RYZUK GEOTECHNICAL

Proposed Seaview Cemetery Expansion and Infill

1706 Lower Road – Roberts Creek, SCRD, BC

Prepared for:

Lees + Associates
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Vancouver, BC V6B 2V2

Richard Cook, Owner/Principal
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Prepared by:

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CONTENTS

1. INTRODUCTION

As requested, we have completed a geotechnical investigation of the subsurface conditions at the referenced site in support of the proposed cemetery expansion and infill development activity. The following report summarizes the results of our subsurface investigation and provides our assessment and recommendations pertaining to the proposed development. Our work has been carried out in accordance with, and is subject to, our accepted Proposal and Terms of Engagement dated May 2, 2024.

2. EXISTING SITE CONDITIONS

As shown on the attached Site Location Plan, the subject site is a large triangular shaped property at the southwest corner of the intersection of the Sunshine Coast Highway and Lower Road, in Roberts Creek on the Sunshine Coast. The property is approximately 2.4 hectares in size, and is bounded by the Sunshine Coast Highway to the north, Lower Road to the south, and a forested rural residential property to the west.

Topographically, the entire site slopes from the north down to the south, with a gentle gradient (5 to 8% slope) in the east half of the property, which gradually transitions to a moderate gradient (12 to 17% slope) covering the west half of the property. Existing site grades vary between 127 m above sea level geodetic (m ASL) at the highpoint in the northwest corner down to around 104 m ASL at the low point in the southwest corner, for a total vertical relief of approximately 23 m.

Most of the site interior has been cleared of forest to create space for cemetery uses, with the exception being a large rectangular shaped area of undisturbed mature forest in the southwest corner of the site, as well as several pockets and rows of mature forest and trees along the site perimeter. We understand the site was first used as a cemetery around 1937, and we suspect most of the forest clearing occurred around this time.

Geographical features of note include a watercourse, which is a tributary to Whittaker Creek, which enters the site from a culvert below the Sunshine Coast Highway and flows south through the site and discharges into the ditch system along the north edge of Lower Road. Also of note is a large ravine located south of the site and Lower Road; this ravine is also part of the Whittaker Creek tributary system.

Parts of the property are within the following SCRD Hazard Development Permit Areas (DPAs): 2A: Creek Corridor, 2B: Ravines, 2D: Low Channel Confinement. While our assessment and this report do not constitute a comprehensive natural hazard assessment, some preliminary commentary is provided where deemed pertinent and necessary.

3. PROPOSED DEVELOPMENT

We understand a number of cemetery development activities are proposed for the site as detailed on the attached Seaview Cemetery Concept Plan and Interment and Memorialization Diagram prepared by Lees + Associates. More recently, a revised Cemetery Phasing Plan (attached) has been prepared by Lees + Associates, which partially incorporates the results of the professional assessment work done thus far. For our scope of work, we were requested to complete geotechnical assessment of the proposed cemetery expansion and infill areas, a proposed public washroom building, an expanded operations yard with new accessory building, as well as ongoing bank erosion along the watercourse which flows through the site.

4. INVESTIGATION PROCEDURE

Our scope of work included a desktop background study, as well as a foot traverse of the site and a test pit program conducted on September 12, 2024. We also participated in a project team meeting at the site on September 13.

During our desktop background study, we reviewed the following materials:

a. *SCRD RFP for Cemetery Expansion, issued March 25, 2024*
b. *SCRD GIS Webmap application: satellite imagery, topography, watercourses, Natural Hazard Development Permit Areas (DPAs)*
c. *Roberts Creek Official Community Plan Bylaw No. 641.4, 2015*
d. *Topographic Survey Plan prepared by Bennett Land Surveying Ltd., dated August 28, 2024*
e. *'Surficial Geology and Sand and Gravel Deposits of the Sunshine Coast…', McCammon, 1977*

Our test pit investigation utilized a track mounted excavator owned and operated by local subcontractor M&M Mini Excavating to complete fifteen test pits extending to depths up to 2.4 m below ground surface (m bgs). Prior to any ground disturbance, we completed a BC 1 Call and a subsurface utility scan to clear our proposed test pit locations. Encountered soils were visually identified in the field as test pitting progressed in accordance with the Modified Unified Soil Classification System (MUSCS). Given the scale of the proposed development, in-situ and lab testing of the encountered soils was deemed unnecessary. Test pit locations are displayed on the attached Test Pit Location Plan and detailed soil descriptions are shown on the attached Test Pit Logs.

5. OBSERVATIONS AND SUBSURFACE CONDITIONS

A summary of our surface and subsurface observations is provided below, with reference to the attached Cemetery Phasing Plan, prepared by Lees + Associates and our Photo Table attached to the end of this report:

Phase 1 Infill Burial Area: Varied layers of compact to dense granular soils including a mix of sand, gravel, cobbles and trace boulders. A 1.2 to 1.8 m thick layer of fill/disturbed native material was encountered at the top of TH24-01 and -02. Boulders were generally less than 450-600 mm in size. Glacial till was encountered within TH24-03 at a depth of 0.8 m bgs. No groundwater or seepage encountered.

Phase A Columbaria Area: Varying thickness of fill materials atop native sand layers. Groundwater table and heavy seepage encountered as shallow as 1.2 m bgs. Based on observed fill slope dropping down to Lower Road, fill materials estimated to be as thick as 2.5 to 3 m moving closer to the existing operations building and south PL.

Phase B Ops Yard Area: While no test pits were completed within this area, the terrain and adjacent mature fir trees suggest the existing building and north half of this area are underlain by shallow undisturbed native soil deposits, with a fill deposit present south of the building which increases in thickness moving further south. East edge of this area may be underlain by similar fill materials and high groundwater table as those encountered within TP24-12.

Phase C Cemetery Expansion Area: This area is covered by relatively undisturbed mature forest with mature fir and cedar trees and little underbrush. A large ravine is present south of this area, on the south side of Lower Road, and parts of this area lies within the SCRD's DPA 2B: Ravines. Very dense glacial till and clean sand, gravel and cobbles were encountered**.** The mini excavator's toothed bucket effectively refused within these materials. An approximately 1 m thick layer of sandy silt was encountered within TP24-09, immediately below which was the groundwater table and heavy seepage at a depth of 1.8 m bgs.

