

TO: Board of Directors

FROM: Planning Department

SUBJECT: Zoning Amendment Bylaw No. 2945, 2022

File No: 22-0743-F-RZ

Date: January 25, 2023

RECOMMENDATION:

That Zoning Amendment Bylaw No. 2945, 2022 which proposes to rezone the property legally described as Lot 3, Sec 28, Twp 18, R7, W6M, KDYD, Plan 34117, Except Plan EPP52118 and located at 23 Carver Road, Electoral Area "F" from the Non-Urban (N.U) zone to the Country Residential (C.R) zone be given First, Second and Third Readings; and further,

That Zoning Amendment Bylaw No. 2945, 2022 be Adopted.

BACKGROUND:

The subject application proposes to rezone the property located at 23 Carver Road, Electoral Area "F" from the Non-Urban (N.U) zone to the Country Residential (C.R) zone. If successful in rezoning the property, the applicant proposes to subdivide the property into a 2.34 ha lot and a 2.16 ha lot.

At the Regular Meeting held on September 21, 2022, the Board of Directors considered the application and the associated Zoning Amendment Bylaw No. 2945. After considering the application, the Board resolved that notice be given in accordance with Section 467 of the *Local Government Act* that Zoning Amendment Bylaw No. 2945 be considered for First Reading at a future meeting. The Board also resolved that Second Reading of Bylaw No. 2945 be withheld until the applicant has submitted a report provided by a professional engineer, a groundwater geologist, or a hydrogeologist verifying that water of sufficient quantity is available year round to service the permitted uses associated with the full build out potential of the subject property and that the extraction of water from the proposed water supplies will not deplete the water supply of neighbouring wells.

In accordance with the Development Application Procedures and Administrative Fees Bylaw No. 2677, Section 467 [Notice if public hearing not held] of the *Local Government Act* and Public Notice Bylaw No. 2931, notice has been provided as outlined below to advise that First Reading of Bylaw No. 2945 will be considered by the Board of Directors at the Regular Meeting to be held on February 15, 2023:

- the applicant posted a Development Notice Sign on the property on December 14, 2022;
- letters were mailed to adjacent landowners on February 3, 2023;
- a notice was posted in the Public Notice section of the RDNO website on February 6, 2023;
- a notice was distributed through the RDNO Public Notice email subscription group on February 6, 2023;
- a notice was posted to the RDNO Facebook page on February 6, 2023; and
- a notice was placed in the weekly RDNO advertisement on February 9, 2023.

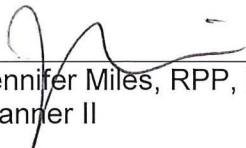
DISCUSSION:

In follow up to the Board's condition of Second Reading of Zoning Amendment Bylaw No. 2945, the applicant has submitted the attached report and letter dated December 22, 2022 and January 23, 2023 respectively from Western Water Associates Ltd. The report and letter contains the following conclusions and recommendations:

- We are of the opinion that there is a good probability of developing an onsite domestic groundwater supply well in the bedrock that underlies the site capable of supplying potable water at the RDNO bylaw rate of 6,550 L/day.
- Based on available data and evidence provided by the landowner, we are of the opinion that the existing residence is being supplied adequately by the existing surface water licence C063514 on Rickover Creek. There appears to be sufficient year-round base flow in the creek to continue to use this licence to serve as the water source.
- Following test well drilling, a pumping test can be completed that would confirm our assertion that an onsite groundwater well can be drilled and pumped so as not to adversely impact the watercourse and nearby groundwater users.
- Based on our review of the site and data gleaned for the surrounding area, our professional opinion is that water of sufficient quantity is available year-round to service the permitted uses associated with the full build out potential of the subject property and that the extraction of water from the proposed water supplies will not deplete the water supply of neighbouring wells.

The Planning Department suggests that Bylaw No. 2945 can be given Second Reading as the applicant has satisfied the Board requirement relating to groundwater availability. The Bylaw can also be given Third Reading and be Adopted as there are no other conditions that need to be met and the Bylaw does not need to be endorsed by the Ministry of Transportation and Infrastructure as it is not within 800 m of an intersection of a controlled access highway.

Submitted by:



Jennifer Miles, RPP, MCIP
Planner II

Reviewed by:



Greg Routley
Deputy Planning Manager

Endorsed by:



Rob Smails, RPP, MCIP
General Manager, Planning and Building

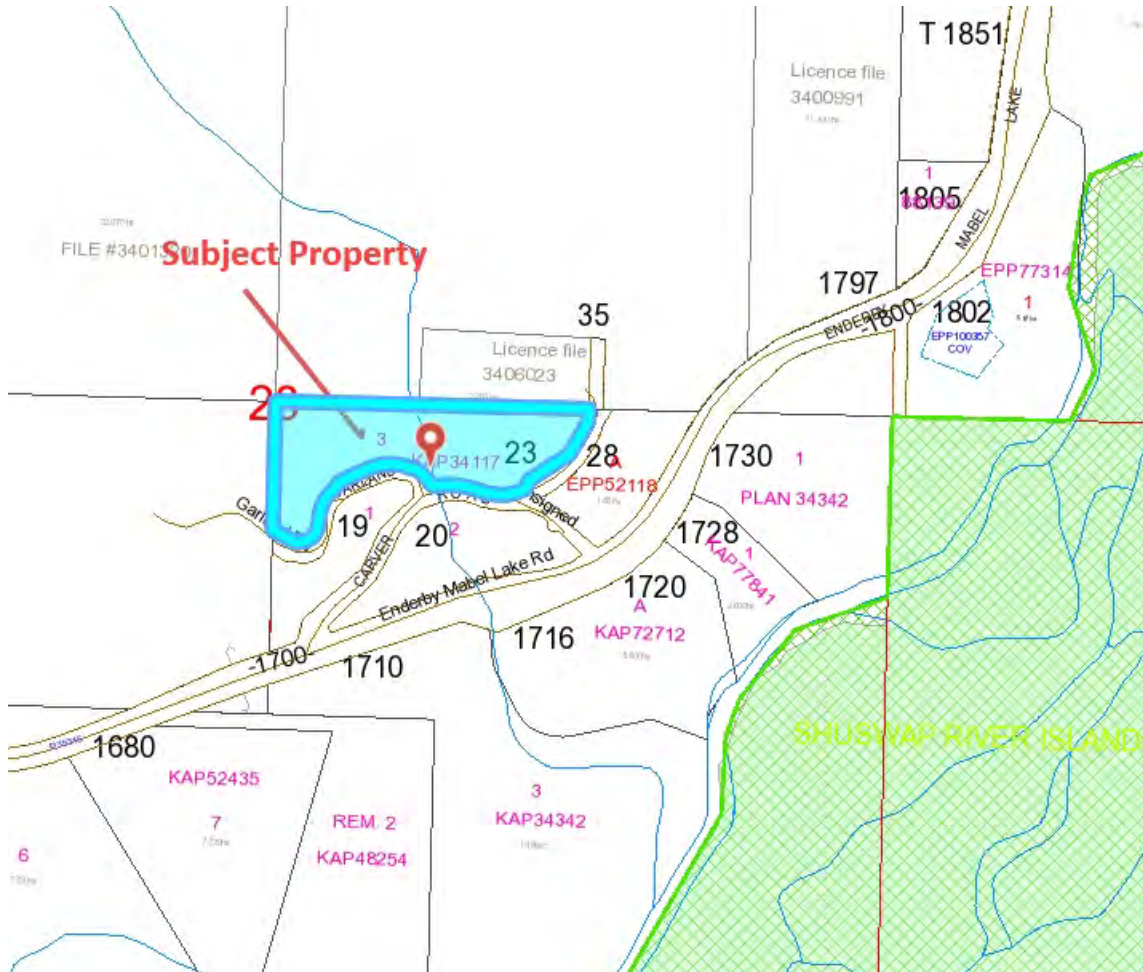
Approved for Inclusion:



David Sewell
Chief Administrative Officer

SUBJECT PROPERTY MAP REZONING

File: 22-0743-F-RZ
Location: 23 Carver Road





Licence file
3406023

2.200 ha

28

creek

Lot 2 (5.34 acres)

Lot 1

3

house

KAP34117

driveway

28A

(5.78 acres)

GARLAND

ROAD

EPP52118

1.85 ha

19¹

20²

CARVER

unimproved

172

1:1,501

76.3 0 38.13 76.3 Meters

December 22, 2022

FILE: 22-148-01VR

Mr. Blaine Gordon
23 Carver Road
Enderby, BC V0E 1V5

Re: Hydrogeological Services – Water Supply Feasibility Assessment for Proposed 2-Lot Subdivision at 23 Carver Road, Enderby, B.C.

Dear Mr. Gordon:

As requested, Western Water Associates Ltd. (WWAL) provides this water supply feasibility assessment for a proposed 2-lot subdivision at a property in Enderby, BC. Our scope of work was outlined in an email to you dated November 2, 2022.

1. BACKGROUND

The purpose of this report is to assess the feasibility of obtaining a water source for two proposed lots in support of rezoning. The property (PID 001-757-091) is located within the Regional District of North Okanagan (RDNO) in Electoral Area "F", approximately 8 km east of Ashton Creek. The address of the property is 23 Carver Road, and the legal description is Lot 3, Section 28, Township 18, Range 7, West of the 6th Meridian, Kamloops Division of Yale District, Plan 34117, except Plan EPP52118.

The property is located on the north side of Carver Road and Garland Road, both gravel roads maintained by the BC Ministry of Transportation and Infrastructure (MOTI). Rickover Creek runs through the middle of the property in a north to south direction. A dwelling and several accessory buildings are located on the eastern half of the property and a driveway connects the buildings to Carver Road. The property is primarily treed and slopes up from Carver Road toward the north.

In 2014, the landowner applied for a road severance subdivision to subdivide along Carver Road and create the current 4.5-hectare subject property to the northwest and a 1.9-hectare lot to the southeast. In March 2016, WWAL provided a hydrogeological evaluation of an existing well (drilled in 2009) completed to facilitate the subdivision and serve as the water source for the new proposed lot. A riparian area protection covenant related to Rickover Creek was registered on title as part of this subdivision process. This subdivision was completed in 2016, which generated the adjacent property to the southeast at 28 Carver Road.

