



REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

Thursday, October 7, 2021
RDOS Boardroom – 101 Martin Street, Penticton

SCHEDULE OF MEETINGS

9:00 am	-	10:30 am	Planning and Development Services Committee
10:30 am	-	11:00 am	Community Services Committee
11:00 am	-	12:00 pm	Environment and Infrastructure Committee
12:00 pm	-	12:15 pm	Break
12:15 pm	-	1:45 pm	RDOS Board of Directors

"Karla Kozakevich"

Karla Kozakevich
RDOS Board Chair

2021 Notice of Meetings			
October 21	RDOS Board	OSRHD Board	Committee Meetings
November 4	RDOS Board Inaugural	OSRHD Board Inaugural	
November 5	Budget Committee Meeting #1		
November 19	Budget Committee Meeting #2		
November 24	Strategic Planning		
November 25	Strategic Planning		
November 18	RDOS Board	OSRHD Board	Committee Meetings
December 2	RDOS Board		Committee Meetings
December 16	RDOS Board	OSRHD Board	Committee Meetings

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
Planning and Development Committee
REGULAR AGENDA



Thursday, October 7, 2021
9:00 am

Pages

A. Approval of Agenda

RECOMMENDATION

THAT the Agenda for the Planning and Development Committee Meeting of October 7, 2021 be adopted.

B. Delegation - Okanagan Falls Community Association

Matt Taylor, President, Okanagan Falls Community Association
Bob Daly, Vice-President, Okanagan Falls Community Association

C. Greater West Bench Geotechnical Review - Electoral Area "F"

Ecora Engineering delegation present.

3

RECOMMENDATION

THAT the 2021 *Greater West Bench Geotechnical Review* be received as a guiding document.

D. Review of Temporary Use Permit (TUP) Application Fees

150

RECOMMENDATION

THAT the Regional District's Fees and Charges Bylaw be amended to apply the following fees to Temporary Use Permit (TUP) applications:

- i. Application Fee: \$2,500.00 for "vacation rental" uses and \$1,250.00 for all other uses; and
- ii. Renewal Fee: \$2,500.00 for "vacation rental" uses and \$1,250.00 for all other uses.

- E. Investigation of Agricultural Protection and Food Security** 154
RECOMMENDATION
THAT the Regional District abandon further investigation into increasing agricultural reserves and agricultural.
- F. Director’s Motion – Cannabis Retail Store Application Moratorium (Electoral Area “D”)** 158
RECOMMENDATION
THAT a “moratorium” on cannabis retail applications in Electoral Area “D” not be pursued.
- G. Adjournment**
RECOMMENDATION
THAT the meeting adjourn.



TO: Board of Directors
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: 2021 Greater West Bench Geotechnical Review – Electoral Area “F”

Administrative Recommendation:

THAT the 2021 *Greater West Bench Geotechnical Review* be received as a guiding document.

Background:

September 20, 2018 - the Regional District adopted the Electoral Area “F” Official Community Plan (OCP) Bylaw No. 2790, 2018. The OCP Bylaw included a policy to “support an updated technical assessment of geotechnical hazards in the West Bench / Sage Mesa area (GWB) using new technologies (e.g., LiDAR) that were not available when the area was last assessed.”

October 17, 2019 - The Regional District Board awarded a contract to Ecora Engineering & Resource Group Ltd. in association with Clarke Geoscience Ltd., to complete a geotechnical review of the Greater West Bench Area.

Amongst other things, the geotechnical review report was to provide the Regional District better comprehension to develop land use policies specific to GWB to better inform and guide residents of the geotechnical conditions and uses of the lands.

The report was also to identify mitigation methods in the management of existing land uses, such as provision of domestic water, storm water control or construction of community sanitary and storm sewer systems ... [and] identify potential locations for further development or change in density in existing land uses in the GWB study area.

July 28, 2021 - the Regional District received a final report of the *Greater West Bench Geotechnical Review* from Ecora and Clarke Geoscience Limited.

Analysis:

At a broad level, the *Greater West Bench Geotechnical Review* determined that the thick deposits of silt soils, derived from Glacial Lake Penticton, have unique Engineering Material Properties that control the geotechnical character of the area.

The research indicates that, in a dry state, the undisturbed silt soils are very stable and can maintain near-vertical slopes. When wetted or disturbed, however these silt soils are prone to rapid erosion, collapse/compression, and slumping. The combination of unique soils, combined with historical land use influences the nature and frequency of geotechnical hazards in the subject area, such as landslides and the development of sinkholes.”

ADMINISTRATIVE REPORT

The Review further concludes that:

- *landslides persist within the vicinity of the steep silt bluff slopes that occur along the eastern boundary of the study area;*
- *landslide hazards are greatest within approximately 50 metres of the slope or gully crest and extend beyond the toe of the slope towards Highway 97 and Okanagan Lake;*
- *sinkhole hazard levels within the GWB Study Area are greatest within 30 metres of the silt bluff slope crest and/or within 30m of another sinkhole, and are observed exclusively within the Glaciolacustrine Silts;*
- *sinkhole hazard levels are greatest within the eastern portion of the study area and predominantly over the northern half of the GWB area; and*
- *collapsible / compressible soils hazard occurs in conjunction with the silt bluffs and associated gullies ...*

Based on these determinations a Geotechnical Constraints Zone map was created in order to indicate the “likelihood of a damaging geohazard event affecting a parcel”; being low, moderate or high.

The Report concludes with a number of recommendations intended to reduce geotechnical risk within the GWB study area, including:

- *Incorporate results of this study into current RDOS bylaws;*
- *Develop Geotechnical Reporting requirements;*
- *Introduce a Soil Removal and Deposition Bylaw;*
- *Develop specific land use activity Best Management Practices; and*
- *Implement a public education and outreach program specific to geohazards.*

The report further addresses a number of “Data Gaps” that *could* be addressed by the Regional District, as required in future. These are seen to encompass projects whose scope and costs could be significant, including:

- *Conduct incidence tracking and data management;*
- *Conduct additional subsurface soils investigation in conjunction with future geotechnical studies;*
- *Conduct additional groundwater investigation and monitoring if resources are made available;*
- *Update the 1994 Wastewater Management Plan when time is appropriate and when funding is available;*
- *Improve stormwater management practices; and*
- *Conduct periodic review of geohazard conditions.*

Administrative Response:

A draft OCP Amendment Bylaw (No. 2790.04 - see Attachment No. 2) is under construction that will incorporate the new Geotechnical Constraints Zone map at Schedule ‘D’ of the OCP. Further

ADMINISTRATIVE REPORT

consultation is required on the significant issues identified and an impact analysis will be required on each issue to identify potential cost, enforcement or resources.

The OCP Amendment Bylaw is also proposing to update the “Hazard Lands” (Section 17.0) of the OCP Bylaw to reflect the information contained within the Report, as well as some of the more significant recommendations, such as a Soil Removal and Deposition Bylaw, that will require further discussion.

With regard to the Zoning Bylaw, consideration should be given to increasing minimum parcel size requirements for subdivision to 2.0 ha throughout the Greater West Bench Area. It is understood that there have been few, if any, subdivisions approved within the West Bench area since the 1992 Geotechnical Hazard Report was completed. The proposed 2.0 ha minimum parcel size will give formal effect to this.

It is also noted that the 1992 Geotechnical Hazard Report identified swimming pools as a trigger for subsurface erosion and sinkhole development and recommended that these be prohibited within the study area. The 2021 Review has confirmed that pools continue to represent a “high risk land use activity” and should be regulated.

In response, it is proposed to list “swimming pools” as a prohibited form of land use within the West Bench through the zoning bylaw. If implemented, existing pools within the West Bench will enjoy non-conforming status (i.e. “grandfathering”) under the *Local Government Act*.

The reference to “Data Gaps” is not seen to be urgent and no action needs to be taken at this time, but that future consideration could be given to these (particularly the incidence tracking and data management web portal).

Public Consultation:

The convening of a public information meeting at which the consultant team will present and discuss the project and technical information (including recommendations) is a required part of this project.

The draft amendment bylaws could be presented as part of the public information meeting and that public input could help to inform the discussion on the proposed changes. The draft amendment bylaws should also be considered by the Electoral Area “F” Advisory Planning Commission.

Other Amendments:

Other recommendations in the report will be reviewed over time, including revisions to the “Hazard Lands” section of the OCP Bylaw as part of incorporating the Greater West Bench Geotechnical Review.

This includes introducing a new sub-section and context statement for Radon Gas hazards and also updating the Flood Hazard sub-section based on the Okanagan Basin Water Board’s 2020 floodplain mapping project.

Alternatives:

- .1 THAT the 2021 *Greater West Bench Geotechnical Review* be referred back to Administration for further review.

ADMINISTRATIVE REPORT

Respectfully submitted:



C. Garrish, Planning Manager

Attachments: No. 1 – Greater West Bench Geotechnical Review (2021)

No. 2 – Draft OCP Amendment Bylaw No. 2790.04 (version 2021-10-07)

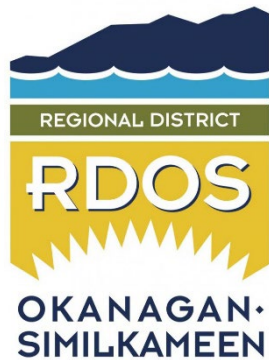
No. 3 – Draft Zoning Amendment Bylaw No. 2461.21 (version 2021-1



View South towards Study Area
Circa 1950
Source: Penticton Archive

Greater West Bench Geotechnical Review

Presented To:



Dated: July 27, 2021

Ecora File No.: 191010



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Presented To:



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Version Control and Revision History

Version	Date	Prepared By	Reviewed By	Notes/Revisions
0	February 5, 2021	JC / NM-H / DB / CE	MJL	Issued for Use
1	July 27, 2021	JC / NM-H / DB / CE	MJL	Issued for Use

Executive Summary

Background

Ecora Engineering & Resource Group Ltd. (Ecora) in conjunction with Clarke Geoscience Ltd. (CGL) were retained by the Regional District of Okanagan-Similkameen (RDOS) to undertake a Geotechnical Review for the Greater West Bench (GWB) located within RDOS Electoral Area "F", which is situated northwest of the City of Penticton (CoP).

In the RDOS Electoral Area "F" Official Community Plan (OCP) Bylaw No. 2790 (Bylaw 2790), (2018), the policy for hazard lands recommended an updated technical assessment of geotechnical hazards in the Greater West Bench Study Area (GWB Study Area), which includes the neighbourhoods of Sage Mesa, West Bench, Husula Highlands and Westwood.

This Geotechnical Review report builds on the work completed by Klohn Leonoff (1992) and provides an assessment of geotechnical conditions utilizing more recent data and modern approaches, technical rationale for the creation of land use policies specific to the GWB Study Area and, will inform and guide GWB residents of the geotechnical conditions and appropriate use of lands.

The scope of work for the assessment is completed at a resolution suitable for electoral area planning. Results are not intended to be site-specific and may need to be confirmed by further geotechnical assessment when applied at a site level.

Unique Geotechnical Character of the Greater West Bench Study Area

The GWB Study Area has unique geotechnical characteristics and is distinguished by a relatively flat terrace that is deeply dissected by gullies and bounded on the east by dramatic silt bluffs adjacent to Okanagan Lake.

The thick deposits of silt soils, derived from Glacial Lake Penticton, have unique Engineering Material Properties that control the geotechnical character of the area. Research and experience indicate that, in a dry state, the undisturbed silt soils are very stable and can maintain near-vertical slopes. When wetted or disturbed, however these silt soils are prone to rapid erosion, collapse/compression, and slumping. The combination of unique soils, combined with historical land use, influences the nature and frequency of geotechnical hazards in the subject area, such as landslides and the development of sinkholes.

Historical Geohazard Events within the Study Area

The first documented geohazard within the GWB Study Area is a landslide that occurred in 1913 during construction of the Summerland to Penticton Lakeshore Road, killing three workers (Section 3.2.4). Further awareness of the geohazards in the GWB area became apparent soon after the area was settled in the 1950s and continues to this day. In a public survey to residents of RDOS Electoral Area "F" completed as part of this study, approximately one third of respondents' report experiencing issues with sinkholes (Section 3.3).

Documented occurrences of geohazards, including sinkhole development, gully erosion and soil collapse, are observed to have resulted from domestic water leaks or irrigation, septic fields, or where roof and road drainage have been diverted onto the silt soils. These events have caused property damage but have rarely resulted in injury or death.

Historical Land Development and Current Servicing

The GWB Study Area is comprised of residential neighbourhoods, consisting primarily of single detached homes on medium and small-sized lots (Section 4.2). Lots in the West Bench - Sage Mesa neighbourhoods were originally developed in the early 1950s. In the 1960s and 1970s the area was partially subdivided and infilled with residential development and, in the 1970s to 1980s the Husula Highlands subdivision was developed. There is an elementary school on West Bench Road, two private golf courses, and a commercial gravel quarry operating south of Madeline (Max) Lake. Since 1992, further land densification and/or large-scale subdivision has not

occurred, due to the concerns for geotechnical hazards. As per recommendations in the Klohn Leonoff (1992) report, further development was contingent on the installation of community sewer and stormwater systems.

The current supply of potable water to the West Bench area is from the CoP. The remainder of the GWB Study Area, servicing the Sage Mesa, Husula Highlands, and Westwood Properties residential areas, and two commercial golf courses, is from Okanagan Lake. In the 1990s, due to an increase in water pipe failures, the West Bench Irrigation District (WBID) initiated a major pipe replacement project. By 2010, over 60% of the water mains in the system had been upgraded. The RDOS have a National Award-Winning leak detection program operating on the West Bench that is an incredibly important tool in the management of potentially unstable ground in an area with soils sensitive to the introduction of water.

To this day, there is no municipal wastewater collection system servicing the GWB Study Area (Section 4.3). All residential dwellings in the study area have individual septic tanks and field tile effluent disposal systems. Stormwater management is inconsistent and not well documented. Stormwater runoff at the property site level is unmanaged and largely unknown. It is assumed that roof and driveway runoff is directed to ground, or possibly into rock pits situated on individual properties.

Geohazards Occurring in the Greater West Bench Study Area

Key geohazards observed in the Glaciolacustrine Silts occurring in the GWB Study Area include the following:

- Shallow planar landslides;
- Deep-seated rotational landslides;
- Silt block falls or ravelling;
- Piping and sinkhole development; and
- Soil collapse.

These processes are often driven by the material's sensitivity to increasing water content from natural hydrologic processes and/or artificial water sources.

Increases in precipitation, and more specifically, the projected increase in the frequency and intensity of rainstorms associated with predicted changes in climate, has the potential to affect the likelihood for geotechnical hazards in the GWB Study Area.

Land use activities may also potentially have a negative effect on the geological stability of lands. Activities that potential impact stability may include land densification, increased concentrated water discharge to the ground, changing slope geometry, and soil loading (see Figure 4.3.a in report). For practical purposes, understanding the land use activity implications on geomorphological process and geohazards such as landslide initiation, sinkhole development, or soil collapse/compression, helps in the development of policies and guidelines for the management and/or mitigation of the hazards.

Geohazard and Risk Assessment

The process of assessing geohazards and risk involves identifying the trigger mechanisms, characterizing the event, estimating the potential likelihood of occurrence, and estimating areas potentially impacted. Hazard maps were produced as part of the assessment and are included in Appendix B (Maps 3.0-5.0).

The landslide hazard assessment results indicate that landslides persist within the vicinity of the steep silt bluff slopes that occur along the eastern boundary of the study area. Landslide hazards are greatest within approximately 50 metres of the slope or gully crest and extend beyond the toe of the slope towards Highway 97 and Okanagan Lake.

Sinkhole hazard levels within the GWB Study Area are greatest within 50 metres of the silt bluff slope crest and are observed exclusively within the Glaciolacustrine Silts (Section 5.3). Sinkhole hazard levels are greatest within the eastern portion of the study area and predominantly over the northern half of the GWB area.

Collapsible / compressible soils hazard occurs in conjunction with the silt bluffs and associated gullies (Section 5.4). It is unlikely that any area mapped as having a collapsible / compressible soils hazard is not also mapped as having a landslide and/or sinkhole hazard. However, this hazard class emphasizes the importance of recognizing the soil material properties susceptible to collapse / compression.

Geotechnical Constraints Mapping

The hazard maps presented in Appendix B (Maps 3.0-5.0) were combined to identify Geotechnical Constraint Zones, which are equivalent to “partial risk”. For this study, partial risk is the probability of a hazardous event (i.e., landslide, sinkhole, and/or collapsible / compressible soils) reaching or otherwise affecting a legal parcel.

The Geotechnical Constraints Zones map is presented as Map 6.0 in Appendix B, and can be interpreted as follows:

Geotechnical Constraints Zone	Criteria	Likelihood of a Damaging Geohazard Event Affecting a Parcel
Zone A	All three hazard types (i.e., landslide, sinkhole, and collapsible/compressible soils) are rated low.	Low
Zone B	Any one of the three hazard types (i.e., landslide, sinkhole, and collapsible/compressible soils) are rated moderate.	Moderate
Zone C	Any one of the three hazard types (i.e., landslide, sinkhole, and collapsible/compressible soils) are rated high.	High

Application of the Results to Land Use Management Planning

The type and level of regulatory response to land use corresponds with the relative likelihood that a particular type of land use activity will affect the likelihood of a damaging geohazard event. For example, although minor changes in land use (i.e., repairs and rebuilds) are unlikely to alter the geohazard condition, even these smaller-scale development applications require more scrutiny when proposed in high-risk areas. With larger-scale development applications, where proposed land use activities include expansion, densification, new building, and rezoning, there is a higher likelihood of adverse impact within all three Geotechnical Constraints Zones. Larger-scale development applications, when proposed within the moderate and high-risk zones, should be subject to rigorous review and certain types of development may be considered unsuitable for the high-risk zones.

Recommendations

Recommendations, presented for consideration by RDOS with the overall objective of reducing geotechnical risk within the GWB study area, include:

- Develop Land Use Management Policies for Hazard Lands, such as:
 - Incorporate results of this study into current RDOS bylaws;
 - Develop Geotechnical Reporting requirements;
 - Introduce a Soil Removal and Deposition Bylaw;
 - Develop specific land use activity Best Management Practices; and,
 - Implement a public education and outreach program specific to geohazards.

- Address Data Gaps, as needed, such as:
 - Conduct incidence tracking and data management;
 - Conduct additional subsurface soils investigation in conjunction with future geotechnical studies;
 - Conduct additional groundwater investigation and monitoring if resources are made available;
 - Update the 1994 Wastewater Management Plan when time is appropriate and when funding is available;
 - Improve stormwater management practices,
 - Conduct periodic review of geohazard conditions.

Acknowledgements

We would like to acknowledge the guidance and assistance of the RDOS staff throughout various stages of report preparation.

Background information was provided from the BC Ministry of Transportation and Infrastructure (MoTI) by Mr. Tom Kneale, P.Eng., Manager, Geotechnical and Materials Engineering for the Southern Interior Region.

Responsibilities

The Geotechnical Review report required collaboration amongst team members practicing in different technical disciplines. Although presented as a whole, we have assigned the following responsibilities for different technical components of the report, as per EGBC Practice Guidelines:

Personnel/Role	Technical Subject Area	Corresponding Report Sections
Michael J. Laws, P.Eng. Senior Geotechnical Engineer Ecora Engineering & Resource Group Ltd.	Overall administrative project manager and technical reviewer	All
Jennifer Clarke, P.Geo. Geomorphologist Clarke Geoscience Ltd.	Overall technical project manager. Geomorphology, terrain analysis, hazard assessment, regulatory response	All, Specifically Sections 1.0, 2.0, 3.0 (except, where indicated by others), 4.0, 5.0, 6.0, 8.0, 9.0
Naomi Mason-Hertage, M.Sc., P.Geo. Engineering Geologist Ecora Engineering & Resource Group Ltd.	Engineering material properties of soils, gINT borehole log creation and geologic-cross-section, geomorphological processes	Sections 3.2.2, 3.4, 5.0
Donna Butler, MCIP Senior Planner Ecora Engineering & Resource Group Ltd.	Land use planning components, existing policies, and input to recommended policies	Sections 7.0, 9.0
Chelsea Evans, B.E (Hons) Civil Geotechnical Consultant Ecora Engineering & Resource Group Ltd.	Seismicity background, info on collapsible/compressible soils, slope stability analysis for silt bluff slopes	Sections 3.6, 5.4, 6.4, 6.7
Christopher Homes, P.Geo. Hydrogeologist Western Water Associates Ltd.	Characterize groundwater regime based on review of information and existing well logs. Comments on conclusions and recommendations of previous work.	Section 3.7, 5.5

Limitations of Report

This report and its contents are intended for the sole use of the Regional District of Okanagan-Similkameen (RDOS), their agents and the applicable regulatory authorities. Ecora Engineering & Resource Group Ltd. (Ecora) and Clarke Geoscience Ltd. (CGL) does not accept any responsibility for the accuracy of any data, analyses, or recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the RDOS, their agents, the applicable regulatory authorities or for any Project other than that described in this report. Any such unauthorized use of this report is at the sole risk of the user.

Where Ecora & CGL submits both electronic file and hard copy versions of reports, drawings, and other project-related documents, only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Ecora and CGL shall be deemed to be the original for the Project. Both electronic file and hard copy versions of Ecora and CGL's deliverables shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Ecora and CGL.

Ecora's General Conditions are provided in Appendix A of this report.

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Appendix Sections

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- Appendix B Maps (1.0-6.0)
- Appendix C Select Fieldwork Photographs
- Appendix D RDOS Public Survey Results
- Appendix E Detailed Geologic Cross-Sections
- Appendix F Engineering Material Properties of the Glaciolacustrine (Penticton) Silts
- Appendix G Slope Stability Analysis (G, G1-G6)

Acronyms and Abbreviations

AIM	Acciona Infrastructure Maintenance
BC	British Columbia (Province of)
BCBC	British Columbia Building Code (2018)
BMP	Best Management Practice
BP	Building Permit
CGL	Clarke Geoscience Ltd.
CL	Low plastic clay (Atterberg Limits Test)
CoP	City of Penticton
CPCN	Certificate of Public Convenience and Necessity
CSA	Canadian Standards Association
DP	Development Permit
EGBC	Engineers and Geoscientists of British Columbia (formerly APEGBC)
ESDP	Environmentally Sensitive Development Permit
FCL	Flood Construction Level
FoS	Factor of Safety
GIS	Geographic Information System
GSA	Grain Size Analysis
GSC	Geological Survey of Canada
GWB	Greater West Bench
IH	Interior Health
ISWMP	Integrated Stormwater Management Plan
kPa	Kilopascal
KVR	Kettle Valley Rail (Trail)
LAS	Local Area Specifications
LIDAR	Light Detection and Ranging
LL	Liquid Limit (Atterberg Limits Test)
LSE	Limit State Equilibrium
m asl	meter(s) above sea level
ML	Low plastic silt (Atterberg Limits Test)
MoTI	(BC) Ministry of Transportation and Infrastructure
NBCC	National Building Code of Canada (2015)
OCP	Official Community Plan
PGA	Peak Ground Acceleration

PI	Plasticity Index (Atterberg Limits Test)
PIB	Penticton Indian Band
PL	Plastic Limit (Atterberg Limits Test)
QP	Qualified Professional
RAPR	(Provincial) Riparian Areas Protection Regulation (2019)
RDNO	Regional District of North Okanagan
RDCO	Regional District of Central Okanagan
RFP	Request for Proposal
RGS	Regional Growth Strategy
RDOS	Regional District of Okanagan-Similkameen
ROW	Right-of-way
Sa(T)	Spectral Acceleration
SH	Small Holdings
SWMP	Stormwater Management Plan
TRIM	Terrain Resource Information Management
WBID	West Bench Irrigation District
WDP	Watercourse Development Permit
WQA	Water Quality Advisory
WWMP	Wastewater Management Plan

1. Introduction

1.1 General

Ecora Engineering & Resource Group Ltd. (Ecora) in conjunction with Clarke Geoscience Ltd. (CGL) were retained by the Regional District of Okanagan-Similkameen (RDOS) to undertake a Geotechnical Review for the Greater West Bench Study Area (the GWB Study Area).

Geohazard issues in the GWB Study Area date back to 1913 when a landslide occurred during construction of the Summerland to Penticton Lakeshore Road, killing three workers (Vernon Morning Star, Jan 5, 2020). In 1958; a large sinkhole appeared in the area (Wright and Kelley, 1959), as a result, investigation, and mapping of the glaciolacustrine soils was completed, leading to early recommendations regarding land use activities to reduce the likelihood of accelerated erosion (Nyland and Miller, 1977).

Detailed geohazard mapping was completed for a portion of the GWB Study Area by Klohn Leonoff (1992). The map work identified potential areas affected by landslide, sinkhole, and silt bluff hazards, and was relied upon by RDOS for many years to direct land development away from hazardous areas.

In the RDOS Electoral Area “F” Official Community Plan (OCP) Bylaw No. 2790 (Bylaw 2790), (2018), the policy for hazard lands encouraged an updated technical assessment of geotechnical hazards in the West Bench / Sage Mesa area to current technical standards. With respect to hazard lands, the current Bylaw 2790 (2018) provides objectives and policies to minimize damages due to natural hazards, and to ensure that development avoids areas subject to hazardous conditions.

The intent of this study is to address the recommendations of Bylaw 2790 (2018) to develop a current technical assessment of hazard conditions within the designated GWB Study Area. The results from this Geotechnical Review report will provide a starting point from which RDOS may develop future policies for regulating various land use activities.

1.2 Study Area Location

The GWB Study Area, shown in Figure 1.2.a, is located within RDOS Electoral Area “F”, and is situated to the northwest of Penticton, British Columbia (BC). The GWB Study Area has a total area of 520 ha, and is comprised of the following residential neighbourhoods:

- Sage Mesa;
- West Bench;
- Husula Highlands; and
- Westwood Properties.

The GWB Study Area is bounded by First Nation Reserve Lands administered by the Penticton Indian Band (PIB). The Red Wing residential subdivision (indicated in Appendix B, Map 1.0) is situated along the east side of the West Bench. PIB are based in Syilx traditional territory and are one of eight communities in the Okanagan Nation (RDOS Electoral Area “F” OCP, 2018).

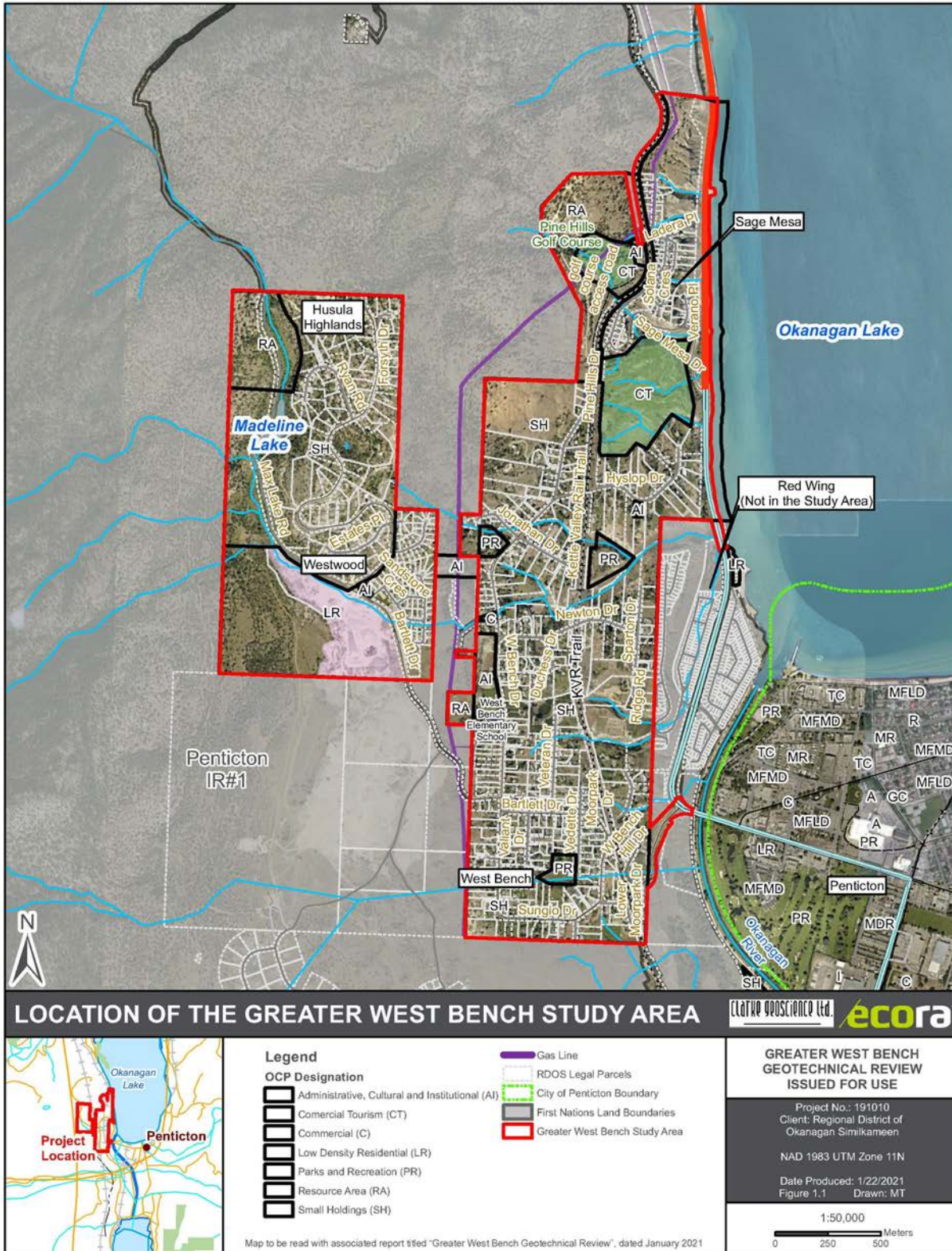


Figure 1.2.a Location of the Greater West Bench Project Study Area.

1.3 Project Objectives and Scope of Work

Based on the RDOS Request for Proposals (RFP No. 2019-DE-01), the project objectives and scope of work was to:

1. Conduct a review of previous and relevant geotechnical studies relating to the Greater West Bench (GWB) area and soil conditions.
2. Expand the Study Area to include all lands that are within RDOS Electoral Area "F" and have zoning designations in the "Regional District Okanagan-Similkameen, Electoral Area "F" Zoning Bylaw No. 2461, 2008"; generally, within the West Bench, Sage Mesa and Husula Highlands area (GWB).
3. Determine any changes since 1992 to topography, sinkhole patterns, roads and other infrastructure, and land use development using any available data such as air photo interpretation, site visits, survey of the Study Area residents, contact with provincial agencies, such as Ministry of Transportation and Infrastructure, etc. Identify and show changes on a base map of the Study Area utilizing existing LiDAR and RDOS data.
4. Field reconnaissance will be necessary to assess the nature, extent, and potential effect of natural hazards within the GWB Study Area.
5. A drilling program may not be necessary a part of the investigation program but utilization of available drill holes and well logs is the expectation for this study.
6. Provide discussions on the benefits and detriments of adding community servicing infrastructure, such as sanitary and storm sewers, and road curb and gutter to the Study Area. Some specifics to consider include:
 - a. How the infrastructure could impact the risk and influence area of existing geological hazards.
 - b. How staging of community servicing systems could be utilized to gain a maximum benefit with limited expenditures.
 - c. Provide recommendations regarding servicing, design and, installation procedures with a view to limiting or preventing adverse influences from servicing work on the prevailing subsurface conditions.
 - d. Discuss ongoing monitoring programs that should be implemented.
7. Assess the levels of risk of existing land use and individual lots in the hazard areas to determine appropriate use, for example, hard surface coverages, pools, and irrigation.
8. Explore opportunities, risks, and mitigation on existing parcels and zoning designations, taking into account existing subsurface prevailing conditions, that have the possibility of densification or alternate land uses, for example, secondary suites and carriage houses within existing zoned areas. Consideration should also be given to land areas where combinations of mitigative measures and ongoing geotechnical monitoring programs could facilitate future residential development and alternate land use possibilities.
9. Provide an interpretation of the potential hydrologic impacts to the Study Area of increased residential development in the higher elevation gravel/bedrock areas located immediately above and west of the silt bluffs in the West Bench/ Sage Mesa area.
10. Additionally, provide a discussion as to the character of the groundwater regime in these higher elevation areas and potential influences from climate change and increased development.

11. Consider the influence that groundwater levels have on defined hazard areas in the silt bluffs. Provide a framework for a groundwater monitoring program to track fluctuations within the Study Area. Include considerations for a mitigative program to control fluctuations if climate change and/or residential development causes unacceptably high groundwater levels.
12. Consideration of future climate change impacts for hazard conditions, mitigative methods, infrastructure design and land use planning.
13. Review benchmarks for risk provided in the Klohn Leonoff (1992) report and provide an up-date to current practice to allow administrators to decide on acceptable risk levels when adopting policies and bylaws controlling the type and location of land use in the Study Area.
14. Re-visit and assess established hazard zone boundaries set out in the Klohn Leonoff (1992) report and confirm or modify these boundaries. Prepare updated geotechnical hazard mapping that summarizes the results of the findings. Mapping should include but not limited to hazard and buffer zones, and risk assessment, mitigation method areas and land use alternatives. Slope stability assessments should follow EGBC (2010) Guidelines.

In response to the RFP, Ecora and CGL developed a work plan tailored to address the above-listed tasks. It is noted that the report organization deviates from this list to provide a logical flow. This Geotechnical Review report builds on the Klohn Leonoff (1992) report, comprising an assessment of geotechnical conditions utilizing historical and recent data, and applies modern technology and methods.

The final Geotechnical Review report and map work will inform the RDOS of the geotechnical conditions and appropriate use of lands within the GWB Study Area and provides a technical rationale for the development of land use policies specific to the area.

2. Approach and Methods

2.1 General

The Geotechnical Review approach, detailed in the following sections, draws upon a combination of Provincially and Nationally recognized techniques and approaches, and incorporates these different approaches to form one that is unique to the study.

This Geotechnical Review report relies on previous geohazard studies, reports, and borehole/well logs, completed by others, to provide subsurface soils and groundwater characterization. No additional subsurface investigations were carried out as part of this study. The current review includes interpretation and evaluation of recent air photo imagery to document terrain conditions, as well as landslide and sinkhole occurrences. Additional information on geohazard occurrences in the GWB Study Area was obtained through agency consultation and a public survey. A three-day field program was conducted to review site conditions, to confirm image interpretation, and to follow up on reported geohazard occurrences.

Relevant documents providing overall guidance to the technical approach include:

- Engineers & Geoscientists British Columbia (EGBC, 2010), *Guidelines for Legislated Landslide Assessments for Proposed Residential Developments in BC*.
 - This document provides professional practice guidelines for landslide analysis and guidance as to how to compare assessment results to levels of landslide safety.
- Wise, et al. (2004), *Landslide Risk Case Studies in Forest Development Planning and Operations*.
 - This document defines the framework, terminology, and procedures for conducting natural hazard and risk assessments.
- Canadian Technical Guidelines and Best Practices related to Landslides: a national initiative for loss reduction (2010-2016).
 - Canada's Landslide Guidelines include a collection of reports assembled by the Geological Survey of Canada (GSC). The documents provide a review and comprehensive summary of national approaches for landslide hazard assessment and risk assessment.
- Porter and Morgenstern (2013), *Landslide Risk Evaluation*. Open File 7312.

2.2 Previous Geohazard Studies and Relevant Reports

The primary document of relevance to this Geotechnical Review is the *West Bench / Sage Mesa Geological Hazards Review*, submitted to the RDOS by Klohn Leonoff in 1992. The Klohn Leonoff (1992) report forms the basis for this updated Geotechnical Review report. Other than this primary document, other key geotechnical documents providing background information and reference material for the assessment include the following:

Geohazard Studies

- Nyland and Miller (1977), *Geological Hazards and Urban Development of Silt Deposits in the Penticton Area*. BC Ministry of Highways and Public Works, Geotechnical and Materials Branch. Kamloops, BC.

Engineering Properties of Soils Reports

- Wright, A.C.S. and C.C. Kelley (1959), *Soil Erosion in the Penticton Series, West Bench Irrigation District, Penticton, BC*. Soil Survey Branch, Department of Agriculture, Kelowna, BC.

- Lum, K.K.Y. (1979), *Stability of the Kamloops Silt Bluffs*. M.A.Sc. Thesis, Department of Civil Engineering, University of British Columbia. Vancouver, BC.
- Iravani, S. (1999), *Geotechnical Characteristics of Penticton Silt*. PhD Thesis, Department of Civil and Environmental Engineering. University of Alberta. Edmonton, AB.
- Thurber (2007), *Highway 97 Bentley Road to Okanagan Lake Park, Detailed Geotechnical Design Report, Victoria, BC*.
- Bigdeli, A. (2018), *Evaluation and Control of Collapsible Soils in Okanagan-Thompson Region*. Ph.D. Thesis, Department of City Engineering. University of British Columbia – Okanagan. Kelowna, BC.

Hydrogeological / Groundwater Reports

- Piteau Gadsby Macleod Ltd. (1976), *Preliminary Report Hydrological Aspects, Husula Developments Ltd*. A hydrogeological investigation report completed for the Husula Highlands neighbourhood.
- Pacific Hydrology and Piteau Associates (1993), *Evaluation of the Groundwater Regime in the Area of Max Lake Road and Forsythe Drive on the West Bench at Penticton, BC*. Prepared for Inland Contracting Ltd. Vancouver, BC.

Several site-specific geotechnical investigations were provided for information purposes. However, there is no complete repository of reports that is readily available for review. Reports prepared for the subdivision approving authority are retained on file with the Ministry of Transportation and Infrastructure (MoTI) and were not available for review. Reports prepared for Building Permit (BP) requirements are retained on file with the RDOS and were also not available for review for this project.

The background information review found that few regional-scale geotechnical or hydrogeological investigations have been completed since the Klohn Leonoff (1992) review. To date, it is the results of the Klohn Leonoff (1992) study that have been incorporated into RDOS development planning policy.

2.3 Terrain Classification

Throughout the GWB Study Area the terrain was classified and mapped according to the BC Terrain Classification System (Howes and Kenk, 1997), and followed the BC Province (the Province) methods for terrain mapping (Resources Inventory Standards Committee, 1996). These methods represent current standards of practice for terrain mapping in BC and provide a consistent and standardized approach.

2.3.1 Historical Air Photo and Imagery Review

A review of available historical air photos and Google EarthTM imagery was undertaken to determine changes in land development and terrain response since the Klohn Leonoff (1992) report, which was based on air photos from 1990. The overall historical air photo record of the GWB Study Area spans across 80 years and includes 15 years of photographic coverage during this period. Since the Klohn Leonoff (1992) study, there have been seven years of air photo and orthophoto coverage, including high resolution digital orthoimagery and LiDAR data acquisition. Table 2.3.a provides a list of historic imagery reviewed for this assessment. It is noted that identification of features was limited to the resolution, elevation, and scale at which the aerial photography was taken.

Table 2.3.a List of Historical Imagery Reviewed for this Geotechnical Review

Year	Flight Line and Photo Number	Scale
1938	BC105 No. 41-42	Not available
1951	BC1244 No. 38-39	Not available

Year	Flight Line and Photo Number	Scale
1963	BC4171 No. 189-190	1:15,840
1974	BC7572 No. 23-24	1:16,000
1979	BC5329 No. 228-229	1:32,000
1980	BC80054 No. 100-101	1:20,000
1985	30BCC371 No. 65-66	1:15,000
1990	30BCB90004 No. 27-29	1:10,000
1996	30BCC96046 No. 25-26	1:15,000
2001	15BCC01032 No. 216-217	Not available
2007	BCD07035 No. 133-135	1:27,000
2003, 2010, 2016, 2018	Google Earth	
2018	RDOS GIS (LiDAR)	

2018 LiDAR¹ data (hillshade and orthophoto imagery) was interpreted for the terrain mapping, sinkhole inventory, and landslide inventory. The 2018 Bare-Earth model developed from the LiDAR data was used to create a base for the Terrain Map (see Appendix B, Map 2.0). Figure 2.3.a shows a clipped example of the Bare-Earth model. Terrain polygon linework, interpreted sinkholes, and landslides were transferred to the base map as a shapefile (.shp) file. An associated terrain ArcInfo GIS database was also transferred.

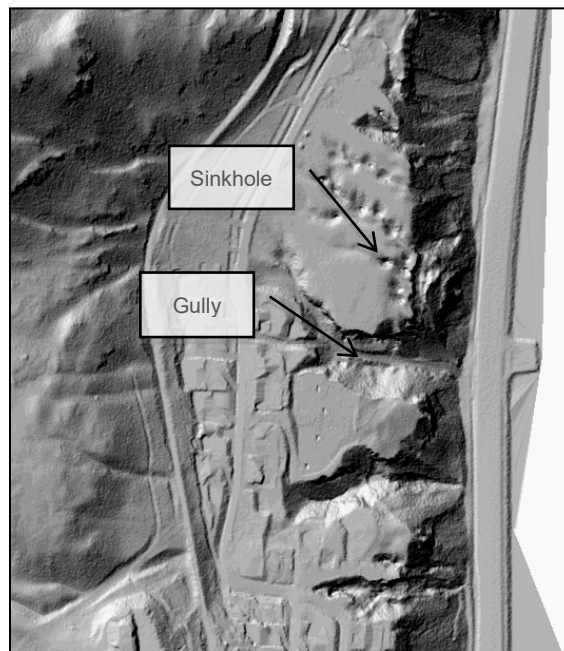


Figure 2.3.a A clipped example of 2018 Bare-Earth LiDAR data, showing gullies and sinkholes at the north end of the GWB Study Area.

The 2018 LiDAR data was supplemented with field observations, available information on historical events from RDOS and MoTI, background review information, and information from local residents.

¹ LiDAR stands for *Light Detection and Ranging*. It is an airborne remote sensing method that uses a pulsed laser to measure distances to the earth surface. Processed LiDAR data used to create a bare-earth image eliminates vegetative cover such that precise information on the earth surface and its character may be obtained using this technique.

2.3.2 Borehole and Well Log Data Compilation

The Government of British Columbia Groundwater Wells and Aquifers database (<https://apps.nrs.gov.bc.ca/gwells/>) was reviewed for all groundwater well records within the GWB Study Area. The information provided by the records included subsurface soils and groundwater conditions. Select well records were used to develop two geologic cross-sections through the Study Area (see Section 2.3.2 above).

2.3.3 Field Review

Fieldwork was completed between November 27 and 29, 2019. The entire portion of the GWB Study Area covered by residential development was traversed by vehicle. Targeted groundwork was completed with an intent to confirm surficial materials (for the terrain mapping), to confirm areas of instability, sinkhole activity, and to observe surface water storm runoff conditions.

No soil sampling or subsurface investigation was conducted during the field review. Select photographs taken during the fieldwork are provided in Appendix C.

2.4 Agency Consultation, Interviews and Public Survey

Past geotechnical hazard events and current site conditions was gathered through agency consultation, interviews, and a web-based public information survey.

RDOS staff coordinated the provision of background information and consultation however, due to data storage and retrieval limitations, only a few recent examples of documented geohazard occurrences were provided. The recent examples were addressed by the Public Works - Operations Department. One example included development of a sinkhole near a broken water main in Sage Mesa (Tetra-Tech EBA, 2014).

Mr. Tom Kneale, P.Eng., the MoTI manager for Geotechnical and Materials Engineering for the Southern Interior Region provided previous geotechnical investigation reports and data for three bridges over the Kettle Valley Rail (KVR) Trail. No information was provided by MoTI District staff, nor from Acciona Infrastructure Maintenance Inc. (AIM), the current Roads Maintenance Contractor

Local resident, John Chapman, provided historical geotechnical investigation documentation for a proposed residential subdivision development in the late 1990s, at the north end of the study area. Interviews with long-time residents and an electronic public participation survey arranged by the RDOS communications department garnered anecdotal information on previous landslides, sinkholes, and other geotechnical issues. A copy of the RDOS survey is included in Appendix D and results are presented for discussion in Section 3.3 below.

3. Geotechnical Character of Study Area

3.1 General

The following sections describe the geotechnical character of the GWB Study Area, including surface and subsurface conditions that support the subsequent interpretations and hazard analysis.

The GWB Study Area is characterized as a relatively flat silt terrace, dissected by gullies, and bounded to the east by dramatically steep bluffs adjacent to Okanagan Lake. The western side of the study area is characterized with several levels of terraces, comprised of sands and gravels. The mid-slope area between the silt terrace and the gravel terraces has a kettle topography identified by an irregular pattern of hills, ridges, and enclosed depressions. The mid-slope area is bisected by the Madeline (Max) Lake Valley. Upland areas within and adjacent to the GWB Study Area are described as moderate to steep bedrock-controlled slopes.

Post-glacial landform development combined with the stratigraphic sequence of the GWB soils and the Engineering Material Properties of the soil (see Section 3.4), control the geotechnical character of the GWB Study Area. The combination of unique soil characteristics, combined with land use practices, dictates the nature and frequency of geomorphological processes, and associated geotechnical hazards.

3.2 Surficial Geology

3.2.1 Landform Development

Landforms and surficial materials in the GWB Study Area reflect the post-glacial history and are relevant to this Geotechnical Review because it has led to the formation of the silt bluffs, and juxtaposition with the sand and gravel terraces. Post-glacial landform development in the South Okanagan is detailed by Nasmith (1962), Roed and Fulton (2011), and is also interpreted by Nyland and Miller (1977), and Klohn Leonoff (1992).

At the end of the last glaciation, glaciers in the Southern Interior of BC melted, not by retreating, but rather by down-wasting (melting in place). Ice melted first from the upland plateau, while ice remained in the valley bottom.

At the end of the most recent glacial episode, the Faulder-Meadow Valley Area west of Summerland, BC, was impounded behind a glacial ice dam (Nasmith, 1962). As a result, Trout Creek was diverted southward down a valley located east of Blue Mountain and west of Mount Nkwala (referred to as "Madeline Canyon" by Roed and Fulton (2011)) and discharged onto a periglacial fan. Much of the sandy gravel deposits may have been deposited on top of, or around stagnant ice in that area at the time of glacial retreat and are therefore described as ice-contact deposits (Pacific Hydrology and Piteau Associates, 1993). Once the ice began to retreat, Trout Creek re-routed to its present-day alignment, creating the Trout Creek Fan just south of Summerland.

During the period of meltwater flow through the Madeline Canyon, coarse glaciofluvial outwash deposits were deposited at the outlet of the canyon, which now contains a small lake called Madeline Lake (also referred to as "Max Lake"). The deposits in the area extend south along the lower valley slopes and currently support several sand and gravel quarry operations, one of which is located within the GWB Study Area.

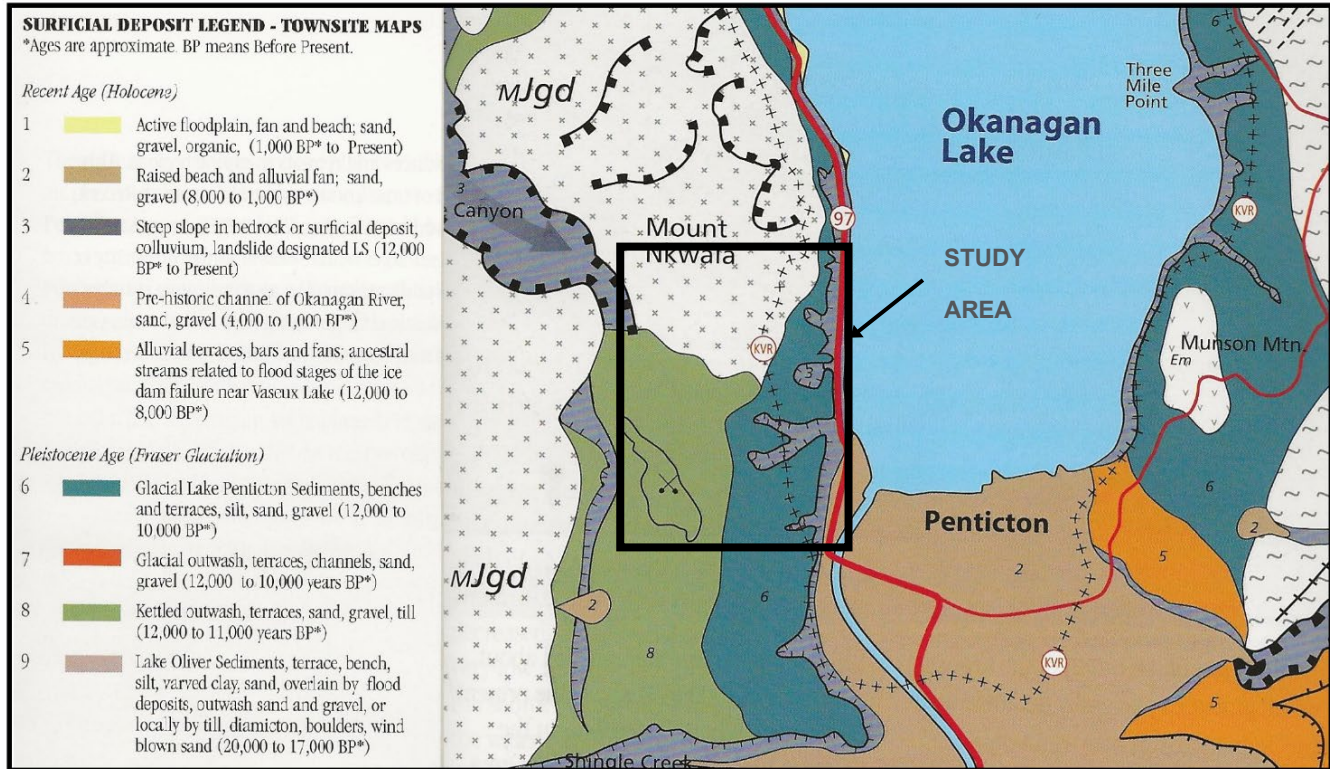


Figure 3.2.a Glacial Deposits in the Pentiction Area (from Roed and Fulton, 2011)

During the late stages of deglaciation, the Okanagan Valley was occupied by a large lake, referred to as Glacial Lake Pentiction. At one time the valley lake stretched from Osoyoos to as far north as Enderby, draining into the Shuswap / North Thompson River and Fraser River system. This was later bisected, with the predominant flow trending southwards through the South Okanagan and into the Columbia River system. During the period that Glacial Lake Pentiction occupied the Okanagan Valley, very fine silty material (i.e., glaciolacustrine deposits) were deposited and accumulated on the lake bottom. The silt was deposited in rhythmic successions due to seasonal variations in runoff (i.e., varves). Thicker layers were deposited during the higher runoff periods through spring and summer, while thin layers were deposited during the low runoff winter months. As a result, a layered stratigraphic sequence of silt, sometimes interbedded with fine sands, deposited during periods of extreme inflow, accumulated over time.

Glaciolacustrine deposition is responsible for development of the silt terrace that forms the majority of the GWB Study Area to the east. The silt deposits, up to 100 m thick, were deposited up to approximate elevations between 400 m above sea level (m asl) and 420 m asl.

During retreat of the last phase of glaciation, as the lake lowered to the current elevation of present-day Okanagan Lake, extensive excision and erosion of the bluffs likely occurred, from surface rilling and gully formation to mass wasting and large landslides. Erosional processes such as piping, caving, and collapse / compression are associated with the evolution of the gullies. Saturated formations west of the silts also drained with the lowering of the lake, contributing to further erosion of the bluffs.

It is relevant to note that for several thousand years immediately following glaciation (also known as the paraglacial period) the climate transitioned from a cool, wet period associated with a very high sediment yield, and characterized by large-scale mass wasting and high rates of landscape evolution (Church and Ryder, 1972). The climate then transitioned to a warm, dry period punctuated by short periods of neoglacial advances and, for the most recent (few thousand) years, rates of sediment yield and mass movement remain low. More recently, landscape evolution is more likely to be associated with degradation, valley downcutting, and erosion.

Glacial deposits in the vicinity of the GWB Study Area are shown in Figure 3.2.a. The distribution of sediments shows that the outwash sands and gravels are peripheral to the Glaciolacustrine Silts. However, the contact zone between the sands and gravels and the silts is not well defined. Previous studies indicate that there is some discontinuous interbedding on the periphery (Nyland and Miller, 1977). Further north in the Sage Mesa area, the silt deposits are less influenced by the meltwater sands and gravels of the Madeline (Max) Lake Valley area.

Previous work speculated that deposition of the Glaciolacustrine Silts and the ice-contact sands and gravels was at least partly simultaneous, although the time required for deposition of the silt would have been longer, and that the deposits were subsequently eroded with lowering glacial lake levels (Pacific Hydrology and Piteau Associates, 1993). The complex interrelationships between the Glaciolacustrine Silts and the sands and gravels influence the movement of groundwater through the GWB Study Area and subsequently influences slope stability.

3.2.2 Geologic Cross-Section

As discussed in Section 2.3.2, two geologic cross-sections were developed based on available borehole and water well records. The borehole and water well data was entered into gINT software² to create the cross-sections. The cross-sections are aligned east to west through the study area, illustrating the general topography of the bedrock surface, and the relationship between the outwash sands and gravels and the Glaciolacustrine Silt. Simplified versions of the two cross-sections are shown in Figure 3.2.b and Figure 3.2.c. Detailed cross-sections as well as a plan view map showing the cross-section locations, are provided in Appendix E1 and E2.

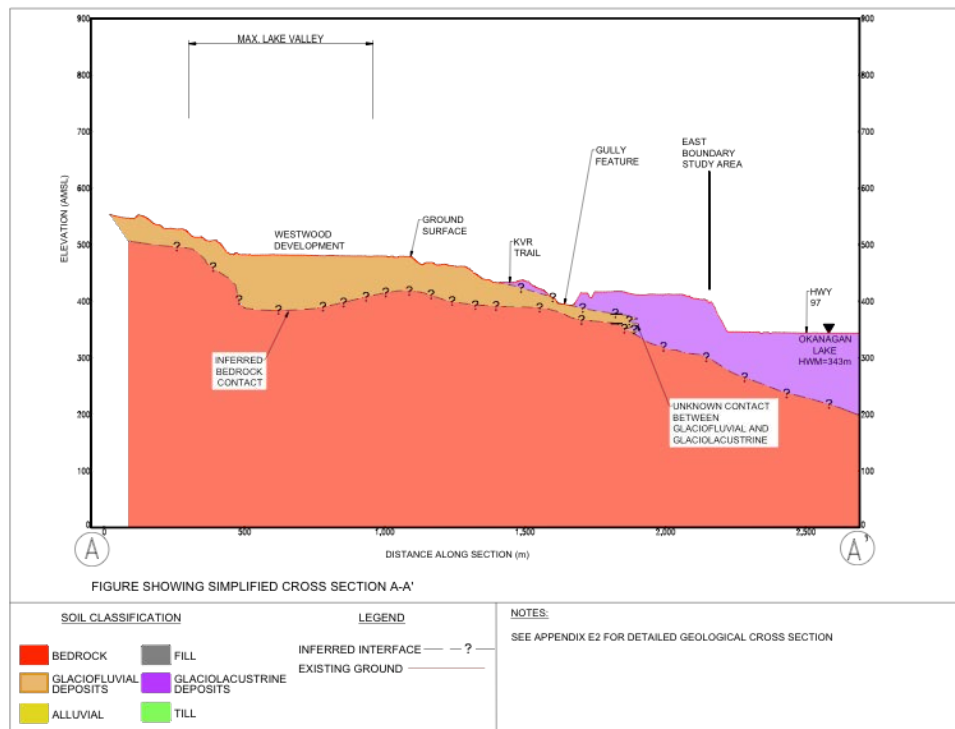


Figure 3.2.b Simplified Geologic Cross-Section A-A'

² gINT is a subsurface data management and reporting software product that logs subsurface data from boreholes or wells for consistent visualization.

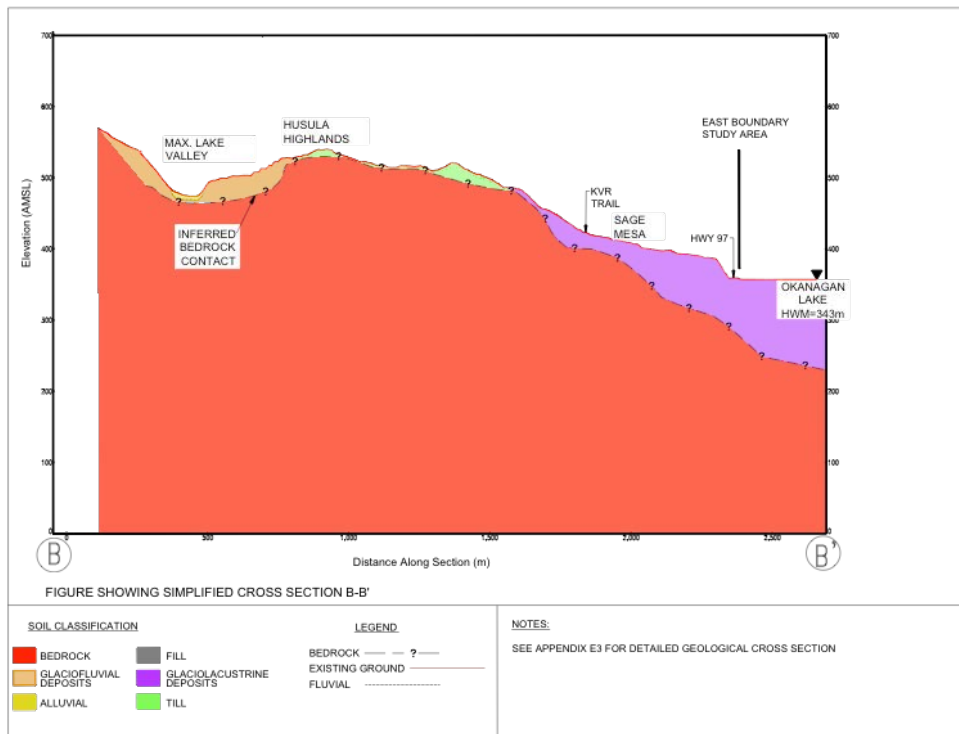


Figure 3.2.c Simplified Geologic Cross-Section B-B'

The following stratigraphic interpretations are made from the cross-sections:

- As described in the Pacific Hydrology and Piteau Associates (1993) report and confirmed in this report, the cross-sections suggest that there is a buried bedrock trough (either a glacially scoured trough, or a bedrock graben defined by a regional scale fault (see Section 3.5, Figure 3.5.a)) trending north-south through the Madeline (Max) Lake Valley. The eastern edge of the trough forms a buried bedrock ridge, which serves to direct the predominant flow of groundwater southwards.
- There are few available boreholes to characterize the interfingering contact between the outwash sands and gravels, and the Glaciolacustrine Silts. Along the western edge of the Glaciolacustrine Silt terrace, available boreholes suggest that the silts are sometimes interbedded with sands, and generally overlie the outwash sands and gravels.
- Gullies dissecting the Glaciolacustrine Silts intercept the sands and gravels. As reported by Klohn Leonoff (1992) and confirmed here, all gullies within the GWB Study Area terminate at the outwash contact, or at a bedrock outcrop. This suggests that these features slowed or stopped the headward progression of the gully and that groundwater flow from the gravels or along the bedrock contact may have influenced the formation of the gully.
- Approaching the east side of the study area towards Okanagan Lake, the Glaciolacustrine Silts are very thick (approaching 100 m) and the depth to bedrock is very deep (est. 100+ m).

3.2.3 Terrain Classification

Terrain classification was undertaken for the GWB Study Area and is presented in Appendix B, Map 2.0. The analysis (described in Section 2.3) essentially confirms the Klohn Leonoff (1992) geological map. Updated imagery since publication of the Klohn Leonoff (1992) geological map enabled this Geotechnical Review to refine

and make minor adjustments in terrain boundaries. In addition, digital imagery and the use of GIS software allowed for more precise presentation and mapping of the results.

Interpretation of the terrain confirms that the lower slopes, representing just over half of the GWB Study Area (53%), consist of a silty glaciolacustrine terrace and associated steep silt bluff slopes. Traditional terrain mapping methods would have resulted in combining the terrace and bluff units however, it was decided that these units should be separated due to the different land management implications of these areas. A summary of the terrain classification is provided in Table 3.2.a below.

West of the glaciolacustrine terrace is a sand and gravel outwash fan with associated terrace deposits, derived from the post-glacial meltwaters flowing from the Trout Creek catchment to the north. For the purposes of the terrain mapping, ice-contact sand and gravel deposits are not distinguished from the outwash deposits; both are classified as glaciofluvial deposits. The glaciofluvial sandy gravel and more recently deposited fluvial deposits represent 41% of the GWB Study Area.

Small upland portions of the GWB Study Area are classified as moderate to moderately steep bedrock-controlled slopes, mantled with silty Till and/or silty-gravelly colluvium (4%). The remaining 2% is made up of the developed Highway 97 corridor.

Appendix B, Map 2.0 provides an updated terrain map illustrating the distribution of soils within the GWB Study Area and forms the basis for subsequent hazard interpretations and analysis.

Table 3.2.a Terrain Classification within Study Area

Terrain Unit	Description	Area (ha) (% of study area)
zLG	Silty Glaciolacustrine Sediments	274 ha (53%)
sgFG	Sandy Gravel Glaciofluvial Sediments	187 ha (36%)
sgF	Sandy Gravel Fluvial Sediments	24 ha (5%)
zsM	Silty Sand Morainal (Till) Sediments	21 ha (4%)
Highway	Developed Highway 97 corridor	13 ha (2%)
Total		520 ha

3.2.4 Geohazard Events Since 1992

The sources of information for documented geohazard events or encounters with geotechnical issues since 1992 are from agency consultation, interviews, or public survey (as described in Section 2.4). Some events were also documented by local online news sources. The documented events (since 1992) have been attributed to geotechnical issues (associated with water leaks, sinkhole development, or landslides) or to safety issues (where people (or animals) had encountered and suffered injuries from the geotechnical hazard(s) such as a sinkhole).

Previous reports by Nyland and Miller (1977) and Iravani (1999) noted the occurrence of geohazard events within the GWB Study Area around the time of initial land development. These include documented historical occurrences of sinkhole development, gully erosion and soil settlement. Most events, observed to have resulted from domestic water leaks or irrigation, septic fields, or where roof and road drainage have been diverted onto the silt soils, caused minor property damage, but rarely injury or death. Some exceptions to this include:

- The death of three workers during construction of the Summerland to Penticton Lakeshore Road (Highway 97) in 1913 by a collapsing silt bluff slope (Vernon Morning Star, Jan 5, 2020); and
- The death of one person and destruction of three homes along Lakeshore Drive in Summerland (north of Study Area) in September 1970 by a silt block fall (reported in Nyland and Miller, 1977).

Sinkhole occurrences (since 1992) are not uncommon within the GWB Study Area, however, are relatively small in size and have little consequence in terms of damages and/or injuries. Development of a notable sinkhole occurred in the Sage Mesa area in 2014, along the water main distribution right-of-way (ROW). A subsequent geotechnical investigation did not identify the cause of the sinkhole but did provide comments for remediation (Tetra Tech EBA, 2014). Approximately two truckloads (20 m³) of granular material was backfilled into the sinkhole.

Numerous silt block falls have impacted Highway 97 between Summerland and Penticton, resulting in debris covering the road, however no fatalities have been recorded. Table 3.2.b below provides a summary of the documented geohazard events within the study area since 1992.

Table 3.2.b Documented Geohazard Events within the Study Area since 1992

Date	Location	Description of Event (information source)
August 24, 2004	Sage Mesa	Deer rescued from sinkhole (www.castanet.net)
Not Specified	Sage Mesa	Uneven settlement of soils under a recently completed pool caused damage to pool and to road below the silt bluff (public survey)
Not Specified	Sage Mesa	Collapse of a carport foundation into a sinkhole
Not Specified	Sage Mesa	Major soil cavity formed under a house
Not Specified	Sage Mesa Road (during construction)	Large sinkhole formed during construction. When filling the hole, reported seeing material bubbling up just offshore in Okanagan Lake
Not Specified	At old hotel on Highway 97	Crawling up pipe starting at Highway and exiting at railroad tracks (unknown source)
April 10, 2014	Between 4655 and 4675 Sage Mesa Drive (Waypoint A)	Sinkhole formed along water main right of way and backfilled (Tetra Tech EBA, 2014)
October 2015	4200 Highway 97, Summerland, BC (outside of the study area)	Buried water pipe broke and resulted in creation of large erosion gully feature and sinkhole (Keystone Environmental, 2017)
April 12, 2018	West Bench Hill Road, Penticton, BC (Waypoint B)	Landslide on silt slope above road (GlobalNews.ca)
August 19, 2018	604 West Bench Hill Rd. (Waypoint C)	Damage to property due to broken irrigation line (investigated by Ecora).
Nov. 6, 2018	KVR Trail, West Bench (Waypoint D)	Penticton firefighters retrieve cyclists who fell into sinkhole on KVR Trail (www.pentictonwesternnews.ca)
Feb. 22, 2019	Highway 97, just south of Summerland, BC (outside GWB Study Area)	Landslide from silt bluffs onto Highway 97
May 15, 2019	KVR Trail, north of West Bench Hill Rd., West Bench (Waypoint E)	UTV driver hit a sinkhole and was injured when thrown down embankment (KelownaNow.ca)

Despite mapped landslide and sinkhole occurrences based on 2018 LiDAR data, orthophotos, and supplemented by fieldwork, the occurrences may have existed prior to 1992. The interpretation is impacted due to a lack of consistent landslide and sinkhole monitoring and incident reporting within the RDOS.

Based on data gathered from public media and anecdotal sources, the landslide and sinkhole inventory is summarized as follows:

- 12 landslides were identified along the Glaciolacustrine Silt bluffs and four landslides were identified on steep glaciofluvial side slopes of the Madeline (Max) Lake Valley, for a total of 16 landslides within the Study Area (see Appendix B, Map 3.0). Landslides were not identified in

the Klohn Leonoff (1992) mapping. Only one of the slides, located at the junction of Sage Mesa Road and Highway 97, is characterized as an ancient large-scale rotational landslide.

- 97 sinkholes were identified within the GWB Study Area (several lie just outside the GWB Study Area boundaries but were counted regardless) (see Appendix B, Map 4.0). By comparison, Klohn Leonoff (1992) identified 301 sinkholes using air photos, field work and anecdotal information.

The reason for the difference is somewhat unclear but it is possible that both the image resolution and image interpretation were factors. It is also quite likely that a significant number of sinkholes have been infilled with soil during land development or are obscured by soils and/or vegetation.

Similarly, to RDOS' landslide and sinkhole monitoring and incident reporting, the MoTI Road Maintenance Contractor(s) lacks consistent reporting of geotechnical or water management issues. Historically, the road maintenance Contractor for the MoTI Area 8 South Okanagan was Argo Road Maintenance Inc. (Argo), however in 2019, road maintenance activities were taken over by AIM. It is unclear whether Local Area Specifications (LAS) are in place and whether maintenance measures address the sensitive soil conditions. More information on road maintenance record-keeping and communication protocol with RDOS is required.

Correspondingly, RDOS reporting of geotechnical issues associated with water line leaks or breaks, or instances where residents have documented issues with groundwater seepage, instability or erosion is inconsistent.

3.3 Public Survey Results

In an effort to obtain information regarding historical landslides, sinkholes and other geotechnical issues, a public survey of area residents was conducted. The survey was distributed to RDOS Electoral Area "F" residents and posted on the RDOS website between February 14 and March 13, 2020.

A total of 41 responses were received from residents, with an average timeframe of occupation within the GWB Study Area (where indicated) of 17 years. Several respondents highlighted smaller-scale issues that would not have been observed by the historic air photo review or fieldwork assessment due to size and/or location (i.e., on private property). A detailed response table is provided in Appendix D. A summary of responses indicates that:

- Approximately one third (33%) of the 41 respondents reported experiencing issues with sinkholes;
- Approximately 15% of respondents reported issues with land subsidence, landslides, erosion, or other land disturbance; and,
- Few respondents (5%) reported issues with groundwater seepage.

3.4 Engineering Material Properties of the Glaciolacustrine Silts

The Glaciolacustrine Silts encountered in the Study Area, also commonly known as Penticton Silt (used interchangeably in the following section), can present significant geotechnical challenges, and have historically performed poorly when their unique behaviour has not been taken into consideration during site development.

The Klohn Leonoff (1992) report derived engineering material property information and data for the Glaciolacustrine Silts from Quigley (1976), and Nyland and Miller (1977). This Geotechnical Review derives additional engineering material property data from Iravani (1999) and Thurber (2007). The background reference studies include in-situ and laboratory testing of the silt at various moisture contents, including seismic cone penetration testing, classification, mineralogy and chemical testing, consolidation testing and triaxial testing. It should be noted that the engineering material properties in some studies include both undisturbed glaciolacustrine soils and colluvial soils, derived from the glaciolacustrine deposits.

The Glaciolacustrine Silts are generally described as varved (Jones, 1973; Shaw, 1975; Evans, 1982; Thurber, 2007), a few cm to ~1 m thick (Thurber, 2007), with small pockets of granular material and erratics. Soft sediment deformation structures have also been noted. Comparatively, Colluvial Silt has been characterised as being derived from Glaciolacustrine Silts (Iravani, 1999), homogeneous, and occur on slopes and infilling gully bottoms (Buchanan, 1977; Nyland and Miller, 1977; Wilson, 1985; Klohn Leonoff, 1992; Thurber 2007).

Contrary to other studies, the Iravani (1999) study indicated that soil suction, as a result of negative pore pressure in unsaturated soils above the groundwater table, is not a key factor in the behaviour of the Pentiction Silt. Rather, the study implies that the Pentiction Silt is structurally bonded by a number of chemical bonding agents (mainly silica acid gel), and the strength of the inter-particle bonding is highly sensitive to changes in water content.

The Engineering Material Properties of the Glaciolacustrine Silt and Colluvial Silt (where identified), which have been used for the current assessment, are discussed in the following sections. Table 3.4.a is a summary table showing those properties, which have been used for the current assessment. Significant differences are noted between properties identified by Klohn Leonoff (1992) and those identified for this assessment using more recent studies. Further detailed descriptions of the Engineering Material Properties of the Glaciolacustrine Silts are provided in Appendix F.

Table 3.4.a Summary of Engineering Material Properties of the Glaciolacustrine Silts, as summarized by Iravani (1999) and Thurber (2007)

Material Property Type	Parameter Values	Comments
Grain Size Analysis	Sand: 0% - 5% Silt: 70% - 100% Clay: <1% - <20% Natural Moisture Content: 9% - 30%	Generally, no major difference identified between glaciolacustrine and colluvial silts by the author. Sand: up to 20% reported in one study Silt: dominant material Clay: up to 91% reported in one study Natural Moisture Content: 9% - 30% Limited Natural Moisture Content data available
Atterberg Limits	Liquid Limit: 21% - 40% Plastic Limit: 20% - 33% Plasticity Index: 1% - 14% In-situ Water Content: 1% - 43%	Liquid Limit: between 50% and 68% reported in three studies Plastic Limit: as low as 13% reported in one study Plasticity Index: up to 43% reported four studies Only one study provided properties for colluvial silt, which appear similar to the other studies
Cohesion	Drained: 30 kPa – 35 kPa (peak) 10 kPa (residual)	MoTI reported lower drained shear strengths in their study
Friction Angle	30°–35°	Generally, for silt with moisture content at/near, or significantly below the Plastic Limit Soils with higher cohesion (peak strength) reported lower friction angles in one study
Consolidation	Volumetric strain decrease in Glaciolacustrine Silts: 2% - 11% Volumetric strain decrease in Colluvial Silts: 25% - 31%	
Specific Gravity	2.6 - 2.88	
Density	1152 kg/m ³ – 1734 kg/m ³ (dry density)	
In-situ Void Ratio	0.68 - 1.56	

Material Property Type	Parameter Values	Comments
Fabric and Scanning Electron Microscopy (SEM)	Horizontally oriented platy particles Anisotropic fabric Micaceous	

3.4.1 Grain Size Analysis

Grain size analysis (GSA) indicates the glaciolacustrine soils typically comprise 0% to 5% sand (but can be up to 10%), 70%+ silts (generally 80%-90%), and the remaining percentage is clay (generally 8% to 18% based on Iravani, 1999, and Thurber, 2007).

Evans and Buchanan (1976) and Wilson (1985) noted there was no major difference in grain size between the glaciolacustrine soils and the colluvial silt. However, there is very little data on colluvial silt to confirm this. Natural moisture contents in the glaciolacustrine soils generally range between 10% to 30%. No natural moisture contents were reported for testing carried out on the colluvial silt.

Ecora has carried out limited soils testing on the Glaciolacustrine Silts for a number of projects in the area. Results of the GSA and natural moisture content tests concur with the previous studies, with fines contents of 94% to 100% and moisture contents in the range of 9% to 20% (average of 16%).

3.4.2 Natural Moisture Content & Atterberg Limits

Iravani (1999) indicated that the in-situ water content of the Pentiction Silt is typically around 15-25% depending on seasonal changes and depth, and that water content increases rapidly with distance from the exposed bluff faces. Iravani (1999) also indicated that the water content at saturation is 43%, which is higher than the liquid limit (LL) of the silt.

Previous Atterberg Limits testing in the glaciolacustrine soils indicated the material primarily consisted of low plastic silt (ML) and low plastic silt and clay (ML-CL). Laboratory test results indicated the soils ranged between 21%-40% for LL, 13%-33% for plastic limits (PL), and 1%-<20% plasticity indices (PI).

Based on the summary reports by Iravani (1999) and Thurber (2007) LL, PL, and PI generally ranged between 35%–40%, 25%–33%, and 0%-10% respectively. There is limited data on the plasticity of the colluvial soils. Undisturbed samples tested by Iravani (1999) from the Okanagan Lake Park Slide and Koosi Creek slide were noted to have shown swelling up to 45% volume, with slurry samples showing signs of shrinkage and volume decrease upon exposure to drying.

Results of Ecora's Atterberg Limits testing in the Glaciolacustrine Silts indicates the LL, PL, and PI were generally within the ranges tested by others.

3.4.3 Shear Strength

Iravani (1999) stated that the Pentiction Silt are strongly structured, with undrained stress paths controlled by soil structure, which in turn are moisture sensitive. Some signs of stress paths caused by pore pressure was noted by Iravani (1999), however the pore pressure generated in test results did not have a significant influence on the undrained response of structured Pentiction Silt. Soil structure is a controlling factor of undrained stress paths rather than generation of pore pressures. Increase in structural bonding within the soil increases as the soil water content decreases. Under confined conditions, the behaviour of the Pentiction Silt is attributed to the soil structure (cohesion rather than friction).

Unconfined compression tests performed by Lum (1977) indicated the average compressive strength was 180 kPa for uniaxial loading parallel to bedding, and 201 kPa for uniaxial loading perpendicular to bedding. The

consolidated triaxial tests indicated samples with higher effective confining stresses (>100 kPa) presented an average shear strength between 130 kPa to 204 kPa and did not strain soften. Samples with lower effective confining stresses (<100 kPa) averaged 60 kPa and were found to show strain softening. The average water contents of the samples were 7%.

Triaxial testing by Lum (1977) and Iravani (1999) indicated shear strength increased with a decrease in water content. Low effective confining stresses were found by Lum (1977) to have cohesion of 60 kPa with a drained friction angle of 17.8°. Wilson (1985) carried out direct shear tests on unsaturated reconstituted specimens, resulting in a friction angle of 38° and 2 kPa cohesion. Testing by Sobkowicz and Coulter (1992) found a 5% increase in friction angle on specimens with water contents significantly lower than the PL, compared to specimens with water contents at/near the PL. The cohesion intercept was the same (30 kPa) for both sample types.

3.4.4 Internal Angle of Friction

Based on the summary reports from Iravani (1999) and Thurber (2007), the internal angle of friction of the Pentiction Silt range between 30° and 35°, with an approximate average of 32°. Klohn Leonoff (1992) summary report indicated friction angles of 17° to 35° in the clay fraction. The studies did not distinguish between glaciolacustrine and colluvial silt.

3.4.5 Collapse of Internal Soil Structure

Limited 1-D consolidation testing in the glaciolacustrine soils indicated a general volumetric strain decrease between 2% and 4%. Results by Nyland and Miller (1977) showed a range of between 3% and 11%, however they noted “the magnitude of collapse increases as vertical effective stress corresponding to the flooding stage increases”.

Lum (1977) noted remolded dry specimens were more compressible than dry undisturbed specimens, and “glaciolacustrine soils are sensitive to water content and exposure to moisture, especially at small values of water content”. MoTI results of 1-D consolidation testing reported by Thurber (2007) indicate a volumetric strain decrease of between 25% and 31% in the colluvial soils.

3.4.6 Specific Gravity, Density, and In-Situ Void Ratio

Laboratory testing of specific gravity, density, and in-situ void ratio is poorly documented in Pentiction Silt and studies do not distinguish between glaciolacustrine and colluvial silt. Based on the available data, specific gravity is reported to range between 2.6 to 2.88; maximum dry density is between 1152 kg/m³ to 1734 kg/m³; and in-situ void ratio ranges between 0.68 and 1.56.

3.4.7 Fabric and Scanning Electron Microscopy (SEM)

Previous studies on the fabric of the Glaciolacustrine Silts generally found the material to be horizontally oriented with anisotropic fabric. Iravani (1999) noted that one cycle of environmental loading resulted in changes in soil fabric and generation of meta-stable voids. His analysis using damping resulted in the formation of micro-cracks and showed evidence of de-structuring on a grain-to-grain level.

3.5 Bedrock Geology

The GWB Study Area is located on the east-facing slopes on the west side of the Okanagan Valley, with a regional north-south trending trench corresponding to the Okanagan Fault. The GWB Study Area is underlain by

intrusive igneous rocks of the Bromley Batholith, while at depth a fault boundary with the much older Okanagan Gneiss is assumed, with minor transverse faults intersecting the south side of Mount Nkwala (Okulitch, 2013) (Figure 3.5.a).

Intrusive igneous rocks are formed under the earth surface by the cooling of magma and are composed of mostly durable minerals in the form of large interlocking crystals and wide-spaced joint planes. Bedrock underlying the GWB Study Area is characterized as medium to coarse-grained granodiorite, quartz diorite and granite.

Normally, these rocks are quite stable and can support steep slopes. However, the presence of feldspar minerals, as indicated by a pinkish rock colour, indicates a less resistant rock type that is subject to granular disintegration due to chemical and mechanical weathering.

Within the GWB Study Area, bedrock is only exposed on the steep upper elevation slopes, such as the side slopes of Mount Nkwala, with minor outcrops at the incised gully headwalls. Available borehole records in the West Bench and Sage Mesa areas indicate that bedrock is quite deep (greater than 80-100 m deep), except for a buried bedrock ridge situated mid-slope, where bedrock is approximately 20 m deep. The orientation of the buried bedrock ridge and the adjacent Madeline (Max) Lake Valley generally coincides with the minor transverse fault, west of Mount Nkwala.

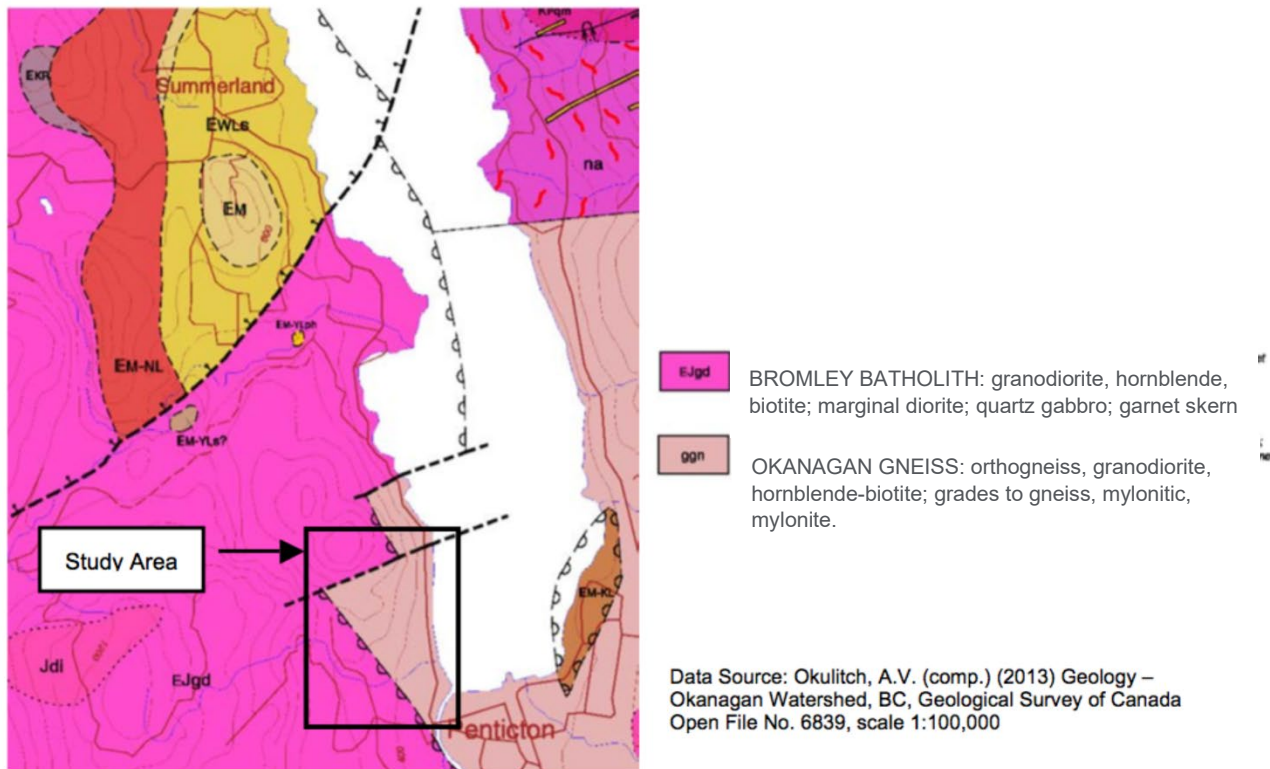


Figure 3.5.a Bedrock Geology within the Study Area (from Okulitch, 2013)

3.6 Seismicity

The GSC has developed a probabilistic (5th Generation) seismic hazard model (Halchuk et. al, 2015) that forms the basis of the seismic design provisions of the 2015 National Building Code of Canada (NBCC, 2015).

Peak Ground Accelerations³ (PGA) and Spectral Accelerations (Sa(T)) for a reference “Class C” (very dense soil and soft rock) can be obtained from the Earthquakes Canada website (<http://earthquakescanada.nrcan.gc.ca>) for various return periods. The values for the GWB Study Area are summarized in Table 3.6.a below.

Table 3.6.a Reference (Class C) Design Peak Ground Acceleration (PGA) and Spectral Accelerations (Sa(T)) for the Greater West Bench Study Area

Return Period	PGA (g)	Sa(0.2) (g)	Sa(0.5) (g)	Sa(1.0) (g)	Sa(2.0) (g)
475 years	0.031	0.069	0.068	0.049	0.031
1,000 years	0.047	0.102	0.095	0.070	0.045
2,475 years	0.074	0.160	0.139	0.102	0.071

3.7 Hydrogeology and Groundwater Regime

Background information on the hydrogeology and groundwater regime within the GWB Study Area is provided in the Pacific Hydrology and Piteau Associates (1993) report. The report, which was commissioned for Inland Contracting Ltd. (Inland), evaluated groundwater conditions in the vicinity of a proposed residential development at the south end of Madeline (Max) Lake Valley, located on the west side of the study area.

Pacific Hydrology and Piteau Associates (1993) carried out an investigation which included drilling five cased boreholes, completed as screened pumping wells or water level monitoring piezometer sites. Well logs, pump testing, and a field reconnaissance program provided the information required to characterize groundwater conditions and to determine possible negative impacts from the proposed development. This study by Pacific Hydrology and Piteau Associates (1993) remains the only comprehensive groundwater investigation completed for the GWB Study Area. No new groundwater wells have been completed since.

The Pacific Hydrology and Piteau Associates (1993) report concluded that the depth and morphology of the bedrock surface under the glacial outwash sands and gravels west of the West Bench imparts a strong influence on the groundwater hydrology of the area. A buried bedrock trough is purported to extend southward from the mouth of Madeline (Max) Lake Valley and turns southeast at Bartlett Drive. A buried bedrock ridge extending south from Mount Nkwala separates this bedrock trough from the thick silts underlying the West Bench. The buried bedrock ridge inhibits direct easterly flow from the bedrock valley into the silts. Consequently, groundwater flows in a south-southeasterly direction through the glacial outwash sediments, until the southern extent of the bedrock ridge is reached. The groundwater flow direction then turns eastward, toward Penticton, through southern portions of the West Bench. This suggests that the groundwater regime differs between the north (i.e., Sage Mesa) and south (i.e., West Bench).

Once the groundwater turns toward Okanagan Lake and encounters the thick (over 100 m) saturated silt and sandy silt horizons, the regional groundwater gradient and velocity are both very low and are deemed incapable of causing structural changes (internal subsurface erosion) to the soil deposits under natural loading conditions.

From a regional perspective, the groundwater regime is important where more permeable stratigraphic units encounter a less permeable unit. For example, while groundwater flow through the Madeline (Max) Lake buried valley can permeate the Glaciolacustrine Silts underlying the West Bench area, groundwater flow on the eastern side of the buried rock ridge encounters the Glaciolacustrine Silts at a shallower depth. Gully headwalls in the GWB Study Area terminate at the bedrock interface, or the interface with the sand and gravel unit, suggesting that groundwater contributes to the development of the erosional landform.

In the Sage Mesa area, at the north end of the GWB Study Area, the groundwater regime within the Glaciolacustrine Silts may also be affected by changing water levels on Okanagan Lake. At low lake levels, the

³ Peak ground acceleration (PGA) is equal to the maximum ground acceleration that occurs during earthquake shaking at a location. PGA is equal to the amplitude of the largest absolute acceleration recorded on an accelerogram at a site during a particular earthquake.

hydraulic gradient through the silts would be higher, increasing the potential for piping and internal erosion through the silts (see Section 5.3). Conversely, during high water levels, the hydraulic gradient may be lower. However, the internal soil strength may be reduced due to increased pore pressures at a higher water table. This may affect the potential for future larger-scale landslides and is a factor to be considered in further investigations.

3.8 Surface Water Hydrology

The most significant surface water feature in the GWB Study Area is Madeline (Max) Lake, which is a shallow pond located in the valley on the west side. The Madeline (Max) Lake is a wetland identified as part of the Okanagan Wetlands Strategy (<http://okanaganwetlands.ca/>). The pond is mostly full of cattails, with only a small amount of open water remaining. The outlet of the lake drains into the Peter Bros. Gravel Pit area and there is no visible outflow. It is judged that all flows downstream of Madeline (Max) Lake are subsurface.

Madeline (Max) Lake and its associated riparian habitat is one of the last remaining wetland habitats in the Penticton Area and is home to a number of rare and endangered species (<http://okanaganwetlands.ca/wetlands/max-lake/>). The Madeline (Max) Lake Conservation Covenant is The Land Conservancy's first covenant in the Okanagan-Similkameen area (<http://conservancy.bc.ca/max-lake/>). This covenant, which protects 5.72 hectares of wetland habitat around the lake, is co-held with the RDOS and is the first of its kind for the Regional District.

There are no gazetted streams within the GWB Study Area. The "blue line work" shown on the enclosed maps represents water courses and is sourced from the BC Freshwater Atlas. Line work for the Freshwater Atlas is derived from provincial 1:20,000 scale Terrain Resource Information Management (TRIM) maps that are interpreted from topographic information and aerial image interpretation. Therefore, the blue lines on the map do not necessarily reflect the true hydrologic nature of the water course, such as whether the stream flows on the surface or sub-surface. Based on experience in the South Okanagan, it is not uncommon for mapped streams to flow subsurface.

On the slopes above the Glaciolacustrine Silt terraces, surface water catchment areas were defined by topography and delineated for further characterization. These upslope catchments would typically have seasonal flow, during spring snow melt, and storm flows during and after rainstorm events. The largest catchment in the GWB Study Area is associated with the area draining into Madeline (Max) Lake (28 km²). Other identified catchments are associated with the headwater reaches on the bedrock-controlled slopes on the south side of Mount Nkwala above the larger gully systems on Sage Mesa / West Bench, or are headwater reaches on slopes above the gravel terraces above West Bench.

In summary, the surface water hydrology of the GWB Study Area is characterized by:

- A lack of perennially flowing streams within the study area;
- Predominantly seasonal surface water flow from relatively small bedrock-controlled catchments above the study area;
- Rapid infiltration of surface water to the ground, reflected in the relative lack of incised stream channels; and
- Localized scour along road ditches and through culverts that reflects periodic flow attributed to rainstorm events.

3.9 Climate

Geotechnical processes in the GWB Study Area are driven by various climate parameters, such as temperature and precipitation. The GWB Study Area has a semi-arid mid-latitude climate, characterized by hot dry summers

and cool dry winters. Very low precipitation in the summer and winter creates a more stable geotechnical condition

The closest climate station with long-term records to the GWB Study Area is located at the Penticton Airport, approximately 4.5 km to the south (Environment Canada Stn. 1126150). Previously completed geotechnical hazard studies reviewed climate data for the periods 1964-1973 (Nyland and Miller, 1977), 1945-1985 (Klohn-Leonoff, 1992) and 1941-1990 (Iravani, 1999). For the current study, the most recent “Climate Normals”, for the period 1981-2010, are reviewed and summarized in Figure 3.9.a.

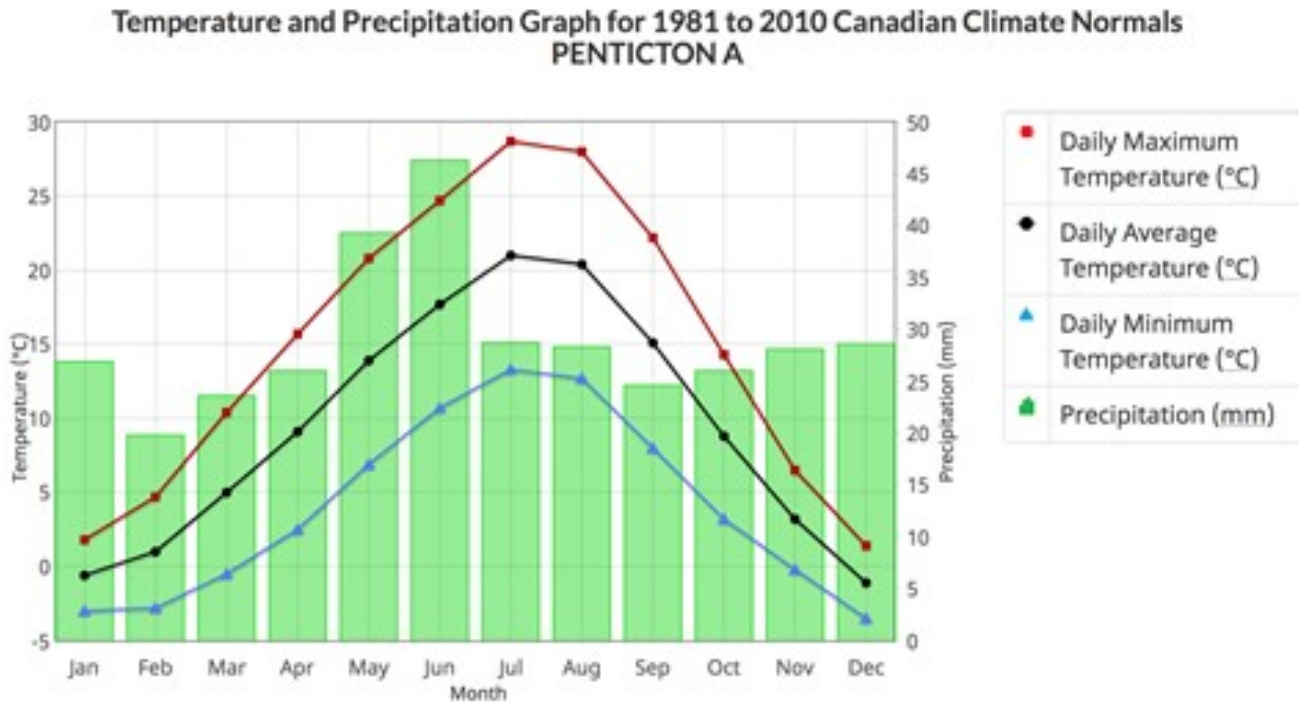


Figure 3.9.a 1981 to 2010 Climate Normals for Penticton A (Env Can Station 1126150)

For the period 1981-2010, the GWB Study Area had a mean monthly temperature of 9.5°C and a mean annual precipitation of 346 mm, of which 58.7 mm fell as snow. On average, the greatest amount of precipitation fell during the month of June (46.3 mm). Extreme daily rainfall events tended to occur in the summer months, with the highest daily rainfall event was recorded on Aug. 9, 2008 (45.6mm).

Climate trends recorded at Penticton Airport (Table 3.9.a) indicate that mean annual precipitation is increasing (22% increase in 25 years), while the proportion of precipitation falling as snow is decreasing (29% decrease in 25 years). Further commentary on future changes in climate, and potential effects on geotechnical stability, are provided in Section 6.10.

Table 3.9.a Climate Trends at Penticton Airport (Stn. 1126150)

	Mean annual precipitation	Mean annual snowfall
Period 1945-1985 (Hogg and Carr, 1985)	282.9 mm	76.0 mm
Climate Normals 1961-1990	308.5 mm	73.0 mm
Climate Normals 1971-2000	332.7 mm	67.2 mm
Climate Normals 1981-2010	346.0 mm	58.7 mm

3.9.1 Regional Water Balance Character

Previous reports that calculate the regional water balance indicate that, due to evapotranspiration during the spring and summer months, there is a net water deficit in the GWB Study Area (Nyland and Miller, 1977). Nyland and Miller (1977) calculate a pre-development moisture deficit of 365.8 mm and concluded that proper irrigation practices (i.e., use of sprinklers), would balance evapotranspiration, and would not cause any rise of groundwater table. Kohn Leonoff (1992) calculated an annual moisture deficit of 194 mm. Further differences in the local water balance may occur due to changing precipitation and land use practices.

Changes in mean annual precipitation and future changes in climate may affect the regional water balance. Projected increases in mean annual precipitation may alter the overall regional water balance. At a local site level, increases in mean annual precipitation and increased frequency of high intensity rain events, will increase reliance on a robust stormwater management system. Groundwater levels may increase, which could increase the frequency of landslide events and accelerate the development of sinkholes.

Further investigation is required to determine whether larger-scale impacts on the regional groundwater table are being affected by changes in climate. Investigation work should include monitoring groundwater levels in existing wells and expanding work to include the development of new monitoring wells.

4. Land Development in the Study Area

4.1 General

The following section provides background information on historical land development and community infrastructure and site servicing.

4.2 Land Development History

The GWB Study Area is comprised of residential neighbourhoods, consisting primarily of single detached homes on medium and small-sized lots. Lots in the West Bench - Sage Mesa neighbourhoods were originally developed as part of the *Veteran's Land Act* after World War II (RDOS Electoral Area "F", OCP, 2018). In the early 1950s, original lots up to 2 Acres in size, were intended for small scale agricultural production (e.g., orchards and gardens). In the 1960s and 1970s the area was partially subdivided and infilled with residential development. On a sloping upland area to the west of the West Bench area, the Husula Highlands subdivision was developed in the 1970s and 1980s. An elementary school is situated on West Bench Road. Within the GWB Study Area, there are two private golf courses, and a commercial gravel quarry operating south of Madeline (Max) Lake on the west side.

Land development that has occurred since the completion of the Klohn Leonoff (1992) report include:

- Subdivision and development of Westwood Properties, and further infill within the Husula Highlands subdivision, comprised of approximately 108 single-family residential lots;
- Subdivision and development of the Red Wing Properties, located on PIB reserve land east of the study area;
- Scattered infrequent infill and single-lot subdivision within the West Bench and Sage Mesa areas; and,
- Development improvements at two private golf courses in the Sage Mesa area, including adding a large, paved parking lot at the WOW Golf Course.

Associated with new development within the GWB Study Area, is approximately 1.4 km of new (paved) road plus driveways and associated paved surfaces.

4.3 Community Infrastructure and Servicing

Previous research has indicated that water introduced from non-natural sources is a contributing factor to landslides, the development of sinkholes, and other soil instability (Nyland and Miller, 1977; Klohn Leonoff, 1992). Therefore, infrastructure and servicing components such as domestic/irrigation water, wastewater (sewerage systems), and stormwater are considered relevant to this Geotechnical Review. A community infrastructure overview was completed by Associated Environmental (2017) during updates to the RDOS Electoral Area "F" OCP (2017).

Water distribution and management requires water lines, which may potentially leak or break. Sewerage systems, comprised of individual septic drain fields, are not connected to a community system, and introduce water to the ground. Where there is no formal stormwater management plan, unmanaged stormwater runoff from hard surfaces such as pavement, concrete, and roofs, may contribute to instability. The following sections summarize the existing community infrastructure and servicing within the GWB Study Area.

4.3.1 Domestic/Irrigation Water Supply

Currently there are two separate water providers: 1) RDOS West Bench Water System (formerly West Bench Irrigation District (WBID)) and 2) the Sage Mesa Water & Public Service Co. Ltd.

RDOS West Bench Water System

The WBID water system was built in the early 1950s to supply water for a Veterans Land Act development. The original lots consisted of larger acreages that in the early days were planted into fruit trees such as cherry, apple, peach, pear and plum. As time went on, some of those lots were subdivided until soil studies identified trends for sinkhole activity in certain areas. In the early days, water was pumped from the river channel and later the intake was extended into Okanagan Lake in an effort to improve water quality. As drinking water requirements increased over the years, and the old steel pipe began to deteriorate, the Irrigation District began a water system infrastructure replacement project and started investigating options to move the system to the RDOS or the City of Penticton (CoP) where they would be eligible for professional management and grant funding. As of 2010, over 60% of the water mains in the system had been upgraded.

In 2011, the WBID's Letters Patent were dissolved through a Provincial "Order in Council", that moved ownership of the water system and its assets to RDOS. As part of that move the Provincial and Federal Governments provided grant funding to finish rebuilding the water system, add water meters, a booster station, back-up power, and supported an "extra territorial" Bulk Water Servicing Agreement between the CoP and RDOS.

The Bulk Water Servicing Agreement provided access to fully treated, filtered water from the CoP's water treatment plant that enabled the West Bench residents to finally meet the Interior Health (IH) Authority's Permit to Operate conditions. Once the work was completed, the long-lasting Boil Water Notice was rescinded.

In 2013, water in the West Bench area was reported to be distributed to the following sectors (WSP, 2016):

- Rural residential (0.5-0.75 acres): 80%;
- Other rural residential: 14%;
- Agricultural: 5%; and,
- Institutional: 1%

The RDOS have a National Award-Winning leak detection system operating on the West Bench water system. Water meters are installed for 351 residential connections and 18 agricultural connections on the West Bench system and monthly readings have been obtained since 2015. Water meters measure the volume of water used at a property and are a valuable tool in assisting the RDOS with water conservation efforts and improving water infrastructure life span.

Using Neptune R900i water meters, RDOS can identify water leaks within the property and relays that information to the homeowner for repair. The metering system alerted RDOS that 66 of the 351 meters had continuous leaks of 35+ days and another 35 meters detected intermittent leaks, totalling over 500 litres per hour (Z. Kirk, personal communication, 2020).

In one example, provided by RDOS, the leak detection system alerted a homeowner situated in a high hazard zone of a 30 litre/hour leak that was not visible. Leaks are documented and reported in a systematic manner, ensuring that the issue is eventually addressed. Overall, the program is an incredibly important tool in the management of potentially unstable ground in an area soils sensitive to introduced water.

Sage Mesa Water & Public Service Co. Ltd. System

Sage Mesa Water & Public Service Co. Ltd. was built as a private system and was regulated under a Certificate of Public Convenience and Necessity (CPCN) to supply water to a development in the "lower zone" of the current water system in the 1970s. In the early 1990s the Province seized the operation for various reasons and the system has been managed through the provincial water controllers ever since. An expansion to the supply water

to new subdivisions (referred to as the “upper zone”) that included Westwood Estates and Husula Highlands also happened in the early 1990s.

In 2010, the Province contracted the RDOS to operate the system and this agreement is still in place.

The system, which includes two golf courses is partially metered and is on a permanent Boil Water Notice in the lower zone and seasonal Water Quality Advisory (WQA) for turbidity in the upper zone. Their current water source is Okanagan Lake.

The Bulk Water Agreement between the RDOS and the CoP included future provisions to supply the Sage Mesa water system if a decision is made to go in that direction.

4.3.2 Wastewater System

To this day, there is no community sanitary sewer or wastewater collection system servicing the GWB Study Area. All residential dwellings have individual septic tanks and field tile effluent disposal systems.

A Wastewater Management Plan (WWMP), developed for RDOS Electoral Area “F” in 1994, identified the West Bench / Sage Mesa area as a priority for alternate wastewater management options due to geological concerns (Stanley Associates, 1994). The alternatives were identified as:

1. A regional sewerage collection system for the GWB area to connect to the CoP wastewater system;
2. A localized facility in the West Bench to collect and treat wastewater, discharging treated effluent to the Okanagan River; or
3. Maintain existing treatment and restrict future development due to geological concerns.

At the time of completion, Option 3 (maintain existing (individual, on-site) wastewater treatment systems) at the property level was chosen. The WWMP was completed in 1994, therefore the OCP update recommended a review to ensure that the WWMP was still valid and that an updated geotechnical hazard assessment was taken into consideration (Associated Environmental, 2017).

A feasibility assessment and preliminary costing for a wastewater collection system was completed in 2005 (by Stantec) to examine the feasibility of a primarily gravity system that connects to the CoP for wastewater treatment and disposal.

4.3.3 Stormwater Management System

Stormwater management within the GWB Study Area is inconsistent and not well documented.

Stormwater runoff along public roads is inconsistent and non-integrated. Roads are maintained at a rural level under contract on behalf of the MoTI. Public roads in the GWB Study Area generally lack curb, gutter, and storm drains. However, there are areas within the Sage Bench and West Bench area that do have storm drains, and it appears that runoff is directed by pipe into nearby gully systems. Little stormwater management information was provided by MoTI or the roads Contractor.

Stormwater drainage for new single family dwelling development requires professional engineering sign off as per current BP requirements. Stormwater runoff at the property site level is unmanaged and largely unknown. It is assumed that roof and driveway runoff is generally managed within the individual properties and is directed to ground, or possibly into rock pits situated on the property, which is the Provincial standard practice for rural storm drainage systems.

There is no provision in the BCBC (2018) to account for sensitive soil conditions, or downslope slope instability. Due to the sensitive nature of soils in the West Bench area with respect to the disposal of water, particular care shall be taken to ensure that any stormwater disposal does not negatively impact downslope adjacent properties.

Generally, the Glaciolacustrine Silts are not considered suitable for on-site disposal (dry wells) and require alternative measures such as the use of rigid stormwater lines to convey stormwater to a sewer, drainage ditch or a natural water course. As an example, properties with no direct access to an existing sewer, open drainage ditch, or natural watercourse may need to negotiate easements to accommodate conveyance of their stormwater to a suitable stormwater disposal system.

During the field review, several instances of soil erosion (i.e., piping) were observed and considered to be associated with storm drainage. Figure 4.3.a shows photographs of several examples of sinkhole development and erosion.



Figure 4.3.a Photographs of Example Sinkholes and Erosion Features Associated with Stormwater Management in the GWB Study Area

There is a clear connection between concentrated stormwater runoff and soil stability issues. As a result, further investigation of existing erosion issues is required, and improved stormwater management practices for the area is recommended.

A hydrogeological and geotechnical assessment completed for the City of Kelowna (CoK), determined the suitability of in-ground stormwater disposal for different soil types, slope, and depth to groundwater conditions (EBA Engineering Consultants Ltd., 1997). The investigation concluded that dry wells do not perform well in glaciolacustrine soils due to their low hydraulic conductivity, and that plugging of the drain rock surrounding the dry well by fine sediment transported in the stormwater limits the lifespan of the dry well. Mapping of in-ground stormwater disposal suitability was completed and, for areas mapped as poorly suited, the use of hard-piped systems was recommended. A similar study may prove to be useful for RDOS and MoTI.

It is recommended that stormwater lines installed in the sensitive glaciolacustrine soils within the GWB Study Area are directionally drilled, inclined no steeper than 2H:1V, and with minimal vegetation disturbance. Installed stormwater lines should consist of a single continuous length with no joints and should have a secondary sleeve, in case of leakage, along its entire length to be connected directly to an existing stormwater disposal system.

4.3.4 Foundation Drainage – BC Building Code

Foundation drainage for houses and small buildings is dictated by the BC Building Code (BCBC 2018). Section 9.14.2 of the BCBC (2018) specifies that, unless it can be shown to be unnecessary, the bottom of every exterior foundation wall shall be drained by drainage tile or pipe laid around the exterior of the foundation by a layer of gravel or crushed rock. The BCBC (2018) indicates that exterior drains are to drain to a sewer, drainage ditch or dry well.

5. Geomorphological Processes

5.1 General

The following section discusses the character and trigger mechanisms of the identified geomorphological processes in the GWB Study Area. For each process identified, we describe the nature of the process (types of processes occurring), the mechanisms of failure and the factors affecting the process.

Later in this report, the interrelation between the geomorphological process and the surrounding environment is considered for the geohazard and risk assessment (Section 6). To clarify, a “geohazard” is a geomorphological process with the potential to cause harm, while events with no harmful potential are simply natural geomorphological processes, or features.

Key geomorphological processes/geotechnical processes observed in the GWB Study Area are shown in Figure 5.1.a and include the following:

- Shallow planar landslides;
- Deep-seated rotational landslides;
- Silt block falls or ravelling;
- Piping and sinkhole development; and
- Collapse/compression.

Other processes, such as rockfall and debris flow/debris flood, were considered. However, the potential for these two processes to occur within the GWB Study Area is considered to be low. The potential for rockfall is only present on steep bedrock-controlled slopes above the north end of the Sage Mesa area. Potential for debris flow/debris flood is considered for some of the small steep catchment areas above the Madeline (Max) Lake Valley. Both areas are considered to be outside the areas of potential future development, so these processes are not discussed further.

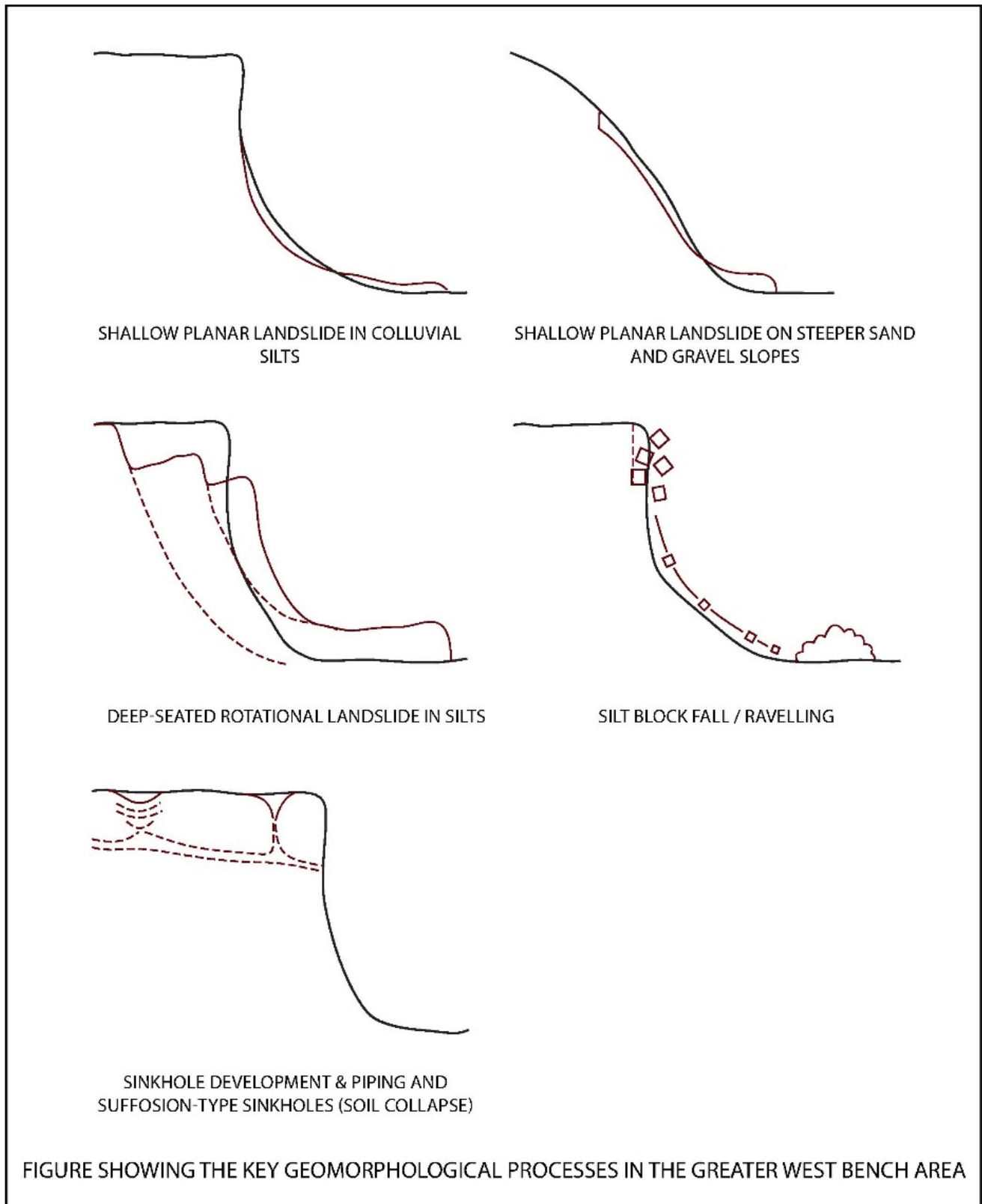


Figure 5.1.a Key Geomorphological Processes in the Greater West Bench Study Area

5.2 Landslides

5.2.1 Shallow Planar Landslides

Shallow planar landslides typically occur on colluvial slopes located at the base of a silt bluff, or on steep glaciofluvial and till slopes. Landslide depth is limited to the upper layer of weathered material and slides roughly parallel (planar) to the original ground surface. Depth may be limited by bedrock in some areas. A recent example of this type of landslide occurring in the silt soils occurred on West Bench Hill Drive in 2018. Other examples of landslides on steep unconsolidated sands and gravel slopes are visible on steep (>50%) slopes at the upper end of the Madeline (Max) Lake Valley.