Phase D Composting Toilet: While no test pits were completed in this area, given the soils encountered in nearby test pits, as well as surface features, we anticipate this area to be underlain by varying layers of sand, gravel and cobbles, similar to the conditions encountered within TP24-01 and -02. No fill materials anticipated in this area as it appears to be undisturbed forest.

Phase E Watercourse Bank Erosion and Infill Burial Area: The watercourse enters the property through a 914 mm (36 in) diameter corrugated steel culvert from below the Sunshine Coast Highway (Photos 14 & 15). The channel is approximately 0.6 to 1.5 m wide typically, although some wider and thinner segments are also present. The channel is cut into the terrain approximately 1 to 1.5 m below the surrounding cemetery lawn, and we noted the channel bed was comprised of glacial till. The banks were generally sandy where soils were exposed. We noted two stretches of the east bank where relatively recent bank erosion is actively eroding into the cemetery and approaching existing burial sites (Photos 16, 17 & 18). The erosion appears to have advanced up to approximately 0.6 m beyond the natural boundary of the watercourse and into the cemetery. No trees or major vegetation were noted in these two areas, and the soils were sandy and would be considered easily erodible.

Subsurface conditions between the watercourse and Phase 1 Area are anticipated to consist of very dense sand, gravel, cobbles and boulders with a high groundwater table, encountered at a depth of 1 m bgs within TP24-13.

Subgrade Review at Existing Cremation Garden: As part of our work, we were also requested to assess the subgrade soils below an existing columbaria concrete foundation within the existing

cremation garden. We conducted one test pit, TP24-15, at the west edge of the concrete foundation (Photo 13), and discovered the concrete foundation had been constructed at the ground surface (no frost cover protection) atop a skim of dense crusher dust (fine gravel and sand) atop 200 mm of native loamy sand with some organics and roots, atop native dense sand and gravel. The concrete foundation appeared nearly level and no cracks were observed. While the lack of frost cover and presence of roots and loamy organic sand are certainly not aligned with best practices for foundation subgrade preparation, we consider the underlying soils to be capable of providing adequate bearing support to the existing columbaria concrete foundation, although some differential settlement or tilting may occur over the lifespan of the structure.

For more detailed soil and groundwater information at specific locations please refer to the attached Test Pit Logs.

6. GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS

Based on our observations and the encountered subsurface conditions, we consider Phases 1, A, B, D and E to be geotechnically feasible, although the following comments and recommendations should be incorporated into the design.

Phase C Cemetery Expansion is considered geotechnically feasible, however, the high groundwater table and large ravine necessitate further detailed geotechnical examination. See Section 6.5 below for a more detailed discussion of the Phase C Cemetery Expansion Area.

6.1 GROUNDWATER

Groundwater and seepage were encountered in many of the test pits, and it should be noted our test pit investigation was completed during one of the driest times of the year. Groundwater was encountered as shallow as 1 m bgs in some areas, and we anticipate the groundwater table rises during wetter months and periods of heavy or prolonged precipitation. The stream may also be contributing to the groundwater regime within down gradient areas. Due to the fine-grained soil constituents and associated very low permeability, the very dense glacial till and silt deposits may be acting as aquitards to the groundwater table in some areas of the site, confining groundwater flow below and possibly pressurizing it during times. Perched groundwater conditions may also be occurring atop the same layers during wetter months and periods of heavy or prolonged precipitation.

Groundwater and heavy seepage should be expected within full depth burial site excavations in most areas we investigated – see Test Pit Logs and Test Pit Location Plan for specific locations and depths.

6.2 PHASE A COLUMBARIA

Our test pits in this area encountered a high groundwater table, and low-quality fill materials are anticipated along the south and west edges of this area. To avoid encountering the groundwater table during future burial excavations, we recommend the project team consider cemetery uses which require shallower/minimal excavations, perhaps in combination with filling to raise the site grade. Placing columbaria structures atop the low-quality fill materials along the south and west edges may lead to undesirable amounts of settlement/tilting, and we recommend replacing these low-quality fills with well compacted select granular fills if structures are to be placed in those areas.

6.3 PHASE 1 INFILL BURIAL AREA: BOULDERS

Our test pits in this area (Photos 3, 4, 5 & 6) did encounter trace boulders in some soil layers up to approximately 450-600 mm in size, and we understand from anecdotal evidence that larger boulders, some up to 1 to 1.5 m in size have been encountered within burial site excavations in this area (Photo 2). We understand these larger boulders can cause issues during the excavation process for full depth burial sites as they are difficult to remove and can cause cave ins/destabilization of neighbouring burial sites. While our test pits did not encounter any of the larger boulders, and only trace amounts of smaller boulders (up to 450-600 mm), we understand the project team desires to know what the process of removing the boulders from the soil in advance of burial site excavations in this area would entail. To remove problematic large boulders from the Phase 1 infill burial areas, these areas would need to be bulk excavated to full burial depth (approx. 2 to 2.4 m) and the soil material would need to be screened through a heavy-duty steel screen (perhaps set to 300 to 450 mm spacing). Once screened the soil material could then be replaced in lifts and well compacted (so that future excavation cutslopes can be cut steeper).

Recommended lift thickness would vary between 300 to 600 mm depending on the size and energy of the compaction equipment available. If the soil material is dry, moisture conditioning each lift prior to compaction may be necessary to achieve higher levels of compaction. We remain somewhat uncertain of the frequency and probability of encountering problematic large boulders within burial excavations in this area, and we recommend the project team weigh the financial aspect of advanced boulder removal vs. doing nothing.

