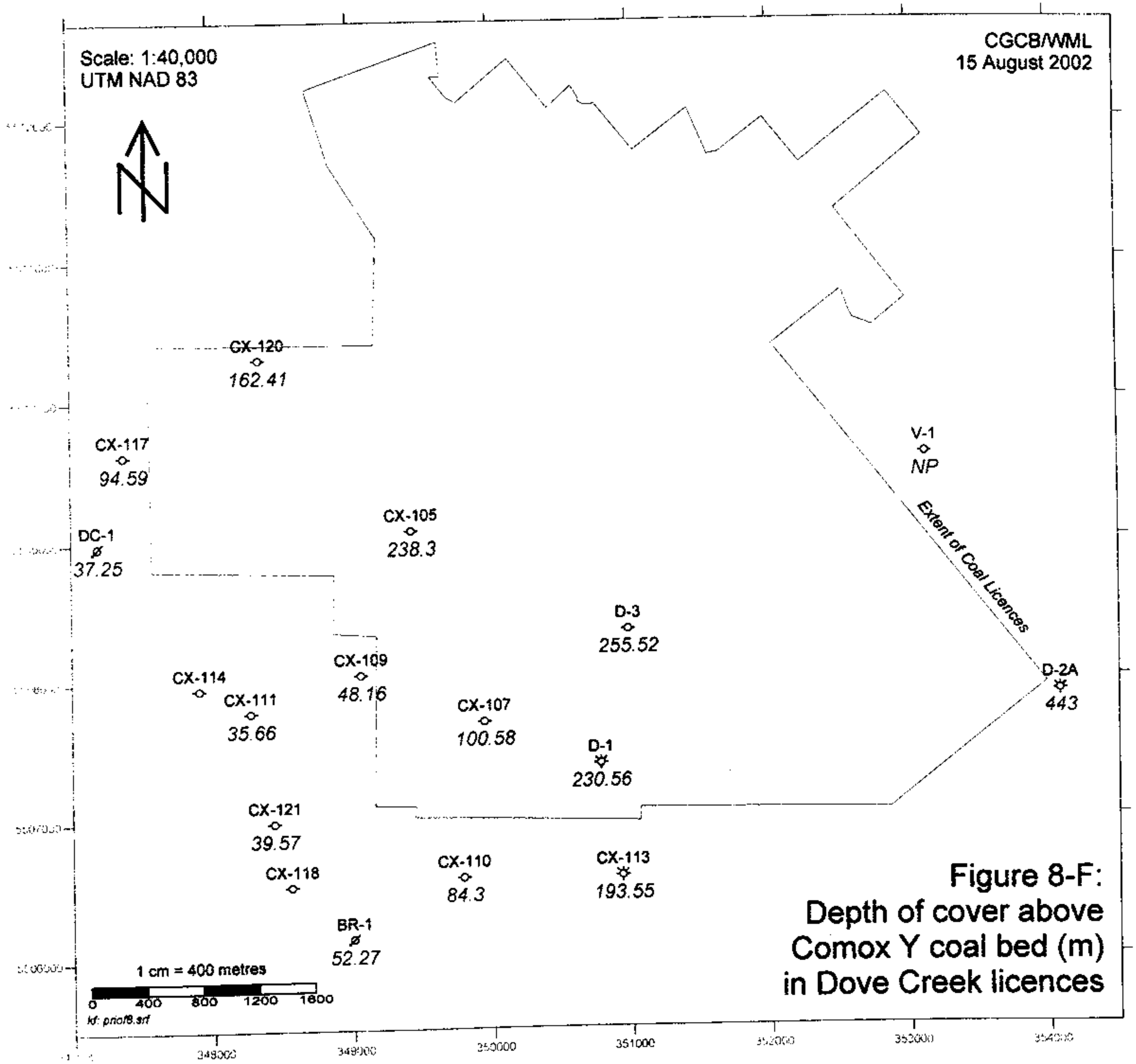


Figure 8-F:
Depth of cover above
Comox Y coal bed (m)
in Dove Creek licences

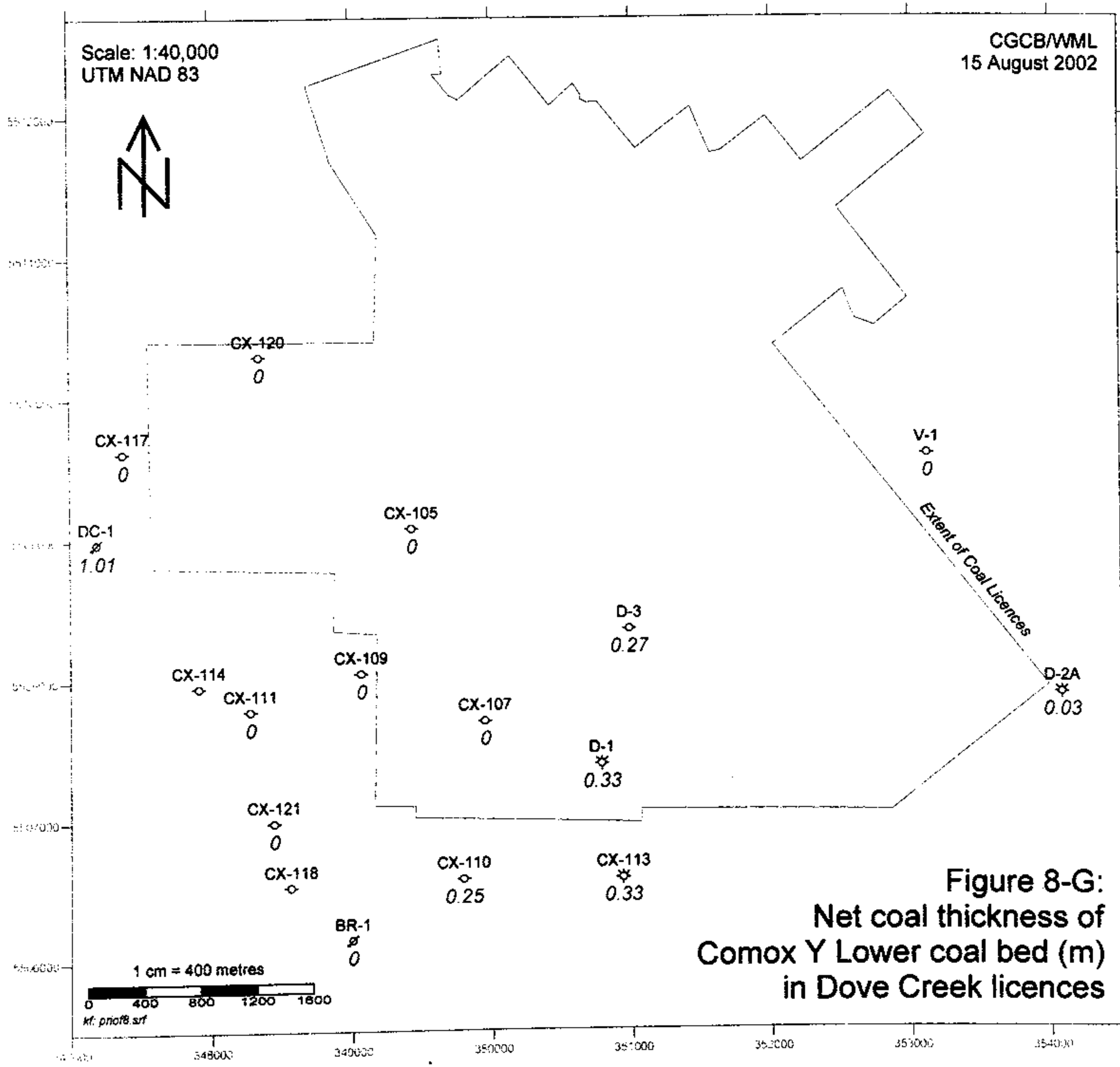


Figure 8-G:
Net coal thickness of
Comox Y Lower coal bed (m)
in Dove Creek licences

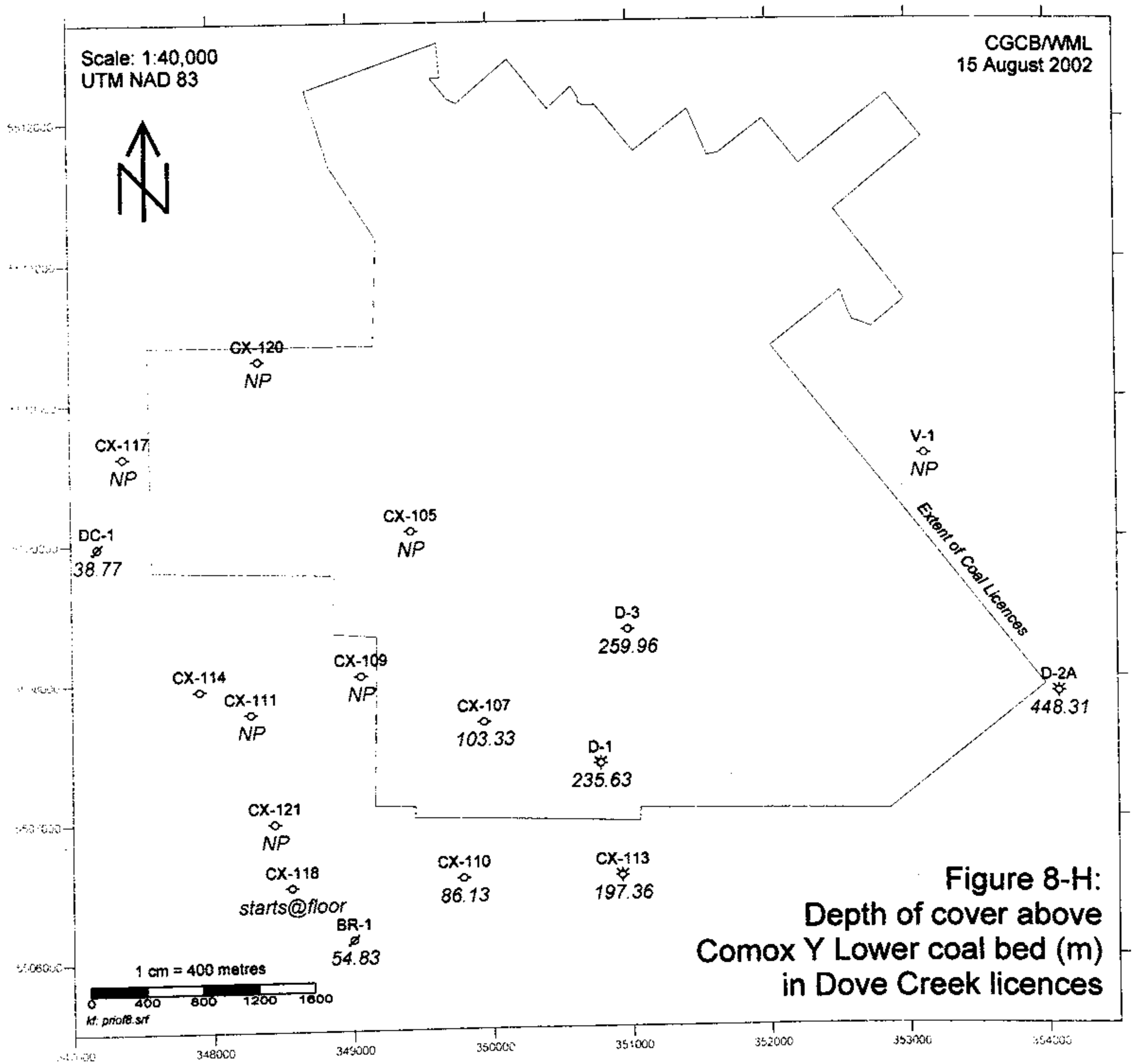


Figure 8-H: Depth of cover above Comox Y Lower coal bed (m) in Dove Creek licences

