



# Committee Report

**Date of Report:** March 1, 2024  
**Date & Type of Meeting:** March 20, 2024 Rural Affairs Committee  
**Author:** Zachari Giacomazzo, Planner  
**Subject:** SITE SPECIFIC EXEMPTION TO THE FLOODPLAIN MANAGEMENT BYLAW  
**File:** F2304A – Drysdale  
**Electoral Area/Municipality** A

## SECTION 1: EXECUTIVE SUMMARY

The purpose of this report is for the Rural Affairs Committee and Regional Board to consider an application for a Site Specific Exemption to Regional District of Central Kootenay Floodplain Management Bylaw No. 2080, 2009, in Electoral Area 'A'.

The applicant seeks relief from the 15 metre floodplain setback for Kootenay Lake specified in the RDCK Floodplain Management Bylaw No. 2080, 2009 in order permit an existing deck—which is attached to the dwelling—in its current location, which is 10 metres from the Natural Boundary of Kootenay Lake.

Staff recommend that the Board approve the site specific exemption to the Floodplain Management Bylaw subject to the registration of a Section 219 restrictive covenant, indemnifying the Regional District and confirming that the deck may be used safely for the intended use.

## SECTION 2: BACKGROUND/ANALYSIS

### GENERAL INFORMATION

**Property Owners:** John Drysdale, Bradley Douglas Drysdale

**Property Location:** 10789 Highway 3A, Electoral Area 'A'

**Legal Description:** LOT A DISTRICT LOT 913 KOOTENAY DISTRICT PLAN 5183 (PID: 014-539-551)

**Property Size:** 2.2 ha (5.4 acres)

**Zoning:** Country Residential (R2) – Electoral Area 'A' Comprehensive Land Use Bylaw No. 2315, 2013

**Land Use Designation:** Country Residential (RC) – Electoral Area 'A' Comprehensive Land Use Bylaw No. 2315, 2013

### SURROUNDING LAND USES

**North:** Country Residential (R2)

**West:** Resource Area (RA) – Kootenay Lake

**East:** Country Residential (R2)

**South:** Country Residential (R2)

### Background and Site Context

The subject property is located approximately 32 km north of the Town of Creston in Electoral Area 'A'. There is a partially constructed one-family dwelling located on the subject property which has been considered under four (4) different building permits since 1985. Since that time different portions of the dwelling, including the deck being considered by this application, were constructed without building permits or prior to the issuance of building permits. The dwelling and the deck are now being considered under Building Permit File No. BP027620 which has been submitted to permit the different portions of unauthorized construction that was completed throughout the years.

Due to topographic constraints (exposed bedrock and steep slopes) with much of the subject property, the building site was chosen as it is one of the only flat areas large enough to accommodate a dwelling, on-site wastewater system and the driveway/parking area associated with the dwelling. The footprint of the dwelling is outside of the 15 metre floodplain setback. This application is required in order to authorize the deck that is structurally attached to the partially constructed dwelling to remain in its current location which at the closest point is 10 metres from the natural boundary of Kootenay Lake. The house and the deck both comply with the required Flood Construction Level of 536.5 metres G.S.C.



Figure 1 - Location Map

## Legislative Framework and Applicable Policy

Under Section 524 of the *Local Government Act (LGA)*, a local government may exempt a person from the application of a floodplain bylaw in relation to a specific building if the local government considers it advisable and either:

- Considers that the exemption is consistent with the Provincial Guidelines; or
- Has received a report that the land may be used safely for the use intended where such a report is certified by a person who is a professional engineer or geoscientist and experienced in geotechnical engineering.

The RDCK provides qualified professionals with a Terms of Reference documents, “*Professional Engineers/Geoscientists undertaking Geotechnical Reports/Flood Hazard Assessment Reports*” which outlines basic information that should be included in such reports.

The report, “*Flood Hazard Assessment 10789 Highway 3A (Lot A, Plan NEP 5183, District Lot 913, Kootenay Land District) for John Drysdale*” prepared by SNT Geotechnical Ltd., dated July 4, 2023 was submitted with the application for an exemption (see Attachment ‘A’) and meets the requirements set out under the above-mentioned Terms of Reference. The report verifies that “the deck may be used safely for the use intended”.

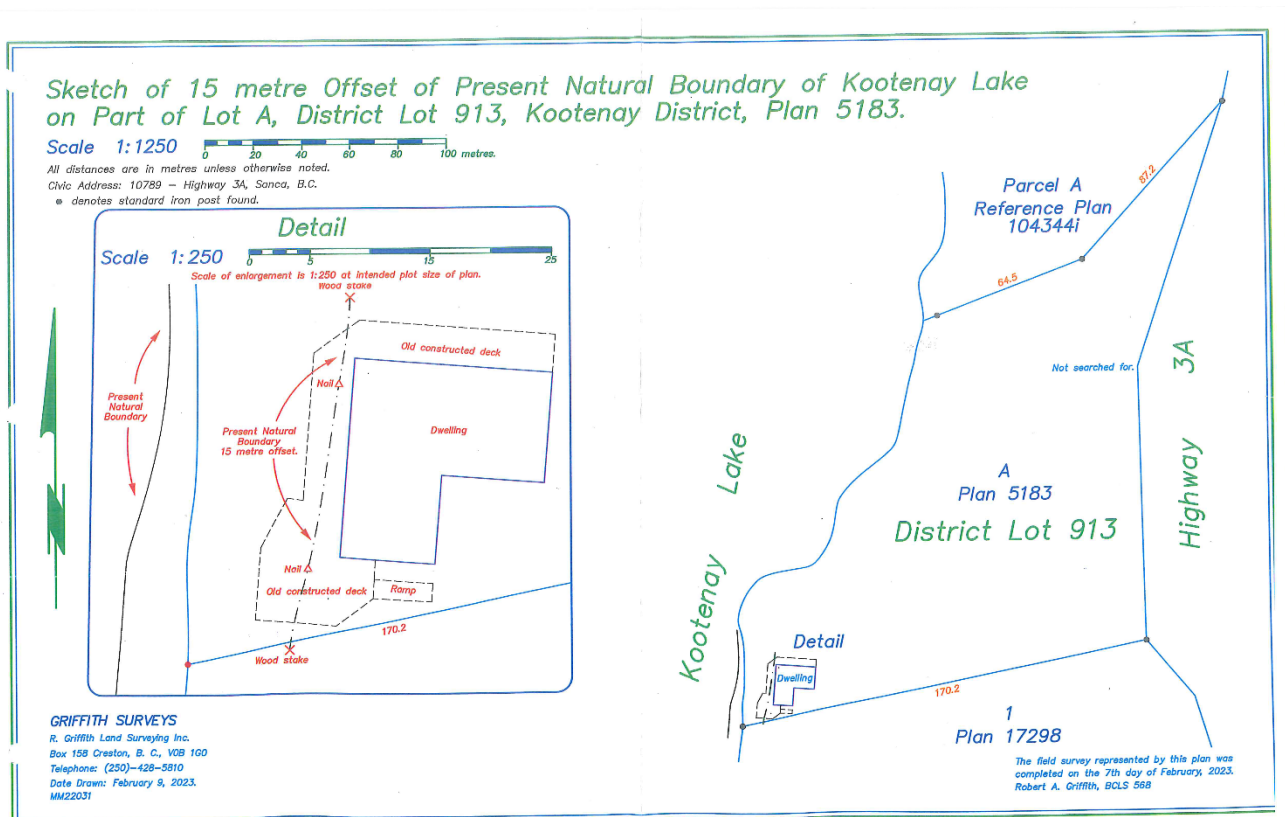


Figure 2 – Sketch Plan showing the 15 metre floodplain setback and the location of the existing dwelling and deck. See Attachment ‘A’ for a full size version of this sketch plan.





*Figure 3 - View looking north towards the deck and dwelling. The red line shows the location of the 15 metre floodplain setback.*





Figure 4 - View looking south from the deck. The red line shows the location of the 15 metre floodplain setback.

## SECTION 3: DETAILED ANALYSIS

### 3.1 Financial Considerations – Cost and Resource Allocations:

Included in Financial Plan:

Yes  No

Financial Plan Amendment:

Yes  No

Debt Bylaw Required:

Yes  No

Public/Gov't Approvals Required:

Yes  No

The \$500 fee for a Site Specific Floodplain Exemption application has been paid pursuant to the RDCK's *Planning Procedures and Fees Bylaw No. 2457, 2015*.

### 3.2 Legislative Considerations (Applicable Policies and/or Bylaws):

Under Section 524 of the *LGA*, the Board has the authority to exempt a development proposal from "requirements in relation to floodplain areas" provided a report prepared by a professional engineer or geoscientist is received stating that the land may be used safely for the use intended.

### 3.3 Environmental Considerations

The deck that is being considered by this site specific floodplain exemption application is partially within the Environmentally Sensitive Development Permit (ESDP) Area associated with Kootenay Lake. A “DP Exemption Memo” prepared by a Mary Louise Polzin, PhD., RPBio. and Sr. Ecologist/Riparian Specialist at Vast Resource Solutions Inc. was submitted with the application which indicates the following: “In summary, there is no water interface between Kootenay Lake and the designated riparian zone by the ESDP as it occurs on top of a bedrock cliff. There is no riparian soil development, and no riparian vegetation. The area within the ESDP is not classified as riparian habitat. No environmental impacts are anticipated on this developed site.”

Based on the information provided by the Qualified Environmental Professional, an ESDP application is not required.

### **3.4 Social Considerations:**

No negative social impacts are associated with this site specific exemption application.

### **3.5 Economic Considerations:**

No economic considerations are anticipated in response to this land use application.