Shallow planar slides can be triggered by the same failure mechanisms for deep-seated rotational landslides as discussed in Section 5.2.2 below, however, generally occur because of an increase in water content. In silt soils, subsequent swelling of the soil particle surface also contributes to the failure mechanism. The key swelling mechanism according to Iravani (1999) is the expansion of the silica acid gel inter-particle bonding under low confining pressures which causes the loss of integrity of the soil structure. Upon exposure to excess water and swelling, breakage of water sensitive bonds, elimination of soil suction and a change in fabric occurs, causing the silt to strain soften and flow.

5.2.2 Deep-Seated Rotational Landslides

Deep-seated (rotational) landslides are complex events and represent the greatest hazard due to size and extent of runout zone of debris, and often sudden occurrence. These types of slides are relatively uncommon in the GWB Study Area. However, there have been a number documented in the silt soils, including those reported in studies by Nasmith (1962), Nyland & Miller (1977), Lum (1977), and Klohn Leonoff (1992).

The following potential deep-seated landslide triggering mechanisms have been identified:

- **Loss of toe support (undercutting)** – prior to construction of Highway 97 along the toe of the silt bluffs there may have been some loss of material from the toe of the silt bluff slopes, leading to landslide activity. Currently, the toe of the slope along Highway 97 is buttressed by colluvial material, constructed protection berms, and Highway 97 itself. Continued ravelling and shallow landslides along the slope gradually result in a more stable slope condition.
- **Introduction of water** – due to precipitation, snowmelt, groundwater flow from the gravels west of the silt bluffs migrating into the gullies and silts and/or natural groundwater flow in the bedrock underlying the silt, or artificially through septic fields, storm water, leaking irrigation, water lines, or swimming pools. In addition, concentration of surface runoff from impervious surfaces such as roadways, driveways, roof drains, or compacted fill surfaces may increase the amount of water being introduced to a sensitive area. Introduction of water is believed to have been the trigger mechanism for most of the documented slides in the silt bluffs (Nyland and Miller, 1977). Additionally, most documented slides in the silt bluffs were triggered by open ditch irrigation (Klohn Leonoff, 1992).

Development increases the amount of water being introduced to the ground and increased infiltration can raise the groundwater level, such that smaller events such as rainstorms have the potential to trigger slides. Klohn Leonoff (1992) indicate that water introduced to, and infiltrating, the silt will raise the water table more than water added to the gravel layers on the west side of the study area.

Compared to pre-development conditions, there has been an overall increase in average annual precipitation, but also increases in irrigation and household water application associated with development. With further development and densification, there would be further increases of water infiltration to the ground.

- **Soil structure** – the Glaciolacustrine Silts have a structured fabric comprising varves and platy particles preferentially aligned in a horizontal orientation making the silt highly anisotropic and likely to have weaker sliding planes. Stress release joints form perpendicular to the face of silt bluffs also resulting in a weak plane which may lead to the initiation of a landslide.
- **Seismicity** – earthquake-induced ground motion could induce soil displacement, and result in a landslide. The size of landslide would be dependant on the vicinity and magnitude of the earthquake and the groundwater conditions at the time of the event. However, as there are no known active faults near the GWB Study Area, earthquake-induced design ground motion is considered relatively low and would be more likely to cause a silt block fall or shallow slide of existing marginally stable bluffs and slopes rather than a deep-seated rotational landslide.

5.2.3 Silt Block Falls or Ravelling

Silt block falls or ravelling are small-scale failures attributed to toppling of blocks of material within the upper near vertical (71° – 82°) silt bluff face. Blocks commonly break up upon impact and debris flows down the slope as a dry, or moist avalanche of silty soil. A slide of this type occurred in 1970 on Lakeshore Road in Summerland, killing one person and damaging three homes. An example of smaller-scale silt falls occurs along the Highway 97, sometimes affecting traffic.

Silt block falls or ravelling are often caused by softening or erosion of a supporting layer, or by cleft water pressures developing in the perpendicular stress release joints behind the bluff face. Ice jacking (freeze/thaw) action within the silt joints (typical of rock fall initiation) may also lead to the smaller-scale silt block falls, typically along the crest or top of slope where silt is not yet mantled by a colluvial talus.

5.3 Piping and Sinkhole Development

5.3.1 General

Sinkholes have been commonly observed in the Glaciolacustrine Silt deposits within the GWB Study Area (as shown in Appendix B, Map 4.0). The development of sinkholes is associated with the geomorphological process of subsurface internal erosion (piping), predominantly by water but may also be gravity based (not discussed in this report).

Sinkholes are normally initiated by the collection of water in surface depressions, or via penetration of water into zones of structural weakness such as vertical joints, fissures, etc. The water penetrates downwards through joints, fissures, and higher permeable zones until reaching a permeable horizontal layer with an egress such as close to the crest of a gully. Transportation of water and sediment within the permeable horizontal layer over time forms pipes (vertical or horizontal rounded tunnels). Where caving and collapse of material around the edge or roof of the tunnel occurs, a sinkhole is formed. The presence of a linear pattern of sinkholes can indicate there is a horizontal pipe at depth. Collapse of the linear series of sinkholes can result in the formation of a gully. This process is illustrated the schematic diagram sourced from Nyland and Miller (1977) (see Figure 5.3.a). In the GWB Study Area all large, incised gullies terminate at the glaciofluvial gravel layer, or at bedrock (Klohn Leonoff, 1992).

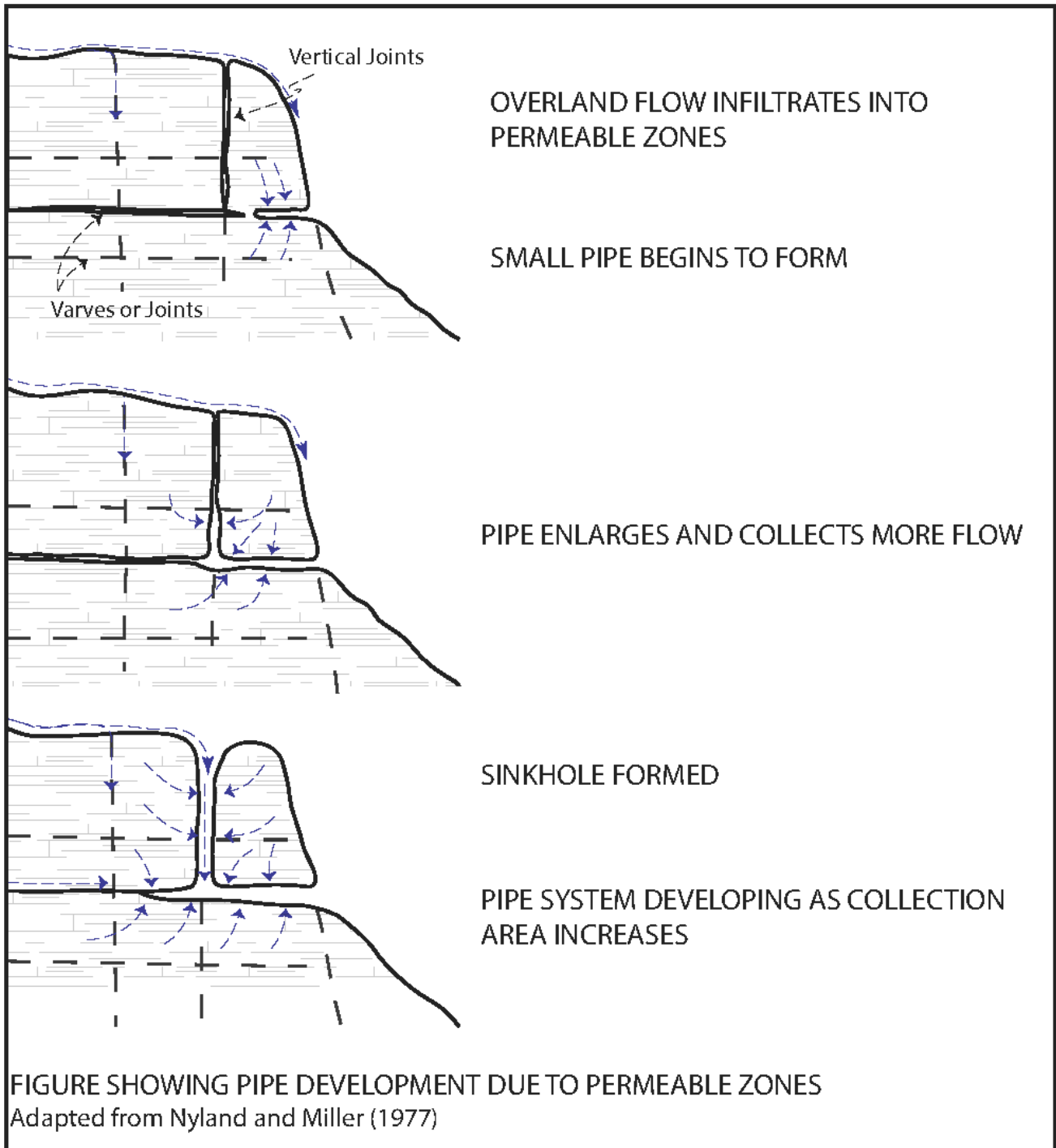
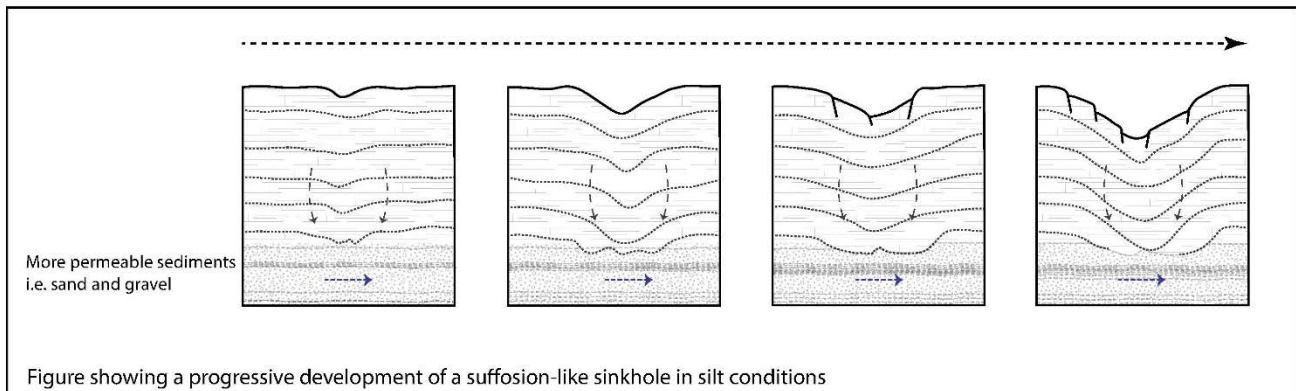


Figure 5.3.a Schematic diagram sourced from Nyland and Miller (1977)

Sinkholes can also be formed by the process of suffosion. Waltham, Bell, and Culshaw (2005) define suffosion as “the transport of disaggregated soil or sediment into fissures in the underlying bedrock”, or mobilization of soil and particles into an underlying pipe, joint, or higher permeability sand/gravel seam. (see Figure 5.3.b below). A clay bearing or indurated cohesive soil can bridge a void for a period of time before collapse (Waltham, Bell, and Culshaw, 2005).



Source: adapted from Waltham, Bell and Culshaw (2005)

Figure 5.3.b Progressive Development of a Suffosion-like Sinkhole in Silt Conditions

5.3.2 Factors Affecting Sinkhole Development and Distribution

The following factors affect the location and rate of sinkhole development:

- Internal stability of soils** –low plasticity soils that are poorly graded may be susceptible to internal erosion and do not self-filter. Soils that self-filter have coarse particles that prevent internal erosion of the medium size particles that in turn prevent internal erosion of fine particles. Soils which potentially do not self-filter include those which are susceptible to internal instability (suffusion) and very broadly graded soils. Plasticity, or PI, influences the progression of erosion, and is a soil parameter that indicates susceptibility to internal erosion, or piping (Table 5.3.a).

Table 5.3.a Influence of Plasticity on the Likelihood of Sinkhole Development

	More Likely	Neutral	Less Likely
Plasticity Index (PI) Value	PI < 6	6 < PI < 15	PI > 15

Source: Geotechnical Engineering of Dams (2018)

- Hydraulic gradients** – loss of material through piping may occur if the drag force created by water seepage passing through the material (seepage force) overcomes the weight of the material.

Hydraulic gradients increase along preferential flow paths such as pipes, fissures, varve boundaries, root holes and/or higher permeability sand/gravel layers. With increased hydraulic gradients, the erosion occurs more intensely and the pipe advances at an increasing rate towards the water source. Once the pipe has reached the source of water, much higher flow rates are possible, so that the flow of water along the pipe can mobilize silts along the pathway, enlarging the size of the pipe.

It is said that the piping process is not a continuous phenomenon but a sudden process that can occur during a short period of increased pore water pressures.

Water may be introduced to the ground naturally, through precipitation, snowmelt, ground water flow from the gravels west of the silt bluffs migrating into the gullies and silts and/or natural groundwater flow in the bedrock underlying the silt, or artificially through septic fields, storm water, leaking irrigation, water lines, or swimming pools. In addition, concentration of surface runoff from impervious surfaces such as roadways, driveways, roof drains, or compacted fill surfaces may increase the amount of water being introduced to a sensitive area. Any event that promotes subsurface erosion process has the potential to trigger the development of a sinkhole.

- **Proximity to slope crest or next closest sinkhole** – the current distribution of sinkholes in the GWB Study Area was identified using 2018 orthoimagery and LiDAR data (as discussed in Section 2.3.1). The distance from the slope, or gully, crest and the distance between sinkholes was measured using GIS.

The inventory, tabulated in Table 5.3.b and shown in Appendix B, Map 4.0, identified 99 sinkholes and found that 85% of all sinkholes identified were located within 30 m of a slope crest, or the next closest sinkhole. For comparison, Klohn Leonoff (1992) identified more than 300 sinkholes. Their study determined that all sinkholes were located within 40 m of a gully slope crest. The difference in the number of identified sinkholes may be attributed to air photo interpretation and possibly changes in land surface (such as infilling and site grading) since 1992.

The remaining 15% of the sinkholes that lie beyond 30 m of the slope crest or another sinkhole are thought to be outliers that are likely associated with compromised soil conditions attributed to the introduction of water to the ground (i.e., such as a broken or leaking water line, or a concentration of surface runoff).

This spatial relationship forms the basis of the sinkhole hazard classification, presented in Section 6.6.

Table 5.3.b Sinkhole Inventory and Distance to Slope Crest or Next Closest Sinkhole

Distance to Crest or Sinkhole (m)	No. of Sinkholes	Cumulative Percentage (%)
0	25	26
5	6	32
10	13	45
15	8	53
20	13	66
25	11	78
30	7	85
35	5	90
40	2	92
45	1	93
50	2	95
55	1	96
60	1	97
65	2	99
70	0	99
75	1	100
TOTAL	99	

5.4 Soil Collapse/Compression

5.4.1 General

Soil collapse is a change in volume (strain) of soil structure due to an increase in moisture content whereas soil compression is considered to be a change in volume (strain) due to an increase in load (stress) acting on the soil structure. The Glaciolacustrine Silt within the GWB Study Area are susceptible to both mechanisms which both result in vertical deformation of the soil. Therefore, for the purpose of establishing hazard criteria, these two mechanisms have been combined.

Collapse / compression of soil structure is analogous to that of a house of cards (Nyland and Miller, 1977): no material is lost but its bulk volume decreases. It was observed that Colluvial Silt (non-stratified depositional material in gullies and along the base of slopes) is highly susceptible to collapse/compression with the introduction of water, particularly under loaded conditions.

Areas of historic infill inferred as where collapse/compression of the Glaciolacustrine Silt deposits have occurred are identified within the GWB Study Area through comparison of historical air photos and from interpretation of the 2018 LiDAR data (shown in Appendix B, Map 5.0). The delineation of filled areas is approximate and completed on a larger scale. For specific sites, assessing the potential for collapsible/compressible soils must be determined through a more detailed investigation.

The historic KVR Trail is located through the GWB Study Area, crossing high embankments that pass through large gullies. Archival photos show that gully infill occurred by side-dumping material, most likely silt material derived from local slope through cuts (see Figure 5.4.a). Material would be loosely packed around a wooden trestle, with the wooden structure providing some additional support to the soil mass.

It was likely that some means of cross-drainage through the infill drainage was provided. However, these cross-drains are now obscured by colluvium and vegetation.



Figure 5.4.a Side dumping on KVR Trestle, at Mile 2.2 (Vancouver Archives: Item CVA 289-002.426, circa 1923) (likely located at the big gully north of Newton Drive)

5.4.2 Factors Affecting the Susceptibility to Collapse/Compression

The following factors affect the soil susceptibility to collapse/compression:

- **Soil structure** – Iravani (1999) states the silt is structurally-bonded by a number of chemical bonding agents (mainly silica acid gel), and the strength of the inter-particle bonding is highly sensitive to water content. The addition of water results in an increase in water content, subsequent swelling and a loss of integrity of the soil structure. Upon exposure to excess water and swelling, breakage of water sensitive bonds, elimination of soil suction and a change in fabric occurs resulting in a rapid reduction of air voids (collapse).
- **Soil depositional environment** – the depositional environment of the uniform Glaciolacustrine Silt particles resulted in a relatively high void ratio making it more susceptible to volume changes (collapse/compression) when subject to the mechanisms described above. Colluvial Silts are formed by erosion of silt bluffs and the infill of gullies and sinkholes and are deposited in a looser state than the Glaciolacustrine Silts themselves resulting in significantly higher potential for volume change (collapse/compression). MoTI (1991) indicated that Glaciolacustrine and Colluvial Silts experienced 2-4% and 28-31% vertical deformation upon flooding under the same applied field load.

5.5 Groundwater Influence on Geohazards

Previous investigations report a strong correlation between groundwater patterns and geotechnical hazards in the Study Area (Nyland and Miller, 1977; Klohn Leonoff, 1992). Under natural conditions, landslides are relatively infrequent in the GWB Study Area. Over the past century, however, there is increasing correlation between groundwater and the frequency of geotechnical hazard events, where groundwater is attributed to land use practices.

Of the twelve major landslides that have been reported in the region, the majority occurred after more extensive agricultural irrigation began, but before the use of sprinklers (Klohn Leonoff, 1992). Consequently, the cause of many of these slides is attributed to high groundwater pressures (Nyland and Miller, 1977).

Previous studies indicate that the use of septic fields for residential wastewater disposal significantly increases the groundwater levels within the silt bluffs, which can increase the probability of a landslide or other slope failure (Klohn Leonoff, 1992). Development-induced trigger mechanisms such as broken pipes, leaking swimming pools and ornamental ponds, and uncontrolled concentration of precipitation runoff are also known to increase the likelihood of subsurface erosion and sinkhole development. Measures to detect and monitor water leaks are very important in mitigating these hazards.

6. Geohazard and Risk Assessment

6.1 General

The basis for the geohazard and risk assessment approach is adapted from that which is presented in Wise et al. (2004) and in Porter and Morgenstern (2013). These source documents reference the generic risk management approach of the Canadian Standards Association (CSA), (CSA, 1997).

Terms commonly used for geotechnical hazard and risk assessment, and employed in this report include:

Hazard (P_H) - a source of potential harm, or a situation with a potential for causing harm, in terms of human injury; damage to property, the environment, and other things of value; or some combination of these (CSA, 1997). With respect to geohazards, it is the process (i.e., landslide, sinkhole, soil collapse/compression) that is the source of potential damage or harm.

Probability (or likelihood) of occurrence of a geohazard event describes the potential for that landslide to occur. It is a number between zero (event will not occur) and one (event will occur) expressed over a specified period of time, such as an annual probability of occurrence. When expressed qualitatively, the probability of occurrence is defined in terms such as unlikely, likely, and very likely.

Consequence ($P_{S:H} \times P_{T:S}$) - the effect on human well-being, property, the environment, or other things of value; or a combination of these (adapted from CSA, 1997). This may be described as the change, loss, or damage caused by the geohazard.

Risk - the chance of injury or loss as defined as a measure of the probability and the consequence of an adverse effect to health, property, the environment, or other things of value (adapted from CSA, 1997).

Specific Risk (R) – the probability of loss or damage to a specific element, resulting from a specific hazardous event. Information regarding vulnerability, which is a measure of robustness and exposure of the occupied site to the hazardous event, is required and considered outside the scope of this assignment.

Partial Risk (PHA) – the probability of a specific hazardous event. It includes an assessment of probability of the event reaching or otherwise affecting the occupied site. Partial risk does not consider the vulnerability.

For this assignment estimating geohazard partial risk is a process that involves identifying the trigger mechanisms, estimating the characteristics of an event, estimating the potential likelihood of an event and the area potentially affected by the event. The assessment process and approach are described further in the following Sections.

6.2 Assessment Process

The following section describes the partial risk assessment process employed for this study. The partial risk assessment process, shown in Figure 6.2.a, begins with an “inventory and characterization of hazardous processes” in the GWB Study Area. This resulted in the development of a Terrain Map (Appendix B, Map 2.0). Areas within the GWB Study Area are then delineated based on an associated level of partial risk, using criteria developed for each different geotechnical hazard being investigated. The partial risk maps are presented as Hazard Maps for landslide, sinkhole, and for soil collapse/compression (see Appendix B, Maps 3.0-5.0). A derivative map is produced that combines the three hazard maps into a single combined partial risk map, referred to as a Geotechnical Constraints Map (Appendix B, Map 6.0). This derivative map can be used to assist in the management of existing and future development.

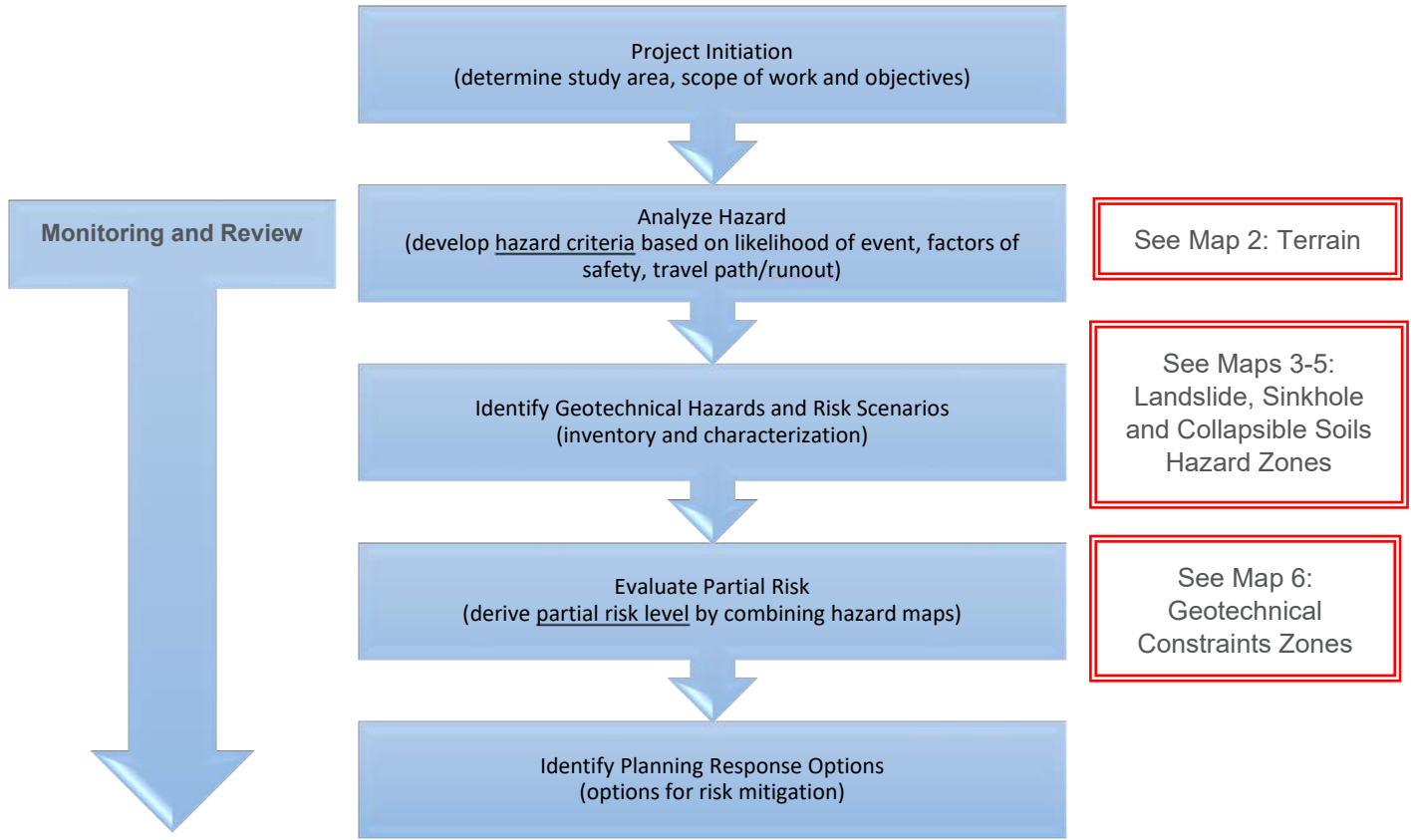


Figure 6.2.a Partial Risk Assessment Process

6.3 Qualitative Partial Risk Assessment Approach Used for this Study

For the purposes of this assessment, we have developed a hybrid qualitative partial risk assessment, using traditional approaches presented by Wise et al. (2004) and Porter and Morgenstern (2013) but also incorporating a Factor of Safety (FoS) approach. By combining the two approaches we present one that is unique and tailored to fit the conditions present in the GWB Study Area, and the information available.

The traditional partial risk (also known as encounter probability) assessment approach is expressed as follows:

$$\text{PARTIAL RISK } (P_{HA}) = \text{HAZARD } (P_H) \times \text{CONSEQUENCE } (P_{S:H})$$

Where:

P_H = hazard, or probability of a damaging geohazard event; and

$P_{S:H}$ = consequence, or probability that the geohazard will reach the site.

The partial risk assessment assumes that sites that are permanent, or fixed, and does not consider vulnerability, or the probability of loss of life or damage.

The partial risk evaluation matrix used for this study is shown in Table 6.3.a and Table 6.3.b, where the risk level is based on the HAZARD, or relative probability of a damaging geohazard event, combined with the CONSEQUENCE, or probability that the event will reach or otherwise affect the site.

To estimate HAZARD the traditional approach is to determine a frequency-magnitude relationship. Generally, smaller events occur more frequently, and larger events tend to be less frequent. For this study, this relationship may only be based on the period of documented history, which represents a period approaching 100 years. It is known that small surficial landslides and sinkhole development occur frequently over this period and this is documented. Large-scale events, such as the deep-seated rotational landslide, are relatively rare but there is at least one occurrence, judged to have occurred within the post-glacial period. Due to the short period of record and lack of documented large-scale events, it is difficult to develop a meaningful relationship for geohazard frequency and magnitude.

With no other data upon which to base the relations, we have chosen to use a terrain-based approach for all processes, except for the large-scale rotational landslides in the Glaciolacustrine Silts where there have been many studies undertaken on the material geotechnical parameters. The terrain-based approach, which estimated event likelihood based on geological (soils) character, and terrain character is applied to landslides on sand and gravel sediments, sinkhole formation, and collapsible/compressible soils.

For large-scale rotational landslides in the Glaciolacustrine Silts, a FoS approach has been used based on the results of Limit State Equilibrium (LSE) stability analyses to establish setback criteria for the silt bluffs. This is discussed further in Section 6.4.

Table 6.3.a Qualitative Partial Risk Evaluation Matrix Used for this Study

Hazard - Probability of damaging geohazard event (P _H)	Consequence - Probability that the geohazard will reach the site (P _{S:H})		
	Low (event will not reach the site)	Moderate (event may reach the site)	High (event is likely to reach the site)
Unlikely (i.e., event is possible but expected to occur every 1,000 to 10,000 years)	L	L	M
Likely (i.e., event is expected to occur every 100 to 1,000 years)	L	M	H
Very Likely (i.e., event is expected to occur more than once every 100 years)	M	H	H

Table 6.3.b Qualitative Partial Risk Levels Defined

Partial Risk Level P _{HA} (probability of a geohazard event and affecting the parcel)		Description
High	H	High Risk – damaging event is very likely
Moderate	M	Moderate Risk – damaging event is likely
Low	L	Low Risk – damaging event is unlikely to occur

The assessment process recognizes that in moderate and low risk areas, there is still some probability of a damaging geohazard and, therefore, a residual level of risk that may still require some further assessment, or some conditions placed on development. Conditions or mitigative actions may be placed on development to reduce the residual risk. The degree of effort required to reduce the risk are based on practicality.

6.4 Landslide Hazard Criteria for Silt Bluff and Gully Side Slope Areas

6.4.1 General

Slope stability analyses were carried out to assess the potential for deep-seated landslides, and to determine setback distances from the slope crest (escarpment) for the purposes of establishing landslide hazard zones within the silt bluff and gully side slope areas.

The stability of a slope is controlled by the ratio between forces acting on the slope (shear stress) and the forces resisting failure (shear resistance). This ratio is expressed as a FoS. A slope with a FoS less than 1.0 is unstable, greater than 1.0 is stable, at 1.0 the slope is at equilibrium and is considered marginally stable.

The stability analysis adopted for this study uses the following landslide hazard criteria for static conditions:

- FoS < 1.0 – High Hazard
- $1.0 < \text{FoS} < 1.5$ – Moderate Hazard
- FoS > 1.5 – Low Hazard

The stability analysis was also undertaken for pseudo-static conditions assuming horizontal acceleration (k_h) equal to the PGA corresponding to a return period of 2,475 years (Table 3.6.a) and amplified by $F(\text{PGA})$ for Site Class D in accordance with Section 4.1.8.4 of the BCBC (2018). The stability assumes hazard criteria for seismic conditions of FoS > 1.1 – Low Hazard.

Global factors of safety were calculated using the two-dimensional LSE software program called Slide2 v9.008 by RocScience utilizing the Morgenstern-Price method with a half sine interslice force adopted.

Slope stability analyses were undertaken for five cross-sections within the silt bluffs in the GWB Study Area (see Appendix G, section line 1-5). The cross-section locations were selected to be representative of the worst case (steepest) topography of the silt bluffs within the GWB Study Area. Geometry of the cross-sections were taken from the 2018 LiDAR data. Each section was analyzed for two groundwater levels, 343.66 m asl, and 347.26 m asl, corresponding to the Flood Construction Level (FCL) of Okanagan Lake under current conditions and for potential future conditions considering climate change, respectively⁴.

With regards to the landslide runout hazard criteria, we have adopted the same criteria employed by Klohn Leonoff (1992), which appears to be consistent with geometric observations from historical slides within the Glaciolacustrine Silt.

Upon reviewing historical case studies from gully erosion events resulting in liquefied soils, it is our opinion that the impact to people and infrastructure downslope from events of this nature appears to be minimal (i.e., maintenance and cosmetic damage only) in comparison to runout from mass slope movements. In addition, the majority of the areas downslope of the silt bluffs fall outside of the study area, along the highway. Therefore, gully erosion and earthflow events have not been considered in the landslide runout hazard criteria.

6.4.2 Material Parameters and Water Level Assumptions

Geotechnical parameters used in the analysis are given in Table 6.4.a based on existing site conditions and published correlations (as discussed in Section 3.4).

⁴ Okanagan Lake Shoreline FCL including wave runup including mid-century climate change is presented by the Okanagan Basin Water Board – Okanagan Flood Story (<https://okanagan-basin-flood-portal-rdco.hub.arcgis.com/app/c6ad2e783be1432bad51e23f42187288>)

The analysis assumes is based on the Mohr-Coulomb failure criterion where the soil shear strength relative to applied normal stress is a function of the effective cohesion (c') and the effective angle of internal friction (ϕ'). Cohesion is the component of shear strength that is independent of interparticle friction. True cohesion is caused by either electrostatic forces in stiff, over-consolidated fine-grained soils or chemical cementation between soil particles. Apparent cohesion can exist in soils as a result of negative pore pressure (suction) above the water table which is lost upon wetting. The angle of internal friction represents the soil’s internal resistance to movement and is based on a number of physical properties of the soil such as grain size distribution, angularity, and particle interlocking.

Effective cohesion (c') of the Glaciolacustrine Silt is highly sensitive to moisture content. For “in-situ” and “air-dried” states, effective cohesion values are approximately 60 kPa and 800 kPa, respectively, as suggested by Iravani (1999). Cohesion reduces to 0 kPa under saturated conditions. A sensitivity analysis of the effect of cohesion on the FoS was completed for the critical slope stability (see Appendix G, section line 2, Figure G6). The relationship indicates that for 0 kPa cohesion, the critical FoS is significantly less than 1.0 (unstable). When cohesion is increased to 60 kPa for the “in-situ” state as recommended by Iravani (1999), the critical FoS is approximately 1.6 (stable).

For the purposes of this study, due to the inherent uncertainty and limited site-specific subsurface geotechnical data with no site-specific strength data in the GWB area, the analysis conservatively assumes 0 kPa cohesion.

The effective angle of internal friction (ϕ') values for the Glaciolacustrine Silt and colluvium is conservatively based on the lower bound values provided by Iravani (1999). **For the purposes of this study, the effective angle of internal friction is 32° for undisturbed silt and 24° for Colluvial Silt.**

Table 6.4.a Summary of Geotechnical Parameters used in the Stability Analysis

Material Name	Strength Type	Unit Weight, γ' (kN/m ³)	Effective Cohesion c' (kPa)	Effective Angle of Internal Friction, ϕ' (°)
Glaciolacustrine Silt	Mohr Coulomb	19	0	32
Colluvium	Mohr Coulomb	14	0	24
Fill	Mohr Coulomb	21	0	34

The stability analysis was also completed for varying lake elevations and found that, except for one section (section line 5), the resultant FoS did not change. The overall effect of Okanagan Lake is considered negligible for the global stability condition due to the distance from the silt bluff area. As it is recognized that the Glaciolacustrine Silts are sensitive to groundwater inputs (from upslope sources for example), using a 0 kPa cohesion is considered to account for this sensitivity. A 0 kPa cohesion essentially models the strength of a soil in a saturated condition. The phreatic surface behind the silt bluff was elevated by 10 m for the critical slope stability section (Appendix G, section line 3) and was found to have little impact on the FoS and resulting setback distances.

By using conservative material parameters, we recognize that the results are likely to be conservative. However, the use of less conservative parameters would require verification through site-specific hydrogeological and geotechnical data including advanced soil laboratory testing.

6.4.3 Stability Analysis Results and Setback Criteria

The results of the stability analysis are expressed as setback distances, as a function of slope height (H). Results are summarized in Table 6.4.b below and are presented in Appendix G, Figures G1-G5.

Table 6.4.b Results of the Slope Stability Analysis

Section	Setback Distance for FoS < 1.0 *	Setback Distance for FoS < 1.5 *	Figure #
Section Line 1	0.3H	1.2H	G1
Section Line 2	0.7H	1.8H	G2
Section Line 3	0.9H	1.9H	G3
Section Line 4	0.6H	1.4H	G4
Section Line 5	0.4H	0.7H	G5
Section 5a (elevated lake level)	0.4H	0.9H	G5a

* Expressed as a function of the slope height (H).

Based on the results of the stability analyses, section line 3 represents the section with the largest setback distances required to achieve the corresponding FoS value (i.e., the critical section). These values are used in the development of silt bluff and gully side slope setback criteria.

The results under pseudo-static conditions indicated that slip surfaces with a FoS of 1.1 or less (outside of the Low Hazard zone) fall within the High Hazard and Moderate Hazard zones under static conditions for each section analyzed and potential development would require further site-specific investigation. In other words, the hazard criteria under static conditions are more critical where there are no geotechnical constraints in place for potential development. The result of the critical section (section line 3) under pseudo-static conditions is presented in Appendix G, Figure G3a).

The landslide setback hazard criteria for the silt bluffs and gully side slopes are summarized in Table 6.4.c, are graphically displayed on Figure 6.4.a, and are shown in Appendix B, Map 3.0. The setback criteria are based on the slope stability results for the critical section (section line 3) with a 10 m buffer added to account for future erosion and regression of the slope crest (escarpment).

Table 6.4.c Landslide Setback Hazard Criteria – Silt Bluffs

Hazard Zone	Setback Criteria *
High Hazard	$D < 1.0H + 10 \text{ m}$
Moderate Hazard	$1.0H + 10 \text{ m} < D < 2.0H + 10 \text{ m}$
Low Hazard	$D > 2.0H + 10 \text{ m}$

* Expressed as a function of the setback distance (D) and slope height (H).

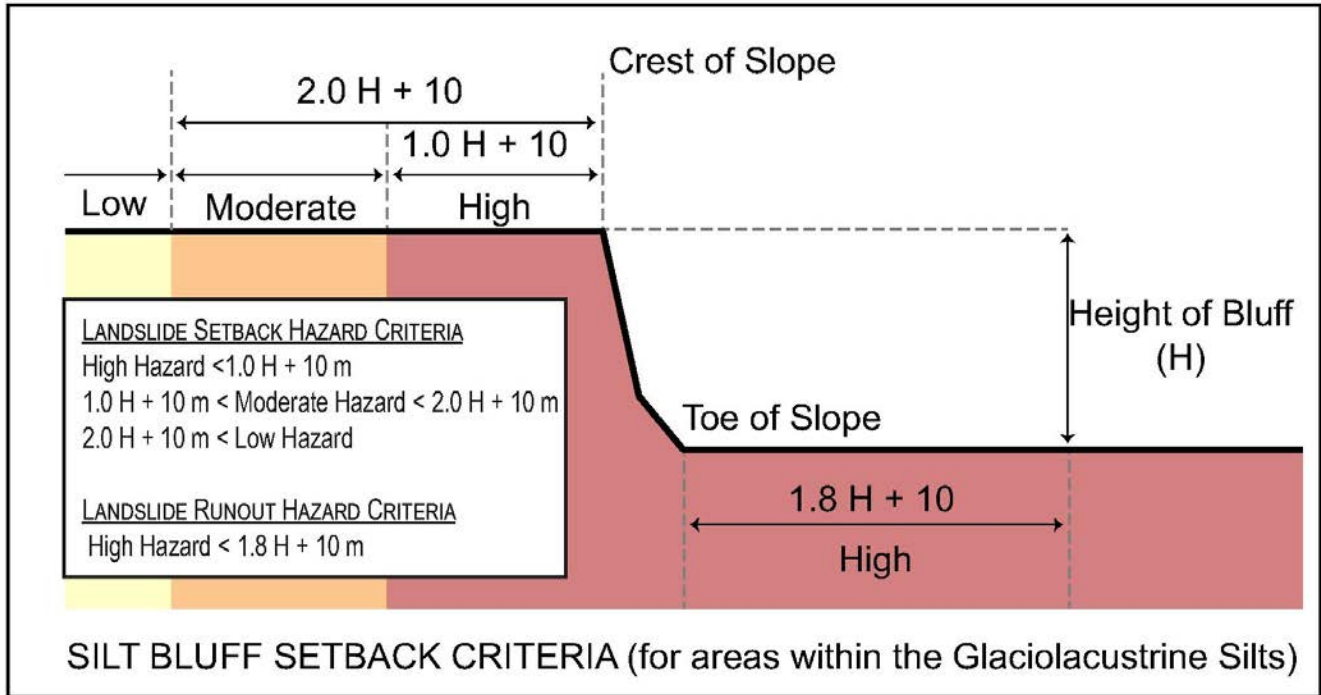


Figure 6.4.a Landslide Hazard Criteria and Setback Zones (also shown in Appendix B, Map 3.0)

6.5 Landslide Hazard Criteria for Areas Outside of Silt Bluffs

Areas outside of the silt bluffs, specifically the slopes in vicinity of Madeline (Max) Lake and the steeper slopes above West Bench Road at the north end of the study area are subject to a different type of landslide hazard. Landslides within areas underlain by unconsolidated sand and gravel glaciofluvial deposits are subject to shallow planar landslides on steeper slopes. These areas are, generally, much less prone to deep-seated landslides than areas underlain by the Glaciolacustrine Silts.

The landslide hazard criteria for areas outside of the silt bluffs is based on terrain conditions, slope, and whether there were historical landslides observed in the 2018 orthoimagery and LiDAR. Likelihood for a damaging landslide event within these areas was based on an approach that utilized information known about existing site conditions and geology in this area, and our previous local experience.

It should be noted that potential signs of slope instability were observed in several instances on slopes less than 50% (>2H:1V) corresponding to the Low Hazard zone. However, this is considered likely to be because of surficial erosion and not a result of global instability.

The landslide hazard criteria for areas outside of the silt bluffs are summarized in Table 6.5.a and in Appendix B, Map 3.0.

Table 6.5.a Landslide Hazard Criteria – Areas Outside of Silt Bluffs

Hazard Zone	Criteria
High Hazard	Greater than 50% slope (<2H:1V) and signs of historical slope instability
Moderate Hazard	Greater than 50% slope (<2H:1V) and no signs of historical slope instability
Low Hazard	Less than 50% slope (>2H:1V)

6.6 Sinkhole Hazard Criteria

Sinkholes continue to develop with the GWB Study Area. While none have been catastrophic in terms of property loss, many have caused damages to property or have resulted in injuries (see Section 3.2.4). The occurrence of sinkholes is almost exclusively within the area mapped as Glaciolacustrine Silt deposits. However, there is a predominance of sinkholes in the northern part of the Study Area (i.e., Sage Mesa). It is hypothesized that variations in the engineering material properties of the silt, such as the PI, for example, influence the preferential spatial development of sinkholes. Further investigation to refine this interpretation may be warranted for site specific investigations.

For this study, in the absence of detailed soil property data, the sinkhole hazard criteria are based on the theoretical evolution of sinkholes in association with the development of gullies (see Section 5.3). The spatial relationship, combined with the predominant underlying soil type, were used in the development of sinkhole hazard criteria.

Sinkhole hazard criteria are listed and described in Table 6.6.a. A schematic diagram showing the hazard criteria developed based on a spatial relationship is shown in Figure 6.6.a.

Table 6.6.a Sinkhole Hazard Criteria

Sinkhole Hazard	Criteria	Definition
High Hazard	<ul style="list-style-type: none"> ▪ Located within 30 m of slope crest; ▪ Located within 30 m of an existing mapped sinkhole; and, ▪ Located within 10 m of an area identified as previous infill. 	<ul style="list-style-type: none"> ▪ A damaging sinkhole event is very likely to occur within this area
Moderate Hazard	<ul style="list-style-type: none"> ▪ Located greater than 30 m of slope crest, greater than 30 m of existing sinkhole; and greater than 10 m from historic infill; and, ▪ Located within area underlain by Glaciolacustrine Silt sediments 	<ul style="list-style-type: none"> ▪ A damaging sinkhole event is likely to occur
Low Hazard	<ul style="list-style-type: none"> ▪ Located within area underlain by glaciofluvial sand and gravel sediments or till 	<ul style="list-style-type: none"> ▪ A damaging sinkhole event is less likely to occur within this area

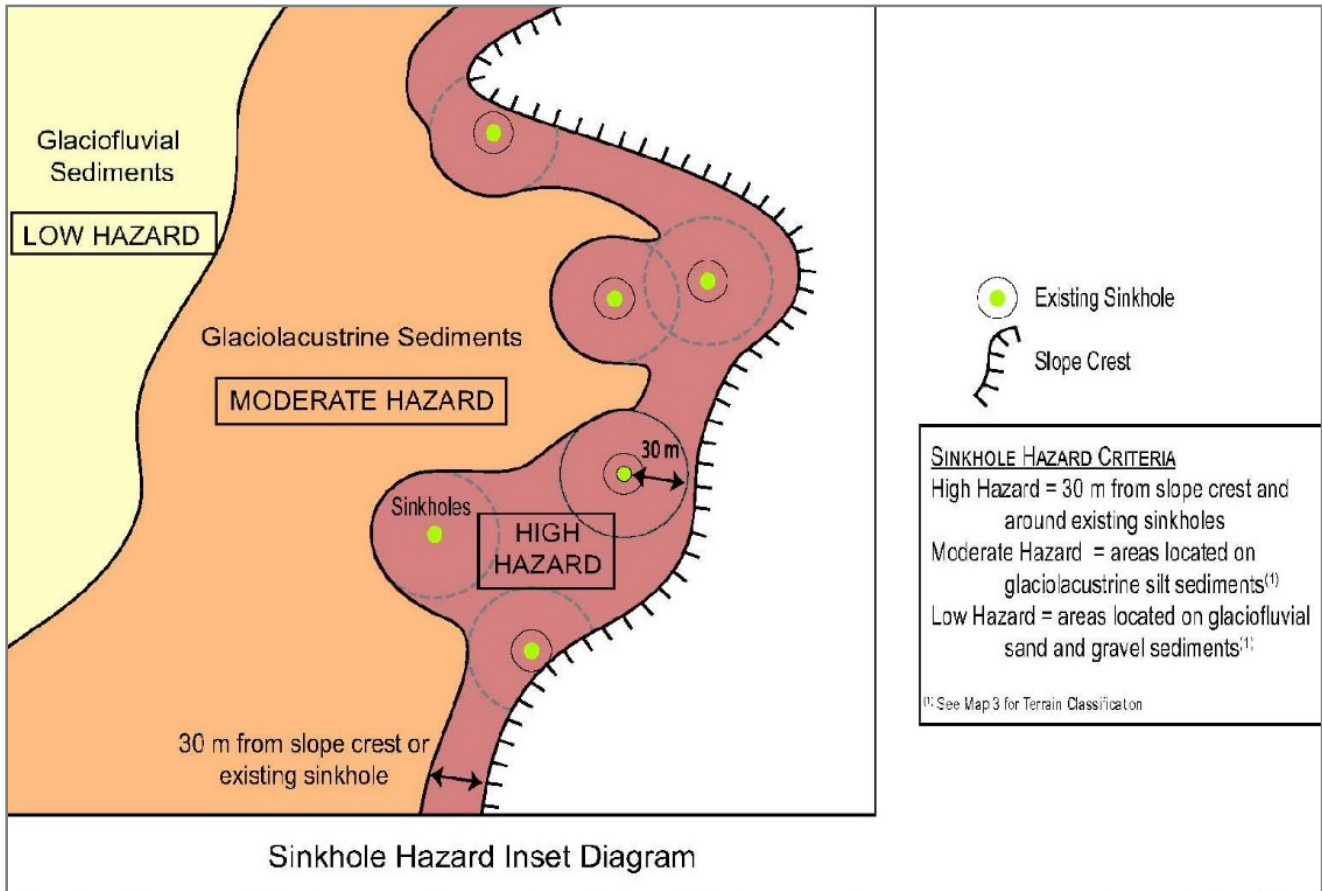


Figure 6.6.a Sinkhole Hazard Zone Diagram (also shown on Appendix B, Map 4.0)

6.7 Collapsible/Compressible Soils Hazard Criteria

The depositional environment of the uniform Glaciolacustrine Silt particles resulted in a relatively high void ratio, making it more susceptible to volume changes (collapse / compression) with the introduction of water, particularly under loading conditions. This may result in a potentially damaging process associated with collapse or compression and can damage infrastructure and/or property.

Colluvial Silts that are formed by erosion of silt bluffs or infill of gullies or sinkholes have a higher potential for collapse / compression. These soils are deposited in a looser state and are often a conduit for preferential groundwater flow.

Collapsible/compressible soils hazard is based on the underlying soil type, and the terrain condition (intact soils vs. colluvial soils or infill). The hazard criteria are listed and described in Table 6.7.a.

Table 6.7.a Collapsible Soils Hazard Criteria

Collapsible Soils Hazard	Criteria	Definition
High Hazard	<ul style="list-style-type: none"> Areas underlain by colluvial silt (non-stratified depositional material in gullies and along the base of silt bluff slopes) Areas of historic infill, such as gullies or sinkholes. 	<ul style="list-style-type: none"> A damaging soil collapse event or significant soil compression is very likely to occur within this area
Moderate Hazard	<ul style="list-style-type: none"> Located within area mapped as Glaciolacustrine Silt sediments. 	<ul style="list-style-type: none"> A damaging soil collapse event or significant soil compression is more likely to occur
Low Hazard	<ul style="list-style-type: none"> Located within area mapped as glaciofluvial sand and gravel sediments. 	<ul style="list-style-type: none"> A damaging soil collapse event or significant soil compression is unlikely to occur within this area

6.8 Hazard Mapping Results

The geohazard assessment results for landslide, sinkhole, and collapsible/compressible soils are presented in Appendix B (Maps 3.0– 5.0) .

The results indicate that landslide hazards persist within the vicinity of the steep silt bluff slopes that occur along the eastern boundary of the GWB Study Area. The landslide hazards are greatest within approximately 50 m of the slope crest and extend beyond the toe of the slope towards Highway 97 and Okanagan Lake.

Sinkhole hazards within the GWB Study Area are highest within 30 m to 50 m of the silt bluff or gully slope crest and are observed exclusively within the Glaciolacustrine Silts. The sinkhole hazard predominately occurs over the eastern and northern half of the West Bench area.

Collapsible/compressible soils occur in conjunction with the silt bluffs and associated gullies. It is unlikely that any area mapped as having a collapsible/compressible soils hazard is not also mapped as having a landslide and/or sinkhole hazard. However, this hazard class emphasizes the importance of potentially damaging soil material properties and therefore site-specific considerations.

The results indicate that, overall, the geotechnical hazard zones are more refined than the original Klohn Leonoff (1992) mapping of landslide and sinkhole hazards. The current Geotechnical Review provides additional refinement with the use of updated aerial imagery and 2018 LiDAR data. Additional landslide analysis using region-specific soil materials data and using slope sections from the GWB Study Area provides further refinement of the landslide hazard. The resultant mapping also interprets a varying degree of hazard (from Low, to Moderate, to High), whereas the Klohn Leonoff (1992) mapping did not. This refinement in hazard mapping allows different hazard areas to be better distinguished to inform future land use management decisions.

6.9 Development of a Geotechnical Constraints Zone Map

Upon completion of the landslide, sinkhole and collapsible / compressible soil hazard maps, the combined partial risk is evaluated following the process introduced in Section 6.2 (Figure 6.2.a). As discussed, partial risk is the probability of a hazardous event reaching or otherwise affecting the legal parcel. For this study, the partial risk is expressed as the combined likelihood of the key identified hazards (i.e., landslide, sinkhole, and collapsible / compressible soils).

Geotechnical constraints zones, defined as the combined potential hazard affecting an area are defined in Table 6.9.a. Zones A, B and C are equivalent to Low, Moderate, and High Risk, respectfully. Criteria for each zone are based on the assessed hazard levels:

- If the area is rated no greater than low hazard in any of the three hazard types, then the area is rated Low Risk (i.e., Zone A).
- If the area is rated moderate hazard in any of the three hazard types, the area is rated Moderate Risk (i.e., Zone B).
- If any area is rated high hazard for any of the three hazard types, the area is rated High Risk (i.e., Zone C).

The mapped Geotechnical Constraints Zones are shown in Appendix B, Map 6.0.

Table 6.9.a Geotechnical Constraints Zones

Geotechnical Constraints Zone	Criteria	Likelihood of a Damaging Geohazard Event Affecting a Parcel
Zone A	<ul style="list-style-type: none"> ▪ All three hazard types (i.e., landslide, sinkhole, and collapsible/compressible soils) are rated low 	Low
Zone B	<ul style="list-style-type: none"> ▪ Any <u>one</u> of the three hazard types (i.e., landslide, sinkhole, and collapsible/compressible soils) are rated moderate. 	Moderate
Zone C	<ul style="list-style-type: none"> ▪ Any <u>one</u> of the three hazard types (i.e., landslide, sinkhole, and collapsible/compressible soils) are rated high 	High

A Geotechnical Constraints Map was created on this basis by combining the three geohazard maps into one and is presented in Appendix B, Map 6.0. The zones, interpreted in the following section, form the basis for guiding development decisions.

6.9.1 Geotechnical Constraints Zone A – Low Risk

Geotechnical Constraints Zone A is designated to areas with a low geologic hazard level. Areas within Zone A have a low hazard rating for all mapped geologic processes and includes the following lands:

- Gentle to moderate (<50%) inclined sand and gravel slopes, with no signs of historic instability.
- Areas (broadly) not underlain by Glaciolacustrine Silts.

With respect to guiding development decisions, areas within Geotechnical Constraints Zone A, while rated Low Risk and not subject to hazards, are not necessarily free from influencing hazards elsewhere. For example, surface water runoff and groundwater movement from Zone A lands may potentially impact more hazardous areas that lie adjacent, or downslope, from these lands.

6.9.2 Geotechnical Constraints Zone B – Moderate Risk

Geotechnical Constraints Zone B is designated to areas that are potentially subject to geologic hazard and where further assessment may be required to further define the hazard. Development within this Zone may require remedial measures, such as deep foundations, in-ground barrier pile walls, and/or specially designed on-site water management. Geotechnical Constraints Zone B includes the following lands:

- Moderate to steep (>50%) sand and gravel slopes, with no signs of historic instability.
- Presence of Glaciolacustrine Silt and/or unknown fill.
- Areas located within “moderate” landslide hazard, “moderate” sinkhole hazard, and/or “moderate” collapsible/compressible soils hazard.

Within Geotechnical Constraints Zone B, some limitations to development may include:

- Erosion, slope retreat, and instability (landslide hazard);
- Potential for sinkhole development (sinkhole hazard) limiting potential for on-site stormwater and effluent disposal;
- Soil conditions that require special geotechnical engineering controls; and,
- Development potential will require further site-specific investigations.

6.9.3 Geotechnical Constraints Zone C – High Risk

Geotechnical Constraints Zone C is designated to areas that are subject to a high level of geologic hazard. Within this zone, there may be evidence of past slope failures and/or sinkhole formation. Further instability and/or sinkhole development is considered very likely. Development within this zone will likely require more detailed site-specific investigation and may require special remedial measures to safely use the land. Geotechnical Constraints Zone C includes the following:

- Steep to very steep (>50%) sand and gravel slopes, that show signs of historic instability;
- Steep to very steep glaciolacustrine (silt bluff) slopes and areas beyond the crest of the slope that lie within the high landslide hazard setback zone or the high sinkhole hazard zone;
- Areas beyond the toe of the steep silt bluff slope that are subject to high hazard landslide runoff;
- Areas of historic landslide activity and/or sinkhole formation; and,
- Presence of colluvium derived from Glaciolacustrine Silt and areas of historic infill.

Within Geotechnical Constraints Zone C, limitations to development are similar to those identified in Zone B, except that there is more certainty that controls will be required. These limitations may include:

- Erosion, slope retreat, and instability (landslide hazard);
- Potential for sinkhole development (sinkhole hazard) limiting potential for on-site stormwater and effluent disposal;
- Soil conditions that require special geotechnical engineering controls; and,
- Development potential will require further site-specific investigations and will likely be costly.

6.9.4 How to Use the Geotechnical Constraints Zone Map

The following steps provide a conceptual idea as to how the Geotechnical Constraints Zone Map (Appendix B, Map 6.0) may be used to evaluate proposed development applications within the GWB Study Area. These are:

- **Step 1:** Development (or BP) Application received by RDOS;
- **Step 2:** Determine whether the subject property lies within Geotechnical Constraints Zone A, B, or C, using Appendix B, Map 6.0;
- **Step 3:** Request supporting documentation, including a Geohazard (Geotechnical Engineering) Report, as appropriate to the applicable Zone. Terms of Reference for the report, to be prepared by a Qualified Professional (QP), are provided; and,
- **Step 4:** Evaluate and receive the Geohazard (Geotechnical Engineering) Report that provides conclusions regarding site suitability for development and assures a low likelihood of offsite impacts.

6.10 Future Considerations

6.10.1 Monitoring and Review

Geohazard conditions may change over time and the landslide risk management process, presented in Section 6.3, includes a monitoring and review component that spans the entire process (Porter and Morgenstern, 2013). Monitoring and review represent an ongoing process that includes monitoring the incidence of landslides, sinkholes, or other geohazard events. It also includes periodic review of risk management methods, recognizing that different approaches and new technologies may develop over time. As development takes place, different risk scenarios may arise, where the potential exposure to geohazard events changes over time.

Temporal changes to geomorphological processes and/or geohazard conditions in the GWB Study Area may be expected with the effects of a changing climate, or with the effects of land development. Efforts were made to incorporate considerations for a changing climate and/or land development effects into the hazard criteria. These include the following:

- For the silt bluff and gully side slope landslide hazard setback criteria, a 10 m buffer is added to account for future erosion and regression of the slope crest.
- For the landslide hazard criteria, conservative values for material properties were chosen to account for a high degree of soil saturation (attributed to natural or artificial sources).
- For the sinkhole hazard criteria, ratings for potential sinkhole development are at least moderate for areas underlain by Glaciolacustrine Silts. This accounts for potential sinkhole hazard regardless of proximity to the slope/gully crest or other adjacent sinkholes.

6.10.2 Effects of Climate Change

A recent report titled *Climate Projections for the Okanagan Region* (RDNO, RDCO, RDOS and Pinna Sustainability, 2020) provides the most recent summary of projected climate change. This information was reviewed in the context of prevailing geomorphologic processes in the GWB Study Area.

Increases in precipitation, and more specifically, the projected increase in the frequency and intensity of rainstorms has potential to affect the likelihood for geotechnical hazards in the GWB Study Area. In Table 6.10.a below, changes in precipitation on wet and very wet days is an indicator of extreme precipitation. In the RDOS valley bottom, precipitation on very wet days areas is expected to increase by an average of 19% by 2050 and 52% by 2080 – these projections indicate a significant change in the volume and intensity of precipitation falling on very wet days.

Table 6.10.a Projected Climate Change Effects and Potential Impacts

Projected Climate Change Effect (on RDOS valley bottom for 2050 and 2080 projections)	Potential Impacts
Increases (10-20%) in total annual precipitation, except in summer months Increases in frequency and intensity of rainstorms. Increased precipitation on the wettest day (5-12% increase), wettest 5-day period (2-10%), and 1-in-20 wettest day (10-16%). Increased precipitation on wet (12-27% increase) and very wet (19-52%) days	Increased pressure on stormwater management and drainage systems. Potential to overwhelm drainage systems and streams leading to saturation of soils, increasing likelihood of landslides.
Warmer summer temperatures, with hottest days getting hotter (4 to 7 degrees warmer on average), more days over 30°C (30-54% increase), and a longer growing season (44 to 73 days longer).	Increased potential for agricultural drought, which increases pressure to irrigate.

7. Review of Current RDOS Land Use Management Planning Policies

7.1 General

The following summarizes current RDOS Land Use Management Planning and Development Policies that currently exist within the GWB area. Current tools and planning mechanisms are the same as municipal governments but are limited because the Regional District does not have subdivision approval authority. The RDOS can manage growth and density through land use and building bylaws and policies.

This report reviews the current state of the geotechnical hazards and land use management and offers recommendations and options to further explore land use for the GWB community. By linking geologic processes with land use activities, the Geotechnical Review provides the rationale for the application and use of various policy mechanisms for the management and mitigation of geohazards.

The policies range from a higher-level growth strategy to site-specific BPs, as per the hierarchy indicated as follows:

1. Regional Growth Strategy (RGS)
2. Official Community Plan (OCP)
3. Zoning Bylaw
4. Subdivision and Development Servicing Bylaw
5. Building Bylaw
6. Board Policies
7. Geological Studies

7.2 South Okanagan Regional Growth Strategy (RGS) Bylaw No. 2770, (2017)

The South Okanagan RGS Bylaw No. 2770 (Bylaw 2770), (2017), provides goals and policies regarding growth throughout the region. The West Bench is located within RDOS Electoral Area "F" and is identified as an existing "Settlement Area" but is not designated as either a "Primary Growth Area" or a "Rural Growth Area."

The RGS does provide policies for non-designated growth areas, such as the GWB, in the following:

1C-4 Limit consideration for rezoning of large rural land parcels to smaller parcels outside of Primary Growth Area and Rural Growth Areas only where such growth is infill, does not significantly increase the number of units or the established density, and respects the character of its surroundings.

Within Goal 3: "to support efficient, effective and affordable infrastructure services and an accessible multi-model transportation network", objectives and supporting policies that are relevant to the current Geotechnical Review include:

- Goal 3-A Direct development to areas with publicly operated services and infrastructure.
- Goal 3-C Minimize environmental impacts of infrastructure and services by considering guidelines and alternative development standards to reduce environmental impacts of hillside

development; and minimize infrastructure development impacts by avoiding hazard areas and environmentally sensitive areas.

The RDOS has initiated a review of the RGS Bylaw 2770 (2017) in 2020. As noted in the RDOS OCP for Electoral Area “F” (2018), future development of the identified growth areas, may require an amendment to the RGS to re-designate the GWB as a “Rural Growth Area”.

7.3 RDOS Electoral Area “F” Official Community Plan Bylaw No. 2790, (2018)

The RDOS Electoral Area “F” OCP Bylaw No. 2790, (2018) was recently adopted (designated OCP zones are shown in Appendix B, Map 1.0). The goals and policies of the Bylaw 2790 (2018) as they relate to growth and development of the GWB Area are summarized below. A goal of Bylaw 2790 (2018) is to provide opportunities for limited growth and housing options and maintain rural residential and agricultural character.

Bylaw 2790 (2018) policies relevant to this Geotechnical Review include:

Local Area Policies

- Support for an updated geotechnical hazard assessment in the West Bench / Sage Mesa area with new technologies (e.g., LiDAR) that were not available when the area was last assessed;
- Support for an assessment and feasibility to provide community sewer and storm water services to part (Sage Mesa) or all of the GWB;
- Subject to an updated geohazard assessment in the GWB area may consider permitting secondary suites or accessory dwellings; and,
- May consider residential development of Low Density Residential or Multiple Family Residential on three development sites – North of Sage Mesa, Pine Hills golf course and west of Westwood Properties (gravel extraction, asphalt plan area) predicated on full sewer, storm water and community water infrastructure, geohazard risks being addressed and amendment of the RGS Bylaw 2770 (2017) to designate the development site(s) as a “Rural Growth Area.”

Small Holdings Policies

Much of the GWB area is designated as SH, Small Holdings (SH) in the RDOS Bylaw 2790 (2018), except for the Westwood and adjacent future development area that is designated Low Density Residential. Relevant policies to this review and GWB include:

- Supports a minimum parcel size of one hectare for lands without community sewer within the SH designation.
- Supports secondary suites and accessory dwellings, subject to accessory dwellings on parcels less than 1.0 ha in area being connected to a community sewer system.
- Subject to an updated technical assessment of geotechnical hazards in the GWB / Sage Mesa area, may consider permitting secondary suites or accessory dwellings in the zone(s) applied to this area(the technical assessment is meant as the current Geotechnical Review).

These policies show a willingness to investigate the possibilities of development by way of the potential of secondary suites and accessory dwellings after completing a geotechnical hazards review.

Infrastructure and Servicing

Policies associated with infrastructure and servicing include:

- Board may require adequate infrastructure, including water, sewer, roads, and storm water management for new developments at no cost to the public;
- Requires that all new parcels of 1 ha or less be connected to a community sewer system;
- Supports working with the CoP to conduct a feasibility study for the extension of a sanitary sewer system (and stormwater) from the CoP to service part or all the GWB; and,
- Encourages use of permeable surfaces on driveways, parking lots and access roads, as well as other measures such as xeriscaping, infiltration basins, swales, and other sustainable design features to reduce overland runoff.

Development Permit (DP) Areas

RDOS Electoral Area “F” has designated two DP areas that apply to the GWB area: Environmentally Sensitive Development Permit (ESDP) Area and the Watercourse Development Permit (WDP) Area.

ESDP Areas have been designated to protect the natural ecosystem. Areas designated include gullies, silt bluffs and larger undeveloped sites – many of the areas identified as having geotechnical hazards.

WDP Areas have been designated to protect fish and fish habitat along water courses and are applied to areas adjacent to fish-bearing watercourses or connected to fish-bearing water courses with fish. Watercourse DP Areas may also apply to isolated wetlands that may be environmentally sensitive or function as groundwater recharge areas. Watercourse DP Areas are assessed based on the *Provincial Riparian Areas Protection Regulation* (RAPR).

7.4 RDOS Electoral Area “F” Zoning Bylaw No. 2461, (2008)

As per the RDOS Electoral Area “F” Zoning Bylaw No. 2461 (Bylaw 2461) (2008), the majority of the GWB is zoned as West Bench Small Holdings (SH6). The principal use permitted is “single detached dwellings” and accessory uses include agriculture, bed and breakfast operations, home occupations and accessory buildings and structures. The minimum lot size in this zone is 0.25 ha when connected to a community sewer and water system; 0.5 ha when connected to a community sewer system and serviced by a well; or 1.0 ha when serviced by well and approved septic system.

Sage Mesa (and Westwood / Husula Highlands) are zoned West Bench Low Density Residential (RS6). The principal use permitted is single detached dwelling with accessory uses of bed and breakfast, home occupation and accessory buildings and structures. The minimum lot size is 500 m² when connected to a community sewer and water system; 0.5 ha when connected to a community sewer system and serviced by well; or 1.0 ha when serviced by well and approved septic system. This zone reflects the small lot character of Sage Mesa when compared to the more rural character of West Bench.

In RDOS Electoral Areas “A”, “C”, “D”, “E” and “I” secondary suites are permitted in single family dwelling in Agricultural, Rural Holdings and Low-Density Residential Zones, with carriage houses allowed in limited areas. Carriage houses are not currently permitted in the GWB area based on recommendations by Klohn Leonoff (1992).

7.5 RDOS Subdivision Servicing Bylaw No. 2000, (2002)

The levels of infrastructure works, and services required for development are outlined in the RDOS Subdivision Servicing Bylaw No. 2000 (Bylaw 2000), (2002). If subdivision was to be approved and an additional parcel is created, the parcel must be a minimum of 1 hectare in size to be serviced by an on-site septic field or a connection to a community sanitary sewer system if the parcel is less than 1.0 hectare. The minimum level of service in Bylaw 2000 (2002) for a rural lot one-hectare and larger in size includes a groundwater well and on-site septic system, and on-site drainage.

The GWB area is serviced by two water systems but does not have a community sanitary sewer or community stormwater drainage systems. The MoTI is responsible for public drainage within road right of ways. There is little opportunity for subdivision as most lots in GWB are less than 1.0 hectare in size, and due to the requirement of a community sanitary sewer.

The approving authority for subdivisions in the RDOS is through MoTI. Applications for subdivision are referred from MoTI to the RDOS and are reviewed for compliance to Bylaw 2000 (2002) requirements. The MoTI Approving Officer has many requirements for subdivision applications, including the requirement for a geotechnical report. Since the Klohn Leonoff (1992) report, there has been little to no subdivision activity in the Sage Mesa and West Bench areas.

7.6 RDOS Building Bylaw No. 2805, (2018)

The RDOS offers building inspection services to GWB by way of the Building Bylaw No. 2805 (Bylaw 2805), 2018 and applies to the geographical areas such as land, the surface of water, air space, buildings, or structures; specifically:

“This bylaw applies to the design, construction or occupancy of new buildings or structures, (including on site preparations, interconnection of modules, connection to services and installation of appliances for mobile homes and factory built houses) and the alteration, reconstruction, demolition, removal, relocation or occupancy or change of use or occupancy of existing buildings and structures (including on site preparations, interconnection of modules, connection to services and installation of appliances for mobile homes and factory built houses).”

The Bylaw 2805 (2018) does not:

- protect of owners, designers, or constructors from economic loss;
- give the assumption by the Regional District or any Building Official of any responsibility for ensuring the compliance by any owner, his or her representatives or any employees, constructors or designers retained by the owner, with the Building Code, the requirements of this bylaw, or other applicable enactments, codes, or standards;
- provide any person a warranty of design or workmanship with respect to any building or structure for which a BP or occupancy permit is issued under this Bylaw;
- provide any person a warranty or assurance that construction undertaken under BPs issued by the Regional District is free from latent, or any, defects; or
- provide protection of adjacent real property from incidental damage or nuisance.

For context and perspective, the RDOS has stated that 158 BPs have been issued between January 1992 to June 2020. The RDOS does not track the number BP issued with a geotechnical review completed under the Board Policy No. 3740-00.02, see Section 7.7 for the description of the policy.

7.7 RDOS Board Policies

A Board Policy gives reasoning and direction to the RDOS on how to conduct local government business. In 1992, the Regional Board adopted a policy on BP Issuance for the West Bench, Sage Mesa, Husula Highlands, West Bench Estates Area (Policy No. P3740-00.02) after receiving the report prepared by Klohn Leonoff (1992) (see Section 7.6). This policy was in response to the Klohn Leonoff (1992) report recommendations that focused on subdivision activity and includes excerpts from the report. This policy is applicable to the entire GWB area and applies a Zone designation 1,2,3,4 and 5 based on the soil conditions (hazards) review by the Klohn Leonoff (1992) report and requires:

- Upon receipt of a BP application for construction in the GWB area, the Building Inspector will provide the applicant access to the Klohn Leonoff (1992) report and advise that a detailed report by a certified professional engineer with experience in geotechnical engineering is required for the proposed development. This report is to certify that the land may be used safely for the use intended and to assess the impacts of the proposed development on adjacent and downstream lands.
- If the above conditions are met, the Building Inspector may issue a BP with the condition that the landowner registers a covenant with the Regional District to use the land only in the manner determined and certified by the engineer.
- If the geotechnical engineer determines that the land cannot be used safely for the use intended or that adjacent or downstream lands may be rendered unsafe, the Building Inspector shall refuse to issue the permit and provide the reasons for the denial.
- The Policy then provides for an appeal directly to the Regional Board who may approve or deny the issuance of the BP and require a covenant.
- The Policy also gives a definition of “construction” for the purposes of this policy: “new construction of a building or the structural alteration or addition to an existing building but does not include the repair or reconstruction of an existing building or structure or the construction of a deck, balcony, shed, carport or garage that does not contain any plumbing fixtures.”

Section 56 of the *Community Charter* is also an available mechanism that local government building inspectors can utilize to require a geotechnical engineering report when a building or structure is proposed on hazardous lands, such as flooding or landslide. This report is to determine the suitability of the lands for the proposed building or structure and to obtain professional recommendations for conditions necessary to assure safe use of the land.

7.8 Geological Studies

In October 1991, the RDOS issued a “Proposal Call” to “determine criteria for development, taking into account identified geological conditions and associated risks.” The RDOS drafted a similar scope as what was given for this Geotechnical Review report: to review the *Geological Hazards and Urban Development of the Silt and Deposits in the Penticton Area*, (Nyland and Miller, 1977), analyse any other existing data and past reports, conduct field research, consult with the GWB residents, and develop conclusions and recommendations to assist with the land use matters in GWB. The Klohn Leonoff (1992) report. was the product of the “Proposal Call”.

The Klohn Leonoff (1992) report provided the following recommendations regarding land use management planning and regulatory hazard response:

- The study results led to the development of five risk categories, with Zone 1, being the highest risk. Most of the West Bench (below West Bench Drive) and all of Sage Mesa was designated to be Zones 1-3. Within Zones 1 and 2 new communities and subdivision of lands are not recommended. In Zone 3, subdivision is only recommended with installation of sanitary and storm sewers. Subdivision in Zones 4 and 5 is also restricted to areas with installed sewers or where water is drawn from groundwater.
- Development in the hazard zones is recommended only with implementation of mitigative measures that are practical, enforceable at time of construction and do not require ongoing policing by the RDOS. Recommended measures include:
 - Restrict development in the GWB area and catchment area to limit the quantity of water entering the silts and gullies;
 - Install septic sewers, storm sewers, road curbs and roof and driveway runoff collection to carry water to Okanagan Lake;

- Improve the community water system;
- Collect groundwater downstream of Madeline (Max) Lake and use as irrigation or transport to Okanagan Lake; and,
- Restrict construction of swimming and ornamental pools.

The Klohn Leonoff (1992) report states: “The obvious approach to reducing risk due to hazard is simply to avoid the risk. This can be achieved by building in areas where the risk is reduced”. The authors also recognize that “where development has already occurred, hazard avoidance would not be a possibility” and “if the risk of hazard can be reduced to acceptable limits of hazard reduction may be chosen an alternative to not developing”.

The Klohn Leonoff (1992) report has provided recommendations with respect to subdivision activity within the GWB Study Area and recommends no subdivisions in Zones 1-3. The message for future building activity in high hazard areas, Zones 1 – 3, is not as clear but seems to suggest that this should not occur until mitigative measures have taken place. Overall, the message is that there should be no further development in the GWB area without implementation of the mitigative measures outlined above. With an abundance of caution, these recommendations led to the RDOS drafting and adopting the policy “Building Permit Issuance West Bench, Sage Mesa, Husula Highlands, West Bench Estates Area” (detailed in Section 7.6) and may have influenced decisions of land use through the RDOS Bylaws.

7.8.1 Klohn Leonoff 1992 Decision Matrix

A “decision matrix” or regulatory hazard response model was created in the Klohn Leonoff (1992) report to assist the RDOS in land management decisions. Five zones were defined in the matrix (presented in Table 7.8.a) and indicate the soil conditions as follows:

- Zone 1.** Landslide Hazard
- Zone 2.** Sinkhole Hazard
- Zone 3.** Silt Bluff
- Zone 4.** Gravel or Bedrock in study area
- Zone 5.** Gravel or Bedrock outside study area

Zone 5 was included in the GWB Study Area for the current Geotechnical Review report.

The “decision matrix” also used a development type and only focused on applications for subdivision. Specifically, the subdivision of existing lots into larger (> 1 Acre (4,040 m²)) parcels, or subdivision into smaller (< 1 Acre (4,040 m²)) parcels; or the creation of a “new community”. The “new community” is suspected to be a reference to the development of Red Wing Subdivision on the PIB lands and outside the study area of this report.

In response to these types of soil conditions and subdivisions, the administrative direction presented at the time included:

- (a) “approved without conditions”
- (b) “approved only with a covenant registered on the property title clearly defining the hazards present”
- (c) “approved only with the installation of septic sewer and storm sewers”
- (d) “approved only with irrigation or domestic water drawn from groundwater”
- (e) “not approved”

Table 7.8.a Decision Matrix from the Klohn Leonoff Report (to be used with Drawing D-1007)

Zone	New Community	Subdivision of Existing Lot to >0.5 Acre	Subdivision of Existing Lot to >1.0 Acre
1. Landslide Hazard	e	e	e
2. Sinkhole Hazard	e	e	e
3. Silt Bluff	e	c	c
4. Gravel or Bedrock in Study Area	c	c	d
5. Gravel or Bedrock outside Study Area	c	c	d

As a result of the final Klohn Leonoff (1992) Report a RDOS Board Policy was adopted for GWB area BP processes. This policy is described in Section 7.7.

The RDOS has had challenges with interpreting the matrix and recommendations contained in the Klohn Leonoff (1992) report over the years, which include:

- The decision matrix only focused on subdivision and not the overall land use of GWB.
- Subdivision approvals lie outside the RDOS authority.
- Future subdivision in the GWB Study Area is mainly premised on the installation of community sanitary and storm systems. Public storm drainage is generally outside of the RDOS authority.
- The matrix does not consider any increase of land use to single-lot residential development such as additions to existing homes, existing dwelling being replaced by larger dwellings and accessory dwellings.
- The discussion of the additional development of “hard surfaces” by land use is not fully realized.
- The lack of guidance to future review of the geotechnical hazards in the GWB area.
- How to interpret the evolution of land use in the GWB with the constants of the existing hazards.

The general intent of this current GWB Geotechnical Review report is to review the geotechnical hazards and the land use mechanisms in place and suggest administrative guidance to development approval decisions.

8. Land Use Effects and Regulatory Tools for Hazard Land Management

8.1 Land Use Effects on Geohazards

For practical purposes, understanding the land use activity implications on geomorphological process and geohazards such as landslide initiation, sinkhole development, or soil collapse / compression, helps in the development of policies and guidelines for the management and/or mitigation of the hazards.

Land use activities that may potentially have a geotechnical issue, or that may have a negative effect on the geological stability of lands, include land densification, increased water infiltration to the ground, changing slope geometry, and soil loading. Table 8.1.a, below, lists a variety of example land use activities and the associated implications on geomorphological process, or geohazard.

Table 8.1.a Effects of Example Land Use Activity on Geohazards

Example Land Use Activity	Effects on Geomorphologic Process or Geohazards
Area Densification (i.e., rezoning or subdivision)	<ul style="list-style-type: none"> ▪ Increased impervious (hard) surfaces will increase surface water runoff (i.e., roofs and concrete or asphalt surfaces) ▪ Altered slope geometry and soil disturbance through fill placement and/or grading ▪ Increased water infiltration to soils through sanitary and/or stormwater contributions
Parcel Densification (i.e., accessory dwelling or secondary suite)	<ul style="list-style-type: none"> ▪ Increase surface water runoff from impervious surfaces ▪ Altered slope geometry and soil disturbance through fill placement and/or grading ▪ Increased water infiltration to soils through sanitary and/or stormwater contributions. Difficult to manage occupancy limits for a specific lot. ▪ Geohazards are not necessarily related to parcel size but the effects of parcel densification are more apparent on smaller lots than on larger lots.
Swimming pool construction	<ul style="list-style-type: none"> ▪ Potential impact on slope stability and sinkhole development due to infiltration of water to soils by leaks and/or overland draining. ▪ Potential impact on slope stability by soil loading (above-ground pools)
Irrigation (residential use or agricultural use)	<ul style="list-style-type: none"> ▪ Potential impact on slope stability and sinkhole development due to infiltration of water to ground (excessive use or leaks)
On-site sewage systems	<ul style="list-style-type: none"> ▪ Potential impact on slope stability and sinkhole development due to infiltration of water to ground (excessive use or leaks)
Stormwater	<ul style="list-style-type: none"> ▪ Potential impact on slope stability and sinkhole development due to infiltration of water to ground associated with the concentration and diversion of surface water runoff.
Impervious surfaces (i.e., roads, driveways, parking lots, roof tops)	<ul style="list-style-type: none"> ▪ Impervious surfaces can result in the concentration and diversion of surface water runoff which can impact slope stability and sinkhole development.
Excavation and fill placement, including soil and/or landscape waste disposal	<ul style="list-style-type: none"> ▪ Changing slope geometry through excavation and fill placement can impact slope stability. For example, removal of toe support along base of a steep slope. ▪ Placement of fill in sinkholes and/or gullies may lead to future instability. ▪ Spoiling soil and/or landscape waste into gullies, or onto a steep slope can impact slope stability.

8.2 Regulatory Tools for Hazard Land Management

Table 8.2.a, below, lists a variety of land use activities and the possible regulatory tools available for hazard land management.

Alternate regulations may include adopting a Hazard Land Development Permit Area, establishing minimum reporting requirements for geotechnical investigations, and restricting development from high hazard zones. Considerations for new regulatory approaches are explored further in Section 9.

Table 8.2.a Possible Regulatory Tools for Hazard Land Management

Example Land Use Activity	Possible Regulatory Tools for Hazard Land Management
Area Densification (i.e., rezoning or subdivision)	<ul style="list-style-type: none"> ▪ RDOS manages subdivision through Land Use and Works and Services bylaws in the subdivision application review process. ▪ Require geotechnical report that comments on soil stability, including on site and off-site effects.
Parcel Densification (i.e., accessory dwelling or secondary suites)	<ul style="list-style-type: none"> ▪ Use zoning bylaws to manage development density (e.g., prohibit secondary suites and accessory dwellings) and land use (e.g., community sanitary sewer and storm drainage). ▪ Limit infill development to larger (>1 ha) lots.
Swimming pool construction	<ul style="list-style-type: none"> ▪ Use zoning and/or Development Permit Areas to specify conditions for developing pools. ▪ Require a geotechnical report that comments on soil stability, operation of pool (including where to drain for maintenance and servicing) and risk of occurrence.
Irrigation (residential use or agricultural use)	<ul style="list-style-type: none"> ▪ Develop land use policies specific for hazard lands. ▪ Continue to use water meters and leak detection program to detect excessive water use and/or leaks. ▪ Use Water Conservation Plan and Water Use bylaws to limit water use. ▪ Develop Best Management Practices (BMPs) to encourage use of low water use landscaping.
On-site sewage systems	<ul style="list-style-type: none"> ▪ Use land use bylaws to establish minimum servicing levels for land development (e.g., subdivision and multi-unit forms of development).
Stormwater	<ul style="list-style-type: none"> ▪ For land development, develop policies or DP area guidelines, to direct use of in-ground stormwater disposal (i.e., dry wells) to safe areas. ▪ Establish reporting requirements for geotechnical investigations that includes stormwater runoff be addressed.
Impervious surfaces (i.e., roads, driveways, parking lots, roof tops)	<ul style="list-style-type: none"> ▪ Continue to use zoning bylaws to limit percentage of lot covered by impervious surfaces, including roofs, decks, and paved surfaces. ▪ Develop Best Management Practices to encourage use of pervious surfaces and vegetation for site coverage.
Excavation and fill placement (including soil and/or landscape waste disposal)	<ul style="list-style-type: none"> ▪ Use Development Permits and/or Building Permits to require plans that show limits of excavation and fill placement. ▪ Implement a soil deposition and removal bylaw to require relocation permits to track volumes being removed or placed. ▪ Use BMPs to prohibit filling in sinkholes and/or spoiling material down steep gully slopes.

9. Recommendations

9.1 General

The following recommendations are presented for consideration by RDOS with the overall objective of reducing geotechnical risk in the GWB Area.

9.2 Develop Land Use Management Policies for Hazard Lands

9.2.1 Incorporate Results of this Study into Current RDOS Bylaws

It is recommended that the results of this study be taken into consideration in the development and update of current RDOS bylaws for land use management. Specifically, the Geotechnical Constraints Zone Map (Appendix B; Map 6.0) should be incorporated into a land use bylaw.

9.2.2 Develop Geotechnical Report Requirements

It is recommended that minimum report requirements for geotechnical studies conducted for properties in the Study Area be prepared and adopted by bylaw (e.g., through the Regional District's Building Bylaw 2805 (2018) or the Development Procedures Bylaw as formal application requirements).

Although a Building Inspector can require a geotechnical report be provided to the Regional District as part of a BP application, there is limited ability to review the report and to enforce the recommendations provided in the report. By developing specific Geotechnical Terms of Reference, some of the uncertainty associated with interpreting reports could be reduced and will help ensure that all geohazards of concern are addressed in a consistent manner.

It is recommended that geotechnical reports include a signed Assurance Statement accompanied by a checklist of technical report content requirements with a signed and sealed document summarizing the assessed hazards in relation to the Geotechnical Constraints Zones. It is recommended that RDOS consider an approach similar to what has been developed by the Fraser Valley Regional District⁵.

9.2.3 Soil Removal and Deposition Bylaw

It is recommended that RDOS introduce a Soil Removal and Deposition Bylaw to regulate, monitor, and limit the removal and deposition of soil through permitting. Combined with the hazard mapping, soil removal and deposition activities can be reduced in high hazard areas and documented within the GWB area.

9.2.4 Develop Specific Land Use Activity Best Management Practices

The RDOS may develop policies and/or Best Management Practices (BMPs) for specific land use activities that are associated with geohazards in the GWB area. Example high risk land use activities include irrigation, landscape practices, and swimming pool use. BMPs provide a means to manage those activities to reduce geotechnical risk.

⁵ <https://www.fvrd.ca/assets/Services/Documents/Planning-and-Development/Application-Forms-and-Resources/APEG%20Form.pdf>

9.2.5 Public Education and Outreach

It is recommended that the RDOS expand educational resources for GWB residents through public outreach and publication of educational materials. The District can disseminate important information regarding geohazards, the land use implications on geohazards, and provide educational information informing residents of the geotechnical sensitivity and potential trigger factors leading to issues.

Example educational materials to be developed and published may include BMPs for water use, irrigation practices, soil or yard waste debris placement, and incident reporting.

9.3 Address Data Gaps

9.3.1 Incidence Tracking and Data Management

It is recommended that RDOS develop a web-based reporting tool that could be accessed by staff and potentially residents to record geohazard events so that they may be responded to appropriately. Operations and maintenance activities can be recorded and potentially integrated with the already existing water leak detection program that tracks the location of continuous water leaks. The tool could also be used to track and record activities where leaks have been addressed and where repairs to public infrastructure has been completed.

One of the challenges encountered during this Geotechnical Review was that there is a lack of tracking geohazard incidences by the RDOS and other government and local authorities. Incidences may include landslide response, sinkhole development, road / sidewalk repairs attributed to erosion, soil collapse / compression, or piping.

It is also recommended that a publicly accessible database of previously completed geohazard and geotechnical reports, including this one, be made available. Access to geohazard reports would assist all other professionals working in the area to provide consistent results and would ensure that relevant information upon which judgements are made regarding hazard and risk are made available.

Incidence tracking and data management would reduce the number of information requests directed to RDOS staff and would provide a living repository that would ensure the future Geotechnical Review updates incorporate relevant historical geohazard data.

9.3.2 Additional Subsurface Soils Investigation

It is recommended that additional surface soils investigations be undertaken in conjunction with future geotechnical studies of the West Bench area to address data gaps identified in this Geotechnical Review report. This report utilized existing borehole and water well records, and no additional subsurface investigation work was completed due to the scope of budget of the project.

While completing this Geotechnical Review it was found that there was limited historic subsurface available upon which to characterize the underlying soils throughout the GWB area. There was insufficient data to fully characterize the interface between the outwash sands and gravels and the Glaciolacustrine Silt. This information would allow for further refinement of the terrain map and the corresponding sinkhole and collapsible / compressible soils hazard maps.

The study also identified that there is spatial variability of the plasticity of Glaciolacustrine Silt throughout the GWB Study Area. Soil plasticity is a key parameter in determining susceptibility to sinkhole formation. Thus, further information on the material properties of the silts would allow for further refinement of the sinkhole and collapsible / compressible soils hazard maps.

Further information may be gained by undertaking additional subsurface soils investigation or drilling boreholes. The boreholes should be strategically placed to further define the interface between the outwash sands and gravels and the Glaciolacustrine Silt, with soil characterization laboratory testing undertaken on retrieved samples of the Glaciolacustrine Silts to further investigate the correlation between low plasticity and sinkhole susceptibility.

9.3.3 Additional Groundwater Investigation and Monitoring

Additional groundwater investigation and monitoring is warranted to better understand the hydrogeologic regime within the GWB Study Area. If resources are made available, further work could include monitoring groundwater levels in existing wells and expanding monitoring to include the development of new wells.

Additional work could also include an update and further development of a detailed water balance for the GWB Study Area to account for different land use activities, different water use character, additional development, differing climate conditions, and predictions for climate change.

This Geotechnical Review report provides little additional information on the assessment of groundwater conditions within the GWB Study Area, as there was no additional data to review. Previous investigations of groundwater and the potential effects of development on groundwater were relied upon.

The groundwater investigation by Pacific Hydrology and Piteau Associates (1993) concluded there would be no significant adverse effects on the silt soils on the West Bench because water volumes would be low, that the area was hydraulically isolated from the West Bench by a buried bedrock ridge, and that groundwater is transmitted through the silt at a low gradient and low velocity. Their work included the installation of several groundwater wells and ultimately recommended that a systematic monitoring program be completed to ensure no adverse impacts associated with development of the Inland Property, located within the sand and gravel sediments near Madeline (Max) Lake. Several groundwater monitoring wells are understood to still be functioning and could be monitored to support future development. It is presumed that since the development of Inland Properties never occurred, no further investigation or monitoring of groundwater conditions was conducted.

9.3.4 Update the 1994 Wastewater Management Plan

There are no immediate plans to connect properties within the GWB to a community sanitary system or the CoP wastewater collection system. RDOS, therefore, relies upon the Wastewater Management Plan developed for Electoral Areas "E" and "F" in 1994. Currently, updates to the plan are considered cost prohibitive. When the time is appropriate and funding is available, the Wastewater Management Plan should be updated and expanded to include an assessment of groundwater and geotechnical impacts. For maximum benefit, updates to the plan should coincide with the development of a stormwater management plan.

9.3.5 Improve Stormwater Management Practices

It is recommended that stormwater management practices be improved within the GWB area, considering the linkages between drainage servicing, land use planning and the unique geohazards. The potential benefits of undertaking these recommended improvements include reduced geotechnical risk.

Stormwater management practices should consider discharges from road (public) sources and from residential (private) sources. MOTI is responsible for drainage structures associated with the road network. RDOS is responsible for the permitting of activities on individual lots and are, therefore, responsible for stormwater management at a site level. Recommended improvements in stormwater management practices include:

- Support the development of a Stormwater Management Plan, or stormwater master plan that promotes the collection of stormwater from residents, roads, and the environment to areas of lower geotechnical risk;

- Develop Best Management Practices for stormwater management at the site-level (see Section 9.2.4);
- Recommend that MOTI require Stormwater Management Plans for new subdivisions;
- Support the development of drainage solutions and irrigation practices based on soil characterization, land use, and proximity to known geohazards; and,
- Support efforts by MOTI to address identified deficiencies in stormwater management infrastructure.

9.3.6 Conduct Periodic Review of Geohazard Conditions

It is recommended that the geohazard conditions within the GWB area be periodically reviewed. The current Geotechnical Review should be revisited in the event of changed conditions, and at a frequency of no more than every ten years. Ten years is a time interval within which there is the potential to detect, and adapt to, geotechnical changes (i.e., landslides, sinkhole development, other recorded incidences). In addition, a ten-year interval roughly corresponds to the frequency of Official Community Plan updates.

10. Study Limitations and Closure

This Geotechnical Review report of the GWB Study Area is intended as a high-level regional assessment of geohazards. The review is completed for the GWB area as a whole and is not necessarily refined enough to be interpreted at a site level. For this reason, it is suggested that, where hazard boundaries intercept property boundaries, the more conservative rating should be applied to the entire property. For example, if a specific lot has areas rated both “moderate” and “high” then it is recommended that the higher of the ratings be applied when determining the appropriate level of response to a development application.

The Geotechnical Review relied upon information that was available at the time of the assessment. This includes limited and dated geotechnical borehole data, limited, and dated groundwater well data, and no additional subsurface investigation. The reliability and accuracy of the mapping and analysis would be improved with additional investigation, well monitoring, and material testing of the Glaciolacustrine Silts.

This Geotechnical Review report provides a snapshot of terrain conditions at the current time. It is anticipated that terrain conditions will change with changes to environmental and/or development conditions. It is expected that a Geotechnical Review should be revisited should conditions change and at a frequency of no more than every ten years. By implementing the recommendation for incidence tracking and development of a geohazard report repository, updates to the Geotechnical Review will be easier.

Due to the inherent uncertainty in the soil material properties and the assumed (and conservative) parameter values used in the slope stability analysis, the landslide setback criteria are also conservative. Further refinement of the model, based on updated material testing, should be undertaken when considering development on specific sites.

We trust this report meets your requirements. Please contact us if you have any questions or comments concerning this report.



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Appendix A

Statement of General Conditions – Geotechnical



1. Standard of Care

Ecora Engineering and Resource Group Ltd. (Ecora) has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied is made.

2. Basis and Use of the Report

This report and the recommendations contained in it are intended for the sole use of Ecora's Client. Ecora does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than Ecora's Client unless otherwise authorized in writing by Ecora. Any unauthorized use of the report is at the sole risk of the user. In order to properly understand the suggestions, recommendations and opinions expressed herein, reference must be made to the whole of the report. We cannot be responsible for use by any party of portions of the report without reference to the whole report.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of Ecora. Additional copies of the report, if required, may be obtained upon request.

3. Alternate Report Format

Where Ecora submits both electronic file and hard copy versions of reports, drawings and other project-related documents, only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Ecora shall be deemed to be the original for the Project. Both electronic file and hard copy versions of Ecora's deliverables shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Ecora.

4. Soil, Rock and Groundwater Conditions

Classification and identification of soils, rocks and geological units have been based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Classification and identification of the type and condition of these materials or units involves judgment, and boundaries between different soil, rock or geologic types or units may be transitional rather than abrupt. Accordingly, Ecora does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Soil and groundwater conditions shown in the factual data and described in the report are the observed conditions at the time of their determination or measurement. Unless otherwise noted, those conditions form the basis of the recommendations in the report. Groundwater conditions may vary between and beyond reported locations and can be affected by annual, seasonal and meteorological conditions. The condition of the soil, rock and groundwater may be significantly altered by construction activities such as traffic, excavation, groundwater level lowering, pile driving, blasting on the site or on adjacent sites. Excavation may expose the soils to climatic elements such as freeze/thaw and wet /dry cycles and/or mechanical disturbance which can cause severe deterioration. Unless otherwise indicated the soil must be protected from these changes during construction.

5. Environmental and Regulatory Issues

The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise specifically stated and identified in the report. The presence or implication(s) of possible surface and/or subsurface contamination resulting from previous activities or uses of the site and/or resulting from the introduction onto the site of materials from off-site sources are outside the terms of reference for this project and have not been investigated or addressed.

6. Sample Disposal

Ecora will dispose all soil and rock samples for 30 days following issue of this report. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.



7. Construction Services

During construction, Ecora should be retained to perform sufficient and timely observations of encountered conditions to confirm and document that the subsurface conditions do not materially differ from those interpreted conditions considered in the preparation of Ecora's report and to confirm and document that construction activities do not adversely affect the suggestions, recommendations and opinions contained in Ecora's report. Adequate field review, observation and testing during construction are necessary for Ecora to be able to provide letters of assurance, in accordance with the requirements of many regulatory authorities. In cases where this recommendation is not followed, Ecora's responsibility is limited to interpreting accurately the information encountered at the borehole locations, at the time of their initial determination or measurement during the preparation of the Report.

8. Job Site Safety

Ecora is responsible only for the activities of our employees on the jobsite. The presence of Ecora's personnel on the site shall not be construed in any way to relieve the Client or any contractors on site from their responsibilities for site safety. The Client acknowledges that he, his representatives, contractors or others retain control of the site and that Ecora never occupy a position of control of the site. The Client undertakes to inform Ecora of all hazardous conditions, or other relevant conditions of which the Client is aware. The Client also recognizes that our activities may uncover previously unknown hazardous conditions or materials and that such a discovery may result in the necessity to undertake emergency procedures to protect our employees as well as the public at large and the environment in general.

9. Changed Conditions and Drainage

Where conditions encountered at the site differ significantly from those anticipated in this report, either due to natural variability of subsurface conditions or construction activities, it is a condition of this report that Ecora be notified of any changes and be provided with an opportunity to review or revise the recommendations within this report. Recognition of changed soil and rock conditions requires experience and it is recommended that Ecora be employed to visit the site with sufficient frequency to detect if conditions have changed significantly. Drainage of subsurface water is commonly required either for temporary or permanent installations for the project. Improper design or construction of drainage or dewatering can have serious consequences. Ecora takes no responsibility for the effects of drainage unless specifically involved in the detailed design and construction monitoring of the system.

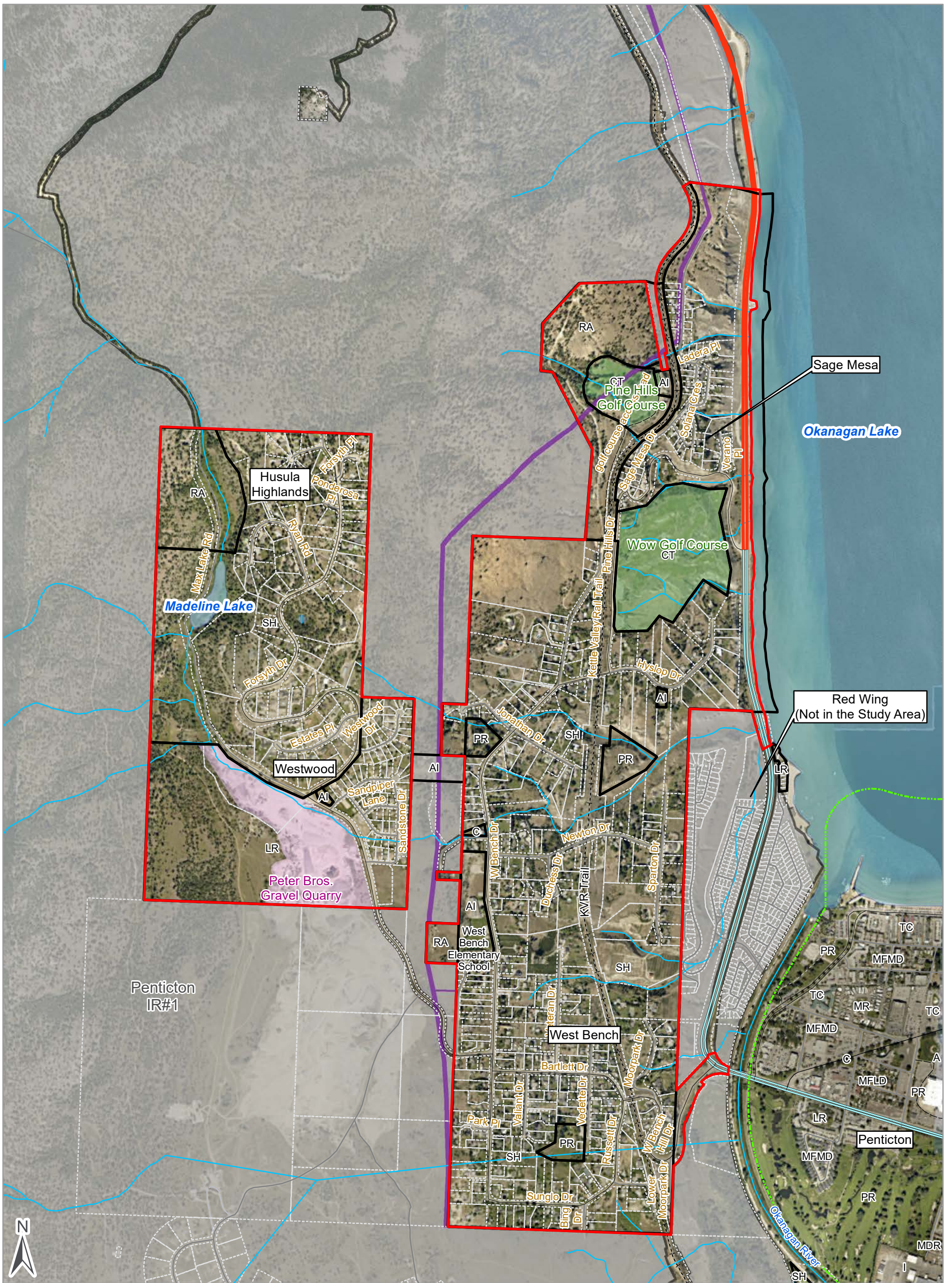
10. Services of Sub consultants and Contractors

The conduct of engineering and environmental studies frequently requires hiring the services of individuals and companies with special expertise and/or services which we do not provide. Ecora may arrange the hiring of these services as a convenience to our Clients. As these services are for the Client's benefit, the Client agrees to hold the Company harmless and to indemnify and defend Ecora from and against all claims arising through such hiring's to the extent that the Client would incur had he hired those services directly. This includes responsibility for payment for services rendered and pursuit of damages for errors, omissions or negligence by those parties in carrying out their work. In particular, these conditions apply to the use of drilling, excavation and laboratory testing services.

Appendix B

Maps (1.0-6.0)

Map 1.0	Greater West Bench Study Area
Map 2.0	Terrain Map
Map 3.0	Landslide Hazard Zones
Map 4.0	Sinkhole Hazard Zones
Map 5.0	Compressible Soils Hazards Zones
Map 6.0	Geotechnical Constraints Zones



GREATER WEST BENCH STUDY AREA

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**GREATER WEST BENCH
GEOTECHNICAL REVIEW**

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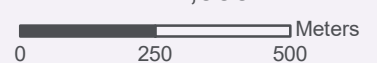
OCP Designation

- Administrative, Cultural and Institutional (AI)
- Commercial Tourism (CT)
- Commercial (C)
- Low Density Residential (LR)
- Parks and Recreation (PR)
- Resource Area (RA)
- Small Holdings (SH)

- Gas Line
- RDOS Legal Parcels
- City of Penticton Boundary
- First Nations Land Boundaries
- Greater West Bench Study Area

Map to be read with associated report titled "Greater West Bench Geotechnical Review", dated January 2021

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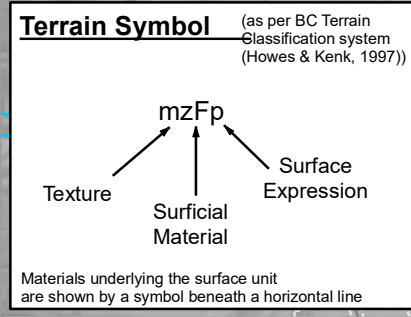
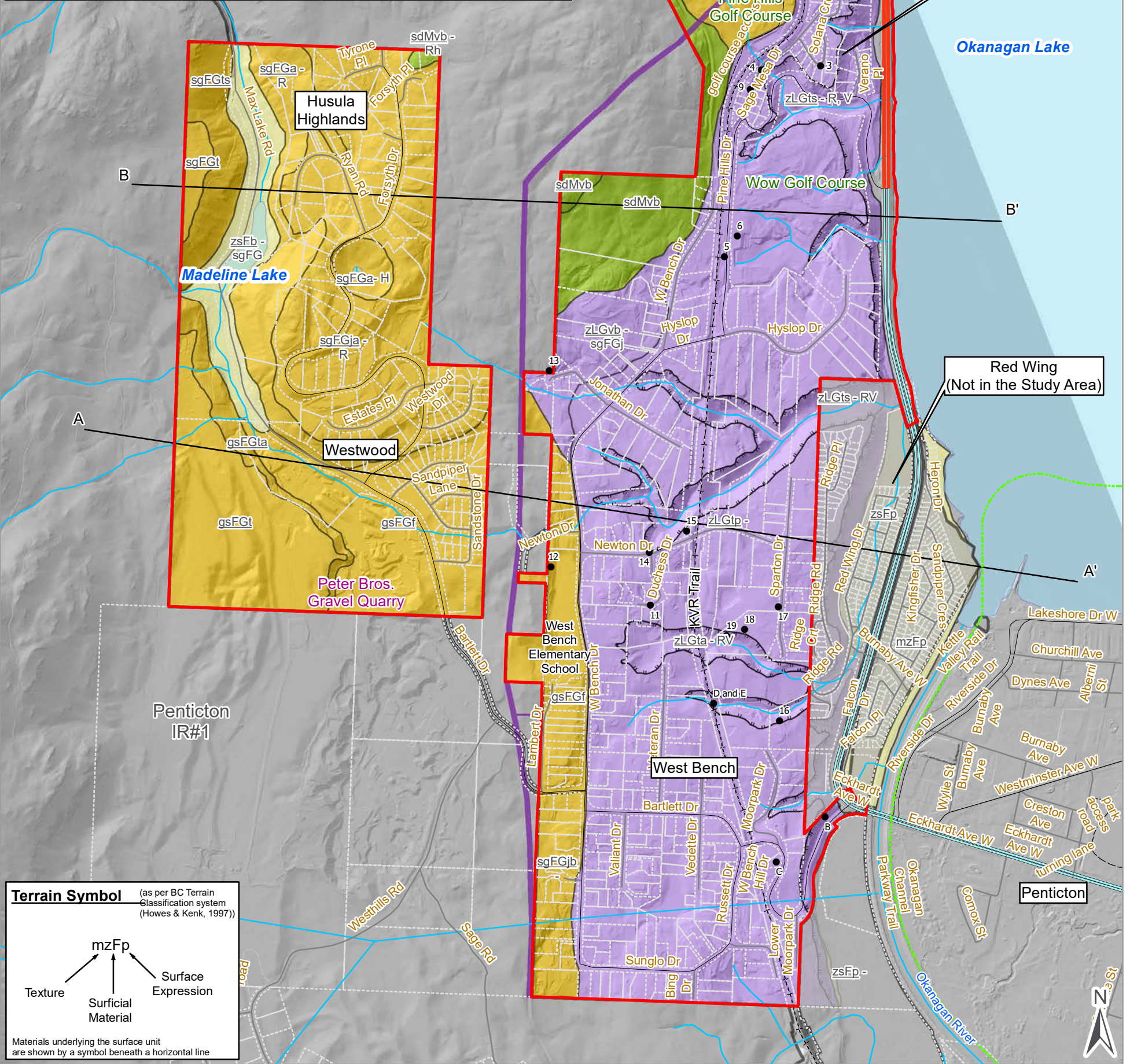
Project No.: 191010
Client: Regional District of Okanagan Similkameen
NAD 1983 UTM Zone 11N

Date: 2021/01/13
Drawn: MT Check: JC

Map 1.0

Material Type	Map Symbol	Symbol Interpretation	Description
Fluvial Sediments	mzFp	muddy-silt Fluvial plain	A flat-lying floodplain surface comprised of mud (m), silt (z) and sand (s), formed by materials transported and deposited
	zsFp	silty-sand Fluvial plain	A mantle of silty-sand (zs) textured fluvial materials overlying sand (s) and gravel (g) deposited in association with glacial ice.
	zsFb/sgFG	silty-sand Fluvial deposits over sandy-gravel Glaciofluvial deposits	
Glaciolacustrine Sediments	zLGts - RV	steeply-sloped silty Glaciolacustrine terrace, subject to landslide and gully erosion	Sediment deposited and/or reworked in proglacial Lake Penticton. In the study area, units are characteristic littoral or sublittoral deposits comprised of silt, sand, and to a lesser degree, clayey silt. The units may be laminated to massive or roughly stratified and well-sorted up to 10 m thick. Terrain units are described as a terrace (t) with associated moderate (15-26 degrees) (a) to steeply sloping (>35 degrees) (s) scarp slope, formed by down cutting and gully erosion. These landforms are subject to rapid mass movement (landslide) and gully erosion.
	zLGta - RV	moderately-sloped silty Glaciolacustrine terrace, subject to landslide and gully erosion	
	zLGtp	flat-lying silty Glaciolacustrine terrace	
	zLGvb/sgFGj	silty Glaciolacustrine sediments overlying sandy-gravel Glaciofluvial fan deposits	
Glaciofluvial Sediments	gsFGf	gravelly-sand Glaciofluvial fan	Well-drained unconsolidated gravel and sand deposits, comprised of fluvial material deposited in contact or close proximity to glacier ice. Deposits in the study area are associated with a large meltwater channel from the former Trout Creek drainage. Deposits may be stratified but particle size and shape are variable. Landforms may be associated with a fan-shaped deposit (f), on gentle (j) to moderate (15-26 degrees) (a) slopes, or a terrace (t).
	sgFGb	mantle of Glaciofluvial sand and gravel	
	sgFG/R	gentle to moderately sloped Glaciofluvial sands and gravels overlying bedrock	
	sgFGt	sandy-gravel Glaciofluvial terrace	
Glacial Sediments (Till/Moraine)	sdMvb	mantle of sand and gravel Till of varying thickness	Layer of unconsolidated sand textured material (diamicton) comprised of a heterogeneous mix of rounded and angular particles that was deposited directly by glaciers (moraine or till). The landform derives its surface expression from the underlying bedrock because the thickness of till varies from less than 1m (v) to more than 1m (b).

Terrain symbology and interpretation based on the BC Terrain Classification System of Howes and Kenk (1997)
 Classification system of surficial deposits is based on that of Paradis (2009) Surficial Geology, Kelowna, BC, GSC Open File 6146.



