Memorandum

Late Addition
Supplemental to
Items 12.2 & 12.3

1-500 Lower Ganges Road, Salt Spring Island, BC
Telephone **(250) 537-9144** FAX: (250) 537-9116
Toll Free via Enquiry BC in Vancouver 660-2421. Elsewhere in BC **1.800.663.7867**
ssiinfo@islandstrust.bc.ca www.islandstrust.bc.ca

Date May 16, 2012 File Number: SS-SUB-2002.7

SS-SUB-2005.29

To Salt Spring Island Local Trust Committee for May 17, 2012 Meeting

From Caitlin Brownrigg
Planner 1
Local Planning Services

Re Supplemental Water Reports for SS-SUB-2002.7 and SS-SUB-2005.29

On May 14, 2012 the Salt Spring Island office of the Islands Trust received two additional reports regarding agenda items 12.2 and 12.3. These reports are attached to this memo as Appendix A and B. Well 14138 is associated with subdivision application SS-SUB-2005.29 and well 14175 is associated with subdivision application SS-SUB-2002.7. The wells that are described in the appended reports were drilled to replace wells that EBA Engineering Consultants in their reports dated July 2, 2010 recommended not be used for any purpose.

Staff recommendations are unchanged.

Respectfully submitted by:

_____
Caitlin Brownrigg
Planner 1

_____
Reviewed by Leah Hartley, Regional Planning Manager

Appendix A: Water Quantity and Quality Report Well #14138
Appendix B: Water Quantity and Quality Report Well #14175

Supplemental to
Items 12.2 & 12.3
Appendix A

Gooding
Hydrology

WATER QUANTITY AND QUALITY REPORT
WELL ID #14138
On
On Proposed Lot 1, W 1/2 DL26, N Saltspring Island

For
Mel Topping,
Saltspring Island, B.C.

By
Dave Gooding, P.Eng.
Gooding Hydrology
Saltspring Island

April 2011

Gooding Hydrology
dgooding@saltspring.com

Introduction

Gooding Hydrology was engaged by Mel Topping to prepare a potable water report for a well (ID Tag# 14138) on a proposed lot 1, located south of the Hydro R.O.W. in the W ½ of DL26, North Saltspring Island, BC. The location of the well is shown below on the CRD Atlas background, with the DL lines visible, in figure 1 below. GPS location of the well head, taken by the driller, is given as 48º 50.725'N, 123º 31.949'W. The well was drilled to replace Well #24977, on the same lot.

Figure 1: Well location

Well Description

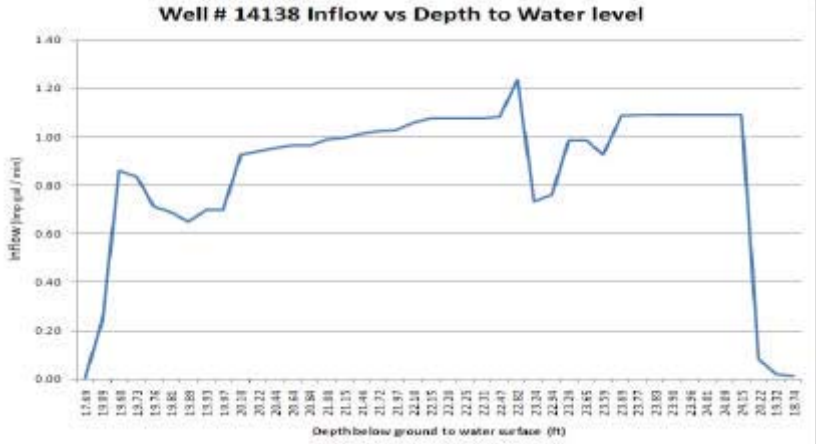
Well 14138 was drilled by Albert Kaye & Sons December 14-18, 2010. The well log is attached as Appendix 1. Well was drilled to 300 ft, with the top 18 ft cased. The well log shows a 10 ft overburden of clay, then bedrock. The remaining 290 feet drilled was layers of conglomerate and shale (conglomerate 10-75 ft depth, shale 75-125 ft, conglomerate 125-225 ft, shale 225-240 ft, conglomerate 240 to bottom of well at 300 ft). Groundwater inflows were picked up at the bottom edge of each shale layer, estimated by the driller at 2 gpm in the upper shale strata, 4 gpm in the lower.

