GEOLOGY, RED LAKE OPEN PIT, KAMLOOPS MINING DIVISION

(92I/15w/2)

Peter B. Read

February 15, 1996

GEOTEX CONSULTANTS LIMITED CONSULTING GEOLOGISTS

GEOLOGY, RED LAKE OPEN PIT, KAMLOOPS MINING DIVISION

(92I/15w/2)

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

25,358

Latitude:	50°56'30"
Longitude:	120°48'50"
Owner:	**Western Industrial Clay Products Ltd.**
Operator:	**Western Industrial Clay Products Ltd.**
Consultant:	**Geotex Consultants Limited**
Author:	**Peter B. Read**
Date:	**February 15, 1996**

GEOTEX CONSULTANTS LIMITED CONSULTING GEOLOGISTS

ABSTRACT

Western Industrial Clay Products Ltd. operates the Red Lake Open Pit at Red Lake 40 km northwest of its plant in Kamloops. This report gives the geological mapping of the open pit.

Red Lake Open Pit exposes up to a 7-metre-thickness of buff, green and tan weathering diatomaceous earth of the Upper D.E. Layer (unit **Mdu**). On August 26, 1995, the bench front and lowest floor of the open pit exposed a few small areas of carbonaceous clay, wood and carbonized lignite. The floor of the lowest level cut across also exposes several mounds of grey sedimentary breccia composed of angular andesite clasts (unit **Mx**), usually sheathed by carbonaceous clay and coal of the Upper Coal (unit **Mcu**). Beaneath the Upper Coal is the unexposed, Basal D.E. Layer (unit **Mdb**) which is up to 6 m thick. Lenses of carbonaceous clay, lignite and coal of the Basal Coal (unit **Mcb**) and sedimentary breccia intervene between the Basal D.E. Layer and the Eocene andesite volcanic basement of unit **Ev**.

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Plate 1: Red Lake Open Pit on August 26, 1995 viewed to the east from near Survey Station #1 on the waste pile, showing the ore pile, mounds of sedimentary breccia (**Mx**), each surrounded by waste, and the position of the bench front exposing the Upper D.E. Layer (**Mdu**). The locations of the other plates are shown.

MAPS

GEOLOGY AND ORE RESERVES,
RED LAKE OPEN PIT, KAMLOOPS MINING DIVISION
(92I/15w/2)

Peter B. Read

1. INTRODUCTION

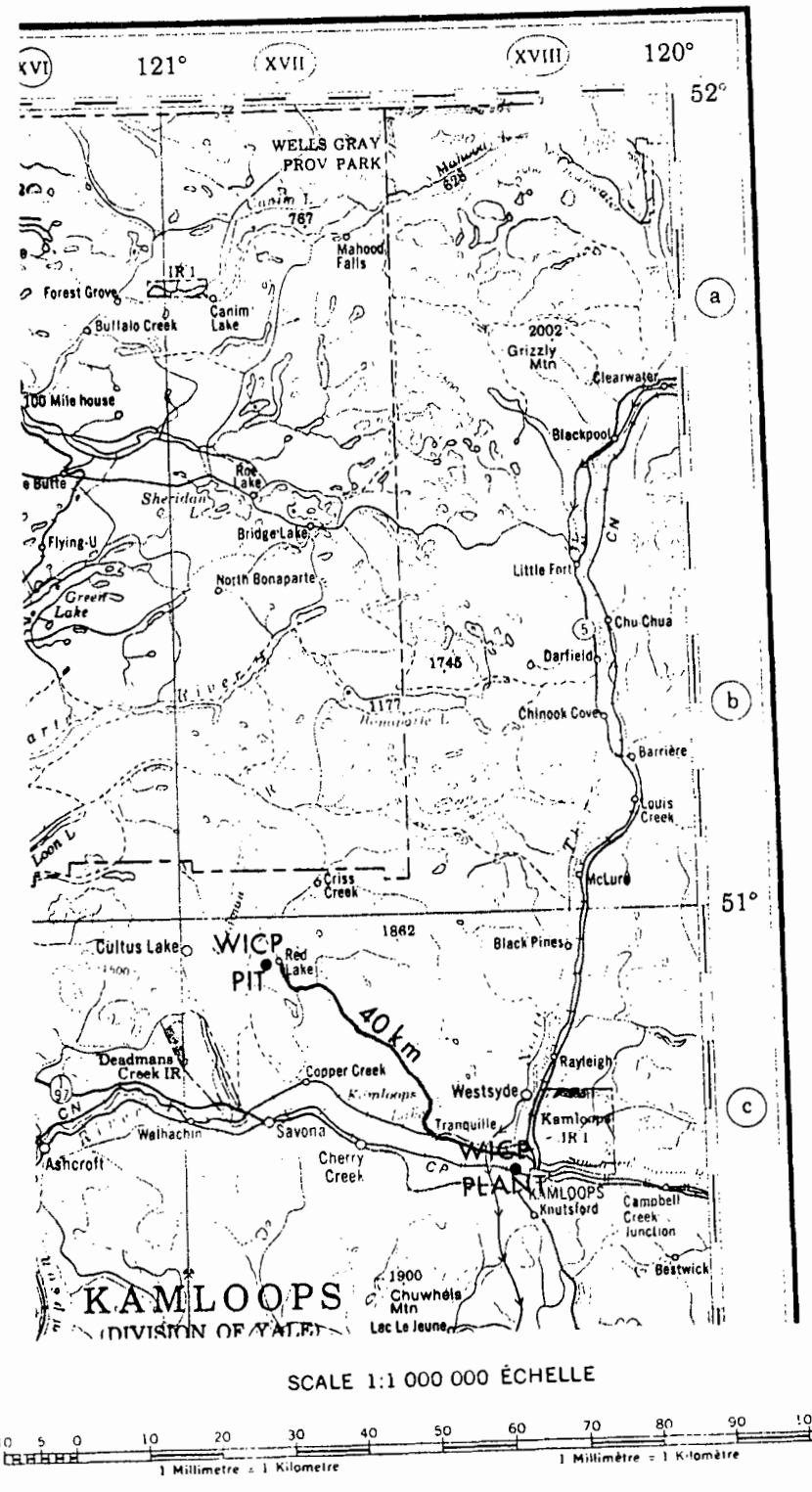
On November 30, 1992, Western Industrial Clay Products Limited obtained mining lease 310888 which covers Red Lake Open Pit and adjacent ground. The lease expires on November 30, 2022. The open pit and a large area of contiguous ground is covered under the following claim names:

