



**REGIONAL DISTRICT OF CENTRAL KOOTENAY**  
**DEVELOPMENT PERMIT**  
**DP2111Hn (Jobin & Joines)**

Date: September 27, 2021

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

1. This Development Permit is issued to Ormond Jobin & Kimberly Joines of Derosa Drive, Rosebery Electoral Area 'H', 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 9 DISTRICT LOT 298 KOOTENAY DISTRICT PLAN 10379 (PID 012-938-891) 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 a 'Watercourse Development Permit Area' pursuant to the Area 'H' Slokan Lake North Official Community Plan Bylaw No. 1967, 2009 as amended.
5. The Permittee has applied to the Regional District of Central Kootenay to drill a water well on the said lands. 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 residential purposes.
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 of this Development Permit. Furthermore, the Permittee is hereby advised of the following requirements:
  - 6.1 Development is authorized in accordance with the terms described in the report titled 'Riparian Assessment, Water Well Installation in Rosebery BC, Lot 9 Derosa Drive Rosebery, British Columbia dated June 9<sup>th</sup>, 2021 and attached to this permit as Schedule 3. Conditions of the permit are identified in Section 5.2 and Section 6 of the report and are categorized as follows:
    - 6.1.1 A Qualified Environmental Professional will be on site at the start of the drilling to assess the site for the presence/absence of species at risk and to ensure there are no construction impacts to the riparian area and that the measures to protect the SPEA are implemented and maintained.
    - 6.1.2 Erosion prevention and sediment control; sediment control measures will be installed as prescribed by the QEP prior to the start of work or as soon as possible when potential erosion control issues arise as identified in Section 5.2.2 of the report.

- 6.1.3 Equipment and operation movements: general equipment operations and movement mitigation measures will be incorporated into all activities, for the duration of the drilling activities. Construction will adhere to the Best Management Practices (BMPs) as identified in Section 5.2.3 of the report.
  - 6.1.4 Earthwork activities shall adhere to relevant regulatory requirements and shall adhere to the measures identified in Section 5.2.4 of the report.
  - 6.1.5 Construction waste will be managed as identified in Section 5.2.5 of the report.
  - 6.1.6 Storage and handling of fuel and hydrocarbon products shall adhere to the Best Management Practices identified in Section 5.2.6 of the report.
  - 6.1.7 Invasive plant prevention and management will adhere to the recommended mitigation measures identified in Section 5.2.7 of the report.
  - 6.1.8 Spill prevention and emergency response best practices will be followed in accordance with Section 5.2.8 of the report.
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.

*S Sudan*

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Sangita Sudan, General Manager of Development Services

October 4, 2021

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Date of Approval (date of review and approval)

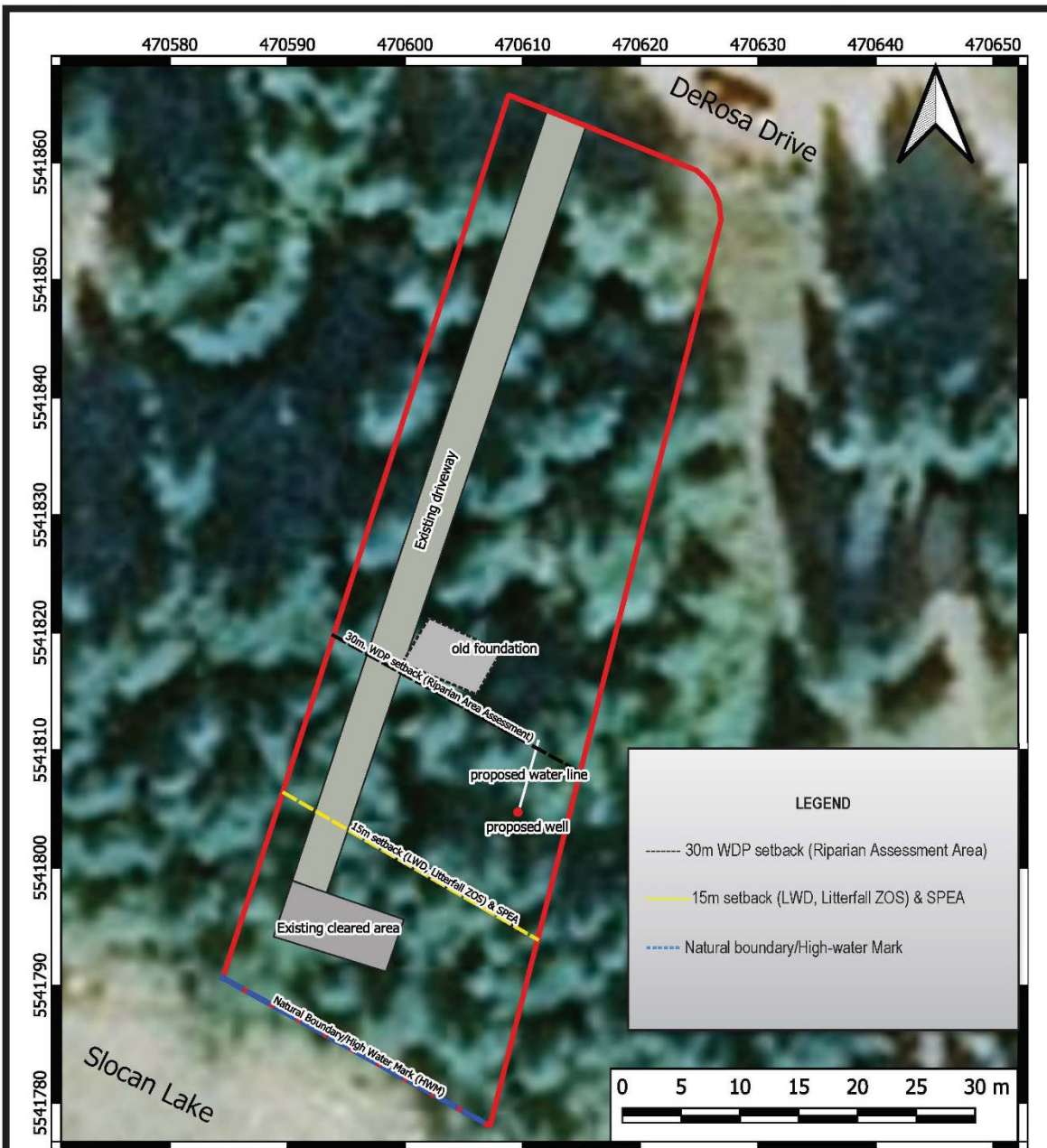
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Date of Issuance

**Schedule 1: Subject Property**



Schedule 2: Site Plan



**LOT 9, Rosebery B.C.**

Data Sources: Lot 9 Boundary from Front Counter B.C. cadastre  
Image: Bing Virtual Earth  
June 7, 2021

**Schedule 3: Riparian Assessment**



# Riparian Assessment

## Water Well Installation in Rosebery, BC

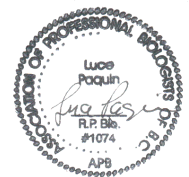
Lot 9, DeRosa Drive, Rosebery, British Columbia



Rev. 0.0  
June 9<sup>th</sup>, 2021

Prepared for:  
**Ormond Jobin and Kimberly Joines**  
296 Fullmoon Road, Rosebery  
BC, V0G 1S1

Prepared by:  
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BC, V0G 1S0



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**APPENDICES**

APPENDIX A                      SLOCAN LAKE NORTH ELECTORAL AREA “H” OFFICIAL COMMUNITY PLAN /DEVELOPMENT PERMIT AREA  
 APPENDIX B                      RDCK WILSON CREEK FLOODPLAIN MAP

## 1 BACKGROUND

Galena Environmental Ltd (Galena) was retained by Ormond Jobin and Kimberly Joines (“the Owners”) to carry out a Riparian Assessment on their Slocan Lake waterfront property located in Rosebery, British Columbia. The Owners intend to install a water well on the vacant lot.

The lot and the two adjacent lots to the north are the product of a subdivision conducted during the 70s by the previous owner. The lots are approximately 20m wide by 70m long. Since these lots are relatively small, the concern has always been to ensure the required 30m distance between well-sites and septic fields. In order to facilitate the drilling of wells, adjacent lot owners have agreed to install their septic fields at the upper end of their lots, adjacent to DeRosa Drive, thus making it possible to drill wells closer to the center of the lot.

The proposed well location, however, is situated within 30m of the high-water mark, also called Riparian Assessment Area (RAA) under the Riparian Area Regulation (RAR). As per the RAR, under the Regional District of Central Kootenay, any type of construction activity proposed within the RAA triggers a Watercourse Development Permit (WDP).

