K-Bingay Creek 82(1)A

OPEN FILE

A GEOLOGIC OVERVIEW

OF

THE BINGAY CREEK COAL PROPERTY

ELK RIVER VALLEY

CL #7299
OWN W. Shenfield.
1982 Field Work

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Operator Stephen L. Gardner

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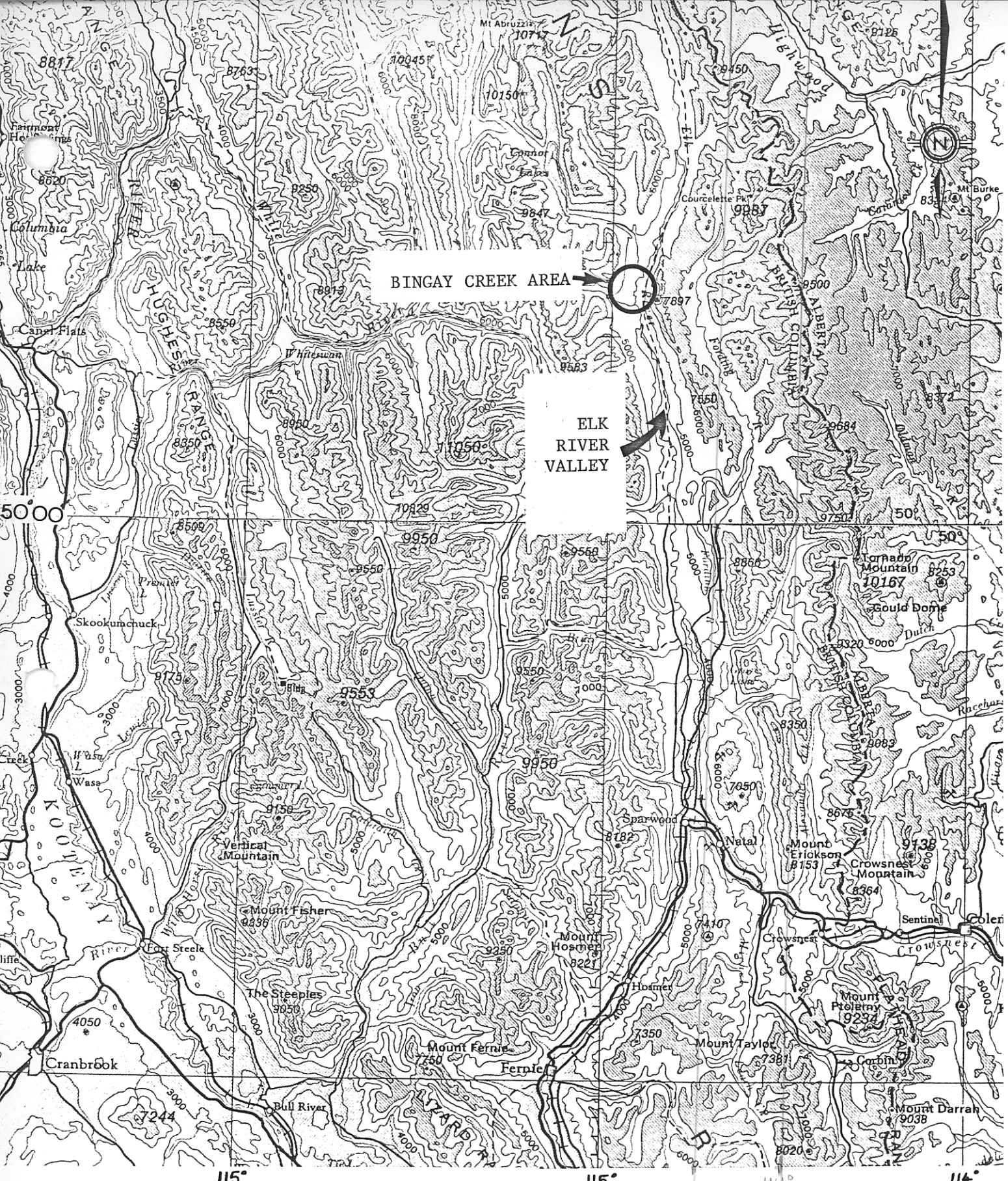


IGURE 1. - LOCATION MAP, ELK RIVER VALLEY, SOUTH-EASTERN BRITISH COLUMBIA

SCALE : 1:500,000

10 km.

114° 52' 30

INTRODUCTION

Approximately 300 meters (985 ft.) of the lower section of the Kootenay Formation is exposed in a tight synclinal structure on the north side of Bingay Creek in the Elk River Valley, some 21 km. (13 mi.) north-west of the town of Elkford, British Columbia. The lower part of the Kootenay Fm. in this area is characterized by fine to medium-grained resistant sandstones with interbedded siltstones, mudstones and at least three major coal zones which are exposed on the flanks of the structure.

Preliminary observations suggest that the structure in the area may yield some surface recoverable coal reserves, with sufficient thickening of the coal seams in the axis of the syncline to allow underground mining by hydraulic methods.

Air photo interpretations indicate that the Kootenay Fm. is preserved to the north of the syncline along the leading edge of a major thrust plane that parallels the Elk Valley in this area.

For the above reasons, and the fact that the area is proximal to existing infrastructure, more detailed geological investigations are desirable in order to satisfactorily evaluate the in-situ coal resources and their mining potential.

