ARDEN CONSULTING ENGINEERS LTD.

November 9, 2020 File: 20-78 Lot 1

James Wilson
1351 Fernwood Street
Pemberton, BC
V0N 2L0

Dear Mr. Wilson:

RE: Potable Water Supply for Proposed Lot 1 of Remainder Lot 2 District Lot 1251 Birken, BC

As per your request, Arden Consulting Engineers Ltd. (ACE) has completed a flow test on the drilled well (BC Well ID Plate # 61576) installed to provide potable water for the proposed two lot subdivision. The testing was completed to evaluate the quantity of the water supply. The well was drilled on October 5, 2020.

The flow test was conducted on October 28, 2020. The well was completed with 150mm diameter casing to a depth of 47.5m with a #40 slot screen installed from 45.4m to 47.5m. The well was also completed with a surface seal consisting of bentonite chips to a depth of 5.5m below ground surface and the well head was extended to a height of 750mm above grade in accordance with the *Groundwater Protection Regulation*. Water level readings during the flow test were obtained using an electronic water meter tape. The pump rate was limited using a Dole Valve and verified by using repeated timed measurements to fill a graduated reservoir.

WATER QUANTITY

A temporary well pump was installed at a depth of 44m and used to pump water from the well. The well was pumped at a rate of 29 Lpm for a duration of approximately 5 hours. The 29 Lpm pumping rate was the maximum flow rate of the test well pump.

The following data was collected during the test:

- Depth to bottom of well 47.5m
- Depth to Water (from top of casing) 25.6m
- Depth to pump 44m
- Available drawdown at the time of the test 21.9m
- Average Pump Rate 29 Lpm
- Pump Duration 290 minutes
- Total volume of water extracted 8,410 L
- Drawdown during pump test 0.04m

28049 Myrtle Avenue, Abbotsford, BC V4X 2P5 Phone: 604 807-1712 Fax: 604 626 4980
www.arden-engineering.com

The Squamish Lillooet Regional District (SLRD) requires a water supply for single family residences to be capable of providing a minimum quantity of 500 gallons (2,273 Lpd).

The theoretical long-term yield is determined by extrapolating the drawdown of the well at 100 days using the shape of the drawdown curve at the later stages of pumping. For the purposes of this pumping test, the drawdown of the well at 100 days was estimated based on the 29 Lpm pumping rate. Based on the data collected during the pump test, the drawdown in the well at 100 days is estimated to be 1m at the 29 Lpm pumping rate. The long-term yield is estimated using the specific capacity of the well calculated from the pump test, multiplied by the available drawdown and applying a 30% factor of safety as shown below:

Theoretical Long-term yield = specific capacity x available drawdown x 0.70

= 318 Lpm (460,000 Lpd)

where: Specific capacity – 29 Lpm per meter drawdown

The available drawdown was estimated to be 15.9m assuming a 2 m drop in the seasonal water level.

Based on the results of the pumping test, it is our opinion that the well is capable of producing a sustained yield in excess of 2,273 Lpd.

Although the theoretical yield was calculated to be 318 Lpm, the actual maximum safe yield should be limited to 29 Lpm which is equivalent to the flow rate tested. Should the owner wish to require the well to be rated at a higher flow rate, the well should be first flow tested at the desired higher rate. It is noted that the drill log estimates the well yield at 95 Lpm.

CLOSURE

This letter has been prepared by ACE exclusively for the Wilson's and is intended to provide an assessment of the subject water well's ability to meet the requirements of the SLRD guidelines for water supply. The conclusions made in this report reflect ACE's best judgement in light of the information available at the time of testing. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. ACE accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this letter.

Should the Wilson's submit this report to the SLRD, the SLRD is authorized to rely on the results within the limitations of the following paragraphs for the purpose of determining whether the Wilson's have fulfilled their obligations with respect to provision of a suitable water supply for subdivision.

The findings and conclusions documented in this report have been prepared for specific application to this site and have been developed in a manner consistent with that level of care normally exercised by groundwater and hydrogeological professionals currently practicing under similar conditions in the area.

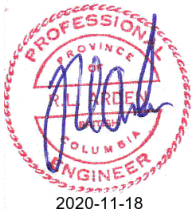
We trust that this provides the information you currently require. If you have any questions or require comment, please feel free to contact the undersigned.

Yours Truly,

ARDEN CONSULTING ENGINEERS LTD.

PER

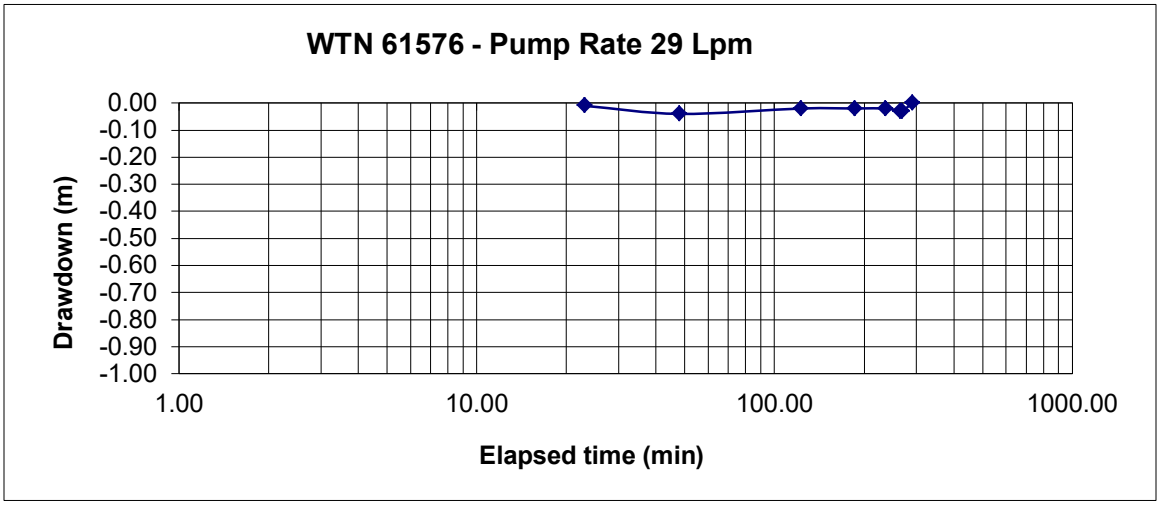
Rob Arden, P.Eng.



