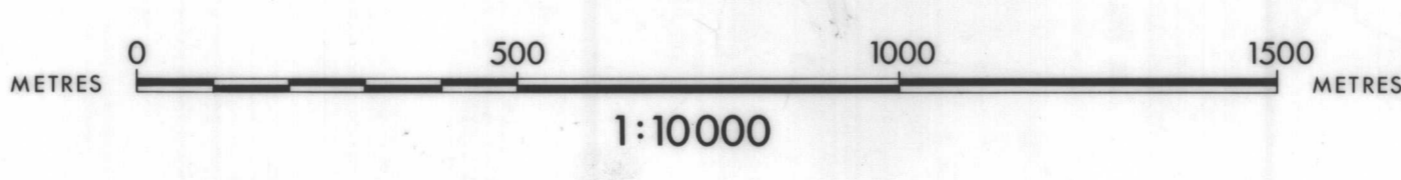


Province of British Columbia
 Ministry of Energy, Mines and Petroleum Resources

SHEET 1
 PRELIMINARY MAP 51
 MARCH 1983

GEOLOGY OF THE GREENHILLS RANGE ELK VALLEY COALFIELD



GEOLOGY BY: D. A. GRIEVE AND D. E. PEARSON

ORTHOPHOTO PRODUCED BY
 MAP PRODUCTION DIVISION
 MINISTRY OF THE ENVIRONMENT
 VICTORIA

SYMBOLS	
MAP	
COAL SEAM: EXPOSED, ASSUMED	.....
SANDSTONE: EXPOSED, ASSUMED	.....
ELK COAL EXPOSURE	.....
THRUST FAULT: APPROXIMATE, ASSUMED (TEETH ON UPTHROW SIDE)	.....
NORMAL FAULT: APPROXIMATE, ASSUMED (BAR ON DOWNTHROW SIDE)	.....
SMALL-SCALE HIGH-ANGLE FAULT (U = UPTHROW; D = DOWNTHROW)	.....
BEDDING: UPRIGHT, OVERTURNED, VERTICAL	.....
SYNCLINE: APPROXIMATE, ASSUMED	.....
ANTICLINE: APPROXIMATE, ASSUMED	.....
SECTION	
PREDOMINANTLY SANDSTONE	.....
INTERBEDDED SANDSTONE AND SILTSTONE	.....
PREDOMINANTLY SILTSTONE AND FINER	.....
PREDOMINANTLY COAL	.....
COVERED INTERVAL	.....
HEIGHT IN METRES ABOVE BASAL SANDSTONE	100
THICKNESS OF SEAM IN METRES	12.9
MEAN MAXIMUM REFLECTANCE OF VITRINITE IN OIL (R _v MAX)	1.14 %