### **3.6 Communication Considerations:**

In accordance with the RDCK’s *Planning Procedures and Fees Bylaw No. 2457, 2015* staff referred the application to all relevant government agencies, internal RDCK departments and the Director for Electoral Area ‘A’ for review. The following comments were received:

#### **Electoral Area ‘A’ APHC (from the minutes of the February 1, 2024 meeting)**

The following was discussed:

- The applicant gave a brief overview of their application
- The commissioners asked clarifying questions regarding engineering reports and when applications are required
- The commissioners noted the non-necessity of the Environmentally Sensitive Development Permit (ESDP) application due to the lack of impact on the riparian area as demonstrated by the Qualified Environmental Professional (QEP)

**MOVED** and seconded,

AND Resolved that it be recommended to the Board:

That the Area A Advisory Planning Commission **SUPPORT** the Site Specific Floodplain Exemption Application to John Drysdale for the property located 10789 Highway 3A and legally described as LOT A DISTRICT LOT 913 KOOTENAY DISTRICT PLAN 5183

#### **Ministry of Transportation and Infrastructure (West Kootenay District) – Development Services Officer**

*The applicant of the file received an access permit for residential use off Highway 3A from the Ministry of Transportation and Infrastructure under file 2015-02116. As the proposed land use will remain as residential, the Ministry has no concerns with the proposed deck addition.*

#### **Ministry of Forests – Crown Land Authorizations**

*From the provided site plans, there does not appear to be any conflicts with crown land. However, please ensure that all construction, including the dwelling, deck, and driveway, are all located within the surveyed boundaries of the private property. Any overlap, construction or overhanging decks on crown land is not permitted. Given the location of the property, I would also like to note that should there be any intent to use crown land to access the lake or install a dock, the applicant should contact FrontCounter BC for more information.*

## **FortisBC – Contract Land Agent, Property Services**

### *Land Rights Comments*

- *There are no immediate concerns or requests for additional land rights, however there may be additional land rights requested stemming from changes to the existing FortisBC Electric (“FBC(E)”) services, if required.*

### *Operational & Design Comments*

- *There are FortisBC Electric (“FBC(E)”) primary distribution facilities along Highway 3A.*
- *All costs and land right requirements associated with changes to the existing servicing are the responsibility of the applicant.*
- *The applicant and/or property owner are responsible for maintaining safe limits of approach around all existing electrical facilities within and outside the property boundaries.*
- *For any changes to the existing service, the applicant must contact an FBC(E) designer as noted below for more details regarding design, servicing solutions, and land right requirements.*

***In order to initiate the design process, the customer must call 1-866-4FORTIS (1-866-436-7847).*** Please have the following information available in order for FBC(E) to set up the file when you call.

- *Electrician’s Name and Phone number*
- *[FortisBC Total Connected Load Form](#)*
- *Other technical information relative to electrical servicing*

*For more information, please refer to FBC(E)’s overhead and underground design requirements:*

*FortisBC Overhead Design Requirements*

*<http://fortisbc.com/ServiceMeterGuide>*

*FortisBC Underground Design Specification*

*<http://www.fortisbc.com/InstallGuide>*

## **Ministry of Water Lands and Resource Stewardship – Ecosystems Section Head**

*The Kootenay-Boundary Ecosystems Section of the Ministry of Water, Land and Resource Stewardship has received your referral request. We are currently unable to provide a detailed review of the referral but provide the following standard requirements, recommendations and/or comments:*

1. *All activities are to follow and comply with all higher-level plans, planning initiatives, agreements, Memorandums of Understanding, etc. that local governments are parties to.*
2. *Changes in and about a “stream” [as defined in the [Water Sustainability Act \(WSA\)](#)] must only be done under a license, use approval or change approval; or be in compliance with an order, or in accordance with Part 3 of the [Water Sustainability Regulation](#). Authorized changes must also be compliant with the [Kootenay-Boundary Terms and Conditions and Timing Windows](#) documents. Applications to conduct works in and about streams can be submitted through [FrontCounter BC](#).*
3. *No “development” should occur within 15 m of the “stream boundary” of any “stream” [all as defined in the [Riparian Areas Protection Regulation \(RAPR\)](#)] in the absence of an acceptable assessment, completed by a Qualified Professional (QP), to determine if a reduced riparian setback would adversely affect the natural features, functions and conditions of the stream. Submit the QP assessment to the appropriate Ministry of Water, Land and Resource Stewardship office for potential review. Local governments listed in Section 2(1) of [RAPR](#) are required to ensure that all development is compliant with RAPR.*



4. The federal [Species at Risk Act \(SARA\)](#) protects Endangered, Extirpated or Threatened species listed under Schedule 1 of SARA. Developers are responsible to ensure that no species or ecosystems at risk (SEAR), or Critical Habitat for Federally listed species, are adversely affected by the proposed activities. The BC Species and Ecosystem Explorer website provides information on known SEAR occurrences within BC, although the absence of an observation record does not confirm that a species is not present. Detailed site-specific assessments and field surveys should be conducted by a QP according to [Resource Inventory Standard Committee \(RISC\)](#) standards to ensure all SEAR have been identified and that developments are consistent with any species or ecosystem specific [Recovery Strategy or Management Plan](#) documents, and to ensure proposed activities will not adversely affect SEAR or their [Critical Habitat for Federally-listed Species at Risk \(Posted\)](#).
5. Development specific Best Management Practices (BMPs) should be applied to help meet necessary legislation, regulations, and policies. Current BC BMPs can be found at: [Natural Resource Best Management Practices - Province of British Columbia \(gov.bc.ca\)](#) and [Develop with Care 2014 - Province of British Columbia](#).
6. Vegetation clearing, if required, should adhere to the least risk timing windows for nesting birds (i.e., development activities should only occur during the least risk timing window). Nesting birds and some nests are protected by Section 34 of the provincial [Wildlife Act](#) and the federal [Migratory Birds Convention Act](#). Guidelines to avoid harm to migratory birds can be found at: [Guidelines to avoid harm to migratory birds - Canada.ca](#). If vegetation clearing is required during the bird nesting period (i.e., outside of the least risk timing window) a pre-clearing bird nest survey should be completed by a QP. The following least risk windows for birds are designed to avoid the bird nesting period:

<b>Bird Species</b>	<b>Least Risk Timing Windows</b>
Raptors (eagles, hawks, falcons, & owls)	Aug 15 – Jan 30
Hérons	Aug 15 – Jan 30
Other Birds	Aug 1 – March 31

7. The introduction and spread of invasive species is a concern with all developments. The provincial [Weed Control Act](#) requires that an occupier must control noxious weeds growing or located on land and premises, and on any other property located on land and premises, occupied by that person. Information on invasive species can be found at: [Invasive species - Province of British Columbia](#). The [Invasive Species Council of BC](#) provides BMPs that should be followed, along with factsheets, reports, field guides, and other useful references. For example, all equipment, including personal equipment such as footwear, should be inspected prior to arrival at the site and prior to each daily use and any vegetative materials removed and disposed of accordingly. If noxious weeds are established as a result of this project or approval, it is the tenure holder's responsibility to manage the site to the extent that the invasive, or noxious plants are contained or removed.
8. Section 33.1 of the provincial [Wildlife Act](#) prohibits feeding or attracting dangerous wildlife. Measures should be employed to reduce dangerous human-wildlife conflicts. Any food, garbage or organic waste that could attract bears or other dangerous wildlife should be removed from the work area. If this is not feasible and waste is not removed, it should be stored in a bear-proof container to avoid drawing wildlife into the area and increasing the threat of human/wildlife conflict.
9. If this referral is in relation to a potential environmental violation it should be reported online at [Report All Poachers & Polluters \(RAPP\)](#) or by phone at 1-877-952-RAPP (7277).
10. Developments must be compliant with all other applicable statutes, bylaws, and regulations.

### **RDCK Building Services**

*The portion of deck within the setback should not pose any concerns with regard to F2304A. A building permit (BP27620) is currently under review and includes the existing deck. A schedule C-B prepared by an engineer has been provided for the deck.*

### **3.7 Staffing/Departmental Workplace Considerations:**

Should the Board support the requested site specific floodplain exemption to reduce the floodplain setback, including registration of a restrictive covenant on title, the RDCK Building Department would then proceed with the review of Building Permit No. 027620 to consider the ongoing construction of the dwelling and attached deck.

### **3.8 Board Strategic Plan/Priorities Considerations:**

This application falls under the operational role of Planning Services.

## **SECTION 4: OPTIONS & PROS / CONS**

### Planning Discussion

Staff have reviewed this application for a site specific exemption to the floodplain management bylaw and conducted a site visit. Other than the exemption requested, being a reduction of the 15 metre floodplain setback to 10 metres in order to authorize the construction an existing deck, the proposal is consistent with the relevant objectives, policies and zoning regulations under the *Electoral Area 'A' Comprehensive Land Use Bylaw No. 2315*.

The **Provincial Guidelines** or the Flood Hazard Area Land Use Management Guidelines for landowner requests for modification of bylaws provides the following guidance:

*Setback requirements should not be reduced unless a serious hardship exists and no other reasonable option is available. A valid hardship should only be recognized where the physical characteristics of the lot (e.g., exposed bedrock, steep slope, the presence of a watercourse, etc.) and size of the lot are such that building development proposals, consistent with land use zoning bylaws, cannot occur unless the requirements are reduced.*

The majority of the subject property is covered by exposed bedrock and steep slopes. The applicant has indicated that the building site was chosen as it is one of the only flat areas on the lot that could accommodate a dwelling, septic system and driveway/parking areas. These constraints were confirmed by staff during a site visit on February 7, 2024. Based on the physical characteristics of the site, a case of hardship has been presented.

The dwelling and all habitable interior floor area comply with the required 15 metre floodplain setback and 536.5 G.S.C. flood construction level. The portion of the development that does not comply with the RDCK Floodplain Management Bylaw regulations is the deck, which encroaches into the required setback by 5 metres necessitating this application for a site specific floodplain exemption in order to permit a setback of 10 metres for the deck that is structurally attached to the dwelling.

Planning staff support the requested floodplain exemption, since:

- The applicants have engaged a professional geotechnical engineer, who have submitted a report confirming that the deck may be used safely for the intended use; and,

- The flood hazard assessment prepared by SNT Geotechnical Ltd. has been reviewed by Regional District staff and meets the necessary assurance requirements and is consistent with the Provincial flood hazard land use management guidelines; and,
- Much of the property is impacted by steep slopes and exposed bedrock which makes it difficult to build further away from the lake; and,
- The existing dwelling complies with the requirements of RDCK Floodplain Management Bylaw no. 2080, 2009 and the requested exemption only applies to the deck that is structurally attached to the dwelling.