Tenure#	Claim Name	Tag#	Good To Date
218218	KITTY 1	117309	Jan 19, 2005
218219	KITTY 2	117308	Jan 19, 2005
218220	KITTY 3	117307	Jan 19, 2005
323043	KITTY 10	210759	Dec 11, 2004
323044	KITTY 11	210760	Dec 11, 2004
323045	KITTY 12	210761	Dec 8, 2004
323046	KITTY 13	210762	Dec 10, 2004

This report covers the geological mapping and drill logs from 39 auger holes totalling 298.2 m in length. The mapping and drilling were done in August 1995 and the office work involved in the unravelling of the Miocene pit stratigraphy required parts of October and November. This investigation was supported by cash flow from the operations of Western Industrial Clay Products operations and an EXPLORE BC, Mineral Exploration Incentive Program Grant No. 95/96 M-91.

2. LOCATION

Western Industrial Clay Products' Mining Lease #310888 lies near 1300 m elevation about 40 km northwest of the town of Kamloops where Western Industrial



SCALE 1:1 000 000 ÉCHELLE

Kilometres 10 5 0 10 20 30 40 50 60 70 80 90 100 110 Kilomètres

1 Millimetre = 1 Kilometre

1 Millimètre = 1 Kilomètre

Figure 1: Regional map showing the locations of Western Industrial Clay Products Red Lake Open Pit and plant in Kamloops separated by 40 km of haul road.

Clay Products has its office and plant. Of the 40 km of publically maintained road, the first 8 km northwest of Kamloops towards Red Lake are paved, but the rest is gravel and of uncertain condition for winter hauling (Figure 1).

3. REGIONAL GEOLOGY

The diatomaceous earth deposit near Red Lake formed in the Miocene fluviatile and lacustrine sediments near the base of the Deadman River Formation. Both the sediments and capping olivine basalt flows of the Chasm Formation are part of the Chilcotin Group. The sediments mainly filled a northwesterly flowing Miocene drainage system that was buried by basalt flows which spread across the upland topography of central British Columbia. The Miocene sediments and volcanics lie on a basement composed of Eocene basalt/andesite flows of the Kamloops Group, or conglomerate and sandstone of the Jurassic Ashcroft Formation, or basic metavolcanic rocks of the Upper Triassic Nicola Group.

Because of the recessive weathering of the Deadman River Formation, only one assured slumpcrop* of diatomaceous earth was found in the claim area. A roadcut and bulldozer trench expose microscopically identified, diatomaceous earth on an Ainsworth Company logging road at station RL1g at UTM coordinates 0653250mE and 5647500mN. This slumpcrop of diatomaceous earth chips in the overburden at 0653100mE and 5745370 mN, and the company's open pit define a north-trending belt of diatomaceous sediments about 1 km wide and 3 km long as shown in Figure 2 where it is labelled MIOCENE SEDS.

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*slumpcrop: Bedrock believed to be slumped but close to its outcrop position.

