BROWN, ERDMAN & ASSOCIATES LTD.
1401 BEWICKE AVENUE, NORTH VANCOUVER, BRITISH COLUMBIA V7M 3C7
TELEPHONE 988-1557

78-112

September 28th, 1979

British Columbia Forest Products Ltd.
P. O. Box 100
Boston Bar, B. C.
V0K 1C0

Attention: Mr. R. S. Brigden, Manager

Subject: Production Well
Boston Bar Mill

Dear Sirs:

The drilling and testing of the subject well was completed during August and September of 1979. Please find enclosed a chemical analysis of the groundwater, a diagram showing the well construction and lithology encountered, the field data and analysis of the aquifer test completed on the well.

The well was drilled through a series of sand and gravels, sands, and talus-scree deposits associated with various levels of erosion and deposition during the development of the Fraser River Canyon. Beginning at 150 feet below ground surface these deposits yielded significant quantities of groundwater which are thought to be derived mainly from infiltrating stream flow in the Fraser River. The well was completed to a total depth of 265 feet and construction consisted of 8-inch casing to 209 feet and slotted 6-inch casing from 206.5 feet to 265 feet.

The available drawdown from the present water level to the top of the slotted casing is 50 feet and it is expected that this will increase and decrease with changes in the stage of the Fraser River. Available drawdown would therefore increase in the spring and gradually decrease slightly during the fall and winter months.

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September 28th, 1979

British Columbia Forest Products Ltd.

The aquifer test on the well was completed on September 6th, 1979. Pumping rates during the test progressed from 90 Imperial gallons per minute (Igpm) to 162 Igpm. Total testing time was 1440 minutes with water level measurements being taken at time intervals shown on the field data sheets. Upon completion of pumping, recovery measurements of the water level were taken. Analysis of the aquifer test, shown on the enclosed time-drawdown plot, reveals that the aquifer zone had a transmissivity of between 40,000 and 57,000 Igpd/ft and that the well had a specific capacity of 27 Igpm/ft of drawdown after one day of pumping. Both the transmissivity and specific capacity indicate that this production well will yield large quantities of groundwater. Based upon the most pessimistic value of transmissivity (40,000 Igpd/ft) and assuming a useable drawdown of 35 feet (15 feet less than presently available) the safe pumping rate of the well is estimated to be 660 Igpm.

The chemical analysis of the groundwater sampled during the pump test is enclosed. As can be seen, the water is potable. The high values of alkalinity and hardness, however, will be inconvenient in their scale forming properties especially in hot water lines. The borderline value of pH should not cause problems and the relatively high value of total iron should decrease with time.

We understand that your present water requirement from this well is 150 Igpm. At this flow rate and assuming a total dynamic head of about 200 feet (pumping to atmosphere) we recommend a six stage, 5.5-inch diameter, 15 hp submersible pump which would deliver about 175 Igpm under these conditions. If this well is used to deliver water into a pressurized domestic system, the total dynamic head would increase to about 350 feet and in this case we would recommend a ten stage, 25 hp, 5.5-inch diameter, submersible pump which would deliver 175 Igpm under these conditions. In either case the pump suction should be set at a depth of 203 feet.

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British Columbia Forest Products Ltd.

If, in the future, more water is required by British Columbia Forest Products Ltd. or others in Boston Bar, a large diameter specially designed well could be constructed that should have a safe productive capacity in the range of 1000 to 1500 Igpm.

If any of the above needs clarification or amplification please do not hesitate to call. Thank you for the opportunity to be involved in this work.

Yours truly

BROWN, ERDMAN & ASSOCIATES LTD.

R. I. J. VOGWILL
Senior Hydrogeologist

RIJV/sa
Encls:
cc: J. Fisher, P. Eng.
Project Engineer
British Columbia Forest Products Ltd.