6.4 WATERCOURSE BANK EROSION

Given the erosion appears to be progressing towards existing grave sites, we recommend the team consider restoring some or all of the land lost to erosion, and increasing the erosion resistance of the bank in eroding areas by installing one or a combination of the following: medium sized rock rip-rap, gabion baskets filled with gravel and cobbles, or perhaps a ‘bag wall’ (heavy weight filter fabric bags filled with soil material and stacked on

top of each other). Once restored and protected as above, erosion resistant shrubs and trees could also be planted along the affected banks to increase the natural erosion resistance of the bank. Selection of the most suitable option should also involve input from the project biologist/environmental consultant and civil engineer.

6.5 PHASE C CEMETERY EXPANSION AREA

Based on the encountered subsurface conditions, we consider cemetery expansion and development of this area to be geotechnically feasible, provided bulk and burial excavations do not advance into the groundwater table and most of the mature trees can be retained. For this area we recommend flat/level areas be constructed primarily by filling rather than excavating, to avoid daylighting/disturbing the groundwater table. Given the proximity to the large ravine south of Lower Road, as well as the apparently high groundwater table and potential for aquitard/confined groundwater conditions, detailed design of cemetery development plans in this area would necessitate further detailed geotechnical examination.

7. ADDITIONAL GEOTECHNICAL WORK

We anticipate the need for further geotechnical engineering input during the detailed design stage of the various Cemetery development Phases, and such can be provided upon request as and when necessary.

Given the proximity to the large ravine south of Lower Road, as well as the apparently high groundwater table and potential for aquitard/confined groundwater conditions, we recommend further detailed geotechnical assessment prior to finalizing development plans within the Phase C Cemetery Expansion Area in the southwest corner of the site.

8. CLOSURE

We trust the preceding is suitable for your purposes at present. Please do not hesitate to contact the undersigned if we can be of further assistance or if you have any questions.

Sincerely,

Ryzuk Geotechnical

Patrick Sails, P.Eng.
Intermediate Geotechnical Engineer

Reviewed By:
Christian Flanagan, P.Eng.
Lead Geotechnical Engineer

Permit to Practice Number: 1002996

Attachment(s):

- Site Location Plan – SCRD Webmap
- Cemetery Concept Plan and Interment and Memorialization Diagram
- Cemetery Phasing Plan
- Test Pit Location Plan
- Test Pit Logs
- Photo Table

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Site Location Plan - 1706 Lower Road, SCRD, BC

This information has been compiled by the Sunshine Coast Regional District (SCRD) using data derived from a number of sources with varying levels of accuracy. The SCRD disclaims all responsibility for the accuracy or completeness of this information.

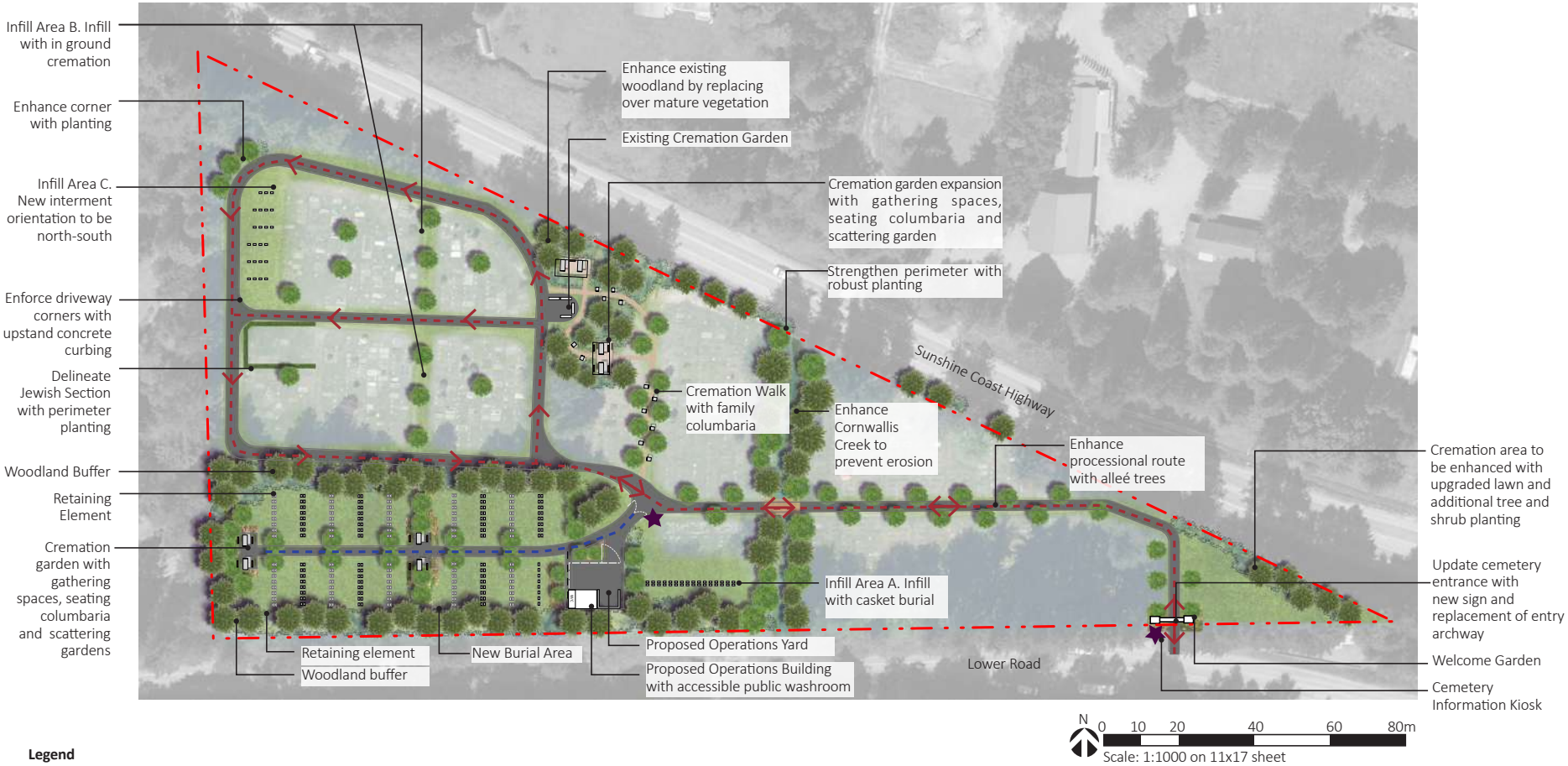
- Road Names
- Parcel Boundaries
- Contours
- Jurisdiction
- Unconstructed Roads
- Golf Courses
- Parks
  - SCRD Park
  - Recreation Site

