COMPLETION REPORT

PRODUCTION WELL NO. 78-2

BEACHCOMBER WATER SUPPLY SYSTEM

NANOOSE AREA

FOR

NANAIMO REGIONAL DISTRICT

R. B. ERDMAN

W. L. BROWN, P. ENG.

November 1978

77-050A

INTRODUCTION

Production Well No. 78-2 for the Beachcomber water supply system is located on District Lot 84 approximately 1000 feet north of Production Well No. 78-1. Drilling commenced in September 1978 and the well was completed in October 1978 with the test pumping of the well.

DRILLING AND DEVELOPMENT

A surface casing of 12-inch diameter was set to a depth of 18 feet. The 8-inch diameter casing was then advanced to a depth of 180 feet at which depth a fine silty sand was encountered.

Water-bearing sands, sands and gravels, and gravels and boulders were encountered in the hole between depths of 106 and 180 feet. The aquifer was screened between depths of 159 and 175 feet with a stainless steel continuous wire wound screen having a 0.060-inch slot opening. On top of the screen is a 3-foot riser pipe with a neoprene packer set at 156 feet to expose the screen. After exposing the screen the well was developed by surging and bailing. Please see the attached well log for further construction and geological details.

PUMPING TEST

The subject well was tested at a discharge rate of 305 USgpm (256 Igpm) for 3000 minutes (50 hours). At the start of the test the static water level was 106.58 feet below the measuring point. Stability was reached after 2450 minutes of pumping at a level of 135 feet. The transmissivity as calculated on the drawdown portion of the test is 36,600 USgpd per foot while from the recovery curve it is calculated to be 39,200 USgpd per foot. Please see the drawdown and recovery chart attached.

The specific capacity of the well at the end of the test was 10.7 USgpm per foot of drawdown.

PUMPING TEST, cont'd.

Production Well 78-1, located 1000 feet south of Well No. 2, was affected by the test and the water level declined from a static of 91.90 feet to 93.49 feet at the end of the test.

WELL CAPACITY

Performance of the well during the pumping test indicates that pumping rates of up to 305 USgpm are possible for extended periods of time. Pumping rates of up to 450 USgpm would be possible for short periods of time.

Based upon the pumping test data, the productive capacity of Well 78-2 is rated as follows:

Top of well screen.		156.0 feet
Static water level		106.6 feet
Total available drawdown.....		49.4 feet
Pump submergence.	2.0 feet	
Safety factor.	19.0 feet	21.0 feet
Total useable drawdown.....		28.4 feet

Safe productive capacity -

28.4 feet x 10.7 USgpm = 304 USgpm
= 253 Igpm

RECOMMENDATIONS AND CONCLUSIONS

1. Based upon data and information presently available to us we conclude that the Beachcomber No. 78-2 Well has a safe productive capacity of 253 Igpm.

RECOMMENDATIONS AND CONCLUSIONS, cont'd.

2. The production pump should have the following characteristics:

   Type - submersible

   Discharge - 253 Igpm.

   Maximum outside diameter - 5 11/16 inches.

   Suction setting - 156 feet below present ground.

   Total dynamic head - 135 feet plus system pressure.

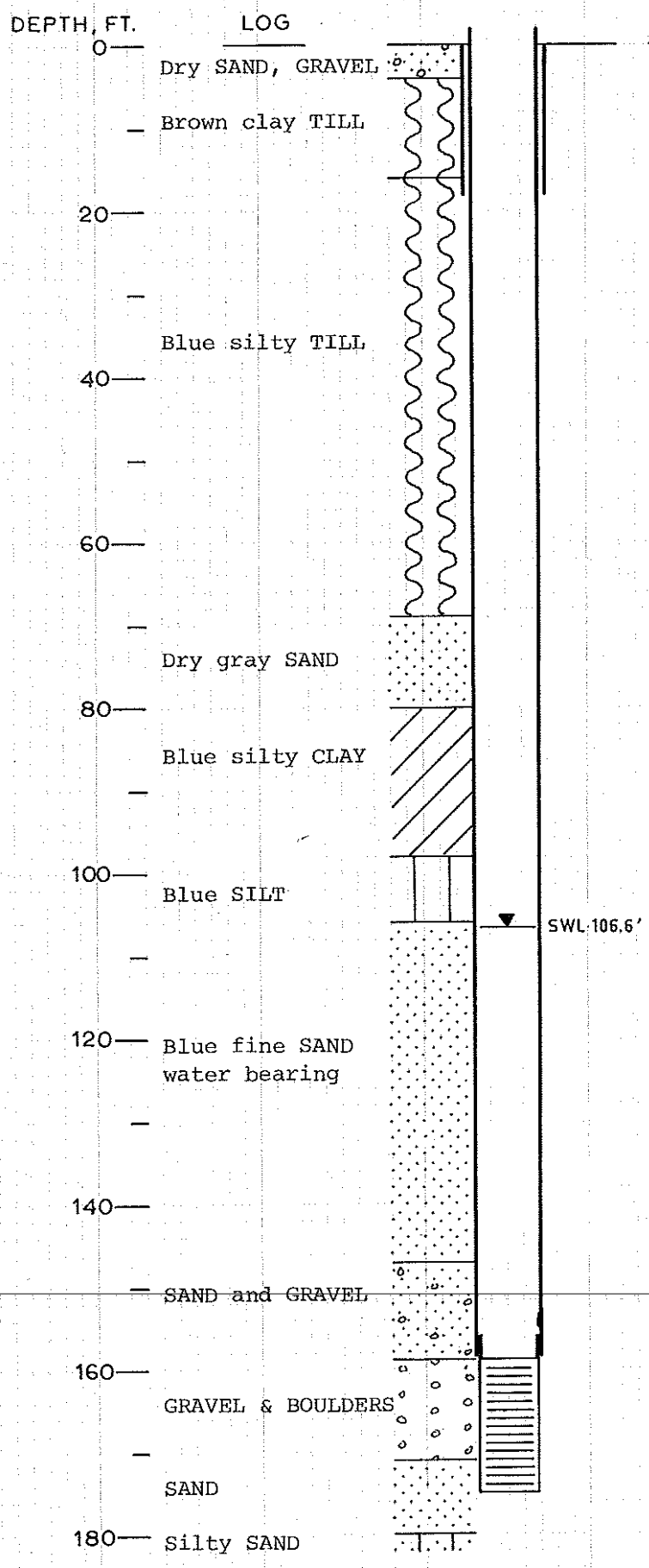
3. The pump controls must include a manual flow control valve and a check valve to ensure that water does not flow back into the well.