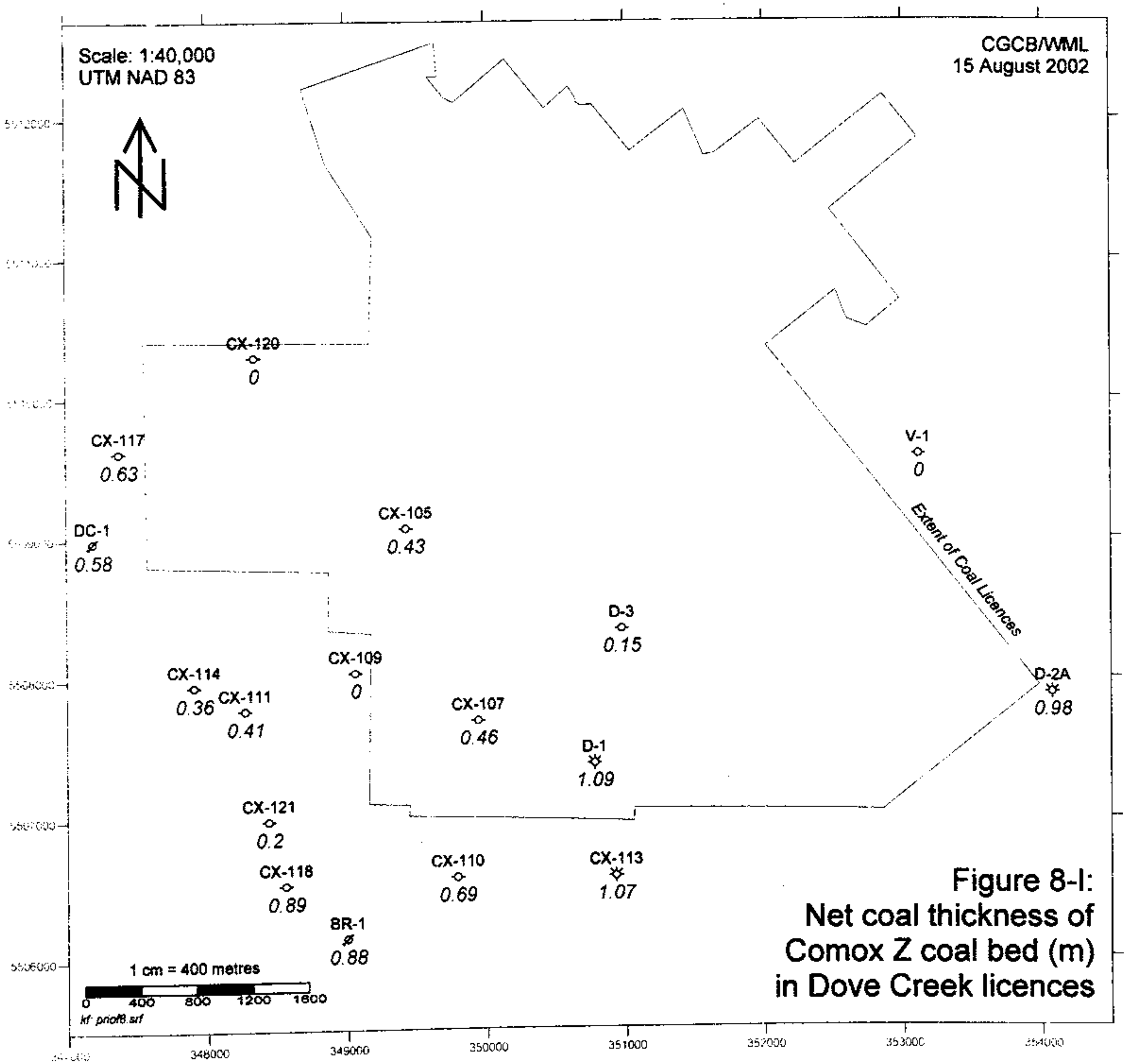


Figure 8-I:
Net coal thickness of
Comox Z coal bed (m)
in Dove Creek licences

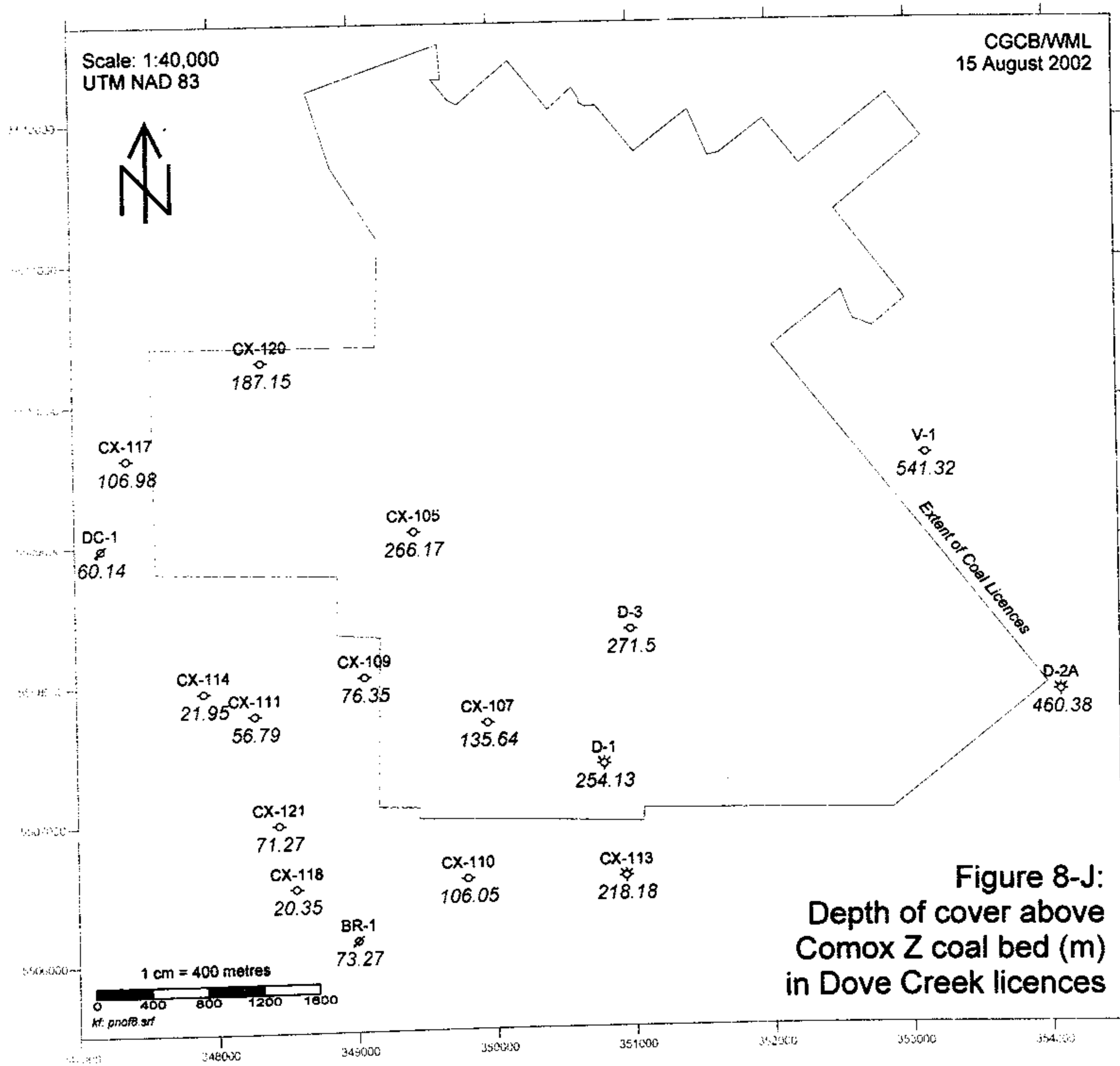


Figure 8-J:
Depth of cover above
Comox Z coal bed (m)
in Dove Creek licences

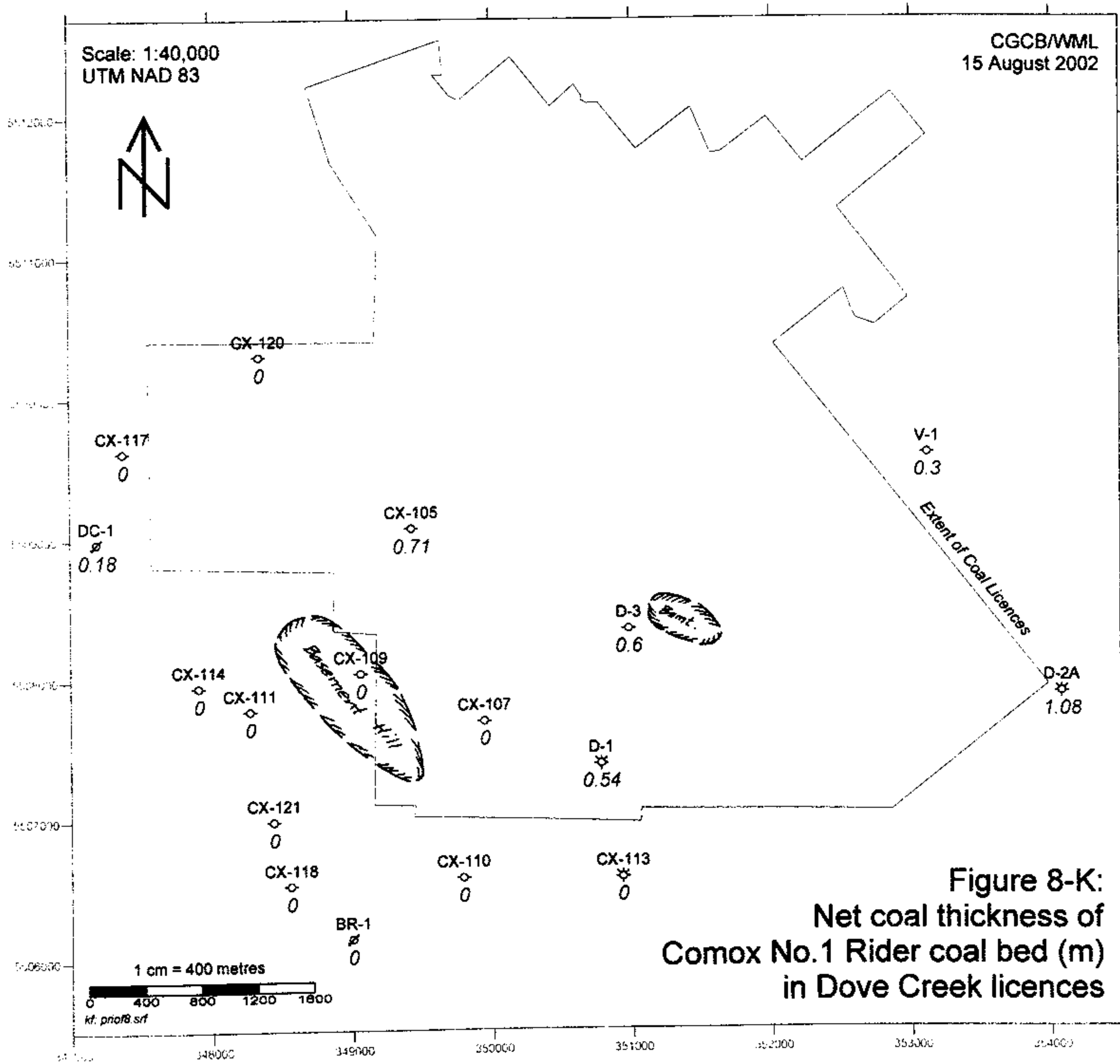


Figure 8-K: Net coal thickness of Comox No.1 Rider coal bed (m) in Dove Creek licences

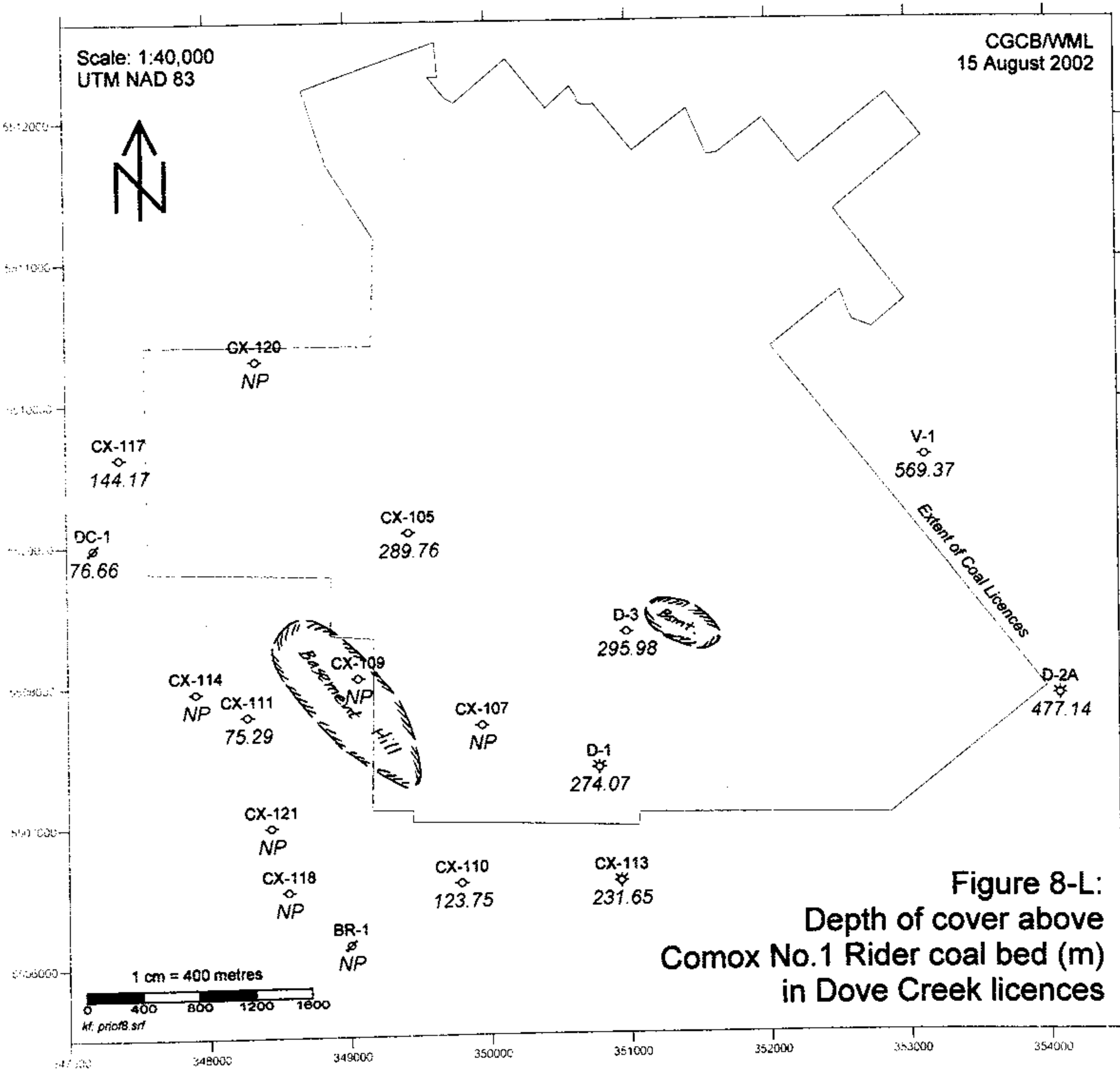


Figure 8-L: Depth of cover above Comox No.1 Rider coal bed (m) in Dove Creek licences

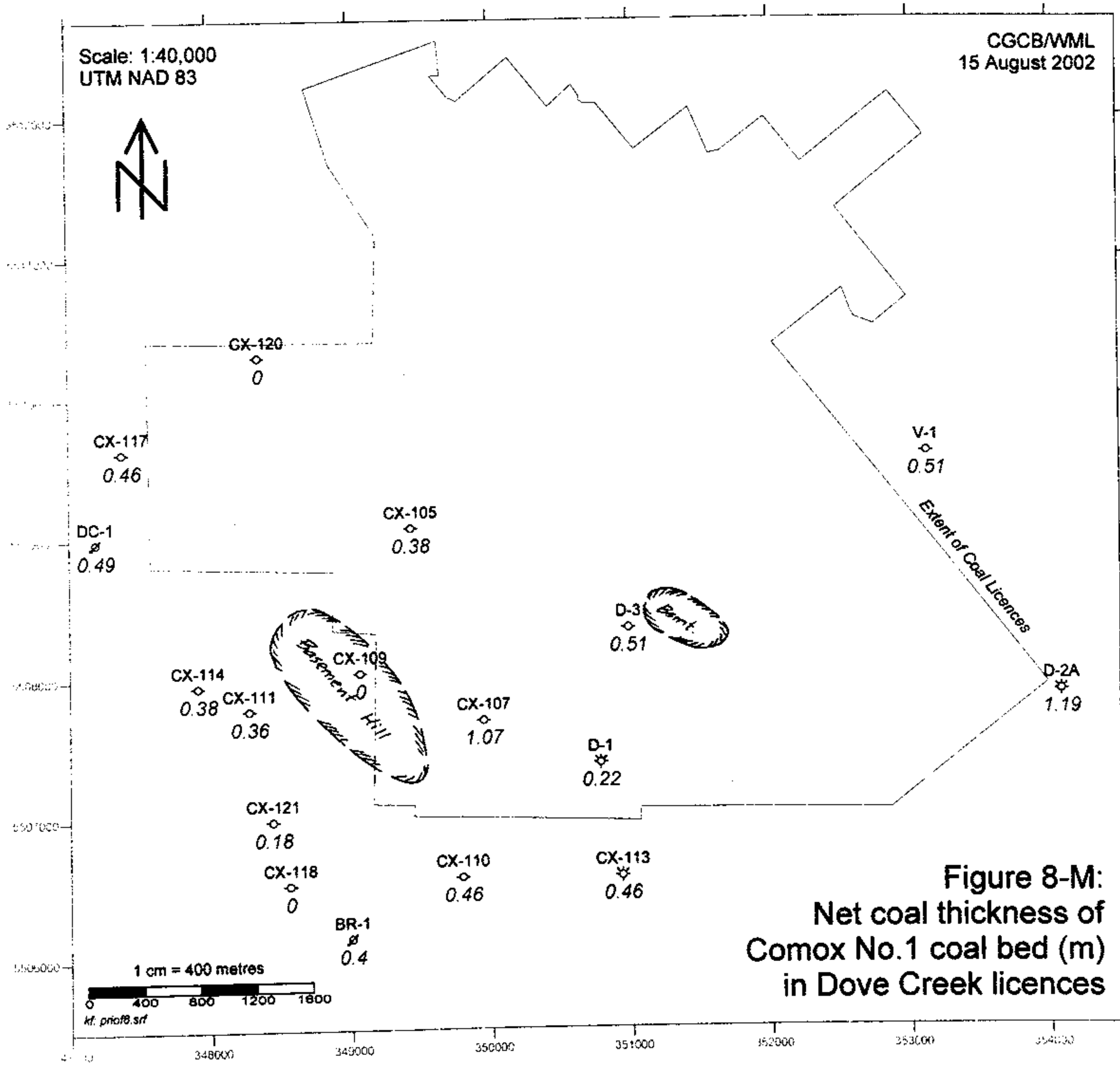


Figure 8-M:
Net coal thickness of
Comox No.1 coal bed (m)
in Dove Creek licences

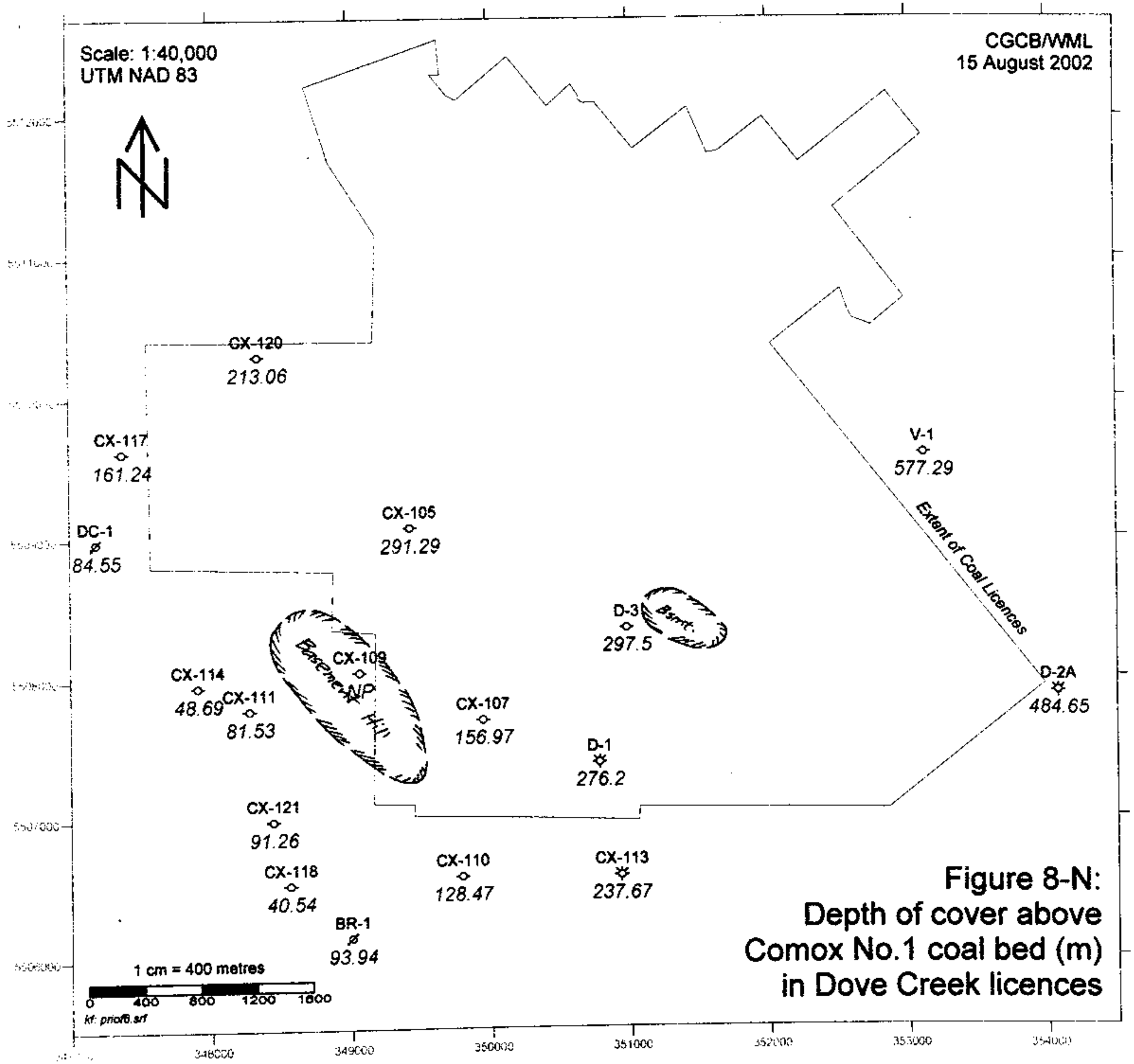


Figure 8-N: Depth of cover above Comox No.1 coal bed (m) in Dove Creek licences

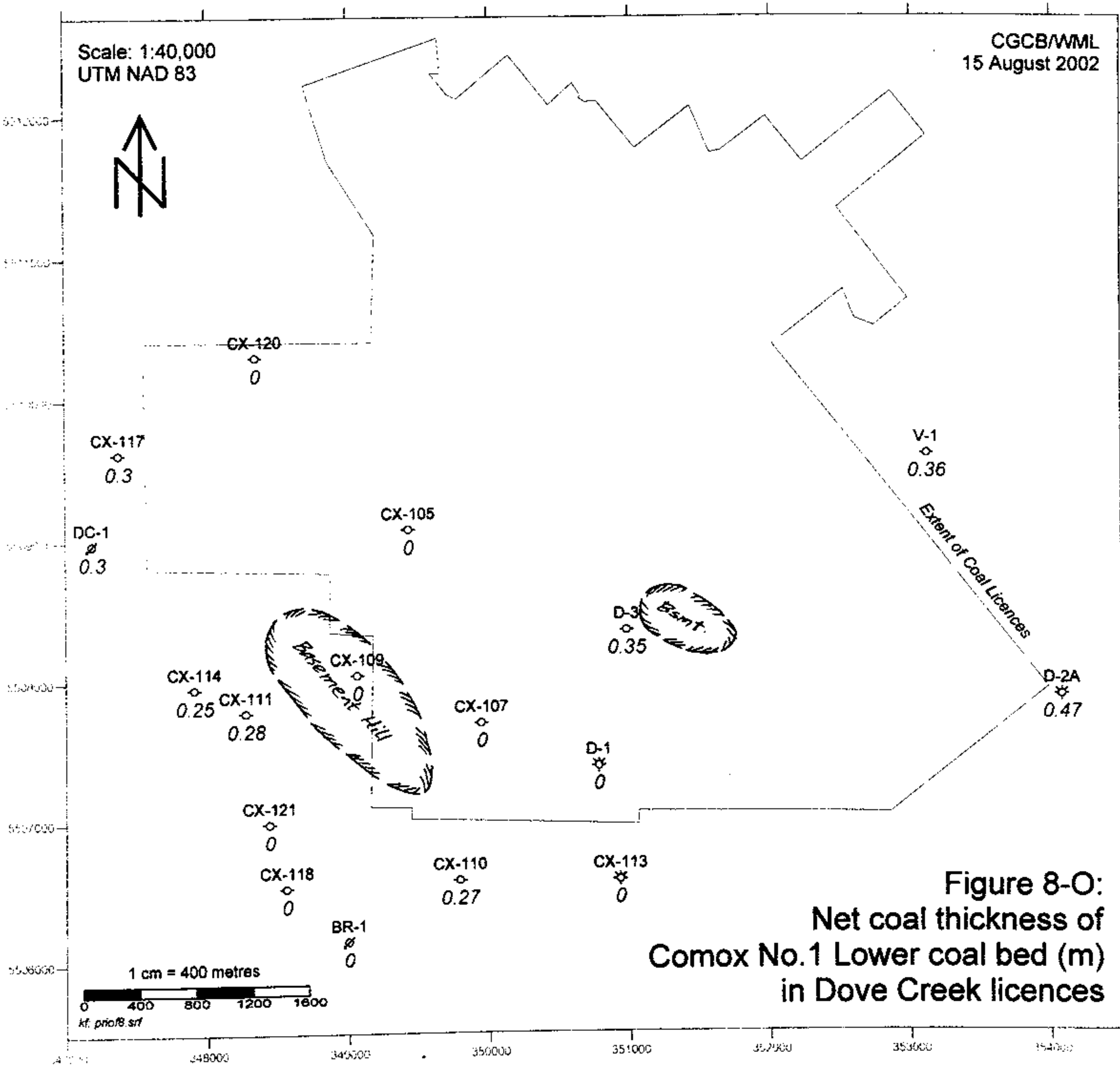


Figure 8-O:
Net coal thickness of
Comox No.1 Lower coal bed (m)
in Dove Creek licences