Further subdivision of the 4.5-hectare lot is now being planned by dividing the property roughly in half along Rickover Creek, creating a 2.34-hectare Lot 1 to the west and a 2.16-hectare Lot 2 to the east (Figure 1). A Rezoning Application 22-0743-F-RZ and associated Zoning Amendment Bylaw No. 2945 were filed on August 24th, 2022 with the RDNO to rezone the property from its current Non-Urban (N.U.) zoning to Country Residential (C.R.) to facilitate subdivision into smaller parcels that are a minimum 2 hectares in size.

In a response letter dated September 22nd, 2022, the RDNO considered the application but resolved to withhold second reading until submission of a report by a qualified professional verifying that water of sufficient quantity is available year-round to service the permitted uses associated with the subdivision at full build-out, and that the extraction of water from the proposed sources will not deplete the water supply of neighbouring wells. According

to RDNO Subdivision Servicing Bylaw 2600, a water supply of 6,550 L/day (1.2 USgpm) is required per parcel on a year-round basis.

This letter provides our desktop groundwater supply feasibility assessment for the subject property. The results of this investigation are considered preliminary, to be confirmed upon completion of well drilling and yield testing.

2. SETTING

2.1 Surrounding Land Use, Site Physiography and Climate

Figure 1 shows an overview of the study area. It is defined as the area bounded by Enderby Mabel Forest Service Road to the south and unoccupied forested crown land to the north. Forested areas and rural residential properties lie to the east and west of the site. Further to the south and east is the Shuswap River Islands Provincial Park and the Shuswap River. Carver Road and Garland Road bisect the original land parcel into several lots, with the subject property located north of Garland Road and north and west of Carver Road.

The study area includes a topographic high point toward the northwest corner of the property. Topographic elevations are approximately 508 metres above sea level (masl) at the top of the knoll to the northwest, to approximately 455 masl along the southern property line with Carver Road. There are a few benched terraces oriented east-west across the site, and the existing residence is located on one of these flat lying benches east of Rickover Creek. We inspected and assessed access constraints of another one of these benches located west of the creek which could be used as a future building site.

Nearby climate station Enderby at Ashton Creek (Station ID# 1162682) recorded daily precipitation and temperature data for this area for the period from 1965 to 1975. The closest location with a longer period of record and at a similar elevation to the site is at the Salmon Arm Airport (Station ID 1166R45 which is 27.5 km to the northwest at an elevation of 527 masl) (EC, 2022). Based on the Environment Canada climate normals calculated from data from this station between 1981 and 2010, the average annual temperature and precipitation for the area are 7.4°C and 653 mm, respectively. The majority of the annual precipitation falls as rain (72%) with the wettest months being between May, June, October and November in a typical year. December and January see the most snow.

Past climate trends are not necessarily indicative of future climate, however. Climate change is an ongoing process, and among the forecasted outcomes for the region is warming temperatures across seasons in addition to longer, drier summers and wetter winters with more precipitation falling as rain at lower elevations. There is also a predicted overall hydrologic transition from snowmelt-dominant watersheds to rainfall-dominant, increasing the need for water conservation and storage (PCIC, 2013).

2.2 Geology

The bedrock geology underlying the site is mapped as undivided metamorphic rocks of the Malton Complex of the Shuswap Assemblage (Proterozoic to Paleozoic age, 245-2500 Mya) (ENV, 2022a). The bedrock is comprised of quartzfeldspathic gneiss, biotite-quartz schist, amphibolite, quartzite marble and skarn. There are no mapped bedrock faults in the study area (Cui et al., 2018).

The regional surficial geology is comprised of a thin veneer of Lumby Till (undifferentiated ground moraine deposits comprised of till and local lenses of gravel, sand and silt) overtop bedrock (GSC, 1970). These material types are consistent with the materials observed in the banks of Rickover Creek during our site visit.

2.3 Hydrogeology

According to the B.C. Ministry of Environment and Climate Change Strategy (ENV) Water Resources Atlas (ENV, 2022a), there are no mapped aquifers that underlie or are in the immediate vicinity of the study area. The closest provincially mapped aquifer, located 2.9 km west of site, is aquifer 804; a fractured crystalline bedrock aquifer underlying the Shuswap River east of Enderby. This aquifer is listed as having low vulnerability to contamination, low productivity and low demand. The aquifer does not have a ENV monitored observation well attributed to it.

Based on drilling information and our knowledge of the area, the overburden sediments do not host a suitable aquifer and therefore prospects for groundwater supply are from the fractured bedrock. Groundwater recharge to the bedrock underlying site is likely to occur within nearby upland areas, where precipitation infiltrates through fractures. Mountain block recharge may be significant in areas where the bedrock comes to surface or is in contact with overlying surficial unconsolidated sediments and direct infiltration from surface water may occur.

Groundwater flow in bedrock is likely through the fracture network and can also occur along faults or shear zones, some of which can act as zones of enhanced permeability. The groundwater flow direction within the fractured bedrock underlying the site and overlying unconsolidated sediments is inferred to be southward towards the Shuswap River, following topography.

2.4 Surface Water

Rickover Creek currently supplies the existing residence on the subject property under Conditional Water Licence C063514 (attached). Four other current licensed Points of Diversion (POD) are located on Rickover Creek and details of those surface water licences are summarized in Table 1 below.