4. The well should not be:

   a) Overpumped
   b) Vibrated
   c) Rawhided
   d) Backwashed

5. The pumping and static water levels should be monitored when the well is put into service. These records will allow us to re-evaluate the well after a year of use.

6. The results of the chemical analyses conducted on a sample of water collected just before the end of the pump test is attached. The water meets the preferred levels of the Canadian Drinking Water Standards for all constituents tested except for dissolved phosphates and manganese. As noted by the Chemist a phosphate level above 0.2 mg/l may promote algae growth in reservoirs open to sunlight. At the level of 1.41 mg/l no adverse physiological effects will be sustained by a person drinking this water. The combined amount of iron and manganese is 0.243 mg/l. Since this is lower than 0.3 mg/l no staining of fixtures is anticipated.



CONSTRUCTION

- Surface casing 12 inch diameter to 18 foot depth. Annular space between 12 inch and 8 inch casing cemented.
- Well 8 inch diameter drilled and cased to 180 feet depth.
- Well screen installed between 159 feet and 175 feet depths.
  Top of neoprene packer at 156 ft.
  Well screen - stainless steel
  - 8 inch nominal dia.
  - slot size 0.060 in.
- Well casing withdrawn to 159 feet to expose screen.
- Development by surging and bailing.

NANAIMO REGIONAL DISTRICT
BEACHCOMBER - NANOOSE PEN.

PRODUCTION WELL NO. 2

BROWN, ERDMAN & ASSOCIATES LTD.
3-11-78 HWR 77-050A

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

Report On Analysis of Water Samples File No. 7945C

Report No.

Reported to Brown, Erdman & Associates Ltd. Date November 10, 1978

1401 Bewicke Ave.,

North Vancouver, B.C.

We have tested the sample of water submitted by you on October 30, 1978 and report as follows:

SAMPLE IDENTIFICATION:

The sample was submitted in a plastic bottle labelled:

BEACHCOMBER WELL #2
77 - 050A

METHOD OF TESTING:

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

RESULTS OF TESTING:

(on following page)

RESULTS OF TESTING:

TEST		RESULT
Physical Tests		
pH		8.20
Conductance (umhos/cm)		310.
Color (C.U.)		10.
Turbidity (J.T.U.)		0.27
Total Dissolved Solids (mg/L)		275.
Total Suspended Solids (mg/L)		1.4
Dissolved Anions (mg/L)		
Alkalinity	$CaCO_3$	
Bicarbonate	HCO_3	180.
Carbonate	CO_3	Nil
Chloride	Cl	5.9
Sulfate	SO_4	4.0
Nitrate & Nitrite Nitrogen	N	0.003
Phosphate	PO_4	1.41
Fluoride	F	0.16
Dissolved Cations (mg/L)		
Total Hardness	$CaCO_3$	82.8
Calcium	Ca	23.7
Magnesium	Mg	5.74
Sodium	Na	30.3
Potassium	K	3.39
Iron	Fe	0.15
Manganese	Mn	0.093
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	0.19
Total Manganese	Mn	0.096

L = Less than; mg/L = milligrams per liter (or parts per million for drinking water)

REMARKS

(on following page)

REMARKS

The water represented by the sample submitted can be characterized as moderate with respect to hardness and dissolved mineralization. For the parameters tested the sample met the limits set by the "Canadian Drinking Water Standards and Objectives, 1968" with the following exceptions:

Dissolved phosphates:	Limit 0.2 mg/L
Dissolved manganese:	Limit 0.05 mg/L

The limit on dissolved phosphate applies primarily to waters that would be stored in open reservoirs as algae growth may be stimulated. Dissolved manganese is limited for aesthetic reasons, (in conjunction with iron, it may cause staining and/or discolouration) and not considered a health hazard.

