



BROWN, ERDMAN & ASSOCIATES LTD.

SUITE 207 - 132 WEST 15TH STREET, NORTH VANCOUVER, B.C., CANADA V7M 1R5
TELEPHONE 988-1557

30 January 1990

90-452

H.Y. Engineering Ltd.
#4 - 15243 - 91 Avenue
Surrey, British Columbia V3R 8P8

Attention: Mr. D. Wone, A.Sc.T.

Subject: Water Well Test, 17469 - 92 Ave., Surrey, B.C.

Dear Sir:

A pumping test was carried out on the subject well on 16 January using the existing pump installation. Pumping was continued for 100 minutes at a constant rate of 30 L/min. (total 3000 L), as measured by timed flow into a container of known volume. The pumping level reached stabilization within the accuracy of discharge rate control within 10 minutes, and recovered to near static within 15 minutes of pumping termination. Total drawdown was 1.63 m, from which a specific capacity of 18.3 L/min. per meter of drawdown is calculated.

Using a safety factor of 2 (to allow for well losses and seasonal water level decline), the potential yield of this well is projected as follows :

Top of screen depth		29.08 m
Less - Static Water Level	17.92 m	
- Pump Submergence	1.0 m	
	-----	=====
Total available Drawdown		10.25 m

$$\text{Potential Yield} = 10.25 \text{ m} \times 18.3 \text{ L/min.} \times 0.5 \text{ S.F.}$$
$$= \underline{94 \text{ L/min.}} \text{ or } 135,360 \text{ L/day.}$$

A sample of water was collected from this well at the end of the pumping and submitted for inorganic chemical analysis. The attached results from the chemist show that the water meets Canadian and British Columbia drinking water guidelines for all parameters analysed. We are informed by the owner that a sample of water from this well was previously submitted for bacterial analysis to the Boundary Health Unit and met their criteria for domestic supply.

- 2 -

We conclude and hereby certify that the subject well is capable of yielding in excess of the minimum 2300 L/day requirement of potable water.

Please do not hesitate to call if you require any clarification, or if we can be of further service.

Yours truly,

H.W. Reed, P.Eng.

BROWN, ERDMAN & ASSOCIATES LTD.

Enc. Well Log
Pumping Test Data
Results of Chemical Analyses

DRILLERS LOG OF WELL

17491 - 92 AVENUE, SURREY, BRITISH COLUMBIA

Drilled By: Columbia Water Wells Ltd. by cable tool
(date unavailable)

DEPTH From	ft. To	LITHOLOGY	DEPTH From	m To
0	5	Gravel	0	1.5
5	40	Till and Cobbles	1.5	12.2
40	63	Cemented Gravel	12.2	19.2
63	89	Stoney Till	19.2	27.1
89	94	Tight Gravel, water bearing	27.1	28.7
94	97	Stoney Till	28.7	29.6

Construction: Steel casing 6-inch diameter

Screen setting 89 to 94 feet (27.1 to 28.7 m)
depth, stainless steel. Slot size 0.025-inch.

PUMPING TEST DATA

17491 - 92 AVENUE, SURREY, BRITISH COLUMBIA

16 January 1990

TIME	ELAPSED TIME min.	DEPTH TO WATER m	DRAWDOWN m	PUMPING RATE L/min	OBS. WELL #17469 m
11:50	0	19.75	0		0
11:52	2	20.36	0.62	13	
11:53	3	20.62	0.87	13	
11:54	4	20.61	0.87	13	
11:55	5	20.60	0.86	13	
11:56	6	20.59	0.84	13	
11:57	7	20.60	0.86	13	
11:58	8	20.59	0.84	13	
11:59	9	20.59	0.84	13	
12:00	10	20.59	0.84	13	
12:05	15	20.59	0.84	13	
12:10	20	20.59	0.84	13	
12:15	25	20.59	0.84	13	
12:20	30	20.59	0.85	13	
12:25	35	20.59	0.85	13	
12:30	40	20.58	0.84	13	
12:33	43	-	-	13	0.02
12:35	45	20.59	0.84	13	
12:40	50	20.59	0.84	13	
12:50	60	20.60	0.85	13	
13:00	70	20.59	0.84	13	
13:10	80	20.59	0.84	13	
13:13	83	-	-	13	0.03
13:20	90	20.59	0.85	13	
13:30	100	20.59	0.85	13	
14:23	153	-	-	13	0.09
14:30	160	20.59	0.85	13	
14:50	180	-	Pump Off	--> Recovery	
14:51	181	20.19	0.45	0	
14:52	182	19.92	0.17		
14:53	183	19.81	0.07		
14:54	184	19.78	0.04		
14:55	185	19.76	0.02		
14:56	186	19.76	0.01		
14:58	188	19.74	0		

RESULTS OF ANALYSIS

File No. 0214B
Page 3 of 3

17491 Drinking *1
92 Ave. Water
Surrey BC Guidelines
Jan 16/90

Physical Tests

pH		8.13	6.5-85.
Conductivity		177.	-
Colour		<5.	15.
Turbidity	NTU	<1.0	5.
Suspended Solids		1.3	-
Dissolved Solids		130.	500.
Hardness	CaCO3	74.0	- *2