A site meeting was held on May 17<sup>th</sup>, 2021, between the Owners and Luce Paquin, R.P. Bio. of Galena Environmental Ltd to identify the scope of the proposed project, the environmental concerns and to determine the most effective construction options.

The present riparian assessment was conducted within the 30m setback from the high water-mark and evaluates the existing site conditions, identifies habitat values, assesses potential environmental issues and offers recommendations for the construction of the Project. The present report adheres to the Riparian Area Protection Regulation (RAPR) regulatory framework and general Best Management Practices (BMPs) related to the project type.

### 1.1 Acknowledgement

This report has been prepared by Luce Paquin, MSc., RP. Bio., P. Biol. and reviewed by Sara Bonar, BSc, RP Bio.

I, Luce Paquin, hereby certify that:

- a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation 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 Regulation.

## 2 PROJECT IDENTIFICATION

### 2.1 Project Location and Legal Description

The site is located in Rosebery in southern British Columbia, on the east shore of Slokan Lake. Sole access is via Highway 6N and DeRosa Drive in Rosebery. The Site location and legal description are described in Table 1.

Table 1: Site legal description and georeferenced information

INFORMATION	LEGAL DESCRIPTION
Lot #	Lot 9
Division	District Lot 298
District	Kootenay District Plan 10379
PID	012-938-891

The Site is bounded by Slokan Lake to the west and northwest; Rosebery and residential areas to the east and south. Figure 1 shows an overview of the property.

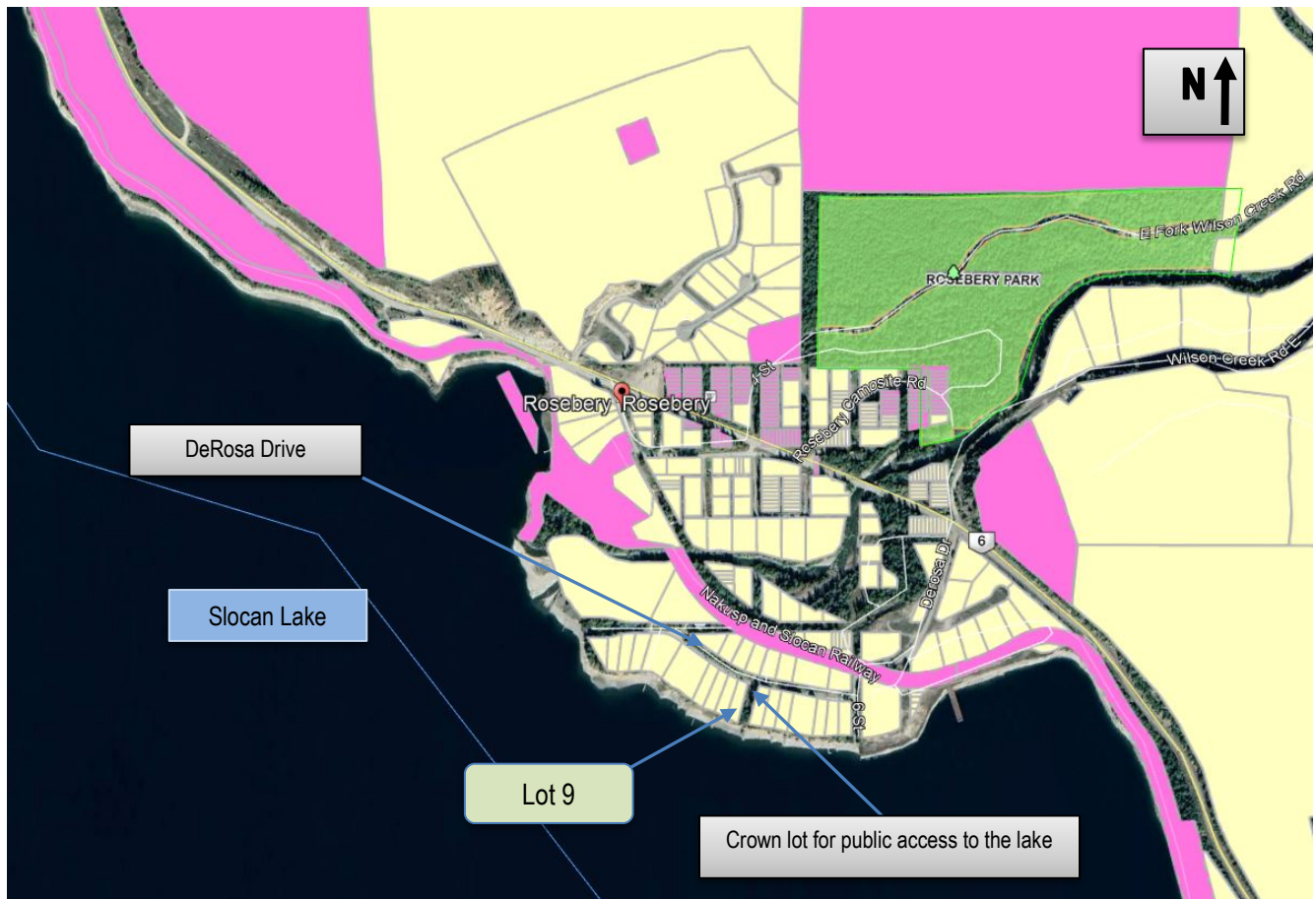


Figure 1: Overview of Lot 9 in Rosebery, BC

The Lot is located within the Central Kootenays and the Administrative and Physiographic setting can be found in the table below.

*Table 2: Project area administrative and physiographic setting<sup>1</sup>*

Description	Project Area Setting
Location	Slocan Lake
<b>Administrative Boundaries</b>	
Regional District	Central Kootenay
Natural Resource District	Selkirk
Natural Resource Region	Kootenay-Boundary
Natural Resource Area	South
FLNRORD Region	Nelson
<b>Ecosystem Classification</b>	
Ecozone	Montane Cordillera
Ecodomain	Humid Temperate
Ecodivision	Humid Continental Highlands
Ecoprovince	Southern Interior Mountains
Ecoregion	Columbia Mountains & Highlands
Ecosection	Central Columbia Mountains
Biogeoclimatic Zone	Interior Cedar-Hemlock (ICH)
Subzone	Moist warm (mw)
Variant	2
<b>Biogeoclimatic Zone Characteristics</b>	
Elevation zone	540m
Mean Annual Rainfall	950mm

<sup>1</sup>: Ministry of Environment, Ecosystem Information Section, 2011

## 2.2 Proposed Development

Activities proposed on the property involve the drilling of a well within 30 m of the Watercourse Development Permit Area (WDP) (also called Riparian Area Assessment) of Slocan Lake. The well site will be approximately located 6 m from the upland 30m boundary and a trench will be excavated from the well to the upland end of the lot to install a water line. The drill diameter will be approximately 6" and the diameter of the water line 1" to 1.5". The approximate well location will be 11 U 470610 E, 5541805 N.

JR Drilling, from Cranbrook, will be the drilling consultant. The drill will be the only required equipment onsite. Excavated soil will be temporary stored onsite during drilling and afterwards spread out on the property, outside the Riparian Assessment Area (Watercourse Development Permit Area under the RDCK). The drill is an air drill, requires no chemical and is equipped with coolers for compressors. A small excavator will dig the short trench for the waterline.

As of today, the Owners have no building or sewage plans in place and are aware that any future developments to occur on the lot will require another riparian assessment and watercourse development area permit.

## 2.3 Existing Site Conditions

The property is a vacant forested lot with a narrow dirt driveway and a small cleared area (4m x 4m) at the upper end. Construction of the driveway and clearing of the open area were conducted by the previous owner (Figure 2).

A partial old house foundation is located in the center of the lot. The foundation is made of stone and dates back to the 30's or 40's. The trees on the lot are mainly second growth and mature coniferous.



Photo 1: Proposed project (northwest view)



Photo 2: Trees within the SPEA (southwest view)



Photo 3: Trees growing in old house foundation (east view)



Photo 4: Logs placed as protection around the old house foundation (southwest view)



Photo 5: Driveway and old house foundation (east view)

Figure 2: Existing site conditions

## 2.4 Current Land Use, Utilities, Property Infrastructures

The property is currently used as a camping area for the Owners. A small camper trailer sits in the open area of the lot (Figure 3). The site has no building and no outhouse. A recently installed hydroelectric residential connection is located beside DeRosa Drive.