11/5/2024

Scale 1: 9,028

458.6 0 458.6 Meters

Seaview Cemetery Concept Plan



Legend

Existing

- Cemetery Land Extents
- Cemetery Driveway

Proposed

- Cemetery Driveway -Limited Access
- Pedestrian Only Path
- Cemetery Information Kiosk
- Gathering Space
- New and Enhanced Woodland Planting
- Specimen Tree

Seaview Cemetery Interment and Memorialization Diagram

Legend

Existing
- Cemetery Land Extents

Proposed
- Cremation Garden
- In-ground Cremation Lot
- Casket Lot with upright marker
- Casket Lot with flat marker

Estimate Interment Capacity

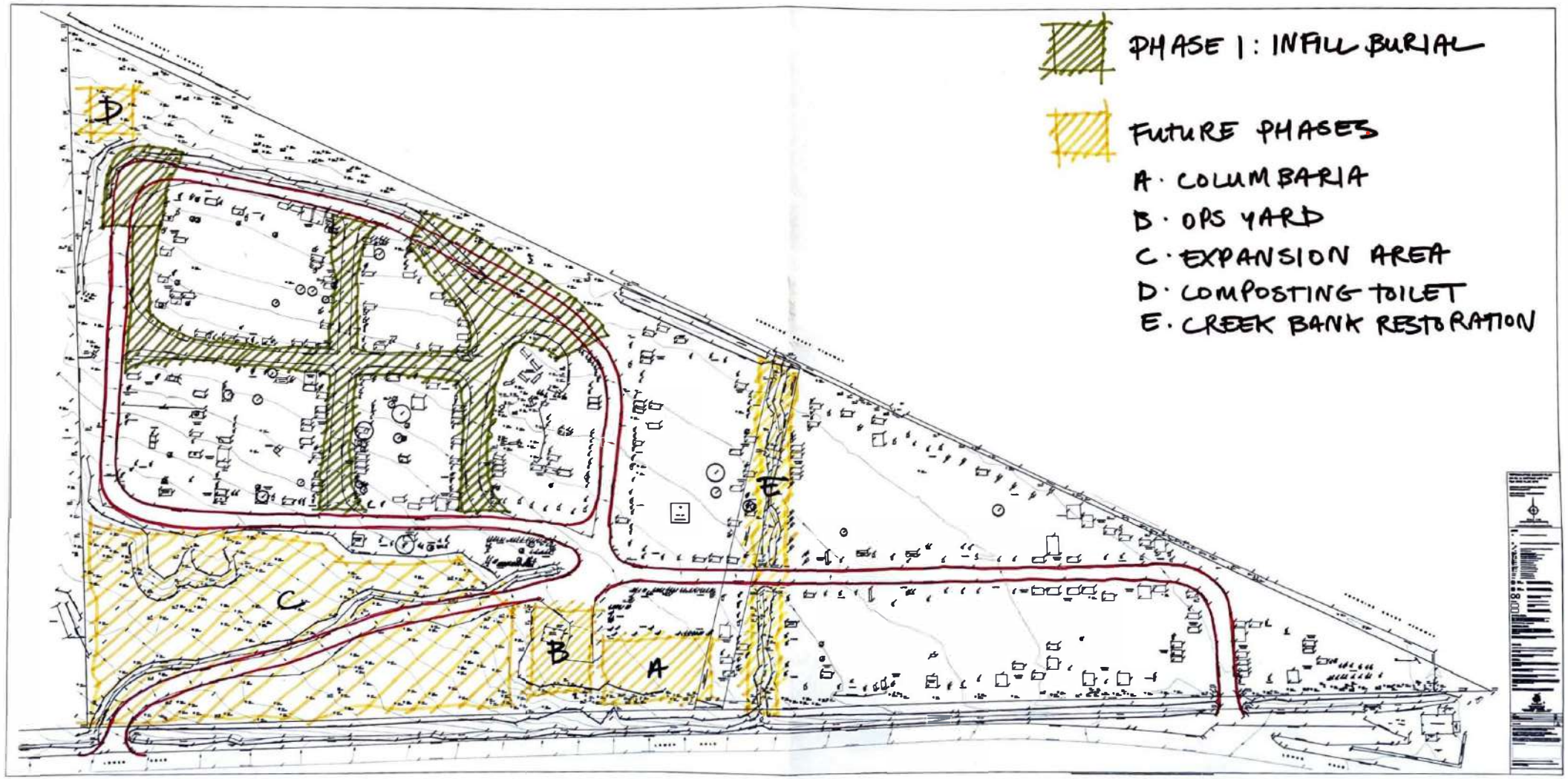
New Burial Area
- Casket Lots: 10-15 years
- In-ground Cremation lots: 10-15 years
- Columbaria Niches: 35-40 years