## OPTIONS

### Option 1

That the Board APPROVE a Site Specific Floodplain Exemption to permit the construction of a deck with a floodplain setback of 10 metres in accordance with the Engineering Report prepared by SNT Geotechnical Ltd. for property located at 10789 Highway 3A, Electoral Area 'A' and legally described as LOT A DISTRICT LOT 913 KOOTENAY DISTRICT PLAN 5183 (PID: 014-539-551), SUBJECT to preparation by John Drysdale and Bradley Drysdale of a restrictive covenant under Section 219 of the Land Title Act and Section 56 of the Community Charter in favour of the Regional District of Central Kootenay.

### Option 2

That the Board NOT APPROVE a Site Specific Floodplain Exemption to permit the construction of a deck with a floodplain setback of 10 metres in accordance with the Engineering Report prepared by SNT Geotechnical Ltd. for property located at 10789 Highway 3A, Electoral Area 'A' and legally described as LOT A DISTRICT LOT 913 KOOTENAY DISTRICT PLAN 5183 (PID: 014-539-551), SUBJECT to preparation by John Drysdale and Bradley Drysdale of a restrictive covenant under Section 219 of the Land Title Act and Section 56 of the Community Charter in favour of the Regional District of Central Kootenay.

## SECTION 5: RECOMMENDATIONS

That the Board APPROVE a Site Specific Floodplain Exemption to permit the construction of a deck with a floodplain setback of 10 metres in accordance with the Engineering Report prepared by SNT Geotechnical Ltd. for property located at 10789 Highway 3A, Electoral Area 'A' and legally described as LOT A DISTRICT LOT 913 KOOTENAY DISTRICT PLAN 5183 (PID: 014-539-551), SUBJECT to preparation by John Drysdale and Bradley Drysdale of a restrictive covenant under Section 219 of the Land Title Act and Section 56 of the Community Charter in favour of the Regional District of Central Kootenay.

Respectfully submitted,

Zachari Giacomazzo, Planner

## CONCURRENCE

Planning Manager – Nelson Wight **Digitally approved**  
 General Manager Sustainability and Development Services – Sangita Sudan **Digitally approved**



Chief Administrative Officer – Stuart Horn **Digitally approved**

**ATTACHMENTS:**

**Attachment A – Geotechnical Report**

**Attachment B – Survey Plan prepared by Griffith Surveys**



Suite #4, 385 Baker Street  
Nelson, BC, V1L 4H6  
250 509 1009

Flood Hazard Assessment 10789 Hwy 3A (Lot A, Plan NEP5183,  
District Lot 913, Kootenay Land District  
for  
John Drysdale

Report Number: 23.540.13

Distribution:

John Drysdale – 1 copy

SNT Geotechnical Ltd. – 1 copy



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## 1. Introduction

At the request of John Drysdale, SNT Geotechnical Ltd. (SNTG) has completed a flood hazard assessment report for 10789 Hwy 3A (LOT A, PLAN NEP5183, DISTRICT LOT 913, KOOTENAY LAND DISTRICT). The report is required to support an application to the Regional District of Central Kootenays (RDCK) for a site-specific exemption from the floodplain setback requirement from the natural boundary of Kootenay Lake required by RDCK Floodplain Management Bylaw No. 2080. A site survey indicates that a portion of the deck for the building infringes within the 15 m floodplain setback specified in the bylaw.

## 2. Site Location

The property is located 32 km north of Creston as shown in Figures 1 and 2. The property is bounded by Kootenay Lake to the west, private property to the north and south and Hwy 3A to the east. The property is situated on relatively steep bedrock dropping from elevation 595 m at the highway to approximately 550 m at the house on the cliff above the lake (see Figure 3). Figure 4 is a copy of the property site plan.