EXPLANATION

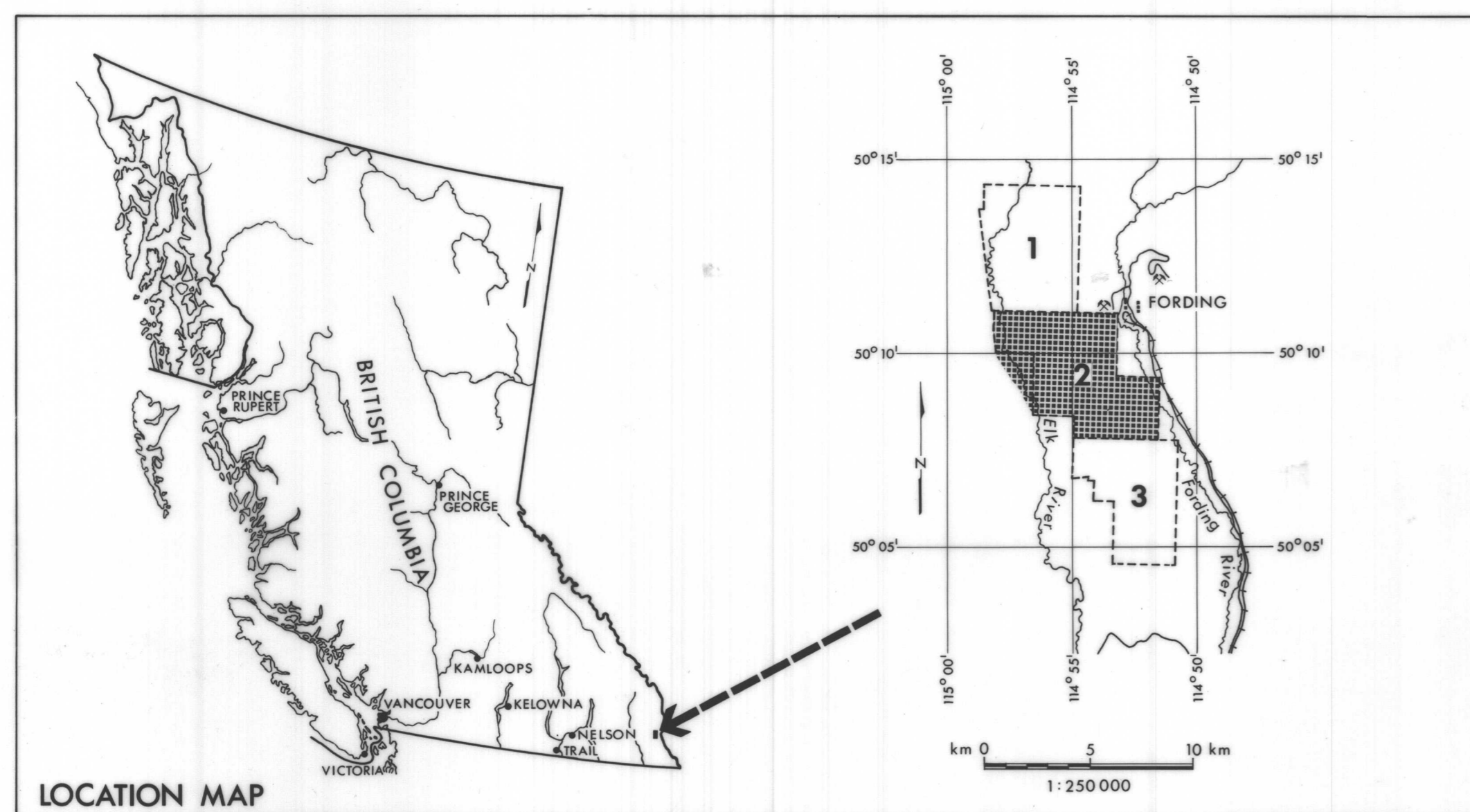
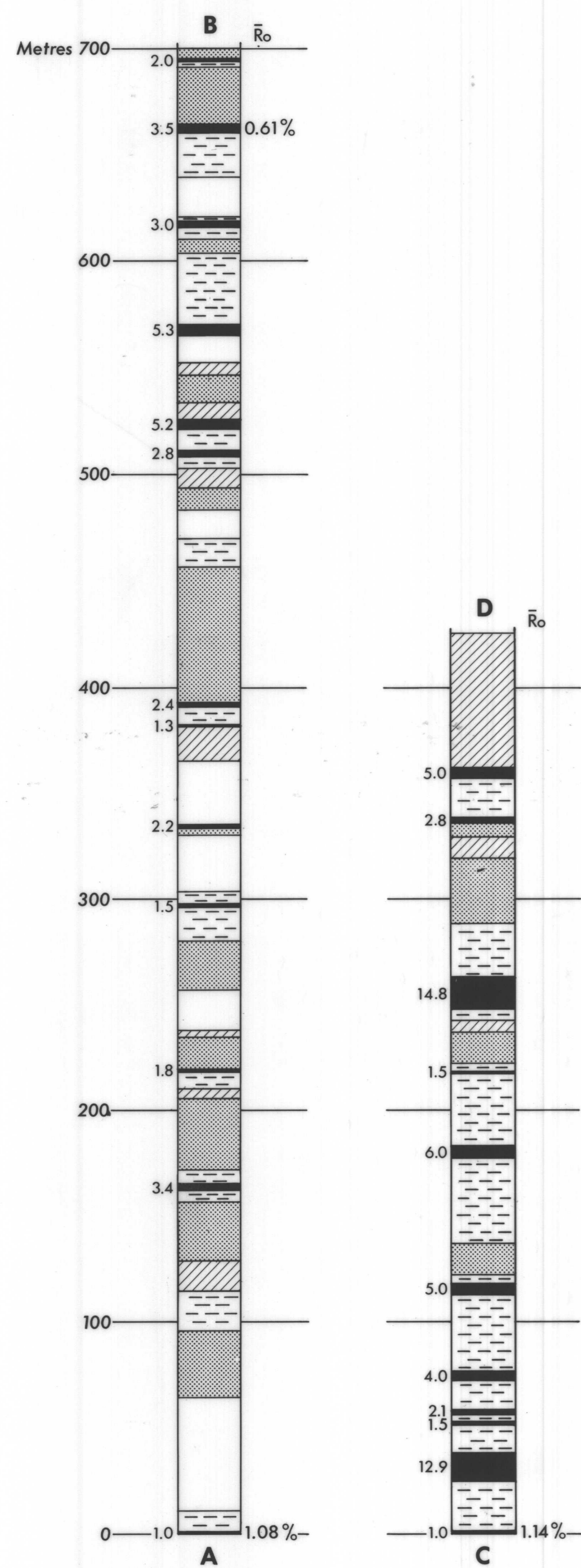
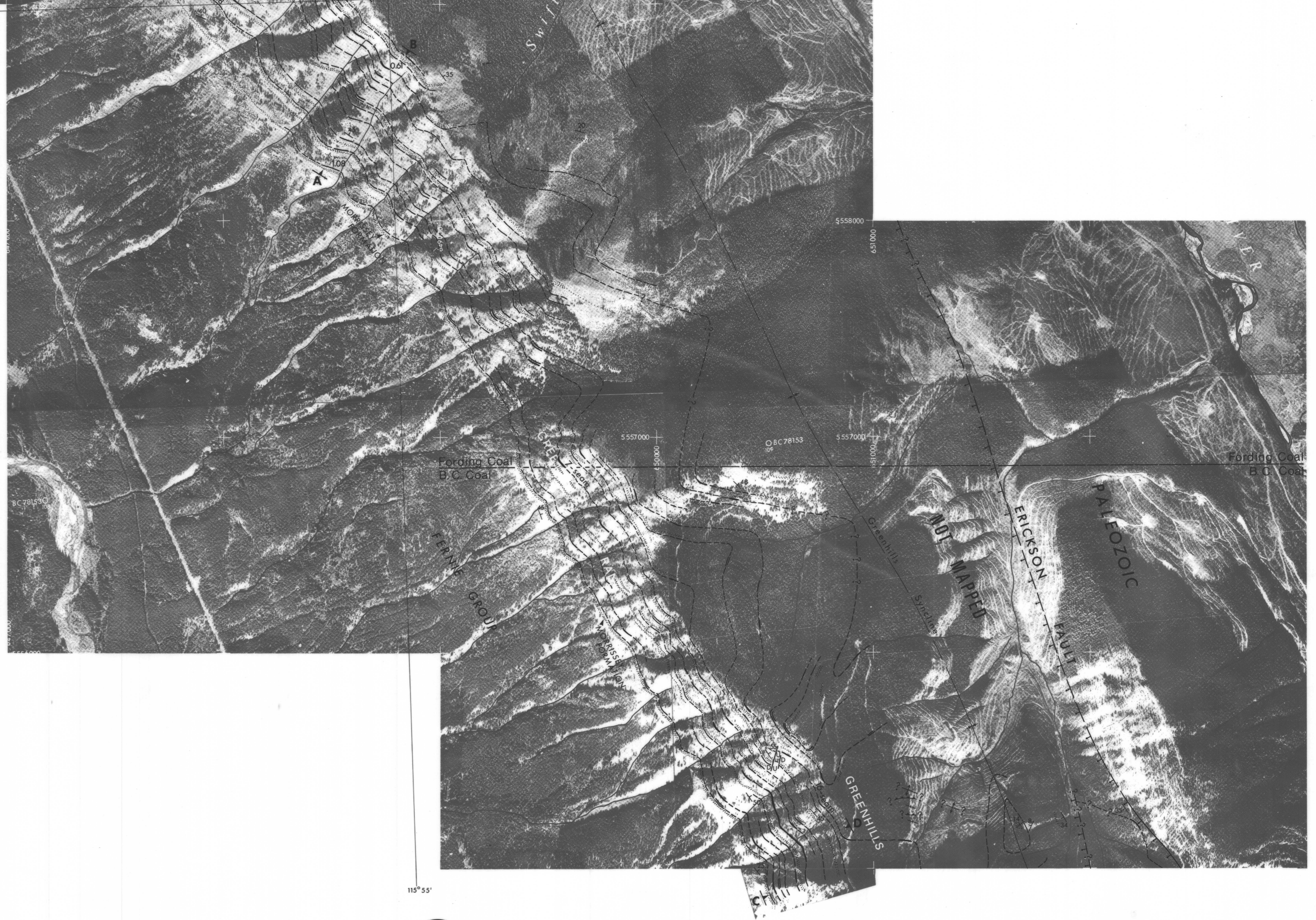
