April 15, 2019

Roy and Becki Ott
7867 Wilson-Jackson Road
Vernon, BC V1B 3N5

Via email: royandbecki@gmail.com

Re: Proposed 4-Lot Subdivision - Groundwater Quantity and Quality Evaluation: 7867 Wilson-Jackson Road Property, Vernon, BC.

Dear Mr. and Mrs. Ott:

In accordance with your request, Watterson Geoscience Inc. (WGI) is pleased to provide this assessment of groundwater quantity and quality for the above-referenced proposed subdivision. WGI understands the property will be subdivided into four (4) parcels, ranging from 2.001 to 2.630 ha in size.

This assessment is intended to satisfy North Okanagan Regional District (RDNO) Subdivision Bylaw Section 2600 Sections 406 (1) and 407 (3). These bylaws require the following:

- All wells shall have the capacity to provide a minimum of 6,550 L/day (1.0 IGPM) on a year-round basis;
- The well test must be conducted between August 1 and March 1, or at another time as confirmed in writing by a Qualified Professional;
- The test must demonstrate that use of the well will not negatively impact the use of neighboring wells;
- Proof of water potability and compliance with applicable drinking water standards must be determined,
- For parcels 2 ha or larger, a written report obtained from a Qualified Professional that verifies that potable water of sufficient quantity (6,550 L/day) is available on the proposed lots, and
- All reporting, quantity and quality testing must be verified by a Qualified Professional and Qualified Water Quality Specialist.

The intent of this report is to meet Sections 406 and 407 requirements.

PROJECT SETTING

WGI was retained in January, 2019 to complete this assessment. The property is situated on a southwest-facing slope on the hillside above Swan Lake, about 10 km northeast of Vernon, BC and north of BX Creek. The parcel is in a sparsely developed rural area with privately owned property on all sides (Figure 1). The proposed lots are accessed by Wilson-Jackson Road, which borders the lots on the east.

An excavated well is situated on proposed Lot 1. An unnamed creek which extends through all four (4) properties (Figure 2). Based on the BC Ministry of Environment (MOE) Water Resources Atlas (WRA), no surface water licenses have been recorded for this creek (MOE, 2019).

No detailed overburden geology information is available for the property area, however based on WGI's field observations local overburden likely consists of Quaternary glacially-deposited interbedded sand, gravel, silt and clay. Bedrock is mapped as undivided Proterozoic and Paleozoic metamorphic rocks of the Shuswap Assemblage (BCGS, 2005).

LOT 1 - WELL CAPACITY TEST

The dug well on proposed Lot 1 was constructed by Horton Contracting of Vernon, B.C. The 100 cm diameter well was excavated to approximately 16 feet below ground surface (bgs). The well was constructed of corrugated plastic casing with perforations in the bottom three (3) ft. Coarse gravel drain rock was installed around the bottom four (4) ft with native soil to the ground surface. The well casing extends approximately one (1) m above ground surface and is capped with a lockable plastic cover.

The well is situated in a very shallow topographic draw which slopes down to the south. At the time of WGI's site visit the ground was covered with snow and no standing or running water was observed. Prior to the test, the static water level was measured at six (6) ft below top of casing (btoc).

As groundwater levels commonly seasonally vary, with generally highest levels observed in late spring and early summer, and the lowest levels during late fall and winter, prior to conducting the pumping test Dan Gare Drilling Ltd. (Dan Gare) measured water levels in the well for approximately one (1) week to confirm the test was conducted during the lowest level of the year.

Between March 11 and 13, 2019 Dan Gare Drilling Ltd. conducted a pumping and recovery test to evaluate the well's ability to meet the District's flow requirements. Groundwater was pumped using an electric submersible pump and water level measurements were obtained with an electric well sounder at preset time intervals. The flow rate was monitored using timed measurements into a pre-calibrated container. Before the flow test started, static water level in the well was measured at six (6) ft below top of casing (btoc). Initial water flow was started at approximately two (2) US gpm (1.6 IGPM) and this flow was

maintained at this rate for the remainder of the test. As shown in attached Figure 3, the water level declined steadily during the initial 600 minutes and then remained steady at approximately 3.6 m btoc for the test duration.

After the flow ceased, the water level recovered quickly with approximately 86% recovery during the initial 250 minutes. The well test drawdown and recovery data are attached.

Based on steady flow of 2 US gpm, the well produced approximately 10,900 Liters (2,398 IG) during the 24-hour test period, which greatly exceeds the bylaw requirement.

Approximately 2.87 ft of drawdown was observed during the test which comprises approximately 22% of total available drawdown (TAD) in the well. TAD is defined as the difference between static water level and the top of screen, estimated to start at approximately 13 ft bgs. The limited percentage of TAD used during the test, the observed decline in water level drawdown while pumping and the steady water level recovery after pumping stopped, demonstrates the well is capable of producing the required volume on a sustainable basis.

A commonly accepted methodology in B.C. to assess long-term well yield is to apply a 0.7 factor of safety to the total available drawdown in the well, which is the difference between static water level and the pump intake or well bottom, and to compare this value to the observed drawdown projected forward after 100 days of continuous pumping. This safety factor allows for seasonal water level changes which commonly result from long-term variations in climate and precipitation, to allow space for the submersible pump, and to allow for potential future decreases in well efficiency. This method is also based on the assumption that 100 days will be the longest time that a well will be pumped without receiving any recharge from precipitation.

As shown in Figure 4, based on only using 70% of total drawdown, the projected drawdown for the well after 100 days continuous pumping is about 5.5 ft, which is about 88% of safe available drawdown.

These findings indicate that when pumped at the Bylaw flow rate, the well has sufficient capacity to safely meet Bylaw flow requirements without substantially affecting the long-term sustainable supply potential of the wells.

LOT 1 – WATER QUALITY ANALYSIS RESULTS

A water quality sample was collected from the well on March 12, 2019 by Dan-Gare after pumping the well for several hours. The samples were submitted to Caro Analytical Services in Kelowna for general potability analyses. The laboratory analytical report is provided as an attachment. Note that WGI did not collect the samples and our analysis is based on data provided by others.

The water quality results were compared to the Guidelines for Canadian Drinking Water Quality Guidelines (CDWQG) and are summarized in Table 1. For this water quality assessment, the term potability is defined as water which is sufficiently pure to be consumed or used with low risk of immediate or long-term harm. With respect to CDWQG guidelines, potable water must meet all health-based Maximum Allowable Concentrations (MAC). In samples where parameters are found to exceed only Aesthetic Objectives (AO), the water is considered to be potable but treatment may be desired to address taste or odor concerns.

Aesthetic Objectives (AO)

Manganese was present above the applicable AO concentration and is likely related to minerals in the overburden. Should the elevated manganese not decline with continued pumping, their concentration can be lowered to below guideline concentrations using readily available filtering systems. For private wells, selection, operation and maintenance of such systems are the homeowner's responsibility.

Health Based Maximum Allowable Concentrations (MAC)

The well water met all health-based Maximum Allowable Concentrations (MAC).

Bacteriological Parameters

The maximum allowable concentration for total and *e. coli* coliforms is 0 per 100 mL of water (0/100 mL) and *E. coli* and total coliform bacteria were not detected in any sample.

GROUNDWATER POTENTIAL AT LOTS 2 - 4

BC WRA mapping shows the property area is underlain by two aquifers: bedrock Aquifer 352 and overlying sand and gravel Aquifer 349 (Figure 2). Aquifer 352 is classified as IIC with moderate demand and productivity, and low vulnerability to contamination. No quality or quantity concerns have been reported for this aquifer. It should be noted that groundwater in bedrock occurs only fractures, which may or may not be present at a given drilling location.

Aquifer 349 is also classified as IIC with low to moderate productivity, low vulnerability and high demand. No quality but some quantity concerns have been reported for this aquifer. As shown in Figure 2, the western border of overlying Aquifer 349 IIC borders the proposed subdivision on the east. As aquifer extent is based on geologic information available from well logs, the shown boundaries are interpretations only, thus it is possible the sand and gravel aquifer extends further west over the proposed lots.

The WRA also provides documentation for numerous wells located around the properties with the closest wells situated more than 300 m away. Property and well locations are shown in Figure 2 and available

completion and production information for nearby wells are summarized below. Available driller's reports for nearby wells are also attached.

Table 2 – Well Summary Information

Well ID	Completion Date	Depth (ft)	Production Material	Est. Prod. Rate (US gpm)
43925	12-30-79	116	Bedrock	40
37987	8-24-77	220	Bedrock	0.5
47092	1-17-81	240	Bedrock	20
113299	10-21-16	700	Bedrock	<0.25
35653	9-3-76	165	Sand and Gravel	3
97354	6-16-07	420	Not provided	0
97348	Not provided	450	Bedrock	0.33
52384	6-30-83	165	Bedrock	6

Review of aerial photography suggests that several additional wells may be located at residential properties surrounding the proposed lots. Until 2016, reporting of well logs in BC was voluntary thus although numerous residences are visible in the photographs, no well records are available for these lots. The presence of these residences further suggests that potable water is available at the proposed lots.

CONCLUSIONS

Based on the assessment results the following conclusions can be made regarding the excavated well on proposed Lot 1:

- The well capacity flow test results demonstrate that the Lot 1 well can meet the RDNO Bylaw flow requirement of 1 IGPM for 24 hours and produce at least 6,550 liters/day.
- Although the well was tested outside of the dates stipulated in the Bylaw, the well drawdown and recovery rate indicate the water supply, when pumped at the bylaw flow rate, is sustainable.
- Pumping from this well at common residential flow rates should not cause interference with other wells or surface water sources nor affect the underlying aquifer's ability to produce water.
- The water quality samples collected from the well indicates that although the concentration of manganese exceeds the AO, the water meets all potability requirements. In-home water quality treatment may be desired to address the elevated parameters.

Please note, in order to meet current GWPR requirements, the following improvements will need to be made to the Lot 1 excavated well:

- A bentonite surface seal will need to be installed as deep as practicable. The GWPR requires a seal length of a minimum of 3 ft for dug wells and WGI recommends installing at least a six (6) ft seal.
- The well must be registered with the MOE and an ID tag needs to be attached to the well.

The following conclusions can be made regarding the groundwater supply potential for proposed Lots 2 – 4:

- Available well and aquifer mapping data, field observations, and the presence of other nearby residences and their wells indicate that sufficient groundwater to meet bylaw volume and flow requirements is likely present beneath the proposed lots from an underlying fractured bedrock Aquifer 351 IIC. It should be noted, however that bedrock water production capability depends on encountering water-bearing fractures, and these fractures may or may not be present at any given drilling location.
- Groundwater may also be present in sand and gravel Aquifer 349 IIC. Although not mapped as below the proposed subdivision, it may overlie the bedrock in this area and also serve as a useful groundwater resource
- Furthermore, given the distances between the proposed lots and closest wells, it is unlikely that groundwater use at required 1 or 2 IGPM flow rate from the proposed lots will negatively affect groundwater supplies in the area.
- General water quality issues, such as elevated iron and manganese that may affect wells on the parcels, are treatable with standard water treatment methods. Specific well yield, sustainability, and water quality compliance with BC Ministry of Health and RDNO requirements can be determined with direct field testing and sampling at the time of drilling.

CLOSURE

WGI trusts that the professional opinions and advice presented in this document are sufficient for your current requirements. Please be advised that the undersigned is a member in good standing in the Engineers and Geoscientists of British Columbia (EGBC) and is acting within his area of expertise. The work presented in this report was completed in accordance with generally accepted engineering and environmental practices. In preparing this analysis I have relied in good faith on information provided by others, the accuracy of which I cannot attest. Please note, no hydrogeological assessment can wholly eliminate uncertainty regarding the potential for unrecognized conditions in connection with an aquifer or subsurface materials.

Please contact the undersigned if you have any questions or wish to discuss any aspect of this report.

WATTERSON GEOSCIENCE INC.

Daniel Watterson, P.Geo., LHG
Principal Hydrogeologist

Attachments

Figure 1: Property Location
Figure 2: Proposed Subdivision and Well Locations
Figure 3: Well Test Drawdown Graph
Figure 4: 100-Day Drawdown Graph
Well Test Data
Table 1 – Analytical Data Summary
Water Quality Analytical Report
Nearby Well Records

References

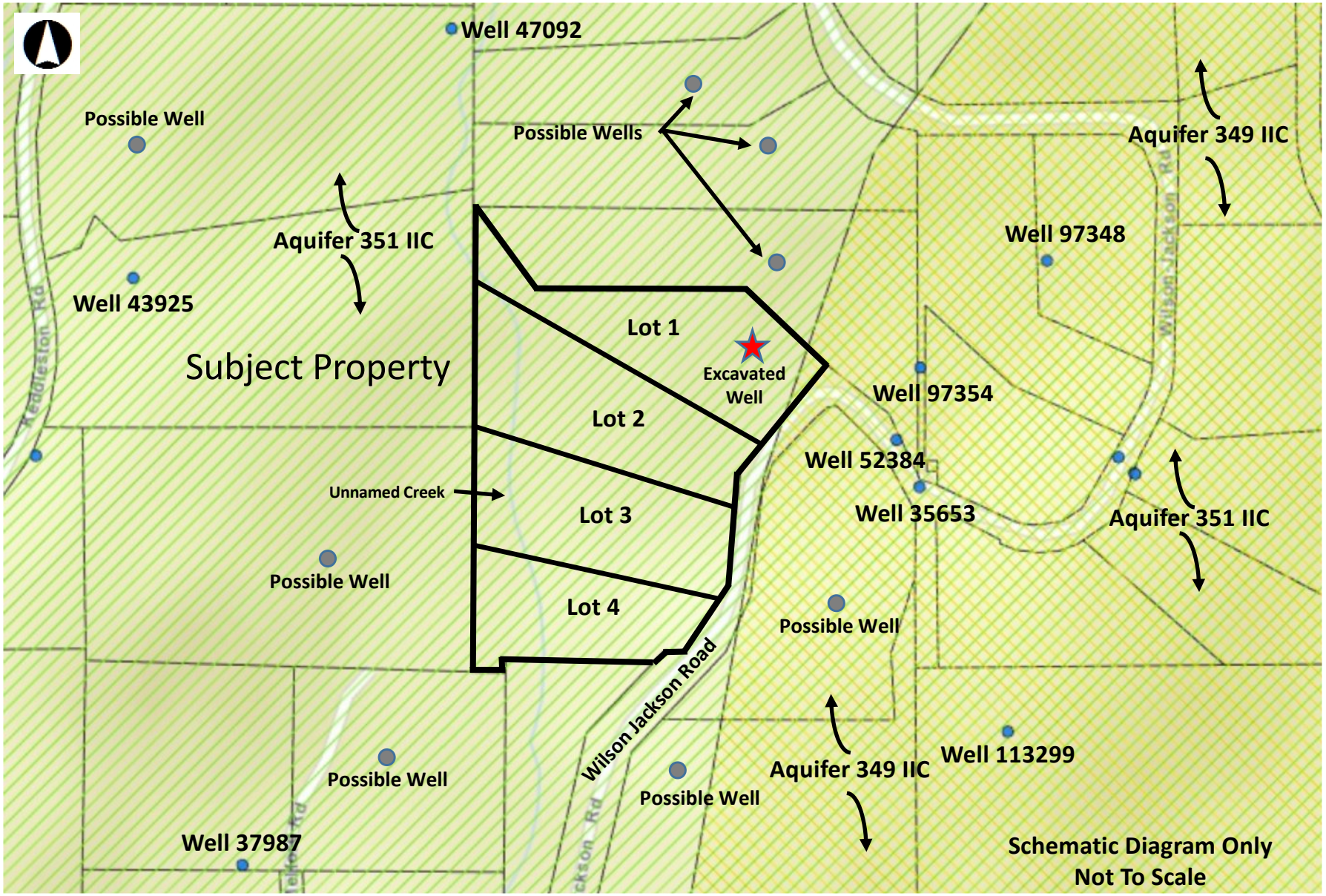
B.C. Geological Survey. 2005. Online geologic mapping.
http://webmap.em.gov.bc.ca/mapplace/minpot/bcgs.cfm

Health Canada. 2019. Guidelines for Canadian Drinking Water Quality (GCDWQ)
http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index_e.html

B.C. Ministry of Environment. 2019. Water Resources Atlas. Online water well, surface water license, and aquifer mapping. http://maps.gov.bc.ca/ess/sv/wrbc/

Shoesmith Land Surveys. File 4642

Watterson Geoscience Inc. Groundwater Consulting Services	Ott Property North Okanagan Regional District Groundwater Supply Evaluation	7867 Wilson-Jackson Rd Property Location Project No. 19-023
Source: Google Earth™	Client: Ott	Figure 1



Watterson Geoscience Inc. Groundwater Consulting Services	North Okanagan Regional District Groundwater Supply Evaluation	Proposed 4-Lot Subdivision 7867 Wilson-Jackson Road Project No. 19-023
Source: BC MOE WRA; Shoesmith Land Surveys File 4642	Client: Ott	**Figure 2**

Roy Ott Well Lot 1 Test			Constant Rate Test	3/11/19	Project 19-043
Contractor: Dan Gare Drilling			Total depth 16 ft	(4.88 metres)	Casing elevation 3 ft (0.96 m)
Static Water Level	6 ft (1.83 m)		Pre-Test Water Level	6 ft (1.83 m)	
Time Elapsed (min)	**DTW* (Ft BTOC)**	**Drawdown (Ft)**	**DTW (M BTOC)**	**Drawdown (m)**	**Pumping Rate**
0	6.00	0.00	1.83	0.00	2 US gpm
1	6.20	0.20	1.89	0.06	
2	6.20	0.20	1.89	0.06	
3	6.20	0.20	1.89	0.06	
4	6.30	0.30	1.92	0.09	1.5 US gpm - Adjusted flow up
6	6.40	0.40	1.95	0.12	2 US gpm
8	6.50	0.50	1.98	0.15	
10	6.60	0.60	2.01	0.18	2 US gpm
13	6.80	0.80	2.07	0.24	
16	6.90	0.90	2.10	0.27	
20	7.10	1.10	2.16	0.34	
25	7.20	1.20	2.19	0.37	
32	7.40	1.40	2.26	0.43	
40	7.60	1.60	2.32	0.49	Adjusted flow up
50	7.80	1.80	2.38	0.55	
64	8.10	2.10	2.47	0.64	2 US gpm
80	8.40	2.40	2.56	0.73	
100	8.60	2.60	2.62	0.79	2 US gpm
120	8.70	2.70	2.65	0.82	
150	8.80	2.80	2.68	0.85	
190	8.90	2.90	2.71	0.88	2 US gpm
240	9.00	3.00	2.74	0.91	Adjusted flow up
300	9.30	3.30	2.83	1.01	
380	9.45	3.45	2.88	1.05	
480	9.50	3.50	2.90	1.07	2 US gpm
600	9.60	3.60	2.93	1.10	
760	9.65	3.65	2.94	1.11	
960	9.65	3.65	2.94	1.11	
1200	9.50	3.50	2.90	1.07	2 US gpm
1440	9.40	3.40	2.87	1.04	Stop Pump Begin Recovery
1441	9.30	3.30	2.83	1.01	
1442	9.20	3.20	2.80	0.98	
1443	9.15	3.15	2.79	0.96	
1444	9.10	3.10	2.77	0.94	
1446	9.00	3.00	2.74	0.91	
1448	8.85	2.85	2.70	0.87	
1450	8.73	2.73	2.66	0.83	
1453	8.60	2.60	2.62	0.79	
1456	8.45	2.45	2.58	0.75	
1460	8.30	2.30	2.53	0.70	
1465	8.10	2.10	2.47	0.64	
1472	7.90	1.90	2.41	0.58	
1480	7.65	1.65	2.33	0.50	
1490	7.45	1.45	2.27	0.44	
1504	7.20	1.20	2.19	0.37	
1520	7.00	1.00	2.13	0.30	
1540	6.80	0.80	2.07	0.24	
1560	6.60	0.60	2.01	0.18	
1590	6.50	0.50	1.98	0.15	
1690	6.45	0.45	1.97	0.14	

