



February 23, 2023

RCE File #2199-23

Bill and Brenda Goorts
[REDACTED]
[REDACTED]
[REDACTED]

Re: Assessment & Feasibility of Sewage Disposal for Proposed Subdivision

Civic Address: 5597 Strick Road, Port Alberni, BC

Legal Description: Lot 8, District Lot 20, Plan 921 Except that Part in Plan 9142, Alberni District

Dear Bill and Brenda,

As you requested, the following report addresses the suitability of your proposed lots for Onsite Sewage Disposal Systems for 4-Lot Subdivision. This subdivision proposes three new lots and a remainder lot with the existing dwelling on it.

Introduction

I understand you are proposing to create three new lots with a remainder lot of one by subdividing **Lot 8, District Lot 20, Plan 921 Except that Part in Plan 9142, Alberni District** in Port Alberni.

It is necessary to evaluate the proposed the new lots as part of the subdivision application to ensure technically and economically viable septic systems can be installed. This is to ensure that it is not posing a public health hazard.

Background

Soils were reviewed on February 20, 2023. Twelve test pits were completed and reviewed. Groundwater conditions were observed after heavy rainfall during a period and within the winter months of typical ground water conditions for wet season monitoring. (See proposed subdivision plan with test pit locations: Appendix 1)

The site is serviced by Beaver Creek Improvement District. The water is also supplied by the improvement district.

There are no covenants that restrict onsite sewage dispersal on the site. (See Appendix 2: Title)

Any sewage system design will be further investigated before the subdivision application is completed for the Ministry of Transportation.

The proposed remainder lot has a functioning sewage disposal system and area for a reserve should that be required in the future. (See Appendix 3)

Soils

Twelve Test Pits were advanced, all to a depth of 0.9m to 1.0m deep. Soil characteristics have been confirmed to be a 20 cm of brown topsoil and turf over a shallow layer of light yellowish loam/ silt loam varying from 45cm to 50cm deep over compacted light grayish silty clay loam and till of low permeability.

Table 1: Site Evaluation Summary

Land Slope:	2-3% average.
# of soil test sites:	12
Typical soil at infiltration surface where Tested	
Texture:	Loam / Silt loam
Structure:	Subangular moderate grade slight graininess
Consistence:	Firm
Typical soil profile	
A: Brown Sandy loam SG-0 to GR-2, loose.moist	
B: yellow loam silt loam, M, firm.some seepage	
C: Gray Silt/ silt clay, heavy seepage	
Typical depths in the selected dispersal area	
Roots:	50cm
Mottling:	faint mottles at 45cm
Seasonal Water Table:	>45cm
Reference:	WL measured by TL
Soil Permeability	
# of CHBP:	8 constant head borehole permeameter
Shallow Soils	
Measured K(fs):	mm/d median value, shallow soil depth of 20 to 30 cm
-or, in mm/d	>180mm/d design value based on median
Deeper Soils	
Measured k(fs):	160mm/d median value, soil depth of 45 to 50cm
Interpretation	
FRH:	>55cm Flow Restrictive Horizon
SHWT:	>40cm Seasonal High Water Table

Test pit logs available upon request.

Permeability

Permeability tests were conducted within the locations of the test pits.

The permeabilities KFS ranged between 180mm/day-240mm/day amongst the areas tested within the proposed areas.

Permeability tests available upon request.

Groundwater

High groundwater conditions were a concern during the initial test pit reviews with the heavy rain that fell on the region during a period in early February. Checking the groundwater levels confirmed groundwater levels to be high. The twelve open test pits indicate SHWT at 35 cm to 40 cm below the surface.

The water levels observed appeared to have been higher than the Seasonal High Water Table due to the heavy recent rainfall. Regardless, the conditions are still indicative that a standard Type 1 gravity system is not appropriate at this site.

