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SITE ASSESSMENT REPORT - Re. Suitability for Onsite Wastewater Systems - Proposed Subdivision

Subject property:

Lot 4, District Lot 24, Alberni District, Plan VIP15614
PID 004-527-437 Roll: 04-770-00659.006
6399 Walker Road, Port Alberni, BC V9Y 8W7

Property Owner:

John Gilmour

Date of this report: February 2, 2023
Date of site assessment: January 20, 2023

BACKGROUND:

The owner is making application for subdivision approval and has requested my assessment of the property to determine the suitability of each proposed parcel for onsite sewerage treatment and dispersal. The existing lot is approximately 1.63 ha. (4 ac).

The proposal is for subdivision into three lots. Currently proposed by Prism Land Surveying as:

- Lot A, 0.29 ha. With the current owner's principal residence and a recently constructed sewerage system.
- Lot B, 0.27 ha. With a rental house and 'vintage' sewerage system, that appears to be in need of replacement.
- Lot C, 1.07 ha. With no residential structure, no sewerage system.

The source of potable water is a municipal water system.

METHODOLOGY:

To determine suitability for onsite sewerage, I conducted the following procedures:

- For the existing residence on proposed Lot 'A', I inspected the existing system and reviewed the 2018 Filing and Certification documents.
- To confirm a suitable reserve area for Lot 'A' and a primary and reserve area of proposed lots 'B' and 'C', I conducted a site and soil assessment including excavation of test pits.

Conclusions about location and adequate area for dispersal systems are reported with regard to horizontal separation standards, vertical separation and other system selection and configuration standards of the BC Ministry of Health Sewerage System Standard Practice Manual. A preliminary design concept is provided to indicate suitable options for onsite sewerage systems that would comply with the BC Sewerage System Regulation.

CONCLUSION:

The three proposed lots have suitable area and conditions for a primary and a reserve sewerage system in compliance with applicable sewerage regulations and standards.

Ministry of Health Sewerage System Regulation Compliance
All Sewerage System Regulation requirements are easily met on each of the three proposed parcels including:

- Regulatory setbacks to wells (minimum 30 m).
- The SSR requirement to construct systems in accordance with 'standard practice'.
- And in a manner that does not cause or contribute to a health hazard.

Ministry of Health Sewerage System Standard Practice Manual (SPM) Compliance
Soil conditions and site constraints on both proposed lots meet the system selection and configuration standards of the Ministry of Health's Sewerage System Standard Practice Manual (SPM) for type 1 treatment (by septic tank only) with pressure dispersal to raised sand mounds. Raised sand mound configurations are typical in the area and are generally characterized as conventional, low risk systems. Advanced pretreatment (type 2 or 3) is not required for SPM compliance.

The depth of suitable soil above seasonal high-water table ranges from 40 - 45 cm. This compares favorably to the minimum 25 cm native soil vertical separation standard (SPM II- 5.3.2 and Table II- 17) for uniform dispersal to raised sand mounds.

The existing residence on proposed Lot 'A' has a legally constructed system, certified October 13, 2020 (Filing PA19/071). This system has suitable capacity and configuration for the current use as per SPM standards and is *operating in a normal manner as intended by its design*. And the proposed Lot 'A' configuration provides adequate reserve area for long term replacement of the sewerage system.

The existing sewerage system serving the existing residence on proposed Lot 'B' appears to be malfunctioning and in need of replacement.

A preliminary design concept for new systems is provided to demonstrate suitability for onsite sewerage. The proposed configurations would comply with the SSR and the SPM but are not the only options available. Each of the three proposed parcels have adequate area and soil conditions that would 'allow' multiple siting options for sewerage systems. The preliminary concepts are based on design flow allowances for four-bedroom residences, but systems with larger capacity could also be constructed.

A suitable configuration for a sand mound serving a four-bedroom residence (for example) is as follows:

- 45 cm minimum depth of sand media (mound sand) below the infiltrative surfaces and above original grade, resulting in raised cover soil approximately 85 cm above original grade.
- 2.0 x 24 m seepage bed, resulting in an overall mound footprint of approximately 7 m wide x 28 m long.
- 1200 gallon septic tank.
- 750 gallon pump chamber with effluent pump and controls providing timed dosing of type 1 effluent.

Each of the proposed parcels has adequate area for those configurations … a reserve area for Lot 'A', plus primary and reserve areas for Lots 'B' and 'C'.

Summary of soils characterization

Eight test pits were excavated in total. The test pits were located in a manner that outlines a suitable area for a primary and for a long-term reserve system on each proposed parcel, in compliance with the Sewerage System Regulation and the Sewerage System Standard Practice Manual.