CANADA

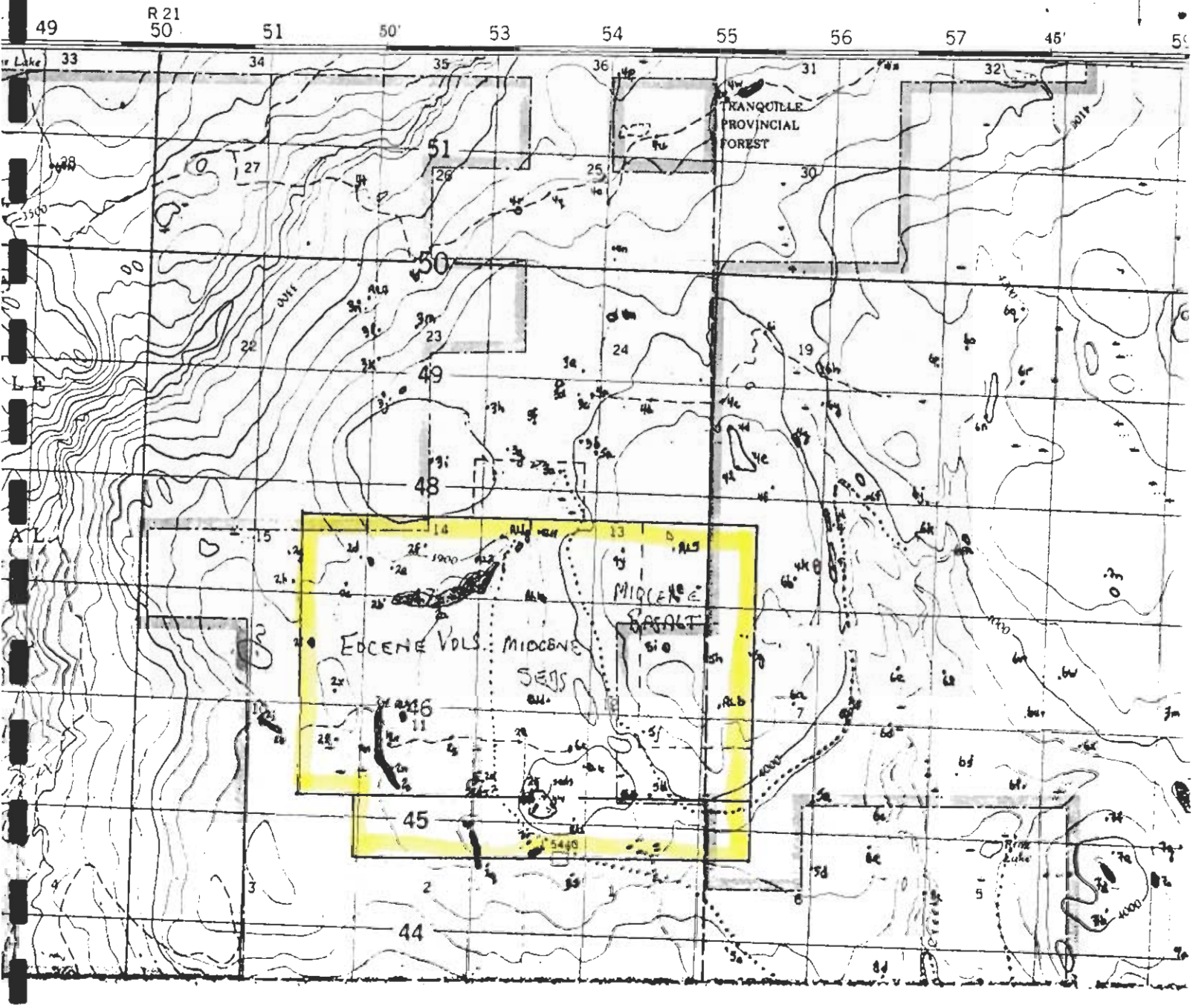
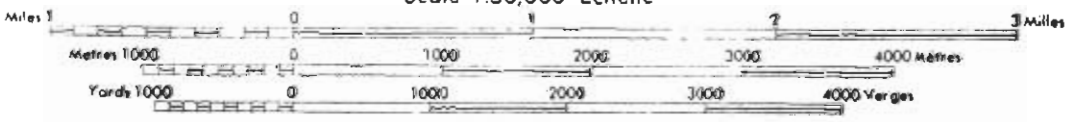


Figure 2: Regional geological map of the KITTY claims (outlined in yellow) which are underlain by a basement of Eocene volcanic rocks unconformably overlain by the Chilcotin Group composed of diatomaceous Miocene sediments (MIOCENE SEDS) topped by basalts (MIOCENE BASALT).

Scale 1:50,000 Échelle



4. GEOLOGY OF RED LAKE OPEN PIT

The Red Lake Open Pit exposes up to a 7 metre-thickness of cream to buff weathering diatomaceous earth. The bench fronts and lowest floor of the present open pit show a few, small areas of carbonaceous clay, wood and carbonized lignite. The floor of the lowest level exposes several mounds of grey aphanitic andesite sedimentary breccias usually sheathed by carbonaceous clay or coal (Plate 1). Typically the bedding is flat (Plate 2), but in the mounds and contiguous diatomaceous and carbonaceous sediments, dips up to 35 degrees are quaquaversal and subvertical faults with dip-slip slickensides are common (Plates 3 to 5). Briefly the stratigraphy exposed in the open pit, a few nearby outcrops, and in the auger cuttings is from oldest to youngest:

(a) Andesite (**Ev**)

Outside the open pit area are a few outcrops of medium grey sparsely vesicular, aphanitic andesite flows of the Eocene Kamloops Group.

(b) ////////////////////// Sub-Miocene Unconformity //////////////////////

The north to westward draining paleotopography of the sub-Miocene unconformity is outlined by the structure contours on the base of the Miocene sediments. In the northwest corner of the pit, the structure contours outline a major west-northwestward draining paleovalley which may extend westward into the northeast corner of the proposed South Pit.

(c) Sedimentary breccia (**Mx**)

A medium grey, sparsely vesicular, aphanitic andesite breccia consists of angular clasts ranging from a few millimetres to a few centimetres on edge, but clasts to 20 cm are rare (Plate 6). Most of the sedimentary breccias are monomictic andesite debris but some are mixed with small angular chunks of diatomaceous or carbonaceous rocks (Plate 7). Some of the volcanic clasts are buff rather than grey which probably results from paleoweathering. Where the