## 3 REGULATORY FRAMEWORK & RELEVANT STANDARDS

Under the Regional District of Central Kootenay (RDCK) of the Slocan Lake Electoral Area “H”, development within 30m of the High-Water Mark (HWM) or the natural boundary of a waterbody is subject to the Slocan Lake North Portion of Electoral Area “H” Official Community Plan Bylaw No. 1967, 2009 and the Regional District of Central Kootenay (RDCK) Watercourse Development Permit. Residential, commercial and industrial development activities above the HWM also require authorization under the provincial Water Sustainability Act. This riparian assessment also adheres to the assessment report guidelines under the BC Riparian Areas Regulation.

### 3.1 Applicable Legislation

This project will follow the applicable legislation related to riparian protection below:

- British Columbia *Riparian Areas Regulation*;
- British Columbia *Water Sustainability Act*;
- Federal Fisheries Act;
- Federal Migratory Birds Convention Act;
- Federal Species at Risk Act;
- Provincial Wildlife Act;
- Provincial Heritage Conservation Act;
- Federal Species at Risk Act;
- Provincial Spill Reporting Regulation; and
- Weed Control Act

### 3.2 Applicable Guidelines Documents

This project will follow the applicable guidelines related to riparian protection below:

- Slocan Lake North Portion of Electoral Area “H” Official Community Plan Bylaw No. 1967, 2009 (Appendix A);
- General BMPs and Standard Project Considerations (Ministry of Environment);
- On the Living Edge: Your Handbook for Waterfront Living;
- Develop with Care. Environmental Guidelines for Urban and Rural Land Development in British Columbia;
- Slocan Lake Foreshore Fish & Wildlife Habitat Assessment (Galena Environmental Ltd, 2011.);
- Shoreline Management Guidelines For Fish and Fish Habitat – Slocan Lake, Regional District of Central Kootenay and Ecoscape Environmental Consultants, 2014;
- Guidelines and Best Management Practices (BMP), BC Ministry of Environment;

- Riparian Restoration Guidelines, BC Ministry of Environment; and
- Riparian Factsheet No. 6 – Riparian Plant Acquisition and Planting.

### 3.3 Streamside Protection and Enhancement Area

A Detailed Riparian Assessment of the property was conducted to determine the Streamside Protection and Enhancement Area (SPEA) setback and whether the Riparian Assessment Area (RAA) or the Watercourse Development Permit Area (WDPA) aligns with the criteria listed in the Riparian Area Regulation (RAR).

Results from the Site Potential Vegetation Type (SPVT), the Zones of Sensitivity (ZOS) and the SPEA can be found in Table 3 and Figure 3. The three ZOS; the Large Woody Debris (LWD), the Litter Fall and the Shade were calculated based on the Riparian Area Regulation protocol, 15m perpendicular from the high water-mark. Both the LWD and the Litter Fall were plotted 15m inland from the high-water mark. The Shade result was “0” due to the southwest exposure of the lot. The 15m SPEA setback was determined based on the ZOS with the greatest setback.

Table 3: SPEA result from a Detailed RAPR Assessment

Feature Type	SPVT	Zones of Sensitivity (ZOS)			SPEA <sup>2</sup>	WDP <sup>3</sup> or RAA
		LWD <sup>2</sup>	Litter Fall	Shade		
Lake	TR <sup>1</sup>	15 m	15 m	0	15 m	30 m

1: TR-tree, 2: Large Woody Debris, Streamside Protection & Enhancement Area, 3: Watercourse Development Permit Area

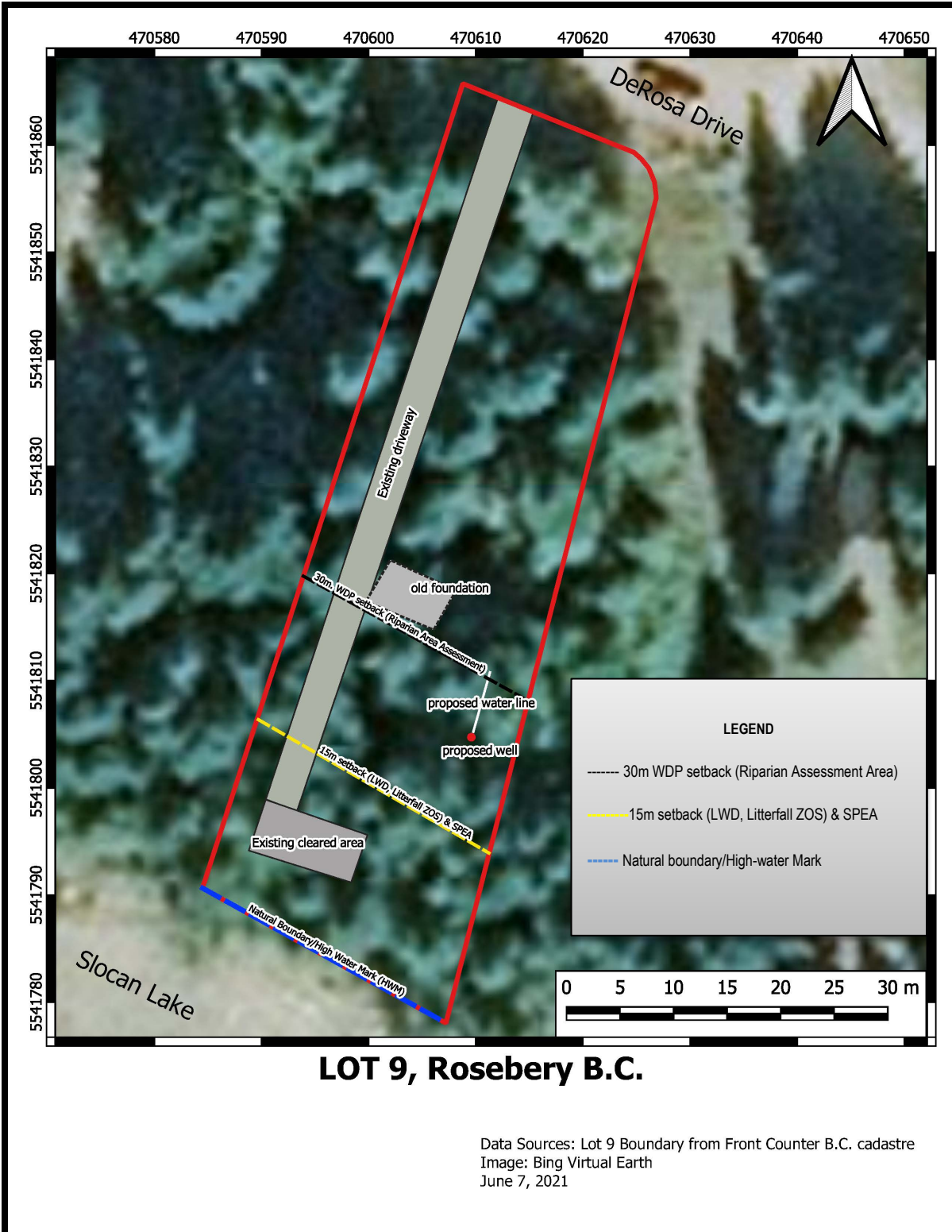


Figure 3: SPEA setback map



## 4 EXISTING RESOURCES

### 4.1 Fish

Slocan Lake (watershed code 340-047200 and waterbody identifier 00115SLOC) is a 39 km long, cold, oligotrophic lake that covers a surface area of 6908 ha. The lake has a mean depth of 171 m and a maximum depth of 298 m. The lake drains southward into the Slocan River. Several tributaries flow into Slocan Lake. The largest tributary, Wilson Creek, enters the lake approximately 450m north from the project site.

The property foreshore shows no signs of human disturbance. The foreshore substrate consists of a 50% cobble, 25% gravel, 23% sand and 2% boulders (Figure 4). The foreshore offers potential rearing habitat for fry and juvenile fish and the coarse woody debris offer fish cover (shelter areas) at high water levels.

A hand full of shrubs and mature trees such as paper birch, aspen and Douglas fir below the HWM offer shade for fish during the high water period. Some significant coarse woody debris were observed below the natural boundary.



Figure 4: Existing foreshore state at the project site

Slocan Lake supports a variety of fish species (Table 4), including several species of regional interest, such as rainbow trout (*Oncorhynchus mykiss*), kokanee (*O. nerka*), burbot (*Lota lota*), bull trout (*Salvelinus confluentus*), Westslope cutthroat trout (*O. clarki lewisi*) and the white sturgeon (*Acipenser transmontanus*).

An Aquatic Habitat Index (AHI) was created based on the assessment results conducted during the Slocan Lake foreshore assessment (Slocan Lake Foreshore Fish and Wildlife Habitat Assessment, Galena 2011). The AHI is a tool which rates the habitat values of a shoreline based on five parameters; biophysical attributes, fisheries, shoreline vegetation and shoreline modifications. The habitat rankings accorded by the AHI ranged from: Very Low, Low, Moderate, High, and Very High. The AHI rating for the subject site (Segment 16) was *Moderate Habitat Index* indicating that this segment of shoreline is estimated to possess relatively moderate rearing habitat for juveniles.