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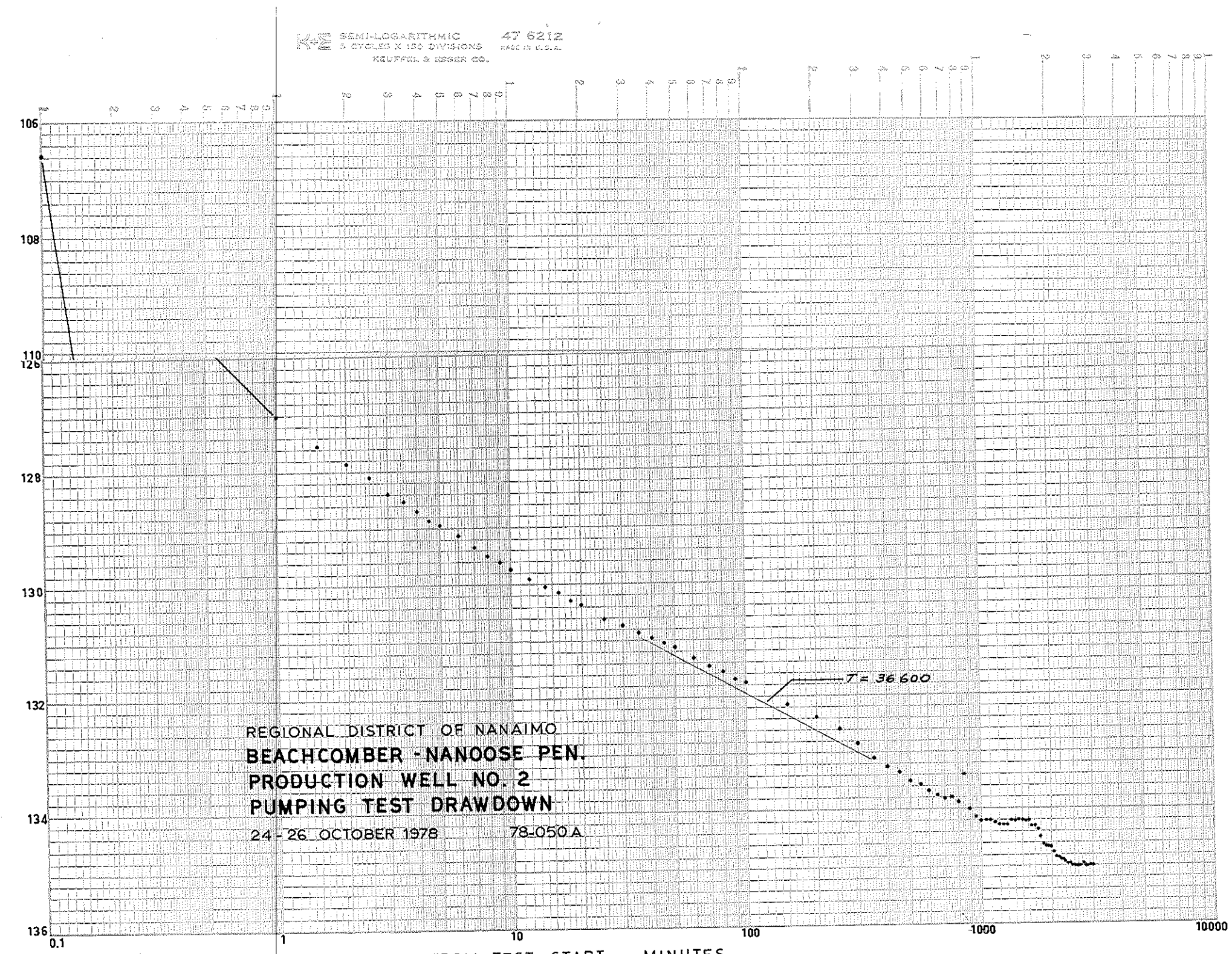
(Ms) Judi M. Mitchell, B.Sc.,
Chemist

