



Site Specific Floodplain Exemption Application

Referral Form – RDCK File F2302E

Date: May 10, 2024

You are requested to comment on the attached FLOODPLAIN EXEMPTION for potential effect on your agency's interests. We would appreciate your response WITHIN 30 DAYS (PRIOR TO June 10, 2024). If no response is received within that time, it will be assumed that your agency's interests are unaffected.

LEGAL DESCRIPTION & GENERAL LOCATION:

2205 Bealby Road, Rural Nelson, Electoral Area 'E'
 LOT A DISTRICT LOT 1316 KOOTENAY DISTRICT PLAN NEP85347 (PID: 027-301-656)

PRESENT USE AND PURPOSE OF PERMIT REQUESTED:

The subject property is located in the Bealby Road area north-east of the City of Nelson on the south shore of the west arm of Kootenay Lake. There is presently a dwelling on the property that is proposed to be demolished if this application is approved to construct a duplex dwelling in approximately the same location.

The owners seek to develop a duplex dwelling (upper and lower level units) with an attached deck, a parking pad and an on-site sewerage system. This application seeks to reduce the floodplain setback from Kootenay Lake from 15 metres to 7.5 metres under the *RDCK's Floodplain Management Bylaw No. 2080, 2009* to allow for the construction of a dwelling with an attached deck. Should the floodplain exemption be approved, issuance of a Watercourse Development Permit would be required for all development activities within the riparian area of Kootenay Lake.

AREA OF PROPERTY AFFECTED	ALR STATUS	ZONING	OCF
0.13 hectares	N/A	N/A	Country Residential (RC)

AGENT: Highland Consulting c/o Cooper Husband

OTHER INFORMATION: ADVISORY PLANNING AND HERITAGE COMMISSION PLEASE NOTE:

If your Advisory Planning and Heritage Commission plans to hold a meeting to discuss this Floodplain Exemption application, please note that the applicants must be provided with an opportunity to attend such meeting, in accordance with Section 461, subsection (8) of the *Local Government Act*, which reads as follows:

"If the commission is considering an amendment to a plan or bylaw, or the issue of a permit, the applicant for the amendment or permit is entitled to attend meetings of the commission and be heard."

Please fill out the Response Summary on the back of this form. If your agency's interests are 'Unaffected' no further information is necessary. In all other cases, we would appreciate receiving additional information to substantiate your position and, if necessary, outline any conditions related to your position. Please note any legislation or official government policy which would affect our consideration of this permit.

**ZACHARI GIACOMAZZO, PLANNER
 REGIONAL DISTRICT OF CENTRAL KOOTENAY**

<input checked="" type="checkbox"/> MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE <input checked="" type="checkbox"/> HABITAT BRANCH (Environment) <input checked="" type="checkbox"/> FRONTCOUNTER BC (MFLNRD) <input type="checkbox"/> AGRICULTURAL LAND COMMISSION <input type="checkbox"/> REGIONAL AGROLOGIST <input checked="" type="checkbox"/> ARCHAEOLOGY BRANCH <input type="checkbox"/> MUNICIPAL AFFAIRS & HOUSING	REGIONAL DISTRICT OF CENTRAL KOOTENAY DIRECTORS FOR: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input checked="" type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> H <input type="checkbox"/> I <input type="checkbox"/> J <input type="checkbox"/> K ALTERNATIVE DIRECTORS FOR: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input checked="" type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> H <input type="checkbox"/> I <input type="checkbox"/> J <input type="checkbox"/> K <input checked="" type="checkbox"/> APHC AREA E <input checked="" type="checkbox"/> RDCK FIRE SERVICES <input checked="" type="checkbox"/> RDCK EMERGENCY SERVICES
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- INTERIOR HEALTH, HBE TEAM
- KOOTENAY LAKES PARTNERSHIP
(FORESHORE DEVELOPMENT PERMITS)
- SCHOOL DISTRICT NO.
- WATER SYSTEM OR IRRIGATION DISTRICT
- UTILITIES (FORTIS, BC HYDRO, NELSON
HYDRO, COLUMBIA POWER)

- RDCK BUILDING SERVICES
- RDCK UTILITY SERVICES
- RDCK RESOURCE RECOVERY
- RDCK REGIONAL PARKS

INSERT COMMENTS ON REVERSE . . .

The personal information on this form is being collected pursuant to *Regional District of Central Kootenay Planning Procedures and Fees Bylaw No. 2457, 2015* for the purpose of determining whether the application will affect the interests of other agencies or adjacent property owners. The collection, use and disclosure of personal information are subject to the provisions of FIPPA. Any submissions made are considered a public record for the purposes of this application. Only personal contact information will be removed. If you have any questions about the collection of your personal information, contact the Regional District Privacy Officer at 250.352.6665 (toll free 1.800.268.7325), info@rdck.bc.ca, or RDCK Privacy Officer, Box 590, 202 Lakeside Drive, Nelson, BC V1L 5R4.

RESPONSE SUMMARY
FILE: F2302E APPLICANT: Cooper Husband

Name:

Date:

Agency:






Title:

RETURN TO: STEPHANIE JOHNSON, PLANNER
DEVELOPMENT AND COMMUNITY SUSTAINABILITY SERVICES
REGIONAL DISTRICT OF CENTRAL KOOTENAY
BOX 590, 202 LAKESIDE DRIVE
NELSON, BC V1L 5R4
Ph. 250-352-8175
Email: plandept@rdck.bc.ca



REGIONAL DISTRICT OF CENTRAL KOOTENAY
Box 590, 202 Lakeside Drive,
Nelson, BC V1L 5R4
Phone: 1-800-268-7325 www.rdck.bc.ca
maps@rdck.bc.ca

Legend

-  Streams and Shorelines
-  Electoral Areas
-  RDCK Streets
-  Cadastre - Property Lines
-  Address Points