Table 4: Fish species present in Slocan Lake

COMMON NAME	SCIENTIFIC NAME	SPECIES STATUS
Bull Trout	<i>Salvelinus confluentus</i>	BC list: Blue-listed <sup>1</sup>
Burbot	<i>Lota lota</i>	BC list: Yellow-listed <sup>2</sup>
Cyprinids	Sp.	
Dace spp.	<i>Rhinichthys spp</i>	
Dolly Varden <sup>1</sup>	<i>Salvelinus malma</i>	BC list: Yellow-listed
Eastern Brook Trout	<i>Salvelinus fontinalis</i>	BC list: Exotic species
Kokanee	<i>Oncorhynchus nerka</i>	BC list: Yellow-listed
Lake Chub	<i>Couesius plumbeus</i>	BC list: Yellow-listed
Largescale Sucker	<i>Catostomus macrocheilus</i>	BC list: Yellow-listed
Mountain Whitefish	<i>Prosopium williamsoni</i>	BC list: Yellow-listed
Northern Pikeminnow	<i>Ptychocheilus oregonensis</i>	BC list: Yellow-listed
Peamouth Chub	<i>Mylocheilus caurinus</i>	BC list: Yellow-listed
Prickly Sculpin	<i>Cottus asper</i>	BC list: Yellow-listed
Rainbow Trout	<i>Oncorhynchus mykiss</i>	BC list: Yellow-listed
Redside Shiner	<i>Richardsonius balteatus</i>	BC list: Yellow-listed
Sculpin spp.	<i>Cottus spp.</i>	
Slimy Sculpin	<i>Cottus cognatus</i>	BC list: Yellow-listed
Torrent Sculpin	<i>Cottus rhotheus</i>	BC list: Yellow-listed
Westslope Cutthroat Trout	<i>Oncorhynchus clarki lewisi</i>	BC list: Blue-listed
White Sturgeon	<i>Acipenser transmontanus</i>	Slocan Lake population is red-listed <sup>3</sup>

1: Species with a special concern 2: Species at the least risk of being lost. 3: Species at risk of being lost (extirpated, endangered or threatened).

## 4.2 Birds

A visual survey of the forest and riparian area surrounding the project development was conducted during the site visits. Although the trees on the property provide foraging and nesting habitat for songbirds, no nests or wildlife habitat features that indicate regular use by birds (i.e. roosts) in mature tree were observed during the site visits. Although the forest within the riparian area has a high potential for songbird nesting, the project will occur in late summer or in the fall, outside the bird breeding season. A varied thrush (*Ixoreus naevius*), two American robins (*Turdus migratorius*) and a northern flicker (*Picidae C. auratus*) and two black-capped chickadees (*Poecile atricapillus*) were observed during the site visits.

### 4.3 Amphibians and Reptiles

The property is generally dry with some decayed coarse woody debris on soil and root cavities that can offer potential habitat for amphibians and reptiles. Lower grounds outside the riparian area and adjacent to DeRosa Drive may also provide good habitat for amphibians during rainy seasons such as spring and fall, though none were observed during the site visits. Cavities observed within the root system of some trees may offer some potential habitat for snakes during summertime.

### 4.4 Mammals

Browsed shrubs were observed on the foreshore area and shrubs and saplings on the property can provide suitable foraging habitat for mammals. Ungulates and bears may occasionally use the area to access the water; however no signs of droppings or browsing were observed. An American red squirrel (*Tamiasciurus hudsonicus*) nest was observed in a large Douglas fir within the riparian area.

### 4.5 Surrounding Vegetation and Riparian Area

Slocan Lake is situated in the Slocan Valley between the Selkirk Range to the east, and the Valhalla Mountain Range to the west. The lake is situated within the lower elevations Interior Cedar-Hemlock moist warm (ICHmw2) Biogeoclimatic Ecosystem Classification (BEC) zone. The upland ecosystem is characterized as being in the ESSF (Engelmann Spruce-Subalpine Fir) and the AT (Alpine Tundra) biogeoclimatic zones containing pockets of open forest.

The project site's riparian vegetation is primarily composed of second growth and mature Douglas-firs, Red western cedar, hemlock, and paper birch trees (Table 5). The understory includes willow sp., mountain alder, red-osier dogwood, common snowberry (*Symphoricarpos albus*). No invasive species were observed during the site visit.

Table 5: Riparian vegetation at the Project site

COMMON NAME	SCIENTIFIC NAME
<b>Trees</b>	
Douglas-fir	<i>Pseudotsuga menziesii</i>
Western red cedar	<i>Tsuga heterophylla</i>
Western Hemlock	<i>Thuja plicata</i>
Paper birch	<i>Betula papyrifera</i>
<b>Shrubs</b>	
Willow sp.	<i>Salix spp.</i>
Mountain alder	<i>Alnus incana</i>
Red-osier dogwood	<i>Cornus stolonifera</i>
Common snowberry	<i>Symphoricarpos albus</i>
<b>Herbaceous</b>	
Brome fescue	<i>Vulpia bromoides</i>
Fescue	<i>Festuca sp.</i>
Wild ginger	<i>Asrum caudatum</i>
Lady fern	<i>Athyrium filix-femina</i>
<b>Mosses &amp; Lichen</b>	
Reindeer lichen	<i>Cladonia rangiferina</i>

#### 4.6 Species at Risk

A 10 km buffer polygon around the site was used to query BC Conservation Data Center records for the potential for species at risk to inhabit or use the area (CDC IMap tool). Based on the query results, four occurrences of species at risk are known within this 10km polygon; the white sturgeon, the banded tigersnail, the pygmy slug and the western bumble bee (Table 6).

Table 6: Species at Risk within a 10km polygon from the project site

SPECIES AT RISK	SCIENTIFIC NAME	BCCDC SHAPE ID	COMMENTS
White sturgeon	<i>Acipenser transmontanus</i> (Upper Columbia pop.)	#36644	The sturgeon is listed endangered in British Columbia. The fish is rarely observed during warm weather in Slokan Lake since it inhabits deepwater areas.
Banded tigersnail	<i>Anguispira kochi</i>	#121782	Fourteen live and 10 dead banded tigersnails were found in 2008 near a residential area north of Wilson Creek and approximately 500m from the Project. The species is listed as Special Concern in BC. The snails were found in a deep leaf litter mixed with coarse woody debris. The species's key habitat requirements are forested areas with a secondary canopy with rocks and coarse woody debris.
Pygmy slug	<i>Kootenaia burkei</i>	#95944	<i>The snail was found</i> on the left (south) shore of Wilson Creek, approximately 1 km from the project site. The species is listed as Special Concern in British Columbia. The slug's key habitat requirements include high substrate moisture with abundant woody debris and leaf litter for shelter.
Western Bumble Bee	<i>Bombus occidentalis</i>	#126321	One female western bumble bee was observed in 2010 near Bonanza Creek, approximately 8km north from the project site. The species is blue-listed in BC. The bee key habitat is diverse and includes forested area, farmlands, urban areas, montane meadows and grasslands.

Drilling activities will not affect water quality in the lake since construction will only occur at the upland end of the riparian area, outside the SPEA where the ground is flat and dry. Therefore, white sturgeon habitat is unlikely to be affected.

Although the tree canopy composition fits the habitat for the Banded Tigersnail and the Pygmy Slug, both species prefer to inhabit damp forested grounds with coarse woody debris. The species are unlikely to be found at the dry project site where coarse woody debris are scarce. Equipment movement and drilling activities will be conducted outside areas that fit the species key habitat elements. The drill and excavator will be working from a disturbed small dry opening within the forested area.

The project area may offer pollinated plants for the Western Bumble Bee and some trees and woody interstices nesting areas for the species.

Given the time of year (late summer or early fall), and the scope of this assessment it is impossible to rule out the presence of species at risk on and near the property. A pre-construction environmental assessment will be conducted by the QEP to in case any of the snail, slug or bumble bee are onsite.

## 5 MEASURES TO PROTECT THE INTEGRITY OF THE SPEA

### 5.1 Environmental Hazard Assessment

#### 5.1.1 Danger Trees

A certified arborist was not retained to assess hazard trees in the SPEA. Some decaying trees were observed during the QEP's Riparian Assessment but at this time the Owners didn't demonstrate the need to remove the trees.