Table 1 Summary of water licences within 500 m of the study area

Licence No.	POD	Subtype	Water Use Purpose	Source	Quantity	Primary Licensee
C063514	PD57252	POD	01A - Domestic	Rickover Creek	2.27 m ³ /day	Blaine and Wendy Gordon
C063512	PD57252	POD	01A - Domestic	Rickover Creek	2.27 m ³ /day	Winnifred Anderson
C063513	PD57253	POD	01A - Domestic	Rickover Creek	2.27 m ³ /day	David Reynolds
C066568	PD57255	POD	01A - Domestic	Rickover Creek	2.27 m ³ /day	Cory Adsit

Additional surface water licences are issued for Hammond Brook to the east and the mainstem of the Shuswap River to the south. All of the surface watercourses in this vicinity have the water allocation notation of application refused (AR), indicating that previous water licence applications have been refused because there was insufficient water to grant the application.

POD PD57252 is shown as being located on the subject property. As observed in the field, the creek intake is actually located several hundred feet to the north on the adjacent crown land, making it the uppermost water POD on that watercourse. The intake is in a shallow gravel pool within the bed of the creek. Rickover Creek flows

year-round; however particular reaches of the creek (such as upstream of the current intake) do not during the drier periods of the year.

2.5 Hydraulic Connection between Groundwater and Surface Water

Hydraulic connection refers to the relative interaction between groundwater and nearby surface water. Where connection occurs, the reduction in stream flow (streamflow depletion) from well pumping is a function of time. Streamflow depletion from well pumping is caused by the combined effects of induced infiltration of water from the stream, and interception of groundwater which would otherwise eventually discharge to the stream.

Rickover Creek provides surface water to the site from the upland crown lands to the north and the surface water has been observed by others as having migrated underground and resurfacing within the bedload of the creek. Consequently, a recommended improvement to the current creek intake would be to bury a corrugated PVC plastic shroud within the substrate and insert the gravity-fed supply line within the shroud. This would effectively lower the intake by as much as 0.3 to 0.6 m below its current elevation within the creek, improving the reliability of the supply.

The potential for a drilled and cased bedrock well located on the west of the property to be hydraulically connected to Rickover Creek is considered low, as the sands and gravels that make up the creek bed terminate atop bedrock or an overlying till over much of its length. As discussed above, the recharge area for the bedrock is likely much higher upslope within the forested crown land area. Consequently, a drilled well into the bedrock is unlikely deplete the surface water in Rickover Creek.

3. EXISTING WELL SURVEY

To further assess the onsite groundwater supply potential for the property, as well as the potential for a future supply to impact offsite wells, we looked at drilling information for wells from the Province's GWELLS database (ENV, 2022b) in the vicinity of the study area. According to the database and our knowledge of working on the property previously in 2016 (WWAL, 2016), there are two groundwater wells reported within 500 m of the study area.

- **Well Tag Number (WTN) 62480** is an offsite private domestic well located to the northeast and owned and operated by Bill and Ida Arcand. The well was drilled in 1991 by Dan Gare Drilling of Enderby. It is completed in bedrock to a depth of 36.6 m (120 ft), with a driller estimated yield of 0.2 L/s (3 USgpm) and having a shallow static water level of 3.0 m (10 ft) below top of casing at the time of drilling.
- **Well Plate Identification Number (WPID) 29313** is located to the east on 28 Carver Road (the new lot created in 2016). This well is also a private domestic well, drilled in 2009 by Dan Gare Drilling. It is completed in bedrock to a depth of 103.6 m (340 ft) and has an estimated long-term yield of 0.076 L/s (1.2 USgpm) (WWAL, 2016). The static water level in the well was measured to be 4.7 m (15.5 ft) below top of casing prior to the pumping test on March 2, 2016.

Based on the yield of these two wells, we believe that the bedrock underlying the site is capable of supporting a domestic supply to the proposed new lot at the minimum rate of 6,550 L/day required by RDNO. Based on the water quality sample obtained during the pumping test on WPID 29313, potable water with possibly elevated iron and manganese should be expected from the bedrock underlying site.

4. SITE VISIT

On December 8th, 2022, WWAL hydrogeologist Christopher Homes, P.Geo., accompanied the developer to conduct a walk-through of the property. At the time of inspection, the site was covered in thick snow (>0.3 m), but areas surrounding flowing reaches of Rickover Creek remained snow-free. Photographs from the site visit are attached.

We observed the creek intake that services the existing property. It is comprised of a 50 mm diameter black PVC supply line that gravity feeds and siphons from a riffle pool in the creek bed. The creek bed is gravelly at this location and the intake lies at the surface under a few placed rocks. The location of the intake¹ was determined to be upstream of PD57252, on the adjacent crown land to the north. Consequently, it is located upstream of the POD, which services the neighbouring property (under licence C063512). The creek bed consisted of a thin discontinuous layer of sand and gravel, lying atop a bedrock and/or till base. The creek was observed to be flowing during winter and is reported to flow year-round. There are noted reaches of the creek upstream that flow into the subsurface and daylight downslope at the site.

During the site visit we assessed the proposed lot that would be created to the west of the creek. A large knoll lies to the northwest of the parcel, which provides topographic relief in this area. At the base of this knoll lie a couple of flat benches or terraces which were partially logged in the past and have since regrown. There appeared to be several prospective test well sites from which to choose from in this area² and a water well could be drilled anywhere along that bench that would access the bedrock at depth. There is sufficient space along the bench to be able to setback a well outside of the riparian area for Rickover Creek, have a building site, and service any future residence with an onsite sewerage system. A future well can be located sufficiently far from other existing wells in the area, so as not to significantly interfere during pumping at a domestic withdrawal rate.