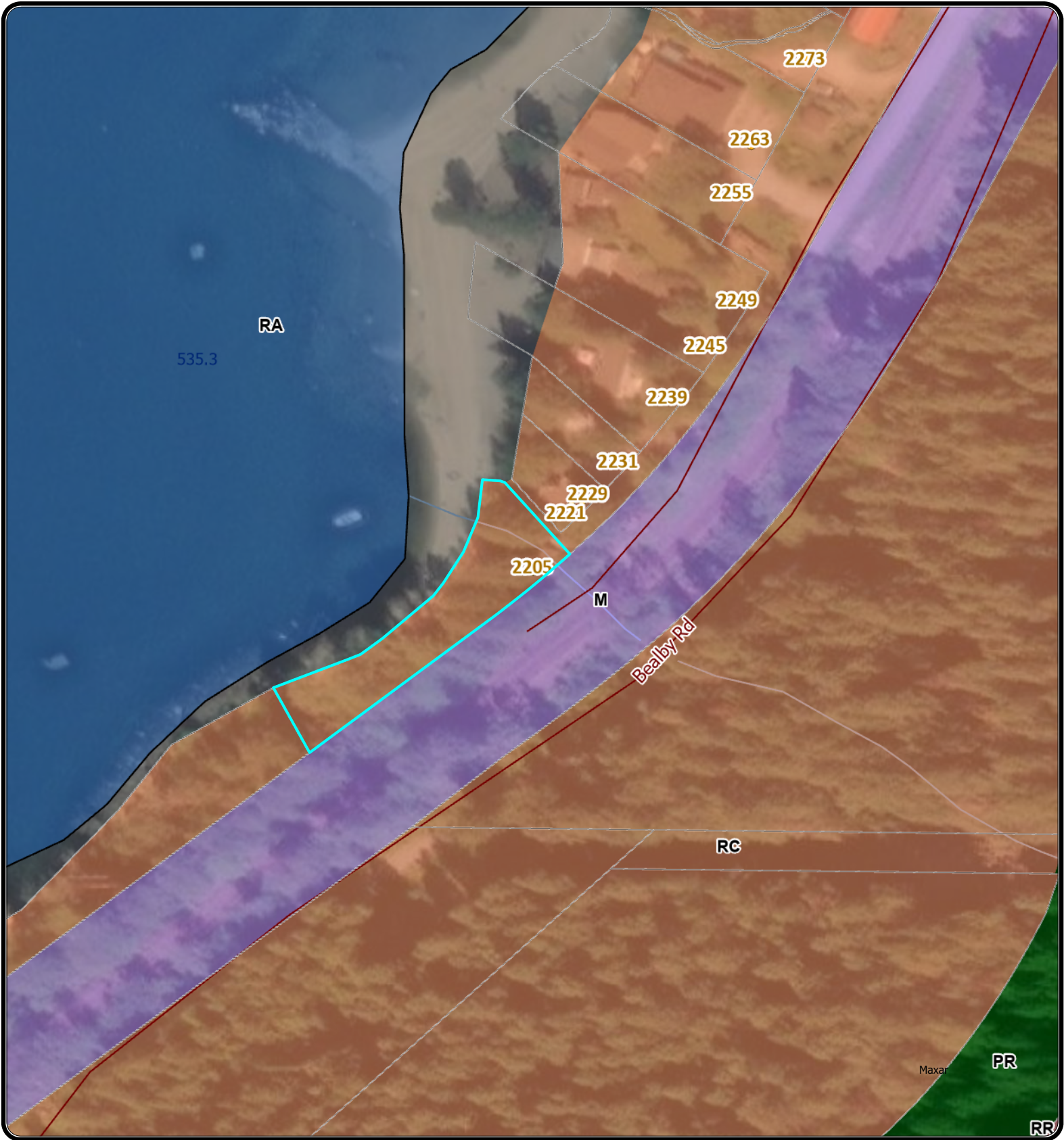
Map Scale:

1:4,000

Date: May 10, 2024



The mapping information shown are approximate representations and should only be used for reference purposes. The Regional District of Central Kootenay is not responsible for any errors or omissions on this map.



REGIONAL DISTRICT OF CENTRAL KOOTENAY
 Box 590, 202 Lakeside Drive,
 Nelson, BC V1L 5R4
 Phone: 1-800-268-7325 www.rdck.bc.ca
 maps@rdck.bc.ca

**Official
 Community Plan**

- Flood Construction Levels - 1990
- Country Residential
- Industrial
- Parks and Recreation

Legend

- Resource Area
- Rural Residential
- Streams and Shorelines
- Electoral Areas
- RDCK Streets
- Cadastre - Property Lines
- Address Points

Map Scale:

1:2,000

Date: May 10, 2024



The mapping information shown are approximate representations and should only be used for reference purposes. The Regional District of Central Kootenay is not responsible for any errors or omissions on this map.



Highland Consulting Ltd,
Paul Kernan, P.Eng,
#210 - 601 Front Street,
Nelson, B.C., V1L 4B6
pkernan@highlandconsultingltd.com
Tel: (250) 551 1416

RDCK Land Use & Planning
Box 590, 202 Lakeside Drive
Nelson, BC V1L 5R4

May 9, 2024

Attention: Sadie Chezenko MCP

Reference: Application for Site Specific Floodplain Exemption Application – Proposal Summary – 2205 Bealby Point

The proponent's, Judy and Jerry Levinson, are proposing the development of a duplex dwelling at subject property LOT A DISTRICT LOT 1316 KOOTENAY DISTRICT PLAN NEP85347. The existing bylaw *RDCK Floodplain Management Bylaw 2080, 2009* has been reviewed for this application and is referenced below.

The Flood Construction Level (FCL) for the subject property is set at 535.3 meters elevation (Geodetic Survey of Canada datum) (Bylaw 2080, section 7.1b.d.), and the minimum Floodplain Setback from the Natural Boundary is 15.0 meters (Bylaw 2080, section 7.2k.). The proposed location of the duplex dwelling is below the FCL of 535.3 m as well as within the Floodplain Setback from the Natural Boundary of 15m.

As outlined in the submitted document "*Flood Assessment for Proposed Site-Specific Floodplain Setback Exemption 2205 Bealby Road – Regional District of Central Kootenay, BC, V1L 3E2*" by Crowsnest Engineering (April. 18, 2024), a minimum elevation of 535.6m for the underside of proposed wooden flooring systems or habitable spaces is to be targeted for construction.

With respect to the Natural Boundary setback, approximately 13% (184m²) of the total property area (1402m²) is currently eligible for development, with the "developable" area split between the Southwest and Southeast property corners. Construction on the subject property is not possible while adhering to the 15m Natural Boundary setback.

An exemption to Bylaw 2080, section 7.2 is requested. Please refer to the submitted document by Crowsnest Engineering for more information and drawing set.