/frh


SEMI-LOGARITHMIC
5 CYCLES X 100 DIVISIONS
KEUFFEL & ESSER CO.
47 6212
MADE IN U.S.A.
106
108
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0.1
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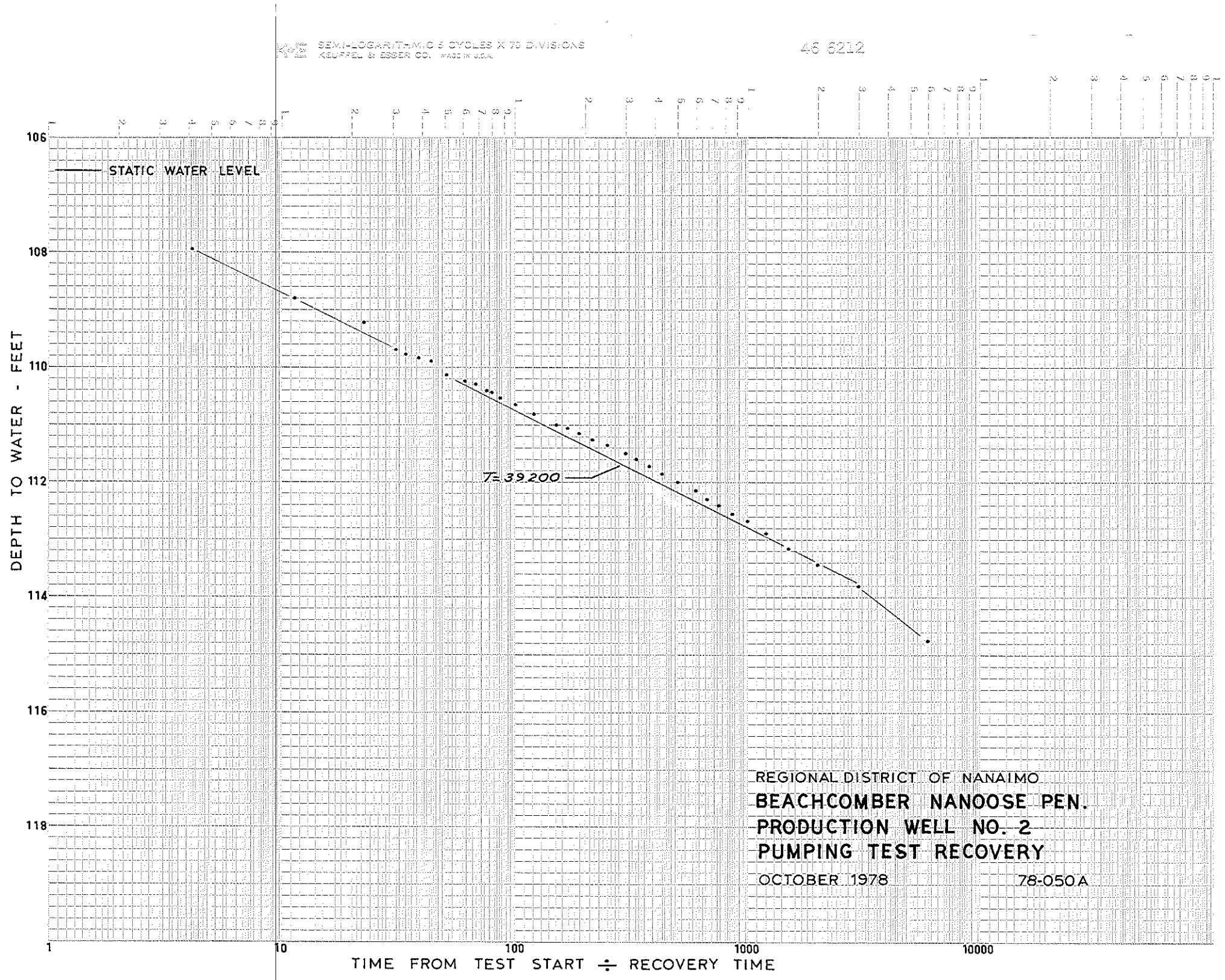
T = 36 600
REGIONAL DISTRICT OF NANAIMO
BEACHCOMBER - NANOOSE PEN.
PRODUCTION WELL NO. 2
PUMPING TEST DRAWDOWN
24 - 26 OCTOBER 1978
78-050A
TIME FROM TEST START - MINUTES

46 5212



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1401 BEWICKE AVENUE, NORTH VANCOUVER, BRITISH COLUMBIA

PAGE 1

WELL OWNER NANAIMO REGIONAL DISTRICT WELL NO. 2 DRAWDOWN ☑
LOCATION BEACHCOMBER - NANOOSE PEN. JOB NO. 77-050A RECOVERY ☐

DATE	TIME	ELAPSED TIME MINUTES	DTW	Q US GPM	DTW WELL NO. 1	REMARKS
24-10-78	13:00	0	106.58		91.90	- MEASURE POINT 2.2 FT. AGL
		0.5	125.78			
		1	127.02	307		
		1.5	127.54			
		2	127.86			
		2.5	128.10			
		3	128.39			
		3.5	128.52			
		4	128.71			
		4.5	128.86			
	13:05	5	128.95	307		
		6	129.13			
		7	129.35			
		8	129.51			
		9	129.61			
	13:10	10	129.74	305		
		12	129.91			
		14	130.04			
		16	130.15			
		18	130.29			
	13:20	20	130.36			
		25	130.62	305		
	13:30	30	130.73			
		35	130.84			
	13:40	40	130.95			
		45	131.04			
	13:50	50	131.13	305		
	14:00	60	131.31			
	14:10	70	131.45			
	14:20	80	131.56			
	14:30	90	131.70			
	14:40	100	131.76	305	92.27	

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WELL OWNER NANAIMO REGIONAL DISTRICT WELL NO. 2 DRAWDOWN ☑
LOCATION BEACHCOMBER - NANOOSE PEN. JOB NO. 77-050A RECOVERY ☐

DATE	TIME	ELAPSED TIME MINUTES	DTW	Q US GPM	DTW WELL No. 1	REMARKS
24-10-78	15:30	150	132.16	305		
	16:20	200	132.39			
	17:10	250	132.58			
	18:00	300	132.84			
	18:50	350	133.11		92.56	
	19:40	400	133.23			
	20:30	450	133.36			
	21:20	500	133.52			
	22:10	550	133.57			
	23:00	600	133.68			
	23:50	650	133.76	305		
25-10-78	00:40	700	133.82			
	01:30	750	133.80			
	02:20	800	133.91			
	03:10	850	133.40			
	04:00	900	134.02			
	04:50	950	134.14			
	05:40	1000	134.21			
	06:30	1050	134.20			
	07:20	1100	134.20			
	08:10	1150	134.23		92.99	
	09:00	1200	134.27			
	09:50	1250	134.27			
	10:40	1300	134.27			
	11:30	1350	134.20			
	12:20	1400	134.21			
	13:10	1450	134.20			
	14:00	1500	134.20			
	14:50	1550	134.21			
	15:40	1600	134.21			
	16:30	1650	134.30		93.07	
	17:20	1700	134.29	305		