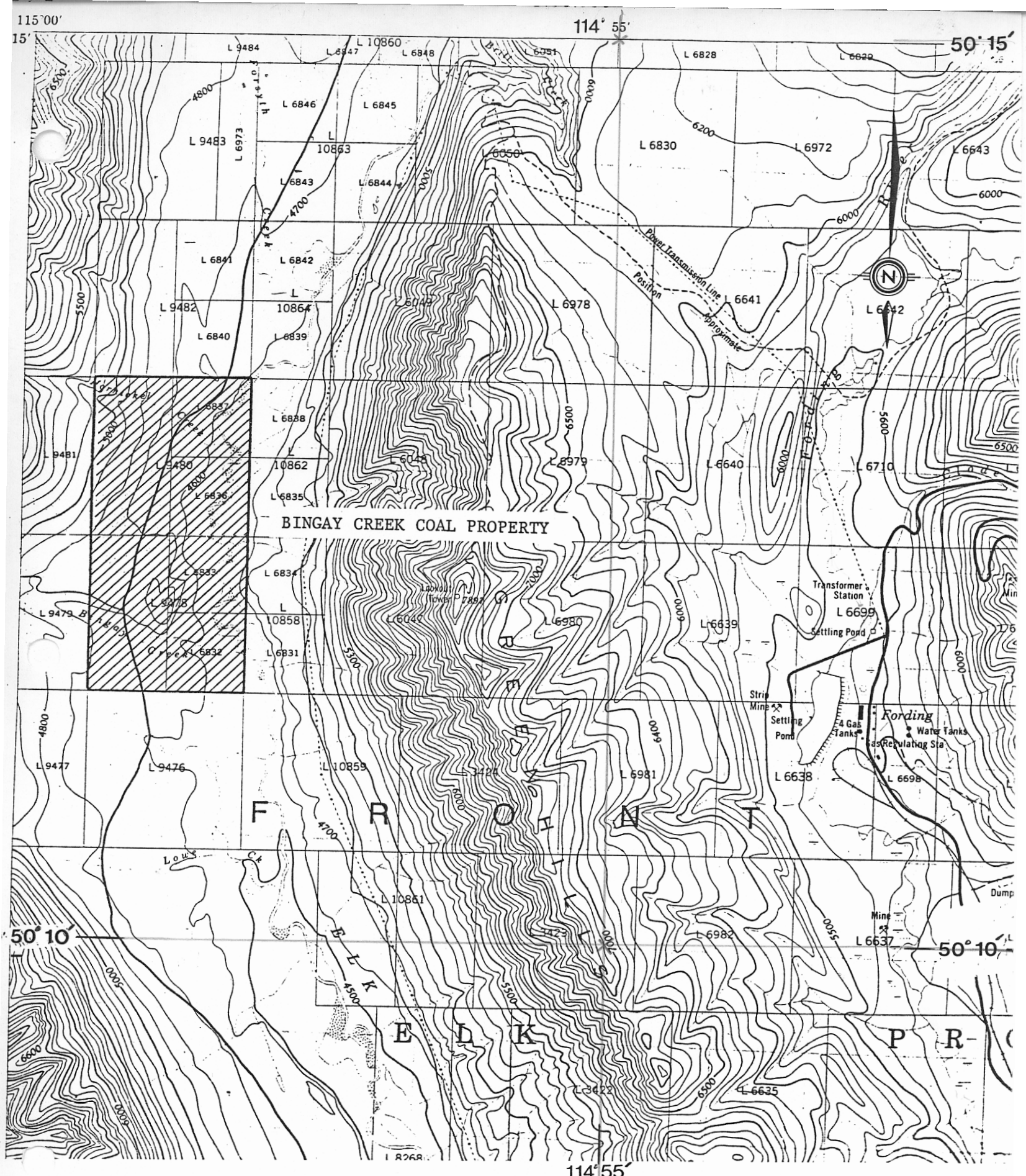


FIGURE 2. - LOCATION MAP, BINGAY CREEK COAL PROPERTY
SCALE - 1:50,000

LOCATION AND DESCRIPTION OF PROPERTY

The Bingay Creek Coal Property is held by Mr. William Shenfield of Fernie, British Columbia. It consists of two contiguous coal licences, covering 518 hectares (1280 acres) or all of District Lots 9478 and 9480 (see Figure 2). Coal Exploration Licence No. 7299 was granted on Jan. 2 , 1982 and District Lot 9478 was applied for in June, 1982. The remaining ground around these two sections is available for lease.

The property is favorably located close to existing mining operations, lying within 8 km. (5 mi.) of the Fording River and Greenhills mines. The proposed railroad spur linking the Elco operation with Sparwood via the Elk Valley will be built immediately adjacent to the Bingay Creek Property.

Access to the property is via good gravelled road from Elkford, approximately 21 km. (13 mi.) to the southeast of Bingay Creek.

Topography on the property is variable, ranging from 1390 meters above sea level (4560 ft.) at the level of the Elk River to 1527 meters (5010 ft.) at the highest point on the property.

The area is densely covered by young pine and fir, but recent logging operations to remove worm-infested timber have resulted in a considerable exposed area on the southeast flank of the Bingay Creek structure.

REGIONAL GEOLOGY

The Bingay Creek Property lies immediately in front of the Bourgeau Thrust, which is the main west-dipping thrust feature running down the length of the Elk Valley in this region. The Bourgeau Thrust has displaced Triassic Spray River Formation and older Paleozoic rocks on top of younger Jurassic and Lower Cretaceous Fernie and coal-bearing Kootenay formations. In certain areas, such as the Bingay Creek area, the Lower Cretaceous rocks have been compressed and folded ahead of the thrust plate. Some of these areas have escaped the subsequent erosional interval that followed the Laramide Orogeny.

Figure 3 illustrates the Table of Formations for the Elk Valley. The Kootenay Formation is the main formation of economic signifcance with respect to coal, and for this reason is described briefly in this section.

The Kootenay Formation

The Kootenay Formation is predominantly non-marine in origin and composed mainly of sandstone, siltstone, silty shale and coal. The sandstone is typically resistant, cross-bedded, buff-coloured weathering to slightly pink and fine to medium-grained. Major coal intervals are commonly found in the lower one-half of the Kootenay Formation.