Anions

Alkalinity	CaCO3	74.3	-
Sulphate	SO4	3.5	500.
Chloride	Cl	8.5	250.
Fluoride	F	0.06	1.5
Silicate	SiO2	25.3	-
NO3/NO2	N	1.28**	10.0

Total Metals

Iron	T Fe	<0.03	0.30
Manganese	T Mn	<0.005	0.05

Dissolved Metals

Arsenic	D As	0.0046	0.05
Barium	D Ba	<0.010	1.0
Cadmium	D Cd	<0.0002	0.005
Chromium	D Cr	<0.015	0.05
Copper	D Cu	<0.010	1.0
Iron	D Fe	<0.03	-
Lead	D Pb	<0.001	0.05
Manganese	D Mn	<0.005	-
Zinc	D Zn	<0.005	5.0
Calcium	D Ca	17.5	-
Magnesium	D Mg	7.20	-
Potassium	D K	1.97	-
Sodium	D Na	7.16	- *3

< = Less than

NO₃/NO₂ = Nitrate/nitrite nitrogen

Results expressed as milligrams per litre except for pH, Conductivity (µmhos/cm), Colour (CU), and Turbidity (NTU).

** Rechecked and verified

*1 "Maximum acceptable concentration" as published by Health & Welfare Canada, 1985

*2 Maximum level not established - water supplies with a hardness exceeding 200 mg/L are considered poor but will be tolerated. Not a health consideration

*3 Maximum level not established - of concern to consumers with sodium restricted diet. Levels exceeding 20 mg/L may be of concern in this circumstance.



CHEMICAL ANALYSIS REPORT

Date: January 29, 1990
File No. 0214B
Report On: Water Analysis
Report To: Brown Erdman & Turner Ltd.
207 - 132 West 15th Street
North Vancouver, B. C.
V7M 1R5

DATE OF SUBMISSION: Jan. 16/90

SAMPLE IDENTIFICATION

Labelled as shown in RESULTS section.

METHODOLOGY

Analysed in accordance with "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, 1985.

RESULTS OF ANALYSIS

Results are presented in the table(s) attached.

REMARKS

The water as represented by the sample submitted can be characterized as moderate with respect to dissolved mineralization.



analytical service laboratories ltd.

CONSULTING CHEMISTS & ANALYSTS
1650 Pandora Street
Vancouver, B.C. • V5L 1L6
Fax (604) 253-6700 • Tel. (604) 253-4188


REMARKS

File No. 0214B
Page 2 of 3

The water sample met Canadian and British Columbia drinking water guidelines for all parameters analysed.

Nitrate and Nitrite levels in both samples are elevated and should be monitored periodically.

ASL ANALYTICAL SERVICE LABORATORIES LTD.


Barbara Szczachor, B.Sc.
Supervisor
Water Quality Laboratory

BS/dmc

.../report/jan/brownerd0214

RESULTS OF ANALYSIS

File No. 0214B
Page 3 of 3

	17469 92Ave Surrey BC Jan 16/90	17491 92 Ave. Surrey BC Jan 16/90	Drinking *1 Water Guidelines
Physical Tests			
pH	8.08	8.13	6.5-8.5.
Conductivity	215.	177.	-
Colour	<5.	<5.	15.
Turbidity NTU	<1.0	<1.0	5.
Suspended Solids	<1.0	1.3	-
Dissolved Solids	144.	130.	500.
Hardness CaCO3	82.6	74.0	- *2
Anions			
Alkalinity CaCO3	84.8	74.3	-
Sulphate SO4	3.4	3.5	500.
Chloride Cl	7.1	8.5	250.
Fluoride F	0.06	0.06	1.5
Silicate SiO2	25.4	25.3	-
NO3/NO2 N	3.19**	1.28**	10.0
Total Metals			
Iron T Fe	<0.03	<0.03	0.30
Manganese T Mn	<0.005	<0.005	0.05
Dissolved Metals			
Arsenic D As	0.0045	0.0046	0.05
Barium D Ba	<0.010	<0.010	1.0
Cadmium D Cd	<0.0002	<0.0002	0.005
Chromium D Cr	<0.015	<0.015	0.05
Copper D Cu	<0.010	<0.010	1.0
Iron D Fe	<0.03	<0.03	-
Lead D Pb	<0.001	<0.001	0.05
Manganese D Mn	<0.005	<0.005	-
Zinc D Zn	<0.005	<0.005	5.0
Calcium D Ca	19.9	17.5	-
Magnesium D Mg	7.82	7.20	-
Potassium D K	2.56	1.97	-
Sodium D Na	8.10	7.16	- *3

< = Less than

NO₃/NO₂ = Nitrate/nitrite nitrogen

Results expressed as milligrams per litre except for pH, Conductivity (µmhos/cm), Colour (CU), and Turbidity (NTU).

** Rechecked and verified

*1 "Maximum acceptable concentration" as published by Health & Welfare Canada, 1985

*2 Maximum level not established - water supplies with a hardness exceeding 200 mg/L are considered poor but will be tolerated. Not a health consideration

*3 Maximum level not established - of concern to consumers with sodium restricted diet. Levels exceeding 20 mg/L may be of concern in this circumstance.