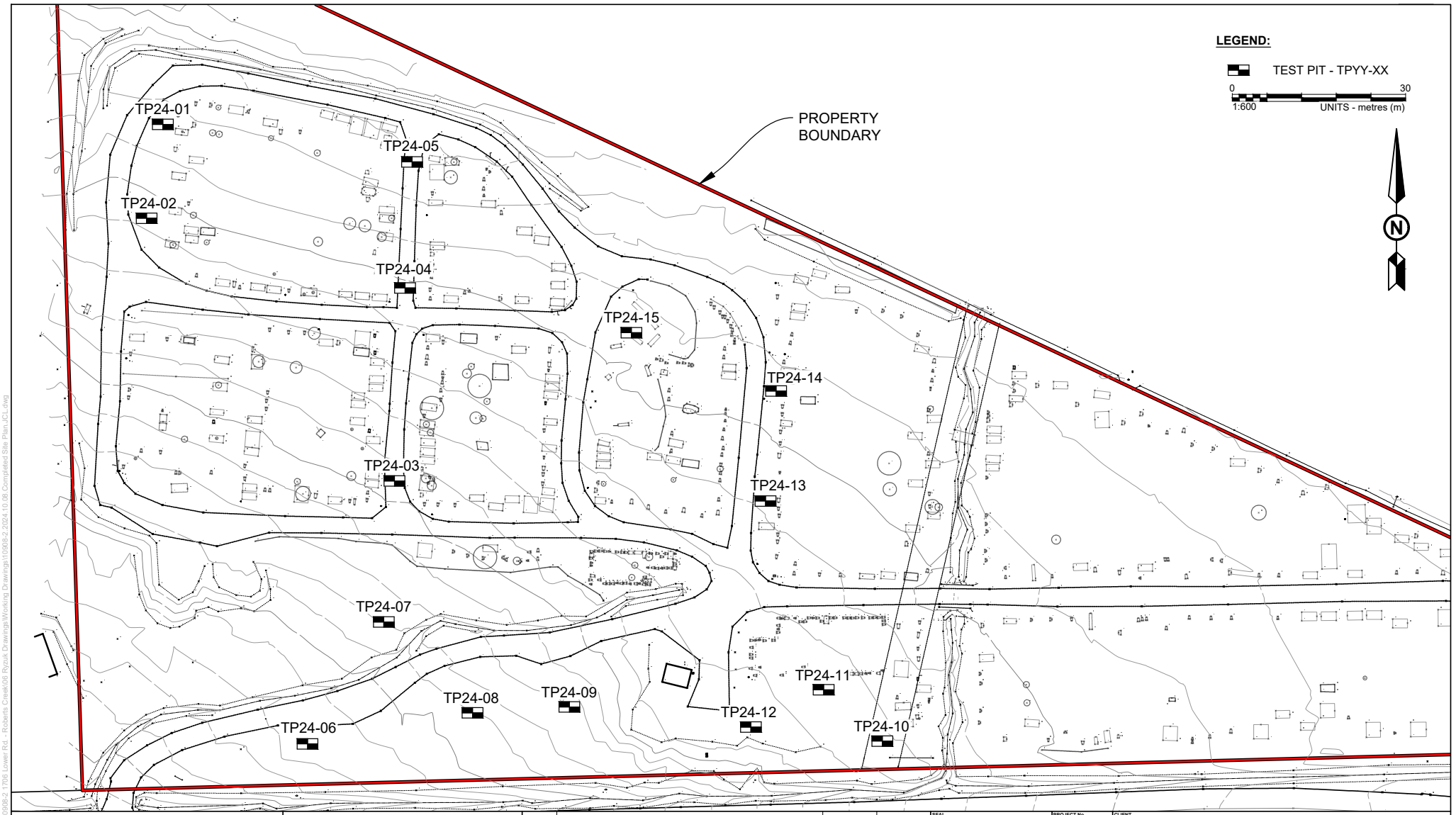
Infill Area A
- Casket Lots: 1-2 years

Infill Area B
- In-ground Cremation lots: 10 years

Infill Area C
- Casket Lots: 1 year

Cremation Garden and Cremation Walk
- Columbaria: 50+ years
- In-ground Cremation lots: 10+ years


PHASE 1: INFILL BURIAL
FUTURE PHASES
A · COLUMBARIA
B · OPS YARD
C · EXPANSION AREA
D · COMPOSTING TOILET
E · CREEK BANK RESTORATION
D
C
B
A
E



NOTES

1. This drawing is scaled for 11x17 sheet and does not require further scaling to fit. Scales will differ if printed on different sheet size.
2. Base drawing from Topographic Survey Plan On Bk 12 District Lot 904 Gp1 NWD Plan 4213 by bennet Land Surverying Ltd. dated on August 28,2024

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REV.	DESCRIPTION	YY/MM/DD	DRAWN BY
0	ISSUED FOR DISCUSSION	24/10/09	JCL

SEAL

PTPN: 1002996

PROJECT No.	10908-2
CLIENT	LEES + ASSOCIATES
EOR/LEAD	PMS
PROJECT TITLE	PROPOSED CEMETERY EXPANSION
REVIEW	CJF
PROJECT ADDRESS	SEAVIEW CEMETERY, 1706 LOWER RD, ROBERTS CREEK, BC
SCALE	1:600
DRAWING PACKAGE	**SUBSURFACE INVESTIGATION**
SHEET No.	01 of 01
SHEET NAME	**TEST PIT LOCATION PLAN**

Project: Proposed Seaview Cemetery Expansion
1706 Lower Road, Roberts Creek, SCRD, BC
Client: Lees + Associates

Investigation Date: September 12, 2024
Location: See Test Pit Location Plan

Inspector: PMS
Ryzuk Job Number: 10908-2

Table 1: Summary of Test Pit Information

Test Pit 24-01

Stratigraphy:

0.0	to	0.1 m	FILL – fine sand, silty, loose
0.1	to	1.2 m	FILL – sand, silty, some gravel and cobbles, trace organics (roots and burnt wood), loose to compact, dark brown, damp
1.2	to	2.1 m	SAND – trace silt, trace fine gravel, trace cobbles, compact, grey, moist to wet.
	at	2.1 m	End of test pit – desired depth

Notes: No seepage observed, side walls appeared reasonably stable

Test Pit 24-02

Stratigraphy:

0.0	to	0.1 m	FILL – fine sand, silty, loose
0.1	to	1.8 m	FILL – gravelly, cobbly, some silt, trace boulders (<300 mm), trace organics, rootlets and wood fragments, compact, light brown, dry
1.8	to	2.4 m	SAND and GRAVEL – some cobbles, trace boulders (<600 mm), medium to coarse sand, dense, damp
	at	2.4 m	End of test pit – desired depth

Notes: No seepage observed

Test Pit 24-03

Stratigraphy:

0.0	to	0.2 m	ROADBASE
0.2	to	0.8 m	SAND – gravelly, dense, rusty brown, dry
0.8	to	1.4 m	TILL – sand, silty, some gravel and cobbles, very dense, grey/tan, damp
	at	1.4 m	End of test pit – refusal

