

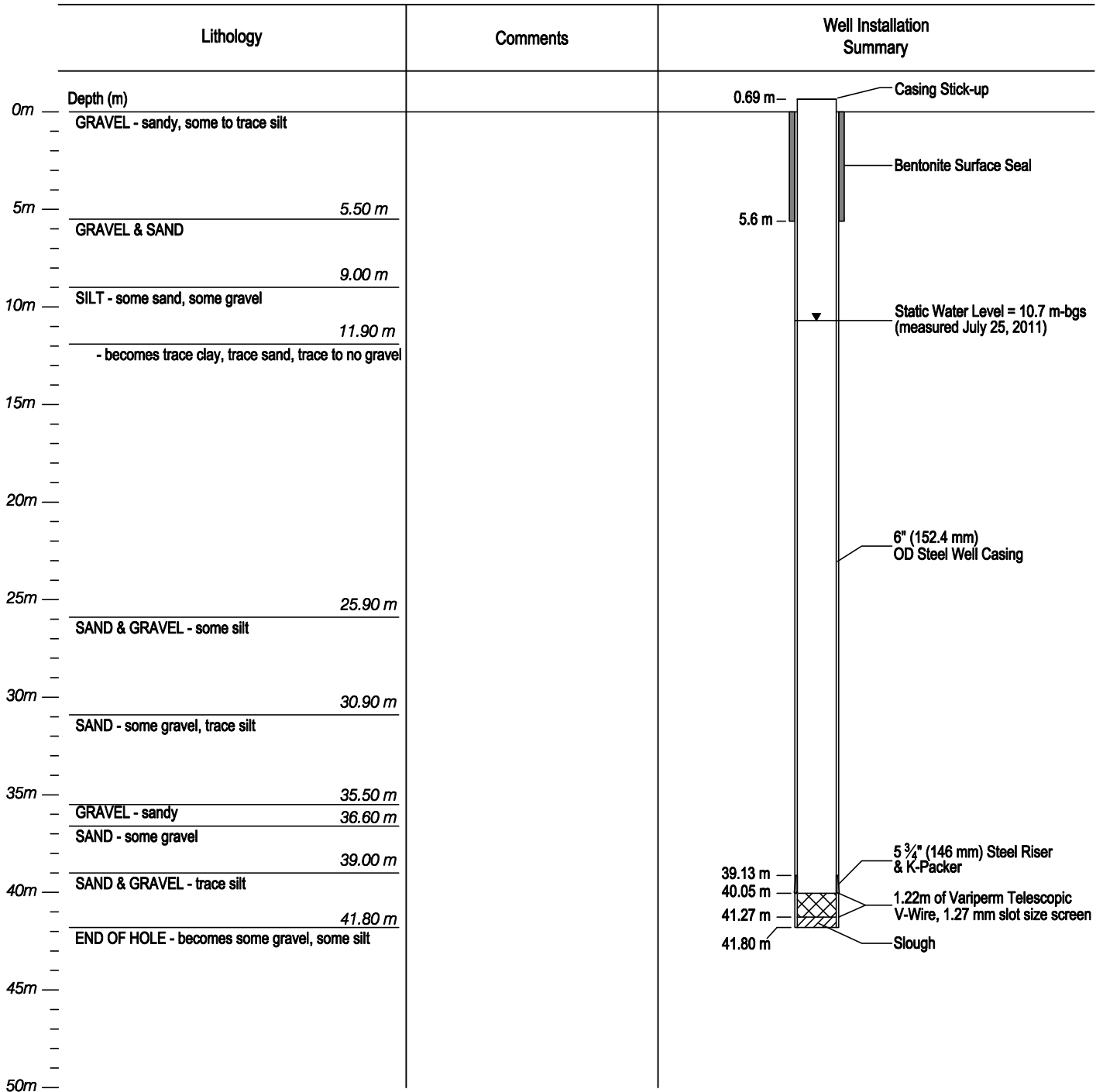
HYDROGEOLOGIC LOG

PURPOSE OF HOLE: Canada Border Service New Housing Water Supply
DRILLING METHOD: Dual Air Rotary
DRILLING DATE: July 23, 2011
SCREEN INSTALLED: 40.05 m - 41.27 m bgs
CONTRACTOR: Impact Well Drilling

BOREHOLE NO.