TERRAIN MAP

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 GEOTECHNICAL REVIEW**

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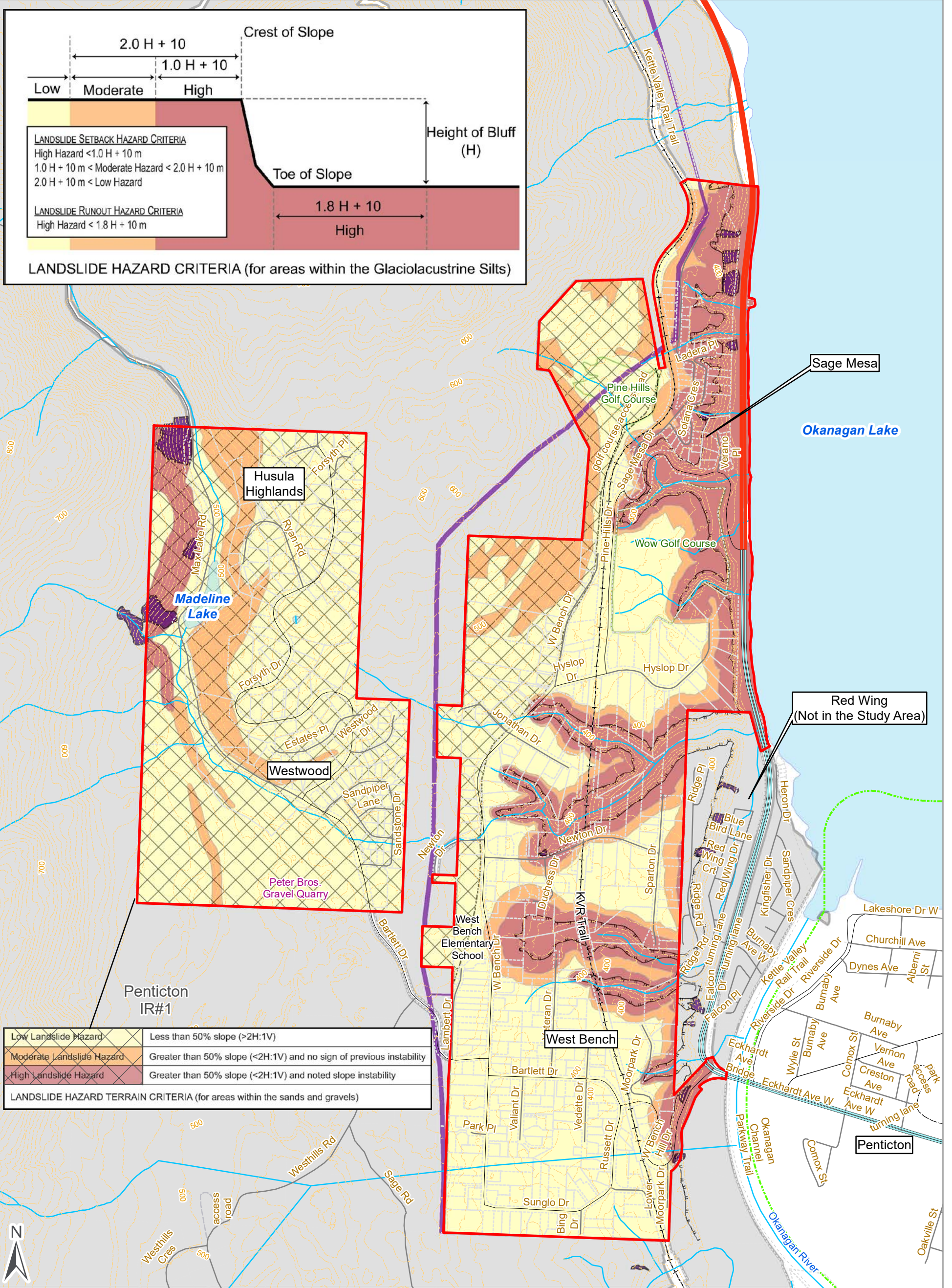
- Field Obs. Locations (See table in report)
- Cross Sections
- Crest of Slope
- Terrain Unit Boundary
- Material Class
- Fluvial Sediments
- Glaciolacustrine Sediments
- Glaciofluvial Sediments
- Glacial Sediments (Till/Moraine)
- Gas Line
- RDOS Legal Parcels
- First Nations Land Boundaries
- City of Penticton Boundary
- Greater West Bench Study Area

Map to be read with associated report titled "Greater West Bench Geotechnical Review", dated January 2021

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0 250 500 Meters

Project No.: 191010 Date: 2021/01/13
 Client: Regional District of Okanagan Similkameen Drawn: MT Check: JC
 NAD 1983 UTM Zone 11N **Map 2.0**



LANDSLIDE HAZARD ZONES

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- Crest of Slope
- Landslides (all identified)
- Low Landslide Hazard Zone
- Moderate Landslide Hazard Zone
- High Landslide Hazard Zone
- Landslide Hazard Within Sands and Gravel
- Gas Line
- RDOS Legal Parcels
- First Nations Land Boundaries
- City of Penticon Boundary
- Greater West Bench Study Area

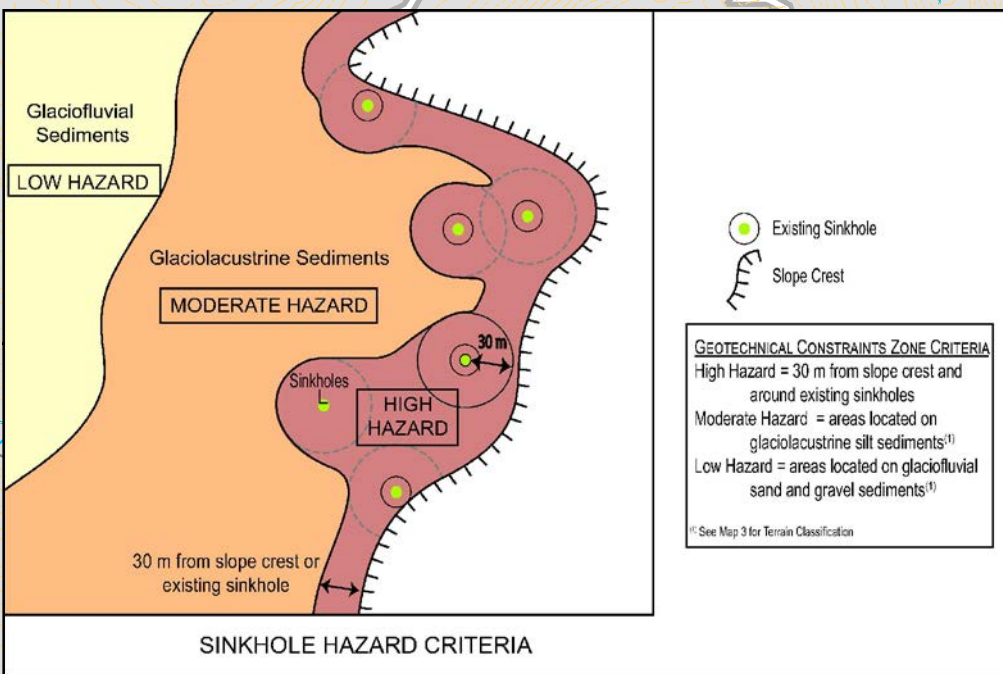
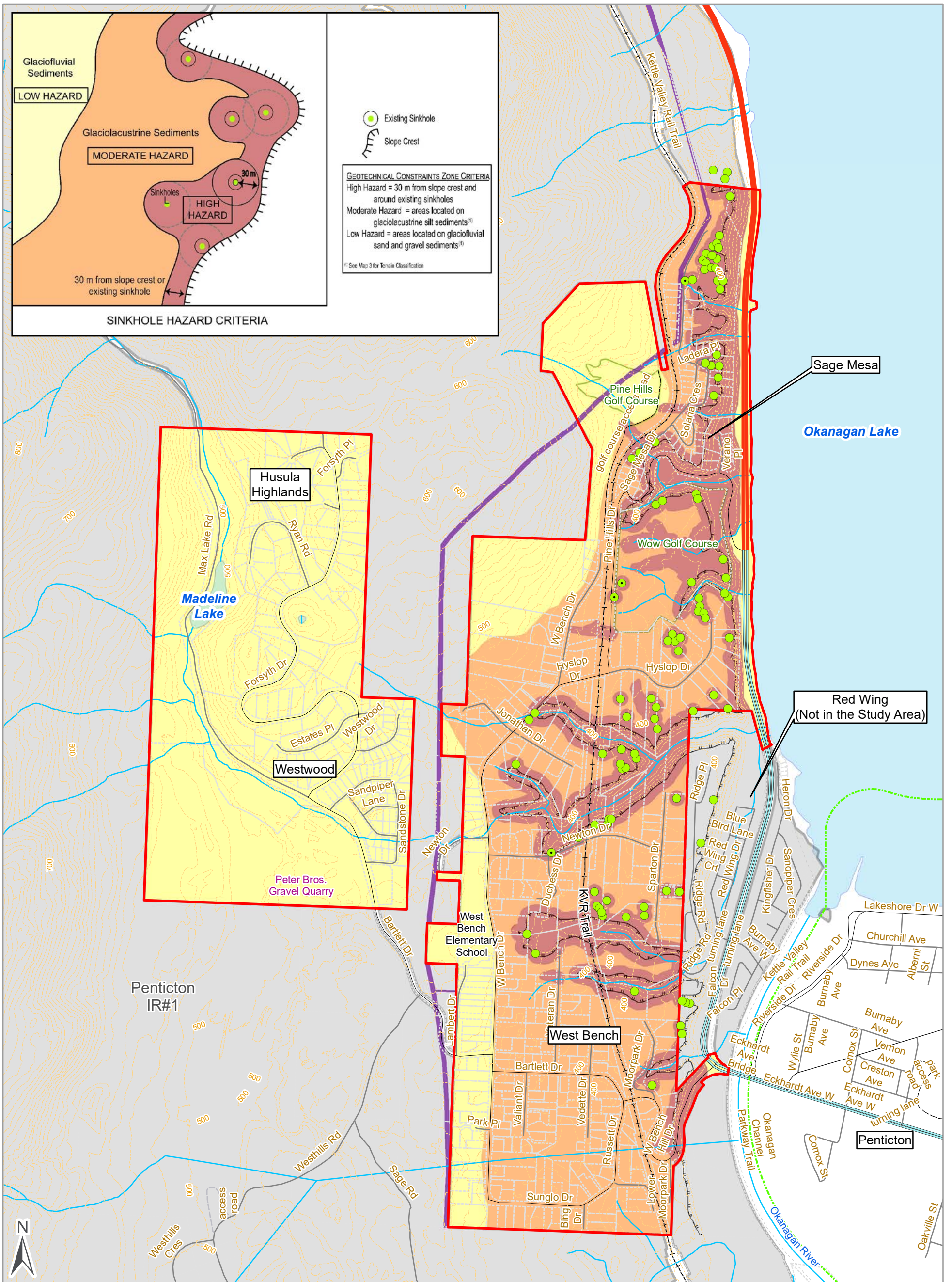
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Project No.: 191010 Date: 2021/01/27

Client: Regional District of Okanagan Similkameen Drawn: MT Check: JC

NAD 1983 UTM Zone 11N **Map 3.0**



SINKHOLE HAZARD ZONES

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Legend

- Sinkholes (Interpreted from 2018 LiDAR)
- Sinkholes (Identified in Field)
- Crest of Slope
- High Sinkhole Hazard Zone
- Moderate Sinkhole Hazard Zone
- Low Sinkhole Hazard Zone
- Gas Line
- RDOS Legal Parcels
- First Nations Land Boundaries
- City of Penticon Boundary
- Greater West Bench Study Area

Map to be read with associated report titled "Greater West Bench Geotechnical Review", dated January 2021

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Project No.: 191010

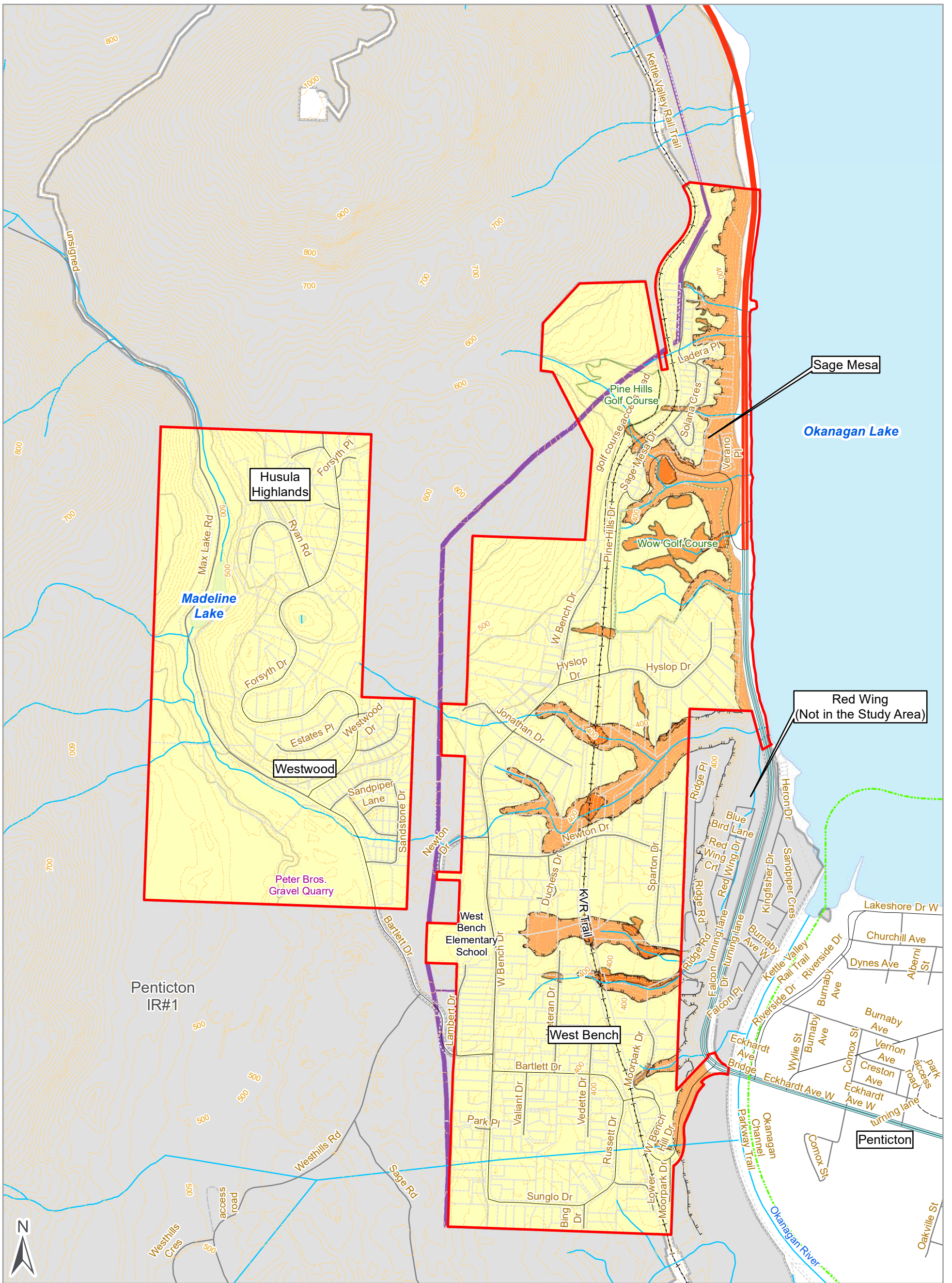
Client: Regional District of Okanagan Similkameen

NAD 1983 UTM Zone 11N

Date: 2021/02/04

Drawn: MT Check: JC

Map 4.0



COMPRESSIBLE SOILS HAZARD ZONES



GREATER WEST BENCH GEOTECHNICAL REVIEW

ISSUED FOR USE

Legend

- Crest of Slope
- Low Hazard Compressible Soils
- Moderate Hazard Compressible Soils
- Moderate Hazard Areas Based on Previous Infill
- Gas Line
- RDOS Legal Parcels
- City of Penticton Boundary
- First Nations Land Boundaries
- Greater West Bench Study Area

Note: There are no high hazard compressible soils

Map to be read with associated report titled "Greater West Bench Geotechnical Review", dated January 2021

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Project No.: 191010

Client: Regional District of Okanagan Similkameen

NAD 1983 UTM Zone 11N

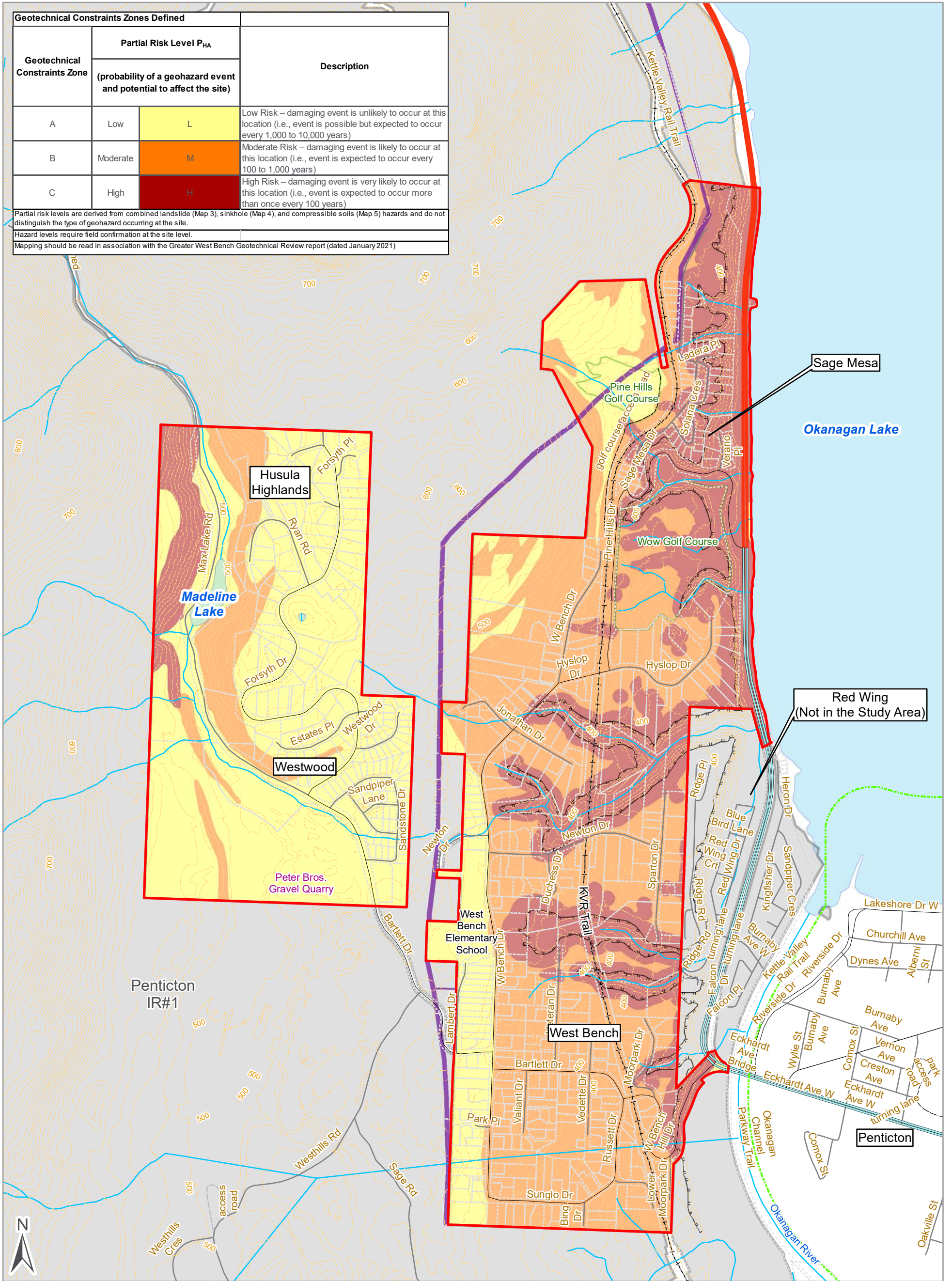
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Map 5.0

Geotechnical Constraints Zones Defined			Description
Geotechnical Constraints Zone	Partial Risk Level P _{HA} (probability of a geohazard event and potential to affect the site)		
	A	Low	L
B	Moderate	M	Moderate Risk – damaging event is likely to occur at this location (i.e., event is expected to occur every 100 to 1,000 years)
C	High	H	High Risk – damaging event is very likely to occur at this location (i.e., event is expected to occur more than once every 100 years)

Partial risk levels are derived from combined landslide (Map 3), sinkhole (Map 4), and compressible soils (Map 5) hazards and do not distinguish the type of geohazard occurring at the site.
Hazard levels require field confirmation at the site level.
Mapping should be read in association with the Greater West Bench Geotechnical Review report (dated January 2021)



GEOTECHNICAL CONSTRAINTS ZONES CLARKE geoscience ltd. **ecora**

**GREATER WEST BENCH
GEOTECHNICAL REVIEW**

ISSUED FOR USE

Legend

- Crest of Slope
- Geotechnical Constraints Zone A
- Geotechnical Constraints Zone B
- Geotechnical Constraints Zone C
- Gas Line
- RDOS Legal Parcels
- City of Pentiction Boundary
- First Nations Land Boundaries
- Greater West Bench Study Area

Map to be read with associated report titled "Greater West Bench Geotechnical Review", dated January 2021

1:14,000

0 250 500 Meters

Project No.: 191010 Date: 2021/02/04
Client: Regional District of Okanagan Similkameen Drawn: MT Check: JC
NAD 1983 UTM Zone 11N

Map 6.0

Appendix C

Select Fieldwork Photographs

Photo 1	View of rocky slopes at north end of study area (Sage Mesa)
Photo 2	Large (pre-existing) sinkhole in Sage Mesa area
Photo 3	Damaged culvert inlet (Sage Mesa)
Photo 4	Catch basin above Sage Mesa Road at top of steep embankment (showing signs of instability)
Photo 5	Sinkhole and tension crack near catch basin (see Photo 4)
Photo 6	Ditch line maintenance measures in disrepair, on Sage Mesa Rd above WOW Golf Course
Photo 7	Erosion at Culvert Inlet at Sage Mesa Rd crossing (near WOW GC)
Photo 8	Erosion at culvert outlet at Sage Mesa Rd crossing (near WOW GC)
Photo 9	Large sinkhole forming in parking lot (WOW GC)
Photo 10	Pavement cracking at WOW GC
Photo 11	Silt Bluff at north end of study area – showing “wax like” flow of saturated silt
Photo 12	Vertical jointing in silt bluffs and high degree of stability when dry
Photo 13	Tension crack at gully edge (Sage Mesa)
Photo 14	Massive sinkhole at culvert outlet (adj to Photo 13 Sage Mesa)
Photo 15	Small sinkhole in driveway (Sage Mesa)
Photo 16	Sinkhole next to catch basin, with sandbags blocking runoff
Photo 17	Depressions in road (end of Duchess Dr)
Photo 18	Glaciofluvial sands and gravels, exposure near school (West Bench Dr.)
Photo 19	Colluvial silt and sand and gravel contact (end of Jonathan Dr.)
Photo 20	Tension cracks and landslide activity along crest of gully (Newton Dr and Duchess Dr.)
Photo 21	Sinkholes at gully crest (Newton Dr and Duchess Dr)
Photo 22	Subsurface erosion and deep cavity on access to KVR at Newton Road
Photo 23	Fill dumping and shallow instability along gully slope (end of Moorpark Dr.)
Photo 24	Recent (2019) sinkhole repair due to leaking water valve (Sparton Road)
Photo 25	Partly infilled sinkhole on private property (off Sparton Road)
Photo 26	Sinkhole visible within gully (off Sparton Road)



Photo 1 View of rocky slopes at north end of study area (Sage Mesa)



Photo 2 Large (pre-existing) sinkhole in Sage Mesa area



Photo 3 Damaged culvert inlet (Sage Mesa)



Photo 4 Catch basin above Sage Mesa Road at top of steep embankment (showing signs of instability)



Photo 5 Sinkhole and tension crack near catch basin (see Photo 4)



Photo 6 Ditch line maintenance measures in disrepair, on Sage Mesa Rd above WOW Golf Course



Photo 7 Erosion at Culvert Inlet at Sage Mesa Rd crossing (near WOW GC)



Photo 8 Erosion at culvert outlet at Sage Mesa Rd crossing (near WOW GC)



Photo 9 Large sinkhole forming in parking lot (WOW GC)



Photo 10 Pavement cracking at WOW GC



Photo 11 Silt Bluff at north end of study area – showing “wax like” flow of saturated silt



Photo 12 Vertical jointing in silt bluffs and high degree of stability when dry



Photo 13 Tension crack at gully edge (Sage Mesa)



Photo 14 Massive sinkhole at culvert outlet (adj to Photo 13 Sage Mesa)



Photo 15 Small sinkhole in driveway (Sage Mesa)



Photo 16 Sinkhole next to catch basin, with sandbags blocking runoff



Photo 17 Depressions in road (end of Duchess Dr)



Photo 18 Glaciofluvial sands and gravels, exposure near school (West Bench Dr.)

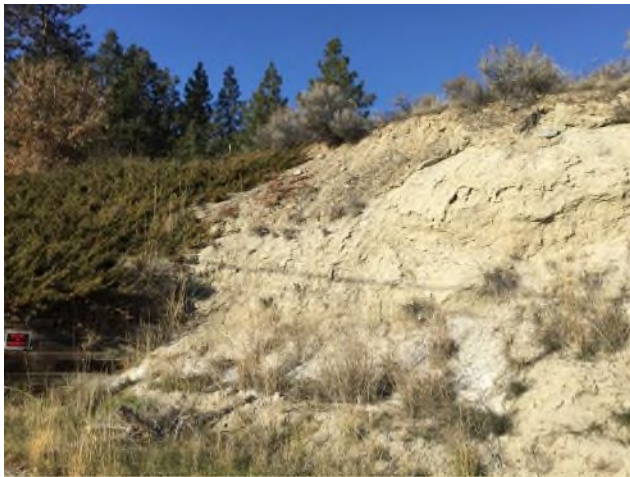


Photo 19 Colluvial silt and sand and gravel contact (end of Jonathan Dr.)



Photo 20 Tension cracks and landslide activity along crest of gully (Newton Dr and Duchess Dr.)



Photo 21 Sinkholes at gully crest (Newton Dr and Duchess Dr)



Photo 22 Subsurface erosion and deep cavity on access to KVR at Newton Road



Photo 23 Fill dumping and shallow instability along gully slope (end of Moorpark Dr.)



Photo 24 Recent (2019) sinkhole repair due to leaking water valve (Sparton Road)



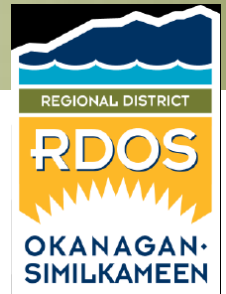
Photo 25 Partly infilled sinkhole on private property (off Sparton Road)



Photo 26 Sinkhole visible within gully (off Sparton Road)

Appendix D

RDOS Public Survey Results



REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

INFORMATION RELEASE

February 14, 2020

RDOS Conducting Geotechnical Review for Greater West Bench Area

The Regional District of Okanagan-Similkameen (RDOS) is conducting a geotechnical review of the Greater West Bench area. The purpose of the review is to create a more current and accurate snapshot of the area. It is expected that the review will help better define existing geotechnical hazard conditions and areas, and assist in determining appropriate planning land uses.

This review is to help expand the area of historical study to include all lands in the Greater West Bench area including Sage Mesa and Husula Highlands. Part of the geotechnical review is being conducted through in-person interviews and discussions, as well as an online survey.

The completed review is expected to produce a report and assessment of the Greater West Bench area geotechnical conditions using historical and current data while applying modern technology and methods.

The final report which will include updated mapping, will help the RDOS develop land use policies specific to the Greater West Bench area. In addition, the report will help inform and guide residents about appropriate uses of the lands in the area given the existing geotechnical conditions.

Please visit the RDOS website to take the survey: www.rdos.bc.ca

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For further information, please contact Stephen Juch at (250) 492-0237 or info@rdos.bc.ca

A handwritten signature in black ink that reads "Karla Kozakevich".

Karla Kozakevich, Chair
Regional District of Okanagan-Similkameen



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www.rdos.bc.ca

Public Engagement Survey (survey period Feb. 14- Mar. 13, 2020)

1. Which neighborhood do you live in, within Greater West Bench?

2. What is your home address and street name?

3. How many years have you lived at this address?

4. Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [sinkholes]

Please describe [Sinkholes]

5. Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Depressions in land]

Please describe [Depressions in land surface]

6. Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Landslides, or loss of property adjacent to slope crest]

Please describe [Landslides, or loss of property adjacent to slope crest]

7. Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Groundwater discharge or seepage]

Please describe [Groundwater discharge or seepage]

8. Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Erosion due to surface water runoff]

Please describe [Erosion due to surface water runoff]

9. Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Known fill sites, holes or gullies have been filled]

Please describe [Known fill sites, holes or gullies have been filled]

10. Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Any other land disturbance]

Please describe [Any other land disturbance [Please describe]

11. Have you completed or received any geotechnical investigations pertaining to the subsurface (soil) conditions on your property, for building permits, subdivision, or other land use applications? [Y / N]

[If yes, please describe]

12. Do you consent to receiving a follow-up telephone call, and/or a personal visit from a representative of the study group to discuss this further? [Y / N] [If yes, please provide a contact telephone number and email address.]

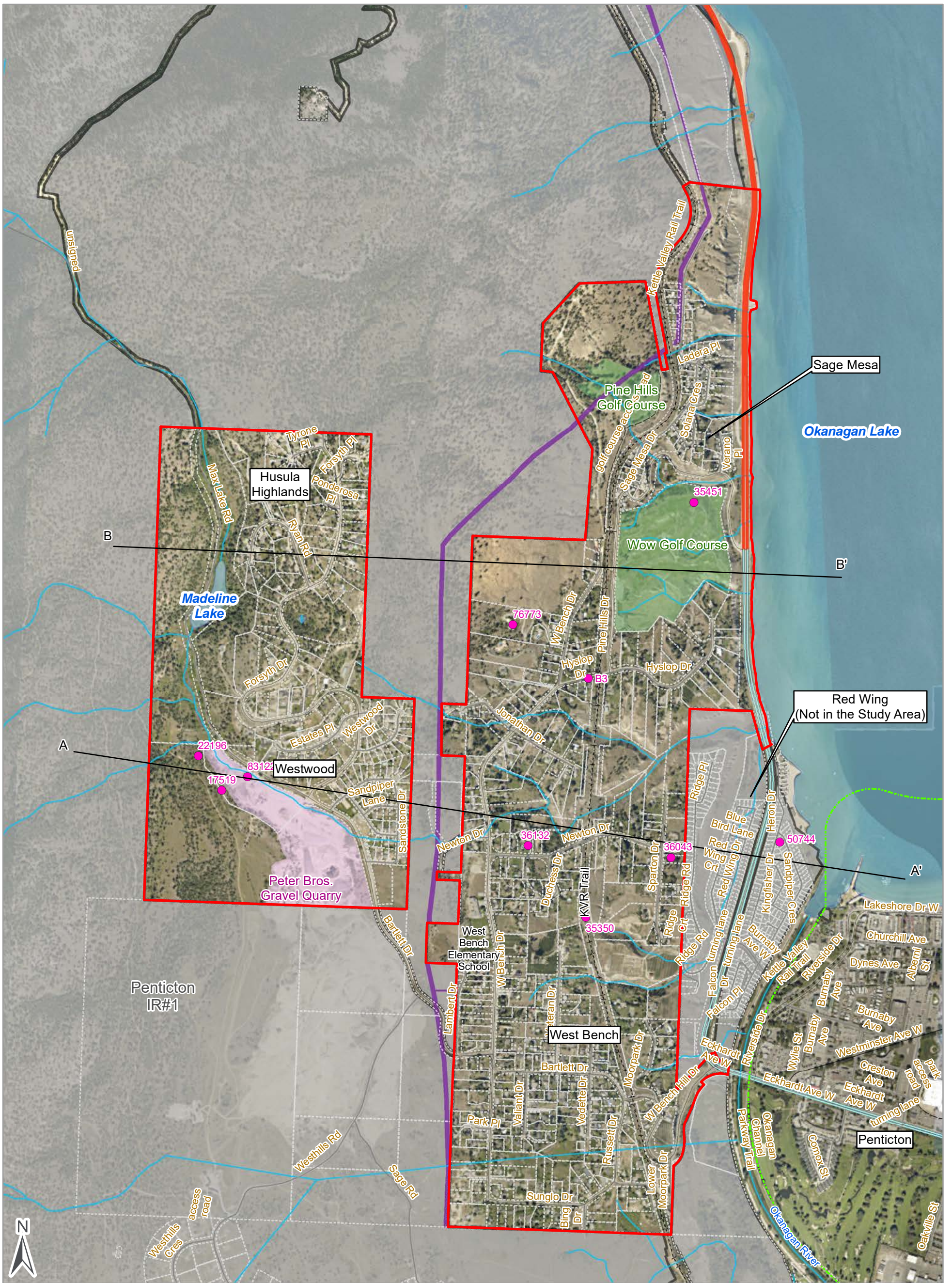
Detailed Public Engagement Survey Response Data (collected on-line by RDOS during survey period Feb. 14- Mar. 13, 2020) (note: identifying personal information is not shown)

Response ID	1. Which neighborhood do you live in, within Greater West Bench?	3. How many years have you lived at this address?	Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [sinkholes]	Please describe [Sinkholes]	Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Depressions in land surface]	Please describe [Depressions in land surface]	Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Landslides, or loss of property adjacent]	Please describe [Landslides, or loss of property adjacent to slope crest]	Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Groundwater discharge or seepage]	Please describe [Groundwater discharge or seepage]	Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Erosion due to surface water runoff]	Please describe [Erosion due to surface water runoff]	Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Known fill sites, holes or gullies have been filled]	Please describe [Known fill sites, holes or gullies have been filled]	Have you experienced any of the following issues on your property, or do you know of other locations on private or public lands where the following issues have occurred? [Any other land disturbance]	Please describe [Any other land disturbance]	Have you completed or received any geotechnical investigations pertaining to the subsurface (soil) conditions on your property, for building permits, subdivision, or other land use applications? [Y/N]
59	Husula Highlands		No		No		No		No		No		No		No		No
25	West Bench	4	No		No		No		No		No		No		No		No
48	West Bench	1	No		No		No		No		No		No		No		No
67	Sage Mesa	8	No		No		No		No		No		No		No		No
2	West Bench	55	Yes	Hyslop Drive near the east end and Newton Drive near KVR bridge and the KVR Trail	Yes	Hyslop, Sparton, Newton and the KVR Trail	Yes	Land above the entrance to West Bench - coming up the hill slide in 2019 - Hyslop Drive slope on highway side slide 1990's	No		No	Yes	West Bench Hill Rd - vineyard on corner was a cherry orchard in a gully that has been filled. Some lots on the north end of West Bench Drive have been filled	No			Yes
3	West Bench	13	No		No		No		No		No		No		No		No
8	Sage Mesa	10	No		No		No		No		No		No		No		No
17	Sage Mesa	12	No		No		No		No		No		No		No		No
18	West Bench	9	Yes	KVR especially south of Newton drive and the path leading from the kvr up to Newton drive by the bridge.	No		Yes	The bank when entering West Bench on West Bench Hill drive.	No		No	Yes	The gully is partially filled where a new house sits on my street, so across the road and and 3 houses north.	No			No
20	West Bench	27	Yes	from irrigation leaks	Yes	suspect irrigation	No		No		No		No		No		No
21	West Bench	8	No		No		No		No		No		No		No		No
28	West Bench	17	No		No		No		No		No		No		No		No
29	West Bench	2	Yes	On KVR access trail off of Newton Drive	No		No		No		Yes	On KVR access trail off of Newton Drive	Yes	Off of Duchess Drive. Active filling of gully several by road maintenance company; from Goulder and Ass. as well as work I have done myself	Yes	slow slumping of slope on property	No
30	Sage Mesa	19	Yes	sink holes in yard and sink holes on road allowance and on the hill slope within my property line	No		Yes	the slope within my property line has increased to the point that it is unusable	Yes	some seepage from property across the road and uphill from my property	No	Yes		Yes	my neighbour to the south of my property also experiences the same problems	Yes	
32	West Bench	32	Yes	many along KVR and on the land north and east of KVR	No		No		No		Yes	upper Moorpark Drive paved curve immediately east of Bentham property; middle of upper Moorpark Drive in the lowest dip	Yes	gully filled 30 years ago on southern part of our land	No		Yes
34	West Bench	33	No		Yes		No		No		No	Yes	gully area above mariposa park	No			Yes
35	West Bench	3.5	No		No		No		No		No		No		No		No
36	Westwood Properties	17	No		No		No		No		No		No		No		Yes
37	Husula Highlands	29	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	No
38	Sage Mesa	41	No		No		No		No		No		No		No		No
40	Sage Mesa	11	No		No		No		No		No		No		No		No
41	West Bench	5	No		No		No		No		No		No		No		No
42	West Bench	12	No		Yes	yes	No		No		No		No		No		No
45	Husula Highlands	16	No		No		No		No		No		No		No		No
46	West Bench	10	Yes	along the KVR there are several dangerous sink-holes. Although this is not within RDOS property the area is used by many residents.	No		No		No		No		No		No		No
49	West Bench	30	Yes	sage mesa and rail tracks	Yes		Yes	west bench hill	No		Yes	bartlett drive	Yes	behind my home	Yes	road sinking bartlett and west bench hill	No
50	West Bench	24	Yes	On the KVR trail	No		Yes	Slides on slope of West Bench Hill	No		No		Yes	Fill site on private property located on NE corner of Sunglo Dr and Russet Dr.	No		No
51	West Bench	5	No		No		No		No		No		No		No		No
52	West Bench	30	No		No		No		No		No		No		No		No
55	Sage Mesa	11	No		No		No		No		No		No		No		No
58	West Bench	2	No		No		No		No		No		No		No		No
61	Sage Mesa	3	Yes	Due to buried irrigation line	No		No		No		No		No		Yes	Minor erosion of recently completed landscaping after very heavy rainfall	Yes
62	West Bench	6	No		No		No		No		Yes	KVR Entrance at Newton Drive	Yes	Several yards having gullies filled.	No		No
63	West Bench	8	Yes	On the KVR trail heading north	No		No		No		No		No		No		No
70	West Bench	16	No		No		No		No		No		No		No		No
71	Sage Mesa	2	No		No		No		No		No		No		No		No
72	West Bench	18	Yes	Two small ones on driveway over 18 years	No		No		No		No		No		No		No
75	Sage Mesa		No		No		No		No		Yes	Ground erosion from road drainage	Yes		No		Yes
76	Sage Mesa		Yes		No		Yes		No		Yes	Erosion due to road drainage	No		No		No
77	Sage Mesa	46	No		No		No		No		No		No		Yes	surface erosion from water utility system leak	No
78	Sage Mesa	50	No		No		No		No		No		No		Yes	Erosion due to road drainage	No

Appendix E

Detailed Geologic Cross-Sections

- Appendix E1 Site Plan
- Appendix E2 Detailed Geologic Cross-Section A-A'
- Appendix E3 Detailed Geologic Cross-Section B-B'



SITE PLAN



GREATER WEST BENCH GEOTECHNICAL REVIEW

ISSUED FOR USE

Legend

- Boreholes Used For Geologic Cross Sections (E2 & E3)
- Cross Sections
- Gas Line
- RDOS Legal Parcels
- City of Pentiction Boundary
- First Nations Land Boundaries
- Greater West Bench Study Area

Map to be read with associated report titled "Greater West Bench Geotechnical Review", dated January 2021

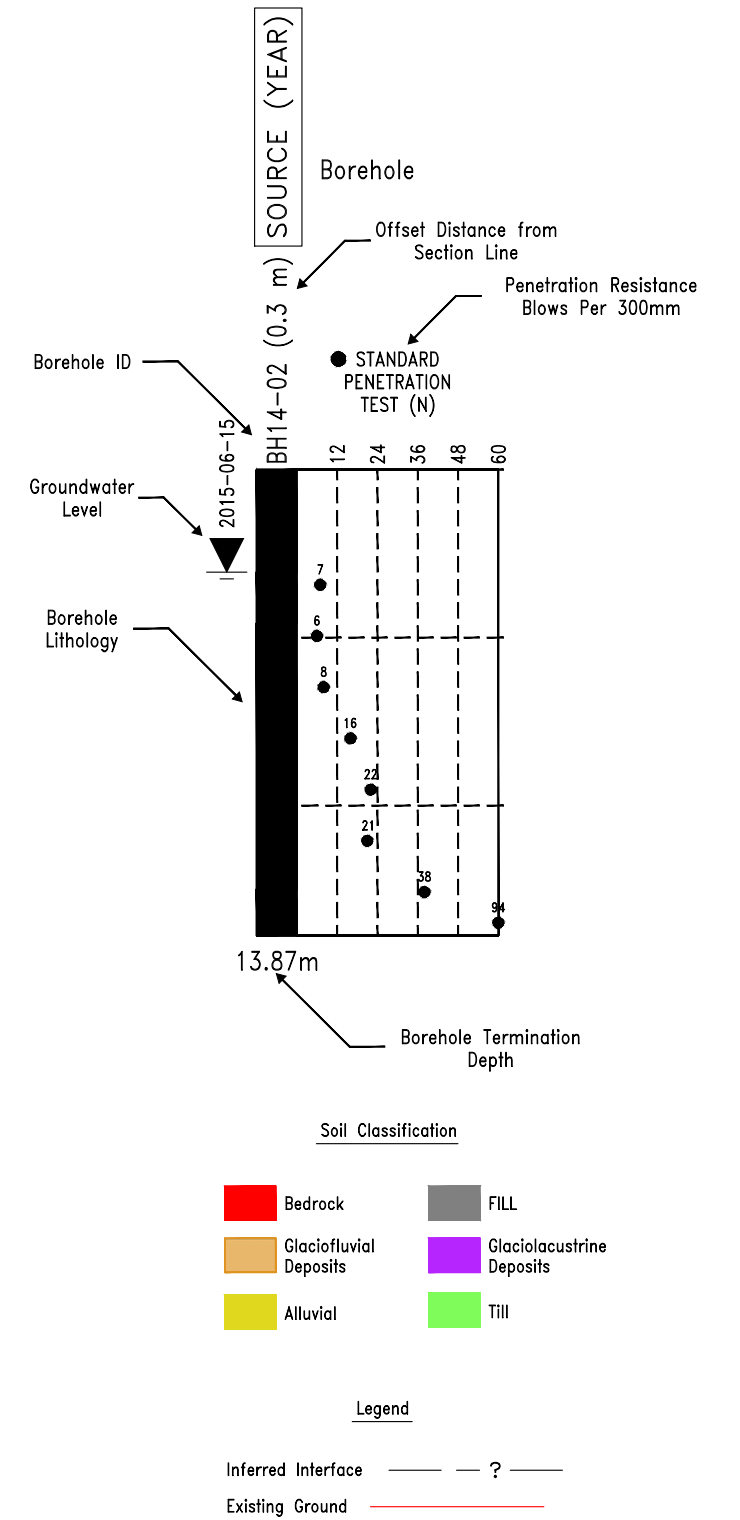
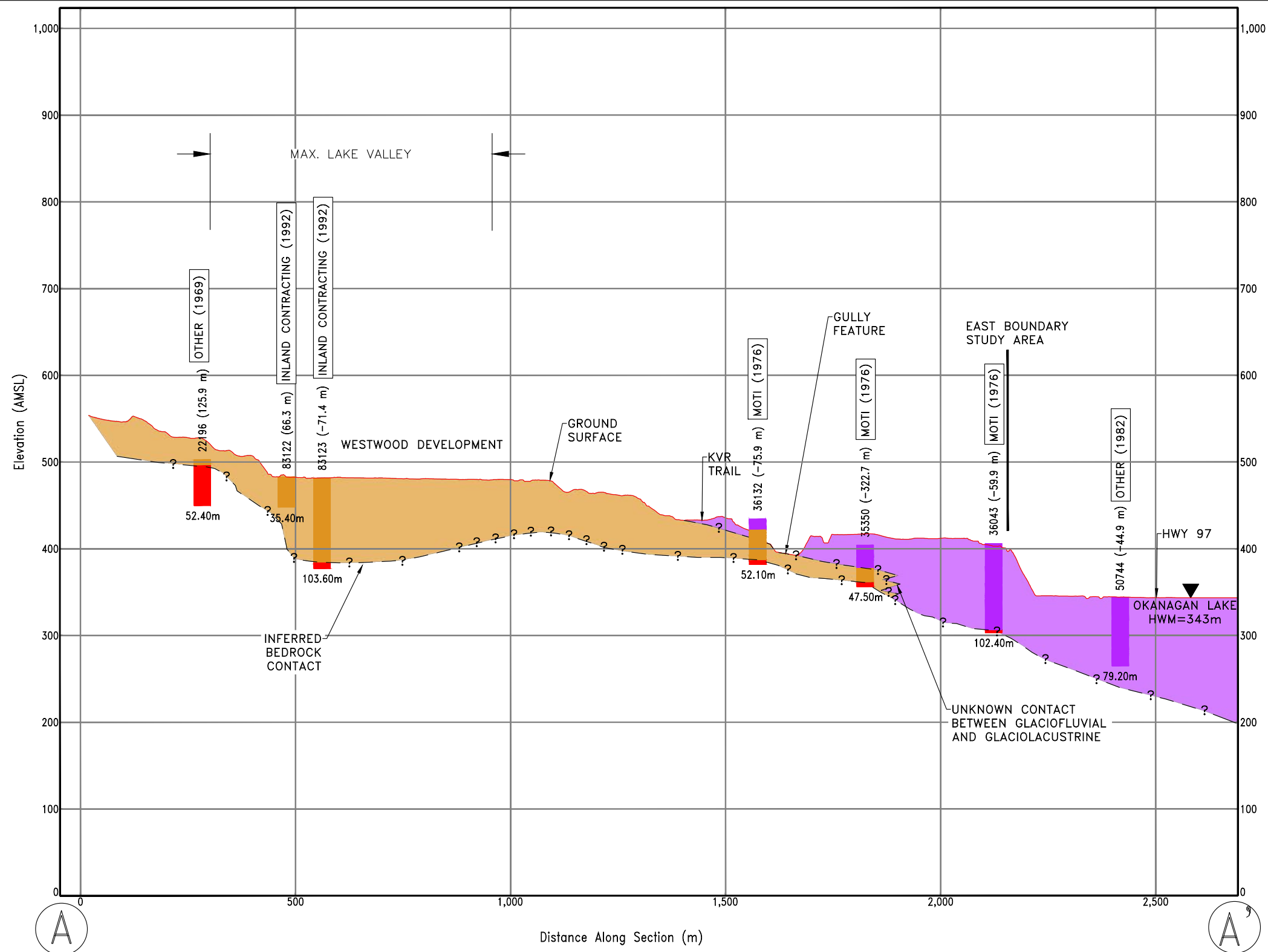
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Project No.: 191010
 Client: Regional District of Okanagan Similkameen
 NAD 1983 UTM Zone 11N

Date: 2021/01/13
 Drawn: MT Check: JC

Appendix E1



Notes:

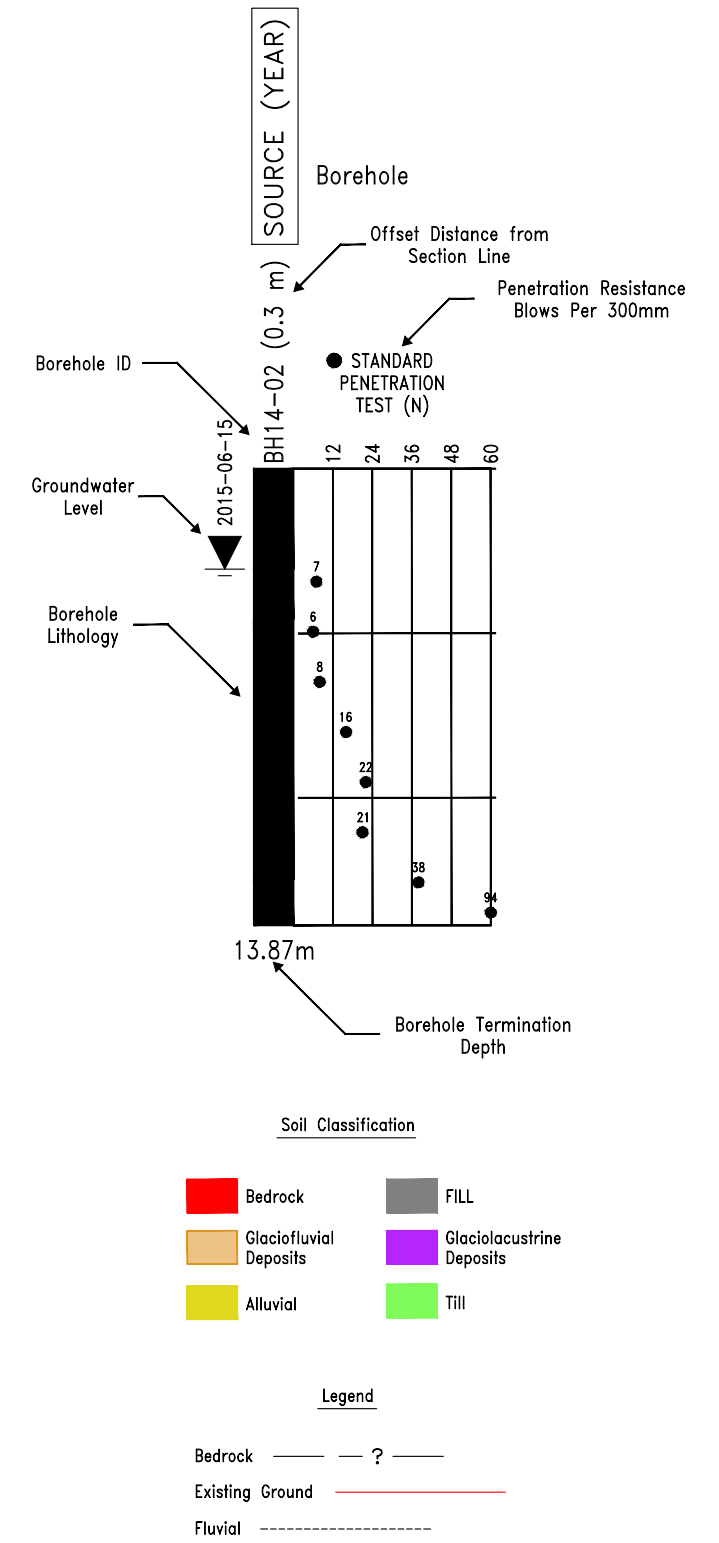
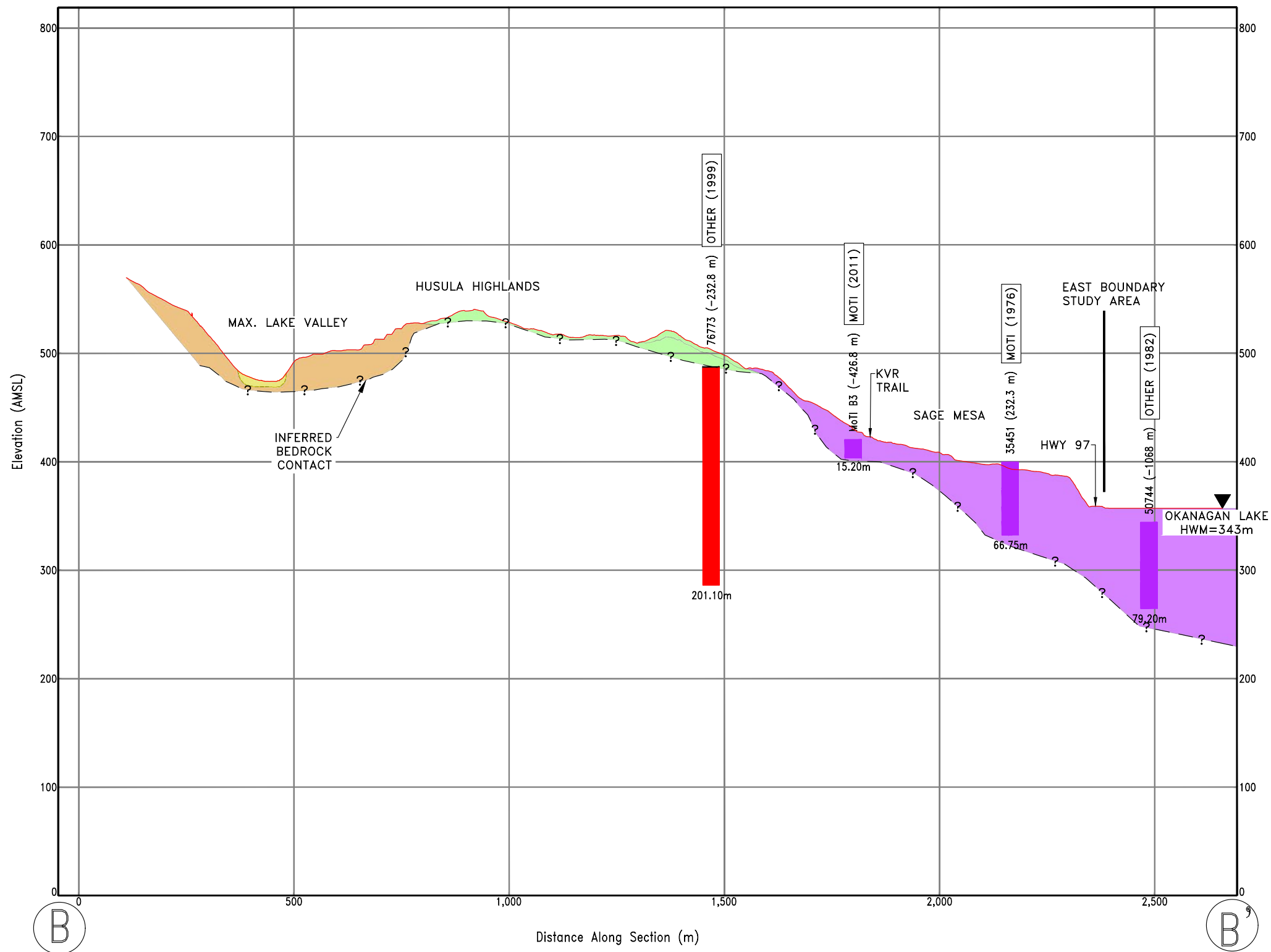
GREATER WEST BENCH GEOTECHNICAL REVIEW

DETAILED GEOLOGIC CROSS SECTION A-A'

Project No.: 191010
 Client: RDOS
 Office: KELOWNA
 Scale: NTS
 Date: SEPT 2, 2020
 DWN: NLS CHK: NM



Appendix E2



Notes:

GREATER WEST BENCH GEOTECHNICAL REVIEW

DETAILED GEOLOGIC CROSS SECTION B-B'

Project No.: 191010
 Client: RDOS
 Office: KELOWNA
 Scale: NTS
 Date: SEPT 02, 2020
 DWN: NLS CHK: NM



Appendix F

Engineering Material Properties of the Glaciolacustrine (Penticton) Silts

Engineering Material Properties of the Glaciolacustrine Silts

Summary Table of Grain Size Analysis - Laboratory Testing of the Glaciolacustrine Silts, adapted from Iravani (1999)
Table 5.2

Original Source	Natural Moisture Content (%)	Sand (%)	Fines (%)		Comments
			Silt	Clay	
Meyer & Yenne (1940)	-	-	>99	<1	Samples from Okanagan Lake, Skaha Lake, Mission Creek Valley 4 samples tested
Fulton (1965)	-	<10	dominant	<20	Samples from South Thompson Valley 24 samples tested from individual varves
Quigley (1976)	-	-	-	7 - 10	Samples taken from Okanagan Valley, South Thompson Valley
Evans & Buchanan (1976)	-	<3	dominant	2 - 12	Samples taken from South Thompson Valley No major difference between glaciolacustrine and colluvial silts noted by authors
Lum (1977)	-	4	89	7	Samples taken from South Thompson Valley 5 samples tested
Evans (1982)	-	-	-	Up to 91	Samples collected from Northern Interior (Prince George and Quesnel)
Wilson (1985)	-	15 - 20	70 - 80	<3	Samples collected from South Thompson Valley No major difference between glaciolacustrine and colluvial silts noted by author
Klohn Leonoff (1992)	-	0 - 2	80 - 87	8 - 17	Samples taken from West Bench/Sege Mesa
Nyland & Miller (1977)	15 - 25 ⁽¹⁾	0 - 2	80 - 87	8 - 17	
Iravani (1999)	-	0 - 5	85 - 90	8 - 18	
Thurber (2007)	10 - 30 ⁽²⁾	0 - 5	-	14 - 18	Tested from 9 Shelby tube samples Clay fraction reported from Direct Shear Testing Silt (ML)
Ecora ⁽³⁾	9 - 20			94-100	

Notes:

⁽¹⁾ Seasonal variation and depth

⁽²⁾ As summarized by Thurber (2007) for the majority of the tested material

⁽³⁾ Based on a number of local projects

Summary Table of Grain Size Analysis Laboratory Testing of the Colluvial Silts, adapted from Irvani (1999) Table 5.2

Original Source	Natural Moisture Content (%)	Sand (%)	Fines (%)		Comments
			Silt	Clay	
Nyland & Miller (1977)	-			7 - 16.2	
Quigley (1976)	-	-	-	12 - 19	Samples taken from Okanagan Valley, South Thompson Valley
Evans & Buchanan (1976)	-	<3	dominant	2 - 12	Samples taken from South Thompson Valley No major difference between glaciolacustrine and colluvial silts noted by authors
Wilson (1985)	-	15 - 20	70 - 80	<3	Samples collected from South Thompson Valley No major difference between glaciolacustrine and colluvial silts noted by author

Summary Table of In-situ Water Content and Atterberg Limits Laboratory Testing of the Glaciolacustrine Silts, adapted from Irvani (1999) Table 5.4

Original Source	In-situ Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Comments
Evans & Buchanan (1976)	2 - 35	27 - 37	-	2 - 12	Samples taken from South Thompson Valley Clayey Silt (ML) 4/6 samples in-situ water content >LL
Nyland & Miller (1977)	1 - 8 ⁽¹⁾	21 - 39	13 - 31	1 - 14	Samples collected from Okanagan Valley
Lum (1977)	7 - 8	-	-	-	Samples taken from South Okanagan Valley Measurements taken in June at 1.5 m bgl
Evans (1982)	-	>50	-	>20	Samples taken from Northern Interior
Wilson (1985)	6	-	-	-	Sample taken from South Thompson Valley Measurement taken at 5 m bgl
Thurber (1989)	-	28 - 52	-	7 - 37	Described in Thurber (2007) report
Thurber (1991)	-	31 - 68	-	6 - 43	Described in Thurber (2007) report
Irvani (1999)	-	35 - 40	25 - 33	0 - 10	Summary values
	15 - 43	35 - 39	30 - 33	29 - 31	Samples taken from Okanagan Park Slide and Koosi Creek Slide
Thurber (2007)		35 - 40 ⁽²⁾	25 - 30 ⁽²⁾	0 - 10 ⁽²⁾	Tested from 9 Shelby tube samples Silt (ML)
Ecora ⁽³⁾	9 - 20	28 - 35	20 - 26	7 - 11	

Notes:⁽¹⁾ Seasonal variation and depth⁽²⁾ As summarized by Thurber (2007) for much of the tested material⁽³⁾ Based on a number of local projects

Summary Table of In-situ Water Content and Atterberg Limits Laboratory Testing of the Colluvial Silts, adapted from Irvani (1999) Table 5.4

Original Source	In-situ Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Comments
Evans & Buchanan (1976)	2-48	25-39	-	4-15	Samples collected from South Thompson Valley Clayey Silt (ML) In-situ water content >LL

Summary Table of Shear Strength Laboratory Testing, adapted from Irvani (1999)

Original Source	Average Shear Strength (kPa)	Comments
Lum, (1977) ⁽¹⁾	130 - 240	Higher effective confining stresses (greater than 100 kPa did not strain soften)
	60	Low effective confining stresses (less than 100 kPa were strain softened)
Wilson (1985)	38	Unsaturated, reconstituted specimen with a water content of 4.4%
MoTI (1989)	2 - 8	Samples with moisture content significantly below the PL (peak strength)
	8 - 20	Samples with moisture content at or near the PL (peak strength)
Sobkowicz & Coulter, (1992) ⁽²⁾	30	Samples with moisture content significantly below the PL
	30	Samples with moisture content at or near the PL
	10	Residual soil
Thurber (2007)	30	Samples with moisture content significantly below the PL (peak strength)
	30	Samples with moisture content at or near the PL (peak strength)
	35	Clayey silt (peak strength)
	35	Silty clay
	10	Silty clay (residual strength)

Notes:

⁽¹⁾ Initial average specimen water contents of 7%

⁽²⁾ Referenced in Klohn Leonoff (1992)

Summary Table of Friction Angle of the Penticton Silt, adapted from Irvani (1999)

Original Source	Friction Angle (°)	Comments
Evans & Buchanan (1976)	24° - 30.5°	Residual drained friction angle from direct shear testing
Lum, (1977)	34°	
Wilson, (1985)	34° - 42°	
Sobkowicz & Coulter, (1992) ⁽¹⁾	35°	Silt samples with moisture content significantly below the PL
	30°	Silt samples with moisture content at or near the PL
	22°	Clayey silt with 35 kPa cohesion (peak strength)
	17°	Silty Clay with 35 kPa cohesion (peak strength)
Irvani, (1999) ⁽²⁾	32°	

Original Source	Friction Angle (°)	Comments
Thurber (2007)	35°	Samples with moisture content significantly below the PL 30 kPa cohesion (peak strength)
	30°	Samples with moisture content at or near the PL 30 kPa cohesion (peak strength)

Notes:

(1) Referenced in Klohn Leonoff (1992)

(2) Based on equation by Robertson & Campanella (1983)

Summary Table of 1-D Consolidation Laboratory Testing of the Glaciolacustrine Silts in the GWB Study Area, conducted by others

Original Source	Water Content (%)	Load (kPa)	Volumetric Strain Decrease (%)	Comments
Lum (1977)	7.2	1,400	3.2	Samples from north shore of the South Thompson River
Nyland & Miller (1977)	-	-	3 - 11	Magnitude of collapse increases as vertical effective stress corresponding to flooding stage increases
MoTI (date unknown) ⁽¹⁾	-	-	2	Compression index of 0.19
	-	-	3	Compression index of 0.09
	-	-	3	Compression index of 0.15
	-	-	4	Compression index of 0.26

Notes:

(1) Based on tested samples collected in 1978 and 1982. Reported by Thurber (2007)

Summary Table of 1-D Consolidation Laboratory Testing of the Colluvial Silts in the GWB Study Area, conducted by others

Publication	Water Content (%)	Load (kPa)	Volumetric Strain Decrease (%)	Comments
MoTI (date unknown) ⁽¹⁾	-	-	25	Compression index of 0.32
	-	-	31	Compression index of 0.70

Notes:

(1) Based on tested samples collected in 1978 and 1982. Reported by Thurber (2007)

Summary Table of Laboratory Testing of the Pentiction Silt, adapted from Iravani (1999) Table 5.3

Original Source	Specific Gravity	Density (kg/m ³)	In-situ Void Ratio	Comments
Meyer & Yenne (1940)	2.88	-	-	Samples taken from Okanagan Valley
Quigley (1976)	-	-	1.02 - 1.20	Samples taken from Okanagan Valley and South Thompson Valley
Lum (1977)	2.60 - 2.80	-	-	Samples taken from South Thompson Valley 9 samples tested with an average Specific Gravity of 2.77
Nyland and Miller (1977)	-	1557 - 1734 (max. dry)	-	Samples taken from Okanagan Valley Optimum moisture content between 0.7% – 7.9%
Wilson, (1985)	2.65 (assumed)	1390 - 1680 (in-situ bulk)	0.68 - 1.02	Samples taken from South Thompson Valley
Thurber (2007) ⁽¹⁾	2.8	1152 - 1631	1.14 - 1.56	Testing from 1991 investigation program Four measurements from several samples Dry Density

Note:

⁽¹⁾ Thurber (2007) did not distinguish between testing of glaciolacustrine silt or colluvial silt

Mineralogy

Based on the bulk mineralogy analysis carried out by Iravani (1999) using x-ray diffraction, Chlorite and Muscovite were found to be the dominant materials within his study areas. Earlier mineralogy studies, summarized by Iravani (1999), and presented in the summary table below indicates quartz, K-feldspar, and plagioclase were also found to be major mineral components. Within the clay fraction, Illite and smectite were found to be dominant, with kaolinite and mica generally moderate to minor. Expanding clay not found to be significant enough to cause de-structuring. Magnetite and calcite are present in small amounts. There was no major crystalline bonding agent found.

Summary of Mineralogy Studies, adapted from Iravani (1999) Table 5.6-A (a & b)

Original Source	Methodology	Comments
Daly (1915)	Chemical analysis applicable only to igneous rocks	49% albite 18% quartz 15% orthoclase 8.5% anorthite
Flint (1935)	unknown	Fresh feldspathic rock flour Interbedded silt with very thin layers of clay at low elevations
Meyer & Yenne (1940)	Microscope	90% equal amounts feldspar and quartz ▪ 2/3 k-feldspar; 1/3 plagioclase 10% unidentified particles

Original Source	Methodology	Comments
Fulton (1965)	Mineralogical Bulk Sample Analysis	Quartz (main) Mica (major) Feldspar (major) Ferromagnesian Minerals (minor) Clay Minerals (minor) <ul style="list-style-type: none"> ▪ 35%-40% Smectite ▪ 28%-35% Illite/Mica ▪ 27%-36% Chlorite
Quigley (1976)	X-ray diffraction-	Quartz (abundant) Mica (minor) Feldspar (moderate) Carbonate (minor) Amphibole (minor) Ferromagnesian Minerals (minor) Clay Minerals (minor) <ul style="list-style-type: none"> ▪ Smectite (abundant) ▪ Illite/Mica (moderate) ▪ Chlorite (minor) ▪ Kaolinite (minor)
Iravani (1999)	X-ra diffraction	Chlorite Mica (Muscovite) Quartz K-Feldspar Plagioclase (Ca-Feldspar) Magnetite Calcite Clay Fraction <ul style="list-style-type: none"> ▪ Illite ▪ Smectite ▪ Chlorite ▪ Vermiculite ▪ Kaolinite ▪ Mica (Muscovite) ▪ Mica (Biotite)

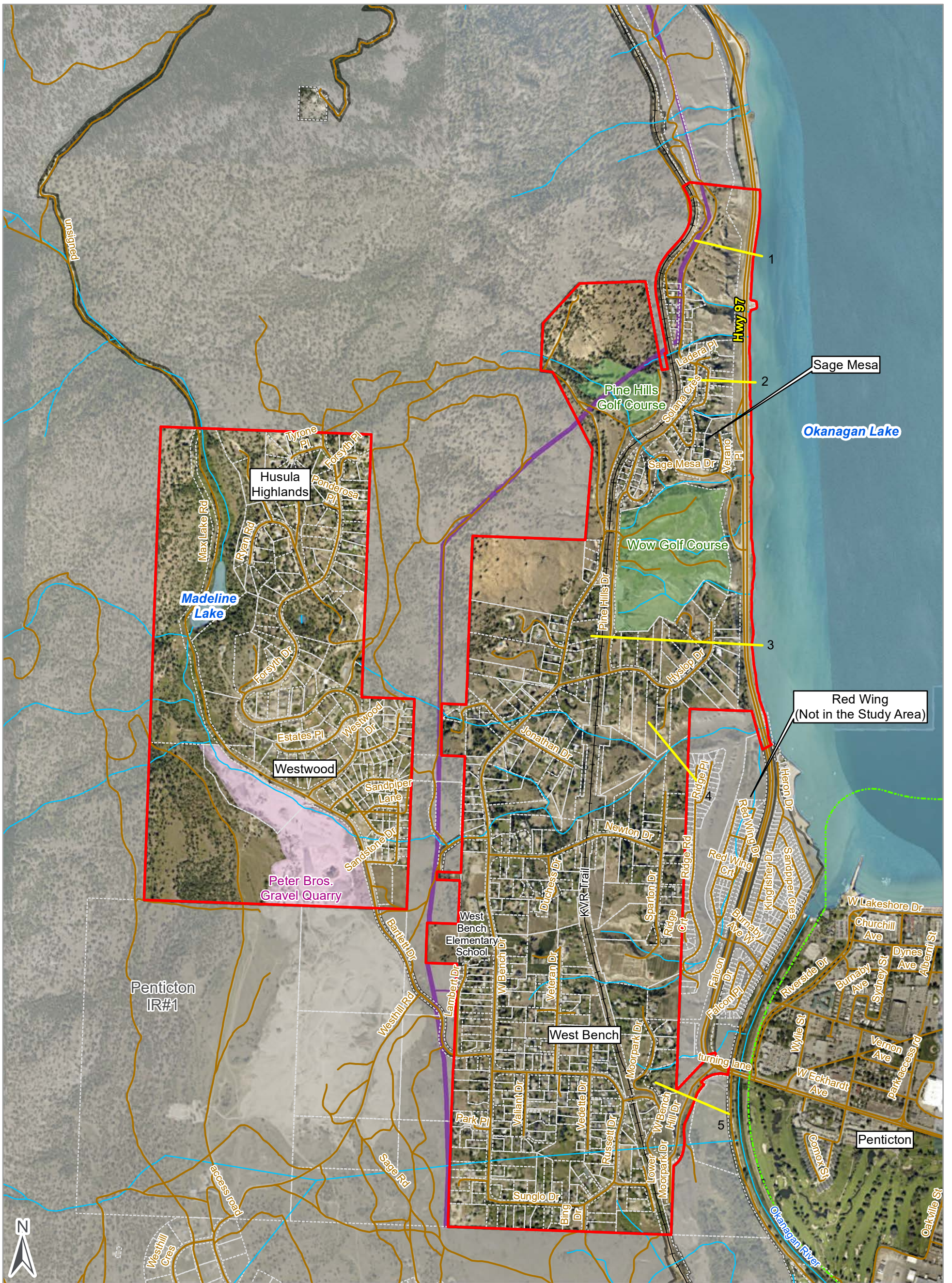
Summary Table of Fabric and Scanning Electron Microscopy (SEM) of the Penticton Silt in the GWB Study Area, conducted by others

Original Source	Sample Type	Comments
Meyer & Yenne (1940)	Glaciolacustrine Silt	Predominantly angular and lath-shaped with elongation indices >10 Some reworked rounded particles noted
Quigley (1976)	Glaciolacustrine and Colluvial Silt	Silt-sized grains of quartz, feldspar, and oriented mica in an open porous structure 5-40 micron mica, horizontally oriented Soil structure appeared stabilized by agglomerated clusters (cementation)
Lum (1977)	Glaciolacustrine Silt (undisturbed and remolded)	Horizontal oriented platy particles Anisotropic fabric observed Similar fabric observations for undisturbed and remolded samples
Iravani (1999)	Glaciolacustrine Silt (undisturbed and remolded)	Anisotropic fabric Horizontally oriented platy particles One wetting and drying cycle was observed to have resulted in soil fabric changes and formation of up to 20 micron voids Gradual flooding under unconfined conditions resulted in micro-cracks less than 30 microns wide

Appendix G

Slope Stability Analysis (G, G1-G6)

Appendix G	Global Stability Sections
Appendix G1	Static Stability Analysis – Section 1
Appendix G2	Static Stability Analysis – Section 2
Appendix G3	Static Stability Analysis – Section 3
Appendix G3a	Pseudo-Static Stability Analysis – Section 3
Appendix G4	Static Stability Analysis – Section 4
Appendix G5	Static Stability Analysis – Section 5
Appendix G5a	Static Stability Analysis – Section 5 (Climate Change)
Appendix G6	Static Stability Analysis – Cohesion Sensitivity Plot



GLOBAL STABILITY SECTIONS



GREATER WEST BENCH GEOTECHNICAL REVIEW

Legend

- Slope Stability Sections
- Gas Line
- RDOS Legal Parcels
- City of Pentiction Boundary
- First Nations Land Boundaries
- Greater West Bench Study Area

1:14,000

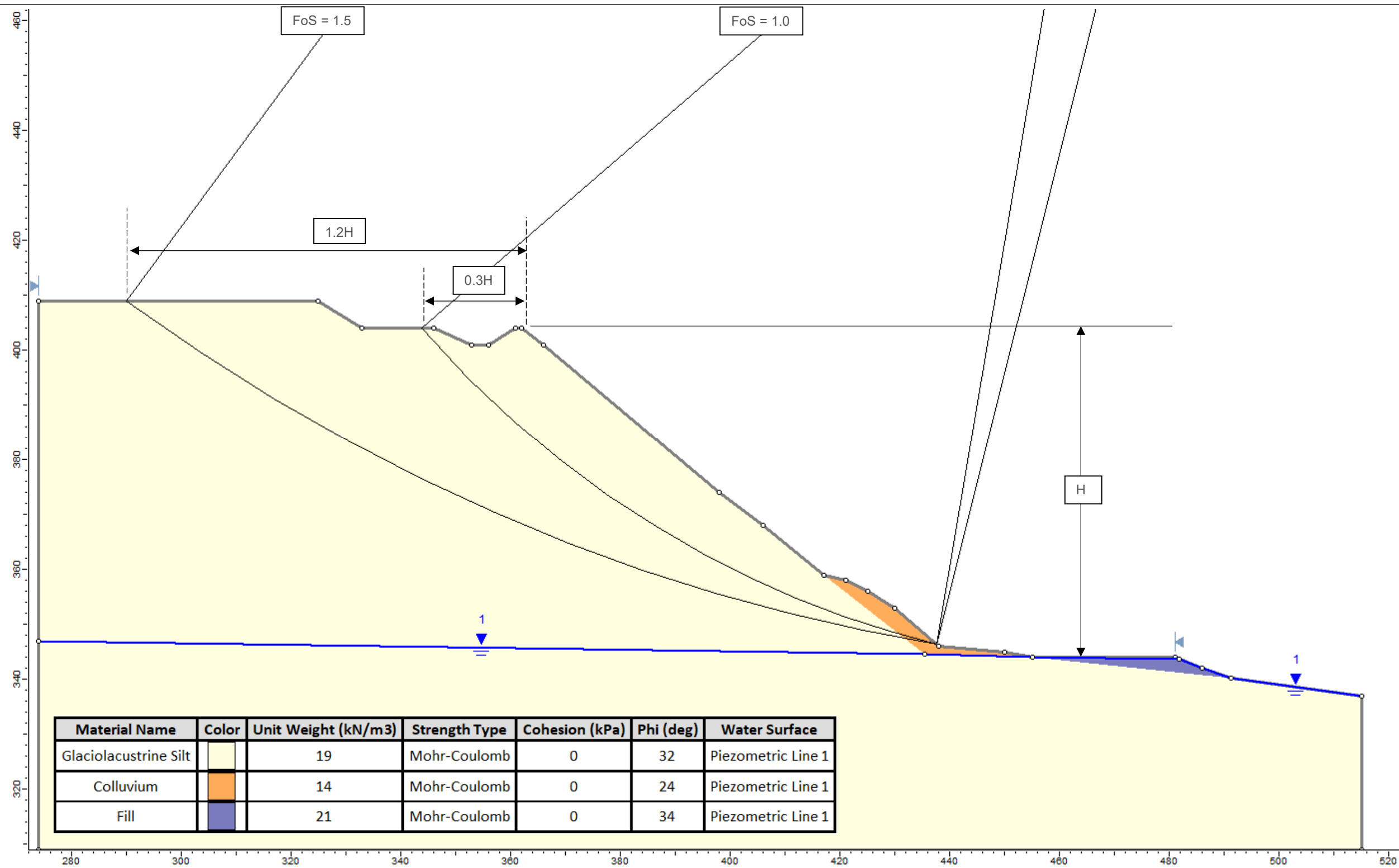


Project No.: 191010
 Client: Regional District of Okanagan Similkameen
 NAD 1983 UTM Zone 11N

Date: 2020/09/01
 Drawn: MT Check: CE

Appendix G

*Not verified in field



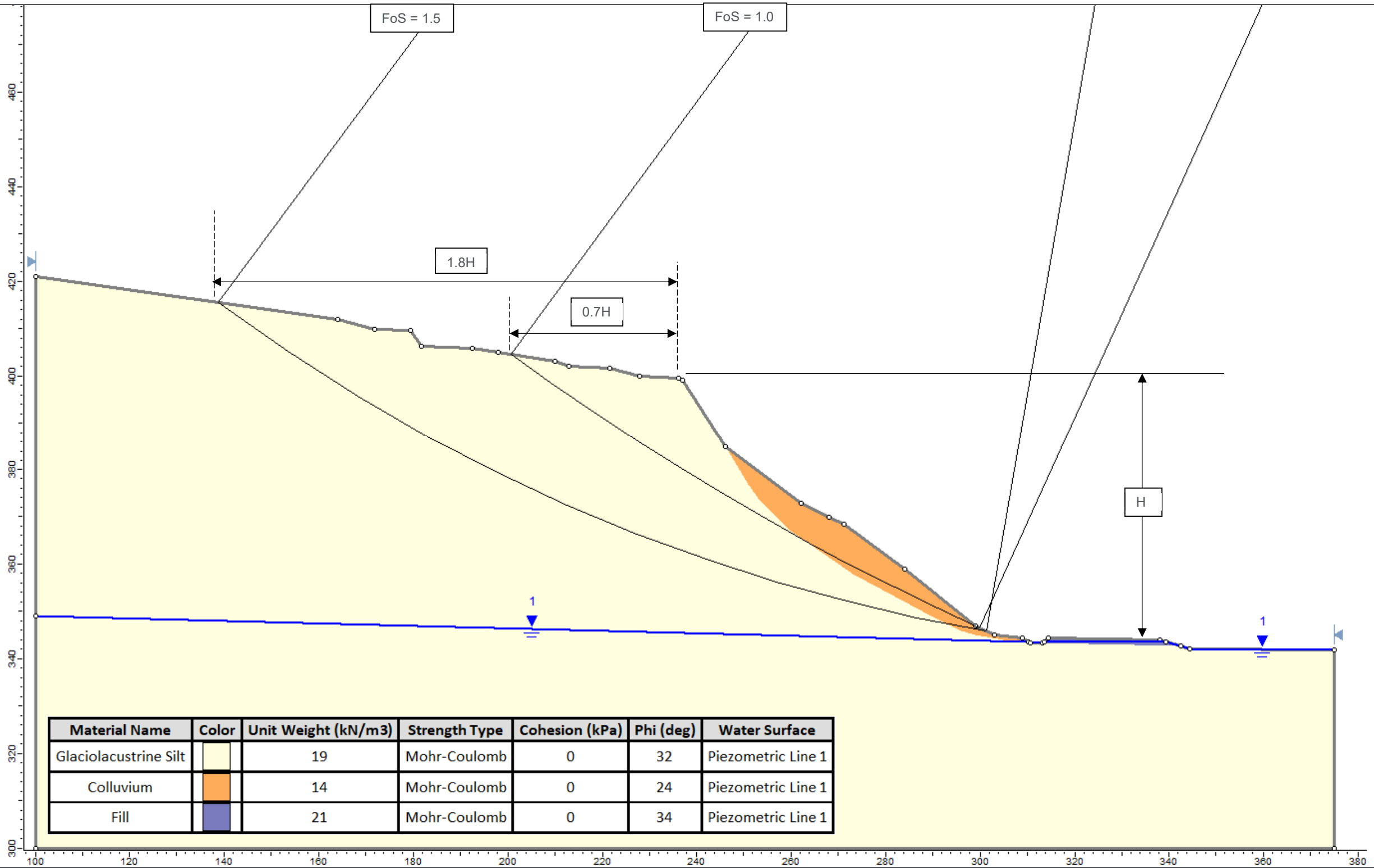
Notes:
 Groundwater table based on HWM of 343.66 m for Okanagan Lake
 Results the same for the projected HWM considering climate change of 347.26 m for Okanagan Lake

GREATER WEST BENCH GEOTECHNICAL REVIEW

Static Stability Analysis – Section 1

Project No. 191010
 Client: Regional District of Okanagan Similkameen
 Office: Kelowna
 Scale: NTS
 Date: January 28, 2021
 DWN: CE CHK: MJL





Notes:

Groundwater table based on HWM of 343.66 m for Okanagan Lake

Results the same for the projected HWM considering climate change of 347.26 m for Okanagan Lake

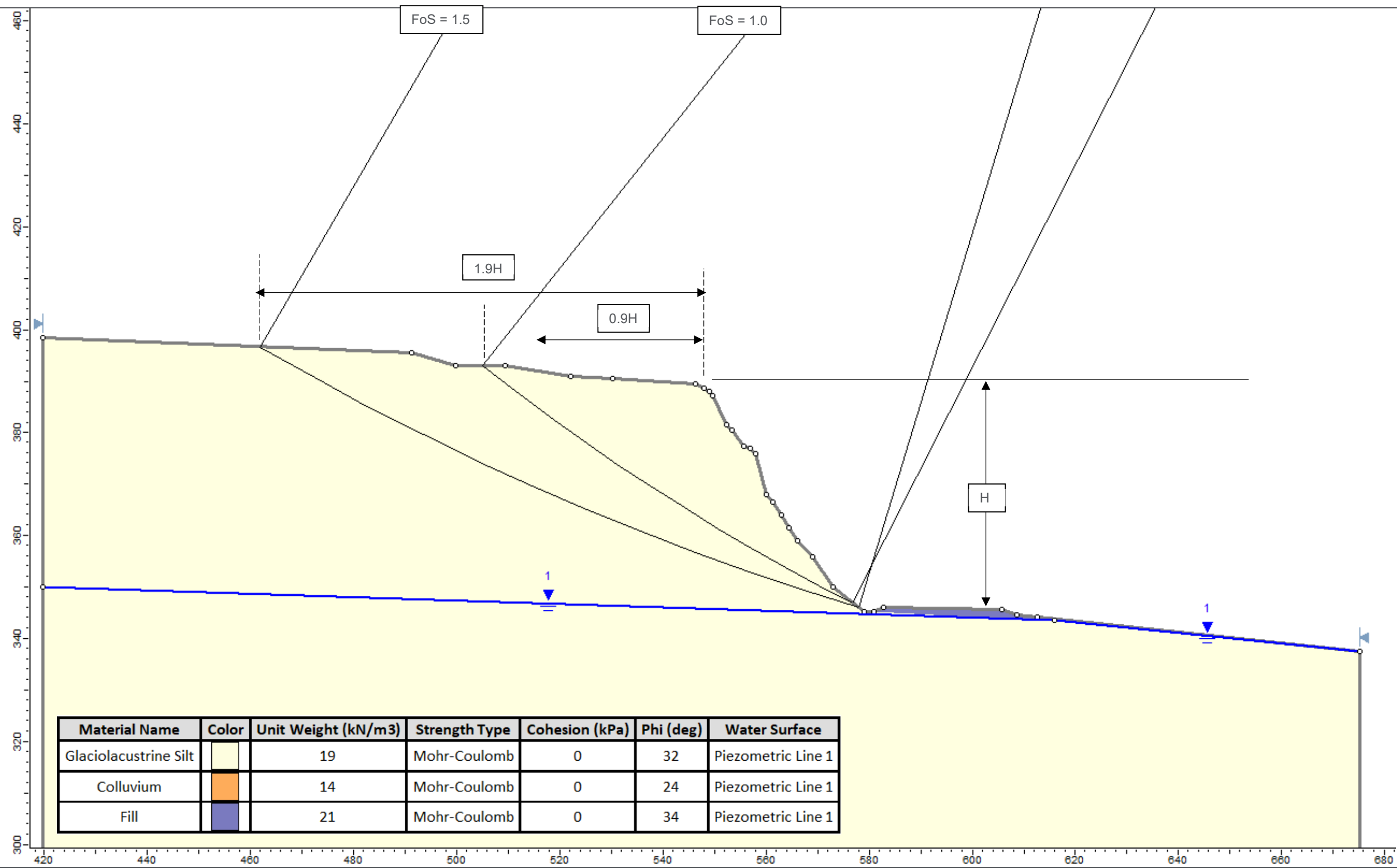
GREATER WEST BENCH GEOTECHNICAL REVIEW

Static Stability Analysis – Section 2

Project No. 191010
 Client: Regional District of Okanagan Similkameen
 Office: Kelowna
 Scale: NTS
 Date: January 28, 2021
 DWN: CE CHK: MJL



Appendix G2



Notes:

Groundwater table based on HWM of 343.66 m for Okanagan Lake

Results the same for the projected HWM considering climate change of 347.26 m for Okanagan Lake

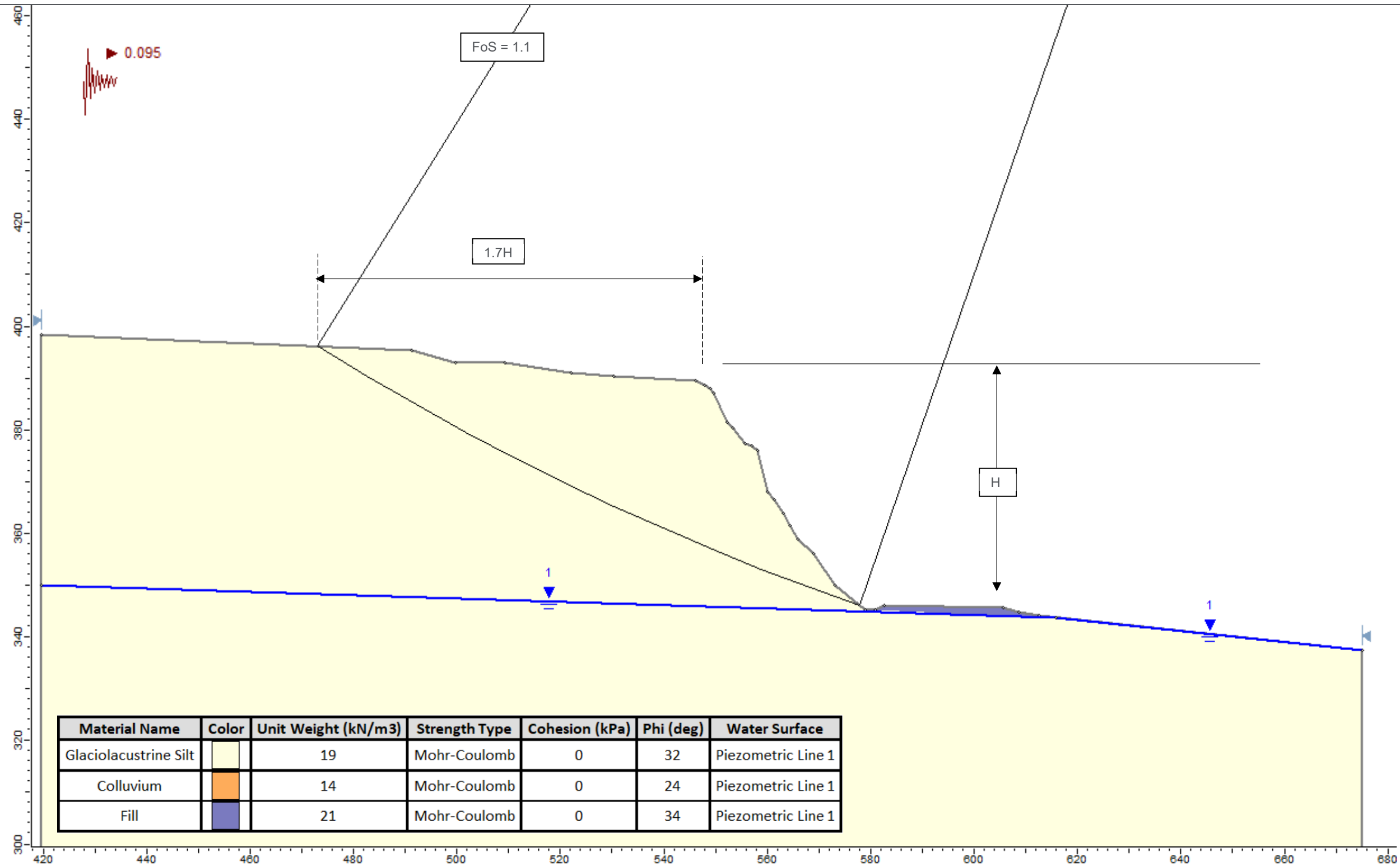
GREATER WEST BENCH GEOTECHNICAL REVIEW

Static Stability Analysis – Section 3

Project No. 191010
 Client: Regional District of Okanagan Similkameen
 Office: Kelowna
 Scale: NTS
 Date: January 28, 2021
 DWN: CE CHK: MJL



Appendix G3



Notes:

Groundwater table based on HWM of 343.66 m for Okanagan Lake

Results the same for the projected HWM considering climate change of 347.26 m for Okanagan Lake

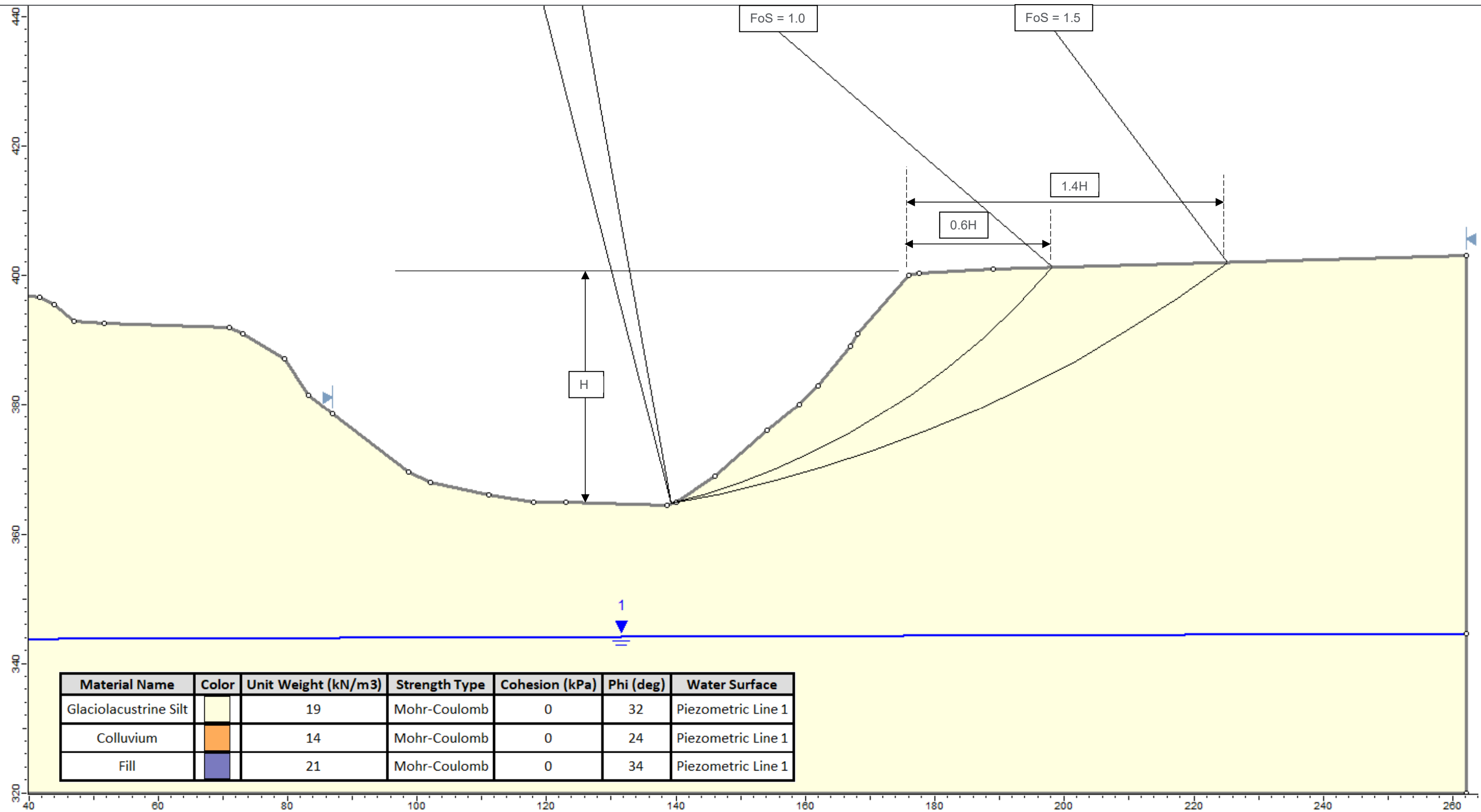
GREATER WEST BENCH GEOTECHNICAL REVIEW

Pseudo-Static Stability Analysis – Section 3

Project No. 191010
 Client: Regional District of Okanagan Similkameen
 Office: Kelowna
 Scale: NTS
 Date: January 28, 2021
 DWN: CE CHK: MJL



Appendix G3a



Notes:

Groundwater table based on HWM of 343.66 m for Okanagan Lake

Results the same for the projected HWM considering climate change of 347.26 m for Okanagan Lake

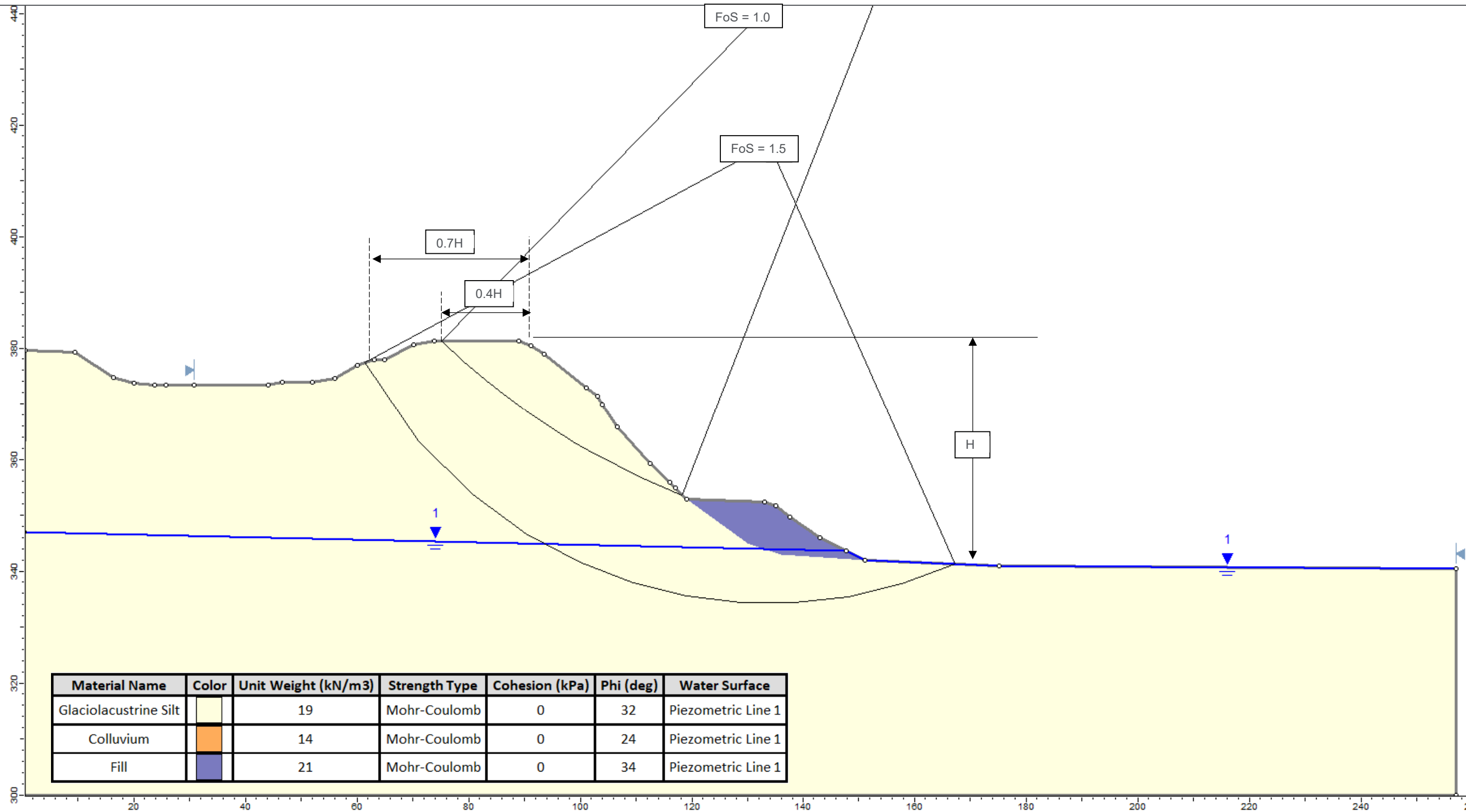
GREATER WEST BENCH GEOTECHNICAL REVIEW

Static Stability Analysis – Section 4

Project No. 191010
 Client: Regional District of Okanagan Similkameen
 Office: Kelowna
 Scale: NTS
 Date: January 28, 2021
 DWN: CE CHK: MJL



Appendix G4



Notes:

Groundwater table based on HWM of 343.66 m for Okanagan Lake

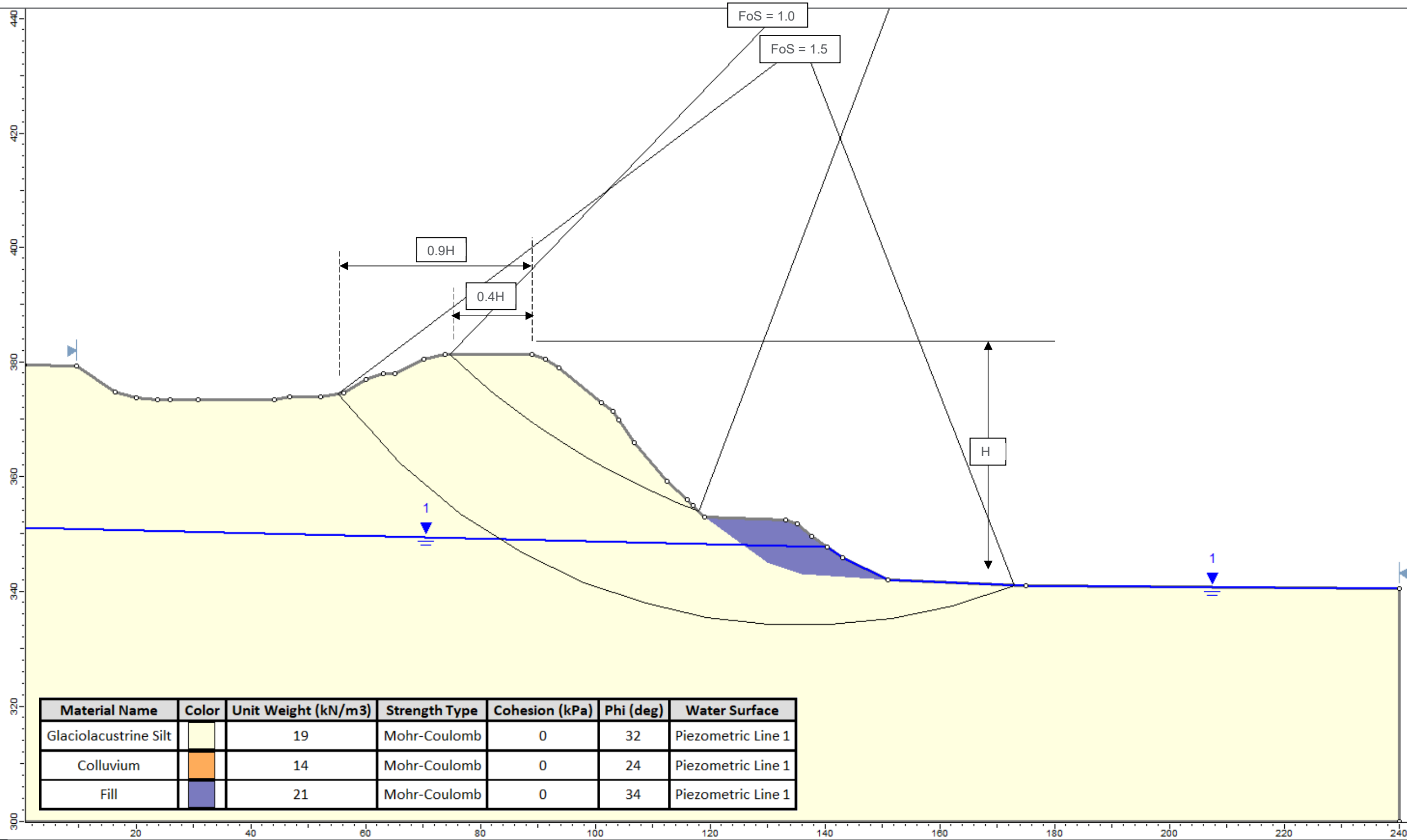
GREATER WEST BENCH GEOTECHNICAL REVIEW

Static Stability Analysis – Section 5

Project No. 191010
 Client: Regional District of Okanagan Similkameen
 Office: Kelowna
 Scale: NTS
 Date: January 28, 2021
 DWN: CE CHK: MJL



Appendix G5



Notes:
 Groundwater table based on the projected HWM considering climate change of 347.26 m for Okanagan Lake

GREATER WEST BENCH GEOTECHNICAL REVIEW

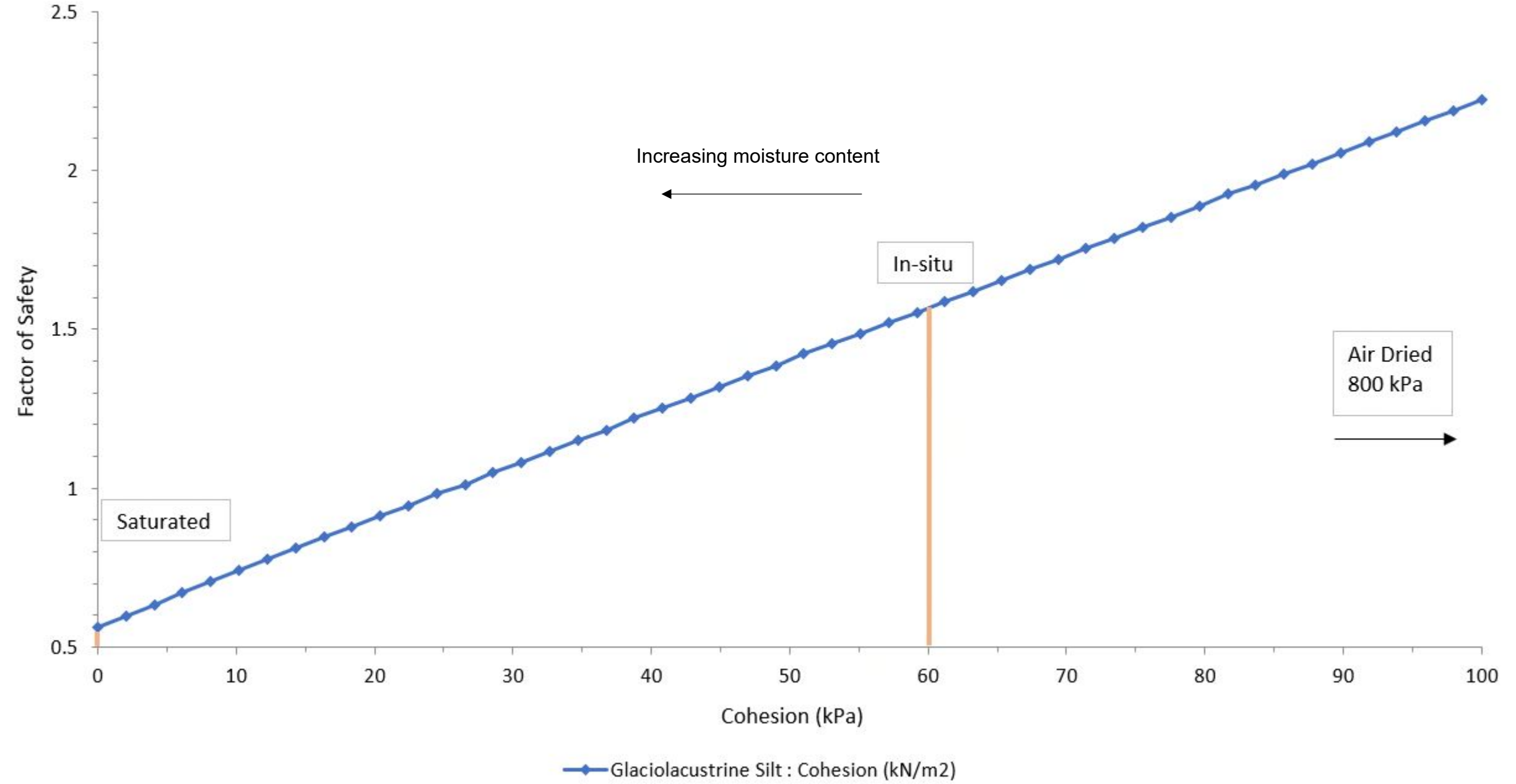
Static Stability Analysis – Section 5 (Climate Change)

Project No. 191010
 Client: Regional District of Okanagan Similkameen
 Office: Kelowna
 Scale: NTS
 Date: January 28, 2021
 DWN: CE CHK: MJL



Appendix G5a

Calculated Factor of Safety vs. Cohesion



Notes:

Graph based on the results of the global stability analysis results for Section 3.

Saturated, "in-situ" and "air dried" cohesion values as recommended by Iravani (1999).

GREATER WEST BENCH GEOTECHNICAL REVIEW

Stability Analysis – Cohesion Sensitivity Plot

Project No. 191010
 Client: Regional District of Okanagan Similkameen
 Office: Kelowna
 Scale: NTS
 Date: January 28, 2021
 DWN: CE CHK: MJL



REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BYLAW NO. 2461.21, 2021

A Bylaw to amend the Electoral Area “F” Zoning Bylaw No. 2461, 2008

The REGIONAL BOARD of the Regional District of Okanagan-Similkameen in open meeting assembled, ENACTS as follows:

1. This Bylaw may be cited for all purposes as the “Electoral Area “F” Zoning Amendment Bylaw No. 2461.21, 2021.”
2. The “Electoral Area “F” Zoning Bylaw No. 2461, 2008” is amended by:
 - i) adding a new sub-section 7.4.5 (Prohibited Uses of Land, Buildings and Structures) under Section 7.0 (General Regulations) to read as follows:
 - .5 swimming pools, ponds and water features are prohibited in the West Bench Small Holdings (SH6) Zone and West Bench Low Density Residential (RS6) Zone.
 - ii) replacing sub-section 10.9.3 (Minimum Parcel Size) under Section 10.9 (West Bench Small Holdings (SH6) Zone) in its entirety with the following:

10.9.3 Minimum Parcel Size for Subdivision

 - a) 2.0 ha
 - iii) replacing sub-section 11.3.3 (Minimum Parcel Size) under Section 11.3 (West Bench Low Density Residential (RS6) Zone) in its entirety with the following:

11.3.3 Minimum Parcel Size for Subdivision

 - a) 2.0 ha

READ A FIRST AND SECOND TIME this ____ day of _____, 2021.

PUBLIC HEARING held on this ____ day of _____, 2021.

READ A THIRD TIME this ____ day of _____, 2021.

ADOPTED this this ____ day of _____, 2021.

Board Chair

Corporate Officer

DRAFT

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BYLAW NO. 2790.04, 2021

**A Bylaw to amend the Electoral Area “F”
Official Community Plan Bylaw No. 2790, 2018**

The REGIONAL BOARD of the Regional District of Okanagan-Similkameen in open meeting assembled, ENACTS as follows:

1. This Bylaw may be cited for all purposes as the “Electoral Area “F” Official Community Plan Amendment Bylaw No. 2790.04, 2021.”
2. The “Electoral Area “F” Official Community Plan (OCP) Bylaw No. 2790, 2018” is amended by:
 - i) replacing Section 17.0 (Hazard Lands) in its entirety with the following:

17.0 HAZARD LANDS

17.1 Background

Hazard lands include but are not limited to areas the Regional District has reason to believe are subject to natural hazards including flooding, mud flows, debris torrents, erosion, rockfall, landslip, sink holes and wildfire.

The information available for the entire Regional District can be variable and may lack detail, so hazards often need to be investigated on a site-by-site basis. Recognizing this, site planning for proposed developments should consider the potential hazards on any given site. Some hazards can be evaluated and mitigated at the time of development. Other hazards, such as wildfire, can not only impact new developments, but also threaten existing structures.

Maps of key hazard areas in the Plan Area have been prepared and include Geotechnical Hazards (Schedule ‘D’), Steep Slope Hazards (Schedule ‘E’), Wildfire Hazards (Schedule ‘F’) and Floodplain Hazards (Schedule ‘G’).

17.2 Objectives

- .1 Prevent injury and loss of life and to prevent or minimize property damage because of natural hazards.
- .2 Ensure development does not occur in areas subject to known hazardous conditions, unless the hazard has been sufficiently addressed and mitigated.
- .3 Recognize that important habitat may also be found in natural areas that are considered hazardous, and that disruption of these areas should be minimized.
- .4 Minimize wildfire hazards to people and property in existing and proposed new development.

17.3 General Policies

The Regional Board:

- .1 Will not support the rezoning of development on lands with natural hazards as identified by the Regional District or other agencies having jurisdiction, unless the applicant can provide a report by a Qualified Professional Engineer or Geoscientist that the land can be safely used for the use intended.
- .2 Encourages annual inspections, and as-needed inspections after large storms, runoff or flooding events, at the highest risk areas for impacts, such as steep slopes and major culverts outfalls.

17.4 Geotechnical Hazard Management

Geohazard issues in the Greater West Bench (GWB) area date back to 1913 when a landslide occurred during construction of the Summerland to Penticton Lakeshore Road, killing three workers. In 1958, a large sinkhole appeared in the area and, as a result, investigation and mapping of the glaciolacustrine soils was completed, leading to early recommendations regarding land use activities to reduce the likelihood of accelerated erosion.