WELL DEPTH CASING SIZE PUMP SUCTIO

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WELL OWNER *NANAIMO REGIONAL DISTRICT* WELL NO. *2* DRAWDOWN ☑
LOCATION *BEACHCOMBER - NANOOSE PEN* JOB NO. *77-050A* RECOVERY ☑

DATE	TIME	ELAPSED TIME MINUTES	DTW	Q US GPM	DTW WELL NO. 1	REMARKS
25-10-78	18:10	1750	134.38	305		
	19:00	1800	134.50			
	19:50	18:50	134.61			
	20:40	1900	134.64			
	21:30	1950	134.65			
	22:20	2000	134.68			
	23:10	2050	134.77			
26-10-78	00:00	2100	134.83			
	00:50	2150	134.84			
	01:40	2200	134.87			
	02:30	2250	134.90			
	03:20	2300	134.93			
	04:10	2350	134.97			
	05:00	2400	134.97			
	05:50	2450	135.00			
	06:40	2500	135.00			
	07:30	2550	135.00			
	08:20	2600	135.00		93.42	
	09:10	2650	135.00			
	10:00	2700	135.01	305		
	10:50	2750	134.96			
	11:40	2800	135.00			
	12:30	2850	135.00			
	13:20	2900	135.01			
	14:10	2950	135.00		93.49	
	15:00	3000	135.00			
	— PUMP OFF - BEGIN RECOVERY —					
	15:00:30	0.5	114.76			
		1	113.81			
		1.5	113.43			
		2	113.17			
	15:02:30	2.5	112.89			

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WELL OWNER NANAIMO REGIONAL DISTRICT WELL NO. 2 DRAWDOWN ☐
LOCATION BEACHCOMBER - NANOOSE PEN. JOB NO. 77-050 A RECOVERY ☑

DATE	TIME	ELAPSED TIME MINUTES	DTW	Q GPM		REMARKS
26-10-78	15:03	3	112.69			
		3.5	112.56			
		4	112.41			
		4.5	112.31			
	15:05	5	112.16			
		6	112.00			
		7	111.86			
		8	111.72			
		9	111.61			
	15:10	10	111.50			
		12	111.35			
		14	111.25			
		16	111.15			
		18	111.06			
	15:20	20	111.00			
	15:25	25	110.81			
	15:30	30	110.64			
	15:35	35	110.54			
	15:40	40	110.41			
	15:45	45	110.30			
	15:50	50	110.24			
	16:00	60	110.13			
	16:10	70	109.89			
	16:20	80	109.85			
	16:30	90	109.78			
	16:40	100	109.71			
	17:20	140	109.21			
	19:50	290	108.80			WELL NO. 1 – 93.00
27-10-78	06:50	950	107.94			WELL NO. 1 – 92.78

SUBMERGENCE _____ PUMP SUCTION

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Report On Analysis of Water Samples File No. 7943C

Report No.

Reported to Brown, Erdman & Associates Ltd. Date November 10, 1978

1401 Bewicke Ave.,

North Vancouver, B.C.

We have tested the sample of water submitted by you on October 30, 1978 and report as follows:

SAMPLE IDENTIFICATION:

The sample was submitted in a plastic bottle labelled:

BEACHCOMBER WELL #2
77 - 050A

METHOD OF TESTING:

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

RESULTS OF TESTING:

(on following page)

RESULTS OF TESTING:

TEST		RESULT
Physical Tests		
pH		8.20
Conductance (umhos/cm)		310.
Color (C.U.)		10.
Turbidity (J.T.U.)		0.27
Total Dissolved Solids (mg/L)		275.
Total Suspended Solids (mg/L)		1.4
Dissolved Anions (mg/L)		
Alkalinity	$CaCO_3$	
Bicarbonate	HCO_3	180.
Carbonate	CO_3	Nil
Chloride	Cl	5.9
Sulfate	SO_4	4.0
Nitrate & Nitrite Nitrogen	N	0.003
Phosphate	PO_4	1.41
Fluoride	F	0.16
Dissolved Cations (mg/L)		
Total Hardness	$CaCO_3$	82.8
Calcium	Ca	23.7
Magnesium	Mg	5.74
Sodium	Na	30.3
Potassium	K	3.39
Iron	Fe	0.15
Manganese	Mn	0.093
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	0.19
Total Manganese	Mn	0.096

L = Less than; mg/L = milligrams per liter (or parts per million for drinking water)

REMARKS

(on following page)

REMARKS

The water represented by the sample submitted can be characterized as moderate with respect to hardness and dissolved mineralization. For the parameters tested the sample met the limits set by the "Canadian Drinking Water Standards and Objectives, 1968" with the following exceptions:

Dissolved phosphates:	Limit 0.2 mg/L
Dissolved manganese:	Limit 0.05 mg/L

The limit on dissolved phosphate applies primarily to waters that would be stored in open reservoirs as algae growth may be stimulated. Dissolved manganese is limited for aesthetic reasons, (in conjunction with iron, it may cause staining and/or discolouration) and not considered a health hazard.