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NORTH VANCOUVER, BRITISH COLUMBIA

PAGE 1

WELL OWNER B. C. F. P. WELL NO. _____ DRAWDOWN ☑
LOCATION BOSTON BAR MILL JOB NO. 78-112 RECOVERY ☐

DATE	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER (FT)	Q US GPM	S (FT)	REMARKS
Sept 5/79	1700	—	155.68	—		From top of casing; static water level
	17:01	1	157.96	108	2.28	
	17:02	2	157.82		2.14	
	17:03	3	157.81		2.13	
	17:04	4	157.81		2.13	
	17:05	5	157.78		2.10	
	17:06	6	157.78		2.10	
	17:07	7	157.78		2.10	
	17:08	8	157.78		2.10	
	17:09	9	157.76		2.08	
	17:10	10	157.81		2.13	
	17:12	12	157.76		2.08	
	17:14	14	157.77		2.09	
	17:15	15	157.78		2.10	Water quickly clearing
	17:20	20	157.81		2.13	
	17:25	25	157.82		2.14	
	17:30	30	157.81		2.13	
	17:35	35	157.82		2.14	
	17:40	40	157.81		2.13	
	17:45	45	157.82		2.14	
	17:50	50	157.84		2.16	
	17:55	55	157.85		2.17	
	18:00	60	157.85		2.17	
	18:01	61	159.18	151	3.50	
	18:02	62	159.18		3.50	
	18:03	63	159.21		3.53	
	18:05	65	159.24		3.56	
	18:07	67	159.21		3.53	
	18:08	68	159.25		3.57	
	18:10	70	159.23		3.55	
	18:12	72	159.23		3.55	

BROWN, ERDMAN & ASSOCIATES LTD.
NORTH VANCOUVER, BRITISH COLUMBIA

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WELL OWNER B.C.F.P. WELL NO. _____ DRAWDOWN ☑
LOCATION BOSTON BAR MILL JOB NO. 78-112 RECOVERY ☐

DATE	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER (FT)	Q US GPM	S (FT)	REMARKS
Sept 5/79	18:15	75	159.25	151	3.57	
	18:20	80	159.27		3.59	
	18:25	85	159.26	151	3.58	
	18:30	90	159.32		3.64	
	18:35	95	159.28		3.60	
	18:40	100	159.31		3.63	
	18:45	105	159.32		3.64	
	18:50	110	159.32		3.64	
	18:55	115	159.33		3.65	
	19:00	120	159.35		3.67	
	19:01	121	160.47	198	4.79	
	19:02	122	160.49		4.81	
	19:03	123	160.48		4.80	
	19:04	124	160.50		4.82	
	19:05	125	160.49		4.81	
	19:06	126	160.51		4.83	
	19:07	127	160.49		4.81	
	19:08	128	160.50		4.82	
	19:09	129	160.50		4.82	
	19:10	130	160.49		4.81	
	19:12	132	160.50		4.82	
	19:15	135	160.50		4.82	
	19:20	140	160.50		4.82	
	19:25	145	160.52		4.84	
	19:30	150	160.53		4.85	
	19:35	155	160.53		4.85	
	19:40	160	160.54		4.86	
	19:45	165	160.57		4.89	
	19:50	170	160.58		4.90	
	19:55	175	160.58	198	4.90	
	20:00	180	160.58		4.90	
	20:10	190	160.60		4.92	

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LOCATION BOSTON BAR MILL JOB NO. 78-112 RECOVERY ☐

DATE	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER (FT)	Q US GPM	S (FT)	REMARKS
Sept 5/79	20:20	200	160.64	198	4.96	
	20:30	210	160.64		4.96	
	20:40	220	160.64		4.96	
	20:50	230	160.64		4.96	
	21:00	240	160.67		4.99	
	21:24	264	160.78		5.10	
	21:40	280	160.74		5.06	
	22:00	300	160.76		5.08	
	22:20	320	160.81		5.13	Water sample; 9°C.
	22:40	340	160.80		5.12	
	23:00	360	160.82	197	5.14	
	23:20	380	160.83	197	5.15	
	23:40	400	160.85		5.17	
	24:00	420	160.86		5.18	
Sept 6/79	00:30	450	160.89		5.21	
	01:00	480	160.91		5.23	
	01:30	510	160.95		5.27	
	02:00	540	160.97		5.29	
	02:30	570	160.97		5.29	
	03:00	600	160.98		5.30	
	03:40	640	161.00		5.32	
	04:20	680	161.02		5.34	
	05:06	720	161.06		5.38	
	05:40	760	161.10		5.42	
	06:20	800	161.12		5.44	
	07:00	840	161.12		5.44	
	07:40	880	161.15		5.47	
	08:20	920	161.22		5.54	
	09:00	960	161.23		5.55	
	09:40	1000	161.26		5.58	
	10:20	1040	161.28	195	5.60	
	11:00	1080	161.30		5.62	

