



# Development Permit

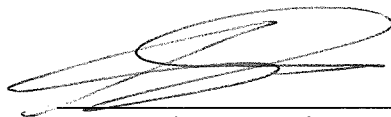
DP2316D (Gorgiev)

Date: February 23, 2024

Issued pursuant to Section 490 and 491 of the *Local Government Act*

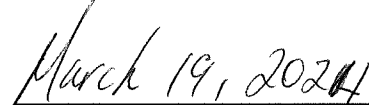
1. This Development Permit is issued to Ivan Gorgiev of Okotoks, Alberta as the registered owner (hereinafter called the "Permittee") and shall only apply to those lands within the Regional District of Central Kootenay, in the Province of British Columbia legally described as LOT 2 DISTRICT LOT 7386 KOOTENAY DISTRICT PLAN 11474 (PID 012-757-870) as shown on the attached Schedules 1 and 2, forming part of this Permit, referred to hereafter as the "said lands".
2. This Development Permit is issued subject to compliance with all of the bylaws of the Regional District of Central Kootenay applicable thereto, except as specifically varied or supplemented by this Permit.
3. This Development Permit shall not have the effect of varying the use or density of land as specified in the applicable Zoning Bylaw of the Regional District of Central Kootenay, nor a Floodplain Specification under Section 524 of the Local Government Act.
4. The said lands have been designated 'Country Residential (RC)' and are located within a Development Permit Area pursuant to the Electoral Area 'D' Official Community Plan Bylaw No. 2435, 2016 as amended.
5. The Permittee has applied to the Regional District of Central Kootenay to authorize a metal staircase that was constructed within the Development Permit Area to provide access to the shoreline and to use land and buildings situated on the said lands for this purpose. Pursuant to this Development Permit and subject to the terms and conditions herein contained, as well as all other applicable Regional District Bylaws, the Regional District of Central Kootenay hereby authorizes the use of the said lands for this purpose.
6. The Permittee is required to obtain approval in writing from the Regional District of Central Kootenay prior to the construction any new buildings, external additions to existing buildings or for any deviation from the development authorized under Section 5 and Schedule 2 of this Development Permit. Furthermore, the Permittee is hereby advised of the following requirements:
  - 6.1 The Regional District of Central Kootenay Building Department requires that the Permittee obtain a demolition permit and/or building permit prior to the removal of any existing buildings and structures, the renovation, expansion or alteration of any existing building and the construction of any new building.
  - 6.2 Development is authorized in accordance with the terms described in the report titled "5324 Amundsen Road, Mirror Lake BC Riparian Assessment" prepared by Masse Environmental Consultants Ltd., dated November 9, 2023 and attached to this permit as **Schedule 3**. Compliance with all terms, conditions, guidelines and recommendations is required.
  - 6.3 Disturbed soils within the SPEA shall be reseeded with a native riparian seed blend both under and around the stairway.

- 6.3.1 The seed blend will be provided to the applicant by the QEP and the applicant will be required to cover the cost of the seed blend in addition to any associated costs to apply, water and maintain the prescribed restoration area.
  - 6.3.2 If invasive weeds are observed they shall be managed in accordance with Section 5.10 of the Riparian Assessment Report.
  - 6.3.3 Once the seeded vegetation has been established the applicant is required to provide photos to RDCK staff in order to confirm that the prescribed works have been completed.
7. The said lands shall be developed strictly in accordance with the terms and conditions of this Development Permit and the requirements of all applicable Regional District Bylaws as well as any plans and specifications which may, from time to time, be attached to this Permit shall form a part thereof.
  8. In accordance with the Local Government Act, if the development authorized by this Development Permit is not commenced within two years of the date of this Permit, this Permit shall lapse.
  9. In accordance with the Local Government Act, 'Notice' shall be filed in the Land Title Office that the said lands are subject to this Development Permit.
  10. The terms of this Development Permit including subsequent amendments, are binding on all persons who acquire an interest in the said lands associated with this Permit.
  11. It is understood and agreed that the Regional District has made no representations, covenants, warranties, guarantees, promises, or agreement (verbal or otherwise) with the Permittee other than those in this Development Permit. It is solely the responsibility of the Permittee to ensure that the requirements of all other applicable government agencies are satisfied.
  12. This Development Permit does not constitute a building permit.
  13. This Development Permit shall come into force and effect 14 days after the date of issuance unless a Waiver of Appeal is received from the Permittee at which time the Development Permit shall be deemed to be issued upon receipt of the Waiver of Appeal. OR If a Notice of Appeal is received the Development Permit shall be suspended until such time as the Board of the Regional District of Central Kootenay has decided the Appeal.



---

Sangita Sudan, General Manager of Development and Community Sustainability Services



---

Date of Approval (date of review and approval)

Schedule 1: Subject Property





Schedule 2: Site Plan



**Schedule 3:** *"5324 Amundsen Road, Mirror Lake, BC Riparian Assessment"* prepared by Masse Environmental Consultants Ltd., dated November 9, 2023



**5324 Amundsen Road, Mirror Lake BC**  
**Riparian Assessment**



Prepared for:  
**Regional District of Central Kootenay**  
202 Lakeside Drive  
Nelson, BC, V1L 5R4

Nov 9, 2023

Prepared by:  
Masse Environmental Consultants  
812 Vernon Street  
Nelson, BC, V1L 4G4

Project Number 2023-1094

***Disclosure Statement***

This report has been prepared by Fiona Lau BTech., ASCT, and reviewed by Ico de Zwart, PhD Chem, RPBio.