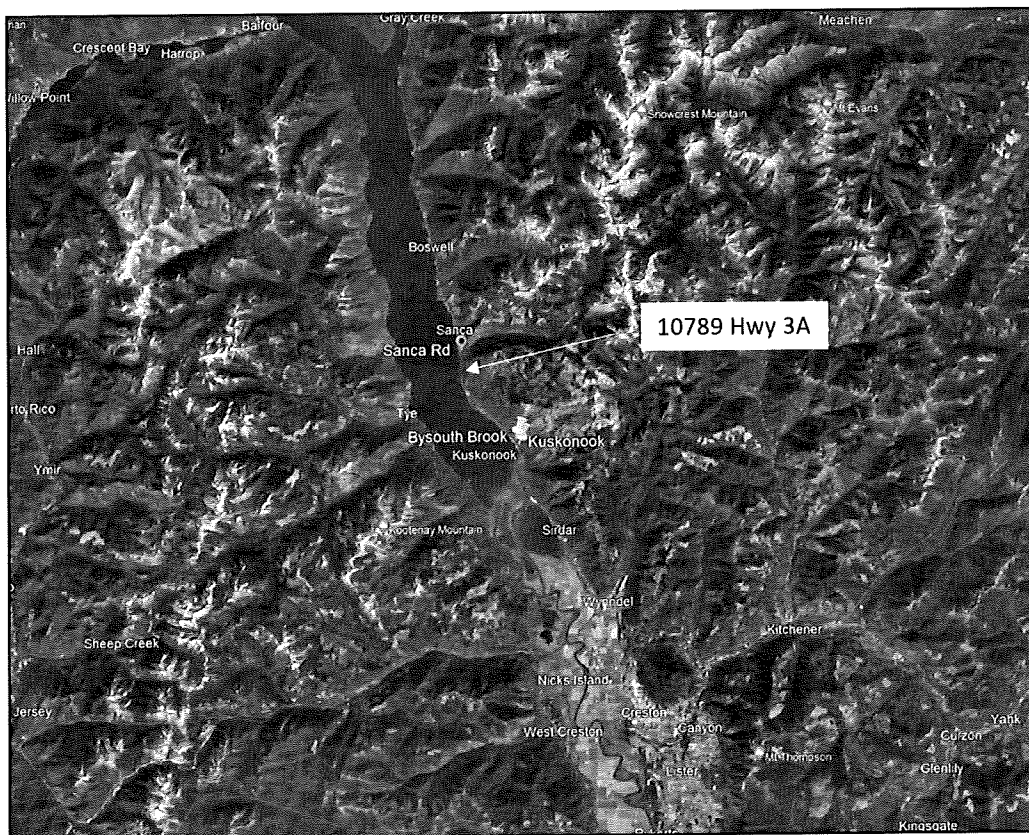


Figure 1. Property Location – source Google Earth Image





Flood Hazard Assessment 10789 Hwy 3A

July 12, 2023



Figure 2. Property Location –Source RDCK webmap

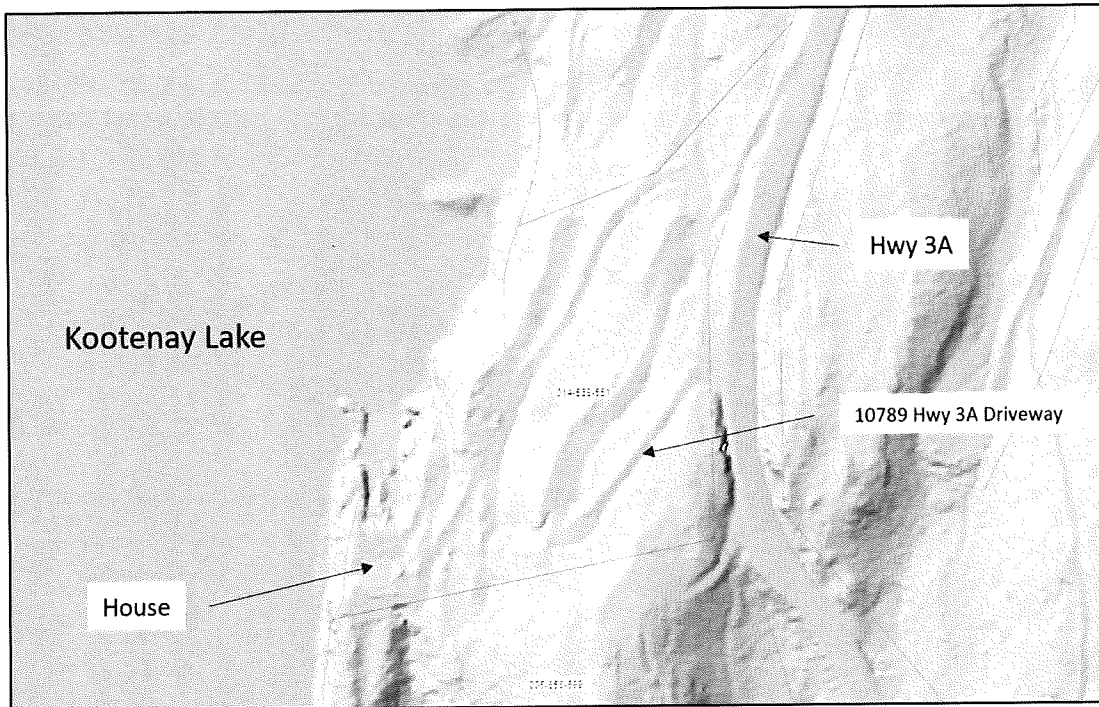


Figure 3: Lidar Imagery – Source Cambio Community Web Application

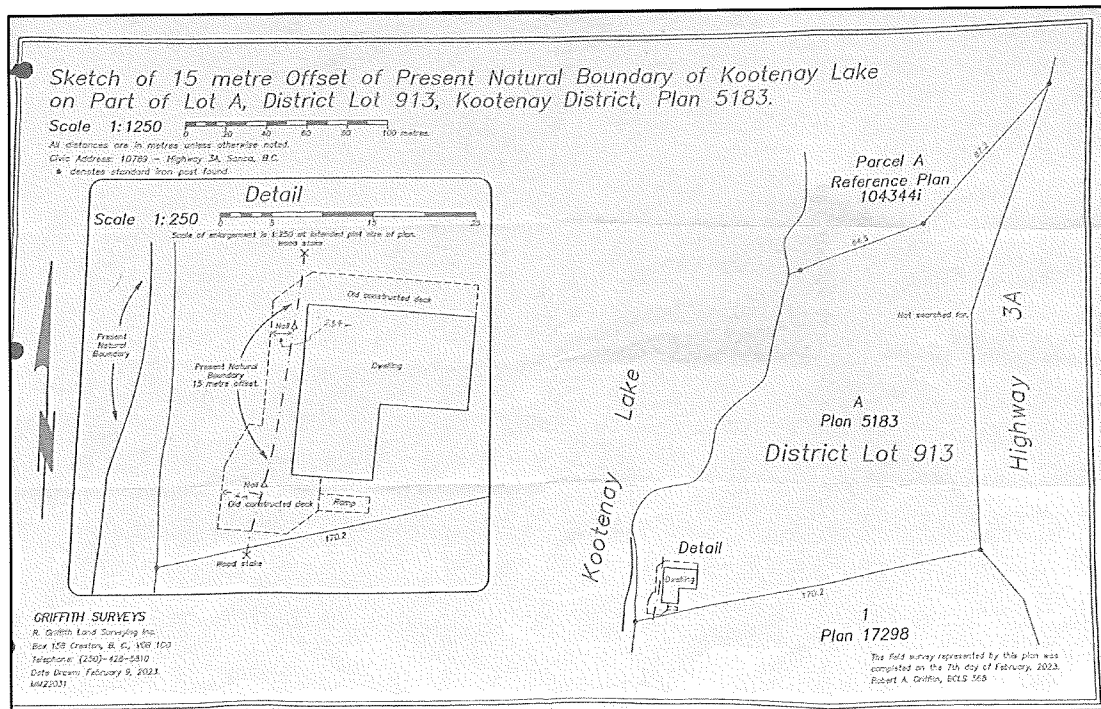


Figure 4: Site Plan





### 3. Project Scope

Table 1 provides the list of tasks completed.

**Table 1:** Task List

Activity	Task
Field Review	Inspect subject property
	Observe and record hazard information
Office	Review background information
	Identify hydrogeomorphic hazards
	Assess hazards considering provincial thresholds for safety
	Analysis and report writing

### 4. Background Information

The following is a summary of background information used to complete the assessment.

#### 4.1. RDCK Floodplain Management Bylaw

The building site is located on the east shore of Kootenay Lake and is subject to the floodplain regulations specified in RDCK Floodplain Management Bylaw No. 2080. As shown in Figure 5, the Kootenay Lake Flood Construction Level (FCL) is 536.5 m, and the building floodplain setback requirement is 15m horizontal distance from the natural boundary of the property.



**Figure 5:** Flood Construction Level and Flood Plain Setback for Kootenay Lake – Source RDCK webmap

## 4.2. Land Title Search

The land title search completed by SNTG on June 13, 2023, did not identify any flood hazard related restrictive covenants on the property. A copy of the title search results is provided in Appendix A.

## 4.3. Existing Reports

### 4.3.1 Vast Resource Solutions Inc. - Environmentally Sensitive Development Permit Review:

Vast Resource Solutions Inc was hired in November 2020 to complete an assessment of the infringement into the riparian area along the Kootenay Lake foreshore. The assessment concluded the following:

“The development permit Area 1: Environmentally Sensitive Development Permit (ESDP) Area qualifies for an exemption. .... In summary, there is no water interface between Kootenay Lake and the designated riparian zone by the ESDP as it occurs on top of a bedrock cliff. There is no riparian soil development and no riparian vegetation. The area within the ESDP is not classified as riparian habitat.”



#### **4.3.2 British Columbia Building Code 2018 – Schedule C-B Assurance of Professional Field Review and Compliance**

In March 2023, structural engineer David Dwyer, P.Eng. completed a review of the deck constructed by the Client. The review concluded that the deck constructed meets the 2018 British Columbia Building Code (BCBC 2018) requirements. A copy of Schedule C-B is included as Appendix B.

### **5. Field Observations**

A field review was completed by the undersigned on June 22, 2023. Photographs referenced in this report are shown in Appendix C.

The building and deck have been constructed on a bedrock cliff above Kootenay Lake (Photos 1 to 5). Using a range finder, the vertical distance from the present lake water line to the deck foundation was measured to be 18 m. The bedrock is a Proterozoic aged siltstone of the Dutch Creek formation. As shown in Photos 2 and 3, the cliff face proximal to the deck has fractured vertical rock slabs approximately 0.6 m thick. The unstable/weakened bedrock extends approximately 1.5 m horizontal distance into the cliff face.

### **6. Hazard Assessment**

The level of safety on properties affected by flooding in BC is assessed using a design flood event with a 200-year return period. The Kootenay Lake Flood Construction Level (FCL) and building floodplain setback distance have been set at 536.5 m and 15m horizontal distance, respectively (see Section 4.1). The FCL is the elevation of the projected one in 200-hundred-year flood lake level with a 0.6 m freeboard allowance added. The 15 m building setback distance from the natural boundary is required to reduce the risk of damage from shoreline erosion by wave action.

The building and deck foundation were measured to be approximately 18 m above the Kootenay Lake level on June 22, 2023. The lake level on this day was 531.66 m (Fortis BC website). The approximate elevation of the building and deck foundation is 549.7 m, which is 13.2 m above the FCL. Consequently, the likelihood of damage from high lake water levels at the building and deck location is negligible.

The bedrock along the shoreline is highly resistant to direct hydraulic forces caused by wave action. However, it is susceptible to spalling where the surface slabs fall off into the lake due to root jacking or frost action (see Photos 2 and 3). Open cracks are visible on the outer 2 to 3 layers of vertical slabs on the cliff face proximal to the deck location. This weakened layer extends approximately 1.5 m into the cliff face. The deck is situated approximately 10 m horizontal



distance from the cliff face and there is considered to be a very low likelihood of damage from the loss of cliff face due to progressive spalling at the cliff face due to wave action.

## **7. Conclusions And Recommendations**

The following conclusions and recommendations resulting from the investigation:

1. The flood hazard at the building deck associated with Kootenay Lake was found to be very low to non-existent.
2. The cliff face fronting the deck shows signs of weakness from spalling rock slabs. However, the hazard at the building deck foundation due to wave erosion is considered very low to non-existent.
3. The use intended is identified as the construction of a deck within the prescribed floodplain setback distance from Kootenay Lake at 10789 Hwy 3A. This study has found that the deck may be used safely for the intended use as required under Section 56 of the Community Charter.
4. This report does not provide or imply design considerations related to foundation soil bearing capacity, site drainage, potential slope instabilities or other slope related hazards.

## **8. Flood Hazard Assurance Statement**

A flood hazard assurance statement is included in Appendix D.

## **9. Closure – Report Use and Limitations**

This report is prepared for the exclusive use of John Drysdale and the RDCK and may not be used by other parties without the written permission of SNT Geotechnical Ltd.

The use of this report is subject to the conditions on the Report Interpretation and Limitations sheet which is included with this report (Appendix E). The reader's attention is drawn specifically to those conditions, as it is considered essential that they be followed for proper use and interpretation of this report.

The material in this report reflects SNTG's best judgment and professional opinion in light of the information available to it at the time of preparation. Any use which a third party makes of this report or any reliance on or decision to be made based on it are the responsibility of such third parties. SNTG accepts no responsibility for damages, if any, suffered by any third party as a result of a decision made or action based, or lack thereof, on this report. No other warranty is made, either expressed or implied.





Flood Hazard Assessment 10789 Hwy 3A

July 12, 2023

The report and assessment have been carried out in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report.

Prepared by:

A handwritten signature in cursive script that reads 'Dwain Boyer'.



SNTG Permit Number 1001083

Dwain Boyer, P. Eng  
SNT Geotechnical Ltd.

Reviewed by:

Pete Wittstock, P.Eng.  
SNT Geotechnical Ltd.



## 10. References

1. Engineers and Geoscientists of BC 2018 Professional Practice Guidelines, Legislated Flood Assessments in a changing Climate in BC Version 2.1 August 28, 2018
2. MFLNRORD, 2004, Flood Hazard Area Land Use Management Guidelines
3. Regional District of Central Kootenays, Nov. 2009, Terms of Reference for Requirements for Professional Engineering/Geoscientists Undertaking Geotechnical Reports/Flood Hazard Assessments Reports
4. Vast Resource Solutions Ltd, Nov. 2020, Exemption demonstration for ESDP area for John Drysdale at Kootenay Lake, Civic Address: 10765, Highway 3A, Sanca, BC.



Flood Hazard Assessment 10789 Hwy 3A

July 12, 2023

## **Appendix A - Land Title Search Results**

**TITLE SEARCH PRINT**

2023-06-13, 09:40:42

File Reference:

Requestor: Dwain Boyer

Declared Value \$ 466000

**\*\*CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN\*\*****Land Title District**

NELSON

Land Title Office

NELSON

**Title Number**

LB461116

From Title Number

LB461115

**Application Received**

2011-04-11

**Application Entered**

2011-04-13

**Registered Owner in Fee Simple**

Registered Owner/Mailing Address:

JOHN DRYSDALE, RETIRED  
 RR#1 SITE 1 BOX 2  
 SANCA, BC  
 V0B 1A2  
 KATHERINE ANN DRYSDALE, PHYSIOTHERAPIST  
 #302, 234 - 5TH AVENUE NE  
 CALGARY, AB  
 T2E 0K6  
 BRADLEY DOUGLAS DRYSDALE, COOK  
 329 - 6TH AVENUE NORTH  
 CRESTON, BC  
 V0B 1G0  
 AS JOINT TENANTS

**Taxation Authority**

Nelson Trail Assessment Area

**Description of Land**

Parcel Identifier:

014-539-551

Legal Description:

LOT A DISTRICT LOT 913 KOOTENAY DISTRICT PLAN 5183

**Legal Notations**

NONE



## Flood Hazard Assessment 10789 Hwy 3A

July 12, 2023

**TITLE SEARCH PRINT**

2023-06-13, 09:40:42

File Reference:

Requestor: Dwain Boyer

Declared Value \$ 466000

**Charges, Liens and Interests**

Nature: UNDERSURFACE RIGHTS  
 Registration Number: Q29860  
 Registration Date and Time: 1981-10-29 08:53  
 Registered Owner: MARGARET ROBERTSON  
 Remarks: INTER ALIA  
 ALL MINERALS PRECIOUS AND BASE (SAVE COAL,  
 PETROLEUM AND NATURAL GAS) IN OR UNDER LOT 14227  
 KNOWN AS "LAKEVIEW" MC KD TRANSFER OF 37936D  
 MINERALS FORFEITED TO CROWN XD3756 14 02  
 1990

Nature: STATUTORY RIGHT OF WAY  
 Registration Number: LB469873  
 Registration Date and Time: 2011-06-15 12:54  
 Registered Owner: FORTISBC INC.

