

February 04, 2022

JEA File: 33788

Sproat Lake Landing Inc.
mitchell@sproatlakelanding.com

Attn: Mr. Ross Mitchell, P.Eng.

Dear Sir,

Re: Sewage Disposal – 20 Cabins

Sproat Lake Landing Inc. has asked JEA to provide an engineering report that reviews the suitability of the site for on-site sewage disposal for 20 cabins with a maximum floor area of 1200 sq.ft. per cabin. The report will assist the ACRD with the review of the current rezoning application. (ACRD File RD21009)

Site Overview

The site is located south of Della's Café, west of Lakeshore Road, and east of Pacific Rim Highway. The site consists of high ground typically 5 – 10m above the ground elevation at the property boundaries. The high ground is in the middle, and the site drops at reasonable slopes to the north, east, south, and west. The middle of the site consists of exposed rock, and the perimeter typically contains native soil and vegetation. (See Schedule A attached)

Development Plan

The development concept includes a cluster of 20 cabins centrally located within the 7ha site. (See Schedule B attached) The perimeter of the site is vegetated, and is suitable for on-site sewage disposal. The perimeter provides:

- dry soil conditions ideal for achieving suitable vertical separation
- a long field length for the sewage treatment and disposal
- a good receiving area for effluent treatment and distribution
- favourable set back to break out

Given the favourable site contours and elevation, the site offers the following opportunities:

- capacity to treat and disperse up to 22,000 l/d
- an opportunity for up to 220m of lineal length
- 7.5m set back to property lines
- space to add sand for leveling the sewage dispersal area, and to increase the Total Vertical Separation

We have prepared preliminary and very conservative calculations for the design parameters for a sewage system. (See attached Schedule C for calculations)

Conclusion and Recommendations

It is our opinion that the site offers favourable conditions for the design, construction, and operation of a durable sewerage system for 20 cabins. Our recommendations include:

- install the sewerage system around the perimeter of the site, no closer than 7.5m to property lines, 30m from wetlands and water courses, and 30m from wells
- require design, inspection, and certification by a Professional engineer with experience in on-site sewage disposal
- direct roof water and road water from the 20 proposed cabins within the central development area away from the sewerage system
- all work to meet the requirement of the Sewerage System Regulations, and the intent of The Sewerage System Standard Practice Manual
- encourage a Type 1 system due to the seasonal occupancy and domestic effluent. Type 2 could be used.

We trust this report addresses the sewerage system questions. Please call if you have any questions.