All depths from top of casing

Figure 3: Ott Well Lot 1 Constant Rate Drawdown and Recovery

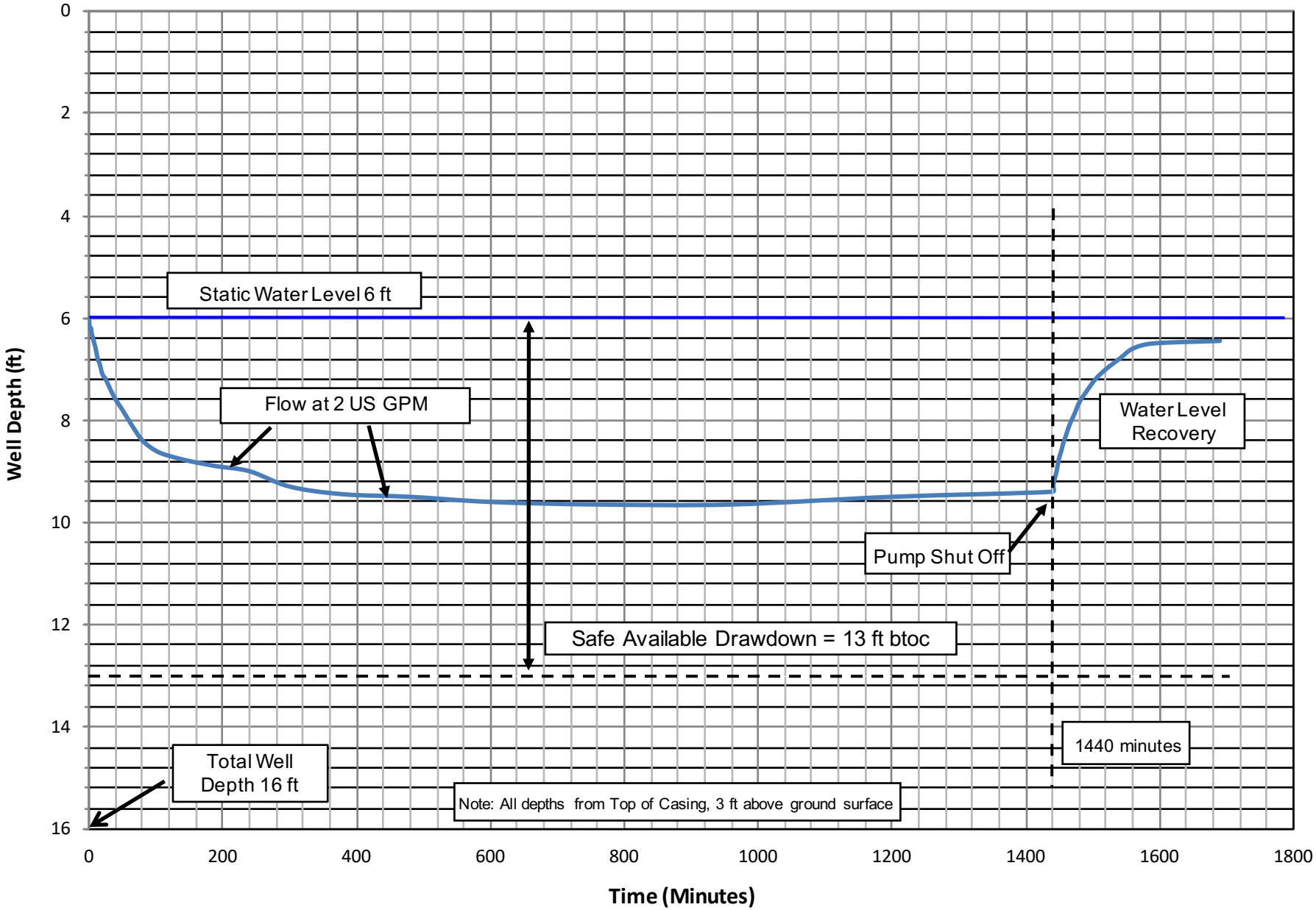


Figure 4: Ott Well Lot 1 100-day Water Level Projection

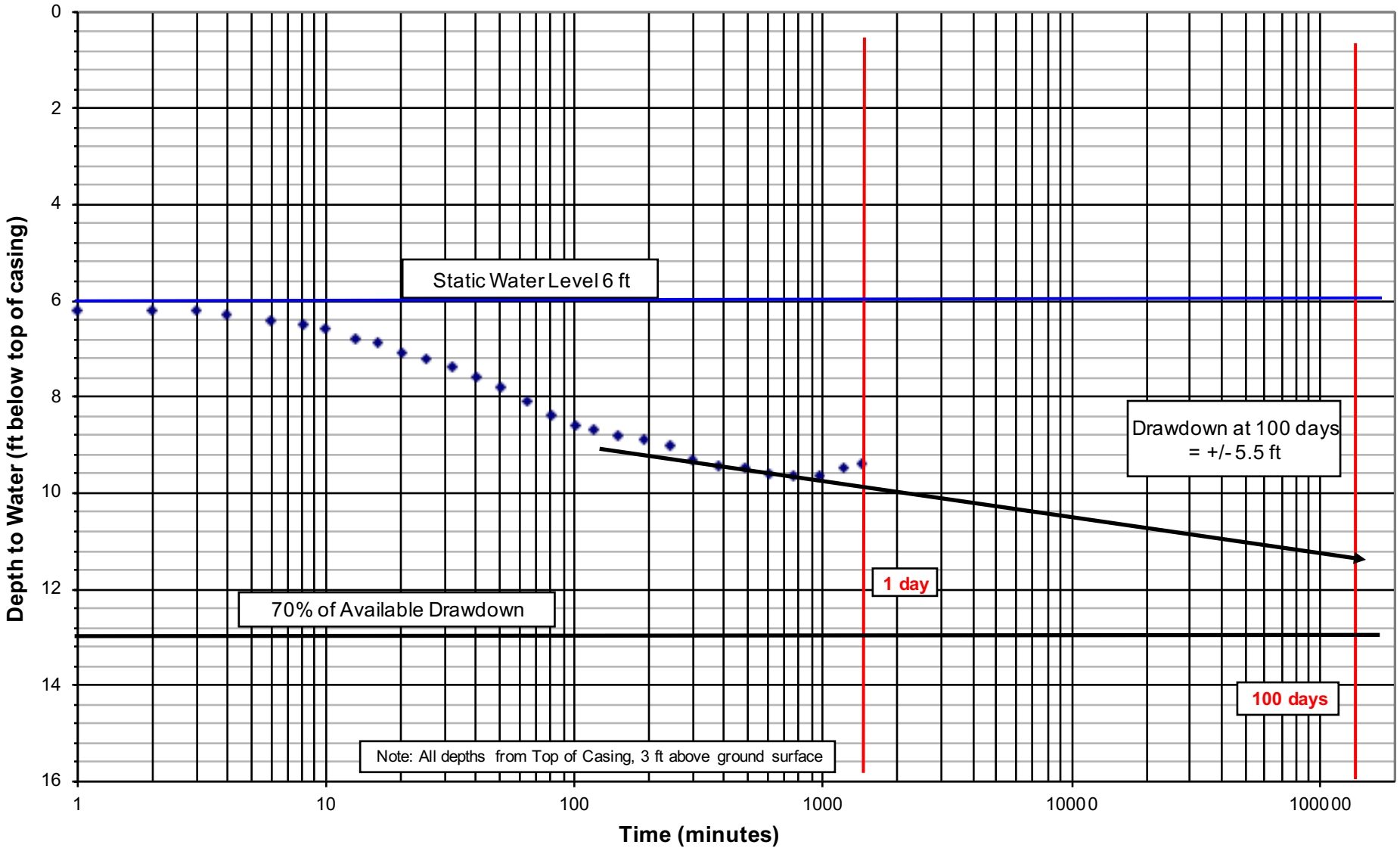


TABLE 1: SUMMARY ANALYTICAL RESULTS				
	Well		GCDWQ[1]	
	Caro Report Date	3/19/19		
	Sampling Date	3/12/19		
	Sampled by:	LF	MAC[2]	AO[3]
	Units			
General Parameters				
Colour, True	%T	8.5		≤15
Alkalinity, Total as CaCO3	mg/L	338		
Cyanide, Total	mg/L	<0.002	0.2	
Turbidity	NTU	0.42		<0.1
pH	pH units	8.01	6.5-8.5	
Conductivity (EC)	uS/cm	723		
Hardness, Total (Total as CaCO3)	mg/L	345		
Solids, Total Dissolved	mg/L	415		≤500
Anions				
Chloride	mg/L	21.6		250
Fluoride	mg/L	0.21	1.5	
Nitrate as N	mg/L	<0.01	10	
Nitrite as N	mg/L	<0.01	1	
Sulfate	mg/L	39.7		500
Total Metals				
Aluminum, total	mg/L	0.0053		<0.1
Antimony, total	mg/L	0.00025	0.006	
Arsenic, total	mg/L	0.00125	0.01	
Barium, total	mg/L	0.0454	1	
Boron, total	mg/L	0.0097	5	
Cadmium, total	mg/L	0.000119	0.005	
Calcium, total	mg/L	107		
Chromium, total	mg/L	0.00055	0.05	
Copper, total	mg/L	0.00573		≤1
Iron, total	mg/L	0.095		≤0.3
Lead, total	mg/L	<0.0002	0.01	
Magnesium, total	mg/L	18.9		
Manganese, total	mg/L	0.0903		≤0.05
Mercury, total	mg/L	<0.00001	0.001	
Potassium, total	mg/L	4.14		
Selenium, total	mg/L	0.00114	0.05	
Sodium, total	mg/L	17		≤200
Uranium, total	mg/L	0.0118	0.02	
Zinc, total	mg/L	<0.004		≤5
Microbiological Parameters				
Coliforms, Total (MPN)	CFU/100 mL	<1	0/100mL	
E. coli (MPN)	CFU/100 mL	<1	0/100mL	

Notes:

1) Guidelines for Canadian Drinking Water Quality, updated 2017.

2) MAC refers to the Maximum Acceptable Concentration according to the GCDWQ criteria.

3) AO refers to the Aesthetic Objective according to the GCDWQ criteria.

Shaded cell = above applicable AO guideline value

CERTIFICATE OF ANALYSIS

REPORTED TO	Dan Gare Drilling Box 722 Armstrong, BC V0E 1B0		
ATTENTION	Logan Flett	**WORK ORDER**	9030862
PO NUMBER		**RECEIVED / TEMP**	2019-03-12 12:51 / 5°C
PROJECT	Analytical Testing	**REPORTED**	2019-03-19 16:58
PROJECT INFO		**COC NUMBER**	No Number

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at estclair@caro.ca

Authorized By:

Eilish St.Clair, B.Sc., C.I.T.
Client Service Representative

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Dan Gare Drilling	**WORK ORDER**	9030862
PROJECT	Analytical Testing	**REPORTED**	2019-03-19 16:58

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Roy / Wilson - Jackson (9030862-01) | Matrix: Water | Sampled: 2019-03-12 10:45						
Anions						
Chloride	**21.6**	AO ≤ 250	0.10	mg/L	2019-03-13	
Fluoride	**0.21**	MAC = 1.5	0.10	mg/L	2019-03-13	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2019-03-13	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2019-03-13	
Sulfate	**39.7**	AO ≤ 500	1.0	mg/L	2019-03-13	
Calculated Parameters						
Hardness, Total (as CaCO3)	**345**	None Required	0.500	mg/L	N/A	
Langelier Index	**1.1**	N/A	-5.0		2019-03-19	
Solids, Total Dissolved	**415**	AO ≤ 500	1.00	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**338**	N/A	1.0	mg/L	2019-03-13	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2019-03-13	
Alkalinity, Bicarbonate (as CaCO3)	**338**	N/A	1.0	mg/L	2019-03-13	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2019-03-13	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2019-03-13	
Colour, True	**8.5**	AO ≤ 15	5.0	CU	2019-03-13	
Conductivity (EC)	**723**	N/A	2.0	µS/cm	2019-03-13	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	2019-03-13	
pH	**8.01**	7.0-10.5	0.10	pH units	2019-03-13	HT2
Temperature, at pH	**22.3**	N/A		°C	2019-03-13	HT2
Turbidity	**0.42**	OG < 1	0.10	NTU	2019-03-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2019-03-12	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2019-03-12	
Total Metals						
Aluminum, total	**0.0053**	OG < 0.1	0.0050	mg/L	2019-03-15	
Antimony, total	**0.00025**	MAC = 0.006	0.00020	mg/L	2019-03-15	
Arsenic, total	**0.00125**	MAC = 0.01	0.00050	mg/L	2019-03-15	
Barium, total	**0.0454**	MAC = 1	0.0050	mg/L	2019-03-15	
Boron, total	**0.0097**	MAC = 5	0.0050	mg/L	2019-03-15	
Cadmium, total	**0.000119**	MAC = 0.005	0.000010	mg/L	2019-03-15	
Calcium, total	**107**	None Required	0.20	mg/L	2019-03-15	
Chromium, total	**0.00055**	MAC = 0.05	0.00050	mg/L	2019-03-15	
Cobalt, total	**0.00069**	N/A	0.00010	mg/L	2019-03-15	
Copper, total	**0.00573**	AO ≤ 1	0.00040	mg/L	2019-03-15	
Iron, total	**0.095**	AO ≤ 0.3	0.010	mg/L	2019-03-15	
Lead, total	< 0.00020	MAC = 0.01	0.00020	mg/L	2019-03-15	
Magnesium, total	**18.9**	None Required	0.010	mg/L	2019-03-15	
Manganese, total	**0.0903**	AO ≤ 0.05	0.00020	mg/L	2019-03-15	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2019-03-15	

TEST RESULTS

REPORTED TO	Dan Gare Drilling	**WORK ORDER**	9030862
PROJECT	Analytical Testing	**REPORTED**	2019-03-19 16:58

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Roy / Wilson - Jackson (9030862-01) | Matrix: Water | Sampled: 2019-03-12 10:45, Continued						
Total Metals, Continued						
Molybdenum, total	**0.00262**	N/A	0.00010	mg/L	2019-03-15	
Nickel, total	**0.00549**	N/A	0.00040	mg/L	2019-03-15	
Potassium, total	**4.14**	N/A	0.10	mg/L	2019-03-15	
Selenium, total	**0.00114**	MAC = 0.05	0.00050	mg/L	2019-03-15	
Sodium, total	**17.0**	AO ≤ 200	0.10	mg/L	2019-03-15	
Strontium, total	**0.632**	N/A	0.0010	mg/L	2019-03-15	
Uranium, total	**0.0118**	MAC = 0.02	0.000020	mg/L	2019-03-15	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2019-03-15	

Sample Qualifiers:

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Dan Gare Drilling	**WORK ORDER**	9030862
PROJECT	Analytical Testing	**REPORTED**	2019-03-19 16:58

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2011)	Titration with H2SO4	Kelowna
Anions in Water	SM 4110 B (2011)	Ion Chromatography	Kelowna
Coliforms, Total in Water	SM 9222* (2006)	Membrane Filtration / Chromocult Agar	Kelowna
Colour, True in Water	SM 2120 C (2011)	Spectrophotometry (456 nm)	Kelowna
Conductivity in Water	SM 2510 B (2011)	Conductivity Meter	Kelowna
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	Kelowna
E. coli in Water	SM 9222* (2006)	Membrane Filtration / Chromocult Agar	Kelowna
Hardness in Water	SM 2340 B* (2011)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
Langelier Index in Water	SM 2330 B (2010)	Calculation	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
pH in Water	SM 4500-H+ B (2011)	Electrometry	Kelowna
Solids, Total Dissolved in Water	SM 1030 E (2011)	Calculation: 100 x ([Cations]-[Anions])/([Cations]+[Anions])	N/A
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Turbidity in Water	SM 2130 B (2011)	Nephelometry	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
°C	Degrees Celcius
AO	Aesthetic Objective
CFU/100 mL	Colony Forming Units per 100 millilitres
CU	Colour Units (referenced against a platinum cobalt standard)
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
OG	Operational Guideline (treated water)
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
ASTM	ASTM International Test Methods
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing. The quality control (QC) data is available upon request

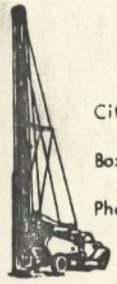
Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method

#23

RIG 250

35653

TRILINE Drilling Ltd.



City SALMON ARM. B.C.
Box 2049
Phone 832-4637

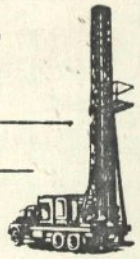
LARGE WELLS · FAST DRILLING

- Domestic -

Industrial - Exploration

FOUNDATION DRILLING

City _____
Box _____
Phone _____



Members of A.W.W.D.A. - B.C.W.W.A. - I.W.W.D.A.

DAILY REPORT for MONTH 9 DAY 3 19 76 RIG NO. 250 OTHER EQUIP. NO. _____

(1) OWNER: Name Wayne Ungaro ADDRESS Vernon Silver Star

(2) LOCATION OF WELL: County _____ ¼ ¼ Sec. ___ T. ___ N.R. ___ W.M.
Bearing and distance from section or subdivision corner _____

(3) PROPOSED USE: Domestic ✓ Industrial ___ Municipal ___
Irrigation ___ Test Well ___ Other _____

(4) TYPE OF WORK: Owner's number of well, (if more than one) _____
New Well ✓ Air Rotary ✓
Deepened ___ Rotary ___
Reconditioned ___ Jetted ___
Cable ___

(5) DIMENSIONS:
Drilled 260 ft. Diameter of well 5 inches
Depth of completed well 165 ft.

(6) CONSTRUCTION DETAILS:
CASING INSTALLED: 5" Diam. from 0 ft. to 165 ft.
Threaded __ ___" Diam. from ___ ft. to ___ ft.
Welding __ ___" Diam. from ___ ft. to ___ ft.

(7) PERFORATIONS: Yes ✓ NO ___
Type of perforator used Torch
SIZE of perforations ___ in. by ___ in.
perforations from 145 ft. to 165 ft.
perforations from ___ ft. to ___ ft.

(8) SCREENS: Yes ___ No ___
Manufacturer's Name _____
Type _____ Model No. _____
Diam. ___ Slot Size ___ from ___ ft. to ___ ft.
Diam. ___ Slot Size ___ from ___ ft. to ___ ft.

(9) GRAVEL PACKED: Yes ✓ No ___ Size of Gravel pea gravel
Gravel placed from _____ FT. TO _____ FT.

(10) SURFACE SEAL: Yes ___ No ___ To what depth? _____ ft.
Material Used In Seal _____
Method of sealing strata off _____

(11) PRODUCTION DATA AT TIME OF DRILLING
Static Level _____ ft.
Measured from ___ ft. With Air ✓ Pump ___ Other _____
Pumping level _____ ft. at _____ GPM
Recommended Pump Setting 160 ft.
If Flowing Well _____ GPM
Recommended Max. Pump Output 3 GPH
Water Clear ✓ Colored ___ Silt ___ Sand ___
Duration of test _____ HRS.