**Duplicate Infeasible Title** NONE OUTSTANDING

**Transfers** NONE

**Pending Applications** NONE





Flood Hazard Assessment 10789 Hwy 3A

July 12, 2023

## **Appendix B – Building Code Schedule C-B**



## Flood Hazard Assessment 10789 Hwy 3A

July 12, 2023

## BRITISH COLUMBIA BUILDING CODE 2018

## SCHEDULE C-B

Forming Part of Subsection 2.2.7, Division C of the  
British Columbia Building CodeBuilding Permit Number  
(for authority having jurisdiction's use)ASSURANCE OF PROFESSIONAL FIELD REVIEW  
AND COMPLIANCE

- Notes: (i) This letter must be submitted after completion of the project but prior to final inspection by the authority having jurisdiction. A separate letter must be submitted by each registered professional of record.
- (ii) This letter is endorsed by: Architectural Institute of BC, Association of Professional Engineers and Geoscientists of the Province of BC, Building Officials' Association of BC, and Union of BC Municipalities.
- (iii) In this letter the words in italics have the same meaning as in the British Columbia Building Code.

To: The authority having jurisdiction

RDCK

Name of Jurisdiction (Print)

Re: STRUCTURAL

Discipline (e.g. Architectural, etc.) (Print)

DRYSDALE DECK and Record of Deck as Bull.

Name of Project (Print)

10765 HWY 3A Sanca BC

Address of Project (Print)

(Each registered professional of record shall complete the following:)

David Dwyer P. Eng. egbc#22264

Name (Print)

645 Meadow Creek Road

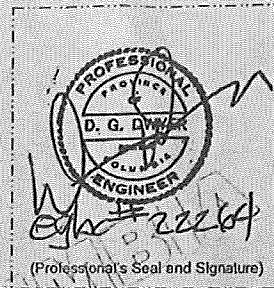
Address (Print)

Meadow Creek BC V0G 1N0

Address (Print) (continued)

(250) 366-4342

Phone Number



(Professional's Seal and Signature)

March 10, 2023

Date

I hereby give assurance that

- (a) I have fulfilled my obligations for *field review* as outlined in Subsection 2.2.7, Division C of the British Columbia Building Code and in the previously submitted Schedule B, "ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW," and
- (b) those components of the project opposite my initials in Schedule B substantially comply in all material respects with:
- (i) the applicable requirements of the British Columbia Building Code and other applicable enactments respecting safety, not including construction safety aspects, and
- (ii) the plans and supporting documents submitted in support of the application for the *building permit*.
- (c) I am a *registered professional of record* as defined in the British Columbia Building Code.

(If the registered professional of record is a member of a firm, complete the following:)

I am a member of the firm

and I sign this letter on behalf of the firm.

(Print name of firm)

Note: The above letter must be signed by a *registered professional of record*, who is a *registered professional*. The British Columbia Building Code defines a *registered professional* to mean

- (a) a person who is registered or licensed to practise as an architect under the Architects Act, or
- (b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientists Act.

1 of 1

CRP's Initials

British Columbia Building Code 2018



## Appendix C - Photographs



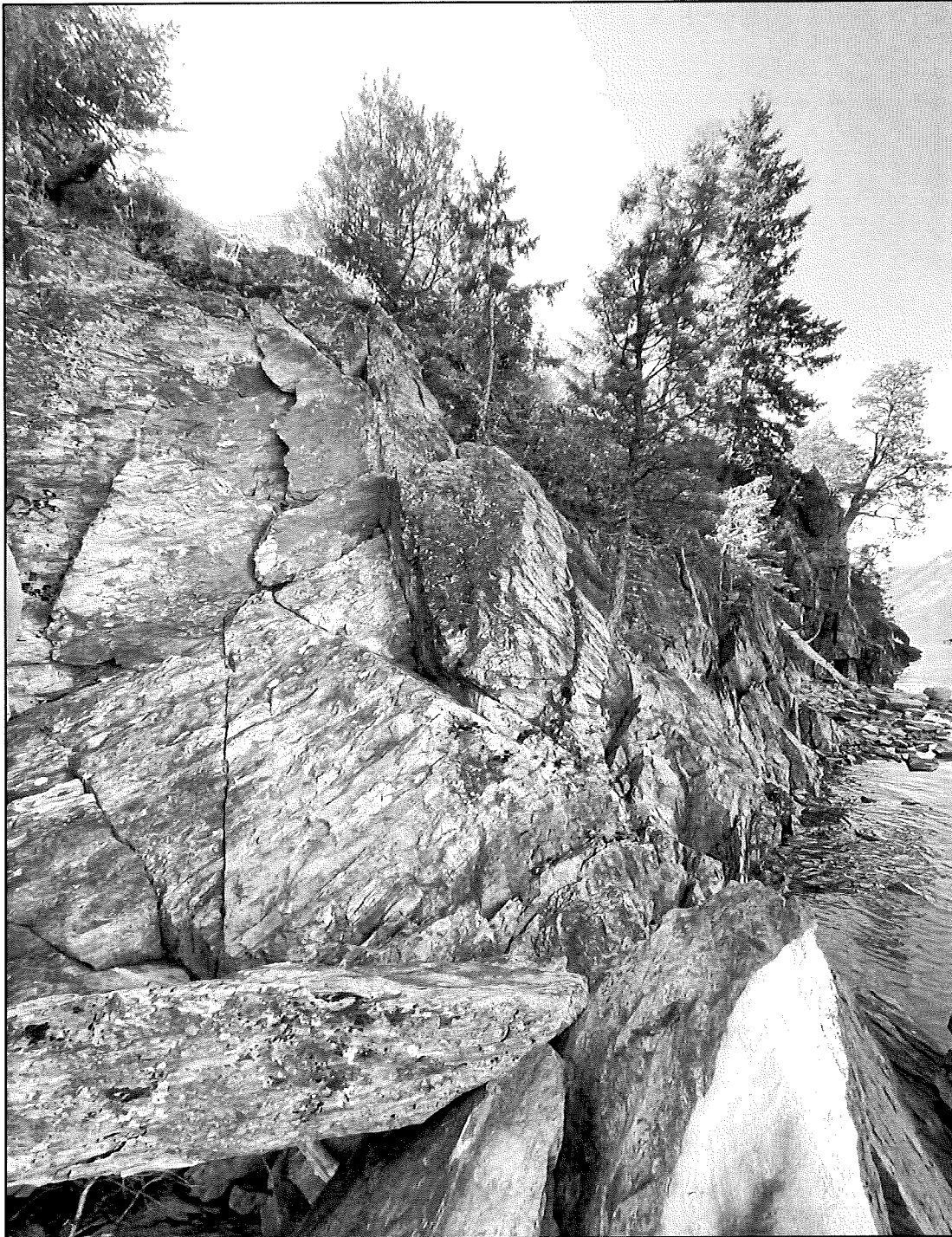


Photo 1: View looking south from the north end of the property at the lake shore line