I, **Fiona Lau**, hereby certify that:

- a) I am a qualified environmental professional (QEP), as defined in the Riparian Areas Regulation made under the Fish Protection Act;
- b) I am qualified to carry out this part of the assessment of the development proposal made by the developer;
- c) I have carried out my assessment of the development proposal, and my assessment is set out in this Assessment Report; and
- d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Protection Regulation.

This report has been prepared by a QEP who has not acted for, or as an agent(s) of the RDCK and was at the expense of the property owner.



**TABLE OF CONTENTS**

Table of Contents ..... i

List of Tables ..... ii

List of Appendices ..... ii

1 Introduction ..... 3

2 Project Overview ..... 3

    2.1 Site Description ..... 3

        2.1.1 Location ..... 3

        2.1.2 Watercourses ..... 4

        2.1.3 Riparian Vegetation ..... 5

        2.1.4 Wildlife Habitat ..... 6

        2.1.5 Aquatic Habitat ..... 6

        2.1.6 Species at Risk ..... 7

        2.1.7 Invasive Species ..... 8

    2.2 Existing Development ..... 8

    2.3 Development (Seeking authorization) ..... 8

    2.4 Archeological and Heritage Resources ..... 9

3 Regulatory Overview ..... 10

    3.1 Riparian Area Protection Regulation (RAPR) Review ..... 10

    3.2 Kootenay Lake Shoreline Management Guidelines ..... 10

4 Impact Assessment ..... 10

5 Measures to Protect the Integrity of the SPEA ..... 11

    5.1 Danger Trees ..... 11

    5.2 Windthrow ..... 11

    5.3 Slope Stability ..... 11

    5.4 Protection of Trees and Vegetation in the SPEA ..... 11

    5.5 Encroachment ..... 12

    5.6 Sediment and Erosion Control ..... 12

    5.7 Stormwater Management ..... 12

    5.8 Floodplain Concerns ..... 12

    5.9 Fish and Wildlife Protection ..... 12

    5.10 Invasive Plant Management ..... 12

6 Mitigation Plan ..... 12

## 5324 Amundsen Road – Riparian Assessment

7	Conclusion.....	13
8	References .....	14

### LIST OF TABLES

Table 1.	Results of detailed RAPR assessment for Kootenay Lake.....	10
Table 2.	Aquatic and archaeological risk results (FIMP 2022) .....	10
Table 3.	Native riparian seed blend.....	13

### LIST OF APPENDICES

- Appendix 1. Site Location Map
- Appendix 2. Site Plan and SPEA Setbacks
- Appendix 3. Archaeological Chance Find Procedures

# 5324 Amundsen Road – Riparian Assessment

## 1 INTRODUCTION

Masse Environmental Consultants Ltd. was retained by Ivan Gorgiev (Owner) to conduct a riparian assessment to accompany an application for a Watercourse Development Permit (WDP) on his waterfront property at 5324 Amundsen Road, Mirror Lake, BC (PID 012-757-870; Lot 2 Plan NEP 11474 District Lot 7386 Kootenay Land). The WDP is being triggered as the Owner is seeking authorization of a newly constructed access stairway within the 30 m WDP area of Kootenay Lake.

A site visit was completed on September 14, 2023, by Fiona Lau, B.Tech., AScT., to conduct a riparian assessment of the property. The riparian assessment evaluates the existing conditions of the riparian area (up to 30 m from the natural boundary of Kootenay Lake), identifies habitat values, assesses potential environmental impacts, and recommends measures to mitigate or compensate for the alteration of the riparian area to maintain environmental values. It is based on the following regulatory framework and best management practices documents:

- Electoral Area 'D' Comprehensive Land Use Bylaw No. 2435, 2016
- British Columbia *Riparian Areas Protection Regulation*
- Kootenay Lake Shoreline Management Guidelines
- British Columbia *Water Sustainability Act*
- *Federal Migratory Birds Convention Act*
- General BMPs and Standard Project Considerations (Ministry of Environment)
- Develop with Care. Environmental Guidelines for Urban and Rural Land Development in British Columbia
- On the Living Edge: Your Handbook for Waterfront Living

## 2 PROJECT OVERVIEW

### 2.1 Site Description

#### 2.1.1 Location

The subject property is located approximately 6.2 km south of Kaslo, BC (see Appendix 1 for Location Map). The property has an eastern aspect, is ~0.77 acres in size and has ~33 m of frontage on Kootenay Lake. The property is bordered by private properties to the north and south, MoTI Right of Way (RoW) to the west, and Kootenay Lake to the east. From the natural boundary of Kootenay Lake moving west, the property is sloped at ~25% for the first 10-15m, then steepens up to ~80% slope for ~15 m, where it then flattens out again. The parcel boundary lines shown on the Site Plan (Appendix 2) have been adjusted to correspond with the ortho-imagery.