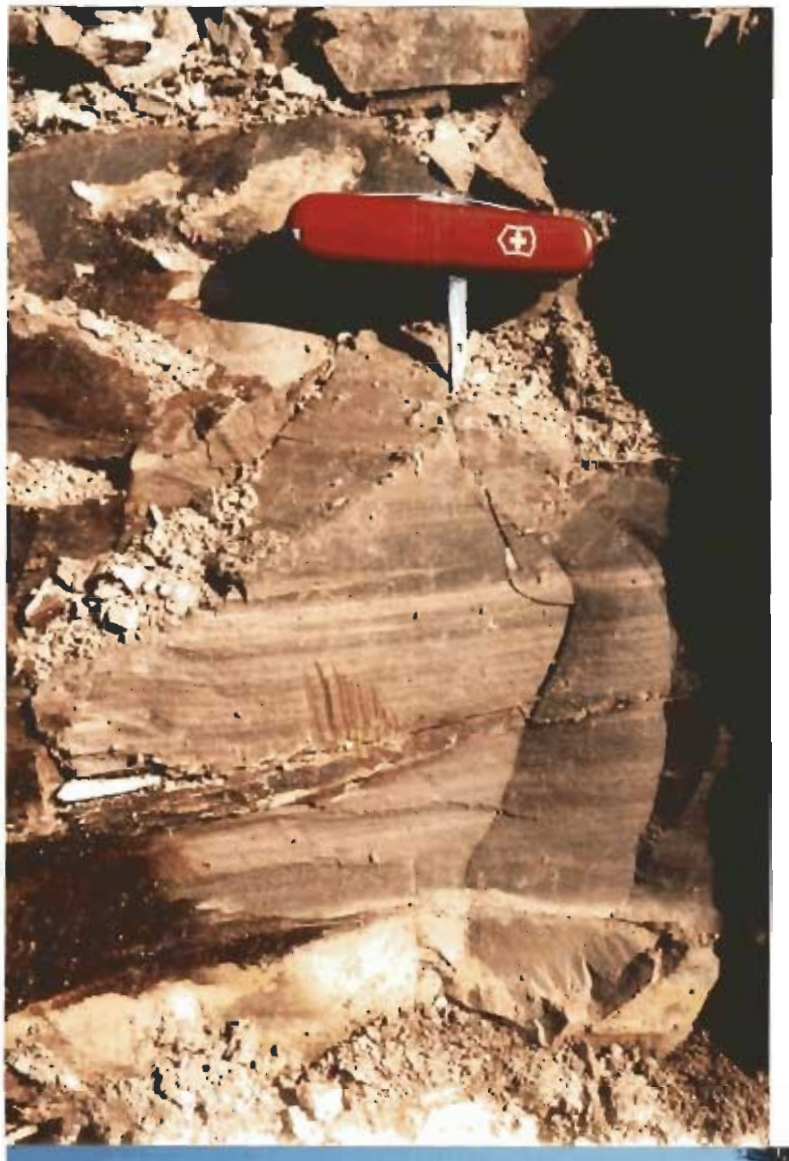


Plate 2:
The base of the north wall of Red Lake Open Pit at 170mE and 20mS exposes horizontally bedded brown diatomaceous earth of unit **Mdu.**

Plate 3:
In Red Lake Open Pit at 162mE and 26mS, looking southwest at a mound cored by sedimentary breccia (**Mx**), composed of Eocene andesite clasts, sheathed in carbonaceous clay and brown diatomaceous earth of the Upper D.E. (**Mdu**) and limited by polished fault planes showing dip-slip slickensides best exposed on the darkened surfaces near the red notebook.

Plate 4: In Red Lake Open Pit at 67mE and 135mS, looking south to a mound of sedimentary breccia composed of Eocene andesite clasts (**Mx**) forming lenses within a brecciated carbonaceous diatomaceous earth (**Mcu**). Beneath the white-weathering diatomaceous earth (**Mdu**) forming the crest of the mound the bedding is 345/25NE and on the right side in the shadow it is 015/50NW and outlines an anticline.

Plate 5: In Red Lake Open Pit at 118mE and 143mS, looking north at a sliver of sedimentary breccia (**Mx**) bounded by steep, north striking faults on the west (tape roll and plastic bag) and on the east (notebook and red tape).

Plate 6 (below):
In Red Lake Open Pit at 118mE and 143mS, looking at the sedimentary breccia sliver (**Mx**) composed of mainly Eocene andesite clasts and a few small fragments of diatomaceous earth truncated by a fault at 002/vertical with dip-slip slickensides.

Plate 7 (above):
In Red Lake Open Pit at 107mE and 173mS, looking at buff diatomaceous earth composed of carbonaceous clay and coal and diatomaceous earth clasts in a diatomaceous earth matrix of unit **Mdu**.

volcanic clasts are in contact with a carbonaceous matrix, signs of burning or heating are absent. The absence supports a sedimentary rather than volcanic origin for the breccia. The present level of exposure restricts the breccia to the mounds where this unit is 2 to 5 m above the typical level of the unconformity. The volcanic sedimentary breccia is composed of Eocene detritus locally deposited at the base of the Miocene Deadman River Formation of the Chilcotin Group.

(d) Basal Coal (**Mcb**)

Carbonaceous clay, lignite and wood forms lenses up to 2 m in thickness at the base of the Miocene Deadman River Formation.

(e) Basal D.E. (**Mdb**)

Only auger cuttings indicate the presence of a brown diatomaceous earth layer ranging in thickness from less than a metre to 5.5 m in the northwest corner of the open pit. The Basal D.E. layer either lies on the Basal Coal or directly on the Eocene basement, but in two places in the southwest corner of the pit, it is absent.

(f) Upper Coal (**Mcu**)

Except for the southeast edge of the open pit, a carbonaceous shale, lignite and wood layer ranging from less than a metre to 3 m, but averaging 1.0 to 1.5 m in thickness separates the Basal D.E. from the Upper D.E (Plate 4).