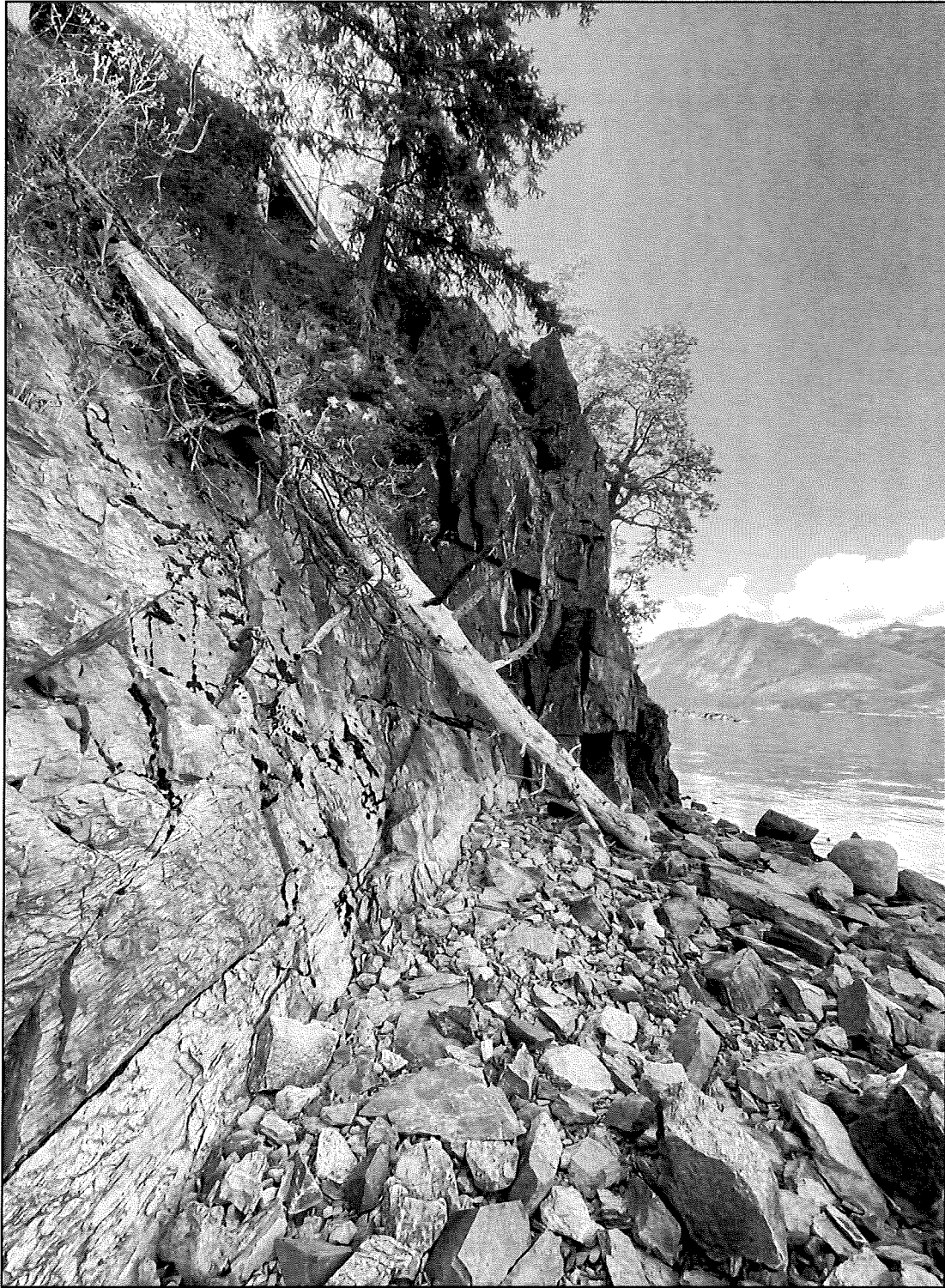


Photo 2: View looking at cliff face between the building and lake



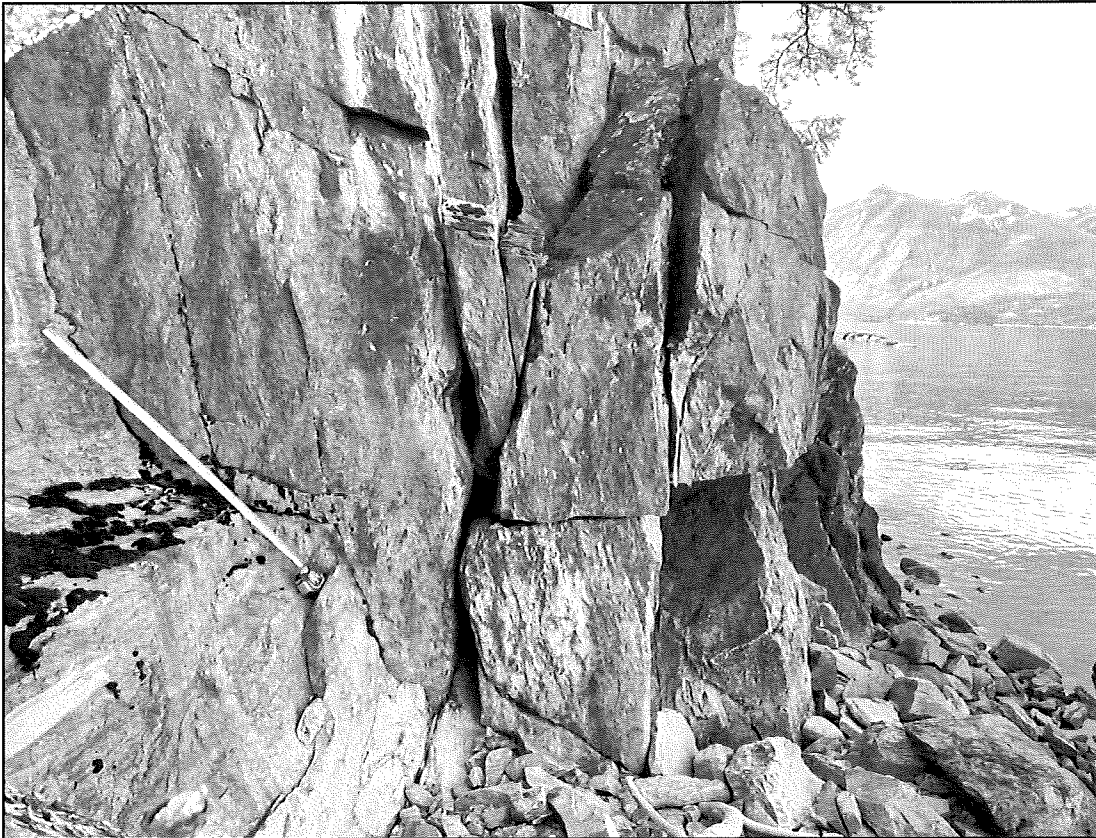


Photo 3: Looking south with closer view of fractured bedrock face- tape measure is set at 1.0 m





Photo 4: View looking north from the south property line.



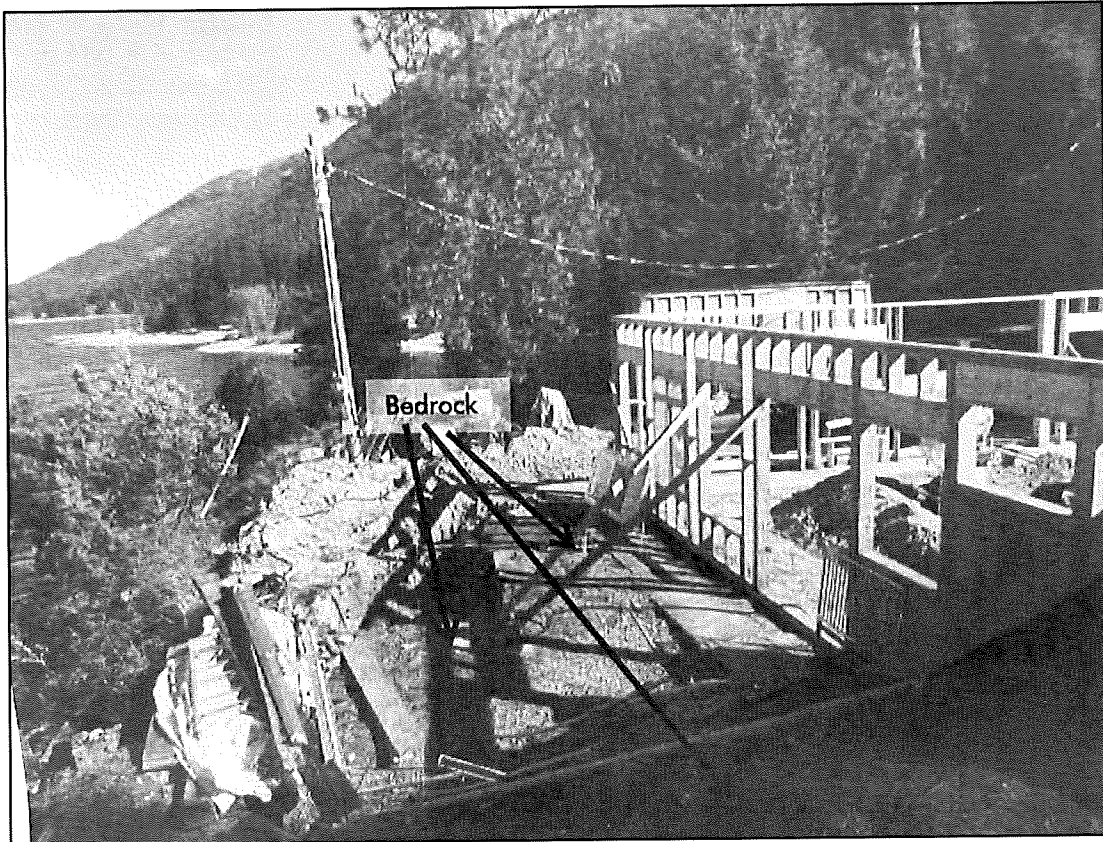


Photo 5: View looking north from south side of the property – source VAST Resource Solutions 2020



Flood Hazard Assessment 10789 Hwy 3A

July 12, 2023

## **Appendix D - Flood Hazard and Risk Assurance Statement**



Flood Hazard Assessment 10789 Hwy 3A

July 12, 2023

## APPENDIX J: FLOOD HAZARD AND RISK ASSURANCE STATEMENT

Note: This Statement is to be read and completed in conjunction with the "APEGBC Professional Practice Guidelines - Legislated Flood Assessments in a Changing Climate, March 2012 ("APEGBC Guidelines") and is to be provided for flood assessments for the purposes of the Land Title Act, Community Charter or the Local Government Act. Italicized words are defined in the APEGBC Guidelines.

To: The Approving Authority

Date: June 28, 2023

RACK  
Nelson BC

Jurisdiction and address

With reference to (check one):

- Land Title Act (Section 86) – Subdivision Approval  
 Local Government Act (Sections 919.1 and 920) – Development Permit  
 Community Charter (Section 56) – Building Permit  
 Local Government Act (Section 910) – Flood Plain Bylaw Variance  
 Local Government Act (Section 910) – Flood Plain Bylaw Exemption

For the Property

Lot A, Plan NEPSIBS, DL 913, KLD 10789 Hwy 3A  
 Legal description and civic address of the Property

The undersigned hereby gives assurance that he/she is a *Qualified Professional* and is a *Professional Engineer* or *Professional Geoscientist*.