5. WATER SUPPLY FEASIBILITY ASSESSMENT

5.1 Existing Residence to the East of the Property

The current surface water licence C063514 services the property, granting the landowner year-round access to 2.27 m³/day of water from Rickover Creek from POD PD57252. We understand that the creek flows year-round, and there has not been supply issues in the past. The water from the creek is considered palatable and has not caused any health concerns to date. This source is therefore considered sufficient to continue to service the existing residence to the east of the property.

As discussed previously, potential enhancements to the creek intake could include excavating and burying the creek intake further down into the gravel substrate beneath the creek bed. As well, to minimize any supply shocks due to timing of use, the creek can gravity feed and siphon to a constructed cistern (concrete or fiberglass) which can then gravity feed into the house.

Sewerage effluent is currently dealt with onsite by a septic field adjacent to the house. Both the existing septic field on proposed Lot 2 and any future septic field on Lot 1 should remain well set back from the creek (> 30 m) so as not to impact downgradient surface water users.

¹ Location of the Existing Creek Intake UTM coordinates: 11U 0364873E 5602055N

² Prospective Well Site UTM coordinates: 11U 0364751E 5601886N; 11U 0364840E 5601941N; 11U 0364886E 5601956N

5.2 Proposed Lot to the West of the Property

Based on the information reviewed for the site and summarized here, the proposed lot to the west of the property can be serviced with an onsite well. It is feasible to drill a test well in one of several proposed locations, and intercept groundwater within the bedrock below. Nearby groundwater wells have been drilled to depths of between 36.6 m and 103.6 m and generate sufficient water to provide for domestic demand and meet the flow requirements of RDNO Bylaw 2600. Water quality from one of these wells was potable, with only iron and manganese in concentrations above their respective aesthetic objectives. There is also sufficient distance between wells that a bedrock test well is unlikely to significantly influence the others during operation.

6. CONCLUSIONS AND RECOMMENDATIONS

Based on our feasibility assessment, the following conclusions are made:

- We are of the opinion that there is a good probability of developing an onsite domestic groundwater supply well in the bedrock that underlies the site capable of supplying potable water at the RDNO bylaw rate of 6,550 L/day.
- Based on available data and evidence provided by the landowner, we are of the opinion that the existing residence is being supplied adequately by the existing surface water licence C063514 on Rickover Creek. There appears to be sufficient year-round baseflow in the creek to continue to use this licence to serve as the water source.
- Following test well drilling, a pumping test can be completed that would confirm our assertion that an onsite groundwater well can be drilled and pumped so as not to adversely impact the watercourse and nearby groundwater users.

We make the following recommendations:

- If desired, water system enhancements to the surface water supply currently servicing the existing residence could include burying the intake further down into the gravel substrate in the creek bed and installing a cistern for storage. These would constitute a change in works for the licence (i.e., an amendment) and would require a permit for working in and about a creek.
- Should you wish to proceed with test well drilling, WWAL is prepared to assist with coordination of this work along with test pumping, analysis, and reporting. We recommend that the test well be built with 150 mm (6")-diameter surface casing into the bedrock and a 115 mm (4.5") diameter PVC liner to depth. The drilling should target the bedrock beneath the site and a well depth up to 107 m (350 ft) should be expected.
- Once created, the test well will need to be pumped to determine if sufficient yield exists to meet the RDNO bylaw rate (6,550 L/day) and test for groundwater potability.

In accordance with the Groundwater Protection Regulation, new supply wells should be sited a minimum of 15 m from existing water supply wells under separate ownership unless alternative specifications acceptable to the Province are made by a Professional Hydrogeologist. A minimum separation distance of 30 m between a potable water well and probable sources of contamination (e.g. any onsite or neighbouring effluent disposal field(s)) is specified in the Public Health Act and must be adhered to.

7. CLOSURE

We trust this letter provides the information you require. If you have any questions, please contact us.

Western Water Associates Ltd.
(EGBC Permit to Practice number 1001419)



Christopher Homes, P. Geo.
Senior Hydrogeologist

Reviewed by

A handwritten signature in blue ink that reads "CWPetersmeyer".

Chad Petersmeyer, M.Sc., P. Geo.
Senior Hydrogeologist

Attachments:

- Figure 1 – Project Location
- Attachment A – Surface Water Licence
- Attachment B – Photographic Documentation

8. REFERENCES

BC Ministry of Environment (ENV), 2022a. BC Water Resources Atlas. Accessed online at <https://maps.gov.bc.ca/ess/hm/wrbc/>

BC Ministry of Environment (ENV), 2022b. Groundwater Wells and Aquifers – Well Search. Accessed online at <https://apps.nrs.gov.bc.ca/gwells/>