Notes: Difficult to excavate

Test Pit 24-04

Stratigraphy:

0.0	to	0.1 m	ROADBASE
0.1	to	0.8 m	SAND – gravelly, some cobbles, dense, rusty brown with grey lenses, dry
0.8	to	2.2 m	COBBLES – sandy, gravelly, trace to no silt and clay, very dense, grey, damp to moist
	at	2.2 m	End of test pit – desired depth

Notes: No seepage observed

Test Pit 24-05

Stratigraphy:

0.0	to	0.3 m	GRAVEL – sandy, compact, grey
0.3	to	0.9 m	SAND – some gravel, some cobbles, trace boulders (<450 mm), compact, brown, dry
0.9	to	1.75 m	SAND – gravelly, some cobbles, trace boulders (<450 mm), dense, grey, dry
1.75		2.15 m	SAND – some gravel and cobbles, dense, grey, damp
	at	2.15 m	End of test pit – desired depth

Notes: No seepage observed

Test Pit 24-06

Stratigraphy:

0.0	to	0.3 m	ORGANIC SOIL - forest floor
0.3	to	0.6 m	SAND – some gravel and cobbles, some silt, compact, brown, dry
0.6	to	1.8 m	COBBLES – sandy, gravelly, some boulders (<300 mm), very dense, grey, dry
	at	1.8 m	End of test pit – refusal

Notes: Difficult to excavate

Test Pit 24-07

Stratigraphy:

0.0	to	0.6 m	ORGANIC SOIL – forest floor, loamy sand
0.6	to	0.9 m	TILL – sand, silty, some gravel and cobbles, very dense, grey, damp
	at	0.9 m	End of test pit – refusal

Notes: Difficult to excavate

Test Pit 24-08

Stratigraphy:

0.0	to	0.6 m	ORGANIC SOIL – forest floor
0.6	to	0.8 m	SAND – silty, loamy, brown, dry
0.8	to	1.1 m	TILL – sand, silty, some gravel and cobbles, trace boulders, very dense, grey, damp
	at	1.1 m	End of test pit – refusal

Notes: Difficult to excavate

Test Pit 24-09

Stratigraphy:

0.0	to	0.3 m	ORGANIC SOIL – forest floor
0.3	to	0.9 m	SAND – silty, loamy, brown, dry, tree roots
0.9	to	1.8 m	SILT – sandy, clayey, trace gravel, very stiff, low plasticity, grey, moist
1.8	to	2.3 m	SAND and GRAVEL – some cobbles, no fines, very dense, grey, wet
	at	2.3 m	End of test pit – desired depth

Notes: Heavy seepage observed in sand and gravel layer, running sands at base of test pit

Test Pit 24-10

Stratigraphy:

0.0	to	0.2 m	FILL – sand, fine, grey, dry
0.2	to	0.5 m	FILL – sand, loamy, brown, dry, some tree roots
0.5	to	0.9 m	SAND – cobbly, silty, dense, rusty brown, dry
0.9	to	1.8 m	SAND – fine to medium, trace to some silt, compact, grey, moist
1.8	to	2.1 m	SAND – coarse, gravelly, compact, grey, wet
	at	2.1 m	End of test pit – desired depth

Notes: Moderate seepage observed from 1.8 m to 2.1 m

Test Pit 24-11

Stratigraphy:

0.0	to	0.3 m	FILL – sand, organic soil
0.3	to	1.2 m	SAND – trace gravel, trace silt, compact, rusty brown, damp
1.2	to	2.1 m	SAND – fine to medium, trace to some silt, compact, grey, wet
	at	2.1 m	End of test pit – desired depth

Notes: Heavy seepage observed from 1.2 to 2.1 m, running sands at base of test pit

Test Pit 24-12

Stratigraphy:

0.0	to	1.8 m	FILL – sand and gravel, silty, some cobbles, trace boulders, some organics, some wood debris, soft/loose, dark brown, wet
	At	1.8 m	End of test pit – desired depth

Notes: Heavy seepage observed from 1.2 m depth to base, sidewalls caving in.

Test Pit 24-13

Stratigraphy:

0.0	to	0.2 m	ORGANIC SOIL – sandy
0.2	to	1.0 m	SAND and GRAVEL – trace cobbles, trace to no fines, dense, rusty brown, damp
1.0	to	1.4 m	SAND – gravelly, some cobbles, dense, grey, wet
1.4	to	2.2 m	SAND – fine to medium, no fines, grey, wet
	at	2.2 m	End of test pit – desired depth

Notes: Light seepage observed from 1.0 m onwards, running sands near base.

Test Pit 24-14

Stratigraphy:

0.0	to	0.2 m	ORGANIC SOIL – sandy
0.2	to	1.2 m	SAND and GRAVEL – cobbly, trace to no fines, dense, rusty brown to brown, dry becoming damp
	at	1.2 m	End of test pit – refusal on very dense cobbles and small boulders

Notes: Abrupt refusal on cobbles and small boulders

Test Pit 24-15

Stratigraphy:

0.0	to	0.1 m	CRUSHER DUST – sand, some fine gravel, dense, grey
0.1	to	0.3 m	SAND – loamy, some organics, some rootlets
0.3	to	0.4 m	SAND and GRAVEL – some silt, dense, brown, dry
	at	0.4 m	End of test pit – desired depth

Notes: Adjacent concrete columnar burial foundation

Photo Table – September 12, 2024

Photo 1: Soil cutbank along west end of north edge of cemetery.

Photo 2: Row of large glacial boulders along north edge of cemetery.

Photo 3: TP24-02.

Photo 4: TP24-02.

Photo 5: TP24-04.

Photo 6: TP24-04.

Photo 7: TP24-09.

Photo 8: TP24-09.

Photo 9: TP24-11.

Photo 10: TP24-11.

Photo 11: TP24-13.

Photo 12: TP24-13.

Photo 13: TP24-15.