DAY STARTED _____ DAY COMPLETED _____
HRS. DAY SHIFT _____ NIGHT SHIFT _____

DEPTH
OVERBURDEN FT. 165'
BEDROCK FT. _____
FORMATION FT. _____
FORMATION FT. _____
FORMATION FT. _____
TOTAL FT. _____

CASEING
SURFACE CASEING IN. ___ FT. 165'
LINER IN. ___ FT. ___
SURFACE CASEING TOP ___ BOT ___
SCREEN TOP ___ BOT. ___
SCREEN IN. ___ LENGTH ___
SET AT _____
DRIVE SHOE SIZE _____

BITS
BIT NO. USED _____
BIT SIZE 7 7/8" _____
BIT SIZE _____
PENETRATION RATE _____
HAMMER BIT NO. _____
QUICK FOME QT. ___ GAL. 4
BARA FOME QT. ___ GAL. ___
MUD CEMENT _____
LOST CIRCULATION _____
QUICK JEL LBS. _____
MUD LBS. _____
BIT OIL QTS. _____

PERSONAL
TOOL PUSH _____
DRILLER T. Mullen
HELPER R. Foster

RIG TIME
MILES MOVED _____ HRS. _____
SET UP HRS. _____ TEAR DOWN HRS. _____
DOWN TIME HRS. _____
STAND BY TIME _____

FORMATION LOG DESCRIPTION

DEPTH IN FEET		
FROM	TO	
Ground Level	90	Clay + rocks
90	115	gravel - clay bands
113	165	gravel - sand bands

ELECTRIC LOG: Yes ___ NO ✓
Gamma ___ Electric ___

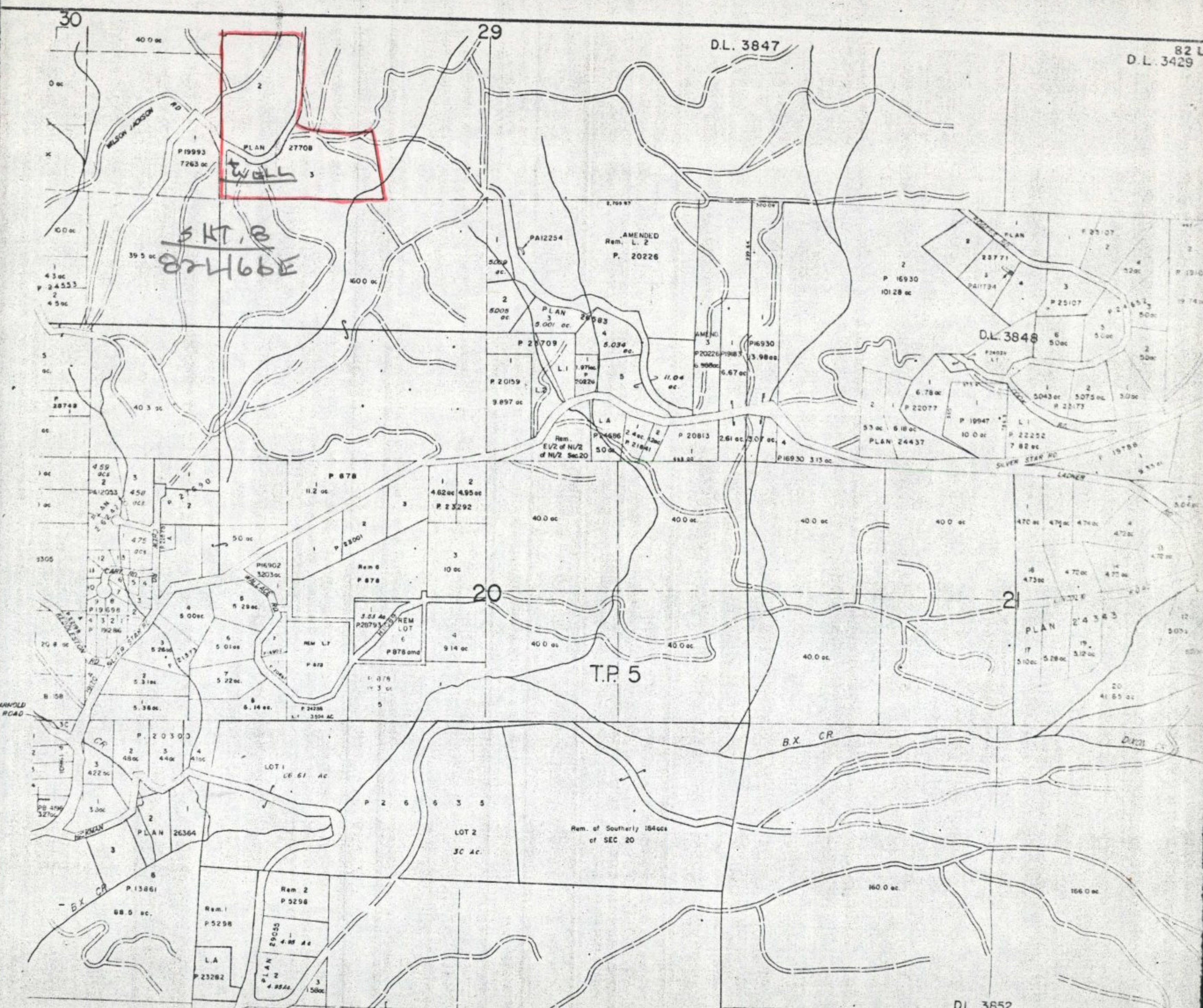
WELL OWNER

I _____ Here By Agree
Work has been completed in accordance with the contract and all material used has been of top quality.
TRI-line DRILLING REP. _____

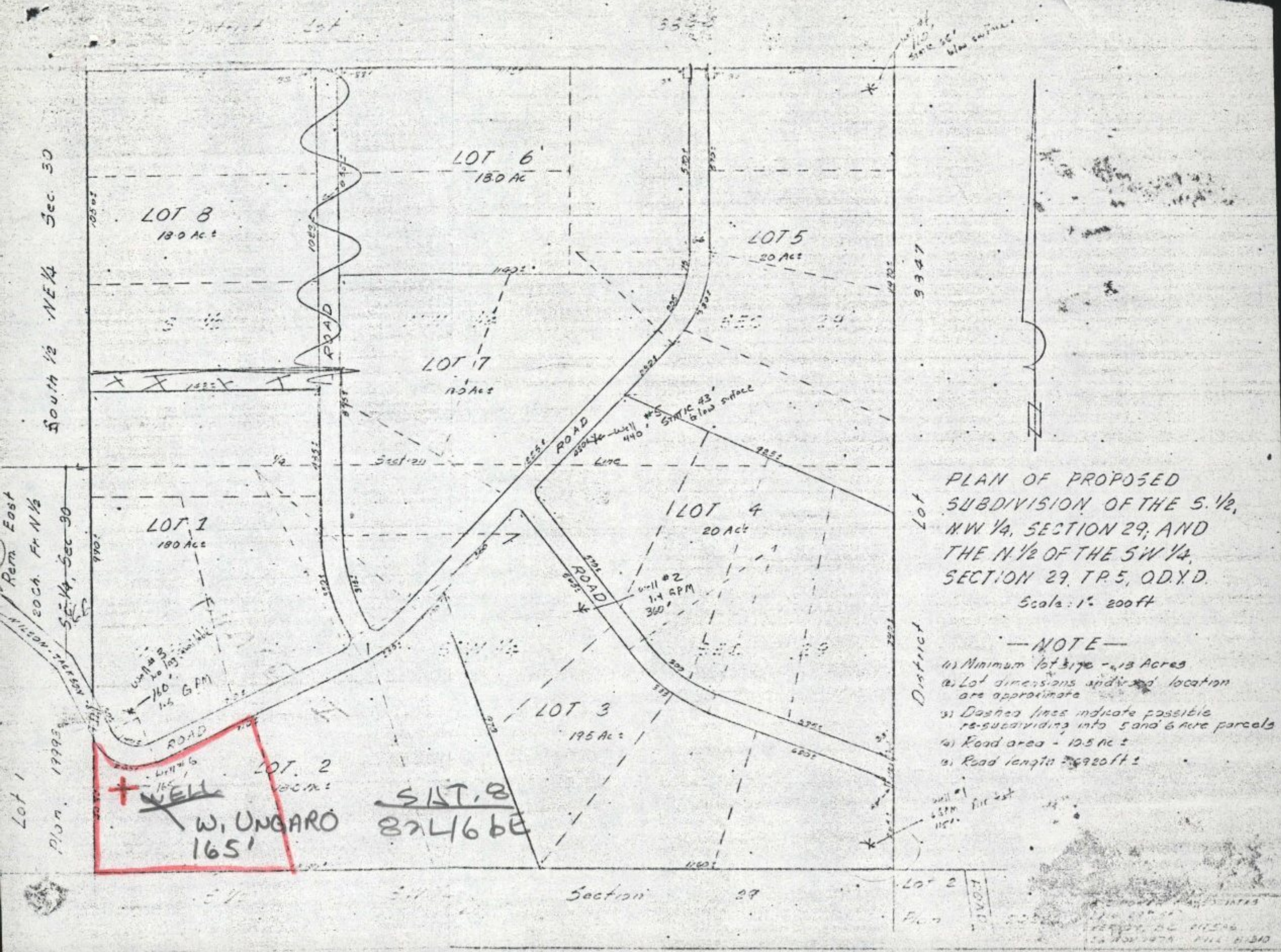
GENERAL REMARKS

3 Hrs developing

It is here by agreed that FORMATIONS, QUALITY, QUANTITY & TYPE of Water, along with all other remarks, are true only to the best knowledge of the Personnel & Company, and they cannot be held responsible for a mistake in calculation.
The company will not be held responsible for Public Liabillity or Property Damage caused by flowing well wash outs or any other mishaps.



30
29
D.L. 3847
82 L
D.L. 3429
WILSON JACKSON RD
PLAN 27708
P 19993
7263 ac
WELL
SHT. 8
82L16E
AMENDED
Rem. L. 2
P. 20226
PA12254
PLAN 26583
P 26709
P 16930
101.28 ac
PLAN 23771
P 25107
D.L. 3848
P 22077
P 19947
P 22252
PLAN 24437
SILVER STAR RD
P 20159
9.897 ac
Rem. E1/2 of N1/2 of N1/2 Sec.20
P 20813
P 878
P 23292
40.0 ac
20
21
PLAN 24343
T.P. 5
P 20303
P 26635
LOT 1
LOT 2
Rem. of Southerly 184acs of SEC 20
B.X. CR
ARNOLD ROAD
PLAN 26364
P 13861
68.5 ac.
Rem. 1
P 5298
Rem 2
P 5298
P 23282
160.0 ac
166.0 ac
D.L. 3652


PLAN OF PROPOSED SUBDIVISION OF THE S. 1/2, N.W. 1/4, SECTION 29; AND THE N. 1/2 OF THE SW 1/4, SECTION 29, TP. 5, O.D.Y.D.
Scale: 1" = 200 ft
— NOTE —
(1) Minimum lot size - ±13 Acres
(2) Lot dimensions and road location are approximate
(3) Dashed lines indicate possible re-subdividing into 5 and 6 Acre parcels
(4) Road area - 12.5 Ac ±
(5) Road length - 6920 ft ±
LOT 6
18.0 Ac
LOT 8
18.0 Ac.
LOT 5
20 Ac.
LOT 7
20 Ac.
LOT 1
18.0 Ac.
LOT 4
20 Ac.
LOT 3
19.5 Ac.
LOT 2
ROAD
South 1/2 NE 1/4 Sec. 30
SE 1/4 Sec 30
Rem. East 20 Ch. Fr. N 1/2
Lot 1 Plan 17795
District Lot 3347
Section 29
Lot 2
well #5 440' STATIC 43' below surface
well #2 1.4 GPM 360'
well #3 no log available 160' 1.6 GPM
well #6 165'
well #1
WELL
W. UNGARO
165'
SITE 8
82L/6 bE
Section Line

82L.035.1.3.1

WTN: 35653

7

WATER WELL RECORD

DEPT. OF ENVIRONMENT, WATER RESOURCES SERVICE, WATER INVESTIGATIONS BRANCH VICTORIA, BRITISH COLUMBIA

Z WELL NO.

E

N

LEGAL DESCRIPTION: LOT 2 SEC. 29 TP. 5 R. ____ D.L. ____ LAND DISTRICT 0504005 PLAN 27708

DESCRIPTIVE LOCATION Well #6 LICENCE NO. ____ DATE ____

Z 10 X 7 Y 35 NO. 14 bE

OWNER'S NAME WAYNE UNGARO (542-8850) ADDRESS VERNON - SILVER STAR

DRILLER'S NAME TRILINE DRILLING LTD ADDRESS SALMON ARM, BC BOX 2049 DATE COMPLETED SEPT 3/76

NAT. TOPO. SHEET NO. 82L/6.9

0504005 SHT 8

DEPTH 165' ELEVATION OF (134) ☐ ESTIMATED ☐ SURVEYED CASING DIAM. 5" LENGTH 0-165'

METHOD OF CONSTRUCTION AIR ROTARY CASING DIAM ____ LENGTH ____

SCREEN LOCATION ____ SCREEN ☐ SIZE ____ LENGTH ____ TYPE ____

SANITARY SEAL YES ☐ NO ☐ SCREEN ☐ SIZE ____ LENGTH ____ TYPE ____

PERFORATED CASING ☒ LENGTH ____ PERFORATIONS FROM 145' TO 165'

GRAVEL PACK ☒ LENGTH ____ DIAM. ____ SIZE GRAVEL, ETC. PEA GRAVEL

DISTANCE TO WATER ____ ☐ ESTIMATED WATER LEVEL

FROM ____ ☐ MEASURED ELEVATION ____ ARTESIAN PRESSURE ____

DATE OF WATER LEVEL MEASUREMENT ____ WATER USE DOMESTIC

PRODUCTION TEST SUMMARY

DATE ____

TEST BY AIRLIFT

BAIL TEST ☐ PUMP TEST ☐ DURATION OF TEST ____

RATE ____ DRAWDOWN ____

WATER LEVEL AT COMPLETION OF TEST 160'

AVAILABLE DRAWDOWN ____ SPECIFIC CAPACITY ____

PERMEABILITY ____ STORAGE COEFF. ____

TRANSMISSIVITY ____

RECOMMENDED PUMPING RATE 3 GPH (MAX)

RECOMMENDED PUMP SETTING 160'

CHEMISTRY

TEST BY ____ DATE ____

TOTAL DISSOLVED SOLIDS ____ mg/l TEMPERATURE ____ °C pH ____ SILICA (SiO_2) ____ mg/l

CONDUCTANCE ____ μmhos/cm AT 25°C TOTAL IRON (Fe) ____ mg/l TOTAL HARDNESS ($CaCO_3$) ____ mg/l

TOTAL ALKALINITY ($CaCO_3$) ____ mg/l PHEN. ALKALINITY ($Ca\ CO_3$) ____ mg/l MANGANESE (Mn) ____ mg/l

COLOUR ____ ODOUR ____ TURBIDITY ____

ANIONS	mg/l	epm
CARBONATE (CO_3)		
BICARBONATE (HCO_3)		
SULPHATE (SO_4)		
CHLORIDE (Cl)		
$NO_2 + NO_3$ (NITROGEN)		
* TKN. (NITROGEN)		
PHOSPHORUS (P)		

CATIONS	mg/l	epm
CALCIUM (Ca)		
MAGNESIUM (Mg)		
SODIUM (Na)		
POTASSIUM (K)		
IRON (DISSOLVED)		

* TKN = TOTAL KJELDAHL NITROGEN CHEMISTRY SITE NO. ____

NO_2 = NITRITE NO_3 = NITRATE

CHEMISTRY FIELD TESTS

TEST BY ____ DATE ____ EQUIPMENT USED ____

LITHOLOGY

FROM	TO	DESCRIPTION
0	90'	CLAY AND ROCKS
90'	115'	GRAVEL - CLAY BANDS
115'	165'	GRAVEL - SAND BANDS

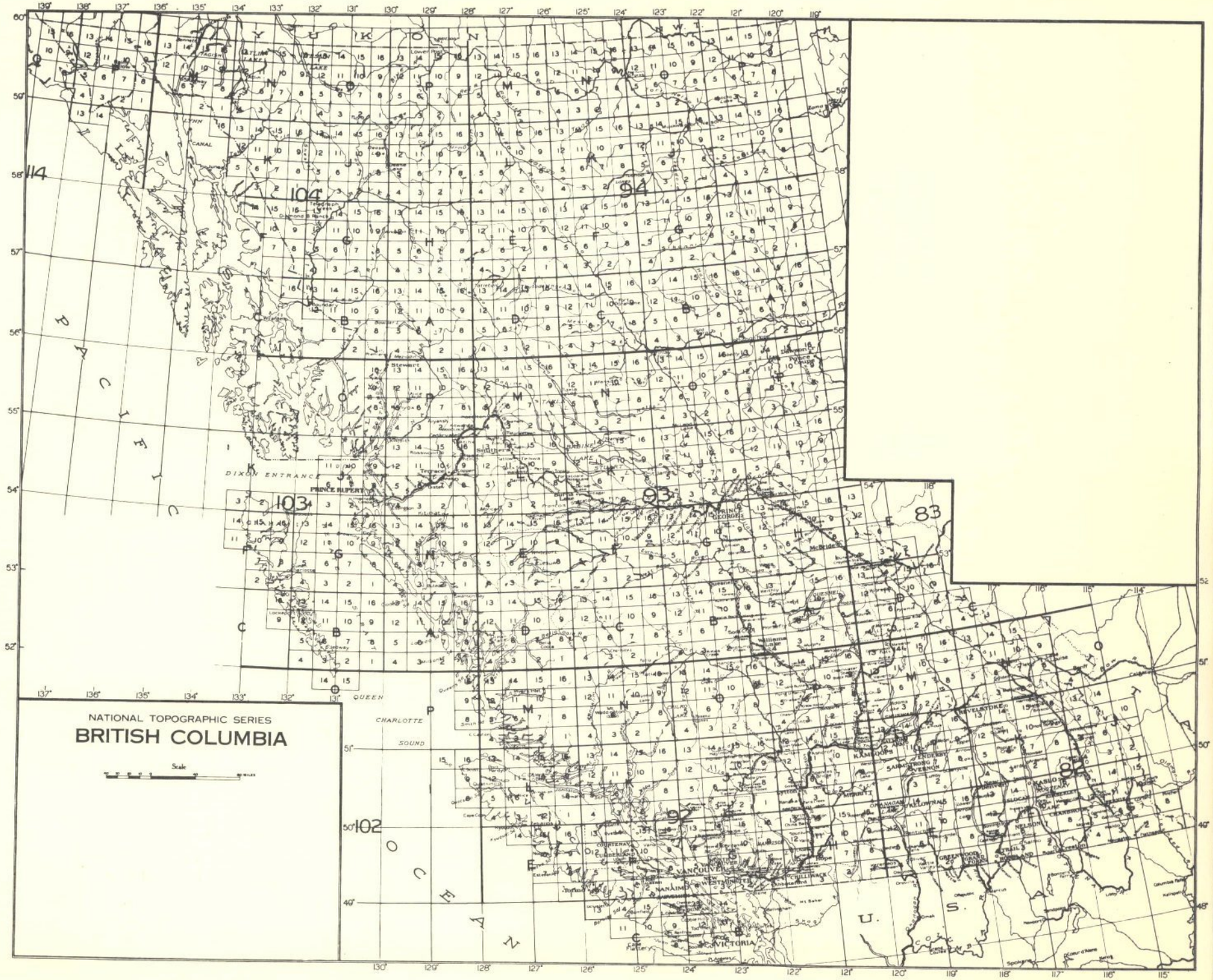
CONTENTS OF FOLDER

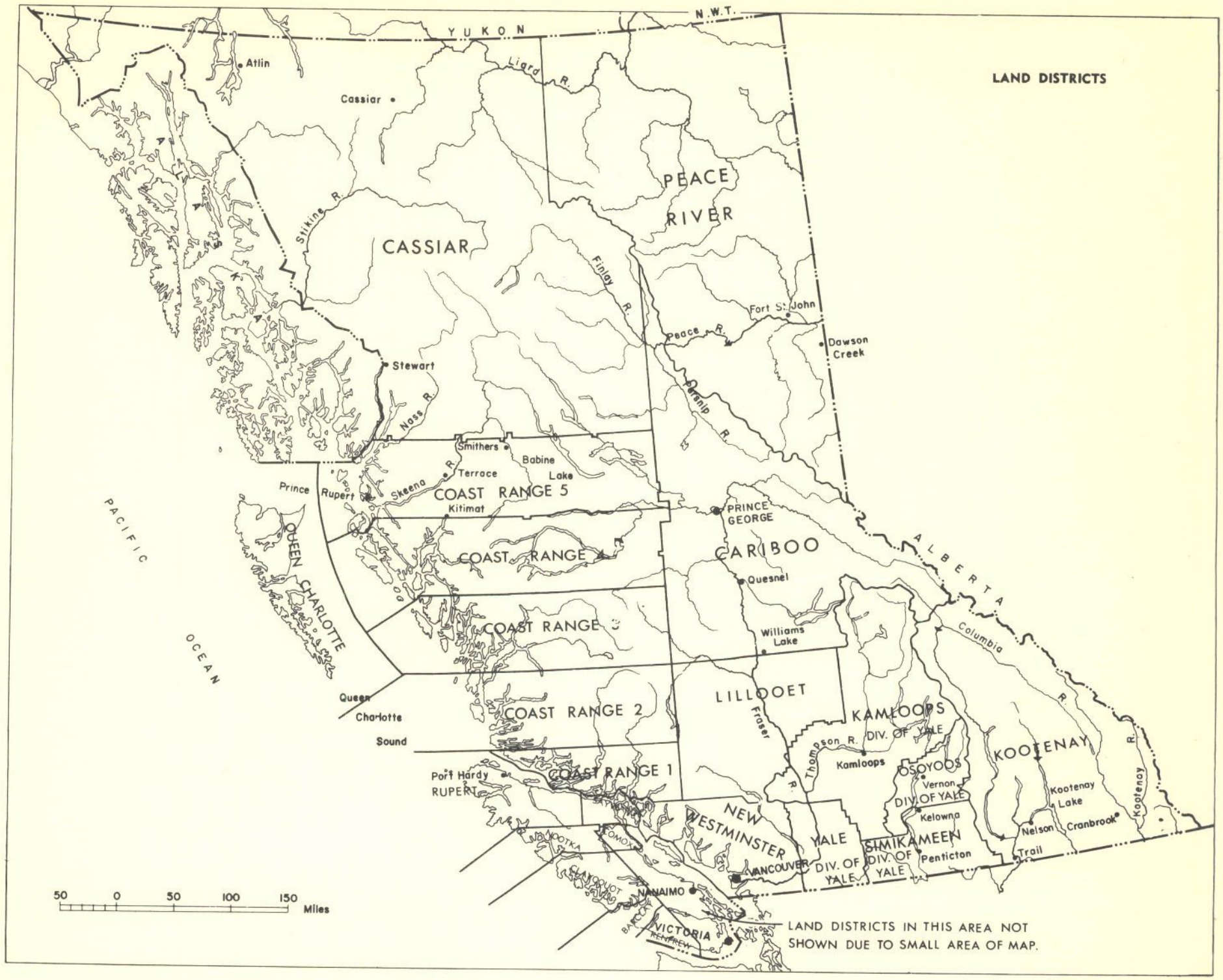
☒ DRILL LOG ☐ PUMP TEST DATA ☐ CHEMICAL ANALYSIS