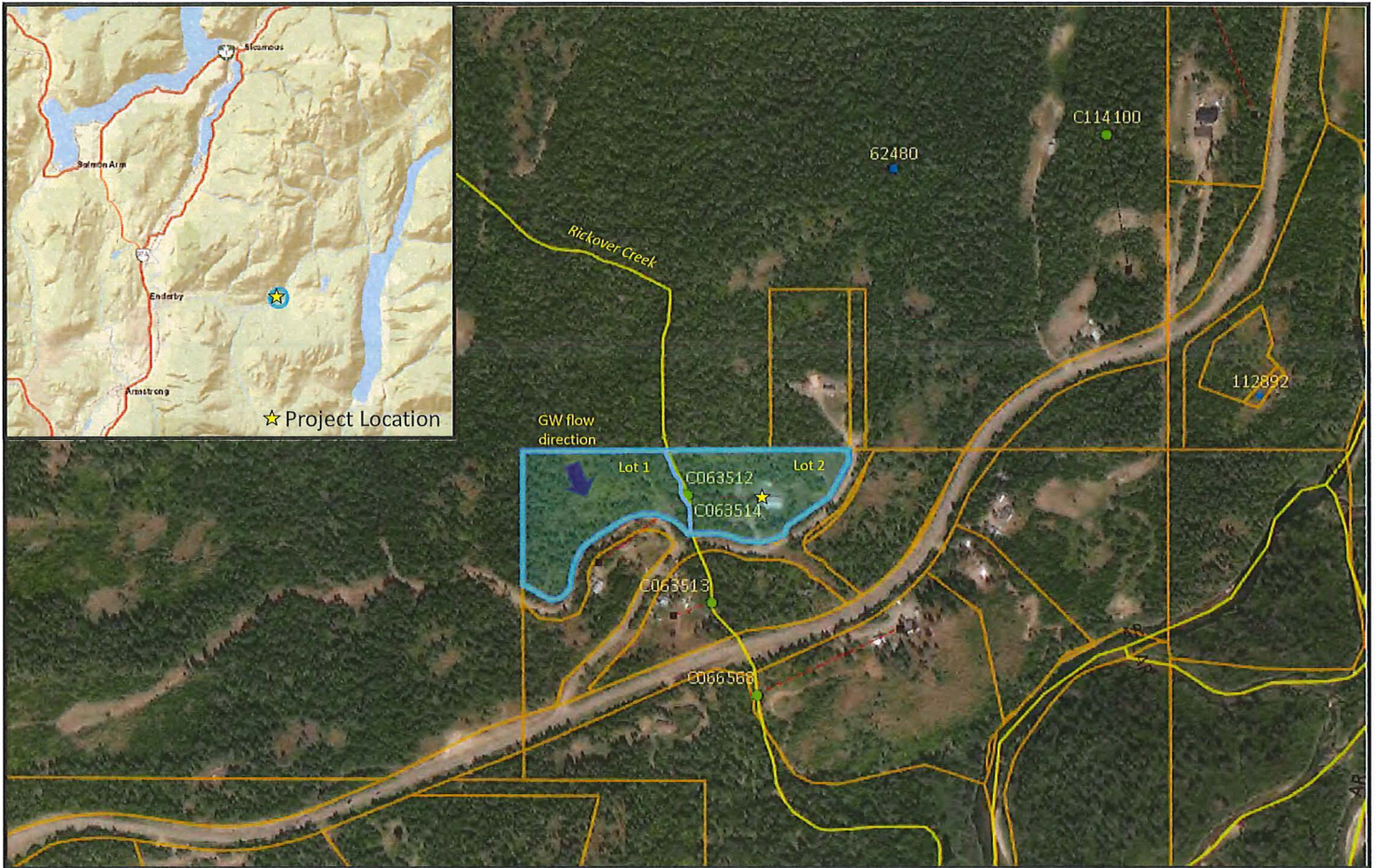
Cui, Y, Massey, N.W.D. and MacIntyre, D.G. (Cui et al), 2018. Geology Fault Line Coverage, British Columbia Digital Geology Data Download. 1:100,000 scale mapping.

Environment Canada (EC), 2022. Canadian Climate Normals 1981-2010 Station Data for Salmon Arm Airport (STN #1166R45). Accessed online at: https://climate.weather.gc.ca/climate_normals/

Fulton, R.J., Achard, R.A. and Smith G.W. (GSC) 1970. Two surficial geology maps of southern British Columbia. Geological Survey of Canada open file 25, 26 sheets.

Pacific Climate Impacts Consortium (PCIC), 2013. Climate Summary for Thompson/Okanagan Region. Accessed online at: https://www.pacificclimate.org/sites/default/files/publications/Climate_Summary-Thompson-Okanagan_0.pdf

Western Water Associates Ltd. (WWAL), 2016. Hydrogeological Evaluation of Water Quantity and Quality from One Well at 23 Carver Road, near Ashton Creek, BC. Report issued March 17, 2016. File 16-013-01



Water Supply Feasibility Assessment
23 Carver Rd., Enderby, BC

TITLE **Figure 1: Project Location**



DRAWN	CDH
CHECKED	CDH
REVIEWED	CP

DATE	December 19, 2022
SCALE	various
FILE NO.	