The type section of the Kootenay Fm. is found at Grassy Mountain, 8 km. (5Mi.) north of Blairmore, Alberta. In 1959 D. K. Norris published a paper entitled "Type Section of the Kootenay Formation, Crassy Mountain Alberta" in the Journal of the Alberta Society of Pet-

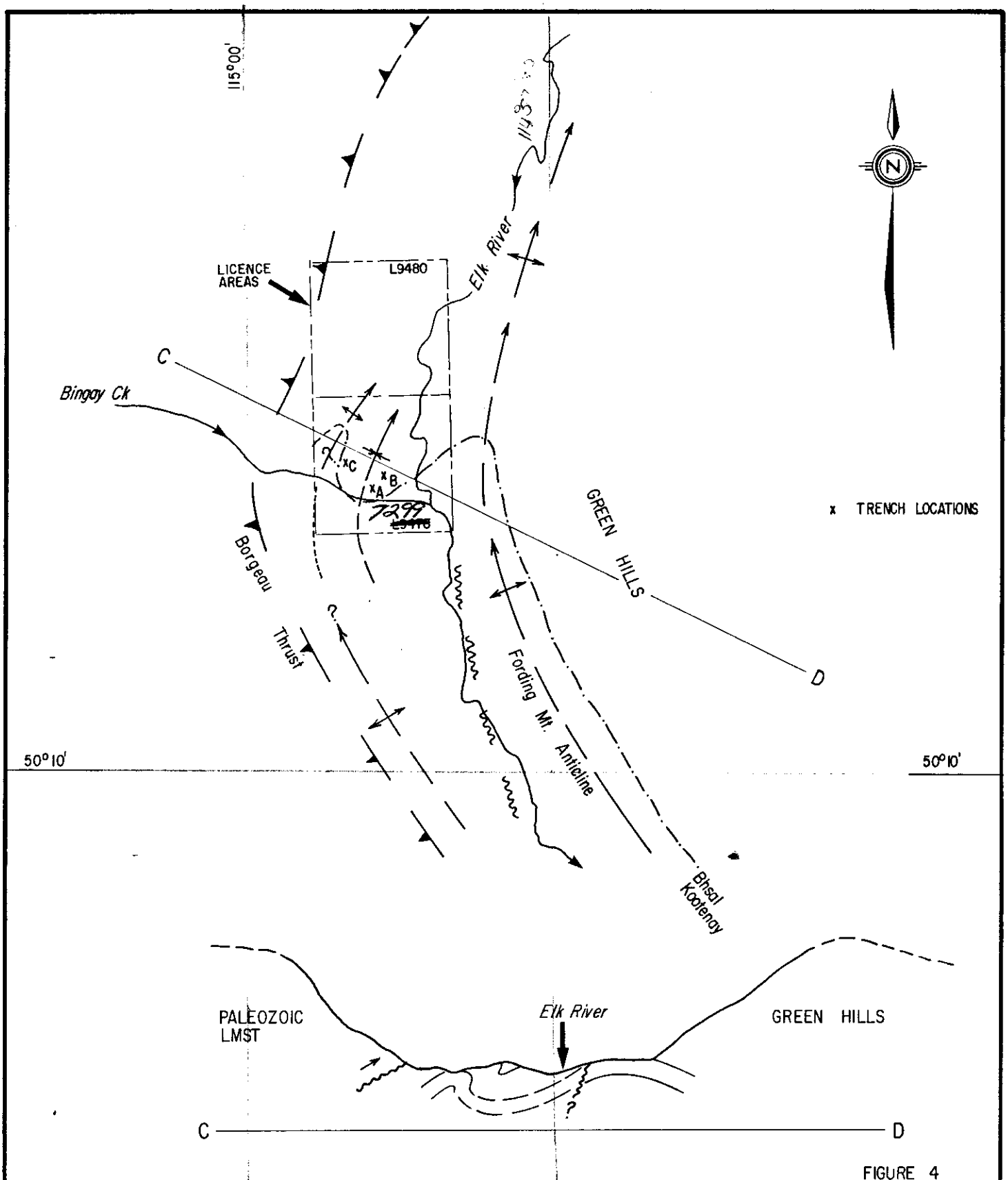


FIGURE 4

BINGAY CREEK COAL PROPERTY

ELK RIVER VALLEY

REGIONAL GEOLOGY

TABLE OF FORMATIONS

Era	Period of Epoch	Group or Formation	Lithology	Thickness in Feet
Cenozoic	Quaternary		Gravel, soil, till	
	U N C O N F O R M I T Y			
Mesozoic	Lower Cretaceous	Elk Formation	Conglomerate, sandstone, shale minor coal. Deltaic.	900±
	Lower Cretaceous-Jurassic	Kootenay Formation	Coarse and fine grained sandstone, conglomerate, conglomeritic sandstone, siltstone, shale, COAL. Non-marine.	2000±
	Jurassic	Fernie Group	Black shale, interbeds of siltstone and silty shale. Marine.	750±
	D I S C O N F O R M I T Y			
	Triassic	Spray River Formation	Siltstone & silty shale. Marine.	1000±
	D I S C O N F O R M I T Y			
Palaeozoic			Carbonate rocks, limestone, dolomite calcareous shale, etc. Mostly Marine.	

FIGURE #3: TABLE OF FORMATIONS , ELK RIVER VALLEY

roleum Geologists. Norris divides the Kootenay Fm. at Grassy Mountain into four members (from lowest): The Moose Mountain (19.2 meters), the Adanac (20 m.), the Hillcrest (29 m.) and the Mutz (57 m.), for a total Kootenay section of 126 meters (413 ft.). Major coal zones are found throughout the Adanac Member and at the base of the Mutz Member at Grassy Mountain.