Land slope: 2-3% average

System Selection

Following the Sewage System Standard Practice Manual Version 3, the options for an onsite wastewater system at a location with high groundwater conditions are sand mound, raised bed and/or package system. The preferred alternative is to establish the feasibility of a Type 1 pressure distribution system with timed or micro dosing to a sand mound. This system is relatively simple, has a low level of treatment and is easy to

maintain. The main additional expense for this system over a standard Type 1 gravity or pressure system is the sand fill and timed dosing. This system requires 10" (25 cm) of Vertical Separation (VS) to groundwater. A site drainage system is needed to achieve this vertical separation at the locations reviewed.

It is noted that it will be the responsibility of the designated professional or qualified persons for the final design for construction that will determine if this is required and if other systems or approaches may be used. This report only evaluates the feasibility of such a system being installed economically.

Site Drainage System

The site is low lying and below the road grade of Strick Road. The site has very few options to create drainage or intercept water.

Any sewage system will have to ensure that **should** overland flooding ever occur, that the sewage system is designed to handle this kind of event.

PROPOSED SYSTEM

Table II-17 allows the use of a Type 1 Sand Mound System with timed dosing and pressure distribution, as per the SPM3. The vertical separation (VS) required for this system is 10" (25cm) per SPM Table II-17. The table requires a minimum of 45cm of sand media thickness and a minimum as constructed Vertical Separation 75cm. This would require the system for this site to have a minimum of 45cm of sand media and minimum 10cm of approved aggregate to meet the minimum required vertical separation (VS) as per Table II-17 and specifications in Table II-51. All required setback will require Table II-19 to be followed.

Summary

Based on the site investigation it is feasible for a sewage disposal system to be installed on the newly created lot. A sand mound design following Table II-17 and Table II-19 and the specifications in Table II-51 of Section 6 of the SPM3, the protection of public health and the environment will be achieved.

I hope this provides you with the information you require. Please contact me if you have any questions.

Yours truly, **ROCK CREEK ENVIRONMENTAL**



Tobin Laughlin
B.A., ROWP (BC)
Reg#OW0007

Tables:

Table II- 17. For sand mounds and sand lined trenches and beds

SOIL TYPE	TYPE OF DOSING	EFFLUENT TYPE (HLR)	MINIMUM VS IN NATIVE SOIL	MINIMUM SAND MEDIA THICKNESS	MINIMUM AS CONSTRUCTED VS	
All soil types	Demand dosing	1	25 cm	60 cm	85 cm	
	Timed dosing	1	25 cm	45 cm	75 cm	
	Low frequency Timed dosing	1	25 cm	60 cm	85 cm	
	Micro-dosing		1 or 3	25 cm	30 cm	60 cm
			2	25 cm	45 cm	75 cm

Note: Confirm that the vertical separation, as planned, meets the minimum depth of native soil specified (in column 4) **and** the minimum depth of sand (sand media thickness, column 5) **and** the minimum required total depth of soil plus sand (as constructed VS, column 6).