CAN TEST LTD.

(Ms) Judi M. Mitchell, B.Sc.,
Chemist

/frh

WTN 40733

DOGWOOD DRILLING LTD.

ERNIE PLUNET
TELEPHONE 245-3756
R.R. 1, YELLOW POINT ROAD
LADYSMITH, B.C.
V0R 2E0

WELL LOG

OWNER Nanaimo Regional District

ADDRESS

WELL LOCATION Beechcomber #2

DATE STARTED September 7th

DATE COMPLETED October 19th

YIELD Approx. 300 GALLONS PER MINUTE

PUMPING WATER LEVEL 150 FEET FROM SURFACE

STATIC LEVEL 105 FEET

CASING USED 8 inch .322# standard black

TYPE OF SCREENS USED 18ft of 60 thow. Johnson stainless 2ft 7in riser and packer

BOTTOM OF CASING 160 FEET FROM SURFACE

STICK-UP ABOVE GROUND 2ft 6in. FEET

DRILLER: Dan Hoyt. Cable tool Rig

INVOICE

20ft Of 12in. cased hole @$30. $600.00

20 FEET CASING @$11.75 $ 235.00

2ft Riser ~~XXXXXXXX~~ @ $10. $ 20.00

160 FEET WELL HOLE @$19.00 $ 3,040.00

16ft SCREEN @$80. $ 1,280.00

84 HOURS DEVELOPING TIME @$40. $ 3,360.00

8hrs standby $18.75 150.00

TOTAL $

Total 8,761.00

- 72.00

Less rebate on casing @$3.00 per. ft. 24ft $8,689.00

LOG OF FORMATIONS

DEPTH	MATERIAL
	Dry sand and gravel
4	Brown clay till
16	Blue silty till
69	Dry grey sand
80	Blue silty clay
98	Blue silt
106	Fine blue sand
162	Blue sand and gravel
171	Boulders and gravel
184	Sand and gravel progressively finer

Pulled backto 175ft backfilled hole. Set screen and developed.

October 3rd. 8hrs standby to sive samples

October 4th 6hrs.
October 5th 6hrs.
October 6th 8hrs.
October 10th 11th 12th 13th 16th 17th 18th 19th

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PAGE 1

WELL OWNER Nanaimo Reg. Dist. WELL NO. 2 DRAWDOWN ☑
LOCATION Beachcomber JOB NO. 77-050 RECOVERY ☐

DATE	TIME	ELAPSED TIME MINUTES	DTW	Q US GPM	Well 1	REMARKS
24-10-78	13:00	0	106.58		91.90	Stickup 2.2 feet.
		0.5	125.78			
		1	127.02	307		
		1.5	127.54			
		2	127.86			
		2.5	128.10			
		3	128.39			
		3.5	128.52			
		4	128.71			
		4.5	128.86			
	13:05	5	128.95	307		
		6	129.13			
		7	129.35			
		8	129.51			
		9	129.61			
	13:10	10	129.74	305		
		12	129.91			
		14	130.04			
		16	130.15			
		18	130.29			
	13:20	20	130.36			
		25	130.62	305		
	13:30	30	130.73			
		35	130.84			
	13:40	40	130.95			
		45	131.04			
	13:50	50	131.13	305		
	14:00	60	131.31			
	14:10	70	131.45			
	14:20	80	131.56			
	14:30	90	131.70			
	14:40	100	131.76		92.27	

29,600

39,860

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1401 BEWICKE AVENUE, NORTH VANCOUVER, BRITISH COLUMBIA

WELL OWNER NANAIMO REG. DIST. WELL NO. 2 DRAWDOWN ☑
LOCATION BEACHCOMBER JOB NO. 77-050 RECOVERY ☐

DATE	TIME	ELAPSED TIME MINUTES	DTW	Q US GPM		REMARKS
24-10-78	15:30	150	132.16	305		
	16:20	200	132.39			
	17:10	250	132.58			
	18:00	300	132.84			
	18:50	350	133.11			
	19:40	400	133.23			obs well 92.56 @ 19:00
	20:30	450	133.36			
	21:20	500	133.52			
	22:10	550	133.57			
	23:00	600	133.68			
	23:50	650	133.76	305		
25/10/78	00:40	700	133.82			
	01:30	750	133.80			
	02:20	800	133.91			
	03:10	850	133.40			
	04:00	900	134.02			
	04:50	950	134.14			
	05:40	1000	134.21			
	06:30	1050	134.20			
	07:20	1100	134.20			
	08:10	1150	134.23			obs well 92.99
	09:00	1200	134.27			
	09:50	1250	134.27			
	10:40	1300	134.29			
	11:30	1350	134.20			
	12:20	1400	134.21			
	13:10	1450	134.20			
	14:00	1500	134.20			
	14:50	1550	134.21			
	15:40	1600	134.21			obs well @ 17:00 93.07
	16:30	1650	134.30			
	17:20	1701	134.29			