Well Pumping Test

Albert Kaye & Sons performed a 12 hour pump test of the well on March 8, 2011. Pumping data form and graph is attached as Appendix 3. Pumping rate was adjusted from 2 gpm down to ¾ gpm in the first 10 minutes, then steadied at 1.09 gpm through the 90 min mark. At the 2 hr mark it was found flow had risen to 1.25 gpm, so it was adjusted down, and varied with minor adjustments from ¾ to 1 gpm through to the 6 hr mark, where it stabilized at 1.09 gpm for the remainder of the for 12 hrs. Total drawdown was 6.46ft.

After pumping was stopped, water level in the well recovered quickly. Water level rose 3.93 ft in the first hr, 0.9 ft in the second hr, then 0.58 ft in the third hr, for a total of 5.41 ft in three hours (to 1.09 ft below the original static level).

Figure 2: Groundwater inflow to well during pump test



Groundwater inflows to the well during the pump test were calculated from the test data, and are shown graphically in figure 2 to left. Inflow varied with pumping rate, to as high as 1.24 gpm during the hour of 1.25 gpm pumping.

Well Capacity

The pump test method used does not determine the maximum rate of flow the well is capable of producing. The test performed established that under the groundwater conditions of the time of pumping, well 14138 is capable of producing over 1 gpm under sustained pumping, or over 1440 imperial gallons per day, (over 6,500 liters per day), and recovered rapidly after pumping. Its flow capacity under continuous use and varying conditions exceeds the 1600 liter/day minimum requirement for a residential lot. No adverse effects of continuous use of this amount of water, on available water quality or quantity for surrounding potable water sources, could reasonably be expected.

Water Quality

A water sample was taken February 15, and analyzed by Agrichem Analytical. Their Drinking Water Report is attached as Appendix 2. The water sample met the Health Canada Guidelines for Potability, and Islands Trust standards, for all the parameters tested. Aesthetic Objectives not met for pH, iron, and turbidity are treatable.

Dave Gooding, P.Eng.

Gooding Hydrology
dgooding@saltspring.com

Appendix 1: Well log

COLUMBIA — Ministry of Environment

☐ **Well Alteration Report**

☐ Original well construction report attached

Red lettering indicates minimum mandatory information. See reverse for notes & definitions of abbreviations.

Owner name: M. Topping / 451630 B.C Ltd

Mailing address: PO 270 Town Ganges Prov. BC, Postal Code V8K2V9

Well Location: Address: Street no. Street name Town

(or) Legal description: Lot 1 Plan D.L. Block Sec. Twp. Rg. Land District

(or) PID: (and) Description of well location (attach sketch, if nec.):

NAD 83: Zone: (see note 2) (and) UTM Northing: m UTM Easting: m (or) Latitude (see note 3): Longitude:

Method of drilling: ☒ air rotary ☐ cable tool ☐ mud rotary ☐ auger ☐ driving ☐ jetting ☐ excavating ☐ other (specify):

Orientation of well: ☒ vertical ☐ horizontal Ground elevation: ft (asl) Method (see note 4):

Class of well (see note 5): Sub-class of well:

Water supply wells: indicate intended water use: ☒ private domestic ☐ water supply system ☐ irrigation ☐ commercial or industrial ☐ other (specify):

Lithologic description (see notes 7-14) **or closure description** (see notes 15 and 16)

From ft (bgl)	To ft (bgl)	Relative Hardness	Colour	Material Description (Use recommended terms on reverse. List in order of decreasing amount, if applicable)	Water-bearing Estimated Flow (USgpm)	Observations (e.g., fractured, weathered, well sorted, silty wash), closure details
0	10			clay-		
10	75			sand Conglomerate		
75	125			shale		
125	225			Conglomerate	2gpm	
225	240			shale		
240	300			conglomerate	4gpm	

Casing details

From ft (bgl)	To ft (bgl)	Dia in	Casing Material / Open Hole	Wall Thickness in	Drive Shoe
0	18	7"		155	

Screen details

From ft (bgl)	To ft (bgl)	Dia in	Type (see note 18)	Slot Size

Surface seal: Type: cement Depth: ft

Method of installation: ☐ Poured ☐ Pumped Thickness: in

Backfill: Type: Depth: ft

Liner: ☐ PVC ☐ Other (specify):

Diameter: in Thickness: in

From: ft (bgl) To: ft (bgl) Perforated: From: ft (bgl) To: ft (bgl)