CBSA - BEAVER CREEK - YT - WDS - 000025

CASING STICK UP: 0.69 m above grd
DEPTH TO SCREEN (m): 40.05 m bgs



| | | | | |
|---------------|--------------------------------------------------------------------------------|--------------------------------|-------------------|------------------------|
| <p>CLIENT</p> | <p>WATER WELL COMPLETION REPORT CBSA NEW HOUSING - BEAVER CREEK, YUKON</p> | | | |
| | <p>WELL LOG</p> | | | |
| | <p>PROJECT NO. W23101451</p> | <p>DWN CB</p> | <p>CKD SK</p> | <p>REV 0</p> |
| | <p>OFFICE EBA-WHSE</p> | <p>DATE August 8, 2011</p> | | |
| | | | | <p>Figure 3</p> |



Government
Department of Environment
Water Resources Section V-310
Yukon Water Well Registry
Box 2703 Whitehorse, Yukon Y1A 2C6

**WATER WELL
DRILLERS FORM**

Well ID: CBSA-Beaver Creek-YT-WDS-000025

To be assigned by Dept. Of Environment

INSTRUCTIONS FOR COMPLETING THE FORM

1. Additional information is provided at the bottom of this form on page 2.
2. Question can be directed to Water Resources at 867 667-3171.
3. All well construction measurements shall be reported to 0.1 m or 0.3 ft.
4. Please print clearly in blue or black ink.
5. Completion and submission of this form is the responsibility of the drilling contractor.
6. Please specify metric or imperial units for all measurements.

WELL LOCATION AND OWNER'S INFORMATION

A1 Well Name: CBSA-Beaver Creek (Optional (i.e. City Well No. 2)
YT-WDS-000025)

A2 Drilled For: First Name Last Name Company / Department / Organization
Canada Border Service Agency

A3 Street Address of Well Location:

A4 Town / Village / Area / Lot #: Beaver Creek

A5 UTM Coordinates (using handheld GPS): NAD 8 3 Zone 0 7

6 9 1 6 9 9 0 5 0 6 2 8 9
Easting Northing

A6 Elevation of Top of Casing: 0.69 ^{agg} (m) / ft ASL

A7 Accuracy of GPS: 10 +/- (m) ft

Sketch of Well Location
In sketch, indicate distances from property line, septic field, fuel tank(s) and building. Please include North arrow.

A8 Purpose of Wells

- Domestic Test Well Irrigation Environmental (Quality)
 Commercial Municipal Observation - Water Level Other (please identify use)
 Industrial Agricultural Public/Recreational

LOG OF OVERBURDEN AND BEDROCK MATERIALS (All depths are below ground surface, circle appropriate units, use descriptors provided)

| EXAMPLE ONLY | | (brown, grey, green, black, redish, beige, olive, yellowish) | CLAY, SILT, SAND, GRAVEL, COBBLES, BOULDERS, BEDROCK | "trace" <10% (i.e. SILT trace gravel) "some" 10-20% (i.e. SAND some gravel) "silty / sandy / gravelly" 20-30% (i.e. silty SAND) "and sand" or "and gravel" 35-50% | MOISTURE: dry / moist / saturated (wet) HARDNESS: soft / hard / very hard |
|----------------|---------------|--------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| | | brown | SAND | trace gravel some silt | soft and saturated |
| Depth (m / ft) | B2 From B3 To | B4 General Colour | B5 Most Common Material | B6 Secondary Materials | B7 General Description |
| 0 | 2 | Brown | clay | | soft |
| 2 | 5 | | fine gravel | clay | soft |
| 5 | 20 | grey | gravel | Silt | coarse |
| 20 | 45 | grey | gravel | thin gravel layers | wet |
| 45 | 72 | | clay | | |
| 72 | 73 | | gravel | | coarse |
| 73 | 86 | | clay | | soft |
| 86 | 102 | | gravel | silt | |
| 102 | 158 | | gravel | | coarse - 60qpm |