Detailed geohazard mapping was completed for a portion of the GWB area by the consulting firm Klohn Leonoff in 1992. Klohn Leonoff's map work identified potential areas affected by landslide, sinkhole, and silt bluff hazards, and was relied upon by the Regional District for many years to direct land development away from hazardous areas.

A 2006 update stated that the conclusions and recommendations of the 1992 report "appear to be valid today" as "the silt bluffs and West Bench/Sage Mesa are still subject to the risk of landslides and subsurface erosion."

In 2021, an updated technical assessment of geotechnical hazards in the GWB area was completed. This report built on the Klohn Leonoff Report (1992) and comprised an assessment of geotechnical conditions utilizing historical and recent data, and applied modern technology and methods. The results indicate that:

- landslide hazards persist within the vicinity of the steep silt bluff slopes that occur along the eastern boundary of the GWB area;
- landslide hazards are greatest within approximately 50 metres of the slope crest and extend beyond the toe of the slope towards Highway 97 and Okanagan Lake;
- sinkhole hazard levels within the GWB Study Area are greatest within 30 metres of the silt bluff slope crest and/or within 30m of another sinkhole, and are observed exclusively within the Glaciolacustrine Silts; and
- sinkhole hazards predominately occur over the eastern and northern half of the West Bench area.

In addition, the geotechnical hazard zones now included at Schedule 'D' (Hazard Lands – Soil) are more refined than the original Klohn Leonoff (1992) mapping of landslide and sinkhole hazards.

The 2021 Update included a further series of suggestions in relation to identified Data Gaps that could be pursued based on need and available funding. This included:

- conduct additional subsurface soils investigation in conjunction with future geotechnical studies;
- conduct additional groundwater investigation and monitoring;
- update the 1994 Wastewater Management Plan; and
- improve stormwater management practices.

North Beach Estates:

A geological hazard analysis was completed for the North Beach Estates area (Golder 2009) as part of rezoning and permitting of the North Beach Estates lands and community when Highway 97 was being redesigned and reconstructed. The houses here were found to be within potential landslide runout zones, and it was recommended (Golder 2009) that: water discharges such as irrigation, and placement of fill, should not occur on the benches above the steep slopes and the houses; natural vegetation should be maintained; and that risk reduction measures should be developed.

Shingle, Trout and Farleigh Creeks:

Terrain stability maps and reports were completed for the western (mainly provincial land) part of the Electoral Area, in the Shingle Creek, Trout Creek, and Farleigh Creek community watersheds, for forest development and erosion mitigation purposes (AGRA 1999; Maynard 2001; Dobson et al 2004). These reports show that these areas are not generally suitable for specific residential land development, that rockfall and rock slides and gully erosion are common in the upland hills and valleys, and that local flooding of the narrow valley bottoms is also common, especially during wet years such as 2017.

17.4.1 Policies

The Regional Board:

- .1 Supports periodic reviews of geohazard conditions within the Greater West Bench Area every 10-20 years in order to detect and adapt to geotechnical changes such as landslides, sinkhole development or other incidences.
- .2 Supports the development of a web-based reporting tool to record geohazard events in the Greater West Bench area.
- .3 Supports restricting densities in the Greater West Bench area due to geotechnical hazards by prohibiting accessory dwellings, secondary suites and establishing larger parcel sizes for the subdivision of land.
- .4 Supports amending the zoning bylaw to prohibit the development of swimming pools in the West Bench/Sage Mesa area due to geotechnical hazards.
- .5 Supports the development of reporting requirements for geotechnical studies submitted in support of new development applications to the Regional District.
- .6 Supports the preparation of a Soil Removal and Deposition Bylaw to regulate, monitor, and limit the removal and deposition of soil in the Greater West Bench Area.
- .7 Encourages monitoring of surface and groundwater conditions at West Bench - Sage Mesa including potential water system leakage.
- .8 Encourages the development of a sanitary sewer and/or stormwater management system in Greater West Bench to alleviate the risk of geotechnical failure due to usage of existing onsite septic systems.
- .9 Supports educating home owners living on and near hazard lands regarding water use and drainage practices necessary to minimize triggering geological hazards, and the importance of immediate reporting to RDOS if erosion or land problems start to occur.

- .10 Encourages a program to monitor the land surveys for roads, curbs and culverts to determine if any subsidence or lateral movement is occurring, which could identify sites where subsurface erosion is occurring due to misdirected water.
- .11 Will direct development away from lands identified as being susceptible to soil instability and potentially hazardous geotechnical conditions.
- .12 Discourages development on slopes with grades in excess of 30% to avoid geotechnical hazards.
- .13 Will recommend that the Approving Officer require a geotechnical report indicating the land can be safely used for the use intended for a subdivision where the new development is located on slopes greater than 30%, including those areas that may be regraded to slopes less than 30% after development, in order to address potential soil instability, hazardous conditions and environmental sensitivity.

17.5 Flood Hazard Management

The Regional District has a long history, through the Electoral Area zoning bylaws, of regulating development within flood prone areas.

In 2003, *Flood Hazard Statutes Amendment Act* was adopted and shifted responsibilities for flood hazard management by removing the province from the subdivision and bylaw approval process. After this date, land use decisions in flood prone areas became the responsibility of local governments and, in regional districts, the provincially appointed subdivision Approving Officer.

When regulating development through the zoning bylaws, the Regional District has historically relied on floodplain mapping prepared by the British Columbia Inventory and Engineering Branch, Floodplain Mapping Program, in the 1980s and 1990s.

Record-setting high flows and flooding in the Okanagan Valley in 2017, followed by high flows in 2018, prompted the Okanagan Basin Water Board (OBWB), the Okanagan regional districts, member municipalities and the Okanagan Nation Alliance and member communities to update floodplain mapping for the Okanagan River and its lakes.

This project was undertaken with two main objectives: comprehensive floodplain mapping for the Okanagan River mainstem lakes and Okanagan River from Penticton to Osoyoos Lake, and improving the understanding of flood management options available to water managers and operators in the face of climate variability and change.

The flood hazards now included at Schedule 'G' (Hazard Lands – Floodplain) are based on the mapping prepared by the OBWB in 2020.

17.5.1 Policies

The Regional Board:

- .1 Discourages development of land susceptible to flooding and encourages those lands to be used for parks, open space, habitat conservation, recreation or agricultural uses.
- .2 Requires that where land subject to flooding is to be developed and no alternative land is available, construction and siting of buildings and manufactured homes to be used for habitation, business, industry, or the storage of goods damageable by floodwaters shall comply with the floodplain regulation of the Zoning Bylaw with any relaxation subject to the recommendations of a report prepared by a qualified Professional Engineer or Geoscientist, where applicable.
- .3 Supports minimizing exposure to future flood damage by avoiding development adjacent to Okanagan Lake or by implementing flood mitigation measures.
- .4 Supports mitigating the impacts of potential flooding on buildings and properties in the floodplain area and affected by groundwater through design and site grading prior to construction as per the recommendations of a report prepared by a qualified Professional Engineer or Geoscientist.
- .5 Encourages the Okanagan Basin Water Board (OBWB) to prepare model floodplain regulations to support the Okanagan Mainstem Floodplain Mapping (2020), so that both the mapping and regulations can be incorporated into the electoral area zoning bylaw(s).

17.6 Wildfire Hazard Mitigation

A *Community Wildfire Protection Plan (CWPP)* was completed for the Regional District in 2011. The plan assessed wildfire risk across the region and made recommendations to improve the community's risk profile through pre-planning and preparedness, policy, and fuel management.

As a predominantly rural area, the CWPP determined that development in the Plan Area generally consists of:

- low to moderately dense rural intermix areas (>1structure/ha) with more forested areas between structures and a less defined perimeter;
- a well-defined urban/interface complex where the interface perimeter is more clearly defined; and

- individual structures remotely scattered within the wildlands.

See Schedule 'F' (Hazard Lands – Wildfire) for a map of wildfire hazard areas in the Plan Area.

In the next few decades, climate change will likely have a significant change on fire hazard within Electoral Area "F" based on the decreases in precipitation and changes in forest fuel structure and composition (Associated Environmental, 2017).

17.6.1 Policies

The Regional Board:

- .1 In reviewing a rezoning application submitted to the Regional District for development in those areas identified in the *Community Wildfire Protection Plan (CWPP)* and shown on Schedule 'F' (Hazard Lands – Wildfire), the Regional District may require a fire hazard risk assessment by a qualified professional with recommendations concerning but not limited to the following:
 - a) incorporating fuel breaks adjacent to, or on, residential subdivisions;
 - b) establishing zones around proposed building sites which are clear of debris and highly combustible materials;
 - c) utilizing fireproofing techniques and fireproof materials in building design;
 - d) designing roads that provide evacuation routes and facilitate movement of firefighting equipment;
 - e) ensuring all roads are named and signed;
 - f) ensuring availability of water supply facilities adequate for fire suppression;
 - g) ensuring the provision of access to local water sources, lakes and watercourses as part of access requirements; and
 - h) implementing setbacks, interface fire protection standards, building material standards, and vegetation pursuant to Provincial FireSmart guidelines.
- .2 Using the FireSmart guide as a principal guidance document, strives to foster wildfire awareness and resiliency through public education materials, programs and events.
- .3 Strongly encourages that all new developments with moderate or higher fire hazard ratings to incorporate best practice interface forest fire mitigation techniques for buildings and landscaping.

- .4 Should review and update wildfire protection approaches as often as necessary based on changing community circumstances, climate change driven ecosystem conditions, and mitigation techniques.
- .5 Encourages property owners to adhere to the relevant Provincial guidelines to protect properties and communities from wildfire risk through such measures as reducing fuel loads and regular maintenance of eaves. Such measures should be supportive of the natural environment and mimic the natural effects of localized ground fire such as thinning and spacing trees and vegetation, removal of debris and dead material from the ground, and removal of lower tree branches.
- .6 Supports pursuing provincial funding and resources to undertake wildfire risk reduction in the community/forest interface areas.
- .7 Supports the development of an inventory of accessible water sources by the province that could be enhanced to support water extraction by firefighting equipment.

17.7 Radon Gas Hazard Mitigation

Radon is a radioactive gas that occurs naturally when the uranium in soil and rock breaks down. It is invisible, odourless and tasteless. When radon is released from the ground into the outdoor air, it is diluted and is not a concern. However, in enclosed spaces like homes, it can accumulate to high levels.

The Plan Area and larger region has been recognized for radon issues. Radon gas is a recognized health hazard and the Province has established regulations in the BC Building Code for new construction to vent radon that may seep into homes.

17.7.1 Policies

The Regional Board:

- .1 Encourages provincial and/or federal agencies to conduct further research on possible radon health risks in and around the Plan Area.
- .2 Encourages Plan Area residents to test their homes for radon exposure and to take appropriate mitigation measures where radon levels are found to be higher than recommended levels.
- .3 Supports providing information on radon and radon mitigation opportunities to Plan Area residents.

- ii) replacing Schedule 'D' (Hazard Lands – Soil Map) with a new Schedule 'D' (Hazard Lands – Soil Map), as shown on the attached Schedule 'A' (which forms part of this bylaw).
- iii) adding a new Schedule 'G' (Hazard Lands – Floodplain Map) as shown on the attached Schedule 'B' (which forms part of this bylaw) and renumbering all subsequent Schedules and bylaw references to these Schedules accordingly.

READ A FIRST AND SECOND TIME this ____ day of _____, 2021.

PUBLIC HEARING held on this ____ day of _____, 2021.

READ A THIRD TIME this ____ day of _____, 2021.

ADOPTED this this ____ day of _____, 2021.

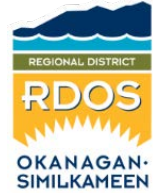
Board Chair

Corporate Officer

DRAFT

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9
Tel: 250-492-0237 Email: info@rdos.bc.ca



Amendment Bylaw No. 2790.04, 2021

File No. F2021.018-ZONE

Schedule 'A'

Electoral Area "F" Official Community Plan (OCP) Bylaw No. 2790, 2018

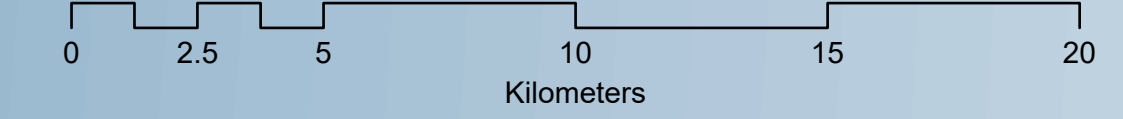
Schedule 'D' (Hazard Lands – Soil Map)

[SEE NEXT PAGE]

DRAFT

Hazard Lands Hazard Lands – Geotechnical

Schedule 'D' - (Hazard Lands – Geotechnical)
Official Community Plan Bylaw No. 2790, 2018.



This is Schedule 'D' - (Hazard Lands – Geotechnical) as referenced in the Regional District of Okanagan-Similkameen's Electoral Area "F" Official Community Plan Bylaw No. 2790, 2018

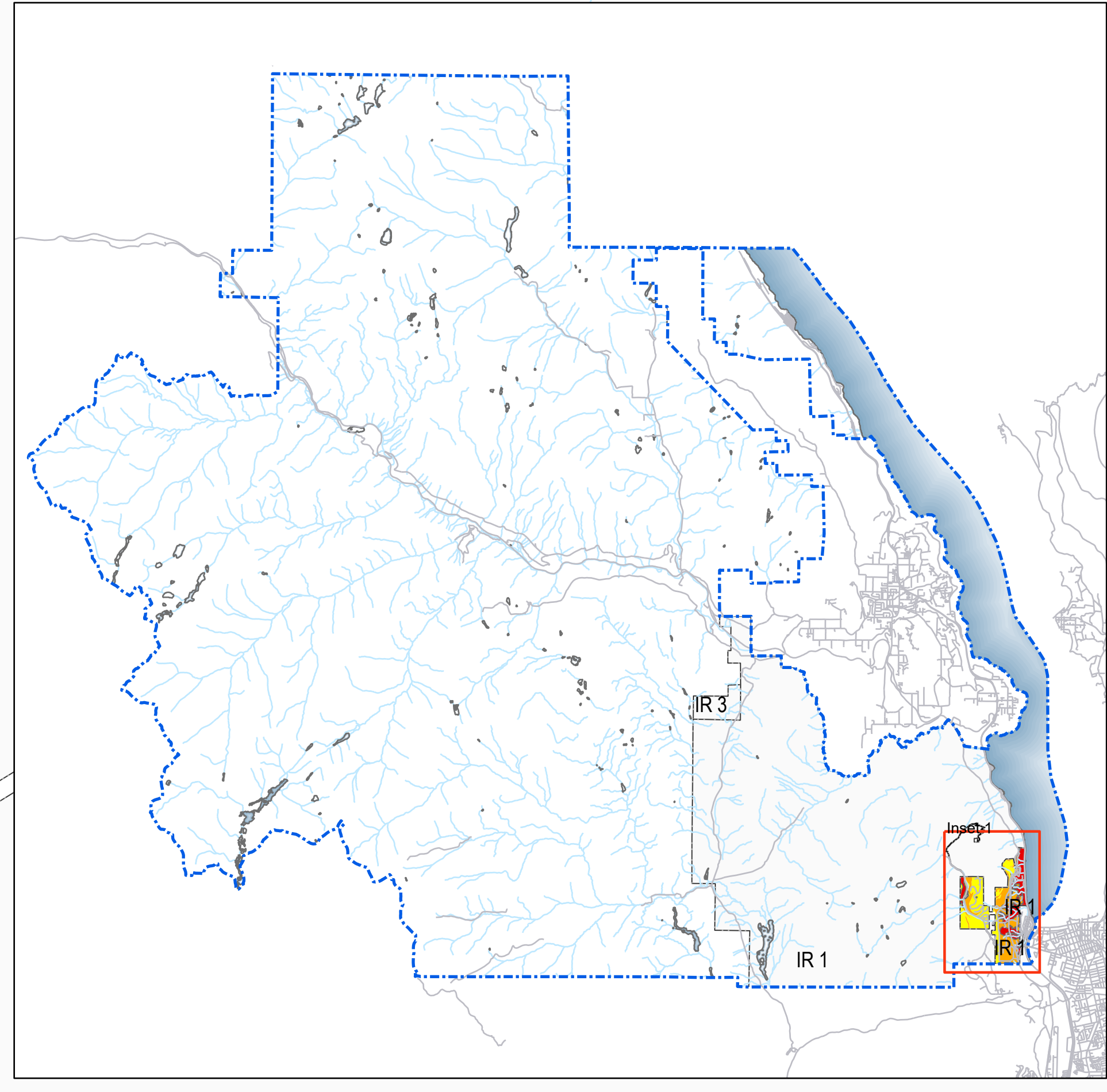
Chair _____

Chief Administrative Officer _____

Legend

Constraint Zone

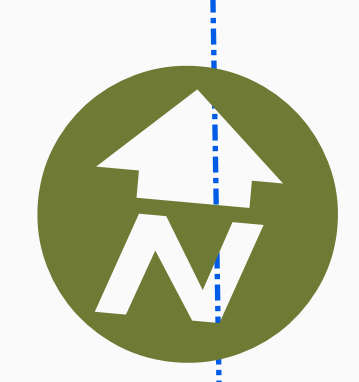
- A - Low
- B - Moderate
- C - High



IR 1

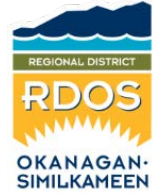
IR 1

IR 1



Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9
Tel: 250-492-0237 Email: info@rdos.bc.ca



Amendment Bylaw No. 2790.04, 2021

File No. F2021.018-ZONE

Schedule 'B'

Electoral Area "F" Official Community Plan (OCP) Bylaw No. 2790, 2018

Schedule 'G' (Hazard Lands – Floodplain Map)

[SEE NEXT PAGE]

DRAFT

Amendment Bylaw No. 2790.04, 2021
(F2021.018-ZONE)

DRAFT VERSION – 2021-10-07

Page 149 of 160

Page 11 of 11

ADMINISTRATIVE REPORT



TO: Planning & Development Committee
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Review of Temporary Use Permit (TUP) Application Fees

Administrative Recommendation:

THAT the Regional District's Fees and Charges Bylaw be amended to apply the following fees to Temporary Use Permit (TUP) applications:

- i) Application Fee: \$2,500.00 for "vacation rental" uses and \$1,250.00 for all other uses; and**
 - ii) Renewal Fee: \$2,500.00 for "vacation rental" uses and \$1,250.00 for all other uses.**
-

Purpose:

The proposed amendments to the Fees and Charges Bylaw is to update the fees to be applied to applications for a Temporary Use Permit (TUP), including a renewal, as part of the preparation of the 2022 Electoral Area Planning service budget.

Statutory Authority:

Under Section 462 of the *Local Government Act*, the Regional District may impose fees for an application for the issue of a land use permit.

The fee imposed under Section 462 "must not exceed the estimated average costs of processing, inspection, advertising and administration that are usually related to the type of application or other matter to which the fee relates."

Background:

When labour cost as well as the hard costs associated with processing a TUP (i.e. newspaper notification, venue rentals, postal charges, etc.) are accounted for, the average or "typical" cost to the Regional District is approximately \$2,500.00.

The current application fees of \$700.00 for an initial TUP application and \$350.00 for a renewal are insufficient to cover the costs being incurred, and have generally not been reviewed since 2003 (application fee) and 2015 (renewal fee).

At its meeting of July 22, 2021, the Regional District adopted amendments to the Development Procedures Bylaw to no longer mandate the scheduling of an APC meeting or PIM for "vacation rental" TUP renewals *prior* to Board consideration of an application. Since 2015, the "typical" TUP application has been for a "vacation rental" use.

It is assumed that this *may* have implications for the costs incurred by the Regional District in processing these types of TUPs, but there has only been limited experience with this new procedure to date and it is unknown how many renewal applications the Board may, or may not subsequently direct be considered at an APC/PIM.

At its meeting of September 23, 2021, the Planning and Development (P&D) Committee considered new fee options for TUP applications and subsequently resolved “that the Review of Temporary Use Permit Application Fees be postponed until the October 7, 2021 meeting.”

Analysis:

Administration considers there to be three general options available to the Board when reviewing the fees applied to Temporary Use Permit (TUP) applications: 1) Cost Recovery; 2) Cost Subsidization; and 3) Status Quo.

However, and further to the discussion at the P&D Committee meeting of September 23, 2021, the Board may wish to consider a hybrid approach, such as the following:

CURRENT TUP FEES		PROPOSED TUP FEES	
Application fee:	\$700.00	Application Fee:	
		a) Vacation Rental Use	\$2,500.00
		b) All other uses	\$1,250.00
Renewal fee:	\$350.00	Renewal Fee:	
		a) Vacation Rental Use	\$2,500.00
		b) All other uses	\$1,250.00

Administration recognizes that the Board previously reduced the fees for a “vacation rental” TUP application between 2015 and 2017 in order to encourage operators to formalize existing “vacation rental” uses by obtaining a permit.

As of July of 2021, the Regional District had issued approximately 40 TUPs for vacation rental uses (not including renewals) since 2015, with the majority of these TUPs having been issued within Electoral Area “E” (e.g. 52.5%).

This number of permits is understood to represent a potentially small percentage of overall number of vacation rental uses occurring within the electoral areas and it is not clear if continuing to offer subsidized application fees will encourage any further operators to come into compliance.

Administration considers that other options are likely required in order to ensure greater compliance, including an awareness/education campaign and pro-active enforcement. It is noted that the City of Penticton undertook a similar process between 2016-17 which increased the number of business licences issued for vacation rental uses by 264% (e.g. 34 to 124).

Given the consultation processes associated TUP applications (i.e. PIMs & APCs), the pro-active enforcement of “vacation rentals” could pose challenges with current staffing levels.

Conversely, Administration recognises that the TUP process offers an avenue for property owners who feel a land use regulation unduly burdens their use of a property to appeal to the Board for relief from such a regulation. An application fee that more closely approximates “typical” costs may be seen as creating a possible hardship in these situations.

It is also recognised that the current TUP fees applied by the Regional District are comparable with those charged by other local governments (see Attachment No. 1) and maintaining the status quo is available to the Board.

The status quo is, however, the least desirable option given the costs being incurred by the Regional District and the resultant deficits in the Electoral Area Planning budget. Advertising costs would likely increase in the 2022 Budget to be recovered by taxes.

Alternatives:

1. THAT the Regional District's Fees and Charges Bylaw be amended to apply a fee of \$1,250.00 for applications seeking a Temporary Use Permit (TUP) and \$1,250.00 for the renewal of a TUP;
2. Status quo.

Respectfully submitted:



C. Garrish, Planning Manager

Attachments: No. 1 – Summary of SILGA Member TUP Fees (Sept. 2021)

Attachment No. 1 – Summary of SILGA Member TUP Fees (Sept. 2021)

		TUP	TUP Renewal*
1.	Revelstoke	\$2,530.00	\$2,530.00
2.	Kelowna	\$1,915.00	\$1,915.00
3.	Clearwater	\$1,500.00	\$1,500.00
4.	Sun Peaks	\$1,500.00	\$1,500 - \$50.00
5.	Coldstream	\$1,500.00	\$200.00
6.	TNRD	\$1,500.00 - \$500.00	\$750.00 - \$250.00
7.	Vernon	\$1,400.00	\$1,400.00
8.	NORD	\$1,300.00	\$200.00
9.	CORD	\$1,200.00	\$1,200.00
10.	Salmon Arm	\$1,200.00	\$900.00
11.	Barriere	\$1,200.00	\$1,200.00
12.	Lake Country	\$1,100.00	\$730.00
13.	SLRD	\$1,000.00	\$800.00
14.	CSRD	\$1,000.00	\$650.00
15.	Summerland	\$1,000.00	\$500.00
16.	Penticton	\$880.00	\$440.00
17.	Kamloops	\$750.00	\$750.00
18.	Lillooet	\$750.00	\$750.00
19.	Oliver	\$700.00	\$350.00
20.	Keremeos	\$700.00	\$350.00
21.	RDOS	\$700.00	\$350.00
22.	West Kelowna	\$650.00	\$650.00
23.	Enderby	\$650.00	\$650.00
24.	Sicamous	\$500.00	\$500.00
25.	Logan Lake	\$450.00	\$450.00
26.	Merritt	\$400.00	\$400.00
27.	Chase	\$400.00	\$400.00
28.	Ashcroft	\$250.00	\$250.00
29.	Clinton	\$250.00	\$250.00
30.	Lumby	[TUPs not issued]	[TUPs not issued]
31.	Spallumcheen	[TUPs not issued]	[TUPs not issued]
32.	Armstrong	[TUPs not issued]	[TUPs not issued]
33.	Osoyoos	[TUPs not issued]	[TUPs not issued]
34.	Peachland	[TUPs not issued]	[TUPs not issued]
35.	Princeton	[not specified on website]	[not specified on website]

* if not specified in a bylaw, it is assumed renewal fee is same as initial application fee

ADMINISTRATIVE REPORT



TO: Planning & Development Committee
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Investigation of Agricultural Protection and Food Security

Administrative Recommendation:

THAT the Regional District abandon further investigation into increasing agricultural reserves and agricultural.

Background:

September 17, 2020 - the Board directed staff to investigate the impacts of increasing agricultural reserves and agricultural operations to increase food security.

Alternatives:

1. the preparation of an Agricultural Area Plan (AAP);
2. the preparation of a Food Security Plan; or
3. formally request that the Agricultural Land Commission (ALC) review the boundaries of the Agricultural Land Reserve (ALR) in the RDOS.

Analysis

Option No. 1 – Agricultural Area Plan (AAP):

The purpose of an Agricultural Area Plan (AAP) is to identify and address farming-related issues and support the development of policies to strengthen the agricultural industry and improve a community or region's long-term agricultural sustainability.

AAPs may be undertaken for portions of a regional district's jurisdiction (i.e., individual Electoral Areas), or region-wide and, in the past, the Regional District has undertaken two AAPs, including one for Electoral Area "C" (2008) and another for Electoral Area "A" in partnership with the Town of Osoyoos (2011).

These resulted in subsequent OCP updates that advanced the protection of farmland in those communities, and lessons that were shared for updating OCPs in other electoral areas. These AAP's were developed with community-based steering committees.

Other regional districts, such as the Regional District of North Okanagan (2015), Regional District of Central Kootenay (2011), and Regional District of East Kootenay (2014) have developed regional agricultural plans. Similarly, the Capital Regional District (2016), and District of Saanich (2018) have completed Agriculture and Food Security Plans.

The Electoral Area “A” AAP was partially funded by the Investment Agriculture Foundation of BC (amounting to \$15,000). The contract amount to hire TRUE Consulting Group for the Electoral Area “A” Agricultural Area Plan was \$27,660.00, excluding HST. Based on a final report to the Investment Agriculture Foundation of BC, the total project cost was \$36,500.00.

Region-wide agricultural area plans may require more funding. The Regional District of North Okanagan undertook a region-wide AAP at a cost of \$76,250.00.

Developing an AAP would support updates to the RGS and OCPs to further protect agricultural land across the region by identifying the current state of agricultural lands in the RDOS, agriculturally capable and suitable lands for potential re-designation, trends in agricultural land uses within the region, current issues faced by local farmers, and opportunities to strengthen farming in the long-term.

Option No. 2 – Food Security Plan:

The purpose of a food security plan is to identify issues relating to availability and access to food within communities, and establish goals, objectives, and strategies to address these issues. Food security plans address local food systems, which includes the “production, processing, distribution, consumption and waste management of food”.

While there are links between agricultural land use planning and food security planning, it may be more appropriate to address food security in a separate plan. A food security plan would need to be contracted out to a consulting company for development.

Other local governments have undertaken food security planning, including the City of Revelstoke (2014), Town of Oliver (2018) and the City of Penticton (in progress).

Correspondence with the Town of Oliver staff indicated that the Town had accessed a Community Food Action Initiation (CFAI) grant through the Interior Health Authority (IHA) which matched the Town’s three year commitment of \$15,000 per year for a total of \$90,000 (i.e., \$45,000 provided by the Town and \$45,000 provided by IHA).

Additional funding was also provided by the Town of Oliver following the completion of their plan to maintain their food security program (e.g., hiring a community development coordinator).

Similarly, City of Penticton committed a total project budget of \$90,000, with three years of funding through CFAI.

Option No. 3 – ALR Boundary Review:

ALC staff would need to be contacted to determine the proper procedure to request a boundary review and Commission expectations regarding financial contributions from the Regional District to complete such a boundary review.

Further, any boundary review would likely need to be supported by further research on the agricultural capability and suitability of lands within these Electoral Areas, whether it be through working with the Ministry of Agriculture, Food and Fisheries to conduct an ALUI, or by hiring an agricultural consulting company.

Summary:

The Regional District is currently working on OCP Reviews for Electoral Areas “E” and “G”, with Electoral Area “C” in the wings and is also undertaking an Update of the Regional Growth Strategy (RGS). Given these work plan commitments, there is seen to be limited capacity to undertake an AAP, Food Security Plan or ALR Boundary Review in 2022.

With respect to resource allocation, updating OCP bylaws to reflect agricultural protection and food security may be more effective than undertaking the creation of additional, separate plans.

Respectfully submitted:



Shannon Duong, Planner I

Endorsed by:



C. Garrish, Planning Manager



TO: Planning & Development Committee
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Director's Motion – Cannabis Retail Store Application Moratorium (Electoral Area "D")

Administrative Recommendation:

THAT a "moratorium" on cannabis retail applications in Electoral Area "D" not be pursued.

Purpose:

The purpose of this report is to provide the Board with an overview of its legislative and legal authority regarding a Director's Motion "that there be a moratorium on cannabis retail applications in Electoral Area "D" pending the review and potential amendment coming from that review."

Background:

August 19, 2021 - a Director's Motion that "there be a moratorium on cannabis retail applications in Electoral Area "D" pending the review and potential amendment coming from that review" was referred to Administration for analysis of the feasibility, legislative compliance and budget impacts.

September 2, 2021 - the Planning and Development (P&D) Committee referred the matter back to administration to present options that included the moratorium to be affective as intended but to also include options that include policy regarding process."

September 23, 2021 - the P&D Committee deferred consideration of the *Electoral Area "D" Update of Retail Cannabis Zoning Regulations Policy*.

Statutory Authority:

Under Section 21 of the *Cannabis Control and Licencing Act*, the "General Manager", being a person appointed by the Minister under the *Public Services Act*, is vested with the power to issue, renew, transfer or amend licences for the sale of cannabis products.

Under Section 22 of the Act, an application to sell cannabis products must be submitted to the General Manager, through the Liquor Control and Regulations Branch (LCRB), in an acceptable form.

Under Section 33(2) of the Act, the "General Manager" must notify the applicable local government of an application for a cannabis retail store licence in their area.

Under Section 33(1) of the Act, the "General Manager" is prevented from issuing a license for a Cannabis Retail Store (CRS) unless the local government "for the area in which the establishment is proposed to be located or is located gives the [LCRB] a recommendation that the licence be issued or amended." If a local government chooses not to make a recommendation, this would end a licence application.

Under Schedule 9 of the Regional District's *Development Procedures Bylaw No. 2500, 2011*, upon receipt of a referral from the LCRB for a cannabis retail store, Administration will schedule the proposal for consideration by the Board.

Delegation to Staff:

Under Section 34(3) of the *Cannabis Control and Licencing Act*, the Board "may delegate its powers and duties under section 33 of this Act."

If a board makes a delegation under Section 34(3), "an applicant whose application is the subject of comments and recommendations made by a delegate has the right to have those comments and recommendations reconsidered by the board."

Analysis:

Further to the direction provided by the P&D Committee at its meeting of September 2, 2021, a draft Policy regarding the processing of referrals from the Liquor Control and Regulations Branch (LCRB) for retail cannabis store licence applications in Electoral Area "D" has been prepared and is included at Attachment No. 1.

The policy is proposing that, upon receipt of a referral from the LCRB the Regional District will advise the Branch that it is not going to comment on the proposal. The draft policy is intended to be in effect for a period of 15 months in order to allow for the review of zoning regulations in Electoral Area "D" to be completed.

Under the *Cannabis Control and Licencing Act*, the Board already has full authority to not provide comment on a cannabis retail store (CRS) proposal, thereby ending an application. A "moratorium" is, therefore, seen to be unnecessary and may represent an unlawful delegation of authority to staff.

Under the requirements of the *Cannabis Control and Licencing Act*, it appears that the Board, or its delegate, must consider and make a decision on every application that is referred to it by the LCRB. This would then preclude the Board from making a decision in advance — through a "moratorium" — about what it will do with every application.

Administration notes that Section 38(2) of the *Liquor Control and Licencing Act* specifically provides for a local government to indicate, "in writing to the general manager that it does not wish to receive notice under subsection (1) of applications or a class of applications." That same option is not provided in the *Cannabis Control and Licencing Act*. We interpret that to mean that the province is expecting local governments to provide a response on every CRS application referred to it.

While this may seem unnecessary as well as an inefficient use of available resources, if the result will always be a denial by the Board, it would be prudent that the Board "consider" each application and deny it, rather than refuse to consider, or decide in advance to deny every application through a "moratorium" and potentially have such a decision open to challenge.

Alternative:

- .1 **THAT the Electoral Area "D" Update of Retail Cannabis Zoning Regulations Policy be approved**

Respectfully submitted:



C. Garrish, Planning Manager

Attachment No. 1 – Draft Board Policy
(Electoral Area “D” Update of Retail Cannabis Zoning Regulations)

**REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BOARD POLICY**

POLICY: Electoral Area “D” Update of Retail Cannabis Zoning Regulations Policy

AUTHORITY: Board Resolution No. _____ dated _____.

AMENDED: Board Resolution No. _____ dated _____.

POLICY STATEMENT

The Regional District of Okanagan-Similkameen will not provide comment or a recommendation to the general manager, appointed under Section 4 of the *Cannabis Control and Licencing Act*, in response to referrals on any prescribed class of licence authorizing the sale, promotion or supply of cannabis for retail purposes in Electoral Area “D” of the Regional District of Okanagan-Similkameen, for a period of 15 months commencing on September 23, 2021.

PURPOSE

At its meeting of August 19, 2021, a Director’s Motion that “there be a moratorium on cannabis retail applications in Electoral Area “D” ...” was carried.

The purpose of this policy is, therefore, to ensure that no new cannabis retail stores are licenced under the *Cannabis Control and Licencing Act* prior to the implementation of new zoning regulations (estimated to occur prior to December 23, 2022) in the applicable Electoral Area “D” Zoning Bylaw.

RESPONSIBILITIES

Planning Department.

PROCEDURES

Upon receipt of a referral from the Liquor Control and Regulations Branch (LCRB) that comprises an application seeking the granting of a licence for a cannabis retail store in Electoral Area “D”, the Regional District will advise the LCRB that it will not be providing comments or a recommendation on the application.

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
Community Services Committee
REGULAR AGENDA



Thursday, October 7, 2021
10:30 am

Pages

A. Approval of Agenda

RECOMMENDATION

THAT the Agenda for the Community Services Committee Meeting of October 7, 2021 be adopted.

B. Arts and Culture with the Okanagan-Similkameen Region - For Information Only

Delegation from South Okanagan Arts Society

2

C. Adjournment

RECOMMENDATION

THAT the meeting adjourn.

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: October 7, 2021

RE: **Arts and Culture with the Okanagan-Similkameen Region - For Information Only**

Purpose:

The South Okanagan Similkameen Arts Society (SOS Arts) has completed an Environmental Scan of Arts and Culture in the Regional District of Okanagan-Similkameen and has submitted this document to the Regional District for information. Additionally, SOS Arts has suggestions on how to proceed with the Environmental Scan to further support and advance the Arts and Culture sector for the future.

Reference:

- An Environmental Scan of Arts and Culture in the Regional District of Okanagan-Similkameen (Appendix A)
- South Okanagan Regional Growth Strategy (Bylaw 2770, 2017)
 - o Objective 4-C: Support regional arts and culture and educational opportunities
 - o Work with agencies, stakeholders and the arts and culture community to develop a Regional Arts and Culture Strategy

Business Plan Objective:

- Key Success Driver 3: Build a Sustainable Region
- Goal 3.2 To develop an economically sustainable region
- Objective 3.2.3 By Reviewing Long-Range Planning Documents

Background:

In March 2020, the South Okanagan Performing Arts Centre Society (SOPAC) was renamed the South Okanagan Similkameen Arts Society (SOS Arts) and commenced a scan of the regional arts and culture landscape. The scan intended to:

- Help the SOS Arts understand how it can further define its mandate and better serve the region
- Provide the community with a comprehensive inventory of stakeholders, including organizations, individuals, businesses and government
- Identify the key strengths and challenges of the arts and culture sector across the region
- Provide a valuable tool to help inform decision-making for the benefit of all stakeholders

The scan was conducted by volunteer members of the SOS Arts Board. No public funding was sought for the initiative.

- The Environmental Scan included the following:
- Identification of hundreds of stakeholders who deliver and support arts and culture services:
- Cultural and heritage societies
- Numerous festivals and cultural initiatives
- Comprehensive list of regional artists, facilities, festivals and community events
- Trends and factors in the arts and culture sector
- The nature of the regional economy and tourism
- Regional demographics
- Role of the regional and municipal governments in support of arts and culture

Respectfully submitted:

“Augusto Romero”

Regional Recreation Manager

An Environmental Scan of Arts and Culture in the Regional District Okanagan Similkameen

DRAFT v3.0

Prepared by the
South Okanagan and Similkameen Arts Society (SOS Arts)
sosarts.ca

September 23, 2021



Summerland Cultural Centre and Art Gallery



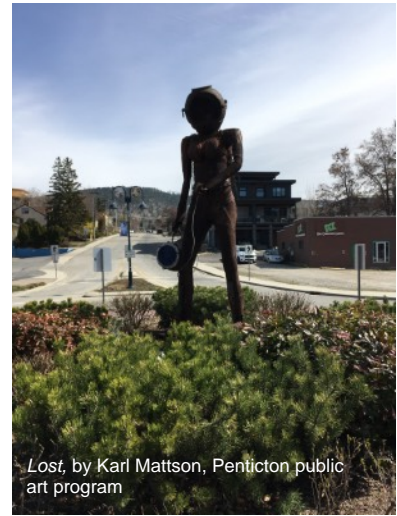
Leir House Cultural Centre, Penticton



Okanagan Salmon Chief, Oliver, Osoyoos Indian Band



The Dream Cafe, Penticton



Lost, by Karl Mattson, Penticton public art program



The Lloyd Gallery, Penticton



Venables Theatre, Oliver



Shatford Centre, Penticton - Former home of the Okanagan School of the Arts



Osoyoos mural by Qoyllur at new "Curator" shop



The Oliver movie theatre



Voice of Mother Earth by Stewart Steinbauer, Summerland

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THE INVENTORY (See separate document)

Appendices

1. Regional Artists
2. Creative Places and Spaces
3. Wineries / Cideries / Micro Breweries / Micro Distilleries
4. Festivals and Community Events
5. Community Arts Councils
6. Results of SOPAC Workshops

EXECUTIVE SUMMARY

The environmental scan of the the arts and culture sector within the Regional District Okanagan Similkameen (the Region) has its origins in the transitional Board of the South Okanagan Performing Arts Centre Society (SOPAC). The Society had discontinued its campaign to build a regional performing arts centre within the City of Penticton and a transitional Board subsequently consulted the community through two moderated workshops in late 2019 and early 2020. The workshops were intended to help identify needs and challenges facing the sector across the Region. At its March 2020 Annual General Meeting, the SOPAC Society was renamed the South Okanagan Similkameen Arts Society (SOS Arts), and the Board of Directors and membership resolved to undertake a scan of the the regional arts and culture landscape as a way

- To help SOS Arts understand how it can further define its mandate and better serve the region (in a way that is complementary and does not duplicate programs of existing organizations).
- To provide the community with a comprehensive inventory of stakeholders, including organizations, individuals, businesses and government.
- To identify the key strengths and challenges of the arts and culture sector across the Region.
- To provide a valuable tool to help inform decision-making for the benefit of all stakeholders.

The scan was initiated in the spring of 2020 and conducted by volunteer members of the SOS Arts Board. No public funding was sought for the initiative. Through the course of its research, SOS Arts has identified hundreds of stakeholders working to deliver and support arts and culture programming and services, including independent artists, volunteers, grass roots and professional groups, arts organizations, facilities, cultural and heritage societies, and numerous festivals and cultural initiatives. The scan also documents key trends and factors impacting the regional arts and culture sector, and identifies areas worthy of further investigation. It explores the ongoing impact of the COVID pandemic, the nature of the regional economy and tourism, regional demographics, the role of the regional and municipal governments in support of arts and culture, and the nature and roles of existing cultural organizations.

Several key findings and themes have emerged from our research. The South Okanagan is a region of exceptional potential for arts and culture. As a well established tourism destination that welcomes almost 1.5 million visitors each year, the Region is renown for its favourable climate, agriculture and viniculture, natural beauty and recreational attractions. It is strategically located on the border of the United States, only half-a-day away from Vancouver and the Lower Mainland by car, or only one hour by air. It also benefits from proximity to a large urban centre, Kelowna, and its international airport to the north. Furthermore, the population is growing and this growth may be accelerated by the COVID pandemic, as people move away from large crowded centres like Vancouver where housing prices have become prohibitive for young and middle-class families.

The Region is also evolving as a destination for arts and culture. It is home to hundreds of professional visual artists, whose works adorn the walls of private and public galleries across the Region. Major attractions like large concerts at the South Okanagan Entertainment Centre, annual festivals, and Indigenous cultural centres, serve to reinforce the region's position as a tourism destination. The presence of First Nations communities, culture and businesses enrich the region and attract international visitors. A burgeoning viniculture industry (along with micro breweries and distilleries) is also raising the bar for culinary and cultural experiences and providing greater opportunities for artists—as is the case with the new District Wine Village under construction along Highway 97. The Region is also attracting savvy cultural workers and entrepreneurs, which has driven the creation of new cultural initiatives like the Route 97 Culture music circuit, the 97 South Song Sessions, the Summerland Cultural Coalition, and the proposed Wide Arts National Association cultural corridor in Osoyoos, and led to innovative programming at galleries, including the Penticton Art Gallery, and community arts councils. In Princeton, the municipal government is working on rebranding a community that is set for growth. The town, in collaboration with the community, local societies and the Princeton Arts Council, is committed to enhancing and expanding cultural attractions like the annual Traditional Music Festival set to be re-established this year. Finally, hundreds of volunteer workers contribute to the success of the cultural sector, with over 200 volunteers serving on the boards of community arts councils and cultural societies alone.

Despite all of the above, the arts and culture sector in the Region is facing a variety of significant challenges, whether environmental, economic, organizational or structural. The total impact of the pandemic is still unquantified. It has threatened the livelihood of performing artists and forced the closure of independent organizations and businesses. It is unclear whether the fallout will be long lasting or if the relief and recovery supports provided by governments will result in a quick turnaround. Climate change and wildfires have served to suppress tourism levels in recent years, which in turn has impacted the number of tourist dollars spent at festivals, venues and special events. The Region's geography and size (over 10,000 square kilometers) also plays a role in the development of the arts and culture sector. The far flung communities across the region are accessible by private vehicle, but very few public or private transportation conveyances are available to help move residents and visitors around the Region. Recent additions of public transit and private bus routes from Kelowna to Osoyoos, although sparse, represent an encouraging trend.

Among the concerns raised during the SOPAC/SOS Arts workshops, was the need for greater coordination and collaboration amongst/between cultural groups across the Region (characterized as “fragmentation”), and a desire for better and more comprehensive promotion of local cultural events and programming. While there are many online promotional sites, they are disconnected and uncoordinated. *“There is so much going on that we don't even know about.”*

The scan reveals that the “ecology” of the cultural sector is somewhat unbalanced. Venue offerings are rather uneven, with few independent local venues in each of the towns dedicated to the performing arts, and no venues serving audiences of between 500 and 1,000. The community arts councils and cultural societies are rich in volunteer leadership but rather under-resourced. Most lack paid staff. Overall, there are relatively few paying jobs for professional cultural workers. Furthermore, there is only one post-secondary accredited program in the arts in the Region, and no university-level programs providing a source of trained cultural workers.

Research has also revealed a lack of available data on the economic impact of arts and culture. While individual attractions like the South Okanagan Entertainment Centre and the Peach Festival have recently prepared economic impact reports, there is relatively little data on investment and economic output of the arts and culture sector overall. Such data, along with relevant benchmarks and metrics are essential for strategic and business planning and the further development of the sector. This points to an opportunity for the Region to work with municipalities, arts councils, funders, chambers of commerce, community foundations, tourism associations, Indigenous communities and other stakeholder groups to chart the future development of the sector.

Taken all together, the findings of the environmental scan indicate that the cultural sector in the Region is at an inflection point. Key drivers, including tourism, the continued resurgence of Indigenous communities, potential population growth, and the growing viticulture industry continue to push the region’s economy forward. Current conditions point to a need for leadership at the regional level to help knit the disparate cultural communities, initiatives and programs of the region together. This may be addressed, in part, by the creation of a comprehensive regional cultural plan as stated in the goal of the RDOS bylaw 2770 to “*Work with agencies, stakeholders and the arts and culture community to develop a Regional Arts and Culture Strategy.*” Current conditions and the likelihood of a recovery following a lengthy and highly disruptive pandemic point to a time of exceptional opportunity for arts and culture in the region.

UPDATE

The circumstances for arts and culture across the Region continue to evolve, and the COVID pandemic continues to impact the cultural sector. Since the last update of this Scan in July, the Region has seen the cancellation of major events, including SOEC’s fall concert season, the Penticton Rib Fest, the Ironman Competition, the Summerland Festival of Lights, and more. The Peach Festival was downsized (the Mini Peach). Conversely, the District Wine Village, still under construction in June is now fully open and has been presenting local and touring performing artists to audiences eager to return to live entertainment, while the Summerland Art Gallery underwent a renovation. Osoyoos has tabled a draft of its new Community Plan 2040 (<https://www.osoyoos.ca/content/official-community-plan-ocp>), and the City of Penticton has prepared an Asset Investment Management Plan for public consultation. (See <https://www.penticton.ca/city-hall/news-alerts/report-makes-four-recommendations-replace-or-modernize-civic>

[assets-over-next](#)) The plan proposes to reinvest in cultural assets, with a new cultural centre and re-investment in the Cleland Theatre. Stats Can has released its 2020 report on the impact of COVID on the arts and culture sector (<https://www150.statcan.gc.ca/n1/pub/45-28-0001/2021001/article/00033-eng.htm>), which reveals the significant negative impact of the pandemic on all cultural industries.

INTRODUCTION

As a result of the second of two moderated workshops held in late 2019 and early 2020, the SOS Arts Society (formerly SOPAC) resolved to refocus its efforts away from a performing arts facility and focus on a review of the current status of arts and culture in the region with the following resolution:

To undertake an environmental scan of the regional arts landscape to inform the future direction and priorities of SOS Arts.

The objectives of a scan include the creation of a comprehensive inventory of cultural stakeholders, the identification of key strengths and challenges of the arts and culture sector across the region, and to provide a valuable informational tool to help support the decision-making of all stakeholders. The scan was conducted by the volunteer directors of SOS Arts. Input was sought in a round of introductory conversations with stakeholders (see Stakeholder Conversations later in this document).

Definition of Environmental Scan

Environmental scanning is a method for identifying, collecting, interpreting and structuring information about a given sector, industry or community in support of an organization's decision making and strategic planning.

Definition of Culture

The Organization of American States declares

"The fact that there is no single all-encompassing definition of culture in Canada is attested to by the observation of the Parliamentary Standing Committee on Heritage (1999) that after two years of deliberations, the Committee was no nearer to a consensus on the definition of culture. The oldest and narrowest definition encompasses only the high professional arts and classical disciplines. The modern definition of culture in Canada comprises the arts and heritage but also broadcasting, the cultural industries and new media, and more recently, the UNESCO-inspired "ways of life." This evolving definition corresponds closely to the Council of Europe's four cultural principles: the promotion of identity and diversity, and support for creativity and participation in cultural life."

(Source: <https://www.oas.org/oipc/espanol/documentos/pol%C3%ADticas culturales escanada.pdf>)

For the purposes of Statistics Canada's framework, the definition of culture is:

"Creative artistic activity and the goods and services produced by it, and the preservation of heritage. This definition casts the net loosely around the meaning of culture, using groupings (called domains) which categorize culture goods and services, industries and occupations conceptually to bring precision to the

framework. **No single criterion is available to determine which goods and services are in scope for culture; a variety of criteria is necessary to pin down those that meet the definition.**" (Source: <https://www150.statcan.gc.ca/n1/pub/87-542-x/2011001/section/s3-eng.htm>)

For the purposes of this environmental scan, we will define culture and the cultural sector as all creative and interpretative activity commonly considered to be within the realm of the arts, whether professional or non-professional, and the goods and services, institutions, organizations, supports, resources, programs, as well as the societies, groups, and individuals that create, produce, present and promote arts and culture. Also included are the ethnic, linguistic, traditional, customary, hereditary, historic or social practices of communities, societies or individuals, along with the built heritage and places that preserve and reflect the cultures of these communities, societies or individuals.

Taking Stock

The bulk of this document is devoted to documenting the many and varied facets of the arts and cultural sector across the region. The scan is complemented by a large annex — the "Inventory" — and its appendices, containing comprehensive data on the various and diverse facets of arts and culture across the region. The lists of artists, cultural groups and facilities, while lengthy, are almost certainly incomplete and it is hoped that the community will work with us to ensure that it is as comprehensive and accurate as it can possibly be.

In the course of its research, SOS Arts has documented a diverse and large set of cultural stakeholders. In summary, we have identified

- Over 200 practicing artists, artist groups and artists studios in the visual arts and crafts.
- Over 100 creative places and spaces, including cultural centres, heritage sites, galleries, facilities, venues and individual studios.
- 10 libraries with program facilities in all major centres in the region.
- Over 30 annual festivals and major community events.
- Five community arts councils and a wide array of arts service groups, including at least 28 cultural societies.
- Over 200 volunteer directors on the region's community arts councils and arts and heritage societies.
- A broad range of professional and grassroots programs and cultural offerings.
- Nearly unlimited opportunities for community members to participate in cultural programming, creative and educational activities.

The scan includes a review of trends and factors impacting arts and culture at national, provincial and regional levels. It explores the commitment of the region and its municipalities to culture as expressed in their bylaws and community plans. It summarizes the current state of the region's community arts councils and arts/heritage

societies; and documents the facilities, services and supports that underpin the cultural sector. Finally, the scan explores the current conditions for arts and culture in the region and identifies the key challenges and opportunities facing the sector today.

Methodology

The bulk of the information contained in the current draft version of the scan document was acquired through documentation research conducted online by volunteer SOS Arts members and the data has been subsequently reviewed during frequent meetings with the SOS Arts Board and advisors. Input from the community at the initial SOPAC workshops, along with preliminary conversations and interviews with stakeholders from all corners of the region (see the section Stakeholder Conversations) have helped to provide insights and context for the information gathering process.

A preliminary draft version of the scan was circulated to selected stakeholders for feedback in May and June. At the time of preparation of the current version of the scan, feedback continues to come in. SOS Arts will also invite input from the broader community and incorporate this input following distribution of this version of the scan during the summer months. It is our hope that the scan will serve as the basis for one or more structured conversations at formal and informal gatherings with stakeholders.

SOS Arts

Information on the SOS Arts team can be found online at <https://sosarts.ca/board/>. SOS Arts is a registered charitable organization. Contact us at admin@sosarts.ca.

TRENDS IN THE NATIONAL AND PROVINCIAL CONTEXT

Providing a full account of the trends and factors impacting the arts and culture sector at the federal and provincial levels and the socio-economic environment in which they operate is well beyond the scope of this scan. However, a few key factors and trends provide important context for circumstances in the region. These include:

- The COVID-19 pandemic
- The economy
- Digital transformation/technology
- Globalization
- Indigenous relations
- Climate change

THE COVID-19 PANDEMIC

In March of 2020, the Province of B.C. declared a public health emergency in response to the pandemic.

“Hotels, restaurants, transportation, arts, sports, and culture activities were either immediately closed or severely curtailed. Despite some re-opening over the summer months, the tourism industry could see a reduction of 69 percent down to \$6.7 billion in revenues in 2020.”

(Source: https://www2.gov.bc.ca/assets/gov/tourism-and-immigration/tourism-industry-resources/tourism_task_force_final_report_-_dec_9.pdf)

Since that declaration, the pandemic has become the most important factor impacting the arts and culture sector. The restrictions it continues to place on social and business activity, along with the uncertainty it has created for artists, organizers and consumers of arts and culture, threaten to undermine artists' and cultural workers' livelihood and the viability of the very organizations that support them. Furthermore, despite claims of pent up demand, it is uncertain when or if culture-goers will have the confidence to return en masse to live events and indoor spaces following the pandemic. According to the *Arts Response Tracking Study* commissioned by Business and the Arts and Canada's National Arts Centre

- Only 5% of culture-goers have gone to live events since the start of the pandemic.
- 8% of culture-goers plan to never return to live events.
- Culture-goers increasingly mention a vaccine as a precaution for early return to in-person arts/cultural performances and exhibitions.
- Safety and being exposed to the COVID-19 virus is the main obstacle mentioned by all culture-goers as obstacles to participation for both indoor and outdoor events.
- Most culture-goers who plan to return to live events even after being vaccinated will still feel uncomfortable doing so unless mitigation measures, like social distancing and mask wearing remain in place.

(Source: *Arts Response Tracking Study - Wave 3 conducted by Nanos for Business and the Arts in 2020* - <http://www.businessandarts.org/resources/arts-response-tracking-study/>)

The *Arts Response Tracking Study* includes further details regarding the timing for return to attendance at live events and indoor cultural spaces according to the artistic discipline or type of venue in question. Cultural organizations, venues and festival operators would be wise to consult these findings.

Thanks to the proliferation of increasingly transmissible COVID variants, the timeline for recovery threatens to stretch out indefinitely. With each passing season, the likelihood of full recovery for individual artists and organizations--in particular those dependent upon bricks and mortar facilities, live audiences and touring circuits--diminishes. And while governments, community foundations, service groups and other resource centres have intervened with targeted relief and recovery funding and programs, it is unclear how much longer they will be able to sustain their support in the face of a protracted pandemic.

It is worth noting that not all artistic disciplines or cultural activities are impacted in the same way. For example, the live performing and touring arts are particularly vulnerable, while the TV and film industries may be significantly less so.

The Penticton Herald posted a related article in late January.

Blockbuster year for Okanagan film industry

Movie producers pumped a record-setting \$48 million into the region's economy last year, according to figures released Thursday by the Okanagan film commissioner. (...) He attributed the local film industry's strength to its early adaptation to COVID-19 protocols, which resulted in a requirement for health and safety officers on all sets now, and the relatively loose public health restrictions in B.C. compared to other places. The Okanagan Film Commission received \$250,000 in funding last year from three regional districts and the Boundary Economic Development Commission. Its contribution from the RDOS is tentatively set to hold steady at \$35,000.

(Source: http://www.pentictonherald.ca/news/article_542723a8-5c29-11eb-8d7d-571224d06134.html)

More on the relative impact of the pandemic for the various cultural industries is provided in the following article from Business Intelligence for BC (BIV).

B.C.'s recovery economy: COVID complications mixed for B.C.'s creative industries

Film and TV sectors upbeat; music, the arts, publishing still struggling with new normal

The claws of the pandemic dug deep into B.C.'s creative industries in March 2020. Film and TV productions immediately went on hiatus, bookstores that authors and publishers relied on were forced to shutter temporarily and bookings at venues for major artists on tour as well as local musicians were wiped clean. But amid the immediate economic paralysis, all corners of the West Coast film and TV sector – labour unions, studios and industry associations – developed a pandemic guide to kick-start production last summer. By the fall, the industry was hitting new records in activity as competing jurisdictions in the U.S. and elsewhere still grappled with COVID-19.

In literature and publishing, bookstores adapted to closures with online sales and curbside pickups before being able to reopen in the spring. The measures helped keep afloat B.C. authors and publishers who'd been grappling with lost sales without customers having the opportunity to thumb through titles as they had just months earlier. Approximately 20 magazines have folded in B.C. since the pandemic, while 300 to 325 remain in operation, according to the Magazine Association of BC (MagsBC).

In music, challenges remain ahead for local musicians whose livelihood depends on touring and live gigs. But many artists have turned to recording studios to create new music as they bide their time while awaiting the return of touring. The local studios have in turn benefited from this trend, with some drawing recording artists from outside B.C.

In theatre and dance, the Greater Vancouver Professional Theatre Alliance (GVPTA) reports 53% of organizations that responded to a December 2020 survey are under the threat of closure, while 2% have already closed.

In film and TV, as the industry reopened in earnest over the summer, IATSE reported that aggregate third-quarter payroll and person days were at about 80% of 2019's Q3 numbers. By 2020's fourth quarter, aggregate payroll and person days for workers in the film and TV industry were at 120% of 2019's Q4 numbers. (Source: Article by Tyler Orton - January 2021 - <https://biv.com/article/2021/01/bcs-recovery-economy-covid-complications-mixed-bcs-creative-industries>)

In a letter delivered to the Minister of Finance in March of 2021, the Canadian Live Music Association asks for sector specific emergency relief and warns of dire consequences for music venues and professional musicians. The letter advises that

Live music venues have experienced an average of 92% revenue loss since March 2020... (and that) We have lost over 85 primary venues alone — spaces that incubate and foster the talent of tomorrow, create jobs, and enhance quality of life in our cities, towns and neighbourhoods.

(Source: <https://mailchi.mp/canadianlivemusic/federal-budget-recommendations-from-canadas-live-music-sector>)

Of course, tourism and the arts and culture sector in BC are inextricably intertwined. A report by the province's tourism task force in December of 2020 highlights the uncertainty created by the pandemic.

The Future of Travel: Positioning B.C. to Accelerate Recovery and Growth - Final Report of the Tourism Task Force

(...) the pandemic has left the tourism industry in a precarious position; many businesses are now facing closure as reserve funds and credit run out, and thousands of members of the workforce are unemployed. Funding is required NOW to ensure that there is a tourism industry for the workforce and visitors to return to. Our discussions with business owners and workers were productive, but many are feeling desperate. A large number of tourism operators and jobholders have fallen through the cracks of previous/current relief programs. People love the industry and want to build careers in tourism but are worried there won't be work for them when tourism recovers.

(Source: https://www2.gov.bc.ca/assets/gov/tourism-and-immigration/tourism-industry-resources/tourism_task_force_final_report_-_dec_9.pdf)

THE ECONOMY

The economic impact of arts and culture has been studied and quantified on numerous occasions and the impact is – or can be – enormous. However, despite this impact, arts and culture are often disregarded as a powerful economic driver in many regions, especially where other more well established industries have been well entrenched. Also, although some companies and individuals involved in arts and culture have achieved both critical and economic success, this is not the case for most artists and those in the region are no exception.

Just north of us in Kelowna, a 2019 economic impact study of the creative sector

...states that the sector has more than doubled in size from 2009 to 2018. Additionally, the study found that 1.5 million people per year, or just over 4,000 people per day on average, attend some type of cultural facility or event in Kelowna. Though the scope of the study did not include related tourism impacts,

the consultant did extrapolate survey responses and estimated that 30% of public attendees at creative sector facilities and events are tourists. The report further suggests that the Kelowna creative sector supports \$40 million of tourist spending. (Sources: <https://www.tourismkelowna.com/industry/industry-news-centre/post/kelowna-creative-sector-economic-impact-study-released/> and https://www.kelowna.ca/sites/files/1/docs/community/Culture/kelowna_creative_sector_economic_impact_study_-_web_version.pdf)

Despite the fact that culture [contributed over \\$53 billion](#) to Canada's economy in 2017, professional artists continue to be among the most economically disadvantaged, with the majority earning below the poverty line.

A 2019 report from Hill Strategies illustrates the low economic status of artists and cultural workers in Canada.

MEDIAN INCOME OF ARTISTS IS 44% LOWER THAN ALL CANADIAN WORKERS

As shown in Figure below, the median individual income of Canada's artists is \$24,300, or 44% less than all Canadian workers (\$43,500). Cultural workers have median individual incomes of \$41,000, or 6% less than all workers.

Figure ES3: Median individual incomes of artists, cultural workers, and all workers



Source: 2016 census custom data request. Income figures relate to the 2015 calendar year.

(...) The main component of total income, for most workers, is employment income (including wages, salaries, and self-employment earnings). A typical artist has employment income of \$17,300, a figure that is 56% lower than the median of all workers (\$39,000). For the first time in 2016, household income statistics were requested from the census. The findings from this analysis are somewhat less dire than the individual income statistics. A typical artist has a household income of \$57,800, 33% lower than all workers (\$86,500). (Source: <https://hillstrategies.com/resource/statistical-profile-of-artists-in-canada-in-2016/>)

THE GIG ECONOMY

The advent of the gig economy has added new opportunities and challenges for artists. The gig economy is based on flexible, temporary, or freelance jobs, often involving connecting with clients or customers through an online platform (e.g., UBER). The gig economy can benefit workers, businesses, and consumers by making work more adaptable to the needs of the moment and demand for flexible lifestyles. In Canada, gig workers are unincorporated self-employed workers who do not report a business number on their tax return. These on-demand, freelance workers are self-employed but do not own a business. Gig workers are in a precarious financial position as they typically do not have access to employment benefits (like contributions to CPP, extended health care and insurance, employment insurance, etc.). For example, musicians, who depend on touring circuits and performances in congregate spaces (venues, theatres, halls, festivals etc.) are particularly disadvantaged by the pandemic. A report by AbacusData published in July 2020 states that:

The pandemic has had a severe impact on Canada's professional musicians' ability to earn a living. 85% agree that if they can't perform live, they will have a difficult time making a living as a professional musician. To underscore the impact of the pandemic, for 2020, the average number of bookings (has dropped to) eight from last year's average of 87. More than half of the musicians surveyed have zero performances booked for the remainder of the year.

(...) Going digital isn't an easy solution for most professional musicians. The technical aspects and isolation make performing difficult, and the income replacement is nowhere near enough to make up for in-person performances. Many musicians report steep learning curves with technology and dissatisfaction with the lack of connection a digital experience creates between them and their audiences. (Source: <https://abacusdata.ca/crowded-out-musicians-live-performances-covid19-pandemic/>)

DIGITAL TRANSFORMATION/TECHNOLOGY

The impact of the digital transformation and technology on the arts and culture in society is broad and deep. Most traditional systems in the arts and culture industry such as education, marketing and revenue generation remain in some form and to some degree but many have been diminished or are being replaced, all based on new forms of communication related to the internet. In addition, new forms of art and culture are being generated wholly within this new medium, including on social media platforms. Regardless, rural and remote regions will continue be disadvantaged with limited bandwidth until such time as robust high speed internet can reach Canada's most remote communities.



Online environments are not yet ideal for every artistic genre or type of creative or interpretive activity, as expressed by musicians in the report above. However, technology continues to evolve as evidenced by the recent development of new online platforms like Zoom, Hangouts and Google Meet, which allow people to gather and

interact remotely with relative ease. And technologists continue to work to create new online environments that allow artists to collaborate and even rehearse and perform seamlessly online in real time, provided there is adequate bandwidth.

One such example is a platform developed by musician-entrepreneurs in Ottawa, Ontario. Syncspace Live (<https://syncspace.live/perform/>), allows performers to seamlessly sync audio and video so that they can hear and see each other in a way that comes close to actually being in the same room.

Another example is Jack Trip Virtual Studio (<https://www.jacktrip.org/studio.html>), allowing you to sing with your chorus, or jam with your band without leaving home. It delivers high quality sound with minimal time delay, so that musicians can keep the beat and stay in harmony. It can make it sound like you are in the same room next to each other.

Even without these new types of technologies, artists and cultural organizations have been digitizing and moving their content, assets, collections, programs, educational offerings, etc. online since the advent of the Internet. The pandemic has merely accelerated this trend.

An example of the rapid transition to online services in the cultural sector is provided by Go West Shore, an online community engagement service promoting Vancouver Island's west shore region. In December it launched its new service, The Arts Channel.

As the #ArtsChannel continues to evolve over the years, it will continue to provide diverse art experiences and resources for our platform, a place where art instruction, artists and their art can flourish and always find a home! Over the coming weeks we will be rolling out an exciting line up of new online art courses, contests, an art rewards program, arts marketplace, community forum, art walk and more! It's going to be a lot of fun and very satisfying for our team. We can't wait for the arts community to join! <https://gowestshore.com/announcing-the-arts-channel/>

Another example of digital transformation, this time from the South Okanagan, was launched in January of this year by the Penticton Scottish Festival.

Explore Scottish culture with new Penticton television series

Ahead of the 262nd birthday of Robbie Burns, the Ploughman Poet of Scotland, the Penticton Scottish Festival Society is launching a new video series. When COVID-19 forced the cancellation of festivals and events, the Penticton Scottish Festival Society reached out to many of the area's Celtic artists, musicians and dancers who were keen to participate in a video project that would give them a safe venue to connect with audiences virtually. Watching the series serves as a warm up for a special watch party for Robbie Burns Day. The watch party will be hosted on the Shaw Youtube channel and as a watch party on the Penticton

Scottish Festival Society Facebook page. (Source: by Brennan Phillips - <https://www.pentictonwesternnews.com/community/explore-scottish-culture-with-new-penticton-television-series/>)

The Okanagan Symphony Orchestra, which would typically perform six to eight concerts per year in our region, has stepped up its use of online platforms in response to COVID restrictions with a series of streamed concerts (<https://watch.unicorns.live/pages/live>). While this effort serves to keep the orchestra active and in the public eye, the results have been mixed, with relatively few tickets sold.

Despite these developments, whether revenue streams for artists performing or presenting their works online will ever reach the level of revenues from live performances is unclear. In addition, it is hard to imagine that remote/virtual performances will ever replace the experience of live in-person events.

GLOBALIZATION

Artists are now competing globally and it is often difficult for the arts and culture sector in smaller areas to compete on a global scale. However, the internet can remove traditional barriers and expose regions such as ours to the world. In addition, the recent pandemic has driven an exodus from larger cities to smaller ones and those with a more vibrant arts and culture community are highly sought after by these urban immigrants. Combined with the desirable climate and lifestyle available to all, regions like southern interior of BC are highly desirable destinations.

INDIGENOUS RELATIONS

According to the 2016 Census, more than 1.67 million people in Canada identify themselves as an Aboriginal person – that equals 4.9% of the Canadian population. There are more than 630 First Nation communities in Canada, which represent more than 50 Nations and 50 Indigenous languages, in addition to numerous Inuit and Metis communities (<https://www.rcaanc-cirnac.gc.ca/eng/1100100013791/1535470872302>). The rapidly evolving relationship between Indigenous and non-Indigenous communities in Canada is complex and far reaching, affecting many facets of the economic (natural resources, land management, industry and more) and cultural landscapes. Indigenous communities have begun the long journey of preserving, rebuilding and reestablishing their Indigenous heritage, customs, languages, reclaiming their traditional territories and autonomy. Their artists and cultural leaders are key drivers of this transformation. Non-Indigenous cultural leaders must learn how to build trusted and meaningful relationships with these peoples, for the benefit of all Canadians.

CLIMATE CHANGE

All communities in Canada are adversely affected by climate change and the trend towards global warming. According to National Resources Canada, the trend has driven extreme temperature fluctuations, changes in rainfall and snowfall, the disappearance of glaciers and sea ice, changes in the availability of fresh water, changes in sea level, coastal flooding and drought. (<https://www.nrcan.gc.ca/climate-change/impacts-adaptations/canadas-changing-climate-report/21177>) The impact of these changes has been particularly damaging for communities and cultures of the north where many Indigenous peoples and others depend on the land for their food and livelihood. For peoples of the Okanagan, climate change has fuelled the increase in wildfires, which has not only threatened the natural environment and the residents, of south central BC, but has put the tourism industry at risk. This trend is discussed later in this document.

THE REGIONAL CONTEXT

BACKGROUND

The SOS Arts Society is working within the Regional District Okanagan Similkameen, which is just one of 27 regional governments within the Province of British Columbia.

For comparison purposes, the table below provides population and area information for the seven most southerly regions of the BC interior. The region of Okanagan Similkameen has the third largest population and the second highest population density.

	Offices	Pop. (2019)	Area (sq km)	Pop. Density (per sq km)
Central Kootenay	Nelson	63,311	22,095	2.7
Central Okanagan	Kelowna	217,214	2,905	67.1
Columbia-Shuswap	Salmon Arm	55,823	28,929	1.8
East Kootenay	Cranbrook	64,695	27,543	2.2
Kootenay Boundary	Trail	33,432	8,082	3.9
Thompson-Nicola	Kamloops	146,096	44,448	3.0
Okanagan-Similkameen	Penticton	89,075	10,414	8.0

(Source: https://en.wikipedia.org/wiki/List_of_regional_districts_of_British_Columbia)

RDOS Mandate

Regional districts are an independent, responsible and accountable order of government within their jurisdiction. The purposes of a regional district include:

- (a) providing good government for its community,
- (b) providing the services and other things that the board considers are necessary or desirable for all or part of its community,
- (c) providing for stewardship of the public assets of its community, and
- (d) fostering the current and future economic, social and environmental well-being of its community.

RDOS Vision

“We envision the Regional District of Okanagan-Similkameen as a steward of our environment, sustaining a diverse and livable region that offers a high quality of life through good governance.”

The RDOS encompasses 10,412 square kilometers, comprising nine largely rural Electoral Areas, and the following communities (Population figures are from 2016):

- Town of Osoyoos (population 5,085)
- Town of Oliver (population 4,928)
- City of Penticton (population 33,761)
- District of Summerland (population 11,615)
- Village of Keremeos (population 1,502)
- Town of Princeton (population 2,828)
- Osoyoos Indian Band reserve, Penticton Indian Band reserve, Upper Similkameen Indian Band and Lower Similkameen Indian Band, Okanagan Nation and the Syilx People (population 2,861)
- Electoral areas A through H (population 24,442)
- The region also includes the localities of Naramata, Kaleden, OK Falls, Olalla, Cawston and Hedley.

As at 2017, the region was home to 87,628 people with the population projected to grow relatively slowly to over 100,000 by 2041 (a more recent report puts the regional population at 89,075). The highest rates of growth will be in Penticton and Oliver. (Source: 2017 RGS Snapshot Growth Strategy) However, a recent surge in home sales, likely driven in part by the pandemic, suggests that population growth in the RDOS in 2020 and 2021 may be higher than anticipated.

TRENDS

The RDOS has identified the following key trends for the region (predates the pandemic):

Social

- The population will continue to age
- Volunteerism is on a downward trendline
- The social safety net will continue to erode
- Aging in place is increasing the need for public transit and assisted living facilities
- Expectations for increased levels of public service are growing

Economic

- The demand for active recreation opportunities will continue to increase due to the healthy, aging population
- The cost of housing is continuing to increase faster than the economy
- Government infrastructure spending is continuing to escalate

Environmental

- Deteriorating municipal infrastructure will continue to challenge funding bodies
- The risk and impact of climate change and natural disasters will continue to increase
- Environmental standards will continue to increase

TRENDS AND FACTORS IMPACTING ARTS AND CULTURE IN THE REGION

In addition to the trends and factors identified in the provincial and regional contexts above, the following trends impacting the cultural sector in the Region include:

- The COVID pandemic
- The economy
- Population growth and demographics (aging population)
- Increasing costs of real estate - commercial and residential
- Internet access and bandwidth for rural and remote communities
- Tourism/Climate change
- Regional geography and public transit

THE PANDEMIC

The impact of the pandemic in the national and provincial contexts applies equally to the South Okanagan. The effects of the pandemic across the region are plain for all to see. Venues are shuttered, theatres are dark, festivals and community events are postponed, meetings and gatherings have been moved online, income for professional artists in many artistic disciplines has been eroded or erased; people are staying home. As we have seen at the provincial level, the impact of the pandemic has been uneven--some artistic and cultural industries have experienced significant setbacks, while others have managed to continue to thrive. For example, the film and television industry has done relatively well here, as have the visual arts (with many public and private galleries able to continue operating under certain restrictions). The performing arts at all levels have been hit particularly hard, with venues, touring circuits and live events and gigs severely curtailed. This has impacted businesses, cultural organizations and independent artists alike.

An article in the Penticton Western News encapsulates the current circumstances for independent musicians in Penticton; circumstances that also apply to other districts across the region.

Penticton musicians struggling in silence through pandemic Public health orders have put live music on hold

The pandemic has taken away or greatly changed the livelihoods of many; and musicians may be among the hardest hit. With no end in sight on restrictions on large gatherings, many musicians are longing for the feeling of playing in front of a live audience — something that has been basically impossible since March 2020. Even prior to the pandemic, finding spaces to play shows in Penticton has always been a challenge, according to Stephanie Lines the lead singer of Penticton-based band Yarrows. “The diminishing number of venues in the city has long been a concern for artists in the local music scene. Penticton has had an ongoing venue challenge to be honest and it’s getting frighteningly worse because the small businesses are finding it so hard and shutting down. For me,

it's pretty scary to look at the future of live shows.”

(Source: <https://www.pentictonwesternnews.com/entertainment/penticton-musicians-struggling-in-silence-through-pandemic/>)

Yet it is not all doom and gloom in the era of the pandemic. Many arts organizations, including the arts councils, now have the time (and relief funding made available by governments) to take a step back, review their operations and programs, and plan for the future.

Furthermore, new initiatives continue to arise with the influx of talented cultural workers and creatives to the region. An example of this is the new music initiative led by Route 97 Culture with support of Creative BC. Arts and culture organizers, Mandy Wheelwright, Mark Greenhalgh, Paul Crawford, Julie Fowler and others are working to establish new live music venues, circuits and opportunities for established and emerging talent across the interior of BC by partnering with wineries, Indigenous communities, academic institutions, tourism associations, arts councils and others. See more about this important initiative at <https://route97culture.com/>. Another new initiative is the proposal for the creation of a cultural corridor in Osoyoos. The project is led by a new non-profit group, Wide Arts National Association, formed by a team of experienced cultural workers and young multi-disciplinary creatives. See <https://www.widearts.ca/about-us>.

In addition, the injection of relief and recovery funds for individuals, organizations and businesses provided by governments and charitable foundations will help sustain many small arts organizations. However, the long-term economic impact and fallout from the pandemic is still unknown and promises to remain a key preoccupation for the arts and culture sector across the region for some time to come.

THE ECONOMY

In its Strategic Plan 2018-2022, the RDOS declares that “The Regional District has a slow, but steadily growing, economy based on government services, agriculture, construction and quality of life (retirement). The cost of housing remains a concern in the area, if not British Columbia as a whole. The continuing downturn in oil prices and the Alberta economy evidence themselves in the regional district housing market as the Okanagan is a primary retirement and vacation target for Albertans.”

Despite the economic factors identified by the RDOS above, from the perspective of the arts and culture sector, the regional economy is driven primarily by tourism/hospitality, recreation, retirement living, agriculture/viniculture, light industry and commercial retail. The effects of the pandemic (both good and bad) on tourism is of particular concern given that tourism is a key driver of the arts and culture sector in the region. It's worth noting that the influx of visitors and new residents from BC's lower mainland has been accelerated by the pandemic.

Festivals are an important segment of the local economy. In 2018, one annual festival alone, the Peach Festival, attracted 14,000 out-of-town visitors and injected \$2.2 million directly into the economy in the form of visitor spending. A tally of the economic impact of festivals across the region has not been calculated. But it is clear that as long as the pandemic continues to curtail festival activity, the region will feel the negative economic effects.

It is worth noting that relatively little regional economic data on arts and culture overall has been gathered; the region has not conducted an economic impact study of its festivals nor of the arts and culture sector overall.

AGING POPULATION

The south okanagan and, in particular Penticton and district, is a destination region for retirees and it doesn't look like that is about to change.

Seniors to make up 77% of Penticton's population growth

More than three-quarters of Penticton's population growth from 2016 to 2046 is expected to be in the 65-plus population, according to a report by the Urbanics Consulting Group.

According to the study, Penticton's population is expected to grow to just under 42,000 in 2046 from about 34,000 in the last census year in 2016, at a rate of about 0.7 per cent per year. By comparison, the senior population in that time is expected to jump to under 16,000 from 10,000 seniors in that same time span, moving the 65-plus cohort from 29 per cent of the overall population in the city up to 37 per cent.

In Penticton, the under-15 population is expected to keep a stable stake in the overall population, at 12 per cent, until 2036, before declining slightly to 11 per cent of the population in the following 10 years. The cohort between 15 and 65 years is projected to decrease from a 59 per cent stake in the overall population to 52 per cent, according to the report. (...) the seniors population will make up 75 per cent of the population growth over the next 30 years, if the report holds true. Meanwhile, the number of households where the primary maintainer is aged 25-34 is expected to decrease by five per cent over that timespan. (*Source: by Dusting Godfrey - 2018 - <https://www.pentictonwesternnews.com/news/seniors-to-make-up-77-of-pentictons-population-growth/>*)

It is unclear whether the pandemic will serve to accelerate or diminish current trends in the age of the population. But one thing is certain, the population age demographics have an impact on the nature of the arts and culture in the region. For example, the region's largest cultural attraction is the 5,500 seat arena at the South Okanagan Entertainment Centre. The big concerts there continue to cater to an older demographic, with headline acts that are predominantly in the classic rock and country

categories. Smaller venues may be able to present younger artists working in other genres, but the audiences for big events are in the older demographic. Big festivals too reflect the older population, with recent featured acts at the annual Peach Festival including the likes of Kim Mitchell and April Wine.

INCREASING COSTS OF REAL ESTATE

Affordable housing is an important issue for artists and cultural workers alike. Kelowna, just north of the RDOS, has recently become the sixth most expensive housing market in Canada. Housing demand and prices in the Region are mirroring that trend.

South Okanagan hottest real estate market in B.C. Over \$1 billion in residential sales in 2020

According to statistics from the B.C. Real Estate Association, the South Okanagan market saw the biggest growth out of all the markets in the province (...) with a 53% increase compared to 2019.

Overall the South Okanagan saw a 32.7 per cent rise in the total number of sales from 2019 to 2020. (...) It wasn't only sheer numbers that saw a substantial increase in 2020. The average sale price of residential properties went up 15.8 per cent. The South Okanagan saw the second-highest increase in prices by 15.5 per cent across the province.

(Source: Brennan Phillips - Jan. 15, 2021 <https://www.pentictonwesternnews.com/business/south-okanagan-hottest-real-estate-market-in-b-c/>)

Following that report, more discouraging news (at least for people searching for a place to live) arrived this month.

Buyers last month paid an average of \$804,000 for a single-family home in the South Okanagan, according to fresh data from the Association of Interior Realtors. That represented a 42% increase over the average sale price in March 2020. (...) 84 apartment and condo units traded hands at an average price of \$394,000, marking a 16% premium on March 2020 prices. Average sale prices in the South Okanagan are as follows: Single-family: \$804K, Townhouse: \$462K, Condo/apartment: \$394K.

(Source: https://www.pentictonherald.ca/news/article_445126bc-97d5-11eb-9118-330f033a40f7.html)

For renters, affordable housing has become a chronic issue in the South Okanagan.

"People in the southern Interior need more affordable rental housing," says David Eby, Attorney General and Minister Responsible for Housing. "

(Source: <https://news.gov.bc.ca/releases/2021AG0006-000179>)

The implications of high prices combined with a short supply of affordable living spaces for the cultural sector are significant. A quick search for rental units of any kind reveals that the rental inventory is very low in the region and the few rental units on offer are expensive. Given the economic circumstances of artists and cultural workers overall, this presents an existential problem for the cultural sector. Many artists depend on other work or “day jobs” -- the type of work that typically doesn’t pay much -- to be able to sustain their artistic practice. With little access to affordable housing, this means they can’t remain in the region for long. In a report to parliament (January 2019), MP Richard Cannings described the situation in the region:

“When I recently talked with employment agencies in Oliver, B.C., I heard that many local businesses could not fill openings. Hotels were hiring, and senior care homes were desperate for employees. Restaurants had signs on the tables apologizing for slow service, because they only had one waiter working. The reason was that the people needed to fill these positions could not find housing and so they moved on. The most ironic story in this vein was a service agency in Penticton who received grant money to coordinate its affordable housing program. It hired someone, who arrived, but they gave up the job because they could not find housing.”

(Source: <https://www.ourcommons.ca/DocumentViewer/en/42-1/house/sitting-375/hansard>, and <https://olivedailynews.com/is-there-a-housing-crisis-in-the-south-okanagan/>)

INTERNET ACCESS AND BANDWIDTH FOR RURAL AND REMOTE COMMUNITIES

The challenges for rural and remote and low income users of Internet services is well documented. Given the pressure to move cultural programming and interact online due to the pandemic, the need for affordable access to reliable high speed internet will only increase in the coming years.

The government of BC recently posted this report on its website:

According to the CRTC, 92% of households in B.C. with access to target speeds of 50 Mbps are largely in urban areas. If we look at rural B.C, only 36% of rural communities and 38% of rural Indigenous communities have access to the recommended broadband internet speeds (...) In order to fully participate in the digital economy, access to high-speed internet is important, but affordability of this access is equally important. Providing the same level of access, quality and affordability in rural areas (including Indigenous communities) as seen in urban areas is a key priority for the Province.

(Source: <https://www2.gov.bc.ca/gov/content/governments/connectivity-in-bc>)

But Internet speed and accessibility are only one part of the equation. Affordability is also a real concern for low income users in the Region. Like most Canadians, residents of the South Okanagan pay some of the highest cell phone rates in the world.

TOURISM AND CLIMATE CHANGE

The climate of the South Okanagan is one of the key reasons that tourists come to the region.

The South Okanagan Tourism Area (Oliver and Osoyoos) generates about 350,000 visitors and an estimated \$59 million annually in direct visitor expenditures. The area's tourism products include wineries, agri-tourism activities, Aboriginal culture, golf, winter and summer outdoor adventure activities and a sizeable roster of festivals and events. (Source: <https://www.osoyoos.ca/content/tourism-osoyoos>)

According to the Thompson Okanagan Tourism Association's Visitor Highlights, the Region welcomed **1,470,600** visitors (unique visits) in 2019. (Source: <https://www.totabc.org/enviro-nics-analytics>)

Unfortunately, climate is also one of the reasons visitors stay away. Visitors often refer to the greater region as the "Smokanagan" because of the wildfires, and adjust their travel plans accordingly.

ARCGis, a technology company providing mapping intelligence services, provides the following assessment of the impact of the climate on tourism in Penticton.

Over the past 10 years, tourism in Penticton has skyrocketed. Large amounts of tourists traveling to the small city has caused massive growth in many areas of it's economy. In Penticton, the environment plays a large role in this growth. The area boast miles of beautiful beaches for families and travelers to enjoy in the warm summer months. The climate is also ideal for growing grapes and the region has over 100 wineries that are open to the public to explore. However, **depending on certain weather and other natural phenomenons occurring, tourism can fluctuate in numbers around 30%. For example, climate change has lead to hotter dryer summers which has increased the risk of forest fires in the area. In particular, forest fires in the summer months in 2018 caused many wary tourists to stay away, resulting in the city to experience around a 25% decrease in tourist population.** (Source: <https://www.arcgis.com/apps/Cascade/index.html?appid=9a5614791e424c7587f3f2e6266321dc>)

REGIONAL GEOGRAPHY AND PUBLIC TRANSIT

The nature of the region's geography and size also has an impact on the cultural sector. Communities are clustered around towns and districts spread across an area of over 10,000 square kilometers. With the only significant means of transportation being the private automobile, people who cannot afford a car (or pickup truck) are likely to stay siloed in their communities. The regional transit system, the most affordable way to get around, is extremely modest and does not reliably provide connections from community to community. Outside of the public transit system, there is no network of hop-on-hop-off buses connecting communities as there are in some other tourist regions. Therefore, the opportunities for people (in particular low income and youth) from one area of the region to frequent attractions in another area is significantly limited.

Encouragingly, a recent report in the Penticton Herald advises that transit capacity in the region will soon increase.

Two bus routes servicing Osoyoos and Penticton will soon see larger buses in order to meet increasing demand and help improve reliability and efficiency in the South Okanagan-Similkameen Transit System. Route 40 (Osoyoos/Penticton) and Route 41 (Osoyoos local) will soon be upgraded with medium-duty buses with an increased capacity to carry passengers, which will replace the smaller, light-duty buses that currently run the route.

(Source: https://www.pentictonherald.ca/news/article_c374105c-90ba-11eb-a3cd-f7b0eb8fb23f.html?utm_medium=social&utm_source=email&utm_campaign=user-share)

In addition to the above, a private bus line has recently introduced a route from Kelowna International Airport to Osoyoos, twice per week, in addition to its twice weekly service from Princeton to Osoyoos. These are promising developments, especially if they represent a trend in the transit system's ability to move people around the region.

ARTS AND CULTURE IN THE REGION

This section provides an accounting of the cultural plans at the regional and district/town levels, along with the organizations, societies, facilities, places and artists of the region.

EXISTING PLANS AND STRATEGIES

THE RDOS

The RDOS does not currently have an official strategy to help develop the cultural sector across the region. However, in its 2017 Regional Growth Strategy Bylaw 2770, within its strategy for “Community Health and Wellbeing” the RDOS has established the following goals:

- 4C-3 Support the celebration of community and local festivals, including cultural events and programs.
- 4C-4 Support and encourage community arts, culture and heritage programs and celebrations.
- 4C-6 Identify and protect important cultural places and structures.
- 4C-7 **Work with agencies, stakeholders and the arts and culture community to develop a Regional Arts and Culture Strategy.**

Though the RDOS has not yet acted upon this commitment, it is encouraging news that the regional government recognizes the need to develop a Regional Arts and Culture Strategy in collaboration with the arts and culture community. The SOS Arts Society would welcome the opportunity to participate in these efforts at the appropriate time and if called upon by the RDOS to do so.

TOWNS AND CITIES

Cultural Plans, Community Plans and Bylaws

To varying degrees, the cities and towns of the region have also identified the need for strategies to sustain and develop the cultural sector within their jurisdictions. The basis for such strategies are typically found within objectives and goals set out in community plans or bylaws. Of the five jurisdictions included below, only the District of Summerland has produced a comprehensive cultural plan.

Excerpts from the plans and bylaws of each of the towns and cities of the region are provided below. (Note that excerpts are verbatim.)



The Venables Theatre, Oliver

Town of Oliver Official Community Plan Bylaw 1370

Cultural Facilities: Cultural facilities include the Regional Library, Museum and Archives, and the region-serving Frank Venables Theatre.

13.1 Objectives

- 1 Enhance existing administrative, institutional and cultural assets.
- 2 Ensure institutional land uses are located where they can best serve the needs of residents.
- 3 Work cooperatively with partners, including the Oliver and District Heritage Society to identify and enhance the Town of Oliver's heritage assets.
- 4 Work cooperatively with partners, including the Oliver Arts Council, to further develop and enhance the artistic and cultural fabric of the community.
- 5 Seek opportunities to work with the Osoyoos Indian Band and other Okanagan Nation Alliance members to recognize, protect and, where appropriate and feasible, interpret important cultural sites and features in the Town of Oliver.

13.2 Policies

- 8 Will continue to support the Oliver Arts Council in their efforts in promoting and enhancing arts and culture within the Town of Oliver.
- 9 Will work with the arts and cultural community to continue to cultivate the Town of Oliver's artistic character by supporting artwork and performances in public places.
- 10 Encourages the Oliver Arts Council and cultural stakeholders to define a strategy to introduce exciting, interesting and innovative arts, entertainment and cultural expressions within the Town of Oliver's downtown.
- 11 Supports existing cultural facilities and organizations, and encourages multi-cultural activities and festivals that promote or foster multi-cultural understanding.
- 12 Continue to explore the concept of providing an outdoor arts performance facility in, or in close proximity to the Town Centre.
- 13 Continue to support the Oliver and District Heritage Society and their efforts to protect, steward and interpret the Town of Oliver's history.
- 14 Continue to participate with the RDOS to provide annual funding to the Oliver and District Heritage Society.
- 15 Supports and encourages community events.
- 16 Supports the preparation of an inventory of heritage buildings and sites within the Town of Oliver.
- 17 Supports the preservation and enhancement of buildings and sites that have historical significance.
- 18 Recognizes and celebrates the rich Syilx/Okanagan cultural and cultural features that exist in and around Oliver.

Continue working with the Oliver Parks and Recreation Society in providing recreation facilities and opportunities for residents and visitors of all ages.



Musicians Jean-François 'D'Jef' Gasse and Vincent DeCowans perform at the opening of the new Wide Arts (WANA) art gallery in Osoyoos.

6 Supports the stewardship, enhancement and interpretation of important environmental features and areas in the Town of Oliver's parks, open space and recreation areas.

7 Encourages and facilitates the provision of recreation opportunities and facilities by sports groups, service clubs, cultural groups and other community groups.

8 Will continue to cooperate with School District #53 in sharing the use of school and public recreation facilities.

Town of Osoyoos

Update: Official Community Plan 2040 (Draft Sept. 2021)

Section 6.A. - Protect and enhance Osoyoos' unique character to foster a strong sense of place.

- a. Work with Osoyoos Indian Band to identify and protect cultural features that are representative of the Syilx culture.
- b. Encourage the retention of built, cultural, and natural heritage features. Consider adoption of a Town Heritage Register to protect these features.
- c. Celebrate Osoyoos' rich heritage and that of the Syilx peoples through completion of way finding signage and public art projects in collaboration with Osoyoos Indian Band and the Osoyoos Arts Council. Work closely with these stakeholders to identify suitable locations for public art installations.
- d. Acknowledge and respect the heritage and culture of the Okanagan Syilx Peoples, and work together with the Osoyoos Indian Band to ensure that this culture is appropriately integrated into the community and the built environment.
- e. Strengthen the connection between Osoyoos' natural environment, agricultural industry, culture, and heritage by seeking opportunities to reflect this connection in the built environment.
- f. Continue to support the Osoyoos Arts Council, Osoyoos and District Museum and Archives, and other community-based arts and culture organizations.
- g. Consider undertaking a Cultural Master Plan process and incorporating a cultural section into the next update to the Parks and Trails Master Plan.

District of Summerland Cultural Plan (2016)

The full plan can be found here: <https://www.summerland.ca/discover/arts-culture/cultural-plan>

The District of Summerland continues to work to carry out the plan with the help of a Cultural Task Force and new arts and culture coalition.

Residents and visitors alike are passionate about the community's arts and festivals. People attach importance to its rich history and heritage, and to its world-renowned orchards and wineries. Summerland is a safe and friendly place where its active residents enjoy great community spirit and a high quality of life.

This is what people say they value most about Summerland: the arts, the character of the community, the quality of life, the community's history and heritage, and local agriculture. These values are what make the community unique. These are what define Summerland's culture.

This document – Summerland's first official Community Cultural Plan – was developed from the input of more than 2,300 comments received through an extensive year-long public consultation process. The Plan represents the collective wisdom and expressed views of the people of Summerland. **The Cultural Plan offers a clear path for leveraging the community's values and cultural assets to crystallize Summerland's identity and help bring about economic prosperity and social cohesion.** It aligns with Summerland Council's adoption of the 'four pillars' model of sustainability, acknowledging that culture is as essential to a vibrant, healthy community as economic, social, and environmental matters. Five strategic directions have been identified to build on the community's values and guide Summerland's cultural development into the future.

1. Reflect Summerland's cultural values in municipal decisions and projects:
Take the importance of the arts, community character, quality of life, history and heritage, and agriculture into account when making decisions and managing projects.
2. Establish an administrative framework to support the arts, heritage and culture:
Place responsibility for cultural initiatives within a designated municipal department and provide adequate and sustainable funding for cultural initiatives.
3. Enhance public spaces and cultural places:
Preserve and extend public spaces, including cultural facilities, and create new ones. Give them a higher profile; animate and beautify streets and parks.
4. Build on community strengths and assets:
Build on what's working and address local issues by leveraging community strengths and cultural assets.
5. Connect the community:
Develop a community that is inclusive, accessible and affordable for all ages and social groups; connect Summerland's past with its present, its urban with its rural, and help community groups collaborate and coordinate. The District of Summerland is encouraged to facilitate implementation of the Cultural Plan. This will require an appropriate allocation of human and financial resources as well as accountability. The municipality, however, cannot deliver all local cultural services. Well established community groups are best positioned to undertake many initiatives. A spirit of mutual trust, cooperation and coordination between the municipality and cultural organizations will be needed for Summerland's culture to flourish.

The SOS Arts Society believes that this is a very comprehensive document and is a good model that could be considered as a template for any efforts to develop a regional arts & culture plan.

City of Penticton Community Plan Bylaw 2019-08

The City of Penticton also produced a comprehensive plan to create a downtown cultural district. Prepared for the city by independent consulting firms in 2010, the ambitious and fully illustrated **Cultural Tourism District Plan** -- intended to revitalize large swaths of the downtown core with major heritage infrastructure investments -- appears to have been only partially completed. Copies of the plan are available from the Economic Development Department. Here are highlights from the 2019 Community Plan:

4.6.1 First Nations

Goal

Respect, honour and promote expressions of Syilx/Okanagan First Nations culture and heritage in Penticton.

Policies

4.6.1.1 Partner with the Penticton Indian Band to support and promote Syilx/Okanagan First Nations culture and heritage in Penticton.

4.6.1.2 Create a more visible Indigenous presence in the city through public art, signage and place-naming, and recognition that Penticton lies within the traditional territory of the Syilx/Okanagan people.

4.6.1.3 Foster collaboration on cultural initiatives between Indigenous and non-Indigenous artists and cultural organizations.

4.6.1.4 Partner with the Penticton Indian Band Development Corporation on mutually beneficial economic, social and cultural development initiatives.

4.6.2 Arts and Culture Presence

Goal

Enhance the city's cultural image through arts facilities, events, festivals, public art and heritage protection.

Policies

4.6.2.1 Explore Development of an Arts and Culture Facility Strategy aimed at creating connections, leveraging opportunities and supporting long-term financial sustainability of Penticton's unique array of diverse facilities and venues, and identifying new opportunities and partnerships.

4.6.2.2 Continue to support community-based arts and culture organizations through City grants and incentives.

4.6.2.3 Recognize the value of the creative sector as a catalyst of economic development which attracts new residents, businesses and tourists.



Penticton public art - *Lost*, by Karl Mattson

4.6.2.4 Utilize artistic and creative processes and activities to engage citizens, especially youth, in community development and visioning efforts.

4.6.3 Public Art

Goal

Expand public art reflecting the city's history, culture and natural environment in prominent public spaces, new development, existing neighbourhoods and along the waterfront and trails.

Policies

4.6.3.1 Identify a stable funding source to foster a sustainable and vibrant public art program including selecting, commissioning, acquiring, installing and maintaining public art pieces.

4.6.3.2 Work with the City's arts-related Advisory Committee to identify suitable locations for public art installations.

4.6.3.3 Explore and evaluate options for public art in new developments early in the design process to create a broad range of possibilities.

4.6.3.4 Use public art as a catalyst for placemaking and a means of wayfinding.

4.6.4 Festivals & Events

Goal

Support, promote and create festivals and events celebrating arts & culture, music, recreation & sport, and local food and drink.

Policies

4.6.4.1 Conceive of and implement a wide range of arts, cultural and recreational activities, celebrations, events and festivals that engage and are enjoyed by residents and visitors.

4.6.4.2 Continue to encourage festivals throughout the year to maintain cultural and civic vibrancy beyond the summer months.

4.6.4.3 Promote and support local volunteer networks who work on exhibitions, festivals, sports events and community cultural projects.

4.6.5 Heritage

Goal

Recognize the value of history and heritage to create a sense of place and belonging for residents, and an incentive to visit for those from elsewhere.

Policies

4.6.5.1 Expand the Heritage Register to include First Nations sites and places, and more modern landmarks, including examples of mid-century modern architecture.

4.6.5.2 Engage the City's heritage-related Advisory Committee to identify criteria to evaluate sites and buildings to be considered for the Heritage Register.

4.6.5.3 Expand interpretive signage in historic parts of the city and along trails to inform and educate users about the natural environment, the Syilx/Okanagan presence, and Penticton's history.

4.6.5.4 Identify and protect trees that are significant due to their age, uniqueness or history by creating and maintaining an inventory of Penticton's heritage trees.

4.6.6 Character Areas

Goal

Recognize and protect the unique character of Penticton's historic Downtown (especially Main Street and Front Street) and character neighbourhoods as these areas change and evolve.

Policies

4.6.6.1 Ensure new developments and renovations integrate with existing neighbourhood character through the Downtown, Intensive Residential, and Multifamily Development Permit Area Guidelines (see OCP chapter 5 Development Permit Area Guidelines).

4.6.6.2 Explore the designation of identified character neighbourhoods as Heritage Conservation Areas, pursuant to Section 614(1) of the Local Government Act, to guide the form and character of new development and major renovations to ensure they are respectful of the historic character. Apply this designation in areas of strong support for the initiative from residents and landowners.

Town of Princeton Official Community Plan 2008

12.0 CELEBRATING OUR CULTURE AND HERITAGE

Guiding Principle

Council is proud of our heritage and will continue to seek opportunities to enhance and showcase what is special about Princeton's past including our First Nations people and other cultures. What Does This Mean? Heritage is about more than just the past; it is also about contributions being made today to the heritage of the future. Princeton has a rich history that contributes to the character of the community. Encouraging our cultural identity through artistic expression will build on our identity. Remembering our roots will also contribute to a strong character. First Nations are a significant part of the heritage and history of the community, especially our partnership with the Upper Similkameen Indian Band. The policies described below will contribute to the protection, preservation and enhancement of Princeton's culture and heritage.

Culture and Heritage Policies

12.1 Culture Council's policies are as follows:

12.1.1 Support the arts and cultural community, including the visual, performing, literary, historic, and multimedia arts.

12.1.2 Encourage the development and promotion of cultural activities that generate valuable economic and social benefits.

12.1.3 Support cultural activities that promote the growth and development of community spirit and identity.

12.1.4 Encourage the following types of existing and future community uses to locate within the Town Centre, if possible:

1 facilities such as art studios and museums;

2 theatres and galleries demonstrating the cultural values of the community; and

3 venues for public participation and enjoyment of cultural performance and exhibits

12.2 Heritage Council's policies are as follows:

12.2.1 Work cooperatively with residents, community groups and local First Nations to encourage the conservation of heritage resources that are significant to the community, including the natural and built environments.

12.2.2 Assist the Province and others involved in identifying existing heritage sites worthy of preservation.

12.2.3 Recognize and promote the heritage of Princeton by preserving buildings, structures, sites and landscapes that reflect the Town's history and character, where possible.

12.2.4 Identify and commemorate historic and archaeological sites.

12.2.5 Consider establishing a heritage commission to preserve the past and future heritage of Princeton.

12.2.6 Consider the tools available to Council, under the Local Government Act, to conserve heritage resources, such as developing a municipal heritage register, creating revitalization agreements and establishing maintenance standards.

12.2.7 Consider incentives, financial and other, to support heritage conservation.

12.2.8 Explore opportunities to provide an efficient and cost-effective mechanism for protecting high potential archaeological areas through a development permit process as identified in the Memorandum of Understanding (January 17, 2007) between the Town, the Upper Similkameen Indian Band and the Regional District of Okanagan-Similkameen.

12.2.9 Work with the Upper Similkameen Indian Band and the Regional District of Okanagan-Similkameen to develop a cultural heritage resources protection protocol as outlined in the Memorandum of Understanding (January 17, 2007).



Leir House Cultural Centre, home to the Penticton and District Community Arts Council

THE ARTS COUNCILS

The region's arts councils are vital components of the regional cultural sector and play a leadership role in fostering and promoting the arts and facilitating community participation. Given their relatively modest resources, these organizations are very productive, serving as cultural hubs, providing numerous avenues for participation in and presentation of cultural programs.

There are five active arts councils in the RDOS. They are situated in Oliver, Osoyoos, Summerland, Penticton and Princeton. These are

- Oliver Community Arts Council
- Osoyoos and District Arts Council
- Summerland Community Arts Council
- Penticton and District Community Arts Council
- Princeton Community Arts Council

The status of the Keremeos and District Arts Council is uncertain. An online search results in a listing with the government of BC at https://www.gobc.ca/keremeos-travel/keremeos-and-district-arts-council_4666. However, the Council's web domain (kadam.ca) appears to be unregistered.

Taken together, although their individual operational capacities and revenues differ greatly, the arts councils offer a broad and diverse range of programming and services to their communities. Revenue is generated from a mix of programming, fundraising, donations, sponsorships, membership, ticket or merchandise sales, sponsorships, community grants and government funding. The nature of the local community in which each of the councils operates also varies greatly from district to district, as does the population base. In Penticton, the arts council serves a population of about 39,000, while Princeton Arts Council serves a community of less than 3,000.

Each of the arts councils may hold capital assets in the form of galleries, offices or storage buildings, cultural centres or other facilities. These assets are an integral part of the councils' operations and programming and unlike the councils themselves, may be staffed with at least one full-time or part-time employee. They are tied to the councils' brand identity and are a source of pride (or concern) for the community. They can provide revenue through rental of facilities and components like gift shops featuring local arts, crafts and merchandise, but can also be very costly to maintain.

Revenue / expenses for each of the five arts councils for 2019 and 2020 were as follows:

	2019		2020	
	Revenues	Expenses	Revenues	Expenses
Oliver Community Arts Council:	\$42,032	\$34,003	\$31,309	\$18,910
Osoyoos and District Arts Council:	\$79,408	\$81,043	\$86,475	\$91,719
Summerland Community Arts Council:	\$159,167	\$107,190	\$96,549	\$82,125
Penticton and District Community Arts Council:	\$131,086	\$120,415	\$135,860	\$148,285
Princeton Community Arts Council:	\$28,894	\$28,894	\$48,924	\$27,502

CAVEAT - Figures are taken from the CRA Charitable Listings website for 2019 and 2020 (https://apps.cra-arc.gc.ca/ebci/hacc/srch/pub/dsplyBscSrch?request_locale=en). While the above figures do not tell a complete story, they do provide a general order of magnitude of the arts councils' financial status.

Based on an initial assessment, it is apparent each of the arts councils shares significant pressures related to managing workload, generating revenue, promoting artists and marketing programs and services. These organizations are largely led and operated by volunteers from the local community. Approximately 45 volunteer directors serve on the region's five arts council boards. Currently, the five arts councils count only one full-time and a handful of part-time employees amongst them, with total annual compensation for employees totalling \$92,142 (2019) and \$110,677 (2020). Additional support is provided by occasional contractors and fee-for-service professionals.

Employee compensation and consulting/professional fees for 2019 and 2020 were as follows:

	2019		2020	
	Employment	Consulting/ Professional Fees	Employment	Consulting/ Professional Fees
Oliver Community Arts Council:	\$0	\$297	\$0	\$323
Osoyoos and District Arts Council:	\$0	\$21,183	\$0	\$39,732
Summerland Community Arts Council:	\$39,015	\$6,073	\$37,788	\$5,733

Penticton and District Community Arts Council:	\$53,127	\$2,865	\$72,889	\$3,752
Princeton Community Arts Council:	\$0	\$835	\$0	\$803

The arts councils are tightly tied to their respective municipal governments and receive support in the form of operating and/or project grants and contributions from the provincial, regional and municipal/district governments. They may also receive funding from other charitable organizations, like the South Okanagan Community Foundation.

Grants received from provincial, regional and municipal/district governments in 2019 and 2020 are as follows:

	2019 Grants	2020 Grants	Population
Oliver Community Arts Council:	\$14,000	\$26,000	4,928
Osoyoos and District Arts Council:	\$23,240	\$29,110	5,085
Summerland Community Arts Council:	\$75,094	\$29,500	11,615
Penticton and District Community Arts Council:	\$62,851	\$62,645	39,000*
Princeton Community Arts Council:	\$24,288	\$42,870	2,828

*Note that population counts are taken from regional data for 2016. A recent census will provide updated data in late 2021. Electoral areas surrounding the towns are home to approximately 25,000 residents. Therefore, population counts cited for towns may be somewhat misleading since they may only reflect residents located within townships' formal boundaries and do not take into account the populated areas surrounding the townships proper. *The Penticton Arts Council population estimate is provided by the arts council itself and takes into account the area surrounding Penticton.*

In spring of 2020, the arts councils each received \$5,000 in supplementary operating resilience funding (COVID) from the BC Arts Council. The list of funding recipients and grants from the BC Arts Council can be found here: <https://www.bcartscouncil.ca/funding/recipients/>.

More information on the community arts councils is provided in the Inventory, Appendix 5.

LOCAL SOCIETIES

In addition to the region's arts councils, a variety of non-profit and charitable volunteer societies provide stewardship, administrative support and programming for cultural communities, facilities, events, heritage sites and organizations. Societies provide substantial expertise and support for arts and culture, with over 165 South Okanagan residents serving as volunteer directors.

Grist Mill Foundation (Keremeos)

A charitable registered society run by volunteers in support of the Grist Mill and Gardens historic site. Works in collaboration with the Grist Mill Community Contribution Corporation (a registered CCC) that operates the site. Programming includes heritage appreciation, food preparation, fairs, concerts, artistic activities and more. (8 volunteer directors) <https://www.oldgristmill.ca/support/foundation/>

Kettle Valley Railway Society (Summerland)

The Kettle Valley Railway Society invites you to join our non-profit, charitable organization and support our efforts to preserve a unique and important piece of Canada's history that began in 1912 and is still in operation today. (7 volunteer directors, 5 full-time and 12 part-time employees) <https://www.kettlevalleyrail.org/about/society/>

Naramata Museum Society (Naramata)

Dedicated to preserving the history of Naramata. Located in the old Naramata Firehall, the charitable Society operates with an all-volunteer team supported by gifts, donations and sales both at the Museum and the Thrift Shop. Displays were made possible by contributions of artifacts from within the community. (12 volunteer directors) <http://www.naramatamuseum.ca/>

Oliver and District Heritage Society and Oliver Museum and Archives

The Oliver & District Heritage Society is a not-for-profit organization governed by a Board of Directors; we preserve and present the history of Oliver BC, Canada's Wine Capital, and surrounding district through exhibits, educational programming, heritage walking tours, and more. (15 volunteer directors, 2 full-time and 3 part-time employees) <https://www.oliverheritage.ca/odhs>, Museum: <https://www.oliverheritage.ca/museum>, Archives: <https://www.oliverheritage.ca/archives>, walking tour: <https://www.oliverheritage.ca/walkingtour>

Oliver Community Theatre Society

The Theatre Society was created to operate and animate the new Frank Venables Theatre. Working closely with School District #53 and the Regional District of the Okanagan Similkameen, the Society was incorporated with the following purposes: to operate and manage the Community Theatre in Oliver as a centre for the performing arts; to support the advancement of local, national and international performing arts presentations in the South Okanagan; to further the development of local amateur and professional performing arts; to encourage local audiences, artists and students to

engage in the performing arts; to cooperate and consult with other agencies and organizations towards these objectives; to obtain funding and donations from various government and other agencies and individuals to further the purposes set out herein. (8 volunteer directors)

<https://www.venablestheatre.ca/operating-society.html>

Oliver Community Garden Society

The Oliver Community Garden Society is a community garden located in Oliver, BC in the south Okanagan Valley. We are located at the Quail's Nest Arts Centre in partnership with the [Oliver Community Arts Council](#). (5 volunteer directors)

<https://olivercommunitygarden.wordpress.com/about/>

Osoyoos Blues Society

The Society will be presenting shows at various locations in Osoyoos, as well as in other communities in the Southern Interior of BC. The Osoyoos Blues Society will be raising money to help young performers develop their skills. (Information about the Society's directors is not provided.)

<https://osoyoosbluessociety.com/home>

Osoyoos Desert Society

Our mission is to conserve and restore the antelope-brush ecosystem in the South Okanagan and through education increase knowledge, respect and active concern for ecosystems worldwide. (8 volunteer director's 1 full-time and 5 part-time employees)

<https://www.desert.org/what-we-do>

Osoyoos Museum Society

Collect, preserve, research, document, interpret and exhibit artifacts and archival records of historic significance to the area. In addition to its core mandate, the museum presents educational and outreach programs and provides a place for the community to gather and celebrate its history. (11 volunteer directors, 2 full-time employees)

<http://www.osoyoosmuseum.ca/>

Peach City Community Radio Society

Our mission is to engage and enrich the South Okanagan through quality radio programming that empowers, educates and entertains. We are a passionate group of dedicated, trained volunteers motivated to provide fresh and unique radio broadcasting for Penticton area residents. Peach City Radio (CFUZ 92.9 FM) is an inclusive space - we welcome the interest of people of all ages, genders, backgrounds, identities, orientations, and abilities. (7 volunteer directors, 2 contract positions and 0 paid staff)

<http://www.peachcityradio.org/about/society.php>

Pentastic Jazz Festival Society (Penticton)

Annual Hot Jazz Festival held the weekend after the labour day weekend in Penticton, BC. (Directors are not provided.) <https://www.pentasticjazz.com/>

Penticton & District Multicultural Society

Doing business as South Okanagan Immigrant & Community Services (SOICS). SOICS is a one-stop shop that provides a range of free services to all immigrants, temporary foreign workers, post secondary international students, and refugees through education, advocacy and projects, which assist in their integration. We have been managing community projects, building partnerships and achieving integration and multicultural outcomes in the South Okanagan-Similkameen region for over 40 years. SOICS' OneWorld Festival unites the community by celebrating and exchanging knowledge about the culturally diverse traditions, cuisine, performances, folk songs and exhibits that make up the South Okanagan region. In 2021, the One World Festival was delivered entirely online. (13 volunteer directors and ≈ 15 employees)

<http://soics.ca/about-us/>

<http://soics.ca/programs/welcoming-communities/one-world-festival/>

Penticton Elvis Festival Society

The Penticton Elvis Festival Society is a not-for-profit society whose main goal is to celebrate the life and music of the greatest entertainer ever known... Elvis Presley. (13 directors)

<https://www.pentictonelvisfestival.ca/>

Penticton Scottish Festival Society

The Penticton Scottish Festival Society exists to celebrate, showcase, and support youth and families through community-based Celtic events and activities. No information is provided on volunteers or management.

