E. LIVINGSTON, P. Eng.
A. BADRY

PACIFIC HYDROLOGY CONSULTANTS LTD.

CONSULTING GROUNDWATER GEOLOGISTS

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

August 8, 1989

Mr. W. R. Thomson
6612 - 224 Street
LANGLEY, B. C. V3A 6H4

Subject: Groundwater Conditions at 6612 - 224 Street in Langley

Dear Sir:

This letter is further to our (Thomson, Livingston) discussion during an inspection trip to the subject property on July 11.

1.0 INTRODUCTION

From the aformentioned discussion, we understand that the situation concerning a deep drilled well at 6612 - 224 Street in Langley is as follows:

1. A drilled well was recently constructed to supply domestic water and water for stock watering.
2. The 150 mm (6") diameter well, which was constructed by Langley Water Wells Ltd., is flowing artesian. The driller's log of sediments encountered during the drilling of the well is attached to this letter.
3. The well is located less than 30.5 m (100 ft) from a new building which will include horse stalls.

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4. The Health Inspector from the Central Fraser Valley Health Unit in Langley has objected to the use of this well for domestic water supply because it is less than 30.5 m (100 ft) from a farm building.

2.0 SURFICIAL GEOLOGY

According to Geological Survey of Canada Map 1484A, **Surficial Geology New Westminster British Columbia**, the subject area is underlain by Capilano Sediments which, in this area, consist of "mainly marine silt loam to clay loam with minor sand, silt, and stony glaciomarine marine material ..., up to 60+ m thick." The surficial geology, as mapped by the Geological Survey of Canada, is confirmed by the log of the recently constructed well which is apparently still in this material at a depth of 76 m (250 ft). The material exposed near the well by the removal of the topsoil is best described as stony glaciomarine silt. The lower part, where the well screen and sand pack are located, is the same material except that it has thin sandy interbeds that contain water under artesian pressure.

3.0 GROUNDWATER HYDROLOGY

The subject area is well known as an area of artesian conditions. There are a number of flowing artesian wells ranging

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in depth from about 60 m (200 ft) to over 305 m (1000 ft). In some places, the artesian water is of poor quality. Work carried out by Inland Waters Branch of Environment Canada (National Hydrology Research Institute Paper No. 26, Inland Waters Directorate Scientific Series No. 145: **Ground Water Supply - Fraser Lowland, British Columbia**; 80 pp, 1986.) has shown that the pattern of flow and the distribution of groundwaters of various compositions is quite complex. However, recharge of the artesian waters is clearly from the uplands to the south and southwest and the path of flow is fairly long.

4.0 CONCLUSION

Pollution of the well water by the nearby barnyard is virtually impossible because of:

1. the flowing artesian conditions in which the groundwater gradient is clearly upward;
2. the considerable thickness of 58 meters (190 ft) of fine-grained sediment of very low permeability over the aquifer zone.

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We trust that this is the information which you require. Please call if we can be of further assistance with this matter.

Yours truly,
PACIFIC HYDROLOGY CONSULTANTS LTD.

E. Livingston

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
E. LIVINGSTON

E. Livingston, P. Eng.

Attachment

Province of British Columbia Ministry of Environment Water Investigations Branch

WIN58573

WATER WELL RECORD

Date 85/08/08 (YR/MO/DY)

Legal Description & Address Lot 8 District Lot 303, Group 2, New Westminster District, Plan 59280

Descriptive Location 6612-224 St. Langley.

Owners Name & Address Mrs. Vicki L. Thomson, R.R.#8, 6612-224 St, Langley, B.C.

NTS MAP ____ ELEV ____ WELL No. ____

UTM Z ____ E ____ N ____ UTM Date 19__

1. TYPE OF WORK 1 ☑ New Well 2 ☐ Reconditioned 3 ☐ Deepened 4 ☐ Abandoned

2. WORK METHOD 1 ☑ Cable tool 2 ☐ Bored 3 ☐ Jetted 4 ☐ Rotary a ☐ mud b ☐ air c ☐ reverse 5 ☐ Other ____

3. WATER WELL USE 1 ☑ Domestic 2 ☐ Municipal 3 ☐ Irrigation 4 ☐ Commercial & Industrial 5 ☐ Other ____

4. DRILLING ADDITIVES ____

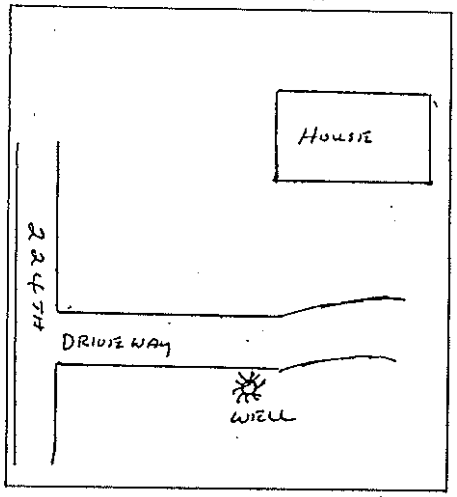
5. MEASUREMENTS from 1 ☐ ground level 2 ☐ top of casing