Table II- 19. Minimum required horizontal separation distances

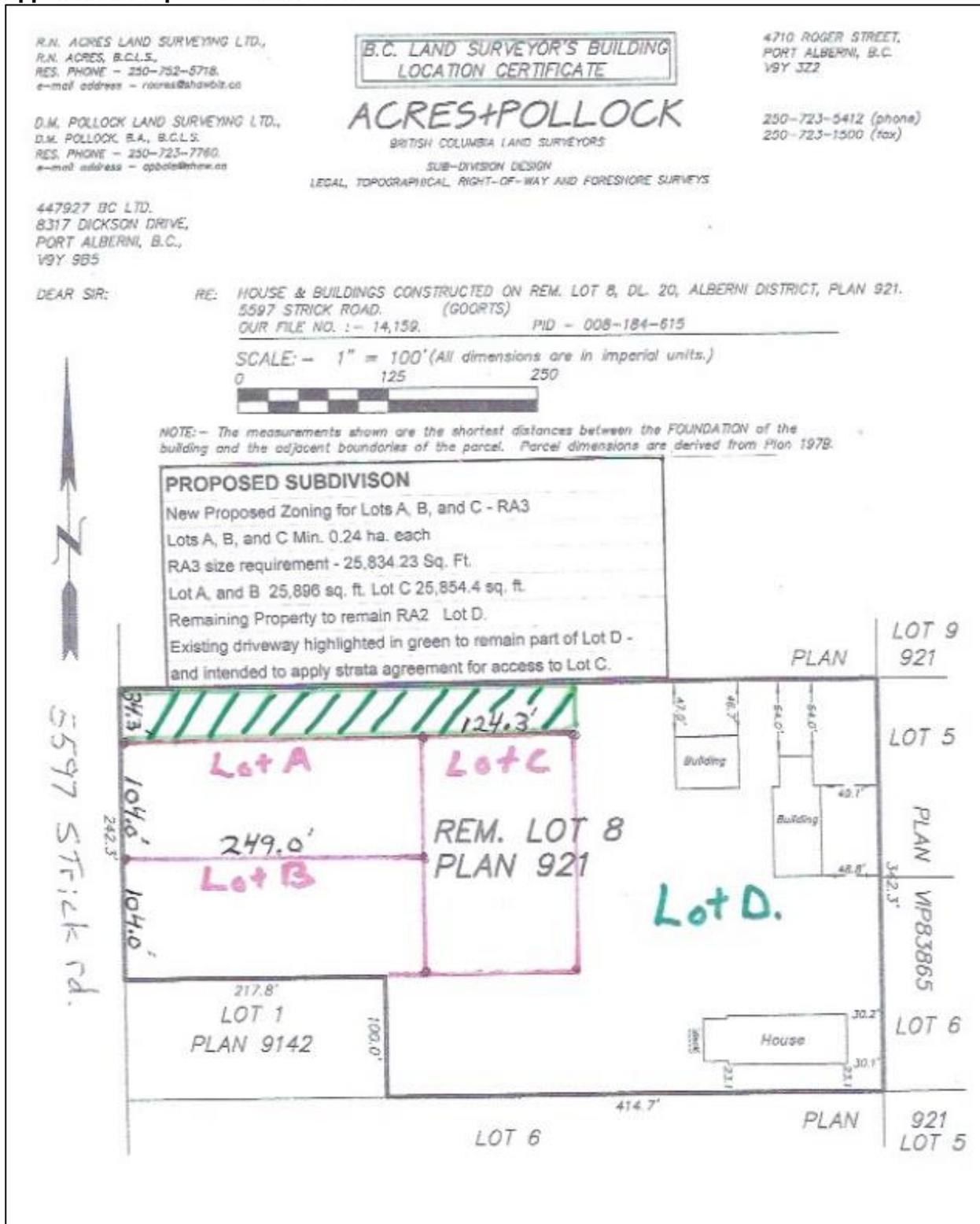
MINIMUM HORIZONTAL DISTANCE TO	FROM DISPERSAL SYSTEM	FROM WATERTIGHT TREATMENT OR PUMP TANK
	METRES	METRES
Water sources and wells		
Surface source of drinking water	30	15
Domestic water supply well ¹	30	30
Domestic water supply well, high pumping rate ²	60	30
Domestic water supply well, high pumping rate, in unconfined aquifer ²	90	30
Irrigation well or open loop geothermal well	15	7.5
Deep monitoring well or closed loop geothermal well ³	6	6
Shallow monitoring well ⁴	3	0
Drinking water lines and cisterns		
Drinking water suction line	30	15
Drinking water suction line, sleeved ⁵	7.5	3
Drinking water line, under pressure	3	3
Drinking water line, under pressure, sleeved ⁵	1	1
Drinking water supply cistern, below ground	15	3
Water bodies and surface breakout		
Permanent fresh water body ⁶	30	10
Intermittent fresh water body ⁷	15	10
Marine water body ⁸	15	7.5
Break-out point or downslope drain ⁹	7.5	0

