

PJB ENGINEERING LIMITED

PRELIMINARY HYDROGEOLOGIC ASSESSMENT OF A PROPOSED SUBDIVISION
AT 33444 - 33472 DEWDNEY TRUNK ROAD
IN THE DISTRICT OF MISSION

PACIFIC HYDROLOGY CONSULTANTS LTD.
FEBRUARY 19, 1990

PACIFIC HYDROLOGY CONSULTANTS LTD.
CONSULTING GROUNDWATER GEOLOGISTS

204 - 1929 WEST BROADWAY
VANCOUVER, B.C. V6J 1Z3
TELEPHONE: (604) 738-9232

February 19, 1990

PJB Engineering Limited
Suite 200 - 11180 Voyageur Way
RICHMOND, B. C. V6X 3N8

Attention: Mr. Pershing Balayo, P. Eng.,
Managing Principal

Subject: Preliminary Hydrogeologic Assessment of a Proposed
Subdivision at 33444 - 33472 Dewdney Trunk Road
in the District of Mission

Dear Sirs:

This letter is further to a telephone discussion between P. Balayo of PJB Engineering Ltd. and E. Livingston of Pacific Hydrology Consultants Ltd. on February 12 and also to a discussion on February 16 between Balayo and Livingston onsite at the proposed subdivision of a parcel of land at 33444 - 33472 Dewdney Trunk Road in the District of Mission. The location of the subject property is shown on Figure 1 in Appendix A.

1.0 INTRODUCTION

The purpose of this letter is to report on our preliminary investigation of hydrogeologic conditions on the subject parcel of land as they would affect the use of onsite wastewater disposal facilities. From the previously

.../2

mentioned discussions between Balayo and Livingston, we understand that PJB Engineering Ltd. has been engaged by land developers to advise them on possible development strategies for the subject parcel of land, consisting of about 6.5 hectares (16 acres), as shown on Figure 2 in Appendix A. This figure has been prepared from a sketch plan of approximate scale 1:1270 which PJB Engineering provided.

2.0 FIELD INVESTIGATION

The field investigation consisted of digging six test pits by a wheel backhoe on that part of the property which is accessible for the machine off of Dewdney Trunk Road, forming the north boundary of the property; there is no access to the property from Cherry Avenue. The test pits were dug to a depth about two metres. Several of the pits, where there were no signs of water, were backfilled immediately after inspection; three of the test pits (1, 3 and 6) were backfilled to a depth about 1.2 m (4 ft) so that the water levels in them can be observed for the remainder of the winter.

The approximate (unsurveyed) locations of the test pits are shown on Figure 2 in Appendix A at an approximate scale of 1:2400, reduced from the plan provided by PJB Engineering. The subdivision layout shown on the aforementioned plan consists of 17 lots (see Figure 2) but the locations of the proposed lots are not marked on the ground.

3.0 TOPOGRAPHY AND SURFICIAL GEOLOGY

From Dewdney Trunk Road, which forms the north boundary of the subject property (Figure 2), the land slopes gradually from the broad flat along Dewdney Trunk Road to the top of an east-west ridge located approximately at the boundary between Lots 10 and 11. On the east half of the property, this ridge is quite narrow with a very steep south side; on the western half, the ridge is broader with a more gently sloping south side. Cherry Avenue, which forms the south boundary of the subject property, is located on the north slope of a similar east-west ridge. Lot 17 is located on this north-facing slope and all or part of Lot 16 is also on this slope.

The intervening area between the two ridges, probably most of Lots 11, 12, 13, 14 and 6, is very poorly drained and all indications are that the water table is very close to surface. This low-lying area, which drains eastward, was not accessible with the backhoe because of a thick growth of alder and other wetland vegetation. It was also not possible to reach the south end of the property because of an open drainage ditch, probably on Lots 6 and 13.

The two ridges are glacial moraines composed of poorly sorted, bouldery, sandy, silty till and till-like sediment. The subsurface conditions shown by Test Pits No.'s 4, 5 and 6, probably on Lots 10, 4 and 2, respectively, confirm that the sediments making up the ridges are typical of a glacial moraine. These moraines were deposited by glacial ice which moved into the area from the north at the end of the last glacial episode in the Mission area. Younger sediments, mostly sand, are deposited against the north side of these ridges and probably also between them. Fine-grained eolian sediments (loess) are present at surface on top of the sand. The ridges control the drainage of the area.