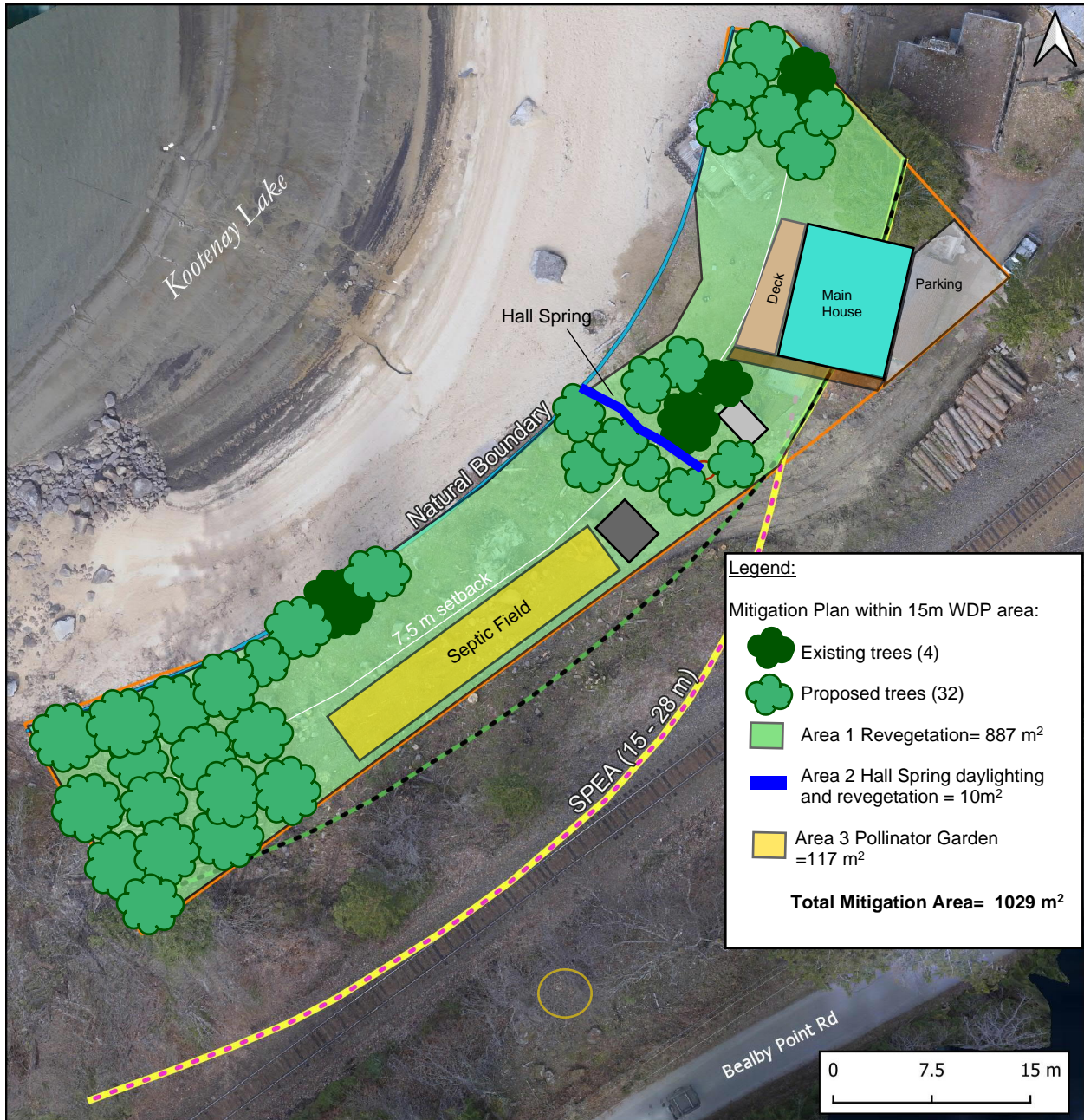
Highland Consulting Ltd trusts that this submission meets your requirements, however if you have any questions or require further information, please do not hesitate in contacting the undersigned.

Yours sincerely,







HIGHLAND CONSULTING LTD

Paul Kernan, P.Eng, Civil Engineer
Principal/Owner

Environmental Mitigation Plan drawing which shows the location of the proposed dwelling (main house) with attached deck.



Levinson WDP | Riparian Assessment | SPEA Setbacks

-  Property Boundary (PID 027-301-656)
-  Natural Boundary
-  WDP Area (15 m)
-  LWD ZOS and Litterfall ZOS (15 m)
-  Shade ZOS (13 - 28 m)
-  SPEA ZOS (15 - 28 m)



Map Date: 08/14/2023
 Projection: NAD83 UTM Zone 11
 Project: 2023-1034
 Map Scale: 1: 500
 Orthoimage Date: April 20, 2023
 Fortis BC Lake Level: 530.11 m



Crowsnest Engineering

Judy Levinson
2205 Bealby Road
Nelson, BC V1L 3E2
1-250-354-3326

Date: April 18th, 2024
File: LEVINSON-2024-001

Attn.: Judy Levinson

Re: Site-Specific Flood Assessment for Proposed Site-Specific Floodplain Exemption
2205 Bealby Road - Regional District of Central Kootenay, BC

This letter presents a summary of a Site-Specific Flood Assessment conducted by Crowsnest Engineering for 2205 Bealby Road, Nelson BC, as it relates to a proposed Site-Specific Floodplain Exemption application.

Legal Description of the subject property is: **LOT A, PLAN NEP85347, DISTRICT LOT 1316, KOOTENAY LAND DISTRICT.**

The proposed development involves the demolition of an existing residence, decks, a travel trailer, and a water pumphouse. It also includes the decommissioning and removal of piping that currently diverts water from Hall Spring, aiming to restore the spring to a more natural daylighted flow. Subsequent to these removals and the restoration of the spring, the proposal includes constructing a new residential structure, walkway, deck, and a Type 3 septic system. Much of this new construction is proposed to be located within the 15.0m floodplain setback area currently prescribed for the property, necessitating exemption approval from the Regional District of Central Kootenay.

1.0 SCOPE OF WORK

The scope of work includes the following aspects:

1. Reconnaissance of the site and existing conditions.
2. Site-Specific Flood Assessment as part of a Floodplain Exemption Application.

2.0 LIMITATIONS OF REPORT

Crowsnest Engineering has prepared this report for and at the expense of The Owner. The material in it reflects the judgement of Crowsnest Engineering in light of the information available to us at the time of report preparation. Similarly, the date of this reporting reflects the conclusions drawn via historic flow information and knowledge of local flow regimes available at this time.