☐ SIEVE ANALYSIS ☐ GEOPHYSICAL LOGS ☐ REPORT

OTHER Subdivision plan

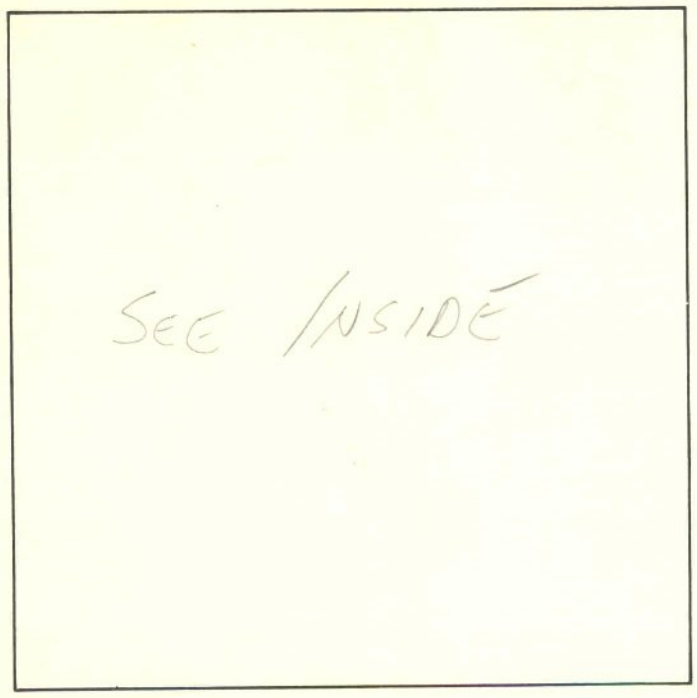
SOURCES OF INFORMATION DRILLER - LOCATION FROM W. UNGARO Sept 27/78


NATIONAL TOPOGRAPHIC SERIES
BRITISH COLUMBIA
Scale
114
104
94
103
93
83
102
92
82
PACIFIC OCEAN
DIXON ENTRANCE
QUEEN CHARLOTTE SOUND
PRINCE RUPERT
PRINCE GEORGE
KAMLOOPS
VANCOUVER
VICTORIA
NANAIMO
NELSON
REVELSTOKE
U.S.


LAND DISTRICTS
N.W.T.
YUKON
ALASKA
Atlin
Cassiar
Liard R.
Stikine R.
CASSIAR
PEACE RIVER
Finlay R.
Fort St. John
Peace R.
Dawson Creek
Parsnip R.
Stewart
Nass R.
Smithers
Babine Lake
Terrace
Skeena R.
Prince Rupert
COAST RANGE 5
Kitimat
PRINCE GEORGE
CARIBOO
ALBERTA
Quesnel
COAST RANGE 4
COAST RANGE 3
Williams Lake
Columbia R.
PACIFIC OCEAN
QUEEN CHARLOTTE
Queen Charlotte Sound
COAST RANGE 2
LILLOOET
Fraser R.
KAMLOOPS
DIV. OF YALE
Thompson R.
Kamloops
OSOYOOS
KOOTENAY
Vernon
DIV. OF YALE
Kootenay Lake
Kootenay R.
Port Hardy
RUPERT
COAST RANGE 1
Kelowna
Nelson
Cranbrook
NEW WESTMINSTER
YALE
SIMILKAMEEN
DIV. OF YALE
DIV. OF YALE
Penticton
Trail
VANCOUVER
NANAIMO
VICTORIA
50 0 50 100 150
Miles
LAND DISTRICTS IN THIS AREA NOT SHOWN DUE TO SMALL AREA OF MAP.

NORTH

WEST



EAST

SOUTH

CARD BY SM DATE JUN 78

ADDITIONAL DATA ADDED BY

REMARKS

Legal confirmed through B.C. Assessment Authority 00/01/24

37987

TRILINE Drilling Ltd.

City SALMON ARM. B.C.
Box 2049
Phone 832-4637

LARGE WELLS - FAST DRILLING
- Domestic -
Industrial - Exploration
FOUNDATION DRILLING

City _____
Box _____
Phone _____

Members of A.W.W.D.A. - B.C.W.W.A. - I.W.W.D.A.

#51

DAILY REPORT for MONTH Aug DAY 24 19 77 RIG NO 30 OTHER EQUIP. NO. 2642-32

DAY STARTED Aug 24 DAY COMPLETED Aug 24-77
HRS. DAY SHIFT _____ NIGHT SHIFT _____

(1) OWNER: Name P.Chabot. ADDRESS Vernon

(2) LOCATION OF WELL: County 11 ¼ ¼ Sec. T. N.R. W.M.
Bearing and distance from section or subdivision corner _____

(3) PROPOSED USE: Domestic ✓ Industrial ___ Municipal ___
Irrigation ___ Test Well ___ Other ___

(4) TYPE OF WORK: Owner's number of well, (if more than one) _____
New Well ✓ Air Rotary ✓
Deepened ___ Rotary ___
Reconditioned ___ Jetted ___
Cable ___

(5) DIMENSIONS:
Drilled 220 ft. Diameter of well 5 inches
Depth of completed well 220 ft.

(6) CONSTRUCTION DETAILS:
CASING INSTALLED: 5 " Diam. from 0 ft. to 23 ft.
Threaded ✓ 5 " Diam. from 0 ft. to 23 ft.
Welding ___ ___ " Diam. from ___ ft. to ___ ft.

(7) PERFORATIONS: Yes ___ NO ✓
Type of perforator used _____
SIZE of perforations ___ in. by ___ in.
perforations from ___ ft. to ___ ft.
perforations from ___ ft. to ___ ft.

(8) SCREENS: Yes ___ No ✓
Manufacturer's Name _____
Type _____ Model No. _____
Diam. ___ Slot Size ___ from ___ ft. to ___ ft.
Diam. ___ Slot Size ___ from ___ ft. to ___ ft.

(9) GRAVEL PACKED: Yes ___ No ✓ Size of Gravel _____
Gravel placed from _____ FT. TO _____ FT.

DEPTH
OVERBURDEN FT. 10
BEDROCK FT. 210
FORMATION FT. _____
FORMATION FT. _____
FORMATION FT. _____
TOTAL FT. 220

CASEING
SURFACE CASEING IN. ___ FT. ___
LINER IN. ___ FT. ___
SURFACE CASEING TOP ___ BOT ___
SCREEN TOP ___ BOT. ___
SCREEN IN. ___ LENGTH ___
SET AT _____
DRIVE SHOE SIZE _____

BITS
BIT NO. USED _____
BIT SIZE 7⅞ Button
BIT SIZE 5" hammer
PENETRATION RATE _____
HAMMER BIT NO. _____
QUICK FOME QT. ___ GAL. ___
BARA FOME QT. ___ GAL. ___
MUD CEMENT _____
LOST CIRCULATION _____
QUICK JEL LBS. _____
MUD LBS. _____
BIT OIL QTS. 3 gal

PERSONAL
TOOL PUSH _____
DRILLER Black
HELPER Dapell

RIG TIME
MILES MOVED 5 HRS. _____
SET UP HRS. _____ TEAR DOWN HRS. _____
DOWN TIME HRS. _____
STAND BY TIME _____

FORMATION LOG DESCRIPTION

DEPTH IN FEET		
FROM	TO	
Ground Level	10	Clay & rock
10	220	Rock

ELECTRIC LOG: Yes ___ NO ✓
Gamma ___ Electric ___

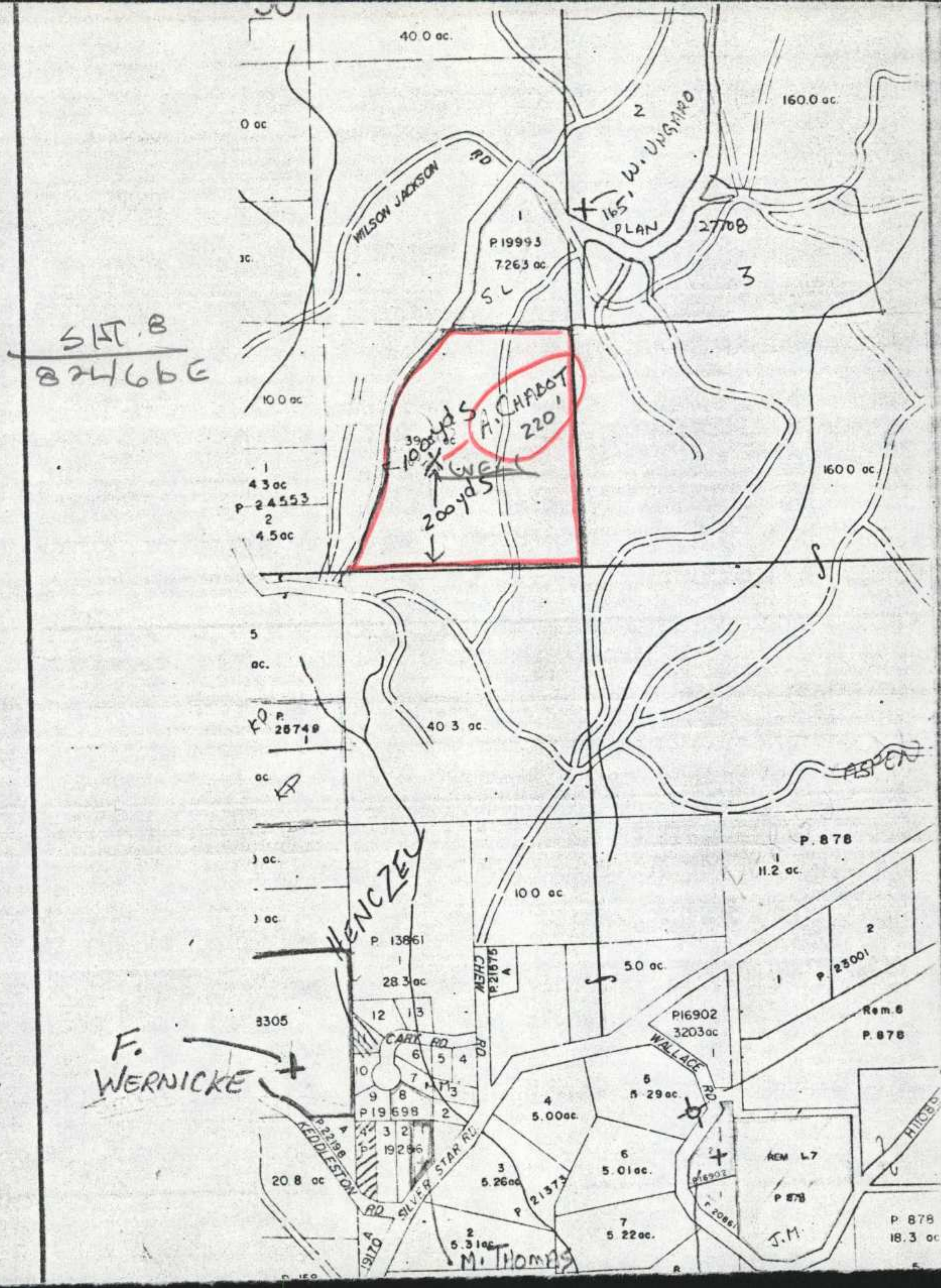
(10) SURFACE SEAL: Yes ✓ No ___ To what depth? 23 ft.
Material Used In Seal Rock cuttings
Method of sealing strata off Steel casing.

(11) PRODUCTION DATA AT TIME OF DRILLING
Static Level _____ ft.
Measured from ___ ft. With Air ___ Pump ___ Other _____
Pumping level 215 ft. at ¼ - ½ GPM
Recommended Pump Setting 215. ft.
If Flowing Well — GPM
Recommended Max. Pump Output 20-40 GPH
Water Clear ✓ Colored ✓ Silt ___ Sand ___
Duration of test _____ HRS.

WELL OWNER
I A Chabot Here By Agree
Work has been completed in accordance with the contract and all material used has been of top quality.
TRI-line DRILLING REP. _____

GENERAL REMARKS
_____
_____
_____
_____

It is here by agreed that FORMATIONS, QUALITY, QUANTITY & TYPE of Water, along with all other remarks, are true only to the best knowledge of the Personnel & Company, and they cannot be held responsible for a mistake in calculation.
The company will not be held responsible for Public Liabillity or Property Damage caused by flowing well wash outs or any other mishaps.


SHT. 8
82H6bE
40.0 ac.
0 ac
160.0 ac.
2
W. UNGARO
WILSON JACKSON RD
165'
PLAN 27708
1
P. 19993
7.263 ac
3
SL
10.0 ac
A. CHABOT
220'
100 yds
39 ac
WELL
200 yds
1
4.3 ac
P 24553
2
4.5 ac
160.0 ac
5
ac.
P. 28749
1
40.3 ac.
ASPEN
ac
P. 878
1
11.2 ac.
HENCZEL
10.0 ac
P. 13861
1
28.3 ac
CHEW
P. 21575
A
5.0 ac.
2
P. 23001
1
Rem. 6
P. 878
8305
12
13
CARR RD
RD
P16902
3203 ac
WALLACE RD
F. WERNICKE
6
5
4
10
7
M3
9
8
P19698
2
6
5.29 ac.
4
5.00 ac.
KEDDLESTON RD
P 22198
3
2
19286
SILVER STAR RD
3
5.26 ac
P 21373
6
5.01 ac.
REM L7
P 878
20.8 ac
P16902
7
5.22 ac.
2
5.31 ac
M. THOMAS
J.M.
P. 878
18.3 ac

82L.035.1.3.1

WTN: 37987

WATER WELL RECORD

DEPT. OF ENVIRONMENT, WATER RESOURCES SERVICE, WATER INVESTIGATIONS BRANCH VICTORIA, BRITISH COLUMBIA

Z [ ] [ ] WELL NO. [ ] [ ] [ ] 6

[ ] [ ] [ ] [ ] [ ] [ ] [ ] E

[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] N

Z 10 X 7 Y 35 NO. 13

NAT. TOPO. SHEET NO. 82L/6.9 Osoyoos SHT. 8

LEGAL DESCRIPTION: LOT ____ SEC. 30 TP. 5 R. ____ D.L. ____ LAND DISTRICT Osoyoos PLAN ____

DESCRIPTIVE LOCATION E 20 CHNS FRAC N½ SE¼ Exc pl 1993 SILVER STAR LICENCE NO. ____ DATE ____

OWNER'S NAME R. CHABOT -379-2647 ADDRESS FALKLAND

DRILLER'S NAME TRILINE ADDRESS ____ DATE COMPLETED 8-24-77

DEPTH 220' ELEVATION OF ____ (134) ☐ ESTIMATED ☐ SURVEYED CASING DIAM. 5" LENGTH 0-23'

METHOD OF CONSTRUCTION AIR ROTARY CASING DIAM ____ LENGTH ____

SCREEN LOCATION ____ SCREEN ☐ SIZE ____ LENGTH ____ TYPE ____

SANITARY SEAL YES ☒ NO ☐ SCREEN ☐ SIZE ____ LENGTH ____ TYPE ____

PERFORATED CASING ☐ LENGTH ____ PERFORATIONS FROM ____ TO ____

GRAVEL PACK ☐ LENGTH ____ DIAM. ____ SIZE GRAVEL, ETC. ____

DISTANCE TO WATER ____ ☐ ESTIMATED WATER LEVEL

FROM ____ ☐ MEASURED ELEVATION ____ ARTESIAN PRESSURE ____

DATE OF WATER LEVEL MEASUREMENT ____ WATER USE ____

PRODUCTION TEST SUMMARY

DATE ____

TEST BY ____

BAIL TEST ☐ PUMP TEST ☐ DURATION OF TEST ____

RATE ¼ - ½ GPM DRAWDOWN ____

WATER LEVEL AT COMPLETION OF TEST 215'

AVAILABLE DRAWDOWN ____ SPECIFIC CAPACITY ____

PERMEABILITY ____ STORAGE COEFF. ____

TRANSMISSIVITY ____

RECOMMENDED PUMPING RATE 20-40 GPM (MAX)

RECOMMENDED PUMP SETTING 215'

CHEMISTRY

TEST BY ____ DATE ____

TOTAL DISSOLVED SOLIDS ____ mg/l TEMPERATURE ____ °C pH ____ SILICA (SiO_2) ____ mg/l

CONDUCTANCE ____ μmhos/cm AT 25°C TOTAL IRON (Fe) ____ mg/l TOTAL HARDNESS ($CaCO_3$) ____ mg/l

TOTAL ALKALINITY ($CaCO_3$) ____ mg/l PHEN. ALKALINITY ($Ca\ CO_3$) ____ mg/l MANGANESE (Mn) ____ mg/l

COLOUR ____ ODOUR ____ TURBIDITY ____

ANIONS	mg/l	epm	CATIONS	mg/l	epm
CARBONATE (CO_3)			CALCIUM (Ca)		
BICARBONATE (HCO_3)			MAGNESIUM (Mg)		
SULPHATE (SO_4)			SODIUM (Na)		
CHLORIDE (Cl)			POTASSIUM (K)		
$NO_2 + NO_3$ (NITROGEN)			IRON (DISSOLVED)		
* TKN. (NITROGEN)					
PHOSPHORUS (P)					