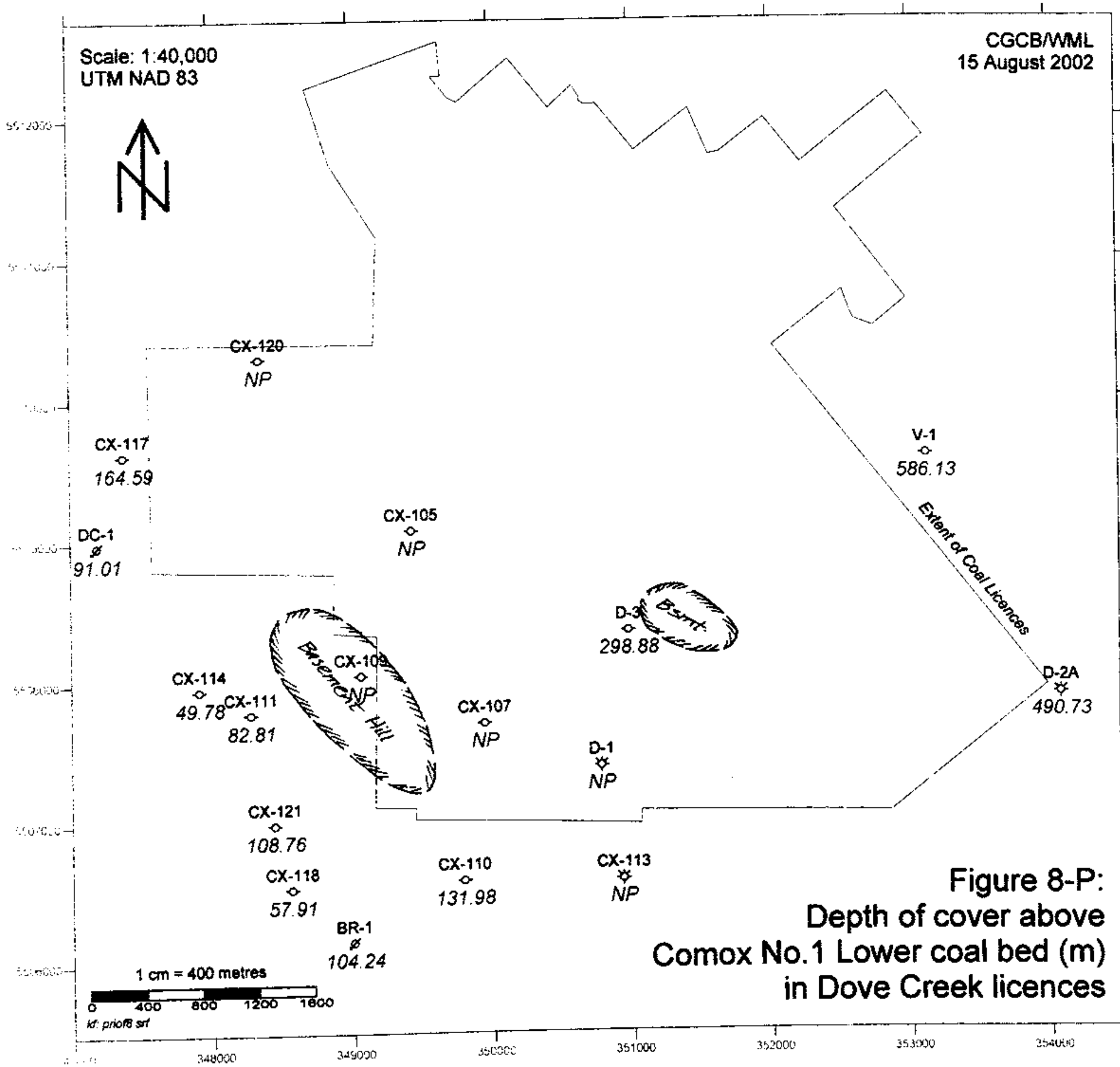


Figure 8-P:
Depth of cover above
Comox No.1 Lower coal bed (m)
in Dove Creek licences

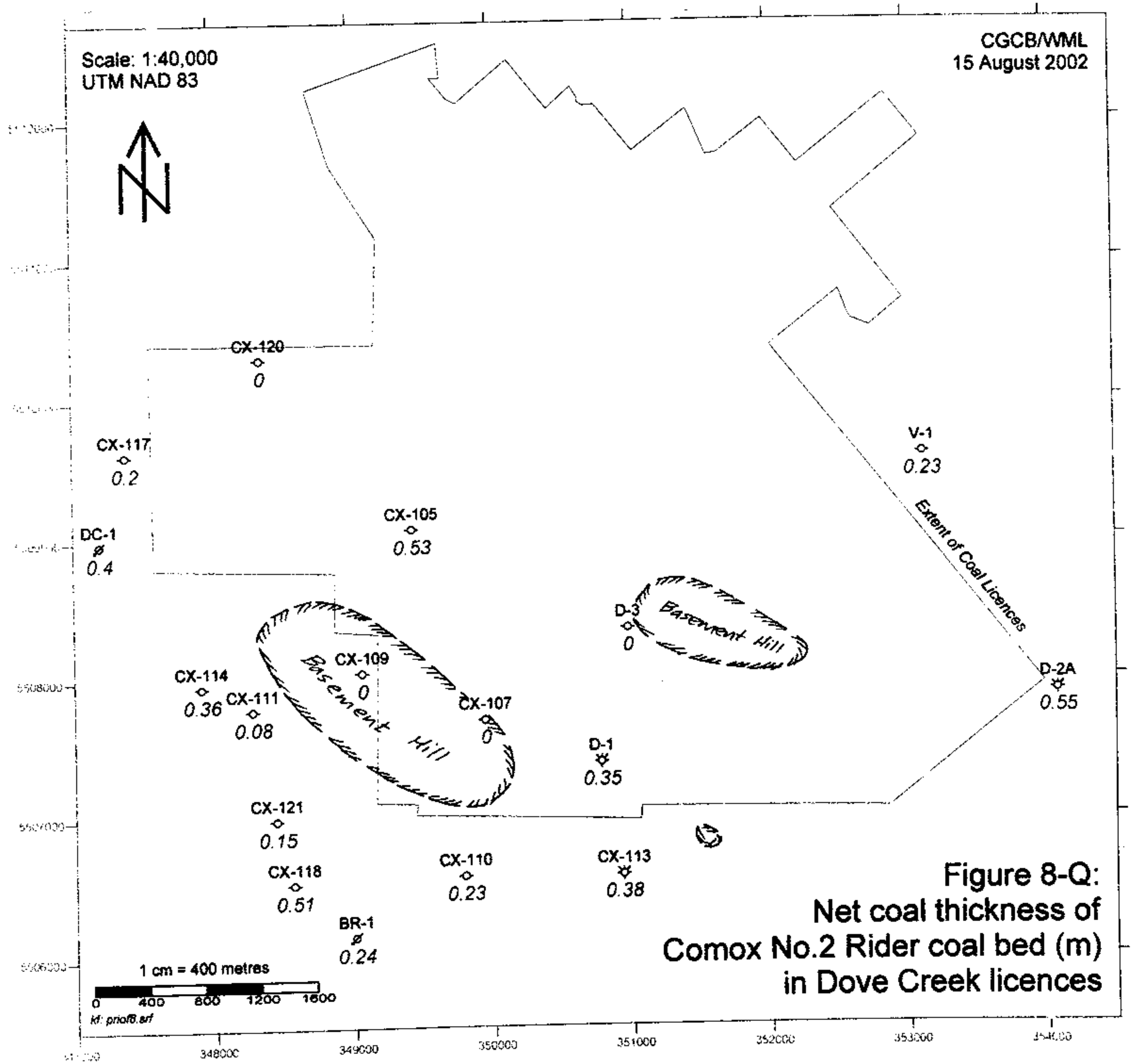


Figure 8-Q: Net coal thickness of Comox No.2 Rider coal bed (m) in Dove Creek licences

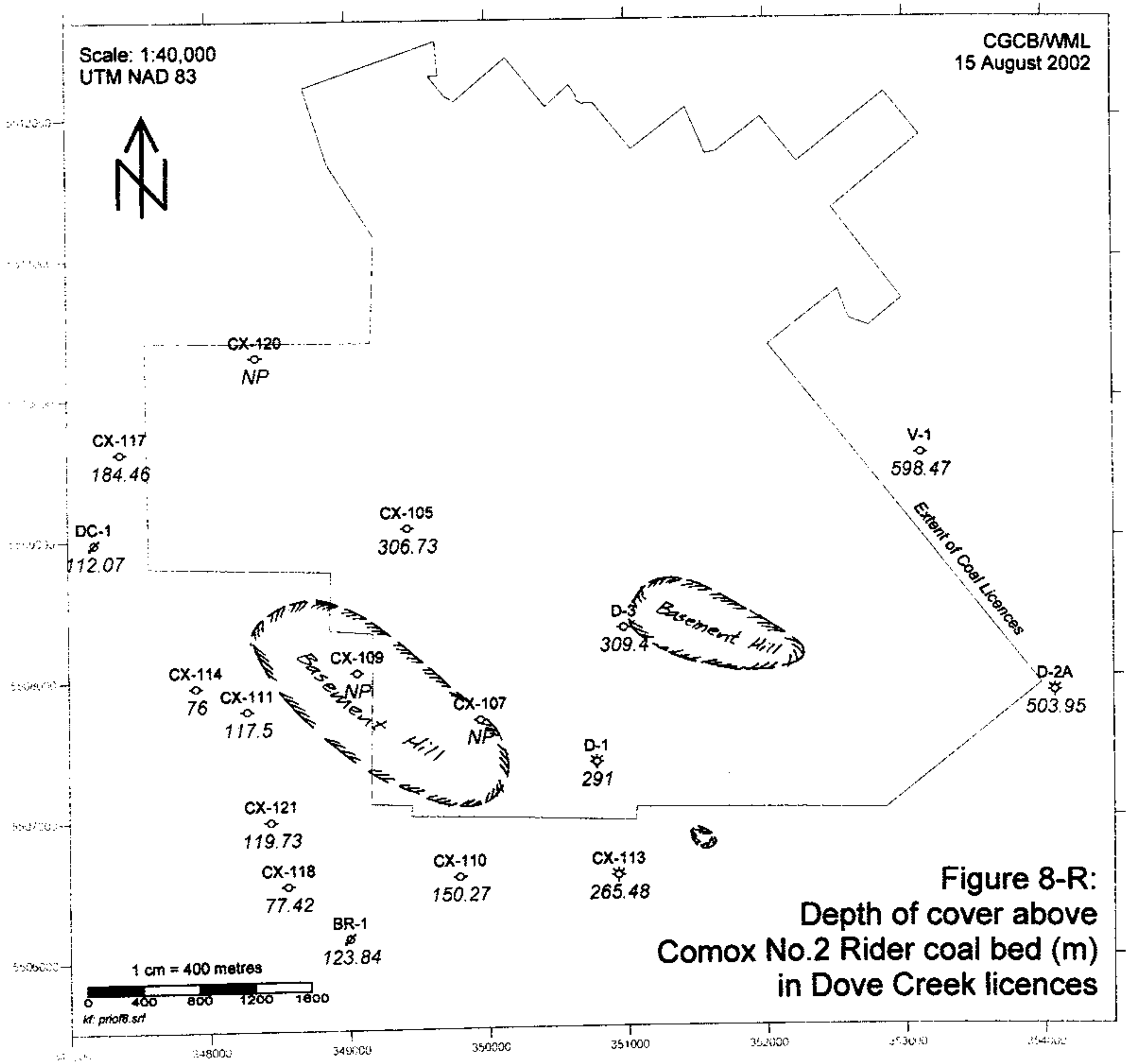


Figure 8-R:
Depth of cover above
Comox No.2 Rider coal bed (m)
in Dove Creek licences