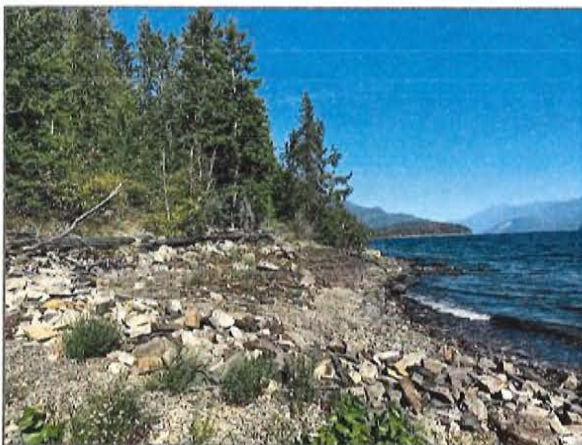


The project area is within the Interior Cedar Hemlock dry warm variant 1 (ICHdw1) biogeoclimatic subzone (MacKillop and Ehman 2016). This moist climatic region is characterized by very hot, moist summers; and very mild winters with light snowfall. Soils generally dry out in late summer for varying extents of time ranging from insignificant to extensive. Snowpacks are very shallow to shallow and of short duration and combined with the mild climate result in no significant soil freezing (MacKillop and Ehman 2016).

### 2.1.2 Watercourses

One watercourse was identified on the subject property: Kootenay Lake. Kootenay Lake borders the subject property along the eastern boundary; it is a long, narrow and deep lake with a surface area of approximately 400 km<sup>2</sup>. Kootenay Lake's main inflows include the Lower Duncan River to the north and the Kootenay River to the south and drains through the West Arm into the Kootenay River. Lake levels can vary up to 4 m throughout the year, affecting the extent of the exposed shoreline. The foreshore of the property consists of a sloped beach (~20-25% gradient), with the substrate mainly consisting of gravel, cobble with some boulders and exposed bedrock (Photo 1 and Photo 2).

The visible **natural boundary** of Kootenay Lake was observed to be approximately ~8 m east of the eastern property line (RDCK mapping 2023) and is shown on the Site Plan (Appendix 2). The **natural boundary** is commonly referred to as the "**high water mark**" around a lake or wetland. Based on the definition of high water mark<sup>1</sup>, the natural boundary shown on the Site Plan will be used to delineate the 30 m RDCK WDP area and streamside protection and enhancement area (SPEA) setbacks in accordance with the Riparian Area Protection Regulation (RAPR).



---

<sup>1</sup> **High water mark** means the visible high water mark of a watercourse where the presence and action of the water are so common and usual, and so long continued in all ordinary years, as to mark on the soil of the bed of the watercourse a character distinct from that of its banks, in vegetation, as well as in the nature of the soil itself, and includes the active floodplain (RDCK 2013).



## 5324 Amundsen Road – Riparian Assessment

Photo 1. Shoreline looking north along front of property.  
Photo 2. Shallow water habitat along shoreline.

### 2.1.3 Riparian Vegetation

The riparian area along Kootenay Lake is generally intact and supports a mix of both mature and young trees, shrubs and herbaceous species (Photo 3 thru Photo 6). Tree species consist of Interior Douglas-fir (*Pseudotsuga menziesii*), paper birch (*Betula papyrifera*), Western redcedar (*Thuja plicata*), and regenerating black cottonwood (*Betula occidentalis*). The shrub community includes Douglas maple (*Acer glabrum*), falsebox (*Pachistima myrsinites*), kinnikinnick (*Arctostaphylos uva-ursi*), mountain alder (*Alnus incana*), mountain ash (*Sorbus sitchensis*), ocean spray (*Holodiscus discolor*), Oregon grape (*Mahonia aquifolium*), red-osier dogwood (*Cornus sericea*), rose sp (*rosa sp*), snowberry (*Symphoricarpos albus*), soopalallie (*Shepherdia canadensis*) and thimbleberry (*Rubus parviflorus*). Herbaceous species include common wormwood (*Artemisia absinthium*) and grass spp. (*Poa spp.*).

Non-native species observed within the riparian area included American elm (*Ulmus amerciana*), American vetch (*Vicia amerciana*), wall lettuce (*Mycelis muralis*) and great mullein (*Verbascum thapsus*). These plants were sporadic with minimal establishment within the riparian area.



Photo 3. Mixed young and mature forest in riparian area



Photo 4. Conifer trees along shoreline.



Photo 5. Rocky riparian area, shallow topsoil with minimal shrub layer.



Photo 6. Mature Western redcedar tree within assessment area next to staircase.

#### 2.1.4 Wildlife Habitat

Riparian ecosystems offer important habitat features for wildlife, affording them essential resources like water, shelter, and food. These areas frequently serve as migration corridors connecting aquatic, riparian, and upland environments, playing a pivotal role in the life cycles of numerous species. Wildlife values observed on site include:

- Mature conifer and deciduous trees provide suitable perch and nesting habitat for a variety of bird species.
- Trees and shrubs along the shoreline provide litterfall and insect drop for fish and nesting habitat for songbirds.
- Large woody debris (LWD) and coarse woody debris (CWD) provide cover habitat for wildlife.
- Warm rocky habitat providing suitable cover and basking habitat for reptiles such as garter snakes (*Thamnophis* spp.) and Northern alligator lizard (*Elgaria coerulea*).
- Riparian vegetation providing a food source and habitat for a variety of large and small mammal species. Confirmed species on and near the property include: American elk (*Cervus canadensis*), black bear (*Ursus americanus*), white-tailed deer (*Odocoileus virginianus*) and red squirrel (*Tamiasciurus hudsonicus*) (p. comm Ivan Gorgiev, BC 2023 , INaturalist 2023).