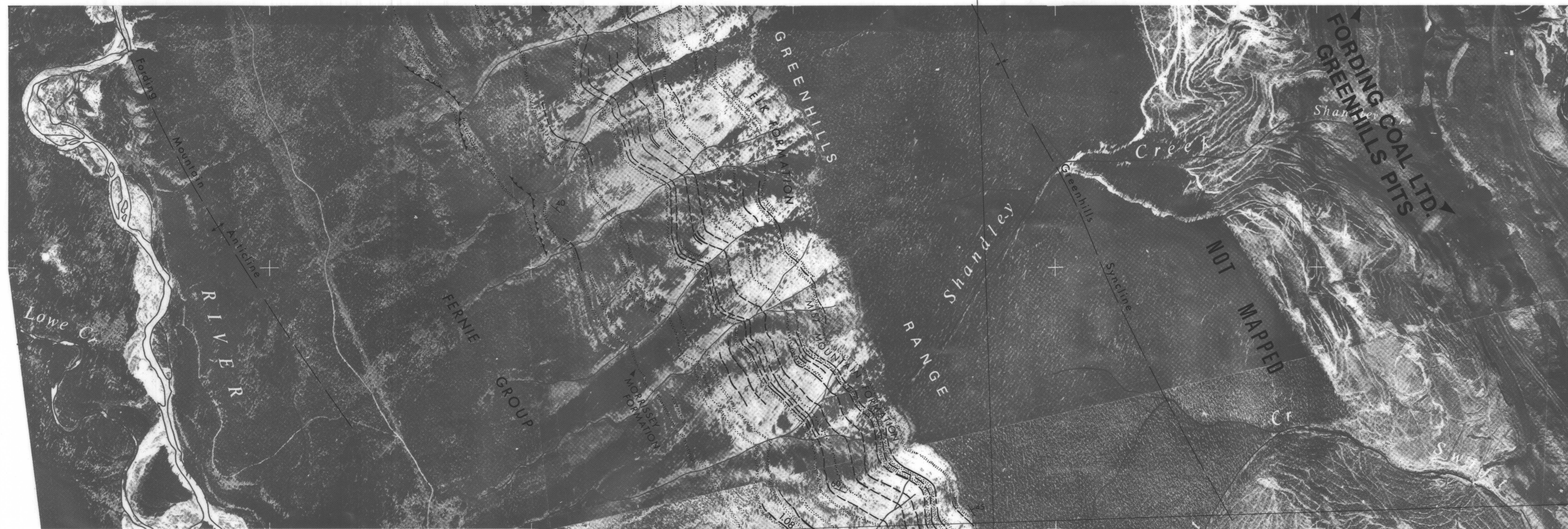
Jurassic-Cretaceous Kootenay Group exposures on the Greenhills Range of the Elk Valley coalfield were mapped by the authors in June and July, 1979. Coal-bearing levels belonging to Fording Coal and E.C. Coal were covered.