The Kootenay Formation in the upper Elk Valley has been estimated by various geologists at between 460 meters and 1000 meters (1500 to 3300 ft.) thick. The lowermost 300 meters of the formation is exposed on the Bingay Creek property.

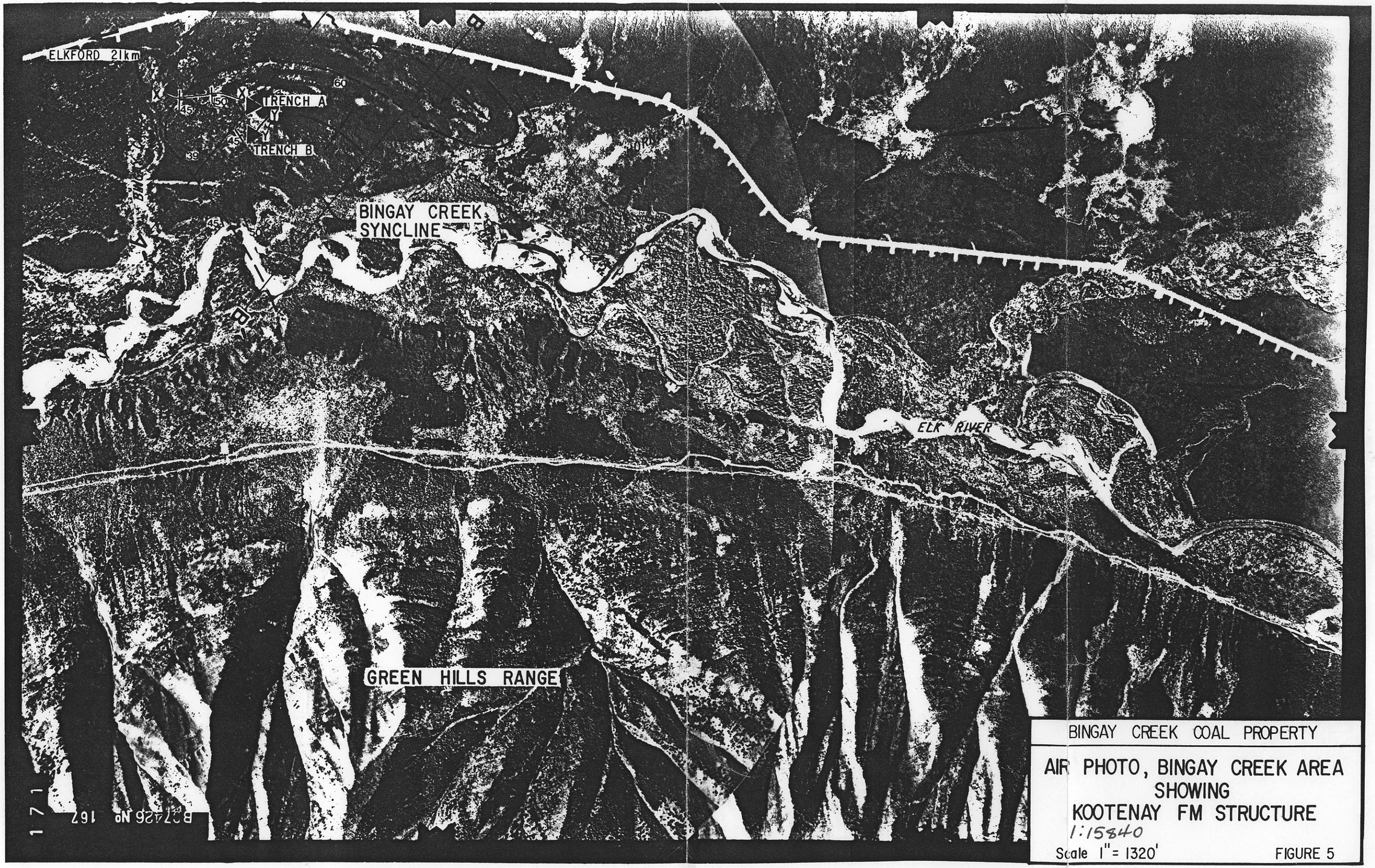
THE BINGAY CREEK AREA - SUMMARY OF WORK TO DATE

The presence of coal in the Bingay Creek area has been known for many years. There is evidence of early prospecting work on the property. Numerous small pits full of coal waste have been found on the limbs of the structure north of Bingay Creek. In at least two locations drifts were begun and a few tons of coal waste remain. These old adits are no longer accessible.

The southern one-half of the property was held for a period of one year by Specific Natural Resources Ltd., a small Vancouver-based public company. No exploration work was performed by the company except for a brief field examination by Mr. John Jenks, the geologist representing the company. Mr. Jenks subsequently wrote a report entitled "Preliminary Geological Report, Coal Licence No. 5176". This report is on open file at the Ministry of Energy, Mines and Petroleum Resources in Victoria. In summary, Mr. Jenks report states that,

"There would appear to be sufficient exposure of coal seams on coal licence No. 5176 to warrant further exploration interest. The deposit has underground potential in the 1.5 to 4 million short ton in-situ category...."

Mr. Jenks qualifies his reserve estimates by calculating reserves on only one of the five seams that he documents. The five seams, according to Mr. Jenks, total an aggregate thickness of "about 12 meters".... "over a stratigraphic interval of 120 meters".