#### 2.1.5 Aquatic Habitat

Fish habitat along this section of foreshore consists of shallow water habitat (Photo 1 and Photo 2). Shallow foreshore areas are used for rearing by smaller fishes and broadcast spawning by non-sport fish species (i.e peamouth chub (*Mylocheilus caurinus*) and northern pikeminnow (*Ptychocheilus oregonensis*)). Several species of regional interest reside in Kootenay Lake including Kokanee (*O. nerka*), Rainbow Trout, Bull Trout (*Salvelinus confluentus*; BC-Blue-Listed; SARA Special Concern), White Sturgeon



## 5324 Amundsen Road – Riparian Assessment

(*Acipenser transmontanus pop.1*; BC Red-Listed, SARA Endangered), Westslope Cutthroat Trout (*O. clarki lewisi*; BC Blue-Listed; SARA Special Concern), and Burbot (*Lota lota pop.1*; BC-Red-Listed).

Mussel beds have been identified along the shoreline of Kootenay Lake in multiple locations both on the West Arm and main body of the lake. No evidence of mussels was seen on the shoreline (ie. live mussels and/or mussel shells). A mussel survey was not conducted to determine presence or absence, as no works are proposed below the HWM.

### 2.1.6 Species at Risk

The BC Conservation Data Center (CDC) occurrence data and critical habitat for Federally listed species were queried within iMap BC, using a 10 km buffer around the center point of the subject property. In addition, the Wildlife Species Inventory observation points within Habitat Wizard BC and iNaturalist were also queried for nearby observations within a 5 km buffer around the property.

Three species at risk have been identified within the buffer with only one species having the potential to occur on the site: Wild licorice (*Glycyrrhiza lepidota*)- BC Blue listed. The three species at risk recorded within the 10 km buffer include:

- 1) The Upper Kootenay River white sturgeon (*Acipenser transmontanus*) population- Red listed. Critical Habitat for white sturgeon on Kootenay Lake is located at the Crawford Creek delta on the east shore of Kootenay Lake ~ 33 km away and at the Duncan delta at the north end of Kootenay Lake ~ 28 m away (Environment Canada 2014).
- 2) Painted turtle (*Chrysemys picta*)- Blue listed. The nearest observation of painted turtle was in Mirror Lake, approximately 2.5 km away. The subject property does not provide suitable turtle habitat.
- 3) Wild licorice (*Glycyrrhiza lepidota*)- Blue listed. The nearest observation of wild licorice was at Mirror Lake, approximately 2.5 km away.

It is important to note that many bats species are blue-listed in BC (e.g.: little brown myotis (*Myotis lucifugus*), Western small-footed myotis (*Myotis ciliolabrum*), and the Yuma myotis (*Myotis yumanensis*)) and have potential to occur on the subject property. The little brown myotis is also listed as 'endangered' under the *Species At Risk Act*. Bat roosting habitat includes tall, live or dead trees with crevices, peeling bark, or cavities.

## 5324 Amundsen Road – Riparian Assessment

### 2.1.7 *Invasive Species*

Central Kootenay Invasive Species Society (CKISS) manages invasive species using a prioritized approach. The management strategy for a specific species is based on a number of factors including the phase of invasion and the potential impacts of the species (CKISS 2023). Priority species lists can be found at <https://ckiss.ca/species/invasive-plant-priority-lists/>.

Based on the CKISS 2023 Priority List, no species were identified as Priority Level 1, 2 or 3 species within the assessment area.

## 2.2 Existing Development

The property is mostly undeveloped within the 30 m riparian assessment area except for the new stairway that was constructed from the home down to the waterfront. Refer to Section 2.3 for more details. The riparian area appears to have had some clearing of trees done ~20 years ago, based on cut tree observations (ie stumps and fallen trees) and the natural regeneration occurring within the assessment area.

The camper trailer with a small structure attached (outside of the 30 m assessment area) is serviced by a temporary hose which is seasonally placed and draws water from Kootenay Lake and a septic field which is located west of the home (camper trailer) outside of the 30 m setback.

## 2.3 Development (Seeking authorization)

The Owner is seeking approval for the authorization of the constructed elevated stairway down to the waterfront. The elevated stairway is ~34 m long by 1 m wide (Photo 7 thru Photo 9) and has a total footprint of ~34 m<sup>2</sup> within the 30 m WDP area. The stairway is located over a steep embankment down to the foreshore and is sited mostly along an existing foot path alignment. It is constructed with metal grate and handrail, steel posts and concrete footings.

Refer to the Site Plan (Appendix 2) for stairway location.





Photo 7. View of access trail down to foreshore at south end of property (July 26, 2023).



Photo 8. View of constructed metal grate stairway and deck (July 26, 2023).



Photo 9. Disturbed soil under stairway

## 2.4 Archeological and Heritage Resources

The subject property was flagged as low archaeological risk; however, further assessment of archaeological risk is beyond the scope of this report. For further information please consult the Kootenay Lake Shoreline Guidance Document (KLP 2020).

Kootenay Lake is part of the traditional territory of the Ktunaxa, Sinixt and Syilx (Okanagan) First Nations and archaeological evidence is documented at multiple sites along the shoreline and mountain sides of Kootenay Lake. Archaeological Chance Find Procedures are provided in Appendix 3 for guidance on which protocols to follow in the event of a chance archaeological find to ensure that archaeological sites are documented and protected as required for compliance with the BC Heritage Conservation Act.