B8 Permafrost Encountered: NO YES If yes, indicated depth (m / ft): from: to:

WELL CONSTRUCTION (Continues on Page 2)

Date Well Completed 2011107213
Y Y Y Y M M D D

Example: 2005 01 31

C1 Drilling Method Air Rotary (Conventional) Auger (Hollow / Solid Stem) Other (please specify)
 Reverse Air Rotary Cable Tool Air Rotary
 Mud Rotary

C2 Well Type: In what geological material is the water producing zone located?
 OVERBURDEN BEDROCK

Casing (depth below ground surface, please circle appropriate units)

C3 Outside Diameter 6 7/8 (cm / in)
C4 Casing Material Steel Plastic Other
C5 Casing Wall Thickness 250 (cm / in)
C6 Casing Depth to: 1338 (m / ft)

C7 Other Comments Regarding Casing:

Surface / Environmental Seal (depth below ground surface, please circle appropriate units)

C8 Seal Material Type: Bentonite chips (i.e. Bentonite)
 C9 Diameter of Seal: 10" (cm / in)
 C10 Seal Depth from: 0- (m / ft)
 C11 Seal Depth to: 18.4" (m / ft)
 C12 Volume Placed: 12 bags (m³ / ft³)

Gravel Pack (depth below ground surface, please circle appropriate units)

C13 Gravel Pack: NO If yes, indicated depth (m / ft):
 YES from: to: Indicate diameter of material: (mm / inches) Material type:

Well Screen Information (depth below ground surface, please circle appropriate units)

C14 Outside Diameter: 5.5 (cm / in)
 C15 Screen Material: Stainless Steel Steel Plastic N/A Other:
 C16 Screen Type: Continuous Wire Wrap Louver Screen Perforated Slotted Open Hole
 C17 Depth from: 133.3' (m / ft) C18 Depth to: 137.8' (m / ft) Slot Size / Perforation Dia: 50 Thou. / mm / inches
 Screen 1: (m / ft) (m / ft) Thou. / mm / inches
 Screen 2: (m / ft) (m / ft) Thou. / mm / inches
 Screen 3: (m / ft) (m / ft) Thou. / mm / inches
 C19 Screen Comments:

WELL DEVELOPMENT AND STATUS

D1 Well Developed by: Surge Block Water Jetting Air Jetting / Air Lifting Bailing Pumping Other:
 D2 Well Head Completion: Well House Pitless Adaptor Depth of adaptor: (m / ft) Well Pit (NOT PERMITTED) None (well not completed)
 D3 Well Head Stick-up (above ground surface): 20 in (m / ft) (Use negative if below grade)
 D4 Static Water Level (below top of casing): 35 (m / ft) (Use negative if below grade)
 D5 Well Yield Estimate: 60 (Lps / gpm)
 D6 Final Well Status: Water Supply (in use) Stand by (Back-up) Observation Not in use Deepened Other: Abandoned Dry Poor Quality Insufficient Yield Artesian conditions
 D7 Well Abandonment Status: Was the well properly decommissioned with bentonite grout? YES NO If YES, Indicate Date:
 D8 Method Used to Estimate Well Yield: Air Lifting Bailing Pumping Test (If test conducted, complete Pumping Test Record)

PUMPING TEST RECORD AND GROUNDWATER QUALITY

(All depths below ground, circle appropriate units)

E1 Pumping Test Information

Pumping Test Start Date: 20110724
 Y Y Y Y M M D D

Static Water Level (SWL): 10.6 bags (m / ft)

Pump Intake Set at: 38.7 bags (m / ft)

Duration of pumping: 24 hrs min

Final Water Level (FWL) at end of Pumping Test: 10.7 (m / ft)