Data presented are based on examination of surface outcrops and roadcuts, with minor air-photograph interpretation. In many cases, poor exposure has limited the amount of data and has restricted the ability to correlate seams. Seam pinch-outs and wash-outs are common, however, and account for many of the discontinuities in seam trace.

Kootenay Formation is composed of, from oldest to youngest, the Morrison Formation (basal sandstone), Mist Mountain Formation (former Coal-bearing Member), and Elk Formation. The last, which occurs only in the north half of the map area, includes a significant number of resistant sandstone units which are not indicated here. The presence of Elk coal, although rare, was used to identify the Elk Formation, while the contact between Elk and Mist Mountain Formations was arbitrarily placed as a mappable sandstone horizon.

Coal deposits in the map area are west of the trace of the west-dipping Erickson fault system. Other major structures include the Greenhills fault, probably a splay of the Erickson fault, the Greenhills syncline, and the Fording Mountain anticline, which parallels the Greenhills syncline throughout the entire length of the Greenhills Range.

The rank of the coal has been determined by measuring the mean maximum reflectance in oil (R_v max) of the maceral vitrinite. Values >1.12 per cent indicate medium-volatile bituminous coal, while those <1.12 per cent indicate high-volatile coal. The entire coal-bearing section on Greenhills Range (on the area mapped) is high-volatile in rank, with the exception of the lowest one or two seams in the southern part of the range, which are medium-volatile. This is in marked contrast with the adjacent portions of the Elk Valley coalfield, including the Fording Coal Greenhills pits, where rank values of the basal seams are in the range of 1.30 to 1.40 per cent. The fact that the map area sits west of the Erickson fault probably accounts for this contrast, as normal faulting in southeastern British Columbia occurred at some time after coalification. In corollary, Fording Coal Greenhills pits must be separated from the map area by a normal fault, probably the northward extension (not indicated here) of the Erickson fault.



Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

SHEET 2
PRELIMINARY MAP 51
MARCH 1983
**GEOLOGY OF THE
GREENHILLS RANGE
ELK VALLEY COALFIELD**

0 500 1000 1500 METRES
1:10000

GEOLOGY BY: D. A. GRIEVE AND D. E. PEARSON

ORTHOPHOTO PRODUCED BY
MAP PRODUCTION DIVISION
MINISTRY OF THE ENVIRONMENT
VICTORIA

SYMBOLS	
MAP	
COAL SEAM: EXPOSED, ASSUMED	.....
SANDSTONE: EXPOSED, ASSUMED	.....
ELK COAL EXPOSURE	.....
THRUST FAULT: APPROXIMATE, ASSUMED (TEETH ON UPTHURST PLATE)	.....
NORMAL FAULT: APPROXIMATE, ASSUMED (BAR ON DOWNTHROWN SIDE)	.....
SMALL-SCALE HIGH-ANGLE FAULT (U = UPTHURST; D = DOWNTHROWN)	.....
BEDDING: UPRIGHT, OVERTURNED, VERTICAL	.....
SYNCLINE: APPROXIMATE, ASSUMED	.....
ANTICLINE: APPROXIMATE, ASSUMED	.....
SECTION	
PREDOMINANTLY SANDSTONE	.....
INTERBEDDED SANDSTONE AND SILTSTONE	.....
PREDOMINANTLY SILTSTONE AND FINER	.....
PREDOMINANTLY COAL	.....
COVERED INTERVAL	.....
HEIGHT IN METRES ABOVE BASAL SANDSTONE	.....
THICKNESS OF SEAM IN METRES	.....
MEAN MAXIMUM REFLECTANCE OF VITRINITE IN OIL IR ₀ MAXI	.....