Intake: ☐ Screen ☐ Open bottom ☐ Uncased hole

Screen type: ☐ Telescope ☐ Pipe size

Screen material: ☐ Stainless steel ☐ Plastic ☐ Other (specify):

Screen opening: ☐ Continuous slot ☐ Slotted ☐ Perforated pipe

Screen bottom: ☐ Ball ☐ Plug ☐ Plate ☐ Other (specify):

Filter pack: From: ft To: ft Thickness: in

Type and size of material:

Developed by:

☒ Air lifting ☐ Surging ☐ Jetting ☐ Pumping ☐ Bailing

☐ Other (specify): Total duration: hrs

Notes:

Well yield estimated by:

☐ Pumping ☒ Air lifting ☐ Bailing ☐ Other (specify):

Rate: 6 USgpm Duration: 1½ hrs

SWL before test: ft (btoc) Pumping water level: ft (btoc)

Obvious water quality characteristics:

☒ Fresh ☐ Salty ☐ Clear ☐ Cloudy ☐ Sediment ☐ Gas

Colour/odour: Water sample collected: ☐

Well driller (print clearly):

Final well completion data:

Total depth drilled: 10 ft Finished well depth: 300 ft (bgl)

Final stick up: 18 in Depth to bedrock: 10 ft (bgl)

SWL: ft (btoc) Estimated well yield: 6 USgpm

Artesian flow: USgpm, or Artesian pressure: ft

Type of well cap: Well disinfected: ☐ Yes ☒ No

Where well ID plate is attached: Casing

Well closure information:

Reason for closure:

Method of closure: ☐ Poured ☐ Pumped

Sealant material: Backfill material:

Details of closure (see note 17):

Appendix 2: Water Quality Test Results

Agrichem Analytical — Drinking Water Report

409 Stewart Rd
Salt Spring Island, BC
V8K 1V6

Phone/Fax: 250.538.1712
web: www.agrichem.ca
email: info@agrichem.ca

Albert Kaye & Sons
Lot 1 Topping
current treatment
unknown

sample 61017
date received 15-Feb-11
time/temperature 11:00 9 °C
date of report 25-Feb-11
sampled by albert

		Potable Water Quality Standards	
		Health Canada (2008)	Island Trust (2002)
Total Coliforms	0 MPN/100ml	0	0
E. coli	0 MPN/100ml	0	0
pH	6.07	6.5 to 8.5 *	6.5 to 8.5 *
Conductivity	62 uS/cm	no limit set	
Total Dissolved Solids (TDS)	58 mg/L	500*	500*
Hardness (as CaCO3)	21 mg/L	80-100	80-100
Alkalinity (as CaCO3)	34 mg/L	no limit set	
Residual Chlorine	< 0.02 mg/L		0
Turbidity	43.6 NTU	****	1
Fluoride (F)	0.59 mg/L	1.5 **	1.5
Chloride	3.14 mg/L	250 *	250 *
Nitrate (N)	0.07 mg/L	10 **	10 **
Nitrite (N)	< 0.01 mg/L	3.2 **	
Phosphate (P)	< 0.02 mg/L	no limit set	
Sulphate (S)	1.8 mg/L	500 *	no limit set
Sodium (Na)	4 mg/L	200 ***	500 *
Potassium (K)	0.2 mg/L	no limit set	200 ***
Magnesium (Mg)	1.5 mg/L	500 *	
Calcium (Ca)	5.9 mg/L	no limit set	
Iron (Fe)	21.38 mg/L	0.3 *	0.3 *
Copper (Cu)	< 0.01 mg/L	1 *	
Manganese (Mn)	0.04 mg/L	0.05 *	0.05 *
Zinc (Zn)	< 0.01 mg/L	5 *	
Arsenic (As)	< 1 ug/l	10**	10**
Lead (Pb)	< 2 ug/L	10**	

< is "less than" > is "greater than"

* aesthetic - no health risk
** maximum
*** 20 mg/L for restricted diets
**** surface water or surface influenced groundwater (drilled well) source 1 NTU **
secure groundwater (drilled well) source 5 NTU *
the presence of Total Coliform bacteria indicates surface influenced water source

For the Total Coliforms and E. coli method, 0 is UNDETECTED and is technically < 1 MPN/100ml

This water sample meets the Health Canada Guidelines for Potability for all parameters tested. The following parameters have not met the Aesthetic Objectives: pH, iron and turbidity - these are not Health concerns and may only contribute to an undesirable smell, taste or color or may cause scale buildup on appliances.