(g) Upper D.E. (**Mdu**)

In most places the bedrock immediately beneath the overburden is a varicoloured diatomaceous earth passing from buff, through green and grey to brown (Plate 2). It ranges in thickness from less than a metre to 7 m except on the southeast edge of the open pit where the absence of the Upper Coal renders it impossible to distinguish between the Basal and Upper D.E. The large variation in thickness results from erosion and exploitation. In the northwest corner of the

open pit, the large area of a metre or less in thickness results from Western Industrial Clay Products exploitation of this layer. The unit thickens northward and is abruptly terminated to the southeast and south through erosion.

5. STRATIGRAPHY AND ORE RESERVES OF THE RED LAKE OPEN PIT

In the Red Lake Open Pit, the stratigraphy penetrated by augering consists of an Eocene andesite basement beneath a succession of Miocene composed of two diatomaceous earth layers up to 7 m thick separated and underlain by carbonaceous clay, coal and lignite layers up to 2 m thick (Fig. 3). Structure contours on the base of the Miocene sediments outline a northerly sloping Miocene paleotopography. On this paleotopography, lignite, wood and carbonaceous clay form basal lenses of unit **Mcb** over about half the open pit area. Covering the basal carbonaceous unit and most of the remainder of the Eocene basement is up to a 5 m thickness of a brown diatomaceous earth of the Basal D.E. (**Mdb**). Except for a small area on the southeast corner of the open pit (Map I), the carbonaceous clay, lignite and wood layer of unit **Mcu** blankets the Basal D.E. and separates it from the overlying Upper D.E. layer (**Mdu**). The Upper D.E. is up to 7 m thick and contains a few thin carbonaceous clay lenses (**Mcm**).

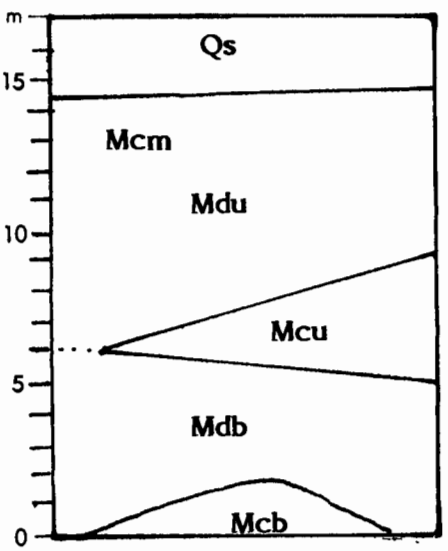


Figure 3: Stratigraphy of Red Lake Open Pit

Glacial till and soil

Upper D.E.: diatomaceous earth and thin carbonaceous lenses (**Mcm**)

Upper carbonaceous clay, lignite, wood layer

Basal D.E.: brown diatomaceous earth

Basal carbonaceous clay, lignite, wood layer

LEGEND FOR ACCOMPANYING MAPS AND SECTIONS

QUATERNARY
PLEISTOCENE AND RECENT

Qs — Unconsolidated sediments: glacial deposits and alluvium

TERTIARY
MIOCENE
CHILCOTIN GROUP
Deadman River Formation

Mdu — Upper D.E. Layer: Tan, brown, green and grey diatomaceous earth

Mcm — Medial lenses of grey diatomaceous earth, carbonaceous clay, lignite

Mcu — Upper Coal: Carbonaceous clay, lignite, wood

Mdb — Basal D.E. Layer: Brown diatomaceous earth

Mcb — Basal Coal: Carbonaceous clay, lignite, wood

Mx — Sedimentary Breccia: Monomictic breccia of andesite clasts

EOCENE
KAMLOOPS GROUP

Ev — Grey vesicular, aphanitic andesite flows

Geological contact (exposed
Geological contact (approximate
Geological contact (assumed

Bedding — 6

Faults — 86

Contours (topography - 2 metre interval — 1320

Contours (structure - 1 metre interval — 1301

Contours (isopach - 1 metre interval — 2

Survey station with elevation in metres — STA#3 1319.8

Auger hole collar with elevation in metres — K95-7 1313.1

Intermediate points with last three digits of elevation — 318.1

Bench top

Bench toe

PRISMACOLOR PENCIL CODE FOR MAP UNITS

914

942

967

968

941

966

912

908

APPENDIX A: Statement of Qualifications

AUTHOR'S STATEMENT OF QUALIFICATIONS

I, PETER B. READ, do hereby certify:

1. That I am employed by Geotex Consultants Limited with offices at #1200 - 100 W. Pender Street, Vancouver, B.C.

2. That I graduated from the University of British Columbia with a BASc (1957) and MASc (1960) in Geological Engineering, and from the University of California, Berkeley with a PhD (1966) in Geology.

3. That I have practiced my profession from 1965 to 1974 in various teaching positions in the universities of Otago, Dunedin, New Zealand; Carleton, Ottawa; and British Columbia, Vancouver. Since 1974, I have been president of Geotex Consultants Limited and been involved with geology as an academic study for the Geological Survey of Canada, and as an applied study for engineering purposes for B.C. Hydro, for structural geology for various major and junior mining companies in British Columbia and parts of United States, and for industrial minerals for mining companies and the British Columbia government.

4. My experience specific to industrial minerals in south-central British Columbia results from consulting for Canadian Occidental Petroleum in 1977 and 1978, Western Industrial Clay Products Ltd. from 1993 to the present, and the British Columbia Ministry of Energy, Mines and Petroleum Resources in 1986 to the present. This experience is summarized in private reports to clients in the mining industry and publically available reports for the British Columbia Ministry of Energy, Mines and Petroleum Resources (list attached).

5. That I am a Fellow in good standing of the Geological Association of Canada, and a member of various other geological and mineralogical societies.