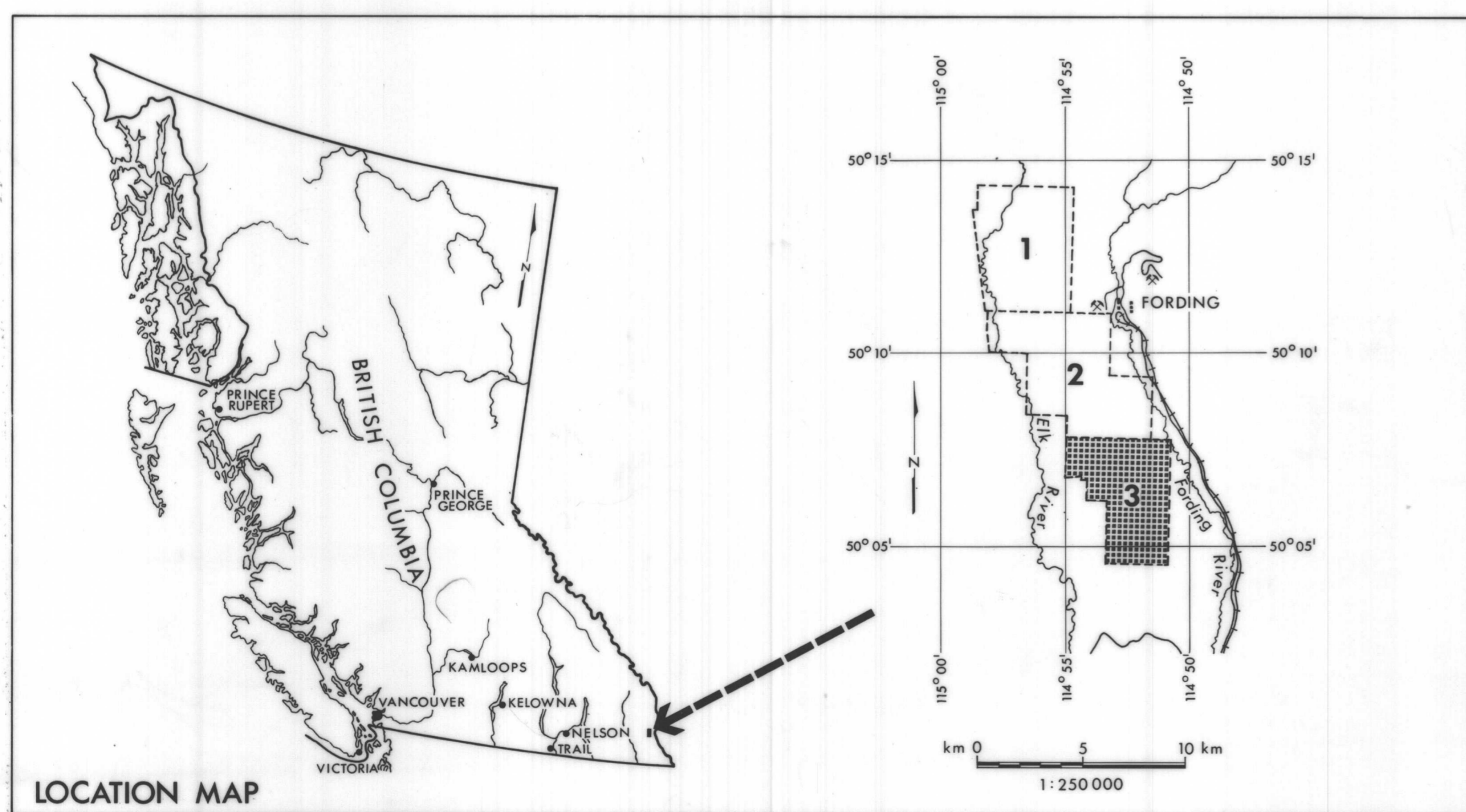
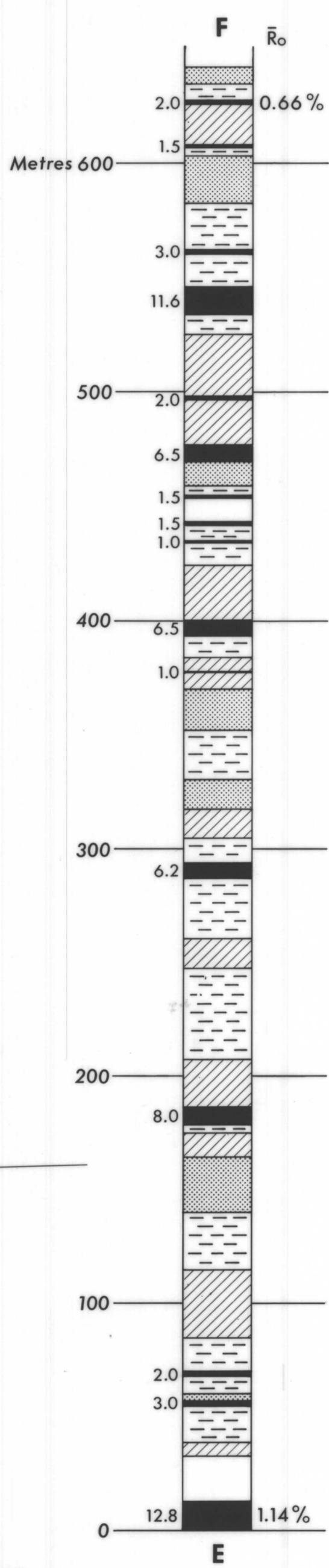