#### 5.1.2 Windthrow

A Certified Arborist was not retained to assess windthrow. The property and the neighboring lots have no evidence of recent windthrow events. No potential windthrow was observed during the QEP's Riparian Assessment. No increased risk of windthrow is expected on the property.

#### 5.1.3 Slope Stability

No slope stability hazard indicators were observed on the property. The property is flat with a light 12% slope near the HWM area. No signs of erosion were observed within the property and the rooting system of some second growth and mature trees provide foreshore stability.

#### 5.1.4 Protection of trees

The Owners have no intention to remove any trees or shrubs within the SPEA. Six trees will be removed from the riparian area to ensure safety during the drilling activities.

#### 5.1.5 Floodplain Concerns

There are no floodplain issues with this property. According to the 2019 RDCK Existing Flood Mapping Project, Wilson Creek floodplain map (Appendix B), the proposed project is located in a "very low" flood hazard rating.

#### 5.1.6 Encroachment

There will be no encroachment of the SPEA for the proposed project. All construction activities are expected to occur "in the dry" within the 15m riparian area east from the SPEA.

### 5.2 Environmental Protection & Best Management Practices (BMPs)

#### 5.2.1 Scheduling of the Drilling Activities

The drilling of the water well will occur during summer or fall 2021, during the dry season and is expected to last approximately one day.

#### 5.2.2 Erosion Prevention & Sediment Control

If required, sediment control measures will be installed around work areas where erodible ground is exposed and has the potential to leach into the lake and adversely impact water quality. Sediment control measures will be installed as prescribed by the QEP prior to the start of work or as soon as possible when potential erosion control issues arise. General measures for sediment and erosion control, which may be employed as required during construction, are as follows:

- Temporary material stockpiles will be placed as far as is practical from drainage channels;
- Sediment control features may include silt fences, and straw bales;
- Sediment and erosion control features will be functional at all times and maintained and monitored regularly until a stable condition is achieved; and

- Inspection of sediment control structures will be conducted after any significant rainfall occurs and any damaged devices repaired immediately.

### 5.2.3 Equipment & Operation Movements

General equipment operations and movement mitigation measures will be incorporated into all activities, for the duration of the drilling activities. Construction will adhere to the Best Management Practices (BMPs) as follows:

- The drill and the excavator will access the drilling area from the driveway and will not encroach on the SPEA;
- The drill and the excavator will encroach into the riparian assessment area as little as possible;
- The equipment will be regularly maintained and inspected. If problems are identified, the equipment will be shut down and repaired to prevent release of hydrocarbons into the environment;
- If required, the staging/storage area will be located near DeRosa Drive and the driveway;
- Any disturbance to the riparian area resulting from the operations of machinery will be restored prior to machinery leaving the site (i.e. rutting, soil compaction, etc.); and
- The drill and excavator will be equipped with a spill kit.

### 5.2.4 Earthworks

The principal concerns associated with earthwork are sediment-laden runoff issuing from the work area. Excavation, backfilling and grading in the riparian area shall be done in a manner that minimizes erosion and sedimentation transport into the lake. All earthwork activities shall adhere to relevant regulatory requirements. Other specific measures to be undertaken to minimize potential effects on aquatic habitat and resources are as follows:

- Excavated materials will only be stored east of the drill site;
- Temporary exposed soils will be immediately covered with a polyethylene sheet to prevent erosion and soil transport into the lake during rainy events;
- Excess soil and material temporarily stored onsite will be removed as soon as possible and disposed of inland and outside the riparian area;
- Excavation, backfilling and grading shall be done in a manner that minimizes potential for runoff; and
- Retain, where possible, all native vegetation.

### 5.2.5 Waste Management

Construction workers will be aware of and will adhere to the waste management practices onsite. All waste materials will be transported off-site by the construction contractor(s) for appropriate disposal. Anticipated waste may include plastic tarp, food waste, and debris from the construction such as rocks, branches, etc. The Project will adhere, but not be limited to, the waste Best Management Practices below:

- Food waste and domestic garbage from the construction site will be collected, stored and disposed of in a timely manner in order to reduce potential human/wildlife encounters; and
- In the event of a spill, contaminated soil will be temporarily disposed of onsite in plastic bins equipped with a lid.

### 5.2.6 Storage & Handling of Fuel & Hydrocarbon Products

A number of substances can be transported by sediments and runoff from construction sites. The following Best Management Practices associated with fuel and hydrocarbon products will apply:

- No large quantities of petroleum products, such as tidy tanks or refueling systems, will be allowed within the riparian area;
- Any chemicals and or petroleum products should be stored in a weather-resistant shelter with appropriate containment measures if possible;
- Store any waste fuel or used sorbent materials securely in a spill-proof container and discard at an approved facility when removed from site;
- Fuel containers will be kept outside the riparian area sitting in a spill tray;
- No petroleum products, other than those contained within the machinery, will be allowed on the riparian area; and
- Where possible, all mechanical emergency repair activities should be undertaken in a predefined area. The area is to be located away from the riparian area. In the event that repairs have to be undertaken within the riparian area, spillage and drainage of materials into the foreshore must be prevented.

### 5.2.7 Invasive Plant Prevention and Management

New drilling activities on the property can potentially introduce invasive plant species. The following mitigation measures will be implemented to prevent the spread of invasive plant species within the riparian area and the SPEA:

- Equipment will be cleaned prior to entering the site;
- Vegetation clearing and soil disturbance should be kept to a minimum;
- After construction, the Owners should monitor the property for the establishment of invasive species. If invasive species are found, the Owners should remove the plants by hand and dispose of them; and
- Exposed soils will be reduced to a minimum during construction;

### 5.2.8 Spill Prevention & Emergency Response BMPs

#### 5.2.8.1 Spill Prevention

The purpose of a Spill Prevention and Response Plan is to provide a course of action that will enable a prompt and orderly response to spills and incidents that may occur during construction. To prevent and control spills or unplanned releases of hazardous substances the BMPs below will be implemented:

- Spill trays or sorbent pads will be used for capturing drips when transferring liquids between containers;
- Project will ensure adequate and appropriate spill response materials and equipment available for use relative to the scope of work;
- Fueling of equipment should be conducted outside the riparian area at a pre-designated location;
- Any soil contaminated by small leaks of fuel, oil or grease from equipment (including hydraulic hose ruptures and loss of fluid) shall be disposed of as per policies and guidelines and at an approved contaminated soil disposal facility;
- Containment trays will be used for stationary fuel storage remaining onsite; and
- All workers will understand and follow the 6 Basic Steps of Spill Response (below).

<b>6 Basic Steps of Spill Response</b>	
1. Assess the risk:	<ul style="list-style-type: none"> <li>✓ Warn others in the area.</li> <li>✓ Eliminate all sources of ignition.</li> </ul>
2. Call for assistance:	<ul style="list-style-type: none"> <li>✓ Call anybody onsite for physical assistance.</li> <li>✓ Call the Environmental Monitor.</li> </ul>
3. Stop the flow:	<ul style="list-style-type: none"> <li>✓ Close valves, shut off pumps, plug leak.</li> <li>✓ Place content of a leaking container into a secondary containment.</li> </ul>
4. Contain the spill:	<ul style="list-style-type: none"> <li>✓ Block any escape points such as drainage ditches, sloppy beach.</li> <li>✓ Contain spill with sorbents, earth, sand or other non-combustible materials.</li> </ul>
5. Clean-up the spill:	<ul style="list-style-type: none"> <li>✓ Collect all used sorbent material using clean non-sparking tools.</li> <li>✓ Place all waste materials in labeled, sealed containers or plastic bags.</li> <li>✓ Use appropriate waste contractor for disposal.</li> </ul>
6. Report:	<ul style="list-style-type: none"> <li>✓ Environmental Monitor must complete Incident Reporting.</li> <li>✓ Spills in a waterbody (lake, river, wetland) must be reported to the Regulatory Agencies.</li> <li>✓ Determine the requirement for external reporting based on the nature and details of the release, as per the Provincial and Federal Legislation and Guidelines.</li> </ul>

**5.2.8.2 Spill communication and reporting**

If the spill is discharged to water or if the volume spilled is equal to or greater than the minimum quantity outlined in Table 7, the QEP will initiate the verbal notification to the Regulatory Agencies and will produce a written Environmental Incident Report (EIR) to the related governmental agencies. The EIR will be completed as soon as possible after the spill has been controlled, preferably within 24 hours. An investigation into the cause and remediation of the spill will be completed, as required, depending on the severity of the incident.

All spills meeting or exceeding the thresholds in the table below must be reported externally to the Provincial and/or the Federal Agencies listed in Table 8. All spills to water will also be reportable to the government (externally reportable). Under these levels, all other spills will be documented in the Closure Report.

