



BRITISH COLUMBIA

BC Environment

Water Management Branch, Groundwater Section

WATER WELL RECORD

Date 10/4/2003

P.C.C.S. MAP, WELL No, ELEV, Location Accuracy, Date 19, Well Type

Owners Name & Address Ken Flett 1 Milk Ranch Ltd Box 797 Cache Creek BC

Legal Description & Address 200 Christian Rd YOU IHO

* Lot 2 S17 T20 R10 KOYO Plan KAP 77897

Descriptive Location P.I.D. # 026-264-536

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

3. WATER WELL USE 1 Domestic 2 Municipal 3 Irrigation 4 Comm. & Ind Other

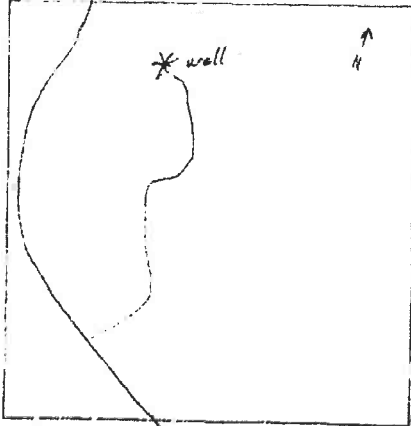
4. DRILLING ADDITIVES None

5. MEASUREMENTS from 1 Ground level 2 top of casing casing height above ground level 2

6. WELL LOG DESCRIPTION table with columns FROM ft, TO ft, Description, SWL ft. Entries: 0-17 Clay, rocks + boulders; 17-540 Bedrock

7. CONSULTANT None Address

8. WELL LOCATION SKETCH



9. CASING Materials 1 Steel 2 Galvanized 3 Wood 4 Plastic 5 Concrete Other

Table with columns: Hole Diameter, Diameter from, to, Thickness, Weight, units (ins, ft, ins, lb/ft). Values: 6 1/2, 8, 2, 19, 19, 18 1/2, 12.9

Pitless unit ft 1 above 2 below ground level 1 Welded 2 Cemented 3 Threaded 1 New 2 Used Perforations: None

Shoe(s): Steel Open hole, from 19 to 540 ft Diameter 6 ins Grout: Benseal

10. SCREEN 1 Nominal (Telescope) 2 Pipe Size Type 1 Continuous Slot 2 Perforated 3 Louvre Other Material 1 Stainless Steel 2 Plastic Other Set from to ft below ground level

RISER, SCREEN & BLANKS table with columns: Length, Diam. I.D., Slot Size, units (ft, ins, ins, ft)

Fittings, top bottom Gravel Pack

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

12. TEST 1 Pump 2 Ball 3 Air Date 10/4/2003 Rate 3 USgpm Temp SWL before test ft Water Level ft after test of hrs

Table for DRAWDOWN and RECOVERY in ft with columns: mins, WL, mins, WL, mins, WL, mins, WL

13. RECOMMENDED PUMP TYPE Submersible RECOMMENDED PUMP SETTING 520 " 5gpm RECOMMENDED PUMP SIZE 1 1/2"

14. WATER TYPE: 1 fresh 2 salty 3 clear 4 cloudy colour no smell no 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

SITE ID No Lab Date

16. FINAL WELL COMPLETION DATA Well Depth 540 ft Well Yield 3 US gpm Static Water Level 70 ft Back filled Bentonite Well Head Completion Cap

17. DRILLER PLEASE PRINT MCGLOTHRY, David Dymak Signature

18. CONTRACTOR, DAN-GARE DRILLING LTD 1199 Mountain View Road ARMSTRONG, B.C. V0E 1B8 1-888-549-3130 / 250-546-3480

J'S PUMPS & PLUMBING

4050-50TH St NW Salmon Arm, BC V1E 3A7

250-832-7922 fax 250-832-7699

M. Bryce Solomen

Dec.16/13

At your request we did a well quantity flow test at 190 Christensen Road SW, Salmon Arm, BC on Dec 13, 2013.

Listed below are the findings:

- (1) The well is 540 feet deep with 19 feet of 6.25 inch galvanize inside diameter steel casing from plus 2 feet above ground to bedrock.
- (2) There is a 4.5 inch inside diameter, screw together pvc liner from 11' 2" to the bottom of the well.
- (3) Static water level before the start of the pump test was 62 feet.
- (4) The well was pumped at varying rates starting at 8 us gallons per minute to 6 usgpm.
- (5) The pump test was started at 10:05 am and ended at 4:05 pm Dec.13/13 for a total of 6 hours or 360 minutes.
- (6) Over the period of the pump test 2395 us gallons was pumped out of the well.
- (7) At 220 minutes into the test the flow rate of the pump was 6 usgpm and stayed at that rate till the end or 360 minutes.
- (8) At 220 minutes the static water level was 323.3 feet.
- (9) At 360 minutes or the end of the flow test that static was 340.5 feet. This left 199.5 feet of water in the well. Over the last 60 minutes of the flow test the static level dropped approximately 1 foot every 10 minutes.
- (10) As noted above when the pump was stopped at 360 minutes the static water level was 340.52 feet.
- (11) At 60 minutes from having stopped the pump the static water level was 141.7 feet or a rise of 198.38 feet.
- (12) At 780 minutes from having stopped the pump, the static level was 69.1 feet.
- (13) At 1440 minutes or 24 hours the static water level was 67.3 feet. This level was within 5.3 feet of the original static water level.
- (14) For the purpose of the flow test, the pump intake was set at 522 feet, with the pump being a Gould 1.5 horse power, 5gpm series.
- (15) There were no water samples taken for testing.
- (16) As noted in the previous engineer's report of March 2005 there will be water treatment necessary due to high levels of uranium, iron and manganese. The high readings of the uranium make the water unpotable at the well head without treatment.