6. That I hold no interest in the properties or securities of Western Industrial Clay Products Ltd., or affliates thereof, nor do I expect to receive any directly or indirectly.

7. That written permission from the author is required to publish this report or any parts thereof in any Prospectus or Statement of Material Facts.

Dated at Vancouver, British Columbia this 15th day of November 1996.

Peter B. Read

The following is a list of industrial mineral publications by P.B. Read published under the auspices of the British Columbia Ministry of Energy, Mines and Petroleum Resources.

Read, P.B. (1987a):
Industrial minerals in some Tertiary basins, southern British Columbia; in Geological Fieldwork 1986, British Columbia Ministry of Energy, Mines and Petroleum Resources, Paper 1987-1, p. 247-254.

_____ (1987b):
Tertiary stratigraphy & industrial minerals, Princeton & Tulameen basins, British Columbia; British Columbia Ministry of Energy, Mines and Petroleum Resources, Open File 1987-19.

_____ (1988a):
Industrial minerals in Tertiary rocks, Lytton to Gang Ranch, southern British Columbia; in Geological Fieldwork 1987, British Columbia Ministry of Energy, Mines and Petroleum Resources, Paper 88-1, p. 411-415.

_____ (1988b):
Industrial minerals in the Tertiary of Bonaparte to Deadman River area, southern British Columbia; in Geological Fieldwork 1987, British Columbia Ministry of Energy, Mines and Petroleum Resources, Paper 88-1, p. 417-419.

_____ (1988c):
Tertiary stratigraphy & industrial minerals, Merritt basin, British Columbia; British Columbia Ministry of Energy, Mines and Petroleum Resources, Open File 88-15.

_____ (1988d):
Cenozoic stratigraphy and industrial minerals: Fraser River, Lytton to Gang Ranch, southwestern British Columbia; B.C. Ministry Energy, Mines and Petroleum Resources, Open File 88-29.

_____ (1988e):
Tertiary stratigraphy & industrial minerals, Cache Creek, British Columbia; British Columbia Ministry of Energy, Mines and Petroleum Resources, Open File 88-30.

_____ (1989a):
Miocene stratigraphy and industrial minerals, Bonaparte to Deadman River area, southern British Columbia (92I/14, 15; 92P/2,3); in Geologic Fieldwork 1988, B.C. Ministry of Energy, Mines and Petroleum Resources, Paper 1989-1, p. 515-518.

_____ (1989b):
Tertiary stratigraphy & industrial minerals, Bonaparte to Deadman rivers, British Columbia; British Columbia Ministry of Energy, Mines and Petroleum Resources, Open File 1989-21.

Read, P.B. (1990):
Tertiary stratigraphy & industrial minerals, Hat Creek, British Columbia; British Columbia Ministry of Energy, Mines and Petroleum Resources, Open File 1990-23.

_____(1994):
Kaolinite Potential of the Comox Sub-Basin, Vancouver Island, British Columbia; B.C. Ministry of Energy, Mines and Petroleum Resources, Open File 1994-16.

_____(1996):
Industrial Mineral Potential of the Tertiary Rocks, Vernon (82l) and Adjacent Map Areas; British Columbia Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork 1995, Paper 1996-1, p. 207-218.

_____(in press):
Geology and industrial minerals of the Tertiary basins, south-central British Columbia; British Columbia Ministry of Energy, Mines and Petroleum Resources, Bulletin (submitted April 1991).

_____(in press):
Industrial Zeolite Potential in British Columbia; British Columbia Ministry of Energy, Mines and Petroleum Resources, Open File Report.

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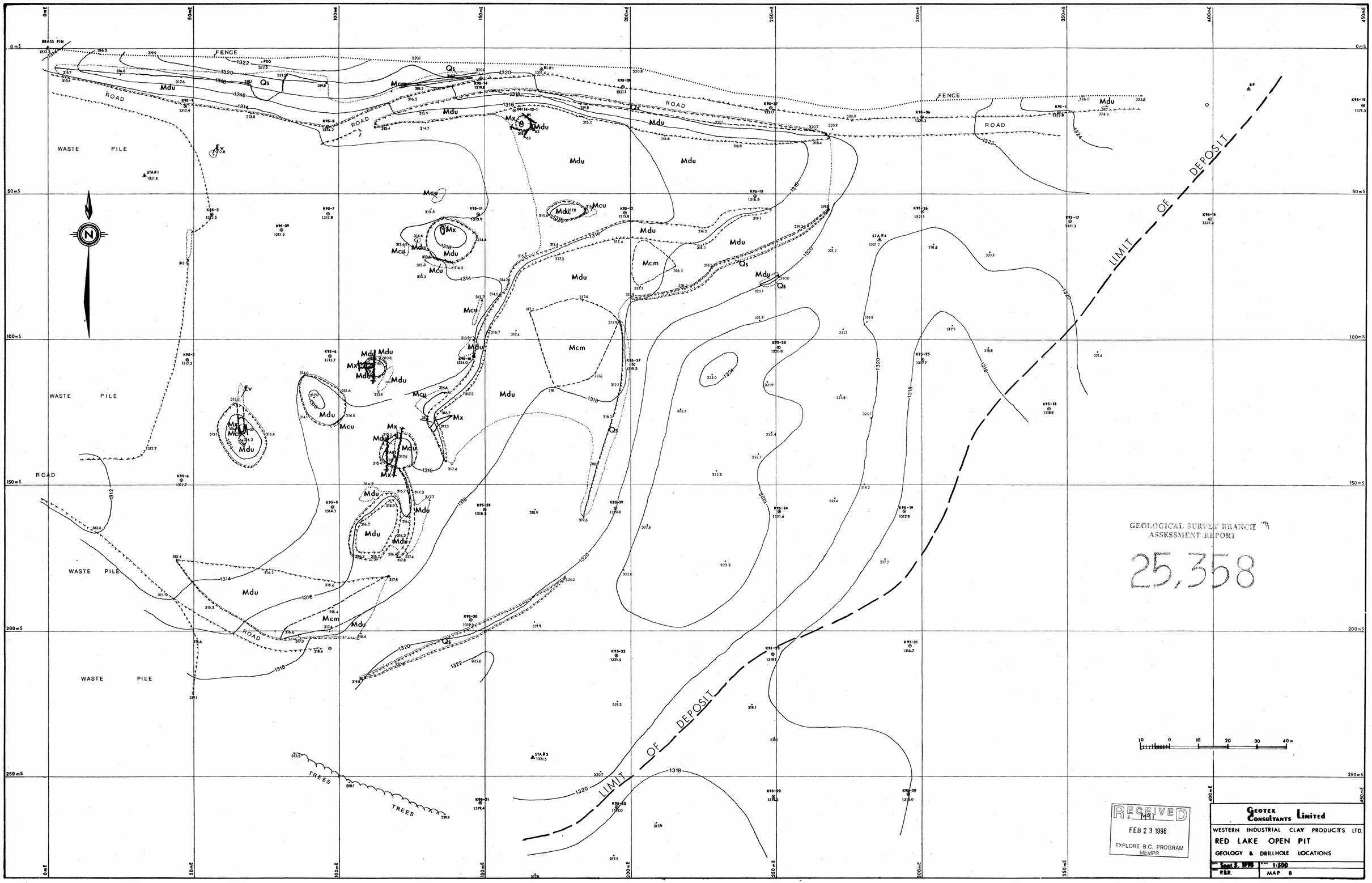
WESTERN INDUSTRIAL CLAY PRODUCTS LTD.