metals and minerals are digested as per APHA 3030E2
Aesthetic Objective - values pose no health risk but may affect the taste, color or smell or cause scaling

John Harris BSc

Appendix 3: Pumping Test Data and Graph

ALBERT KAYE & SONS DRILLING LTD.
200 Musgrave Road
Salt Spring Island, BC., V8K 1V5
(250) 653 4757

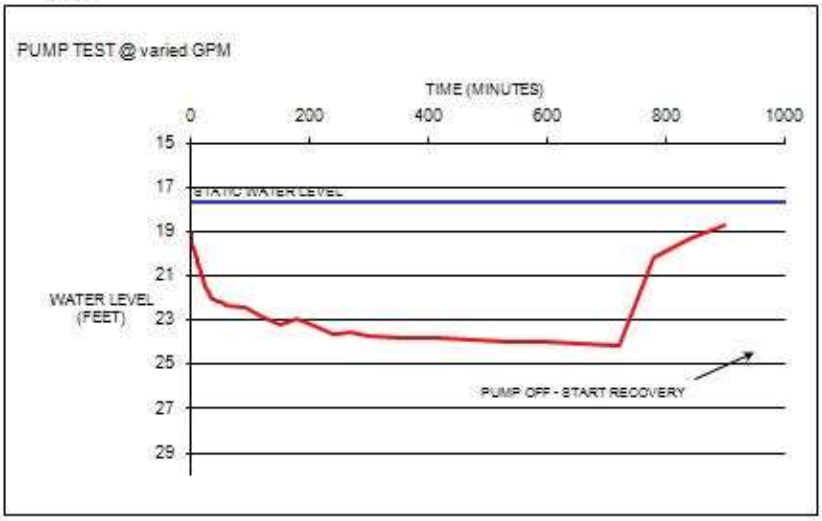
PUMP TEST DATA

CLIENT NAME: Mel Topping
ADDRESS: Juniper place or road?
LOT No.: well tag# 14138 Lot# 1
DATE:
START TIME: 16:30

SURFACE COORDINATES:
north 48 degrees 50.725 west 123 degrees 31.949
ELEVATION: 261 meters
(GPS READING +/- 24')

WELL DEPTH:	300	FEET
WELL FLOW:	6.00	GPM
GL - MP:		FEET
STATIC LEVEL:	17.69	FEET

ELAPSED TIME	READING FROM
1	19.09
2	19.60
3	19.73
4	19.76
5	19.81
6	19.89
7	19.93
8	19.97
9	20.10
10	20.22
12	20.44
14	20.64
16	20.84
18	21.00
20	21.15
25	21.46
30	21.72
35	21.97
40	22.10
45	22.15
50	22.20
55	22.25
60	22.31
90	22.47
120	22.82
150	23.24
180	22.94
210	23.29
240	23.65
270	23.59
300	23.69
360	23.77
420	23.83
480	23.90
540	23.96
600	24.01
660	24.09
720	24.15
780	20.22
840	19.32
900	18.74



REMARKS:

The pump rate varied as follows;
1 minute mark 2 gpm- 2 minute mark 1.5 gpm- 3minute mark 1 gpm- 4 minute mark 3/4 gpm until the 8 minute mark.- 9 minute mark 1 gpm plus, meaning 55 second gallon. At the 120 minute mark the flow increased to 1.1/4 and reset to 3/4 gpm for the 180 minute mark. At the 210 minute mark the flow was tested at 1 gpm where it stayed until the 270 minute mark it had slowed down to a 65 second gallon and then reset to a 55 second gallon at the 300 minute mark until the last reading.

← START RECOVERY

Supplemental to
Items 12.2 & 12.3
Appendix B

Gooding
Hydrology

WATER QUANTITY AND QUALITY REPORT
WELL ID #14175
On Lot 26

For
Mel Topping,
Saltspring Island, B.C.

By
Dave Gooding, P.Eng.
Gooding Hydrology
Saltspring Island

April 2011

Introduction

Gooding Hydrology was engaged by Mel Topping to prepare a well report for the well (Ministry Well ID Tag# 14175) on lot 26, located north of the Hydro R.O.W. in the W ½ of DL26, North Saltspring Island, BC. The location of the well is shown below on the CRD Atlas background, with the DL lines visible. GPS location of the well head taken by the driller is given as N 48º 50.974', W 123º 31.979'. This well was drilled to replace Well #26793, on the same lot.