G1 GROUNDWATER QUALITY

Field Data

Date Measurements Taken: 20110725
 Y Y Y Y M M D D

Electrical Conductivity: 440 uS
 pH: 7.84
 Temperature: 4 °C

Groundwater Type

- Salty
- Sulphur / Egg Odour
- Organic Taste / Odour
- Metallic Taste
- Other:

RECOMMENDATIONS

Recomm. Pump Depth: 37 (m / ft)
 Recomm. Pumping Rate: 40 usgpm (Lps / gpm)
 If flowing, provide rate: (Lps / gpm)

Turbidity/Sand Content

- Clear
- Slightly turbid/cloudy
- Moderately turbid/cloudy
- Turbid/cloudy
- Trace sand present
- No sand present

Well Disinfection

Was the well disinfected upon completion of the pump installation? YES NO

Briefly describe method of well disinfection.

per 2 liters bleach

F1 Well Water Level Drawdown/Recovery DATA

| Drawdown | | Recovery | |
|------------|----------------------|------------|----------------------|
| Time (min) | Water Level (m / ft) | Time (min) | Water Level (m / ft) |
| 0 (SWL) | <u>610c</u> | 0 (FWL) | <u>12.94</u> |
| 1 | <u>12.495</u> | 1 | <u>12.05</u> |
| 2 | <u>12.612</u> | 2 | <u>11.909</u> |
| 3 | <u>12.683</u> | 3 | <u>11.835</u> |
| 4 | <u>12.743</u> | 4 | <u>11.771</u> |
| 5 | <u>12.756</u> | 5 | <u>11.742</u> |
| 10 | <u>12.872</u> | 10 | <u>11.651</u> |
| 15 | <u>12.904</u> | 15 | <u>11.615</u> |
| 20 | <u>12.914</u> | 20 | <u>11.604</u> |
| 25 | <u>12.914</u> | 25 | <u>11.596</u> |
| 30 | <u>12.926</u> | 30 | <u>11.599</u> |
| 40 | <u>12.936</u> | 40 | <u> </u> |
| 50 | <u>12.938</u> | 50 | <u> </u> |
| 60 | <u>12.941</u> | 60 | <u> </u> |

Bacteria Testing

Was a sample taken? YES NO If yes, indicate the name of the laboratory.

Date Sample Taken: 20110725
 Y Y Y Y M M D D Yukon Environmental Health Services

Chemical Analysis of Water

Was a sample taken? YES NO If yes, indicate the name of the laboratory.

Date Sample Taken: 20110725
 Y Y Y Y M M D D Exova

WELL CONTRACTOR

H1 Name of Contractor / Drilling Company: Impact Well Drilling
 H2 Name of Driller(s): Brian Mac Dougal
 H3 Address of Driller: Box 1025 White Y.T. Y1A7A1
Brian Mac Dougal
 Signature of Primary Driller
 Date Submitted to Dept. Of Environment:

CONSULTANT (if applicable)

I1 Company Name: EBA
 I2 Company Address: Unit 6 61 Industrial Road, Whitehorse
 I3 Report Reference: W2310451
 I4 Report Date: 2011108116
 Y Y Y Y M M D D

ADDITIONAL INSTRUCTIONS

Upon completing this form, please mail or fax it to:
 Water Resources Section (V-310), Department of Environment, Government of Yukon Box 2703, Whitehorse, Yukon, Canada Y1A 2C8

Please feel free to contact us at:
 Phone: (867) 667-3171, Toll free (in Yukon): (1-800) 661-0408, local 3171
 Fax: (867) 667-3195 E-mail: Water.Resources@gov.yk.ca

Personal information contained on this form is collected under the authority of the Access to Information and Protection of Privacy (ATIP) Act, Section 29 (c) and will be used to compile a public database of well and ground water information. For further information contact the Manager of Hydrology, Water Resources at (867) 667-3223, toll free within Yukon 1-800-661-0408 Ext 3223.

I have read the above clause and understand the purpose for collection of personal information.

Signature of Well Owner