### 3 REGULATORY OVERVIEW

#### 3.1 Riparian Area Protection Regulation (RAPR) Review

The 30 m WDP setback from the natural boundary of Kootenay Lake was compared with the Riparian Area Protection Regulation (RAPR) criteria by conducting a detailed assessment of the subject property in order to calculate the Streamside Protection and Enhancement Area (SPEA) setback. Results for the Zones of Sensitivity (ZOS) and SPEA are presented in Table 2 and Appendix 2. As per the RAPR, the SPEA from the natural boundary of Kootenay Lake is 15 m.

Table 1. Results of detailed RAPR assessment for Kootenay Lake.

Feature Type	SPVT <sup>1</sup>	Zones of Sensitivity			SPEA <sup>3</sup>
		LWD <sup>2</sup>	Litter fall	Shade	
Kootenay Lake	TR	15 m	15 m	4-8 m	15 m

<sup>1</sup> SPVT: site potential vegetation type (TR-tree)

<sup>2</sup> LWD- large woody debris

<sup>3</sup> SPEA- streamside protection and enhancement area

#### 3.2 Kootenay Lake Shoreline Management Guidelines

The Kootenay Lake Foreshore Integrated Management Planning (FIMP; Schleppe and McPherson 2022), the Foreshore Inventory Mapping (FIM; KLP 2023) and the Kootenay Lake Shoreline Guidance Document (KLP 2020) were used to help determine site-specific risks for riparian and aquatic habitat, Ktunaxa Nation cultural values, and archaeological resources along the shoreline (Table 2). The property is within FIM segment 71. The aquatic habitat index rating is listed moderate here because of the high value juvenile rearing habitat. Based on the Activity Risk Matrix (Table 3a Shoreline Guidance Document KLP 2022), the activity performed within the riparian area is not a listed activity; therefore, at this time has 'no risk rating' associated with it.

Table 2. Aquatic and archaeological risk results (FIMP 2022)

Aquatic Habitat Index Rating (AHI)	Aquatic Sensitivity	Archaeological Risk	Enhanced Engagement Required (Work below HWM)
Moderate	Sensitive	Low	No

### 4 IMPACT ASSESSMENT

The impact assessment considered the existing site conditions and construction of the stairway. Effects of the stairway development within the SPEA include loss of potential tall shrub and tree habitat within the stairway footprint (~34 m<sup>2</sup>) and minor soil disturbance during the construction causing a potential pathway for erosion and non-native plant establishment to occur.



The stairway is elevated approximately 0.5-1 meter above the ground and utilizes steel grating as the decking material, which allows light and rainfall to penetrate through for the benefit of vegetation growth. This design also provides passage underneath for small animals. Larger mammal migration is not expected to be greatly impacted as migration to and from the foreshore can be navigated along either side of the stairway, along the beach and vegetated area below the stairway and the flat area above the stairway.

The property owner chose an appropriate alignment for the stairway along the existing foot path to minimize the impact on riparian vegetation. Effects to fish and fish habitat are expected to be negligible due to the small footprint of the development.

Considering the relatively small overall footprint of the project, any adverse effects on the SPEA are expected to be negligible.

## **5 MEASURES TO PROTECT THE INTEGRITY OF THE SPEA**

This section provides measures to protect the integrity of the SPEA as described in the RAPR, as well as recommended best management practices.

### **5.1 Danger Trees**

No danger trees were identified within the SPEA; however, a danger tree assessor was not retained.

### **5.2 Windthrow**

No windthrow risk indicators were observed. Further assessment of windthrow risk is beyond the scope of this report, and any such assessment should be led by a Registered Professional Forester (RPF).

### **5.3 Slope Stability**

No slope stability hazard indicators were observed during the site visit. Further assessment of geotechnical hazard is beyond the scope of this report, and any such assessment should be led by a P.Geol. or P.Eng.

### **5.4 Protection of Trees and Vegetation in the SPEA**

It is recommended that no further vegetation removal within the SPEA is conducted.

### 5.5 Encroachment

Additional development on the site should occur outside of the SPEA (see Appendix 2). If future development within the 30 m WDP is proposed, a new WDP application will be required prior to any construction.

### 5.6 Sediment and Erosion Control

To help prevent erosion of exposed soils under the stairway, disturbed soils shall be reseeded with a native riparian seed mix blend (Refer to Section 6).

### 5.7 Stormwater Management

There are no stormwater management concerns.

### 5.8 Floodplain Concerns

There are no floodplain concerns observed on the subject property.

### 5.9 Fish and Wildlife Protection

There are no further measures required to protect fish or wildlife. The stairway is located on a steep embankment, is elevated off the ground and allows wildlife to traverse the area.

### 5.10 Invasive Plant Management

To help prevent the establishment of invasive species, disturbed and exposed soil under and around the stairway shall be re-seeded with a native riparian seed mix. Invasive weeds should be removed by hand if they become established. Invasive weed disposal will involve double bagging the plants and disposing at a landfill facility.

## 6 MITIGATION PLAN

The Shoreline Management Guidelines for Kootenay Lake outlines general principles for shoreline development in order to achieve a “No Net Loss” of habitats present. The principle is achieved by applying the following priority sequence of mitigation options: 1. *Avoidance* of environmental impacts; 2. *Minimization* of unavoidable impacts; 3. On-site *restoration*; and 4. *Offset* residual impacts that cannot be minimized through compensation (KLP 2018).