Figure 1: Well location

Well Description

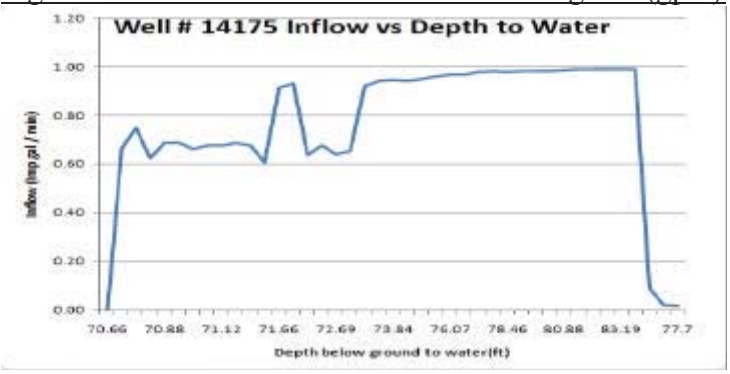
Well 14175 was drilled by Albert Kaye & Sons December 8-10, 2010. The well log is attached as Appendix 1. Well was drilled to 200 ft, with the top 18 ft cased. After 10 ft of gravel and clay, drilling to 125 ft was in conglomerate. Water was found in the sandstone strata between 125 and 160 ft depth. Flow was estimated by the driller at 4 gallons per minute (gpm).

Well Pumping Test

Albert Kaye & Sons performed a 12 hour pump test of the well on March 11, 2011. Pumping data form and graph is attached as Appendix 3. Pumping was done at a rate varying between ¾ and 1 gpm for the first 35 minutes, then at a steady 1 gpm for the remainder of the 12 hrs, with total volume pumped approximately 720 imperial gallons. Water level in the well dropped 7.1 ft over the 12 hour pump, 3.6 ft in the first hour. For the remainder of the pump test, the hourly draw down of the well's water surface level gradually decreased to 0.55 ft per hour. Total draw down during the test was 14.4 ft. After pumping was stopped water level in the well recovered at an average rate, 4.26 ft in the first hour, 1.04 ft in the second hour, and 0.76 ft in the third hour (3 hr total 6.06 ft).

Inflow of groundwater to the well was calculated from the pump test data, shown in figure 2 below. Note that there is no time scale, with each reading given an even interval, therefore the left side of the graph shows the first hour, the right half the remaining 11 hours. Inflow increased gradually as the test progressed (as the pressure head of water level in the well decreased). It is estimated that if pumping had been continued at a steady rate of 1 gpm, the inflow would balance with outflow, and water surface level would remain steady before depth to water reached 90 ft (still 30 ft above the fractured sandstone acquifer), and that this well is capable of producing a sustained flow of 1 gpm.

Figure 2: Groundwater inflows to well during test (gpm)