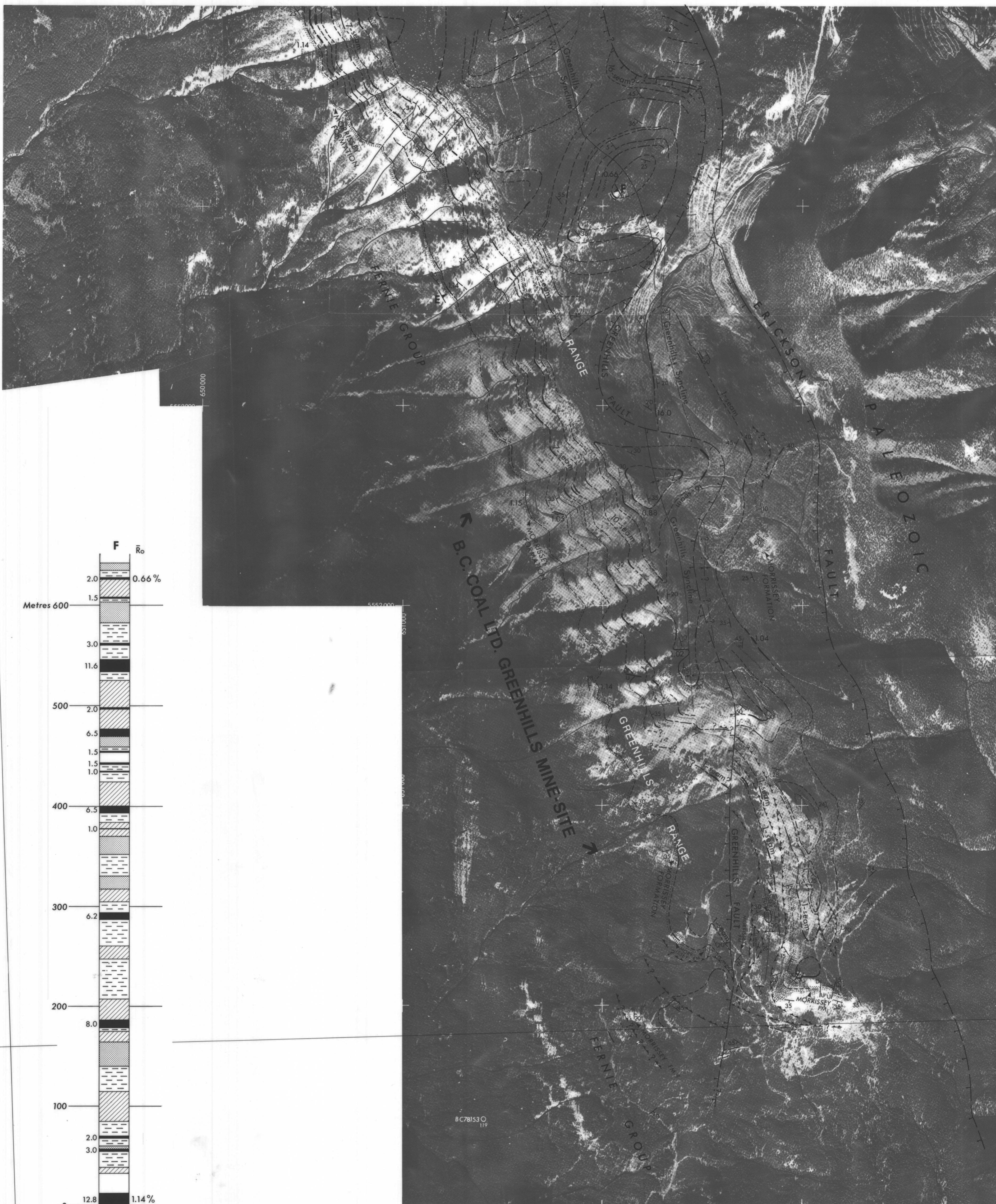
EXPLANATION