Any use that a third party makes of this report, or any reliance on decisions to be based on it is the responsibility of such third parties. Crowsnest Engineering accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

As a mutual protection to our client, the public, and ourselves, all reports and drawings are submitted for the confidential information of our client. Authorization for any use and/or publication of this report or any data, statements, conclusions or abstracts from or regarding our reports and drawings, through any form of print or electronic media is reserved pending written approval from Crowsnest Engineering. Please note that this disclaimer does not apply to Building Official/s, Provincial Approving Officer/s, or any other third party directly associated with the completion of this project only, who may rely on this reporting as necessary.

3.0 SITE INVESTIGATION

The site field investigation was conducted by the writer in the presence of Judy Levinson on October 26th, 2022. Land-survey (by others) had recently been conducted across the subject property, delineating the Natural Boundary as well as the property extents.

The entirety of the subject property was traversed during the course of this site investigation. This report summarizes our flood hazard assessment while also providing conditions and design recommendations to allow for safe encroachment into the floodplain setback at the subject property.

4.0 SITE AND PROJECT DESCRIPTION

The subject property is located North of the City of Nelson, on the Eastern shore of the West Arm of Kootenay Lake within the Regional District of Central Kootenay (RDCK). The orientation of the subject property is as shown below in Figure 4.1:

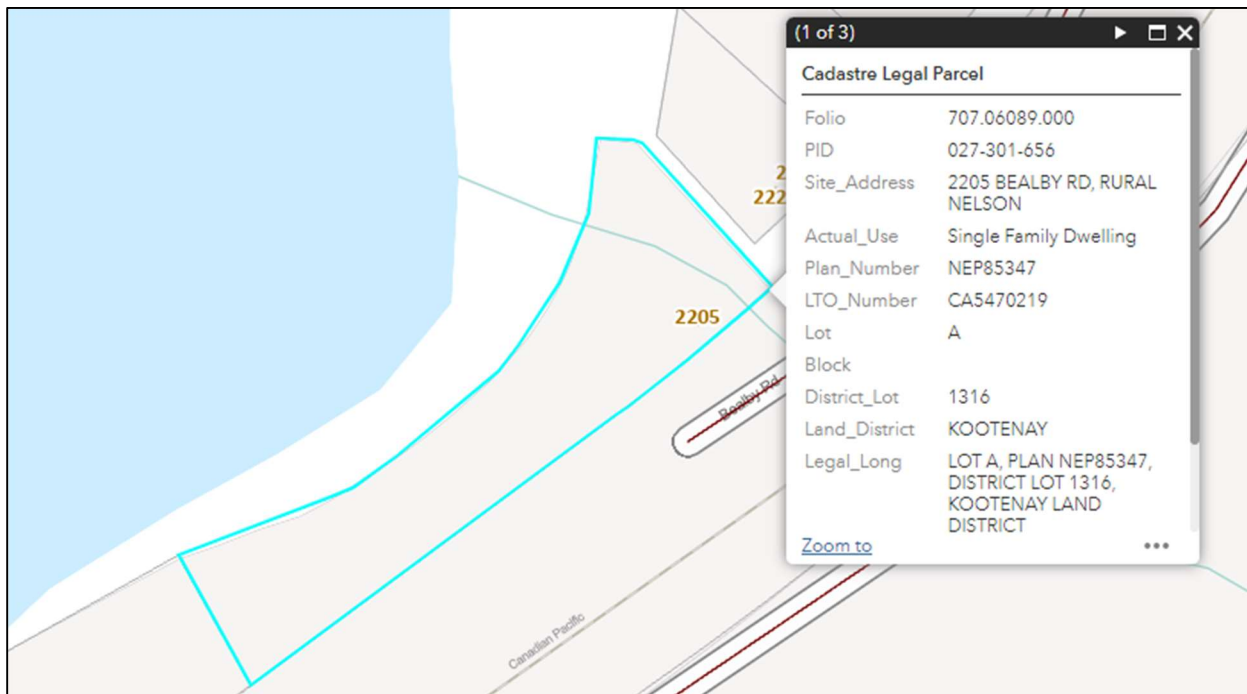


Figure 4.1: Orientation of Subject Property in Relation to the West Arm of Kootenay Lake. North = up. Taken from RDCK Interactive Web Mapping Service.