Well Capacity

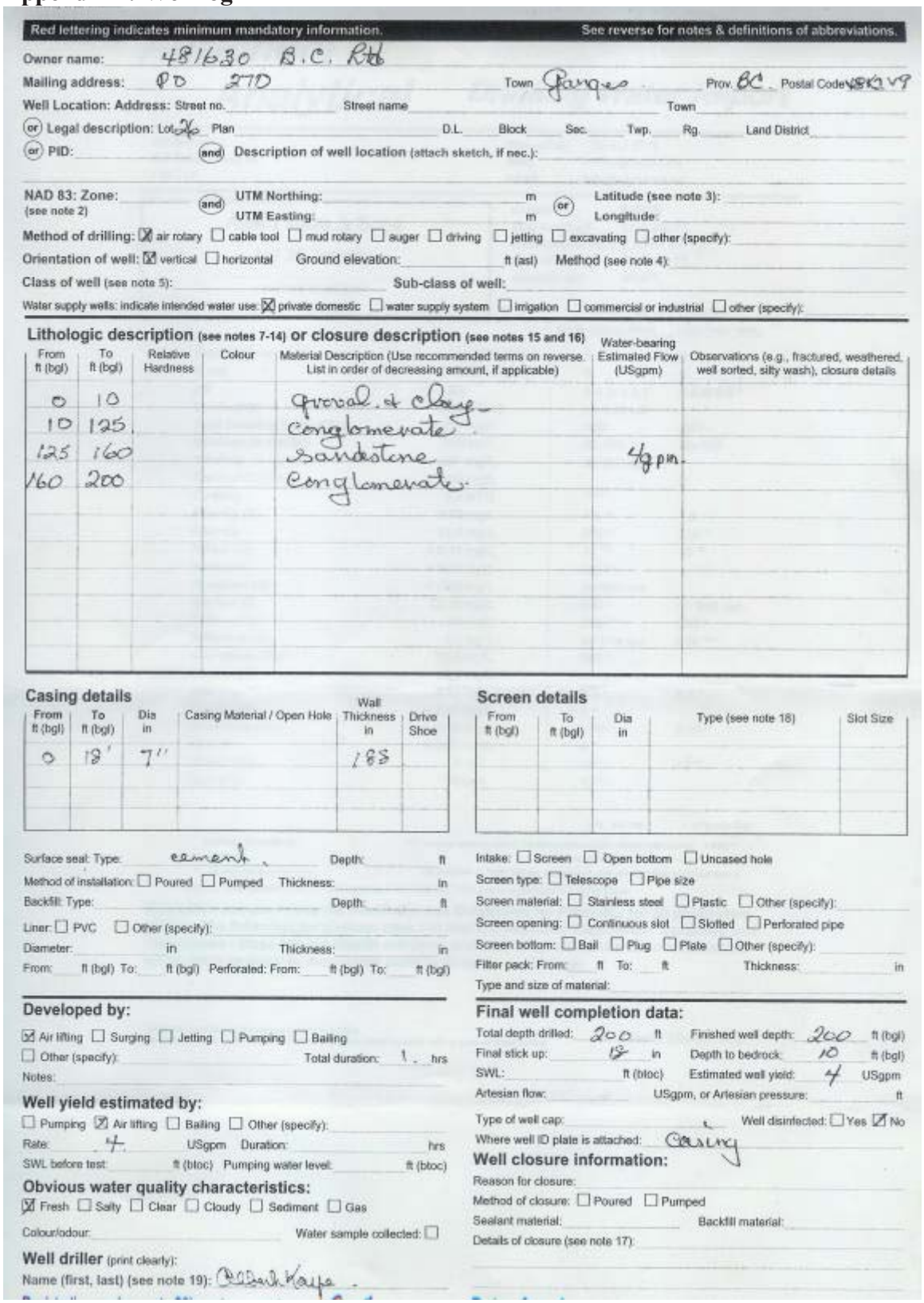
Under the groundwater conditions of the time of pumping, well 14175 demonstrated that is capable of producing 1 gpm under sustained pumping, or 1440 imperial gallons per day, (over 6,500 liters per day). Under continuous use, its flow capacity under varying hydrologic conditions could reasonably be expected to exceed the 1600 liter/day minimum requirement for a residential lot. This use can not reasonably be expected to adversely affect the water quality or quantity available from existing surrounding sources of potable water.

Water Quality

A water sample was taken February 15 by Albert Kaye, and analyzed by Agrichem Analytical. Their Drinking Water Report is attached as Appendix 2. The water sample met the Health Canada Guidelines for Potabilty, and Islands Trust standards, for all the parameters tested. The sample did not meet the Aesthetic Objectives for hardness and manganese, but these are treatable with a water softener.

Dave Gooding, P.Eng.

Appendix 1: Well log



Red lettering indicates minimum mandatory information. See reverse for notes & definitions of abbreviations.

Owner name: 481630 B.C. Ltd

Mailing address: PO 270 Town Ganges Prov. BC Postal Code V8K 2V9

Well Location: Address: Street no. Street name Town

(or) Legal description: Lot 26 Plan D.L. Block Sec. Twp. Rg. Land District

(or) PID: (and) Description of well location (attach sketch, if nec.):

NAD 83: Zone: (see note 2) (and) UTM Northing: m UTM Easting: m (or) Latitude (see note 3): Longitude:

Method of drilling: ☒ air rotary ☐ cable tool ☐ mud rotary ☐ auger ☐ driving ☐ jetting ☐ excavating ☐ other (specify):

Orientation of well: ☒ vertical ☐ horizontal Ground elevation: ft (asl) Method (see note 4):

Class of well (see note 5): Sub-class of well:

Water supply wells: indicate intended water use: ☒ private domestic ☐ water supply system ☐ irrigation ☐ commercial or industrial ☐ other (specify):

Lithologic description (see notes 7-14) or closure description (see notes 15 and 16)