*Table 7: External reportable level requirements*

<b>External reportable Level Requirements (L)</b>
Antifreeze 5 L Diesel Fuel 100 L Gasoline 100 L Greases 100 L Hydraulic Oil 100 L Lubricating Oils 100 L Paints and Paint Thinners 100 L Solvents 100 L



Table 8: Contact information for externally reportable spills

Regulatory Agency	Reporting Requirements	Contact Information
Provincial Emergency Program (PEP)	Spills that meet or exceed PEP thresholds	PEP 1-800-663-3456
Fisheries and Oceans Canada	Any spills into waters frequented by fish	1-800-268-6060
Fire, police and ambulance service	Emergency assistance	911

### 5.2.8.3 General Spill Containment and Clean-up Actions

Spill containment will depend on the physical and chemical properties of the substance:

- If solid, cover material with plastic;
- If liquid contain the spill using booms or other materials designed for this purpose;
- Clean up and recover material using protective gear. Material recovery may utilize pumps or sorbets as appropriate for type of spill; and
- Implement environmental monitoring of water quality, if applicable.

Plastic bags will be stored in the spill kit for temporary storage of soiled material. The bags will be placed in a pickup or a designated area for transport to an appropriate waste disposal facility. Contents of a spill kit must be replenished immediately following its use.

## 6 CONSTRUCTION ENVIRONMENTAL MONITORING

The monitoring schedule for the development will include a site visit by the QEP at the start of the drilling to assess the site for the presence/absence of species at risk and to ensure there are no construction impacts to the riparian area and that the measures to protect the SPEA are implemented and maintained. The QEP will inform workers of the implementation of the Best Management Practices listed in this report. It will be the responsibility of the clients to notify the QEP prior to commencement of the drilling activities.

## 7 CONCLUSION

The Project has a relatively small footprint and although encroachment into the SPEA will not occur, drilling activities and trenching will encroach into the riparian area. The drilling of the water well will pose no risk to water resources as the construction activities will be conducted in the late summer or early fall, during the dry seasons and at low water levels, keeping the construction activities well away from the water.

The construction of the proposed project will have negligible impacts on the surrounding environment providing that the mitigation strategies outlined in this report are followed. The project will only occur within the first 7-10 m of the riparian area. The loss of riparian vegetation will be negligible.

The habitat located within the footprint of the project does not contain unique vegetation ecology and the area has not been found to contain unusually high or unique wildlife habitat. None of the species at risk listed for the area are likely to be adversely affected by this project because key habitat elements and life history requirements were not found.

## 8 CLOSURE

This report has been prepared by a Registered Professional Biologist (R.P. Bio.) and a Qualified Environmental Professional (QEP) for and at the expense of the Owners of the subject property. The R.P. Bio. has not acted for or as an agent for the Regional District of Central Kootenay. This report has been prepared for the Regional District of Central Kootenay as a pre-condition to the issuance of a Watercourse Development Permit.

I, Luce Paquin, hereby certify that I am qualified to carry out this assessment; and that the assessment methods under the Regulation have been followed; and that, in my professional opinion:

- (i). If the development is implemented as proposed, or;
- (ii). If the streamside protection and enhancement areas identified in the report are protected from the development; and
- (iii). If the developers implement the measures identified in the report to protect the integrity of those areas from the effects of the development, then there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area.

**Prepared by:**



Luce Paquin, MSc., R.P. Bio. #1074, P.Biol., #4624, RAPR Certified

## 9 REFERENCES

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- Regional District of Central Kootenay. 2011. Slocan Lake North Portion of Electoral Area “H”, Official Community Plan Bylaw No. 1967, 2009

## APPENDICES

- APPENDIX A**            **Slocan Lake North Electoral Area “H” Official Community Plan /Development**
- APPENDIX B**            **Permit Area RDCK Floodplain Map for Rosebery Area**

**APPENDIX A            RDCK Floodplain Map for Rosebery Area**

## 19.0 DEVELOPMENT PERMIT AREAS

### Background

The OCP may designate Development Permit Areas under the authority of local government legislation. Unless otherwise specified, a development permit must be approved by the Regional Board prior to any development or subdivision of land within a designated Development Permit Area.

Development Permit Areas allow for implementation of special guidelines for the protection of the natural environment, protection from hazardous conditions, for revitalization of designated areas, or to guide the form and character of development within the Slocan Lake North Plan area.

Where land is subject to more than one Development Permit Area designation, a single development permit is required. The application will be subject to the requirements of all applicable Development Permit Areas, and any development permit issued will be in accordance with the guidelines of all such Areas.

### Development Permit Area #1: Watercourse Development Permit (WDP) Area

#### Category

The WDP area is designated under Section 919.1(1) (a) of the *Local Government Act* and applicable provisions of the *Community Charter* for the protection of the natural environment, its ecosystems, and biological diversity.

#### Area

The WDP area is comprised of:

1. Riparian assessment areas (Figure 1) for fish and wildlife habitat and drinking water, which include all watercourses and adjacent land:
  - a. within 30 metres of the high water mark of a watercourse;
  - b. within 30 metres of the top of the ravine bank in the case of a ravine less than 60 metres wide; and
  - c. within 10 metres of the top of the ravine bank in the case of a wider ravine that link aquatic to terrestrial ecosystems and includes both existing and potential riparian vegetation and existing and potential upland vegetation that exerts an influence on the watercourse.

“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;

“top of ravine bank” means the first significant break in a ravine slope where the break occurs such that the grade beyond the break is latter than 3:1 for a minimum distance of 15 metres measured perpendicularly from the break and the break does not include a bench within the ravine that could be developed;

“watercourse” includes any of the following: a watercourse, intermittent or not; a pond, lake, river, creek or brook, and a ditch, spring or wetland that is connected by surface flow to a watercourse.

### **Justification**

The primary objective of this Development Permit Area designation is to regulate development activities in watercourses and their riparian areas so as to protect aquatic habitat; and to conserve, enhance, and where necessary, restore watercourses and their riparian areas.

The impact of development on watercourses can be minimized by carefully examining the proposed development and taking appropriate measures in relation to the environmentally sensitive riparian areas land.

### **Determining whether development falls within the WDP Area**

To confirm whether a proposed development is within land identified as a riparian assessment area in the WDP area for which a Development Permit application is required, the following applies:

Any area located within 30 metres of the high water mark of a watercourse; within 30 metres of the top of the ravine bank in the case of a ravine less than 60 metres wide; and within 10 metres of the top of the ravine bank in the case of a wider ravine that link aquatic to terrestrial ecosystems and includes both existing and potential riparian vegetation and existing and potential upland vegetation that exerts an influence on the watercourse;

Unless the proposed development or alteration of land is clearly outside the riparian assessment area the location of the development shall be determined accurately by survey in relation to the WDP Area to determine whether a development permit application is required.

### **Guidelines**

A Development Permit is required, except where specified under the exemptions section, for development or land alteration on land identified as a riparian assessment area within the WDP Area. Where not exempt, development requiring a development permit includes any of the following associated with or resulting from residential, commercial or industrial

activities or ancillary activities to the extent that they are subject to local government powers under Local government legislation the:

- a. removal, alteration, disruption or destruction of vegetation;
- b. disturbance of soils;
- c. construction or erection of buildings and structures;
- d. creation of non-structural impervious or semi-impervious surfaces;
- e. flood protection works;
- f. construction of roads, trails, docks, wharves and bridges;
- g. provision and maintenance of sewer and water services;
- h. development of drainage systems;
- i. development of utility corridors;
- j. subdivision as defined in section 872 of the *Local Government Act*.

**Development shall be in accordance with the following guidelines:**

1. All development proposals subject to this permit will be assessed by a Qualified Environmental Practitioner (QEP) in accordance with the Riparian Areas Regulation established by the Provincial and/or Federal governments as used elsewhere in the Province;
2. A WDP shall not be issued prior to the RDCK ensuring that a QEP has submitted a report certifying that they are qualified to carry out the assessment, that the assessment methods have been followed, and provides in their professional opinion that a lesser setback will not negatively affect the functioning of a watercourse or riparian area and that the criteria listed in the Riparian Areas Regulation has been fulfilled, and;
3. The Riparian Areas Regulation implemented through the WDP does not supersede other Federal, Provincial and or local government requirements, including that of other development permit areas, building permits, flood covenants, Federal or Provincial authorization. Land subject to more than one development permit area designation must ensure consistency with the guidelines of each development permit area, to provide comprehensive stewardship of both fish and wildlife habitat.