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DATE	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER (FT)	Q US GPM	S (FT)	REMARKS
Sept 6/79	11:40	1120	161.32	195	5.64	
	12:20	1160	161.35		5.67	
	13:00	1200	161.38		5.70	
	14:00	1260	161.40		5.72	
	15:00	1320	161.43		5.75	
	16:00	1380	161.45		5.77	
	16:30	1410	161.46	195	5.78	Water sample taken; 9°C.

can test ltd.

1650 PANDORA STREET, VANCOUVER, B.C. V5L 1L6 • TELEPHONE 254-7278 • TELEX 04-54210

Report On Analysis of Water Samples

File No. 2193 D

Report No.

Reported To Brown Erdman & Associates Ltd.,

1401 Dewicke Avenue,

North Vancouver B.C.

P.O. #

Date Sept. 25, 1979.

Attention:

We have tested the sample of water submitted by you on September 7, 1979 and report as follows:

SAMPLE IDENTIFICATION:

The sample was submitted in a plastic bottle labelled -

B.C.F.P.
78 - 112
BOSTON BAR
6/9/79
1420 MINS 9°C
Slight H_2S Smell

METHOD OF TESTING:

The analyses were carried out in accordance with procedures described in "Standard Methods for the Examination of Water and Wastewater (14thEdition)" published by the American Public Health Association, 1975.

RESULTS OF TESTING:

(on following page)

RESULTS OF TESTING:

		BCFP - BOSTON BAR
Physical Tests		
pH		8.40
Conductance (umhos/cm)		480.
Color	Cu	5.
Turbidity	JTU	5.0
Total Dissolved Solids	mg/L	376.
Total Suspended Solids	mg/L	0.6
Dissolved Anions (mg/L)		
Alkalinity		
Bicarbonate	HCO_3	253.
Carbonate	CO_3	3.0
Chloride	Cl	5.20
Sulfate	SO_4	13.0
Nitrate & Nitrite	N	0.38
Phosphate	PO_4	0.030
Fluoride	F	0.36
Silica	SiO_2	13.1
Dissolved Cations (mg/L)		
Total Hardness	$CaCO_3$	212.
Calcium	Ca	67.2
Magnesium	Mg	10.7
Sodium	Na	9.06
Potassium	K	1.15
Iron	Fe	L 0.030
Manganese	Mn	0.018
Cadmium	Cd	L 0.001
Copper	Cu	L 0.001
Lead	Pb	L 0.001
Zinc	Zn	0.002
Others (mg/L)		
Total Iron	Fe	0.35
Total Manganese	Mn	0.019

L - less than, mg/L - milligrams per liter (or parts per million for drinking water)

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REMARKS:

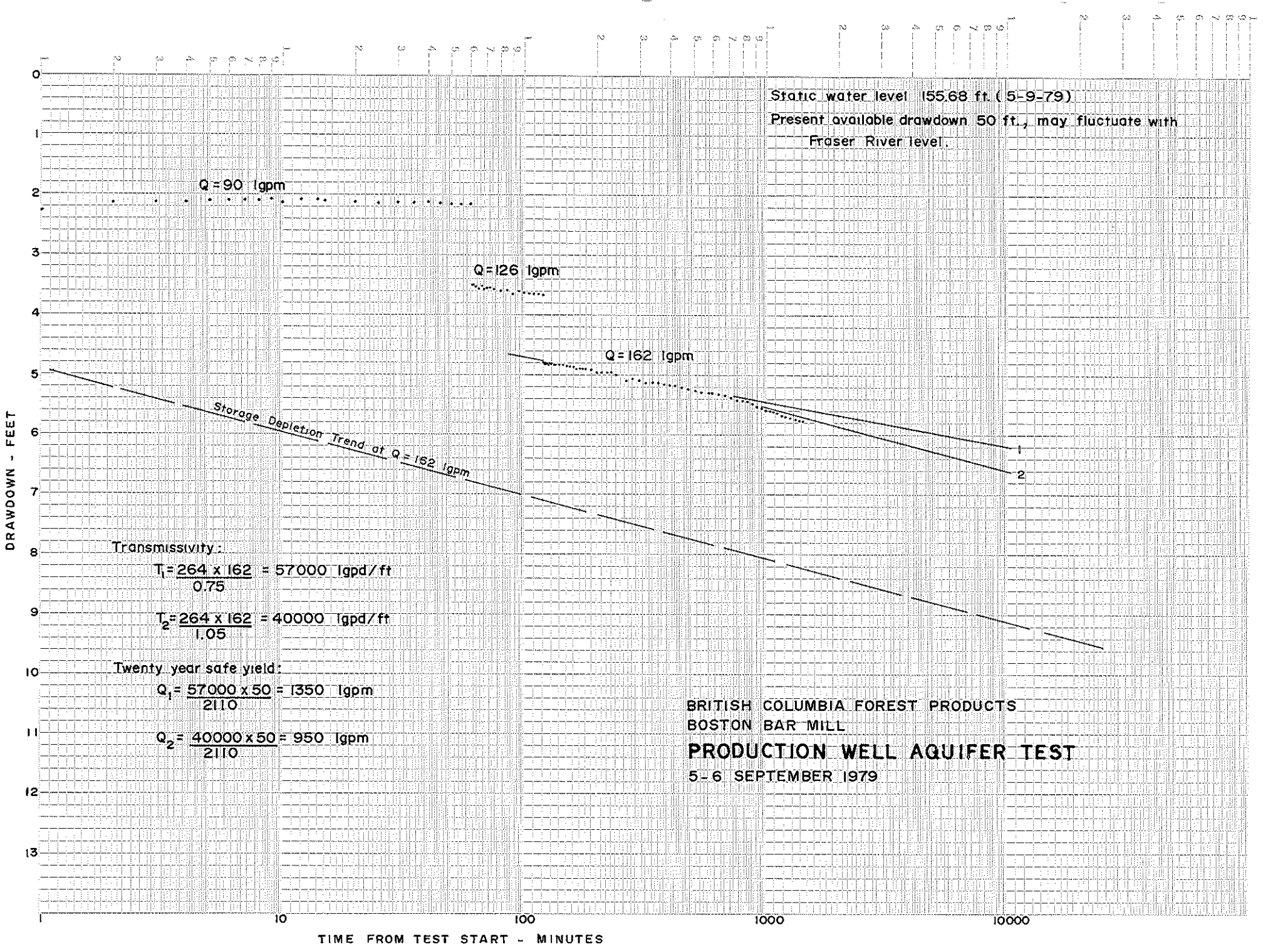
The water represented by the sample submitted can be characterized as a moderately hard water, moderate with respect to dissolvdd mineralization. For the parameters tested the sample met the limits set by the Canadian Drinking Water Standards and Objectives, 1968, with the exception of pH (limit 6.5 - 8.3)

The sample was also noted to be borderline with respect to colour. This is reflected in the high total iron. High values for these parameters are often associated with new wells.

CAN TEST LTD.

Judi M. Mitchell, B.Sc.,
Chemist.