* TKN = TOTAL KJELDAHL NITROGEN CHEMISTRY SITE NO. ____

NO_2 = NITRITE NO_3 = NITRATE

CHEMISTRY FIELD TESTS

TEST BY ____ DATE ____ EQUIPMENT USED ____

LITHOLOGY

FROM	TO	DESCRIPTION
0	10'	CLAY AND ROCK
16'	225'	ROCK

B

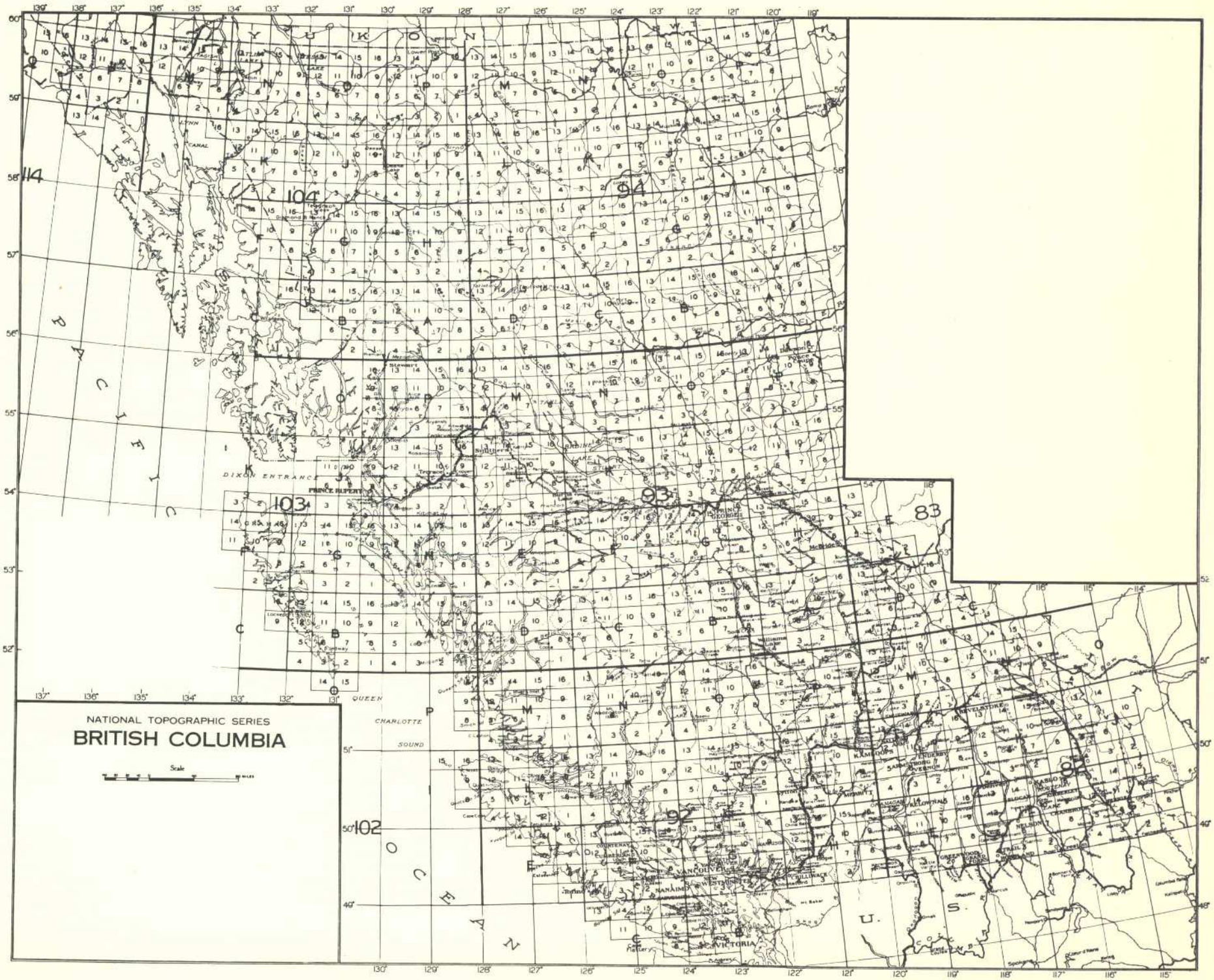
CONTENTS OF FOLDER

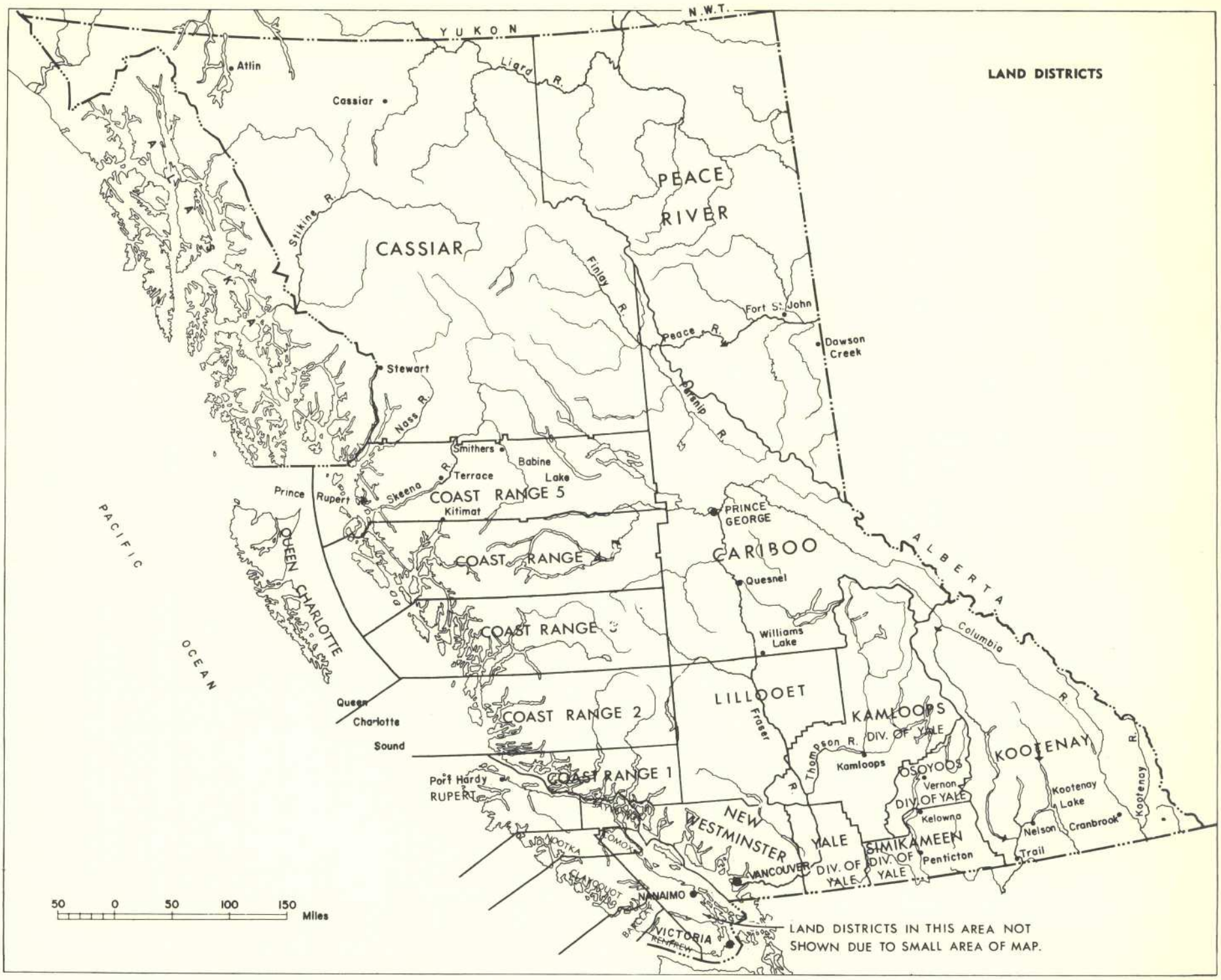
☒ DRILL LOG ☐ PUMP TEST DATA ☐ CHEMICAL ANALYSIS

☐ SIEVE ANALYSIS ☐ GEOPHYSICAL LOGS ☐ REPORT

OTHER ____

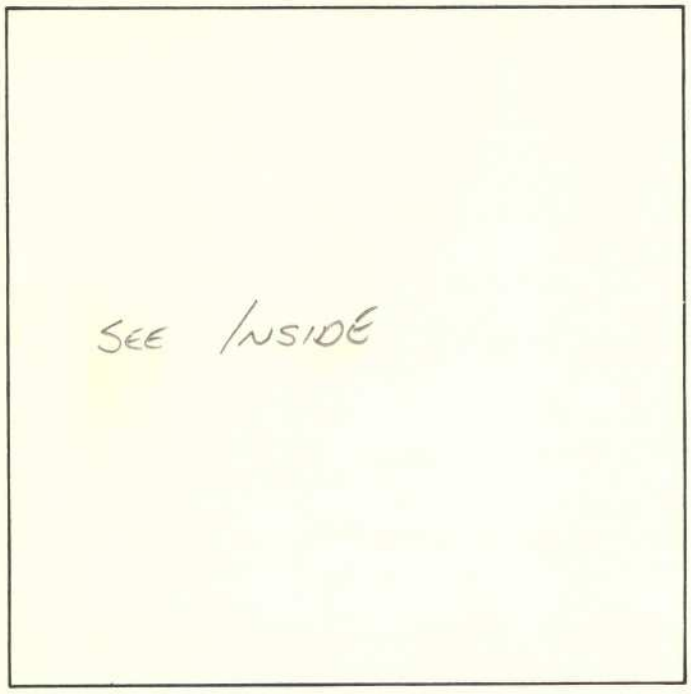
SOURCES OF INFORMATION DRILLER


NATIONAL TOPOGRAPHIC SERIES
BRITISH COLUMBIA
Scale
114
104
94
103
93
83
102
92
82
PACIFIC
OCEAN
DIXON ENTRANCE
QUEEN CHARLOTTE SOUND
PRINCE RUPERT
VANCOUVER
VICTORIA
KAMLOOPS
U.S.


LAND DISTRICTS
N.W.T.
YUKON
Atlin
Cassiar
Liard R.
PEACE RIVER
CASSIAR
Stikine R.
Finlay R.
Fort St. John
Peace R.
Dawson Creek
Parsnip R.
Stewart
Nass R.
Smithers
Babine Lake
Terrace
Skeena R.
Prince Rupert
COAST RANGE 5
Kitimat
PRINCE GEORGE
CARIBOO
ALBERTA
PACIFIC OCEAN
QUEEN CHARLOTTE
COAST RANGE 4
Quesnel
COAST RANGE 3
Williams Lake
Columbia R.
Queen Charlotte Sound
COAST RANGE 2
LILLOOET
Fraser R.
KAMLOOPS
DIV. OF YALE
Thompson R.
Kamloops
OSOYOOS
Vernon
DIV. OF YALE
KOOTENAY
Kootenay Lake
Kootenay R.
Port Hardy
RUPERT
COAST RANGE 1
Kelowna
Nelson
Cranbrook
NEW WESTMINSTER
YALE
SIMILKAMEEN
DIV. OF YALE
DIV. OF YALE
Penticton
Trail
VANCOUVER
NANAIMO
VICTORIA
50 0 50 100 150 Miles
LAND DISTRICTS IN THIS AREA NOT SHOWN DUE TO SMALL AREA OF MAP.

NORTH

WEST



EAST

SOUTH

CARD BY JP S.M. DATE 1-11-78

ADDITIONAL DATA ADDED BY

REMARKS

Province of British Columbia Ministry of Environment Water Investigations Branch

WATER WELL RECORD

Date 79/2/30 (YR/MO/DY)

Legal Description & Address

Descriptive Location Keddleston Road - Vernon #1

Owners Name & Address E. M. Meade, Keddleston Rd. Vernon, B.C.

NTS MAP ELEV WELL No.

UTM Z E N UTM Date 19__

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 5 ☐ Other

3. WATER WELL USE 1 ☑ Domestic 2 ☐ Municipal 3 ☐ Irrigation 4 ☐ Commercial & Industrial 5 ☐ Other

4. DRILLING ADDITIVES

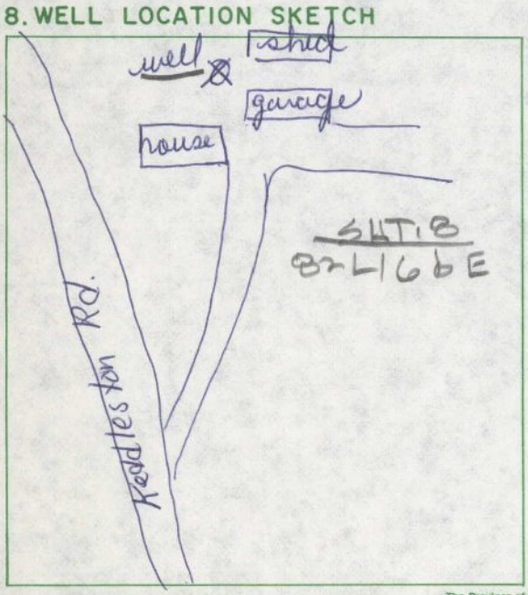
5. MEASUREMENTS from 1 ☑ ground level 2 ☐ top of casing

FROM ft	TO ft	6. WELL LOG DESCRIPTION	SWL ft
0	8	rocks & clay	
8	64	limestone	
	64	water - small amount	35
64	80	sandstone	
80	86	limestone	
86	116	sandstone	

7. CONSULTANT

Address

8. WELL LOCATION SKETCH



9. CASING: Materials 1 ☑ Steel 2 ☐ Galvanized 3 ☐ Wood 4 ☐ Plastic 5 ☐ Concrete 6 ☐ Other

							units
Hole Diameter							ins
Diameter	6"				4"		ins
from	2' above ground				71		ft
to	11				116		ft
Thickness	.280				.188		ins
Weight							lb/ft

Pitless unit 4 ft 1 ☐ above 2 ☑ below ground level

1 ☑ Welded 2 ☐ Cemented 3 ☑ Threaded 4 ☐ New 5 ☐ Used

Perforations:

Shoe(s): 6"

Open hole, from to ft Diameter ins

Grout:

10. SCREEN: 1 ☐ Nominal 2 ☐ Pipe Size

Type 1 ☐ Continuous Slot 2 ☐ Perforated 3 ☐ Louvre 4 ☐ Other

Material 1 ☐ Stainless Steel 2 ☐ Plastic 3 ☐ Other

Set from to ft below ground level

SCREEN & BLANKS							units
Length							ft
Diam. I D							ins
Slot Size							ins
from							ft
to							ft

Fittings, top bottom

Gravel Pack

11. DEVELOPED BY: 1 ☐ Surging 2 ☐ Jetting 3 ☐ Air 4 ☑ Bailing 5 ☐ Pumping 6 ☐ Other

12. TEST 1 ☐ Pump 2 ☑ Bail Date 79/2/20 (YR/MO/DY)

Rate 40 USgpm hour Temp °C SWL before test 35 ft

ft after test of hrs mins

TIME in mins & DRAWDOWN in ft				TIME in mins & RECOVERY in ft			
mins	WL	mins	WL	mins	WL	mins	WL

13.

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
Submersible	115 ft	USgpm

14. WATER TYPE: 1 ☑ fresh 2 ☐ salty 3 ☑ clear 4 ☐ cloudy

colour smell ; gas 1 ☐ yes 2 ☑ no

15. WATER ANALYSIS: 1 ☐ Hardness mg/ℓ

2 ☐ Iron mg/ℓ 3 ☐ Chloride mg/ℓ

4 ☐ pH Field Date

SITE I D No Lab Date (YR/MO/DY)

16. FINAL WELL COMPLETION DATA

Well Depth 116 ft Water Flowing US gpm

Static Water Level 35 ft Pressure Head ft

Back filled

Well Head Completion pitless adaptor & vented well cap liquid level control installed in well

17. DRILLER PLEASE PRINT SURNAME: SCHIBLI FIRST NAME: MAX

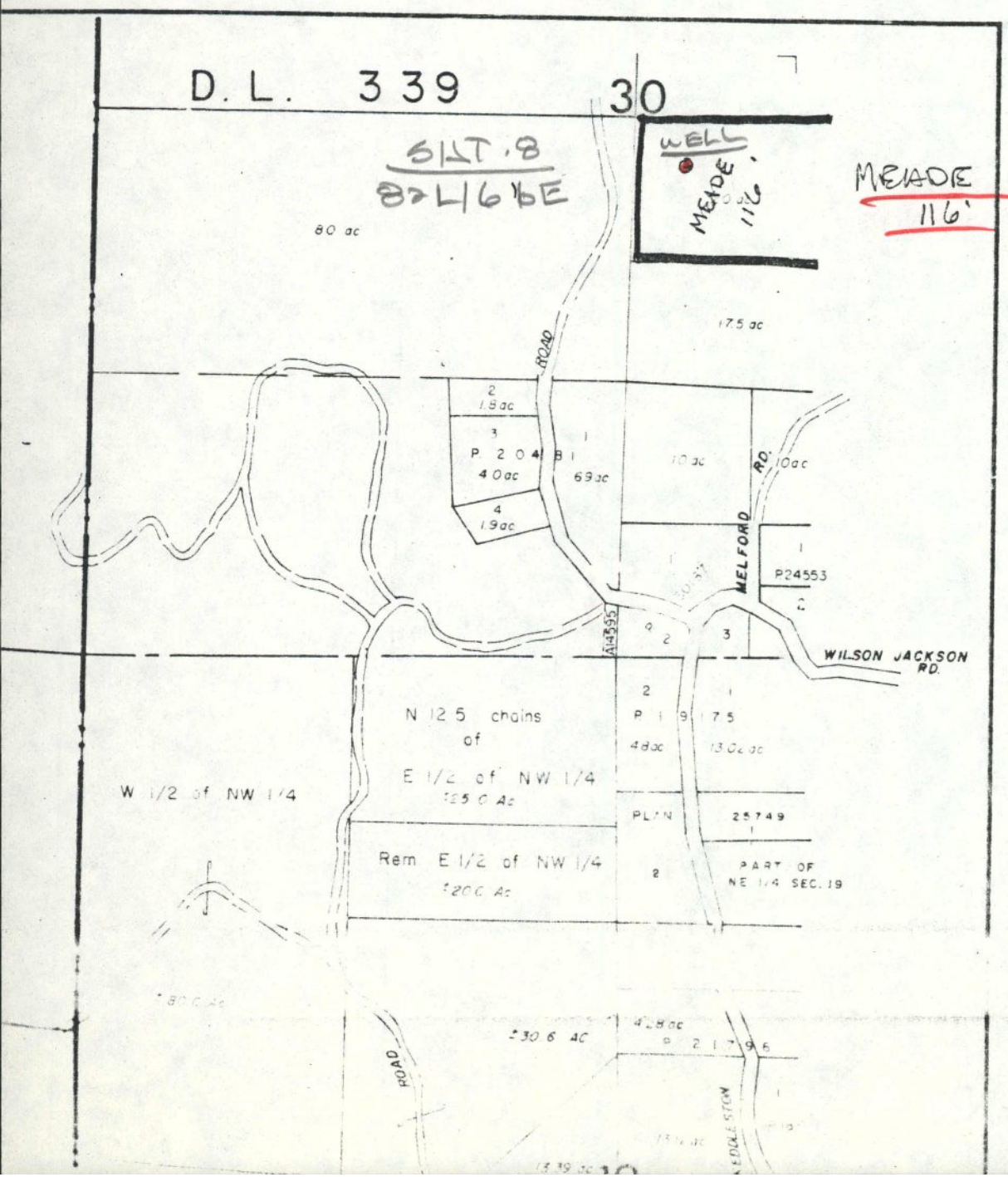
Signature Max Schibli

18. CONTRACTOR, Address

M SCHIBLI WATER WELLS

LUMBY, B.C. PH. 547-6189

Member, BCWWDA ☑ yes ☐ no ;


D. L. 339
30
WELL
MEADE
MEADE
116'
80 ac
17.5 ac
ROAD
2
1.8 ac
3
P 20481
4.0 ac
6.9 ac
4
1.9 ac
10 ac
RD.
10 ac
MELFORD
P24553
A14595
WILSON JACKSON RD.
N 12.5 chains
of
E 1/2 of NW 1/4
125.0 Ac
W 1/2 of NW 1/4
P 19175
4.8 ac
13.0 ac
PLAN
25749
Rem E 1/2 of NW 1/4
120 Ac
PART OF
NE 1/4 SEC. 19
230.6 AC
4.8 ac
P 21796
ROAD