From ft (bgl)	To ft (bgl)	Relative Hardness	Colour	Material Description (Use recommended terms on reverse. List in order of decreasing amount, if applicable)	Water-bearing Estimated Flow (USgpm)	Observations (e.g., fractured, weathered, well sorted, silty wash), closure details
0	10			gravel & clay		
10	125			conglomerate		
125	160			sandstone	4gpm.	
160	200			conglomerate		

Casing details

From ft (bgl)	To ft (bgl)	Dia in	Casing Material / Open Hole	Wall Thickness in	Drive Shoe
0	18'	7"		.188	

Screen details

From ft (bgl)	To ft (bgl)	Dia in	Type (see note 18)	Slot Size

Surface seal: Type: cement Depth: ft

Method of installation: ☐ Poured ☐ Pumped Thickness: in

Backfill: Type: Depth: ft

Liner: ☐ PVC ☐ Other (specify):

Diameter: in Thickness: in

From: ft (bgl) To: ft (bgl) Perforated: From: ft (bgl) To: ft (bgl)

Intake: ☐ Screen ☐ Open bottom ☐ Uncased hole

Screen type: ☐ Telescope ☐ Pipe size

Screen material: ☐ Stainless steel ☐ Plastic ☐ Other (specify):

Screen opening: ☐ Continuous slot ☐ Slotted ☐ Perforated pipe

Screen bottom: ☐ Ball ☐ Plug ☐ Plate ☐ Other (specify):

Filter pack: From: ft To: ft Thickness: in

Type and size of material:

Developed by:

☒ Air lifting ☐ Surging ☐ Jetting ☐ Pumping ☐ Bailing

☐ Other (specify): Total duration: 1 hrs

Notes:

Well yield estimated by:

☐ Pumping ☒ Air lifting ☐ Bailing ☐ Other (specify):

Rate: 4 USgpm Duration: hrs

SWL before test: ft (btoc) Pumping water level: ft (btoc)

Obvious water quality characteristics:

☒ Fresh ☐ Salty ☐ Clear ☐ Cloudy ☐ Sediment ☐ Gas

Colour/odour: Water sample collected: ☐

Well driller (print clearly):

Name (first, last) (see note 19): Richard Kaye

Final well completion data:

Total depth drilled: 200 ft Finished well depth: 200 ft (bgl)

Final stick up: 12 in Depth to bedrock: 10 ft (bgl)

SWL: ft (btoc) Estimated well yield: 4 USgpm

Artesian flow: USgpm, or Artesian pressure: ft

Type of well cap: Well disinfected: ☐ Yes ☒ No

Where well ID plate is attached: casing

Well closure information:

Reason for closure:

Method of closure: ☐ Poured ☐ Pumped

Sealant material: Backfill material:

Details of closure (see note 17):

Appendix 2: Water Quality Test Results

Agrichem Analytical — Drinking Water Report

409 Stewart Rd
Salt Spring Island, BC
V8K 1Y6

Phone/Fax: 250.538.1712
web: www.agrichem.ca
email: info@agrichem.ca

Albert Kaye & Sons
Lot 26 Topping

current treatment
unknown

sample 61016
date received 15-Feb-11
time/temperature 11:00 10 °C
date of report 25-Feb-11
sampled by albert

		Potable Water Quality Standards	
		Health Canada (2008)	Island Trust (2001)
Total Coliforms	0 MPN/100ml	0	0
E. coli	0 MPN/100ml	0	0
pH	7.54	6.5 to 8.5 *	6.5 to 8.5 *
Conductivity	394 uS/cm	no limit set	
Total Dissolved Solids (TDS)	269 mg/L	500*	500*
Hardness (as CaCO3)	175 mg/L	80-100	80-100
Alkalinity (as CaCO3)	137 mg/L	no limit set	
Residual Chlorine	< 0.02 mg/L		0
Turbidity	2.6 NTU	****	1
Fluoride (F)	0.78 mg/L	1.5 **	1.5
Chloride	13.8 mg/L	250 *	250 *
Nitrate (N)	< 0.01 mg/L	10 **	10 **
Nitrite (N)	< 0.01 mg/L	3.2 **	
Phosphate (P)	< 0.02 mg/L	no limit set	
Sulphate (S)	12.25 mg/L	500 *	no limit set
Sodium (Na)	13 mg/L	200 ***	500 *
Potassium (K)	1.1 mg/L	no limit set	200 ***
Magnesium (Mg)	12.8 mg/L	500 *	
Calcium (Ca)	48.8 mg/L	no limit set	
Iron (Fe)	0.21 mg/L	0.3 *	0.3 *
Copper (Cu)	< 0.01 mg/L	1 *	
Manganese (Mn)	0.06 mg/L	0.05 *	0.05 *
Zinc (Zn)	< 0.01 mg/L	5 *	
Arsenic (As)	4 ug/l	10**	10**
Lead (Pb)	10 ug/L	10**	