WELL DEPTH SWG STICKUP PUMP SUCTION

BROWN, ERDMAN & ASSOCIATES LTD.
1401 BEWICKE AVENUE, NORTH VANCOUVER, BRITISH COLUMBIA

PAGE 3

WELL OWNER NANAIMO REG DIST. WELL NO. 2 DRAWDOWN ☑
LOCATION BEACHCOMBER JOB NO. 77050 RECOVERY ☐

DATE	TIME	ELAPSED TIME MINUTES	DTW	Q GPM		REMARKS
25/10/78	18:10	17150	134.38	305		
	1900	1800	134.50			
	1950	1850	134.61			
	2040	1900	134.64			
	2130	1950	134.65			
	2220	2000	134.68			
	2310	2050	134.77			
26/10/78	00:00	2100	134.83			
	00:50	2150	134.84			
	01:40	2200	134.87			
	02:30	2250	134.90			
	03:20	2300	134.93			
	04:10	2350	134.97			
	05:00	2400	134.97			
	05:50	2450	135.00			
	06:40	2500	135.00			obs 93.42 @ 0810
	07:30	2550	135.00			
	08:20	2600	135.00			
	09:10	2650	135.00			
	10:00	2700	135.01	305		
	10:50	2750	134.96			
	11:40	2800	135.00			
	12:30	2850	135.00			
	13:20	2900	135.01			
	14:10	2950	135.00			obs 93.49 @ 14:00
	15:00	3000		305		Difference in elevation 16'

OIL ENGINE PUMP SUCTION

BROWN, ERDM[illegible] & ASSOCIATES LTD.
1401 BEWICKE AVENUE, NORTH VANCOUVER, BRITISH COLUMBIA

PAGE 4

WELL OWNER Nanaimo Rec Dist WELL NO. 2 DRAWDOWN ☐
LOCATION Beachcomber JOB NO. 77-050 RECOVERY ☑

DATE	TIME	ELAPSED TIME MINUTES	DTW	Q GPM		REMARKS
26/10/78	1500	1500	135.00			Pump off
	15:00:30	1500.5	114.76		~~6000~~ 6001	
	01	1501	113.81		3001	
	01:30	1501.5	113.43		2001	
	02	1502	113.17		1501	
	02:30	1502.5	112.89		1201	
	03	1503	112.69		1001	
	03:30	1503.5	112.56		858	
	4	1504	112.41		751	
	04:30	1504.5	112.31		668	
	15:05	1505	112.16		601	
	15:06	1506	112.00		501	
	15:07	1507	111.86		430	
	15:08	1508	111.72		376	
	15:09	1509	111.61		334	
	15:10	1510	111.50		301	
	16:12	1512	111.35		251	
	16:14	1514	111.25		215	
	15:16	1516	111.15		188	
	15:18	1518	111.06		168	
	15:20	1520	111.00		151	
	15:25	1525	110.81		121	
	15:30	1530	110.64		101	
	15:35	1535	110.54		87	86.7
	15:40	1540	110.41		76	
	15:45	1545	110.30		68	67.7
	15:50	1550	110.24		61	
	1600	60	110.13		51	
	1610	70	109.89		44	43.9
	1620	80	109.85		38.5	
	1630	90	109.78		34	34.3
	16:40	100	109.71		31	Pulled Pump

WELL DE[illegible] PUMP SUCTIO[illegible]