The proposed development within the SPEA has demonstrated the principle of “*Minimization*”. The SPEA on the property remains mostly undisturbed with exception to the ground disturbance below and directly



## 5324 Amundsen Road – Riparian Assessment

around the stairway. Disturbed soils shall be reseeded with the following recommended native riparian seed blend (Table 3) both under and around the stairway. In addition, if invasive weeds are observed they shall be managed accordingly (Section 5.10). Additional monitoring and/ or post inspection are not proposed.

Table 3. Native riparian seed blend.

<b>Native Riparian Blend 1</b>	<b>% weight</b>	<b>% by species</b>
slender wheatgrass	25.0%	18%
streambank wheatgrass	25.0%	18%
fringed brome grass	24.7%	9%
northern wheatgrass	20.0%	14%
sheep fescue	3.0 %	10%
tufted hairgrass	1.0 %	11%
fowl bluegrass	1.0 %	9%
yarrow	0.3 %	3%

## 7 CONCLUSION

There are minimal biological impacts associated with the authorization of the stairway located within the SPEA. Provided that measures to protect the SPEA are followed, any negative impacts from the proposed authorization of the stairway are anticipated to be minimal.

Sincerely,



Fiona Lau, BTech., ASCT  
[fiona@masseenvironmental.com](mailto:fiona@masseenvironmental.com)

Reviewed by:



Ico de Zwart, PChem, RPBio  
Masse Environmental Consultants

## 8 REFERENCES

- [BC]. 2019. *Riparian Areas Protection Regulation*. B.C. Reg. 178/2019, Last amended February 5, 2021 by B.C. Reg. 11/2021. Victoria, British Columbia, Canada.
- [BC]. 2023. Habitat Wizard. BC Mapping Application. Available online at: <https://maps.gov.bc.ca/ess/hm/habwiz/>. Accessed on Nov 8, 2023
- [INaturalist]. 2023. Bioinventory observation application. Available online at: <https://www.inaturalist.org/observations>. Accessed on Nov 8, 2023
- Kipp, S. and Callaway, C. 2002. *On the Living Edge. Your Handbook for Waterfront Living*.
- [KLP] Kootenay Lake Partnership. Ktunaxa Nation Council, Regional District of Central Kootenay, Ministry of Forests, Lands, and Natural Resource Operations, Ecoscape Environmental Consultants Ltd., Tipi Mountain Eco-Cultural Services Ltd. The Firelight Group Ltd., Wayne Choquette. 2020. *Shoreline Guidance Document – Kootenay Lake*. Prepared for Kootenay Lake Partnership.
- [KLP]. Kootenay Lake Partnership. 2023. *Kootenay Lake Shoreline Inventory Mapping Interactive Map*. Available online at: <http://kootenaylakepartnership.com/>
- [LTSA] Land Title and Survey Authority of British Columbia. 2023. *ParcelMap BC Mapping Application*. Available online at: <https://ltsa.ca/products-services/parcelmap-bc/>
- Mackillop, D. and Ehman, A. 2016. *A Field Guide to Site Classification and Identification for Southeast British Columbia: the South-Central Columbia Mountains*. Province of B.C., Victoria, B.C. Land Management Handbook 70.
- [MFLNRORD] BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development. 2019. *Riparian Areas Protection Regulation Technical Assessment Manual*. V 1.1. November 2019.
- [MoE] BC Ministry of Environment. 2014. *Develop with Care 2014. Environmental Guidelines for Urban and Rural Land Development in British Columbia*. Province of British Columbia. Victoria, British Columbia, Canada.

## 5324 Amundsen Road – Riparian Assessment

[RDCK] Regional District of Central Kootenays. 2016. Electoral Area 'D' Comprehensive Land Use Bylaw No. 2435, 2016.

[RDCK]. Regional District of Central Kootenay. N.D. A Resource for Kootenay Lake Living. Available online at:  
[https://www.rdck.ca/assets/Services/Land~Use~and~Planning/Documents/2021-04-20-KLDPA\\_Resource-V5.pdf](https://www.rdck.ca/assets/Services/Land~Use~and~Planning/Documents/2021-04-20-KLDPA_Resource-V5.pdf)

Schleppe, J.<sup>1</sup> , and S. McPherson<sup>2</sup> . 2022. Kootenay Lake Foreshore Integrated Management Planning. Prepared for Living Lakes Canada. Prepared by: Ecoscape Environmental Consultants Ltd.<sup>1</sup> , and Lotic Environmental Ltd.<sup>2</sup>



**APPENDIX 1. SITE LOCATION MAP**

# RDCK Map



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

## Legend

### Location Map

**5324 Amundsen Road  
Mirror Lake, BC**

### Map Scale:

1:144,413

Date: November 7, 2023



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.

**APPENDIX 2. SITE PLAN AND SPEA SETBACKS**





**Legend**

- Electoral Areas
- RDCK Streets
- Cadastre - Legal Parcels
- Address Points

**Site Plan**

5324 Amundsen Rd  
Mirror Lake  
BC

Map Scale:  
1:1,000



Date:  
November 7, 2023

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

The mapping information shown are approximate representations and should be used for reference purposes only.

The Regional District of Central Kootenay is not responsible for any errors or omissions on this map.