II- 6.15.3 SPECIFICATION AND INSTALLATION

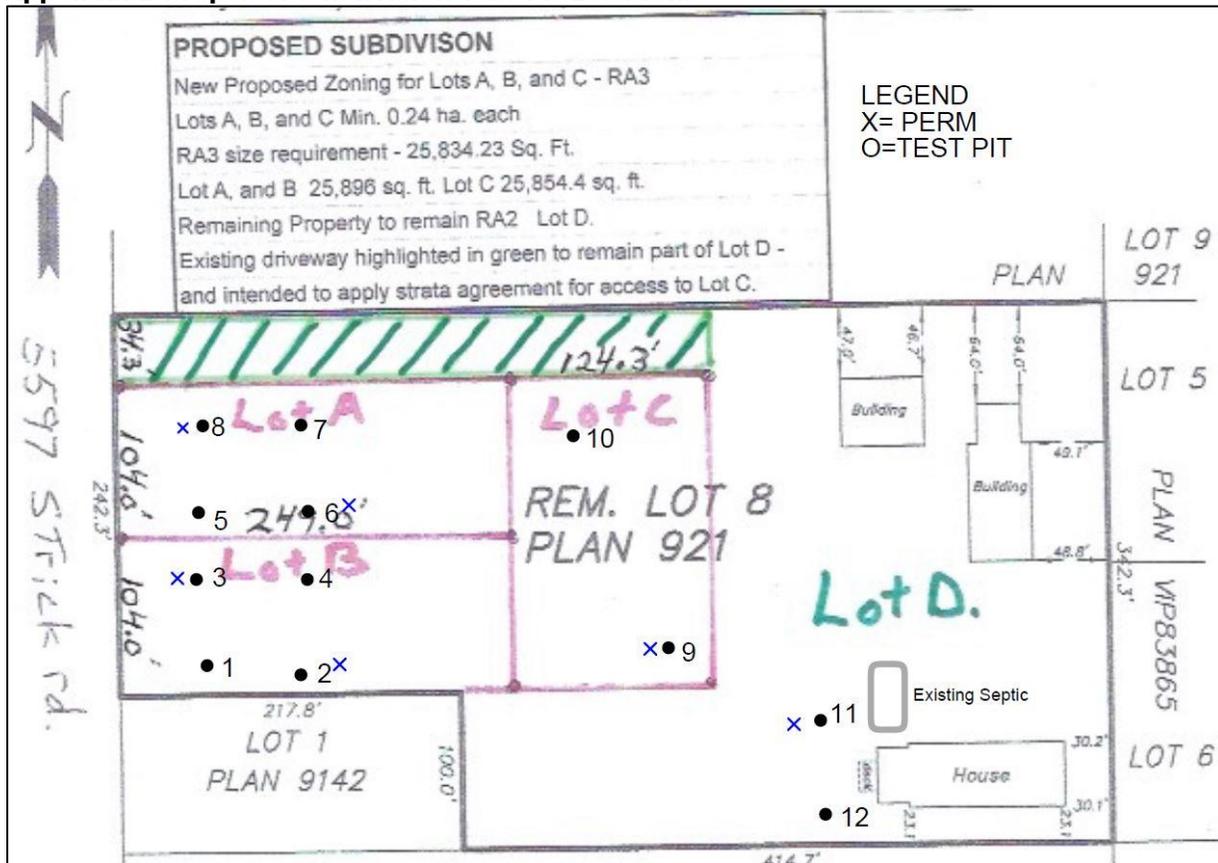
Table II- 51. Sand Mounds and sand lined trenches or beds