Yours truly,
J.E. Anderson and Associates

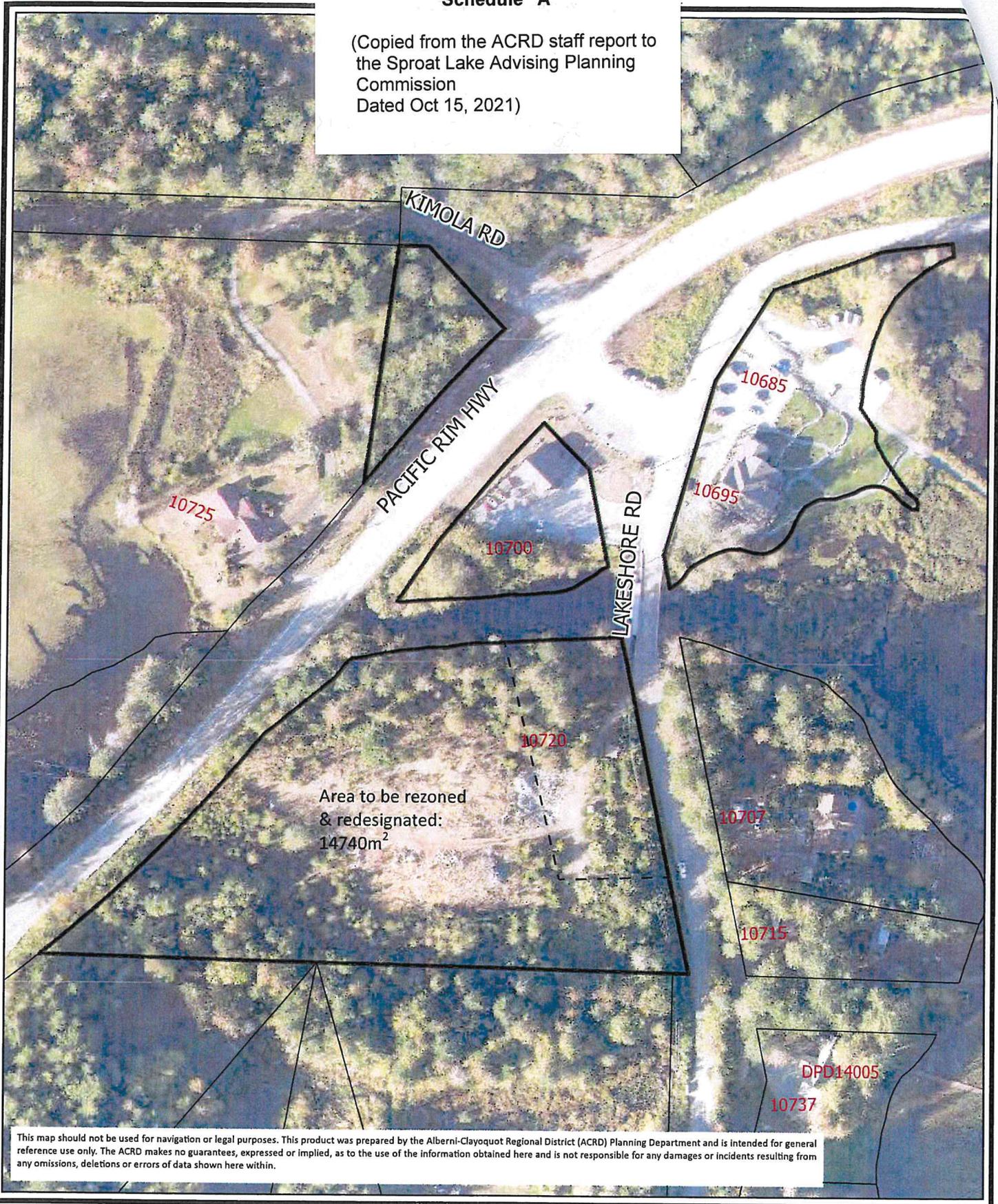
Phil Buchanan, P. Eng.

PCB/fc

Attachments: Schedule "A", Schedule "B" and Schedule "C"

Schedule "A"

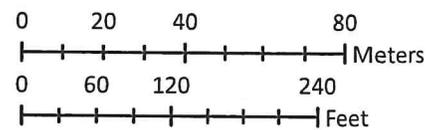
(Copied from the ACRD staff report to
the Sproat Lake Advising Planning
Commission
Dated Oct 15, 2021)