<https://www.pentictonscottishfestival.ca/>

Princeton and District Museum and Archives Society

A Society committed to protecting, preserving, restoring and collecting items pertaining to the history of Princeton and the surrounding area. (12 volunteer directors and 5 part-time employees)

<https://www.princetonmuseum.org/e/about>

Princeton Traditional Music Society

The Princeton Traditional Music Society was founded by Jon Bartlett and Rika Ruebsaat who have a life long commitment to this music. The Princeton Traditional Music Festival, and its success, is a testimony to their passion and hard work. (8 volunteer directors)

<http://princetontraditional.org/ourstory.htm>

South Okanagan Amateur Players (SOAP) Theatre Society (Osoyoos and Oliver)

We are a non-profit society incorporated under the laws of British Columbia as the South Okanagan Amateur Players Society (SOAP). Our main purpose is to promote and foster interest in the performing arts in the South Okanagan... (7 volunteer directors)

<https://www.soplayer.ca/about.html>

South Okanagan Concert Society (Osoyoos & Oliver)

A Group Member of the Oliver Community Arts Council and Osoyoos & District Arts Council. Contributes to programming at the Frank Venables Theatre. Information about the society's volunteer directors is not available.

South Okanagan Similkameen Arts Society (SOS Arts)

SOSArts is dedicated to connecting, supporting and raising the profile of arts and culture across the regions. SOSArts Regional Arts Society is the reincarnation of an earlier group of volunteers working to establish a performing arts venue to serve the region and known as the South Okanagan Performing Arts Centre Society (SOPAC and SOPAC II). This evolution is the result of two formal workshops conducted in late 2019 and early 2020 attended by SOPAC members and representatives from across the region. The current Board of Directors and membership were formed at the 2020 AGM and a subsequent meeting of the Board on May 3rd. As a result of the second of the two workshops, the SOSArts Society resolved to undertake an environmental scan of the regional arts landscape to inform the future direction and priorities of SOSArts. A future role for SOS Arts, if any, will not be determined until the environmental scan and consultations with the regional arts and culture community are complete.

(7 volunteer directors)

<https://sosarts.ca/about/>

South Similkameen Arts Society (Keremeos)

The focus of the society is to establish an open and all-inclusive organization for the vast diversity of art forms, including but not restricted to visual and fabric arts, photography, sculpture, musicians and performing arts. (5 volunteer directors)

<http://southsimilkameenartsociety.ca/>

South Similkameen Museum Society (Keremeos)

To care for and program the museum and historical records. (8 volunteer directors)

<https://keremeosmuseum.ca/>

The S.S. Sicamous Society (Penticton)

To preserve and present the marine history and heritage of the Okanagan with historical integrity; to preserve, restore and maintain the historical vessels of Okanagan Lake.

Our society cares for the S.S. Sicamous Stern Wheeler. It is open as a museum and heritage site. We have a full time staff that is led by a team of 8 volunteer directors.

<http://sssicamous.ca/about/>



Osoyoos Museum and Archives

Summerland Bluegrass Group (Society)

Operate the Summerland Bluegrass Festival. Dedicated to the preservation and promotion of bluegrass music. (10 volunteer directors) <https://www.summerlandbluegrass.com/>

Summerland Fall Fair Society

Sample the local food and sip the artisan beverages. Local musicians and entertainers will fill your senses. Free children's rides and activities will thrill the whole family. Local vendors, service clubs and societies will showcase their world and invite you to experience the 'fabric' of Summerland. (5 volunteer directors) <https://www.summerlandfallfair.ca/>

Summerland Museum and Archives Society

The Summerland Museum and Archives is operated by the Summerland Museum and Archives Society. Governance is in the hands of the Board of Directors, consisting of four executive members as well as up to six additional directors. (8 volunteer directors) <https://www.summerlandmuseum.org/society-documents>

Summerland Singers and Players

Founded over 100 years ago, the society encourages the development the theatre in the community, produces quality live theatre, provides training and development opportunities and creates appreciation for theatre. Originally renowned for its Gilbert and Sullivan operettas, the group now produces a variety of plays and events in the area. Recently, the Players have partnered with the Kettle Valley Railway to produce murder mysteries aboard the train. <https://summerlandtheatre.ca/history/>

Tempest Theatre and Film Society (Penticton and beyond)

Our aim is to encourage and develop local, national, and international artistic outlets, focusing on theatrical and motion picture media. The purposes of the Society are: To produce and present theatre, film, television, and other art or artistic things and events on local, national and international scales, and to do so, live or recorded, using digital, analog, experimental media or any other means; To promote theatre, film, acting, and other art forms as avenues to emotional wellness and vital living... (6 members) <https://tempest.ca/society-constitution/>

The Wide Arts National Association (WANA) (Osoyoos and Oliver)

The mission of the Wide Arts National Association (WANA) is to actively create and deliver a wide array of arts and cultural experiences to foster the health, development, appreciation, understanding, and enrichment of community. WANA presents performing, visual and literary arts and cross-disciplinary opportunities as avenues of education, inclusion and involvement for individuals of all ages and social backgrounds. WANA was founded in 2021 and has launched its first public art program Murals in Osoyoos Vicinity & Environs "MOVE" and has proposed WIDE ARTS ALLEY MARKET "WAAM", an initiative to develop an "Arts Corridor" where visitors and residents expose themselves to artwork, performances and the tastes of Osoyoos. (7 volunteer directors) <https://www.widearts.ca/about-us>



Kettle Valley Railway Stop, Summerland

CREATIVE PLACES AND SPACES

The region is home to over 100 creative spaces and places, including a diverse mix of cultural centres, private and public galleries, professional theatres, small venues and stages, wineries, studios, outdoor cultural spaces, libraries, museums and heritage sites, and a large multi-purpose event centre (SOEC).

PERFORMANCE SPACES

The table below provides a sampling of prominent venues for concerts, performing arts and cultural events. Note that there are only two commercial cinemas in the region: the Oliver Theatre and the Landmark Cinemas multi-screen theatre in Penticton. A comprehensive inventory of the region's creative places and spaces, including museums and other heritage spaces can be found in Appendix 2.

Venue/Facility	Location	Capacity	Programming	Comments
South Okanagan Event Centre (SOEC)	Penticton	5,500	Arena style, multi-purpose, mid-sized to large acts	Concerts, sporting events, 3 ice pads, attached to the Penticton Trade and Convention Centre, and the Penticton Memorial Arena
Penticton Lakeside Hotel and Conference Centre	Penticton	Up to 1,000	Conference centre for groups of 10 to 1,000 — with 32,000 square feet of flexible meeting space including two ballrooms, seven breakout rooms, and private outdoor courtyard. The Barking Parrot Bar has a large riser and audio setup for live performances for up to 300 people.	
Cleland Theatre	Penticton	443	A variety of concerts and performing arts events	City of Penticton will reinvest in the theatre
The Dream Cafe	Penticton	110	Intimate concerts and performances in a bistro/venue setting.	Operated by a collective. For-profit.

Venue/Facility	Location	Capacity	Programming	Comments
The Cannery Stage/Many Hats Theatre	Penticton	?	Primarily used by Many Hats Theatre	At the Cannery Trade Centre
Tempest Theatre	Penticton	?	Black box theatre that emphasizes original content and also a provocative approach to classical and contemporary texts.	Operated by the Tempest Theatre & Film Society
Orchard House	Penticton	100 to 250	2 large entertainment spaces (theatre and banquet hall) with commercial kitchen	Rental venue. Includes the Balance School of Performing Arts and houses the band Yard Katz
Gyro Park	Penticton	Up to 1,000?	Outdoor bandshell / stage with washrooms	Operated by the City.
Gyro Park	Osoyoos	Up to 1,000?	Outdoor bandshell / stage	Home of Music in the Park
Kinsmen Theatre Bandshell	Summerland	Up to 500?	Outdoor bandshell / stage	Outdoor bandshell at Memorial Park. This urban park within the downtown core is a focal point for many festivals and events.
Venables Theatre	Oliver	406	A variety of concerts and performing arts events	Owned by School District # 53 and leased to the RDOS through a joint use agreement. Operated by Oliver Community Theatre Society.
Janet M. Ritchie Centre Stage Theatre	Summerland	295	The Theatre accommodates concerts, live theatre, movies, speakers and regular school drama productions.	Community/school facility located at Summerland Secondary School.

Venue/Facility	Location	Capacity	Programming	Comments
Riverside Community Centre Theatre	Princeton	270/150	Public performances and private events	Operated by the Recreation and Culture office of Princeton. Mix of soft seats and folding chairs.
Tin Horn Creek Winery	Oliver	500 (tbc)	Amphitheatre - Hosts Canadian Concert Series May through August	
The Shatford Centre	Penticton		A large facility owned by School District 67 - previously serving as home to the Okanagan School of the Arts.	According to the city of Penticton, the Shatford Cultural Centre is an entrepreneurial creativity centre dedicated to creative well-being. The status of the facility is uncertain.
District Wine Village	Oliver	600	A new facility - The first true wine village in Canada. Located in the heart of the South Okanagan, the Village. Surrounded by vineyards and home to 16 artisan producers. A four seasons opportunity for visitors to meet and enjoy local events and experiences. https://districtwinevillage.com	Includes a 600 seat amphitheatre, patios for performances in each of the businesses and displays of visual art.
<p><i>A variety of small venues that provide occasional performance spaces can be found sprinkled across the region, including taverns, legions, and halls. See Appendix 2 for the complete list.</i></p>				



Summerland Arts and Culture Centre

CULTURAL CENTRES

There are a handful of cultural centres in the region. These centres serve as community hubs and are home to arts councils, artists in residence, community galleries and heritage groups. The Shatford Centre in Penticton, owned by School District 67 and former home of Okanagan School of the Arts is currently shuttered. (https://www.pentictonherald.ca/news/article_92429a28-40a4-11eb-ae0a-f787baa6a0d9.html)

En’Owkin Centre

An Indigenous cultural, educational, ecological and creative arts organization, En’owkin plays a lead role in the development and implementation of Indigenous knowledge and systems, both at the community and international levels. The centre provides cultural programming and gathering and performance space for up to 150 people. It is located in Syilx territory on the Penticton Indian Reserve. The Centre is also home to Theytus Books, a leading North American publisher of Indigenous voices.

<https://enowkincentre.ca/about.html>

<https://www.theytus.com/About-Theytus>

Leir House Cultural Centre (Penticton)

Leir House is the home of the Penticton & District Community Arts Council, as well as other community arts organizations, including the Penticton Academy of Music & Dramatic Arts and the Penticton Potters’ Guild. In addition to these arts groups, Leir House is also the home of several Artists in Residence (AiR), whose studio spaces are subsidized by the Penticton Arts Council. Leir House features two public gallery spaces for Arts Council members to display and exhibit their artwork to the public.

<https://www.pentictonartscouncil.com/leir-house-1>

Nk’Mip Desert Cultural Centre (Osoyoos)

Nk’Mip Desert Cultural Centre is a unique and informative way to experience the First Nation’s of the area, the Okanagan People. See legends come alive in two multi-sensory theatre experiences. Explore the “Living Lands” outdoor exhibit and sculpture gallery. Smell the wild sage along our network of walking trails and admire the view from the Chief’s lookout. Visit a reconstructed village and explore the rich living culture of the Osoyoos Indian Band. The spectacular Nk’Mip Desert Cultural Centre (pronounced in-ka-meep) is a state-of-the-art interpretive centre is an architectural marvel sensitively constructed into a hillside. Extensive indoor and outdoor exhibit galleries create a fun, interactive learning environment with hands-on displays, education stations and two multi-media theatre experiences. Discover the fascinating stories of Canada’s only desert and share in the rich living culture of the Okanagan people.

*Offers **two theatres**, indoor and outdoor exhibits and trails. <https://nkmipdesert.com/>, <https://www.facebook.com/NkmipDCC/>*

Quail's Nest Arts Centre (Oliver)

Includes studio building for rentals and the Big Blue building currently leased by SOAP Theatre. <http://oliverartscouncil.org/rental/>

Summerland Arts and Culture Centre

Supporting arts and culture in the community of Summerland. The centre is operated by the Summerland Community Arts Council and includes a gallery, gift shop and community space. https://www.facebook.com/SummerlandArts/?ref=page_internal

The Shatford Cultural Centre

The Centre is currently closed and its future is unclear. It has gone through some significant changes in the last two years, with the anchor tenant (Okanagan School of the Arts) having relocated. Its description on the City of Penticton website reads "The Shatford Centre is an entrepreneurial creativity centre dedicated to creative well-being." The Shatford building is owned by School District 67.

<https://www.penticton.ca/our-community/arts-culture/shatford-centre>



The Art Gallery Osoyoos

GALLERIES

The region's over 150 visual artists are well supported by the collection of galleries -- publicly or privately operated—and mid-sized and small studios scattered across the region. Public and non-profit galleries are typically supported or operated by the city or township/district either directly, as in the case of the Penticton Art Gallery, or indirectly through the district arts councils. A selection of the more prominent galleries is provided below. The complete inventory of galleries and studios is provided in Appendix 2.

Art Gallery Osoyoos

A Community Gallery for Creative People: The Gallery, operated by the Osoyoos Arts Council, offers original art produced by artists and artisans. The gallery features guest artists, local and non-local, throughout the year. The Art Gallery Osoyoos was established in the 1990s and is a non-profit organization run by volunteers. <https://osoyoosartscouncil.com/art-gallery> and <https://www.facebook.com/THE-ART-GALLERY-osoyoos-289443131153442/>

Art Up Studio Gallery (Penticton)

Art Up Studios is a community of artists living their dream making art. Collaborating and inspiring creativity here in Penticton, BC. A working studio space with an Art Gallery and Gift Shop. <https://www.facebook.com/Artupstudiospentiction/>

Matheson & Grove Fine Art/Martin Street Gallery (Penticton)

Offers private studios, artist wall rentals, special events, music rehearsal and performance venues. Offers an all in one "art experience". The gallery has recently downsized to a smaller space. <https://www.martinstreetgallery.com/>

Okanagan Art Gallery (Osoyoos)

An artists' cooperative featuring the work of local artists. The gallery today comprises a large 2100 sq ft floor area with six rooms. Membership in the gallery is restricted to residents of the south Okanagan/Boundary/Similkameen area and applicants are subject to a jurying process ensuring a consistently high standard of work. The gallery is active in the community, participating in art exhibitions, offering workshops, giving charitable donations and hosting special talks. <https://www.okanaganartgallery.com/>

Penticton Art Gallery (Penticton)

The Penticton Art Gallery exists to exhibit, interpret, preserve and promote the visual, artistic and cultural heritage of Indigenous Peoples and of Canada; to educate and engage the public on local, regional and global social issues through the visual arts. We envision a gallery accessible to everyone as a vibrant public space in service of our community, to foster greater social engagement, critical thinking and creativity. The Gallery is supported by the City of Penticton. www.pentictonartgallery.com



The Lloyd Gallery, Penticton

Summerland Art Gallery

Community art gallery located in the Summerland Arts and Culture Centre and operated by the Summerland Community Arts Council. Provides exhibits and artist residencies.

<https://summerlandarts.com/>

Sunflower Gallery (Princeton)

Gallery and gift shop supported by the Princeton Community Arts Council. Another gallery, the Snowflake Community Gallery is temporarily closed.

<https://www.princetoncommunityartscouncil.com/sunflower-gallery--gift-shop.html>

The Lloyd Gallery (Penticton)

The Lloyd Gallery has provided the Okanagan Valley with an exceptional selection of quality original art by Canadian artists. The Lloyd Gallery welcomes you to view their salon-style gallery showcasing 40 Canadian artists, ranging in style from contemporary landscapes in oils and acrylics, or life-size horses and wildlife to figurative bronze sculpture. Many of our artists enjoy an award-winning national and international reputation. <https://www.lloydgallery.com/>

Tumbleweed Gallery (Penticton)

Collective of seven artists who manage and attend the gallery on a rotating basis. The Tumbleweed is an artist run gallery, featuring unusual and inspiring works of art from local artists. www.tumbleweedgallery.ca

MUSEUMS AND HERITAGE SITES

The region's museums and heritage sites are dedicated to preserving the history and the cultures of the people of the South Okanagan Similkameen.

Keremeos Museum

The South Similkameen is an area rich in history. From cattle rustling to the growth of the fruit industry, our heritage is commemorated through the artifacts and documents that make up the collections at the Keremeos Museum. <https://keremeosmuseum.ca/>

Naramata Heritage Museum

Operated by the Naramata Heritage Museum Society, the museum is Dedicated to preserving the history of Naramata. The Museum has a large collection of family histories of both original pioneers, later arrivals and descendants. <http://www.naramatamuseum.ca/>

Nixdorf Car Museum (Summerland)

The facility of over 14,000 sq. ft. preserves the history of classic automobiles with an Inventory of over 100 classic cars completely restored. <https://www.nixdorfclassiccars.com/>

Oliver Museum and Archives

The Oliver and District Museum is housed in the old BC Provincial Police building, a heritage location built in the 1920s. Learn about the unique ecosystem of the South Okanagan, its settlement during eras of fur trading, mining, ranching and agriculture, and the culture and resilience of the Syilx Okanagan people who continue to call it home. The ODHS Archives acquires, collects, preserves, and makes accessible records pertaining to the history of Oliver and area, including the former gold mining settlements of Camp McKinney and Fairview. <https://www.oliverheritage.ca/#basics>

Osoyoos and District Museum and Archives

The Mission of the Osoyoos Museum is to collect, preserve, research, document, interpret and exhibit artifacts and archival records of historic significance to the area. In addition to its core mandate, the museum presents educational and outreach programs and provides a place for the community to gather and celebrate its history. <http://www.osoyoosmuseum.ca/index.php/about-us.html>

Penticton Museum and Archives

An ongoing resource for anything dealing with the history of Penticton. The museum also hosts community events to do with historical aspects of the district. <https://www.penticton.ca/our-community/arts-culture/museum-archives>

Princeton and District Museum

Committed to protecting, preserving, restoring and collecting items pertaining to the history of Princeton and the surrounding area. <https://www.princetonmuseum.org/e/about>

SS Sicamous (Penticton)

The SS Sicamous is the largest surviving stern wheeler in Canada. The vessel, located on Okanagan Lake in Penticton, is operated by the SS Sicamous Society, a charitable organization dedicated to preserving and presenting the marine history and heritage of the Okanagan and to preserve, restore and maintain the historical vessels of Okanagan Lake. The Sicamous is open for public visits and rentals of its rooms for weddings and other events. <http://sssicamous.ca/>

Summerland Museum and Archives

The Summerland Museum and Archives exists to collect, preserve, research, interpret, and display objects that are historically significant to our community. These objects reflect the history of the Summerland District and the immediate surrounding area, from the period from pre-contact, including Indigenous history, to the present. <https://www.summerlandmuseum.org/about-nav>

The Desert Centre (Osoyoos)

Our mission is to conserve and restore the antelope-brush ecosystem in the South Okanagan and through education increase knowledge, respect and active concern for ecosystems worldwide. <https://www.desert.org/>

LIBRARIES

There are 10 public libraries in the Region. These libraries are part of the Okanagan Library System (<https://www.orl.bc.ca/>), with the exception of the Penticton Library & Archives, which is owned and operated by the municipality. Branches of the Okanagan Library System can be found in Hedley, Kaleden, Keremeos, Naramata, OK Falls, Oliver, Osoyoos, Princeton and Summerland.

Libraries are no longer book storage and lending places. In many ways they have become community meeting spaces. Often, connectivity is better at the library than it is in people's homes -- especially in rural or remote areas. Therefore many users prefer the library to do on line research. All of the region's libraries offer programming to the public. This can range from children's pre-school story hours, to after-school student gaming (which has become quite common in libraries) and various learning opportunities. Adult book clubs, craft clubs, author readings, musical offerings and more are available to the public. Increasingly, programming has been digitized and is offered online.

WINERIES

There are hundreds of wineries, vineyards and producers of craft beverages (cideries, micro breweries, distilleries) in the region. These businesses are a key part of the tourism industry in the South Okanagan and as such, are valuable allies in arts and culture. The current contributions of wineries and other producers of craft beverages to regional arts and culture and the potential for additional support have not been quantified, primarily as a result of the fact that with a very few exceptions, performances either musical or otherwise are not a scheduled occurrence but rather they are offered only as the winery or sponsor elects to reach out. To date, there has been no collective/ coordinated effort to promote arts and culture to the many wineries across the region. See the Inventory, Appendix 3 for a complete list of wineries and producers of craft beverages, along with a summary of recent developments.

FESTIVALS AND COMMUNITY EVENTS

There are over 30 annual cultural festivals and community events in the Region, with the majority of them taking place in the summer months. A sampling of regional festivals and events is provided below. A list of festivals and events featuring the many artistic disciplines, culture and heritage, along with festivals that include a cultural component (like the Penticton Dragon Boat Festival) can be found in Appendix 4.

Note that many were canceled in 2020 and early 2021 due to the pandemic.



“Maybe in 2021” The Osoyoos Music in the Park event was canceled in 2020.

97 South Song Sessions (Penticton) (July)

A songwriter's festival and competition - 97 South Song Sessions is a magical music performance event, where you'll hear the stories behind the songs that make up the soundtrack of your life. Award-winning songwriters and recording artists come together to perform and share tales of the creative journey that inspired their hit songs. The festival takes place at the Penticton Trade and Convention Centre, the Lakeside Hotel Resort and in local venues, Bench 1775 Winery, The Dream Café, Poplar Grove Winery and Tempest Theatre. The festival includes a competition for local songwriters.

Kiwanis Music, Dance and Speech Arts Festival (Penticton)

Festival hosts over 1600 competitive and non-competitive young amateur performing arts entries in 9 disciplines. The purpose of the Penticton Kiwanis Music, Dance and Speech Arts Festival is to complement and enhance the learning/teaching process. It provides an opportunity for students to perform their music, speech arts and dance achievements and to receive a constructive, meaningful evaluation of their performances. pkmf.org/about-pkmf.aspx

Oliver Festival of the Grape (October 2 - 3)

Oliver Festival of the Grape attracts over 4,500 attendees annually who come to sample a variety of BC wines, dance to live music, and cheer on the fun and chaotic grape stomp. In addition, there are mouth-watering food trucks, an interactive Kids Zone, an artisan Merchant Market and the Fall Art Show (presented by Oliver Community Arts Council) and Sale. <https://oliverfestivalofthegrape.ca/>

One World Festival - by South Okanagan Immigrant and Community Services (SOICS) (February)

A virtual one-day festival Celebrating and exchanging knowledge about culturally diverse traditions, cuisine and performances making up the South Okanagan. <http://www.soics.ca/oneworld/>

Peach Festival (Penticton) (August 4 - 8)

Penticton Peach Festival is an annual South Okanagan Valley tradition, which began in 1947, to celebrate the peach harvest in Penticton. Concerts, recreational activities, professional and grass roots performances by local arts groups (music, film, dance, theatre), participatory activities, food and merchandise. <https://peachfest.com/>

Penticton Elvis Festival (June 25 - 28)

The Penticton Elvis Festival celebrates the life and music of the greatest entertainer ever known... Elvis Presley. <https://www.pentictonelvisfestival.ca/>

Princeton Traditional Music Festival (August 20 - 22)

The kind of music presented at the Traditional Music Festival consists of tunes and songs that have been passed on orally, from one generation to the next. In the days before any kind of electronic devices people made their own music. Events are held on several stages in the centre of Princeton and begin on Friday evening with a public street dance and an Irish ceili band. <http://princetontraditional.org/ourstory.htm>

Ryga Arts Festival (Summerland) (August 13 - 22)

The Ryga Arts Festival is a diverse multi-day celebration of arts and culture in the Okanagan, inspired by influential Canadian playwright and author George Ryga. Bringing together professional and local artists, it features concerts, spoken word, author readings, visual arts, theatre, and more. Visit <http://www.rygafest.ca/>

Summerset Music and Arts Festival (New) (Penticton) (September 17 - 18)

Guests will enjoy world-class music & art and mouth-watering local food and beverages right on the water as the sun sets on Skaha Lake. The festival is an offshoot of the annual Langle festival. <https://summerseffestival.ca/penticton/event-info/>

The Penti-Con Pop Culture Festival (Penticton) (October 16, 2021)

Pop culture festival - cosplay, talent competition and art events, workshops, gaming. <https://www.thepenti-con.org/>

Wine Country Writers' Festival (Penticton) (September 24 - 25)

The inaugural festival was to take place in 2020 but was canceled due to the Pandemic. This Festival is a celebration to bring together like-minded individuals of the greater writing community in an exciting, safe, and encouraging atmosphere. Writing is such a solitary pursuit that it's important to meet and make connections within the industry. At WCWF you'll learn from industry insiders, perhaps share your own story with other writers, as well as mingle and network with published authors and industry professionals. This event is inclusive of all genres and every skill level. <https://winecountrywritersfestival.ca/>

ARTISTS

The region is home to over 50 artistic and artisanal groups, studios and societies. This scan identifies hundreds of individual professional artists living in the region, with the majority working in the visual arts. Please see Appendix 1 for the complete list.

Many of the region's visual artists are members of grassroots groups such as "plein air" painters as well as formal groups such as the South Okanagan-Similkameen Chapter of the Federation of Canadian Artists. The Federation provides support and promotion, allowing artists to "hang out their shingle" and display works online. Artists and artisans also look to the region's arts councils and public and private galleries for promotion and opportunities to show and sell their works, or simply to be part of a community. For many of the region's visual artists, the sale of their works is not their primary source of income. They may have retirement income, rely on part-time employment or earn income by giving lessons or workshops.

An area worthy of further investigation is the economic status of these artists, their sources of income and their expectations relative to sources of financial and promotional support.

COMMERCE, TOURISM AND PROMOTION

The region's many chambers of commerce and tourism/travel associations support economic development and offer a variety of promotional and business services for individuals and organizations in arts and culture (including the arts councils). These include online events calendars, member directories, online marketplaces, group benefits, workshops and skills development, business tools, access to networking events, access to funding sources, COVID-19 recovery services and information, facility rentals, awards, galas and more.

PROMOTIONAL WEBSITES

Castanet

Castanet provides various listings. Penticton and Osoyoos are the only towns of the region specifically listed.

<https://www.castanet.net/events/>

<https://www.castanet.net/events/search/?kw=penticton>

<https://www.castanet.net/events/search/?kw=osoyoos>

Destination Osoyoos

Tourism site promoting Osoyoos' attractions and events. Operates the Osoyoos Visitor Centre.

<https://www.destinationosoyoos.com/>

<https://www.destinationosoyoos.com/event/>

<https://www.destinationosoyoos.com/osoyoos-visitor-centre/>

Downtown Penticton Association

<https://downtownpenticton.org/>

<http://downtownpenticton.org/events/> (Does not appear to contain any current information)

Eventbrite

The online ticketing and promotional platform provides localized postings of events. The postings are not restricted to arts and culture.

<https://www.eventbrite.ca/d/canada--oliver/events/>

<https://www.eventbrite.ca/d/canada--osoyoos/events/>

<https://www.eventbrite.ca/d/canada--penticton/events/>

<https://www.eventbrite.ca/d/canada--princeton/events/>

<https://www.eventbrite.ca/d/canada--summerland/events/>

Penticton and Wine Country Chamber

<https://www.penticton.org/>

https://www.penticton.org/business_category/culture/

Penticton Now

*A promotional and marketing news site by the Now Media Group with calendar of events. Penticton is the only city served in the South Okanagan (<https://nowcities.ca/>).
<https://www.pentictonnow.com/events/>*

Princeton and District Chamber of Commerce

*A leading advocate for business in the Princeton & District area of B.C.
<https://princetonchamber.ca/>*

Similkameen Valley Service Directory

*Serving Princeton, Coalmont and Tulameen, Hedley, Keremeos, Cawston, Cathedral Lakes, Chopaka, Eastgate, Manning Park, Olalla, and Twin Lakes.
<https://similkameenvalley.com/directory/categories/chamber-of-commerce>
<https://similkameenvalley.com/things-to-do/events/>*

South Okanagan Chamber of Commerce

*Connecting and Advocating for South Okanagan Businesses in Osoyoos, Oliver and Ok Falls. (Membership directory lists 24 organizations or business, artists, artisans, individuals offering services in the arts.)
<https://www.sochamber.ca/>
<https://www.sochamber.ca/list/ql/arts-culture-entertainment-3>*

Summerland Chamber of Commerce

*Membership directory lists 28 organizations or business, artists, artisans, individuals offering services in the arts.
<https://www.summerlandchamber.com/>
<https://www.summerlandchamber.com/list/ql/arts-culture-entertainment-3>
<https://www.summerlandchamber.com/annual-festivals-events>*

Thompson Okanagan Tourism Association

*Serving the Thompson-Okanagan, including Okanagan Similkameen region
<https://www.totabc.org/about>*

Travel Penticton

*Travel Penticton is a Destination Marketing Organization (DMO), charged with the task of providing marketing and awareness to potential travelers on a regional, provincial, national and international level. Travel Penticton promotes a collaborative funding model offering a balanced approach to Tourism Marketing utilizing: Print, Digital & Social Media Platforms, Media Development & Leveraging, Event Support, Consumer Direct Shows, Partnerships with Local Events, Facilities and Attractions. Travel Penticton operates the Penticton Visitor Centre.
<https://www.travelpenticton.com/overview-travel-penticton/>
<https://www.travelpenticton.com/events/>*

Tourism Summerland

*A tourism website for the District of Summerland
<https://www.tourismsummerland.com/>*

<https://www.tourismsummerland.com/play/arts-and-culture/>
<https://www.tourismsummerland.com/events/arts-culture-events/>

Visit Oliver - Oliver Tourism Association

The Oliver Tourism Association will identify and promote tourism opportunities and activities within the Town of Oliver and the surrounding area, encourage and support tourism initiatives that will benefit the Town of Oliver and the surrounding area, and develop and market the destination branding. The OTA operates the Visitor Centre.

<https://visitoliver.com/>
<https://visitoliver.com/about-oliver/meet-the-ota/>
<https://visitoliver.com/events-tickets>

Visit Penticton

Tourism info service featuring a limited directory of cultural attractions.

<https://www.visitpenticton.com/>
<https://www.visitpenticton.com/listing-category/arts-culture/>
<https://www.visitpenticton.com/event/>

Visit South Okanagan

A tourism website for Summerland, Penticton, Naramata, Kaleden, OK Falls, Oliver and Osoyoos. <https://www.visitsouthokanagan.com/>

In addition to the promotional websites above, other organizations (including the arts councils) and groups provide online promotion through events calendars and listings. Among the most comprehensive of these is the Penticton and District Arts Council's extensive events calendar and Arts Matters web pages which provide information on the Penticton Arts Council's events and member artists in addition to selected cultural events and programming across the region. The Summerland Cultural Coalition has developed an events platform allowing individuals and organizations to post information on events and programming in the District of Summerland. Both the Penticton Arts Council and the Summerland events calendar platform may serve as good starting points for an eventual comprehensive pan-regional promotional portal. The arts councils and many community groups also use facebook and other online services to promote their activities.

Oliver Community Arts Council

<http://oliverartscouncil.org/upcoming-2/>

Osoyoos and District Arts Council

The Osoyoos Arts Council does not provide an events calendar, but it does provide current information on its activities and programs.

<https://www.destinationosoyoos.com/event/calendar/>

Penticton and District Community Arts Council

<https://www.pentictonartscouncil.com/calendar>
<https://www.pentictonartscouncil.com/events>

<https://www.pentictonartscouncil.com/online-activities>

Princeton Community Arts Council

<https://www.princetoncommunityartscouncil.com/events.html>

Summerland Community Arts Council

<https://summerlandarts.com/pages/2021-gallery-shows>

<https://summerlandarts.com/blogs/news>

Summerland Cultural Coalition Community Calendar

In keeping with objectives in its Cultural Plan, the Summerland arts community has recently established an Arts and Cultural Coalition. The Coalition is an amalgam of local businesses, cultural organizations and arts groups including the Kettle Valley Railway, Bottleneck Drive, The Ryga Festival and many more valuable community assets. The Coalition has developed a new promotional platform (<https://mysummerland.ca/>) in the form of a Community Calendar that promotes educational, social, cultural, or recreational events in Summerland. It allows individuals and organizations to post their events and programming at <https://mysummerland.ca/submit.html>. Anyone is welcome to post to the calendar. The platform could eventually be adopted as a promotional tool by other cultural communities in the region.

RADIO STATIONS

Radio is an important part of the cultural fabric of the region. The region's community radio station, CFUZ Peach City Radio is a vital resource and outlet for local artists, volunteers and cultural causes. The complete list of stations is provided below:

FM Radio

92.9 - 49.9w [CFUZ -- Peach City Radio](#) Penticton BC new (community)
 93.1 - 188w [CBRG](#) -- CBC Radio 1 CBU-690 Princeton (news/information)
 93.7 - 1.84kW [CKOR](#) -- CBC Radio 1 CBU-690 Penticton (news/information)
 95.3 - 235w [CBUB](#) -- CBC Radio 1 CBU-690 Osoyoos (news/information)
 97.1 - 1.8kW [CJMG -- Move 97.1](#) Penticton (hot adult contemporary)
 98.1 - 73w [CIGV-2 -- New Country 100.7](#) Princeton (country)
 98.5 - 100w [CHOR -- EZ Rock Summerland](#) Summerland (soft adult contemporary)
 98.9 - 460w [CIGV-1 -- New Country 100.7](#) Keremeos (country)
 99.9 - 180w [CJMG-2 -- Move 97.1](#) Oliver (hot adult contemporary)
 100.7 - 10.6kW [CIGV -- New Country 100.7](#) Penticton (country)
 102.9 - 180w [CJOR -- EZ Rock Osoyoos](#) CJOR-1240 Oliver (adult contemporary)
 106.5 - 17w [CIRO](#) Osoyoos community, TIS (tourist)

AM Radio

800 - 10kW [CKOR -- EZ Rock Princeton](#) Penticton (adult contemporary)
 1240 - 1kW [CJOR -- EZ Rock Osoyoos](#) Osoyoos (adult contemporary)
 1350 - 400w [CBKY](#) -- CBC Radio 1 CBU-690 Keremeos (news/information)
 1400 - 1kW [CIOR -- EZ Rock Princeton](#) CKOR-800 Princeton (adult contemporary)

(Source: http://radiostationworld.com/locations/canada/british_columbia/okanagan_similkameen/radio_stations/)

SOCIAL INTEGRATION, WELLNESS AND EDUCATION

In addition to the offerings listed below, other individuals and groups, such as the district arts councils and societies provide a variety of social and educational programs. It is worth noting that there are no university-level accredited arts programs in the region, but the Okanagan College (Penticton) offers an Associate of Arts degree.

Aging Well Penticton

A partnership of community organizations and local government working together to further community services that enhance the social connections and belonging of seniors in Penticton. The collaborating partners are expanding social supports and providing better access to physical recreation, social outings, arts programs, intergenerational activities, volunteering, grief and loss counselling, supports for family caregivers, and mental wellness supports. (<https://agingwellpenticton.ca/>)

Balance School of the Performing Arts (Penticton)

Offering training for youth and adults in ballet, contemporary dance, musical theatre, acting, voice and acrobatic arts. (<https://www.balanceschoolofperformingarts.com/classes>)

Even Dance (Penticton)

A family oriented studio that allows the students to explore dance and self expression in a safe and caring environment. Parents are always welcome to come and view their child's progress. Dance classes are offered in tap, jazz, ballet, musical theatre, contemporary dance, acrobatics. (<https://www.evendance.com/about/>)

In House Dance (Summerland)

The vision of In House is to create a hard working, creative space for kids to grow in technical excellence in all genres of dance, vocals and acting. We strive to fuel passion and connection in each performing artist's ability. At this studio you have the ability to take your technical dance, vocal and acting training and round out into a triple threat performer. In House Studio has the tools and ability to guide a dancer to a performing arts career. (<https://www.inhouseperformingarts.com/>)

Okanagan College (Penticton)

Associate of Arts Degree - Immerse yourself in different cultures, new perspectives and timely historical insights. Communicate in new ways and dig up answers to long-standing and emerging questions facing today's world. Develop your critical thinking and research skills with the two-year Associate of Arts Degree, choosing from more than 300 courses in 23 subject areas. (<https://www.okanagan.bc.ca/associate-of-arts-degree>)

Okanagan School of the Arts (Penticton Campus)

Established in 1960, the Okanagan School of the Arts (OSA) is one of the longest-running schools of its kind in Canada. The OSA offers a variety of performing and visual arts

courses and programs for students of all ages and stages of development, providing creativity and connection for residents of Penticton and the surrounding communities. (<https://www.okanaganschoolofthearts.com/>)

Penticton Senior's Drop-In Centre

The Penticton Seniors' Drop-In Centre Society (PSDICS) is a valuable community resource that plays a vital role in serving the social, intellectual and physical needs of individuals aged 50 and older who live in Penticton and the surrounding communities. (<https://www.pentictonseniors.org/>)

Penticton Academy of Music and Dramatic Arts (Leir House)

The Penticton Academy of Music Society is a charitable non-profit organization that was formed in 1994 with the mission "to provide music education to students of all ages and circumstances through outstanding faculty in an environment that stimulates music excellence, enriching the community at large." <https://pentictonacademyofmusic.ca/about/>

Soundstage Productions (Penticton)

Led by Artistic Director Lynne Leydier, Soundstage Productions provides formal training in voice and musical theatre, with a focus on youth. Soundstage is an active voice studio where she teaches classical voice and musical theatre to students throughout the Okanagan who compete in musical festivals in the valley in both disciplines regularly winning awards at both the local, and provincial levels. <https://www.soundstageproductions.com/>

South Okanagan Immigrant and Community Service (SOICS) (Penticton)

The first wave of permanent immigrants to arrive in the Okanagan were European settlers. Since their arrival, the region has had successive waves of immigrants, each of which bring the arts & culture of their respective origins. These new communities can be quite recognizable by their different languages, food, clothing, music, and dance whereas some of their characteristics - such as family structures and cultural values - are less visible. Waves of immigration have been related to historic events that have provided potential economic opportunity (such as the Gold Rush and the construction of the national railroad) or a potential safe haven from conflict (eg. post-World War resettlement and recently, wars in the Middle Eastern and Africa). Immigration to the South Okanagan and Similkameen is ongoing and current and has added to the variety and vibrancy of their local communities and become a part of Canada's "cultural mosaic" that encourages new immigrants to retain their way of life, including arts & culture. The South Okanagan Immigrant & Community Services is one example of a local resource for immigrants that has help expand the awareness of the new residents and their arts & culture through the annual One World Festival. (<http://www.soics.ca/>)

The Dance Studio (Oliver)

Family oriented dance instruction for all ages in jazz, ballet, tap, hip hop, contemporary dance, musical theatre and acrobatics. (<https://www.thedancestudioinoliver.com/>)

LOCAL SOURCES OF FUNDING AND SUPPORT FOR ARTS AND CULTURE

In addition to the many federal and provincial sources of funding and support for arts and culture, there are a number of local resources serving the region. The local arts councils provide support in a variety of ways, including small grants, paying gigs and residencies. The Penticton and District Arts Council provides an excellent listing of funders, services and opportunities on its blog at <https://www.pentictonartscouncil.com/pdcac-blog/artist-opportunities>. It also provides honoraria for artists accepted to create digital/online content for the community, along with a COVID relief fund. The Community Foundation provides a lengthy list of funding bodies of all kinds, whether local, regional or federal; see <https://www.cfsone.net/other-funding-sources/>. A sampling of local sources of support is provided below.

Community Foundation of the South Okanagan Similkameen

The Community Foundation is a registered charity that helps donors make legacy gifts to support causes they care about. The Foundation provides grants to support projects that benefit the community. <https://www.cfsone.net/grants/apply-for-a-grant/>

Community Futures Okanagan Similkameen

Acting as a catalyst for initiating and coordinating community economic development and facilitating entrepreneurship, training and educational opportunities to enhance the socio-economic diversity and well-being of our communities. <http://www.cfokanagan.com/>

Telus Story Hive

Telus is offering grants for creators in the South Okanagan, including grants of \$5,000 to create nonfiction videos that tell local stories.

<https://www.storyhive.com/community>

RDOS

<https://www.rdos.bc.ca/finance/regional-grant-in-aid/>

Municipalities

Town of Osoyoos - <https://www.osoyoos.ca/content/community-service-grant-program>

City of Penticton - <https://www.penticton.ca/city-hall/municipal-grants>

Town of Princeton - <https://princeton.ca/p/official-documents>

District of Summerland - https://www.summerland.ca/docs/default-source/administration/policies/200-5-grant-in-aid.pdf?sfvrsn=a56bf9fb_2 ; <https://www.cfsone.net/summerland-community-fund/>

Credit Unions

Credit Unions may offer support under the auspices of their community giving programs and foundations.

Valley First - First West Foundation - <https://firstwestfoundation.ca/content/valley-first-community-endowment-0>

Osoyoos Credit Union - <https://ocubc.com/community/community-giving-fund/>

Interior Savings - <https://www.interiorsavings.com/about-us/community>

Summerland Credit Union - <https://www.sdccu.com/business/financing/summerland-capital>

Prospera Credit Union - <https://www.prospera.ca/Community/GrantPartners/>

Some local Service Clubs offer grants and encourage partnerships for projects and initiatives that benefit the community.

Rotary

District - <https://portal.clubrunner.ca/50005/sitepage/grants/welcome-to-grants>

Osoyoos - <https://portal.clubrunner.ca/830/>

Oliver - <https://portal.clubrunner.ca/828/>

Penticton - <https://portal.clubrunner.ca/564/>

Summerland - <https://summerlandrotary.ca/>

EVALUATION OF CURRENT CONDITIONS FOR THE REGIONAL CULTURAL SECTOR

The bulk of this document is devoted to researching and identifying the many and varied facets of the arts and cultural sector across the region. The goal is to lay bare in detail all facets of the sector—from individual artists and organizers to organizations, resources, supports and infrastructure—with a view to drawing inferences and conclusions about current circumstances that may lead to strategies and initiatives that help to improve conditions for all stakeholders. In this section, we will explore the current strengths, challenges and opportunities of the regional arts and culture sector.

STRENGTHS

A Beautiful Place to Live and Visit

The natural beauty and warm semi-arid climate of the region combined with the region's many services that would be found in large urban centre make it an extremely attractive place to live and visit.

Strategic Location

The region's location—bordering the United States and within easy driving distance of the lower mainland and in close proximity to a larger city and international airport to the north means it is easily accessible to visitors and business travellers. The regional airport, with regular short-haul flights from Vancouver, Calgary and Kelowna make the region easy to get to.

Growing Population

The region is a popular choice for people of retirement age. Due to the pandemic and the trend to remote working arrangements, a broader demographic of workers views the region as a safe, affordable and not-too-remote option.

Tourism Dollars

The South Okanagan is a major destination region and the arts and cultural sector benefits economically from a major influx of visitors each year. *According to Thompson Okanagan Tourism Association, the Region welcomed nearly 1.5 million visitors in 2019.*

A Burgeoning Wine District

The growth of the viniculture industry along with craft breweries, micro-distilleries and cideries is attracting visitors and new residents who tend to take an interest in arts and culture.

A Destination for Arts and Culture

Major attractions like concerts at the South Okanagan Entertainment Centre, annual festivals, a burgeoning viniculture industry, and Indigenous cultural centres, serve to reinforce the region's position as a tourism destination. The presence of First Nations communities, culture and businesses enrich the region and attract international visitors.

The region is also attracting savvy cultural workers like those who established the Route 97 Culture music initiative (<https://route97culture.com/about/>).



Under construction. The District Wine Village opened only partially in June of 2021. The 600 seat amphitheatre is the structure featured in the centre of the photograph.

Vital Arts Councils

The arts councils offer abundant and diverse programs and services that benefit artists and community members alike.

A Wealth of Skilled Volunteers

Arts and culture organizations benefit from a large number of experienced volunteers (many who are retired) dedicated to managing and supporting the operations of the region's many cultural organizations. There are currently 45 volunteer directors serving on arts council boards and over 165 serving on the boards of the region's cultural societies. The number of volunteers assisting in the delivery of programming has not been quantified.

Hundreds of Talented Artists

The region is home to an abundance of emerging and established visual artists and outlets like private galleries and artist studios attract visitors and tourist dollars.

Solid Public Engagement

The arts councils and local arts organizations offer many and varied opportunities for participation in arts and culture and are well connected to their communities.

CHALLENGES**The Pandemic**

The COVID pandemic has shuttered businesses and threatened the livelihoods of people and artists working in arts and culture, in particular those working in the performing arts. The continued threat of infection and advent of COVID variants has created an atmosphere of uncertainty about the very survival of many arts organizations, facilities and individual organizations.

Climate Change

Climate change has increased the incidence of wild fires and drought and discouraged tourism in the region.

Regional Geography

The region's towns are scattered across a an area of over 10,000 square kilometres, and separated by mountain ranges, lakes and forests.

Internet Connectivity

Like most rural and remote regions, internet and cell coverage is uneven and expensive.

Cost of Housing

The lack of affordable homes and availability of rental units discourages artists and cultural workers from moving to or staying in the region.

Limited Alternative Modes of Transportation

There are scant public transit or private transportation systems connecting the towns, leaving private automobiles and motorcycles as the only viable means of travelling from town to town. For youth and those who cannot afford or are unable to drive automobiles, including those who do not want to risk drinking and driving, attending or participating in events or programs in other parts of the region is problematic.

A Demographic Dominated by an Aged Population

There is a lack of diversity in the regional demographic, which is dominated by white people over the age of 50 and retirees, combined with a lack of younger volunteers and skilled workers and a tendency for the older volunteer community to “age out.”

Uneven Venue Offerings

While there is a diversity in the types of venues for the performing arts, the range of venue features and the seating capacities is uneven. The South Okanagan Entertainment Centre in Penticton can accommodate audiences of up to 5,500, while the Venables Theatre in Oliver and the Cleland Theatre in Penticton have about 400 seats. Restaurant venues like The Dream Cafe can seat about 100. With the exception of the outdoor amphitheatre at Tin Horn Creek winery and bandshells in Summerland, Osoyoos and Penticton, there are no venues with a capacity between 500 and 1,000 seats. There are no purpose-built concert halls dedicated to high-quality listening experiences. There are no independently operated venues of scale (theatres in the region are administered by or attached to municipal governments or local school boards). The Shatford Cultural Centre has been shuttered since the fall of 2020.

Post-Secondary Educational Options

There is a lack of accredited post-secondary programs in arts and culture. Okanagan College offers one “Associate of Arts” degree in the liberal arts. The closest university is located in Kelowna.

Cultural Planning

Despite a stated commitment to the creation of a regional cultural plan in collaboration with the community, the RDOS does not yet have an arts and culture strategy.

Under-Resourced Arts Councils

The arts councils provide invaluable services for their respective communities and—driven primarily by volunteer directors—do an exceptional job and deliver exceptional value for their communities with very little resource. Yet, with five arts councils in the region, taken altogether, they employ only one full-time employee and a handful of part-time employees. Their volunteers, including their directors, are often overworked and suffer burnout in delivering their programs and services. There is a clear need to shore up the sustainability of these arts councils and their programs by ensuring that they are properly staffed.

A Lack of Coordination Amongst Cultural Stakeholders

Arts councils and other arts groups and organizations tend to be siloed and do not regularly collaborate on programs, planning or common causes. They tend to be focused on their own challenges. For example, there is relatively little communication and collaboration amongst arts councils, societies or cultural groups responsible for programming of festivals and other major events in their respective towns. The region's geography no doubt has an impact on this, as does the varied population bases of the region's towns (from populations as small as 3,000 in Princeton to populations as large as more than 35,000 in Penticton). Nevertheless, from a regional perspective, these councils and cultural groups often face many similar challenges and opportunities.

Promotion of Local Programming

The promotion and marketing of regional events is fragmented. Numerous promotional channels, like the events listings of tourism associations, online news outlets, websites of independent organizers and local governments, social media sites, and listings by arts councils each offer their own views of arts and culture in the region. Arts councils like the Penticton and District Community Arts Council do an exceptional job of promoting local artists and listing cultural events and programming, however these are generally limited to the City of Penticton and its surrounding District.

OPPORTUNITIES

A Region of Exceptional Potential

As a tourism and vacation destination, the Region offers a warm, semi-arid climate and exceptional natural beauty year round. The region's reputation as a burgeoning viticulture destination attracts tourists with a natural appetite for meaningful cultural experiences. Its many festivals, events, galleries, heritage sites and talented artists serve to make these experiences even more appetizing. Annually, starting in late spring, the local population of nearly 90,000 and growing surges with an influx of **1,470,600** new and returning visitors (Source: <https://www.totabc.org/environics-analytics>). The surge of visitors peaks in the summer months and tapers off in the late fall after the harvest of local fruit and grapes.

Taken altogether, these factors—including its proximity to Vancouver and the US Border — make the Okanagan Similkameen a region of exceptional potential for the cultural sector. Given the expressed commitments of the regional government and townships to work to develop arts and culture in their jurisdictions (as evidenced by existing cultural plans and bylaws), there is an exceptional opportunity for the arts and culture sector to flourish in new and sustainable ways.

Whether stakeholders will be able to seize the opportunity will depend on their ability to work together to organize and plan.

Indigenous Arts and Culture

First Nations in Canada have developed many arts and cultural traditions over their centuries of habitation on land upon which many new and different communities now exist. In the South Okanagan and Similkameen area, we understand that indigenous traditions have relied mainly on the continuity of an oral history and that in recent times, more permanent facilities such as the Penticton Indian Band's Outma Sqilx'w School and the En'owkin Centre have been developed to help preserve and maintain these traditions. There has also been a growing recognition of the original first nations communities and a desire for further understanding. Although this environmental scan has only recognized the need to learn more about indigenous arts and culture in the region, we believe there is a significant opportunity to use the conduit of arts and culture to help enhance the relationship between the indigenous peoples and the rest of the communities in the region.

Viniculture Industry Creating Opportunities for Arts and Culture

The growth of the viniculture industry along with craft breweries, micro-distilleries and cideries is attracting visitors and new residents who are inclined to take an interest in arts and culture. This trend has fuelled the improvement of culinary experiences and provided new venues and opportunities for arts and culture. A regional strategy could help arts organizations forge new partnerships and sponsorships with these businesses. (See Appendix 3 for a full accounting of wineries, breweries and distilleries in the region.)

Built Heritage, Architectural / Urban / Landscape Design

Most cultures consider architecture, urban design and man-made landscapes as part of their arts and culture inventory. Iconic examples include the Eiffel Tower in Paris, Central Park in New York or the Ramblas in Barcelona. In the South Okanagan and Similkameen, the First Nations tread lightly on the landscape and left subtle traces of their presence by comparison but over the past 200 years, successive waves of development have had a great impact on the landscape. Some of the remaining historically significant buildings and public spaces have been identified but preservation efforts have not always been successful. Also, the somewhat limited appreciation of the importance of the built environment seems to be focused on preservation of the past rather than a focus on the future and the potential that a quality built environment can have on the arts & culture of our region. In some areas of the world, high quality buildings and public spaces have been embraced by communities and have been an economic driver such as Guggenheim Museum, Bilbao, Spain or the High Line elevated parkway in New York. Whereas some recent major developments in the region have added to the quality of the built environment, the majority of both public and private buildings have not. Because of the current building boom combined with the need to upgrade and/or replace existing infrastructure in many of the communities in the region, there is great opportunity to focus on improving the quality of architecture, urban and landscape design when considering the replacement and upgrading of major civic buildings and spaces. And there is reason to be optimistic; the viniculture industry and the region's Indigenous communities appear to be fuelling new and innovative spaces, including, for example, the District Wine Village and the new offices of the Osoyoos

Indian Band (see <https://www.timeschronicle.ca/new-office-space-for-osoyoos-indian-band-in-oliver-features-impressive-architecture/>).

An Opening for More Accredited Post-Secondary Programs in Arts and Culture

In the same way that the increase in the number and quality of wineries in the region has driven the creation of new college programs aimed at providing trained workers in aspects of the viniculture industry, there is an opportunity to encourage Okanagan College to increase its program offerings in arts and culture. This could help to retain young people to stay in the region for their education and provide more skilled cultural workers. This could also offer more avenues to enhance connections with Indigenous communities.

More Meaningful Employment for Artists and Cultural Workers

Our arts councils are cultural leaders in their respective districts. They represent a potentially important training ground for cultural workers. There is an opportunity for the regional government and the towns to work together to develop strategies to provide meaningful employment for young cultural workers and lessen the burden on volunteers at an operational level and allow volunteer directors to spend more time on governance and strategic planning. This will serve to professionalize the sector and help young artists and cultural workers to stay in the region.

A Regional Plan for Arts and Culture

The groundwork for a regional approach to arts and culture is already in place. The RDOS has committed to working with the community to develop a regional strategy (see bylaw 2770, 2017). And each of the region's towns has articulated its support for the development of arts and culture in their localities within their bylaws or community plans.

A Regional Approach for Cultural Organizations, Organizers and Artists

SOS Arts has learned that the bulk of the groups and organizations are focused on their own challenges which in most cases, are very similar for all organizations and artists within the region. A regional approach to sustaining and developing the cultural sector may result in the following benefits:

- **Strengthened networks and relationships**

More and stronger connections between regional cultural bodies, with government and community funders, programmers, cultural workers and artists, leading to the breaking down of silos, shared knowledge, greater collaborations, and a more unified voice for the sector on common causes and matters of common concern...

- **Greater leverage for the regional cultural sector**

Increased bargaining authority vis-a-vis local, provincial and federal supports, community funders and businesses/sponsors leading to increased buy-in and investment in arts and culture, partnerships, opportunities...

- **Increased organizational capacity**

Shared resources, access to tools and human resources, expertise, skills and best practices, leading to greater stability, a more manageable and balanced workload and greater resiliency in the face of change...

- **Increased audiences and engagement**

Increased outreach and promotion leading to greater community awareness across a range of demographics/publics, growth of audiences from outside the region (tourism), strengthening of regional touring circuits, greater opportunities for venues, presenters, organizers and artists...

AREAS FOR FURTHER INVESTIGATION

The primary purpose of our environmental scan is to provide a full accounting of all facets of the arts and culture sector. Such an accounting naturally leads to additional questions and identifies areas of enquiry to help us better understand what we have found. With that in mind, the following questions are worthy of further investigation:

Indigenous Relations

More deliberate and sustained effort is needed to develop outreach strategies and build cultural bridges and more meaningful relationships between First Nations and non-indigenous communities in the region.

Volunteerism

The sector relies heavily on the efforts of volunteers. For this reason, it would be worthwhile to gain a better understanding of the scope and nature of volunteerism in the region.

Demographics

Available data on age demographics suggest that the region's population is skewed toward an older demographic and that this trend is growing. Yet, given the advent of the viniculture industry, micro-distilleries and craft breweries, it appears that the region is now attracting a younger demographic. That, taken together with the impact of the pandemic—which appears to be fuelling an influx of new residents—suggests that a more careful study and clarification of these trends would be valuable for planning and strategic purposes.

Benchmarking

A benchmarking exercise would be useful as a means of measuring the impact and strength of arts and culture in the Region relative to other regions in Canada.

Economic Impact

An economic impact study of the arts and culture sector (including festivals) would be a valuable tool for making business cases for further investment and partnerships. To date

there has been no regional quantification of the level of investment in arts and culture, nor is there any data on the size and nature of the **cultural workforce**.

A Review of Marketing and Promotional Vehicles

Promotion of cultural programming is an essential facet of the sector and is often blamed for the failure of organizations to attract audiences. Further investigation into the nature and scope of marketing efforts in the region may offer insights into how to better target and attract audiences or participants.

CONCLUSION

Taken all together, the findings of the environmental scan indicate that the cultural sector in the Region is at an inflection point. Key drivers, including tourism, the continued resurgence of Indigenous communities, potential population growth, and the growing viticulture industry continue to push the region's economy forward. Current conditions point to a need for leadership at the regional level to help knit the disparate cultural communities, initiatives and programs of the region together. This may be addressed, in part, by the creation of a comprehensive regional cultural plan as stated in the goal of the RDOS bylaw 2770 to "*Work with agencies, stakeholders and the arts and culture community to develop a Regional Arts and Culture Strategy.*" Current conditions and the likelihood of a recovery following a lengthy and highly disruptive pandemic point to a time of exceptional opportunity for arts and culture in the region.

STAKEHOLDER CONVERSATIONS - ROUND 1

As part of the information gathering phase, and as a means to begin establishing relationships with stakeholders, SOS Arts held a first round of introductory conversations with the stakeholders listed below. SOS Arts also presented to the RDOS Board and Penticton City Council.

We wish to acknowledge the generosity of stakeholders who took valuable time to speak with us. SOS Arts will continue these conversations individually and in one or more moderated group settings as part of a second round of consultations following the distribution of the Environmental Scan Draft document.

- Oliver Community Arts Council - Penelope Johnson, President, and Earl Krushelnicki, Director, Osoyoos Arts Council and founder Osoyoos Blues Society
 - Osoyoos and District Arts Council - Tracey Carnochan, President
 - Penticton and District Community Arts Council - Bethany Handfield, Administrator, Tim Tweed, VP, and PDCAC Board
 - Princeton Community Arts Council - Dayton Wales, President
 - Summerland Community Arts Council - Laurie Weir, President
-
- Board of the Regional District Okanagan Similkameen
 - Augusto Romero, Recreation Manager, RDOS
 - Penticton City Council
 - City of Penticton Arts, Culture and Innovation Advisory Committee
 - Anthony Haddad, General Manager, Community Services, City of Penticton
 - Kelsey Johnson, Manager of Recreation, Arts & Culture, City of Penticton
 - JoAnne Kleb: Public Engagement Program Manager, City of Penticton
 - Carly Lewis: Economic Development Manager, City of Penticton
 - Julius Bloomfield, Councillor, City of Penticton
-
- Dean Clarke, General Manager, SOEC; Regional VP Spectra Venue Management
 - Paul Crawford, Curator, Penticton Art Gallery
 - Heather Davies, Artistic Director, Ryga Festival, Summerland
 - Daniel Dinsmore, consultant, Summerland
 - Leah Foreman, Manager, Venables Theatre, Oliver
 - Julie Fowler, organizer, founder of Island Mountain Arts, Wells
 - Darcel Giesbrecht, Media Relations Manager, District Wine Village
 - Mark Greenhalgh, independent producer, engineer, musician, event manager
 - Prema Harris, Tumbleweed Gallery; Penticton Academy of Music and Dramatic Arts, and Dream Cafe
 - Kate Hobin, President, Wide Arts National Association and Osoyoos Art Gallery and member, SOS Arts
 - Doug Holmes, Councillor, District of Summerland, and Board member RDOS
 - Lori Keith, Dream Cafe, Penticton
 - Allison Marking, Summerland Chamber of Commerce
 - Aaron McRann, Executive Director, South Okanagan Community Foundation

- Cody Naples, Tourism, and Cultural Events Coordinator, Town of Princeton
- Wendy Newman, Oliver Community Theatre Society
- Kim Palmer, Executive Director, Okanagan School of the Arts
- Geraldine Parent, Executive Director, OK Symphony Orchestra
- Krista Patterson, Community Programs Officer, BC Arts Council
- Mandy Wheelwright, consultant, organizer, artist manager and coach
- Laura White, Interim Executive Director, West Kootenay Regional Arts Council

An Environmental Scan of Arts and Culture
in the Regional District Okanagan Similkameen

INVENTORY

DRAFT v3.0

Prepared by the
South Okanagan and Similkameen Arts Society (SOS Arts)
sosarts.ca

September 23, 2021



Summerland Cultural Centre and Art Gallery



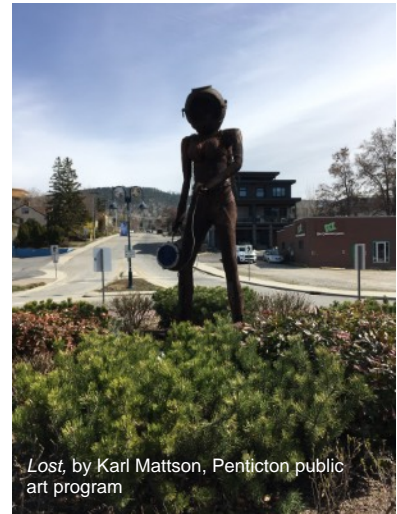
Leir House Cultural Centre, Penticton



Okanagan Salmon Chief, Oliver, Osoyoos Indian Band



The Dream Cafe, Penticton



Lost, by Karl Mattson, Penticton public art program



The Lloyd Gallery, Penticton



Venables Theatre, Oliver



Shatford Centre, Penticton - Former home of the Okanagan School of the Arts



Osoyoos mural by Qoyllur at new "Curator" shop



The Oliver movie theatre



Voice of Mother Earth by Stewart Steinbauer, Summerland

THE INVENTORY

Appendices

1. Regional Artists
2. Creative Places and Spaces
3. Wineries / Cideries / Micro Breweries / Micro Distilleries
4. Festivals and Community Events
5. Community Arts Councils
6. Results of SOPAC Workshops

INTRODUCTION

The environmental scan of the the arts and culture sector within the Regional District of Okanagan Similkameen (RDOS) has its origins in the transitional Board of the South Okanagan Performing Arts Centre Society (SOPAC). The Society had discontinued its campaign to build a regional performing arts centre within the City of Penticton and a transitional Board subsequently consulted the community through two moderated workshops in late 2019 and early 2020. The workshops were intended to help identify needs and challenges facing the sector across the RDOS. At its March 2020 Annual General Meeting, the SOPAC Society was renamed the South Okanagan Similkameen Arts Society (SOS Arts), and the Board of Directors and membership resolved to undertake a scan of the the regional arts and culture landscape as a way to

- To help the SOS Arts understand how it can further define its mandate and better serve the region (in a way that is complementary and does not duplicate programs of existing organizations).
- To provide the community with a comprehensive inventory of stakeholders, including organizations, individuals, businesses and government.
- To identify the key strengths and challenges of the arts and culture sector across the region.
- To provide a valuable tool to help inform decision-making for the benefit of all stakeholders

The scan was initiated in the spring of 2020 and conducted by volunteer members of the SOS Arts Board. No public funding was sought for the initiative. Through the course of its research, SOS Arts has identified hundreds of stakeholders working to deliver and support arts and culture programming and services, including independent artists, volunteers, grass roots and professional groups, arts organizations, facilities, cultural and heritage societies, and numerous festivals and cultural initiatives. The scan also documents key trends and factors impacting the regional arts and culture sector, and identifies areas worthy of further investigation. It explores the ongoing impact of the COVID pandemic, the nature of the Regional economy and tourism, regional demographics, the role of the regional and municipal governments in support of arts and culture, and the nature and roles of existing cultural organizations.

The appendices that follow are intended to complement the environmental scan and provide a comprehensive list of regional artists, facilities, festivals and community events. Despite best efforts, SOS Arts believes that more information will come to light as the inventory is shared more broadly with artists and arts organizations. For this reason, the inventory will remain in draft form as a “living document” for the foreseeable future. SOS Arts will update the inventory as artists and other stakeholders provide input.

APPENDIX 1 - REGIONAL ARTISTS

VISUAL ARTS GROUPS		
Artisans of the Okanagan	Summerland	
Artists on Main Osoyoos	Osoyoos	https://artistsonmainosoyoos.wordpress.com/
Desert Sage Spinners & Weavers	Oliver	http://www.desertsagespinnersandweavers.blogspot.ca/
Double O Quilters	Oliver	
Federation of Canadian Artists South OK and Similkameen	South OK and Similkameen	https://fca-sos.ca/roster
Group of 6 or 7	Summerland	
Material Girls Quilt Guild	Summerland	
Osoyoos Photography Club	Osoyoos	http://osoyoosarts.com/groups/osoyoos-photography-club/
Osoyoos Potters	Osoyoos	http://osoyoosarts.com/groups/osoyoos-potters/
Osoyoos Quilters Guild	Osoyoos	http://osoyoosarts.com/groups/quilters-guild/
Osoyoos Wood Carvers	Osoyoos	http://osoyoosarts.com/groups/osoyoos-wood-carvers/
Rip Off Artists	Oliver	http://www.riporffartists.ca/index.html
South Okanagan/Penticton Plein Air Group	South Okanagan	https://www.pleinairbc.com/penticton-plein-air-group/
Summerland Art Club	Summerland	
Summerland Potters Guild	Summerland	
Summerland Pleasure Painters	Summerland	
Studio 5 Drawing Group	Summerland	https://www.summerlandreview.com/life/studio-5-group-to-exhibit-works/
Summerland Stitchers	Summerland	
Summerland Traditional Rug Artists	Summerland	https://www.summerlandreview.com/ourtown/rug-hooking-donation/

Surfaces Mixed Media Group	Oliver	https://www.facebook.com/groups/1100774133369864/
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VISUAL / MEDIA ARTISTS		
Sandra Albo	Oliver?	
Carol Avedon-Savage (Taylor Made Art)	Penticton	http://www.carolavedonsavage.com/bio.html
Bev Alexander	Penticton	https://www.pentictonartscouncil.com/artists/bev-alexander
Allie Arnst	Keremeos	http://southsimilkameenartssociety.ca/allie-arnst/
Karla Avendano	Penticton	https://www.pentictonartscouncil.com/artists/karla-avendano
Velma Bateman		https://fca-sos.ca/roster
Brandi Beckett	Penticton	https://www.brandibeckett.com/
Diane Bennett-Way	Summerland	http://www.dianewayart.com/
Jean Booth	Summerland	
Evan Borges	Osoyoos	https://www.widearts.ca/board
Dave Brewin	Penticton	https://www.artisbrewin.com/
Alexandra Brooke	Penticton	https://belleartiste.wixsite.com/alexandrabrooke
Christine Buchler	Oliver	christinebuchler.com
Janet Burgart		https://fca-sos.ca/roster
June Byard		https://fca-sos.ca/roster
Judy Byer		https://fca-sos.ca/roster
Laila M Campbell	Penticton	http://www.lailacampbell.ca/
Glenn Clark	Penticton	https://www.glennclarkart.com/
Peggy Collins	Penticton	https://www.peggiecollinsdesign.com/
Steve Coombs (Visual Artist and musician)	Penticton	https://www.stevecoombsart.com/contact
Janice Emma Cornett-Ching		https://fca-sos.ca/roster

Lawrence Cormier & Kena Cumming Cormier	Penticton	https://www.cormierstudio.com/our-artwork http://www.cormierart.com/
Bruce Crawford	Summerland	
Jan Crawford		https://fca-sos.ca/roster
Ron Crawford (Jeweller)	Penticton	https://www.roncrawforddesigns.com/
Amanda Dagg		
Lyse Deselliers	Penticton / Kelowna	http://www.deselliers.ca/
Maureen DeYaeger		https://fca-sos.ca/roster
Pamela Duncan		https://fca-sos.ca/roster
Jessie Dunlop	Penticton	https://www.jessiedunlop.com/
Les Dunlop	Okanagan?	https://www.lloydgallery.com/index.php/artists/les-dunlop
Val Eibner	Summerland	https://valeibner.com/bio
Will Enns	Summerland	http://www.willenns.com/index.htm
Jean Evanishen (Potter)	Summerland	https://summerlandarts.com/collections/jean-evanishen
Jennifer Farnell	Oliver	
Andie Felts	Penticton	https://www.pentictonartscouncil.com/artists/andie-felts
Tracy Fehr	Summerland	
Jacinta Ferrari	Penticton	https://fca-sos.ca/roster
Sheryl Fossett		https://fca-sos.ca/roster
Kathryn Gibson		https://fca-sos.ca/roster
Ron Gladish		https://fca-sos.ca/roster
Donna Goett		https://fca-sos.ca/roster
Janice Blackie Goodine	Summerland	
Nancy Gray	Osoyoos?	http://nancygrayart.com/index.html
Laura Gray		https://fca-sos.ca/roster

Myra E Hammond	Keremeos	http://southsimilkameenartssociety.ca/myra-hammond/ https://fca-sos.ca/roster
Sheryl Hare	Keremeos?	http://southsimilkameenartssociety.ca/sheryl-hare/
Anne-Marie Harvey (Visual artist and musician)	Penticton	http://www.anne-marieharvey.com/ https://www.lloydgallery.com/index.php/artists/anne-marie-harvey
Erica Hawks	Okanagan Valley	https://www.lloydgallery.com/index.php/artists/erica-hawkes
Lisa Heinricks	Penticton	https://www.lisaheinricks.com/about
Michael Hermesh	Summerland	https://www.lloydgallery.com/index.php/artists/michael-hermesh
Bill Hibbard	Summerland	
Katie Hicks		https://fca-sos.ca/roster
Barb Hillier	Penticton	https://barbillier.ca/about/
Bradford Hillis		
Barbara A Hofer	OK Falls	https://barbhofer.com/
Sunette Holmes-Louw		https://fca-sos.ca/roster
Eileen Hopkins	Penticton	https://eileenb4u.wixsite.com/artbyeileenhopkins https://fca-sos.ca/roster
Marcia Hurley		https://fca-sos.ca/roster
Pauline Hurley	Summerland	https://m.facebook.com/HUR32/about/?ref=page_internal&mt_nav=0
Carolyn Jager	Twin Lakes	http://www.carolynjagerart.com
Megan Jentsch		https://www.mecjayy.com/
Michael Jorden		http://www.majordenart.com/ https://fca-sos.ca/roster
Greta Kamp		http://www.flickr.com/photos/gretakamp https://fca-sos.ca/roster
Ariane Kamps	Penticton	https://www.arianekamps.com/

Dianne Korsch		https://fca-sos.ca/roster
Georgia Krebs		http://georgiakrebs.com https://fca-sos.ca/roster
Robin Lake	Okanagan Valley	https://www.lloydgallery.com/index.php/artists/robyn-lake
Joan Lansdell		https://fca-sos.ca/roster
Carla Leinweber	Penticton	https://www.pentictonartscouncil.com/artists/carla-leinweber
Sharon Leonard		http://www.sharonleonardartist.com/ https://fca-sos.ca/roster
Marguerite MacIntosh		https://www.margueritemacintosh.com https://fca-sos.ca/roster
Katherine MacNeill		https://fca-sos.ca/roster
Lynne Marand		https://fca-sos.ca/roster
Michael Martel		https://fca-sos.ca/roster
Brandy Maslowski - Quilter on Fire	Summerland	https://www.quilteronfire.com/
Renee Matheson		https://fca-sos.ca/roster
Dale Matthews		https://fca-sos.ca/roster http://dalematthews.ca/about/
Viv Mcelgunn-Lieskovsky	Penticton	https://www.lloydgallery.com/index.php/artists/viv-mcelgunn-lieskovsky
Bobi McMillan	Penticton	http://www.bobimcmillan.com/ https://fca-sos.ca/roster
Lorie Meyer		https://loriemeyer.weebly.com https://fca-sos.ca/roster
Marianne Meyer		http://www.mariannemeyer.com/ https://fca-sos.ca/roster
Judy Millar	Kaleden	https://www.facebook.com/Judy-Millar-Encaustic-Art-866944930042865/?fref=nf https://fca-sos.ca/roster
Julie-Ann Miller		http://www.jamillerart.weebly.com https://fca-sos.ca/roster
Susan Mitchell		https://fca-sos.ca/roster

Art Moore		http://www.pentictonartscouncil.com/penticton/art/council/396-Art%2BMoore https://fca-sos.ca/roster
Barb Mosby		https://fca-sos.ca/roster
Carol Munro		http://www.carolmunro.ca https://fca-sos.ca/roster
Sharon Newton		https://fca-sos.ca/roster
Valorie Nielsen	Summerland	
Lynn O'Brien		http://www.lynnobrien.ca https://fca-sos.ca/roster
Ruby Palmer		https://fca-sos.ca/roster
Elizabeth (Libby) Parsons	Penticton	http://www.libbyparsons.com/ https://fca-sos.ca/roster
Joyce Peace		https://fca-sos.ca/roster
Jill Pelland		https://m.facebook.com/Jill-Pelland-Art-2110372942577429/?_rdr https://fca-sos.ca/roster
Lindsay Peltz	Penticton	https://www.dinopony.com/
Margaret Phillips		https://fca-sos.ca/roster
Maureen Potter		https://fca-sos.ca/roster
Pat Proudfoot		https://fca-sos.ca/roster
Wendy Provins		http://southsimilkameenartssociety.ca/wendy-provins-2/ https://fca-sos.ca/roster
Sandra Psiurski		https://fca-sos.ca/roster
Claudia Punter		http://www.claudiapunter.com https://fca-sos.ca/roster
Judith A Rackham		http://www.judithrackhamart.com https://fca-sos.ca/roster
John Revill	Okanagan Valley	https://www.lloydgallery.com/index.php/artists/john-revill
Bonny Roberts	Keremeos	http://southsimilkameenartssociety.ca/bonny-roberts-2/

Robin Robertson		https://www.facebook.com/robinrobertsonart/ https://fca-sos.ca/roster
Victoria Rodgers		https://fca-sos.ca/roster
Mandy Rollins		https://fca-sos.ca/roster
Don Shadow		https://fca-sos.ca/roster
Kristine Lee Shepherd	Penticton	https://www.pentictonartscouncil.com/artists/kristine-lee
Jane Scheffler		http://www.oliverartgallery.ca/jane-scheffler.html https://fca-sos.ca/roster
Stephanie Seaton (Multi media)	Summerland	
Lee Simmons	Penticton	http://www.leesimmons.ca/
Carollyne Sinclair		http://pocketdesertpainter.com https://fca-sos.ca/roster
Diana Skelhorne		https://fca-sos.ca/roster
Cindy Smith		https://fca-sos.ca/roster
Dona Smithson		https://www.instagram.com/donasmithson/ https://fca-sos.ca/roster
Sharon Snow		https://fca-sos.ca/roster
Marcia and Ron Stacy	Summerland	http://www.stacystudios.com/stacystudios/Stacy_Studios.html
Martyn Stephenson		
Nancy Strachan	Summerland	
Alice Strohmaier	Penticton	https://www.pentictonartscouncil.com/events/artsy-aging-with-alice
Dorothy Tinning		http://www.dorothytinning.com/ https://fca-sos.ca/roster
John Topham Studio	Summerland	
Debbie Tougas	Penticton	https://www.debbietougas.com/ https://fca-sos.ca/roster
Elanie Watts	Summerland	http://www.ElaineWatts.com/

Johann Wessels	Penticton	https://www.lloydgallery.com/index.php/artists/johann-wessels
Marjolein Witteman	Penticton	https://www.lloydgallery.com/index.php/artists/marjolein-witteman
Nel Witteman	Penticton	https://www.lloydgallery.com/index.php/artists/nel-witteman
Mary Kate Woodward (Visual artist / author)	Penticton	https://www.pentictonartscouncil.com/artists/mary-kate-woodward
Susan Wolf	Penticton	https://susanwolfdesign.com/
Jenny Wright	Penticton	https://www.wrightonart.com/

PERFORMING ARTS - MUSICIANS, PERFORMERS, GROUPS, SERVICES		
A1 Records Productions	Penticton	https://a1recordsproductions.business.site/
AtoG Mobile Music	Penticton	https://atog.ca/
Aidan and Mandy (Aidan Mayes and Mandy Cole singers)	Penticton	https://www.aidanandmandy.ca/
BC Music Teachers Directory		Some teachers from South Okanagan listed here https://musicteachersdirectory.org/
Bent Family Entertainment	South Okanagan	"We are a syilx family that decided to put our language and culture as a motivation in life. As a result, our whole family dances and continues to gain knowledge about our unique language and culture, as syilx Okanagan people. https://www.facebook.com/BENTFamilyEntertainment/
Kyle Anderson - musician, songwriter	Penticton	http://www.dkyleanderson.com/dkyleanderson.com/Welcome.html
Katerina Bakalos (singer and retail business owner)	Summerland	https://www.linkedin.com/in/katerina-bakalos-a9906aa8/
Jon Bartlett and Rika Ruebsaat	Princeton	www.jonandrika.org
Bianca Berkland (singer/songwriter)	Oliver	http://biancaberkland.com/about/
Wiz Bryant / Wiz Bryant Productions	Penticton	https://wanderingcanada.com/

Mickey Clark / MC Productions	Penticton	Vintage recordings http://mcproductions.ca/index.html
Larry Crawford (saxophone and woodwinds)	Summerland	
Fritz Cronjaeger - Similkameen Sound Studio	Keremeos	https://www.facebook.com/fritzbassman/
Vincent DeCowans	Osoyoos	https://www.youtube.com/watch?v=BbdP5MqIOL
Rochelle Dionne	Penticton	https://www.rochelledionne.com/
DM Productions - Photography and digital media production	Penticton	http://www.dmproductions.info/
Kennedy Edwards	Osoyoos	https://www.widearts.ca/board
Fresh BC Talent - producer and musician Denis Chaykowski	Penticton	Showcasing young performers. Weekly shows at Blenz Coffee house. https://www.cmeliveproductions.com/
Jean-Francois 'D'Jef Gasse	Osoyoos	https://www.facebook.com/210269512367826/posts/we-are-back-in-the-venables-theatre-doing-live-shows-since-there-is-limited-seat/3562593970468680/
Justin Glibbery	Naramata	https://justinglibbery.com/bio
Brakeman Jack Godwin (folk, banjo)	Narramata	https://www.castanet.net/news/Penticton/338057/Naramata-Heritage-Museum-sets-up-for-reopening-with-an-new-historical-instrument-to-show-off
Lynnea Good (musician)	Summerland	linneagood.com
Manuel Gosselin	Osoyoos	https://www.widearts.ca/board
Hickory Lane Publishing and Recording Studio	Oliver	https://hickorylanerecording.business.site/
Debi Johnson (harp and music therapy)	Summerland?	See also Musaic Vocal Ensemble https://musaicvocalensemble.ca/music-from-home/
Isaac Jordan and Vault of Stars	Penticton	http://www.vaultofstars.com/info/
Anona Kampe	Syilx Territory	https://www.youtube.com/watch?v=EmC_GTy1gp8
Tyrone Kauger (dancer)	Penticton Indian Band	http://www.soics.ca/oneworld/

Shane Koyczan (Spoken word)	Penticton	https://www.shanekoyczan.com/
Lynne Leydier and Soundstage Productions	Penticton	Classically trained singer and teacher, Artistic Director of Soundstage Productions https://www.soundstageproductions.com/
Janet Marcotte Music Studio	Osoyoos	https://osoyoosartscouncil.com/janet-marcotte-music-studio
Lindsay Mitchell (legendary rock guitarist formerly with Prism currently has band with Leslie Thompson)	Penticton	https://www.facebook.com/okfallsrockabilly/
Musaic Vocal Ensemble	South Okanagan	https://www.facebook.com/Musaic-Vocal-Ensemble-246252435577746/?ref=page_internal
Dejan Nad	Penticton/Cawston	Percussionist https://www.linkedin.com/in/dejan-nad-77030974/?originalSubdomain=ca https://www.facebook.com/dejan.nad
Naramata Community Choir	Naramata	https://www.naramatachoir.com/
Howard Lee Naylor (singer, songwriter, performer)	Penticton	https://www.howardleenaylor.ca/about-us https://www.facebook.com/hnaylor53/
Ari Neufeld	Oliver	https://www.facebook.com/arineufeld2/ https://www.whereisari.ca/music/ https://arineufeld.bandcamp.com/
Kristi Neumann	Oliver	http://kristineumann.com/
Okanagan Musicians Collective		https://www.facebook.com/groups/139445399457776/about
Okanagan Symphony Orchestra	Not headquartered in South Okanagan but employs musicians from the region and performs in the region	https://okanagansymphony.com/
William Okos (musician, luthier)	Summerland	https://williamokosmusic.com/
Oliver Handbell Ringers	Oliver	https://www.facebook.com/oliverhandbellringers
Alan K Parsons	Princeton	https://www.bandmix.ca/alankparsons/
Penticton Concert Band	Penticton	https://www.facebook.com/PentictonConcertBand/

Perry Music Studio - Anita Perry	Summerland	http://pianoteachersfederation.org/anita_perry https://www.summerlandchamber.com/list/member/perry-music-studio-409
Sean Petersen	Oliver	https://www.covertfarms.ca/event/live-music-sundays-september-26th/
Wina Poliquin	Osoyoos	https://www.widearts.ca/board
Primary Colours (Dan Marcelino, Shae Ryga, and Sergei Ryga)	Summerland	See Ryga Festival
Princeton Concert Band	Princeton	
Rebel Luv (band) - Mike Spillett, Ken Repkow	Osoyoos	https://rebelluv.com/bios
Maiya Robbie	Sylix Territory	https://www.pentictonartscouncil.com/events/maiyarobbie
Thurien Myint - record label Caron Maria Records and recording - Ellis Avenue Analog Studio	Summerland	https://www.cmrlabel.com/artists Works with artists Chynna McLean, Kenny Holick, Macy Lynn, Mason Burns, Jen Peters, Kym Gouchie (https://kymgouchie.com/shows), Evan Fuller. Analog Studio https://www.facebook.com/EllisAveAnalogStudio/
Paul Rodgers (former lead singer with Bad Company)	Summerland	
Carleen Roth and Carleen Roth Band	Summerland	Rock, blues, soul https://www.facebook.com/Carleen-Roth-290724647804463/about/
Stan Sabourin (saxophonist and music teacher)	Summerland	Stan Sabourin Studios https://stansabourin.com/home
Sing your song Studio	Summerland	
Nicky Slavic	Penticton	https://www.bandmix.ca/nicky-slavic/
SOAP South Okanagan Amateur Players	Oliver and Osoyoos	http://www.soplayer.ca/
South Okanagan Big Band	Penticton	https://www.facebook.com/South-Okanagan-Big-Band-1068208823336188/

Summerland Singers and Players	Summerland	summerlandtheatre.ca The purposes of the society are to encourage the development of the theatre in the community, produce quality live theatre, provide training and development opportunities, and create appreciation for theatre. Partners with the Kettle Valley Railway to create murder mysteries aboard the trains.
Jacob Audrey Taves (holtzkopf) - musician, organizer	Osoyoos	https://holtzkopf.bandcamp.com/album/house-of-aud
TallBrothers Bill Small and Tom Small	Penticton	https://www.facebook.com/tallbrothers420/ Bill Small, singer and guitarist and Tom Small, composer and multi-instrumentalist perform a wide range of musical styles from jazz classics of the American Songbook, to pop and original songs.
The Organic Humans	Cawston	https://www.facebook.com/theorganichumansband/
The Yarrows	Penticton	https://www.facebook.com/yarrowsband/?ref=page_internal
Dave Thomas - audio engineer	Summerland	https://www.facebook.com/dave.thomas.902604/about
Brent Tyler	Penticton	https://www.brenttyler.com/about
Chris Michael Urbanski - Hickory Lane Publishing & Recording	Oliver	https://www.linkedin.com/in/chris-michael-urbanski-7a5781144/
Vagabond - folk rockabilly trio comprising Lindsay Mitchell (lead guitar, vocals), Leslie Thompson (lead vocals, rhythm guitar), and Stefan Bienz	Penticton	https://www.facebook.com/okfallsrockabilly/
Don Wade (Saxophone)	Naramata	https://www.facebook.com/don.wade.7
Tavis Weir	Penticton	
Adora Wong (violin teacher)	Penticton	https://adorawong.com/lessons/ https://musicteachersdirectory.org/
Yanti	Penticton	https://www.facebook.com/yanti.sharplesrowland

Yard Katz	Penticton	https://www.facebook.com/groups/YardKatz/
Mel Zachary (Piano)	Penticton	

WRITERS AND LITERARY GROUPS		
Faye Arcand (fiction and non-fiction)	Okanagan Falls	www.fayeearcand.com https://www.facebook.com/Faye.E.Arcand/ See Federation of BC Writers
Carolyn Barnes (writer/editor)	Penticton	See Federation of BC Writers
Finnian Burnett (fiction)	Princeton	www.finnburnett.com See Federation of BC Writers
Gordon Dawson (writer, playwright, screenwriter)	Penticton	See Federation of BC Writers
Greg Devins (fiction non-fiction)	Penticton	See Federation of BC Writers
Carolae Donoghue (fiction)	Penticton	See Federation of BC Writers
Angela Douglas (fiction non-fiction)	Summerland	https://www.angeladouglas.ca https://www.facebook.com/anglynn Douglas See Federation of BC Writers
Don Gayton (ecologist/writer)	Summerland	https://www.facebook.com/PechaKuchaPenticton/photos/don-gayton-has-a-lifelong-association-with-grasslands-that-is-both-scientific-an-1005444846291532/
Norma Hill (illustrator)	Penticton	https://normajhill.com/ https://www.facebook.com/norma.j.hill.penandpapermama See Federation of BC Writers
Leslie Howard (fiction)	Penticton	See Federation of BC Writers
Susan Kostuch (fiction)	Princeton	See Federation of BC Writers
Rachel McMillen (poetry / fiction)	Penticton	http://www.rjcmillen.com See Federation of BC Writers

Danial Neil (fiction)	Oliver	See Federation of BC Writers
Aggie Stevens (writer)	Penticton	See Federation of BC Writers
Aggie's Authors	Penticton	Penticton radio talk show on Peach City Radio C-FUZ, featuring local authors, editors, and publishing. Although no longer live, be sure to listen to the 53 podcasts featuring BC writers! https://www.peachcityradio.org/programs/aggiesauthors/index.php https://www.facebook.com/groups/540378256355835
Okanagan-South Writers' League (OWL)	Penticton	https://www.facebook.com/groups/519953788213898/
South Okanagan Scribes	Okanagan Falls	https://www.facebook.com/groups/2041584439501050/
STEPS Creative Writing for Youth		Writing information and events of interest to teen writers https://www.facebook.com/groups/1216336771813453/
Summerland Philosophers' Café	Summerland	https://www.facebook.com/SummerlandPhiloCafe
Theytus Books (First Nations publisher)	Penticton / Syilx Territory	http://www.theytus.com/

APPENDIX 2 - CREATIVE PLACES AND SPACES

Type of Cultural Space	Location	Hyperlink	Mandate or programs
CULTURAL CENTRES			
En'Owkin Centre	Penticton Indian Band Reserve	https://enowkincentre.ca/about.html https://www.theytus.com/About-Theytus	An Indigenous cultural, educational, ecological and creative arts organization, En'owkin plays a lead role in the development and implementation of Indigenous knowledge and systems, both at the community and international levels. The centre provides cultural programming and gathering and performance space for up to 150 people. It is located in Syilx territory on the Penticton Indian Reserve. The Centre is also home to Theytus Books, a leading North American publisher of Indigenous voices.
Leir House (see also Penticton Arts Council)	Penticton and district	https://www.pentictonartscouncil.com/	Provide accommodation for Penticton Arts Council and artist studios, Penticton Academy of music and other arts groups
Nk'Mip Desert Cultural Centre	Osoyoos	https://www.facebook.com/NkmipDCC/	Nk'Mip Desert Cultural Centre is a unique and informative way to experience the First Nation's of the area, the Okanagan People. 2 theatres with daily programming.
Quail's Nest Arts Centre managed by Oliver Community Arts Council	Oliver	http://oliverartscouncil.org/rental/	Has studio building for rentals and the Big Blue building currently leased by SOAP Theatre

Shatford Cultural Centre	Penticton	https://www.penticton.ca/our-community/arts-culture/shatford-centre	The Centre is currently closed and its future is unclear. It has gone through some significant changes in the last two years, with the anchor tenant (Okanagan School of the Arts) having relocated. Its description on the City of Penticton website reads "The Shatford Centre is an entrepreneurial creativity centre dedicated to creative well-being." The Shatford building is owned by Schoolboard 67.
Summerland Arts and Culture Centre	Summerland	https://www.facebook.com/SummerlandArts/?ref=page_internal	Supporting arts and culture in the community of Summerland. The centre is operated by the Summerland Community Arts Council and includes a gallery and gift shop, common space.
MUSEUMS AND HERITAGE			
Grist Mill & Gardens	Keremeos	https://www.facebook.com/OldGristMill/	The Grist Mill and Gardens has much to offer visitors: explore a working 1877 waterwheel powered flour mill, participate in one of our regular workshops, performances and other special events, enjoy lunch in the Kitchen, browse in our unique gift shop, or stay overnight at our creek side RV campground.
Keremeos Museum	Keremeos	https://keremeosmuseum.ca/	History of South Similkameen operated by the South Similkameen Museum Society

Kettle Valley Railway Museum	Summerland	https://www.kettlevalleyrail.org/	The Kettle Valley Railway Society invites you to join our non-profit, charitable organization and support our efforts to preserve a unique and important piece of Canada's history that began in 1912 and is still in operation today. https://www.kettlevalleyrail.org/about/society/
Nixdorf Car Museum	Summerland	https://www.nixdorfclassiccars.com/	
Oliver and District Museum and Archives (and Heritage Garden)	Oliver	https://www.oliverheritage.ca/museum Museum: https://www.oliverheritage.ca/museum , Archives: https://www.oliverheritage.ca/archives , walking tour: https://www.oliverheritage.ca/walkingtour	The Oliver & District Heritage Society is a not-for-profit organization governed by a Board of Directors; we preserve and present the history of Oliver BC, Canada's Wine Capital, and surrounding district through exhibits, educational programming, heritage walking tours, and more.
Osoyoos & District Museum	Osoyoos	http://www.osoyoosmuseum.ca/	With guided walking tours and a rich of history of the South Okanagan, this is a fantastic educational opportunity for your family.
Penticton Museum and Archives	Penticton	https://www.penticton.ca/our-community/arts-culture/museum-archives	An ongoing resource for anything dealing with the history of Penticton. They do provide some public events to do with the community with ties in to the historical aspects of the area.
Princeton and District Museum	Princeton	https://www.princetonmuseum.org/e/about	Princeton and District Museum and Archive Society. Committed to protecting, preserving, restoring and collecting items pertaining to the history of Princeton and the surrounding area.
Snaza'ist Discovery Centre	Hedley	https://www.mascotmine.com/snazzy/centre.html https://syilx.org/images/pdf/ONA_tourism_guide.pdf	This is the focal point for the discovery, development and celebration of First Nation culture and history in the Similkameen Valley. The Centre includes unique displays documenting the people's interaction with their traditional lands.

SS Sicamous Museum and Heritage Park and Sicamous Society	Penticton	http://sssicamous.ca/	To preserve and present the marine history and heritage of the Okanagan with historical integrity; to preserve, restore and maintain the historical vessels of Okanagan Lake.
Summerland Museum and Summerland Heritage Society	Summerland	https://www.summerlandmuseum.org/	The Summerland Museum and Archives Society (SMAS) exists to collect, preserve, research, interpret, and display objects that are historically significant to our community. These objects reflect the history of the Summerland District and the immediate surrounding area, from the period from pre-contact, including Indigenous history, to the present.
PUBLIC AND PRIVATE GALLERIES			
Art Gallery Osoyoos	Osoyoos	https://www.facebook.com/THE-ART-GALLERY-osoyoos-289443131153442/	A Community Gallery for Creative People: The Gallery, operated by the Osoyoos Arts Council, offers original art produced by artists and artisans. The gallery features guest artists, local and non-local, throughout the year. The Art Gallery Osoyoos was established in the 1990s and is a non-profit organization run by volunteers. https://osoyoosartscouncil.com/art-gallery
Art Up Studio Gallery	Penticton	https://www.facebook.com/Artupstudiospenticton/	a shared studio and creative space in the heart of downtown Penticton. We are an Artist Community that strives to foster creativity. Studio space for rent.
Gallery One Twenty-Seven	Penticton	https://www.peggiecollinsdesign.com/	Gallery One Twenty-Seven, filled to the brim with Peggie Collins Art. Originals, prints and gift items.

Long Gallery	Penticton and Southern Interior	www.longgallery-studio.com	Offers open studios, classes and shows a wide range of artwork by local and regional artists Curated Visual Art Exhibitions, artist in studio residencies, original, print and crafts sales
Matheson & Grove Fine Art	Located downtown Penticton.	www.martinstreetgallery.com	
Newton Road Gallery	Cawston		Paintings, Prints, & Framing
Okanagan Art Gallery	Osoyoos	https://www.okanaganartgallery.com/	The Okanagan Art Gallery is a small and earnest business located in Osoyoos, B.C. and comprised of over two dozen south Okanagan artists.
Penticton Art Gallery	Penticton	www.pentictonartgallery.com	The Penticton Art Gallery exists to exhibit, interpret, preserve and promote the visual, artistic and cultural heritage of Indigenous Peoples and of Canada; to educate and engage the public on local, regional and global social issues through the visual arts. We envision a gallery accessible to everyone as a vibrant public space in service of our community, to foster greater social engagement, critical thinking and creativity.
Picture This Custom Framing	Penticton	https://www.pentictonartscouncil.com/galleries/picture-this	Picture This is a fun and relaxed little gallery where you can view the artwork by 8 Okanagan artists.
St Germain Cafe Gallery	Penticton	www.saintgermainbc.com	Gallery, music and literary presentations A cultural marriage of art and coffee in the heart of beautiful Penticton serving organic coffee and teas, freshly baked pastries, ready-to-go sandwiches, and creative soups. And it is a gallery that displays contemporary fine art from established, emerging and amateur Canadian artists.

Standing Rock Native Art & Gallery	Keremeos	https://syilx.org/images/pdf/ONA_tourism_guide.pdf	A unique gallery featuring original handcrafted artworks from Similkameen, Okanagan and other North American First Nation Tribes. Art includes West Coast Cedar masks & carvings, soapstone & antler carvings, original paintings, West Coast & Arizona sterling silver and gold jewelry. Other authentic works include pottery, native basketry, bead work, blankets, Cowichan sweaters and more. RR#1 Hwy 3 West, Keremeos BC
Summerland Art Gallery	Summerland	https://summerlandarts.com/	Community art gallery located in the Summerland Arts and Culture Centre and operated by the Summerland Community Arts Council. Provides exhibits and artist residencies.
Sunflower Art Gallery	Princeton	https://www.princetoncommunityartscouncil.com/sunflower-gallery--gift-shop.html	Gallery and gift shop supported by the Princeton Community Arts Council. Another gallery, the Snowflake Community Gallery is temporarily closed.
The Bench Market	Penticton	https://www.thebenchmark.com/in-the-community-2/	The Bench Market is an eatery and market with gallery space through the dining area. We feature the works of local Penticton-area artists.

The Lloyd Gallery	Penticton	https://www.lloydgallery.com/	The Lloyd Gallery has provided the Okanagan Valley BC with an exceptional selection of quality original art by Canadian artists. Situated on Penticton's downtown colourful Front Street, The Lloyd Gallery welcomes you to view their salon-style gallery showcasing 40 Canadian artists. Many of our artists enjoy an award-winning national and international reputation. There is artwork to suit every budget. Framing, insurance, evaluation, delivery and installation.
Tumbleweed Gallery	Penticton	www.tumbleweedgallery.ca	Collective is made up of 7 artists listed who manage and attend the gallery on a rotating basis. The Tumbleweed is an artist run gallery, featuring unusual and inspiring works of art from local artists. We also offer framing services and advice, to ensure that your art, and your home, looks its best. The Tumbleweed Gallery Artists are continually challenging and exploring individual advancement in the arts. As a group we support each other, and work together to provide a strong and active voice in the arts community.
Wide Arts Gallery (WAG)	Osoyoos	https://www.widearts.ca/wide-arts-gallery	Offers rotating shows featuring artists who create in all genres and media— artists who challenge the status quo, embrace the status quo and, above all, are driven to create. WAG proudly supports local artists, artists from the surrounding area and provides opportunities for visiting artists to share their creations and concepts of artmaking.
Will Enns Fine Art Gallery and Studio	Summerland	http://www.willenns.com/	Gallery and studio

INDEPENDENT STUDIOS			
Elanie Watts Studio	Summerland	http://www.ElaineWatts.com/ https://www.facebook.com/pg/DevineArtShow/about/?ref=page_internal	Watercolourist and printmaker. Trout Creek Studio. https://www.facebook.com/eewatts/
Jean Evanishen Pottery	Summerland	https://summerlandarts.com/collections/jean-evanishen	Summerland creator with a focus on pottery.
Bruce Crawford Studio	Summerland		Art gallery and studio
Stacy Studio / Marcia Stacy	Summerland	http://www.stacystudios.com/stacystudios/Stacy_Studios.html	
Delong Studio	Summerland	https://delongstudio.com/about/	Handcrafted jewelry
Tammy's Brush to Canvas	Summerland	https://www.facebook.com/TammysBrush2Canvas/	Art classes and supplies
Tanya Graham Art	Summerland	https://www.tanyagrahamart.com/music.html	Visual art and music
John Topham Studio	Summerland	https://www.johntophamwoodturning.com/	Fine craft, wood turning
Valorie Nielsen Studio / Earth Art Pottery	Summerland	https://studiotour.wordpress.com/2013/03/28/5-earth-art-pottery-valorie-nielsen/	Pottery studio
Val Eibner Studio	Summerland	https://valeibner.com/page/resume	Glass fine craft
Perry Music Studio	Summerland	https://www.summerlandchamber.com/list/member/perry-music-studio-409	Musical education in the subjects of piano, composition and theory, through a specialized and individually tailored curriculum. Lessons for beginners to advanced, ages 6 to 96.
Phia's Pottery	Summerland	https://www.summerlandchamber.com/list/member/phia-s-pottery-416	Pottery
Unlimited Vision Photography	Summerland	https://www.unlimited-vision.com/about	Design, illustration, photography by Stephanie Seaton.
Elizabeth Wrobel Photography	Summerland	https://www.summerlandchamber.com/list/member/elizabeth-wrobel-photography-652	Photography
Linkage Photo	Summerland	https://www.linkagephoto.com/	Photography by John Barber
Greg Johnson Real Photography	Summerland	https://www.realphotography.ca/	Photography
Vision Quest Photography - Brian and Judy Kardosh	Summerland	https://vqphoto.photorefect.com/store/StoreAbout.aspx?p=233920	Event photography

John Rousseau Design	Summerland	https://www.johnrousseaudesign.com/	Craft, bespoke furniture and cabinets
Cormier's Studio	Penticton	https://www.cormierstudio.com/our-artwork	Lawrence Cormier & Kena Cumming Cormier are Cormier's Studio, everything we offer is created by us in our studio. You will find an array of metal sculptures large or small, bright, colourful fused glass sculptures for indoors or outdoors & a selection of happy acrylic paintings & mixed media wall-art. http://www.cormierart.com/
Glenn Clark Art	Penticton	https://www.glennclarkart.com/	Glenn Clark's gallery is more of a studio experience for visitors as they will see work in various stages of progress.
Lisa Heinricks Studio	Penticton	https://www.lisaheinricks.com/about	Studio. Lisa Heinricks is an established western Canadian multidisciplinary Artist who resides in Penticton, BC.
Osoyoos Studios	Osoyoos	https://www.facebook.com/osoyoosmusic/?ref=page_internal	Osoyoos Music is a music and video production studio. Owner/ Creator BJ Engel runs the show. Audio recording, live event filming, and booking acts at Jojo's Cafe.
Perry Studios - Stephanie Perry	Penticton	https://www.pentictonartscouncil.com/galleries/perry-studios	Studio. Stephanie Perry is a landscape and nature artist and Michael is a commercial and pop culture artist. https://www.etsy.com/ca/shop/StephPerryArt
Rasha Tattoo and Gallery	Penticton	https://www.pentictonartscouncil.com/galleries/rasha	Small gallery showcasing original artwork, wood burning and glass etching.
Timid Turtle Creative (Diana Skelhorne)	Penticton	https://www.timidturtlecreative.com/	Timid Turtle Creative is the home of artist Diana Skelhorne and photographer Paul Skelhorne. They also offer workshops.
Art House Penticton	Penticton	http://www.arthousepenticton.com/	Art House Penticton is a collection of individual studios & common workspaces for professional & dedicated artists to further their craft & collaborate. https://www.facebook.com/ArtHousePenticton/

Sing Your Song Studios - Rochelle Dionne	Penticton	https://www.rochelledionne.com/details https://www.facebook.com/RochelleDionneSings/?ref=page_internal	HELPING STUDENTS FIND THEIR CREATIVE VOICE, ONE CLASS AT A TIME
Skaha Sound	Penticton	http://www.skahasound.com/	Audio and lighting for events https://www.facebook.com/Skaha-Sound-198998606807614/
Soundstage Productions - Studio and theatre company	Penticton	https://www.soundstageproductions.com/	Led by classically trained Artistic Director and voice instructor Lynne Leydier, Soundstage provides professional training in voice and musical theatre, with a focus on youth.
Hickory Lane Publishing and Recording Studio	Oliver	https://hickorylanerecording.business.site/	Recording Studio
A1 Records Productions	Penticton	https://a1recordsproductions.business.site/	Recording Studio
Similkameen Sound Studio - Fritz Cronjaeger	Keremeos	https://www.facebook.com/fritzbassman/	A small multitrack recording studio with a mix of old and new tech.
Janet Marcotte Music Studio	Osoyoos	https://artsosoyoos.com/janet-marcotte-music-studio	Hosts the Dorothy Fraser Memorial Scholarship Award for piano. Music teacher? The Osoyoos and District Arts Council instituted an annual award to promote excellence and achievement in piano as a memorial tribute to Mrs. Dorothy Fraser. The award consists of a perpetual plaque, a keeper trophy and a scholarship of \$100.
4th Meridian Art & Vintage	Penticton	https://www.4thmeridian.ca/	We are the Okanagan's only fine art auction house selling local, national, and international works of art. We also run an Etsy shop featuring objet d'art, fine art, and fine collectibles.
Wentworth Music	Penticton	https://www.wentworthmusic.ca/	Music Store
Dragon's Den	Penticton	https://www.facebook.com/dragonsdenpenticton/about/	Art supply, crafts, merchandise store

William Okos - Laughing Tree Guitars	Summerland	https://williamokosmusic.com/	Luthier
FACILITIES, THEATRES, STAGES AND VENUES			
Penticton Trade and Convention Centre	Penticton	https://www.soec.ca/	City Owned space for various events to do with culture and commerce in Penticton and surrounding area. Many festivals and cultural events staged in this centre
South Okanagan Event Centre	Penticton	https://www.soec.ca/	The South Okanagan Events Centre is a 5,000-seat multi-purpose arena for large events such as concerts, ice hockey - attached to convention centre.
Victory Hall	Keremeos	https://keremeos.civicweb.net/document/3393	Rental hall
Royal Canadian Legion #192	Keremeos	http://keremeoslegion.com/useful%20links.htm	Rental; music nights
Cawston Hall	Cawston	https://www.facebook.com/cawstonhall/	Rental
Elks Hall	Keremeos	https://similkameencountry.org/keremeos-lodge-56-elks/	Rental
Elks Lodge #51	Penticton	https://www.elkslounge51.com/events	Hosts live bands every Saturday night.
Plass	Oliver	https://plassforall.com/	Rental dance studio - Plass, the newest community space in Canada's Wine Capitol, Oliver BC- the heart of the South Okanagan. A not-for-profit foundation designed to foster community engagement by providing a venue for varied diverse forms of moving arts for all ages and abilities.
Penticton Lakeside Hotel and Conference Centre	Penticton	https://www.pentictonlakesideresort.com/conference-centre/	Our on-site conference centre is perfect for groups of 10 to 1,000 — with 32,000 square feet of flexible meeting space including two ballrooms, seven breakout rooms, and a private outdoor courtyard. The Barking Parrot Bar has a large riser and audio setup for live performances.

Orchard House	Penticton	https://www.orchardhousetheatre.com/fashion	Includes the Balance School of Performing Arts and houses the band Yard Katz
Seniors Drop In Centre and Society	Penticton	https://www.pentictonseniors.org/	The Penticton Seniors' Drop-In Centre Society (PSDICS) is a valuable community resource that plays a vital role in serving the social, intellectual and physical needs of individuals aged 50 and older who live in Penticton and the surrounding communities. Senior's Week and other services. Creative activities.
IOFF Lodge	Summerland	http://www.rebekahlodge.com/	Rental space for community events. Identified as "permanantly closed" according to Google search.
Summerland Drop In Centre at the Community Centre	Summerland	http://summerlanddropincentre.ca/	To promote the happiness and well being of residents in the Municipality of Summerland and area by having access to safe, affordable recreational activities that support a sense of well-being to an extent that justifies the use of available resources.
Cleland Theatre	Serving Penticton and Region	https://www.penticton.ca/our-community/arts-culture/cleland-community-theatre	The Cleland Community Theatre is Penticton's premiere performing arts venue. We host productions ranging from symphonies and comedians to international performers, inspirational speakers and community groups. Entertainment (professional and community generated), theatre rentals, volunteer opportunities
Tempest Theatre	Penticton and Southern Interior, including participants from Vancouver	www.tempest.ca	Black box theatre that emphasizes original content and also a playful and provocative approach to classical and contemporary texts. It is operated by the Tempest Theatre & Film Society, a non-profit organization registered in British Columbia.

Riverside Community Centre Theatre	Princeton/Hedley	https://www.princeton.ca/p/riverside-community-centre-theater	Experience theatre, music, and dance performances from local artists and professional groups who rave about this fantastic performing space.
Venables Theatre and the South Okanagan Theatre Society	Oliver	https://www.venablestheatre.ca/	The Theatre Society was created to operate and animate the new Frank Venables Theatre. Working closely with School District #53 and the Regional District of the Okanagan Similkameen, the Society was incorporated with the following purposes: to operate and manage the Community Theatre in Oliver as a centre for the performing arts; to support the advancement of local, national and international performing arts presentations in the South Okanagan; to further the development of local amateur and professional performing arts; to encourage local audiences, artists and students to engage in the performing arts; to cooperate and consult with other agencies and organizations towards these objectives to obtain funding and donations from various government and other agencies and individuals to further the purposes set out herein.
Janet M. Ritchie Centre Stage Theatre	Summerland and area	https://www.facebook.com/pages/category/Performance-Art-Theatre/Center-Stage-Theatre-156563877717835/	To provide a performing space for local and touring performance groups. 295 seats. Managed by the District of Summerland Recreation Department

The Cannery and Cannery Stage	Penticton	https://cannerytradecentre.com/	"The Cannery is a large industrial complex converted to commercial uses. Businesses include a winery, Castilla Irish Dance School, Even Dance, Get Bent Arts and Recreation, Many Hats Theatre Co., The Nest Restaurant, CFUZ Peach City Community Radio, a micro brewery. It is a Penticton designated HERITAGE building. https://www.facebook.com/thecannerytradecentre/ "
Gyro Park	Penticton	https://www.penticton.ca/parks-recreation/parks/find-parks-and-gardens/gyro-park	Outdoor bandshell operated by City of Penticton for live performances.
Gyro Park	Osoyoos	https://www.osoyoos.ca/content/gyro-park-planning-charrette	Outdoor bandshell operated by town of Osoyoos for live events.
Kinsmen Theatre Bandshell	Summerland	https://www.summerland.ca/parks-recreation/parks-trails	Outdoor bandshell at Memorial Park. This urban park within the downtown core is a focal point for many festivals and events.
The Dream Cafe	Penticton	hazel@thedreamcafe.ca	Restaurant and venue for both local and touring musicians. Exceptional audio setup.
Firehall Brewery	Oliver	https://www.firehallbrewery.com/	Brew pub featuring occasional live music
Slackwater Brewery	Penticton	https://slackwaterbrewing.com/	Brew pub featuring a riser and audio gear for live performances.
Wrong Turn Tavern	Keremeos	https://www.facebook.com/WrongTurnTavern/	Live music
Medici's Gelateria	Oliver	https://www.facebook.com/Medicis-Gelateria-Coffee-House-653999671369169/	Stage for occasional live music.
Osoyoos Community Theatre	Osoyoos	https://www.osoyoos.ca/content/2019-osoyoos-community-theatre-cod-gone-wild	The status of this facility is uncertain.