Maximum dispersal bed width	<ul style="list-style-type: none"> o 3.0 m (10 ft.) for a sand mound or sand lined bed. o 90 cm (36 in.) for a sand lined trench.
Bed level	<ul style="list-style-type: none"> o Bed level to \pm 1.25 cm (\pm 0.5 in.). o Not necessary for subsurface drip dispersal.
Spacing, minimum	<ul style="list-style-type: none"> o For trenches, follow the trench spacing standards in Table II- 37 (page II- 48). o For sand lined beds, follow the seepage bed standards in Table II- 38 (page II-49). o For sand mounds, provide 2 m spacing between the edges of the cover soil. o Except provide 6 m spacing between the edges of cover soil for mounds on Clay Loam and Clay textured soils.
Aggregate for bed (note that gravelless systems may also be used)	<ul style="list-style-type: none"> o Use drain rock or pea gravel. o For drain rock, use a nominal gravel size of 19 mm (3/4") and meeting the standards of Table II- 35 (page II-46). o For pea gravel, use a size range of 3 to 12 mm ($\frac{1}{8}$ – $\frac{1}{2}$"), washed and with <1% by weight passing the #200 (75μm) sieve, and meeting the standards of Table II- 35 (page II-46).
Aggregate depth (pressure distribution system)	<p>Install aggregate to the following minimum depths:</p> <ul style="list-style-type: none"> o For pea gravel, provide min. 10 cm (4 in.) under the distribution piping and 2.5 cm (1 in.) over the piping. o For drain rock, provide min. 15 cm (6 in.) under the distribution piping and 5 cm (2 in.) over the piping.
Sand media	Specify and supply sand meeting Table II- 25 (page II-37).
Permeable fill media for sand mound toe, toe blanket or mantle	<ul style="list-style-type: none"> o Test the sand to confirm a minimum Kfs of 3000 mm/day or a perc rate faster than 3 min/inch after settling. o Install the sand following the same procedure as for Mound Sand o See Volume III for guidance on toe blankets and sand mantle sand mounds.
Observation port, completed to aggregate bed infiltrative surface	Minimum two ports, install at minimum 10 cm from the distribution pipe.
Observation port, completed to the soil infiltrative surface	<ul style="list-style-type: none"> o Minimum 2, located $\frac{1}{6}$ of length of bed from ends of bed, on downslope side of bed (or on opposing sides for flat site), and half way between the bed and the toe of the mound. o Place observation ports at least 30 cm from the nearest orifice.

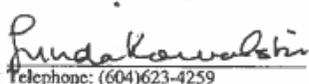
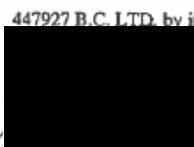
Appendix 1 Proposed Subdivision