In summary, this well at this time with a flow rate of 5.5 us gallons per minute will support normal domestic use once the water is treated.

A more comprehensive test will be needed at the time of applying for a building permit from the City of Salmon Arm.

If there are any questions, please give me a call.

Regards,


Jerry E. Jones



102 - 3877 Highway 87N
 Kelowna, B.C. V1X 5C3
 Telephone (250) 765-8846
 Fax (250) 765-3893

Email caroenvironmental@shaw.ca

CERTIFICATE OF ANALYSIS

March 17, 2005

J's Pumps & Plumbing
 4050 - 50th Street NW
 SALMON ARM, - BC
 V1E 3A7

Attention: Jerry Jones

Sample ID:

Well on Lot #2 Plan 7961

Date sampled:

Mar. 1/05
 5:30pm

Received: Mar. 2/05

Parameter	units	Result	Canadian Guidelines if one applies
Alkalinity (total)	mg/L as CaCO ₃	336	
Aluminum (total)	mg/L	0.01	*
Antimony (total)	mg/L	<0.0005	0.006 MAC
Arsenic (total)	mg/L	<0.001	0.025 MAC
Barium (total)	mg/L	<0.02	1.0 MAC
Boron (total)	mg/L	<0.1	5.0 MAC
Cadmium (total)	mg/L	<0.0002	0.005 MAC
Calcium (total)	mg/L	89	
Chloride	mg/L	1.15	<250 AO
Chromium (total)	mg/L	<0.002	0.05 MAC
Colour (true)	TCU	6	<15 AO
Conductivity	umhos/cm	608	
Copper (total)	mg/L	<0.01	<1.0 AO
Cyanide	mg/L	<0.010	0.2 MAC
Fluoride	mg/L	0.70	1.5 MAC
Hardness	mg/L as CaCO ₃	280	**
Iron (total)	mg/L	0.65	<0.3 AO
Lead (total)	mg/L	0.002	0.01 MAC
Magnesium (total)	mg/L	14	
Manganese (total)	mg/L	0.04	<0.05 AO
Mercury (total)	mg/L	<0.0002	0.001 MAC
Molybdenum (total)	mg/L	<0.03	

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J's Pumps & Plumbing

March 17, 2005

(cont)

Sample ID: Well on Lot #2 Plan 7961

Parameter	units	Result	Canadian Guidelines if one applies
Nitrate	mg/L as N	<0.01	10 mg/L as N MAC
Nitrite	mg/L as N	<0.01	1 mg/L as N MAC
pH	pH units	7.2	6.5 - 8.5 AO
Potassium (total)	mg/L	2.3	
Selenium (total)	mg/L	<0.001	0.01 MAC
Sodium (total)	mg/L	29	<200 AO
Sulphate	mg/L	2.5	<500 AO
Total Dissolved Solids	mg/L	366	<500 AO
Turbidity	NTU	7.4	1.0 MAC if disinfection needed <5 AO (clarity)
Uranium (total)	mg/L	0.088	0.02 MAC
Zinc (total)	mg/L	1.3	<5.0 AO
Total Coliform	Colonies/100mL	0	0 col/100mL MAC
Fecal Coliform	Colonies/100mL	0	0 col/100mL MAC

"<" means not detected at that detection limit

"AO" Aesthetic Objective

"MAC" Maximum Acceptable Concentration (health-related guideline)

* Aluminum - no health guideline "operational guidance values" for water treatment are 0.10 or 0.20 mg/L depending on treatment type. See complete guidelines.

** Hardness - no guideline - "Hardness levels between 80 and 100 mg/L as CaCO₃ are considered acceptable; levels greater than 200 are considered poor but can be tolerated; those in excess of 500 are normally considered unacceptable"

Certified by:


 GARD Environmental Services

Janice M. Fraser, B.Sc., Lab Manager



(250) 832-7699

also mailed with invoice

THE INFORMATION CONTAINED IN
THIS REPORT IS THE CONFIDENTIAL
PROPERTY OF THE CLIENT. ANY
LIABILITY ATTACHED THERE TO IS
LIMITED TO THE FEE CHARGED.