I have signed, sealed and dated, and thereby certified, the attached flood assessment report on the Property in accordance with the APEGBC Guidelines. That report must be read in conjunction with this Statement. In preparing that report I have:

Check to the left of applicable items

1. Collected and reviewed appropriate background information  
 2. Reviewed the proposed *residential development* on the Property  
 3. Conducted field work on and, if required, beyond the Property  
 4. Reported on the results of the field work on and, if required, beyond the Property  
 5. Considered any changed conditions on and, if required, beyond the Property  
 6. For a *flood hazard analysis* or *flood risk analysis* I have:  
 6.1 reviewed and characterized, if appropriate, floods that may affect the Property  
 6.2 estimated the *flood hazard* or *flood risk* on the property  
 6.3 included (if appropriate) the effects of climate change and land use change  
 6.4 identified existing and anticipated future *elements at risk* on and, if required, beyond the Property  
 6.5 estimated the potential *consequences* to those *elements at risk*  
 7. Where the *Approving Authority* has adopted a specific level of *flood hazard* or *flood risk* tolerance or return period that is different from the standard 200-year return period design criteria<sup>(1)</sup>, I have  
 7.1 compared the level of *flood hazard* or *flood risk* tolerance adopted by the *Approving Authority* with the findings of my investigation  
 7.2 made a finding on the level of *flood hazard* or *flood risk* tolerance on the Property based on the comparison  
 7.3 made recommendations to reduce the *flood hazard* or *flood risk* on the Property

<sup>(1)</sup> *Flood Hazard Area Land Use Management Guidelines* published by the BC Ministry of Forests, Lands, and Natural Resource Operations and the 2009 publication *Subdivision Preliminary Layout Review – Natural Hazard Risk* published by the Ministry of Transportation and Public Infrastructure. It should be noted that the 200 year return period is a standard used typically for rivers and purely fluvial processes. For small creeks subject to debris floods and debris flows return periods are commonly applied that exceed 200 years. For life-threatening events including debris flows, the Ministry of Transportation and Public Infrastructure stipulates in their 2009 publication *Subdivision Preliminary Layout Review – Natural Hazard Risk* that a 10,000-year return period needs to be considered





Flood Hazard Assessment 10789 Hwy 3A

July 12, 2023

8. Where the Approving Authority has not adopted a level of flood risk or flood hazard tolerance I have:
- 8.1 described the method of flood hazard analysis or flood risk analysis used
  - 8.2 referred to an appropriate and identified provincial or national guideline for level of flood hazard or flood risk
  - 8.3 compared this guideline with the findings of my investigation
  - 8.4 made a finding on the level of flood hazard or flood risk tolerance on the Property based on the comparison
  - 8.5 made recommendations to reduce flood risks
9. Reported on the requirements for future inspections of the Property and recommended who should conduct those inspections.

Based on my comparison between

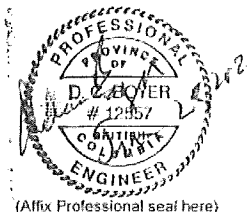
- Check one
- the findings from the investigation and the adopted level of flood hazard or flood risk tolerance (item 7.2 above)
  - the appropriate and identified provincial or national guideline for level of flood hazard or flood risk tolerance (item 8.4 above)

I hereby give my assurance that, based on the conditions contained in the attached flood assessment report,

- Check one
- for subdivision approval, as required by the Land Title Act (Section 86), "that the land may be used safely for the use intended".
  - Check one
    - with one or more recommended registered covenants.
    - without any registered covenant.
  - for a development permit, as required by the Local Government Act (Sections 919.1 and 920), my report will "assist the local government in determining what conditions or requirements under [Section 920] subsection (7.1) it will impose in the permit".
  - for a building permit, as required by the Community Charter (Section 56), "the land may be used safely for the use intended".
  - Check one
    - with one or more recommended registered covenants.
    - without any registered covenant.
  - for flood plain bylaw variance, as required by the Flood Hazard Area Land Use Management Guidelines associated with the Local Government Act (Section 910), "the development may occur safely".
  - for flood plain bylaw exemption, as required by the Local Government Act (Section 910), "the land may be used safely for the use intended".

Dwain Boyer  
 Name (print)  
  
 Signature  
 396 Heddlie Rd  
 Address  
 Nelson, BC  
 Telephone  
 250-551-8345

June 26, 2023  
 Date



(Affix Professional seal here)

If the Qualified Professional is a member of a firm, complete the following.

I am a member of the firm SNT Geotechnical Ltd  
 and I sign this letter on behalf of the firm. (Print name of firm)



## **Appendix E - Report Interpretation and Limitations**



## REPORT INTERPRETATION AND LIMITATIONS

### 1. STANDARD OF CARE

SNTG Geotechnical Ltd. (SNTG) has prepared this report in a manner consistent with generally accepted engineering consulting practices in this area, subject to the time and physical constraints applicable. No other warranty, expressed or implied, is made.

### 2. COMPLETENESS OF THIS REPORT

This Report represents a summary of paper, electronic and other documents, records, data and files and is not intended to stand alone without reference to the instructions given to SNTG by the Client, communications between SNTG and the Client, and/or to any other reports, writings, proposals or documents prepared by SNTG for the Client relating to the specific site described herein.

This report is intended to be used and quoted in its entirety. Any references to this report must include the whole of the report and any appendices or supporting material. SNTG cannot be responsible for use by any party of portions of this report without reference to the entire report.

### 3. BASIS OF THIS REPORT

This report has been prepared for the specific site, development, design objective, and purpose described to SNTG by the Client or the Client's Representatives or Consultants. The applicability and reliability of any of the factual data, findings, recommendations, or opinions expressed in this document pertain to a specific project as described in this report and are not applicable to any other project or site and are valid only to the extent that there has been no material alteration to or variation from any of the descriptions provided to SNTG. SNTG cannot be responsible for the use of this report, or portions thereof, unless we were specifically requested by the Client to review and revise the Report in light of any alterations or variations to the project description provided by the Client.

If the project does not commence within 3 years of the report date, the report may become invalid and further review may be required.

The recommendations of this report should only be used for design. The extent of exploration, including the number of test pits or test holes necessary to thoroughly investigate the site for conditions that may affect construction costs will generally be greater than that required for design purposes. Contractors should rely upon their own explorations and interpretation of the factual data provided for costing purposes, equipment requirements, construction techniques, or to establish project schedule.

The information provided in this report is based on limited exploration for a specific project scope. SNTG cannot accept responsibility for independent conclusions, interpretations, interpolations or decisions by the Client or others based on information contained in this Report. This restriction of liability includes decisions made to purchase or sell land.

### 4. USE OF THIS REPORT

The contents of this report, including plans, data, drawings, and all other documents including electronic and hard copies remain the copyright property of SNTG. However, we will consider any reasonable request by the Client to approve the use of this report by other parties as "Approved Users."





With regard to the duplication and distribution of this Report or its contents, we authorize only the Client and Approved Users to make copies of the Report only in such quantities as are reasonably necessary for the use of this Report by those parties. The Client and “Approved Users” may not give, lend, sell or otherwise make this Report or any portion thereof available to any other party without express written permission from SNTG. Any use which a third party makes of this Report – in its entirety or portions thereof – is the sole responsibility of such third parties. SNT GEOTECHNICAL LTD. ACCEPTS NO RESPONSIBILITY FOR DAMAGES SUFFERED BY ANY PARTY RESULTING FROM THE UNAUTHORIZED USE OF THIS REPORT.

Electronic media is susceptible to unauthorized modification or unintended alteration, and the Client should not rely on electronic versions of reports or other documents. All documents should be obtained directly from SNTG.

#### 5. INTERPRETATION OF THIS REPORT

Classification and identification of soils and rock and other geological units, including groundwater conditions have been based on exploration(s) performed in accordance with the standards set out in Paragraph 1.

These tasks are judgmental in nature; despite comprehensive sampling and testing programs properly performed by experienced personnel with the appropriate equipment, some conditions may elude detection.

As such, all explorations involve an inherent risk that some conditions will not be detected. Further, all documents or records summarizing such exploration will be based on assumptions of what exists between the actual points sampled at the time of the site exploration. Actual conditions may vary significantly between the points investigated and all persons making use of such documents or records should be aware of and accept this risk.

The Client and “Approved Users” accept that subsurface conditions may change with time and this report only represents the soil conditions encountered at the time of exploration and/or review. Soil and ground water conditions may change due to construction activity on the site or on adjacent sites, and also from other causes, including climactic conditions.

The exploration and review provided in this report were for geotechnical purposes only. Environmental aspects of soil and groundwater have not been included in the exploration or review or addressed in any other way.

The exploration and Report are based on information provided by the Client or the Client’s Consultants, and conditions observed at the time of our site reconnaissance or exploration. SNTG has relied in good faith upon all information provided. Accordingly, SNTG cannot accept responsibility for inaccuracies, misstatements, omissions, or deficiencies in this Report resulting from misstatements, omissions, misrepresentations or fraudulent acts of persons or sources providing this information.

#### 6. DESIGN AND CONSTRUCTION REVIEW

This report assumes that SNTG will be retained to work and coordinate design and construction with other Design Professionals and the Contractor. Further, it is assumed that SNTG will be retained to provide field reviews during construction to confirm adherence to building code guidelines and generally accepted engineering practices, and the recommendations provided in this report. Field services recommended for the project represent the minimum necessary to



confirm that the work is being carried out in general conformance with SNTG's recommendations and generally accepted engineering standards. It is the Client's or the Client's Contractor's responsibility to provide timely notice to SNTG to carry out site reviews.

The Client acknowledges that unsatisfactory or unsafe conditions may be missed by intermittent site reviews by SNTG. Accordingly, it is the Client's or Client's Contractor's responsibility to inform SNTG of any such conditions.

Work that is covered prior to review by SNTG may have to be re-exposed at considerable cost to the Client. Review of all Geotechnical aspects of the project are required for submittal of unconditional Letters of Assurance to regulatory authorities. The site reviews are not carried out for the benefit of the Contractor(s) and therefore do not in any way effect the Contractor(s) obligations to perform under the terms of his/her Contract.

#### 7. SAMPLE DISPOSAL

SNTG will dispose of all samples 3 months after issuance of this report, or after a longer period of time at the Client's expense if requested by the Client. All contaminated samples remain the property of the Client and it will be the Client's responsibility to dispose of them properly.