BINGAY CREEK COAL PROPERTY

AIR PHOTO, BINGAY CREEK AREA
SHOWING
KOOTENAY FM STRUCTURE

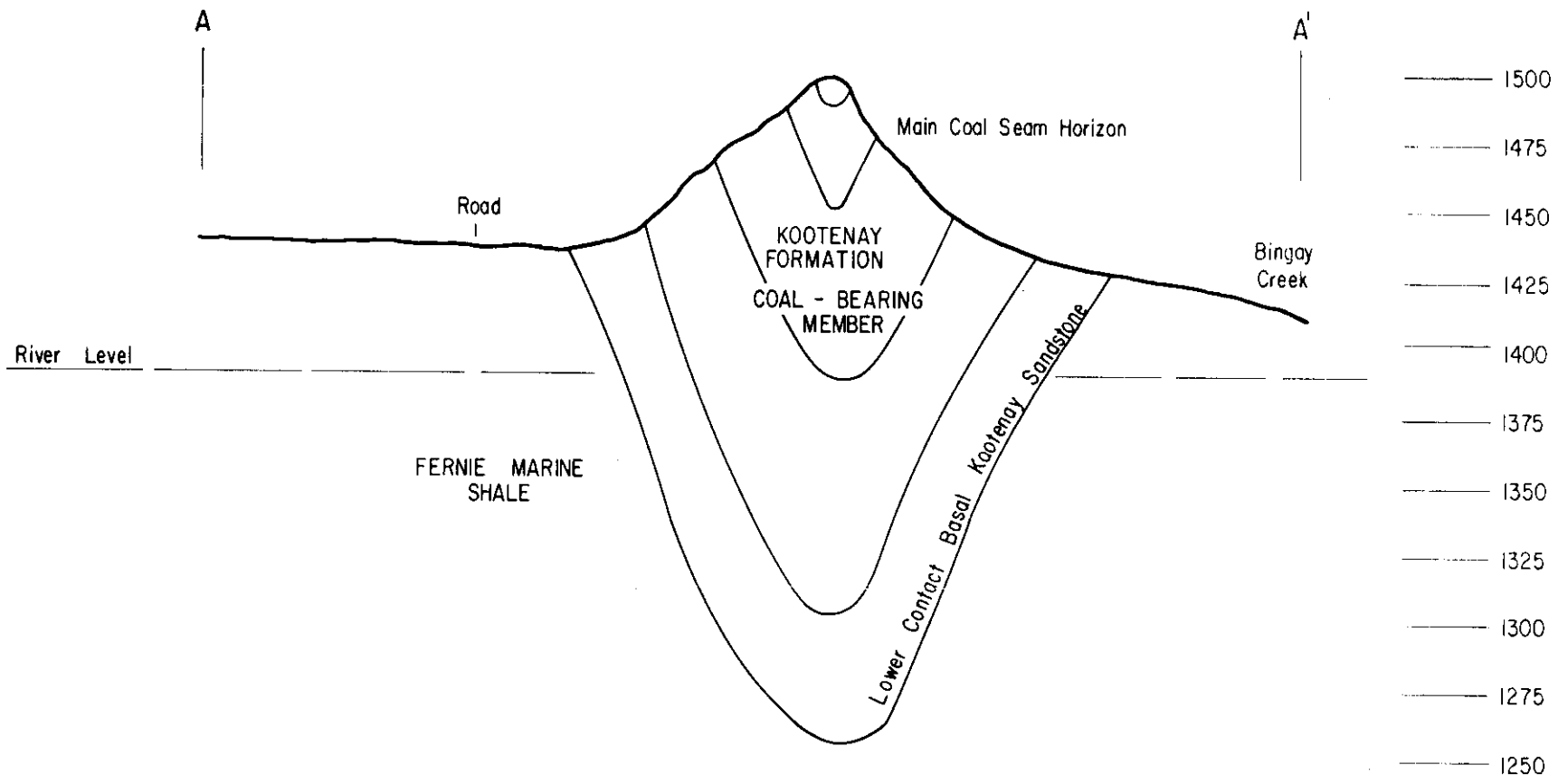
1:15840

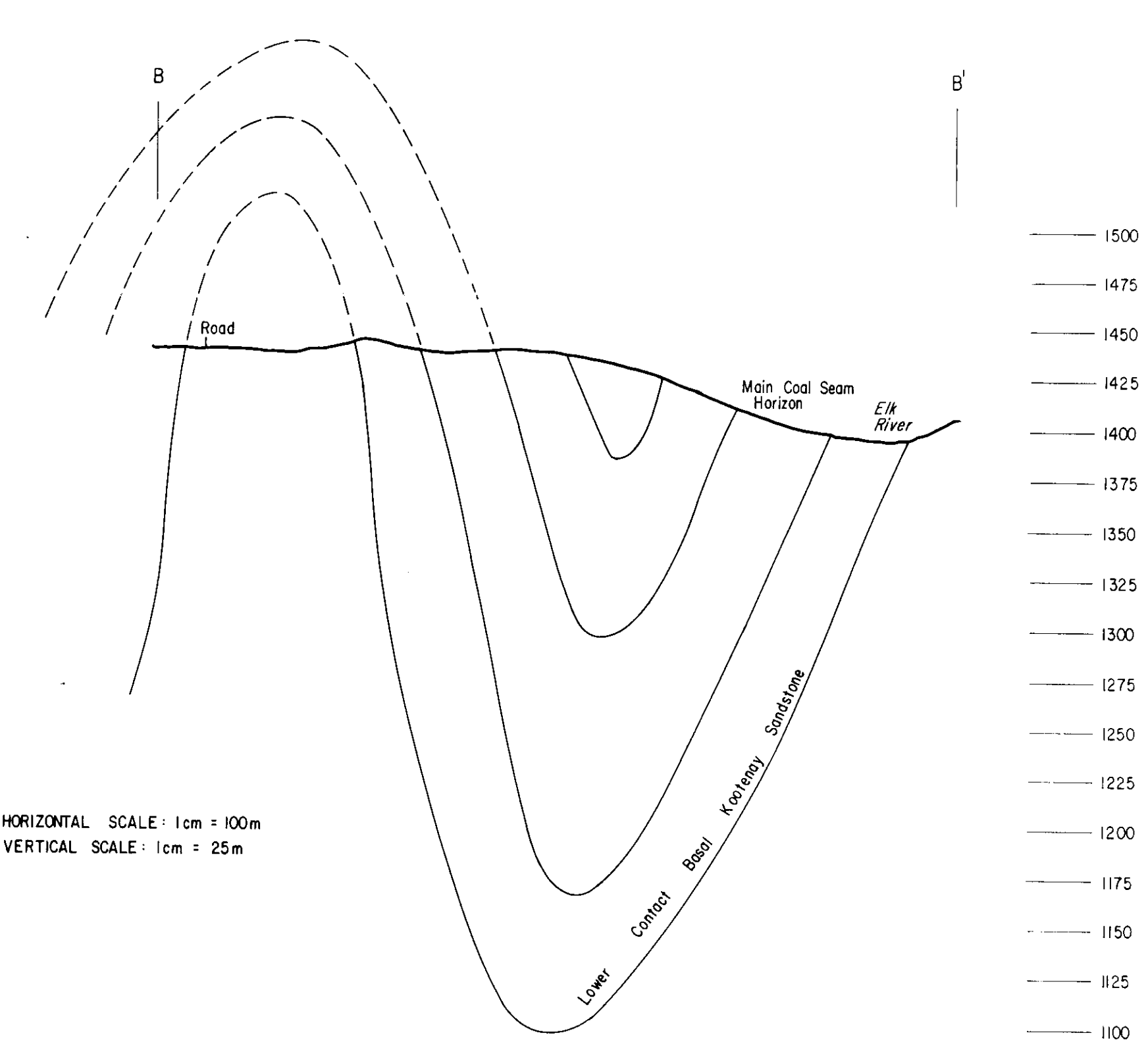
Scale 1" = 1320'