District Wine Village	Oliver	A new facility - The first true wine village in Canada. Located in the heart of the South Okanagan, the Village. Surrounded by vineyards and home to 16 artisan producers. A four seasons opportunity for visitors to meet and enjoy local events and experiences. https://districtwinevillage.com	Includes a 600 seat amphitheatre, patios for performances in each of the businesses and displays of visual art.
Brexit Pub	Penticton	Music friendly pub with small riser for performances. http://www.brexitpub.com/	Featuring local artist Aidan Mayes
Howling Coyote Pub and Grill	Oliver	Provides small riser, lighting and sound system for events https://howlingcoyotepub.com/index.html	Featuring local musicians
LIBRARIES			
Hedley Branch		https://www.orl.bc.ca/	Part of Okanagan Regional Library System
Kaleden Branch		https://www.orl.bc.ca/	Part of Okanagan Regional Library System
Keremeos Branch		https://www.orl.bc.ca/	Part of Okanagan Regional Library System
Naramata Branch		https://www.orl.bc.ca/	Part of Okanagan Regional Library System
Okanagan Falls Branch		https://www.orl.bc.ca/	Part of Okanagan Regional Library System
Oliver Branch		https://www.orl.bc.ca/	Part of Okanagan Regional Library System
Osoyoos Branch		https://www.orl.bc.ca/	Part of Okanagan Regional Library System
Penticton Public Library		https://pentictonlibrary.ca/	The library is a city owned and operated entity which sponsors many events to do with the community and the population generally.
Princeton Branch		https://www.orl.bc.ca/	Part of Okanagan Regional Library System
Summerland Branch		https://www.orl.bc.ca/	Part of Okanagan Regional Library System

APPENDIX 3 - WINERIES / CIDERIES / MICROBREWERIES / MICRODISTILLERIES

There are hundreds of wineries, vineyards and producers of craft beverages in the region. These businesses are a key part of the tourism industry in the South Okanagan and as such, are valuable allies in arts and culture. The current contributions of wineries and other producers of craft beverages to regional arts and culture and the potential for additional support have not been quantified primarily as a result of the fact that with a very few exceptions, performances either musical or otherwise are not a scheduled occurrence but rather they are offered only as the winery or sponsor elects to reach out. In most cases the event is more intended as a draw to attract the public to the particular site or as a thank you to winery supporters (i.e. wine club subscribers).

Since the start of the pandemic, live events at wineries and other facilities have been severely curtailed. This means that there is relatively little in the way of programming listings promoting arts and culture at the various facilities throughout the RDOS currently.

Five kilometres north of Oliver on Highway 97, there is a new and ambitious initiative underway to build a District Wine Village (<https://districtwinevillage.com/>) scheduled to open this year. A conversation with the newly appointed manager revealed that there will be a higher level of arts/cultural programming and local participation through the main seasons (spring, summer and fall). The architectural design features a 600 seat amphitheater at the heart of the village which is intended as an outdoor (though covered) venue for many different artistic endeavours. The manager indicated that they have been in contact with the management of the Venables Theatre in Oliver for input as to potential cultural and artistic possibilities. Local Artistic groups have also been consulted for ideas as to what may work. Negotiations with Skaha Sound to provide the necessary audio component as it is deemed necessary are also underway. The Manager discussed the need for a reliable source (website or publication) in the region that would list the contact information and describe the contributions of the various artists, cultural groups and performers.

The Oliver Area in which the new Wine Village is located is a hive of winery and other craft beverage production, but in all areas of the Regional District of Okanagan Similkameen these activities are to be found.

Beginning in the District of Summerland, the northern limit of the region, the Bottleneck Drive group is an association of producers consisting of 15 wineries, four cideries and one distillery. This organization exists to promote local producers as well as culture. The Summerland Bottleneck Drive Art Tour promotes local artists and arts events and includes the following participants: 8th Generation Vineyard, Lunessence Winery, NOMAD Cider, Sage Hills Vineyard, Sleeping Giant Winery and Thornhaven Winery. Below is a list of selected businesses that support arts and culture and/or host cultural events in that district:

8th Generation Vineyard (Summerland)
(<https://www.8thgeneration.com/Our-Story/Events>)

Dirty Laundry Vineyard (Summerland)
(<https://www.dirtylaundry.ca/event-calendar>)

Lunessence Winery (Summerland)
(<https://www.lunessencewinery.com/Visit-Us/Winery-Events>)

NOMAD Cider (Summerland)
(<https://www.nomadcider.ca/>)

Saxon Estate Winery (Summerland)
(<https://www.saxonwinery.com/>)

Sleeping Giant Fruit Winery (Summerland)
(<http://www.sleepinggiantfruitwinery.ca/index.php>)

Summerland Estate Winery
This winery provides regular music programming with the Organic Humans and Movings Lines and other musicians, including musicians from Kelowna
<https://summerlandwinery.ca/>
Live music at <https://summerlandwinery.ca/live-music>

Thornhaven Winery (Summerland)
(<http://www.thornhaven.com/events/>)

Sage Hills Vineyard (Summerland)
(<https://www.sagehillswine.com/home>)

South of Summerland and in the greater Penticton area the Naramata Bench wineries also have developed an association and many of their participants have been involved with cultural and/or artistic events in the past including sponsorship financially or in kind. It is not possible to provide here an exhaustive listing because as mentioned earlier, their participation varies from year to year. They do not offer regularly scheduled and ongoing events and tend to vary according to factors such as the weather, tourist traffic and wild fires. Shown below are the known and ongoing contributions made by the Naramata Bench (including Kaleden) producers:

Pentage Winery (Penticton)
(<https://pentage.com/>)

Poplar Grove (Penticton)
(<https://www.poplargrove.ca/Tasting-Room-Events/Special-Events>)

Red Rooster (Naramata Bench)
(<https://www.redroosterwinery.com/>)

Slackwater Brewing (Penticton)
(<https://slackwaterbrewing.com/blogs/events>)

Time Winery (Penticton)
(<https://timewinery.com/events>)

Township 7 (Penticton)
(<https://township7.com/events/>)

Wineries like Bench 1775 contribute to local arts organizations (like the Penticton Art Gallery and the 97 Song Sessions Festival).

Okanagan Falls' wineries have offered entertainment in the form of dance or music in the past and will no doubt continue in the future when the pandemic is declared over.

Liquidity (Okanagan Falls)
(<https://www.liquiditywines.com/Art>)

Myer Family Wines (Okanagan Falls)
(<https://mfvwines.com/blogs/events>)

Wild Goose Winery (Okanagan Falls)
(<https://wildgoosewinery.com>)

The many wineries in the Oliver/Osoyoos area including Black Sage Road on the East bench and those on the West bench such as Tinhorn Creek have offered cultural and entertainment events for many years and no doubt will again in the future. Tin Horn Creek grounds include a large open amphitheatre in which a concert series is offered to the public during the seasons (with the exception of winter). Other wineries such as Desert Hills have offered entertainment both representing the Indian culture of the owners and events where local musicians have been invited to perform for the evening. Covert Farms Family Estate Winery in Oliver offers Sunday entertainment with "an incredible roster of live performances by some of our region's best musical talent, taking place Sundays from 12 – 4pm" throughout the summer months.

Nk'mip Cellars is located on indigenous reserve lands and was begun by the Osoyoos Band many years ago. They are now a part of the Great Estates of the Okanagan organization. They are connected to the cultural centre a short walk from the winery and they do offer events throughout the season.

Tin Horn Creek (Oliver) Amphitheatre
(<https://www.tinhorn.com/Purchase/Events>)

Desert Hills (Oliver)
(<https://www.deserthills.ca/>)

Covert Farms Family Estate Winery (Oliver)
<https://www.covertfarms.ca/events-calendar/>

In addition to the above, Oliver Community Arts Council lists the following wineries as sponsors:

Bartier Brothers
<https://www.bartierbros.com/>

Castoro de Oro Winery
<http://www.castorodeorowinery.com/>

C.C. Jentsch Cellars
<http://www.ccjentschcellars.com/>

Church and State Wines
<https://churchandstatewines.com/>

Desert Hills Winery
<https://www.deserthills.ca/>

Fairview Cellars
<http://www.fairviewcellars.ca/fairviewcellars.ca/Welcome.html>

Gehring Brothers Winery
<https://www.gehringerwines.ca/>

Hidden Chapel Winery
<https://www.hiddenchapelwinery.com/>

Inniskillin Okanagan
<https://www.inniskillin.com/Okanagan/>

Intersection Winery
<http://xwine.ca>

Jackson Triggs
<https://www.jacksontriggswinery.com/Vineyards/Okanagan-Estate/>

Kismet Estate Winery
<http://kismetestatewinery.com>

Quinta Ferreira

<https://www.quintaferreira.com/>

River Stone Winery

<https://www.riverstoneestatewinery.ca/>

Rust Wine

<https://www.rustwine.com/>

Stoneboat Vineyards

<https://www.stoneboatvineyards.com/>

Vin Amite Cellars

<https://www.vinamitecellars.com/>

There are a number of wineries in the Kerameos/Cawston areas, including:

Clos du Soleil Winery

<https://www.closdusoleil.ca/>

Corcelettes Estate Winery

<https://www.corceletteswine.ca/>

Crowsnest Vineyards

<http://www.crowsnestvineyards.com/>

Eau Vivre Winery

[https://www. https://eauvivre.com/](https://www.eauvivre.com/)

Forbidden Fruit Winery

<https://www.forbiddenfruitwine.com/>

Hugging Tree Winery

[https://www. https://huggingtreewinery.com/](https://www.huggingtreewinery.com/)

Liber Farm and Winery

[https://www. https://www.liberfarm.com/](https://www.liberfarm.com/)

Little Farm Winery

<https://littlefarmwinery.ca/>

Orofino Winery

<https://www. https://www.orofinovineyards.com/>

Robin Ridge Winery

<https://www.robinridgewinery.com/>

Rustic Roots Winery

<https://www.harkersorganicsrusticroots.com/>

St. Laszlo Vineyards

<https://similkameenvalley.com/directory/listing/st-laszlo-vineyards>

Seven Stones Winery

<https://www.sevenstones.ca/>

Similkameen Wild Winery

<https://similkameenvalley.com/directory/listing/similkameen-wild-winery>

Twisted Hills Craft Cider

<https://www.twistedhills.ca/>

Vanessa Vineyard

<https://vanessavineyard.com/>

APPENDIX 4 - FESTIVALS AND COMMUNITY EVENTS

EVENT	LOCATION	HYPERLINK
97 South Song Sessions	Penticton	https://97-south-song-sessions.prezly.com/ https://97-south-song-sessions.prezly.com/97-south-song-sessions-announces-developing-bc-songwriters-contest
Action Fest Music in the Park	Summerland	Free 3-day festival http://summerlandactionfestival.ca/
Art Walk	Summerland	
Arts Rising Festival	Penticton	https://downtownpenticton.org/event/pdcac-presents-arts-rising-festival-culture-days/
Bluegrass Festival	Summerland	https://www.summerlandbluegrass.com/
Endless Summer Show and Shine Festival	Summerland	
Festival of Lights - multi-day winter festival cancelled for 2021	Summerland	summerlandlightup.com
Gord Bamford's #REDNEK Music Fest	Penticton and surrounding area	https://www.soec.ca/event/gord-bamfords-rednek-music-fest/
Keremeos Blue Grass Jamboree	Keremeos Rodeo Grounds	https://bluegrasscanada.org/Resources/festivals/keremeos/keremeos.php
Music in the Park (formerly Wednesdays on the Water)	Summerland	summerlandarts.com https://www.facebook.com/events/memorial-park-summerland-bc/summerland-music-in-the-park/1659692384161182/
OK Vinyl Fest	Penticton	http://www.peachcityradio.org/events/okvf/index.php
Oliver Festival of the Grape	Oliver	https://oliverfestivalofthegrape.ca/
One World Festival - by South Okanagan Immigrant and Community Services (SOICS)	Penticton (serving the entire region)	http://www.soics.ca/oneworld/
Osoyoos Music in the Park	Osoyoos	https://osoyoosmusicinthepark.com/

EVENT	LOCATION	HYPERLINK
Pentastic Jazz Festival Society	Penticton	info@pentasticjazz.com
Penticton Dragon Boat Festival	Skaha Lake	https://pentictondragonboat.com/festivals/2020-penticton-dragon-boat-festival/
Penticton Elvis Festival (June 25 - 28) (canceled for 2021)	Penticton	https://www.pentictonelvisfestival.ca/
Penticton Kiwanis Music, Dance and Speech Arts Festival	Penticton and district	n/a
Penticton Peach Festival	Penticton and district	https://peachfest.com/
Penticton Public Sculpture Exhibit	Penticton	https://www.penticton.ca/our-community/arts-culture/public-art
Penticton Rib Fest	Penticton	https://infotel.ca/events/heavens-gate-winery-at-penticton-ribfest-2020/1-27354
Penticton Scottish Festival	Penticton	https://www.pentictonscottishfestival.ca/
Princeton Traditional Music Society	Princeton	http://princetontraditional.org/
Ryga Arts Festival	Summerland	http://www.rygafest.ca/
SHINE Penticton	Penticton	https://shinedancefestival.com/event/penticton/
Similkameen Sizzle	Memorial Park, Keremeos	https://similkameenvalley.com/event/similkameen-sizzle/
Summerland Fall Fair Society and Fall Fair	Summerland	https://www.summerlandfallfair.ca/ https://youtu.be/HbSt9MCeKyE
Tandem Fest	Penticton	https://www.facebook.com/Mo-Pro-Promotions-260703654840745/
Wine Country Writers Festival	Penticton and surrounding area	https://www.facebook.com/WineCountryWritersFestival/

APPENDIX 5 - COMMUNITY ARTS COUNCILS

The tables below provide information on the operations of each of the arts councils gleaned from their websites and the CRA Charitable Listings website (https://apps.cra-arc.gc.ca/ebsci/hacc/srch/pub/dsplyBscSrch?request_locale=en). Information on the arts councils' revenues and expenses is provided in the main body of the Environmental Scan document.

OLIVER Community Arts Council		
Status	Registered non-profit, charitable	
Mandate/Mission	An umbrella group currently representing the many groups and businesses listed below, and about 80 individual and family members, including both art-related and arts-supporting members... to educate and increase the public's understanding and appreciation of the arts in all its forms, to provide instructional seminars and workshops on topics related to the performing and visual arts, and to produce arts festivals. https://oliverartscouncil.org/	
No of Employees	0	
No of Directors	11	
No of Volunteers	Over 60	A variety of volunteers and volunteer committees
No of Members	19 member non-profit groups, 12 businesses, and 80 individuals and families.	Also see lists below.
Funders/Sponsors Also see list of winery donors below.	ArtsBC BC Arts Council Kevin's No Frills Oliver Kiwanis Oliver Parks and Recreation Regional District Okanagan Similkameen Town of Oliver Buy Low Foods	
Programs	Public events including showcases of local talent, art walk, music in the park, art shows, theatrical productions, student bursaries and workshops, including workshops for the developmentally challenged.	
No of Artists Supported	Over 160	Numerous artists and performers paid for events and workshops

OLIVER Community Arts Council		
Facilities	Quails Nest Arts Centre, studio and storage building	Buildings are available for rent.
Notes	Appears to be well integrated with individuals, community groups and businesses. Buildings (assets) valued at \$438,453.	
Business members: Anda Massage & Dance Art is Brewin (Dave Brewin) The Dance Studio in Oliver Firehall Brewery Gems and Stems @Eastside Janice Goodman Art Medici's Gelateria & Coffeehouse MOVE Therapies Munday Media & Design Oliver Daily News Oliver Eats Ltd Oliver Online Painting in the Jewel The Painted Chair South Okanagan Photos and Art South Okanagan Quality Childcare	Group members: Desert Sage Spinners & Weavers Double O Quilters Federation of Canadian Artists SOS Friends of the Oliver Library Musaic Vocal Ensemble Okanagan Art Gallery Oliver & District Heritage Society Oliver Arts and Crafts Oliver Community Garden Society Oliver Community Theatre Society Oliver Grandmothers for Africa Oliver Handbell Ringers Oliver Sagebrushers PI@ss RipOff Artists Sage Valley Voices Choir SOAP Theatre South Okanagan Concert Society Surfaces Mixed Media Women of Oliver for Women	Winery donors: Bartier Brothers Castoro de Oro Winery C.C. Jentsch Cellars Church and State Wines Desert Hills Winery Fairview Cellars Gehring Brothers Winery Hidden Chapel Winery Inniskillin Okanagan Intersection Winery Jackson Triggs Kismet Estate Winery Quinta Ferreira River Stone Winery Rust Wine Stoneboat Vineyards Vin Amite Cellars

OSOYOOS and District Arts Council		
Status	Registered non-profit, charitable	Note that they do not appear to provide an annual report.
Mandate/Mission	<p>The mission of the Osoyoos & District Arts Council is to increase and broaden opportunities to enjoy, participate and be enriched by arts and culture. Assist with coordinating the work and programs of artists and cultural associations.</p> <p>Stimulate and encourage the development of cultural projects and activities. Render service to members. Act as a clearinghouse for information on cultural programs and activities. Foster interest and pride in the cultural heritage of the community. Interpret the work of cultural groups to promote public understanding. Inform civic authorities of the cultural needs of the community. Be fiscally responsible and sustainable in order to support business, provide funding opportunities and plan for growth regarding infrastructure, programming and personnel needs.</p> <p>https://osoyoosartscouncil.com/</p>	
No of Employees	0	
No of Directors	6	
No of Volunteers	Not estimated	
No of Members	See list of group members below.	
Funders/Sponsors	BC Arts Council, Town of Osoyoos, Osoyoos Credit Union, Watermark Beach Resort and Conference Centre, Quail Security	
Programs	Art Shows (Gallery), Artisan Market, Osoyoos Performing Arts Concert series (4 concerts/year), Childrens art program, Student bursary	
Facilities	Osoyoos Arts Centre (rental) + Art Gallery Osoyoos, Osoyoos Community Theatre (Osoyoos School Board)	

OSOYOOS and District Arts Council	
<p>Member Groups</p> <p>The Osoyoos Potters, Artists on Main, Osoyoos Photography Club, Osoyoos Wood Carvers, the Osoyoos Quilters Guild, South Okanagan Concert Society and Janet Marcotte Music Studio, Osoyoos Music in the Park and Osoyoos Blues Society</p>	<p>Past Osoyoos Concert Series Sponsors</p> <p>Platinum Level *****</p> <p>Barb Pasternak – ReMax Realty Solutions The Osoyoos Times Brock Jackson and EZ Rock Radio Watermark Beach Resort Sunshine Ridge Retirement Residences</p> <p>Gold Level *****</p> <p>Strayhorse Consulting Ltd. Silver Level *****</p> <p>Osoyoos Golf & Country Club Rod Rezka – IPC Investment Corporation Osoyoos Credit Union Sun Valley Dental – Dr. Jason Bartsch Sage Bookkeeping</p> <p>Bronze Level *****</p> <p>Osoyoos Duty Free Shop JoJo’s Café Lakeside Travel – Deb & Mel McCallum Rotary Club of Osoyoos Sunshine Valley Family Chiropractic. Doctors Brittany Morris & Johnny Cheong AG Foods Osoyoos Kiwanis Club of Osoyoos WK Group, LLP,- Chartered Professional Accountants Munday Media and Design</p>

SUMMERLAND Community Arts Council		
Status	Registered non-profit, charitable	
Mandate/Mission	<p>ADVOCACY FOR THE ARTS IN THE SUMMERLAND AREA, WORKS OF ARTS PRESENTED IN THE MAIN GALLERY, ADAMS ROOM AND MEMBERS CAN DISPLAY THEIR WORKS IN THE GIFT GALLERY. CHILDREN'S PROGRAMS INCLUDE THE SUMMER ARTS AND BANNER PROGRAMS. THE ARTS CENTRE IS A MEETING PLACE FOR VARIOUS ARTS GROUPS. WINTER WORKSHOPS, PHILOSOPERS' CAFE AND SEASON SPARKLES.</p> <p>https://summerlandarts.com/ Annual Report: https://cdn.shopify.com/s/files/1/0248/7812/1014/files/Annual_Report_with_Proposed_Budget_SCAC_2020.pdf?v=1613667084</p>	

SUMMERLAND Community Arts Council		
No of Employees	1 ft, 2 pt	
No of Directors	10	
No of Volunteers	Not estimated	
No of Members	See member groups and studios below.	
Funders/Sponsors	District of Summerland, Thornhaven Estates Winery, Community Foundation SOS, Purple Hemp Co., BC Arts Council, Summerland Chamber of Commerce and a number of local businesses	
Programs	Gallery, exhibitions, permanent collection, hosting of events, shop, artist of the month, workshops, connections, Children's Summer Arts courses, Music in the Park, Friday Night Live, Stash Bash, Cultural Days	
Facilities	Cultural Centre including Art Gallery	\$102,186 in capital assets
Member groups: Okanagan Modern Quilt Guild Philosophers' Cafe Ryga Festival Society Summerland Art Club Summerland DeVine Arts Summerland Fall Fair Society Summerland Friends of the Garden Summerland Museum and Heritage Society Summerland Pleasure Painters Summerland Potter's Guild Summerland Singers and Players Summerland Stitchers TAFE (Tuesday Afternoon Fibre Arts)	Member studios: Jean Evanishen Pottery Marcia Stacy, Stacy Studio John Topham Studio Elaine Watts Studio Irene Gray Studio Valorie Nielsen Studio	

PENTICTON and District Community Arts Council		
Status	Registered non-profit, charitable	
Mandate/Mission	<p>THE PENTICTON & DISTRICT COMMUNITY ARTS COUNCIL IS THE UMBRELLA ARTS ORGANIZATION FOR THE PENTICTON BC AREA AND SERVICE A RURAL POPULATION OF 39,000 THROUGH THE ARTS MATTER PROGRAM. THE PROGRAMMING OFFERS INCLUDE ART EXHIBITIONS, WORKSHOPS, ART MARKETS, FESTIVALS AND ART WALKS, THEY CREATE OPPORTUNITIES FOR COMMUNITY MEMBERS TO CONNECT THROUGH ARTISTIC ACTIVITIES. THEY RUN ARTS PROGRAMMING FROM THE LEIR HOUSE CULTURAL CENTRE AND PROVIDE SUPPORT FOR THE ARTISTS AND ART GROUPS IN RESIDENCE PROGRAM. EACH YEAR THEY PROVIDE TWO YEARLY SCHOLARSHIPS TO HIGH SCHOOL STUDENTS PURSUING HIGHER EDUCATION IN THE ARTS. ONE STUDENT IS CHOSEN FROM PENTICTON HIGH SCHOOL AND ONE FROM PRINCESS MARGARET HIGH SCHOOL FOR A TOTAL OF \$1,500. THE CLIENT HELPS TO KEEP THE COMMUNITY UP TO DATE ON THE CURRENT ARTS AND CULTURAL EVENTS AND ACTIVITIES THROUGH A NEWSLETTER, SOCIAL MEDIA CHANNELS AND AN ONLINE COMMUNITY CALENDAR. THE CLIENT ALSO REPRESENT THE COMMUNITY ON THE CITY OF PENTICTON'S ARTS, CULTURE & INNOVATION COMMITTEE AND THE MUSEUM & HERITAGE ADVISORY COMMITTEE. New programs: NEW UPCOMING PROGRAMMING INCLUDES MORE EVENTS AND SUPPORTS FOR COMMUNITY MEMBERS WHO ARE NEW TO THE AREA, LIVE IN THE REGIONAL DISTRICTS, OR WHO ENGAGE WITH SOCIAL SERVICE PROVIDERS.</p> <p>https://www.pentictonartscouncil.com/ Annual Report: https://static1.squarespace.com/static/5e5022d5f4cb5251c890fa8f/t/5fe277705b8dd61db8f92647/1608677237405/PDCAC+AGM+2020+Final.pdf</p>	
No of Employees	4 part-time	
No of Directors	10	
No of Volunteers	Not estimated	
No of Members	Number of members not estimated. Memberships are \$24 to \$36.	

PENTICTON and District Community Arts Council		
Funders/Sponsors	BC Arts Council, City of Penticton, The Hamber Foundation, Community Foundation, RDOS. <i>The COVID-19 fund has also received contributions from BC Gaming, Gore Mutual Insurance and private individuals.</i>	
Programs	Arts Matter. Artist in Residence (6). Outreach to marginalized groups. Arts Promotion (online calendar). Gallery - Exhibitions for members (Leir House). Art walks and festivals in all creative disciplines. COVID-19 Arts Fund. #Love Local Arts directory for businesses, groups and artists.	The COVID-19 arts fund provides art packs to children and seniors; online event gigs for local artists (funds of \$4730 raised through Canada Helps campaign so far). NEW UPCOMING PROGRAMMING INCLUDES MORE EVENTS AND SUPPORTS FOR COMMUNITY MEMBERS WHO ARE NEW TO OUR AREA, LIVE IN THE REGIONAL DISTRICTS, OR WHO ENGAGE WITH SOCIAL SERVICE PROVIDERS.
Facilities	Leir House Cultural Centre	

PRINCETON Community Arts Council		
Status	Registered non-profit, charitable	Note that they do not appear to provide an annual report.
Mandate/Mission	Concerts and theatrical performances Art Displays and Installations Classes in various arts techniques https://www.princetoncommunityartscouncil.com/	
No of Employees	0	
No of Directors	9	
No of Volunteers	Not estimated.	
No of Members	60 to 90	
Funders/Sponsors	Town of Princeton, Princeton and District Chamber of Commerce, BC Arts Council, RDOS, Crimson Tine Theatre Society	
Programs	Concerts and theatrical performances Art Displays and Installations Classes in various arts techniques	

PRINCETON Community Arts Council	
Facilities	Sunflower Gallery & Gift Shop, Snowflake Community Gallery, Riverside Community Centre and Theatre
Notes	See also Princeton Traditional Music Society and Princeton and District Museum and Archives.

APPENDIX 6 - SOPAC II WORKSHOPS**50 The Results of the STEP TWO Workshop*****Towards a Vision for the Arts in the South Okanagan/Similkameen***

hosted by SOPAC II/SOSArts **Executive Summary**

This one-day workshop built on the foundation of the inaugural workshop held in the autumn. As the final step of the earlier workshop, participants came to a consensus on a common vision statement:

We are a united voice of the South Okanagan Similkameen, building a vibrant arts and culture community for everyone.

That workshop concluded that there is a strong willingness to connect, a strong will to move forward and the idea of disbanding SOPAC was not supported although a re-naming was encouraged.

The **objective of this workshop** was the development of an action plan that could provide more focussed direction to the Executive Board going forward if there was a strong consensus that things should continue.

There were several rounds of conversation, each centred initially at tables of five participants, drawn from across the region – from Princeton to Osoyoos to Summerland to Penticton! The conversations addressed the questions and ideas raised in three major challenges that were the core of a background working paper which evolved from the Step One Workshop and was provided to each participant prior to the workshop..

When all the conversations concluded, the group re-convened in its entirety and came to a consensus on the prime recommendations:

- A. Whereas the Board of Directors consists of a cross-section of regional arts stakeholders including indigenous peoples, with the commitment and availability to fulfill the vision of SOSArts,**
Be it resolved that:
The newly elected 2020 Board of Directors review By-Law/ Constitution to make recommendation of changes to take forward to a Special General

Meeting specifically to:

- 1) **Determine number of Board members**
- 2) **Determine Board member terms**
- 3) **Focus on regional representation**
- 4) **Include all aspects of Arts**

B. Be it resolved that:

The Board undertake an *environmental scan* of the regional arts landscape to inform the future direction and priorities of SOSArts; scan = 1) inventory of cultural stakeholders

- 2) **inventory of regulatory bodies**
- 3) **potential partners**
- 4) **inventory of cultural activities and facilities**
- 5) **other information that may emerge as relevant**

It was then determined that any response to the third challenge ought to be deferred until the Board has been able to thoroughly address **A & B**. The major thrusts of this conversation included a consultation process re *needs assessment & validation* (which in large part may well be addressed in the *Environmental Scan*). The others are engaging the larger community, providing examples beyond SOSArts, gaining an inventory of existing groups (again part of the *Eco-Scan*), and developing a regional calendar.

The workshop concluded and brought the two resolutions forward to the AGM which followed the Workshop. The draft minutes of the AGM follow as do the various preliminary responses to the three major challenges.

Appendix A: Records of 2020 AGM

Chair: Leighton McCarthy

(3:25 p.m.) Welcome and acknowledgements

As a result of the *Step One Workshop* we have developed a **Vision Statement** to guide us going forward: ***We are a united voice of the SOS (South Okanagan/Similkameen), building a vibrant Arts & Culture community for everyone. Our challenge now is to move forward to develop an action plan to make SOSArts a real moving force in the implementation of this Vision.***

(3:27 p.m.) Approve agenda [m: Meiklejohn / s: Hobin decision: approved]

Primary Resolutions:

§ *This AGM waves the need for advance notice of the Step Two Workshop's recommendations.* [m: Hobin /s: Allin decision: approved]

§ *That the name of South Okanagan Performing Arts Centre Society (SOPAC) be changed to that of South Okanagan/Similkameen Arts Board (SOSArts).*

[m: Coates /s: Mansell decision: approved]

\$ *That the Fiscal Year of SOSArts be from January 1st to December 31st.*

[m: Coates /s: Fry decision: approved]

\$ *That the SOPAC financial reports for 2018/2019 & 01/07/19-31/12/19 be accepted as filed.* [m: Sinclair /s: Allin decision: approved]

\$ *Due to the fact an AGM was not held during/for the 2018/2019 year this AGM acknowledges and accepts the lack of minutes to be approved.* [m: Meiklejohn/s: Sinclair decision: approved]

Resolutions Arising from the Step Two Workshop:

A. *Whereas the Board of Directors consists of a cross-section of regional arts stakeholders including indigenous peoples, with the commitment and availability to fulfill the vision of SOSArts,*

Be it resolved that:

The newly elected 2020 Board of Directors review By-Law/ Constitution to make recommendation of changes to take forward to a Special General Meeting specifically to:

- 1) *Determine number of Board members*
- 2) *Determine Board member terms*
- 3) *Focus on regional representation*
- 4) *Include all aspects of Arts*

[m: Sinclair s: Coates decision: approved]

B. *Be it resolved that:*

The Board undertake an environmental scan of the regional arts landscape to inform the future direction and priorities of SOSArts;

scan = 1) inventory of cultural stakeholders; 2) inventory of regulatory bodies; 3) potential partners; 4) inventory of cultural activities and facilities; 5) other information that may emerge as relevant

[m: Sinclair s: Monro decision: approved]

Other Motions:

\$ *That the membership dues (fees) for the stump period in 2019 be twenty-five dollars (\$25.00/member).* [m: Coates/s: Hobin decision: approved]

\$ *That the three permanent members of the Board (McCarthy, Meiklejohn, Sinclair) be acknowledged, upon receipt of their dues, as being the only members for the stump period in 2019.* [m: Allin /s: Coates decision: approved]

\$ *That the membership dues (fees) for the 2020 year be twenty-five dollars (\$25.00/member).* [m: Sinclair/s: Crawford decision: approved]

Election of 2020 Board:

\$ *That the membership approve the slate of directors as presented by the out-going Board (which served as the Nominating Committee). [m: Sinclair /s: Crawford decision: approved] {in no particular order}*

\$ Kate Hobin (Osoyoos)

\$ Myrna Coates (Keremeos)

\$ Leighton McCarthy (Penticton)

\$ Cal Meiklejohn (Penticton)

\$ Derek Bryson (Osoyoos)

\$ Alice Mansell (Penticton)

\$ Betty-Anne Xenis (Summerland)

\$ Leah Foreman (Oliver)

\$ Valerie Tait (Naramata)

Notice of Board Next Meeting: (to serve also as a transitional meeting)

\$ *The newly elected Board will meet on the first Wednesday of each month; thus the next meeting will be on April 1st at 6:30 p.m. at a site to be determined.*

(3:55 p.m.) Adjourn [m: Crawford s: Allin decision: approved]

Challenges to be addressed by participants at Step Two Workshop**Challenge 1:*****How do we go about establishing a strong regional leadership process?***

\$ What is the optimum design for type of board we would find most effective? [e.g. should it be a consortium of interests appointed by key groups throughout the region OR an elected council, determined at each AGM although the Board could prepare a recruited slate of candidates in advance OR some other concept?]

\$ What would be the preferred number of members on the board [e.g. an uneven number so the Chair can always break any ties, a minimum of nine so there can be sufficient representation from throughout the region? OR...]

\$ Describe what you believe to be good characteristics of an effective Board including how to incorporate a matrix of SOS interests to ensure collaboration as well as regional representation? [e.g. the structure could include: 1 from Cawston/Keremeos/Princeton area, 1 from Osoyoos/Oliver/Ok Falls area, 1 from Summerland area, 1 from Aboriginal organizations, 1 from RDOS, 1 from City of Penticton, 3 from Penticton/Naramata area AND within these 9 individuals at least one is from business, one from agriculture, one from education, one from the arts OR there could be: two representative from each of the geographic sub-regions with the exception of Penticton which would get four (no RDOS

or City reps however), but only one person from each area would be from an official arts organization thus ensuring an adequate multi-interest board]

§ Describe how you would ensure continual re-energization through membership being determined on a rotational basis for staggered three-year terms? [e.g. if the membership were to be nine members in the first year (2020) three would serve a one-year term, three would serve a two-year term, and three the full three-years perhaps meeting every two months with sub-committees meeting on the alternate months plus a *special general meeting* in the autumn to help keep momentum as each school year gets underway and *AGM* in the late winter as the fiscal year gets underway OR possibly a full day (perhaps Saturday) once a month with sub-committees in the morning and the full board in the afternoon complete with a public Q+A session to increase access from the community itself]

Draft a potential Resolution that you would put forward at the AGM that incorporates all four responses in a simple sentence:

Challenge 2:***What are the objectives for SOSArts – in other words, Why are We doing this?***

- \$ at the Step One Workshop a number of priorities were determined (e.g. increased engagement including community outreach & education, year-round coordinated festivals/events, & more support for diversity within the arts) so how might we establish working groups/committees to develop action plans on suggested themes such as – *making the SOS a summer destination for the arts, fringe-style festivals, all year events, regional festivals...?*
- \$ at the Step One Workshop collaboration was determined to be the most pressing need for a successful push forward in the Arts so how might we go about developing working relationships with the various tourist/info centres in each community through the South Okanagan/Similkameen including ensuring there is a comprehensive listing of all arts-related organizations; and, what might be an approach for working with the winery associations, craft breweries and distilleries?
- \$ another major recommendation from the Step One Workshop was for *regional leadership* that would promote a unified voice in messaging, sharing and even facilitating more on-line exchanges of news and ideas which means there needs to be some attention given to how the Board itself undertakes to promote *the arts as an indicator of the quality of life* within the community – so what are some concrete objectives that should be incorporated into any Action Plan for the Board in 2020?

Draft a potential Resolution that you would put forward at the AGM that incorporates all four responses in a simple sentence:

Challenge 3:***What are key action items/structures we need to show what we can do?***

- \$ The Step One Workshop brought forward the idea of establishing/maintaining a regional calendar of events – ought this to be a priority on the SOSArts website whereby is published a general schedule of ALL arts & culture related events throughout the region + the occasional Super event within the valley-wide community at either Vernon or Kelowna? And if so, how should it be managed and accessed?
- \$ The Step One Workshop recommended a dynamic approach to marketing including developing a business strategy identifying regular, continuous funding for the work of the Board itself – what should this look like? how should the Board be financially supported [e.g. should there be individual and/or organization-based membership fees to support annual costs of meetings, web-site, outreach? fees are \$25/person with an active membership list of no more than forty (total = \$1.000/yr) so what might be a realistic total budget and how should that be obtained/financed?]
- \$ Coupled to the marketing concept was the recommendation for an implementation strategy which would consist of a five-year plan enlisting multi-sector material support that addressed targets, milestones, communication, good stories of collaboration gathering synergy to guide the leadership of SOSArts so there are strong answers to the question *how do we develop services for all to benefit from?* – but is this a priority and if so just how ought we to proceed to operationalize this idea?
- \$ At what point in the Action Plan should the Board consider raising and/or promoting the issue of a central facility (Concert Hall/Playhouse)? What are some steps that need to be taken/assured in order for this to be perceived as a regional concepts?

Draft a potential Resolution that you would put forward at the AGM that incorporates all four responses in a simple sentence:

Excerpts from the Tables' Conversations:

{ **note:** *records are randomly listed* – each table # is not identified in parallel order }

Challenge #1:

table 1 –

An effective Board is comprised of regional representatives and included all aspects of the Arts; through communication and collaboration the Board will be the go-to organization to coordinate functions in the region, with a Board maximum of 9, and minimum of 3.

table 2 –

A set Board of 9 multi-talented members that represent the whole region in advocating for and engaging in the Arts.

table 3 –

Be it resolved that SOSArts shall establish an interim Board of Directors to define the roles & composition of an SOSArts Board to carry forward the mission developed through the Step 1 collaboration.

table 4 –

Create a Board:

- \$ to determine *the story*
- \$ that represents both regions & arts forms
- \$ that will be a *working* (vs. governance) Board
- \$ that is committed to developing *the story* (e.g. making the region an arts & culture destination)

Challenge #2:

table 1 –

Why are we doing this? A belief in the value of the Arts to improve communities in SOS collectively and individually.

Objectives –

- \$ a unified voice created by *communication plan* (including social media, media,# of individual contact
- \$ an umbrella organization that will keep the Arts front & centre! Ensuring collaboration, focussing on common interests in all parts of the region
- \$ ensuring/fostering good working relationships with community organizations that can promote mandate

table 2 –

Be it resolved that the Board undertake an environmental/cultural scan of the SOSArts region, to help better define SOSArts Role as facilitator and advocate.

table 3 –

- \$ support, connect & build upon existing Arts communities
- \$ build strategic partnerships
- \$ raise the profile of the Arts in the region

table 4 –

The leadership will:

- \$ establish, maintain and distribute a calendar of events
- \$ encourage a diverse community membership through working groups/committees

Challenge #3:

table 1 –

recognizing the *vision* of SOSArts, a 3-5 year strategic/marketing plan will be created with defined objectives & funding

- \$ ultimately 1 P.T. employee
- \$ Board completes strategic/marketing plan and provides employee & volunteers the Operational Plan to deliver identified action items
- \$ set up website & social media platform(s)
- \$ manage membership fees/revenues
- \$ contact key groups to *sell* value of SOSArts

table 2 –

- \$ develop a digital strategy to connect communities and their events
- \$ create a business plan for sustainable funding

table 3 –

- \$ develop a plan: I) time frame, ii) results oriented (*story*), iii) budget
- \$ develop *pride of place* based on acknowledgement of what we already have
- \$ independent of individual arts groups' needs
- \$ request funding from sources that does not *take* from existing Arts groups (e.g. regional development)

table 4 –

Be it resolved that we table Challenge 3 until such time as the interim Board has resolved the items laid out in Challenges ! & 2

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
Environment and Infrastructure Committee
REGULAR AGENDA



Thursday, October 7, 2021
11:00 am

Pages

A. Approval of Agenda

RECOMMENDATION

THAT the Agenda for the Environment and Infrastructure Committee Meeting of October 7, 2021 be adopted.

B. Lower Nipit Improvement District - Acquisition Assessment

Ecora Engineering Delegation Present

RECOMMENDATION

THAT the Regional District decline the request from the Lower Nipit Improvement District to assume ownership of their infrastructure.

2

C. Adjournment

RECOMMENDATION

THAT the meeting adjourn.

ADMINISTRATIVE REPORT

TO: Environment and Infrastructure Committee

FROM: B. Newell, Chief Administrative Officer

DATE: October 7, 2021

RE: Lower Nipit Improvement District - Acquisition Assessment

Administrative Recommendation:

THAT the Regional District decline the request from the Lower Nipit Improvement District to assume ownership of their infrastructure.

Purpose:

Presentation of the Engineering Assessment results for the potential transfer of the Lower Nipit Improvement District to the RDOS

Reference:

Lower Nipit Improvement District Engineering Assessment & Acquisition Plan – ECORA Engineering Ltd. - August 25, 2021

Business Plan Objective:

Key Success Driver 3: Build a Sustainable Region

Goal 3.3: To Develop an environmentally sustainable region

Background:

The Lower Nipit Improvement District (LNID) was incorporated in the 1950's with the purpose of managing water levels in upper and lower Twin Lake and providing agricultural irrigation for the surrounding properties. Recent flooding events have shown that the LNID's current infrastructure is not adequate for managing lake levels and the system requires upgrading.

The LNID advised the Regional District of Okanagan-Similkameen (RDOS) that it was their intention to dissolve the Improvement District and propose that the Regional District assume ownership of the infrastructure and take the responsibilities in the LNID Letters Patent.

Following the request, the RDOS contracted Ecora Engineering Ltd. to complete an engineering and financial assessment and determine any infrastructure upgrades and operational procedures required to safely manage water levels in Twin Lakes and, subsequently, to consider the impacts of downstream identified in the Dobson/Pomeroy Twin Lakes and Park Rill Flood Mitigation Reports.

Analysis:

Existing Infrastructure

In the fall of 2020, representatives from ECORA Engineering and the RDOS met with LNID personnel and toured existing infrastructure to get an overview of system operations. The infrastructure consists of the following:

- 15 horsepower Grindex three-phase submersible pump with a 6" (150mm) diameter discharge,
- 6" (150mm) diameter HDPE pipe and couplers about 670 metres long
- monitoring equipment,
- 2 surface water licenses, and
- 6 metre wide right of way approximately one kilometer long used to convey water.

ECORA noted that the existing pump is showing signs of extreme wear and is in need of immediate replacement, all of the other infrastructure was in good operational condition.

Required Upgrade

In order to properly size the new infrastructure to protect against a 1 in 200 year flooding event, ECORA completed hydraulic modeling for the lake and watershed. The new infrastructure needs to have the capacity to drain water at 1.9m³/s from the lake. To meet these requirements, the pump would need to be upgraded to a 470 horsepower pump with a 12" (200mm) discharge port.

Given the large volumes of water and pumping capacity required, ECORA explored abandoning the existing pumping infrastructure and installing a culvert that would passively drain the lake. ECORA determined that a 300 metre long 1800mm diameter culvert would meet the flow requirements for a 1 in 200 year event. The analysis showed that although the culvert had a higher upfront capital cost, the operational costs over the life of the infrastructure are significantly lower resulting in a better net present value for the culvert option. The culvert option also presents fewer potential points of failure, and would remain operational in the event of a power outage without the need for a backup generator.

Cost to Service Area

ECORA estimates that the capital costs to install the new culvert infrastructure is approximately \$1.6 Million. The maintenance and operational costs would be minimal with operators doing periodic checks, adjusting the sluice gate to regulate flows, and scheduling periodic cleaning to remove blockages. ECORA has estimated that operations and maintenance costs would be about \$5,500 annually.

Based on the financial analysis ECORA provided, and assuming a 25 year amortization period for the infrastructure, each of the 68 properties would be charged approximately \$1,325 per year without any grant funding.

As a summary, the following table provides the annual cost estimates for the new culvert infrastructure to each of the 68 properties. The project does not have grant funding at this time.

(MFA Loan – 25 yrs, 2.6% interest)

ESTIMATED COSTS FOR CULVERT INSTALLATION & PROPOSED SERVICE FOR 69 PROPERTIES	TOTAL FOR SERVICE (NO GRANT)
Culvert Installation Borrowed Funds	\$ 1.6 M
Annual Debt Payment	\$ 90,025
Annual Debt Payment per Property	\$ 1,305
Annual Operations & Maintenance Cost	\$ 5,500
Annual Operations & Maintenance Cost per Property	\$ 80
ANNUAL ESTIMATED TOTAL PER PROPERTY	\$ 1385

Liabilities & Risk Tolerance:

Flood control and mitigation is not a service currently provided by the RDOS. Previous studies on Twin Lakes and the Park Rill Water System indicate that all water from Twin Lakes moves through Willowbrook, down Sportsmans’ Bowl, across Hwy 97 to the Channel. There are a number of risks in the downstream Willowbrook and Park Rill areas to consider. Those studies indicate that any redress would be in the \$10M - \$15M range and should start at the bottom of the system, not at the top.

The Regional District has liability insurance with the Municipal Insurance Authority of British Columbia. MIA agrees that the conclusion at the end of the Technical Memo states what liability would remain after the culvert upgrades: *"Even if these upgrades were made, it would not fully rectify the issues in Park Rill as there are still sections of channel that are undersized, or landowner crossings are inadequate"*. Some of the undersized components are on Ministry of Transportation and Infrastructure right of ways while others belong to private property owners. If the RDOS makes the downstream changes indicated in the report, it would improve a number of areas in relation to erosion etc., but that final statement would still remain. The Regional District does not have a “Service” that would allow work on this system without ratepayer approval and willingness to pay.

Additionally, while completing the works in phases (as indicated in the Technical Memo) there may be some exposure in controlling the various upgrades and monitoring the downstream impacts. Any work the Regional District could undertake in Twin Lake would have an impact on the remainder of the Park Rill System and MIA believes the areas of concern are the impact to private property and issues with stream erosion/impact to natural habitat.

There is liability in all of the scenarios provided in the reports and MIA noted that the Regional District, if assuming this responsibility, would have to determine its own risk tolerance and comfort level in terms of the existing issues and any of the issues noted when upgrades are in progress. Consideration is necessary to determine whether initiating this service makes sense for the RDOS

moving forward. The Province of British Columbia is developing a Flood Strategy document, anticipated to be released in Spring of 2022.

Evaluation of Options:

The following table summarizes some of the main points from the report that should be considered in determining the next steps for the RDOS consideration of the acquisition request from the LNID.

Topic	Details
Engineering Assessment	Current pump is undersized and needs replacing; Downstream infrastructure is inadequately sized to handle design flow from culvert – additional analysis, designs and cost estimates would be required.
Financial Assessment	Assets include cash, investments, property and equipment; Sufficient funds for annual expenditures, but require additional funds for pump replacement; No insurance claims or lawsuits filed against or by LNID.
Acquisition Plan	Straightforward process for service creation; Expected 0.05 FTE (Full Time Equivalent) annually and 0.19 FTE seasonally for culvert operation and monitoring – additional staff may be required, especially during wet years.
Operational Plan	Water release must be pre-approved by Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD) and may be conditional on water levels in Park Rill system.
Right of Way (ROW)	Alignment of culvert is different from current pump discharge pipe so a new ROW is required and would need a 20 m width to accommodate deep excavations for the culvert.
Water Licenses	Two licenses are currently held by LNID; Maximum discharge is 75 Litres/second (0.075 m ³ /s) but new culvert designed for 1900 Litres/second (1.9 m ³ /s) so a new water license for increased lake outflows is needed.

Next Steps:

Should the Board decide to continue with the acquisition process, the Consultant will present the findings of the assessment to the LNID and residents. A newsletter will be prepared, an open house scheduled and the residents would decide if they wished to proceed with the transfer process to the RDOS. The residents would need to approve a borrowing bylaw and the dissolution of the LNID.

A transfer agreement would be prepared by the RDOS for all assets, including water licenses and right of ways, and Cabinet would dissolve the LNID.

Alternatives:

1. Refer the matter back to Administration for additional information or analysis.
2. Continue with the acquisition process of the Lower Nipit Improvement District.

Communication Strategy:

RDOS will present the findings of the assessment to the LNID and the public. If proceeding with acquisition, an open house and newsletter will likely be planned for the community.

The report will be provided on the RDOS website as a public document.

Respectfully submitted:

“Liisa Bloomfield”

L. Bloomfield, Engineering Manager

August 25, 2021

Ecora File No.: 201421

Regional District of Okanagan-Similkameen
101 Martin Street
Penticton, BC V2A 5J9

Attention: Shane Fenske, ASCT – Engineering Technologist

Reference: Lower Nipit Improvement District Engineering Assessment & Acquisition Plan
Technical Memorandum No. 1 – Park Rill Improvement Review Letter

1. Introduction

Ecora Engineering and Resource Group Ltd. (Ecora) was retained by the Regional District of Okanagan–Similkameen (RDOS) to carry out an Engineering Assessment and Acquisition Plan to review the feasibility of acquiring infrastructure owned and operated by the Lower Nipit Improvement District (LNID) at Lower Twin Lake (LTL). The findings of the study are summarised in the report titled *Lower Nipit Improvement District Engineering Assessment & Acquisition Plan* prepared by Ecora in June 2021.

A significant component of the Engineering Assessment was to look at possible improvements to the lake outlet that could improve flood control within LTL. In doing so, attention was brought to the impacts of increased lake outflows on downstream infrastructure and properties within the Horn Creek and Park Rill systems. To quantify these impacts and assess the liabilities of the proposed works at LTL, RDOS requested a supplemental review.

The purpose of this Technical Memorandum is to present the findings of the document review, identify system operation liabilities, analyze capacity and assess upgrade requirements for the potential increased flows resulting from LTL outlet improvements.

2. Background Document Review

A background document review, with a focus on the impacts of water release from Twin Lakes on the downstream watercourse was conducted as part of this technical memorandum. Three recent studies were referenced as part of the review and the findings are as follows

Twin Lakes Flood Response Feasibility Assessment prepared by Ecora Engineering & Resource Group Ltd., June 2019

- During 2018 flooding, Park Rill was flooding concurrently with LTL. LNID was not permitted to pump water into the Park Rill watershed until LTL lake levels reached a point where temporary flood protection works were at risk of failing.
- It was noted that increased pumping from LTL was permitted by the Provincial Water Engineer in 2013 and 2015 to 2018. It is suspected that this pumping exacerbated creek erosion within

properties upstream of Myers Flats. Additionally, the Lower Horn Creek channel appeared to be incised due to continued erosion through a finer-grained channel bed.

- It was highlighted that increases in discharge from LTL could have severe impacts on erosion and flood potential in the downstream Park Rill channel. The hydraulic capacity and erosion resistance requirements of Park Rill should be assessed in detail.
- Near White Lake Ranch, erosion from 2018 flooding had deepened and widened the existing channel, impacting an access road. The channel had down-cut into a 2 m deep gully with slumping banks.

Park Rill Flood Response Feasibility Study prepared by Ecora Engineering & Resource Group Ltd., June 2019

- A letter report written by Nicole Pyett (regional hydrogeologist) in 2018 suggests that there may be limited storage capacity in the Willowbrook aquifer and it may be unfit to handle continued pumping from Twin Lakes into Park Rill. However, it is noted that this relationship is not well understood, and factors such as an overall increasing trend in regional aquifers, should also be considered.
- Botham (1973) mentions that in 1951, pumping from Lower Twin Lake into Park Rill caused flooding in the Park Rill area.
- The BC Ministry of Transportation and Infrastructure has been completing ongoing upgrades to the MoTI crossings along Park Rill.
- As a result of the 2017 and 2018 flooding and pumping from Twin Lakes, erosion damage occurred at 4493 Willowbrook Road. Restoration of this property is required which should consist of increasing channel capacity to accommodate the design flow and stabilization of the channel banks.
- The Lower Twin Lake discharge to Park Rill is expected to have an impact downstream of the discharge location, primarily in the Park Rill headwaters where the overall proportional increase to discharge is more significant and there is insufficient channel capacity. It was recommended that a detailed analysis of the channel be completed to identify areas where peak flows may damage the channel and adjacent private properties.
- Channel improvements to the Park Rill reach within the Sportsmens Bowl area are challenged by space constraints and limitations in the available road right-of-way.
- The existing Park Rill crossing under Highway 97 is composed of three 600 mm diameter CSPs with two overflow 800 mm diameter culverts. It is noted that the combined capacity of these five culverts is less than the capacity of the upstream Secret Hill Road culverts. The report suggests that Highway 97 would require an upgrade to pass the designed flow with a 6.0m short span bridge or a 4200mm (span) x 1500mm (rise) concrete box culvert.
- Park Rill Road has a 1200 mm diameter CSP, which is undersized. Improving this structure would fall under MoTI jurisdiction.
- Numerous small culverts are located along Park Rill, under private driveways located within private property and along the Sportsmens Bowl Road ditch. These culverts do not have capacity to discharge high flow events.

Park Rill Creek, Horn Creek and Kearns Creek Flood Mapping Final Report - Draft prepared by Northwest Hydraulic Consultants Ltd., May 2021

- The 1 in 200-year recommended design flows estimated for Park Rill (exclusive of Twin Lake outflows and inclusive of climate change (CC) factoring) are as follows:
 - Park Rill at Willowbrook Rd. - 9.6 m³/s (200-year + CC)
 - Park Rill at Sportsmens Bowl Rd. - 21.9 m³/s (200-year + CC)
- The report indicated that road and crossing upgrades would be required to improve conveyance of design flows within the Willowbrook and Sportsmens Bowl areas. A number of the crossings in these areas are still undersized and require attention in order to handle the design flood event.
- It is worth noting that the flood mapping study limits did not include the crossings located on Horn Creek or Park Rill between Twin Lakes and the Willowbrook Area and it was estimated that there will be problems beyond the northern limit of the study (Willowbrook Road). The channel assessment in the report found that channel capacity is far below what is required, and that water carries a significant sediment load which deposits in the area of the culvert under Jones Way.
- The report suggested that channels on private property need to be improved to keep water moving and to reduce sediment loading.
- One of the proposed flow conveyance improvements is to upgrade Park Rill to handle the design event by applying channel and crossing improvements within the Willowbrook and Sportsmens Bowl areas.
- The maps produced by this study show the properties that would currently be at risk of flooding during the design flood event.

In reviewing the three most recent studies conducted in the area of Twin Lakes and Park Rill there is a re-occurring theme that indicates that the drainage system downstream of LTL is undersized in terms of both channel and crossing capacities. Some crossings have been improved in recent years by MoTI but there is still much work to be done to bring the system up to a standard which could handle the 1 in 200-year design flood event. This observation supports the idea that the system is undersized regardless of the introduction of outlet upgrades at LTL.

Other data that was collected to support this technical memorandum includes NDMP 2019 and Okanagan 2018 LiDAR data and BC Ministry of Transportation and Infrastructure (MoTI) as-built drawings for the crossing improvement works completed in the Willowbrook Area.

3. System Operation Impact Review

A review was completed to identify the issues that may surround the operation of the proposed culvert outlet at LTL and as they relate to liability and the potential impacts to downstream infrastructure. These concerns surrounding liability were reviewed such that the information can be considered by the legal representatives of the RDOS and/or MFLNRORD, as they assess the feasibility of the works from a legal standpoint.

To aid in assessing the liabilities of the upgrades to the LTL outlet, literature from the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD) Dam Safety Program was referenced and approaches that are applied in evaluating dams and dam upgrades were reviewed. Referencing the Downstream Consequence of Failure Classification Interpretation Guideline (MFLNRORD, 2017), it was found that an incremental approach is often used, as stated as follows:

*“Incremental consequences of failure are defined as “the incremental losses or damage that a dam failure might inflict on upstream areas, on downstream areas, or at the dam itself, over and above any losses or damage that would have occurred in the same event or conditions had the dam not failed” (CDA Guidelines, Glossary). 3 The CDA Technical Bulletin #1 discusses incremental and total consequences in more detail in Section 3.6: **It is traditionally assumed that the standard of care and due diligence expected of a dam owner relate to the potential damages above and beyond those that would occur due to a natural event when the dam does not fail.** The “incremental losses” are defined as the total damages from an event with dam failure minus damages resulting from the same event if the dam had not failed. Under the regulation, the consequence of failure is based on losses, damage, deterioration or destruction “caused by the failure of the dam”, (see Schedule 1, Definitions; “consequences of failure”, clause (a)). The term “incremental” as related to consequences of failure is not defined or addressed in the regulation but is implied by that phrase “caused by the failure of the dam”. Therefore, the dam owner should assume that the consequences of failure only include the damages that would have occurred over and above any losses or damage that would have occurred in the same event or conditions had the dam not failed, as defined by “incremental consequences of failure” in the CDA Guidelines.”*

Interpreting this excerpt, it would suggest that an adequate standard of care and due diligence would be to evaluate the incremental impact of the upstream works at LTL on downstream reaches of Park Rill. This incremental impact could be estimated by comparing the flood condition without outflows from LTL to the flood conditions including the existing LTL pump and the LTL outlet upgrade. The incremental losses or damages that the increased LTL outflows might inflict on the downstream areas, or at the outlet itself can be reviewed to determine if their impacts would be over and above any losses or damage that would have occurred during the same event, occurring without the LTL outflows. A crossing capacity analysis was completed in Section 4 of this report in an attempt to capture the incremental impacts of change in outflows from LTL.

Ecora has been involved in numerous dam rehabilitation projects in which associated downstream flood mitigation obligations were not required and following this approach may be a reasonable solution for considering the downstream impacts without necessarily being responsible for upgrades throughout the entire reach. MFLNRORD may request that a flood risk assessment be completed for the downstream Park Rill area to further quantify the impacts of the increased discharge from LTL as proof of the incremental changes in the flood impacts. This assessment could be supplemented by the models created for the 2020 Park Rill Flood Mapping study being produced currently. Presenting those findings, in combination with the benefit of reduced flooding at LTL and an incremental increase in flooding along Park Rill it could potentially be argued that these works would be a net improvement. If the incremental impacts can be proven for the downstream area, it is unlikely that MFLNRORD would require the Regional District to implement mitigation to the downstream reach.

It is also worth noting that without the LTL outlet upgrade, additional emergency pumping measures (similar to what was seen in 2018) would be employed during flood events and the increased discharge would also have an impact on the downstream crossing and channels, which could have similar impacts to what would be seen during the peak discharge from the upgraded LTL outlet. It could be argued that appropriately-sized infrastructure at the outlet of LTL could better manage water levels and storage capacity in the lake and hopefully avoid or reduce the need for a large discharge as is seen in an emergency event.

An observation was made that several culverts within the Willowbrook Area were upsized in recent years. These crossing upgrades would reduce the backwater storage created by the previously existing undersized culverts and could potentially have impacts on downstream infrastructure. This work could be seen as a precedent for the area in that the crossings were upgraded without the owners being responsible for downstream impacts.

Lastly, as part of this assessment, information on the operation of the Mill Creek Diversion was gathered and reviewed. However, information was not found with respect to the background of the regulatory approval process which allowed the diversion works to occur. However, considering the capacity of the Mill Creek Diversion in comparison to the capacity of Mission Creek (which the Diversion discharges into) it is possible that a similar approach was taken in evaluating the incremental impacts of the diversion. Due to the suspected relatively small increase in flow coming from the diversion into Mission Creek, it is possible that this was allowed based on the negligible influence on the Mission Creek water levels and velocities.

Based on the history of the site and the implications that resulted from changing the natural outlet of the lake between 1947 and 1963, it is unclear as to the consequences that would come from restoring the previously occurring drainage pathway by improving the outlet at LTL. Since both withholding water in the lake and flooding LNID residents as well as releasing waters from the lake and impacting downstream infrastructure would have repercussions, it is recommended that the RDOS and/or the Province should seek legal advice to review the liabilities surrounding where the flood waters should be directed.

Ultimately, it is expected that MFLNRORD would have to issue an updated water licence for the increased discharge of water from LTL to the Park Rill system. To acquire this, RDOS would have to satisfy all MFLNRORD requirements, and the Ministry would have to deem the system acceptable. Approval by way of an issued water licence would put control of the timing and magnitude of the discharge coming from LTL in the hands of the Province. It is anticipated that operation and maintenance of the LTL outlet culvert would be completed by the RDOS but in accordance with the specifications of the water licence and the Provincial Water Engineer.

3.1 General

A crossing capacity analysis was conducted to further evaluate the impacts of increased outflows coming from LTL (which would be the result of lake outlet upgrades) on the existing crossings (culverts, etc.) and channel segments downstream of Lower Twin Lake.

The intent of the analysis was to estimate the degree of change in the crossing and channel hydraulics that would result from the change in the outflows from LTL. To present this change in hydraulics, three scenarios were compared. The first scenario was that in which no water is discharged from LTL during the 200-year design flood event. The second scenario assesses the impacts of the 200-year design flood event, including the existing 6-inch LNID pump running at maximum output (0.06 m³/s). The final scenario looks at the impacts of the 200-year design flood event including the outflows from the proposed LTL culvert outlet. Comparing these three scenarios should produce a good indication as to whether Park Rill below LTL is currently capable of handling the design floods and what kind of an impact would be associated with upgrading the LTL outlet.

Applying the acquired LiDAR data and MoTI as-built drawing sets for the Willowbrook Area, the capacities of the existing crossings were evaluated in further detail. This information was also applied to estimate the required size of crossing necessary to handle the 200-year design flood event including the outflows from the proposed LTL culvert outlet.

To evaluate the capacity of the crossings and channels, and the upgrade requirements, the design flows in Park Rill had to be estimated. To do this, the most current flow data presented in the Park Rill Creek, Horn Creek and Kearns Creek Flood Mapping Final Report (NHC, 2021) was used. This data was scaled accordingly for application at each crossing location within the reach.

It is worth noting that the capacity analysis in this technical memorandum was conducted using desktop data and a survey of the crossings was not included in the scope of the work. Where as-built or design information was unavailable, the iMapBC database was reviewed to gather culvert sizes and assumptions had to be made with respect to the invert elevations based on the topographic surface produced by the LiDAR data. For analysis purposes, it was assumed that the invert elevations at these crossings matched the stream grade in the vicinity of the crossing.

There are also a number of private crossings throughout Park Rill that were not evaluated as part of this memo since culvert data was not readily available for these locations.

3.2 Flow Estimates

Design discharges used in the crossing capacity analysis were approximated using the 1 in 200-year plus climate change design flow estimates produced in the Draft Park Rill Creek, Horn Creek and Kearns Creek Flood Mapping Final Report (NHC, 2021), as shown in Table 4.2a.

Table 4.2a Park Rill Flood Mapping Design Flows (NHC, 2021)

Location	Drainage Area (A_2 , km ²)	NHC Design Flows* (200-year + CC) (Q_2 , m ³ /s)
Park Rill (Willowbrook Rd)	64	9.6
Park Rill (Sportsmens Bowl Rd)	164	21.9

*Flows are exclusive of LTL design outflows.

Design flows for each crossing were estimated by applying a basin transfer approach, using methods described in Section 3.2.5 of the TAC Guide to Bridge Hydraulics (2004). The approach uses the equation below to scale the design flows along a reach by comparing the relative drainage area sizes.

$$Q_1 = Q_2 \left(\frac{A_1}{A_2} \right)^b$$

- Where:
- Q_1 = Basin Transfer Flow (200-year + CC), m³/s;
 - Q_2 = NHC Design Flow (200-year + CC), m³/s;
 - A_1 = Drainage Area for Crossing, km²
 - A_2 = Reference Drainage Area from NHC Report, km²
 - b = 0.80 (Drainage Area 10 to 100 km²) or 0.65 (Drainage Area 100 to 1000 km²)

The drainage areas (A_1) in Table 4.2b below were established in the Park Rill Flood Response Feasibility Study (Ecora, 2019) and were used in the calculation of Q_1 . Scaling the flows at the various locations along Park Rill, from LTL to the Mouth, the following design flows were estimated for the crossing capacity analysis.

Table 4.2b Estimated Design Flows for Crossing Capacity Analysis

Location	Drainage Area (A_1 , km ²)	Basin Transfer Flow (200-year + CC) (Q_1 , m ³ /s)
Twin Lakes Outflow (Existing Pump)	24	0.06
Twin Lakes Outflow (Proposed Culvert)	24	1.91
Park Rill at Horn Creek Confluence	28*	5.0
Park Rill above McCaig Creek	61*	9.2
Park Rill above Kearns Creek	67*	10.0
Park Rill at Kearns Creek	111*	17.0
Park Rill above Park Rill Dam	157*	21.3
Park Rill at the Mouth	165*	22.0

*Areas exclude catchment flowing into Lower Twin Lake.

Note that the design flows presented in the NHC, 2021 report, which were used for establishing basin transfer flows above, were greater than the flows used in designing the recent MoTI culvert replacements in the

Willowbrook Area. As a result, the new flow estimates may suggest that a number of these recent crossing improvements are undersized.

3.3 Existing Crossings

The hydraulic capacity for the existing crossing structures within Park Rill, downstream of LTL, was evaluated to assess the incremental impacts of flow increases coming from LTL (as discussed in Section 3 of this memo). Thirteen crossings were identified between LTL and Highway 97 on the iMapBC “Culverts – MoT” database layer and were assessed. A number of small private crossings are noted throughout the watercourse but do not have size information available to estimate their capacities. Figure 1.0 attached to this memo letter presents the location of each of the evaluated crossings and whether they are undersized to handle design flow plus the proposed increase in discharge coming from LTL. Map ID numbers have been assigned to each crossing (shown in Tables 4.3a, 4.4a and 4.4b) and are used to reference the crossing locations on Figure 1.0.

As mentioned previously, three scenarios were evaluated at each of the crossings to represent how their performance changes as the inflows change within Park Rill. The scenarios considered are as follows:

- Park Rill design flows only (no water discharged from LTL during the design flood event);
- Park Rill design flows including the maximum discharge from the existing LNID pump; and,
- Park Rill design flows including the proposed LTL culvert upgrade design discharge.

The performance of each crossing under the three scenarios is presented in Table 4.3a attached at the end of this memo. To summarize the results presented in that Table, 12 of the 13 crossings were found to be undersized under each of the three scenarios, based on the updated design flows established by NHC. The exception was the Twin Lakes Rd. (1) crossing which could adequately handle the outflow from the existing pump (0.06 m³/s) but is undersized for the proposed LTL outlet upgrade.

The capacity of the channel downstream of each crossing was also assessed for each of the three scenarios. It was found that in most cases the channel was inadequate for containing flows and that water would overtop the banks and spill onto the adjacent floodplain. To summarize, 10 of the 13 channel reaches would have to be deepened to contain the design flows, while adequate channel sizes (for each of the three scenarios evaluated) were found at Crossings (1), (3) and (13). It should be noted that this review of the channel occurred at isolated locations near the crossings and the channel cross sections may vary in size throughout the Park Rill reach. However, this affirms the observations made in past reports that many of the channel reaches are inadequate.

From analyzing the capacity of the known crossings between the LTL outlet and Highway 97 (and the channels in their vicinity) it is evident that the drainage system downstream of the Lake outlet is undersized despite the influence of discharges from Twin Lakes. The increased flows resulting from the upgraded LTL outlet would produce slightly exacerbate the current flood hazards. Water levels in the channels and culverts would rise slightly and there would be a small increase in flow velocities; however, these increases are not anticipated to have a significant impact on flood extents or erosion damage. Regardless of the presence of LTL flows, individuals should be taking measures to protect their property from the estimated design flows. The magnitudes of these water level and velocity increases could be further evaluated by updating the recent Park Rill flood modelling to include the upgraded LTL outflows.

At many of the crossings the roadway was overtopped during the design flood scenarios. During overtopping, flows would fan out and an incremental change in flow would result in a small increase in water level.

3.4 Park Rill Crossing Upgrade Requirements

To produce a high-level review of the upgrade requirements for improving the crossings within the Park Rill system, culvert sizes were estimated for each of the 13 crossing sites identified in Figure 1.0 (attached). The upgrade sizes were based on the design flows plus proposed increase in discharge coming from LTL, and culvert sizes were selected based on their ability to provide zero or greater freeboard. Significantly undersized culverts were assumed to be replaced in full, whereas recently upgraded crossings would be improved by adding another culvert.

Similar analysis was conducted for the channel in the vicinity of each crossing and channel improvement dimensions were estimated. The channel sizing improvements were mostly an increase in channel depth while keeping the bed width and channel slopes constant to match the surrounding channel.

A summary of the anticipated upgrades at each crossing is provided in Table 4.4a, below.

Table 4.4a Park Rill Crossing Upgrade Summary

Crossing Location (Map ID)	Drainage Infrastructure Component	Estimated Infrastructure Upgrade
Twin Lakes Rd. (1)	Culvert	1 – 1800 mm Ø CSP (to replace existing)
	Channel	Channel Depth Increase: 0.00 m
White Lake Rd. (2)	Culvert	1 – 2400 mm Ø CSP (to replace existing)
	Channel	Channel Depth Increase: 0.50 m
Sweetwater Ranch Access (3)	Culvert	1 - 2000 mm Ø CSP (additional to existing)
	Channel	Channel Depth Increase: 0.00 m
Yellowbrick Rd. (4)	Culvert	1 - 2000 mm Ø CSP (additional to existing)
	Channel	Channel Depth Increase: 0.85 m
Willowbrook Rd. (5)	Culvert	1 – 2400 x 2100 mm CBC (additional to existing)
	Channel	Channel Depth Increase: 1.05 m
Jones Way (6)	Culvert	1 – 2400 x 2100 mm CBC (additional to existing)
	Channel	Channel Depth Increase: 1.20 m
Goldtau Rd. (7)	Culvert	1 – 3050 x 3050 mm CBC (additional to existing)
	Channel	Channel Depth Increase: 1.45 m
Secret Hill Rd. (8)	Culvert	1 - 1800 mm Ø CSP (additional to existing)
	Channel	Channel Depth Increase: 0.80 m
10304 Sportsmens Bowl Rd. Field Entrance (9)	Culvert	1 – 3600 x 3600 mm CBC (to replace existing)
	Channel	Channel Depth Increase: 1.00 m
10304 Sportsmens Bowl Rd. Field Entrance (10)	Culvert	1 – 3600 x 3600 mm CBC (to replace existing)
	Channel	Channel Depth Increase: 1.20 m
10304 Sportsmens Bowl Rd. House Entrance (11)	Culvert	1 – 3600 x 3600 mm CBC (to replace existing)
	Channel	Channel Depth Increase: 1.10 m
10308 Sportsmens Bowl Rd. House Entrance (12)	Culvert	1 – 3600 x 3600 mm CBC (to replace existing)
	Channel	Channel Depth Increase: 1.25 m
HWY 97 (13)	Culvert	3 – 3050 x 2100 mm CBC (to replace existing)
	Channel	Channel Depth Increase: 0.20 m

The hydraulic performance of the crossing upgrades, along with the freeboard produced and grade raise requirements are presented in Table 4.4b, which is attached to this letter.

3.4.1 Culvert Upgrade Cost Estimates

Conceptual level cost estimates were prepared for each of the culvert upgrades presented in Section 4.4 and breakdowns of the cost estimate sub-totals are presented in Table 4.4c, attached to this memo. Further, a summary of the sub-totals for each crossing upgrade is included in Table 4.4d, below. In total, it was estimated that upgrading the 13 crossings to handle the estimated design flows would have a total cost of approximately \$4,010,000.

It is worth noting that even if these upgrades were made, it would not fully rectify the flooding issues in Park Rill as there are still several sections of channel that are undersized, and inadequate private crossings.

Table 4.4d Park Rill Crossing Upgrade Cost Estimate Summary

Crossing Location (Map ID)	Estimated Infrastructure Upgrade	Estimated Upgrade Cost
Twin Lakes Rd. (1)	1 – 1800 mm Ø CSP (to replace existing)	\$160,000
White Lake Rd. (2)	1 – 2400 mm Ø CSP (to replace existing)	\$110,000
Sweetwater Ranch Access (3)	1 - 2000 mm Ø CSP (additional to existing)	\$70,000
Yellowbrick Rd. (4)	1 - 2000 mm Ø CSP (additional to existing)	\$70,000
Willowbrook Rd. (5)	1 – 2400 x 2100 mm CBC (additional to existing)	\$450,000
Jones Way (6)	1 – 2400 x 2100 mm CBC (additional to existing)	\$230,000
Goldtau Rd. (7)	1 – 3050 x 3050 mm CBC (additional to existing)	\$210,000
Secrest Hill Rd. (8)	1 - 1800 mm Ø CSP (additional to existing)	\$170,000
10304 Sportsmens Bowl Rd. Field Entrance (9)	1 – 3600 x 3600 mm CBC (to replace existing)	\$160,000
10304 Sportsmens Bowl Rd. Field Entrance (10)	1 – 3600 x 3600 mm CBC (to replace existing)	\$160,000
10304 Sportsmens Bowl Rd. House Entrance (11)	1 – 3600 x 3600 mm CBC (to replace existing)	\$160,000
10308 Sportsmens Bowl Rd. House Entrance (12)	1 – 3600 x 3600 mm CBC (to replace existing)	\$470,000
HWY 97 (13)	3 – 3050 x 2100 mm CBC (to replace existing)	\$1,640,000
	Total	\$4,010,000

4. Summary

It is evident from the document review and analysis contained in this report that most of the crossings and channel segments within the Park Rill reach downstream of Lower Twin Lake, are undersized. This is the case for the design flows within Park Rill regardless of Lower Twin Lake outflows. The only exception to this is the culvert

crossing carrying Horn Creek across Twin Lakes Road as it is not required to carry flood waters coming from the Park Rill catchment.

An incremental consequence approach, similar to what is specified in the Downstream Consequence and Failure Classification Interpretation Guideline (MFLNRORD, 2017) is recommended for assessing the risk to downstream infrastructure created by the upgrades to the outlet at LTL. NHC flood mapping models could be applied for the Park Rill area to further evaluate these risks. Presenting the findings of this approach to MFLNRORD could help in acquiring approvals for the works and obtaining amendments to the existing water licence held by LNID for operation of the outlet pump at LTL. Acquiring a water licence for the control of discharge from LTL would require an approval granted by the Province. Further, similar to the existing water licence for LTL, it is expected that the document would dictate periods for operation of the culvert and permitted discharge rates.

Lastly, a concept level review of the upgrade requirements for the 13 crossings assessed within the study area was completed and it appears that replacement or installation of additional culverts would be required at each crossing. It is estimated that the cost to do these 13 crossing upgrades would be approximately \$4,010,000. Even if these upgrades were made, it would not fully rectify the issues in Park Rill as there are still sections of channel that are undersized and inadequate private crossings.

5. Closure

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Sincerely

Ecora Engineering & Resource Group Ltd.

Prepared by:

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Version Control and Revision History

Version	Date	Prepared By	Reviewed By	Notes/Revisions
0	July 22, 2021	DBV	AGC	Report Draft
1	August 25, 2021	DBV	SF/AR	RDOS Draft Review

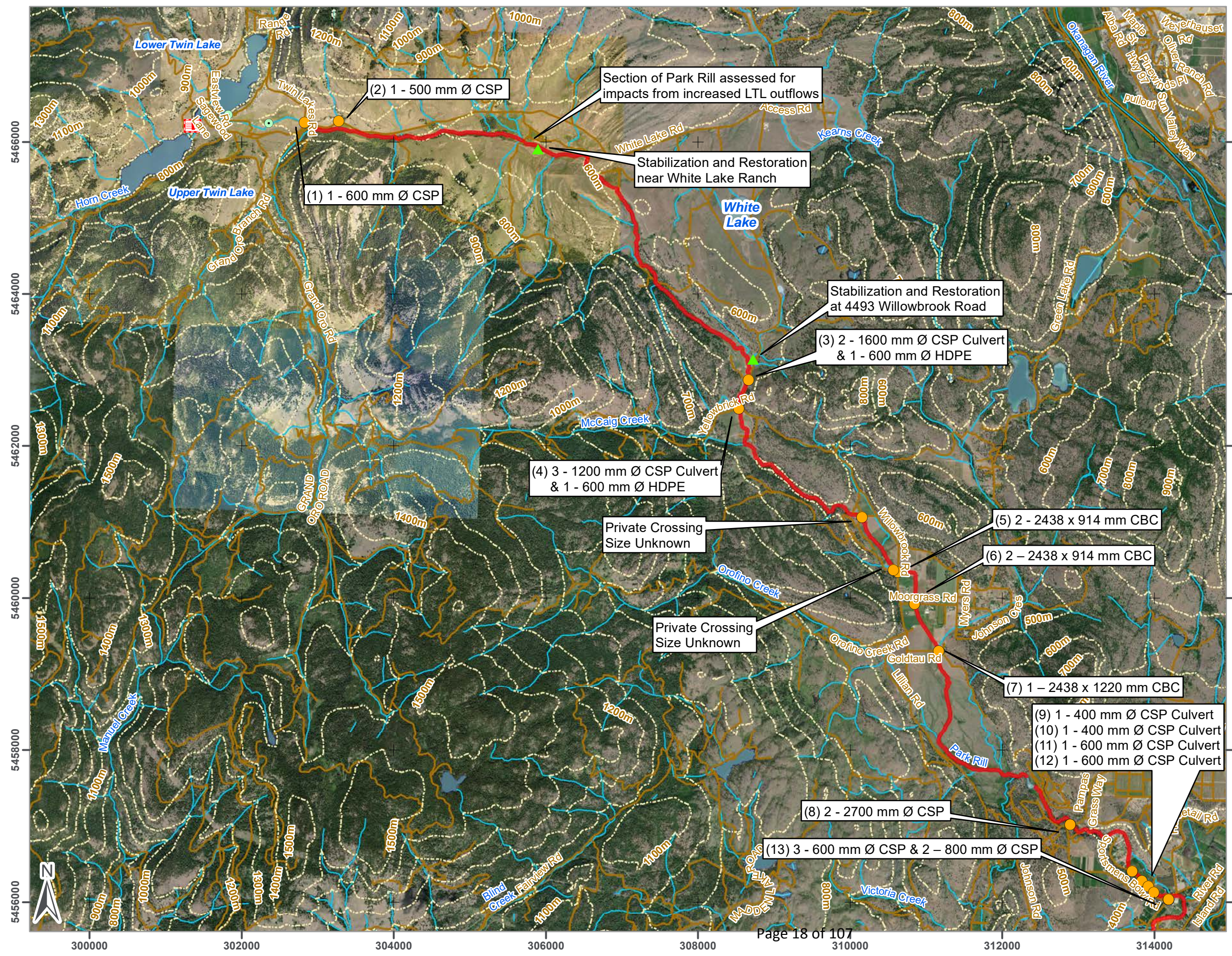
Attachments

Figure 1.0	Park Rill Crossings – Downstream of Lower Twin Lake
Table 4.3a	Park Rill Crossings Downstream of Lower Twin Lake – Incremental Capacity Analysis
Table 4.4b	Park Rill Crossing Upgrade Sizing Results
Table 4.4c	Park Rill Crossing Upgrade Cost Estimate Breakdown

PARK RILL CROSSINGS - DOWNSTREAM OF LOWER TWIN LAKE

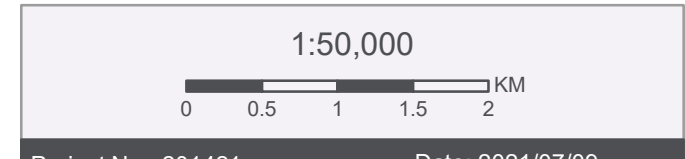
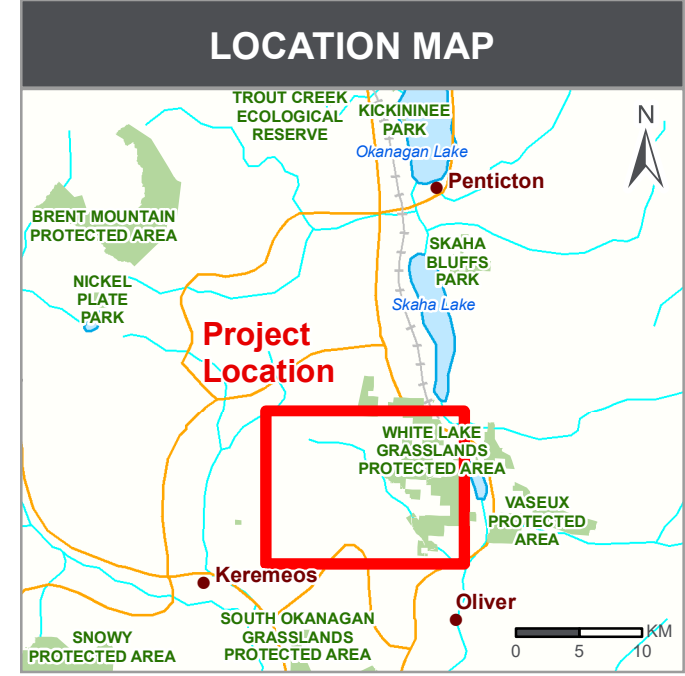


LNID ENGINEERING ASSESSMENT & ACQUISITION PLAN TWIN LAKES, BC



Legend

- Crossing Location
- ▲ Area of Interest
- ▣ Upper Twin Lake Dam
- Proposed Twin Lake Culvert Outlet
- 100m TRIM Contour Lines
- Fresh Water Atlas Streams
- Digital Atlas Roads
- Park Rill Alignment



Project No.: 201421 Date: 2021/07/09
 Client: Regional District of Okanagan-Similkameen Drawn: MT Check: DBV
 NAD 1983 UTM Zone 11N

Figure 1.0

Table 4.3a Park Rill Crossings Downstream of Lower Twin Lake – Incremental Capacity Analysis

Crossing Location (Map ID)	Crossing Type	Discharge Type	Approximate Discharge (200-year + CC) (m ³ /s)	Outlet Velocity (m/s)	Control water Depth (m)	Freeboard (m)**
Twin Lakes Rd. (1)	1 - 600 mm Ø CSP	Twin Lakes Outflow (Existing Pump)	0.06	1.04	0.25	0.35
		Twin Lakes Outflow (Proposed Culvert)	1.91	2.43	1.56*	-0.96
	Downstream Channel	Twin Lakes Outflow (Existing Pump)	0.06	0.45	0.10	0.70
		Twin Lakes Outflow (Proposed Culvert)	1.91	1.16	0.50	0.30
White Lake Rd. (2)	1 - 500 mm Ø CSP	Park Rill at Horn Creek Confluence	5.00	3.92	0.96*	-0.46
		Park Rill at Horn Creek + LTL Existing	5.06	3.92	0.96*	-0.46
		Park Rill at Horn Creek + LTL Proposed	6.91	3.94	0.98*	-0.48
	Downstream Channel	Park Rill at Horn Creek	5.00	3.71	0.48	-0.16
		Park Rill at Horn Creek + LTL Existing	5.06	3.72	0.48	-0.16
		Park Rill at Horn Creek + LTL Proposed	6.91	3.92	0.53	-0.21
Sweetwater Ranch Access (3)	2 - 1600 mm Ø CSP & 1 - 600 mm Ø HDPE	Park Rill above McCaig Creek	9.20	3.01	1.87	-0.27
		Park Rill above McCaig Creek + LTL Existing	9.26	3.02	1.88	-0.28
		Park Rill above McCaig Creek + LTL Proposed	11.11	3.28	2.17	-0.57
	Downstream Channel	Park Rill above McCaig Creek	9.20	2.03	0.84	0.41
		Park Rill above McCaig Creek + LTL Existing	9.26	2.03	0.85	0.40
		Park Rill above McCaig Creek + LTL Proposed	11.11	2.15	0.94	0.31

Crossing Location (Map ID)	Crossing Type	Discharge Type	Approximate Discharge (200-year + CC) (m ³ /s)	Outlet Velocity (m/s)	Control water Depth (m)	Freeboard (m)**
Yellowbrick Rd. (4)	3 - 1200 mm Ø CSP & 1 - 600 mm Ø HDPE	Park Rill above McCaig Creek	9.20	2.16	1.53*	-0.33
		Park Rill above McCaig Creek + LTL Existing	9.26	2.16	1.53*	-0.33
		Park Rill above McCaig Creek + LTL Proposed	11.11	2.13	1.55*	-0.35
	Downstream Channel	Park Rill above McCaig Creek	9.20	1.38	1.08	-0.48
		Park Rill above McCaig Creek + LTL Existing	9.26	1.39	1.08	-0.48
		Park Rill above McCaig Creek + LTL Proposed	11.11	1.45	1.16	-0.56
Willowbrook Rd. (5)	2 - 2438 x 914 mm CBC	Park Rill above Kearns Creek	10.00	0.46	1.31*	-0.40
		Park Rill above Kearns Creek + LTL Existing	10.06	0.45	1.32*	-0.41
		Park Rill above Kearns Creek + LTL Proposed	11.91	0.20	1.44*	-0.53
	Downstream Channel	Park Rill above Kearns Creek	10.00	2.46	1.42	-0.67
		Park Rill above Kearns Creek + LTL Existing	10.06	2.46	1.42	-0.67
		Park Rill above Kearns Creek + LTL Proposed	11.91	2.57	1.55	-0.80
Jones Way (6)	2 - 2438 x 914 mm CBC	Park Rill above Kearns Creek	10.00	1.10	1.24*	-0.33
		Park Rill above Kearns Creek + LTL Existing	10.06	1.08	1.24*	-0.33
		Park Rill above Kearns Creek + LTL Proposed	11.91	0.71	1.28*	-0.37
	Downstream Channel	Park Rill above Kearns Creek	10.00	1.97	1.26	-0.70
		Park Rill above Kearns Creek + LTL Existing	10.06	1.98	1.26	-0.70
		Park Rill above Kearns Creek + LTL Proposed	11.91	2.06	1.36	-0.80
Goldtau Rd. (7)	1 - 2438 x 1220 mm CBC	Park Rill at Kearns Creek	17.00	2.27	1.76*	-0.54
		Park Rill at Kearns Creek + LTL Existing	17.06	2.27	1.76*	-0.54
		Park Rill at Kearns Creek + LTL Proposed	18.91	2.17	1.78*	-0.56
	Downstream Channel	Park Rill at Kearns Creek	17.00	0.56	1.33	-1.08
		Park Rill at Kearns Creek + LTL Existing	17.06	0.56	1.33	-1.08
		Park Rill at Kearns Creek + LTL Proposed	18.91	0.57	1.39	-1.14

Crossing Location (Map ID)	Crossing Type	Discharge Type	Approximate Discharge (200-year + CC) (m ³ /s)	Outlet Velocity (m/s)	Control water Depth (m)	Freeboard (m)**
Secret Hill Rd. (8)	2 - 2700 mm Ø CSP	Park Rill above Park Rill Dam	21.3	3.84	2.09	-0.09
		Park Rill above Park Rill Dam + LTL Existing	21.36	3.84	2.10	-0.10
		Park Rill above Park Rill Dam + LTL Proposed	23.21	3.94	2.26	-0.26
	Downstream Channel	Park Rill above Park Rill Dam	21.3	2.29	1.27	-0.47
		Park Rill above Park Rill Dam + LTL Existing	21.36	2.29	1.27	-0.47
		Park Rill above Park Rill Dam + LTL Proposed	23.21	2.34	1.31	-0.51
10304 Sportsmens Bowl Rd. Field Entrance (9)	1 - 400 mm Ø CSP	Park Rill at the Mouth	22.00	0.15	1.14*	-0.74
		Park Rill at the Mouth + LTL Existing	22.06	0.15	1.14*	-0.74
		Park Rill at the Mouth + LTL Proposed	23.91	0.15	1.18*	-0.78
	Downstream Channel	Park Rill at the Mouth	22.00	2.12	1.20	-0.90
		Park Rill at the Mouth + LTL Existing	22.06	2.12	1.21	-0.91
		Park Rill at the Mouth + LTL Proposed	23.91	2.16	1.25	-0.95
10304 Sportsmens Bowl Rd. Field Entrance (10)	1 - 400 mm Ø CSP	Park Rill at the Mouth	22.00	0.15	1.08*	-0.68
		Park Rill at the Mouth + LTL Existing	22.06	0.15	1.08*	-0.68
		Park Rill at the Mouth + LTL Proposed	23.91	0.15	1.12*	-0.70
	Downstream Channel	Park Rill at the Mouth	22.00	2.31	1.15	-0.75
		Park Rill at the Mouth + LTL Existing	22.06	2.31	1.15	-0.75
		Park Rill at the Mouth + LTL Proposed	23.91	2.36	1.20	-0.80
10304 Sportsmens Bowl Rd. House Entrance (11)	1 - 600 mm Ø CSP	Park Rill at the Mouth	22.00	0.21	1.08*	-0.48
		Park Rill at the Mouth + LTL Existing	22.06	0.21	1.08*	-0.48
		Park Rill at the Mouth + LTL Proposed	23.91	0.20	1.12*	-0.52
	Downstream Channel	Park Rill at the Mouth	22.00	2.31	1.15	-0.75
		Park Rill at the Mouth + LTL Existing	22.06	2.31	1.15	-0.75
		Park Rill at the Mouth + LTL Proposed	23.91	2.36	1.20	-0.80

Crossing Location (Map ID)	Crossing Type	Discharge Type	Approximate Discharge (200-year + CC) (m ³ /s)	Outlet Velocity (m/s)	Control water Depth (m)	Freeboard (m)**
10308 Sportsmens Bowl Rd. House Entrance (12)	1 - 600 mm Ø CSP	Park Rill at the Mouth	22.00	0.14	1.11*	-0.51
		Park Rill at the Mouth + LTL Existing	22.06	0.14	1.11*	-0.51
		Park Rill at the Mouth + LTL Proposed	23.91	0.13	1.17*	-0.57
	Downstream Channel	Park Rill at the Mouth	22.00	3.25	1.50	-0.90
		Park Rill at the Mouth + LTL Existing	22.06	3.26	1.50	-0.90
		Park Rill at the Mouth + LTL Proposed	23.91	3.32	1.56	-0.96
HWY 97 (13)	3 - 600 mm Ø CSP & 2 - 800 mm Ø CSP	Park Rill at the Mouth	22.00	2.53	2.22*	-1.42
		Park Rill at the Mouth + LTL Existing	22.06	2.53	2.22*	-1.42
		Park Rill at the Mouth + LTL Proposed	23.91	2.53	2.24*	-1.44
	Downstream Channel	Park Rill at the Mouth	22.00	2.49	0.71	0.09
		Park Rill at the Mouth + LTL Existing	22.06	2.50	0.71	0.09
		Park Rill at the Mouth + LTL Proposed	23.91	2.55	0.74	0.06

*Roadway overtops.

**Negative freeboard denotes headwater above the crown elevation of culvert or top of bank and suggests feature is undersized.

Table 4.4b Park Rill Crossing Upgrade Sizing Results

Crossing Location (Map ID)	Drainage Infrastructure Component	Estimated Infrastructure Size	Approximate Discharge (200-year + CC) (m ³ /s)	Outlet Velocity (m/s)	Freeboard (m)	Roadway Grade Raise (m)
Twin Lakes Rd. (1)	Culvert	1 – 1800 mm Ø CSP	1.91	2.12	0.40	0.25
	Channel	Bottom Width: 1.00 m Depth: 0.80 m Bank Slope: 4H:1V		1.19	0.28	N/A
White Lake Rd. (2)	Culvert	1 – 2400 mm Ø CSP	6.91	4.70	0.00	0.00
	Channel	Bottom Width: 1.00 m Depth: 0.80 m Bank Slope: 4H:1V		4.00	0.26	N/A
Sweetwater Ranch Access (3)	Culvert	2 - 1600 mm Ø CSP & 1 – 600 mm Ø HDPE & 1 - 2000 mm Ø CSP	11.11	2.46	0.00	0.00
	Channel	Bottom Width: 4.00 m Depth: 1.20 m Bank Slope: 2H:1V		2.09	0.29	N/A
Yellowbrick Rd. (4)	Culvert	3 - 1200 mm Ø CSP & 1 – 600 mm Ø HDPE & 1 - 2000 mm Ø CSP	11.11	1.86	0.06	0.62
	Channel	Bottom Width: 1.00 m Depth: 1.45 m Bank Slope: 5H:1V		1.44	0.30	N/A
Willowbrook Rd. (5)	Culvert	2 – 2438 x 914 mm CBC & 1 – 2400 x 2100 mm CBC	11.91	1.44	0.03	0.67
	Channel	Bottom Width: 1.70 m Depth: 1.80 m Bank Slope: 1H:1V		2.54	0.32	N/A
Jones Way (6)	Culvert	2 – 2438 x 914 mm CBC & 1 – 2400 x 2100 mm CBC	11.91	1.51	0.14	0.57
	Channel	Bottom Width: 1.20 m Depth: 1.60 m Bank Slope: 2.5H:1V		2.02	0.29	N/A
Goldtau Rd. (7)	Culvert	1 – 2438 x 1220 mm & 1 – 3050 x 3050 mm CBC	18.91	3.14	0.16	0.14
	Channel	Bottom Width: 3.00 m Depth: 1.70 Bank Slope: 15H:1V		0.57	0.31	N/A
Secret Hill Rd. (8)	Culvert	2 - 2700 mm & 1 - 1800 mm Ø CSP	23.21	3.64	0.18	0.00
	Channel	Bottom Width: 1.00 m Depth: 1.60 m Bank Slope: 5H:1V		2.34	0.29	N/A
10304 Sportsmens Bowl Rd. Field Entrance (9)	Culvert	1 – 3600 x 3600 mm CBC	23.91	4.31	0.15	0.15
	Channel	Bottom Width: 1.40 m Depth: 1.55 m Bank Slope: 6H:1V		2.16	0.30	N/A

Crossing Location (Map ID)	Drainage Infrastructure Component	Estimated Infrastructure Size	Approximate Discharge (200-year + CC) (m ³ /s)	Outlet Velocity (m/s)	Freeboard (m)	Roadway Grade Raise (m)
10304 Sportsmens Bowl Rd. Field Entrance (10)	Culvert	1 – 3600 x 3600 mm CBC	23.91	4.39	0.15	0.15
	Channel	Bottom Width: 2.60 m Depth: 1.50 m Bank Slope: 5H:1V		2.35	0.31	N/A
10304 Sportsmens Bowl Rd. House Entrance (11)	Culvert	1 – 3600 x 3600 mm CBC	23.91	4.39	0.15	0.15
	Channel	Bottom Width: 2.60 m Depth: 1.50 m Bank Slope: 5H:1V		2.35	0.31	N/A
10308 Sportsmens Bowl Rd. House Entrance (12)	Culvert	1 – 3600 x 3600 mm CBC	23.91	4.95	0.15	0.15
	Channel	Bottom Width: 2.00 m Depth: 1.85 m Bank Slope: 1.7H:1V		3.32	0.30	N/A
HWY 97 (13)	Culvert	3 – 3050 x 2100 mm CBC	23.91	3.30	0.09	0.00
	Channel	Bottom Width: 6.30 m Depth: 1.00 m Bank Slope: 9H:1V		2.53	0.27	N/A

Note:

- Existing culverts in the Estimated Infrastructure Size column are italicized for crossings where culverts were added to existing.
- It was assumed that 0.3 m of freeboard is desirable in the channel.
- Channel measurements are based on LiDAR data and are as accurate as the topographic data provided.

Table 4.4b Park Rill Crossing Upgrade Sizing Results

No.	Item	Cost
Twin Lakes Rd. (1): 1 – 1800 mm Ø CSP (to replace existing)		
1.1	Mobilization and Demobilization	\$ 11,232
1.2	Excavation	\$ 5,682
1.3	Culvert Supply and Installation	\$ 32,861
1.4	Backfill	\$ 11,950
1.5	Riprap Supply and Installation	\$ 1,988
1.6	Roadway Work	\$ 59,841
1.7	Contingency (30%)	\$ 37,067
Site Sub-total		\$ 160,622
White Lake Rd. (2): 1 – 2400 mm Ø CSP (to replace existing)		
1.1	Mobilization and Demobilization	\$ 7,114
1.2	Excavation	\$ 7,768
1.3	Culvert Supply and Installation	\$ 30,321
1.4	Backfill	\$ 15,109
1.5	Riprap Supply and Installation	\$ 3,539
1.6	Roadway Work	\$ 14,398
1.7	Contingency (30%)	\$ 23,475
Site Sub-total		\$ 101,724
Sweetwater Ranch Access (3): 1 - 2000 mm Ø CSP (additional to existing)		
1.1	Mobilization and Demobilization	\$ 4,451
1.2	Excavation	\$ 4,239
1.3	Culvert Supply and Installation	\$ 27,076
1.4	Backfill	\$ 9,160
1.5	Riprap Supply and Installation	\$ 3,026
1.6	Roadway Work	\$ 1,013
1.7	Contingency (30%)	\$ 14,689
Site Sub-total		\$ 63,653
Yellowbrick Rd. (4): 1 - 2000 mm Ø CSP (additional to existing)		
1.1	Mobilization and Demobilization	\$ 4,731
1.2	Excavation	\$ 4,411
1.3	Culvert Supply and Installation	\$ 24,394
1.4	Backfill	\$ 8,840
1.5	Riprap Supply and Installation	\$ 3,242
1.6	Roadway Work	\$ 6,420
1.7	Contingency (30%)	\$ 15,611
Site Sub-total		\$ 67,650
Willowbrook Rd. (5): 1 – 2400 x 2100 mm CBC (additional to existing)		
1.1	Mobilization and Demobilization	\$ 31,409
1.2	Excavation	\$ 5,370
1.3	Culvert Supply and Installation	\$ 81,317
1.4	Backfill	\$ 10,985
1.5	Riprap Supply and Installation	\$ 4,352
1.6	Roadway Work	\$ 212,070
1.7	Contingency (30%)	\$ 103,651
Site Sub-total		\$ 449,153

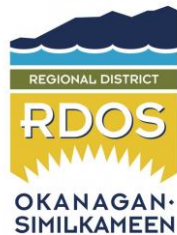
Jones Way (6): 1 – 2400 x 2100 mm CBC (additional to existing)			
1.1	Mobilization and Demobilization	\$	15,842
1.2	Excavation	\$	4,853
1.3	Culvert Supply and Installation	\$	81,317
1.4	Backfill	\$	10,295
1.5	Riprap Supply and Installation	\$	3,926
1.6	Roadway Work	\$	58,032
1.7	Contingency (30%)	\$	52,280
Site Sub-total		\$	226,545
Goldtau Rd. (7): 1 – 3050 x 3050 mm CBC (additional to existing)			
1.1	Mobilization and Demobilization	\$	14,560
1.2	Excavation	\$	6,527
1.3	Culvert Supply and Installation	\$	112,111
1.4	Backfill	\$	15,507
1.5	Riprap Supply and Installation	\$	6,733
1.6	Roadway Work	\$	4,720
1.7	Contingency (30%)	\$	48,047
Site Sub-total		\$	208,206
Secret Hill Rd. (8): 1 - 1800 mm Ø CSP (additional to existing)			
1.1	Mobilization and Demobilization	\$	11,857
1.2	Excavation	\$	22,389
1.3	Culvert Supply and Installation	\$	42,133
1.4	Backfill	\$	36,000
1.5	Riprap Supply and Installation	\$	3,171
1.6	Roadway Work	\$	14,878
1.7	Contingency (30%)	\$	39,128
Site Sub-total		\$	169,556
10304 Sportsmens Bowl Rd. Field Entrance (9): 1 – 3600 x 3600 mm CBC (to replace existing)			
1.1	Mobilization and Demobilization	\$	10,788
1.2	Excavation	\$	5,141
1.3	Culvert Supply and Installation	\$	81,237
1.4	Backfill	\$	11,958
1.5	Riprap Supply and Installation	\$	8,790
1.6	Roadway Work	\$	750
1.7	Contingency (30%)	\$	35,599
Site Sub-total		\$	154,263
10304 Sportsmens Bowl Rd. Field Entrance (10): 1 – 3600 x 3600 mm CBC (to replace existing)			
1.1	Mobilization and Demobilization	\$	10,744
1.2	Excavation	\$	5,156
1.3	Culvert Supply and Installation	\$	81,237
1.4	Backfill	\$	11,977
1.5	Riprap Supply and Installation	\$	8,323
1.6	Roadway Work	\$	750
1.7	Contingency (30%)	\$	35,456
Site Sub-total		\$	153,644

10304 Sportsmens Bowl Rd. House Entrance (11): 1 – 3600 x 3600 mm CBC (to replace existing)		
1.1	Mobilization and Demobilization	\$ 10,744
1.2	Excavation	\$ 5,156
1.3	Culvert Supply and Installation	\$ 81,237
1.4	Backfill	\$ 11,977
1.5	Riprap Supply and Installation	\$ 8,323
1.6	Roadway Work	\$ 750
1.7	Contingency (30%)	\$ 35,456
Site Sub-total		\$ 153,644
10308 Sportsmens Bowl Rd. House Entrance (12): 1 – 3600 x 3600 mm CBC (to replace existing)		
1.1	Mobilization and Demobilization	\$ 32,491
1.2	Excavation	\$ 20,324
1.3	Culvert Supply and Installation	\$ 241,173
1.4	Backfill	\$ 45,324
1.5	Riprap Supply and Installation	\$ 9,258
1.6	Roadway Work	\$ 8,832
1.7	Contingency (30%)	\$ 107,221
Site Sub-total		\$ 464,623
HWY 97 (13): 3 – 3050 x 2100 mm CBC (to replace existing)		
1.1	Mobilization and Demobilization	\$ 114,455
1.2	Excavation	\$ 32,609
1.3	Culvert Supply and Installation	\$ 708,182
1.4	Backfill	\$ 79,507
1.5	Riprap Supply and Installation	\$ 4,299
1.6	Roadway Work	\$ 319,950
1.7	Contingency (30%)	\$ 377,701
Site Sub-total		\$ 1,636,702
Project Total		\$ 4,009,986



Lower Nipit Improvement District Engineering Assessment & Acquisition Plan

Presented To:



Dated: August 25, 2021

Ecora File No.: 201421

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Executive Summary

The Regional District of Okanagan-Similkameen (RDOS) engaged Ecora Engineering & Resource Group Ltd. (Ecora) to prepare an Engineering Assessment and Acquisition Plan to review the feasibility of acquiring infrastructure owned and operated by the Lower Nipit Improvement District (LNID). The LNID infrastructure in general includes an electric pump, which acts to control water levels in Twin Lake, buried pump discharge piping, an electronic water level data logger, two domestic surface water licences and one Statutory Right of Way, which their infrastructure occupies. The sole purpose of this system is to manage lake levels to prevent flooding to the 69 properties located along the Twin Lakes shoreline.

The goal of the project is to determine if the acquisition of LNID assets is a worthwhile opportunity and to establish an approach for improving the function of the drainage systems owned and operated by LNID; to protect against future flooding in Lower Twin Lake. The Engineering Assessment and Acquisition Plan was undertaken in general accordance with the requirements of the RDOS Utility Acquisition Policy and our report has been arranged in three sections to be in line with the Policy process:

- Engineering Assessment (Acquisition Policy Sections 4.0 and 5.0);
- Financial Assessment (Acquisition Policy Section 6.0); and,
- Acquisition Plan (Acquisition Policy Sections 7.0, 8.0 and 9.0).

Engineering Assessment

The Engineering Assessment was conducted to get a relative understanding of the history of the LNID and the study area, document LNID's infrastructure assets, rank the condition of the infrastructure assets, assess the hydrology of the region, evaluate the capacity of the existing infrastructure and propose upgrades to the existing system.

The Twin Lake area is a unique and complex hydrological network which experiences influence from various factors including fluctuations in groundwater infiltration, evaporation and diversion (via pumping). As a result, a hydrologic analysis was required to better understand the events that would drive flooding within Lower Twin Lake and to establish whether the existing pump outlet is under sized. The analysis was completed to estimate the design inflows for the 1 in 200-year event and to account for climate change impacts on the design flow.

A hydraulic model was produced to estimate the influence lake storage had on attenuating peak flows and to establish peak water levels and outflows from the lake. This model was applied to estimate the capacity of the existing LNID pump. During the analysis, it was found that the pump is significantly undersized for the 200-year plus climate change flood event.

Upon determining that the existing infrastructure is undersized, infrastructure upgrades were explored to develop a lake outflow system that would provide adequate capacity to handle the design flood event. The findings of the proposed infrastructure capacity analysis indicated that the upgraded outlet structures would include either a 12 inch, 470 horsepower submersible pump or a 1800 mm diameter SRPE culvert. To select the best option out of these two, an option evaluation framework was developed. The evaluation framework looked at factors such as reliability, property impacts, constructability, cost and operation requirements to rank and select the most desirable replacement option. The findings of the evaluation process determined that the **culvert installation** would be the preferred and selected option.

A high-level review of the impacts of the increased lake outflow on the downstream infrastructure was performed as part of the study and a technical memorandum was prepared to assess the capacity of these structures under additional flow conditions. Technical Memorandum No. 1 – Park Rill Improvement Review Letter (Ecora, 2021) was completed to supplement this report and is included in Appendix B. The findings of Technical Memorandum No. 1,

indicate that each crossing would be undersized once an estimated design flow (occurring from the Park Rill watershed) was added to the Lower Twin Lake outflows. Based on the indication that downstream infrastructure would be undersized, measures should be taken by the Owners of the downstream infrastructure to ensure that their crossings are adequately sized to handle current estimated design flows.

Financial Assessment

A financial assessment was prepared to establish if there any concerns with respect to LNID's finances and to quantify their existing debts, reserves, assets and potential liabilities. Through discussions with LNID, Ecora was able to collect their financial data. LNID provided all accounting, legal and insurance information including working papers, past audits, bank statements, insurance claims and pending lawsuits to form the basis of the financial assessment. A list of physical assets, complete with replacement values, was also supplied. At this time LNID also indicated that they have not had any insurance claims filed against them, nor have they filed any claims and they are not involved in any pending lawsuits.

The findings of the financial assessment indicated that LNID's assets includes Cash, Short Term Investments, Accounts Receivable, Property and Equipment. LNID possesses \$1,684 worth of Liabilities, which consist of honorariums payable and an accounting accrual. **LNID has sufficient funds to cover 2020 and budgeted 2021 annual expenditures but will require additional funding to cover the cost of the pump replacement.**

Acquisition Plan

An Acquisition Plan was produced to evaluate the transition process for delivering the LNID utility operations to the RDOS and the staff and financial requirements for operating the system.

Transitioning the utility ownership from LNID to RDOs would be relatively simple and would not require a great deal of coordination. The RDOS should schedule the transition to occur prior to pump replacement, in the late spring to early summer such that the utility can be handed over when pumping would not be necessary and RDOS staff would not require training with respect to pump operation, inspection and maintenance and system operation would be focused on the gravity drainage culvert outlet system.

Staff requirements to operate the system would be mostly seasonal in nature, with the highest staff demand being during spring freshet and during the fall in preparation for the coming spring. **The staffing Full Time Equivalents (FTEs) would be 0.05 for the year and 0.19 over the period of culvert operation.**

The financial impacts of the upgrade to the Lower Twin Lake outlet infrastructure would include a capital cost for replacement of approximately **\$1,598,000** and annual operation cost of approximately **\$5,500**. These costs would be assessed to the 69 property owners which reside on the lake shoreline and who are actively members of LNID. To fund the costs of the Utility, **LNID member fees would have to increase from \$300/year to \$1,385/year, without an infrastructure grant and from \$300/year to \$515/year, if a 66% infrastructure grant is applied.** There are various Provincial and Federal funding streams that could be explored to offset the annual fee amount required to fund the works.

Recommendations

Recommendations are made based on the findings of the Engineering Assessment and Acquisition Plan. A summary of the recommendations is provided below with more detail in Section 5.

- The existing LNID infrastructure is undersized and should be upgraded to handle flood events within the lake. The costs associated with the upgrades are substantial and the RDOS would be required to take over the LNID utility to facilitate the works and secure funding.

- Option 2 – Culvert Replacement should be selected to replace the existing pump outlet at Lower Twin Lake. If RDOS chooses to pursue this alternative, the option should be further developed through detailed design.
- Further study should be completed to more accurately estimate the impacts of the increased Lower Twin Lake outflows (resulting from the improved outlet) on downstream infrastructure and to establish flood inundation, depth and hazard results.
- The infrastructure has a high priority for replacement and the works should occur within the next 1 to 3 years.
- Replacement works should occur in the late spring or early summer when lake levels are low.
- The RDOS should explore grant funding streams to help offset the costs associated with the construction of the culvert outlet.

Limitations of Report

This report and its contents are intended for the sole use of the Regional District of Okanagan-Similkameen, their agents and the applicable regulatory authorities. Ecora Engineering & Resource Group Ltd. (Ecora) does not accept any responsibility for the accuracy of any data, analyses, or recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Regional District of Okanagan-Similkameen, their agents, the applicable regulatory authorities or for any Project other than that described in this report. Any such unauthorized use of this report is at the sole risk of the user.

Where Ecora submits both electronic file and hard copy versions of reports, drawings and other project-related documents, only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Ecora shall be deemed to be the original for the Project. Both electronic file and hard copy versions of Ecora's deliverables shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Ecora.

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Figures

Figure 2.6a Site Plan and Watershed Overview

Appendices

- Appendix A Site Photographs
- Appendix B Technical Memorandum No. 1 – Park Rill Improvement Review Letter
- Appendix C Estimated Annual Operation, Monitoring and Maintenance Costs
- Appendix D Net Present Value Analysis
- Appendix E Long-Term Debt Amortization Schedules
- Appendix F Preliminary Design Drawings

1. Introduction

Ecora Engineering & Resource Group Ltd. (Ecora) and ic Infrastructure Corp. (IIC) were retained by the Regional District of Okanagan-Similkameen (RDOS) to carry out an Engineering Assessment and Acquisition Plan to review the feasibility of acquiring infrastructure owned and operated by the Lower Nipit Improvement District (LNID) and to satisfy the requirements of the RDOS Water and Sewer Utility Acquisition Policy (2019) in doing so.

The ultimate objective of the project is to determine if the acquisition of LNID assets is a worthwhile opportunity for the RDOS to pursue and to establish an approach for improving the function of the drainage systems, protect against flooding, and address health and safety concerns in Lower Twin Lake (LTL). This objective would be completed by following the sequence of tasks laid out in the Utility Acquisition Policy and our report has been arranged in three sections to represent this process:

- Engineering Assessment (Acquisition Policy Sections 4.0 and 5.0);
- Financial Assessment (Acquisition Policy Section 6.0); and,
- Acquisition Plan (Acquisition Policy Sections 7.0, 8.0 and 9.0).

Contained within this report are the assessment analysis, findings, and recommendations for the acquisition of the LNID assets.

1.1 Project Background

The LNID infrastructure is operated at Twin Lakes, located approximately 10 km west of Okanagan Falls, British Columbia. Twin Lakes consists of a series of two kettle lakes, Upper Twin Lake (UTL) (colloquially known as Horn Lake) and Lower Twin Lake (colloquially known as Lower Nipit Lake). UTL drains into LTL by passing through three hydraulic structures, including an unregulated dam at the outlet of UTL, a small pond known as Turtle Pond and a culvert crossing at Eastview Road. The main tributary flowing into this lake system is Horn Creek which enters UTL at the southwest corner. Figure 1.1 below provides a site plan labelling these features.