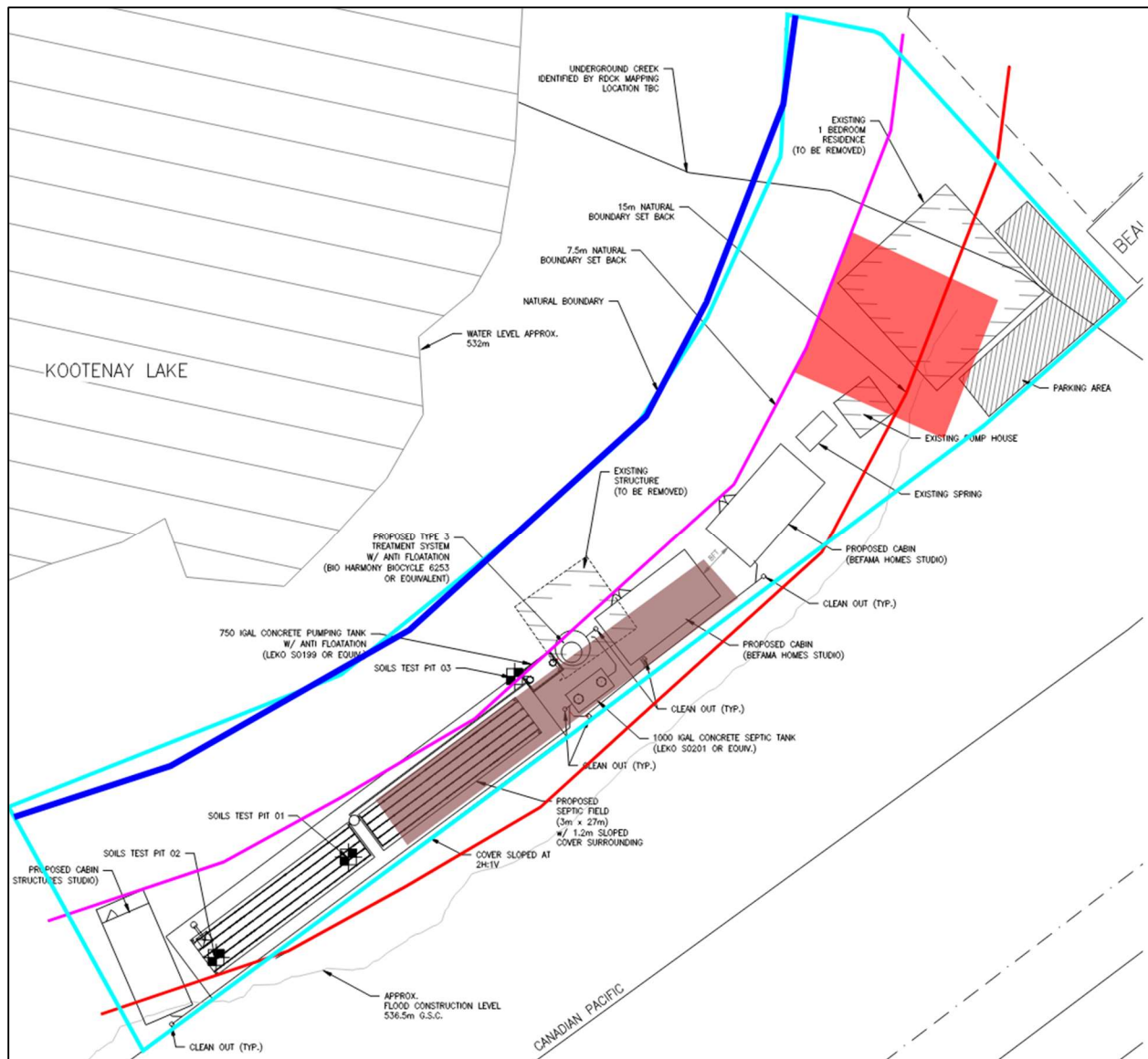


Figure 4.2: Orientation of subject property (delineated in cyan) in relation to the Natural Boundary (delineated in blue), the currently proscribed 15.0m setback from the Natural Boundary (delineated in red), and a 7.5m setback from the Natural Boundary (delineated in magenta). Approximate proposed development area shown in red hatching, and approximate septic area shown in brown hatching. North = up. Repurposed from Highland Consulting Limited 2205 Bealby Road Layout design drawing, Issue B, 30-Jan-2023.

The subject property is bounded on the east and west by other land parcels, on the north by the West Arm of Kootenay Lake, and on the south by Canadian Pacific Railway track. The area may be topographically described as a general descent from southeast to northwest towards Kootenay Lake. The property itself resides within a relatively flat bench area, with the present natural boundary of Kootenay Lake approximately representing the northern property extent. Property access is via Bealby Road, which terminates at the eastern property extent.

Soil mapping and desktop analysis infer the native subgrade soils predominantly comprise so-called Buhl Creek deposits, describing shallow, moderately coarse and very coarse textured colluvium over coarse-grained bedrock. These soils are typically considered to be rapidly drained.



Review of the RDCK interactive web-mapping tool and provincially available topographic mapping suggest Bossuet Creek (SO4302) transits the northern portion of the subject property before discharging into Kootenay Lake, though our site investigation did not encounter the presence of any surface flow indicators.

Hall Spring (SO4131) is also known to reside within the property, and currently discharges to Kootenay Lake via Big-O piping which daylight within the foreshore outside the northern property extent.

When considering the presently required setback from the Natural Boundary, approximately 13% (184m²) of the total property area (1402m²) is currently eligible for development without exemption to the setback requirement, with this “developable” area split between the Southwest and Southeast property corners.

The proposed new development entails a residential structure with a deck and walkway planned to project as close as 7.5 metres from the present natural boundary of Kootenay Lake. The proposed foundation system includes conventional cast-in-place reinforced concrete strip and/or spread foundations.

4.1 Proposed Development Setback

With respect to Bylaw 2080, the minimum allowable Floodplain Setback¹ from the Natural Boundary² is 15.0 metres in this instance.

Our review of the proposed development on the subject property indicates that the nearest planned structures, specifically the deck and walkway, will be situated approximately 7.5 metres from the natural boundary, extending along this setback line for about 10.0 metres. Accordingly, up to a 7.5 metre encroachment into the currently designated floodplain setback is proposed in this instance.

The main house is planned to be located an additional 2.0 metres beyond this boundary. Furthermore, the septic system, including both the field and tank, is designed to be positioned outside of the 7.5 metre setback.

4.2 Proposed Development Minimum Construction Level

With respect to Floodplain Construction Level³ (FCL) requirements, Bylaw 2080 defines the FCL elevation as 535.3 metres (CGVD28 datum). Furthermore, in this instance we recommend an additional 0.3m of vertical freeboard be included to account for wave and/or floating debris action at the subject property, resulting in a recommended minimum elevation of 535.6m for the underside of proposed wooden flooring systems or habitable spaces.

¹ Floodplain Setback or “Setback” is defined as the minimum required distance from the Natural Boundary of a watercourse, lake, or other body of water and for administrative purposes is taken to be that area submerged by the Designated Flood plus freeboard. Taken from RDCK Floodplain Management Bylaw 2080, 2009.

² Natural Boundary is defined as the visible high watermark of any lake, river, watercourse, or other body of water where the presence and action of the water are so common and usual and so long continued in all ordinary years as to mark upon the soil of the bed of the lake, river, watercourse, or other body of water a character distinct from that of the banks thereof, in respect to vegetation, as well as in respect to the nature of the soil itself. In addition, the natural boundary includes the best estimate of the edge of dormant or old side channels and marsh areas. Taken from RDCK Floodplain Management Bylaw 2080, 2009.

³ Flood Construction Level (FCL) is defined as the Designated Flood Level (the observed or calculated elevation for the Designated Flood which is used in the calculation of the Flood Construction Level), plus the allowance for freeboard and is used to establish the elevation of the underside of a wooden floor system or top of concrete slab for habitable buildings. In the case of a manufactured home, the ground level or top of concrete or asphalt pad on which it is located shall be no lower than the above-described elevation. It also establishes the minimum crest level of a Standard Dike. Where the Designated Flood Level can not be determined or where there are overriding factors, an assessed height above the natural boundary of the water body or above the natural ground elevation may be used. Taken from RDCK Floodplain Management Bylaw 2080, 2009.



Our understanding of the proposed developments infers all Habitable Area⁴ is planned above the FCL, and thus no variance is proposed as part of this project.

The Canadian Geodetic Vertical Datum of 1928 (CGVD28) was established based on mean sea levels at specific tide gauges, formalized in 1935. It provided normal-orthometric heights through a vast network of about 94,000 benchmarks. While precise locally, CGVD28's national accuracy and extensive maintenance requirements were limiting. Despite these limitations, CGVD28 remains the current legal vertical datum in the province of British Columbia. Replacing it, the Canadian Geodetic Vertical Datum of 2013 (CGVD2013) was introduced as a gravimetric datum defined by an equipotential surface, aligned with mean sea level conventions for North America. CGVD2013 supports compatibility with Global Navigation Satellite Systems (GNSS), providing more precise and nationally consistent orthometric heights. Recent floodplain mapping and some local jurisdictions in British Columbia are beginning to transition to CGVD2013 due to its enhanced accuracy and compatibility with modern positioning technology.