WF 824-034.2.4.2

WTN: 43925

3

WATER WELL RECORD

DEPT. OF ENVIRONMENT, WATER RESOURCES SERVICE, WATER INVESTIGATIONS BRANCH VICTORIA, BRITISH COLUMBIA

LEGAL DESCRIPTION: LOT ____ SEC. 30 TP. 5 R. ____ D.L. ____ LAND DISTRICT OSOYOOS PLAN ____

Frac. N½ of Frac. N½ of SE ¼

DESCRIPTIVE LOCATION KEDDLESTON RD. VERNON LICENCE NO. ____ DATE ____

Z ___ WELL NO. ___ E ___ N ___

Z 10 X 7 Y 34 NO. 1

NAT. TOPO. SHEET NO. 82L/6bE OSOYOOS SHEET 8

OWNER'S NAME E.M. MEADE ADDRESS SAME

DRILLER'S NAME M. SCHIBLI ADDRESS LUMBY DATE COMPLETED DEC. 74

DEPTH 116' ELEVATION OF 093 ☐ ESTIMATED ☐ SURVEYED CASING DIAM. 4" LENGTH 7'-116'

METHOD OF CONSTRUCTION CABLE TOOL CASING DIAM 6" LENGTH +2'-11'

SCREEN LOCATION ____ SCREEN ☐ SIZE ____ LENGTH ____ TYPE ____

SANITARY SEAL YES ☐ NO ☐ SCREEN ☐ SIZE ____ LENGTH ____ TYPE ____

PERFORATED CASING ☐ LENGTH ____ PERFORATIONS FROM ____ TO ____

GRAVEL PACK ☐ LENGTH ____ DIAM. ____ SIZE GRAVEL, ETC. ____

DISTANCE TO WATER 35' ☐ ESTIMATED WATER LEVEL

FROM G.L. ☐ MEASURED ELEVATION ____ ARTESIAN PRESSURE ____

DATE OF WATER LEVEL MEASUREMENT ____ WATER USE ____

PRODUCTION TEST SUMMARY

DATE ____

TEST BY ____

BAIL TEST ☐ PUMP TEST ☐ DURATION OF TEST ____

RATE 40 G.P.HOUR DRAWDOWN ____

WATER LEVEL AT COMPLETION OF TEST ____

AVAILABLE DRAWDOWN ____ SPECIFIC CAPACITY ____

PERMEABILITY ____ STORAGE COEFF. ____

TRANSMISSIVITY ____

RECOMMENDED PUMPING RATE ____

RECOMMENDED PUMP SETTING 115'

CHEMISTRY

TEST BY ____ DATE ____

TOTAL DISSOLVED SOLIDS ____ mg/l TEMPERATURE ____ °C pH ____ SILICA (SiO_2) ____ mg/l

CONDUCTANCE ____ μmhos/cm AT 25°C TOTAL IRON (Fe) ____ mg/l TOTAL HARDNESS ($CaCO_3$) ____ mg/l

TOTAL ALKALINITY ($CaCO_3$) ____ mg/l PHEN. ALKALINITY ($Ca\ CO_3$) ____ mg/l MANGANESE (Mn) ____ mg/l

COLOUR ____ ODOUR ____ TURBIDITY ____

ANIONS	mg/l	epm	CATIONS	mg/l	epm
CARBONATE (CO_3)			CALCIUM (Ca)		
BICARBONATE (HCO_3)			MAGNESIUM (Mg)		
SULPHATE (SO_4)			SODIUM (Na)		
CHLORIDE (Cl)			POTASSIUM (K)		
$NO_2 + NO_3$ (NITROGEN)			IRON (DISSOLVED)		
* TKN. (NITROGEN)					
PHOSPHORUS (P)					

* TKN = TOTAL KJELDAHL NITROGEN CHEMISTRY SITE NO. ____

NO_2 = NITRITE NO_3 = NITRATE

CHEMISTRY FIELD TESTS

TEST BY ____ DATE ____ EQUIPMENT USED ____

CONTENTS OF FOLDER

☒ DRILL LOG ☐ PUMP TEST DATA ☐ CHEMICAL ANALYSIS

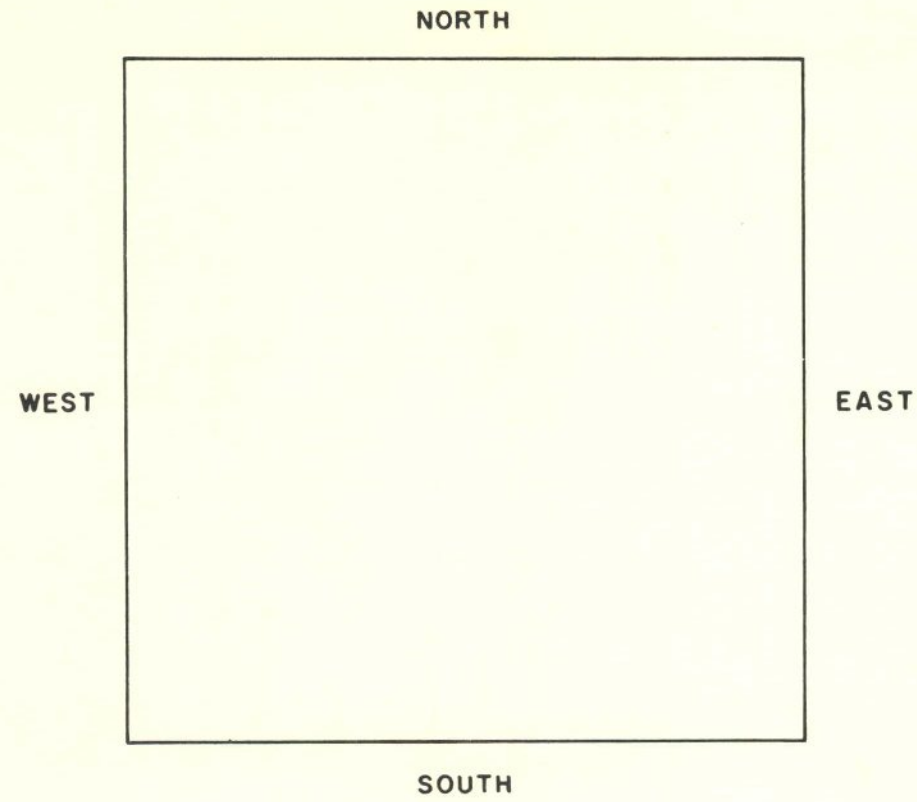
☐ SIEVE ANALYSIS ☐ GEOPHYSICAL LOGS ☐ REPORT

OTHER ____

SOURCES OF INFORMATION DRILLER

LITHOLOGY

FROM	TO	DESCRIPTION
0	8'	ROCKS & CLAY
8'	64'	LIMESTONE - SMALL AMOUNT OF WATER AT 35'.
64'	80'	SANDSTONE
80'	86'	LIMESTONE
86'	116'	SANDSTONE.
B		PITLESS ADAPTOR & VENTED WELL CAP. LIQUID LEVEL CONTROL INSTALLED IN WELL.
		SKETCH INSIDE.
MTR	80	ANGO SD#2 SUB 629 00205.000 FRACTION NORTH ½ of FRACTION NORTH ½ of SE ¼ except E. 20 chains LOT 4 SEC 30 TP 5 200 ACRES LTO F177925



CARD BY R.J.W. DATE Feb. 20, 1980.

ADDITIONAL DATA ADDED BY _____

REMARKS

47092

Province of British Columbia Ministry of Environment Water Investigations Branch

WATER WELL RECORD

Date 81 11 7 (YR MO DY)

Legal Description & Address

Descriptive Location KEPPLESTON RD. VERNON B.C.

Owners Name & Address EDWIN M. MEADE R.R.#1 DUNCAN, B.C.

NTS MAP ELEV WELL No.

UTM Z E N UTM Date 19

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 5 ☐ Other

3. WATER WELL USE 1 ☑ Domestic 2 ☐ Municipal 3 ☐ Irrigation 4 ☐ Commercial & Industrial 5 ☐ Other

4. DRILLING ADDITIVES NONE

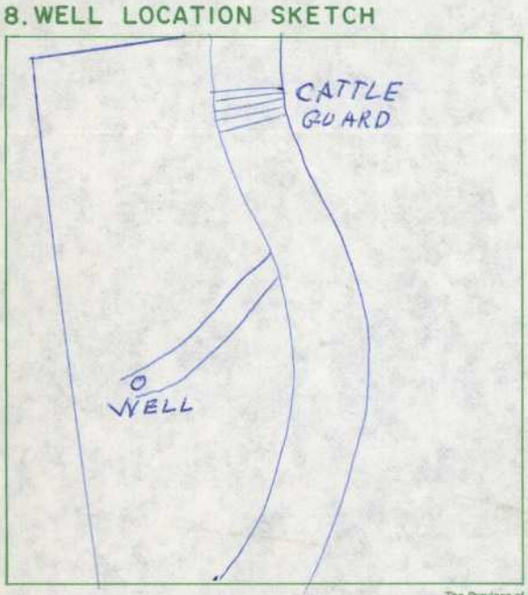
5. MEASUREMENTS from 1 ☑ ground level 2 ☐ top of casing

FROM ft	TO ft	6. WELL LOG DESCRIPTION	SWL ft
0	18'	BROWN BROCKEN SHALE	
18'	132'	HARD ROCK	13'
132'	188	SOFTER ROCK WITH THIN HARD LAYERS (GRAY TO WHITE)	13'
188'	199'	SOFT LAYER OF BLUE-GRAY COLOR	13'
199'	204'	HARD GREENISH COLOURED ROCK	13'

7. CONSULTANT

Address

8. WELL LOCATION SKETCH



9. CASING: Materials 1 ☑ Steel 2 ☐ Galvanized 3 ☐ Wood 4 ☐ Plastic 5 ☐ Concrete 6 ☐ Other

Hole Diameter							units
Diameter	6"						ins
from	+2'						ft
to	18						ft
Thickness	0.250						ins
Weight	18						lb/ft

Pitless unit ft 1 ☐ above 2 ☐ below ground level

1 ☑ Welded 2 ☐ Cemented 3 ☐ Threaded 4 ☐ New 5 ☐ Used

Perforations:

Shoe(s): 6 INCH

Open hole, from 18' to 204 ft Diameter 6 ins

Grout:

10. SCREEN: 1 ☐ Nominal 2 ☐ Pipe Size

Type 1 ☐ Continuous Slot 2 ☐ Perforated 3 ☐ Louvre 4 ☑ Other NONE

Material 1 ☐ Stainless Steel 2 ☐ Plastic 3 ☐ Other

Set from to ft below ground level

SCREEN & BLANKS							units
Length							ft
Diam. I D							ins
Slot Size							ins
from							ft
to							ft

Fittings, top bottom

Gravel Pack

11. DEVELOPED BY: 1 ☐ Surging 2 ☐ Jetting 3 ☐ Air 4 ☑ Bailing 5 ☐ Pumping 6 ☐ Other

12. TEST 1 ☐ Pump 2 ☑ Bail Date 81 11 6 (YR MO DY)

Rate 20 USgpm GPH Temp °C SWL before test 13 ft

ft after test of hrs mins

TIME in mins & DRAWDOWN in ft				TIME in mins & RECOVERY in ft			
mins	WL	mins	WL	mins	WL	mins	WL

13.

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
SUBMERSIBLE	200 ft	LIQUID LEVEL CONTROLLED USgpm

14. WATER TYPE: 1 ☑ fresh 2 ☐ salty 3 ☑ clear 4 ☐ cloudy

colour CLEAR smell NONE ; gas 1 ☐ yes 2 ☑ no

15. WATER ANALYSIS: 1 ☐ Hardness mg/ℓ

2 ☐ Iron mg/ℓ 3 ☐ Chloride mg/ℓ

4 ☐ pH Field Date

SITE I D No Lab Date (YR MO DY)

16. FINAL WELL COMPLETION DATA

Well Depth 204 ft Water Flowing US gpm

Static Water Level 13 ft Pressure Head ft

Back filled NATURAL

Well Head Completion CAPPED

17. DRILLER PLEASE PRINT SURNAME SCHIBLI FIRST NAME MAX

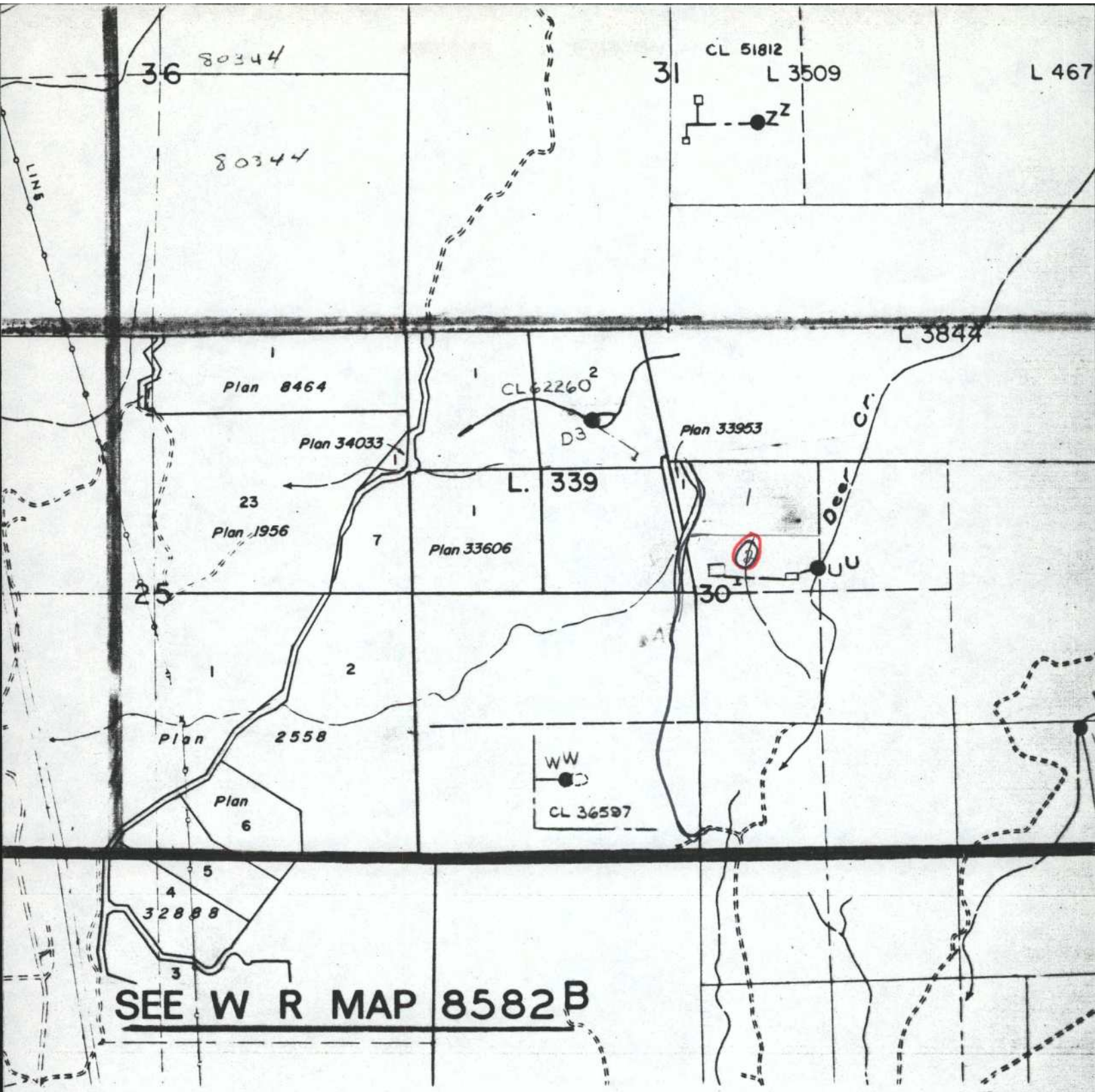
Signature Max Schibli

18. CONTRACTOR, Address

SCHIBLI WATER WELLS

LUMBY, B.C. PH. 547-6189

Member, BCWWDA ☑ yes ☐ no ;


36
80344
80344
LINE
31
CL 51812
L 3509
ZZ
L 467
L 3844
1
Plan 8464
1
CL 62260
2
D3
Plan 33953
Plan 34033
1
L. 339
1
Deer Cr.
23
Plan 1956
7
1
Plan 33606
1
UC
25
30
1
2
Plan 2558
WW
CL 36587
Plan
6
5
4
32888
3
SEE W R MAP 8582B

FILED KAKAP34627 E25956 2000-01-24-14.25.47.837989

20-NO

PLAN OF SUBDIVISION OF THE FRAC. S1/2 of NE 1/4, SEC. 30, TP. 5, except the east 20 chains, and PLAN 33953; THE FRAC. N 1/2 of FRAC. N 1/2 of SE 1/4, SEC. 30, TP. 5, except the east 20 chains; PART OF THE N1/2 of SW1/4, SEC. 30, TP. 5; and PART OF D.L. 339, except Plans 32722, & 33606; ALL IN O.D.Y.D.

SCALE 1:2000 (All distances are shown in metres and decimals thereof)

Plan No. 34627

DEPOSITED IN THE LAND TITLE OFFICE AT KAMLOOPS, B.C., THIS 25th DAY OF March, 1994.

REGISTRAR

DETAIL 'A'
SCALE 1:500

DETAIL 'B'
SCALE 1:500

DETAIL 'C'
SCALE 1:500

PLAN 32722

PLAN 33953

D.L. 3844

Rem. D.L. 339

LOT 3
8.037 ha.

LOT 2
8.035 ha.

LOT 1
7.543 ha.

FRACTIONAL S1/2 OF NE 1/4, SEC. 30, TP. 5 EXCEPT EAST 20 CHAINS

EAST 20 CHAINS OF FRACTIONAL S1/2 OF NE 1/4, SEC. 30, TP. 5

FRACTIONAL N1/2 OF FRACTIONAL N1/2 OF SE 1/4 SEC. 30, TP. 5, EXCEPT EAST 20 CHAINS

REM. OF EAST 20 CHAINS OF THE FRACTIONAL N1/2 OF SE 1/4, SEC. 30, TP. 5

FRACTIONAL S1/2 OF FRACTIONAL N1/2 OF FRACTIONAL SE 1/4, SEC. 30, TP. 5, EXCEPT THE EAST 20 CHAINS.

N1/2 of SW 1/4 SEC. 30 TP. 5

W 1/2 OF NW 1/4 OF SE 1/4, SEC. 30

E 1/2 OF NW 1/4 OF SE 1/4, SEC. 30

E 1/2 OF S1/2 OF SE 1/4, SEC. 30, TP. 5

S1/2 OF SW 1/4, SEC. 29

See Detail 'A'

See Detail 'B'

See Detail 'C'

KEDDLESTON ROAD

JACKSON ROAD

WILSON ROAD

PLAN 27708 ROAD

PLAN 19993

PLAN 20481

PLAN 3

LEGEND

BEARINGS ARE ASTRONOMIC AND DERIVED FROM PLAN 30481.

- ⊕ OIP DENOTES OLD IRON POST FOUND
- ⊕ IP DENOTES IRON POST SET
- WIT. DENOTES WITNESS
- SM DENOTES STONE MOUND

APPROVED UNDER THE LAND TITLE ACT THIS 3rd DAY OF February, 1994

APPROVING OFFICER FOR THE MINISTRY OF TRANSPORTATION AND HIGHWAYS

The registered owner designated hereon declares that he has executed this plan in accordance with Section 99 of the Land Title Act.