The lowest part of the north-sloping side of the property is on Lot 1 close to Dewdney Trunk Road. A test pit (No. 1) dug near the northeast corner of Lot 1 reached the water table in clean sand containing minor lenses of gravel. After about two hours, the water level had risen to about 1.4 m (4.6 ft). Such a level probably represents the shallowest water table on the northern part of the property. The test pits on the ridge (Pit No.'s 4, 5 and 6) were all dug in well-drained, poorly sorted, gravelly till-like sediment of the moraine.

4.0 ONSITE WASTEWATER DISPOSAL

The preliminary investigation of conditions on the subject property generally shows that the property, except for the poorly-drained central part between the two ridges, is suitable for the use of individual conventional onsite wastewater disposal systems consisting of a septic tank and tile drain field. However, because the boundaries of the proposed lots as shown on Figure 2 in Appendix A are not defined on the ground, we are not prepared, as a result of this preliminary investigation, to put precise boundaries on the area and/or identify which lots are unsuitable. We suggest that the suitable area could be better established from a detailed contour plan of the property and distinct ground markings. If such a plan were available, the proposed subdivision layout could be revised to take better advantage of the irregular topography of the parcel.

5.0 SUMMARY

1. The property proposed for subdivision at 33444 - 33472 Dewdney Trunk Road is situated on two glacial moraine ridges at the north and south ends with an intervening low-lying, poorly drained portion between the ridges.
2. For the present investigation, only the northern part of the property could be accessed by a wheel backhoe. Six test pits were dug on this part of the property. These pits show that conditions on the northern part of the site are generally suitable for the use of conventional, individual, onsite wastewater disposal facilities.
3. Conditions on a portion of the southern part of the property also appear to be suitable for onsite wastewater disposal systems but this was not confirmed by test pit digging.
4. A detailed contour plan of the site would permit revision of the proposed lot layout to take advantage of the irregular topography.
5. Stormwater disposal from the proposed subdivision could be conveyed to existing road drainage but this question is best addressed at the time of a more detailed investigation associated with definite subdivision plans.

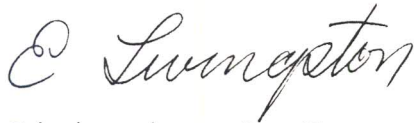
PJB Engineering Limited
Preliminary Hydrogeologic Assessment of a Proposed Subdivision
at 33444 - 33472 Dewdney Trunk Road in the District
of Mission

February 19, 1990 - Page 6

We trust that this letter fulfills your requirements. Please call if you have any questions about the contents of this letter or if we can be of further assistance with this matter.

Yours truly,

PACIFIC HYDROLOGY CONSULTANTS LTD.

A handwritten signature in cursive script that reads "E. Livingston".