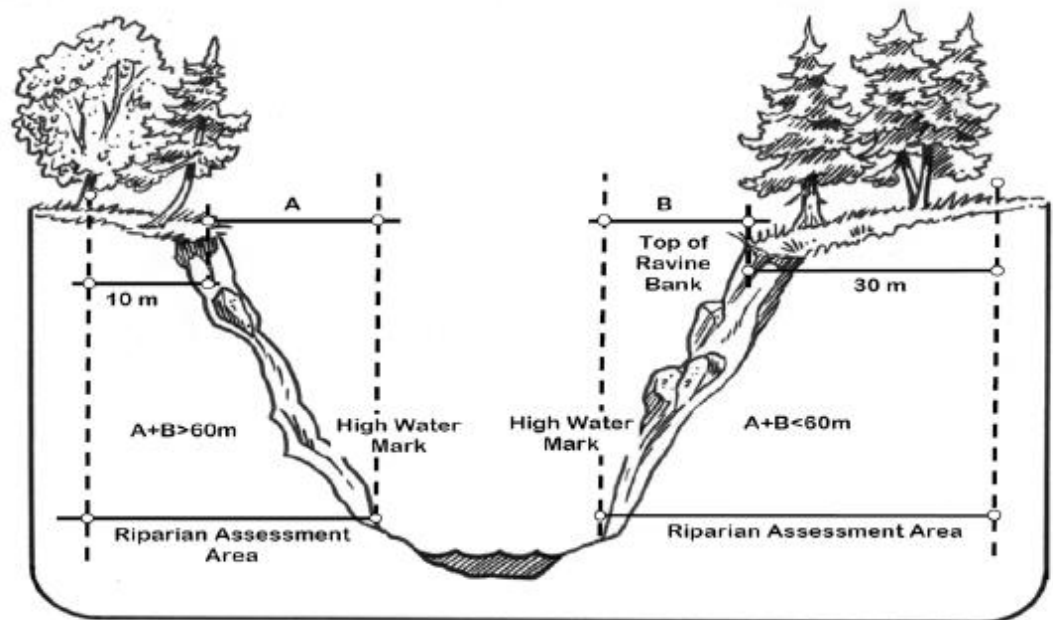
**Exemptions**

The WDP area does not apply to the following:

1. existing construction, alteration, addition, repair, demolition and maintenance of farm buildings;



2. existing institutional development containing no residential, commercial or industrial aspect;
3. reconstruction, renovation or repair of a permanent structure if the structure remains on its existing foundation. Only if the existing foundation is moved or extended in to a riparian assessment area would a WDP be required; and
4. an area where the applicant can demonstrate that the conditions of the WDP Area have already been satisfied or a development permit for the same area has already been issued in the past and the conditions in the development permit have all been met, or the conditions addressed in the previous development permit will not be affected.



**FIGURE 1: RIPARIAN ASSESSMENT AREA:** means the area within 30 m of the high water mark of a watercourse; within 30 m of the top of the ravine bank in the case of a ravine less than 60 m wide; and within 10 m of the top of the ravine bank in the case of a wider ravine that link aquatic to terrestrial ecosystems and includes both existing and potential riparian vegetation and existing and potential upland vegetation that exerts an influence on the watercourse. Applies only to residential, commercial and industrial designations.

Source: British Columbia Ministry of Environment, *Riparian Areas Regulation Implementation Guidebook*, March 2005

## **Development Permit Area #2: Environmentally Sensitive Residential Cluster Development Permit Area (ESRC DP)**

### **Category**

The ESRC DP area is designated under Section 919.1(1) (a) and (e) of the Local Government Act, and applicable provisions of the Community Charter for the establishment of objectives for the form and character of intensive residential development.

### **Area**

The ESRC DP area is comprised of all privately owned or leased lands designated as Suburban Residential (R1), Country Residential (R2) and Multi-family Residential (R4) on Schedule 'B' where a strata development, fee simple lots, shared interest, cooperatives, or companies are proposed that result in sub-lots or lots that are less than 1 hectare (2.47 acres) in area or a building strata that is comprised of five or more buildings.

### **Justification**

The primary objective of this development permit area designation is to achieve a high standard of appearance to ensure that site development is sensitive to adjoining property and the environment, and to protect major transportation corridors from adverse traffic and congestion. Lands in the Plan area have not been studied to a high level for their ability to sustain intense development over the long term. It is therefore desirable to allow development to occur in a manner which allows for efficient use of land and services and protects lands deemed environmentally sensitive or hazardous from potential adverse impacts.

### **Determining whether development falls within the ESRC DP Area**

A development permit shall be required for all subdivisions that propose lots or strata sub-lots where any lot or sub-lot is less than 1 hectare (2.47 acres) in area or any building strata in which five or more building are involved. In no instance will an average sub-lot for a strata, be less than 1 hectare (2.47 acres). Common land shall be covenanted against further subdivision.

### **Guidelines**

Development shall be in accordance with the following guidelines:

1. Riparian zones should remain free of development and restoration of the riparian zone undertaken as part of the new development, if the vegetation is not intact and healthy (diversity of native shrubs and trees).
2. Total impervious cover of the site should minimize the impact on receiving aquatic environments. Consideration should be given to reducing impervious cover through reduction in building footprint and paved areas and use of on-site filtration.

3. Building profiles should reflect the character of surrounding development with special attention to the height of new buildings in relationship to surrounding buildings on adjoining properties.
4. As many of the existing trees, as practicable, should be retained as part of the overall landscape design.
5. Pedestrian networks, through and adjacent to the site should be designed to welcome people, encourage pedestrian activity, and integrate with and link to larger public spaces when possible. Pedestrian amenities must be of sufficient width to allow for a safe walking environment for people of all ages and levels of mobility.
6. Transportation and parking provisions of a site design should include elements that recognize, respect and balance the needs of all transportation modes, including but not limited to cyclists, scooter users, disabled persons, commercial vehicles, public transit, pedestrians and motor vehicles, as well as consider environmental and visual impacts. Traffic calming elements should be integrated into site plans.
7. Site design should incorporate, where appropriate, design elements to protect and enhance riparian areas, watercourses and sensitive eco-system elements.
8. Retention of green space and common lands in strata subdivisions shall be covenanted against further subdivision.

### **Exemptions**

The ESRC DP area does not apply to the following:

1. Lands that are not subject to a strata development, fee simple lots, shared interest, cooperatives, or companies that propose lots or sub-lots that are greater than 1 hectare (2.47 acres) in area or involve the construction of less than five buildings in a building strata.

### **Development Permit Area #3: Industrial Development Permit (IDP) Area**

#### **Category**

The IDP area is designated under Section 919.1(1) (a) and (f) of the Local Government Act, and applicable provisions of the Community Charter for the establishment of objectives for the protection of the natural environment and form and character of industrial uses within the Plan area.

#### **Area**

The IDP area is comprised of all privately owned or leased lands designated as Industrial (M1) on Schedule 'B'.

#### **Justification**

The primary objective of this development permit area designation is to ensure that industrial developments within the Plan area are compatible and considerate of the natural environment and the surrounding residential and rural character of the Plan area.

#### **Guidelines**

Development shall be in accordance with the following guidelines and considerations:

- a. impact on farm land;
- b. capability of the natural environment to support the proposed development;
- c. compatibility with adjacent land uses and designations, and the character of the area;
- d. susceptibility to natural hazards, including but not limited to flooding, slope instability, or wildfire risk;
- e. the size of the property in relation to the proposed industrial activity;
- f. the Province is requested to ensure industrial activities involving emission of toxic or irritant material meet the highest standards regarding the protection of groundwater catchment areas, surface water and riparian areas and air-borne industrial pollutants;
- g. wherever possible, new industrial activity shall be located in close proximity and with direct access to major roads;
- h. prior to commencement of industrial activity, a landscape buffer shall be required on industrial properties adjacent to non-industrial designated properties; and
- i. all industrial activity; including parking and storage must be screened and wide buffers shall be left along roads and property lines.

#### **Exemptions**

The IDP area does not apply to the following:

- a. existing construction, alteration, addition, repair, demolition and maintenance of industrial buildings.

## **20.0 Implementation**

### **Introduction**

The OCP sets out statements on the broad objectives, polices and directions for the Plan area, but does not provide the tools for implementing its policies. The RDCK has a number of tools and methods available for implementing the Plan. The purpose of this section is to set out specific steps the RDCK can take to implement this Plan. Some of the steps include refining the Plan; changing existing bylaws; adopting new bylaws; conducting studies to obtain more information and direction; and working closely with other jurisdictions and government agencies. Some of the specific steps are set out in the subsections below.