BROWN, ERDMA[illegible] & ASSOCIATES LTD.
1401 BEWICKE AVENUE, NORTH VANCOUVER, BRITISH COLUMBIA

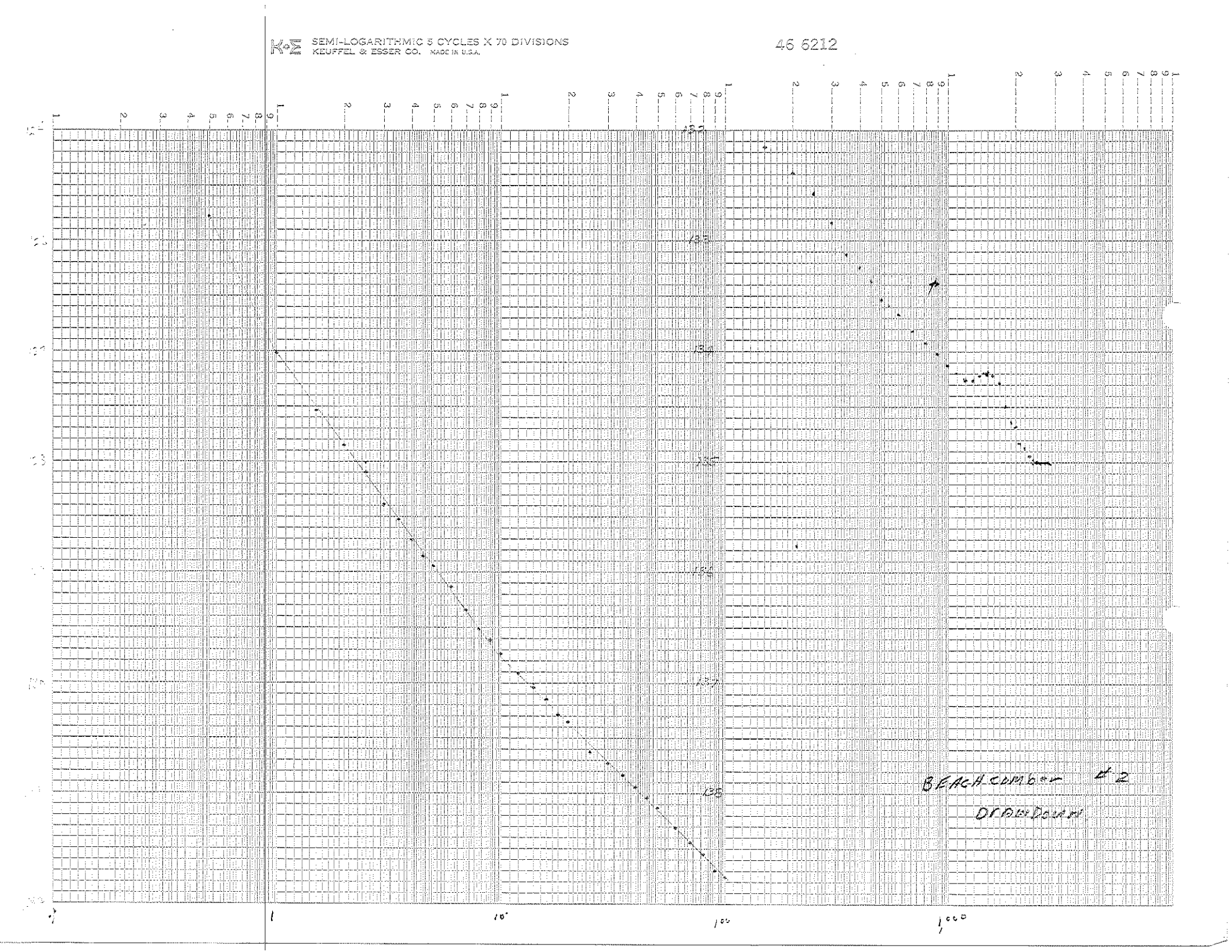
PAGE 5

WELL OWNER
LOCATION

WELL NO.
JOB NO.

DRAWDOWN ☐
RECOVERY ☑

DATE	TIME	ELAPSED TIME MINUTES	DTW	Q / GPM		REMARKS
	17:20	140	109.21		22.4	
	19:50	290	108.80		11.3	20:00 obs 93.00
	06.50	950	107.99		4.16	07:00 obs 92.78


K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 5212
BEACH COMBER #2
DRAWDOWN

PHONE 980-5814

MIN-EN Laboratories Ltd.
Specialists in Mineral Environments
Corner 15th Street and Bewicke
705 WEST 15th STREET
NORTH VANCOUVER, B.C.
CANADA

October 3, 1978.

Erdman Brown & Assoc.,
1401 Bewicke Ave.,
North Vancouver, B.C.

File No: 8-499 SIEVE ANALYSIS

Sample Number	Mesh Size	Weight Retained	Cumulative	Weight Passed	% Passing
Beach Cumber 179'	+5	129.0	129.0	1127.0	10.3
	+10	270.5	399.5	856.5	31.8
	+20	248.0	647.5	608.5	51.6
	+40	269.0	916.5	339.5	72.9
	+60	204.0	1120.5	135.5	89.2
	+80	79.5	1200.0	56.0	95.6
	+100	24.5	1224.5	31.5	97.5
	-100	31.5	1256.0		
			TOTAL	1256.0 gm	

Certified By

PHONE 980-5814

MIN-EN Laboratories Ltd.
Specialists in Mineral Environments
Corner 15th Street and Bewicke
705 WEST 15th STREET
NORTH VANCOUVER, B.C.
CANADA

October 2, 1978.

Erdman Brown & Assoc.,
1401 Bewicke Ave.,
North Vancouver, B.C.

File No: 8-490

SIEVE ANALYSIS

Sample Number	Mesh Size	Weight Retained	Weight Passed
Beach Cumber 154'	+5	11.0	1059.5
	+10	49.0	1010.5
	+20	170.5	840.0
	+40	464.5	375.5
	+60	195.0	180.5
	+80	88.5	92.0
	+100	53.7	38.3
	-100	38.3	
			1070.5 gm
Beach Cumber 158'	+5	180.0	683.7
	+10	155.5	528.2
	+20	146.0	372.2
	+40	176.5	195.7
	+60	117.5	78.2
	+80	36.3	41.9
	+100	21.2	20.7
	-100	20.7	
			863.7 gm

Certified By

October 2, 1978.

Erdman Brown & Assoc.,
1401 Bewicke Ave.,
North Vancouver, B.C.

File No: 8-490

SIEVE ANALYSIS

Sample Number	Mesh Size	Weight Retained	Weight Passed
Beach Cumber 154'	+5	11.0	1059.5
	+10	49.0	1010.5
	+20	170.5	840.0
	+40	464.5	375.5
	+60	195.0	180.5
	+80	88.5	92.0
	+100	53.7	38.3
	-100	38.3	
			1070.5 gm
Beach Cumber 158'	+5	180.0	683.7
	+10	155.5	528.2
	+20	146.0	372.2
	+40	176.5	195.7
	+60	117.5	78.2
	+80	36.3	41.9
	+100	21.2	20.7
	-100	20.7	
			863.7 gm

D. P. Chris

Certified By