Currently LTL does not have a natural outlet and water exits the lake reservoir either through extraction by residents for household use or by the water level control pump located at the southwest corner of the lake. Currently, without the impact of humans, water level elevation would be dictated by precipitation, ground water fluctuations and evaporation.

It is understood that the watershed that feeds the Twin Lakes regularly fluctuates between a state of drought and a state of flooding. During periods of flooding, the lake levels are managed by the water level control pump system. This system discharges into Lower Horn Creek which eventually makes its way into Park Rill. The water level control pump is owned and operated by the Lower Nipit Improvement District.

The LNID has been in operation since it was incorporated in 1965 and is the focus of the Utility Acquisition at Twin Lakes. The objective of LNID, as described in their Letters Patent, shall be the acquisition, maintenance, and operation of works for land improvement purpose and all matters incidental thereto. Any works executed by LNID above and beyond this scope would not be considered a mandate of the organization and the focus of their operation should be limited to the areas surrounding the LTL. All though their directive is quite broad, in recent years their focus has been on water management for the purpose of land improvement and the group has taken on the voluntary role of water stewardship at Twin Lakes.

The infrastructure owned and operated by the Utility (LNID) includes an electric pump, which acts to control water levels in Twin Lake, buried pump discharge piping and an electronic water level data logger which provides real-time lake level and temperature readings. Currently, this water control infrastructure acts to protect 69 properties

along the lake. To allow for the operation of their pump, the LNID has two domestic surface water licences registered under their name and one Statutory Right of Way (SRW), which their infrastructure occupies.

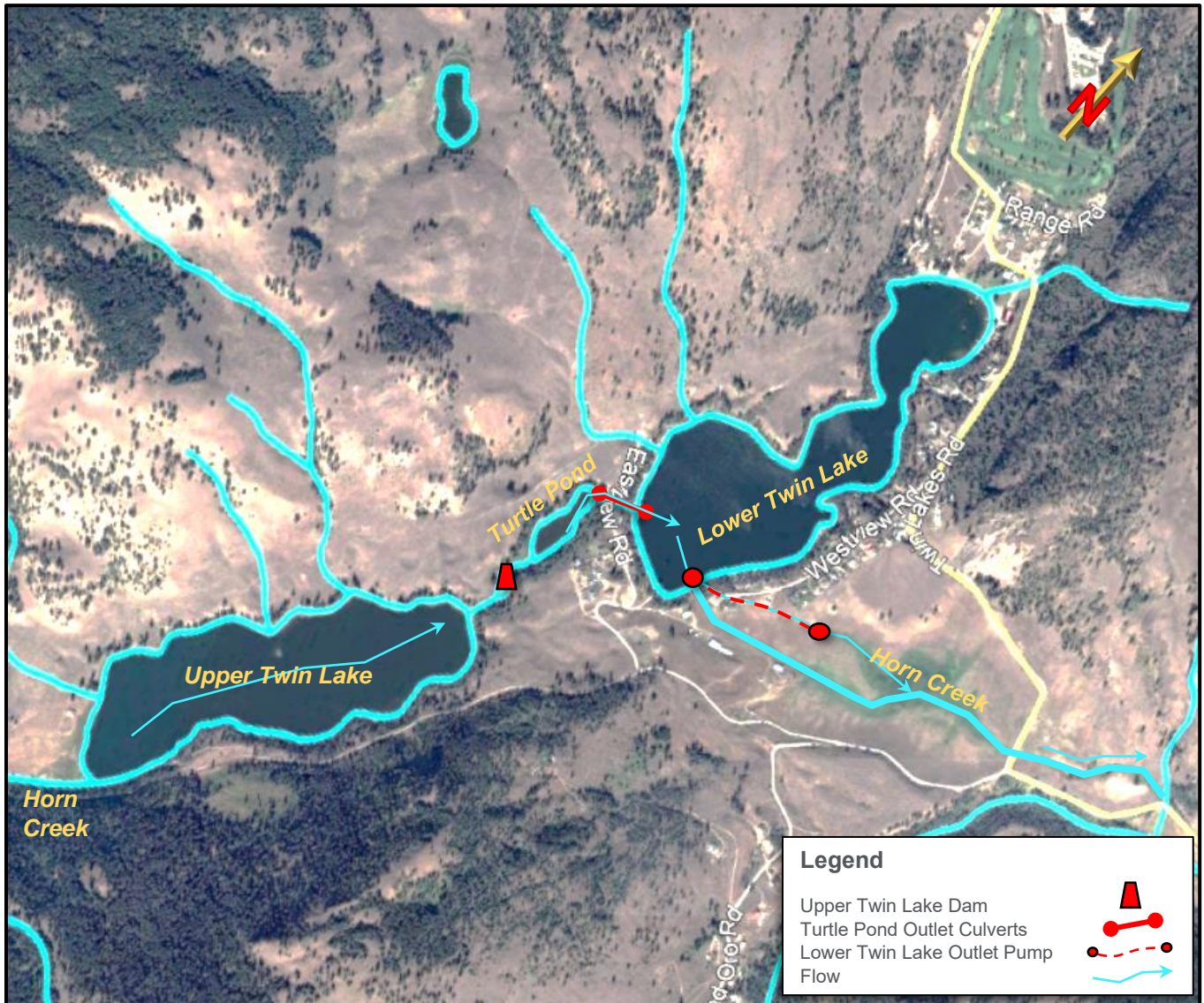


Figure 1.1 Study Area Site Plan

2. Engineering Assessment

2.1 Site Reconnaissance

A site reconnaissance of the Twin Lakes area was carried out on October 16, 2020 by Barrett Van Vliet, P.Eng., of Ecora. At the same time that the site visit was conducted, an onsite stakeholder meeting was held. Present at the meeting were Shane Fenske (RDOS), Alex Thomson (The Nature Trust of British Columbia), Reinhard Maier (LNID) and Kelly Mercer (Ecora). The key points recorded during the meeting are as follows:

- LNID provided background on the pump type, condition, performance and anticipated replacement/repair costs;
- LNID noted that a new solar powered data logger was recently installed at the LTL pump to record lake level and temperatures at that location;
- LNID indicated that the existing pump is in need of repairs. Parts have been ordered and are coming from Sweden;
- LNID was actively looking for a replacement pump to have on site as a backup. They may delay replacement pending the findings of this study;
- Stakeholders discussed the opportunity for a culvert outlet with a control gate at LTL. This alternative would either outlet at the abandoned house on The Nature Trust of British Columbia (NT) land, or would drain into an engineered open channel closer to the lake (to save on culvert costs);
- The LTL lake level at the time of the meeting was thought to be a 'good' maintained lake level for outlet culvert to be set to. A higher lake level is preferable to residents than a lower lake level;
- If an open channel were constructed, NT would require fencing to be installed surrounding the channel or produced wetland to protect cattle;
- Nature Trust could not foresee any issue with the culvert outlet alternative and would generally be in support;
- Nature Trust would accept demolition of the abandoned house on their property to accommodate works and potentially shorten the culvert installation. Currently NT does not have any plans to remove the house;
- LNID provided a tour of where the pump intake and outlet were located. The pump was noted to generally operate (24/7) from September until an acceptable lake level is achieved or ice forms on the lake. The intent of pumping during this time is to lower lake levels in preparation for the freshet;
- There is a significant increase in elevation between the pump location and its outlet. Constructing an open channel outlet through this 'mound' would require excavations that would likely encroach on adjacent homes and the costs would be prohibitive, making it impractical;
- Options for altering Horn Lake dam to increase storage were discussed, however, this would be more environmentally disruptive and would have a number of regulatory hurdles for dam safety compliance. This would not be considered ideal;
- The costs associated with each alternative are the biggest concern to Twin Lakes residents; and,
- Grant opportunities, to fund the works, would be explored to reduce the cost to residents.

Following the stakeholder meeting Ecora personnel familiarized themselves with the study area by viewing the following features of interest:

- The area surrounding UTL;
- The dam at the outlet of UTL;
- Turtle Pond;
- The MoTI culvert crossing located at Eastview Road which carries flows from Turtle Pond to LTL;

- The area surrounding LTL;
- The pump, pump housing and controls, level logger arrangement and outlet piping;
- The terrain along the alignment of the LTL pump outlet piping;
- The terrain within Nature Trust land located downstream of LTL;
- The abandoned house located within Nature Trust land located downstream of LTL; and,
- The culvert located under Twin Lakes Road downstream of the LTL pump outlet. The channel was inspected upstream and downstream of the crossing.

Photographs gathered during the site reconnaissance are included in Appendix A.

2.2 Background Document Review

As part of the desktop review, background documents pertaining to the Engineering Assessment were collected and reviewed for relevant information. Discussions between Ecora team members and the project Stakeholders yielded most of the background documents used for the study. The remaining documents were acquired through discussions with municipal and Provincial bodies. The documents that formed the basis of the desktop review include the following:

- Preliminary Report on Control of Surface Levels on Twin (Nipit) Lakes prepared by J. Botham, February 1973;
- Twin Lakes Aquifer Capacity Study prepared by Summit Environmental Consultants Inc., May 2010;
- Mitigation for the Drought/Flood of the Twin Lakes Waterway prepared by LNID, October 2013;
- Infrastructure Study for Electoral Area D-1 prepared by Kerr Wood Leidal, April 2015;
- Twin Lakes Flood Response Feasibility Assessment prepared by Ecora Engineering & Resource Group Ltd., June 2019;
- Monitoring Twin Lakes Annual Lake Level with Triggers prepared by LNID, 2013 to 2020;
- Twin Lakes – Water Management Review – Executive Summary (Draft) prepared by Dobson Engineering Ltd., March 2020;
- Twin Lake Lands Water Levels & Historical Data 1937 – 2019 prepared by LNID, June 2020;
- Applicable right-of-way plans;
- Available water licence documentation;
- Historical topographic maps; and,
- Historical Aerial Photographs (See report Section 2.5).

The above documents were reviewed by Ecora to develop an understanding of the study area.

2.3 LNID Water Licenses

The Province of British Columbia's Water Licence Search tool was used to review active water licences held by LNID. The details of these Water Licences are as shown in Table 2.3, below.

Table 2.3 LNID Water Licence Details

Licence No.	Licence Type	Licence Status	Priority Date	Authorized Activity	Annual Licence Fee
C041537	Surface Water	Current	Feb 27, 1973	<ul style="list-style-type: none"> ▪ Divert water from Twin Lakes by means of pump and pipe with the purpose of land improvement (drainage). ▪ The rate at which water may be diverted under this licence shall not exceed that specified in writing by the Provincial Water District Engineer. ▪ The period of year for which water may be diverted shall be as directed by the Provincial Water District Engineer. 	\$50.00
C060398	Surface Water	Current	Dec 05, 1983	<ul style="list-style-type: none"> ▪ Divert water from Horn Creek (upstream of UTL) by means of diversion structure, drainage ditch and reservoir with the purpose of land improvement (diversion and storage). ▪ The maximum quantity of water that may be diverted and stored is 200 acre-feet (246,700 m³) per annum plus any additional quantity that the Provincial Water District Engineer should allow for losses. ▪ The period of year for which water may be diverted shall be as directed by the Provincial Water District Engineer. 	\$50.00

The authorized maximum discharge from LNID's pump is 75 litres per second (Lps) unless approved otherwise by the Provincial Water District Engineer. Typically, surface water pumping for domestic purposes does not occur when lake water levels are below the desirable low water level (794.00 m) to conserve water for future use.

The water licences on UTL were also reviewed and it was found that the licence pertaining to control of UTL discharge (Water Licence No. C062298) is held by NT and it dictates the operation of their dam spillway and the maximum quantity of storage that may take place in the lake. The water licence dictates that NT may store 120 acre-feet (148,020 m³) per annum and storage may only occur between October 1 and June 30.

There are also approximately 19 current domestic surface water licences held by property owners on the lake.

Although specified by the Water Licences, the actual water used under these surface water licences is not known as they represent a maximum amount of water withdrawal authorized, not actual use.

2.4 Drainage Infrastructure Inventory

An inventory of the drainage infrastructure owned and operated by the LNID was completed and a condition rating was applied to each item (where applicable). Condition ratings were applied during the October 16, 2020 site reconnaissance, when Ecora reviewed the condition of each infrastructure component. The condition rating criteria are presented in Table 2.4a.

Table 2.4a Infrastructure Condition Rating Criteria

Rating	Commentary	Maintenance Priority
9 – Very Good	New condition.	No repairs in foreseeable future.
8	Almost new condition.	No repairs in foreseeable future.
7 - Good	Could be upgraded to new condition with very little effort.	No repairs necessary at this time.
6	Generally good condition. Functioning as designed with no signs of distress or deterioration.	No repairs necessary at this time.
5 - Adequate	Acceptable condition and functioning as intended.	No repairs necessary at this time
4	Below minimum acceptable condition.	Low priority for repairs.
3 - Poor	Presence of distress or deterioration. Not functioning as intended.	Medium priority for replacement or repair. Repair or replace within 3 to 5 years.
2	Hazardous condition or severe distress or deterioration.	High priority for replacement or repair. Repair or replace within 1 to 3 years.
1	Danger of failure and/or danger to users.	Decommission infrastructure, replacement, repair, and/or signing required as soon as possible. Repair or replace immediately.

A summary of the LNID infrastructure inventory and the condition rating of each component is presented in Table 2.4b.

Table 2.4b LNID Infrastructure Inventory Summary

Property and Equipment	Infrastructure Details	Condition Rating
Pump	1 - 15 horsepower Grindex three-phase submersible mining pump with a 6-inch diameter discharge.	2
Discharge Piping	1 - 6-inch diameter by 670 m long HDPE pipe complete with couplers.	5
Monitoring Equipment	1 – 9 m long HOBO Water Level Data Logger complete with a 30 m long remote water level cable and a 30 m long liquid tight stainless steel cable conduit. The system is powered by a solar panel.	9
Water Licences	Two surface water licences (No. C041537 and C060398)	N/A
Statutory Right of Way	One 667 m long by 6 m wide (0.400 ha) statutory right of way easement (“SRWC” Plan No. EPP44979).	N/A

Based on the condition ratings, LNID infrastructure components are in adequate or better condition, aside from the pump which is in poor condition and in need of repair or replacement.

It is worth noting that the unregulated dam structure at the outlet of UTL is operated and maintained by NT. The culverts at the outlet of turtle pond (which pass under Eastview Road) are operated and maintained by the Ministry of Transportation and Infrastructure. These structures are not the responsibility of LNID.

2.5 Aerial Photograph Review

A review of available historical photographs was conducted for the study area. Aerial photographs were acquired from the University of British Columbia (UBC) Geography Department, for the period 1933-2007. The aerial photographs and imagery were used to track water levels and development within the study area. The aerial photos gathered and reviewed as part of the study are listed in Table 2.5 below.

Table 2.5 Aerial Photograph Summary

Year	Aerial Photo No.	Type
1938	BC101:8-15, 19-25 BC102:1-5	Black & White
1951	BC1246:11-13, 45-48 BC1246:41-38, 17-19, BC1312:4-2	Black & White
1959	Details Unavailable	Black & White
1963	A16663:148-149, BC4143:170-173, BC4174:83-86, BC4184:12-16, 132-138	Black & White
1969	BC5330:14-16, 71-73	Black & White
1974	BC7580:13-17, 20-26, 200-202	Black & White
1979	BC79026:131-134, BC79030:175-178	Black & White
1985	BCC363:1-7, 67-71, BCC369:115-118	Black & White
1987	BCC695:133-136, BCC708:45-51, 74-77	Black & White
1989	BCC1028:122-125, 169-170	Black & White
1996	BCC96025:31-33, 165-171, BCC96026:30-33	Black & White
2007	BCD07022:8-14, 66-71	Colour

In addition to review of the air photos, more recent aerial imagery was acquired and reviewed using publicly available imagery on the web through DataBC and Google Earth.

One of the primary focuses of the aerial photograph review was to determine if LTL previously had a natural outlet, and to determine if the outlet was infilled due to land developments in the area. Reviewing available pre-development historical air photos, signs point towards there being a natural outlet channel at the southwest corner of the lake. This outlet channel appears to be present in the 1938 air photo and appears to be infilled some time prior to the 1951 air photo. These observations are presented further in Section 2.6.2.2 of this report.

2.6 Desktop Hydrology Review

2.6.1 Watershed Characteristics

The Twin Lakes are surrounded by three mountains: Mount Parker (northeast of the lakes), Orofino Mountain (south) and an unnamed peak (northwest). Water is collected on each of these mountains and drains into watercourses which feed the Twin Lakes. The most significant of these watercourses is Horn Creek which enters UTL from the southwest. All of the other streams feeding the system are minor unnamed tributaries, that flow directly into the lakes. The northern extents of the basin reach as far as Trout Lake and the southern limits extend to the Horn Creek headwaters located approximately 4 km east of Olalla. The Twin Lakes watershed falls within the Southern Thompson Plateau hydrologic zone and the majority of runoff collected by the lakes is derived from snowmelt from the three surrounding mountains. It is suspected that since around 1938 the outlet of LTL has been infilled and the Twin Lakes and Turtle Pond have functioned as kettle lakes (i.e., terminal lakes).

The watershed has a moderate relief of about 710 m, ranging from a minimum elevation of 790 m at LTL to a maximum elevation of approximately 1500 m in the Horn Creek headwaters. The average slope of the catchment area along Horn Creek was estimated to be approximately 0.11 m/m. The watershed area feeding the lakes is estimated to be 24 km². This area was determined by combining Provincial TRIM data and existing watershed boundaries available through iMapBC. A map of the watershed areas is provided in Figure 2.6a.

The catchment consists of a mix of forested upland areas and sage brush slopes. Development in the area is primarily confined to single family residences located along the shoreline of LTL and the Twin Lakes Golf Course located to the north. A significant portion of the land within the watershed is owned as a NT conservation area and major changes to the basin resulting from development would not be anticipated. Some aspects of land usage within the basin may change in future years (such as logging or possible residential development at Twin Lakes Golf Course); however, for the sake of this study, only current development was considered in the hydrological analysis.

2.6.2 Watershed Dynamics

2.6.2.1 General

Flows through the Twin Lake system are shown in Figure 1.1 (Section 1.1) and as described below.

UTL has a water surface area of approximately 0.33 km² (according to Provincial TRIM waterbody boundaries) and is fed by Horn Creek, which enters the lake at its southmost corner. The shoreline of the lake is uninhabited, and the outlet is controlled by a 1.5 m high earth embankment dam equipped with a sluice gate controlled low-level outlet and a concrete weir overflow spillway. This dam is owned by NT which holds a storage water licence for irrigation purposes.

Outflow from UTL enters Turtle Pond prior to reaching LTL. Turtle Pond has a surface area of approximately 0.013 km², an undeveloped shoreline, and is surrounded by trees. Water flows from UTL into Turtle Pond when the sluice gate in the dam at UTL is opened to release water through the low-level outlet or when water levels in UTL exceed the spillway elevation. Water from UTL flows from south to north entering Turtle Pond at its southmost corner. Water exits the pond at its northeast corner, where it passes through a 610 mm diameter culvert at Eastview Road and discharges into LTL. There is also a 1000 mm diameter overflow culvert at this location, which is set approximately 3 m above the elevation of the 610 mm pipe to handle higher water elevations in the pond.

LTL is the terminal lake in the Twin Lakes system and has an area of approximately 0.29 km². Water enters LTL from Turtle Pond along the western edge. LTL does not currently have a free-flowing outlet and, based on available information, appears to be controlled by fluctuations in groundwater infiltration, evaporation and diversion (via pumping). The pump that is used to control lake levels is situated at the southmost corner of the lake and is only operated during flooding or in the fall in preparation for the upcoming freshet. The outlet of this pump is located approximately 500 m east of the pump intake and discharges into Lot 280 where it then flows into the Park Rill system.

It is thought that UTL, Turtle Pond and LTL combine to form one lake during high flows and the dynamics of the connections among the three can be depicted using a storage elevation curve (Ecora, 2018). This curve is presented in Section 2.7 of this report and was used as part of the Hydrological Assessment.

Groundwater infiltration is thought to have a significant impact on the watershed dynamics. Past studies have noted many times that water entering the system by means of precipitation does not make its way to the Twin Lakes as surface runoff and instead goes to ground in the upper reaches of Horn Creek. This phenomenon is important to consider as it would have a notable impact on how hydrology is assessed at Twin Lakes.

2.6.2.2 Historical Drainage

The Twin Lakes area is known to cycle between extreme dry and wet conditions resulting in significant fluctuations in lake water levels. The following historical observations have been made with respect to the hydrological regime:

- The earliest documented year of flooding is 1948;
- High runoff occurred from 1948 to 1951. During this time span, floodwaters were handled by pumping into Park Rill. This resulted in flooding of properties along Park Rill;
- In 1952, approximately 152 m (500 feet) of 381 mm (15-inch) pipe, with a vertical steel control gate, was installed at the lake Outlet. The pipe was used to outlet lake water into Lot 280. The pipe was buried up to 7.6 m below existing ground level; however, the exact location of this pipe was not documented and remains unknown;
- Significantly reduced lake levels were noted in the 1960s. Over this time, the lake was needed for irrigation of agricultural land and so the outlet pipe diverting water into Park Rill was decommissioned in 1965;
- Extreme high runoff occurred in 1972 when the LTL water level rose by over 3 m. In 1973, J. Botham established a low water level in LTL of 3.84 m (EL. 794.03m), a normal high water level of 5.37 m (EL. 795.56m), and a flood water level of 6.59 m (EL. 796.78 m) using a local datum where 0 m is equivalent to a geodetic elevation of 790.19 m;
- It is understood that the LNID considers the current flood level to be 5.98 m (EL. 796.13 m) based on the current level at which flood damage can occur to developments near the lakeshore;
- Between 1997 and 1999, a portion of Horn Creek discharge was diverted into the adjacent Keremeos Creek watershed via a diversion channel. At the same time LNID was using a pump to divert water (at a rate of 0.06 m³/s (60 Lps)) from LTL into Park Rill;
- Drought conditions from 2000 to 2010 resulted in a 4.1 m drop in the LTL water levels;
- In 2013, and from 2015 to present day, pumping from the lake into Park Rill has been necessary to control lake levels and has been permitted by the Province; and,
- As reported by LNID, the 2018 freshet caused significant flooding in LTL, where water levels rose to 8.16 m (EL 798.35 m) triggering a state of emergency. During this event, a 2.44 m high wall of sandbags was erected around the lake and pumping was required to protect homes from flood damage. Thirty-three residences experienced water damage from this event. The pumping from LTL to control water levels was discharged into Park Rill. Some suspect that this pumping further exacerbated creek erosion and flooding to properties along upper Park Rill, upstream of Myers Flats.

As noted previously, pre-development historical air photos (1938) suggest a natural outlet channel at the southwest corner of LTL. Further, Water Rights topographic maps (from the 1930s) indicate a stream leaving the lake at a location similar to what is shown in the aerial photos. Although the photographs are not the best quality (based on their age, resolution and black and white nature) it appears that between 1938 and 1959 the natural drainage channel (which outlets LTL) is backfilled and graded and that manmade trenches become used to convey water. The timing of these works observed in the photos coincide with the historical observation that in 1952 the natural outlet was replaced with a 381 mm pipe.

Figure 2.6b below shows the pre-development 1938 photograph overlaid with the 1930 topographic map. This image indicates that the mapped watercourse is quite similar to the actual watercourse location and that the slight variance can be attributed to the large contour spacings used to develop the maps in the 30's.

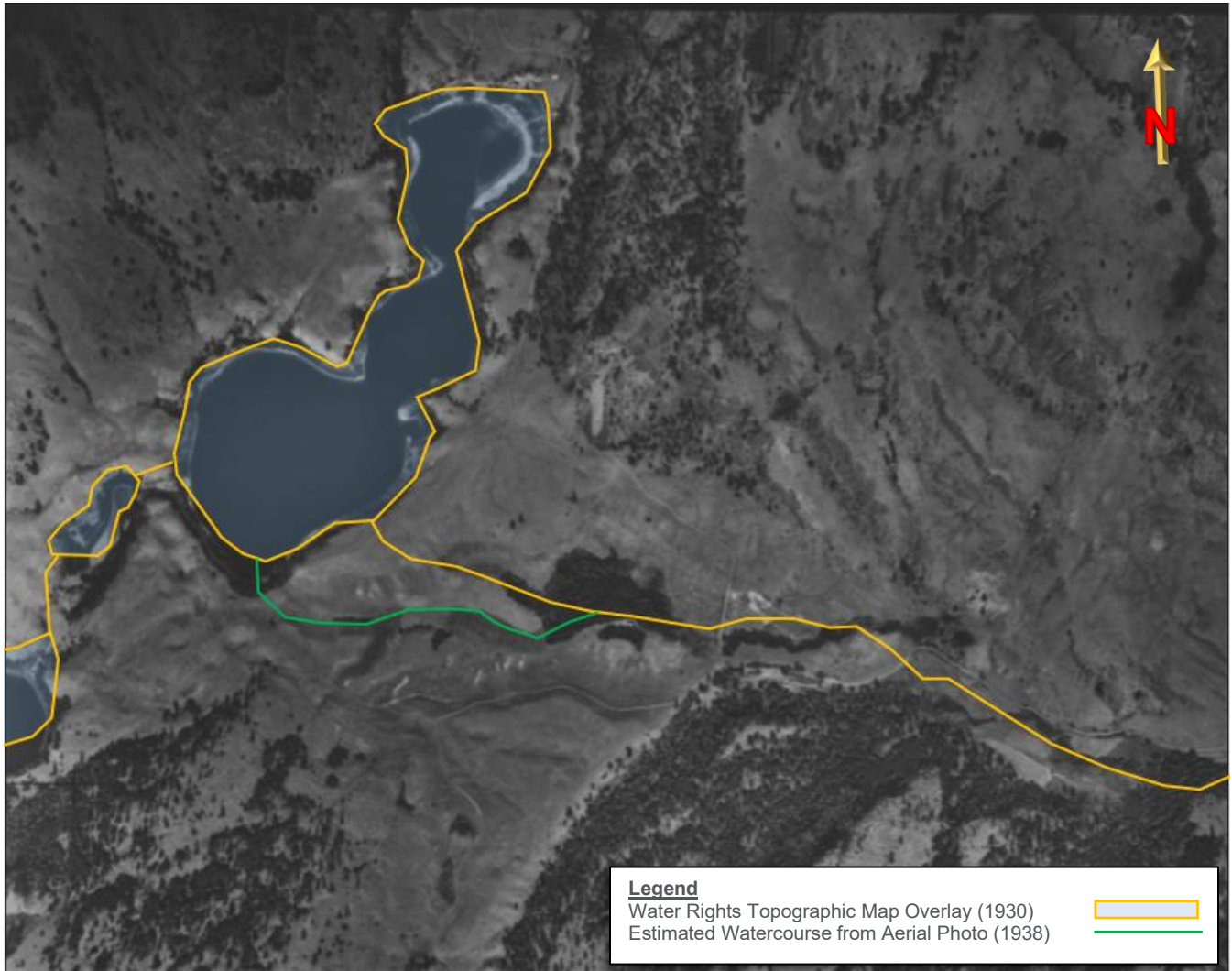


Figure 2.6b 1938 Aerial Photo with 1930 Water Rights Topographic Map Overlay

Figures 2.6c to 2.6f below delineate the centerline and boundaries of the drainage depression between 1947 and 1963, highlighting the modifications made to the natural drainage depression over the timeframe. The infill that is observed is emphasized in the images along with the approximate location of the drainage pipe that was installed in 1952.

Based on the information available for the pre-developed lake and the narratives provided from LNID members with respect to the drainage history, it would suggest that LTL historically drained from its southmost shore.

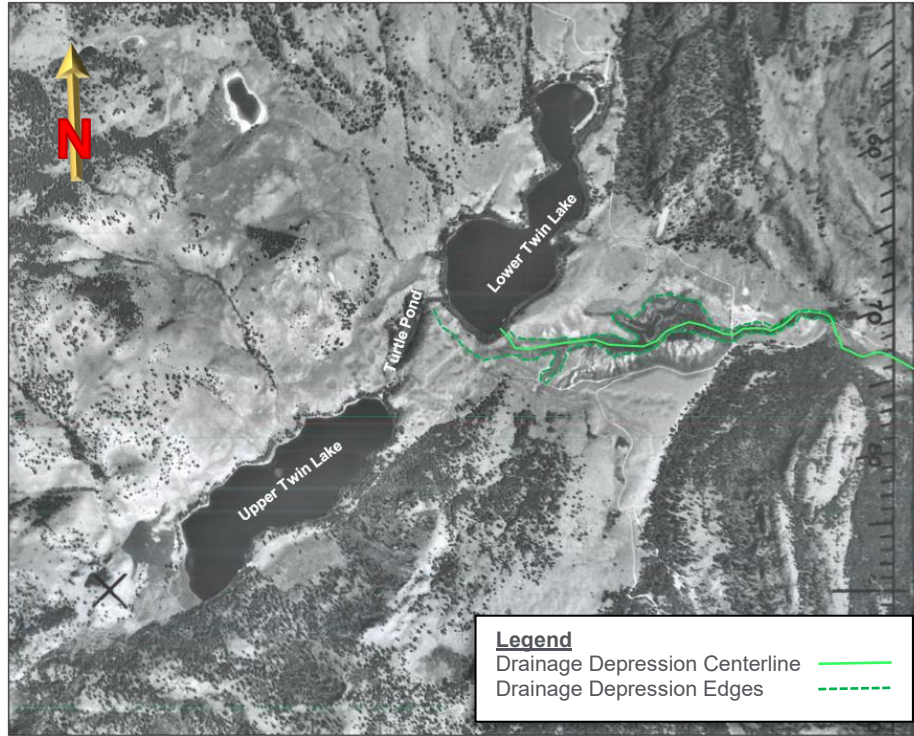


Figure 2.6c 1947 Aerial Photo Drainage Path Delineation

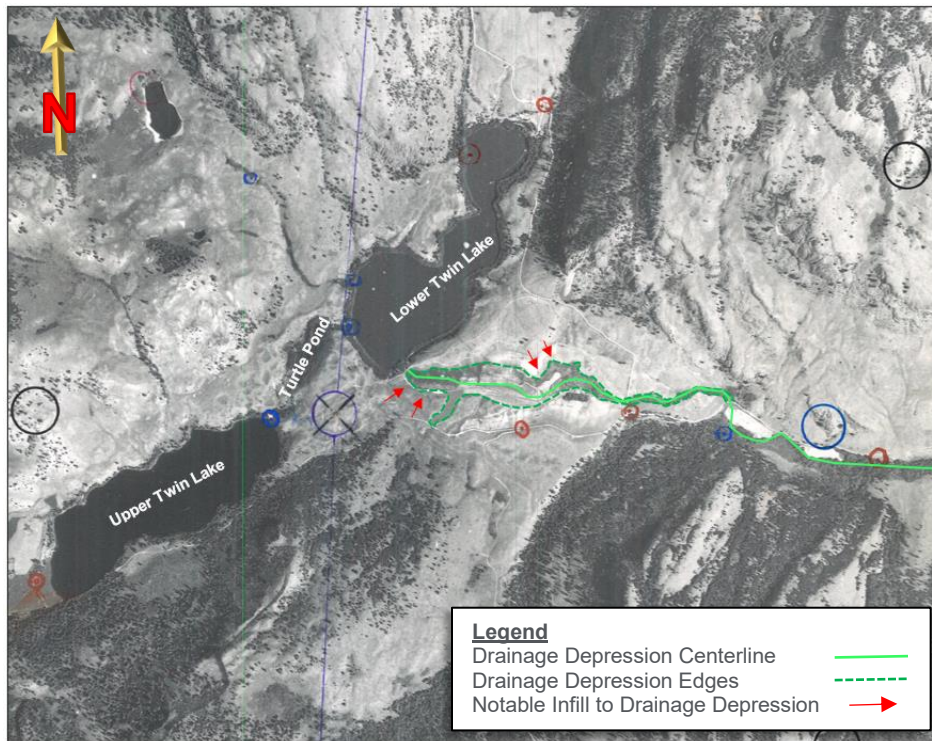


Figure 2.6d 1951 Aerial Photo Drainage Path Delineation

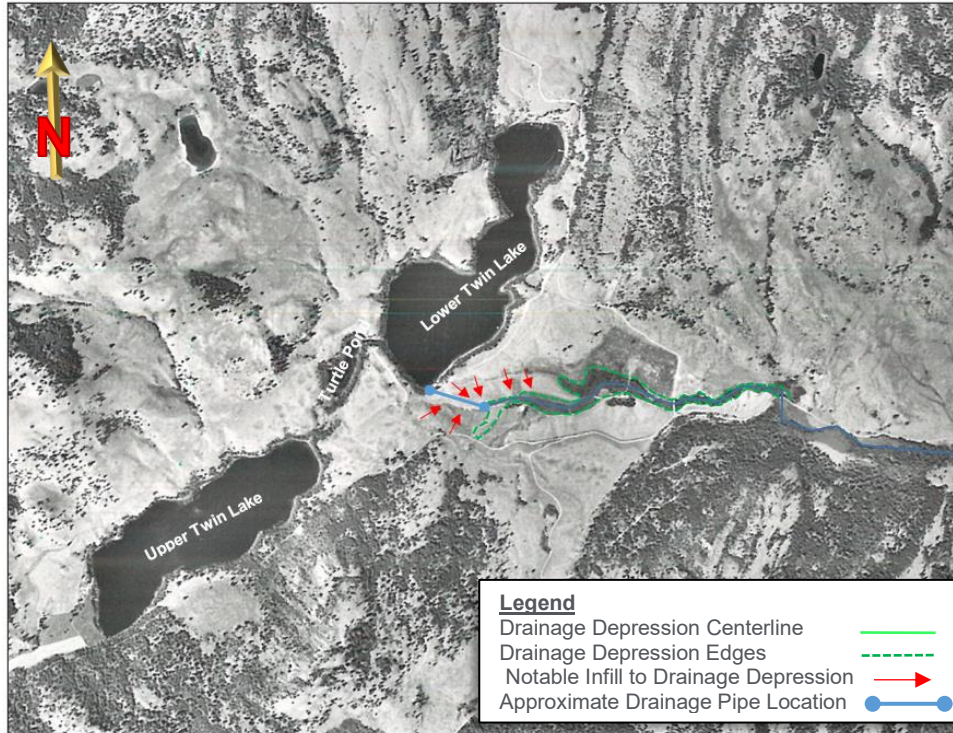


Figure 2.6e 1959 Aerial Photo Drainage Path Delineation

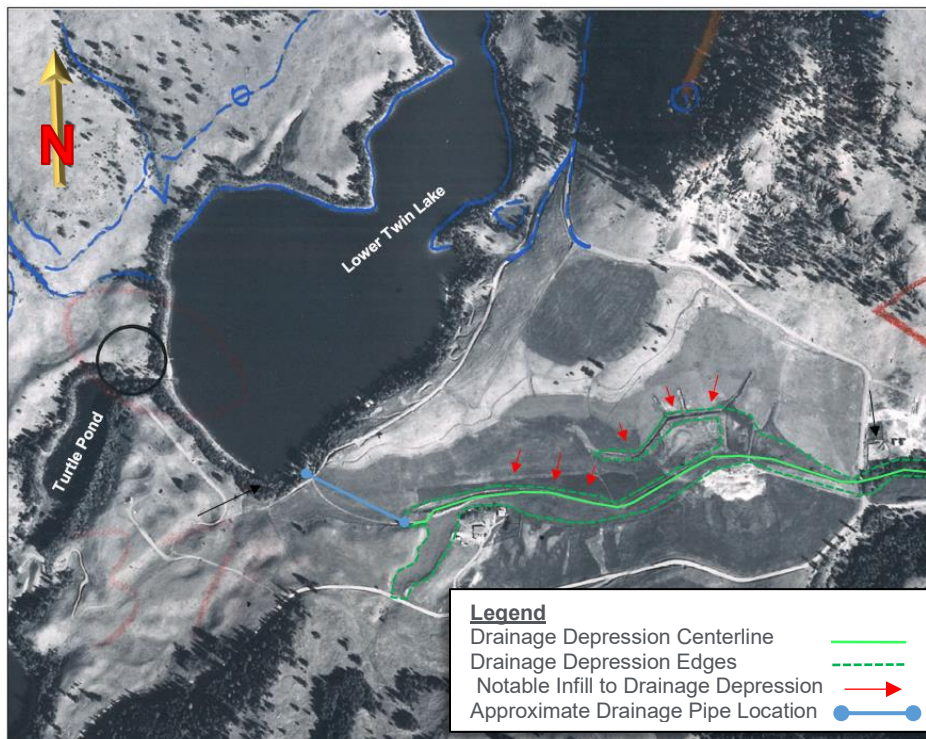


Figure 2.6f 1963 Aerial Photo Drainage Path Delineation

2.6.3 LNID Operational Rules

The LNID was contacted on November 26, 2020 to request their operational rules for monitoring inflows and initiating pumping. LNID provided Ecora with their documents titled *'Monitoring Twin Lakes Annual Lake Level with Triggers'* for 2013 to 2020. After reviewing these documents and having discussions with LNID, the following monitoring and operational rules were understood:

Limitations on Operational Rules

Due to the complex nature of the Twin Lakes watershed, the variable spring runoff volumes and the cyclical change from wet to dry years it is difficult to predict the peak freshet lake levels in any given year, making it especially difficult to predict the best approach to managing them. The need for pumping is dependent on numerous factors that could influence freshet peak inflows into the lake including the ice-off lake level, precipitation, snowpack, groundwater levels and temperature. LNID does its best to prepare for the coming freshet, however, this effort can be futile if conditions are adverse. Even with the Critical Flood Monitoring Measurements presented in Table 2.6, it is difficult to gauge the severity and storage capacity required to handle each year's spring runoff. Without sophisticated monitoring systems in place, an 'observe and react' approach to floodwater management is utilized by LNID.

Critical Flood Monitoring Measurements and Locations

Table 2.6 Summary of Critical Flood Monitoring Measurements and Locations

Location	Measurement Type	Data Recorded
Mt. Kobau Snow Station	Snow Pack (Recorded February, March and April)	Date Percent of Normal
South White Lake Road (Upstream of UTL)	Ice out of culvert	Date
Upper Twin Lake	Water flowing into UTL - Start	Date
	Water flowing into UTL - End	UTL Level ¹
	Water flowing out of UTL (in dam spillway) - Start	Turtle Pond Level ²
	Water flowing out of UTL (in dam spillway) - End	LTL Level ³
	Dam culvert - Open	Date
	Dam culvert - Closed	Date
Lower Twin Lake	Ice off lake	Date
	Water flowing into LTL - Start	UTL Level ¹
	Water flowing into LTL - End	Turtle Pond Level ²
	LTL peak water level	LTL Level ³
	LTL outlet pump - ON	
	LTL outlet pump - OFF	
	Ice on lake	

¹Water level above EL 796.188 m – water level above spillway sill elevation.

²Water level above EL 793.770 m – water level above lower culvert invert elevation.

³Water level above EL 790.190 m – water level above historical WSC gauge (08NM148) local datum (located at Lat: 49°19'03", Long: 119°43'35")

Operational Rules

The operation of LNID's pump is largely dictated by permissions from the Province's Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD) and by the operations of Nature Trust of British Columbia's dam culvert. The pump is not operated every year, only in wet years. When pumping is deemed necessary by LNID they are required to submit a written request to MFLNRORD to activate the pump. Only

MFLNRORD has the authority to approve pumping from the lake and only once a response is received by the Ministry shall these operations take place. Often the Ministry's authorization for pumping is conditional on downstream water levels in the Park Rill system.

LNID does not have control of inflow to LTL from UTL. NT operates a sluice gate in the UTL dam and the dam culvert is opened to release water when levels drop below the spillway crest elevation. The sluice gate may only be closed between October 1 and June 30 and may only store 148,020 m³ per annum; unless instructed otherwise by the Provincial Water District Engineer. Consequently, in flood years, LNID is unable to simply close the dam culvert and increase storage in the UTL.

LNID does not have set rules for pump operation for flood control. Their approach can be summarized as follows:

- 1) Issue written request to MFLNRORD to initiate pumping. Permission to pump is conditional on whether or not downstream flooding is occurring concurrently.
- 2) During dry years, pumping does not take place. This is when water is near or below the Normal High Water El. 795.55 (5.36 m) and limited inflow is noted.
- 3) During wet years, freshet pumping is initiated when water is near the Normal High Water El. 795.55 (5.36 m) and increasing inflow is noted.
- 4) Freshet pumping terminates when water levels are lowered to between the Normal Low Water and Normal High Water Elevations (El. 794.00 to El. 795.55)
- 5) In dry years fall pumping does not occur.
- 6) In wet years, fall pumping is often initiated when the NT dam culvert is closed, and continues until ice forms on the lake or a lake level of El. 795.07 (4.88 m) is reached. This lake level is approximately 0.31 m above the pump intake elevation (794.76 m) and allows for 0.91 m of storage for the next freshet.

2.7 Hydrological Assessment

A hydrological assessment was completed by reviewing the hydrology analysis for Twin Lakes included in the '*Twin Lakes Flood Response Feasibility Assessment*' (Ecora, 2019). The methods used in this report were reviewed and, where possible, were updated to include current data sets.

As noted in past reports, flood mitigation design for the Twin Lakes area is based on the 1 in 200-year design flood event. This magnitude of design flood event would be in line with common practice within the Province of British Columbia and meets the designated flood standards specified in the Flood Hazard Area Land Use Management Guidelines produced by MFLNRORD (2018) and EGBC's Professional Practice Guidelines for Legislated Flood Assessments in a Changing Climate in BC (Version 2.1) (2018).

The goal of this hydrological assessment is to determine operational lake levels that, if exceeded, will trigger discharge of water from the LTL system. Discharge rates required to maintain operational lake levels and to protect the infrastructure surrounding the lake are also established in the following sections.

2.7.1 Frequency Analysis on Lower Twin Lake

Ecora (2019) explored three methods for determining a design flow including frequency analysis of freshet water volumes, regional analysis using hydrometric station data and an index flood method. Within that assessment, it was found that local lake level data was the most reliable and representative of peak runoff events in the basin, since there is significant groundwater infiltration in the upper reaches of the basin that may skew the hydrologic results. Such uncertainties would influence regional analysis and the index flood method so the lake level frequency analysis method was chosen as the preferred approach to hydrological analysis. After reviewing the Ecora (2019)

report, it was decided that a similar approach should be taken for this assessment. The hydrological findings of the 2019 feasibility assessment were updated to include current lake level data and to consider the impacts of climate change on flooding.

2.7.1.1 Approach

Peak runoff events generally occur in the Twin Lakes area during the spring freshet and are driven by snowmelt in the adjacent mountains. Consequently, the frequency analysis was conducted using freshet water levels (based on water level data and pumping records for LTL) to determine the 1 in 200-year peak water level and corresponding flood hydrograph. The data sets that were used were a combination of the Water Survey Canada (WSC) gauge station level data for the Twin Lakes near Olalla (08NM148) gauge (for the years 1969 to 1977) and peak water level records collected by LNID at LTL (from 1997 to 2003 and 2008 to 2020). This combination of data sets produces 26 years of peak water level data and is considered a reasonable period of record for a frequency analysis. This combination of peak data is made assuming that LNID has recorded their level data to the same vertical datum as the WSC hydrometric station.

Due to pumping at the outlet of the lake, the gauge and LNID water level data could not be used without accounting for the water that had exited the system. To produce frequency analysis results that best represent the natural hydrological dynamics of LTL the lake level results had to be naturalized, removing the human influence on the data. To account for this in years where pumping is known to have occurred, the pumped volumes were added back into the recorded peak lake volumes. The resulting lake elevations for the naturalized historical maximum freshet lake levels were plotted for years in which LTL saw increases in water levels due to freshet (wet years) and the results are shown in Figure 2.7a. This data was used as input for the frequency analysis.

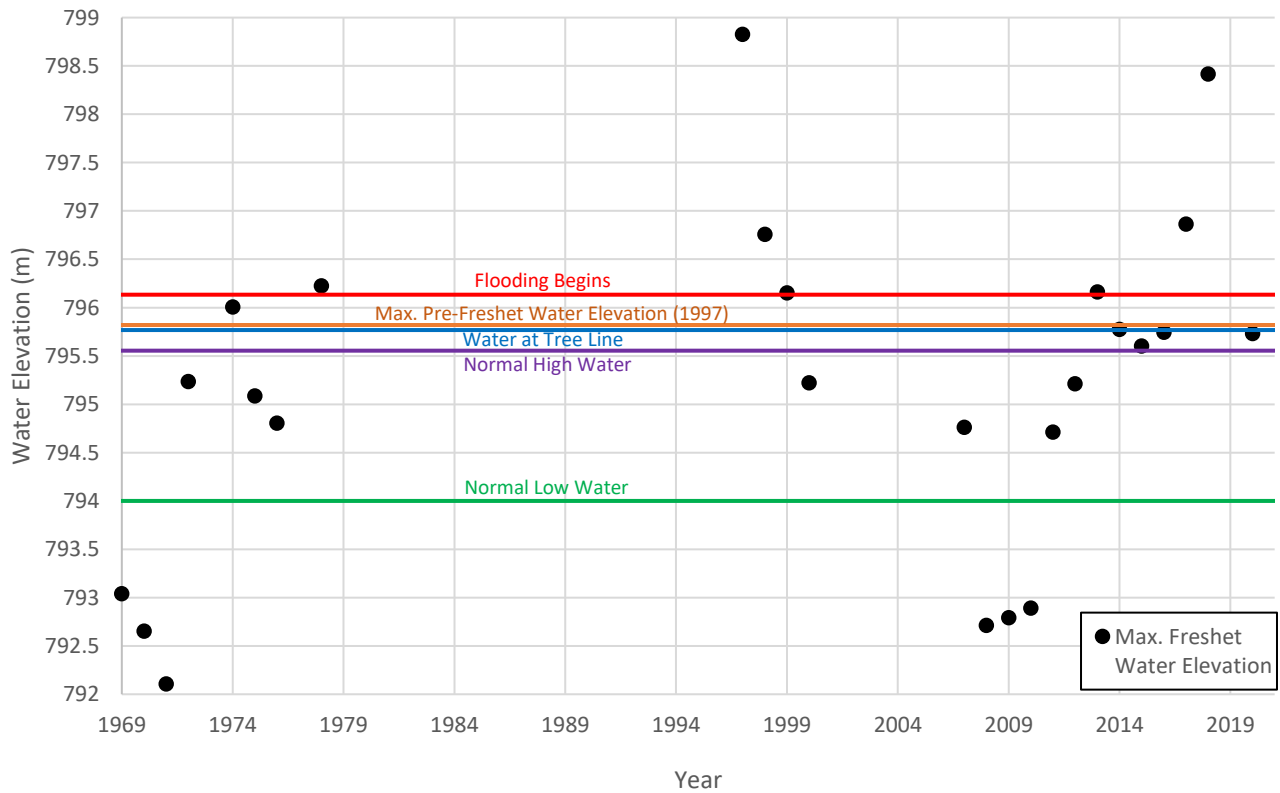


Figure 2.7a LTL Historical Maximum Freshet Water Elevations - Naturalized

The historical freshet water elevations in LTL were compared to key observation point elevations to assess the significance of each historical freshet event. These observation points and their significance are as follows:

Table 2.7a Key Observation Point Lake Elevations

Observation	Elevation (Level) (m)	Significance
Normal Low Water	794.00 (3.81)	Botham (1973) report presented this as the desirable low water level. The level was reported as 12.6 ft (3.84 m).
Normal High Water	795.55 (5.36)	Botham (1973) report presented this as the normal high water level, the level that would be exceeded only during periods of heavy inflow. The level was reported as 17.6 ft (5.36 m).
Water at Tree Line	795.77 (5.58)	The elevation reported by LNID at which lake levels reach the tree line. This is considered to be a natural high water mark.
Maximum Recorded Pre-Freshet Water Elevation	795.82 (5.63)	This is the historical maximum recorded pre-freshet water level, which occurred in 1997.
Flooding Begins	796.13 (5.94)	The elevation reported by LNID at which lake levels reach buildings.

As shown in Figure 2.7a, the current flood water elevation of 796.13 m (5.94 m) would have been reached or exceed seven times (without pumping) during the 26 years of record between 1969 and 2020.

An initial pre-freshet lake level was required for the flood routing through LTL. This is the assumed lake level when freshet inflows begin. Northwest Hydraulic Consultants (NHC) is currently conducting a flood mapping study for Park Rill, Horn Creek and Kearns Creek. In their frequency analysis of the naturalized LTL levels, NHC (2020) applied a technique known as conditional frequency analysis, as there is a significant degree of autocorrelation between the peak freshet level and the initial pre-freshet level, implying that the maximum freshet levels are not truly independent but can be influenced by previous levels. NHC recommends that the observed historical maximum pre-freshet level be used as the basis of design levels. Following this approach, the maximum recorded pre-freshet water elevation of 795.82 (recorded in 1997) was selected.

Using the LTL Historical Maximum Freshet Water Elevations as inputs, the frequency analyses were carried out using HYFRAN software Version 2.2. Lake level elevations were converted into lake volumes using the watershed stage-storage curve established for the site (Ecora, 2018) and as shown in Figure 2.7b below.

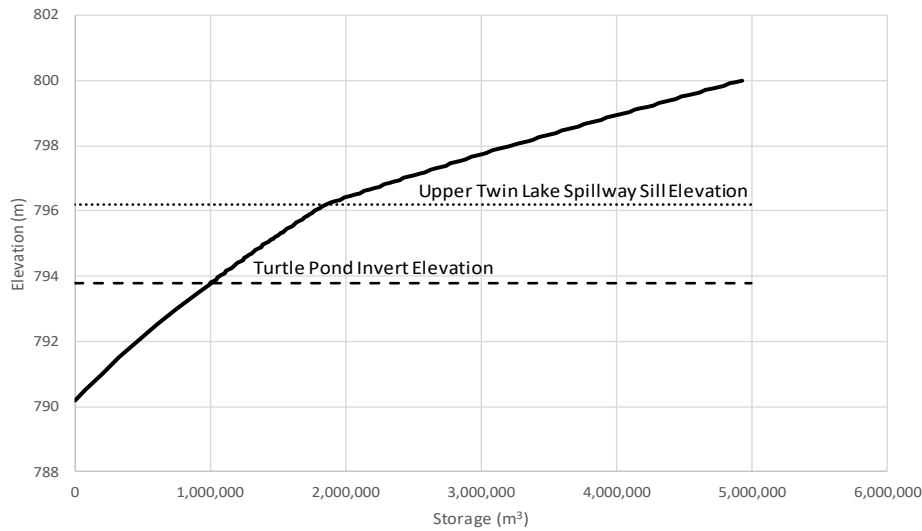


Figure 2.7b Stage-Storage Curve for Twin Lakes (Ecora, 2019)

Note that the stage-storage curve was derived using Provincial TRIM contours, which have an interval of 20 m, so the resulting curve should be considered a rough approximation.

2.7.1.2 Results

From the flood frequency analysis, change in lake level, change in lake volume and the corresponding return periods were calculated based on the LTL historical level data. The results for the 200-year return period are presented in Table 2.7b below.

Table 2.7b Frequency Analysis Results

Return Period	Naturalized Lake Level (m)	Change in Lake Level - Freshet Inflow (m)	Change in Lake Volume – Freshet Inflow (m ³)
200-year	9.46 (EL 799.642)	11.50 (El. 801.690)	2.80 x 10 ⁶

*Datum EL 790.19 used.

2.7.2 Climate Change Trend Analysis

An attempt was made to perform a Kendall trend analysis on the historical level data that was used for determining the change in lake level and change in lake volume results. The analysis was attempted using HYFRAN; however, it could not be performed due to an insufficient number of years of data available for completing the trend analysis. Another approach was selected. Western University’s (UWO) computerized web-based Intensity-Duration-Frequency (IDF) tool was used to assess potential changes in precipitation and rainfall intensity resulting from climate change at LTL. Although there is no direct correlation between precipitation and streamflow, these changes provide some indication of a reasonable climate change factor.

Due to the lack of nearby Environment Canada Weather Stations, an ungauged IDF approach was applied. The tool conducted a statistical analysis on historical data and generated possible future changes based on a combination of climate modelling outputs and locally observed weather data.

The climate model selected for generating the IDF curves was the PCIC - Bias Corrected (Version 2) which was implemented on the CanESM2 (BCCAQv2) model which is developed by the Canadian Centre for Climate Modelling and Analysis in Victoria, BC. The time range for which the model was run was from 2006 to 2100.

Results from two scenarios were considered for the climate change impacts on total precipitation and intensity rates. These scenarios compared Representative Concentration Pathways (RCP) 4.5 and 8.5. RCP 4.5 is an intermediate greenhouse gas concentration scenario which provides a future concentration scenario that would lead to moderate climate change severity, when compared to scenarios associated with RCP 2.6 and 8.5. RCP 8.5 was applied for comparison purposes as it would be considered the upper limit on climate change impacts and would lead to the most severe outcome when compared to the other RCPs. Currently, there does not appear to be any consensus on a climate model or RCP scenario to be used for analysis. Keeping this in mind, the results generated from the IDF climate change analysis are shown below in Tables 2.7c and 2.7d. Only the 100-year period was presented as it would best match the longer duration return period used for determining the design inflow.

Table 2.7c Summary of Total Precipitation IDF Results (UWO, 2020)

	Scenario	IDF Historical Data Total Precipitation (mm)	IDF Under Moderate Climate Change (RCP 4.5) Total Precipitation (mm)		IDF Under Severe Climate Change (RCP 8.5) Total Precipitation (mm)	
	T (Years)	100-year Period	100-year Period	% Change	100-year Period	% Change
Duration (Minutes)	5	14.94	12.21	-18.3%	18.34	+22.8%
	10	22.24	18.17			
	15	27.58	22.53			
	30	31.85	26.03			
	60	34.02	27.80			
	120	36.15	29.54			
	360	45.58	37.25			
	720	51.69	42.24			
	1440	56.66	46.30			

Table 2.7d Summary of Rainfall Intensity IDF Results (UWO, 2020)

	Scenario	IDF Historical Data Intensity Rates (mm/h)	IDF Under Moderate Climate Change (RCP 4.5) Intensity Rates (mm/h)		IDF Under Severe Climate Change (RCP 8.5) Intensity Rates (mm/h)	
	T (Years)	100	100	% Change	100	% Change
Duration (Minutes)	5	179.31	146.52	-18.3%	220.06	+22.8%
	10	133.43	109.03			
	15	110.31	90.13			
	30	63.71	52.06			
	60	34.02	27.80			
	120	18.08	14.77			
	360	7.60	6.21			
	720	4.31	3.52			
	1440	2.36	1.93			

From the IDF analysis, the 100-year period result for the RCP 4.5 model would produce a 18.3% decrease in total precipitation and rainfall intensity (when compared to the historical IDF curve). The RCP 8.5 model would produce

a 22.8% increase. The average percent change between the moderate and severe results is 2.3%. The high variability in results between the moderate and severe climate change scenarios depicts the uncertainty associated with climate modeling and the difficulty in finding a definitive trend.

The Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) Professional Practice Guidelines: Legislated Flood Assessments in a Changing Climate in BC, recommends a factor of 20% should be added to the peak flow when an increasing trend is present in record data. If no trend is present, a factor of 10% should be applied. Due to the lack of definitive trend based on the above analyses, a 10% increase to the design flood estimates is recommended.

The Ecora (2019) report did not account for the effects of climate change on the design flood event, and it is anticipated that this would produce higher estimated lake outflow results in this study.

2.8 Design Inflow Hydrograph

A design inflow hydrograph was required to quantify the flood routing effects in LTL during a design flood event. The design inflow was estimated by developing a stage hydrograph for the 2018 flood event and scaling up the hydrograph to represent the increased stage during a design event. The 200-year change in lake level resulting from freshet inflow (5.87 m) estimated in Section 2.7 was used to generate the synthetic hydrograph, which is shown in Figure 2.8a below.

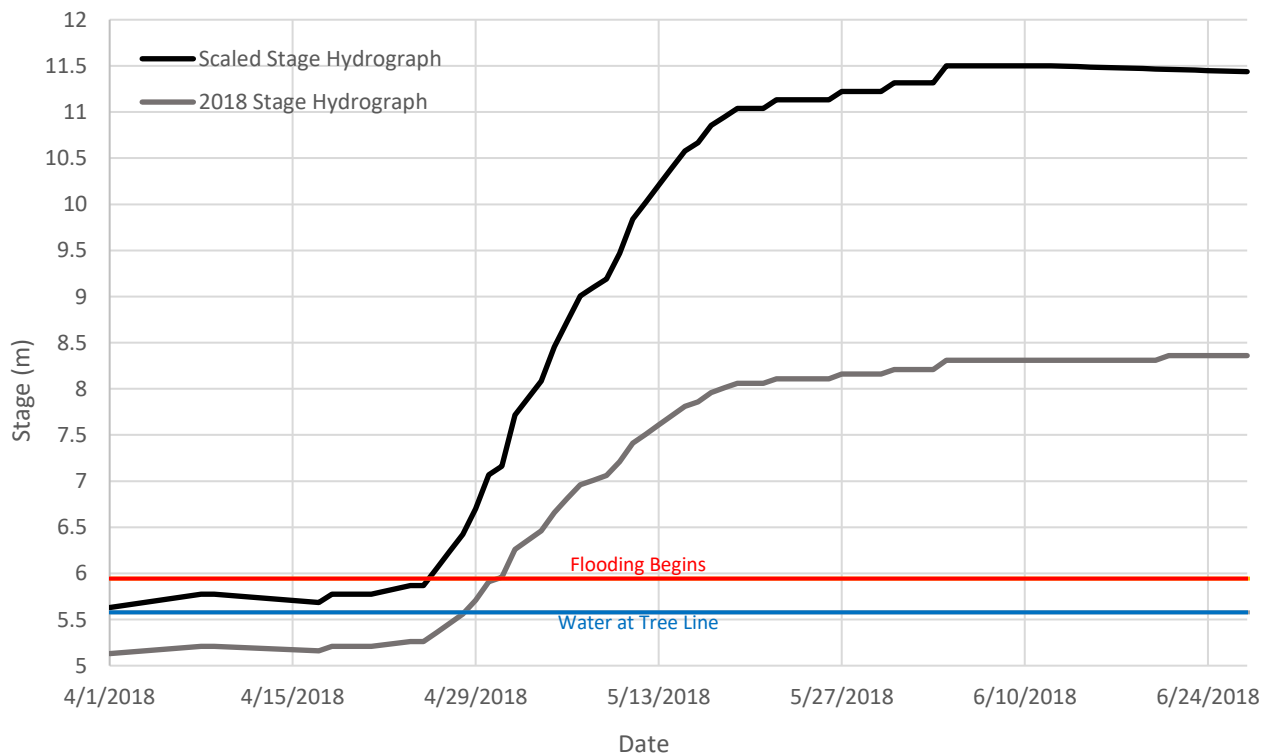


Figure 2.8a Design Stage Hydrograph

In addition to outlet pumping, outflows from the LTL can be attributed to groundwater exfiltration, evaporation, and surface withdrawal. The effects these factors have on the lake level are difficult to estimate with the limited records available. However, in an attempt to account for these factors, the decrease in water level following the peak water level was estimated. This was done by looking at years with no outlet pumping and the rate the water level decreased. The average daily decrease in water level was calculated based on a comparison of peak water level

to “ice on” water level. This approach assumed a steady rate of lake level decrease (0.0042 m/day) which was converted to a daily lake outflow of 1365 cubic metres per day. This decrease did not impact the frequency analysis results for the peak levels and was accounted for by applying it to the stage hydrograph on dates following the peak water level, as shown.

The daily average inflow was calculated using the design stage hydrograph. Stage values from the hydrograph were converted to daily changes in lake volume using the Storage-Elevation Curve for Twin Lakes (Figure 2.7b). The daily changes in lake volume were converted to flows by dividing the result by the number of seconds in a day. The resulting inflow hydrograph converted from the stage hydrograph results is plotted in Figure 2.8b.

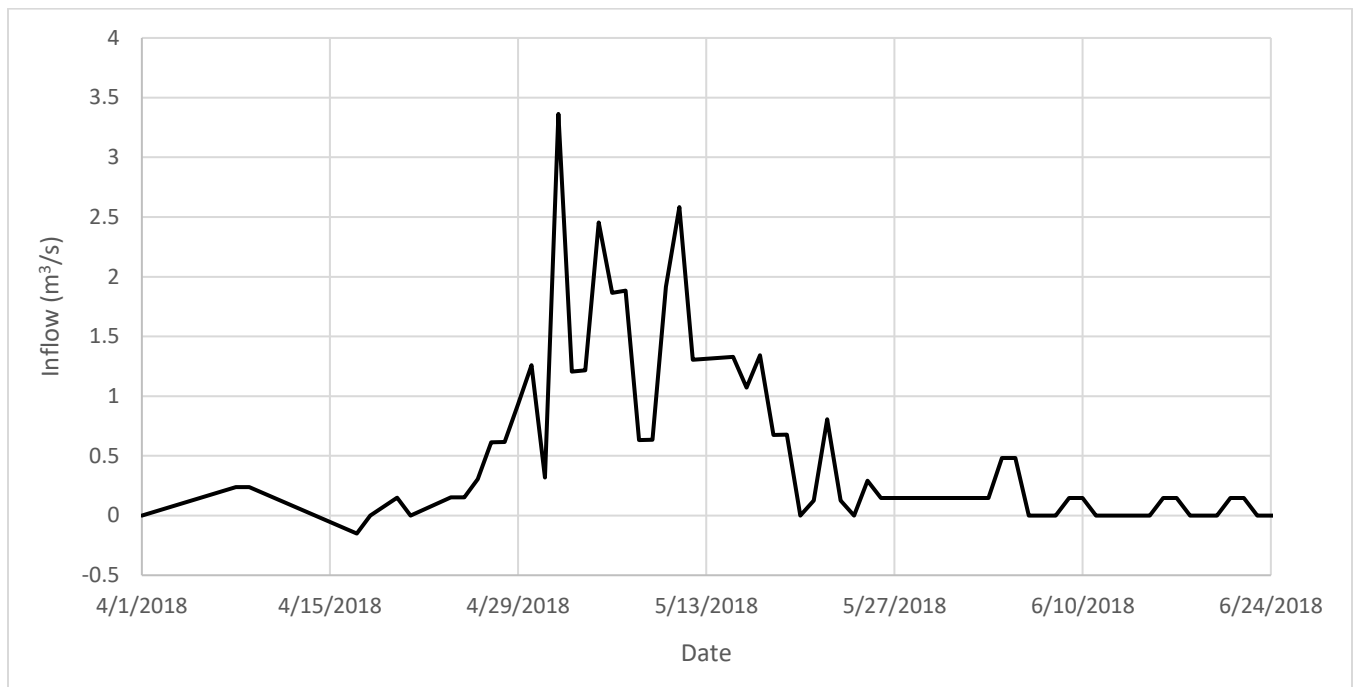


Figure 2.8b Design Inflow Hydrograph

As shown in the design inflow hydrograph the maximum daily average LTL inflow is 3.4 m³/s.

2.9 Hydraulic Modelling Methodology

A 1-dimensional (1D) hydraulic model was developed for the LTL and its outlet. The model was prepared using the US Army Corps of Engineers HEC-RAS software. Considering there was no topographic survey or LiDAR information available for the area at the time of the assessment, the geometry of the 1D model was developed based on historical topographic information and parameter estimates made during the site visit. This level of detail was considered adequate for the assessment level review of the outlet hydraulics. Applying these observed attributes, the model was used to review the hydraulic performance of the existing LNID pump and the proposed outlet upgrade options during the design flood event.

The hydraulic model was run using a unsteady flow analysis with the synthetic design inflow hydrograph (200-year plus climate change event) presented in Section 2.8 as the inflow boundary condition. This boundary condition adds flow into LTL, which was modelled to have a stage-storage curve similar to that presented in Section 2.7. The outflow from LTL varied depending on the outlet structure (pump or culvert) being considered. The results of these scenarios are presented later in this report. All outlet structures eventually discharge into open channel cross sections which represent the flow in Lot 280. The cross sections along this reach were on a channel slope of 0.003 m/m and were assigned Manning’s n roughness values of 0.030 which is consistent with Chow (1959) for clean,

straight natural stream channels with no rifles or deep pools and lined with short grass. A Manning’s n roughness value of 0.040 (Chow, 1959) was assigned to the left and right overbanks. The channel and bank roughness’s were based on field observations from Ecora’s site reconnaissance on October 16, 2020.

2.10 Existing Drainage Infrastructure Capacity Analysis

A review of the LNID’s existing infrastructure (pumps, discharge piping, SRWs), and its ability to control water levels in LTL was conducted.

Based on discussions with LNID, the discharge capacity of the existing pump is 75 Lps (0.075 m³/s) when running at 100% efficiency. This amount matches the 75 Lps (0.075 m³/s) discharge permitted by their water licence (No. C041537). It is assumed that 100% pump efficiency would not be achieved and that a smaller discharge would be produced by the existing pump.

The pump was purchased in the spring of 1997, and at this time the size of pump selected was based on the largest size affordable to LNID and not based on its ability to handle a large freshet event. At the time of its purchase it was acknowledged that it was under likely undersized.

To better estimate the existing LNID pump capacity, an attempt was made to locate the performance curve. However, this information was unavailable (due to the age of the existing pump) and a performance curve for a modern 15 horsepower Grindex three-phase submersible mining pump with a 6-inch diameter discharge was used. Since the newer pump would likely have better efficiency than the existing LNID pump the results of this modelling would likely still overestimate the actual capacity of the pump. Nevertheless, it was assumed that the developed performance curve would provide a reasonable estimate of the discharge. The performance curve used for analysis purposes is shown in Figure 2.10.

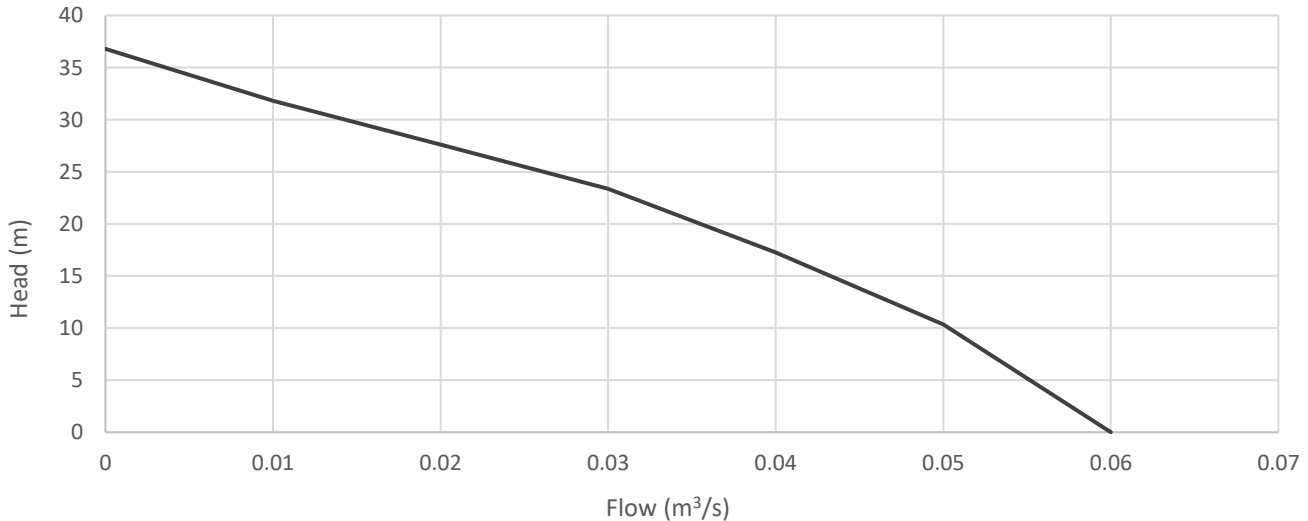


Figure 2.10 LNID Pump Estimated Performance Curve

A 1-dimensional (1D) hydraulic model was used to evaluate the capacity of LNID’s existing pump infrastructure to determine its suitability for managing the water levels in LTL during the 200-year plus climate change (200-year + CC) flooding. The estimated performance curve was applied to the model and lake backwater effects were calculated. The results are presented in Table 2.10.

Table 2.10 LNID Existing Pump Capacity Analysis Results – Lower Twin Lake

Return Period Flood	Total Pump Discharge (m ³ /s)	Change in Lake Volume – Pump Discharge (m ³)	Flooding Starts Water Surface EL (m)	Model Max Water Surface EL (m)
Single 15 HP 6 inch Submersible Pump				
200-year + CC	0.06	5.13 x 10 ⁵	796.13	799.34

These results indicate that the existing LNID pump is undersized for the 200-year plus climate change flood event and would give rise to lake levels that are 3.21 m above the elevation at which flooding starts. This amount of backwater suggests that pump is significantly undersized to handle the design flood event, which was evident during 2018 flooding when additional temporary pumps were required to handle flood waters.

The discharge piping for the pump is 6 inches in diameter, which matches the size of the pump’s discharge port. Due to the low capacity the pump (0.06 m³/s) it is considered that the downstream channel and right-of-way surrounding it, are sufficient to handle the discharge. The velocity associated with the maximum discharge (0.64 m/s) would not erode the naturally-vegetated channel.

2.11 Proposed Infrastructure Capacity Analysis

2.11.1 Pumps

Three pump options were reviewed as part of the infrastructure capacity analysis for a new pump system at LTL.

The pump options evaluated were as follows:

- **One 8 inch, 580 HP Submersible Pump with 82.0% maximum efficiency**
- **One 12 inch, 470 HP Submersible Pump with 79.0% maximum efficiency**
- **One 14 inch, 500 HP Submersible Pump with 82.0% maximum efficiency**

The estimated performance curves for these pumps, in comparison to the existing pump are plotted in Figure 2.11a.

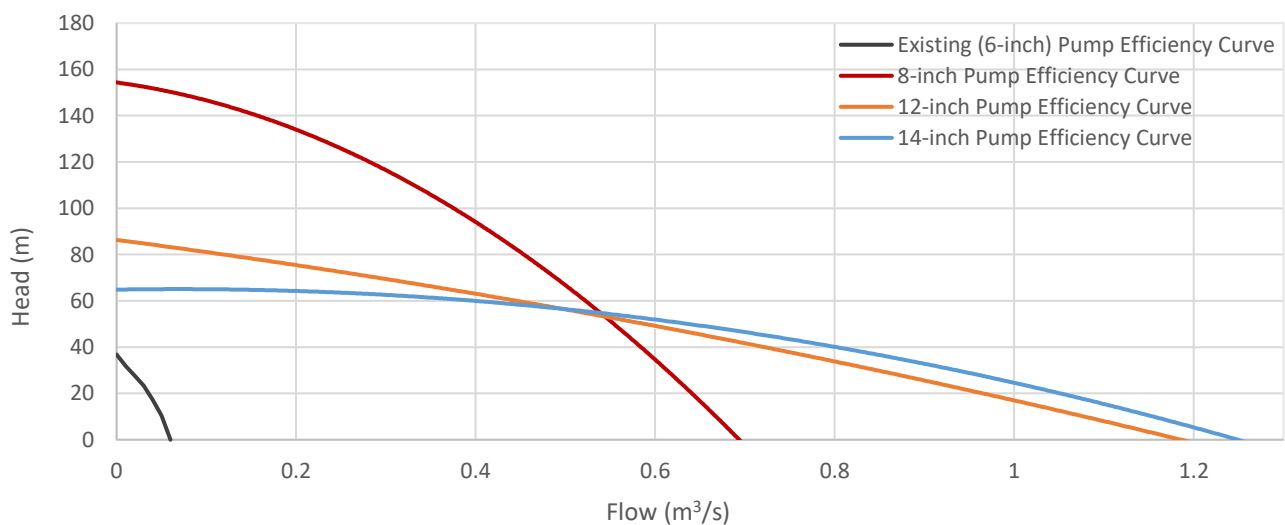


Figure 2.11a Estimated Performance Curves for Pump Options

The performance curve data was used as an input for the hydraulic model to assess the capacity of each pump to handle the design flood event. The performance of each pump during the design flood (Figure 2.8b), in terms of managing water levels is presented in Figure 2.11b. A pump intake elevation of 794.00 m was selected as this is the suggested Normal Low Water level.

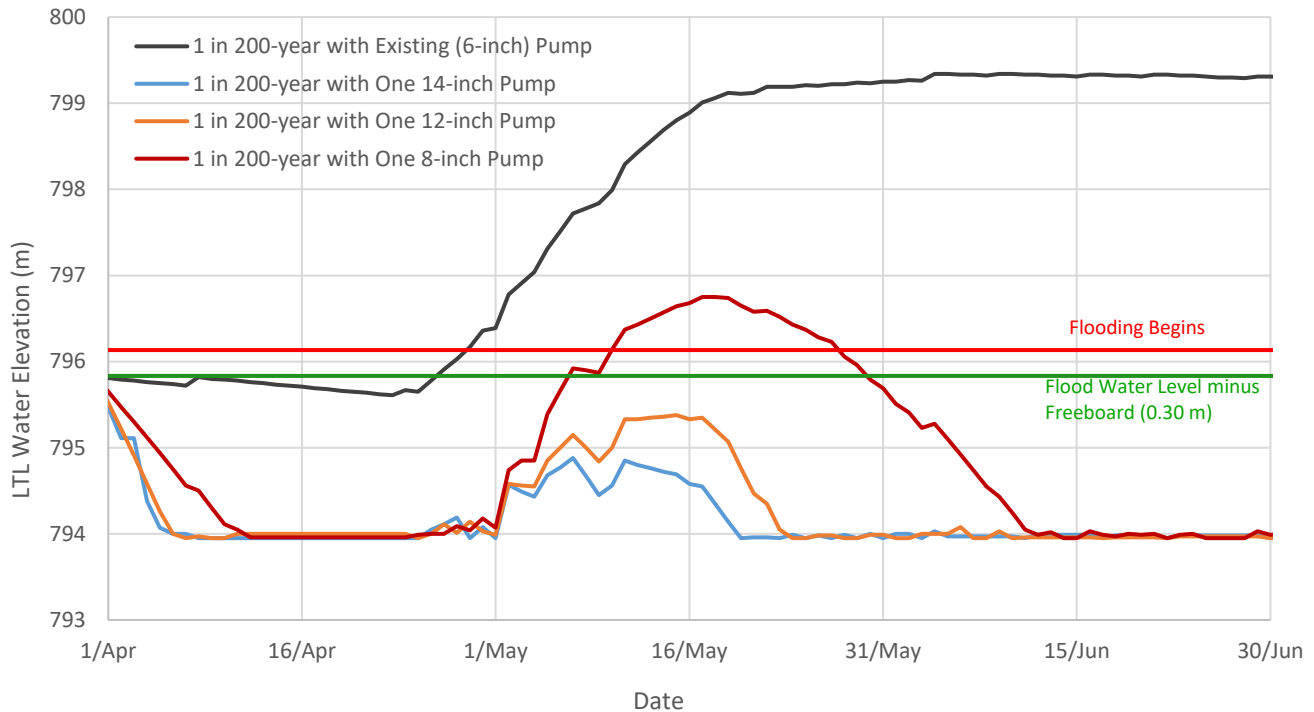


Figure 2.11b Estimated Lake Levels Produced by Proposed Pump Systems

The results of the pump capacity analysis, with a focus on the pump discharge and maximum water surface elevation, are summarized in Table 2.11a.

Table 2.11a Proposed Pump Option Analysis Results – Lower Twin Lake

Return Period Flood	Total Pump Discharge (m ³ /s)	Pumping Change in Lake Volume (m ³)	Flooding Starts LTL Water EL (m)	Flooding Starts Minus Freeboard (m)	Model Max LTL Water EL (m)
One 8 inch, 580 HP Submersible Pump with 82.0% maximum efficiency					
200-year + CC	0.74	3.90 x 10 ⁶	796.13	795.83	796.75
One 12 inch, 470 HP Submersible Pump with 79.0% maximum efficiency					
200-year + CC	1.26	3.54 x 10 ⁶	796.13	795.83	795.38
One 14 inch, 500 HP Submersible Pump with 82.0% maximum efficiency					
200-year + CC	1.47	3.47 x 10 ⁶	796.13	795.83	794.88

It is clear from the model results that the 12 inch, 470 HP submersible pump is the minimum pump size required to handle the design flood to ensure 0.30 m of freeboard is maintained below the critical level. With this pump configuration, the water level would rise to El. 795.38 m, which is within 0.75 m of the level at which flooding begins on LTL (796.13 m). A pump discharge of 1.26 m³/s would be required to maintain the required LTL levels. Pump discharge velocities would be in the order of 1.00 m/s and a grass-lined channel would be erosion resistant in this velocity range. A splash pad could be considered for energy dissipation directly at the pump discharge outlet.

It is understood that the RDOS is currently producing flood maps for Park Rill at Willowbrook and Sportsmens Bowl Road areas which consider an LTL discharge of 1.6 m³/s (Ecora, 2019). This pump configuration would have a small impact in comparison to the discharge assumed or the flood mapping study. The flood mapping results were not available at the time of preparation of this report.

2.11.2 Culverts

Three culvert sizes were reviewed as part of the infrastructure capacity analysis for a new gravity drainage system at LTL. It is suggested that a sluice gate be installed at the inlet of the culverts to control water levels in the lake.

The options evaluated were steel reinforced polyethylene (SRPE) culverts at a 0.3 % slope as follows:

- **One 1650 mm SRPE culvert**
- **One 1800 mm SRPE culvert**
- **One 2100 mm SRPE culvert**

The capacity of each culvert to handle the flows resulting from the design flood (Figure 2.8b) and to manage water levels is presented in Figure 2.11c. An inlet invert elevation of 794.76 m was selected for the culverts as this is the midway point between the Normal Low and Normal High water levels. This elevation would be a good level to be maintained for lake usage by residents and should not create any issues should the inlet sluice gate not be closed. Selection of this invert elevation also considered excavation depths for installation and overall culvert length. Lowering the pipes would further increase both values.

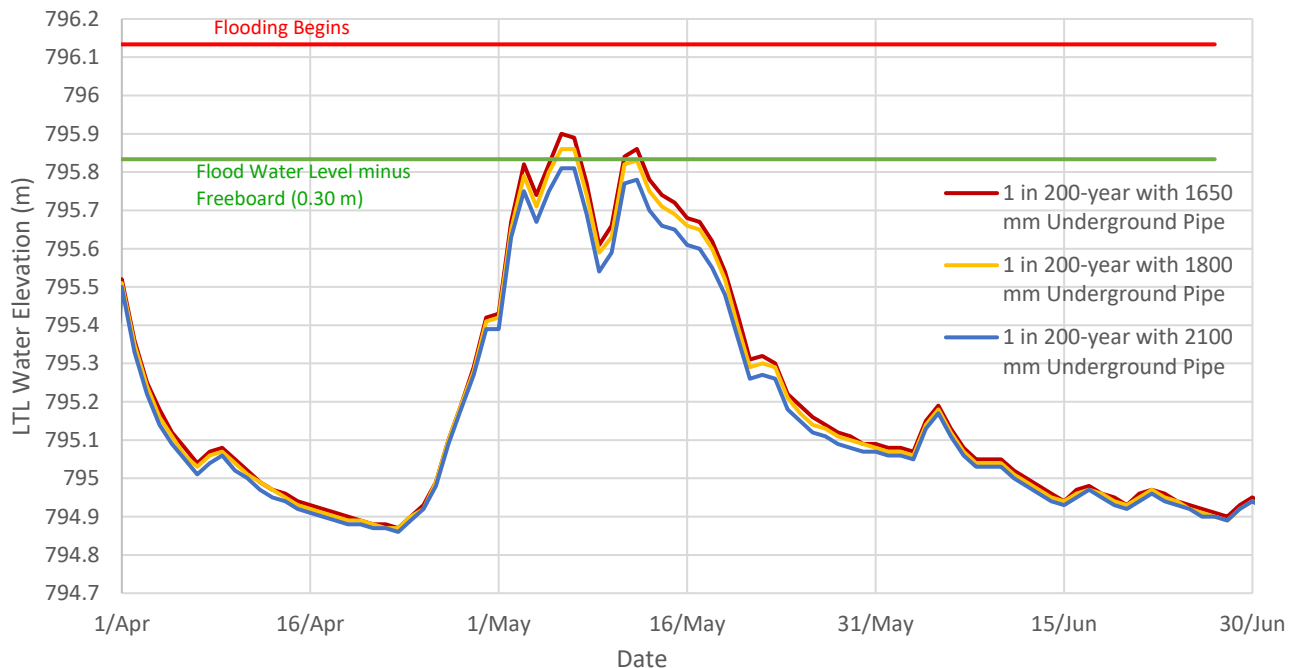


Figure 2.11c Estimated Lake Levels Produced by Different Culvert Options

The results of the culvert capacity analysis, with a focus on the culvert discharge and maximum water surface elevation, are summarized in Table 2.11b.

Table 2.11b Proposed Culvert Option Analysis Results – Lower Twin Lake

Return Period Flood	Total Culvert Discharge (m ³ /s)	Flooding Starts LTL Water EL (m)	Model Max LTL Water EL (m)	Freeboard Amount (m)
1650 mm diameter SRPE x 295 m long Culvert at 0.3% slope; n=0.012				
200-year + CC	1.90	796.13	795.90	0.23
1800 mm diameter SRPE x 295 m long Culvert at 0.3% slope; n=0.012				
200-year + CC	1.91	796.13	795.87	0.26
2100 mm diameter SRPE x 295 m long Culvert at 0.3% slope; n=0.012				
200-year + CC	1.93	796.13	795.82	0.31

From the model results, the amount of freeboard available with the three culvert alternatives would range from 0.23 to 0.31 m below the elevation where flooding begins. The 1800 mm diameter SRPE culvert would provide 0.26 m of freeboard in the lake during the design flood event which would be considered reasonable. This culvert would allow for a maximum outflow of 1.93 m³/s to maintain the desired LTL level. Culvert inlet and outlet velocities would be in the order of 2.2 m/s and 2.3 m/s, respectively. A grass-lined channel would not be erosion-resistant in this velocity range and Class 10 riprap aprons would be required at the inlet and outlet for erosion protection.

The LTL discharge of 1.6 m³/s (Ecora, 2019) being used for the flood mapping for Park Rill at the Willowbrook and Sportsmens Bowl Road areas would have to be updated to reflect the increased discharges associated with this culvert configuration if this alternative is pursued.

2.11.3 Lake Outflow Impacts

Regardless of option selected, increasing the outflow from LTL into the Park Rill Watershed will have impacts on the downstream drainage system. A high-level review of the hydraulics of the downstream channel and culverts was completed to quantify these impacts.

Impacts to Downstream Channel

For the hydraulic impacts of increased flows on the open channel, a rating curve was produced for a surveyed channel cross section located approximately 970 m downstream of the LTL outlet. The rating curve is presented in Figure 2.11d.

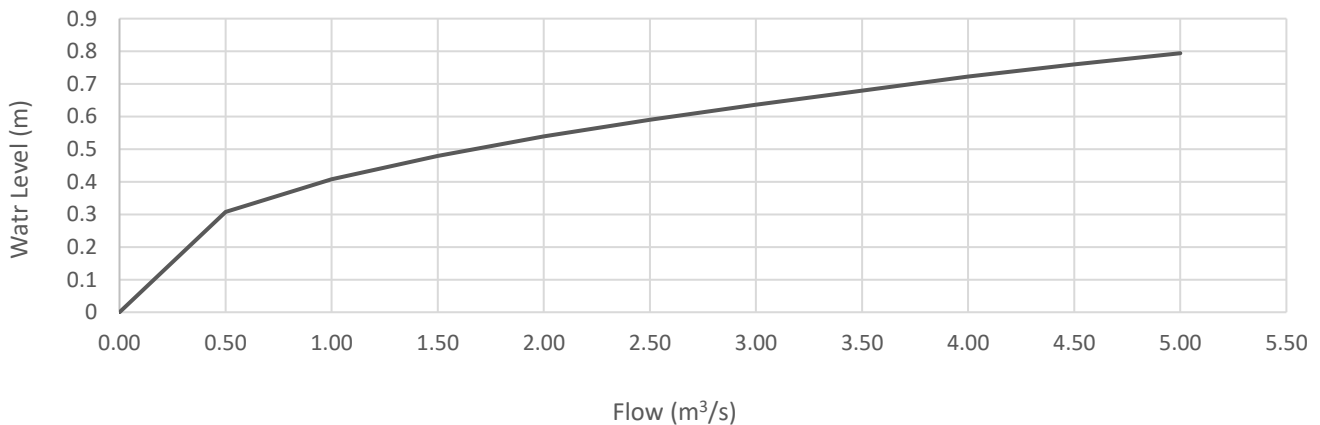


Figure 2.11d Rating Curve for Downstream Channel Section

The water levels associated with the outflow from the existing pump, proposed pump and proposed culvert are summarized in Table 2.11c.

Table 2.11c Lake Outflow Impacts on Channel Water Level

LTL Outlet Type	Return Period Flood	LTL Outflow (m ³ /s)	Water Level (m)
Existing 6-inch Pump	200-year + CC	0.06	0.13
Proposed 12-inch Pump		1.26	0.45
Proposed 1800 mm dia. Culvert		1.91	0.53

Comparing the LTL outlet alternatives, it is evident that an increase of 0.65 m³/s between the proposed pump and culvert options would result in a water level increase of 0.08 m. Comparing the results to the existing pump, the water level in the channel would increase by 0.32 m (proposed pump) and 0.40 m (proposed culvert). These changes in water level would vary for different channel cross-sections downstream.

Impacts to Downstream Culverts

The iMapBC database was used, along with as-built construction information provided by the MoTI, to estimate the culvert sizes for the roadway crossings over Park Rill extending from LTL downstream to Secrest Hill Road. The capacity of each of these structures to handle the LTL design outflow (independent of inflows from other reaches of the basin) was assessed.

Table 2.11d Lake Outflow Impacts on Downstream Culverts

Crossing Location (Culvert Dia.)	Distance from LTL (Km)	LTL Outlet Type	LTL Outflow (200-year + CC) (m ³ /s)	Freeboard (m)
Twin Lakes Rd. (600 mm)	1.0	Existing 6-inch Pump	0.06	0.38
		Proposed 12-inch Pump	1.26	-3.90
		Proposed 1800 mm dia. Culvert	1.91	-9.58
White Lake Rd. (500 mm)	1.6	Existing 6-inch Pump	0.06	0.24
		Proposed 12-inch Pump	1.26	-11.37
		Proposed 1800 mm dia. Culvert	1.91	-13.13
Sweetwater Ranch Access (2 - 1600 mm CSP & 1 - 600 mm HDPE)	8.9	Existing 6-inch Pump	0.06	1.47
		Proposed 12-inch Pump	1.26	0.95
		Proposed 1800 mm dia. Culvert	1.91	0.80
Yellowbrick Rd. (3 - 1200 mm CSP & 1 - 600 mm HDPE)	9.3	Existing 6-inch Pump	0.06	1.10
		Proposed 12-inch Pump	1.26	0.70
		Proposed 1800 mm dia. Culvert	1.91	0.58
Willowbrook Rd. (2 - 2438 x 914 mm CBC)	12.7	Existing 6-inch Pump	0.06	0.87
		Proposed 12-inch Pump	1.26	0.55
		Proposed 1800 mm dia. Culvert	1.91	0.42
Jones Way (2 - 2438 x 914 mm CBC)	13.4	Existing 6-inch Pump	0.06	0.87
		Proposed 12-inch Pump	1.26	0.52
		Proposed 1800 mm dia. Culvert	1.91	0.40
Goldtau Rd. (2438 x 1220 mm CBC)	14.1	Existing 6-inch Pump	0.06	1.11
		Proposed 12-inch Pump	1.26	0.66
		Proposed 1800 mm dia. Culvert	1.91	0.51
Secrest Hill Rd. (2 x 2700 mm)	17.7	Existing 6-inch Pump	0.06	1.86
		Proposed 12-inch Pump	1.26	1.68
		Proposed 1800 mm dia. Culvert	1.91	1.59

Note: To assess each the culvert capacities comparably, it was assumed that there would be no roadway overtopping. The freeboard results are assuming that flows are passed through the pipe. Negative freeboard values represent backwater surcharge.

It was found that each of the crossings downstream of White Lake Road would be able to handle the design outflows from LTL (as presented in Table 2.11d); however, these structures may become undersized once flows from surrounding reaches downstream of LTL are added to the Park Rill system. As such, the capacity of these structures was analyzed in further detail in Technical Memorandum No. 1 – Park Rill Improvement Review Letter (Ecora, 2021) which has been included for reference in Appendix B of this report. As indicated in Technical Memorandum No. 1, each crossing would be undersized once an estimated design flow (occurring from the Park Rill watershed) was added to the LTL outflows. The exception to this was the Twin Lakes Rd. crossing which could adequately handle the outflow from the existing pump (0.06 m³/s) but is undersized for the proposed LTL outlet upgrades. Based on the indication that downstream infrastructure would be undersized, measures should be taken by the Owners of the downstream infrastructure to ensure that their crossings are adequately sized to handle current estimated design flows.

To more accurately estimate the impacts of the increased LTL outflows on downstream infrastructure (including establishing flood inundation, depth and hazard results) the discharge rates for the culvert and pump options should be incorporated into the Northwest Hydraulic Consultants (NHC) flood map modelling which is currently being prepared on behalf of the RDOS.

For the sake of this report, upgrades to all of the downstream structures were not explored as this would be a component of both the pumping and culvert outlet options. However, these upgrades were explored at a concept level in Technical Memorandum No. 1.

2.12 Infrastructure Assessment

Based on our discussions with the RDOS we have considered three options for the improvement of the LTL outlet, including pump replacement (Option 1), culvert installation (Option 2) and creek restoration (Option 3).

The creek restoration option, in which an open channel connecting LTL to Horn Creek at the existing pump discharge location, was briefly considered. However, to maintain stable slopes for an open channel, a significant excavation would be required which would remove homes on both sides of the channel and would impact infrastructure to the north such as roads and utilities. Further, this option would not allow for control of lake outflows to regulate flows during periods of drought or flood. Based on this, this option was not explored in further detail.

A detailed evaluation of Options 1 and 2 is presented in the following sections.

2.12.1 Option Evaluation

An option evaluation framework was developed to aid in selecting the preferred infrastructure upgrade to allow for outflow from LTL into Horn Creek. The framework weighs various project constraint criteria to assess the preferred infrastructure replacement option. The criteria and a brief description are presented in Table 2.12a.

Table 2.12a Option Evaluation Criteria

Evaluation Criterion	Description
Reliability	Reliability of the infrastructure to perform as intended and to its full capacity.
Property Impacts	Impacts to right of ways, private properties, downstream infrastructure and utilities.
Constructability	Evaluates installation requirements, ease of construction, need for temporary staging, and site access limitations. Considers overall ground disturbance for work areas.
Cost	Comparison of cost breakdown estimates and net present value life cycle cost analysis.
Operation Requirements	Ease of operation, staff commitments to system operation, utility requirements.

A rating between 1 and 5 (1 – low impact, 3 – moderate impact, 5 – high impact) was assigned to each evaluation criterion for each design option. The results are tabulated in the option evaluation rating summary presented in Section 2.12.4.

Both options considered were determined to be hydraulically sufficient to handle the design flood event and as such a hydraulic performance rating was not evaluated.

2.12.2 Option 1 – Pump Replacement

Based on the pump replacement sizing completed in Section 2.11, it was determined that the required pump configuration would include a single 12-inch submersible pump with a 470 HP motor. As part of the pump replacement, a new 12-inch discharge line would have to be installed to replace the existing 6-inch diameter line. The discharge velocities at the pump outlet would not be significant enough to erode the grass-lined channel; however, a splash pad could be installed at the pump outlet for energy dissipation. The existing electrical supply has a voltage of 600V and would be sufficient to operate the replacement pump.

The ranking of the evaluation criteria for this design option are as follows:

Reliability

- Due to the mechanical nature of the pumping system it is susceptible to mechanical failures. When, and how severe, these failures may be is an unknown and can be influenced by several factors. If pump failure, or reduced capacity occurs during flooding this could result in property damage.
- The replacement pump would be reliant on power from the grid to operate. Power outages could result in stoppages to pumping at critical times. Again, having redundancies in the form of power generation or back up fuel powered pumps would be required as protection against this.
- Regular servicing of the pump would be required to improve reliability. Shutdowns for servicing would have to be scheduled during dry periods on the lake.
- The reliability and effectiveness of the pump is dependent on the operator. The operator needs to be capable of initiating pumping in a timely manner and at critical times to ensure that water levels in the lake can be managed effectively.

Based on the above factors, Reliability was given a rating of **'4 – Moderate to High Impact'**

Property Impacts

- The proposed 12-inch discharge line could be installed in a shallow excavation, limiting the ground disturbance during construction and could be potentially contained to the existing 6 m wide right of way limits.
- No anticipated disturbance to landowners during construction.
- Potential noise disturbance from pump operation.
- Increased discharge into the Park Rill system would impact downstream landowners/ infrastructure and would require a new water licence for increased lake outflows.

Based on the above factors, Property Impacts was given a rating of **'3 – Moderate Impact'**

Constructability

- Relatively simple installation requirements. Hoisting of pump in place and trenching to install shallow discharge line. Simplified installation requires less earthworks and ground disturbance.
- Small to medium sized equipment required for pump erection and trenching earthworks.

Based on the above factors, Constructability was given a rating of **'3 – Moderate Impact'**

Capital Cost

Based on preliminary material quantities, unit costs and general construction costs, Ecora has prepared a budgetary cost estimate for Option 1 summarized in Table 2.12b below.

Table 2.12b Option 1 – Pump Replacement and Operation Costs

No.	Item	Cost
1.1	Mobilization and Demobilization	\$61,000
1.2	Clearing and Grubbing	\$4,000
1.3	Environmental Protection	\$10,000
1.4	Discharge Pipe Excavation	\$10,000
1.5	Backfill	\$22,000
1.6	Discharge Pipeline Supply and Installation – 305 mm dia. HDPE Piping	\$201,000
1.7	Pump Outlet Supply and Installation - Splash Pad	\$1,000
1.8	Pump Supply and Installation	\$280,000
1.9	Pump Housing Supply and Installation	\$5,000
1.10	Power Supply Upgrades	\$5,000
1.11	Salvage and Re-Install Level Logger	\$1,000
1.12	Pump Remote Monitoring System	\$10,000
1.13	Waste Material – Haul off Site	\$1,000
1.14	Site Restoration and Seeding	\$5,000
1.15	Archaeological and Environmental Reporting, & Monitoring	\$50,000
1.16	Contingency (20%)	\$134,000
	Total	\$800,000
2.0	Estimated Annual Operation, Monitoring and Maintenance*	\$42,000

*It is assumed that annual operation, monitoring and maintenance would include electricity costs, pump performance monitoring, condition inspections, repairs and annual winter removal and cleaning.

A table showing the breakdown of the estimated annual operation, monitoring and maintenance costs has been prepared and is included in Appendix C.

A Net Present Value (NPV) analysis was conducted for the pump replacement. The analysis assumed a 25-year service life for the pump and that a number of components would have to be replaced at this time. The annual operation, monitoring and maintenance costs presented in Table 2.12b were also considered in the analysis. A table showing the results of the NPV analysis is included in Appendix D. The NPV total adjusted cost was calculated to be **\$1,850,000**.

The cost breakdown estimates for the infrastructure replacement options presented here and in the following sections are thought to be limited to the detail of the design option. More accurate measurements will be subject to further design. Detailed design, monitoring of construction, and GST are excluded from the cost estimates.

Based on the above factors, Cost was given a rating of **'5 – High Impact'**

Operation Requirements

- To avoid freeze thaw damage, the pump should be removed prior to freezing and re-installed in spring.
- Routine maintenance inspections should be completed to ensure the pump performs as intended and to its highest efficiency.
- A remote monitoring system should be installed on the pump to confirm its performance during use. The existing lake level monitoring system could be salvaged and reinstalled.
- An operator should still visit the pump regularly during its operation to ensure it is performing adequately and to confirm that the remote monitoring devices are producing accurate readings.
- Greater monitoring requirements for turning the pump on and off to ensure electricity cost savings.
- Approval would be required from the Province to allow for pumping to begin.

Based on the above factors, Operation Requirements was given a rating of **'3 – Moderate Impact'**

2.12.3 Option 2 – Culvert Installation

Based on the culvert sizing analysis completed in Section 2.11, it was determined that the required outlet culvert structure would be an 1800 mm diameter SRPE x 295 m long culvert complete with a sluice gate to control outlet discharge rates. As part of the culvert installation, a channel would have to be excavated at the pipe outlet to convey flow to the existing pump outlet location, where the flows can return to the natural drainage pattern. The discharge velocities at the culvert outlet would cause erosion of the excavated channel and it is recommended that the constructed channel be armoured with Class 10 riprap. To prevent livestock from entering the riprap-lined channel, barbed wire fencing would have to be placed around the constructed channel perimeter.

The ranking of the evaluation criteria for this design option are as follows:

Reliability

- Due to the length of the proposed culvert, blockages from drift and debris could be challenging to remove and could inhibit drainage. However, there does not seem to be a significant amount of drift within the lake and this type of debris could be intercepted using a trash rack.
- Failure of the sluice gate locking it in the down position could prevent drainage. However, depending on the design of the sluice this should be unlikely.
- The reliability of the culvert would be dependent on response timing of the sluice gate operator during the flood event.

Based on the above factors, Reliability was given a rating of **'1 – Low Impact'**

Property Impacts

- The anticipated alignment for the culvert installation would be different than that of the existing pump discharge pipe. As such, additional right of way would be required to accommodate the new culvert. The deep excavations necessary to set the culvert at an elevation to drain the lake, would require 20 m or more of construction easement to complete the work.
- The alignment of the culvert installation will result in the need to remove and replace existing barbed wire fencing.

- During the detailed design, attention should be brought to the power poles in the vicinity of the excavation to ensure that they are not compromised by construction.
- Increased discharge into the Park Rill system would impact downstream landowners and infrastructure and would require a new water licence for increased lake outflows.

Based on the above factors, Property Impacts was given a rating of **'4 – Moderate to High Impact'**

Constructability

- Culvert installation would be relatively simple; however, relatively deep excavations, large earthwork quantities and the length of culvert would make for a large workload.
- Medium to large sized equipment would be required for culvert installation.

Based on the above factors, Constructability was given a rating of **'3 – Moderate Impact'**

Capital Cost

Based on preliminary material quantities, unit costs and general construction costs, Ecora has prepared a budgetary cost estimate for Option 1 summarized in Table 2.12c below.

Table 2.12c Option 2 – Culvert Installation and Operation Costs

No.	Item	Cost (\$)
1.1	Mobilization and Demobilization	\$121,000
1.2	Clearing and Grubbing	\$7,000
1.3	Environmental Protection	\$10,000
1.4	Culvert Excavation	\$244,000
1.5	Channel Excavation	\$14,000
1.6	Backfill	\$341,000
1.7	Culvert Supply and Installation – 1800 mm dia. SRPE Culvert	\$470,000
1.8	Riprap Supply and Installation – Class 10	\$3,000
1.9	Sluice Gate and Debris Catcher	\$10,000
1.10	Salvage and Re-Install Level Logger	\$1,000
1.11	Waste Material – Haul off Site	\$50,000
1.12	Site Restoration and Seeding	\$11,000
1.13	Archaeological and Environmental Reporting, & Monitoring	\$50,000
1.14	Contingency (20%)	\$266,000
	Total	\$1,598,000
2.0	Estimated Annual Operation, Monitoring and Maintenance	\$5,500

*It is assumed that annual operation, monitoring and maintenance would include culvert performance monitoring and condition inspections.

A breakdown of the estimated annual operation, monitoring and maintenance costs has been prepared and is included in Appendix C.

Net Present Value (NPV) analysis results for the culvert replacement assumed a 70-year service life for the culvert, a 50-year service life for the inlet control structure and included the annual operation, monitoring and maintenance costs presented in Table 2.12c. A table showing the results of the NPV analysis is included in Appendix D. The NPV total adjusted cost was calculated to be **\$1,660,000**.

Detailed design, monitoring of construction, environmental permitting and GST are excluded from the cost estimates.

Based on the above factors, Capital Cost was given a rating of ‘5 – High Impact’

Operation Requirements

- Remote monitoring of lake levels could be set up to aid in operation of the culvert sluice gate. This could inform the RDOS operator when to open and close the culvert.
- It is assumed that an operator would visit the site about once a week during freshet to adjust the sluice gate and once during the fall to put the sluice gate in its final position prior to winter freeze up. During these site visits, the operator should inspect the culvert to ensure it is free of debris blockages and that the sluice gate is functional.
- The culvert would not have an electricity requirement so its operation would not have to be optimized to reduce costs.
- Approval would be required from the Province to allow for discharge from the lake.

Based on the above factors, Operation Requirements was given a rating of ‘2 – Low to Moderate Impact’

2.12.4 Option Evaluation Rating Summary

The results of the option evaluation summary completed above are tabulated in Table 2.12d to aid in the option selection process.

Table 2.12d Option Evaluation Ratings Summary

Evaluation Criterion	Option Evaluation Ratings	
	Option 1 Pump Replacement	Option 2 Culvert Installation
Reliability	4	1
Property Impacts	3	4
Constructability	3	3
Capital Cost	5	5
Operation Requirements	3	2
Cumulative Rating	18	15

Based on the Cumulative Ratings established for each LTL outlet option, it is determined that **Option 2 – Culvert Installation** has the lowest adverse impact rating based on the project constraint criteria and is the preferred lake outlet option.

2.12.5 Option Selection

Based on our assessment of the LTL outlet options, it is recommended that **Option 2 – Culvert Installation** be selected for future upgrades and design. The outlet would include the construction of an 1800 mm diameter SRPE x 295 m long culvert, complete with a sluice gate to control outlet discharge rates. A channel would be excavated at the outlet of the culvert to carry flows into the Park Rill system. The preliminary cost for this alternative would be in the range of **\$1,600,000 - \$1,700,000**.

A preliminary design drawing was prepared for the selected option and is included in Appendix F.

2.13 Upgrade Plan and Scheduling

Upgrading the existing LTL pump outlet to a culvert outlet would be relatively simple and would mostly be dependent on timely installation to avoid flooding or downstream erosion. Since control of lake levels in LTL is often limited to freshet and the late fall, these seasons should be avoided for constructing the culvert outlet. Since a downstream channel is to be excavated, it should be excavated and given ample time to revegetate (1 to 2 months) prior to releasing flow into the channel. This would protect the channel from erosion and siltation of the watercourse. Other scheduling limitations include avoiding construction in peak summer months when lake usage is high, avoiding heavy equipment operation during fire season in a grasslands area, and coordination with ranchers to avoid construction during cattle grazing periods. Based on these factors, the ideal timing to complete the works would be as soon as freshet waters recede in the lake and lake inflow from UTL has slowed or stopped. Coordination could be made with NT to ensure the culvert in their dam is closed during the replacement works to help control water levels during construction. Based on the above factors, completing replacement works in the late spring or early summer would be ideal.

During the culvert installation works, the existing LTL outlet pump should remain in place to control water levels in the occurrence of an extreme weather event during construction. Temporary pump hosing should be available on site to accommodate pumping through the site in case of an emergency. Once culvert sections are in place, pumping through the culvert barrel could be utilized in an emergency.

2.14 Operation Plan - Gravity Drainage System

The operation of the lake outlet sluice gate would be relatively straightforward and would include remote monitoring of lake level data and responding by adjusting the sluice gate accordingly. As noted previously, LNID already has a data logger installed to remotely monitor lake level data, this unit would be salvaged and used to confirm sluice gate opening requirements. Table 2.14a below was prepared to show how the data logger water level results could be converted to minimum sluice gate openings and the resulting daily lake level reductions that could be achieved under each opening scenario. A similar table could also be helpful in reporting lake outflows to the Province.

Table 2.14a Sluice Gate Operation Results

Lake Level Elevation (m)	Minimum Sluice Gate Opening Height (m)	Average Outflow (m ³ /s)	Daily Volume Decrease (1000 m ³)	Daily Lake Level Decrease (m)
795.87	1.11	1.91	165	0.44
795.66	0.90	1.30	112	0.31
795.56	0.80	1.04	90	0.25
795.46	0.70	0.80	69	0.19
795.36	0.60	0.59	51	0.14
795.26	0.50	0.41	35	0.10
795.21	0.45	0.34	29	0.08
795.16	0.40	0.27	23	0.07
795.11	0.35	0.21	18	0.05
795.06	0.30	0.16	14	0.04
795.01	0.25	0.11	10	0.03
794.96	0.20	0.07	6	0.02
794.91	0.15	0.04	3	0.01
794.89	0.13	0.03	3	0.01

*Note this table provides general guidance and assumes that inflows have stopped entering the lake.

The operating rules for the culvert outlet would follow the general principles of the LNID's existing operating rules. A table similar to Table 2.14 could be produced as a reference document for operation of the sluice gate to maintain water levels below the elevation where flooding begins in LTL, minus freeboard (EL 795.87). In general, the higher the lake level elevation the higher the outflows that are required. Controlling the lake levels to have smaller fluctuations would reduce the outflow impacts on downstream structures.

Similar to lake outflow pumping, release of water from the lake would be dictated by authorizations received from MFLNRORD. As part of the operation plan, the RDOS may establish a trigger point to monitor downstream conditions and to provide data to the Province that can aid in the decision making process and will inform when flow releases from LTL can be made or increased. This framework would be helpful to expedite coordination with the Province during flood response. Based on this premise, flows could be released from LTL at an increasing rate until it is observed that further increase in flows will have impacts on downstream infrastructure. From our analysis of the downstream crossings, it was observed that the crossing that would be the limiting constraint on the magnitude of discharge from the lake would be the 500 mm diameter CSP culvert crossing at White Lake Road (WLR). It was estimated that 0.16 m³/s of flow could be passed through this culvert before the headwaters would jump the channel banks and flow east along the WLR ditch. This diversion of flow from the channel could potentially overwhelm the WLR ditches, the roadway crossing at 1122 White Lake Road or the driveway access at this location. As such, it was determined that this crossing would dictate flow release and could be monitored to provide guidance to the sluice gate operator as to the rate of flow that could be released from LTL. The following water depths at the White Lake Road crossing of Horn Creek would correspond to the amount of flow that could be released. Flow release that exceeds 0.16 m³/s would warrant approval from the Province as it would have an impact on adjacent watersheds. Table 2.14b provides guidance in this regard. If the culvert size and channel depth at White Lake Road were increased, the table could be revised to reflect the increased capacity.

Table 2.14b Potential Outflow Trigger Point – White Lake Road Crossing

Measurements at White Lake Road Crossing			Measurements at LTL Outlet Sluice Gate		
Flow (m ³ /s)	Est. Headwater Elevation (m)	Estimated Headwater Depth (m)	Flow (m ³ /s)	Sluice Gate Opening Height (m)	Est. Resulting Headwater Depth at WLR (m)
0.00	756.01	0.00	0.16	0.30	0.50
0.02	756.18	0.17	0.14	0.28	0.46
0.04	756.25	0.24	0.12	0.26	0.42
0.06	756.3	0.29	0.10	0.24	0.38
0.08	756.35	0.34	0.08	0.21	0.34
0.10	756.39	0.38	0.06	0.18	0.29
0.12	756.43	0.42	0.04	0.15	0.24
0.14	756.47	0.46	0.02	0.10	0.17
0.16	756.51	0.50	0.00	0.00	0.00
0.18	756.55	Channel Overtops	0.18	0.33	Channel Overtops

*Note this table provides general guidance and does not take into account topographical variations or detailed hydraulic modeling to estimate the extents of the backwater.

The operation of the sluice gate on the proposed LTL outlet culvert is summarized as follows:

- 1) Issue written request to MFLNRORD to initiate lake outflow as soon as lake inflows are noted. This request could be further informed based on the readings made at potential trigger point locations (such as White Lake Road).

- 2) Monitor spring lake water levels. As water levels rise, adjust sluice gate accordingly to maintain the desired outflow/lake level and to satisfy MFLNRORD approved outflows. If lake levels do not stabilize or do not decrease, further open the sluice gate (in accordance with Provincial approvals) until levels reach a consistent elevation. These outflows may exceed the limitations of the downstream triggers and the decision to further increase the flows would be made in collaboration with the Province.
- 3) During dry years, the sluice gate should be set to an elevation that would limit lake outflows and could satisfy Water Licence requirements should a storm event take place.
- 4) During wet years, open the culvert sluice gate when water is near the Normal High Water El. 795.55 m (5.36 m) and the water level is increasing.
- 5) The culvert sluice gate should remain open during freshet until lake levels are restored to the culvert invert elevation (El. 794.76 m), which is between the Normal Low Water and Normal High Water elevations.
- 6) In dry years, water will fall below the culvert invert elevation and there would be no controlled lake outflows.
- 7) In wet years, if fall lake levels are above the culvert invert, the lake should be discharged to bring the lake level to the culvert invert elevation (El. 794.76 m). This would generally take place between October and December once the NT dam culvert is closed. Prior to lake freeze up, it should be confirmed that the sluice gate is set to an elevation that would limit lake outflows and could satisfy Water Licence requirements during the start of the next freshet. This approach would allow for about 1.22 m of storage for the upcoming freshet.