PRIVATE WELL CERTIFICATION

Pursuant to Schedule "B" of the Subdivision and Development Servicing Bylaw No. 3200 which requires that each lot to be created and/or each existing lot forming part of the proposed development can be serviced with potable water in accordance with the requirements of the Bylaw for the development of:

LEGAL DESCRIPTION: Plan 7961, Lots 1, 2, and Remainder

PROJECT NO: 04.23

I certify that a quantity of not less than 2,500 litres per day on a year round basis has been proven for each existing or proposed lot in the development.

I certify that each well within the subdivision has been tested and is capable of continuously providing water at a rate of 9 litres per minute for a four hour period.

I certify that water quality tests have been conducted and that the "Canadian Drinking Water Standards, 1989" can be met for each existing or proposed lot in the development, however onsite water treatment will be required (See Attachment #1).

Certified by:

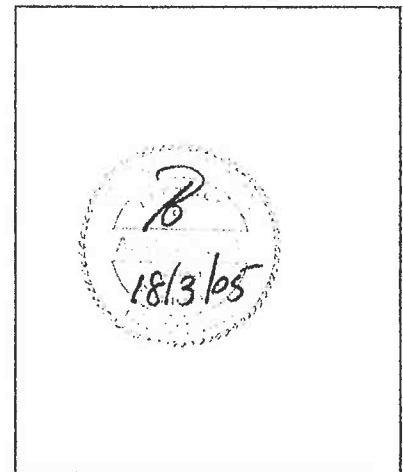
Alan Bates, P.Eng.

Signature and Name of Professional Engineer

5690 Lakeshore Road NE

Salmon Arm, BC V1E 3P5

Address



Engineer's Seal

The Private Well Certification shall be submitted with completed sets of Forms (Well Pump – Field Test F-6; Well Pump – Drawdown Graph; and Well Pump – Test Summary F-7) for each well as required pursuant to Section 3 of Schedule "B", Part 1.

Attachment #1

Re: Plan 7961: Lot 1, Lot 2 and Remainder

(App.#04.23)

Water test results for all three wells on Plan 7961 showed high levels of uranium, manganese and iron, in excess of the Canadian Drinking Water Guidelines. While the iron and manganese levels exceed only aesthetic objectives, the uranium content renders the water non-potable at the well head.

Water treatment is required to reduce the uranium to acceptable levels (less than 0.02 mg/l). Uranium levels can be effectively reduced (~90%) through standard reverse osmosis and ion exchange treatment methods. These methods will also reduce the iron and manganese levels, as well as hardness to improve water quality. Due to the amount of wastewater generated during the reverse osmosis process, this treatment methodology should only be applied to water used for human consumption (i.e. drinking water as opposed to water for other household uses). A qualified/reputable water treatment professional should be consulted to ensure an appropriate and effective treatment system is installed to enable safe domestic use of water from each of these wells.



WELL PUMP – TEST SUMMARY

Owner's Name Ken Flett Well No. #1
 Application No. 04.23 Date 1/03/05
 Location Lot 2, Plan 7961 Sheet 1 of 1
 Test No. _____

Well Completion Data		Screen Design (mark one)		Description of Aquifer
Depth	<u>164</u> m	<input checked="" type="checkbox"/> Open Hole	<input type="checkbox"/> Slotted Casing	<u>bedrock</u>
Diameter	<u>150</u> mm	<input type="checkbox"/> Screen	<input type="checkbox"/> Gravel Pack	_____
Static Water Level	<u>19.2</u> m	<input type="checkbox"/> Other	_____	_____
		Screen Interval	<u> </u> m to <u> </u> m	_____

Pump Test

Start: Date (d/m/y) 1/03/05 Time (h:m) 06:00
 Pump Type: Elect submersible Jet Air Lift
 Other (describe) _____
 Test pump set at 137.2 M below ground
 Water level sounded by: Electric tape Air bubbler Steel tape
 Other (describe) _____
 Flow measured by: Container & watch Flow meter Orifice & tube
 Other (describe) _____

Test

Water Samples Taken During Test

Initial non-pumping level	<u>19.2</u> m	Chemical Analysis	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Constant rate of yield	<u>5.7</u> lpm	Bacterial Analysis	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Test duration	<u>12</u> h	Water Temperature	<u>n/a</u> °C
Drawdown at end of test	<u>7.9</u> m	Any particular gas smells noted	_____
Recommended pumping rate	<u>18.9</u> Lpm		<u>No</u>
		Comments on clarity of water	<u>Clear</u>

Other comments:

Water levels in adjacent lots (Lot 1, Remainder) were also monitored during this pump test.
Water level on Mike Birseck prop.(Rem Lot 1 Plan 27316) was monitored (max drawdown was 0.08m)
Well #2 (Lot 1 - approximately 155m SE) maximum drawdown was 0.01m during test.
Well #3 (Rem. - approximately 207m E) maximum drawdown was 0.04m during test.
Recovery of Well #2 monitored for 24 hours (see attached).