PROJECT NO.	22-148-01VR
DWG. NO.	Figure 1
SOURCE	Water Resources Atlas, 2022

WATER LICENCE DISPOSITION RECORD

CONDITIONAL/FINAL WATER LICENCE NO. CL 63514

Has Been Recorded As:

ABANDONED
 CANCELLED
 SUPERCEDED BY: _____

OR

Old Map No. 82 L / 10-W Old POD: W _____

New Map No. 82.L.056.3 New POD: R _____

Old Map No. _____ Old POD: _____

New Map No. _____ New POD: _____

Old Map No. _____ Old POD: _____

New Map No. _____ New POD: _____

Notation by: SPB

Date: 90.03

THE PROVINCE OF BRITISH COLUMBIA—WATER ACT
CONDITIONAL WATER LICENCE

Blaine J. Gordon and Wendy A. Phillips of Box 187, Enderby, B. C. V0E 1V0

are hereby authorized to divert and use water as follows:

- (a) The source of the water-supply is Rickover Creek.
- (b) The point of diversion is located as shown on the attached plan.
- (c) The date from which this licence shall have precedence is 23rd September, 1982.
- (d) The purpose for which this licence is issued is domestic.
- (e) The maximum quantity of water which may be diverted is 500 gallons a day.
- (f) The period of the year during which the water may be used is the whole year.
- (g) The land upon which the water is to be used and to which this licence is appurtenant is Lot 3 of Section 28, Township 18, Range 7, West of the 6th Meridian, Kamloops Division of Yale District, Plan 34117.
- (h) The works authorized to be constructed are diversion structure and pipe, which shall be located approximately as shown on the attached plan.
- (i) The construction of the said works shall be completed and the water shall be beneficially used on or before the 31st day of December, 1989.
- (j) This licence authorizes the use of water for domestic purpose in one dwelling located approximately as shown on the attached plan.



J. E. Farrell

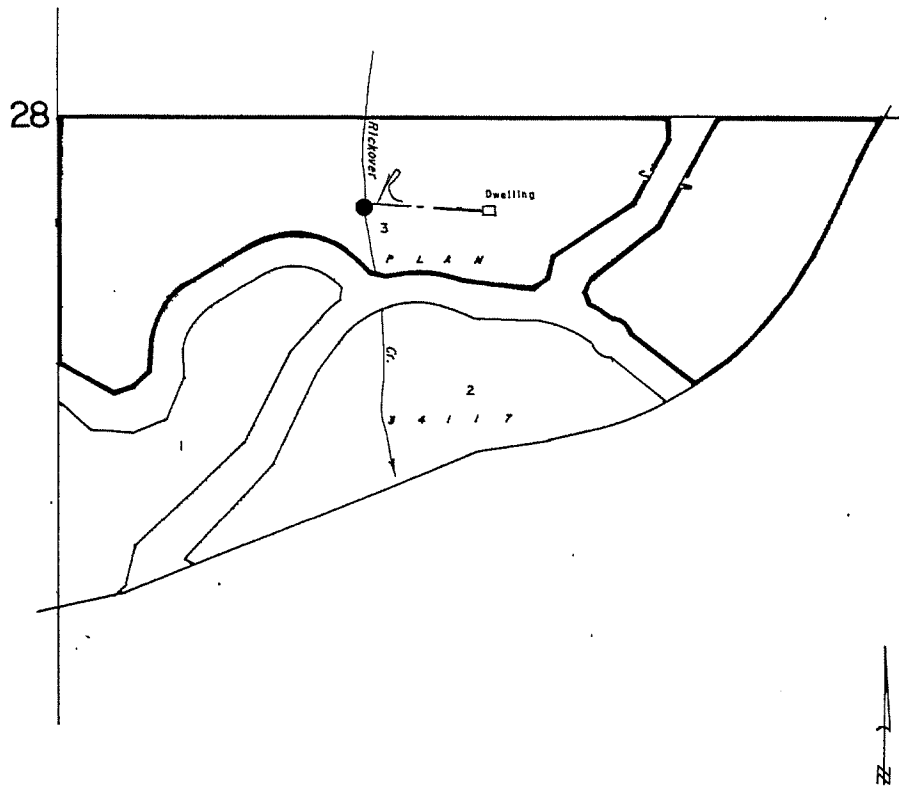
Deputy Comptroller of Water Rights

File No. 0370700 Date issued: 13th December, 1985 Conditional Licence 63514



Province of British Columbia

TP. 18 R.7 W.6M.



WATER DISTRICT : VERNON
 PRECINCT : MARA
 LAND DISTRICT : KAMLOOPS DIVISION OF YALE

Signature: 
 Date: DEC 13 1985

LEGEND

Scale : 1:3000
 Point of Diversion : ●
 Map Number : WR 82 L/10-W(d) 82-L-056-3
 Pipe :

C.L. 63514
 File 0370700

The boundaries of the land to which this licence
 is appurtenant are shown thus:

Photograph 1, 2, and 3. Site Visit – 23 Carver Rd. (December 8, 2022)



1. Photo of Rickover Creek at the intake for water licence C063514. Intake actually located north of PD57252 on adjacent crown land to the north. View looking east.



2. Detail of creekbed coarse sand and gravel atop bedrock substrate. Intake for existing residence nominally 0.3m below current creek surface. View looking northeast.



3. Detail of Rickover Creek banks further downstream. Photo shows coarse gravel and colluvium in till, on top of bedrock outcrop. View looking northeast.

Photograph 4, 5 and 6. **Site Visit – 23 Carver Rd. (December 8, 2022)**



4. Creek intake at PD57252 servicing adjacent property under licence C063512. Water column builds head and accounts for artesian pressure (overflow frozen in photo). View looking east.