< is "less than" > is "greater than"

* aesthetic - no health risk
** maximum
*** 20 mg/L for restricted diets
**** surface water or surface influenced groundwater (drilled well) source 1 NTU**
secure groundwater (drilled well) source 5 NTU *
the presence of Total Coliform bacteria indicates surface influenced water source

For the Total Coliforms and E. coli method, 0 is UNDETECTED and is technically < 1 MPN/100ml

This water sample meets the Health Canada Guidelines for Potability for all parameters tested. The following parameters have not met the Aesthetic Objectives: hardness and manganese - these are not Health concerns and may only contribute to an undesirable smell, taste or color or may cause scale buildup on appliances.

metals and minerals are digested as per APHA 3030E2
Aesthetic Objective - values pose no health risk but may affect the taste, color or smell or cause scaling

John Harris BSc

Appendix 3: Pumping Test Data and Graph

200 Musgrave Road
Salt Spring Island, BC., V8K 1V5
(250) 653 4757

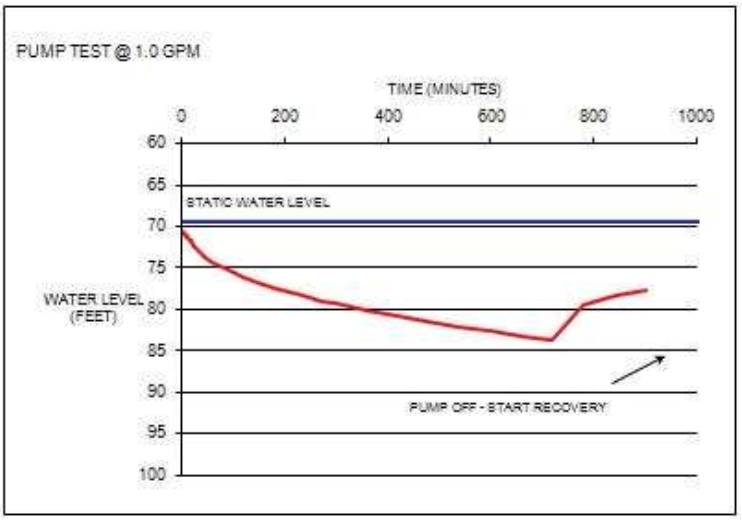
PUMP TEST DATA

CLIENT NAME: Mel Topping
ADDRESS: Juniper road
LOT No.: Well tag# 14175 Lot #2
DATE: March 8th 2011
START TIME:

SURFACE COORDINATES:
north 48degrees 50.974 west 123 degrees 31.979
ELEVATION: 250 meters
(GPS READING +/- 24')

WELL DEPTH:	200	FEET
WELL FLOW:		GPM
GL - MP:		FEET
STATIC LEVEL:	69.36	FEET
PUMP RATE:	1.00	GPM

ELAPSED TIME	READING FROM
1	70.66
2	70.73
3	70.73
4	70.83
5	70.88
6	70.93
7	71.00
8	71.06
9	71.12
10	71.17
12	71.29
14	71.52
16	71.66
18	71.77
20	71.95
25	72.25
30	72.69
35	73.07
40	73.39
45	73.62
50	73.84
55	74.07
60	74.27
90	75.24
120	76.07
150	76.86
180	77.42
210	77.89
240	78.46
270	78.92
300	79.33
360	80.14
420	80.88
480	81.49
540	82.09
600	82.65
660	83.19
720	83.76
780	79.50
840	78.46
900	77.70
1440	



REMARKS:

Flow was set at 3/4 gpm until the 14 minute mark were it stayed at 1 gpm until the 18 minute mark were it was 3/4 gpm until the 35 minute mark. At the 35 minute mark the flow was set to 1 gpm where it stayed until the end of the testing.

← START RECOVERY

NB. ALL READINGS FROM GROUND LEVEL TO 1/100 TH OF A FOOT