Soil depth and characteristics are similar in all test pits. A simplified summary of soil conditions is as follows:

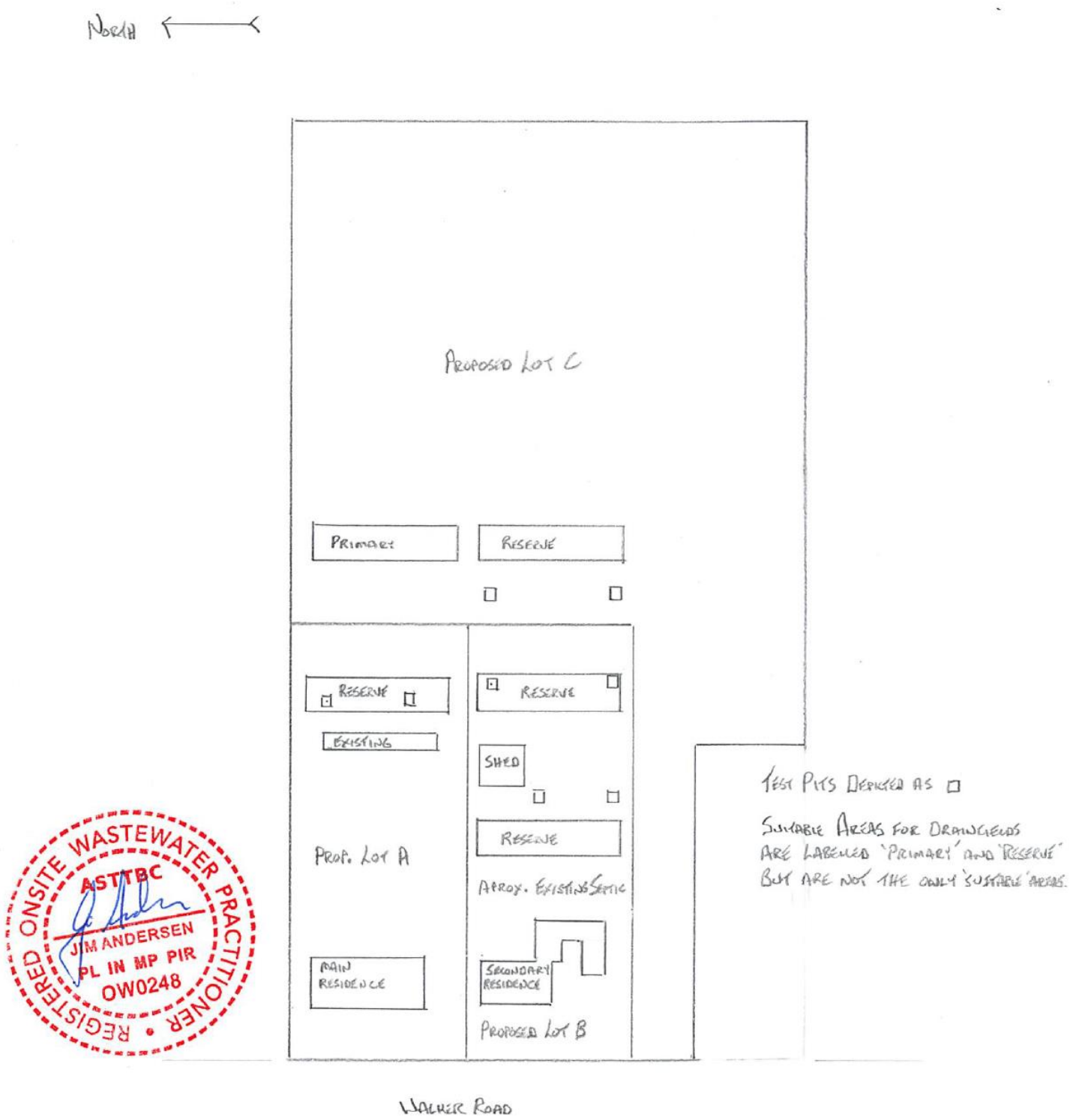
0 – 40 cm Most test pits showed 45 cm depth of suitable soil.	Sandy loam texture. Moderate grade blocky structure with soft considetence. Many fine – medium roots. Less than 5% rock fragments. Dry to moist, no water seepage and no mottling to 40 cm +.
40 to 45 cm +	Restrictive clays. No roots. Mottled. Seepage at 40 – 45 cm.
The shallowest limiting condition for vertical separation determination is seasonal high water table at 40 cm, indicated by root growth limits, mottling and water seepage, with restrictive clays below 45 cm depth.	
Permeability estimates (by perc rates) within the relevant soil horizons ('worst' horizons within 30 cm below infiltrative surfaces) range from 8 minutes/inch to 15 minutes/per inch.	

Appended:
Site plan sketch – Test pit locations and design concept sketch.

Jim Andersen, AScT, ROWP

Onsite Sewerage Assessment – Test Pits and Design Concepts

Client: Gilmour **Location:** 6399 Walker Road, Port Alberni, BC
Drawn By/Planner: Jim Andersen, AScT, ROWP **Date:** January 31, 2023 **Scale:** 1:1000
All dimensions are in metres unless otherwise noted.



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