OWNER

Witness

Witness

Address

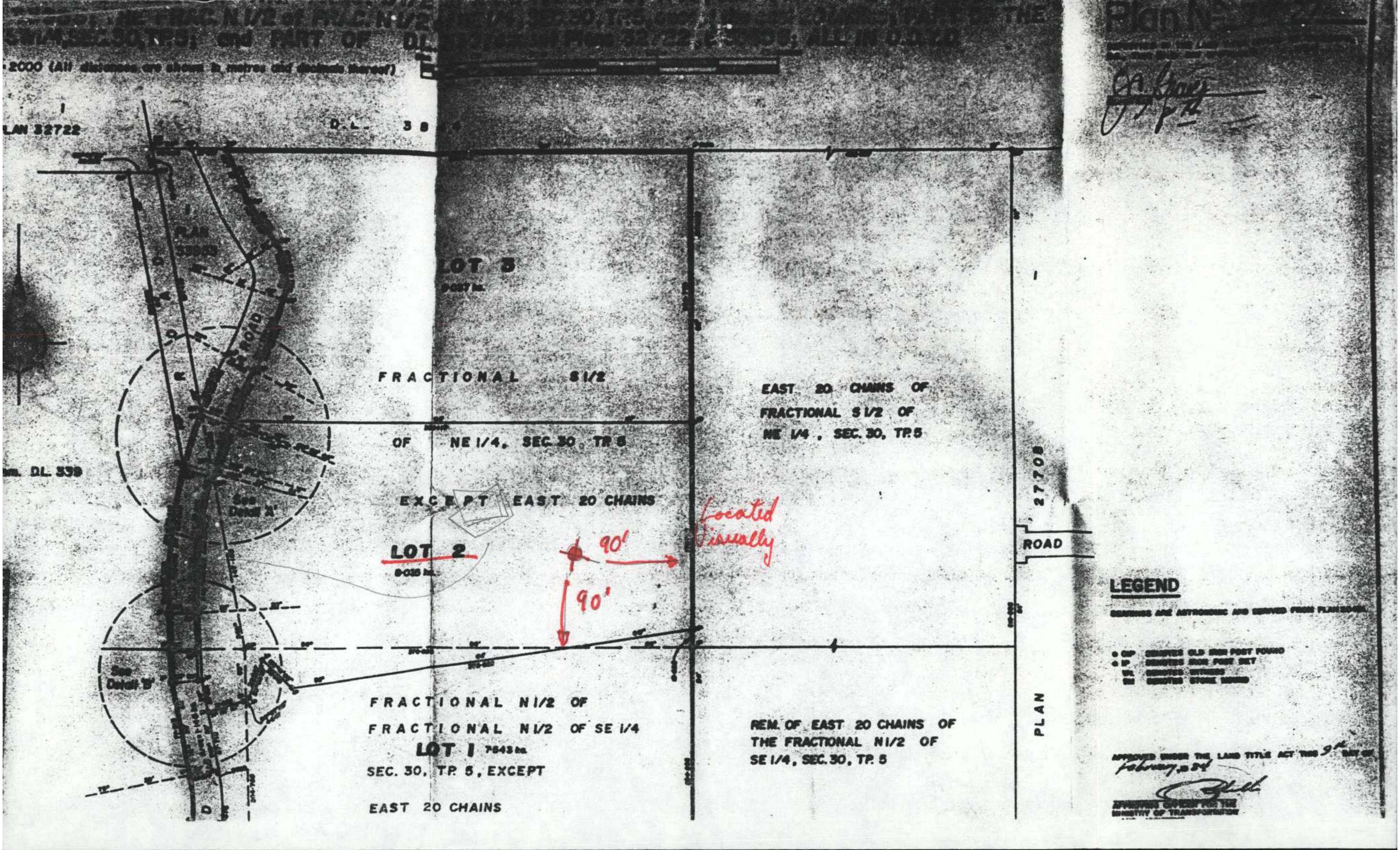
Occupation

THIS PLAN LIES WITHIN THE REGIONAL DISTRICT OF NORTH OKANAGAN.

I, R. N. SHORTT, A BRITISH COLUMBIA LAND SURVEYOR, OF VERNON, IN BRITISH COLUMBIA, CERTIFY THAT I WAS PRESENT AT AND PERSONALLY SUPERINTENDED THE SURVEY REPRESENTED BY THIS PLAN, AND THAT THE SURVEY AND PLAN ARE CORRECT. THE SURVEY WAS COMPLETED ON THE 17th DAY OF NOVEMBER, 1993.

R.N. SHORTT B.C.L.S.

RUSSELL N. SHORTT
BRITISH COLUMBIA LAND SURVEYOR
2601-32nd. STREET, VERNON, B.C.
PHONE 545-0611
R.S. 575, 682 FILE NO. 9209


Plan No
LAN 32722
D.L. 38
PLAN 33563
ROAD
LOT 3
FRACTIONAL S1/2
OF NE 1/4, SEC. 30, TP. 5
EXCEPT EAST 20 CHAINS
LOT 2
See Detail 'A'
Rem. DL. 339
See Detail 'B'
EAST 20 CHAINS OF
FRACTIONAL S 1/2 OF
NE 1/4, SEC. 30, TP. 5
Located Visually
90'
90'
FRACTIONAL N1/2 OF
FRACTIONAL N1/2 OF SE 1/4
LOT 1
SEC. 30, TP. 5, EXCEPT
EAST 20 CHAINS
REM. OF EAST 20 CHAINS OF
THE FRACTIONAL N1/2 OF
SE 1/4, SEC. 30, TP. 5
PLAN 27708
ROAD
LEGEND
APPROVED UNDER THE LAND TITLE ACT THIS 9th DAY OF
February 19 84
MINISTRY OF TRANSPORTATION

82L.034, 2.4.2 WTN: 47092

23

WATER WELL RECORD

DEPT. OF ENVIRONMENT, WATER RESOURCES SERVICE, WATER INVESTIGATIONS BRANCH VICTORIA, BRITISH COLUMBIA

LEGAL DESCRIPTION: LOT 2 SEC. 30 TP. 5 R. ____ D.L. 339 LAND DISTRICT 0504005 PLAN 34627

DESCRIPTIVE LOCATION KEDDLESTON RD. VERNON B.C. LICENCE NO. ____ DATE ____

Z ____ WELL NO. ____

____ E

____ N

Z 11 X 7 Y 2 NO. 10

NAT. TOPO. SHEET NO. 82 L/6 0504005 SHEET 8

OWNER'S NAME EDWIN M. MEADE 748-0081 ADDRESS RR 1 DUNCAN B.C

DRILLER'S NAME M. SCHIBLI WATER WELL ADDRESS LUMBY B.C. DATE COMPLETED 8/11/77

DEPTH 204' ELEVATION OF ____ (093) ☐ ESTIMATED ☐ SURVEYED CASING DIAM. ____ LENGTH ____

METHOD OF CONSTRUCTION CABLE TOOL CASING DIAM 6" LENGTH +2'-18'

SCREEN LOCATION ____ SCREEN ☐ SIZE ____ LENGTH ____ TYPE STEEL

SANITARY SEAL YES ☐ NO ☐ SCREEN ☐ SIZE ____ LENGTH ____ TYPE ____

PERFORATED CASING ☐ LENGTH ____ PERFORATIONS FROM ____ TO ____

GRAVEL PACK ☐ LENGTH ____ DIAM. ____ SIZE GRAVEL, ETC. ____

DISTANCE TO WATER 13' ☐ ESTIMATED WATER LEVEL

FROM GROUND LEVEL ☐ MEASURED ELEVATION ____ ARTESIAN PRESSURE ____

DATE OF WATER LEVEL MEASUREMENT ____ WATER USE DOMESTIC

PRODUCTION TEST SUMMARY

DATE ____

TEST BY ____

BAIL TEST ☐ PUMP TEST ☐ DURATION OF TEST ____

RATE 20 GPM DRAWDOWN ____

WATER LEVEL AT COMPLETION OF TEST ____

AVAILABLE DRAWDOWN ____ SPECIFIC CAPACITY ____

PERMEABILITY ____ STORAGE COEFF. ____

TRANSMISSIVITY ____

RECOMMENDED PUMPING RATE ____

RECOMMENDED PUMP SETTING ____

CHEMISTRY

TEST BY ____ DATE ____

TOTAL DISSOLVED SOLIDS ____ mg/l TEMPERATURE ____ °C pH ____ SILICA (SiO_2) ____ mg/l

CONDUCTANCE ____ μmhos/cm AT 25°C TOTAL IRON (Fe) ____ mg/l TOTAL HARDNESS ($CaCO_3$) ____ mg/l

TOTAL ALKALINITY ($CaCO_3$) ____ mg/l PHEN. ALKALINITY ($Ca\ CO_3$) ____ mg/l MANGANESE (Mn) ____ mg/l

COLOUR ____ ODOUR ____ TURBIDITY ____

ANIONS	mg/l	epm	CATIONS	mg/l	epm
CARBONATE (CO_3)			CALCIUM (Ca)		
BICARBONATE (HCO_3)			MAGNESIUM (Mg)		
SULPHATE (SO_4)			SODIUM (Na)		
CHLORIDE (Cl)			POTASSIUM (K)		
$NO_2 + NO_3$ (NITROGEN)			IRON (DISSOLVED)		
* TKN. (NITROGEN)					
PHOSPHORUS (P)					

* TKN = TOTAL KJELDAHL NITROGEN CHEMISTRY SITE NO. ____

NO_2 = NITRITE NO_3 = NITRATE

CHEMISTRY FIELD TESTS

TEST BY ____ DATE ____ EQUIPMENT USED ____

CONTENTS OF FOLDER

☒ DRILL LOG ☐ PUMP TEST DATA ☐ CHEMICAL ANALYSIS

☐ SIEVE ANALYSIS ☐ GEOPHYSICAL LOGS ☐ REPORT

OTHER ____

SOURCES OF INFORMATION DRILLER

LITHOLOGY

FROM	TO	DESCRIPTION	
0	18'	BROWN BROKEN SHALE	
18'	132'	HARD ROCK	13'
132'	188'	SOFTER ROCK WITH THIN HARD LAYERS (GRAY TO WHITE)	13'
188'	199'	SOFT LAYER OF BLUE-GRAY COLOR	13'
199'	204'	HARD GREENISH COLOURED ROCK	13'
		OPEN HOLE FROM 18' - 204'	

B

NORTH

WEST

EAST

SOUTH

CARD BY KJ DATE Sept 8, 1981

ADDITIONAL DATA ADDED BY

REMARKS

ODYD 82L/6bE 52384

Province of British Columbia Ministry of Environment Water Investigations Branch

WATER WELL RECORD

Date 83 06 30 (YR MO DY)

Legal Description & Address N½ of SW¼ Sec. 29 and S½ of NW¼ Sec. 29 TP 5, ODYD Heloma Estates Subdivision, Vernon, B.C. Project 40481

Descriptive Location WELL #9

Owners Name & Address Heloma ESTATES, INC., VANCOUVER, B.C.

NTS MAP ELEV WELL No.

UTM Z E N UTM Date 19__

1. TYPE OF WORK 1 [X] New Well 2 [ ] Reconditioned 3 [ ] Deepened 4 [ ] Abandoned

2. WORK METHOD 1 [X] Cable tool 2 [ ] Bored 3 [ ] Jetted 4 [ ] Rotary a [ ] mud b [ ] air c [ ] reverse 5 [ ] Other

3. WATER WELL USE 1 [X] Domestic 2 [ ] Municipal 3 [ ] Irrigation 4 [ ] Commercial & Industrial 5 [ ] Other

4. DRILLING ADDITIVES

5. MEASUREMENTS from 1 [X] ground level 2 [ ] top of casing

FROM ft	TO ft	6. WELL LOG DESCRIPTION	SWL ft
0	9	Brown Clay + rocks	
9	155	Grey Clay + rocks with Boulders at 85'-96', 100', 104', 141', 152'	
		Blasted rock at 85' and 96'-98' and 100'-104'	
155	162	Medium to coarse sand + gravel - very angular	134
162	164	fine to coarse sand + gravel (silty)	
164	165	Bedrock	

7. CONSULTANT ED. LIVINGSTON
Address VANCOUVER

8. WELL LOCATION SKETCH

9. CASING: Materials 1 [X] Steel 2 [ ] Galvanized 3 [ ] Wood 4 [ ] Plastic 5 [ ] Concrete 6 [ ] Other

							units
Hole Diameter							ins
Diameter	6						ins
from	0						ft
to	155						ft
Thickness	312						ins
Weight	21						lb/ft

Pitless unit ____ ft 1 [ ] above 2 [ ] below ground level
1 [X] Welded 2 [ ] Cemented 3 [ ] Threaded 4 [X] New 5 [ ] Used
Perforations:
Shoe(s): 6"
Open hole, from ____ to ____ ft Diameter ____ ins
Grout:

10. SCREEN: 1 [X] Nominal 2 [ ] Pipe Size
Type 1 [X] Continuous Slot 2 [ ] Perforated 3 [ ] Louvre 4 [ ] Other
Material 1 [X] Stainless Steel 2 [ ] Plastic 3 [ ] Other
Set from 156 to 164 ft below ground level

SCREEN & BLANKS							units
Length	4	4					ft
Diam. I D	6	6					ins
Slot Size	.120	.060					ins
from	156	160					ft
to	160	164					ft

Fittings, top lead packer bottom Bail - Bottom
Gravel Pack

11. DEVELOPED BY: 1 [X] Surging 2 [ ] Jetting 3 [ ] Air 4 [X] Bailing 5 [ ] Pumping 6 [ ] Other

12. TEST 1 [X] Pump 2 [X] Bail Date 83 06 13 (YR MO DY)
Rate 6 USgpm Temp ____ °C SWL before test 134 ft
148 ft after test of 2 hrs ____ mins

TIME in mins & DRAWDOWN in ft				TIME in mins & RECOVERY in ft			
mins	WL	mins	WL	mins	WL	mins	WL

13.

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING ft	RECOMMENDED PUMPING RATE USgpm

14. WATER TYPE: 1 [X] fresh 2 [ ] salty 3 [X] clear 4 [ ] cloudy
colour ____ smell ____ ; gas 1 [ ] yes 2 [ ] no

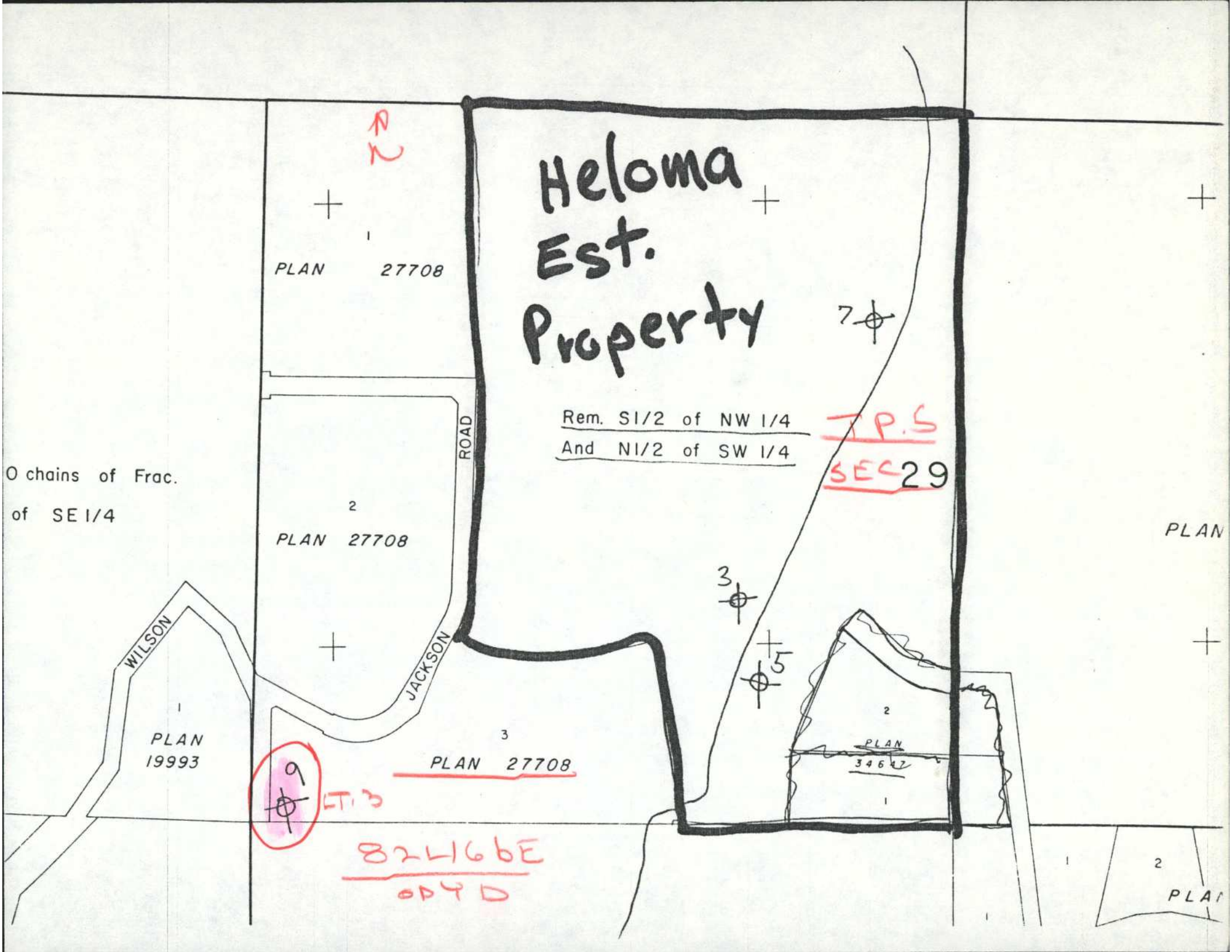
15. WATER ANALYSIS: 1 [ ] Hardness ____ mg/ℓ 2 [ ] Iron ____ mg/ℓ 3 [ ] Chloride ____ mg/ℓ 4 [ ] pH ____ Field Date ____ Lab Date ____ (YR MO DY)

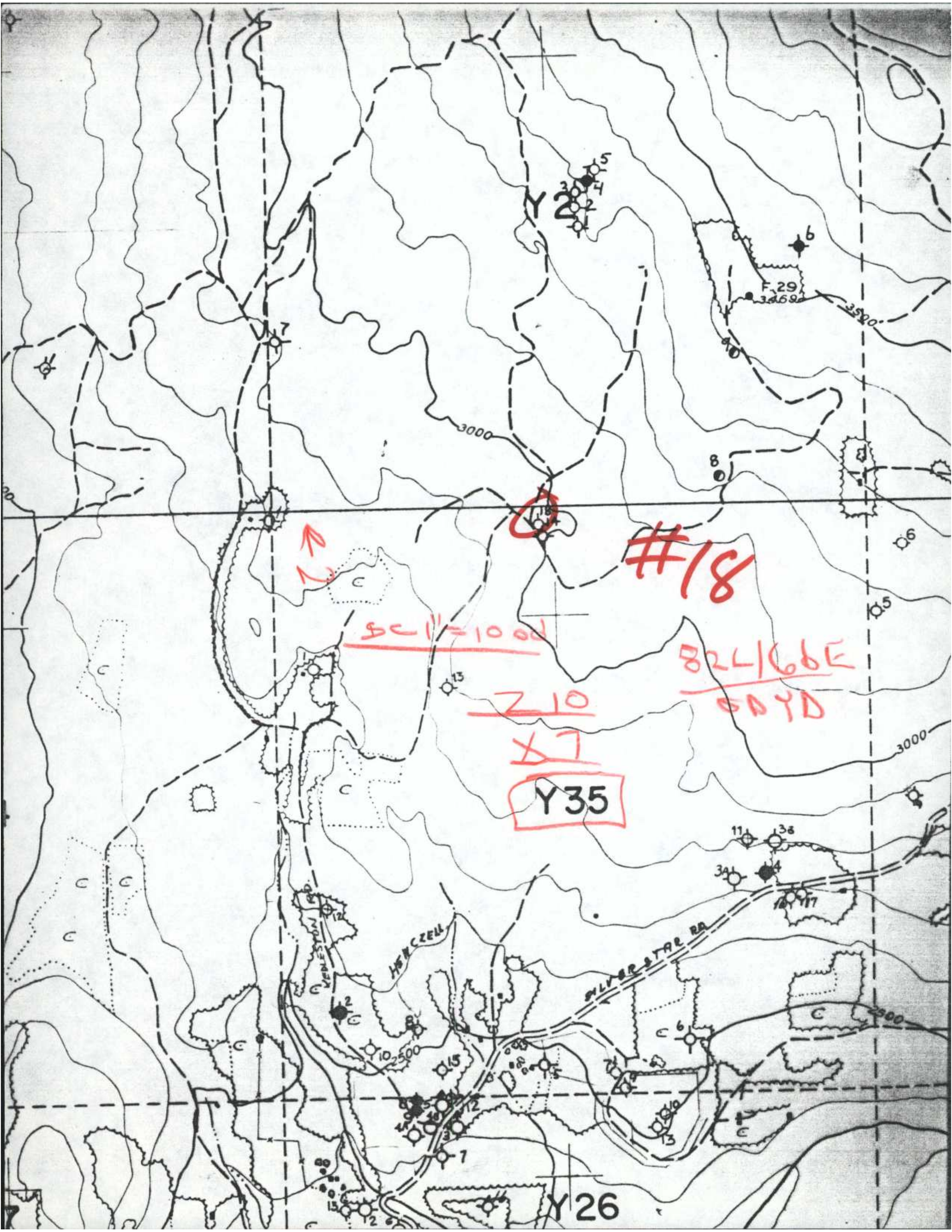
SITE I D No ____

16. FINAL WELL COMPLETION DATA
Well Depth 165 ft Water Flowing ____ US gpm
Static Water Level 134 ft Pressure Head ____ ft
Back filled ____
Well Head Completion Capped

