CLIFTON ASSOCIATES LTD.

GEOLOGY OF THE LORAAS DISPOSAL SITE

July 27, 1981

Clifton Associates Ltd.
2225 Hanselman Court
Saskatoon, Saskatchewan
S7L 6A8

Attention: Mr. S.L. Barbour

Dear Mr. Barbour:

Enclosed are two copies of Report 0076-001 on the "Geology of Loraas disposal site". Five additional testholes are proposed to provide the necessary framework for your firm's geotechnical study.

If you have any queries, please contact me.

Sincerely yours,

[Signature]

E.A. Christiansen
INTRODUCTION

E.A. Christiansen Consulting Ltd. was commissioned by Clifton Associates Ltd. June 25, 1981 to provide a geological framework for the geotechnical studies of the Loraas disposal site in the south half of Section 3, Township 38, Range 5 West of the Third Meridian (Fig. 1) between Saskatoon and Warman. Testhole III (Figs. 1,2; Drawing 0076-001-01, Testhole 3) was drilled, sampled, and electric logged between July 13 and 17.

GEOLOGY

The relationship of the stratigraphy of the Loraas disposal site with the regional geology is shown in Drawing 0076-001-01. The Tyner Valley underlies the site at a depth of about 230 feet (70 m). The Dalmeny Aquifer is missing in Testhole 2 (Drawing 0076-001-01) as a result of glacial erosion, but is present in Testhole 3. Because the Dalmeny Aquifer was not encountered at a depth of 21 m (70 feet) in Testhole 101 (Fig. 1), it is believed the aquifer is not present at this site.

PROPOSED TEST DRILLING

To determine whether the Dalmeny Aquifer was glacially eroded from the western part of SW-3-38-5-W3 (Fig. 1), it is proposed to drill Testholes A and B to bedrock. If the Dalmeny Aquifer is not encountered in Testholes A and B, Testholes C, D, and E would be proposed to more accurately define the boundary of the aquifer. The Empress Group would be the base of exploration for these latter three testholes. The total footage for the five proposed testholes is 1600 feet or a total cost, including mobilization, of about $10,000.00 as itemized in the enclosed quotation by Hayter Drilling Ltd.
Figure 1. Location of proposed testholes, rotary testhole, and augerholes at the Loraas disposal site.
Figure 2. Geologic log, Testhole III.
* 1. Mobilization between sites and Saskatoon
   to Watrous 200 miles @ $4.00                 $ 800.00
  2. Test drilling 1600 feet @ $4.00            6400.00
  3. Electric logging 1600 feet @ $0.50         800.00
  4. Light plant and trailer rental 3 days @ $80.00 240.00
  5. Poly gel 10 bags @ $10.00                 100.00
  6. Sustenance 3 men @ $35.00 per man 3 days   315.00
  7. Rock bits 5 rock bits @ $250.00           1250.00

   ** 9905.00**

* This assumes that test drilling would be done immediately
  after completing the investigation of the arena sites.
** Does not include cementing testholes.
July 21, 1981

E.A. Christiansen Consulting Ltd.,
Consulting Geologist,
Box 3087,
Saskatoon, Saskatchewan.
S7K 3S9

Dear Earl;

In regard to our recent telephone conversation, we are forwarding price quotations for test drilling in the Saskatoon area. They are as follows:

Mobilization and demobilization, per mile  $4.00
Test hole, per ft. 4.00
E-Log, per ft. .50¢
Extra work, men and equipment, per hr. 95.00
Standby, men and equipment, per hr. 80.00
Standby, equipment only per day 500.00
Abandonment plug 50 ft., lump sum 200.00
Cement, per bag 8.50
Light plant and trailer rental per day 80.00
Gravel drilling per hr 80.00
plus, per ft. 3.50
Poly Gel, per bag 10.00
Sustenance, per man per day 35.00
Rock bits, cost plus 10% handling

Yours truly,
Hayter Drilling Ltd.

Dale A. Hayter

DAH: mh