FIGURE 5

Recent work by Mr. Shenfield on the Bingay Creek includes the hand trenching of three coal intervals. This work has been augmented by logging operations that have provided road access on the property and have resulted in the exposure of a great deal of the Kootenay section, including the coal intervals. Despite a great amount of effort by Mr. Shenfield to expose these coal intervals by trenching, the extremely weathered nature of the coal on outcrop makes accurate measurements difficult. The main seam is estimated to have a true width of 6.1 meters (20 ft.). This is the result of a hand trench 10.7 meters long by .75 meters wide, to a maximum depth of 2.1 meters (Trench 'A'). A second coal interval is estimated to have a true width of 4.9 meters with an additional 1.8 meters of coal and shale at its base (Trench B).

It is the author's opinion that this most recent work on the property is positive, and renders Mr. Jenks' reserve estimate of 1979 obsolete.





HORIZONTAL SCALE: 1cm = 100m
VERTICAL SCALE: 1cm = 25m

NOTE: For location of sections see Figure 5

FIGURE 6

BINGAY CREEK COAL PROPERTY

GENERALIZED
CROSS - SECTIONS

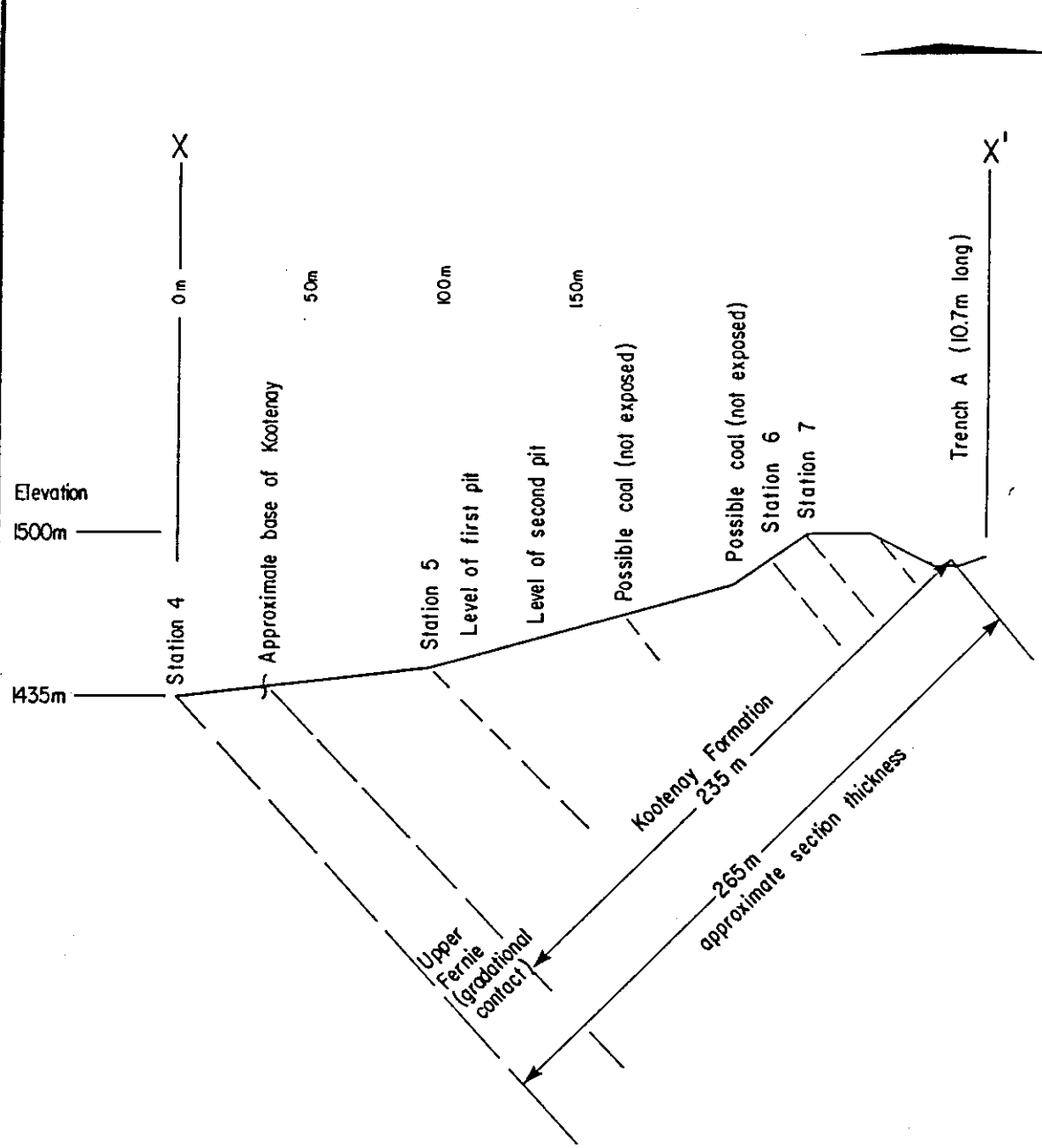
GEOLOGY OF THE COAL MEASURES ON THE BINGAY CREEK PROPERTY

As previously stated, the Kootenay Fm. on the north side of the creek has been tightly folded directly in front of the Bourgeau Thrust, which surfaces along the western margins of the Elk Valley. The main structure in the Kootenay Fm. in this area is a tight synclinal fold which pitches to the northeast and disappears under the alluvial material deposited by the Elk River. A complementary anticline has been identified lying immediately northwest of the syncline. A linear topographic feature on the northwest flank of the syncline is interpreted by Mr. Jenks to be a fault running at roughly right angles to the strike of the formation. The presence of the anticline to the northwest and two topographic features approximately 2 km. north of it indicate that the Kootenay Fm. may be preserved for a considerable distance along the Elk Valley in this area.