/dn



Transmissivity:

$T_1 = \frac{264 \times 162}{0.75} = 57000$ Igpd/ft

$T_2 = \frac{264 \times 162}{1.05} = 40000$ Igpd/ft

Twenty year safe yield:

$Q_1 = \frac{57000 \times 50}{2110} = 1350$ Igpm

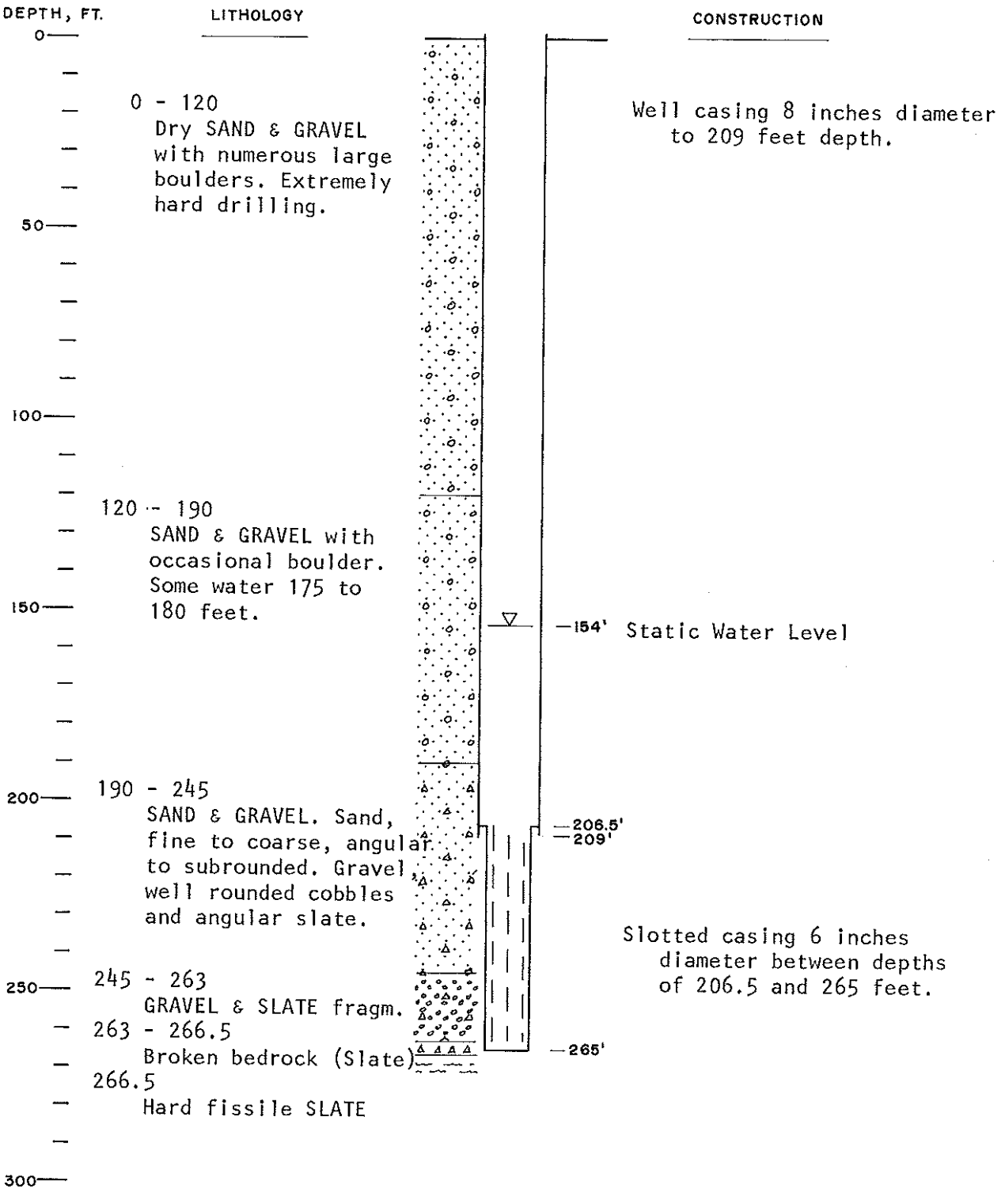
$Q_2 = \frac{40000 \times 50}{2110} = 950$ Igpm

BRITISH COLUMBIA FOREST PRODUCTS
BOSTON BAR MILL

PRODUCTION WELL AQUIFER TEST

5-6 SEPTEMBER 1979

WTN66029



BRITISH COLUMBIA FOREST PRODUCTS
BOSTON BAR MILL

WELL LITHOLOGY & CONSTRUCTION

BROWN, ERDMAN & ASSOCIATES LTD.