2020-11-18

Encl: Drawdown and Recovery Pumping Curve
Well Log
Site Plan

DRAWDOWN AND RECOVERY PUMP CURVE



FIELD DRILLING CONTRACTORS LTD

P. O. Box 841
25320 Fraser Highway
Aldergrove, BC V4W 2V1

Phone: (604)857-2266
Toll free: 1-866-857-2266
Fax: (604)857-2267

WATER WELL RECORD

OWNER:	WILSON, JAMES	**DATE:**	OCT. 5, 2020
ADDRESS:	PO BOX 991	**SITE ADDRESS:**	2510 SUMMIT ROAD
	PEMBERTON, BC V0N 2L0		BIRKEN, BC
PHONE:	604.966.7415		HOLE 1 OF 2

Date Begun: SEPT. 28, 2020
Date Completed: SEPT. 29, 2020
Hole Diameter: 6 Inch
Surface Seal:
Diameter: 10 Inch 18 Feet
Drive Shoe: YES

MEASUREMENTS FROM GROUND LEVEL:

Stick-Up: 2' 6" Feet
Bottom of Casing: 152 Feet
Hole Depth: 156 Feet
Open Hole From: Feet
To: Feet

SCREENS

No. of Screens: 1
Slot Size:
Slot 40 Slot
Slot Slot
Screen Length: 6 Feet
8 Inch
Top at: 149 Feet 4 Inch
Bottom at: 156 Feet Inch

K. Packer: YES Riser: 2 FT
B. Bottom: YES

WELL COMPLETION

Est. Rate: 25 +/- GPM
Pump Setting: 145 Feet
Static Water Level: 82 Feet
Develop: 1.5 Hours

FROM	TO	WELL LOG DESCRIPTION
0	4	SAND, GRAVEL, COBBLES
4	6	BOULDER
6	9	SAND, GRAVEL, COBBLES
9	13	BOULDER
13	55	SAND, GRAVEL, COBBLES - ODD SML BOULDER
55	89	SILTY SAND WITH ANGULAR GRAVEL, ODD
		BOULDER
89	99	WET SILTY SAND AND ANGULAR GRAVEL
99	156	W.B. SAND AND GRAVEL, ODD BOULDER

**PLEASE NOTE: THE GALLONS PER MINUTE LISTED IS AN ESTIMATE ONLY AND SHOULD NOT BE USED TO DETERMINE ACTUAL WELL YIELD. WELL SHOULD BE PUMP TESTED FOR EXACT GPM. WE WILL NOT BE RESPONSIBLE FOR DAMAGE OR WELL PERFORMANCE PROBLEMS CAUSED BY OVER-PUMPING THE WELL.*

Rig No: 9 Air Rotary: YES
Cable:
Driller: FIELD/POSTON
Helper: REJEAN BERTIN

WELL GPS COORDINATES:
50° 28' 21.96"N
122° 38' 39.60" W

WELL PLATE#:
61576

NAME: WILSON, JAMES
NUMBER: 6363-9
WELL SHOULD BE PUMP TESTED FOR EXACT GPM

KEY MAP
SCALE 1:4000

PRODUCTION WELL
PROPOSED DISPERSAL AREA

WELL 61575

REM LOT 2

WELL 61576

512.5
510.0
507.5
505.0
502.5

14.50m
6.00m
RESERVE
PRIMARY
TH1
TH2
TH3
TH4
P1
P2
P3
P4
P5
P6
3.00m
2.92m
49.65m
79.65m
5.15m
A=194.303
R=982.690

DESIGN CRITERIA:

THIS SYSTEM IS DESIGNED TO SERVICE:

3 BEDROOM RESIDENCE: UP TO 280m²

TOTAL DESIGN FLOW = 1300 LITERS PER DAY

LEGEND

- LOCATION OF TEST PIT
- LOCATION OF PERCOLATION TEST
- WELL LOCATIONS

0 10 20 30 METRES
SCALE 1:500

NOTE: ORIGINAL SEAL IN RED

SEAL

ARDEN CONSULTING ENGINEERS LTD.

CLIENT: **JAMES WILSON**

PROJECT: LOT 1 DL 1252 MT. CURRIE

TITLE: PROPOSED SEWAGE DISPOSAL SYSTEM

DATE OF ISSUE	PROJECT No.	DWG. No.	REV.
NOV 11/20	20-78	2 OF 2	00

DWN BY: AC

CANCEL PRINTS BEARING EARLIER NUMBER