E. Livingston, P. Eng.

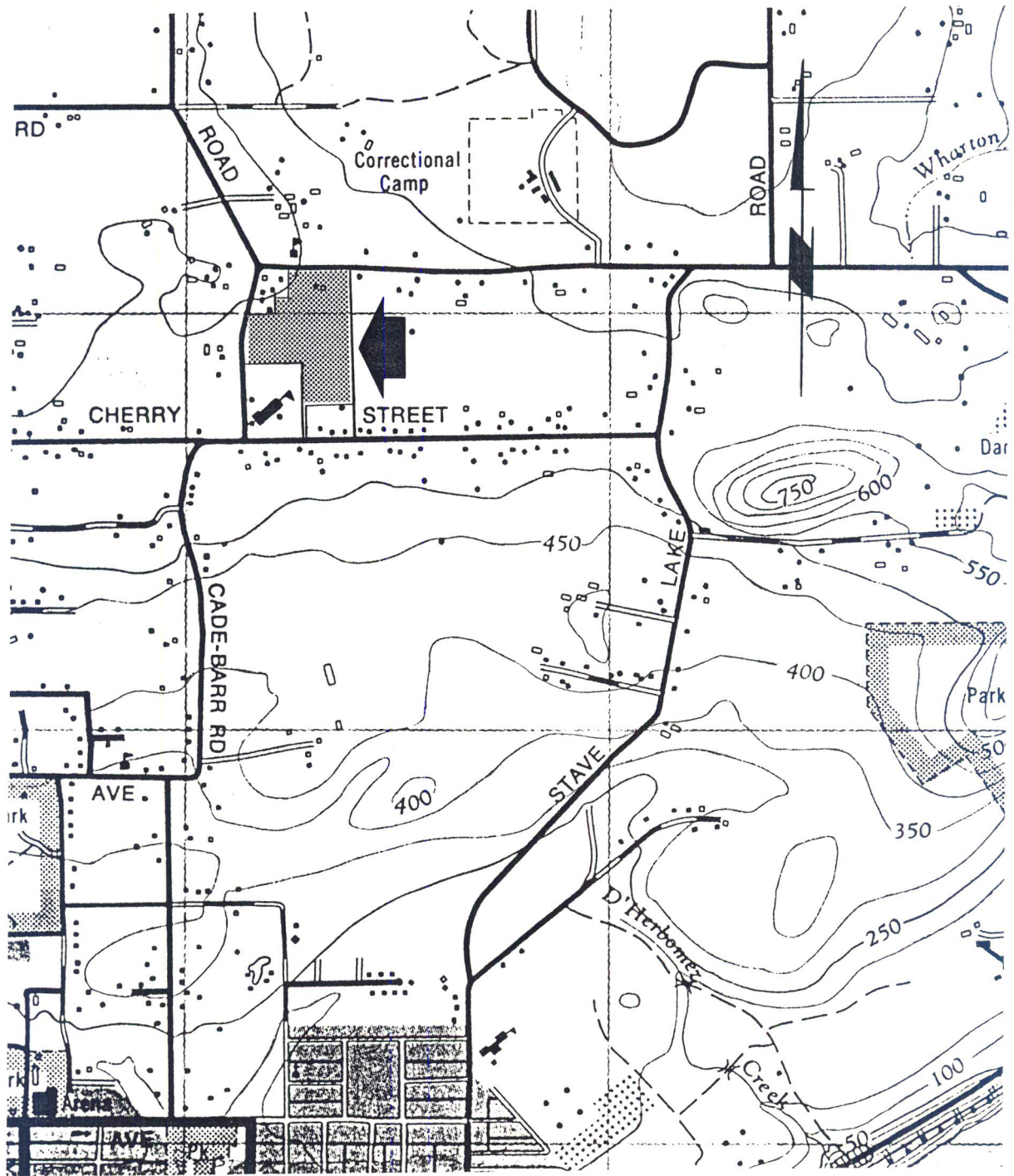
Attachments

APPENDIX A

AREA LOCATION MAP AND SUBDIVISION PLAN

FIGURE 1

AREA LOCATION MAP - PROPOSED SUBDIVISION
AT 33444 - 33472 DEWDNEY TRUNK ROAD
IN THE DISTRICT OF MISSION



Notes:


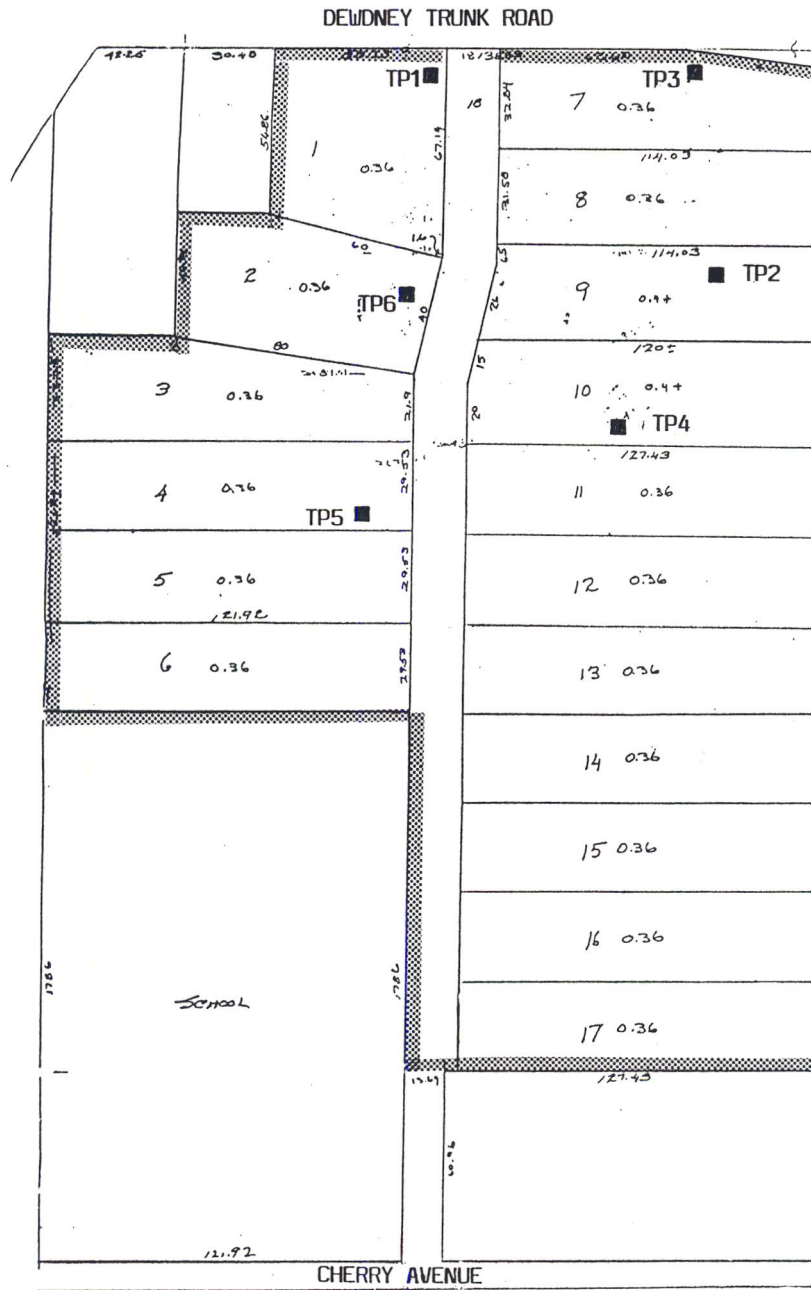
1. The base map is 1:25,000 scale topographic map N.T.S. 92G/1f, **Mission**, enlarged to a scale of approximately 1:15,000; contour interval is 50 ft.
2.  indicates the location of the subject property.