Appendix 1 Proposed Subdivision Test Pit Locations



Appendix 2 Land Title

Status: Registered	Doc #: EX147939	RCVD: 2005-11-21 RQST: 2023-02-21 12.30.18									
EX147940	21 NOV 2005 10 50	EX147939									
<p>Land Title Act FORM C (Section 233) Province of British Columbia</p>											
<p>GENERAL INSTRUMENT - PART 1 (This area for Land Title Office Use)</p>		Page 1 of 2 pages									
<p>1. APPLICATION: Nancy McClellan, Agent for B.C. Hydro and Power Authority and TELUS 8th Floor, 333 Dunsmuir Street Vancouver, B.C., V6B 5R3</p>											
		 Telephone: (604)623-4259									
<p>2. PARCEL IDENTIFIER(S) AND LEGAL DESCRIPTION(S) OF LAND: 008-184-615 Lot 8 DL 20 Alberni District Plan 921 except that part in Plan 9142</p>											
<p>3. NATURE OF INTEREST:</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Description</th> <th>Document Reference</th> <th>Person Entitled to Interest</th> </tr> </thead> <tbody> <tr> <td>Statutory Right of Way for B.C. Hydro</td> <td>Entire Instrument</td> <td>Transferee (B.C. Hydro)</td> </tr> <tr> <td>Statutory Right of Way for TELUS</td> <td>Entire Instrument</td> <td>Transferee (TELUS)</td> </tr> </tbody> </table>			Description	Document Reference	Person Entitled to Interest	Statutory Right of Way for B.C. Hydro	Entire Instrument	Transferee (B.C. Hydro)	Statutory Right of Way for TELUS	Entire Instrument	Transferee (TELUS)
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Statutory Right of Way for B.C. Hydro	Entire Instrument	Transferee (B.C. Hydro)									
Statutory Right of Way for TELUS	Entire Instrument	Transferee (TELUS)									
<p>4. TERMS: PART 2 of this instrument consists of (select one only)</p> <table border="0" style="width:100%;"> <tr> <td style="width:33%;">(a) Filled Standard Charge Term</td> <td style="width:33%;"><input checked="" type="checkbox"/></td> <td style="width:33%;">D.F. No. ST020098</td> </tr> <tr> <td>(b) Express Charge Terms</td> <td><input type="checkbox"/></td> <td>Annexed as Part 2</td> </tr> <tr> <td>(c) Release</td> <td><input type="checkbox"/></td> <td>There is no Part 2 of this instrument</td> </tr> </table> <p><small>A selection of (a) includes any additional or modified terms referred to in Item 7 or in a schedule annexed to this instrument. If (c) is selected, the charge described in Item 3 is released or discharged</small></p>			(a) Filled Standard Charge Term	<input checked="" type="checkbox"/>	D.F. No. ST020098	(b) Express Charge Terms	<input type="checkbox"/>	Annexed as Part 2	(c) Release	<input type="checkbox"/>	There is no Part 2 of this instrument
(a) Filled Standard Charge Term	<input checked="" type="checkbox"/>	D.F. No. ST020098									
(b) Express Charge Terms	<input type="checkbox"/>	Annexed as Part 2									
(c) Release	<input type="checkbox"/>	There is no Part 2 of this instrument									
<p>5. TRANSFEROR(S): 447927 B.C. LTD., (Inc. No. 447927)</p>											
<p>6. TRANSFEREE(S): (Including postal address(es) and postal code(s)) BRITISH COLUMBIA HYDRO AND POWER AUTHORITY, 333 Dunsmuir Street, Vancouver, BC V6B 5R3 (As to one Statutory Right of Way) TELUS COMMUNICATIONS INC., (Extra Provincial No. A55547) #1 - 15079 - 64th Avenue, Surrey, BC V3S 1X9 01 05/11/21 10:50:45 01 VI 670019 (As to one Statutory Right of Way) CHARGE \$129.50</p>											
<p>7. ADDITIONAL OR MODIFIED TERMS: SEE SCHEDULE</p>											
<p>8. EXECUTION(S): This instrument creates, assigns, modifies, enlarges, discharges or governs the priority of the interest(s) described in Item 3 and the Transferor(s) and every other signatory agree to be bound by this instrument, and acknowledge(s) receipt of a true copy of the filed standard charge terms, if any.</p>											
<p>Officer Signature(s)  JOHN LESLIE MITCHELL Service & Design Representative A Commissioner for taking Affidavits within the Province of British Columbia B.C. Hydro and Power Authority 4820 Wallace Street Port Alberni, B.C. V9Y 3Y2</p>	<p>Execution Date</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Y</td> <td>M</td> <td>D</td> </tr> <tr> <td>05</td> <td>11</td> <td>15</td> </tr> </table>	Y	M	D	05	11	15	<p>Party(ies) Signature(s) 447927 B.C. LTD. by its authorized  BILL Goorts</p>			
Y	M	D									
05	11	15									
<p>OFFICER CERTIFICATION: Your signature constitutes a representation that you are a solicitor, notary public or other person authorized by the Evidence Act, R5BC 1996, e.124 to take affidavits for use in British Columbia and certifies the matters set out in Part 5 of the Land Title Act as they pertain to the execution of this instrument. File No.: 505-1602.0(X268) Originator: Imk Date: 05 09 23 Doc type: Standard Terms Blanket SRW (Triparty) UB</p>											
<p>20965.L1 HPAG169</p>											

**Land Title Act
FORM E**

SCHEDULE

ENTER THE REQUIRED INFORMATION IN THE SAME ORDER AS THE INFORMATION MUST APPEAR ON THE FREEHOLD TRANSFER FORM, MORTGAGE FORM OR GENERAL DOCUMENT FORM.