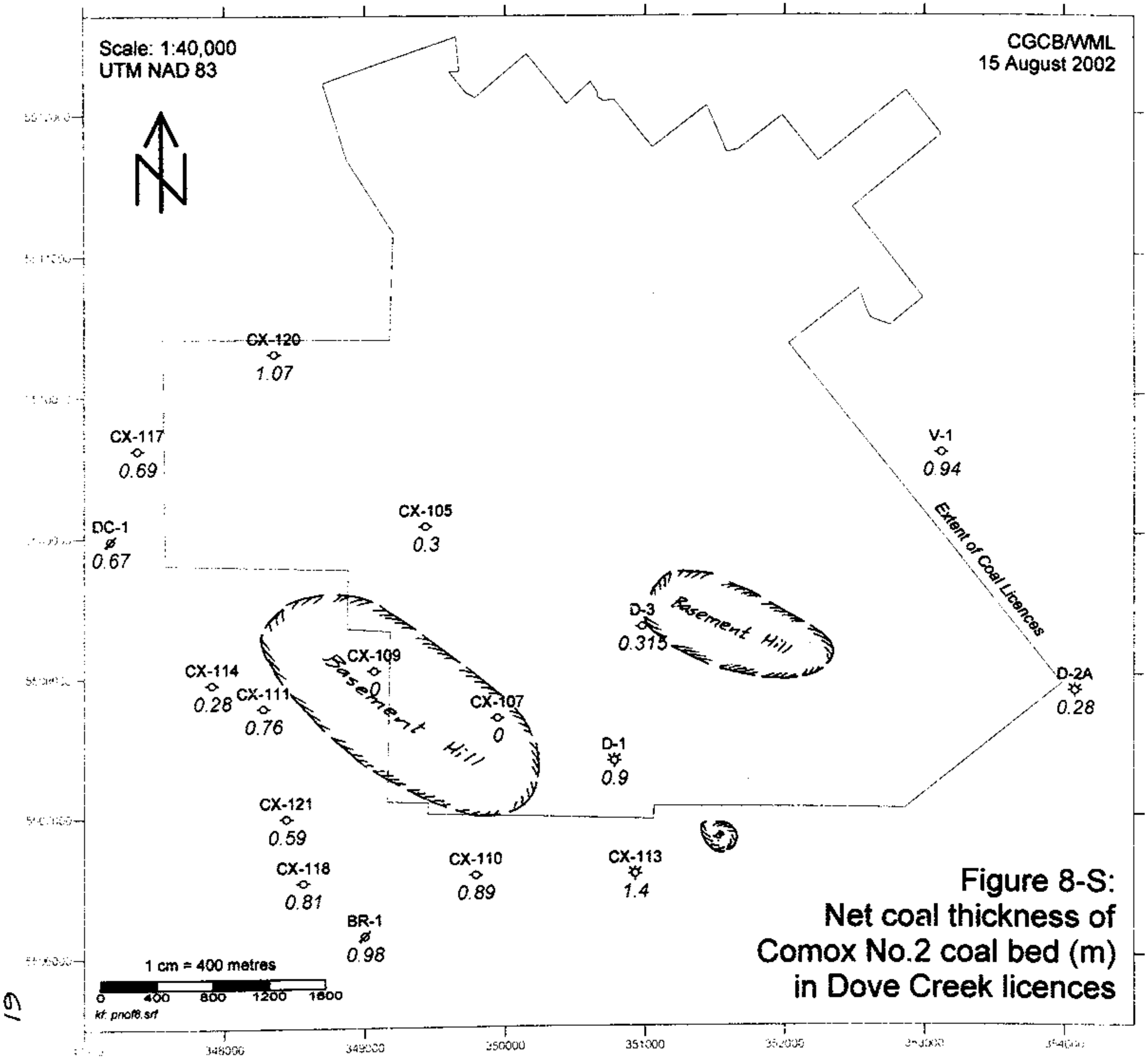


Figure 8-S:
Net coal thickness of
Comox No.2 coal bed (m)
in Dove Creek licences

61

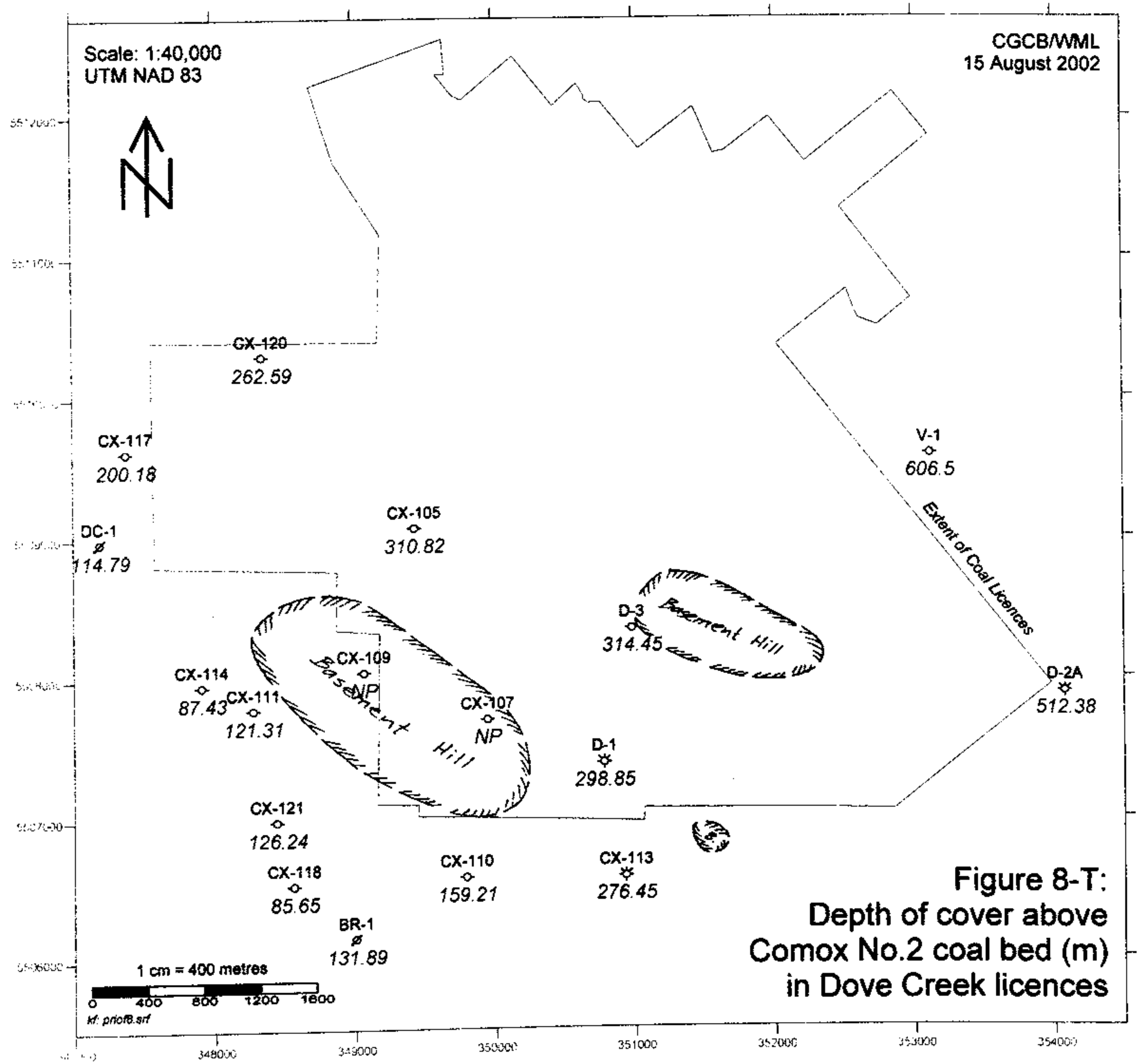


Figure 8-T: Depth of cover above Comox No.2 coal bed (m) in Dove Creek licences

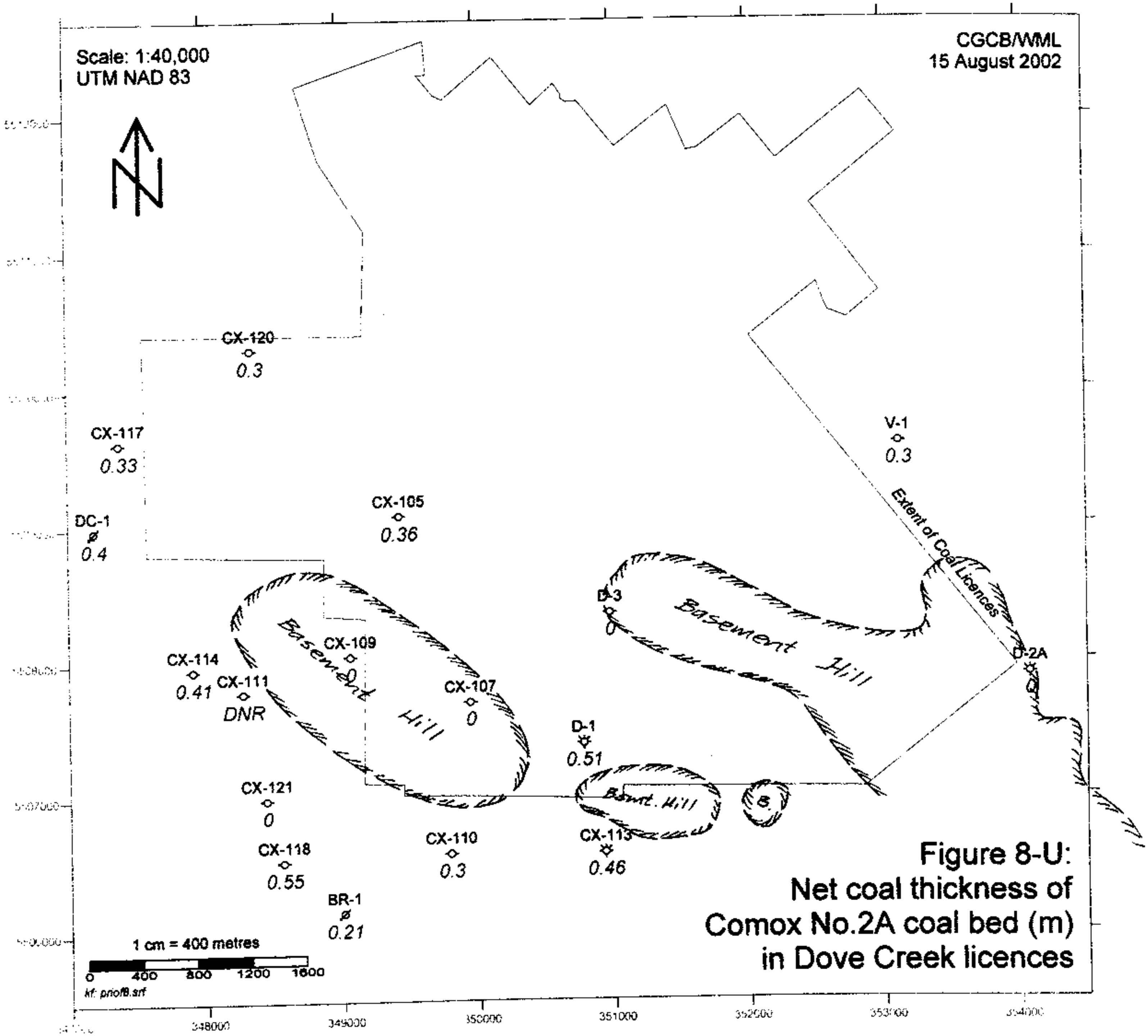


Figure 8-U:
Net coal thickness of
Comox No.2A coal bed (m)
in Dove Creek licences

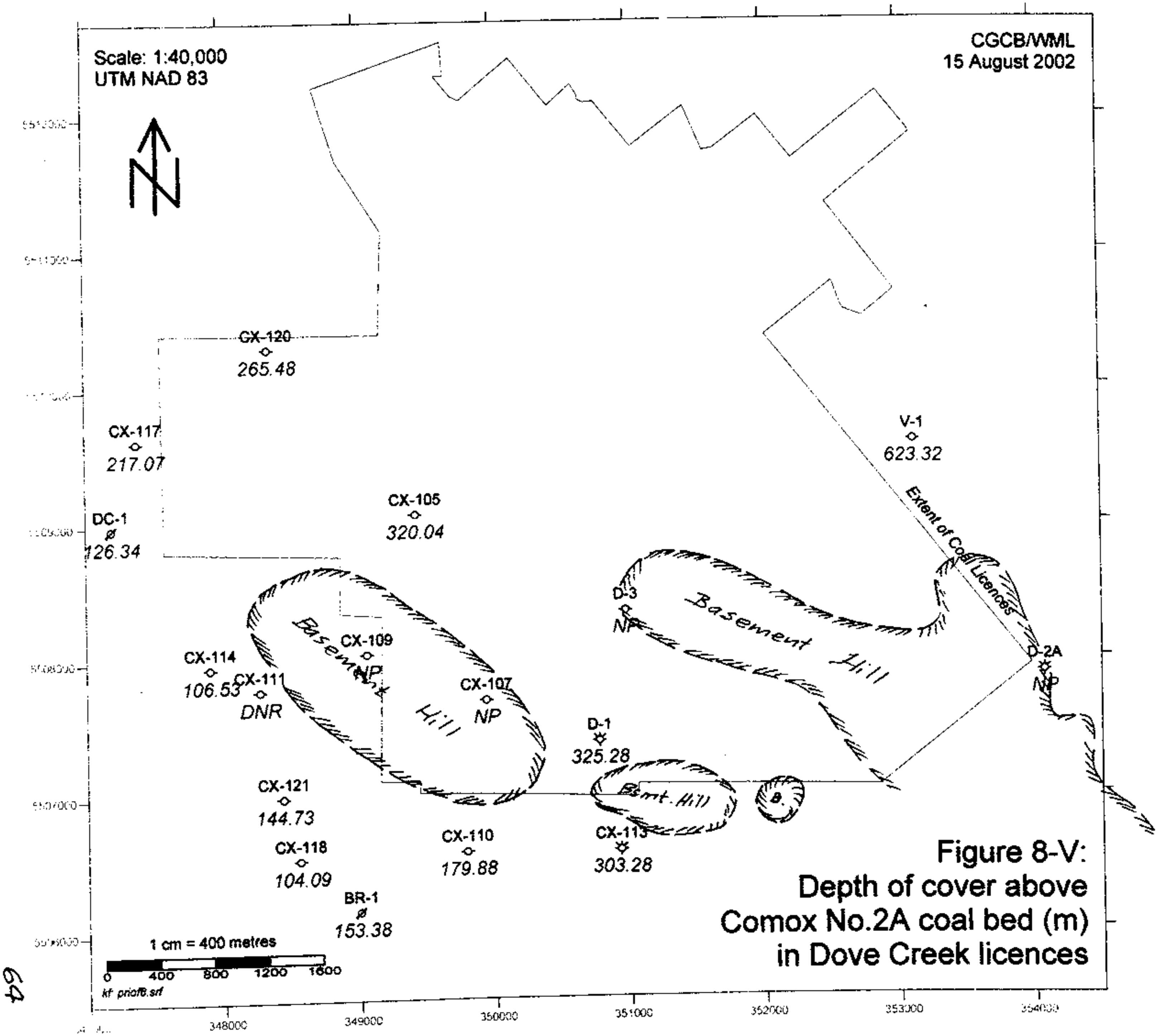


Figure 8-V: Depth of cover above Comox No.2A coal bed (m) in Dove Creek licences

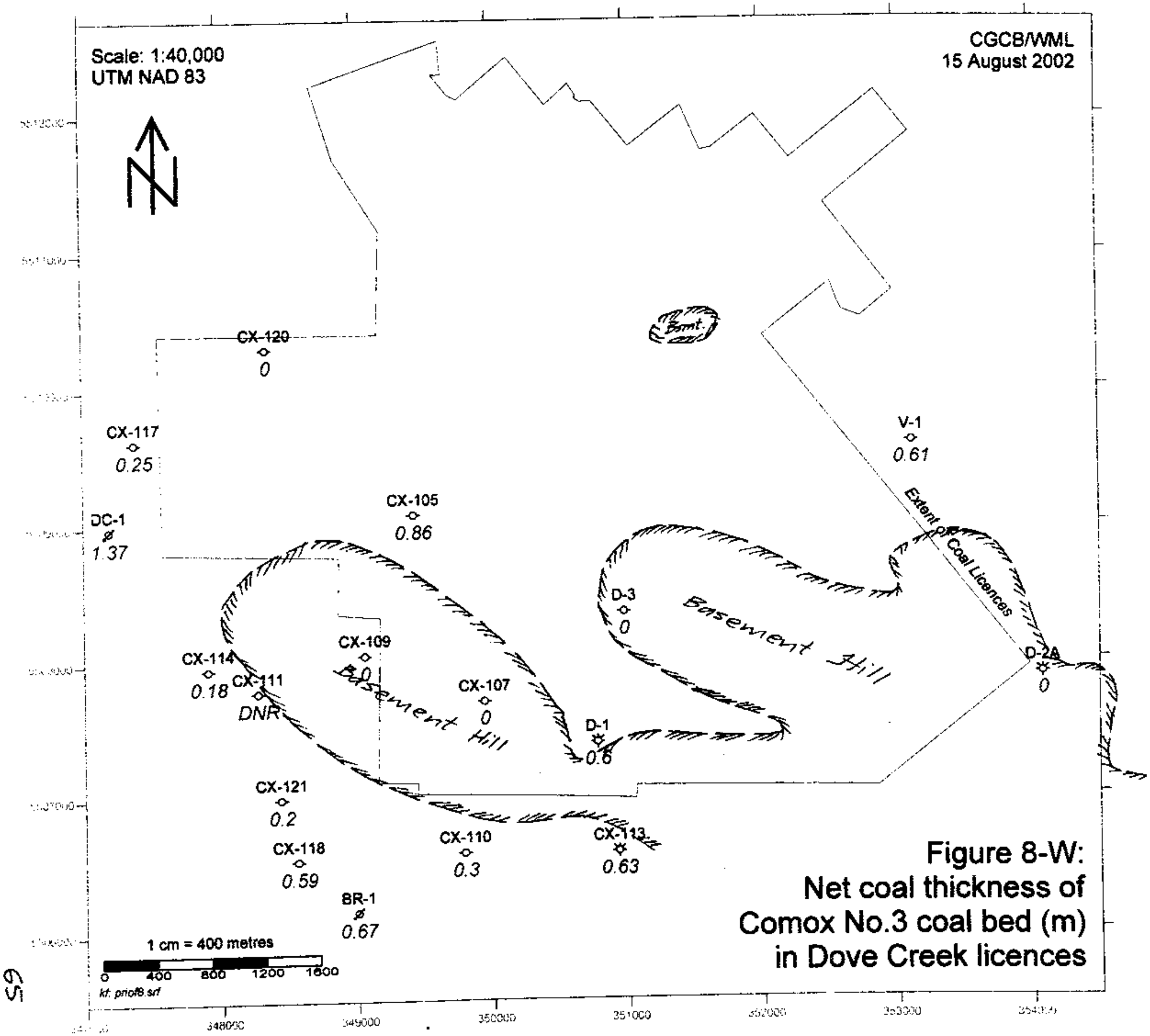


Figure 8-W: Net coal thickness of Comox No.3 coal bed (m) in Dove Creek licences

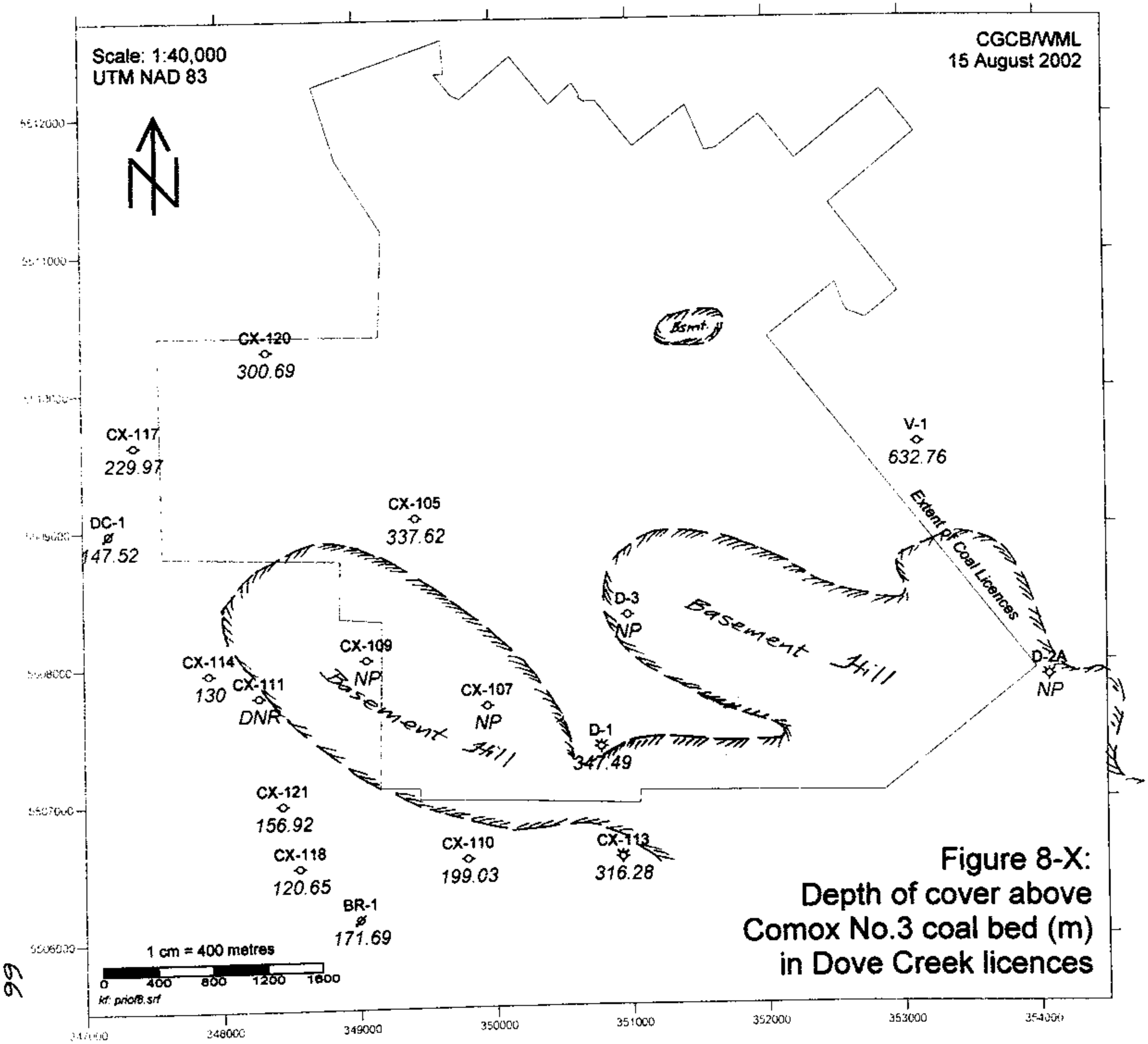


Figure 8-X:
Depth of cover above
Comox No.3 coal bed (m)
in Dove Creek licences

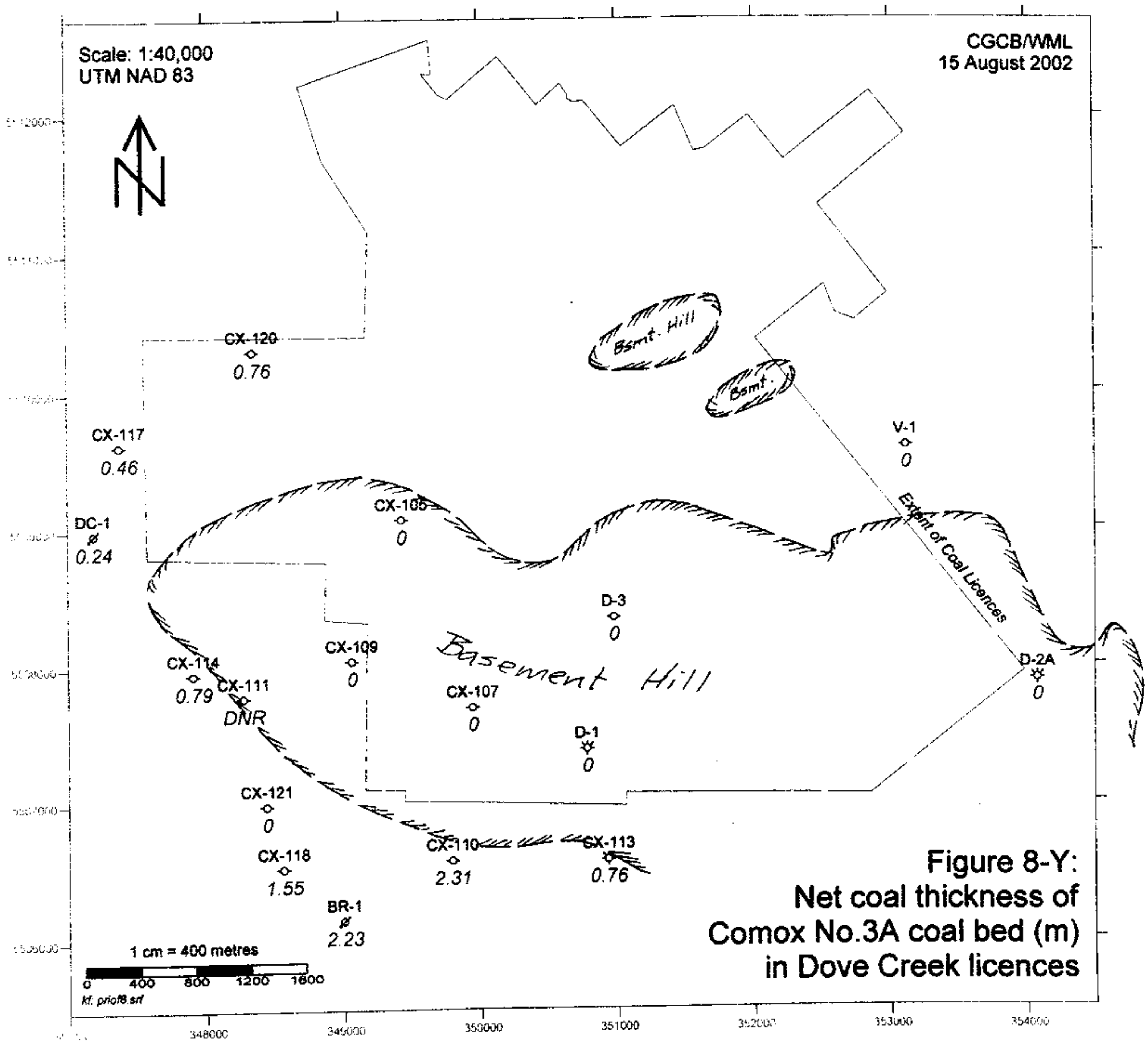


Figure 8-Y:
Net coal thickness of
Comox No.3A coal bed (m)
in Dove Creek licences