FIGURE 2

TEST PIT LOCATIONS ON PROPOSED SUBDIVISION
 AT 33444 - 33472 DEWDNEY TRUNK ROAD
 IN THE DISTRICT OF MISSION



Notes:

1. The scale of the base map is approximately 1:2400.
2. indicates boundary of subject property.
3. shows the approximate (unsurveyed) location of a test pit.

APPENDIX B

TEST PIT LITHOLOGS

TEST PIT LITHOLOGS

Location of property: In the District of Mission, at 33444
- 33472 Dewdney Trunk Road, extending
south almost to Cherry Avenue.

Date of test pit digging and examination: February 16, 1990.

Test Pit No. 1

Location: In the northeast corner of Lot 1.

Total depth: 1.9 metres.

Litholog:

0 - 0.9 m reddish-brown, fine silty loam with roots to
0.7 metres; no stones; probably loess
0.9 - 1.9 m grey, coarse to medium sand with streaks of
fine gravel in the lower part.

Remarks: Seepage from a lens of gravel at a depth about
1.5 metres resulted in a water level of 1.4 metres
after two hours.

Test Pit No. 2

Location: Probably on the eastern part of Lot 9.

Total depth: 2.1 metres.

Litholog:

0 - 1.0 m reddish-brown loam soil containing very few
stones
1.0 - 2.1 m poorly sorted grey gravel with a brown
weathered zone of about 0.2 metres at the
top.

Remarks: No water accumulated in the pit but there was a
small local seepage in one corner.

Test Pit No. 3

Location: Near the north side of Lot 7.

Total depth: 1.9 metres.

Litholog:

0 - 0.8 m reddish-brown loam; slightly sandy but no stones; may be loess
0.8 - 1.9 m grey, coarse to medium sand with a brown weathering zone about 0.2 m thick at the top.

Remarks: Sand was saturated at the bottom; water level at 1.8 metres after two hours.

Test Pit No. 4

Location: On top of moraine ridge, probably on Lot 10.

Total Depth: 1.7 metres.

Litholog:

0 - 0.2 m reddish loam soil
0.2 - 1.7 m brownish-grey, bouldery, non-compact sandy till(?); some of the granitic boulders and cobbles are deeply weathered.

Remarks: Pit was dry.

Test Pit No. 5

Location: On the south slope of moraine ridge, probably near the eastern edge of Lot 4.

Total depth: 1.9 metres.

Litholog:

0 - 0.7 m reddish-brown stony soil with roots to about
0.8 m
0.7 - 1.9 m grey, stony, sandy, compact till; no boulders.

Remarks: Pit was dry.

Test Pit No. 6

Location: In pine plantation, probably near the eastern edge of Lot 2.

Total depth: 2.0 metres.

Litholog:

0 - 0.7 m reddish-brown silty soil; probably loess
0.7 - 2.0 m grey, stony, sandy, poorly-sorted, non-compact
till-like sediment; some evidence of
weathering to a depth about 1.5 m with orange-
brown colour and some rotten stones.

Remarks: Pit was dry.