Photo 14: 914 mm (36 in) corrugated steel culvert at upstream end of Cornwallis Creek tributary.

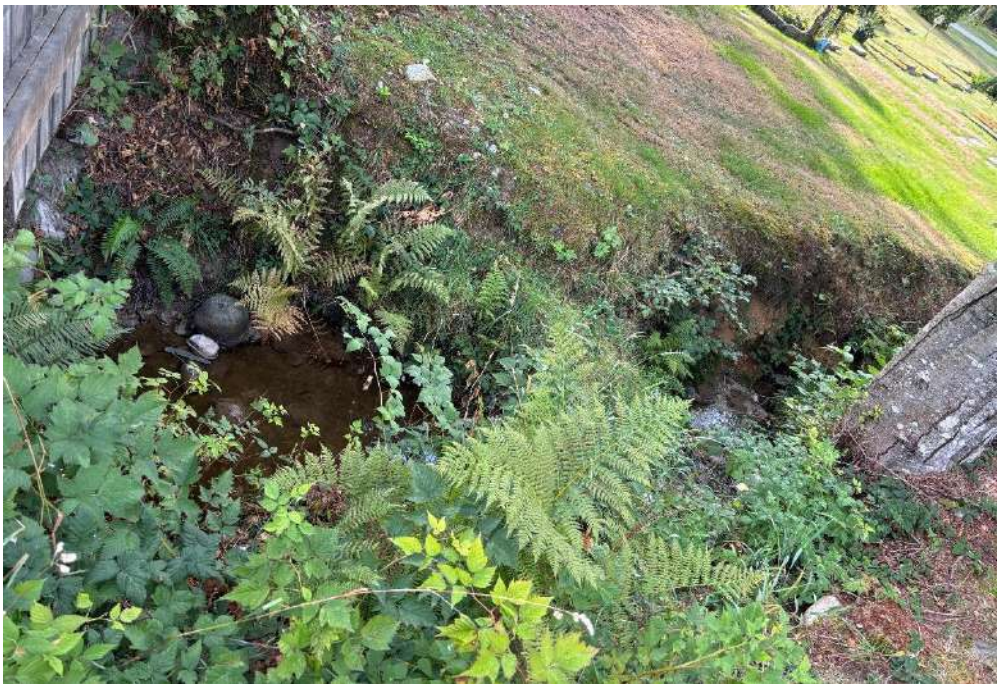

Photo 15: 914 mm (36 in) corrugated steel culvert at upstream end of Cornwallis Creek.

Photo 16: Erosion along west bank of Cornwallis Creek.

Photo 17: Erosion along west bank of Cornwallis Creek (same as Photo 16)

Photo 18: Erosion along west bank of Cornwallis Creek.

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TERMS OF ENGAGEMENT

1. GENERAL

1.1. Ryzuk Geotechnical Ltd., its principals and employees (collectively the "Consultant") shall render the Services to the Client for the Project in accordance with the following terms of engagement (the "Engagement").

1.2. The Services, and any other associated documents, records or data, shall be carried out and/or prepared in accordance with generally accepted engineering practices commensurate with the timing and location in which the Services are performed. No other representations or warranties, expressed or implied, are made by the Consultant.

1.3. The Consultant may, at its discretion and at any stage, engage sub-consultants to perform all or any part of the Services.

2. COMPENSATION

2.1. The Consultant's rates and fees are generally based on the hourly rates of our employees. The Consultant maintains accurate records of the time we devote to the Engagement. For certain well-defined services we will be able to quote a fixed fee.

2.2. The Consultant's rates and fees are adjusted annually to reflect current levels of geotechnical experience, changes in market conditions and other factors.

2.3. All fees billed to the Client by the Consultant are payable in Canadian dollars. Invoices are due and payable by the Client on receipt of the invoice, without holdback. Interest on overdue accounts is 24% per annum.

3. REPRESENTATIVES

3.1. Each party must designate a representative who is authorized to act on behalf of that party and receive notices under this Engagement.

4. TERMINATION

4.1. Either party may terminate this Engagement without cause upon providing 30 days' written notice to the other party. On termination by either party under this section, the Client shall forthwith pay to the Consultantall fees invoiced by the Consultant for the Services performed, including all expenses and other charges incurred by the Consultant in respect of the Consultant's Engagement by the Client.

4.2. If either party is in breach of any term of this Engagement, the non-defaulting party may give written notice of the breach to the other party and thereafter terminate this Engagement forthwith if the defaulting party does not remedy said breach within 7 days' of being provided written notice of the breach. On termination bythe Consultant under this section, the Client shall forthwith pay to the Consultant all fees invoiced for the Services performed to the date of termination, including all expenses and other charges incurred by the Consultant in respect of the Consultant's Engagement by the Client.

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5. ENVIRONMENTAL

5.1. The Consultant's field investigation, laboratory testing and engineering recommendations will not address or evaluate contamination or pollution of soil or groundwater. The Consultant will cooperate with any environmental consultant retained by the Client during the field work phase of the investigation.

6. PROFESSIONAL RESPONSIBILITY

6.1. The Consultant will provide the Services in accordance with the standard of care, skill and diligence required of a geotechnical consulting firm providing similar services at the same time in the same geographic location and circumstances in British Columbia. The Services will be provided in accordance with procedures customarily provided in similar circumstances by similar professionals.

7. INSURANCE

7.1 Ryzuk Geotechnical maintains Professional Indemnity Insurance as follows:

7.1.1 $2,000,000 each and every claim

7.1.2 $2,000,000 in the aggregate

7.1.3 $5,000,000 commercial/general liability coverage.

8. LIMITATION OF LIABILITY

8.1. The Consultant shall not be responsible for:

8.1.1. the negligence or failure of any contractor or other professional retained by the Client to perform work or provide services in respect of the Project in accordance with the applicable contract documents and/or advice provided by the Consultant;

8.1.2. the design of or defects in equipment or materials supplied or provided by the Client or its contractors for incorporation into the Project;

8.1.3. any cross-contamination resulting from subsurface investigations;

8.1.4. any Project decisions made by the Client if such decisions are made without the Client first seeking advice from the Consultant and/or decisions contrary to or inconsistent with advice provided by the Consultant;

8.1.5. any consequential loss, injury or damages suffered by the Client or its agents and contractors, including but not limited to loss of use, earnings and business interruption;

8.1.6. the unauthorized distribution of any confidential document or reports prepared by or on behalf of the Consultant for the exclusive use of the Client;

8.1.7. damage to subsurface structures and utilities.