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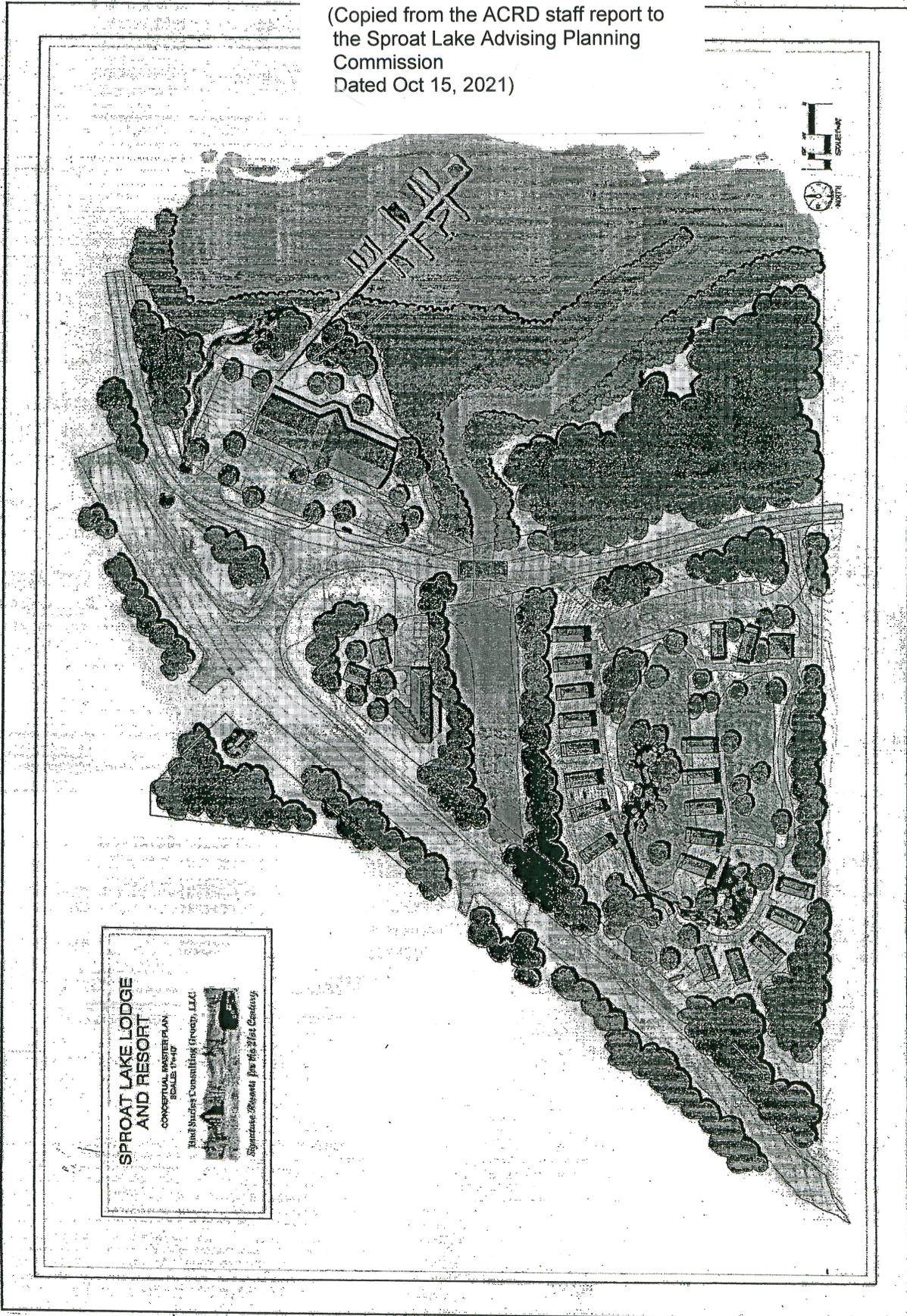
RD21009 – 10695 Lakeshore Road

Scale: 1:1,750



Schedule "B"

(Copied from the ACRD staff report to
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Schedule “C”

**Sproat Lake Landing Inc.
Sewerage System Preliminary Calculations**

(All calculations based on Sewerage System Standard Practice Manual)

Daily Design Flow (DDF) Calculations

Method 1 – 20 cabins x 4 people per cabin x 225 l/d/person = 18,000 l/day

Method 2 – 20 two-bedroom homes x 1000 l/s/home = 20,000 l/day

Conclusion – conservative DDF = 20,000 l/day

Significant Site Calculations

1. Infiltration Area (IA) based on coarse, clean sand fill (30 l/d/m²)

$$A = \frac{\text{DDF}}{\text{Infiltrate Rate}} = \frac{20,000 \text{ l/d}}{30 \text{ l/d/m}^2} = 666\text{m}^2$$

2. Lineal Length

$$W = 3\text{m}$$

$$L = \frac{A}{W} = \frac{666\text{m}}{3\text{m}} = 222\text{m}$$

Conclusion – the site has area and length to achieve the 220m length

3. Lineal Loading Rate (LLR)

Site Condition – 10 to 15% slope, sandy loam soil or coarse sand fill, 60 – 90 cm depth
 SPM indicates a design soil LLR of 180 l/d/m

$$\text{Required Length} = \frac{20,000 \text{ l/d}}{180 \text{ l/d/m}} = 111\text{m}$$

Conclusion: the available site length of 220m exceeds the required length of 111m.

4. Calculation Review

We anticipate the detailed system calculation will lead to a wider field with a shorter length.
 Details to be provided at the design stage for the project.