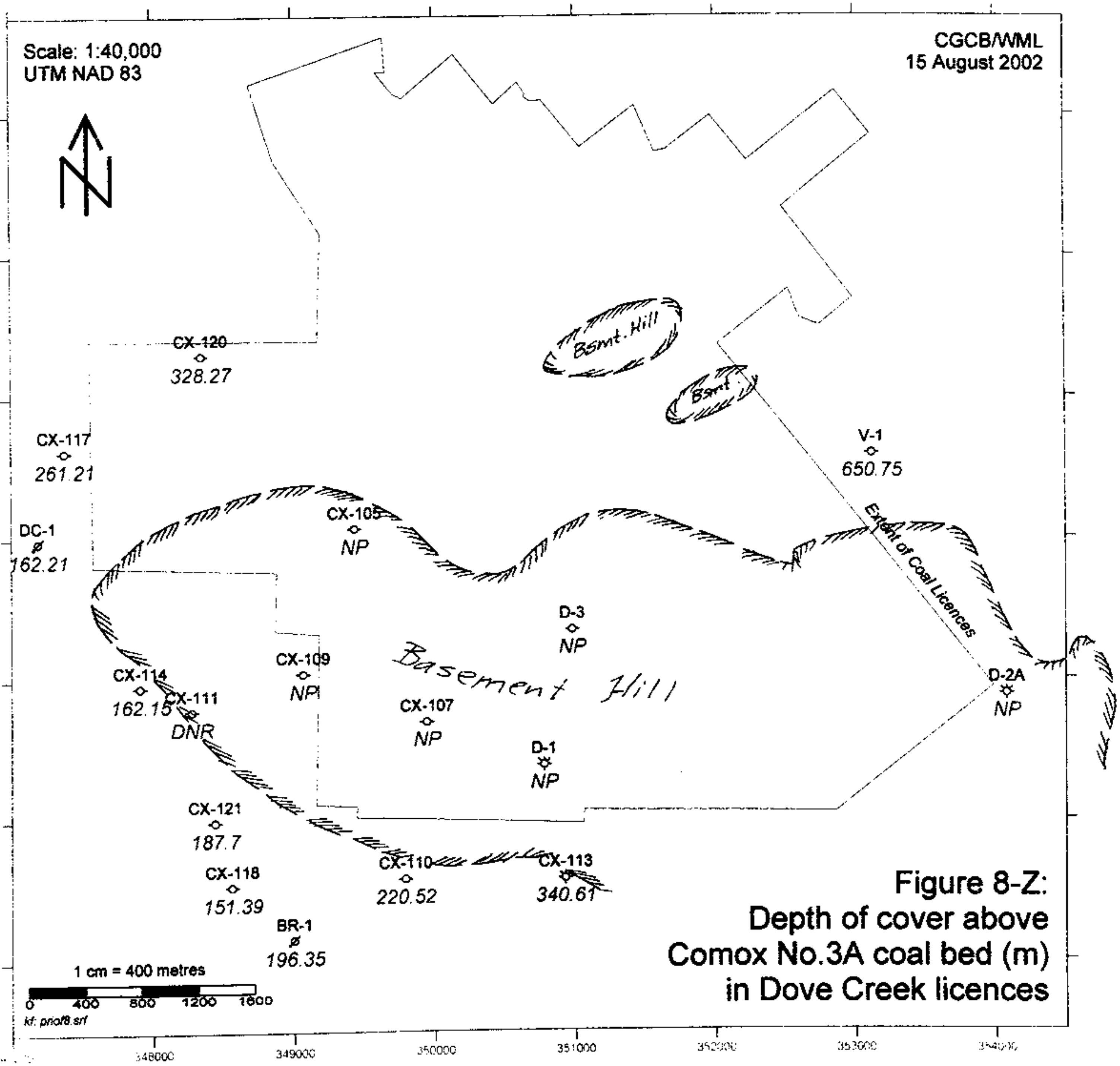


**Figure 8-Z:
Depth of cover above
Comox No.3A coal bed (m)
in Dove Creek licences**

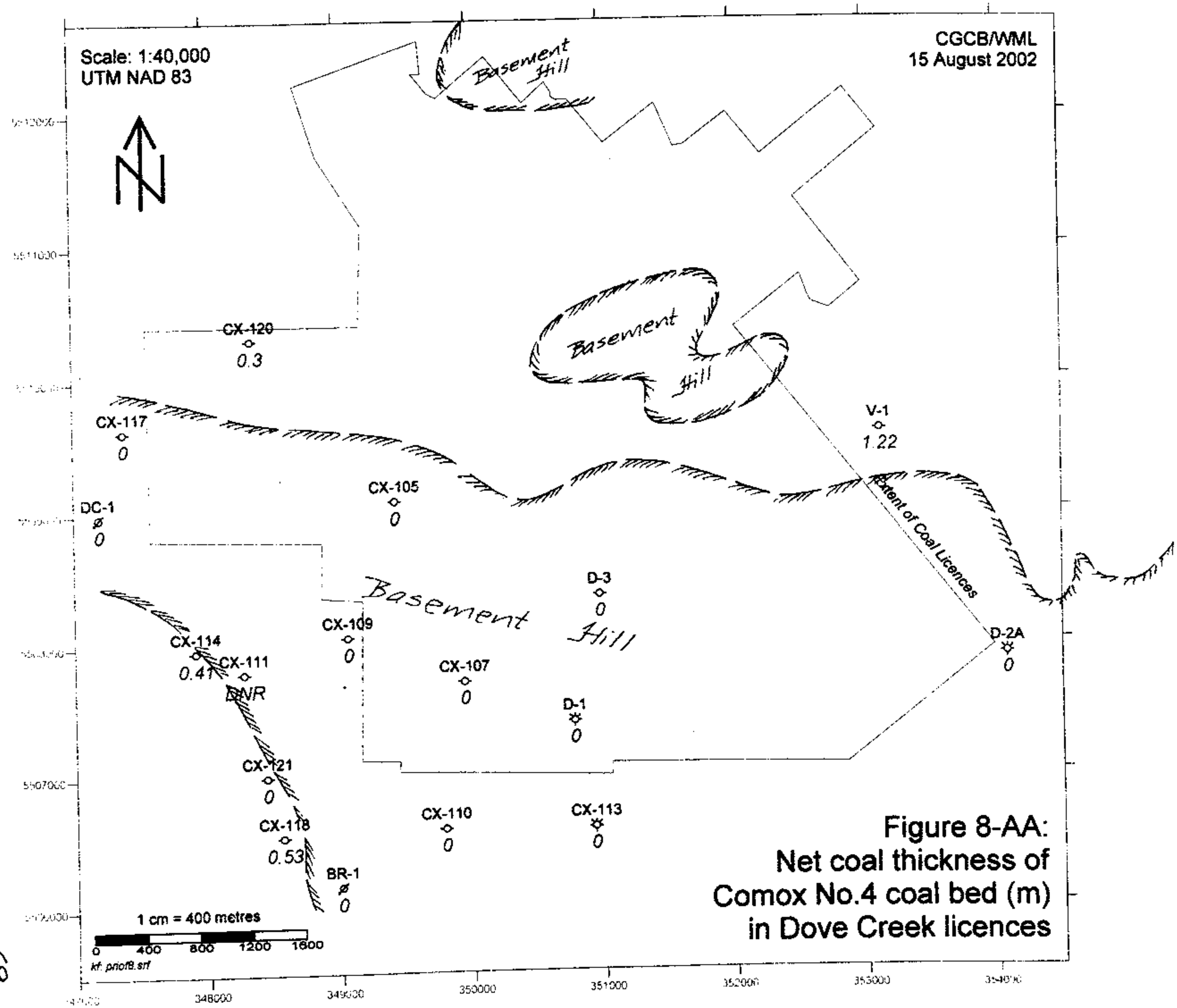


Figure 8-AA: Net coal thickness of Comox No.4 coal bed (m) in Dove Creek licences

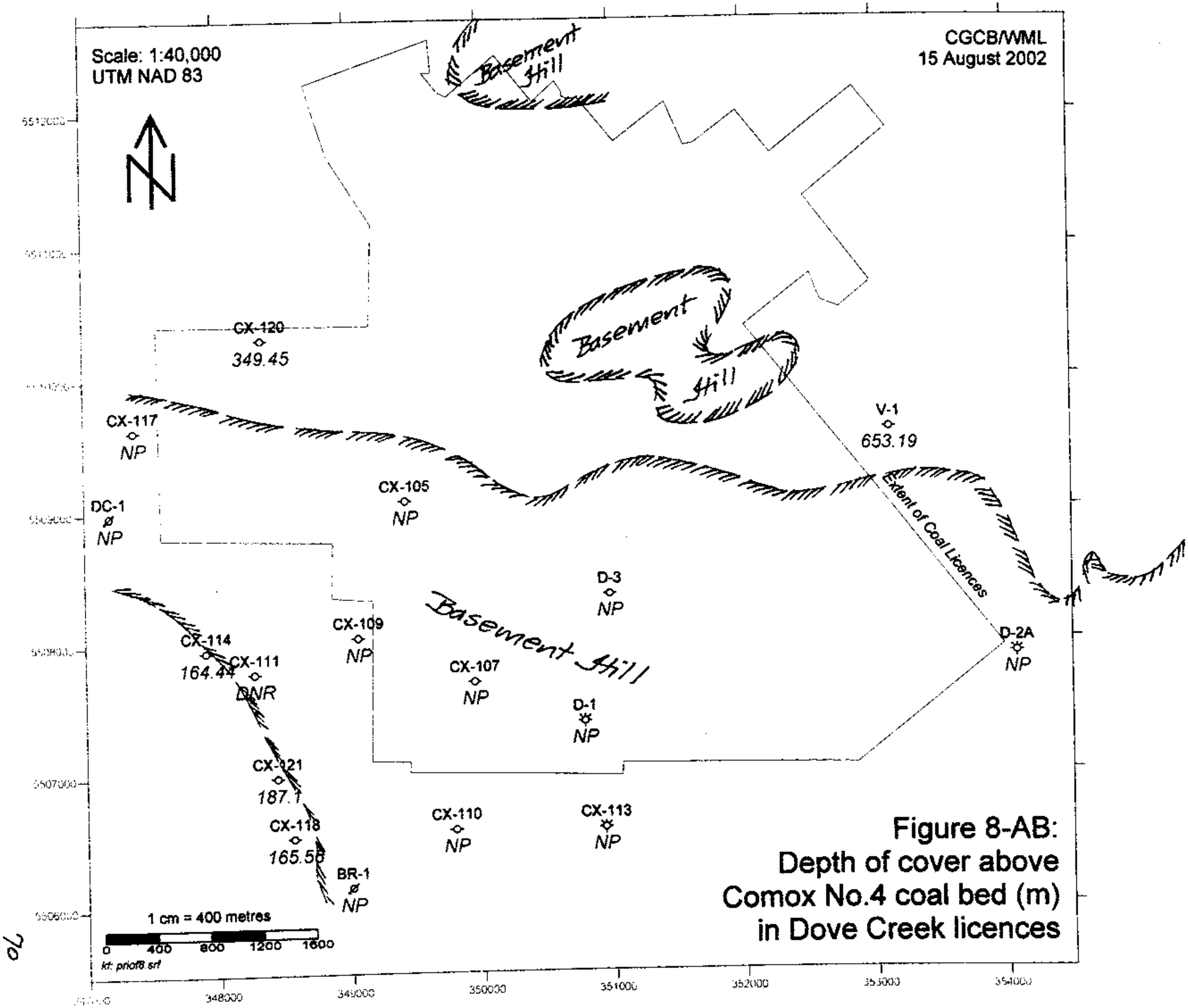


Figure 8-AB:
Depth of cover above Comox No.4 coal bed (m) in Dove Creek licences

basement paleohigh, or as indications of proximity to a major fault. Borehole D-3 also intersected a minor fault farther uphole, juxtaposing Browns sandstone over Puntledge shale.

Borehole D-2A, situated on freehold coal lands immediately east of the Dove Creek property, is interpreted to have intersected an extensional fault within the Royston Member, with unknown displacement.

A northwest-striking, probably east-dipping extensional fault is inferred to cross the southwestern part of the property, possibly passing between boreholes CX-117 and CX-120, and CX-105 and CX-113. The exact location, displacement and geometry of this fault is unknown, as it is nowhere exposed within the property. Another northwest-striking fault is inferred to follow the Southwestern side of Tsolum River, in the north-eastern corner of the property. Similarly, this fault is nowhere exposed and its presence is inferred from regional structural patterns.

6.2.3 DETAILS OF THE COMOX FORMATION

The Comox Formation comprises (from base upwards) the basal Benson conglomerate, mainly-shaly Cumberland coal-measures, and uppermost mainly-sandy Dunsmuir coal-measures. Coal beds of potential interest for exploration and mining are contained within both the Cumberland and Dunsmuir coal-measures.

6.2.3.1 BENSON MEMBER

The name "Benson" was introduced by Clapp (1914) for the basal conglomerate unit in the Nanaimo coalfield. Most subsequent workers have found it convenient to apply the name to a basal conglomeratic unit within the Comox Formation in the Comox coalfield.

In the Dove Creek area, the Benson Member consists of texturally-immature pebbly siltstone and mudstone, which directly overlies pre-Cretaceous basement and is inferred to drape against irregularities in the basement paleosurface (as suggested by Rose, 1924). Thickness of the Benson Member as observed in boreholes at Dove Creek ranges from nil to 4 metres; the Benson may be thicker in paleovalleys, but this possibility remains to be tested by drilling.

The Benson Member does not contain coal within the Dove Creek property.

6.2.3.2 CUMBERLAND MEMBER

The Cumberland Member is the medial, dominantly fine-grained, portion of the Comox Formation. Its basal contact with the Benson Member is drawn at the top of the highest bed of conglomerate or conglomeratic mudstone, which is not in turn underlain by older coal-measures. The Cumberland-Benson contact is probably gradational by interbedding at local and sub-regional scale (as suggested by Kenyon and others, 1992).

The Cumberland Member consists mainly of variably-carbonaceous mudstone and siltstone with occasional thin to thick coal beds and channel-sands. Mudstones of the Cumberland are often sheared, perhaps due to differential compaction over irregularities in the underlying basement. Cumberland coals range from blocky and hard (with well-developed cleat systems) to sheared and crumbly (with many closely-spaced shear planes or listric surfaces). Some of the Cumberland mudstones and siltstones are rooty and distinctly bleached, perhaps representing paleosol horizons.

Cumberland sands range from fine- to very coarse-grained. They tend to be distinctly clay-rich or dirty (including considerable silty or carbonaceous matrix), with compositions ranging from quartz-feldspar to quartz-feldspar-basalt. Feldspar grains tend to be kaolinised and corroded.

Thickness of the Cumberland Member at Dove Creek ranges from nil to at least 158 metres, with a mean thickness of 63 metres. Most of the variability in thickness is probably due to the irregularities of the underlying Karmutsen paleosurface, but the top of the Cumberland may also locally be truncated by erosion prior to deposition of the overlying Dunsmuir member.

6.2.3.2.1 Coals of the Cumberland Member

Coals within the Cumberland Member are numbered downwards from No.2R, 2 and 2A, 3 and 3A, to 4 at the base. The No.2R coal bed is locally absent due to sub-Dunsmuir erosion, and the 3, 3A and 4 are frequently absent owing to non-deposition in areas of high basement paleoelevation. **Figure 9** shows the inferred progressively-smaller outlines of the basement hills, as the paleosurface is gradually infilled by sediments.

The 2, 3A and 4 coals constitute the bulk of the resource base within the Cumberland Member at Dove Creek. The No.2A coal bed locally splits downward to form a distinct bed, the 2AL, which may correlate with a thick coal found in the Anderson Lake coal property to the west of Dove Creek.

Maps of net coal thickness and depth to top of the Cumberland coal beds (except for the 2AL, which has not been mapped in detail) are presented as **Figures 8-Q** through **8-AB**.

6.2.3.3 DUNSMUIR MEMBER

The Dunsmuir Member is the uppermost, dominantly sandy member of the Comox Formation. Unlike further north in the Campbell River and Oyster River areas, the Dunsmuir at Dove Creek contains numerous coal beds as well as thick, laterally-persistent sandstone beds. Its basal contact with the underlying Cumberland Member is drawn at an abrupt shift from sandstone downwards to siltstone, mudstone or coal; this contact is locally distinctly erosional, with ripped-up blocks of coal and siltstone crowding the basal Dunsmuir sandstone.

The Dunsmuir Member consists mainly of sandstone, which ranges from fine- to very coarse-grained. Dunsmuir sands tend to be clean and well-sorted, of quartz-chert to quartz-basalt composition, with well-developed low gamma-ray counts. Some of the Dunsmuir sands are shell-bearing, containing thick-shelled pelecypods and gastropods, and *Macaronichnus* burrows (cf. *M. segregatis* Clifton and Thompson, 1978) are locally distinctly abundant within the sandstones.

Thickness of the Dunsmuir Member at Dove Creek ranges from 98 to 177 metres, with a mean thickness of 131 metres. Most of the variability in thickness is probably due to a gradual south-westward thinning-out of the member, but the top and base of the member are locally marked by erosional surfaces which may cause significant gain or loss of thickness.

6.2.3.3.1 Coals of the Dunsmuir Member

Coals within the Dunsmuir Member are lettered downwards from X and XL at the top, through Y, YL and Z, to 1R, 1 and 1L at the base. The X and XL, Y and YL, and 1R, 1 and 1L coals form three local zones of closely-associated coals. The shift from lettering to numbering within the Dunsmuir coals is an artefact of miners' historical practice of numbering major coals within the Comox coalfield.

Within the Dove Creek property, Dunsmuir coals form the bulk of the resource base. The coals of the 1R, 1 and 1L zone, and the Z coal bed, are the thickest of the Dunsmuir coals at Dove Creek. The Z coal bed and the 1 group of coals are locally inferred to be absent due to non-deposition atop basement paleohills (**Figure 9**).

Maps of net coal thickness and depth to top of the Cumberland coal beds (except for the 2AL, which has not been mapped in detail) are presented as **Figures 8-A** through **8-P**.