RED LAKE OPEN PIT

TOPOGRAPHY as of August 26, 1995

Sept.5, 1995 | 1:500 | P.B.R. | MAP A



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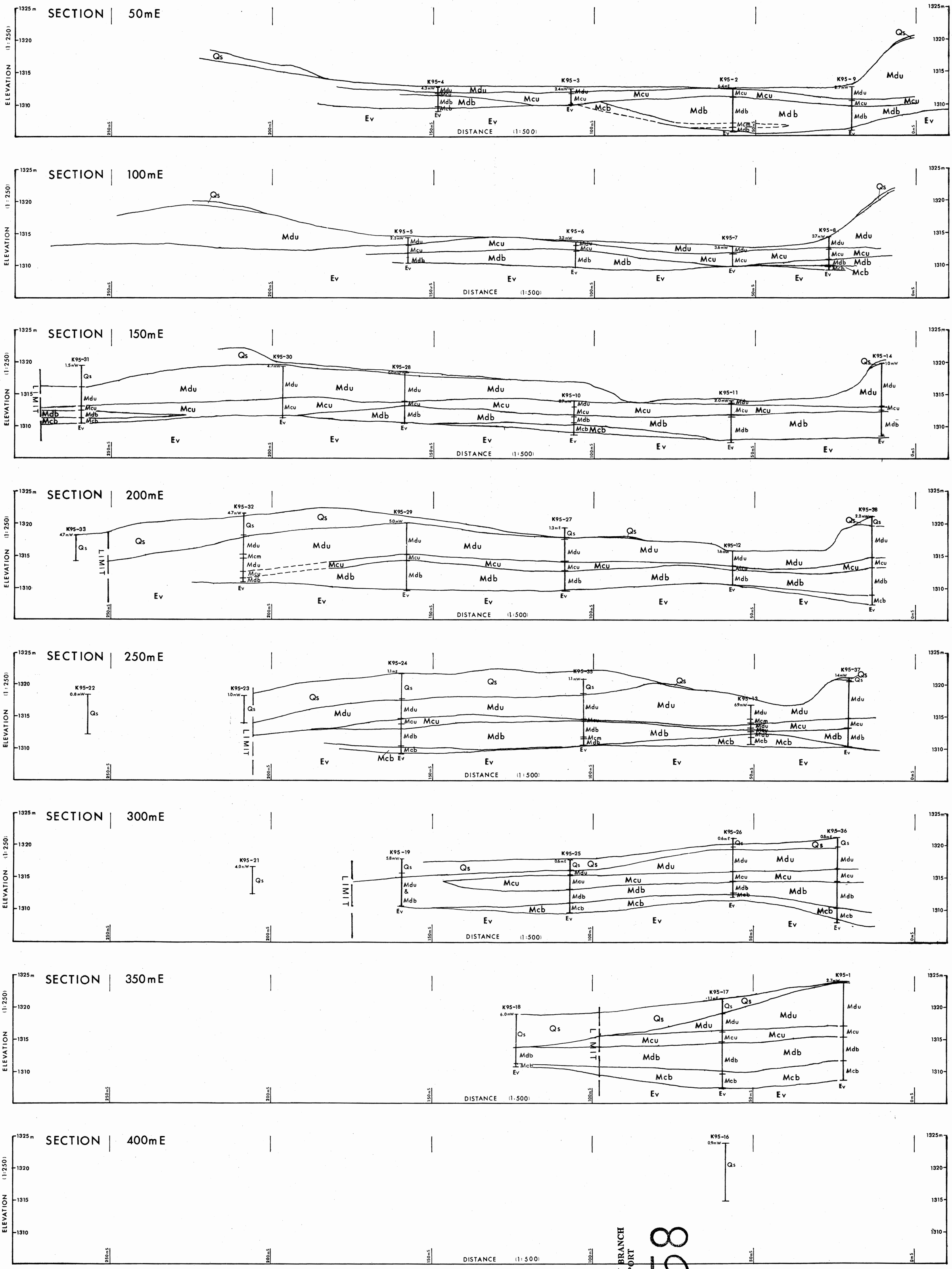
RED LAKE OPEN PIT