Data presented are based on examination of surface outcrops and coal-cuts, with minor air-photograph interpretation. In many cases, poor exposure has limited the amount of data and has restricted the ability to correlate seams. Seam pinch-outs and wash-outs are common, however, and account for many of the discontinuities in seam traces.

Kootenay Formation is composed of, from oldest to youngest, the Morriston Formation (basal sandstone), Mist Mountain Formation (lower coal-bearing Member), and Elk Formation. The latter, which occurs only in the north half of the map-area, includes a significant number of resistant sandstone units which are not indicated here. The presence of Elk coal, alginite-rich coal, was used to identify the Elk Formation, while the contact between Elk and Mist Mountain Formations was arbitrarily placed at a mappable sandstone horizon.

Coal deposits in the map-area are west of the trace of the west-dipping Erickson fault system. Other major structures include the Greenhills fault, probably a splinter of the Erickson fault, the Greenhills syncline, and the Fording Mountain anticline, which parallels the Greenhills syncline throughout the entire length of the Greenhills Range.

The rank of the coal has been determined by measuring the mean maximum reflectance in oil IR₀ (max) of the mapped outcrops. Values >1.12 per cent indicate medium-volatile bituminous coal, while those <1.12 per cent indicate high-volatile coal. The entire coal-bearing section on Greenhills Range (in the area mapped) is high-volatile in rank, with the exception of the lowest one or two seams in the southern part of the range, which are medium-volatile. This is in marked contrast with the adjacent portions of the Elk Valley coalfield, including the Fording Coal Greenhills pits, where rank values of the basal seams are in the range of 1.30 to 1.40 per cent. The fact that the map-area sits west of the Erickson fault probably accounts for this contrast, as normal faulting in southeastern British Columbia occurred at some time after coalification. In corollary, Fording Coal Greenhills pits must be separated from the map-area by a normal fault, probably the northward extension (not indicated here) of the Erickson fault.



Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

SHEET 3
PRELIMINARY MAP 51
MARCH 1983

GEOLOGY OF THE GREENHILLS RANGE ELK VALLEY COALFIELD

0 500 1000 1500 METRES
1:10000

GEOLOGY BY: D. A. GRIEVE AND D. E. PEARSON

ORTHOPHOTO PRODUCED BY
MAP PRODUCTION DIVISION
MINISTRY OF THE ENVIRONMENT
VICTORIA

SYMBOLS	
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SMALL-SCALE HIGH-ANGLE FAULT (U = UPTHROWN; D = DOWNTROWN)
BEDDING: UPRIGHT, OVERTURNED, VERTICAL
SYNCLINE: APPROXIMATE, ASSUMED
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SECTION	
PREDOMINANTLY SANDSTONE
INTERBEDDED SANDSTONE AND SILTSTONE
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EXPLANATION

Jurassic-Cretaceous Kootenay Group exposures on the Greenhills Range of the Elk Valley coalfield were mapped by the authors in June and July, 1979. Coal-bearing lands belonging to Fording Coal and B.C. Coal were covered.

Data presented are based on examination of surface outcrops and roadcuts, with minor air-photograph interpretation. In many cases, poor exposure has limited the amount of data and has restricted the ability to correlate seams. Seam pinch-outs and wash-outs are common, however, and account for many of the discontinuities in seam traces.

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Coal deposits in the map-area are west of the trace of the west-dipping Erickson fault system. Other major structures include the Greenhills fault, probably a splay of the Erickson fault, the Greenhills syncline, and the Fording Mountain anticline, which parallels the Greenhills syncline throughout the entire length of the Greenhills Range.

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