17. DRILLER PLEASE PRINT SURNAME SCHIBLI FIRST NAME MAX
Signature Max Schibli

18. CONTRACTOR, Address
SCHIBLI WATER WELLS
LUMBY, B.C. PH. 547-6189
Member, BCWWDA [X] yes [ ] no ;


Heloma
Est.
Property
Rem. S1/2 of NW 1/4
And N1/2 of SW 1/4
JPS
SEC 29
PLAN 27708
PLAN 27708
PLAN 19993
PLAN 27708
PLAN 34647
ROAD
WILSON
JACKSON
0 chains of Frac.
of SE 1/4
LT. 3
82L16bE
ODYD


Y2
F.29
3500
3000
#18
Y35
3000
SILVER STAR RD
2500
2500
Y26

82L.035.1.3.1

WTN: 52384

VERNON - KELOWNA 8

WATER WELL RECORD

DEPT. OF ENVIRONMENT, WATER RESOURCES SERVICE, WATER INVESTIGATIONS BRANCH VICTORIA, BRITISH COLUMBIA

Z [ ] [ ] WELL NO. [ ] [ ] [ ]

[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] E

[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] N

Z 10 X 7 Y 35 NO. 18

LEGAL DESCRIPTION: LOT 3 SEC. 29 TP. 5 R. ____ D.L. ____ LAND DISTRICT ODYD PLAN 27708

DESCRIPTIVE LOCATION WELL #9 N½ OF SW¼ & S½ OF NW¼ S29 TP5 ODYD LICENCE NO. ____ DATE ____

NAT. TOPO. SHEET NO. 082-8 82L/6E

OWNER'S NAME HELOMA ESTATES ADDRESS VANCOUVER

DRILLER'S NAME SCHIBLI WATER WELLS ADDRESS LUMBY DATE COMPLETED 83/06/30

DEPTH 165' ELEVATION OF (093) ☐ ESTIMATED ☐ SURVEYED CASING DIAM. ____ LENGTH ____

METHOD OF CONSTRUCTION CABLE TOOL CASING DIAM 6" LENGTH 0 TO 155'

SCREEN LOCATION 156 TO 164' SCREEN ☒ SIZE .120 & .060 LENGTH 8' TYPE ST. STEEL

SANITARY SEAL YES ☐ NO ☐ SCREEN ☐ SIZE ____ LENGTH ____ TYPE ____

PERFORATED CASING ☐ LENGTH ____ PERFORATIONS FROM ____ TO ____

GRAVEL PACK ☐ LENGTH ____ DIAM. ____ SIZE GRAVEL, ETC. ____

DISTANCE TO WATER 134' ☐ ESTIMATED WATER LEVEL

FROM GROUND ☐ MEASURED ELEVATION ____ ARTESIAN PRESSURE ____

DATE OF WATER LEVEL MEASUREMENT ____ WATER USE ____

PRODUCTION TEST SUMMARY

DATE 83/06/13

TEST BY DRILLER

BAIL TEST ☒ PUMP TEST ☐ DURATION OF TEST 2 HRS

RATE 6 GPM DRAWDOWN 14'

WATER LEVEL AT COMPLETION OF TEST 148'

AVAILABLE DRAWDOWN ____ SPECIFIC CAPACITY ____

PERMEABILITY ____ STORAGE COEFF. ____

TRANSMISSIVITY ____

RECOMMENDED PUMPING RATE ____

RECOMMENDED PUMP SETTING ____

CHEMISTRY

TEST BY ____ DATE ____

TOTAL DISSOLVED SOLIDS ____ mg/l TEMPERATURE ____ °C pH ____ SILICA (SiO_2) ____ mg/l

CONDUCTANCE ____ μmhos/cm AT 25°C TOTAL IRON (Fe) ____ mg/l TOTAL HARDNESS ($CaCO_3$) ____ mg/l

TOTAL ALKALINITY ($CaCO_3$) ____ mg/l PHEN. ALKALINITY ($Ca\ CO_3$) ____ mg/l MANGANESE (Mn) ____ mg/l

COLOUR ____ ODOUR ____ TURBIDITY ____

ANIONS	mg/l	epm	CATIONS	mg/l	epm
CARBONATE (CO_3)			CALCIUM (Ca)		
BICARBONATE (HCO_3)			MAGNESIUM (Mg)		
SULPHATE (SO_4)			SODIUM (Na)		
CHLORIDE (Cl)			POTASSIUM (K)		
$NO_2 + NO_3$ (NITROGEN)			IRON (DISSOLVED)		
* TKN. (NITROGEN)					
PHOSPHORUS (P)					

* TKN = TOTAL KJELDAHL NITROGEN CHEMISTRY SITE NO. ____

NO_2 = NITRITE NO_3 = NITRATE

CHEMISTRY FIELD TESTS

TEST BY ____ DATE ____ EQUIPMENT USED ____

LITHOLOGY

FROM	TO	DESCRIPTION
0	9	BROWN CLAY & ROCKS
9	155	GREY CLAY & ROCKS WITH BOULDERS AT 85-96, 100, 104, 141, 152 BLASTED ROCK AT 85' AND 96-99 AND 100-104
155	162	MEDIUM TO COARSE SAND & GRAVEL - VERY ANGULAR
162	164	FINE TO COARSE SAND & GRAVEL (SILTY)
164	165	BEDROCK

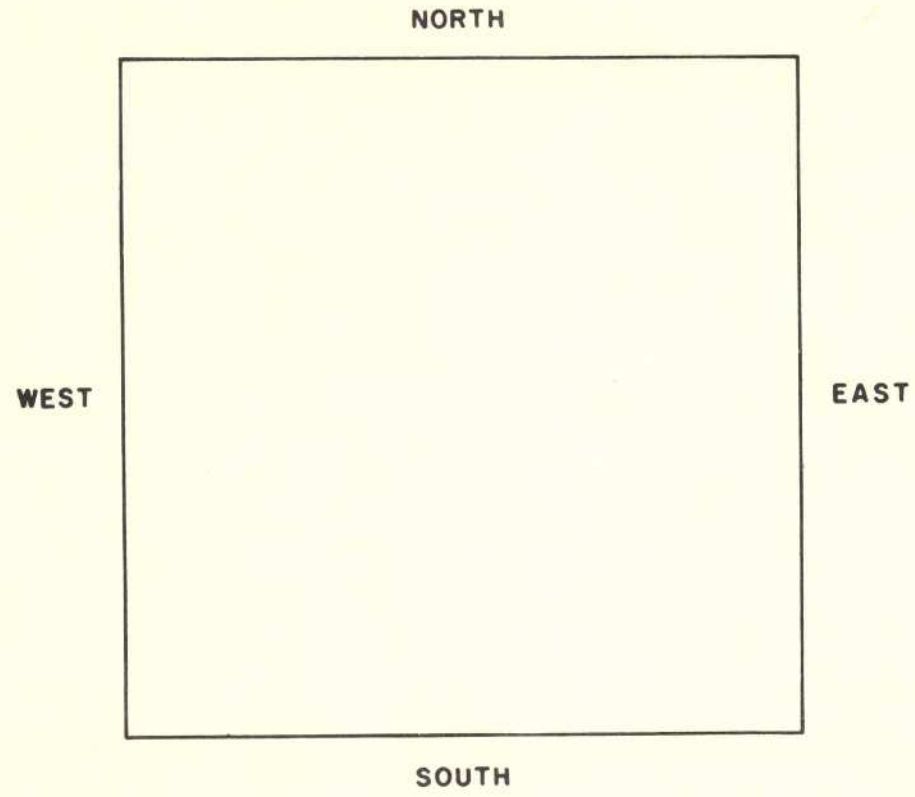
CONTENTS OF FOLDER

☒ DRILL LOG ☐ PUMP TEST DATA ☐ CHEMICAL ANALYSIS

☐ SIEVE ANALYSIS ☐ GEOPHYSICAL LOGS ☐ REPORT

OTHER ____

SOURCES OF INFORMATION DRILLER



CARD BY Steve Holmes DATE Aug 26/85

ADDITIONAL DATA ADDED BY _____

REMARKS

ENV 1995

BRITISH COLUMBIA
Ministry of Environment

☒ Well Construction Report
☐ Well Closure Report
☐ Well Alteration Report

Integrity Drilling Inc
Stamp company name/address/ phone/fax/e-mail here, if desired.

Ministry Well ID Plate Number: 28035
Ministry Well Tag Number: 97354
☐ Confirmation/alternative specs. attached
☐ Original well construction report attached

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

Owner name: DAN AND SHANNON LACASSE

Mailing address: 7925 WILSON JACKSON RD Town VERNON Prov. BC Postal Code V1B 3N5

Well Location: Address: Street no. 7925 Street name WILSON JACKSON Rd Town VERNON

(or) **Legal description:** Lot ____ 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):** 50° 19.881 52.86" N **Longitude:** 119° 11.651 39.06" W

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

Orientation of well: ☒ vertical ☐ horizontal Ground elevation: 2996 ft (asl) Method (see note 4): GPS

Class of well (see note 5): WATER SUPPLY **Sub-class of well:** DOMESTIC

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

Casing details

From ft (bgl)	To ft (bgl)	Dia in	Casing Material / Open Hole	Wall Thickness in	Drive Shoe
+2	40	6 5/8	STEEL	.250	

Screen details

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

Surface seal: Type: BENTONITE Depth: 15 ft
Method of installation: ☒ Poured ☐ Pumped Thickness: 1 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: ☐ Bail ☐ 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: ____ USgpm Duration: 1 hrs
SWL before test: 15 ft (btoc) Pumping water level: 420 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): DARREL, WANGLER
Registration no. (see note 20): WD 5092602
Consultant (if applicable; name and company): ____

DECLARATION: Well construction, well alteration or well closure, as the case may be, has been done in accordance with the requirements in the *Water Act* and the Ground Water Protection Regulation.

Signature of Driller Responsible D Wangler

Final well completion data:

Total depth drilled: 420 ft Finished well depth: 420 ft (bgl)
Final stick up: +2FT in Depth to bedrock: ____ ft (bgl)
SWL: 15 ft (btoc) Estimated well yield: ____ USgpm
Artesian flow: NO USgpm, or Artesian pressure: ____ ft
Type of well cap: VERMIN PROOF Well disinfected: ☒ Yes ☐ No
Where well ID plate is attached: TO CASING

Well closure information:

Reason for closure: ____
Method of closure: ☐ Poured ☐ Pumped
Sealant material: ____ Backfill material: ____
Details of closure (see note 17): ____

Date of work (YYYY/MM/DD):

Started: 2007/06/16 **Completed:** 2007/06/16
Comments: PRESSURE FRACTURE EXISTING WELL

PLEASE NOTE: The information recorded in this well report describes the works and hydrogeologic conditions at the time of construction, alteration or closure, as the case may be. Well yield, well performance and water quality are not guaranteed as they are influenced by a number of factors, including natural variability, human activities and condition of the works, which may change over time.

white: Customer copy
canary: Driller copy
pink: Ministry copy

Sheet ____ of ____

50° 19' 52.86" 119° 11' 39.06" 082L.035.131

BRITISH COLUMBIA
The Best Place on Earth

Ministry of Environment

☒ Well Construction Report
☐ Well Closure Report
☐ Well Alteration Report

AQUA SOURCE DRILLING LTD.
2307 - 39th Ave.
Vernon, B.C. V1T 3B3
Bus: 250-275-0920

Ministry Well ID Plate Number: 50310
Ministry Well Tag Number: 113299
☐ Confirmation/alternative specs. attached
☐ Original well construction report attached

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

Owner name: Tim & Boulter

Mailing address: 7961 Silver Star Rd Town Vernon Prov. _____ Postal Code V1B 3N2

Well Location (see note 2): Address: Street no. 7961 Street name Silver Star Rd Town Vernon

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

(or) **PID:** _____ (and) **Description of well location (attach sketch, if nec.):** well is at NW corner of property near Wilson Jackson Road

NAD 83: Zone: Nad 83 (see note 3) (and) **UTM Easting:** 119° 11, 590 W. m **UTM Northing:** 50° 19.701 N. m (or) **Latitude (see note 4):** 50 19 42 **Longitude:** 119 11 35 LAT

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

Orientation of well: ☒ vertical ☐ horizontal Ground elevation: 3027 ft (asl) Method (see note 5): GPS.

Class of well (see note 6): Closed Loop Geothermal **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 8-13) or closure description (see notes 14 and 15)

From ft (bgl)	To ft (bgl)	Surficial Material: Clay	Silt	Till	Sand with clay/silt	Sand, fine-med	Sand, med-coarse	Sand with gravel	Bedrock Material: Siltstone/shale	Sandstone	Conglomerate	Limestone	Basalt	Volcanic	Crystalline	Other Surficial/ Bedrock	Colour: Red	Orange	Brown	Tan	Light Grey	Blue	Green	Dark Grey	Hardness: Very Hard	Hard	Dense/Stiff	Loose	Water Content: Dry	Moist	Wet	High Production	Lost circulation	Not Available	Observations (e.g. other geological materials (e.g. boulders), est. water bearing flow (USgpm), or closure details)
0	7			●															●								●		●							
7	12																									◐			●							Black + white.
12	54							●											●									●	●							
54	218			●																							●									Black
218	700													●																						< 1/4 GPM.

Casing details

From ft (bgl)	To ft (bgl)	Dia in	Casing Material/Open Hole (see note 17)	Wall Thickness in	Drive Shoe
0	236	6	STEEL	.219	✓
236	700	6 1/8	Open Hole		

Surface seal: Type: Bentonite Depth: 20 ft
Method of installation: ☐ Poured ☐ Pumped Thickness: 4 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)

Screen details

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

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: ☐ Bail ☐ 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: _____ 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): Walter Howe
Registration no. (see note 20): 05081001
Consultant (if applicable; name and company): _____

DECLARATION: Well construction, well alteration or well closure, as the case may be, has been done in accordance with the requirements in the Water Act and the Ground Water Protection Regulation.

Signature of Driller Responsible Jim Howe.

Final well completion data:

Total depth drilled: 700 ft Finished well depth: 700 ft (bgl)
Final stick up: 24 in Depth to bedrock: 218 ft (bgl)
SWL: _____ ft (btoc) Estimated well yield: < 1/4 USgpm
Artesian flow: _____ USgpm, or Artesian pressure: _____ ft
Type of well cap: Vented Well disinfected: ☒ Yes ☐ No
Where well ID plate is attached: To Casing

Well closure information:

Reason for closure: _____
Method of closure: ☐ Poured ☐ Pumped
Sealant material: _____ Backfill material: _____
Details of closure (see note 16): _____

Date of work (YYYY/MM/DD):

Started: 2016 10 21 **Completed:** 2016 11 01
Comments: _____

PLEASE NOTE: The information recorded in this well report describes the works and hydrogeologic conditions at the time of construction, alteration or closure, as the case may be. Well yield, well performance and water quality are not guaranteed as they are influenced by a number of factors, including natural variability, human activities and condition of the works, which may change over time.

white: Customer copy
canary: Driller copy
pink: Ministry copy

Sheet ___ of ___

General

1. Requirements for well construction and well closure reports are found in Part 5 of the *Water Act* and the Ground Water Protection Regulation. Part 5 of the act and regulation are available at: http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/index.html#leg.
2. A minimum of one of the well location descriptors must be completed (e.g. Address OR Legal OR PID) plus the description of the well location.
3. The current Ministry standard datum for mapping and geodetic use is the North American Datum of 1983 (NAD 83). To determine GPS coordinates using a Global Positioning System (GPS), set the datum to NAD 83.
4. For latitude and longitude coordinates, provide coordinates either in degree, minutes and seconds (e.g., 50˚ 2' 21.037") or decimal degrees (e.g., 50.039175˚).
5. For the method of determining ground elevation, enter: GPS, differential GPS, level, altimeter, 1:50,000 map, 1:20,000 map, 1:10,000 map or 1:5,000 map.
6. The classes and sub-classes of wells are shown below:

Class	**Sub-class** (if applicable)
Water supply	Domestic; Non-domestic
Monitoring	Temporary; Permanent
Recharge or injection	
Dewatering or drainage	Temporary; Permanent
Remediation	Temporary; Permanent
Geotechnical	Borehole; Test pit; Special type of hole; Closed loop geothermal

7. Well reports submitted to the Deputy Comptroller, or retained by the person responsible, as required under the *Water Act* and the Ground Water Protection Regulation, shall be considered part of the Provincial Government records and is subject to the *Freedom of Information and Protection of Privacy Act*.

How to Fill Out the Lithologic Description Table

8. Each row in the lithologic description table represents either a depth interval or depth in the well.
9. A row could represent a depth interval (e.g., from 0 feet to 12 feet), such as for a geologic stratum or a specific depth (e.g., 120 feet), such as for a depth location of a water-bearing fracture.
10. For each depth interval, indicate with a check mark (√) or X the hardness, colour, and type of surficial material or bedrock material. Only make one selection for each class.

    The classification system for surficial material, bedrock material, colour and hardness has been adopted with permission from *The Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes* (Thomas M. Hanna, RPG, 2006).
11. "Crystalline" bedrock material includes granitic rocks, such as granodiorite, or metamorphic rocks, such as gneiss or schist.
12. For a depth interval, if the type of surficial material or bedrock material is not listed in the table indicate with a check mark (√) or X and specify the geologic material encountered in the Observation field.
13. If a water-bearing fracture is encountered, the depth of the fracture the estimated flow of water in the fracture should be recorded in the Observations column.

How to Fill Out the Closure Description Table and the Well Closure Information Section

14. Each row in the closure description table represents either a depth interval (e.g., from 0 feet to 12 feet) or depth (e.g., 120 feet) in the well.
15. For a depth interval, enter the type of backfill or sealant material(s) in the Observations column.
16. Indicate in "Details of closure" whether casing(s) or screen(s) were pulled or left in place. If casing(s) were left in place, indicate whether it was perforated or ripped.

Casing Details

17. "Casing Material / Open hole" includes cement, plastic, steel, other, open hole, or casing pulled.

    If a surface seal is required, details of the casing used to create the annular space for the surface seal can be entered in the first row of the table. Enter the depth interval, casing diameter, and record "casing pulled" under "Casing Material / Open hole".

Screen Details

18. "Type" includes riser pipe, K-packer, screen, screen blank, or tail pipe.

Well Driller

19. Fill in the name of the driller who constructed the well.

Registration Number of Driller Responsible

20. Fill in the registration number on the Qualified Well Driller identification card. If the work was completed by a driller who is not registered as a Qualified Well Driller, the Qualified Well Driller who is directly supervising the work should fill in their registration number on their Qualified Well Driller identification card. The Qualified Well Driller signs the form.

Definitions of Abbreviations

asl ..... above sea level

bgl ..... below ground level

btoc ..... below top of casing

Dia ..... Diameter

D.L. ..... District Lot

ft ..... feet

hrs ..... hours

in ..... inches

NAD 83 ..... North American Datum (1983)

PID ..... Parcel Identifier

Rg ..... Range

Sec ..... Section

SWL ..... static water level

Twp ..... Township

USgpm ..... US gallons per minute

UTM ..... Universal Transverse Mercator Grid

Return Completed Forms to:

Ground Water Data Technician
Water Stewardship Division, Ministry of Environment
PO Box 9362 Stn Prov Govt
Victoria BC V8W 9M2

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