FROM ft	TO ft	6. WELL LOG DESCRIPTION	SWL ft
0	2	SUB SOIL	
2	95	STICKY CLAY	
95	140	CLAY WITH SOME SMALL STONES	
140	194	HARD STICKY CLAY	
194	203	SILTY CLAY	
203	227	LAYERS OF SILTY SAND WITH CLAY	
227	228	CEMENTED SILT	
228	250	CLAY	
		GEN. REMARKS	
		THIS DRILL LOG IS BASED ON 12 HRS. PUMPING AT 6 GPM	
		SAND PACKED FROM 200' - 234'	

7. CONSULTANT ____

Address ____

8. WELL LOCATION SKETCH



9. CASING: Materials 1 ☑ Steel 2 ☐ Galvanized 3 ☐ Wood 4 ☐ Plastic 5 ☐ Concrete 6 ☐ Other ____

								units
Hole Diameter								ins
Diameter	6							ins
from								ft
to								ft
Thickness	x.250	.188						ins
Weight								lb/ft

Pitless unit 2½ ft 1 ☐ above 2 ☑ below ground level

1 ☐ Welded 2 ☐ Cemented 3 ☐ Threaded 4 ☐ New 5 ☐ Used

Perforations: ____

Shoe(s): 6" ____

Open hole, from ____ to ____ ft Diameter ____ ins

Grout: ____

10. SCREEN: 1 ☐ Nominal 2 ☐ Pipe Size

Type 1 ☑ Continuous Slot 2 ☐ Perforated 3 ☐ Louvre 4 ☐ Other ____

Material 1 ☑ Stainless Steel 2 ☐ Plastic 3 ☐ Other ____

Set from ____ to ____ ft below ground level

SCREEN & BLANKS								units
Length	24'							ft
Diam. I D	4"							ins
Slot Size	10							ins
from								ft
to								ft

Fittings, top 2 PACKERS OVERSHOT & RISER bottom TAIL PIPE 6'5" 11

Gravel Pack 4 GS

11. DEVELOPED BY: 1 ☐ Surging 2 ☐ Jetting 3 ☐ Air 4 ☑ Bailing 5 ☑ Pumping 6 ☐ Other ____

12. TEST 1 ☐ Pump 2 ☐ Bail Date ____ (YR/MO/DY)

Rate ____ USgpm Temp ____ °C SWL before test ____ ft

____ ft after test of ____ hrs ____ mins

TIME in mins & DRAWDOWN in ft				TIME in mins & RECOVERY in ft			
mins	WL	mins	WL	mins	WL	mins	WL
6 6 PM		(FLOWING)					

13.

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
SUB. 2½ H.P 20 STAGE	194 ft	6 USgpm

14. WATER TYPE: 1 ☑ fresh 2 ☐ salty 3 ☑ clear 4 ☐ cloudy

colour ____ smell ____ ; gas 1 ☐ yes 2 ☐ no

15. WATER ANALYSIS: 1 ☐ Hardness ____ mg/l 2 ☐ Iron ____ mg/l 3 ☐ Chloride ____ mg/l 4 ☐ pH ____

Field Date ____ Lab Date ____ (YR/MO/DY)

SITE I D No ____

16. FINAL WELL COMPLETION DATA

Well Depth 234 ft Water Flowing ½ USgpm

Static Water Level FLOWING ft Pressure Head 5PSI ft

Back filled ____

Well Head Completion PITLESS + CAP.

17. DRILLER PLEASE PRINT SURNAME MIANIKOWSKI FIRST NAME JOHN

Signature ____

18. CONTRACTOR, Address

LANGLEY WATER WELLS LTD.
20254 - 66th AVENUE,
R.R. 4, LANGLEY, B.C. V3A 4P7
PHONE: 534-5675

Member, BCWWDA ☐ yes ☑ no ; NWWA

The Province of ... no responsibility for the contents or accuracy of this record.

Note to File - Thomson

W. R. (Bill) Thomson at 6612 - 224th street in Langley (telephone: 534-8558; 644-9316) called. He has a well drilled by Langley Water Wells Ltd. with a $1\frac{1}{2}$" diameter screen and sand pack from 194 to 236 ft. The well is flowing artesian. Mr. Thomson has built a barn approximately 60 feet from the well and the Ministry of Health says that he cannot use the well because it is too close to the barn. He wanted to know what to do. I said that I didn't think that there is anything he can do but he wants us, after inspection, to write a letter to him describing the local conditions.

E. Livingston

July 11, 1989