The Bingay Creek Syncline

At present, the main synclinal feature, called the Bingay Creek Syncline, represents the most promising area for containing recoverable reserves of coal. This syncline is easily distinguishable on air photos (see Figure 5). It is a tight structure with dips on the limbs ranging from 39 to 70 degrees. Figure 6 illustrates two generalized sections across the axis of the structure.

A stratigraphic section of the Kootenay Fm. as it occurs on the syncline has been constructed from two traverses on the southeast limb. This is shown in Figures 7 and 8. At least three coal zones are apparent on the southeast limb of the structure. The



NOTE: For location of traverse see Figure 5

FIGURE 7

SCALE 1:2500

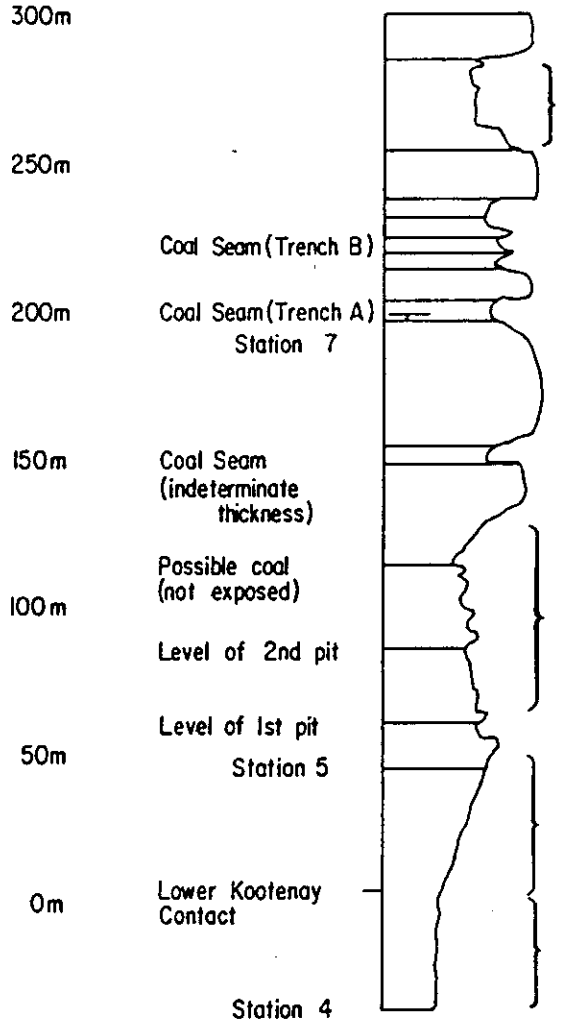
50 0 50 100 150m

BINGAY CREEK COAL PROPERTY

ELK RIVER VALLEY

TRAVERSE X-X'

Total Kootenay Section : 303 metres



Resistant, pink weathering massive sandstone

Covered interval

Resistant, coarse grained sandstone

Siltstone - shale interbeds with 4.9m coal

Main coal zone 6.1m

Massive resistant cross-bedded sandstone, medium to coarse grained

Coal and shale

Resistant cross-bedded sandstone, medium grey weathering to pink

Covered interval : interbedded sandstones, siltstones and shale with possible coal

Basal Sandstone Member
(equivalent to Moose Mountain Member)

Upper Fernie (gradational contact)

FIGURE 8

BINGAY CREEK COAL PROPERTY

SCALE 1:2500

50 0 50 100 150 m

MEASURED SECTION OF
KOOTENAY STRATA
(RESULT OF TWO TRAVERSES
ON SYNCLINAL STRUCTURE)

main seam is estimated to have a thickness of 6.1 meters (20 ft.). A second coal interval is estimated at 4.9 meters thick with an additional 1.8 meters of coal and shale at its base.

COAL QUALITY

Recent work by the Ministry of Energy, Mines and Petroleum Resources has indicated that the coal on Bingay Creek may be a high volatile bituminous coal suitable for a thermal product (see Figure 9).