#### 8. SUBCONSULTANTS AND CONTRACTORS

Engineering studies frequently requires hiring the services of individuals and companies with special expertise and/or services which SNT Geotechnical Ltd. does not provide. These services are arranged as a convenience to our Clients, for the Client's benefit. Accordingly, the Client agrees to hold the Company harmless and to indemnify and defend SNT Geotechnical Ltd. from and against all claims arising through such Sub consultants or Contractors as though the Client had retained those services directly. This includes responsibility for payment of services rendered and the pursuit of damages for errors, omissions or negligence by those parties in carrying out their work. These conditions apply to specialized sub consultants and the use of drilling, excavation and laboratory testing services, and any other Sub consultant or Contractor.

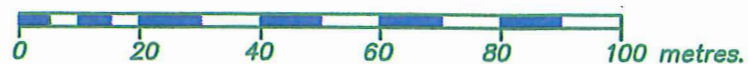
#### 9. SITE SAFETY

SNT Geotechnical Ltd. assumes responsibility for site safety solely for the activities of our employees on the jobsite. The Client or any Contractors on the site will be responsible for their own personnel. The Client or his representatives, Contractors or others retain control of the site. It is the Client's or the Client's Contractors responsibility to inform SNTG of conditions pertaining to the safety and security of the site – hazardous or otherwise – of which the Client or Contractor is aware.

Exploration or construction activities could uncover previously unknown hazardous conditions, materials, or substances that may result in the necessity to undertake emergency procedures to protect workers, the public or the environment. Additional work may be required that is outside of any previously established budget(s). The Client agrees to reimburse SNTG for fees and expenses resulting from such discoveries. The Client acknowledges that some discoveries require that certain regulatory bodies be informed. The Client agrees that notification to such bodies by SNTG Geotechnical Ltd. will not be a cause for either action or dispute.

# Sketch of 15 metre Offset of Present Natural Boundary of Kootenay Lake on Part of Lot A, District Lot 913, Kootenay District, Plan 5183.

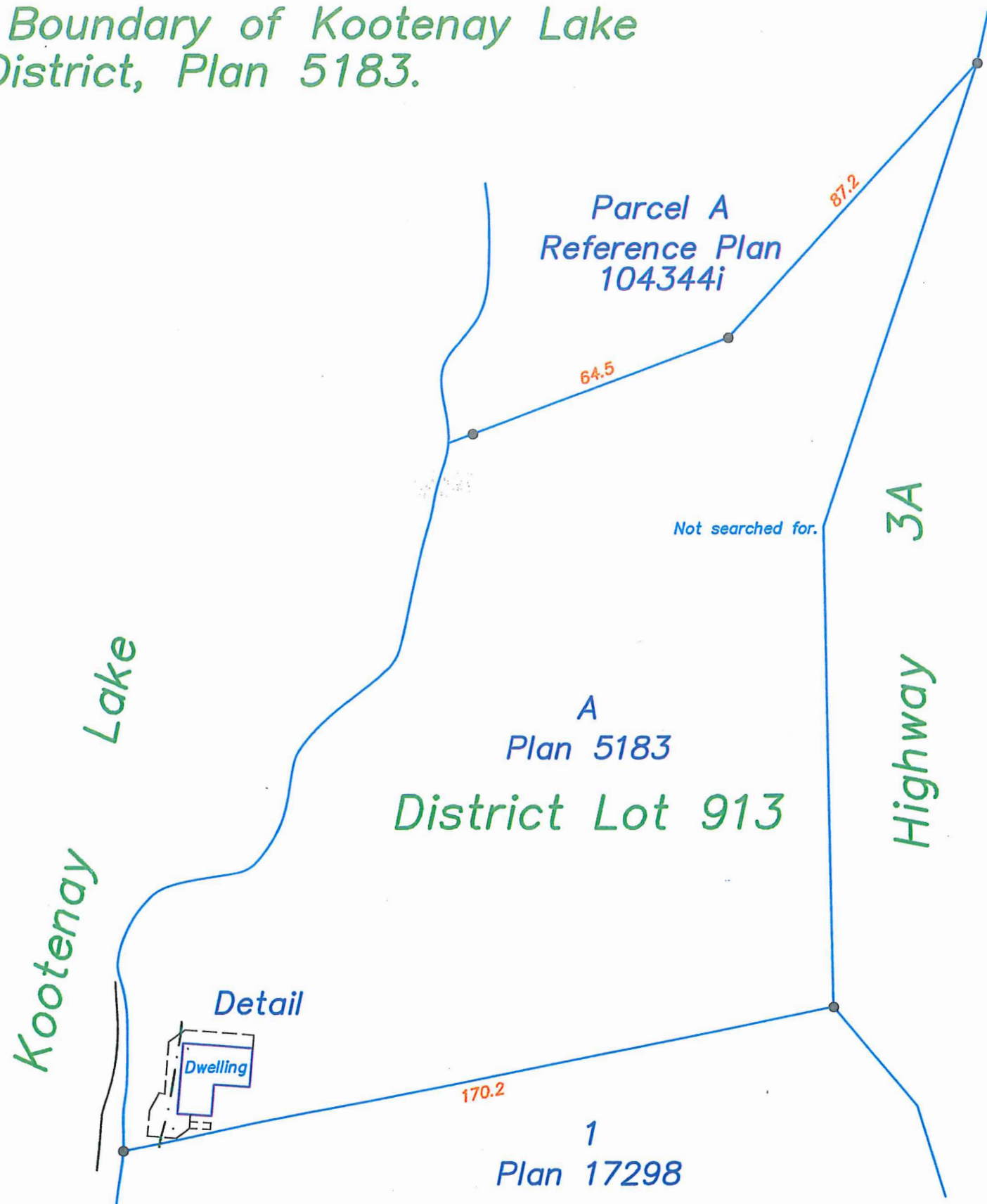
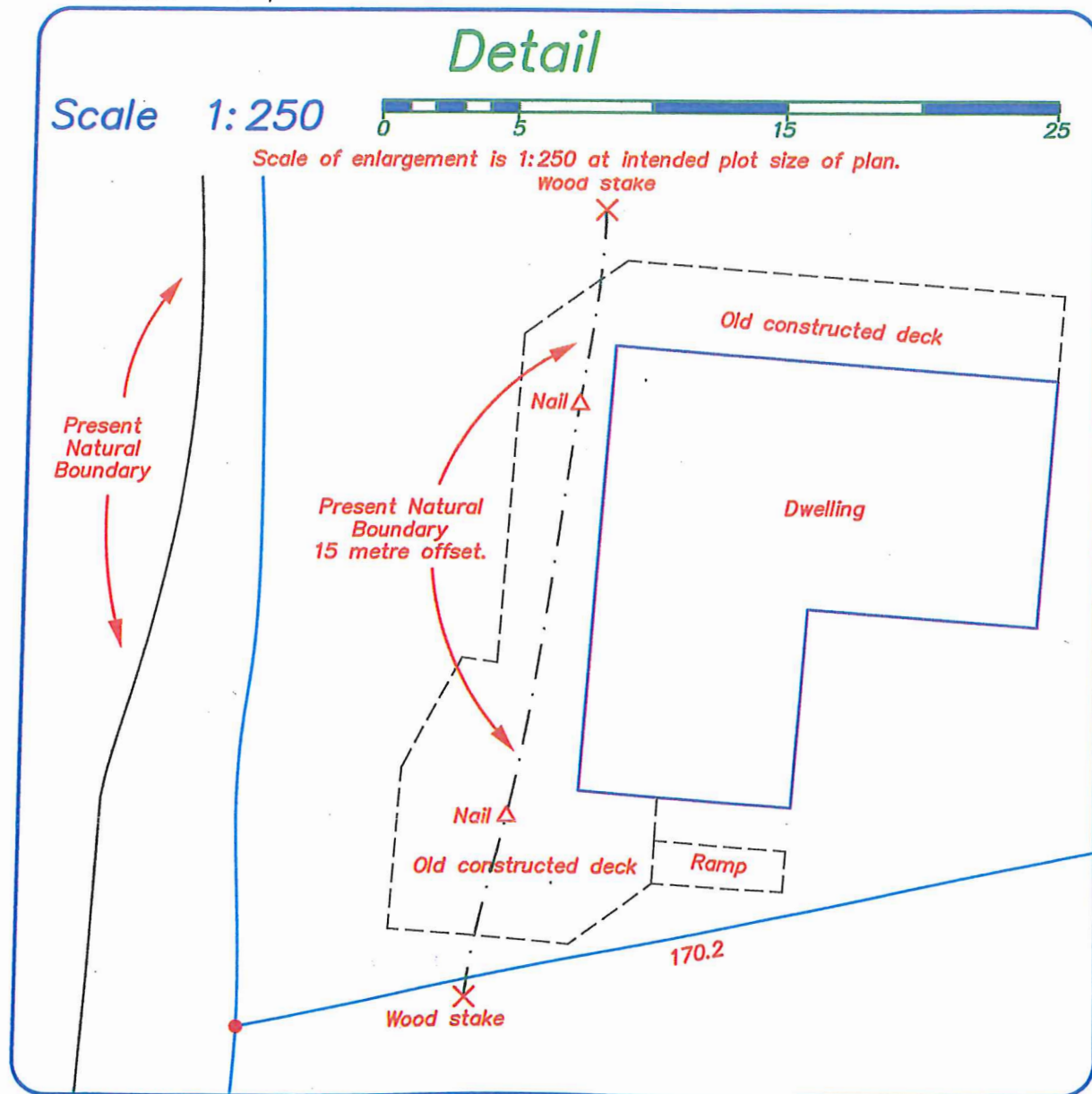
Scale 1:1250



All distances are in metres unless otherwise noted.

Civic Address: 10789 - Highway 3A, Sanca, B.C.

● denotes standard iron post found.



## GRIFFITH SURVEYS

R. Griffith Land Surveying Inc.  
Box 158 Creston, B. C., V0B 1G0  
Telephone: (250)-428-5810  
Date Drawn: February 9, 2023.  
MM22031

The field survey represented by this plan was completed on the 7th day of February, 2023.  
Robert A. Griffith, BCLS 568