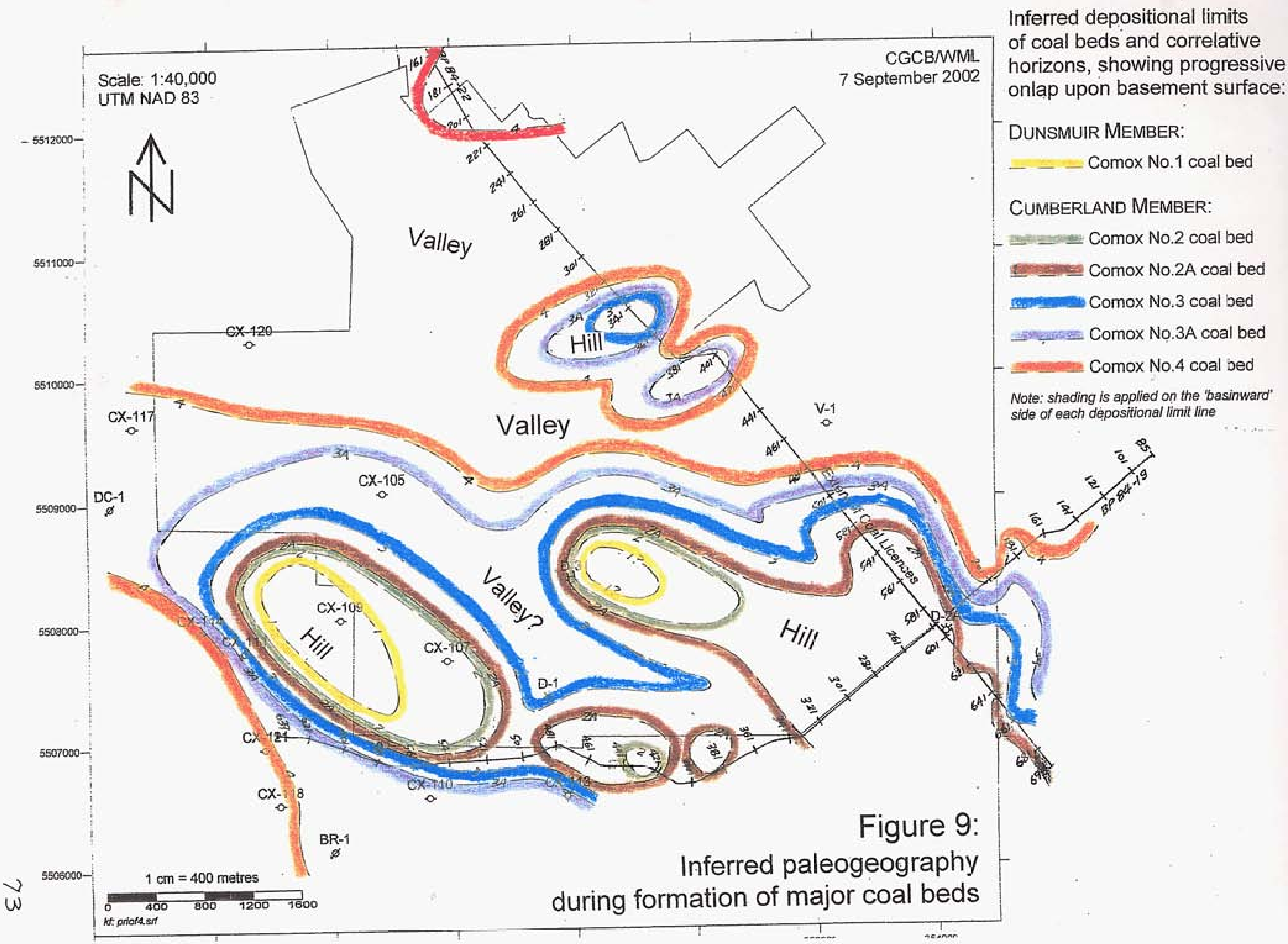


Figure 9:
Inferred paleogeography
during formation of major coal beds

6.2.4 DETAILS OF THE TRENT RIVER FORMATION

Within the Dove Creek property, the Trent River Formation comprises (from base upwards) the basal Cougarsmith siltstone, Cowie sandstone, Puntledge shale and sandstone, Browns sandstone and Royston shale, with additional overlying Baynes Sound and Willow Point members which are present only on the extreme eastern fringe of the property.

None of the members of the Trent River Formation are known to contain coal at Dove Creek, other than as isolated bright coal bands which probably represent coalified logs. Rootlets are rarely seen within the Browns Member, in contrast with the development of coal beds within the Browns Member of the Campbell River area, farther to the north.

Stratigraphy of the basal two-thirds of the Trent River Formation is reasonably well-documented (Cathyl-Bickford, 1992a; 2001) but the uppermost Baynes Sound and Willow Point members are much less well-known owing to lack of outcrop, and their relationships and thickness are still to some extent conjectural.

6.2.4.1 COUGARSMITH MEMBER

Although in its type locality in the Tsable River coalfield the Cougarsmith Member consists of shale (Cathyl-Bickford, 1992a), at Dove Creek it consists of interbedded siltstone and sandstone, and it is much more difficult to distinguish from the adjoining sandstone units other than for its characteristic high degree of bioturbation. The basal contact of the Cougarsmith with the underlying Dunsmuir sandstone ranges from abrupt to erosional, and is locally marked by a lag deposit rich in shells and coalified plant trash.

The Cougarsmith Member ranges from 5.2 to 21 metres in thickness, with an average of 11.5 metres at Dove Creek, but it is locally not recognisable owing to the absence of the overlying Cowie sandstone. Perhaps the Cougarsmith is locally truncated by erosion at the base of the younger Puntledge shale, as suggested in the north-western part of the geological map accompanying this report (**Figure 5**).

6.2.4.2 COWIE MEMBER

The Cowie Member at Dove Creek consists of one or more thick sandstone beds, ranging from very fine- to medium-grained quartz-chert to quartz-chert-basalt sandstone. The Cowie sands are sparsely to intensely bioturbated, and occasionally include lag beds rich in contorted flakes, chips and blocks of siltstone and mudstone. The basal contact of the Cowie with the underlying Cougarsmith siltstones tends to be abrupt or erosional, but it is locally obscured by intense bioturbation and concomitant churning of sediment.

The Cowie Member locally appears to be altogether absent, whether due to original non-deposition or to subsequent sub-Puntledge erosion. Where present, the Cowie Member ranges from 1.8 to 44.2 metres thick, averaging 20.3 metres.

6.2.4.3 PUNTLEDGE MEMBER

The Puntledge Member consists of interbedded siltstone and mudstone with minor sandstone at its type locality on Puntledge River (Cathyl-Bickford, 2001), but in the Dove Creek area it consists predominantly of sandstone with significant but still subordinate interbeds of siltstone; on the whole this is a surprisingly rapid change from the fine-grained beds at the type locality, and it suggests that the Puntledge Member may pinch out altogether, to the northeast towards Merville.

Puntledge sandstones are mostly quartz-chert to quartz-chert-basalt, and very-fine to fine-grained, with occasional medium-grained sandstone beds. Glauconite is more common in the Puntledge sandstones than in those of underlying and overlying units.

The basal contact of the Puntledge Member with the underlying Cowie Member ranges from gradational to erosional, but at times it is largely obscured by bioturbation. The Puntledge siltstones may in some localities interfinger laterally with the Cowie sandstones, but elsewhere they appear to step down and scour out the Cowie altogether.

The Puntledge Member ranges from 30 to 128 metres in thickness at Dove Creek, averaging 87 metres.

6.2.4.4 BROWNS MEMBER

Like the Puntledge Member, the Browns Member at Dove Creek is significantly different from its type section (Cathyl-Bickford, 2001) at Steelhead Rapids on Browns River, just south of the property. At the type section the Browns Member consists of 9 metres of interbedded very fine- to fine-grained sandstone interbedded with sandy siltstone, but in the subsurface of the Dove Creek coal licences the Browns thickens markedly, consisting of 16 to 96 metres of interbedded sandstone and siltstone with minor mudstone.

Very fine- to coarse-grained, cherty to quartz-chert to chert-basalt sandstone forms the bulk of the subsurface Browns Member. Sand beds range from thin to thick, and are locally very well-cemented with silica and accordingly very strong, locally quite difficult to drill.

From Oyster River northwards to Campbell River, the Browns Member contains thin coal beds, but the only sign of plant growth and possible subaerial exposure at Dove Creek is the rare occurrence of rootlets atop some of the Browns sandstones.

The basal contact of the Browns Member with the underlying Puntledge siltstone is usually abrupt and locally erosional at the scale of an individual borehole or outcrop; the contact may, however, be gradational by interfingering at a regional scale.

6.2.4.5 ROYSTON MEMBER

The Royston Member consists of dark grey to greenish-grey, locally-concretionary, generally-sandy siltstone at Dove Creek, with occasional thin interbeds of fine- to medium-grained cherty sandstone and occasional thicker interbeds of silty mudstone. The basal contact of the Royston Member with the underlying Browns sandstone is usually gradational, locally marked by intense bioturbation.

The Royston Member is 163 to 185 metres thick in the Dove Creek coal property. It locally contains bedding-plane shear zones and sandstone dykes, which are mostly concentrated near its top.

6.2.4.6 BAYNES SOUND MEMBER

The Baynes Sound Member consists of thin to medium interbeds of fine- to medium-grained cherty sandstone and dark grey to greenish-grey sandy siltstone. The basal contact of the Baynes Sound Member with the underlying Royston mudstone is usually erosional, and it sometimes is marked by a few decimetres of local relief.

The Baynes Sound Member is 5 to 6 metres thick within the Dove Creek property. The member is conjectured to pinch out northward towards the northern edge of the coal property, since it cannot be readily recognised in the streamside exposures along Dove Creek.

6.2.4.7 WILLOW POINT MEMBER

The Willow Point Member consists of ashen-grey to greenish-grey, locally hematitic-weathering sandy siltstone with occasional very thin interbeds of very fine-grained cherty sandstone. The basal contact of the Willow Point Member with the underlying Baynes Sound sandstone is abrupt at outcrop scale, but is probably gradational by interfingering at regional scale.

The Willow Point Member is at least 102 metres thick at Dove Creek. The member in its entirety may be 150 to 250 metres thick, as indicated by boreholes southwest of Courtenay and by outcrop sections on Denman Island.

6.2.5 DRIFT COVER

As mentioned before, the Dove Creek area is widely covered by a blanket of unconsolidated Quaternary (probably mostly Pleistocene) Drift. Thickness of the Drift cover as found in boreholes ranges up to 33 metres, averaging 17 metres. Drift appears to thicken eastward towards the Tsolum River.

Lithology of the Drift varies widely, but in many of the boreholes a tripartite section can be observed, of uppermost loose to compact silty sand and gravel overlying compact bouldery till, in turn overlying basal interbeds of silt, sand and gravel.

7 PALEONTOLOGICAL REPORT FOR BOREHOLES D1, D2A AND D-3

By Dirk Meckert, PhD.

A complete list of publications dealing with fossils of the Upper Cretaceous Nanaimo Group would likely fill a moderately-sized bookshelf. Almost all groups of animals and plants have been dealt with one way or another. Until the end of the 1950's generalists dominated, producing large monographs covering everything they possibly could. The first major descriptions were undertaken by Whiteaves (1879, 1895, 1903) picturing most of the species known today. Usher (1952) added some molluscs, and Bell (1957) described the paleoflora.

Jeletzky wrote a number of paleontological reports (e.g. 1965; 1967) based on collections made by other researchers between the late 1950's and the mid 1970's. Although based mostly on the above publications they give insight not found anywhere else. Subsequent publications have dealt mostly with a single species, or a handful at best. Ward (1976; 1978a, b) and Haggart (1989) have to be mentioned here.

While paleontological research is lagging behind, lithostratigraphy in the Nanaimo Group has come a long way with researchers like Cathyl-Bickford producing numerous papers and Mustard (who published very good summary of the Nanaimo Group in 1994). Here we are at the heart of the problem, the reconciliation of the paleontological with the geological data. This has not happened for any part of the Nanaimo Group in decades. One large study is underway, involving Mustard, Haggart and Meckert, but is far away from completion. However, I am able to use my experience gathered to come to a preliminary conclusion, helping in my assessment of paleontological markers in Priority Ventures' boreholes.

7.1 BOREHOLE D-1

D-1 encountered several layers with shell-hash from the top down into the Dunsmuir Member. Some more complete bivalves were encountered as well. Down into the Puntledge Member a *Sphenoceramus – Inoceramus – Acila – Nemodon* (all bivalves) association predominates. The Dunsmuir Member contains mostly glycymeroid and trigonid bivalves. Other molluscs are indeterminate, as are most of the plant material encountered.

7.2 BOREHOLE D-2A

A number of gastropods were encountered in the Royston Member but could not be identified. Like in D-1 the *Sphenoceramus – Inoceramus – Acila – Nemodon* association predominates into the Puntledge Member. Of note is the bivalve *Idonearca* encountered in the Browns Member. The Comox Formation yielded mostly glycymeroid bivalves and *Cymbophora.*

7.3 BOREHOLE D-3

The bivalve associations in borehole D-3 follow the same pattern as in the previous two boreholes. Other important macrofossils were not encountered.

7.4 DISCUSSION

7.4.1 POSSIBLE SANTONIAN/CAMPANIAN STAGE BOUNDARY

Any of Priority's boreholes might cross the Santonian – Campanian boundary. The International Stratigraphic Commission defined this boundary as the last occurrence of *Marsupites testudinarius.* This crinoid has only been found in the Haslam Formation around Nanaimo, and only 5 specimens are known. This is not enough to come to any conclusion.

In surface exposures another crinoid, *Uintacrinus*, is helpful. Its first occurrence defines the begin of the Upper Santonian and it is not known to cross the Santonian / Campanian Boundary. The last occurrence falls into the basal Royston member on the Puntledge River.

These fossils are rare to say the least and it is unlikely to encounter them in a borehole.

7.4.2 BOUNDARIES BETWEEN MEMBERS

It may sound surprising, but there are no well-documented marker fossils for any of the boundaries within the Nanaimo Group. Early works were based on limited collections and a diffuse terminology for inoceramid bivalves. The latter have been redescribed, but not in the context of the Nanaimo Group.

Most molluscs last a long time and cross several member or formation boundaries. Exceptions are a set of new pachydiscid ammonites in the basal Royston Member (not encountered) and *Polyptychoceras* as a short-lived marker within the Puntledge member. It often occurs in association with *Ryugasella* in this level. These ammonites are fairly common, and getting one in a core helps a good deal in determining the approach to the Dunsmuir Member. On the Trent River (south of the Dove Creek property) only a few meters separate the Comox Formation from the first occurrence of *Polyptychoceras* in the Puntledge member.

Biostratigraphy in the Nanaimo Group suffers from the fact that stage boundaries can be defined through facies changes between full marine and marginal marine to possibly terrestrial. In order to apply internationally recognised species, full marine conditions are necessary. That may sound discouraging, but in this case associations based on facies may work just as well. The Comox Formation yields mostly bivalves like *Cymbophora*, *Glycymeris*, *Yaadia*, and *Pterotrigonia*. All these forms have thick shells needed in a sand-dominated high-energy environment.

The Puntledge Member can be understood as fully marine with ammonites and inoceramids appearing right at the base. Except for the above-mentioned *Polyptychoceras*, all other molluscs may occur from the Puntledge right up into the Royston Member. The thick-shelled *Idonearca* may be of limited help to identify the Browns Member in this area. North of Nanaimo I have only encountered it in the rather sandy facies of the Browns Member.

7.5 CONCLUSIONS

- Plant fossils are too badly preserved, too scattered and if well preserved too endemic to be of any use.
- Ammonites and crinoids are fully marine and don't work too well in this setting and it is unlikely to encounter the desired species, drilling.
- Inoceramids and maybe even more so, gastropods could be very useful but both groups need to be completely revised.
- Microfossils might be worked on again in the next couple of years and that could turn out to be the most helpful source of information, paleontologically speaking.

There is one personal suggestion I would like to make. In surface exposures I have never seen an inoceramid in the Comox Formation. I would therefore suggest that when inoceramids are encountered in the borehole, the boundary between the Comox Formation and the following Trent River Formation (Cougarsmith or Puntledge Members) should be below that layer.

Combining lithostratigraphy and paleontology I am able to read "tendencies" into what is happening, but this works only on a case-to-case basis and can only be acquired through many years of experience.

8 COAL QUALITY

8.1 DATA FROM SUMMER 2001 PROGRAMME

As mentioned above in section 4.2.3 of this report, 93 proximate analyses were run of coal and rock samples from the summer 2001 boreholes. Results of these analyses are summarised in **Table 9**, which relates each sample to its geological context and linear core recovery.

8.2 DISCUSSION OF RAW COAL QUALITY

The Dove Creek coals are of high volatile 'A' bituminous rank, with moderate to high free swelling index (FSI) values indicative of strong caking tendencies. Ash yields and sulphur contents of the coals are moderate to high by world standards.

8.2.1 ASH YIELD

Chart 3 (which is identical to **Chart 1** as presented in section 5 of this report, but is here repeated for convenience) depicts the ash yield of single-lithology coal and rock samples taken from boreholes D-1 and D-2A. All of the samples used in the construction of this chart were described by the same geologist (Cathyl-Bickford) and analysed at the same laboratory (Birtleys).

8.2.1.1 COALS

The mean ash yield of coals was 20.2% (with standard deviation of 7.8%), and the median ash yield was 19.9%. For most purposes it would probably suffice to consider that a 'typical' coal at Dove Creek would contain 20% ash on dry basis.

Dominantly-bright coals tend to fall into two populations: low-ash (roughly 8 to 15% dry basis) and high-ash (roughly 25 to 38% dry basis). Mixed-lithotype, or common banded coals, tend to fall into a moderate-ash population between the two groups of dominantly-bright coals. There is some overlap between the three groups of coals, and it is uncertain whether these observations would withstand rigorous statistical analysis which is beyond the scope of the present report.

One sample of stony coal plots out-of-place, with dry ash yield exceeding 45%; this sample was perhaps misidentified during logging and ought more properly to have been designated as a canneloid or coaly mudstone.

8.2.1.2 ROCKS

The mean ash yield of rocks was 60.6% (with standard deviation of 11.9%), and the median ash yield was 58.5%. For most purposes it would probably suffice to consider that a 'typical' mudstone parting at Dove Creek would contain 60% ash on dry basis.

All single-lithology rock samples yielded more than 40% ash on dry basis, which accords with expectations for the boundary between coals and coaly rocks. Perhaps not surprisingly, coaly or canneloid mudstones yielded less ash during proximate analysis, than did silty or carbonaceous mudstones. This suggests that a geologist indeed can, with sufficient practice, make some distinction between these two groups of mudstones.