Despite its highly weathered appearance on outcrop, the coal on Bingay Creek exhibits a vitreous lustre if broken.

It is the author's opinion that Bingay Creek coal is medium volatile bituminous to high volatile 'A' bituminous, with a B.T.U. value ranging from 11,000 to 14,000 B.T.U./lb., sulphur content of .3% to .7%, and an F.S.I. of 2 to 8.

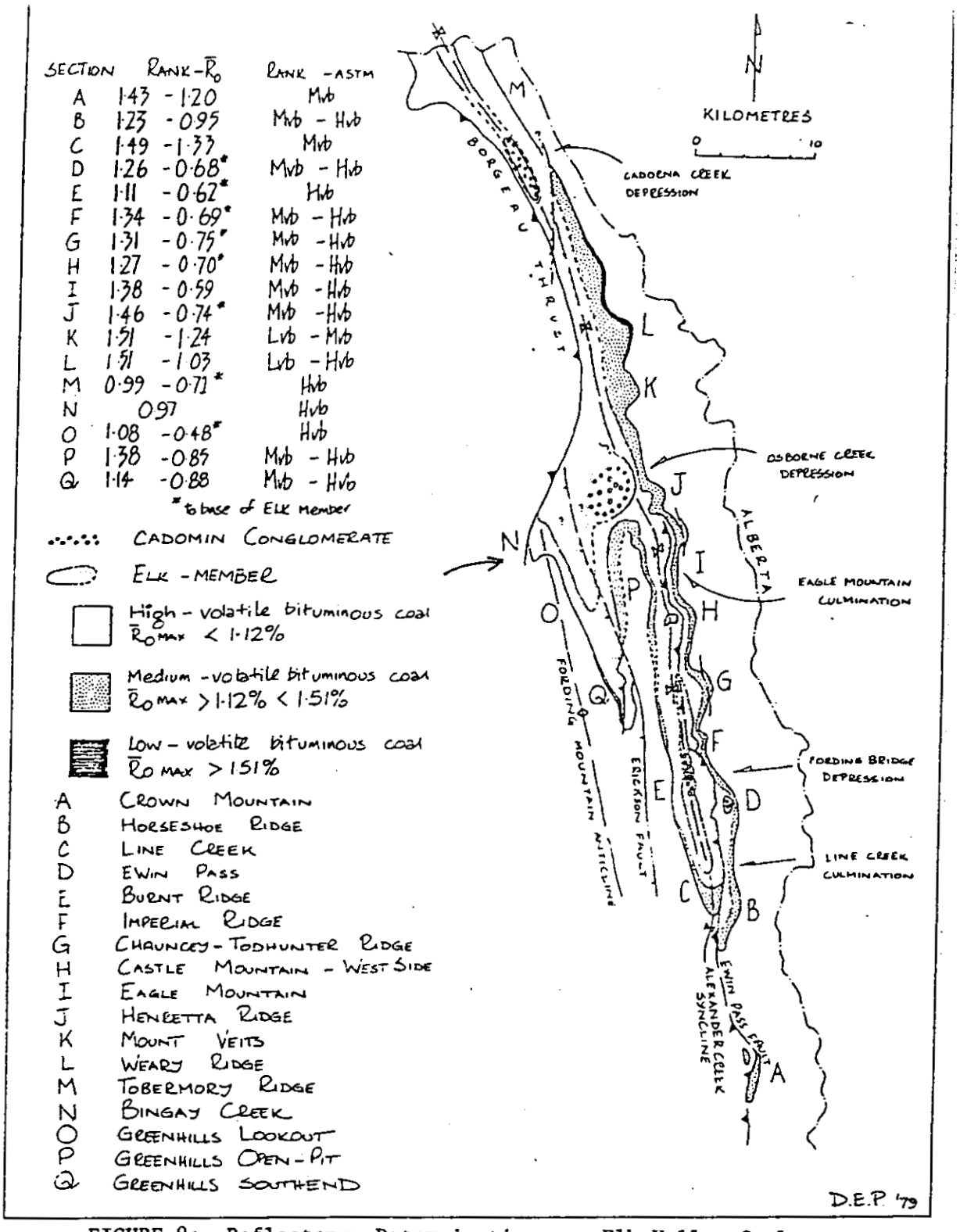


FIGURE 9: Reflectance Determinations on Elk Valley Coals. (Courtesy, David E. Pearson and Associates Ltd. Victoria, B.C.)

CONCLUSIONS AND RECOMMENDATIONS

It can be concluded that at least three significant coal zones occur in the Kootenay Formation on the Bingay Creek Syncline, two of which measure in excess of 4 meters in thickness. Air photo interpretations suggest that the Kootenay Fm. in this area could extend for a considerable distance north of Bingay Creek- if the 3 coal zones are continuous, significant in-situ coal resources may exist.

In order to properly evaluate the coal resource potential of the Bingay Creek area additional exploration work is a necessity. Surface mapping and trenching is of limited use in this area - proper examination of the Kootenay section can only be accomplished by drilling and coring.

A drill program for this property should be designed with three objectives in mind:

a) to penetrate the complete section of Kootenay Fm. in the Bingay Creek syncline, thereby intersecting all coal zones.

b) to construct at least one structural profile across the syncline (three holes) and an additional hole down the pitch to confirm continuity of the structure.

c) to examine additional structural complications immediately northwest of the syncline. (NOTE: if the first two objectives are met with a negative conclusion, the third can be abandoned.)

The author recommends that diamond coring equipment be used for this program, due to the following reasons:

1) All holes should be cored from top to bottom to confirm stratigraphy and structure.

2) Many of the holes will be spudded on an angle, so as to intersect bedding as close to a right angle as possible.

3) Terrain and access is more suited to smaller equipment such as diamond equipment.