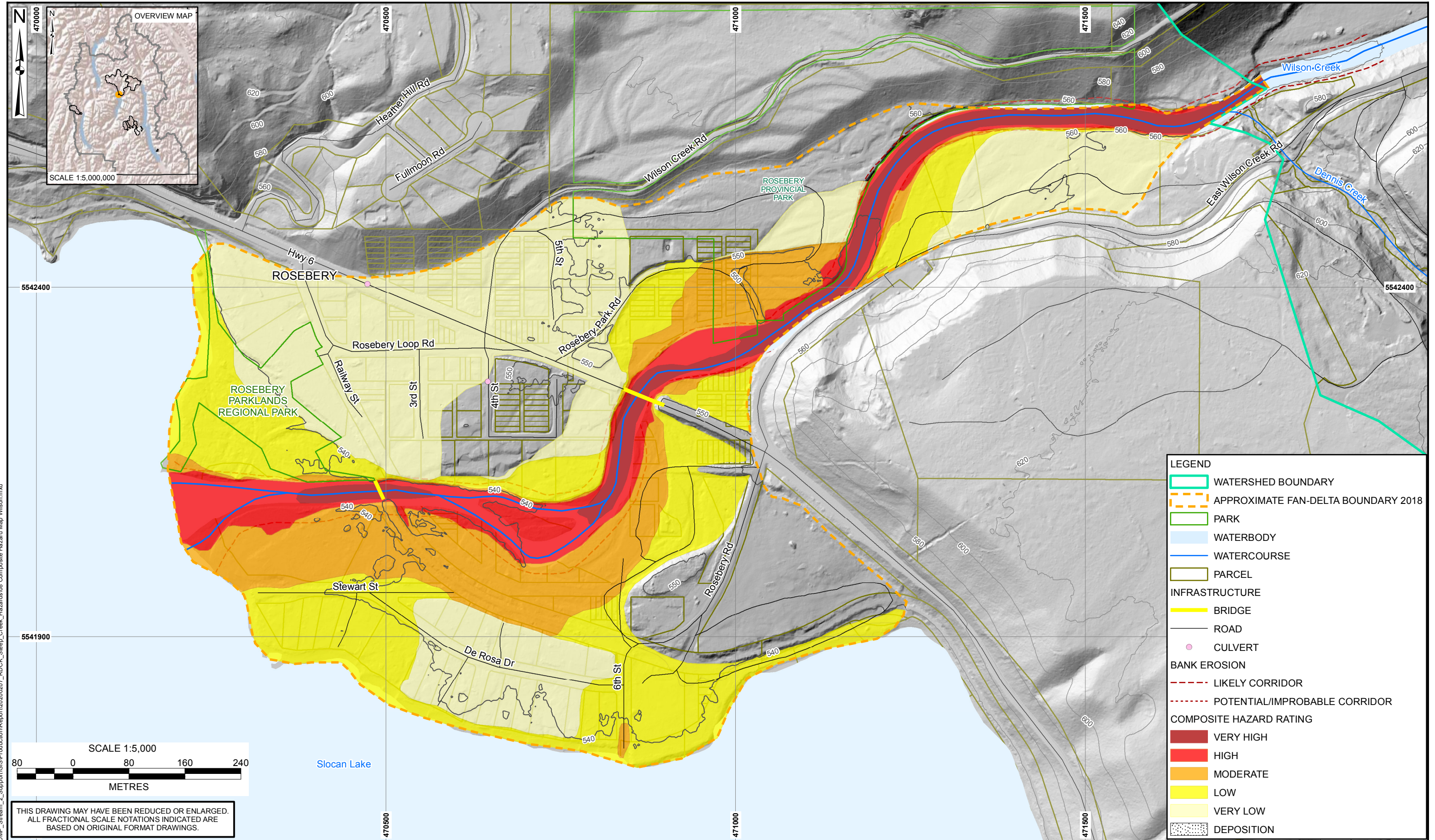
### **Zoning Bylaw**

The Zoning Bylaw sets out the density of development on a parcel of land, as well as specifying permitted. It also may contain specific regulations that control the size, siting, and various other details of development on a parcel of land. A Zoning Bylaw enforcing the policies of this Plan may be developed during or following the adoption of this bylaw. This must occur through a lengthy public review process and will occur only through a separate public input process. Individual communities may initiate a Zoning Bylaw for their community or it may include the entire Plan area dependent on the preferred direction of each community.

### **Subdivision and Development Servicing Bylaw**

The RDCK Subdivision and Development Servicing Bylaw sets out minimum standards for access, water systems, and sewer systems. Subdivisions must meet these standards before they are approved. The Subdivision and Development Servicing Bylaw will need to be reviewed and amended where necessary to ensure that it works to implement various policies in the Plan, particularly with respect to servicing levels related to parcel sizes.

**APPENDIX B            RDCK Floodplain Map for Rosebery Area**



**LEGEND**

- WATERSHED BOUNDARY
- APPROXIMATE FAN-DELTA BOUNDARY 2018
- PARK
- WATERBODY
- WATERCOURSE
- PARCEL
- INFRASTRUCTURE**
- BRIDGE
- ROAD
- CULVERT
- BANK EROSION**
- LIKELY CORRIDOR
- POTENTIAL/IMPROBABLE CORRIDOR
- COMPOSITE HAZARD RATING**
- VERY HIGH
- HIGH
- MODERATE
- LOW
- VERY LOW
- DEPOSITION

SCALE 1:5,000

80 0 80 160 240

METRES

THIS DRAWING MAY HAVE BEEN REDUCED OR ENLARGED.  
ALL FRACTIONAL SCALE NOTATIONS INDICATED ARE  
BASED ON ORIGINAL FORMAT DRAWINGS.

**NOTES:**

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. THIS DRAWING MUST BE READ IN CONJUNCTION WITH BGC'S REPORTS TITLED "RDCK FLOODPLAIN AND STEEP CREEK STUDY - WILSON CREEK", AND DATED MARCH 2020.
3. BASE TOPOGRAPHIC DATA BASED ON LIDAR PROVIDED BY RDCK, DATED 2018. CONTOUR INTERVAL IS 20 m AND 10 m ON FAN. THE FAN BOUNDARY AS DRAWN IS APPROXIMATE AND DELINEATES THE LANDFORM BASED ON LIDAR DATED 2018.
4. MODELLED BANK EROSION IS SHOWN AS A LIKELY CORRIDOR (DIVIDED BETWEEN CHANNEL BANKS BASED ON CHANNEL GEOMETRY) AND POTENTIAL/IMPROBABLE CORRIDOR (APPLIED EQUALLY TO BOTH BANKS).
5. THIS MAP REPRESENTS A SNAPSHOT IN TIME. FUTURE CHANGES (DEVELOPMENT, DEBRIS FLOOD MITIGATION, GEOHAZARD EVENTS) MAY WARRANT RE-DRAWING OF CERTAIN AREAS.
6. BUILDING FOOTPRINTS DIGITIZED BY BGC. CULVERT LOCATIONS FROM BC MINISTRY OF TRANSPORTATION. PARKS DATA FROM GOVERNMENT OF BC. ROADS DATA FROM BC DIGITAL ROAD ATLAS. RAILWAY DATA FROM GEOBASE NATIONAL RAILWAY NETWORK. ELECTRICAL, PETROLEUM, COMMUNICATION AND WATER INFRASTRUCTURE FROM INTEGRATED CADASTRAL INFORMATION SOCIETY. BANK PROTECTION FROM GEOBC AND BGC FIELD OBSERVATIONS. PARCEL MAP FROM PARCELMAP BC.
7. PROJECTION IS NAD 1983 UTM ZONE 11N.
8. UNLESS BGC AGREES OTHERWISE IN WRITING, THIS DRAWING SHALL NOT BE MODIFIED OR USED FOR ANY PURPOSE OTHER THAN THE PURPOSE FOR WHICH BGC GENERATED IT. BGC SHALL HAVE NO LIABILITY FOR ANY DAMAGES OR LOSS ARISING IN ANY WAY FROM ANY USE OR MODIFICATION OF THIS DOCUMENT NOT AUTHORIZED BY BGC. ANY USE OF OR RELIANCE UPON THIS DOCUMENT OR ITS CONTENT BY THIRD PARTIES SHALL BE AT SUCH THIRD PARTIES' SOLE RISK.

SCALE:	1:5,000	<p><b>BGC ENGINEERING INC.</b> AN APPLIED EARTH SCIENCES COMPANY</p>	PROJECT: RDCK FLOODPLAIN AND STEEP CREEK STUDY	
DATE:	MAR 2020		TITLE: WILSON CREEK COMPOSITE HAZARD RATING MAP	
DRAWN:	STT, LL, MIB		PROJECT No.:	0268007
CHECKED:	LCH		DWG No.:	08
APPROVED:	MJ			

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