Where local datum transformation is required, site-specific GNSS observations are recommended. In our investigation of the subject property, we conducted long-duration static GNSS observations and processed the data using Natural Resources Canada's Precise Point Positioning tool in both CGVD28 and CGVD2013 datums, indicating that CGVD28 is approximately 0.221 meters lower than CGVD2013 at this location. This differential is presented as an aid in understanding local site elevations should future vertical datum transformation be required. For legal and/or cadastral purposes, this information should be further verified by a British Columbia Land Surveyor (BCLS).

5.0 SITE-SPECIFIC FLOOD HAZARD ASSESSMENT

We have conducted a site-specific assessment for the proposed development, utilizing the Flood Construction Level (FCL) inferred from Bylaw 2080. This bylaw establishes the FCL based on maximum water levels, which are coordinated with BC Hydro's operational levels.

In British Columbia, flood protection standards are typically based on the Design Flood concept, which is defined as a flood event with a 0.5% annual exceedance probability, commonly known as the "200-year flood." This standard provides a benchmark for flood hazard assessment and the formulation of mitigation strategies. For this site, the FCL specified by Bylaw 2080 is considered to align with the 200-year flood standard.

A key aspect of our assessment is the recommendation for further geotechnical engineering work to support the proposed development. This work is essential to ensure the geotechnical integrity of proposed developments as well as conformance with the recommendations presented herein. Further discussion on this recommendation is provided below.

5.1 Site Specific Flooding and Erosion Hazards

In this instance, it is expected that the lower extents of foundation systems will be subject to water inundation and wave effect up to the site-specific FCL elevation of 535.6 metres (CGVD28 datum). The structural consultant shall consider both inundation and wave effect over these areas.

Foundations associated with the proposed development should consider the natural angle of repose for the beach sands and gravels, and this should be used as a reference for the establishment of all new footings within the Subject Property. In order to provide effective long-term resistance to erosion and scour, footings

⁴ Habitable Area means any room or space within a Building or Structure that is or can be used for human occupancy, commercial sales, or storage of goods, possessions or equipment (including furnaces) which would be subject to damage if flooded. Taken from RDCK Floodplain Management Bylaw 2080, 2009.



for new developments should be borne at a nominal 600.00 mm lower elevation than a theoretical plane along the naturally established grade of the beach, extended to the location of the foundation in question. This is conceptually shown below in Figure 5.1:

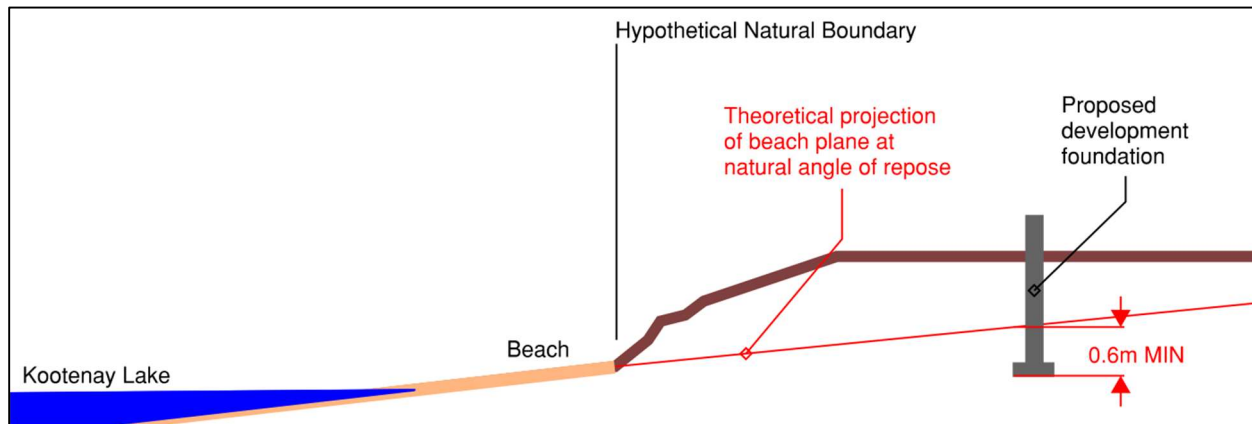


Figure 5.1: Schematic of intention for ensuring proposed development footings are satisfactorily protected from erosion and scour risk from Kootenay Lake.

Elevations of the undersides floor systems or the tops of concrete slabs for rooms or spaces within a Building, Structure or Manufactured Home which can be used for human occupancy, Commercial Use, or storage of goods, possessions, or Fixed Equipment that would be subject to damage if flooded shall be located above elevation 535.6 metres (CGVD28 datum). Provided all development occurs in conformance with Bylaw 2080 and the above recommendations, the assessed flooding, erosion and scour risks associated with the proposed development are considered acceptably low.

5.2 Site-Specific Alluvial Hazards

The subject property lies outside of all currently-delineated alluvial fan hazard areas.

As previously discussed, the results of our desktop review indicate that Bossuet Creek transits the northern portion of the subject property.

Our field reconnaissance did not locate any visible indicators of permanent or intermittent surface water flow pathways within the property or the wider upslope areas surrounding Bealby Road. While Bossuet Creek is known to produce surface flows upstream, it appears that this creek has been either redirected or has otherwise fully infiltrated at its downstream reaches in the vicinity of the subject property.

Alternatively, Bossuet Creek may be associated with Hall Spring, also mapped on the property and witnessed during our field investigation. Only minimal information was available on this spring that we could find. The flows may be relatively confined to the abandoned underground structure which conveys Hall Spring flows via an existing Big-O pipe into Kootenay Lake.

Given the potential for subsurface flows from Bossuet Creek and/or the influence of Hall Spring, additional geotechnical subsurface investigations are critical to support the subgrade and/or foundation design for the proposed development. Further details are discussed below.