**LEGEND**

- Natural boundary (HWM)
- WDP setback (30 m)
- LWD and litterfall ZOS (15 m)
- Shade (4-8m)
- SPEA (15m)
- Stairway (~34 m<sup>2</sup>)

Kootenay Lake

Maxar

**APPENDIX 3. ARCHAEOLOGICAL CHANCE FIND PROCEDURES**





**KTUNAXA  
NATION**

Ktunaxa Nation Council  
7825 Mission Road  
Cranbrook, BC V1C 7E5  
tel: 250-489-2464  
fax: 250-489-2438

*visit us at:*  
[www.ktunaxa.org](http://www.ktunaxa.org)

### **Chance Find Procedures for Archaeological Material**

This document provides information on how a developer and/or their contractor(s) can manage for potential archaeological material discoveries while undertaking construction and/or maintenance activities. This document can provide assistance to in-field contractors in the identification of archaeological remains and the procedures to follow if a discovery is made. The discovery of human remains initiates a different course of action and is outlined separately.

Under the provincial *Heritage Conservation Act (HCA)*, archaeological sites that pre-date 1846 are automatically protected whether on public or private land. Protected sites may not be damaged, altered or moved in any way without a Section 12 or 14 Permit as issued through the *HCA*. It is illegal to collect or remove any heritage object from an archaeological site unless authorized to do so under permit.

#### **1. Activities occurring outside of known Archaeological Sites:**

When archaeological material is encountered outside of known archaeological site areas work in the vicinity must stop immediately no matter what type of material or feature has been identified. Alteration to an archaeological site can only occur under a Section 12 (Site Alteration Permit) or Section 14 (Heritage Inspection Permit) *Heritage Conservation Act* permit. Such permit applications should be prepared by a professional archaeologist.

If archaeological material is discovered during the course of construction activities:

- 1.1 **Stop Work:** Halt all work in the area of the discovery and safely secure the area. Contact the project manager or site foreman.
- 1.2 **Contact an Archaeologist:** An archaeologist should be contacted as soon as possible. For a list of qualified archaeologists in the area, the proponent is directed to the BC Association of Professional Consulting Archaeologists website: [www.bcapa.ca](http://www.bcapa.ca). The proponent may also wish to contact the Ktunaxa Nation Council's Archaeology Technician Nathalie Allard for direction (1-250-426-9549; [nallard@ktunaxa.org](mailto:nallard@ktunaxa.org)).
- 1.3 **Archaeologist provides guidance:** The archaeologist will direct the proponent on the next courses of action, which will include notifying the Archaeology

*Takisqnak*

*Taqam*

*Lower Kootenay*

*Tobacco Plains*



Branch and First Nations with interest in the area.

## **2. Activities Occurring within Known Archaeological Site Boundaries:**

Land altering activity within a previously recorded archaeological site must be conducted under a Section 12 HCA Site Alteration Permit (SAP), in some cases with an onsite archaeological monitor. It is common for additional archaeological material and features to be encountered during activities occurring within previously recorded archaeological sites. Minor finds (lithic flakes, diffuse charcoal or fire altered rock) may not require work to stop, however significant finds require a level of assessment by a professional archaeologist, and it is up to the onsite project manager to determine the level of significance based on criteria presented below.

### **2.1 Significant Cultural Finds that Require a Professional Archaeologist (described in detail in Section 4)**

- Intact archaeological features, which can include but are not limited to hearths, cultural depressions (e.g. cache pits, house depressions) and rock alignments or forms (e.g. tipi rings, cairns, blinds)
- Significant archaeological materials, which include but are not limited to, the presence of formed lithic tools (e.g. projectile point, microblade core, scraper), a dense concentration of lithic waste flakes, or artistic items
- Human Remains (described in detail in Section 3)

### **2.2 Archaeological Site Management Options**

- 2.2.1 **Site Avoidance:** If the boundaries of a site have been delineated, redesign the proposed development to avoid impacting the site. Avoidance is normally the fastest and most cost effective option for managing archaeological sites. Site avoidance could also be achieved through minimizing ground disturbance by looking for alternative constructive methods.
- 2.2.2 **Mitigation:** If it is not feasible to avoid the site through project redesign, it is necessary to conduct systematic data collection and analysis within the site prior to its loss. This could include surface collection and/or excavation. This work can be time-consuming and therefore expensive to conduct.
- 2.2.3 **Protection:** It may be possible to protect all or portions of the site which will be impacted through installation of barriers during the development period and possibly for a longer period of time. Methods for barrier construction could include fencing around site boundaries or applying

geotextile to the ground surface and capping it with fill. The exact method used would be site-specific.

### **3. Chance Find Procedures for Identified Human Remains**

Procedures in the event of the discovery of human remains during construction are covered in depth by an Archaeology Branch Policy Statement, found on their website at [www.for.gov.bc.ca/archaeology](http://www.for.gov.bc.ca/archaeology), and are summarized below.

- 3.1 Stop all construction activities immediately in the area of found or suspected human remains and contact the RCMP and/or Office of the Coroner.
- 3.2 The coroner must determine whether the remains are of contemporary forensic concern or archaeological/aboriginal.
- 3.3 If the remains are found to be of aboriginal ancestry then the next step involves the relevant First Nations collaboratively determining the appropriate treatment of those remains.

The key to respectfully dealing with ancient aboriginal remains is to involve the appropriate First Nations as early as possible in the process. However this must be done in a manner that does not interfere with the coroner's office ability to conduct their business in the manner that they see fit.

### **4. Site Identification Guide**

The following are characteristics typical to site types found within the Ktunaxa Traditional Territory.

#### **4.1 Artifact Scatters**

Lithic (stone) scatters from the production and maintenance of stone tools are the most common type of archaeological site found in the region. Other materials that may be represented in artifact scatters are Fire Broken Rock (FBR), bone, antler and tooth.