7. ADDITIONAL OR MODIFIED TERMS

1. The Standard Charge Terms (DF number ST020098) provide in section 1.1 that the following terms are as defined in the General Instrument Part 1:
 - (a) **The Area of the Works.** The "Area of the Works" means that portion of the Land located within 6 metres of either side of the centre of the alignment of the Works.
 - (b) **The Works.** The "Works" means:
 - (i) as it relates to the rights and responsibilities of B.C. Hydro means, all things and components, in any combination and using any type of technology or means, necessary or convenient for the purposes of transmitting and distributing electricity and for the purpose of telecommunications, including underground lines, cables, conduits and pipes of every kind, together with access nodes, all ancillary appliances and fittings, above ground or underground transformers, including any associated protective installations, and related works; and
 - (ii) as it relates to the rights and responsibilities of TELUS means, all things and components, in any combination and using any type of technology or means, necessary or convenient for the purpose of telecommunications, including underground lines, cables, conduits and pipes of every kind, together with access nodes, cabinets, all ancillary appliances and fittings, above ground or underground transformers, including any associated protective installations, and related works.
2. The Standard Charge Terms (DF number ST020098) are amended by the addition of the following section(s):
 - 5.2 Notwithstanding subsection 5.1(h), the Owner shall own and be responsible for maintaining all Underground Civil Works. This section 5.2 will not abrogate from or affect the rights of B.C. Hydro or TELUS to use the Underground Civil Works pursuant to section 2.1(h) of this Agreement.

END OF DOCUMENT

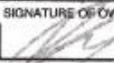
Appendix 3: Septic System Permit/Authorization to Use

03-02



BRITISH COLUMBIA
Ministry of Health Planning

**AUTHORIZATION TO OPERATE
A SEWAGE DISPOSAL SYSTEM**

FOLIO NUMBER	DATE OF APPLICATION (Y/M/D)	NAME OF OWNER	NAME OF CONTRACTOR
		447927 B.C. Ltd.	Self.
LEGAL DESCRIPTION OF LOT		STREET ADDRESS / GENERAL LOCATION	
DL 20 Plan 921 Lot 8 PID 008-184-615		5597 Strick Rd Port Alberni	
AS BUILT DIAGRAM : to be completed by the contractor or applicant		INSTALLED AS PER REGULATIONS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	SIGNATURE OF OWNER / APPLICANT
			

Scale
1 Box = 20'



The Ministry of Health does not guarantee the useable life of the sewage disposal system. The life of the system is affected by the use and maintenance it receives. Pump out the septic tank every 2-3 years. For servicing of package treatment plants, consult your local service agent. For service guarantees, consult your local sewage disposal contractor. If the system needs repair or modification, a new permit is required. If the system is not authorized for backfilling and if corrections are required, a re-inspection fee of \$100 must be paid for each time the Public Health Inspector checks to see that the faults have been corrected.

DATE BACKFILL / USE AUTHORIZED	SUBJECT TO THE FOLLOWING CONDITIONS:
May 15/05	(Install) Clean filter every 10-12 months Excluded for - 248-8621 This does not include electrical (Signature)
SIGNATURE PUBLIC HEALTH INSPECTOR / EHO:	
(Signature)	

FOR PUBLIC HEALTH INSPECTOR / EHO USE ONLY						
	APPROVED	REJECTED	NOT APPLICABLE	APPROVED	REJECTED	NOT APPLICABLE
septic tank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
package treatment plant	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
other (e.g. lagoon, holding tank)	specify: _____					
field laterals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
distribution box	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
siphon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
curtain drain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
interceptor drains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
pump	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
drain rock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
set back distances	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
fill	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

HLTH 136 Rev. 2002/08/21
 WHITE COPY - FILE
 YELLOW COPY - TO OWNER
 PINK COPY - TO BUILDING AUTHORITY