8.2.2 SULPHUR CONTENT

Chart 4 presents results of a similar study of sulphur content (dry basis) of single-lithology coal and rock samples from boreholes D-1 and D-2A. **Chart 5** shows a crossplot of ash yield against total sulphur content: coal samples and rock samples appear to form two distinct 'clouds' within this plot. The

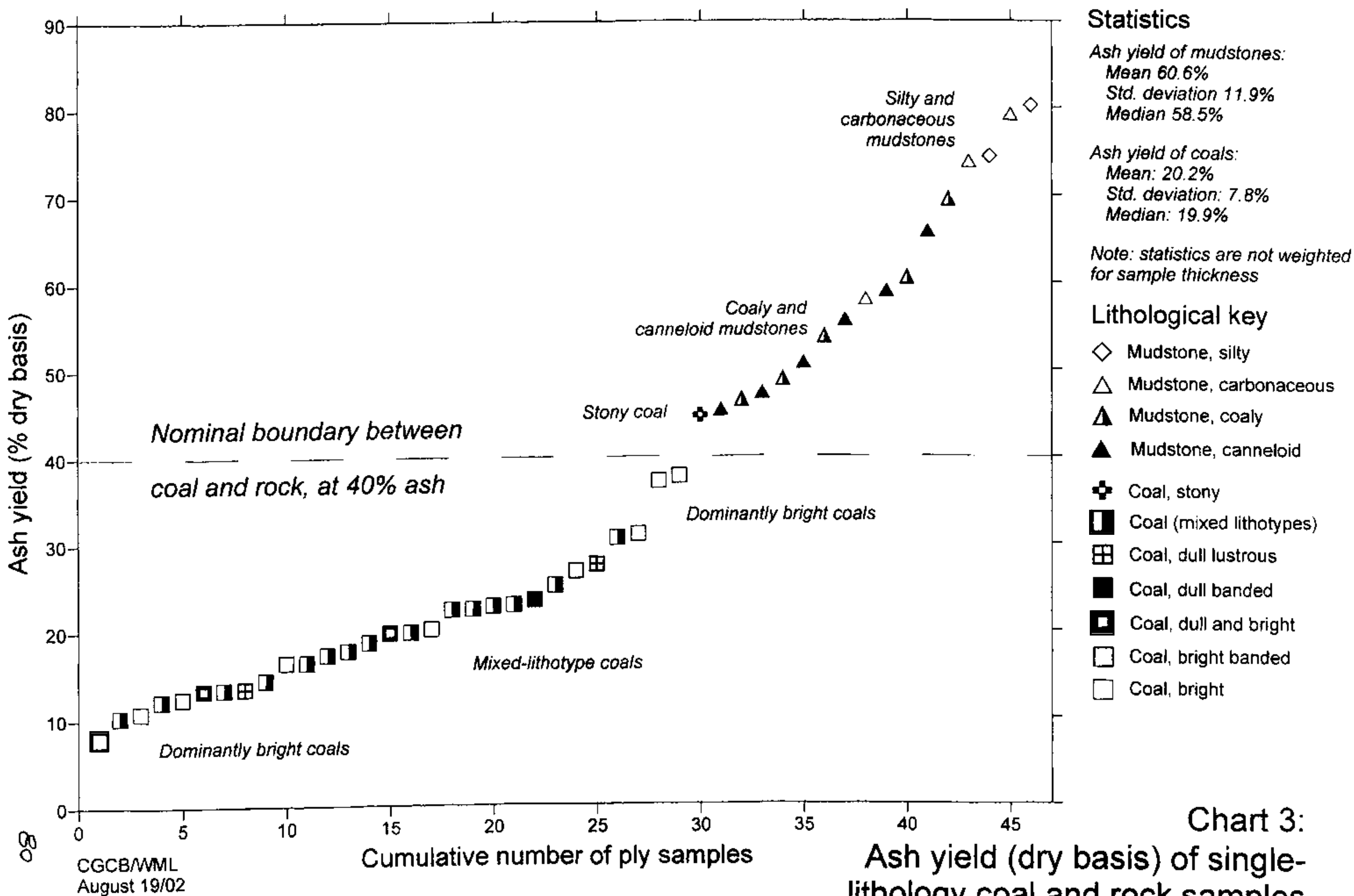
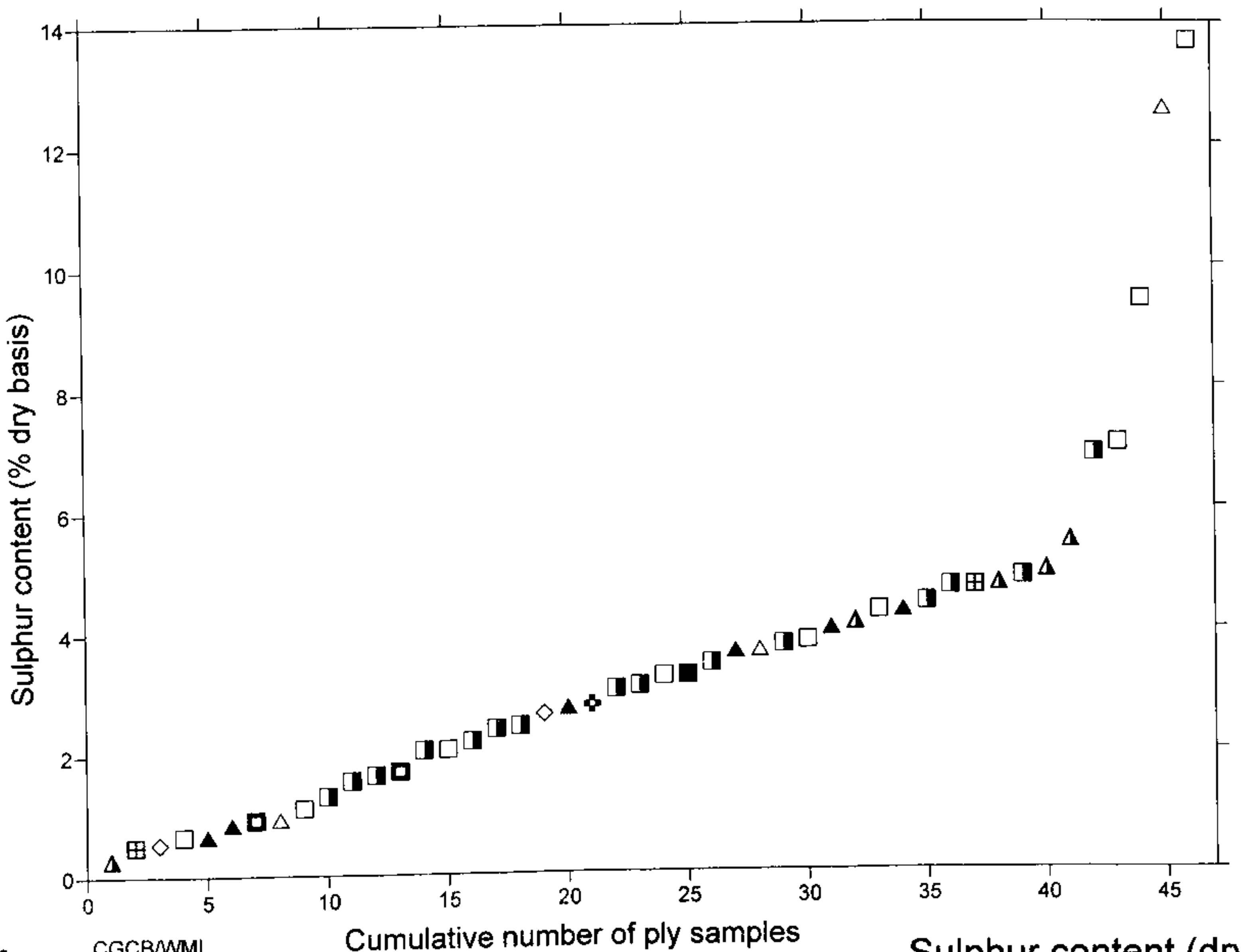


Chart 3:
Ash yield (dry basis) of single-lithology coal and rock samples from Dove Creek D-1 and D-2A



Statistics

Sulphur content of mudstones:
Mean 3.50%
Std. deviation 2.98%
Median 3.64%

Sulphur content of coals:
Mean: 3.59%
Std. deviation: 3.08%
Median: 2.82%

Note: statistics are not weighted for sample thickness

Lithological key

- ◇ Mudstone, silty
- △ Mudstone, carbonaceous
- Mudstone, coaly
- ▲ Mudstone, canneloid
- Coal, stony
- Coal (mixed lithotypes)
- Coal, dull lustrous
- ■ Coal, dull banded
- Coal, dull and bright
- Coal, bright banded
- □ Coal, bright

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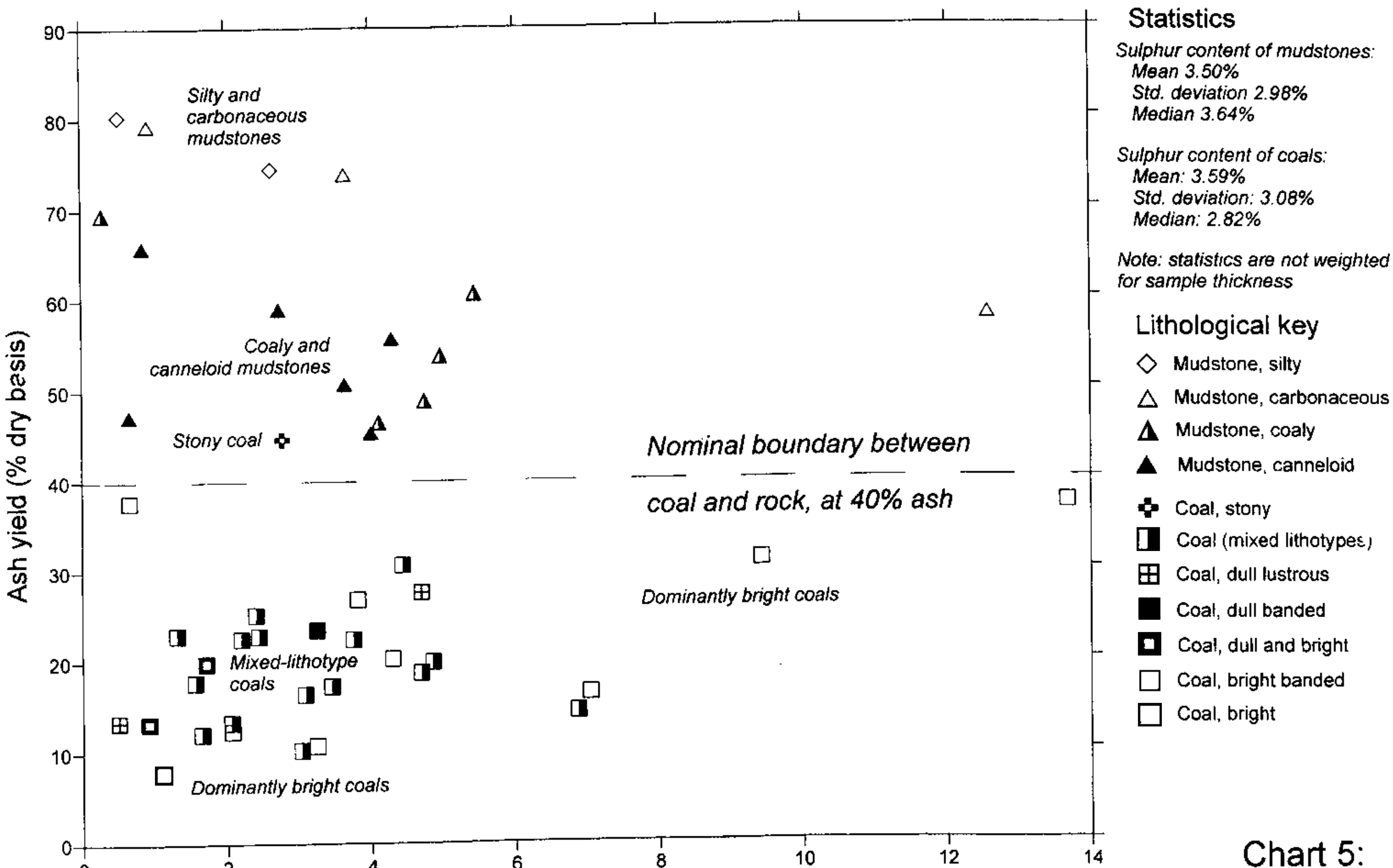
Chart 4:
Sulphur content (dry basis) of single-lithology coal and rock samples from Dove Creek D-1 and D-2A



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August 19/02

Chart 5:
Ash yield (dry) vs. sulphur content (dry) of single-lithology coal and rock samples from Dove Creek D-1 and D-2A

distinction appears to be based entirely on ash yield, and it appears that there is no clear separation of coals and rocks into populations on the basis of total sulphur content.

8.2.2.1 COALS

The mean total sulphur content of coals was 3.59% (with standard deviation of 3.08%), and the median sulphur content was 2.82%. By any standpoint, most of the Dove Creek coals have a high sulphur content in their raw state.

8.2.2.2 ROCKS

The mean total sulphur content of rocks was 3.50% (with standard deviation of 2.98%), and the median sulphur content was 3.64%. It is evident that many of the mudstone partings in the Dove Creek coal beds have a high sulphur content, although the extreme high value of total sulphur content (nearly 14% on dry basis) was attained by a coal sample.

8.2.3 FREE SWELLING INDEX (FSI)

The FSI of a coal is a measure of its caking power, and a crude indicator of its possible value for coke-making (although many other factors besides FSI must be correctly-proportioned to make a good coking coal).

The Dove Creek coals have moderate to high FSI values, ranging from 5.5 to 9+, indicating that they are strongly caking. The coals show a slight inverse relationship between ash yield and FSI, with clean coals tending to have higher FSI values. This relationship is reasonably common in caking coals, since the ash-forming minerals do not contribute as much to the coal's caking power as do the reactive organic constituents of the coal.

8.2.4 CALORIFIC VALUE

The calorific value of a coal is a measure of its possible utility for combustion, including steam-raising, thermal power generation, and use in furnaces. Calorific values of the Dove Creek coals range from 6796 to 8323 (dry basis), suggesting that they have potential for thermal use.

8.3 DISCUSSION OF CLEAN COAL QUALITY

Sink-float tests (presented in **Volume 3** of this report) of medium to coarse coal (retained on 60-mesh sieve) indicate that the coals can be more readily washed for ash reduction than for sulphur reduction. This appears to be characteristic of coals from the Comox coalfield, as reported by earlier workers (Swartzman, 1942; 1943). We would therefore expect that the Dove Creek coals, as currently known, will have greater potential for thermal power generation than for blending into metallurgical coal supplies.

In any case, the Dove Creek coals are mostly quite high in sulphur, although perhaps in the same ballpark as coals in adjoining parts of the Comox coalfield.

Further details of clean coal quality are presented in **Volume 3** of this report, which has been submitted on a confidential basis in accordance with the provisions of sections 5(2) and 15(2) of the provincial *Coal Regulation*, B.C. Reg. 19/93.

Ply data for borehole D-1 — Compiled by: CGCB — Date: Nov.8/01 — Page 1 of 4

Ply identification, thickness and linear recovery						Analytical data								
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV	SG	FSI
		206.61												
X	D 1/1/1		0.01	100	0.01	db	---			44.67	2.77			
		206.62												
		231.01												
Y	D 1/2/1		0.06	100	0.06	db	---	30.40	48.06	21.54	2.32			
		231.07												
		231.22												
	D 1/2/2		0.08	100	0.08	db	---	33.72	51.86	14.42	6.87	8287		8
		231.30												
		235.63												
Y_L	D 1/3/1		0.28	79	0.22	db	---	34.39	45.68	19.93	4.85	8149		6.5
		235.91												
		235.92												
	D 1/3/2		0.04	100	0.04	db	---	36.29	45.79	17.92	6.89	8199		6
		235.96												
		254.10												
Z (roof)	D 1/4/1		0.03	100	0.03	db	---			55.70	4.29			
		254.13												
Z	D 1/4/2		0.27	70	0.19	db	---	35.24	51.42	13.34	2.06	8322	1.37	8
		254.40												
	D 1/4/3		0.30	100	0.30	db	---			78.72	0.35		2.23	
		254.70												
	D 1/4/4		0.25	100	0.25	db	---	28.04	38.70	33.26	1.22		1.51	
		254.95												
	D 1/5/A (C-5)		0.38	100	0.38	db	---	23.54	23.99	52.47	2.19			
		255.33												

Table 9:
Analytical results for raw coal samples
Sheet 1 of 10

Ply data for borehole D-1			Compiled by: CGCB				Date: Nov.8/01			Page 2 of 4				
Ply identification, thickness and linear recovery						Analytical data								
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV	SG	FSI
		255.33												
Z (cont'd)	D 1/4/5		0.02	100	0.02	db	---	27.69	35.15	37.16	13.68			
		255.35												
	D 1/5/B (C-1)		0.35	94	0.33	db	---	26.03	34.65	39.32	1.55			
		255.70												
	D 1/4/6		0.02	100	0.02	db	---			47.28	0.66			
		255.72												
		274.07												
1R	D 1/6/1		0.24	100	0.24	db	---	33.32	43.48	23.21	5.56			
		274.31												
	D 1/6/2		0.33	76	0.25	db	---	36.24	47.30	16.45	7.04	8092		9
		274.64												
		276.20												
1	D 1/7/1		0.03	100	0.03	db	---	33.56	39.58	26.85	3.81			
		276.23												
	D 1/7/2		0.06	100	0.06	db	---			73.85	3.65			
		276.29												
	D 1/7/3		0.10	100	0.10	db	---			50.75	3.64			
		276.39												
	D 1/7/4		0.19	37	0.07	db	---	34.40	42.06	23.54	3.25			
		276.58												
		291.00												
2R	D 1/8/1		0.35	54	0.19	db	---	31.17	46.36	22.48	3.75			
		291.35												

Table 9:
Analytical results for raw coal samples
Sheet 2 of 10

Ply data for borehole D-1			Compiled by: CGCB				Date: Nov.8/01			Page 3 of 4				
Ply identification, thickness and linear recovery						Analytical data								
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV	SG	FSI
		298.82												
2 (roof)	D 1/9/1		0.03	100	0.03	db	---			69.57	0.29		1.98	
		298.85												
2	D 1/9/2		0.01	100	0.01	db	---	27.05	35.21	37.73	0.66			
		298.86												
	D 1/8/A (C-2)		0.36	100	0.36	db	---	27.01	37.93	35.07	1.93			
		299.22												
	D 1/9/3		0.03	100	0.03	db	---	38.96	50.28	10.76	3.24	8135		+9
		299.25												
	D 1/9/4		0.07	100	0.07	db	---			58.06	12.57			
		299.32												
	D 1/9/5		0.21	52	0.11	db	---	32.69	47.45	19.86	1.71	8196	1.39	5.5
		299.53												
	D 1/9/6		0.17	47	0.08	db	---			53.79	4.96			
		299.70												
	D 1/9/7		0.18	83	0.15	db	---			50.86	1.52			
		299.88												
	D 1/8/B (C-3)		0.32	100	0.32	db	---	35.79	52.11	12.10	1.65			
		300.20												
		325.28												
2A	D 1/9/A (C-4)		0.37	73	0.27	db	---	23.78	28.18	48.04	1.96			
		325.65												
		326.34												
	D 1/10/1		0.19	63	0.12	db	---	28.16	40.78	31.06	9.42			
		326.53												
	D 1/10/2		0.07	100	0.07	db	---			59.03	2.73			
		326.60												

Table 9:
Analytical results for raw coal samples
Sheet 3 of 10

Ply data for borehole D-1			Compiled by: CGCB				Date: Nov.8/01			Page 4 of 4				
Ply identification, thickness and linear recovery						Analytical data								
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV	SG	FSI
		327.11												
2A (cont'd)	D 1/10/3		0.16	38	0.06	db	---			65.84	0.85			
		327.27												
		331.43												
$2A_L$	D 1/11/1		0.12	100	0.12	db	---	35.60	41.39	23.01	1.31			
		331.55												
	D 1/11/2		0.26	38	0.10	db	---	30.85	46.17	22.98	0.60			
		331.81												
	D 1/11/3		0.08	100	0.08	db	---	37.06	49.66	13.28	0.92	8089		9
		331.89												
		347.49												
3	D 1/12/1		0.20	95	0.19	db	---	28.83	42.28	28.89	2.30			
		347.69												
	D 1/12/2		0.12	100	0.12	db	---			43.98	1.47			
		347.81												
		348.63												
	D 1/12/3		0.38	76	0.29	db	---			45.36	0.26			
		349.01												