7.0 RECOMMENDATIONS

- Elevations of the undersides of floor systems or the tops of concrete slabs for rooms or spaces within a Building, Structure or Manufactured Home which can be used for human occupancy, Commercial Use, or storage of goods, possessions, or Fixed Equipment that would be subject to damage if flooded shall be located above elevation 535.6 metres (CGVD28 datum).
- Proposed structural systems should consider water inundation and wave effects up to 535.6 metres (CGVD28 datum).
- All foundations associated with proposed new structure development should be borne at a nominal 0.60 metres beneath the Native Sand and Gravel beach deposits, or beneath a theoretical plane extended from the Native Sand and Gravel beach at the beach angle of repose, to the location of the foundation in question.
- Structural and Geotechnical collaboration, assessment and design by suitably qualified Professional Engineer/s is necessary to ensure satisfactory performance of the proposed development. At a minimum we recommend further geotechnical subsurface investigation, as well as the inspection and approval of all subgrade areas associated with proposed developments by a suitably qualified Geotechnical Engineer to ensure native soils within a proposed development area are suitable to support proposed development loading.
- Provided full conformance with all other recommendations, a site-specific setback variance to reduce the setback to the Natural Boundary of the West Arm of Kootenay Lake from 15.0 meters to *as little as* 7.5 metres (a maximum 7.5 metre proposed reduction) is considered acceptable with respect to risks associated with up to and including 1 in 200 year return period flooding events within Kootenay Lake.



8.0 CLOSURE

The conclusions in this report are provided on the assumption that future habitable structure development will be designed and constructed in general conformance with the BC Building Code and applicable local bylaws.

This assessment provides assurance that the proposed development is geotechnically suitable to withstand flooding events up to the 1:200 year standard, without compromising structural safety. However, it is prudent to recognize the non-zero potential for floods exceeding the design threshold of a 1:200 year return period event, which could impact the development. It is also important to note that regular inspection, maintenance, and repair are critical for all structures, especially those within floodplain setback limits or below the Flood Construction Levels, where approved. Inspection and maintenance as required following seasonal high-water and/or flooding events is recommended to occur by the Owner annually.

Reference should be made to the attached Flood Hazard and Risk Assurance Statement for specific language regarding the suitability of the proposed land to be safely used for the purpose intended.

We trust this document provides the information you require at present. Please do not hesitate to contact the undersigned should you have any further questions or concerns relating to this matter.

Respectfully submitted,



Rev2 – 2024.04.18



Crowsnest Engineering

EGBC Permit to Practice No. 1002717
1025 Bridgeview Crescent, Castlegar BC
(C) 1-647-239-5264
(E) contact@crowsnestengineering.com

Appendices:

- Appendix 1 – Masse Environmental, “Levinson WDP – Riparian Assessment – SPEA Setbacks”, Environmental Mitigation Plan Drawing, 2024.04.03
- Appendix 2 – Flood Hazard Risk Assurance Statement

References (Listed in Chronological Order):

- *Jungen, J. R.*, “Soil Resources of the Nelson Map Area”, RAB Bulletin No. 20, BC Ministry of Environment, 1980.
- *Naval Facilities Engineering Command*, *Soil Mechanics Design Manual*, 7.01, 2005.
- *Canadian Geotechnical Society*, *Canadian Foundation Engineering Manual*, 4th Edition, 2006.
- *Regional District of Central Kootenay*, *Floodplain Management Bylaw No. 2080*, 2009.
- *Terzaghi, K., Peck, R.B., Mesri, G.*, “Soil Mechanics in Engineering Practice”, 3rd Edition, 2010.



Appendix 1

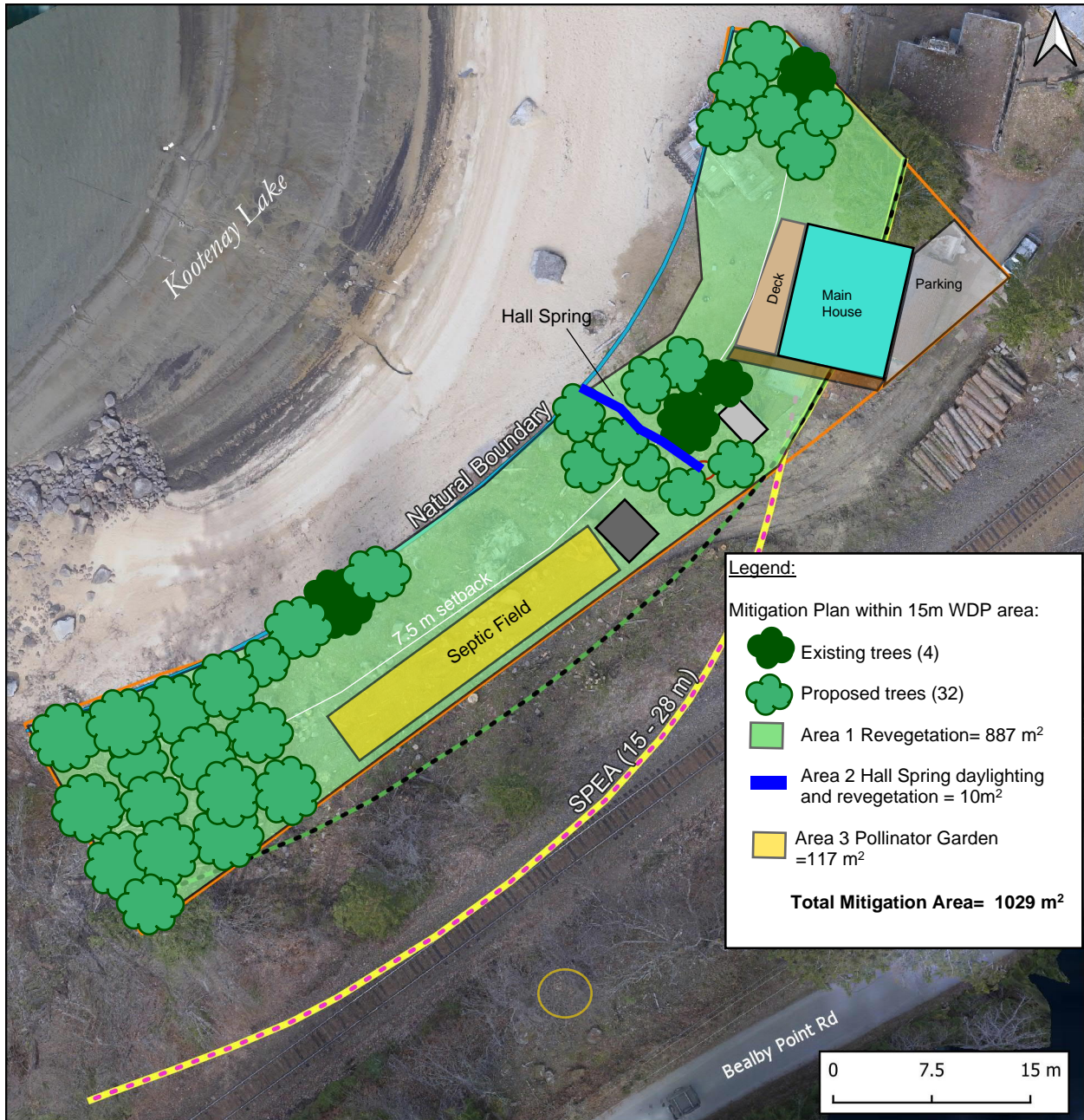
Masse Environmental

“Levinson WDP – Riparian Assessment – SPEA Setbacks”