Lithics: What to look for

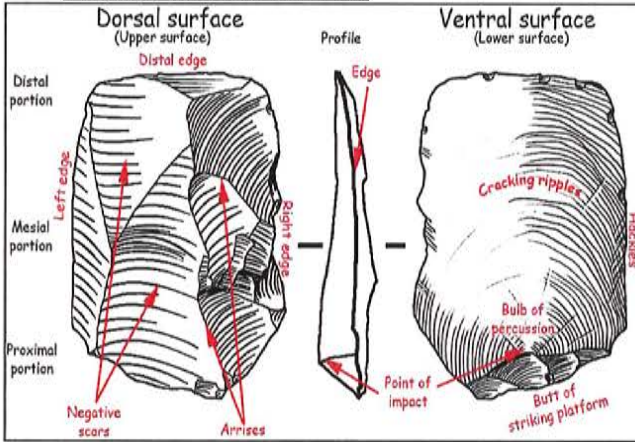


Image 1: Basic flake morphology



Image 2: Examples of lithic flakes



Image 3: Example of lithic scatter found on ground surface



Image 4: Example of formed lithic artifacts

*Nakisqnuk*

*Naqam*

*Lower Kootenay*

*Tobacco Plains*





Image 5: Ground stone artifacts

Bone, Tooth and Antler Artifacts: What to Look For

- Obvious shaping
- Incising
- Unnatural holes



*Zakisquuk*

*Zaqam*

*Lower Kootenay*

*Tobacco Plains*

## Image 6: Bone and Antler artifacts

### 4.2 Fire Broken Rock and Hearths

Fire-broken rock (FBR) results from the use of fire during cooking, heating and processing activities. FBR is often associated with other features including hearths and cultural depressions, but can also be thinly scattered in concentrations away from the features with which they were first associated.

When looking for FBR, note concentrations of roughly fractured rock from rapid heating and cooling, rock showing signs of burning or oxidation and/or reddening or blackening of surrounding matrix.

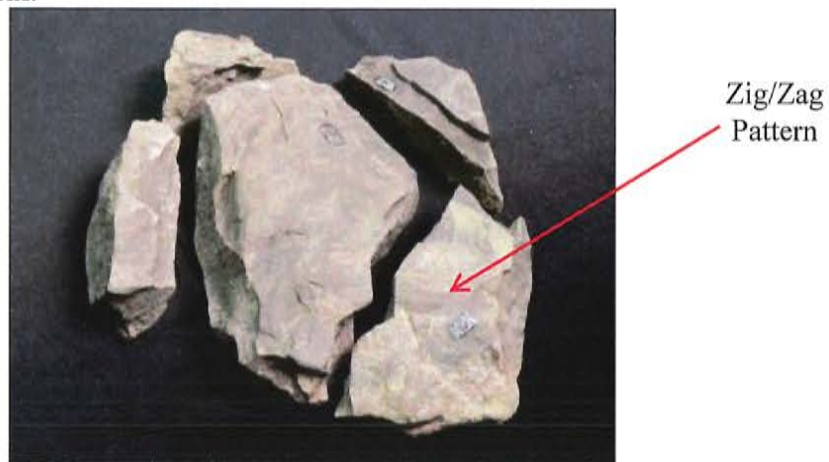


Image 7: Example of FBR; note the zig/zag pattern of breakage common to FBR. A hearth feature is evidence of a fire pit or other fireplace feature of any period. Hearths were used for cooking, heating, and processing of some stone, wood, faunal, and floral resources and may be either lined with a wide range of materials like stone or left unlined. Occasionally site formation processes (e.g., farming or excavation) deform or disperse hearth features, making them difficult to identify without careful study.

Hearths: What to look for

- FBR
- reddening or blackening of the associated soil/sediment
- charcoal
- layering of FBR and charcoal, and
- depressions in the earth associated with FBR, reddened or blackened matrix and charcoal.

*Nakisqnuk*

*Naqam*

*Lower Kootenay*

*Tobacco Plains*



Image 8: Example of a hearth uncovered along the wall of an excavation unit  
4.3 Cultural Depressions

Any depression seen on the ground surface that appears to have been excavated by man can be a cultural depression and have archaeological significance. These “pits” were dug for a variety of reasons such as for food storage, cooking or as a base for a dwelling. They can range in size from 1m across to 7-10m across, and are usually found associated with other artifacts such as FBR and lithic scatters.

To identify a cultural depression, look for:

- Subtle to deep scours on the ground surface that are circular to rectilinear in shape
- A raised rim along the edge of a depression
- Depressions associated with artifacts and FBR
- Depressions associated with fire reddening and blackening of the matrix

*Paleoquack*

*Pagam*

*Lower Kootenay*

*Tobacco Plains*





Image 9: Example of a large cultural depression in a natural setting

#### 4.6 Rock Alignments

There are several types of rock alignments that occur within the culture area, which include tipi rings, medicine wheels, cairns and blinds. When attempting to identify rock alignments, look for a group of rocks that look purposefully placed as in a circle, pile or line; isolated groups of rock that do not seem to belong to that landscape; and/or rocks which form a pattern.



Image 10: Example of a Cairn or piling of rocks



Image 11: Example of a tipi ring in a natural setting

*Nakisqnuuk*

*Naqam*

*Lower Kootenay*

*Tobacco Plains*