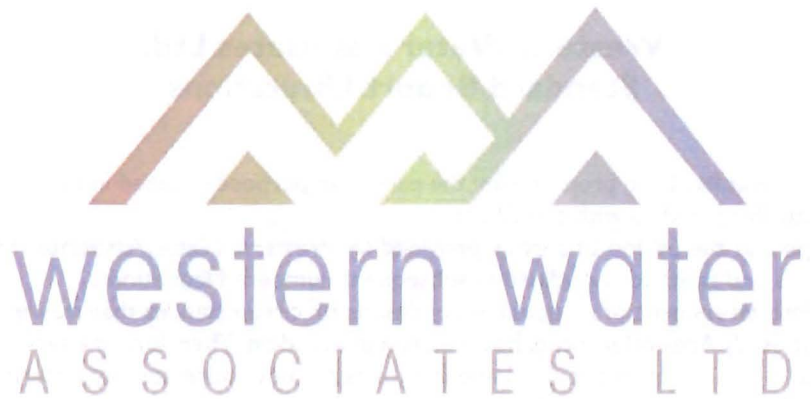
5. Bench landing area, formerly logged with some regrowth. Relatively level area, suitable for potential development or test well drilling. View looking east.



6. Bench landing area, formerly logged and access trail to Garland Rd. Another relatively level area, accessible for test well drilling. View looking south.

Western Water Associates Ltd. Standard Report Limitations

1. This Document has been prepared for the particular purpose outlined in the work scope that has been mutually agreed to with the Client.
2. The scope and the period of service provided by Western Water Associates Ltd are subject to restrictions and limitations outlined in subsequent numbered limitations.
3. A complete assessment of all possible conditions or circumstances that may exist at the Site or within the Study Area referenced, has not been undertaken. Therefore, if a service is not expressly indicated, it has not been provided and if a matter is not addressed, no determination has been made by Western Water Associates Ltd. in regards to it.
4. Conditions may exist which were undetectable given the limited nature of the enquiry that Western Water Associates Ltd. was retained to undertake with respect to the assignment. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the Site, or Study Area, which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.
5. In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Western Water Associates Ltd's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Western Water Associates Ltd to form no more than an opinion of the actual conditions of the Site, or Study Area, at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the Site, or Study Area, nor the surroundings, or any laws or regulations.
6. Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either expressed or implied, that the actual conditions will conform exactly to the assessments contained in this Document.
7. Where data supplied by the Client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated.
8. No responsibility is accepted by Western Water Associates Ltd for incomplete or inaccurate data supplied by others.
9. The Client acknowledges that Western Water Associates Ltd may have retained sub-consultants affiliated to provide Services. Western Water Associates Ltd will be fully responsible to the Client for the Services and work done by all of its sub-consultants and subcontractors. The Client agrees that it will only assert claims against and seek to recover losses, damages or other liabilities from Western Water Associates Ltd.
10. This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Western Water Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.



Groundwater Supply Development and Management

Source Water Assessment and Protection

Well Monitoring & Maintenance

Environmental & Water Quality Monitoring

Storm & Wastewater Disposal to Ground

Groundwater Modeling

Aquifer Test Design and Analysis

Geothermal / Geoexchange Systems

Policy and Guideline Development

Applied Research

Rural Subdivision Services

Environmental Assessment & Permitting

January 25, 2023

Jennifer Miles, B.Sc., RPP, MCIP
Planning Department
Regional District North Okanagan
9848 Aberdeen Road
Coldstream, B.C. V1B 2K9

Re: Report Addendum #1 – Hydrological Services – Water Supply Feasibility Assessment for Proposed Subdivision at 23 Carver Road, Enderby, B.C.

Western Water Associates Ltd. (WWAL) is pleased to provide this addendum to our December 22, 2022 report entitled “Hydrogeological Services – Water Supply Feasibility Assessment for Proposed 2-Lot Subdivision at 23 Carver Road, Enderby, B.C.”. This addendum speaks to recommendations made in the RDNO Planning Department Information Report for the Rezoning Application, dated August 24, 2022 and released as RDNO file No. 22-0743-F-RZ.

Our Western Water Feasibility Assessment report demonstrates that that maximum build-out potential of the subject property, resulting from the proposed rezoning to Country Residential (C.R.), could be serviced with domestic water supplies meeting the quantity and quality standards specified in the RDNO Subdivision Servicing Bylaw No. 2600 [2013].

Based on our review of the site and data gleaned for the surrounding area, our professional opinion is that water of sufficient quantity is available year-round to service the permitted uses associated with the full build out potential of the subject property and that the extraction of water from the proposed water supplies will not deplete the water supply of neighbouring wells. However to verify it or prove that it exists, would require not only the well to exist but for it to be tested for both quantity and quality for verification.

It is the developer’s intent for this additional work to be done at the time of subdivision, and prior to any building or occupancy permits being applied for; however, they wish to confirm that the parcel can and will be rezoned to Country Residential (C.R.) before incurring the additional development costs. We ask that the Second Reading of Zoning Amendment Bylaw No. 2945, 2022 be allowed to proceed under this understanding.

We trust this is sufficient for your needs at this time. Please contact us if you have questions or further comments.

WESTERN WATER ASSOCIATES LTD.
(EGBC Permit to Practice No. 1001419)



Christopher Homes, P.Geo.
Senior Hydrogeologist