Table 9:
Analytical results for raw coal samples
Sheet 4 of 10

Ply data for borehole D-2A			Compiled by: CGCB					Date: Nov.8/01		Page 1 of 5				
Ply identification, thickness and linear recovery						Analytical data								
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV	SG	FSI
		416.40												
X	D 2/1/1		0.26	81	0.21	db	---			41.97	5.08			
		416.66												
		417.36												
	D 2/2/1		0.27	48	0.13	db	---	31.73	45.70	22.57	2.20			
		417.63												
		424.75												
X_L	D 2/3/1		0.19	100	0.19	db	---	30.11	44.67	25.23	2.40			
		424.94												
	D 2/3/2		0.07	100	0.07	db	---			80.28	0.53			
		425.01												
	D 2/3/3		0.37	51	0.19	db	---	31.49	44.19	24.32	3.64			
		425.38												
		443.00												
Y	D 2/4/1		0.07	100	0.07	db	—			44.48	5.03			
		443.07												
	D 2/4/2		0.35	17	0.06	db	---	32.99	49.70	17.31	3.45	8323		8.5
		443.42												
	D 2/4/3		0.03	100	0.03	db	---			54.44	0.40			
		443.45												
	D 2/4/4		0.10	100	0.10	db	---	33.88	49.11	17.01	1.85	8261		7.5
		443.55												
		448.31												
Y_L	D 2/5/1		0.03	100	0.03	db	—	36.77	55.38	7.84	1.11	7829		8.0
		448.34												

Table 9:
Analytical results for raw coal samples
Sheet 5 of 10

Ply data for borehole D-2A			Compiled by: CGCB				Date: Nov.8/01		Page 2 of 5				
Ply identification, thickness and linear recovery						Analytical data							
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV	SG	FSI
		459.72												
Z (roof)	D 2/6/1		0.27	37	0.10	db	---	26.20	35.23	38.57	5.14			
		459.99												
	D 2/6/2		0.39	100	0.39	db	---			81.39	1.72			
		460.38												
Z	D 2/6/3		0.33	100	0.33	db	---	29.48	42.28	28.24	2.30		1.48	
		460.71												
	D 2/6/4		0.25	88	0.22	db	---			84.16	0.13		2.30	
		460.96												
	D 2/6/5		0.17	100	0.17	db	---	28.98	45.78	25.25	0.51			
		461.13												
	D 2/6/6		0.02	100	0.02	db	---	31.55	54.99	13.46	0.50	8195	1.34	4
		461.15												
	D 2/6/7		0.10	100	0.10	db	---	32.10	44.19	23.71	1.17		1.42	
		461.25												
	D 2/6/8		0.27	81	0.22	db	---			72.07	0.23			
		461.52												
	D 2/6/9		0.27	74	0.20	db	---	29.46	45.25	25.29	2.09		1.42	
		461.79												
	D 2/6/10		0.11	100	0.11	db	---			57.34	0.33		1.75	
		461.90												
	D 2/6/11		0.25	60	0.15	db	---	31.37	41.68	26.95	0.52			
		462.15												

Table 9:
Analytical results for raw coal samples
Sheet 6 of 10

Ply data for borehole D-2A			Compiled by: CGCB					Date: Nov.8/01		Page 3 of 5				
Ply identification, thickness and linear recovery						Analytical data								
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV	SG	FSI
		476.77												
1R (roof)	D 2/7/1		0.20	100	0.20	db	---			48.87	4.74			
		476.97												
	D 2/7/2		0.05	100	0.05	db	---	31.25	41.15	27.60	4.69			
		477.02												
	D 2/7/3		0.12	100	0.12	db	---			74.44	2.63			
		477.14												
1R	D 2/7/4		0.33	12	0.04	db	---			45.34	4.00			
		477.47												
	D 2/7/5		0.34	56	0.19	db	---			82.81	2.22			
		477.81												
	D 2/7/6		0.14	100	0.14	db	---			49.14	2.19			
		477.95												
	D 2/7/7		0.28	100	0.28	db	---	36.03	53.69	10.28	3.03	7498		9.0
		478.23												
	D 2/7/8		0.19	100	0.19	db	---	34.33	54.85	10.82	0.86	7480		+9.0
		478.42												
	D 2/7/9		0.14	100	0.14	db	---			46.88	1.08			
		478.56												
	D 2/7/10		0.14	36	0.05	db	---			56.20	0.45			
		478.70												
		484.34												
1 (roof)	D 2/8/1		0.16	100	0.16	db	---			89.26	0.22			
		484.50												

Table 9:
Analytical results for raw coal samples
Sheet 7 of 10

Ply data for borehole D-2A			Compiled by: CGCB				Date: Nov.8/01			Page 4 of 5				
Ply identification, thickness and linear recovery						Analytical data								
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV	SG	FSI
		484.50												
I	D 2/8/2		0.06	100	0.06	db	---			44.08	5.11			
		484.56												
	D 2/8/3		0.09	100	0.09	db	---			71.15	2.72			
		484.65												
	D 2/8/4		0.28	100	0.28	db	---	34.19	53.42	12.39	2.07	7222		9.0
		484.93												
	D 2/8/5		0.37	100	0.37	db	---	34.32	49.22	16.46	3.08			
		485.30												
	D 2/8/6		0.04	100	0.04	db	---			60.59	5.44			
		485.34												
	D 2/8/7		0.09	100	0.09	db	---	30.76	38.57	30.67	4.43			
		485.43												
	D 2/8/8		0.26	100	0.26	db	---			68.41	10.26			
		485.69												
	D 2/8/9 (C-6)		0.38	100	0.38	db	---	19.76	18.35	61.89	7.25			
		486.07												
	D 2/8/10		0.07	100	0.07	db	---	32.43	47.25	20.32	4.29			
		486.14												
	D 2/8/11 (C-7)		0.39	87	0.34	db	---	20.50	23.70	55.80	1.19			
		486.53												
I (floor)	D 2/8/12		0.10	100	0.10	db	---			79.28	0.93			
		486.63												
		490.73												
IL	D 2/9/1		0.59	44	0.26	db	---	29.37	43.77	26.86	3.97			
		491.22												

Table 9:
Analytical results for raw coal samples
Sheet 8 of 10

Ply data for borehole D-2A			Compiled by: CGCB					Date: Nov.8/01			Page 5 of 5			
Ply identification, thickness and linear recovery						Analytical data								
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV	SG	FSI
		503.95												
2R	D 2/10/1		0.18	56	0.10	db	---	32.10	49.12	18.77	4.69	8142		8
		504.13												
	D 2/10/2		0.05	100	0.05	db	---			79.95	0.97			
		504.18												
	D 2/10/3		0.21	81	0.17	db	---	30.72	46.41	22.87	2.44			
		504.39												
	D 2/10/4		0.02	100	0.02	db	---			46.55	4.11			
		504.41												
	D 2/10/5		0.16	100	0.16	db	---	31.05	51.15	17.80	1.56	6796		7.5
		504.57												
		512.32												
2	D 2/11/1 (C-8)		0.38	42	0.16	db	---	19.87	15.73	64.41	1.08			
		512.70												

Table 9:
Analytical results for raw coal samples
Sheet 9 of 10

Ply data for borehole D-3			Compiled by: CGCB			Date: June 1/02				Page 1 of 1				
Ply identification, thickness and linear recovery						Analytical data								
Coal bed	Ply	interpreted depth (m)	interpreted thickness (m)	percentage recovery	measured linear recovery (m)	basis	M	VM	FC	Ash	S	CV		FSI
		236.85												
X	D 3/1/B (C-10)		0.31	100	0.31	db	--	23.05	26.58	50.37	1.07			
		237.16												
	D 3/1/A (C-9)		0.36	100	0.36	db	--	29.29	44.65	26.06	0.89			
		237.52												
		297.59												
!	D 3/5/A (C-11)		0.40	100	0.40	db	--	35.94	56.12	7.95	1.79			
		297.99												
		298.88												
	D 3/5/B (C-12)		0.35	100	0.35	db	--	29.00	42.09	28.92	4.59			
		299.23												

Table 9:
Analytical results for raw coal samples
Sheet 10 of 10

9 CONTRACTORS AND COSTS

Under the direction of Mr. Neil Swift, Priority Ventures Ltd. operated and had overall responsibility for the summer 2001 exploration programme.

9.1 PROJECT MANAGEMENT

Westwater Mining Ltd. provided project management for the summer 2001 programme, including review and recommendation of most of the contractors and suppliers. Gwyneth Cathyl-Bickford, assisted by K.V. Slater, supervised the operations at the drillsites, took coal samples, and logged the majority of the drill cores.

9.2 PRINCIPAL CONTRACTORS

As is typical of the Canadian coal industry, most of the programme was staffed and undertaken by contractors, who were chosen by Priority Ventures on the basis of their experience and capabilities. Priority Ventures used local Vancouver Island goods and services wherever practicable.

a) Analysis of coalbed gas samples recovered from the canisters was done by B.C. Research in Vancouver, B.C., under contract to the Geological Survey Branch.

b) Canister testing for coalbed gas content determinations was done by Dr. Barry Ryan of the Coal Unit of the British Columbia Geological Survey Branch, on an on-call basis from his office in Victoria, B.C.

c) Coal analysis was provided by Birtley Coal and Minerals Testing of Calgary, Alberta.

d) Diamond drilling and reaming was done by Aggressive Diamond Drilling of Kelowna, B.C., supervised by owner Mitch McLellan.

e) Drilling and installation of conductor pipes and surface casing, along with abandonment cementing and site cleanup, was done by Fyfe's Drilling from Qualicum, B.C., under the supervision of Jim Fyfe.

f) Drillsite construction was done by Richard Roberts of Theodosia Logging, from Courtenay, B.C.

g) Geophysical logging of boreholes was done by logging engineer Dave Smith, working for Roke Oil Enterprises of Calgary, Alberta. Processing of geophysical logs was also done by Mr. Smith, acting in consultation with owner Keith Banks.

h) Paleontological studies and additional core-logging were provided by Dr. Dirk Meckert of Courtenay, B.C.

i) Security guards were provided by Safety Net Security Ltd. of Campbell River, B.C. and Thunderbird Security Ltd. of Bowser, B.C.

j) Toilet service was provided by Patty's Portable Potties from Black Creek, B.C.

k) Water supply and drilling mud disposal services were provided by Ivan White of City Sweeper Services, from Merville, B.C.

9.3 COSTS

Major programme costs are presented below, including all taxes paid:

Table 10: Cost analysis

Pre-drilling costs

	ITEM COST	PERCENTAGE OF TOTAL PROGRAMME
Geological supervision (Westwater)	$9,068.25	2.9%
Reclamation bond	$18,000.00	5.7%

Drilling costs

	ITEM COST	PERCENTAGE OF TOTAL PROGRAMME
Accommodation and subsistence for drillers and logger	$2,910.85	0.9%
Core boxes and lids	$5,086.05	1.6%
Diamond drilling (Aggressive)	$135,977.76	43.1%
Fuel	$48.18	0.002%
Garbage disposal	$150.00	0.005%
Geological supervision (Westwater)	$18,150.00	5.8%
Geophysical logging (Roke)	$42,065.20	13.3%
Security guards (Safety Net and Thunderbird)	$10,179.39	3.2%
Small tools and equipment	$311.01	0.1%
Surface drilling and casing (Fyfe)	$61,361.08	19.4%
Toilet rental (Patty's)	$255.00	0.08%
Truck rental	$1,008.76	0.3%
Water supply (City Sweeper)	$11,116.13	3.5%

9.3.3 Post-drilling costs

	ITEM COST	PERCENTAGE OF TOTAL PROGRAMME
Coal analysis (Birtleys)	$3,668.17	1.2%
Core shed rental	$2,275.00	0.7%
Courier and express charges	$155.48	0.05%
Electrical power supply to core shed (B.C. Hydro)	$29.71	0.009%
Geological supervision (Westwater)	$2,411.55	0.8%
Refund of reclamation bond	($18,000.00)	(5.7%)
Sample bags and vials	$114.49	0.03%
Site reclamation (Fyfe)	$8,684.85	2.8%
Tree planting	$500.00	0.16%

		COST PER TOTAL DRILLED METRE
Total cost	***$315,526.91***	***$259.59/m***

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11 CONCLUSIONS

11.1 VALIDITY OF EXPLORATORY APPROACH

All three of the summer 2001 boreholes were valid tests of the Comox Formation for its coal content. They were partially valid tests for coalbed gas, in that the thickest of the coal beds were not necessarily those which were available for canister tests when the opportunity arose. The geological model of basement highs controlling positions of thick coal beds was at least partially validated, as noted below:

Table 11: Measures of exploratory outcome

BOREHOLE	CONCEPT	RESULTS
Borehole D-1	Test for the eastern side of a basement high mapped to extend through old boreholes CX-107 and CX-109.	Struck coal of possible interest for underground mining, but basement still came in higher than expected.
Borehole D-2A	Test the northeastern flank of a seismically-defined basement high.	Found multiple coal beds, some of which would qualify for future interest as mineable coals.
Borehole D-3	Test possibility of paleovalley with thick coal, as suggested by old borehole CX-105.	Entered zone of steep dips and bedding-plane shears; inferred to have hit western nose of a basement hill.

11.2 RECOMMENDATIONS FOR FURTHER WORK

Drilling to date has disclosed good potential for coalbed gas development, and a lesser but significant potential for coal development. Further work should focus on confirming and extending areas of thick coal development, as well as outlining paleotopographically-low areas which may contain additional coal beds.

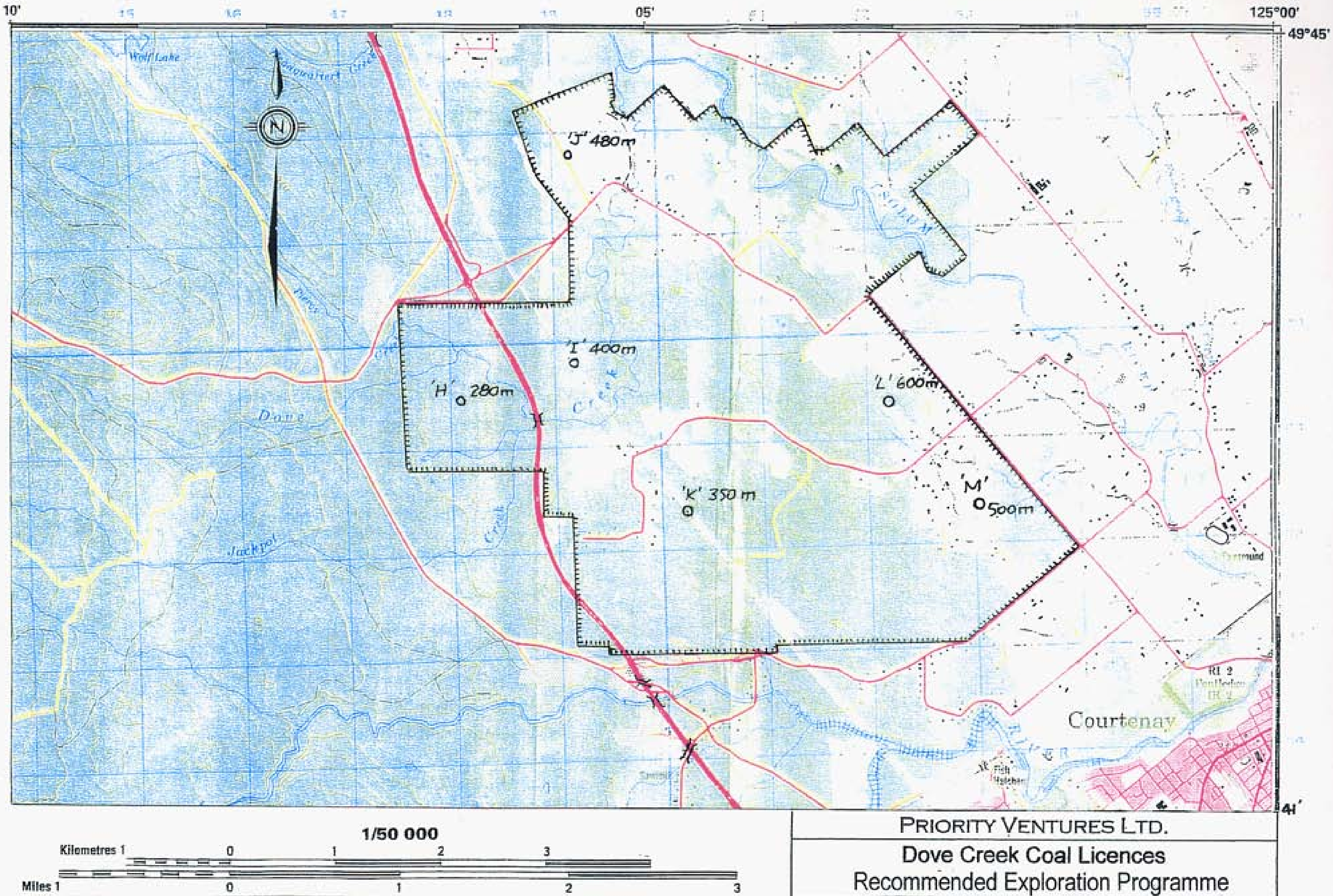
11.2.1 DRILLING

We recommend the drilling of seven additional partially-cored boreholes within the Dove Creek coal licences. Coring should be programmed to commence in the basal Puntledge Member, allowing the recovery of coal cores from all the underlying coal beds. The holes should be drilled a minimum of 10 metres into basement, to allow for effective geophysical logging of the entire Comox section. Details of the recommended holes are given below, and their proposed locations are shown on **Figure 10**.

Table 12: Recommended drill programme

SITE	UTM 83 COORDS.	EXPLORATORY CONCEPT	DEEPEST COAL	EXPECTED DEPTH
H	348020 E, 5509465 N	Test underground mining potential of the west side of the property	Comox No.3A	280 m
I	349175 E, 5509805 N	Stepout from CX-105	Comox No.4	400 m
J	349150 E, 5511795 N	Far stepout to north end	Comox No.4	480 m
K	350220 E, 5508365 N	Stepout from D-1	Comox No.3	350 m
L	352190 E, 5509360 N	Confirmation of V-1	Comox No.4	600 m
M	353040 E, 5508365 N	Stepout from D-2A	Comox No.2A?	500 m

		Total: 6 boreholes		***2610 m***



PRIORITY VENTURES LTD.		
Dove Creek Coal Licences Recommended Exploration Programme		
Scale: 1:50,000	Contour interval: 40 m	For coal licence details refer to licence documents 383367 through 383374 inclusive
August 15, 2002	NTS 92/F 11 NAD 83	
Drawn by: C.G. Cathyl-Bickford, P.Geo.		
Westwater Mining Ltd.	WR 195 /02	Figure 10

11.2.2 ANALYTICAL WORK

Analytical work on coal samples taken from the proposed boreholes should focus on the potential production of a clean coal product suitable for sale into Pacific Rim markets as thermal or metallurgical blending coal.

Furthermore, acid-base testing should be conducted on selected rock samples, in order to assess the likelihood of acid mine drainage and acid rock drainage from workings and waste-rock piles associated with possible future underground mining at Dove Creek.

11.3 PROPOSED PROGRAMME BUDGET

Drilling (all-in, including supervision and ancillary services)	2610 metres @ $260/metre	$678,600
Analytical testwork	6 boreholes @ $9,000 each	$54,000
Environmental, archaeological and consultation	" " " "	$60,000
Permitting costs (under *Mines Act*)		$28,000

	Subtotal	$820,600
	Contingency @ 15%	$123,090

	Total budgeted cost	$943,690

11.4 CLOSURE

This report has been prepared for Priority Ventures Ltd.'s submission to the provincial government of British Columbia, as required under the provincial Coal Regulation. The report is submitted in two volumes: the present volume which contains operational, geological and geophysical data, and a second volume which contains information concerning clean coal quality and coalbed gas potential, both of which subjects are entitled to confidential treatment.

Respectfully submitted

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Geologist-of-record
for Westwater Mining Ltd.

Sealed at Cumberland, B.C.

September 9, 2002