Environmental Mitigation Plan Drawing

2024.04.03





Levinson WDP | Riparian Assessment | SPEA Setbacks

-  Property Boundary (PID 027-301-656)
-  Natural Boundary
-  WDP Area (15 m)
-  LWD ZOS and Litterfall ZOS (15 m)
-  Shade ZOS (13 - 28 m)
-  SPEA ZOS (15 - 28 m)



Map Date: 08/14/2023
 Projection: NAD83 UTM Zone 11
 Project: 2023-1034
 Map Scale: 1: 500
 Orthoimage Date: April 20, 2023
 Fortis BC Lake Level: 530.11 m

Appendix 2

Flood Hazard Risk Assurance Statement



FLOOD ASSURANCE STATEMENT

Note: This statement is to be read and completed in conjunction with the current Engineers and Geoscientists BC *Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC* (“the guidelines”) and is to be provided for flood assessments for the purposes of the *Land Title Act*, Community Charter, or the *Local Government Act*. Defined terms are capitalized: see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority

Date: April 15, 2024

Regional District of Central Kootenay

Jurisdiction and address

With reference to (CHECK ONE):

- Land Title Act* (Section 86) – Subdivision Approval
- Local Government Act* (Part 14, Division 7) – Development Permit
- Community Charter (Section 56) – Building Permit
- Local Government Act* (Section 524) – Flood Plain Bylaw Variance
- Local Government Act* (Section 524) – Flood Plain Bylaw Exemption

For the following property (“the Property”):

2205 Bealy Rd, Regional District of Central Kootenay, BC, V1L 3E2. Legal Description: LOT A, PLAN NEP85347, DISTRICT LOT 1316, KOOTENAY LAND DISTRICT.

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 who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, sealed, and dated, and thereby certified, the attached Flood Assessment Report on the Property in accordance with the guidelines. That report and this statement must be read in conjunction with each other. In preparing that Flood Assessment Report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

- ___ 1. Consulted with representatives of the following government organizations:

- 2. Collected and reviewed appropriate background information
- 3. Reviewed the Proposed Development on the Property
- ___ 4. Investigated the presence of Covenants on the Property, and reported any relevant information
- 5. Conducted field work on and, if required, beyond the Property
- 6. Reported on the results of the field work on and, if required, beyond the Property
- 7. Considered any changed conditions on and, if required, beyond the Property
- 8. For a Flood Hazard analysis I have:
 - 8.1 Reviewed and characterized, if appropriate, Flood Hazard that may affect the Property
 - 8.2 Estimated the Flood Hazard on the Property
 - 8.3 Considered (if appropriate) the effects of climate change and land use change
 - 8.4 Relied on a previous Flood Hazard Assessment (FHA) by others RDCK Floodplain Management Bylaw No. 2080, 2009
 - 8.5 Identified any potential hazards that are not addressed by the Flood Assessment Report
- 9. For a Flood Risk analysis I have:
 - 9.1 Estimated the Flood Risk on the Property
 - 9.2 Identified existing and anticipated future Elements at Risk on and, if required, beyond the Property
 - 9.3 Estimated the Consequences to those Elements at Risk

FLOOD ASSURANCE STATEMENT

10. In order to mitigate the estimated Flood Hazard for the Property, the following approach is taken:

- 10.1 A standard-based approach
- 10.2 A Risk-based approach
- 10.3 The approach outlined in the guidelines, Appendix F: Flood Assessment Considerations for Development Approvals
- 10.4 No mitigation is required because the completed flood assessment determined that the site is not subject to a Flood Hazard

11. Where the Approving Authority has adopted a specific level of Flood Hazard or Flood Risk tolerance, I have:

- 11.1 Made a finding on the level of Flood Hazard or Flood Risk on the Property
- 11.2 Compared the level of Flood Hazard or Flood Risk tolerance adopted by the Approving Authority with my findings
- 11.3 Made recommendations to reduce the Flood Hazard or Flood Risk on the Property

12. Where the Approving Authority has not adopted a level of Flood Hazard or Flood Risk tolerance, I have:

- 12.1 Described the method of Flood Hazard analysis or Flood Risk analysis used
- 12.2 Referred to an appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk
- 12.3 Made a finding on the level of Flood Hazard or Flood Risk tolerance on the Property
- 12.4 Compared the guidelines with the findings of my flood assessment
- 12.5 Made recommendations to reduce the Flood Hazard or Flood Risk

13. Considered the potential for transfer of Flood Risk and the potential impacts to adjacent properties

14. Reported on the requirements for implementation of the mitigation recommendations, including the need for subsequent professional certifications and future inspections.

Based on my comparison between:

[CHECK ONE]

- The findings from the flood assessment and the adopted level of Flood Hazard or Flood Risk tolerance (item 11.2 above)
- The findings from the flood assessment and the appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk tolerance (item 12.4 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* (Part 14, Division 7), my Flood Assessment Report will "assist the local government in determining what conditions or requirements it will impose under subsection (2) of this section [Section 491 (4)]".

- 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* and the *Amendment Section 3.5 and 3.6* associated with the *Local Government Act* (Section 524), "the development may occur safely".

- For flood plain bylaw exemption, as required by the *Local Government Act* (Section 524), "the land may be used safely for the use intended".

FLOOD ASSURANCE STATEMENT

I certify that I am a Qualified Professional as defined below.

April 15, 2024
Date

Nicholas Ellis, P.Eng.
Prepared by

Nicholas Ellis, P.Eng.
Name (print)


Signature

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1-647-239-5264
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Email



(Affix PROFESSIONAL SEAL here)

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

I am a member of the firm Crowsnest Engineering EGBC Permit to Practice No. 1002717
and I sign this letter on behalf of the firm. (Name of firm)