GEOLOGY & DRILLHOLE LOCATIONS

DATE Sept 5, 1995	SCALE 1:500
DRAWN P.B.R.	MAP B



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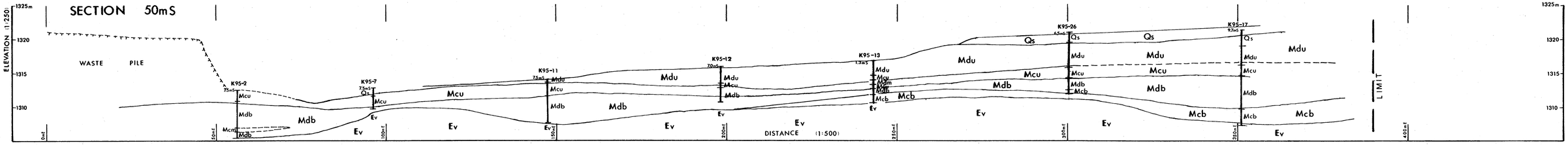
RED LAKE OPEN PIT

EAST GEOLOGICAL CROSS-SECTIONS

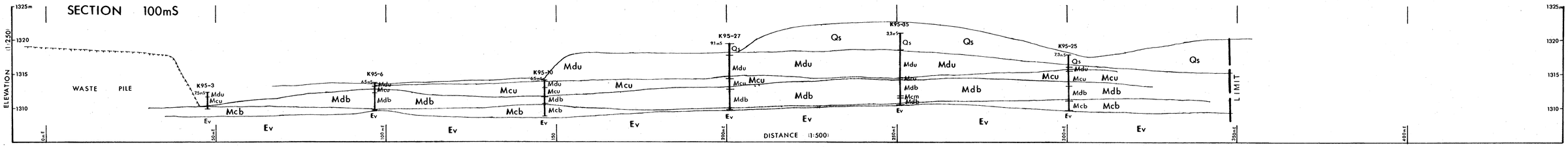
DATE Oct. 20, 1995 | SCALE Horiz. 1:500 & Vert. 1:250

DWN P.B.R. | MAP K

SECTION 50mS



SECTION 100mS



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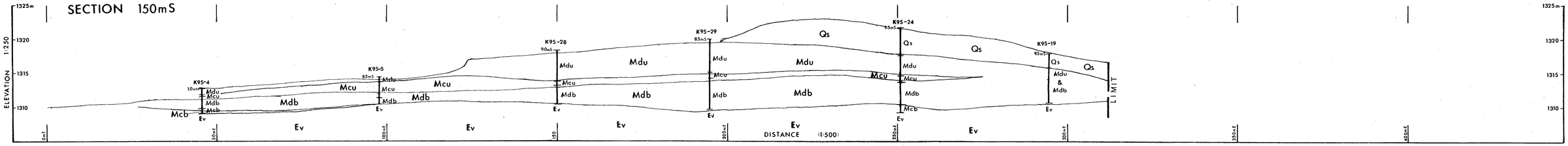
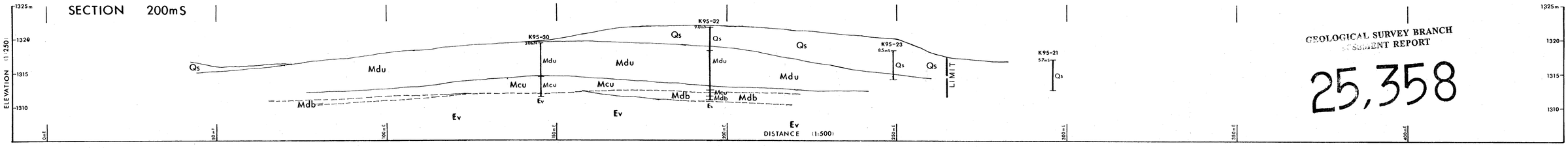


SECTION 200mS



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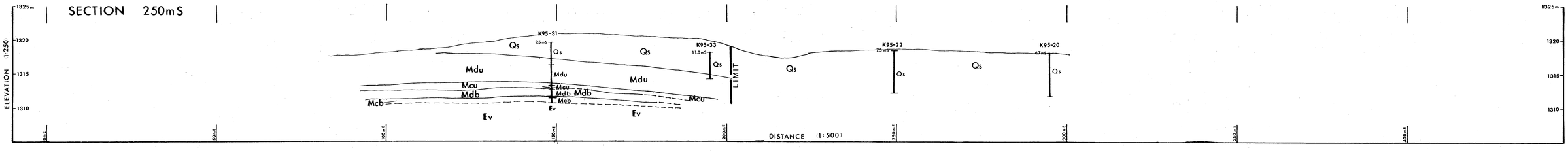

Geotex Consultants Limited

WESTERN INDUSTRIAL CLAY PRODUCTS LTD.

RED LAKE OPEN PIT

SOUTH GEOLOGICAL CROSS-SECTIONS

Date: Oct. 20, 1995 | Scale: Horiz: 1:500 & Vert: 1:250

Drawn: P.B.R. | MAP L