8.2. The Consultant will make all reasonable efforts prior to and during subsurface site investigations to minimize the risk of damaging any subsurface utilities/mains. If, in the unlikely event that damage is incurred where utilities are unmarked and/or undetected, the Consultant will not be held responsible for damages to the Project site or surrounding areas, utilities/mains or drilling equipment or the cost of any repairs thereto.

8.3. The Consultant's total liability to the Client for any errors, omissions, breaches of contract and/or negligence arising in connection with the Services is limited to the amount of the Consultant's fees for the Services and shall not exceed that amount under any circumstances. For greater clarity, this means that if the Client makes any claim, including any claim for contribution or indemnity, or brings any claims against the Consultant, then any damages for which the Consultant may be liable cannot exceed the total amount of fees paid to the Consultant by the Client.

8.4. The Client agrees to indemnify and to save and hold harmless the Consultant from any claim, demand, litigation, expense, legal fees, liability, damage, award or cost, of any form or type whatsoever, in respect of any claim for property damage, loss, or personal injury brought by any party including the Client's contractors, other professionals, or any third party, resulting from the Consultant's provision of the Services, except for such property damage, loss or personal injury that results directly from the gross negligence of the Consultant or its employees.

8.5. No claim may be brought against the Consultant in respect of the Consultant's provision of the Services, in contract, negligence or other civil wrong more than 2 years after any claim is discoverable.

9. DOCUMENTS AND REPORTING

9.1. All of the documents prepared by or on behalf of the Consultant in connection with the Project are instruments of service for execution of the Project and the Services. The Consultant retains the property and copyright in these documents, whether the Project is executed or not. These documents may not be used on any other project without the prior written agreement of the Consultant.

9.2. Documents that have been prepared specifically for the Project are applicable and may be relied upon onlyin the case where there has been no physical alteration to, or deviation from any of the information or plans provided to the Consultant by the Client or the Client's agents. If the Client makes any changes or deviations from original plans for the Project, the Client may request that the Consultant review and revise Project documents accordingly.

9.3. Identification and classification in respect of the extent, properties, or type of soils or other materials at the Project site will be based upon investigation and interpretation of results in a manner consistent with customarily accepted standard geotechnical consulting practices in the location where the Services were performed. Due to the nature of geotechnical consulting, there is an inherent risk that all potential conditions will not be detected at the Project site and that actual subsurface conditions may vary considerably from investigation points. The Client and any other party making use of any documents prepared by the Consultant in respect of the Project acknowledges and accepts this risk.

9.4. Any conclusions and recommendations provided within any document prepared by the Consultant for the Client will be based on the scope of investigation by the Consultant and any additional information provided to the Consultant by the Client or the Client's agents. The Consultant disclaims responsibility for any deficiency or inaccuracy resulting from the Consultant being provided with inaccurate or fraudulent information by the Client or the Client's agents.

10. JOBSITE SAFETY AND CONTROL

10.1. The Client acknowledges that control of the Project site remains solely with the Client, and/or the Client's agents and/or contractors. The presence of the Consultant's personnel on the Project site does not relieve the Client, the Client's agents and/or contractors from their responsibilities for Project site safety. The Client must inform the Consultant of all hazardous or otherwise dangerous conditions at the Project site of which the Client, its agents, and/or contractors are aware.

10.2. The Client acknowledges that during the course of a geotechnical investigation a previously unknown hazard or contaminant may be discovered. Discovery and/or identification of a hazard/contaminant may necessitate procedures to ensure the safety and protection of persons and/or the environment being undertaken. The Client shall be responsible for payment of any additional expenses incurred as a result of discovery of a hazard/contaminant. The Client acknowledges that certain circumstances require governmentand/or regulatory authorities to be notified of hazardous conditions and/or contaminants. The Client shall not make any claim or bring any action against the Consultant in the event the Consultant provides any required notification of a hazard and/or contaminant to a government and/or regulatory authority.

11. FIELD SERVICES

11.1. If the Consultant is requested or required to provide field review Services for the Project and the Client declines to authorize or otherwise limits the scope of same in a manner inconsistent with the Consultant's advice or recommendations, the Consultant may provide qualified certifications in respect of any work completed by the Client and/or its contractors that was not overseen by the Consultant.

12. DISPUTE RESOLUTION

12.1. If requested in writing by either the Client or the Consultant, the Client and the Consultant shall attempt to resolve any dispute between them arising out of or in connection with this Engagement by entering into structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. If a dispute cannot be settled within a period of thirty (30) calendar days with assistance of a mediator, the dispute shall be referred to and finally resolved by a British Columbia Court.

13. PROVISION OF INPUT DOCUMENTS

13.1 The Client agrees to provide all relevant third-party documentation reasonably required by the Consultant in connection with the execution and performance of this Agreement. Such documents shall be provided in a timely manner to ensure the effective and uninterrupted delivery of the services contemplated herein.

This includes, but is not limited to, the timely provision of the following:

- A clear description of the project
- Documentation received from any relevant municipality, district, or governing authority
- Covenants on title;
- Site plans and/or surveys;
- Consultant design drawings such as building plans, structural plans, etc.;
- Any existing geotechnical reports or other relevant consultant reports;
- Site photographs

14. CONFIDENTIALITY

14.1. During the term of the Engagement, the Consultant shall not use or disclose any of the Client's confidential information to any third party other than the Consultants legal and/or financial advisors without authorization from the Client. The Consultant will use any confidential information for the sole purpose of carrying out the Services. The Consultant may share photos of the Project so long as such photos do not disclose any information not otherwise available or readily visible by the public. Unless already made public, the Consultant will not share Client or Project site address information on social media or with third parties.