If this gravity drainage system is implemented, authorized maximum discharges should be established with the Province and a new Water Licence should be acquired. The new Water Licence could be framed around the potential trigger reporting that could be done at WLR.

3. Financial Assessment

3.1 Approach

A financial assessment was prepared by Ecora to understand the current financial position of LNID and to quantify their existing debts, reserves, assets and potential liabilities. The assessment was conducted by Melissa Vogan, CPA, CA of Ecora.

To complete the collection of financial data, Ecora was put in contact with Pamela Mann, LNID's Treasurer. Ecora requested and received all accounting, legal and insurance information including working papers, past audits, bank statements, insurance claims, pending lawsuits, etc that would form the basis of the financial assessment. A list of physical assets, complete with replacement values, was also supplied and included in the financial assessment.

During the data collection LNID also confirmed that they have not had any insurance claims filed against them, nor have they filed any claims and they are not involved in any pending lawsuits. A court registry search was completed by Ecora to confirm this and the search did not yield any results. Currently LNID does not possess insurance.

A title search was completed to confirm any lands or investments owned by LNID. The results of the search indicated that LNID does not possess any land or investments and the results of the title search indicated that they have a Statutory Right of Way (SRWC) within District Lot 280, which is owned by the Nature Trust of British Columbia.

The assessment of the financial data collected from LNID is presented in the following sections.

3.2 Financial, Liability and Asset Summary

LNID's designate external accountant is Grant Thornton LLP who last completed a year-end report for December 31, 2019. LNID's in-house management prepared and provided a Financial Summary for the period of January 1, 2020 to October 31, 2020 which accounts for current financials occurring since the last year-end report. Budgets for 2020 and 2021 were also supplied. It is worth noting that the current year depreciation was the only financial item noted as missing from the October 31, 2020 interim Financial Statements. To account for this, we have adjusted the financial information to reflect this missing data.

A summary of LNID's assets includes Cash, Short Term Investments, Accounts Receivable, Property and Equipment. Property and Equipment has a value of \$2,684 and consists of two main items, a pump and monitoring equipment. The pump is almost fully depreciated and will need to be replaced. The estimated cost of replacement to the pump itself (without upgrading capacity) is approximately \$29,000 and it is estimated that the existing unit will need to be replaced within the next 1 to 3 years. The monitoring equipment (lake level data logger) was purchased in September, 2020 for \$2,489 and is in good condition to be salvaged for re-use if the pump is replaced.

LNID possesses \$1,684 worth of Liabilities, which consist of honorariums payable and an accounting accrual.

LNID holds three funds which include General, Restricted (asset value of the pump) and Reserve (donations for a water study).

On the basis of information provided by the organization, we have compiled a Financial, Liability and Asset Summary of Lower Nipit Improvement District as at October 31, 2020, with the following results:

Assets:				
	<u>Dec 31, 2019</u>	<u>Oct 31, 2020</u>	<u>Oct 31, 2020</u>	
			<u>(Adjusted)</u>	<u>Procedure</u>
Cash	29,483	47,858	47,858	Agreed Balance to Oct 31, 2020 Valley First Bank Statement. No outstanding cheques or deposits.
Short Term Investments	22,611	18,576	18,576	Agreed Balance to Oct 31, 2020 Valley First Bank Statement. No outstanding cheques or deposits.
Accounts Receivable	390	1,840	1,840	Per discussion with Pamela Mann, Treasurer, all AR are taxes and there are no collectibility issues.
Property and Equipment	244	2,732	2,684	See Schedule A
	<u>52,728</u>	<u>71,007</u>	<u>70,958</u>	
Schedule A				
	<u>Amortization</u>			
	<u>Rate</u>			
	<u>(Declining</u>			
	<u>Balance)</u>	<u>Amount Depreciated</u>	<u>Current Book Value</u>	<u>Procedure</u>
Pump	20%	92%	195	Reinhard Mair will provide replacement cost information.
Monitoring Equipment	20%	0%	2,489	Agreed to receipt.
Legal SRWs				Obtained copy of Legal Descriptions form Land Titles Office (attached) Per Pamela Mann, Treasurer, she is not aware of anything else that needs to be improved/replaced
Other				\$9,000 Watershed management plan on 2021 budget to be paid to Don Dobson. RDOS has hired him to the do the same thing so whether this expense will be incurred is uncertain.
			<u>2,684</u>	
Liabilities:				
	<u>Dec 31, 2019</u>	<u>Oct 31, 2020</u>	<u>Oct 31, 2020</u>	
			<u>(Adjusted)</u>	<u>Procedure</u>
AP and Accrued Liabilities	1,684	6,350	6,350	AP and Accrued Liabilities are Honourariums and Accounting Accrual No held cheques at October 31, 2020 per Pamela Mann, Treasurer. Requested details of annual licenses, any recurring charges, and copies of any agreements. Only item is two water licenses \$50/each per year = \$100/year total. LNID has agreed not to charge the Natures Trust for annual taxes in exchange for cooperation with respect to their SRW's
General Fund	32,800	46,413	46,413	
Restricted Fund	244	244	195	Net asset value of pump.
Reserve Fund	18,000	18,000	18,000	Donations for a water study.
	<u>52,728</u>	<u>71,007</u>	<u>70,958</u>	
Insurance:				
	LNID does not have insurance			No legal costs noted in financial statements. Goodwin Mark has been used in the past to deal with SRW's. Performed a court registry search - no search results.
Other:				
	Status as a qualified Donee for Tax Purposes			Confirmation attached.

Figure 3.2 Financial, Liability and Asset Summary

3.3 Findings

For the sake of this study, the Financial, Liability and Asset Summary would be considered a Notice to Reader and Financial Statement Assurance would not be required or included.

Although there was no assurance on the financial information provided to Ecora, there were no indicators that would cast doubt on financial integrity. Based on our review of LNID’s financials, there were no instances of unrecorded assets or liabilities.

Currently, there are no indicators that would suggest any material change in assets, debts or liabilities that would occur from LNID’s last audited year-end financial statements to the time that the Utility assets may be transferred to the RDOS. However, depending on the timing of this process and the findings of the engineering assessment, pump upgrades may be required.

Upcoming additional expenses beyond normal expenditures are replacement of the pump (estimated cost: \$29,000 (same capacity pump)) and a watershed management plan budgeted for in the 2021 budget (estimated cost: \$9,000). LNID has sufficient funds to cover 2020 and budgeted 2021 annual expenditures but will require additional funding to cover the cost of the pump replacement.

4. Acquisition Plan

An Acquisition Plan was prepared to evaluate the transition process required for delivering the LNID utility operations to the RDOS, the staff capacity that would be required to operate the system and the financial requirements to fund the system.

Based on the findings of the options evaluation completed in Section 2.12, it was assumed that the Acquisition Plan would be implemented for the **Option 2 – Culvert Replacement**.

4.1 Transition Plan

The transition of the LNID utility from the LTL residents to the RDOS would require coordination such that the Regional District can take over ownership without service disruption that may affect the LTL residents during the transition.

Taking into consideration the construction timelines for the new system (presented in Section 2.13), The RDOS should schedule the transition such that transfer of ownership does not delay construction of the proposed outlet culvert. The construction window is quite small and a seamless transition of ownership prior to the works would be important. Based on this, the transition should be completed immediately prior to pump replacement, in the late spring to early summer. This timing would be such that the utility could be handed over when pumping would not be necessary, and staff would not require training or procedures for the pump operation, inspection and maintenance. Instead, the transition would be during the decommissioning of the pump so that staff would only have to be trained on the culvert operation procedures. This would be done when inflows to the lake have stopped, allowing the RDOS ample time to develop and refine the procedures prior to the coming year's freshet. During this time the Regional District should finalize staffing assignments for the additional tasks associated with operating the utility.

Prior to the official transfer of the utility, coordination should be made to have the land titles and water licenses transferred over to the Regional District. During this process, the RDOS should liaise with the Province on protocols for releasing water from the lake.

During the transition of the Utility from LNID to RDOS, there would be opportunity to expand the service area. This would be done to more accurately reflect the properties that would benefit from the lake outlet flood control infrastructure. However, currently the members of LNID includes the 69 properties that surround LTL (who are at most risk of flooding). These properties would benefit the most from an improved lake outlet and unless additional properties are added surrounding the lake, it is not necessary for the service area to be expanded.

4.2 Staff Capacity Assessment

Staff capacity requirements were estimated in developing the Section 2.12 cost estimates and a breakdown of the estimated annual operation, monitoring and maintenance costs has been included in Appendix C. The estimated staff hours required to operate, maintain, and administer the newly acquired utility (LNID) and the upgraded lake outlet are summarized as follows:

- Site Supervision - Freshet: It is assumed that site visits would occur once a week during freshet (approximately 11 weeks). At 3 hours per site visit, this would require 33 staff hours per year. It

was assumed that the weekly inspections would only occur in freshet years, and it was assumed that a freshet year would occur every other year. As such, the annual staff hours would be reduced to 16.5 hrs to account for this.

- Site Supervision – Pre-Winter: This task would include a site visit which would occur once a week in the fall during pre-winter water level control (approximately 1 weeks). At 3 hours per site visit, this would require 3 staff hours per year.
- Remote Logger Monitoring: It is assumed that remote monitoring of water levels would occur daily during operation of the outlet culvert. It was estimated that this would occur 0.5 hours/day for 12 weeks (11 weeks for freshet and 1 week in the fall). During pre-freshet and summer months, it is assumed that remote monitoring would occur once a week over 24 weeks. Remote monitoring would require 38 staff hours per year based on the assumption that a freshet year would occur every other year.
- Monthly Inspection: Regardless of wet or dry years, a monthly inspection would be completed on the LTL outlet culvert. At 3 hours per site visit, this would require 36 staff hours per year.
- Annual Report: An annual report would be prepared to summarize the inspections that happened within the calendar year. This annual report is assumed to require 4 staff hours per year.

These assumed staff requirements would equate to Full Time Equivalents (FTEs) of 0.05 for the year. However, since this staffing requirement would be mostly seasonal, the FTE over the period of culvert operation would be approximately 0.19. Due to the small FTE associated with operating this utility, it is anticipated that it could be added onto an existing staff member's duties. A public works staff member who is already responsible for regular scheduled field inspections within the area would be an ideal candidate for the work. This staff member could be tasked with the operation and inspection of the LTL outlet culvert as part of their regular rounds and these inspections would not have a large impact on the staff members workload.

4.3 Financial Plan

A financial plan was prepared to estimate how the operation and capital costs estimated for the **Option 2 – Culvert Replacement** (completed in Section 2.12 of this report) translates into user fees and will summarize the borrowing requirements necessary to acquire the LNID assets and to upgrade the system to the proposed gravity drainage culvert outlet.

Municipal Finance Authority (MFA) of BC's Long-Term Debt Amortization (LTDA) Schedules tool was used to estimate the annual debt payments required to fund the Option 2 – Culvert Replacement works. Standard interest and capitalization rates, as recommended by MFA, were used for the calculations. Two amortization schedules were prepared for the Option 2 costs. One which assumed no grant funding, and one which assumed a 66% infrastructure grant. The results of the LTDA Schedules tool for both grant scenarios have been included in Appendix E.

The anticipated debts, assets, reserves (presented in Section 3), the upgrade and operation costs (presented in Section 2.12) and the LTDA results are provided in Table 4.3.

Table 4.3 Financial Plan Cost Summary

Financial Item	Existing Amount (\$)	Proposed Amount (\$)	Net Amount (\$)	Properties Contributing to LNID	Current Member Fees (\$/year)	Proposed Member Fees** (\$/year)
2020 Total Liabilities	70,958		0			
2020 Total Assets	70,958					
0% Infrastructure Grant						
Culvert Upgrade Capital Costs		1,598,000	1,735,500	69	300	1,385
Annual Operation Costs*		137,500				
66% Infrastructure Grant						
Culvert Upgrade Capital Costs		532,667	670,167	69	300	515
Annual Operation Costs*		137,500				

* Over 25 years

**Proposed member fees following Option 2 – Culvert Replacement based on a 25-year amortization period.

To fund the costs associated with the culvert replacement and the annual operation of the Utility, LNID member fees would have to increase from **\$300/year to \$1,385/year (without an infrastructure grant)**. **With a 66% infrastructure grant, the fees would have to increase from \$300/year to \$515/year.**

Alternate forms of grant funding were explored for opportunities to offset the financial impact of the project costs on LNID residents. Applicable Provincial and Federal grant funding opportunities that could aid in the lake outlet improvement include the following:

- The Union of BC Municipalities' (UBCM) Community Emergency Preparedness Fund (CEPF) for Structural Flood Mitigation:
 - To qualify for funding, applications must demonstrate the need for structural flood mitigation through the completion of appropriate risk assessments, flood maps and/or mitigation plans. These details should be available for the Twin Lakes through the current flood mapping being prepared for the area.
 - Eligible projects include installation of structural flood protection works, or upgrades to existing structural flood protection works (e.g. pump stations, flood boxes, etc.) which relates to the culvert installation proposed under this study.
 - The funding stream can contribute a maximum of 100% of the cost up to a maximum of \$750,000.
 - This has been an annual grant in recent years. The application process usually opens in September with a November submission deadline.
 - Grant opportunity website: <https://www.ubcm.ca/EN/main/funding/lgpps/community-emergency-preparedness-fund/structural-flood-mitigation.html>
- The Government of Canada and Province of British Columbia's Adaptation, Resilience & Disaster Mitigation (ARDM) Program:
 - The goal of the program is to fund any public infrastructure asset, including Natural Infrastructure, where the purpose of the project is to build, modify and, or reinforce to prevent, mitigate or protect against floods.
 - Eligible projects include installation of structural flood protection works, or upgrades to existing structural flood protection works (e.g., dikes, flood walls, pump stations, flood

- boxes, debris catchment structures, dam flood risk reduction etc.) which relates to the culvert installation proposed under this study.
- To be applicable, projects are to be ‘shovel ready’.
 - The funding stream can contribute a maximum of 100% of the cost up to a maximum of \$10,000,000.
 - This is a new grant established in 2020. The RDOS should monitor the return of this grant opportunity. Last year, the application process opened in December 2020 with a January 2021 submission deadline.
 - Grant opportunity website: <https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/emergency-management-bc/bc-disaster-mitigation/flood-mitigation-funding-programs/ardmp>
- The Government of Canada’s Disaster Mitigation and Adaptation Fund (DMAF):
 - The goal of the program is to fund new construction, rehabilitation or expansion of public infrastructure with an aim to reduce the socio-economic, environmental and cultural impacts of natural hazards and extreme weather events when considering current and potential future climate change impacts.
 - Eligible projects must reduce impacts on critical infrastructure, health and safety of Canadians, economic activity, recovery or replacement efforts or vulnerable regions.
 - The funding stream requires that projects had a **minimum** expenditure of \$20,000,000. Although the culvert replacement at Twin Lakes is not eligible by itself, the works could be bundled with greater improvement to the Park Rill system downstream.
 - This funding stream will cover expenditures such as design and planning, capital cost and costs related to meeting specific program requirements.
 - This grant is under review during the tabling of the federal budget and its return for the coming year should be updated in the next few weeks. The RDOS should monitor the return of this grant opportunity. Expression of interest takes place between May and July.
 - Grant opportunity website: <https://www.infrastructure.gc.ca/dmaf-faac/details-eng.html>

If the ARDM OR DMAF grants were secured, the entire culvert replacement cost would be covered by the grant amount and the current LNID member fees would not have to be increased to fund the project. Alternatively, if the CEPF grant were secured the net amount for the upgrades could be reduced to \$848,000 and would result in a proposed LNID member fee of \$692/year.

5. Recommendations

Based on the findings within this report, the existing LNID infrastructure is undersized and should be upgraded to handle flood events within the lake. The costs associated with the upgrades are substantial and the RDOS would be required to take over the LNID utility to facilitate the works and secure funding.

5.1 Option Selection

Based on our assessment of the infrastructure upgrade options, it is recommended that **Option 2 – Culvert Replacement** be selected to replace the existing pump outlet at Lower Twin Lake. The upgrade would include the installation of an 1800 mm diameter SRPE x 295 m long culvert at the south end of the lake. The culvert would be complete with a sluice gate to control outlet discharge rates. A channel would have to be excavated at the pipe outlet to convey flow into the to the natural drainage pattern. This option would allow for gravity drainage to occur at the lake outlet and would allow for a normal water level to be maintained in the lake. The budgetary cost for this alternative would be approximately **\$1,598,000** with an estimated annual operation cost of **\$5,500**. Based on these estimates, the Culvert Replacement would have a Net Present Value of **\$1,660,000**.

If RDOS chooses to pursue this alternative, the option should be further developed through detailed design.

5.2 Downstream Impacts

Upgrading the Lower Twin Lake Outlet to an 1800 mm diameter culvert would have an impact on the capacity of the existing culverts and the watercourses downstream of the Lake. To estimate the impacts of the increased outflows more accurately, the discharge rates for the culvert option should be incorporated into the Northwest Hydraulic Consultants (NHC) flood map modelling currently being prepared on behalf of the RDOS. To fully capture the downstream impacts, the flood mapping limits along Park Rill would have to be expanded beyond the Willowbrook and Sportsmens Bowl areas. Additionally, further study looking into the required upgrades for downstream structures should be completed.

5.3 Scheduling

The existing pump infrastructure at the outlet of Lower Twin Lake is undersized and is in poor condition. The infrastructure has a high priority for replacement or repair and the works should occur within the next 1 to 3 years.

Replacement works should take place in the late spring or early summer when lake levels are low. The RDOS should schedule the transition of the utility from LNID to the Regional District shortly before these replacement works commence.

5.4 Funding

The RDOS should explore alternate funding streams, such as Provincial and Federal grant opportunities. Some of these opportunities would include the Community Emergency Preparedness Fund for Structural Flood Mitigation, the Adaptation, Resilience & Disaster Mitigation Program and the Disaster Mitigation and Adaptation Fund to help offset the costs associated with the construction of the culvert outlet at Lower Twin Lake. If funding cannot be secured for the works, the costs of the culvert improvements would be assessed to the 69 properties currently surrounding Lower Twin Lake who are members of LNID. Assigning the costs to these properties would increase their existing yearly fees from \$300/year to \$1,385/year, based on the Municipal Finance Authority (MFA) of BC's Long-Term Debt Amortization Schedules tool and a 25-year amortization period. If additional properties are added surrounding the lake, these fees should be readjusted.

6. Closure

We trust that this report satisfies your present requirements. If you have any questions or comments, please feel free to contact our office at your earliest convenience.

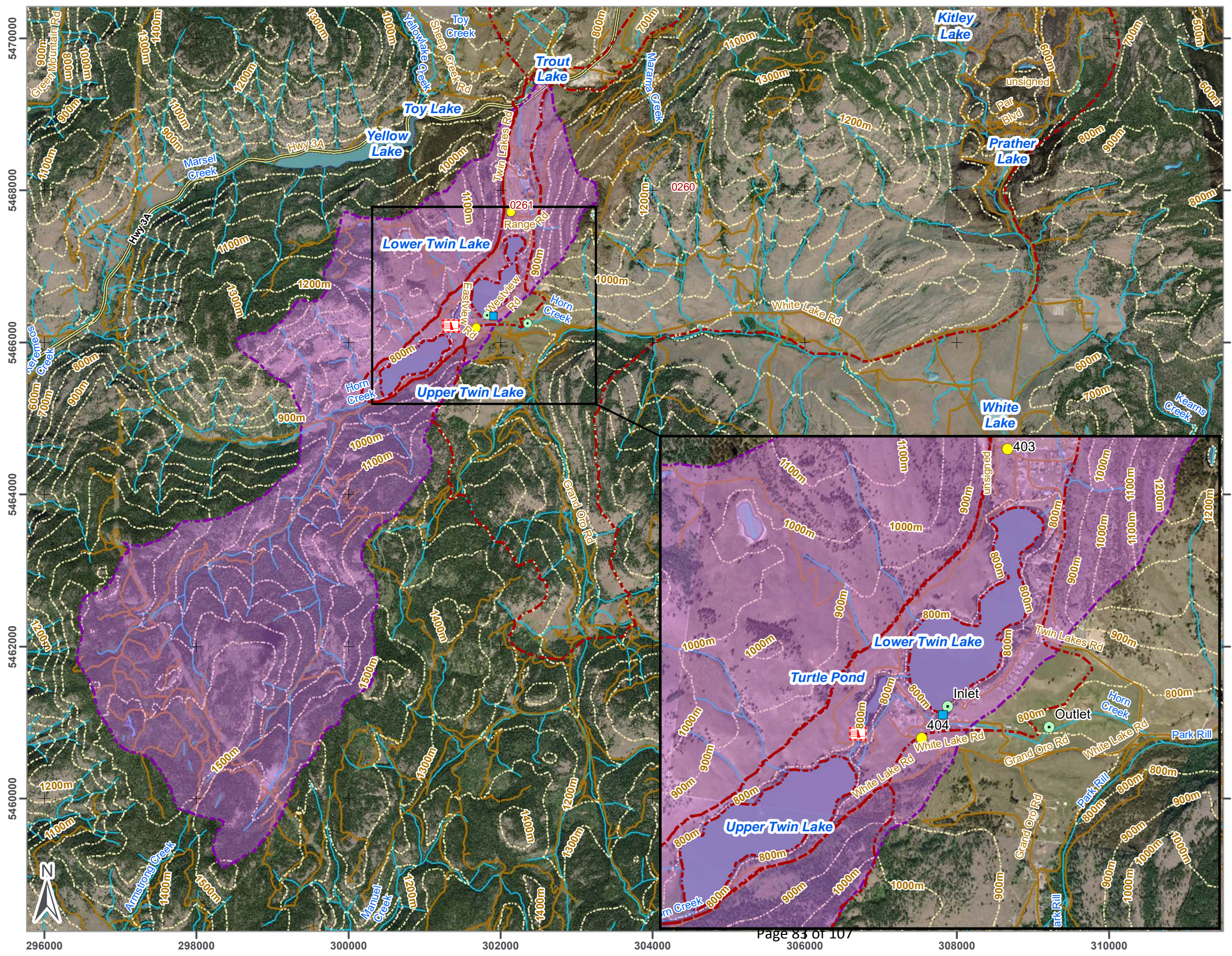
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Figures

Figure 2.6a Site Plan and Watershed Overview

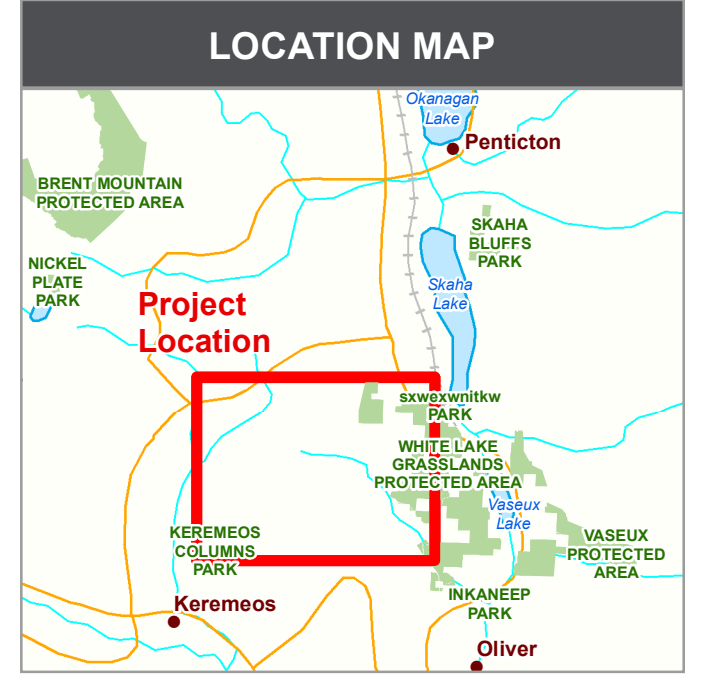
SITE PLAN AND WATERSHED OVERVIEW



LOWER NIPIT IMPROVEMENT DISTRICT ENGINEERING ASSESSMENT & ACQUISITION PLAN TWIN LAKES, BC

Legend

- Upper Twin Lake Dam
- LNID Electric Pump Inlet and Outlet
- Provincial Groundwater Observation Wells
- Historic WSC Hydrometric Gauge (08NM148)
- 100m TRIM Contour Lines
- Fresh Water Atlas Streams
- Digital Atlas Roads
- Highways
- WHSE Aquifers
- Twin Lakes Watershed (24 km²)



1:50,000

0 1 2 KM

Project No.: 201421 Date: 2021/03/15
 Client: Regional District of Okanagan-Similkameen Drawn: MT
 NAD 1983 UTM Zone 11N

Figure 2.6a

Appendix A

Site Photographs



Photo 1 A view of the LNID pump, looking towards the west side of the lake.



Photo 2 A closer look at the LNID pump, concrete housing and buried discharge piping.



Photo 3 Utility control panel for LNID Pump and data logger, mounted on outside of shack located southeast of the pump.



Photo 4 A closer look at the utility control panel for LNID Pump and data logger, mounted on outside of shack.



Photo 5 A view of the solar panel mounted on the shack.



Photo 6 A view of the LNID SRW and the grade increase separating the pump from the pump outlet.



Photo 7 Looking south from the LNID SRW at Lot 280.



Photo 8 Looking east from the utility shack at Lot 280.



Photo 9 **Lookin west from the utility shack towards Lower Twin Lake.**



Photo 10 **Empty boat storage shack locate south of the LNID pump.**



Photo 11 A view of the outlet of the Eastview Road culvert, connecting Turtle Pond to Lower Twin Lake.



Photo 12 A view of Turtle Pond, standing over the culvert inlet in Eastview Road.



Photo 13 Standing southeast of the LNID pump (indicated by red arrow), looking west at Lot 280.



Photo 14 Standing southeast of the LNID pump, looking east at Lot 280.



Photo 15 Abandoned home located southeast of the LNID pump discharge, located within Lot 280.



Photo 16 Standing on White Lake Road, southeast of the LNID pump, looking north at Lot 280.



Photo 17 Standing on White Lake Road, southeast of the LNID pump, looking northeast at Lot 280.



Photo 18 Standing over the culvert in Twin Lakes Road looking upstream at Lot 280.



Photo 19 A view of the inlet to the culvert located in Twin Lakes Road.



Photo 20 Standing over the culvert in Twin Lakes Road looking downstream towards Park Rill.

Appendix B

Technical Memorandum No. 1 – Park Rill Improvement Review Letter

Appendix C

Estimated Annual Operation, Monitoring and Maintenance Costs

Option 1 – Pump Replacement – Annual Operation, Monitoring and Maintenance Costs

RDOS Weekly, Monthly and Annual Fee Calculations

			Weekly Fees		Annual	
			Hours	Fees ⁺	Hours	Fees ⁺
Task 1	Remote System Operation	0.5 hr/day during operation, 0.5hr/week otherwise*	3.50	\$ 154.21	61.00	\$ 2,687.66
	System Supervision - During Pumping	Twice during spring, twice during fall @ 3 hrs/visit*	3.00	\$ 132.18	6.00	\$ 264.36
Task 2	Monthly Inspection	Drive to and from site, 1 hour on site. Conducted Monthly	0.75	\$ 33.05	36.00	\$ 1,586.16
	Supervision	1 hour/year			1.00	\$ 44.06
Task 3	Annual Report	4 hours per year			4.00	\$ 176.24
Task 4	Power Supply - Pump Operation*					\$ 25,000.00
Task 5	Ice-On Pump Removal/Annual Maintenance					\$ 2,500.00
Task 6	Year-Averaged Repairs					\$ 1,100.00
SUBTOTAL OPERATIONS						\$ 33,358.48
RDOS Oper Admin, Engineering charges, (15% of total)						\$ 5,003.77
Contingency for Operations (5% of Total)						\$ 1,667.92
Contingency for Travel Expenses (5% of Total)						\$ 1,667.92
Totals for Weekly, Monthly and Annual hours and fees						\$ 42,000.00

NOTES:

Monthly fees calculated based on annual fee divided by 12 months

* Assumes freshet drainage required every other year

⁺ Fees are calculated using the average System Operator Wage with labour load

\$ 44.06 per hour

Option 2 – Culvert Installation – Annual Operation, Monitoring and Maintenance Costs

RDOS Weekly, Monthly and Annual Fee Calculations

			Weekly Fees		Annual	
			Hours	Fees ⁺	Hours	Fees ⁺
Task 1	System Supervision - Freshet	Weekly - 11 Weeks @ 3 hrs/week*	3.00	\$ 132.18	16.50	\$ 726.99
	System Supervision - Pre-Winter	1 Week @ 3 hrs/week	3.00	\$ 132.18	3.00	\$ 132.18
Task 2	Remote Logger Monitoring	0.5 hr/day during operation, 0.5hr/week otherwise*	3.50	\$ 154.21	38.00	\$ 1,674.28
Task 3	Monthly Inspection	Drive to and from site, 1 hour on site. Conducted Monthly	0.75	\$ 33.05	36.00	\$ 1,586.16
	Supervision	1 hour/year			1.00	\$ 44.06
Task 4	Annual Report	4 hours per year			4.00	\$ 176.24
SUBTOTAL OPERATIONS						\$ 4,339.91
RDOS Oper Admin, Engineering charges, (15% of total)						\$ 650.99
Contingency for Operations (5% of Total)						\$ 217.00
Contingency for Travel Expenses (5% of Total)						\$ 217.00
Totals for Weekly, Monthly and Annual hours and fees						\$ 5,500.00

NOTES:

Monthly fees calculated based on annual fee divided by 12 months

* Assumes freshet drainage required every other year

⁺ Fees are calculated using the average System Operator Wage with labour load

\$ 44.06 per hour

Appendix D

Net Present Value Analysis

Option 1 – Pump Replacement – Net Present Value Analysis

Year	Capital	Annual Expenditures	NPV
2021	\$800,000	\$42,000	\$842,000
2022		\$42,000	\$40,385
2023		\$42,000	\$38,831
2024		\$42,000	\$37,338
2025		\$42,000	\$35,902
2026		\$42,000	\$34,521
2027		\$42,000	\$33,193
2028		\$42,000	\$31,917
2029		\$42,000	\$30,689
2030		\$42,000	\$29,509
2031		\$42,000	\$28,374
2032		\$42,000	\$27,282
2033		\$42,000	\$26,233
2034		\$42,000	\$25,224
2035		\$42,000	\$24,254
2036		\$42,000	\$23,321
2037		\$42,000	\$22,424
2038		\$42,000	\$21,562
2039		\$42,000	\$20,732
2040		\$42,000	\$19,935
2041		\$42,000	\$19,168
2042		\$42,000	\$18,431
2043		\$42,000	\$17,722
2044		\$42,000	\$17,041
2045		\$42,000	\$16,385
2046	\$280,000	\$42,000	\$120,788
2047		\$42,000	\$15,149
2048		\$42,000	\$14,566
2049		\$42,000	\$14,006
2050		\$42,000	\$13,467
2051		\$42,000	\$12,949
2052		\$42,000	\$12,451
2053		\$42,000	\$11,972
2054		\$42,000	\$11,512
2055		\$42,000	\$11,069
2056		\$42,000	\$10,643
2057		\$42,000	\$10,234
2058		\$42,000	\$9,840
2059		\$42,000	\$9,462
2060		\$42,000	\$9,098
2061		\$42,000	\$8,748
2062		\$42,000	\$8,412
2063		\$42,000	\$8,088

Year	Capital	Annual Expenditures	NPV
2064		\$42,000	\$7,777
2065		\$42,000	\$7,478
2066		\$42,000	\$7,190
2067		\$42,000	\$6,914
2068		\$42,000	\$6,648
2069		\$42,000	\$6,392
2070		\$42,000	\$6,146
2071		\$42,000	\$5,910
Replacement Cost			\$280,000
Remaining Life (Years)			0
Pump Total Life (Years)			25
Salvage Value			\$0
NPV Total Adjusted Cost			\$1,849,284

Option 2 – Culvert Installation – Net Present Value Analysis

Year	Capital	Annual Expenditures	NPV
2021	\$1,598,000	\$5,500	\$1,603,500
2022		\$5,500	\$5,288
2023		\$5,500	\$5,085
2024		\$5,500	\$4,889
2025		\$5,500	\$4,701
2026		\$5,500	\$4,521
2027		\$5,500	\$4,347
2028		\$5,500	\$4,180
2029		\$5,500	\$4,019
2030		\$5,500	\$3,864
2031		\$5,500	\$3,716
2032		\$5,500	\$3,573
2033		\$5,500	\$3,435
2034		\$5,500	\$3,303
2035		\$5,500	\$3,176
2036		\$5,500	\$3,054
2037		\$5,500	\$2,936
2038		\$5,500	\$2,824
2039		\$5,500	\$2,715
2040		\$5,500	\$2,611
2041		\$5,500	\$2,510
2042		\$5,500	\$2,414
2043		\$5,500	\$2,321
2044		\$5,500	\$2,231
2045		\$5,500	\$2,146
2046		\$5,500	\$2,063
2047		\$5,500	\$1,984
2048		\$5,500	\$1,907
2049		\$5,500	\$1,834
2050		\$5,500	\$1,764
2051		\$5,500	\$1,696
2052		\$5,500	\$1,631
2053		\$5,500	\$1,568
2054		\$5,500	\$1,508
2055		\$5,500	\$1,450
2056		\$5,500	\$1,394
2057		\$5,500	\$1,340
2058		\$5,500	\$1,289
2059		\$5,500	\$1,239
2060		\$5,500	\$1,191
2061		\$5,500	\$1,146
2062		\$5,500	\$1,102
2063		\$5,500	\$1,059

Year	Capital	Annual Expenditures	NPV
2064		\$5,500	\$1,018
2065		\$5,500	\$979
2066		\$5,500	\$942
2067		\$5,500	\$905
2068		\$5,500	\$871
2069		\$5,500	\$837
2070		\$5,500	\$805
2071	\$15,000	\$5,500	\$2,885
Replacement Cost			\$1,598,000
Remaining Life (Years)			20
Pump Total Life (Years)			70
Salvage Value			\$64,245
NPV Total Adjusted Cost			\$1,659,517

Appendix E

Long-Term Debt Amortization Schedules

Option 2 – Culvert Installation – LTDA Schedule (0% Infrastructure Grant)

25 Year Term	Estimated Annual Debt Payments:		90,025	2.25% Capitalization Rate S/F Factor:	
Principal (0% Infrastructure Grant):	1,598,000	Interest Rate:	2.61%	0.030236	
	Estimated Principal Payment	Estimated Interest Payment	Estimated Total Payment	Estimated Actuarial	Reducing Balance
					1,598,000
Yr 1 Semi Annual		20,854	20,854		1,598,000
Yr 1 Annual	48,317	20,854	69,171		1,549,683
Yr 2 Semi Annual		20,854	20,854		1,549,683
Yr 2 Annual	48,317	20,854	69,171	1,087	1,500,279
Yr 3 Semi Annual		20,854	20,854		1,500,279
Yr 3 Annual	48,317	20,854	69,171	2,199	1,449,763
Yr 4 Semi Annual		20,854	20,854		1,449,763
Yr 4 Annual	48,317	20,854	69,171	3,335	1,398,110
Yr 5 Semi Annual		20,854	20,854		1,398,110
Yr 5 Annual	48,317	20,854	69,171	4,498	1,345,296
Yr 6 Semi Annual		20,854	20,854		1,345,296
Yr 6 Annual	48,317	20,854	69,171	5,686	1,291,293
Yr 7 Semi Annual		20,854	20,854		1,291,293
Yr 7 Annual	48,317	20,854	69,171	6,901	1,236,075
Yr 8 Semi Annual		20,854	20,854		1,236,075
Yr 8 Annual	48,317	20,854	69,171	8,143	1,179,614
Yr 9 Semi Annual		20,854	20,854		1,179,614
Yr 9 Annual	48,317	20,854	69,171	9,414	1,121,884
Yr 10 Semi Annual		20,854	20,854		1,121,884
Yr 10 Annual	48,317	20,854	69,171	10,713	1,062,854
Yr 11 Semi Annual		20,854	20,854		1,062,854
Yr 11 Annual	48,317	20,854	69,171	12,041	1,002,496
Yr 12 Semi Annual		20,854	20,854		1,002,496
Yr 12 Annual	48,317	20,854	69,171	13,399	940,780
Yr 13 Semi Annual		20,854	20,854		940,780
Yr 13 Annual	48,317	20,854	69,171	14,787	877,675
Yr 14 Semi Annual		20,854	20,854		877,675
Yr 14 Annual	48,317	20,854	69,171	16,207	813,151
Yr 15 Semi Annual		20,854	20,854		813,151
Yr 15 Annual	48,317	20,854	69,171	17,659	747,175
Yr 16 Semi Annual		20,854	20,854		747,175
Yr 16 Annual	48,317	20,854	69,171	19,144	679,714
Yr 17 Semi Annual		20,854	20,854		679,714
Yr 17 Annual	48,317	20,854	69,171	20,661	610,736
Yr 18 Semi Annual		20,854	20,854		610,736
Yr 18 Annual	48,317	20,854	69,171	22,213	540,205
Yr 19 Semi Annual		20,854	20,854		540,205
Yr 19 Annual	48,317	20,854	69,171	23,800	468,087
Yr 20 Semi Annual		20,854	20,854		468,087
Yr 20 Annual	48,317	20,854	69,171	25,423	394,347
Yr 21 Semi Annual		20,854	20,854		394,347
Yr 21 Annual	48,317	20,854	69,171	27,082	318,948
Yr 22 Semi Annual		20,854	20,854		318,948
Yr 22 Annual	48,317	20,854	69,171	28,779	241,852
Yr 23 Semi Annual		20,854	20,854		241,852
Yr 23 Annual	48,317	20,854	69,171	30,513	163,022
Yr 24 Semi Annual		20,854	20,854		163,022
Yr 24 Annual	48,317	20,854	69,171	32,287	82,418
Yr 25 Semi Annual		20,854	20,854		82,418
Yr 25 Annual	48,317	20,854	69,171	34,101	0
TOTALS:	1,207,928	1,042,695	2,250,623	390,072	

Total principal repaid plus total actuarial earnings equals amount originally borrowed.

Option 2 – Culvert Installation – LTDA Schedule (66% Infrastructure Grant)

25 Year Term	Estimated Annual Debt Payments:		30,008	2.25% Capitalization Rate	
				S/F Factor:	
Principal					
(66% Infrastructure Grant):	532,667	Interest Rate:	2.61%	0.030236	
	Estimated Principal Payment	Estimated Interest Payment	Estimated Total Payment	Estimated Actuarial	Reducing Balance
					532,667
Yr 1 Semi Annual		6,951	6,951		532,667
Yr 1 Annual	16,106	6,951	23,057		516,561
Yr 2 Semi Annual		6,951	6,951		516,561
Yr 2 Annual	16,106	6,951	23,057	362	500,093
Yr 3 Semi Annual		6,951	6,951		500,093
Yr 3 Annual	16,106	6,951	23,057	733	483,254
Yr 4 Semi Annual		6,951	6,951		483,254
Yr 4 Annual	16,106	6,951	23,057	1,112	466,037
Yr 5 Semi Annual		6,951	6,951		466,037
Yr 5 Annual	16,106	6,951	23,057	1,499	448,432
Yr 6 Semi Annual		6,951	6,951		448,432
Yr 6 Annual	16,106	6,951	23,057	1,895	430,431
Yr 7 Semi Annual		6,951	6,951		430,431
Yr 7 Annual	16,106	6,951	23,057	2,300	412,025
Yr 8 Semi Annual		6,951	6,951		412,025
Yr 8 Annual	16,106	6,951	23,057	2,714	393,205
Yr 9 Semi Annual		6,951	6,951		393,205
Yr 9 Annual	16,106	6,951	23,057	3,138	373,961
Yr 10 Semi Annual		6,951	6,951		373,961
Yr 10 Annual	16,106	6,951	23,057	3,571	354,285
Yr 11 Semi Annual		6,951	6,951		354,285
Yr 11 Annual	16,106	6,951	23,057	4,014	334,165
Yr 12 Semi Annual		6,951	6,951		334,165
Yr 12 Annual	16,106	6,951	23,057	4,466	313,593
Yr 13 Semi Annual		6,951	6,951		313,593
Yr 13 Annual	16,106	6,951	23,057	4,929	292,558
Yr 14 Semi Annual		6,951	6,951		292,558
Yr 14 Annual	16,106	6,951	23,057	5,402	271,050
Yr 15 Semi Annual		6,951	6,951		271,050
Yr 15 Annual	16,106	6,951	23,057	5,886	249,058
Yr 16 Semi Annual		6,951	6,951		249,058
Yr 16 Annual	16,106	6,951	23,057	6,381	226,571
Yr 17 Semi Annual		6,951	6,951		226,571
Yr 17 Annual	16,106	6,951	23,057	6,887	203,579
Yr 18 Semi Annual		6,951	6,951		203,579
Yr 18 Annual	16,106	6,951	23,057	7,404	180,068
Yr 19 Semi Annual		6,951	6,951		180,068
Yr 19 Annual	16,106	6,951	23,057	7,933	156,029
Yr 20 Semi Annual		6,951	6,951		156,029
Yr 20 Annual	16,106	6,951	23,057	8,474	131,449
Yr 21 Semi Annual		6,951	6,951		131,449
Yr 21 Annual	16,106	6,951	23,057	9,027	106,316
Yr 22 Semi Annual		6,951	6,951		106,316
Yr 22 Annual	16,106	6,951	23,057	9,593	80,617
Yr 23 Semi Annual		6,951	6,951		80,617
Yr 23 Annual	16,106	6,951	23,057	10,171	54,341
Yr 24 Semi Annual		6,951	6,951		54,341
Yr 24 Annual	16,106	6,951	23,057	10,762	27,473
Yr 25 Semi Annual		6,951	6,951		27,473
Yr 25 Annual	16,106	6,951	23,057	11,367	0
TOTALS:	402,643	347,565	750,208	130,024	

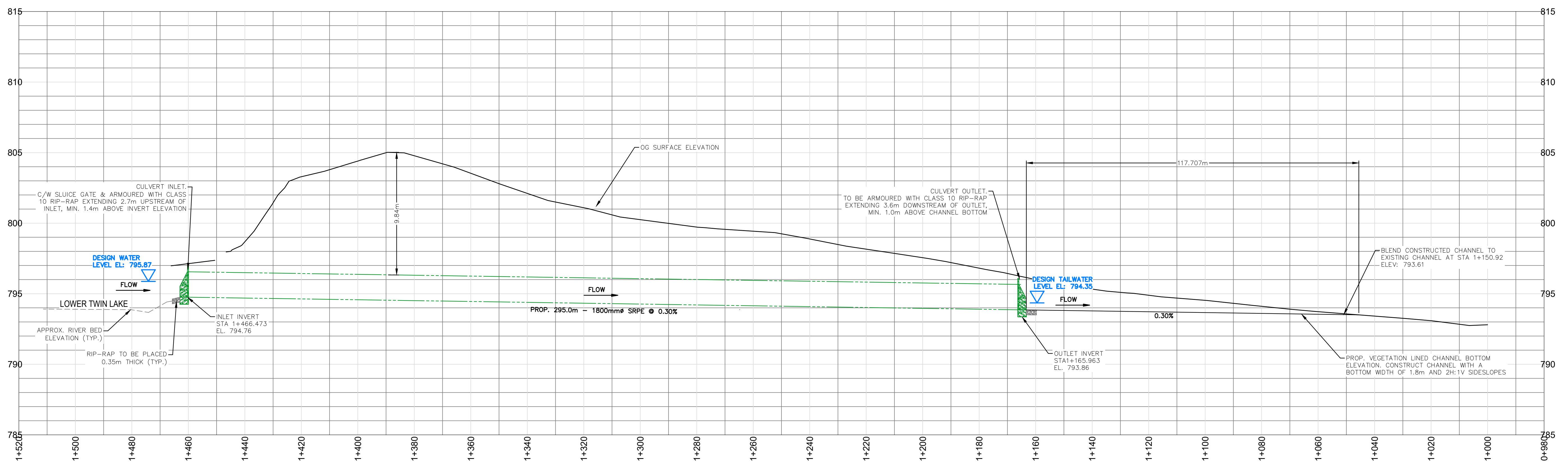
Total principal repaid plus total actuarial earnings equals amount originally borrowed.

Appendix F

Preliminary Design Drawings



CULVERT CL PROFILE



NO.	DATE (YY/MM/DD)	DRN	REVISION	CHKD
A	2021/04/23	RT	FOR REVIEW	BV

ecora
 #201-284 MAIN STREET PENTICTON, B.C.
 V2A 5B2
 PHONE: 250-492-2227
 www.ecora.ca

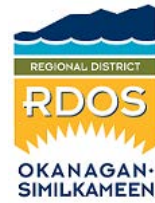
DESIGN: BV
DRAWN: RT
CHECKED: BV
DATE: 21/03/16
SCALE: 1:750

RDOS
 LOWER NIPIT IMPROVEMENT DISTRICT
 TWIN LAKES
 LAKE OUTLET PRELIMINARY SCHEMATIC

Drawing No. 201421-SK01	Rev.No A
----------------------------	-------------

SEAL

FILE LOCATION: \\1-200148-010-000\p\m\p\21-03-16\RDOS\201421-SK01\201421-SK01.dwg PLOTTED ON: 1/27/2021 8:01 PM



**REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BOARD of DIRECTORS MEETING
REGULAR AGENDA**

Thursday, October 7, 2021
12:15 pm

Pages

A. APPROVAL OF AGENDA

(Unweighted Corporate Vote - Simple Majority)

RECOMMENDATION

That the Agenda for the RDOS Board Meeting of October 7, 2021 be adopted.

A.1. Consent Agenda – Corporate Issues

(Unweighted Corporate Vote - Simple Majority)

RECOMMENDATION

THAT the Consent Agenda Corporate Services be adopted

A.1.1. Advisory Planning Commissions

- | | | |
|-----------------|--|---------|
| A.1.1.1. | Electoral Area "I" Advisory Planning Commission Minutes
<i>THAT the minutes of the August 18, 2021 Electoral Area "I" Advisory Planning Commission be received.</i> | 6 - 7 |
| A.1.1.2. | Electoral Area "E" Advisory Planning Commission Minutes
<i>THAT the minutes of the September 13, 2021 Electoral Area "E" Advisory Planning Commission be received.</i> | 8 - 10 |
| A.1.1.3. | Electoral Area "D" Advisory Planning Commission Minutes
<i>THAT the minutes of the September 14, 2021 Electoral Area "D" Advisory Planning Commission be received.</i> | 11 - 13 |
| A.1.1.4. | Electoral Area "E" Advisory Planning Commission Minutes
<i>THAT the minutes of the September 15, 2021 Electoral Area "E" Advisory Planning Commission be received.</i> | 14 - 15 |

A.1.2. Board and Committee

A.1.2.1.	Corporate Services Committee <i>THAT the Minutes of the September 23, 2021 Corporate Services Committee meeting be received.</i>	16 - 17
A.1.2.2.	Environment and Infrastructure Committee <i>THAT the Minutes of the September 23, 2021 Environment and Infrastructure Services Committee meeting be received.</i>	18 - 18
A.1.2.3.	Planning and Development Committee <i>THAT the Minutes of the September 23, 2021 Planning and Development Committee meeting be received.</i>	19 - 21
A.1.2.4.	RDOS Regular Board Meeting <i>THAT the minutes of the September 23, 2021 RDOS Regular Board meeting be adopted.</i>	22 - 31
A.2.	Consent Agenda – Development Services (Unweighted Rural Vote - Simple Majority)	
	<u>RECOMMENDATION</u>	
	THAT the Consent Agenda – Development Services be adopted.	
A.2.1.	Development Permit Application — Electoral Area “D” (D2021.001-DP) <i>THAT Development Permit No. D2021.001-DP to place a metal storage container in the Okanagan Falls Town Centre Development Permit Area at 718 Main Street be approved.</i>	32 - 41
A.2.2.	Development Variance Permit Application — Electoral Area “D” (D2021.040-DVP) <i>THAT Development Variance Permit No. D2021.040-DVP to allow for oversized commercial signage on the property at 3500 Highway 97 be approved.</i>	42 - 49
A.2.3.	Temporary Use Permit Application – Electoral Area “E” (E2021.006-TUP) <i>THAT Temporary Use Permit No. E2021.006-TUP for a “vacation rental” use at 1024 Old Main Road, Naramata be approved.</i>	50 - 69
A.2.4.	Temporary Use Permit Application – Vacation Rental – Electoral Area “E” (E2021.021-TUP) <i>THAT Temporary Use Permit No. E2021.021-TUP for a “vacation rental” use at 4785 Mill Road, Naramata be approved.</i>	70 - 96

- A.2.5. Development Variance Permit Application — Electoral Area “H” – H2021.039-DVP** 97 - 107
THAT Development Variance Permit No. H2021.039-DVP to allow for the development of an accessory building at 518 Dagur Way be approved.

B. DEVELOPMENT SERVICES – Untidy/Unsightly Bylaw Enforcement

- B.1. Bylaw Enforcement — Untidy & Unsightly - 4908 10th Avenue, Okanagan Falls** 108 - 115
(Unweighted Corporate Vote - Simple Majority)

RECOMMENDATION

THAT the owner of the property legally described as Lot 11, District Lot 374, SDYD, Plan 5823, being 4908 10th Avenue, Okanagan Falls, be formally notified that the property is not in compliance with the Regional District of Okanagan-Similkameen Untidy and Unsightly Premises Regulatory Control Bylaw No. 2326, 2004; and,

THAT if after 30 days the non-compliance has not been rectified, the Regional District commence direct action to bring Lot 11, District Lot 374, SDYD, Plan 5823, being 4908 10th Avenue, Okanagan Falls into compliance; and,

THAT costs of undertaking the above work be recovered in the same manner and with the same remedies as property taxes in arrears.

C. DEVELOPMENT SERVICES – Rural Land Use Matters

- C.1. Development Variance Permit Application — Electoral Area “C” (C2021.037-DVP)** 116 - 124
(Unweighted Rural Vote - Simple Majority)

RECOMMENDATION

THAT Development Variance Permit No. C2021.037-DVP to formalize the placement of seven metal storage containers at 5481 Sawmill Road be approved, on the condition that storage on top of the containers be prohibited.

- C.2. Town of Osoyoos - Regional Context Statement (RCS)** 125 - 128
(Unweighted Rural Vote - Simple Majority)

RECOMMENDATION

THAT the Regional District accept the Regional Context Statement as proposed in the revised Town of Osoyoos Official Community Plan;

- C.3. APC Bylaw Amendment – Removal of Members – Bylaw 2339.04** 129 - 130
(Unweighted Corporate Vote - Simple Majority)

RECOMMENDATION

THAT Bylaw No. 2339.04, being a bylaw to amend the Advisory Planning Commission Bylaw to address the removal of APC members be read a first, second and third time and adopted.

- C.4. Development Procedures Bylaw Amendment - Landscaping Securities – X2021.006-DPB** 131 - 133
(Unweighted Rural Vote - Simple Majority)

RECOMMENDATION

THAT Bylaw No. 2500.23, 2021, being a bylaw to amend the Development Procedures Bylaw to introduce a minimum threshold of \$25,000.00 before requiring a landscaping security, be read a first, second and third time and adopted.

D. FINANCE

- D.1. Electoral Area “I” Community Grant in Aid** 134 - 151
(Weighted Corporate Vote - Majority)

RECOMMENDATION

That the Board approve the following Electoral Area “I” Grant in Aid applications:

	Purpose	Amount
Kaleden Community Association	Host “Get-Jazzed” event to raise funds to support community projects (KVR benches, KCA post-secondary bursary, KCA small grant program) .	\$600
Kaleden Community Association – Seniors Committee	Assist with costs associated with the Kaleden Outdoor Winter Market. Costs include advertising, printing, facility rental and signage.	\$1,195
Kaleden Community Association – Kaleden Firesmart Committee	Hire a local contractor to help with fire mitigation on a few Kaleden properties. Other costs may include bin rental and canvas bags for debris removal.	\$2,000

E. LEGISLATIVE SERVICES

- E.1. Oliver and District Arena Conversion and Service Establishment** 152 - 154
(Unweighted Corporate Vote - Simple Majority)

RECOMMENDATION

THAT Bylaw No. 2942, 2021, a bylaw to convert the Oliver and District Arena Service from a Supplementary Letters Patent to a Service established by bylaw, be adopted.

- E.2. Area G Community Works (Gas Tax) Reserve Expenditure Bylaw No. 2947** 155 - 157
(Weighted Corporate Vote - Majority)

RECOMMENDATION

THAT Electoral Area "G" Community Works Program (Gas Tax) Reserve Expenditure Bylaw No. 2947, 2021, being a bylaw to authorize an expenditure of \$30,000 from the Electoral Area "G" Community Works Reserve to fund the construction of a portion of the Similkameen Rail Trail, be read a first, second, and third time and be adopted.

F. CAO REPORTS

- F.1. Verbal Update**

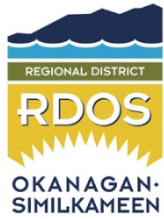
G. OTHER BUSINESS

- G.1. Chair's Report**
G.2. Directors Motions
G.3. Board Members Verbal Update

H. ADJOURNMENT

RECOMMENDATION

THAT the meeting adjourn.



Minutes

Electoral Area “I” Advisory Planning Commission

Meeting of Wednesday, August 18, 2021

<https://rdos.webex.com>

Present:

Members: Darlene Bailey (Vice-Chair), Mike Gane, Sandie Wilson, John Davis, Doreen Olson, Bruce Shepherd, Bob Handfield, Christopher Struthers

Absent: Adele Dewar (Chair)

Staff: Fiona Titley, Planner I; Christopher Garrish, Planning Manager; Laura Miller, Building & Enforcement Services Manager

Guest: Subrina Monteith, Director, Electoral Area “I”

Recording Secretary: Fiona Titley, Planner I

Delegates: Renee Leighton

1. CALL TO ORDER

The meeting was called to order at 5:31 p.m.

ADOPTION OF AGENDA

MOTION

It was Moved and Seconded that the Agenda be adopted.

CARRIED (UNANIMOUSLY)

2. APPROVAL OF PREVIOUS MEETING MINUTES

2.1 **MOTION**

It was Moved and Seconded by the APC that the Minutes of June 16, 2021 be approved.

CARRIED (UNANIMOUSLY)

3. DEVELOPMENT APPLICATIONS

3.1 Referral Application Temporary Use Permit Application – I2021.020-TUP

Administrative Report Submitted by Fiona Titley, Planner I

Delegate Renee Leighton present.

Discussion.

MOTION

It was Moved and Seconded THAT the APC recommends to the RDOS Board of Directors that the proposed temporary use be. 5 in Favour; 1 Against

4. OTHER

4.1 Proposed New Signage Regulations

Administrative Report Submitted by Christopher Garrish, Planning Manager

Discussion.

MOTION

It was Moved and Seconded that the APC recommends to the RDOS Board that the subject amendment bylaw be approved with the following conditions:

- The mural definition be such that the mural cannot be of a commercial nature

CARRIED (UNANIMOUSLY) / DEFEATED

4.2 Consolidated Noise Bylaw- Construction Hours

Administrative Report Submitted by Laura Miller, Building & Enforcement Services Manager

Discussion.

MOTION

It was Moved and Seconded that the APC recommends to the RDOS Board that the subject bylaw be approved.

CARRIED (UNANIMOUSLY)

6. ADJOURNMENT

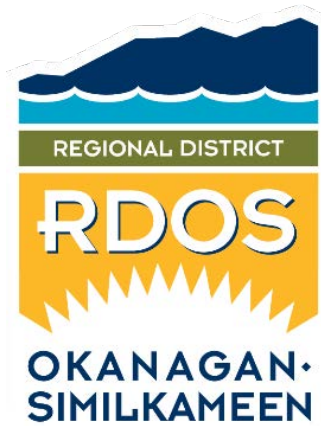
4.1 MOTION

It was Moved and Seconded that the meeting be adjourned at 6:43 pm.

CARRIED (UNANIMOUSLY)

Advisory Planning Commission Chair

Advisory Planning Commission Recording Secretary / minute taker



Minutes

Electoral Area 'E' Advisory Planning Commission

Meeting of Monday, September 13, 2021 at 7:00 p.m.

RDOS WebEx, Naramata, BC

Present:

Members: Richard Roskell (Chair, Electoral Area 'E' APC), Heather Fleck, Dianna Smith, Adrienne Fedrigo, Debbie Selwood

Absent: Don Mancell, Maureen Redman

Staff: Danielle DeVries (RDOS, Planner I), Christopher Garrish (RDOS, Planning Manager) arrived to meeting at 7:22 p.m.

Guests: Karla Kozakevich (RDOS, Area 'E' Director)

Recording Secretary: Heather Lemieux

Delegates: Megan Steel left meeting at 7:14 p.m.

1. ADOPTION OF AGENDA

The meeting was called to order at 7:06 p.m. Quorum Present.

1.1 MOTION

It was Moved and Seconded THAT the Agenda for the Electoral Area 'E' Advisory Planning Commission (APC) meeting of September 13, 2021 be adopted as presented.

CARRIED

2. APPROVAL OF MINUTES

2.1 MOTION

It was Moved and Seconded THAT the Minutes of the August 9, 2021, Electoral Area 'E' Advisory Planning Commission (APC) meeting be adopted as presented.

CARRIED

3. DELEGATIONS

- 3.1 Michaud – Temporary Use Permit Application – E2021.021-TUP

4. DEVELOPMENT APPLICATIONS

- 4.1 Temporary Use Permit Application – E2021.021-TUP Administrative Report Submitted by Danielle DeVries, Planner I

MOTION

It was Moved and Seconded in favour of Option 1. THAT the APC recommends to the RDOS Board of Directors that the proposed temporary use be approved.

CARRIED

5. OTHER

- 5.1 Street Lighting Policy Review – Administrative Report submitted by Christopher Garrish, Planning Manager

Discussed the Official Community Plan (OCP) and jurisdictions.

MOTION

It was Moved and Seconded in favour of Option 1. THAT the APC recommends to the RDOS Board of Directors that the proposed Official Community Plan Bylaw Street Lighting objectives and policies be supported.

CARRIED

- 5.2 Metal Storage Container Regulations
Administrative Report submitted by Christopher Garrish, Planning Manager

Discussed setbacks and lot coverages.

MOTION

It was Moved and Seconded in favour of Option 3. THAT the APC recommends to the RDOS Board of Directors THAT Amendment Bylaw No. 2895, 2020, proceeds to third reading un-changed and consistent with the direction provided by the P&D Committee at its meeting of October 1, 2020.

Metal storage containers would be limited in the Low Density Residential and Small Holdings zones to a maximum of one (1) provided that:

i) THAT the size restriction of metal storage containers contained within the Amendment Bylaw No. 2020 zoning bylaw be removed.

Short-term exemptions would be provided for construction projects and the relocation of a residential or commercial use.

It would be further proposed that the Siting Permit provisions in the Building Bylaw No. 2805, 2018, be repealed.

CARRIED

6. ADJOURNMENT

MOTION

It was Moved and Seconded that the meeting be adjourned at 8:47 p.m.

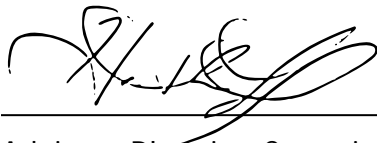
CARRIED

Next Meeting – Tuesday, October 12, 2021 at 7:00 p.m.

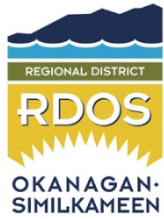
Location TBD

Richard Roskell

Richard Roskell, Chair of the Area 'E' Advisory Planning Commission



Advisory Planning Commission Recording Secretary / minute taker



Minutes

Electoral Area “D” Advisory Planning Commission

Meeting of Tuesday, September 14, 2021

<https://rdos.webex.com>

Present:

Members: Doug Lychak (Chair), Norm Gaumont, Gerry Stewart, Malcolm Peterson, Don Albright, Kelvin Hall

Absent: Jill Adamson, Navid Chaudry, Almira Nunes, Kurtis Hiebert, Bob Pearce

Staff: Fiona Titley, Planner I; Christopher Garrish, Planning Manager

Guest: Ron Obirek, Director, Electoral Area “D”

Minute Taker: Fiona Titley, Planner I

Delegates: Donna Butler (Ecora Engineering), Sarah Allen

1. CALL TO ORDER

The meeting was called to order at 7:02 p.m.

ADOPTION OF AGENDA

MOTION

It was Moved and Seconded that the Agenda be adopted.

CARRIED (UNANIMOUSLY)

2. APPROVAL OF PREVIOUS MEETING MINUTES

2.1 MOTION

It was Moved and Seconded by the APC that the Minutes of June 8, 2021 be approved.

CARRIED (UNANIMOUSLY)

3. DEVELOPMENT APPLICATIONS

3.1 Referral Application Temporary Use Permit Application – D2021.016-ZONE

Administrative Report Submitted by Fiona Titley, Planner I

Delegates Donna Butler (Agent) and Sarah Allen (Property Owner) present.

Discussion.

MOTION

It was Moved and Seconded that the APC recommends to the RDOS Board of Directors that the subject development

application be approved.

CARRIED (UNANIMOUSLY)

4. OTHER

4.1 Street Lighting Policy Review

Administrative Report Submitted by Christopher Garrish, Planning Manager

Discussion.

MOTION

It was Moved and Seconded THAT the APC recommends to the RDOS Board of Directors that the proposed Official Community Plan Bylaw Street Lighting objectives and policies be supported.

CARRIED (UNANIMOUSLY)

4.2 Metal Storage Containers

Administrative Report Submitted by Christopher Garrish, Planning Manager

Discussion.

MOTION

It was Moved and Seconded that the APC recommends to the RDOS Board of Directors that they adopt Option 3 for the metal storage container zoning regulations contained within Amendment Bylaw No. 2895, 2021, with the following amendment:

- Metal Storage containers in Low Density Residential and Small Holding zones are limited in size to 10m²/ 8'x10'

CARRIED (UNANIMOUSLY)

4.3 Consolidated Noise Bylaw- Construction Hours

Administrative Report Submitted by Laura, Miller, Manager of Building and Enforcement;
Presented by Christopher Garrish, Planning Manager

Discussion.

MOTION

It was Moved and Seconded that the APC recommends to the RDOS Board that the subject bylaw be approved with the following amendments.

- No commercial activity of any kind on Sundays and Statutory holidays.

CARRIED (UNANIMOUSLY)

4.4 Proposed New Signage Regulations

Administrative Report Submitted by Christopher Garrish, Planning Manager

Discussion.

MOTION

It was Moved and Seconded that the APC recommends to the RDOS Board that the subject amendment bylaw be approved.

CARRIED (UNANIMOUSLY)

6. ADJOURNMENT

4.1 MOTION

It was Moved and Seconded that the meeting be adjourned at 8:49 pm.

CARRIED (UNANIMOUSLY)

Advisory Planning Commission Chair

Fiona Titley

Advisory Planning Commission minute taker



Minutes

Electoral Area 'I' Advisory Planning Commission

Meeting of Wednesday 15th of September, 2021

Via Online "WebEx"

-
- Present:** Subrina Monteith, Director, Electoral Area "I"
Adele Dewar (Chair), Darlene Bailey – Vice Chair, Chris Struthers – Secretary,
Doreen Olson, Sandie Wilson, Bob Handfield, Bruce Shepherd, Darlene Bailey,
Mike Gane
- Absent:** John Davis
- Staff:** Christopher Garrish, Nikita Kheterpal
- Recording Secretary:** Chris Struthers
- Delegates:** None present

1. CALL TO ORDER

The meeting was called to order at 5:35 pm

2. ADOPTION OF AGENDA

MOTION

It was Moved and Seconded that the Agenda be adopted.

CARRIED UNANIMOUSLY

3. APPROVAL OF PREVIOUS MEETING MINUTES

MOTION

It was Moved and Seconded by the APC that the Minutes of August 18th 2021 be approved.

CARRIED UNANIMOUSLY

4. APPLICATIONS

4.1 No Applications

5. OTHER BUSINESS

5.1 **Official Community Plan (OCP) Amendment Bylaw - Street Lighting Policies**

Presentation & Discussion

MOTION

THAT the APC recommends to the RDOS Board of Directors that the proposed Official Community Plan Bylaw Street Lighting objectives and policies be supported.

CARRIED UNANIMOUSLY

5.2 **Zoning Amendment Bylaw No. 2895 — Regulation of Metal Storage Containers**

Presentation & Discussion

MOTION

THAT the APC recommends to the RDOS Board of Directors that the metal storage container zoning regulations contained within Amendment Bylaw No. 2895, 2021, be amended as follows:

i) Adopt the amendment outlined in presented Attachment No. 3 – Metal Storage Container Regulations (Option 3), with a reduction to the minimum parcel size listed in 1.b(i), from 0.5 ha to 0.3 ha

CARRIED UNANIMOUSLY

6. **ADJOURNMENT**

MOTION

It was Moved and Seconded that the meeting be adjourned at 6:41 pm.

CARRIED UNANIMOUSLY



Adele R Dewar (Sep 16, 2021 09:57 PDT)

Advisory Planning Commission Chair



Chris Struthers (Sep 16, 2021 11:21 PDT)

Advisory Planning Commission Recording Secretary / minute taker.



REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

Corporate Services Committee

Thursday, September 23, 2021, 10:27 a.m.

RDOS Boardroom

101 Martin Street, Penticton, BC V2A 5J9

MEMBERS PRESENT: Chair K. Kozakevich, Electoral Area "E"
Vice Chair S. Coyne, Town of Princeton
Director R. Barkwill, Alt District of Summerland
Director M. Bauer, Village of Keremeos
Director G. Bush, Electoral Area "B"
Director B. Coyne, Electoral Area "H"
Director R. Gettens, Electoral Area "F"
Director D. Holmes, District of Summerland
Director M. Johansen, Town of Oliver
Director S. McKortoff, Town of Osoyoos
Director S. Monteith, Electoral Area "I"
Director R. Knodel, Electoral Area "C"
Director R. Obirek, Electoral Area "D"
Director M. Pendergraft, Electoral Area "A"
Director T. Roberts, Electoral Area "G"
Director K. Robinson, City of Penticton
Director J. Sentes, City of Penticton
Director J. Vassilaki, City of Penticton
Director C. Watt, City of Penticton

MEMBERS ABSENT: Director E. Trainer, District of Summerland

STAFF PRESENT: B. Newell, Chief Administrative Officer C. Malden, Manager of Legislative Services

A. APPROVAL OF AGENDA

It was **MOVED** and **SECONDED**

THAT the Agenda for the Corporate Services Committee Meeting of September 23, 2021 be adopted.

– **CARRIED**

B. COMMUNITY CHAMPIONS UPDATE - For Information Only

The Committee was provided an update on the Community Champions initiative.

C. 2021 RISK REGISTER – For Information Only

The Committee discussed the 2021 Risk Register and Mitigation Strategy.

Minutes are in DRAFT form and are subject to change pending approval by the Regional District Board

D. ADJOURNMENT

It was MOVED and SECONDED

THAT the meeting adjourn. – CARRIED

The meeting adjourned at 10:38 am.

APPROVED:

CERTIFIED CORRECT:

K. Kozakevich, RDOS Board Chair

B. Newell, Corporate Officer



REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

Environment and Infrastructure Committee

Thursday, September 23, 2021, 10:47 a.m.

RDOS Boardroom

101 Martin Street, Penticton, BC V2A 5J9

MEMBERS	Chair R. Gettens, Electoral Area "F"	Director S. Monteith, Electoral Area "I"
PRESENT:	Vice Chair G. Bush, Electoral Area "B"	Director R. Knodel, Electoral Area "C"
	Director R. Barkwill, Alt District of Summerland	Director R. Obirek, Electoral Area "D"
	Director M. Bauer, Village of Keremeos	Director M. Pendergraft, Electoral Area "A"
	Director B. Coyne, Electoral Area "H"	Director T. Roberts, Electoral Area "G"
	Director S. Coyne, Town of Princeton	Director K. Robinson, City of Penticton
	Director D. Holmes, District of Summerland	Director J. Sentes, City of Penticton
	Director M. Johansen, Town of Oliver	Director J. Vassilaki, City of Penticton
	Director K. Kozakevich, Electoral Area "E"	Director C. Watt, City of Penticton
	Director S. McKortoff, Town of Osoyoos	

MEMBERS ABSENT: Director E. Trainer, District of Summerland

STAFF PRESENT:	B. Newell, Chief Administrative Officer	C. Malden, Manager of Legislative Services
	A. Reeder, Manager of Operations	

A. APPROVAL OF AGENDA

It was **MOVED** and **SECONDED**

THAT the Agenda for the Environment and Infrastructure Committee Meeting of September 23, 2021 be adopted. - **CARRIED**

B. DELEGATION - GREENSTEP INC.

The Committee was provided an update on the projects that GreenStep Inc. has been involved in within the Regional District.

C. ADJOURNMENT

It was **MOVED** and **SECONDED**

THAT the meeting adjourn. – **CARRIED**

The meeting adjourned at 11:04 am

APPROVED:

R. Gettens, Chair

CERTIFIED CORRECT:

B. Newell, Corporate Officer

It was MOVED and SECONDED

THAT the Review of Temporary Use Permit Application Fees be postponed until the October 7, 2021 meeting.

- **CARRIED**

Opposed: Directors Bauer and Barkwill

D. REVIEW OF SUBDIVISION REFERRAL FEES

It was MOVED and SECONDED

THAT the fees for subdivision referrals received from the Ministry of Transportation and Infrastructure (MoTI) be revised as follows:

- Base Fee: \$1,000.00;
- Service Area Fee: \$500.00/RDOS Service;
- Boundary Adjustment: \$1,000.00.

- **CARRIED**

E. LANDSCAPING SECURITY REVIEW

It was MOVED and SECONDED

THAT Bylaw No. 2500.23, being a bylaw to amend the Development Procedures Bylaw to introduce a minimum threshold of \$25,000.00 before requiring a landscaping security as a condition of a land use permit, be initiated; and,

THAT all landscaping securities currently held by the Regional District as a condition of a development permit with a value of less than \$25,000.00 be refunded. - **CARRIED**

F. SOUTH OKANAGAN ZONING BYLAW PROJECT - REVIEW OF LANDSCAPING REGULATIONS

It was MOVED and SECONDED

THAT zoning regulations for screening and landscaping not be included in “General Regulations” of the Draft South Okanagan Electoral Areas Zoning Bylaw No. 2800. – **CARRIED**

G. REMOVAL OF ADVISORY PLANNING COMMISSION (APC) MEMBER

It was MOVED and SECONDED

If any member of a Commission is continuously absent from three consecutive meetings, unless due to illness or some other unavoidable reason that is temporary in nature, their appointment may be rescinded by the Board of Directors.

It was MOVED and SECONDED

THAT the Removal of Advisory Planning Commission (APC) Member be postponed to enable staff to do further review and return to committee. – **CARRIED**

H. MOBILE HOMES IN THE ELECTORAL AREA ZONING BYLAWS

This item was postponed from the August 19, 2021 Planning and Development Committee meeting.

It was MOVED and SECONDED

THAT the resolution passed by the Board of Variance (BoV) at its meeting of April 6, 2021, requesting a review of

zoning regulations governing the placement of mobile homes in the ALR not be considered by the Board as a strategic project. - **CARRIED**

I. CANNABIS RETAIL STORE APPLICATION MORATORIUM, ELECTORAL AREA "D"

It was MOVED and SECONDED

THAT the *Electoral Area "D" Update of Retail Cannabis Zoning Regulations Policy* be approved.

It was MOVED and SECONDED

THAT the Cannabis Retail Store Application Moratorium, Electoral Area "D" be postponed until a later meeting date. - **CARRIED**

Opposed: Directors Bauer, Holmes, S. Coyne, McKortoff and Barkwill

J. ADJOURNMENT

It was MOVED and SECONDED

THAT the meeting adjourn. – **CARRIED**

The meeting adjourned at 10:27 am.

APPROVED:

CERTIFIED CORRECT:

R. Knodel, Chair

B. Newell Corporate Officer



REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BOARD of DIRECTORS MEETING

Thursday, September 23, 2021, 11:15 a.m.
RDOS Boardroom
101 Martin Street, Penticton, BC V2A 5J9

MEMBERS PRESENT: Chair K. Kozakevich, Electoral Area "E"
Vice Chair: S. Coyne, Town of Princeton
Director R. Barkwill, Alt District of Summerland
Director M. Bauer, Village of Keremeos
Director G. Bush, Electoral Area "B"
Director B. Coyne, Electoral Area "H"
Director R. Gettens, Electoral Area "F"
Director D. Holmes, District of Summerland
Director M. Johansen, Town of Oliver
Director S. McKortoff, Town of Osoyoos
Director S. Monteith, Electoral Area "I"
Director R. Knodel, Electoral Area "C"
Director R. Obirek, Electoral Area "D"
Director M. Pendergraft, Electoral Area "A"
Director T. Roberts, Electoral Area "G"
Director K. Robinson, City of Penticton
Director J. Sentes, City of Penticton
Director J. Vassilaki, City of Penticton
Director C. Watt, City of Penticton

MEMBERS ABSENT: Director E. Trainer, District of Summerland

STAFF PRESENT: B. Newell, Chief Administrative Officer
C. Malden, Manager of Legislative Services

A. APPROVAL OF AGENDA

MOVED and SECONDED

THAT the Agenda for the RDOS Board meeting of September 23, 2021 be adopted as amended by:

- Correcting typo in A.2.5
- Moving A.2.4. from Consent agenda to item B.13

- CARRIED

A.1 Consent Agenda – Corporate Issues

MOVED and SECONDED

THAT the Consent Agenda Corporate Services be adopted. – **CARRIED**

1. Advisory Planning Commissions

a. Advisory Planning Commission, Electoral Area "F"

THAT the minutes of the August 23, 2021 Advisory Planning Commission, Electoral Area "F" be received.

b. Advisory Planning Commission, Electoral Area "H"

THAT the minutes of the August 17, 2021 Advisory Planning Commission, Electoral Area "H" be received.

2. Parks and Recreation Committees

a. Kaleden Parks & Recreation Commission

THAT the minutes of the August 17, 2021 Kaleden Parks & Recreation Commission be received.

3. Board and Committees

a. Service and Boundary Configuration Study, Electoral Area "D"

THAT the minutes of the August 18, 2021 Service and Boundary Configuration Study, Electoral Area "D" be received.

b. Corporate Services Committee

THAT the minutes of the September 2, 2021 Corporate Services Committee meeting be received.

c. Planning and Development Committee

THAT the minutes of the September 2, 2021 Planning and Development Committee meeting be received.

THAT the Cannabis Retail Store Moratorium (Electoral Area "D") be referred back to staff for further options.

THAT the item be referred back to staff for further work based on a 90 day period.

d. RDOS Regular Board Meeting

THAT the minutes of the September 2, 2021 RDOS Regular Board meeting be adopted.

e. South Okanagan Conservation Fund – Technical Advisory Committee Appointment

THAT the appointment of Tara White, R.P. Bio as a volunteer member of the South Okanagan Conservation Fund Technical Advisory Committee be approved for a three year term ending September 30, 2024.

A.2 Consent Agenda – Development Services It was MOVED and SECONDED

**THAT the Consent Agenda – Development Services be adopted as amended to remove A.2.4.
- CARRIED**

1. **Development Variance Permit Application — Electoral Area “A” 4003 37th Street**
THAT Development Variance Permit No. A2021.036-DVP to allow for a dwelling addition at 4003 37th Street be approved.
2. **Development Variance Permit Application — Electoral Area “C” 7335 Tucelnuit Drive**
THAT Development Variance Permit No. C2021.033-DVP to allow for an accessory structure in an interior side parcel line setback at 7335 Tucelnuit Drive, be approved.
3. **Development Variance Permit Application — Electoral Area “D” 420 Panorama Crescent**
THAT Development Variance Permit No. D2021.032-DVP, to permit the development of an addition to an existing accessory structure at 420 Panorama Crescent, be approved.
4. **Development Variance Permit Application — Electoral Area “D” 136 Chadwell Place**
(Item was moved from Consent to item B.13)
5. **Development Variance Permit Application — Electoral Area “E”**
THAT Temporary Use Permit No. E2021.008-TUP to authorize a “vacation rental” use at 2205 Naramata Road be approved.
6. **Development Variance Permit Application — Electoral Area “E”**
THAT Development Variance Permit No. E2021.038-DVP to reduce the number of streetlights for a 41 lot subdivision at 3480 Arawana Forestry Road under the Subdivision Servicing Bylaw, be approved.
7. **Temporary Use Permit Application – Electoral Area “I” 174 Range Road**
THAT Temporary Use Permit No. I2021.020-TUP to allow a “vacation rental” use at 174 Range Road, Twin Lakes be approved.

B. DEVELOPMENT SERVICES – Rural Land Use Matters

B.1 Zoning Amendment Bylaw No. 2461.15, 2021 – Scheduling of Public Hearing

MOVED and SECONDED

THAT the holding of a second public hearing for Amendment Bylaw No. 2461.15, 2021, be delegated to Director Gettens; and,

THAT the date, time, and place of the public hearing be scheduled in consultation with Director Gettens; and,

THAT notice of the public hearing be given in accordance with the requirements of the *Local Government Act*. – **CARRIED**

B.2 Agricultural Land Commission Referral (Non-Farm Use) – Electoral Area “C”

MOVED and SECONDED

THAT the application to operate a commercial tool and farm equipment business as a non-farm use on the parcel located at 5680 Hwy 97 (Lot 1, District Lot 2450S, SDYD, Plan 39302) be authorized to proceed to the Agricultural Land Commission. - **CARRIED**

B.3 Agricultural Land Commission Referral (Non-Adhering Res. Use) – Electoral Area “C” 5454 Sumac Street

MOVED and SECONDED

THAT the item be referred to the Electoral Area “C” Advisory Planning Commission. - **CARRIED**

B.4 Agricultural Land Commission Referral – Electoral Area “D”

MOVED and SECONDED

THAT the application to convert the use of an existing building for utility service and event concession purposes as a non-farm use on the parcel located at 2434 Oliver Ranch Road be authorized to proceed to the Agricultural Land Commission. - **CARRIED**

B.5 Petition to Enter Faulder Water Service Area – Electoral Area “F”

The Chair enquired whether the property owner or agent was present to address the Board and the property owner did so.

MOVED and SECONDED

THAT Bylaw No. 1177.05, 2021, a bylaw to extend the area of the Faulder Community Water System, be denied. – **CARRIED**

B.6 Petition to Enter the Naramata Water System Local Service Area – Electoral Area “E”

MOVED and SECONDED

THAT this item be referred to Electoral Area “E” Advisory Planning Commission and the Naramata Water Advisory Committee for review and feedback. – **CARRIED**

B.7 Zoning Bylaw Amendment – Electoral Area “A”

Director Pendergraft declared a conflict of interest due to the applicant being a family member.

MOVED and SECONDED

THAT Bylaw No. 2451.32, 2021, a bylaw to amend the Electoral Area “A” Zoning Bylaw to allow for a minimum parcel size of 3.7 ha at 2257 82nd Ave in Area “A” be read a first and second time and proceed to public hearing; and,

THAT the holding of a public hearing be scheduled for the Regional District Board meeting of October 21, 2021; and,

THAT staff give notice of the public hearing in accordance with the requirements of the *Local Government Act*. - **CARRIED**

B.8 Official Community Plan & Zoning Bylaw Amendment – Electoral Area “F”

MOVED and SECONDED

THAT Bylaw No. 2790.02, 2021, a bylaw to amend the Electoral Area “F” Official Community Plan to allow for the development of 106 dwelling units at 625 Hwy. 97 be read a first and second time and proceed to public hearing; and,

THAT Bylaw No. 2461.18, 2021, a bylaw to amend the Electoral Area “F” Zoning Bylaw be read a first and second time and proceed to public hearing; and,

THAT the Board of Directors considers the process, as outlined in this report from the Chief Administrative Officer dated September 23, 2021, to be appropriate consultation for the purpose of Section 475 of the *Local Government Act*; and,

THAT, in accordance with Section 477 of the *Local Government Act*, the Board of Directors has considered Amendment Bylaw No. 2790.02, 2021, in conjunction with its Financial and applicable Waste Management Plans; and,

THAT the holding of a public hearing be scheduled for the Regional District Board of Directors meeting of October 21, 2021; and,

THAT notice of the public hearing be given in accordance with the requirements of the *Local Government Act*. – **CARRIED**

Opposed: Directors Monteith and Knodel

B.9 Official Community Plan & Zoning Bylaw Amendments – Residential and Small Holdings Review

MOVED and SECONDED

THAT Bylaw No. 2892, 2021, a bylaw to amend the Electoral Area “A”, “C”, “D”, “E”, “F” and “I” Official Community Plan and Zoning Bylaws in order to update the Residential and Small Holdings zones be read a first and second time and proceed to public hearing; and,

THAT the Board of Directors considers the process, as outlined in this report from the Chief Administrative Officer dated September 23, 2021, to be appropriate consultation for the purpose of Section 475 of the *Local Government Act*; and,

THAT, in accordance with Section 477 of the *Local Government Act*, the Board of Directors has considered Amendment Bylaw No. 2892, 2021, in conjunction with its Financial and applicable Waste Management Plans; and,

THAT the holding of a public hearing be scheduled for the Regional District Board meeting of October 21, 2021; and,

THAT notice of the public hearing be given in accordance with the requirements of the *Local Government Act*. - **CARRIED**

B.10 Official Community Plan & Zoning Bylaw Amendment – Electoral Area “A”

MOVED and SECONDED

THAT Bylaw No. 2905.02, 2021, a bylaw to amend the Electoral Area “A” Official Community Plan to facilitate a 70-lot subdivision and creation of conservation and dedicated park areas at Willow Beach, be read a third time; and,

THAT Bylaw No. 2451.31, 2021, a bylaw to amend the Electoral Area “A” Zoning Bylaw be read a third time; and,

THAT prior to adoption of Amendment Bylaw Nos. 2905.02, 2021, and 2451.31, 2021, that a statutory covenant be registered on the title of Lot 675, Plan KAP2066, District Lot 2450S, SDYD, Except Plan 22229 43613 H9726, to provide the Regional District with access to the lands and the ability to undertake mosquito control measures. - **CARRIED**

B.11 Official Community Plan & Zoning Bylaw Amendment – Electoral Area “H”

MOVED and SECONDED |

THAT Bylaw No. 2497.12, 2021, a bylaw to amend the Electoral Area “H” Official Community Plan Bylaw to permit a 2-lot subdivision at 2321 Old Hedley Road, be read a first and second time and proceed to public hearing; and

THAT Bylaw No. 2498.23, 2021, a bylaw to amend the Electoral Area “H” Zoning Bylaw be read a first and second time and proceed to public hearing; and,

THAT the Board of Directors considers the process, as outlined in this report from the Chief Administrative Officer dated September 23, 2021, to be appropriate consultation for the purpose of Section 475 of the *Local Government Act*; and,

THAT, in accordance with Section 477 of the Local Government Act, the Board of Directors has considered Amendment Bylaw No. 2497.12, 2021, in conjunction with its Financial and applicable Waste Management Plans; and,

THAT the holding of a public hearing be scheduled for the Regional District Board meeting of October 21, 2021; and,

THAT staff give notice of the public hearing in accordance with the requirements of the *Local Government Act*. – **CARRIED**

B.12 Zoning Bylaw Amendment – Electoral Area “F” 5863 Princeton Summerland Road

MOVED and SECONDED

THAT Bylaw No. 2461.16, 2021, a bylaw to amend the Electoral Area “F” Zoning Bylaw to allow for a “campground” as a permitted use at 5863 Princeton-Summerland Road be read a third time, as amended; and adopted. - **CARRIED**

B.13 Development Variance Permit Application - Electoral Area "D" 136 Chadwell Place

MOVED/SECONDED

THAT Development Variance Permit No. E2021.008-DVP to permit the development of a single detached dwelling at 136 Chadwell Place, be referred to the Electoral Area “D” Advisory Planning Commission. - **CARRIED**

C. COMMUNITY SERVICES

C.1 Award of Contract - North Naramata Firehall Detailed Design

MOVED and SECONDED

THAT a contract for detailed design of the North Naramata Firehall be awarded to Landform Architecture Ltd. for \$65,000.00. - **CARRIED**

C.2 Provincial Licence of Occupation – Apex Fire Hall

MOVED and SECONDED

THAT the Regional District submit an application to the Province of British Columbia for a License of Occupation on a portion of District Lot 395s, Similkameen Division of Yale Land District for the development of the Apex community fire hall. – **CARRIED**

D. FINANCE

D.1 Grant Approval from the Vermillion Forks Reserve Fund

MOVED and SECONDED

THAT the Regional District of Okanagan Similkameen approve a \$15,000 grant to the Eastgate Fire protection Society (EFPS); and,

THAT the grant be funded from the Vermillion Forks Community Forest Reserve fund; and,

THAT reserve expenditure Bylaw No.2946, 2021, being a bylaw to authorize an expenditure of \$15,000 from the Vermillion Forks Community Forest Reserve Fund to help fund the EFPS be given first, second, & third readings and be adopted. – **CARRIED**

D.2 Permissive Tax Exemptions for Properties Within the City of Penticton

MOVED and SECONDED

THAT the Regional District of Okanagan Similkameen apply for a permissive tax exemption for properties leased at 184 Main Street and 105 Martin Street. – **CARRIED**

D.3 Reserve Expenditure Bylaw and Budget Amendment - Oliver Landfill Organics Facility

MOVED and SECONDED

THAT Bylaw No.2945, 2021, being a bylaw to authorize the funding for the expenditure of an additional \$600,000 from the Oliver Landfill Capital Reserve be read a first, second, & third time and be adopted; and,

THAT Bylaw No. 2922.01, 2021, being a bylaw to amend the 2021-2025 Five Year Financial Plan to increase the Oliver Landfill Capital budget by \$600,000, be read a first, second, & third time and be adopted. - **CARRIED**

E. LEGISLATIVE SERVICES

E.1 Electoral Area “G” Cemetery Operations Contribution Service

MOVED and SECONDED

THAT Bylaw No. 2943, 2021, Electoral Area “G” Cemetery Operations Contribution Service Establishment Bylaw, be read a first, second and third time and forwarded to the Inspector of Municipalities for approval; and,

THAT upon approval by the Inspector of Municipalities, participating area approval for the adoption of Electoral Area “G” Cemetery Operations Contribution Service Establishment Bylaw

No. 2943, 2021, be obtained from the electorate within Electoral Area “G” through an alternative approval process in accordance with the *Local Government Act*; and,

THAT the deadline for submitting elector response forms in relation to Bylaw No. 2943 to the Manager of Legislative Services is no later than 4:30 p.m. on Monday December 6, 2021; and,

THAT the elector response form attached to the report dated September 23, 2021 be the approved form for the Bylaw No. 2943 alternative approval process; and,

THAT the total number of eligible electors to which the alternative approval process applies is 1973; and,

THAT the number of elector responses required to prevent the bylaw from proceeding without a referendum is 197. - **CARRIED**

F. CAO REPORTS

F.1 Verbal Update

F.2 MRDT Request – City of Penticton

It was **MOVED** and **SECONDED**

THAT the Regional District provide a letter of support to the City of Penticton for their application to the Province of British Columbia to increase the 2% Municipal and Regional District Tax (MRDT) to 3%. - **CARRIED**

G. OTHER BUSINESS

G.1 Chair’s Report

G.2 Board Representation

1. Developing Sustainable Rural Practice Communities - *McKortoff*
2. Municipal Finance Authority – *Kozakevich (Chair), Coyne (Vice Chair, Alternate)*
3. Municipal Insurance Association – *Kozakevich (Chair), Coyne (Vice Chair, Alternate)*
4. Okanagan Basin Water Board - *McKortoff, Holmes, Knodel, Pendergraft (Alternate to McKortoff), Obirek (Alternate to Holmes), Monteith (Alternate to Knodel)*
5. Okanagan Film Commission – *Gettens, Obirek (Alternate)*
6. Okanagan Regional Library – *Monteith, Obirek (Alternate)*

7. Okanagan-Kootenay Sterile Insect Release Board – *Bush, Kozakevich (Alternate)*
8. Southern Interior Municipal Employers Association – *Knodel, Kozakevich (Alternate)*
9. Starling Control – *Bush, Knodel (Alternate)*
10. Fire Chief Liaison Committee – *Pendergraft, Knodel, Monteith, Obirek, Roberts*
11. Intergovernmental Indigenous Joint Council – *Kozakevich, Coyne, Roberts*
12. Okanagan-Similkameen Regional Hospital District – *Sentes, McKortoff (Alternate)*

G.3 Directors Motions

Directors Notice of Motion – Director Gettens

THAT the Directors Motion “To request that staff develop an interim solution that will accommodate both in-person and electronic attendance to RDOS Board meetings by the public, staff and Directors while abiding current BC Public Health Orders” be refered to Administration for analysis of the feasibility, legislative compliance and budget impacts.

G.4 Board Members Verbal Update

H. ADJOURNMENT

It was MOVED and SECONDED

THAT the meeting adjourn. – CARRIED

The meeting adjourned at 1:27pm.

Director S. Coyne and Director Bauer left the meeting at 12:45pm. Director Coyne returned at 1:20pm and Director Bauer returned at 1:25pm.

APPROVED:

CERTIFIED CORRECT:

K. Kozakevich RDOS Board Chair

B. Newell Corporate Officer

ADMINISTRATIVE REPORT



TO: Board of Directors
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Development Permit Application — Electoral Area “D” (D2021.001-DP)

Administrative Recommendation:

THAT Development Permit No. D2021.001-DP to place a metal storage container in the Okanagan Falls Town Centre Development Permit Area at 718 Main Street be approved.

Legal: Lot 5, Plan 4700, District Lot 337, SDYD Folio: D-00905.000
OCP: Okanagan Falls Town Centre (OFTC) Zone: Okanagan Falls Town Centre (OFTC)

Site Context:

The subject property is approximately 1,393.5 m² in area and is situated on the south side of 7th Street and the west side of Main Street in Okanagan Falls. The property is currently developed as commercial (cabins).

The surrounding pattern of development is characterised by a mix of residential development (single family dwellings and multi-family dwellings) and in close proximity to Christie Memorial/Kenyon Park as well as the Okanagan Falls commercial area.

Background:

The current boundaries of the subject property were created on June 20, 1948, while available Regional District records indicate that a building permit for an addition (1976) has previously been issued for this property.

Under the Electoral Area “D” Official Community Plan (OCP) Bylaw No. 2603, 2013 the subject property is designated Town Centre and is the subject of Okanagan Falls Town Centre Development Permit (OFTCDP) Area designation.

Under the Electoral Area “D” Zoning Bylaw No. 2455, 2008, the property is currently zoned Okanagan Falls Town Centre (OFTC) which allows for accessory buildings and structures, among other uses.

BC Assessment has classified the property as Residential (Class 01).

Public Process:

At its meeting of June 8, 2021, the Electoral Area “D” Advisory Planning Commission recommended that the subject application be approved, subject to a condition that “White Cladding is provided around the metal storage container to match the other buildings on site.”

In response, the applicant is proposing to provide fencing around the metal storage container, measuring 2.44 metres (8 feet) in height, in order to provide screening from the street.

Under Division 7 (Development Permits) of the *Local Government Act*, there is no obligation on the Regional District to provide notice of a development permit. This is presumed to be on the basis that the public was consulted during the implementation of the OCP Bylaw within which the DP Area Guidelines reside.

Analysis:

The Okanagan Falls Town Centre Development Permit Area (OFTCDPA) is to ensure consistent, high-quality design for all new developments in the Town Centre. Under the OFTCDPA guidelines, “new commercial buildings should have a pedestrian-oriented ground floor treatment, with a high level of transparency between the sidewalk and commercial/retail interiors...” (Section 24.6.6.2(a)).

Although a metal storage container is not seen to be consistent with the guidelines of the OFTCDPA; the container is proposed to be placed internally on the subject parcel and concerns of visibility from Main Street are mitigated.

Screening in the form of walls, decorative fencing, hedging, planting, other screening materials are recommended around outdoor storage areas, waste containers (Section 24.8.6.5(a)(i)). Although metal storage containers are not specifically mentioned, unmodified metal storage containers are seen as a similar form that should also be screened from view.

The applicant has proposed to provide wooden fencing around the metal storage container to meet the particular DPA guideline, which may shield the metal storage container from the view of the passing public.

Conversely, the metal storage container has no transparency (no windows or doors) and no variation in form or roofline to provide visual interest in the town centre. The proposed mitigation measures appear to meet the guidelines of the OFTCDPA.

Alternatives:

1. That the Board deny Development Variance Permit No. D2021.001-DP.

Respectfully submitted


Nikita Kheterpal, Planner I

Endorsed by:


C. Garrish, Planning Manager

Attachments:

- No. 1 – Site Photo (June 11, 2021)
- No. 2 – Aerial Photo

Attachment No. 1 – Site Photo (June 11, 2021)





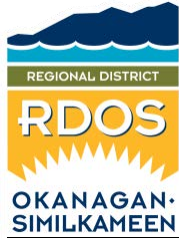
Proposed Location of Metal
Storage Container
(APPROXIMATE)

5029

718

MAIN STREET

700



Development Permit

Okanagan Falls Town Centre

FILE NO.: D2021.001-DP

GENERAL CONDITIONS

1. This Development Permit is issued subject to compliance with all of the bylaws of the Regional District of Okanagan-Similkameen applicable thereto, except as specifically varied or supplemented by this Permit.
2. The land described shall be developed strictly in accordance with the terms and conditions and provisions of this Permit, and any plans and specifications attached to this Permit that shall form a part thereof.
3. Where there is a conflict between the text of the permit and permit drawings or figures, the drawings or figures shall govern the matter.
4. This Development Permit is not a Building Permit.

APPLICABILITY

5. This Development Permit applies to, and only to, those lands, including any and all buildings, structures and other development thereon, within the Regional District as shown on Schedules 'A', 'B', 'C', and 'D' described below:

Legal Description: Lot 5, Plan 4700, District Lot 337, SDYD

Civic Address: 718 Main Street, Okanagan Falls

Parcel Identifier (PID): 006-495-991 Folio: D-00905.000

CONDITIONS OF DEVELOPMENT

6. In accordance with Section 24.8 of the Electoral Area "D" Official Community Plan Bylaw No. 2603, 2013, the land specified in Section 5 may be developed in accordance with the following conditions:
 - a) THAT the proposed accessory building is sited in accordance with the site plan and building elevations attached as Schedule 'B', 'C' and 'D'.

COVENANT REQUIREMENTS

7. Not applicable.

SECURITY REQUIREMENTS

8. Not applicable.

EXPIRY OF PERMIT

11. The development shall be carried out according to the following schedule:

- (a) In accordance with Section 504 of the *Local Government Act* and subject to the terms of the permit, if the holder of this permit does not substantially start any construction with respect to which the permit was issued within **two (2) years** after the date it was issued, the permit lapses.
- (b) Lapsed permits cannot be renewed; however, an application for a new development permit can be submitted.

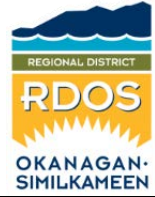
Authorising resolution passed by the Regional Board on _____, 2021.

B. Newell, Chief Administrative Officer

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

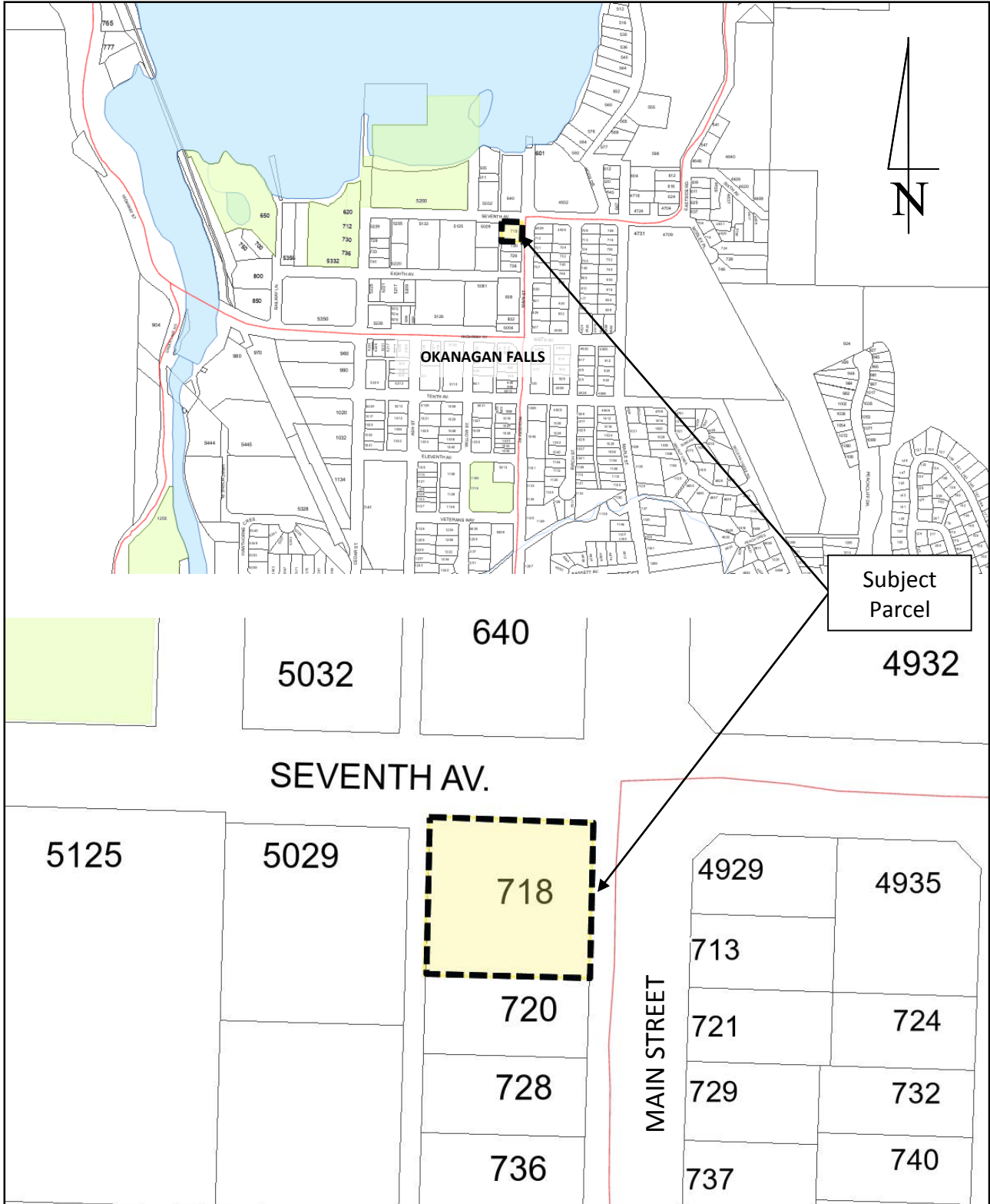
Tel: 250-492-0237 Email: info@rdos.bc.ca



Okanagan Falls Town Centre Development Permit

File No. D2021.001-DP

Schedule 'A'



Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9
 Tel: 250-492-0237 Email: info@rdos.bc.ca



Okanagan Falls Town Centre Development Permit

File No. D2021.001-DP

Schedule 'B'

718 MAIN STREET, OKANAGAN FALLS.

B - White Container Section - 8' x 20' x 8'6" W L H.

5

19'

16'

4

19'

16'

3

19'

16'

2

19'

16'

1

19'

16'

6	16 feet	28'	Container B. Placement	8' x 20'	A 16'	32'
7	16'	19'	OPENING SIDE	8'6" height	B ↔ A 10' Separation	
8	16'	19'				
9	16'	38'				

Wood Fence 3' plus 4ft x 4ft around container latch at front for access.

Regional District of Okanagan-Similkameen

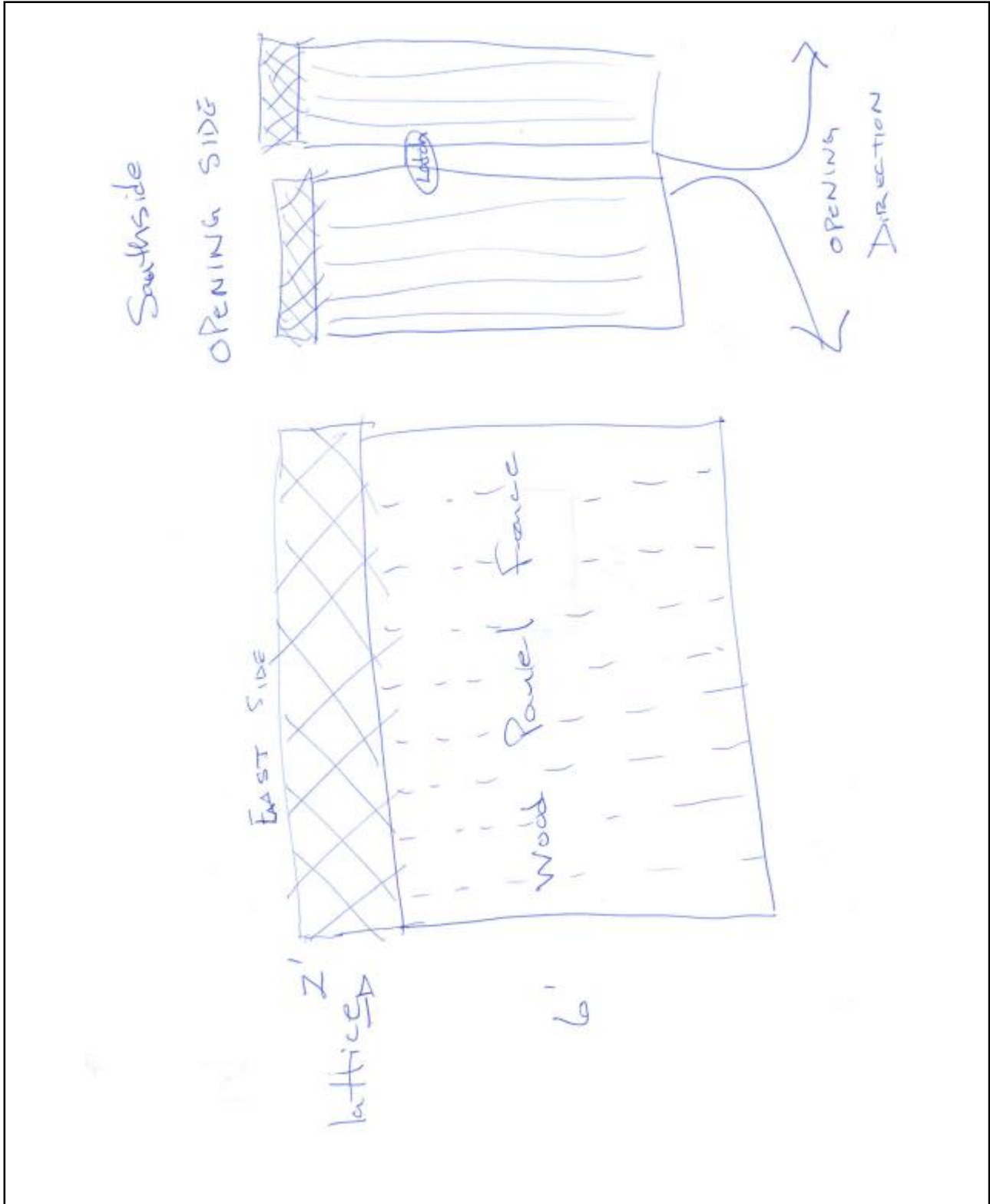
101 Martin St, Penticton, BC, V2A-5J9
Tel: 250-492-0237 Email: info@rdos.bc.ca



Okanagan Falls Town Centre Development Permit

File No. D2021.001-DP

Schedule 'C'



Regional District of Okanagan-Similkameen

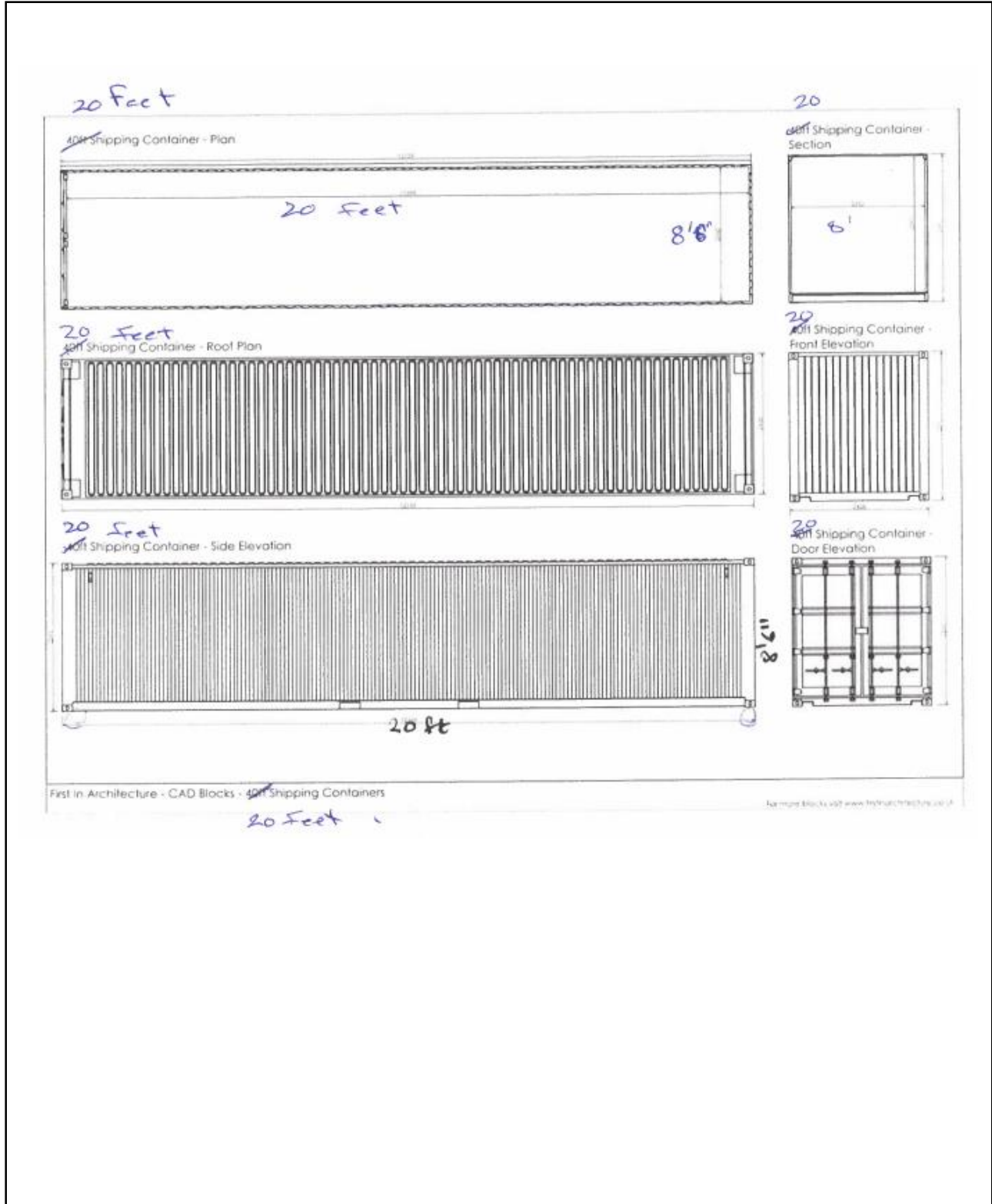
101 Martin St, Penticton, BC, V2A-5J9
Tel: 250-492-0237 Email: info@rdos.bc.ca



Okanagan Falls Town Centre Development Permit

File No. D2021.001-DP

Schedule 'D'





TO: Board of Directors
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Development Variance Permit Application — Electoral Area “D” (D2021.040-DVP)

Administrative Recommendation:

THAT Development Variance Permit No. D2021.040-DVP to allow for oversized commercial signage on the property at 3500 Highway 97 be approved.

Legal: Lot 1, Plan KAP1340, Section 16 & 21, Township 85, SDYD Folio: D-08023.000

Zone: part Agriculture One (AG1) and part Commercial Campground (CT2)

Variance Request: To increase the maximum sign size from 3.0 square metres to 4.5 square metres

Proposed Development:

To vary the maximum sign size that applies to the subject property in order to undertake a new sign advertising the winery on site. Specifically, it is being proposed to increase the maximum sign size from 3.0 m² to 4.5 m².

In support of this request, the applicant has stated that “we are looking to get an exemption to replace our old small sign with larger roadside sign, which will be easier for our customers to see.”

Site Context:

The subject property is approximately 4.4 ha in area and is situated on the west side of Highway 97 and bordering Vaseux Lake. The property is currently developed to include a single-detached dwelling converted into the wine shop, a vineyard, and an accessory building.

The surrounding pattern of development is characterised by agricultural land with single-detached dwellings and accessory buildings to the north and south, vacant parks and recreation and conservation area areas to the east, and Vaseux Lake to the west.

Background:

The current boundaries of the subject property were created by a Plan of Subdivision deposited with the Land Titles Office in Kamloops on June 2, 2014, while available Regional District records indicate that a building permits for renovations to the single family dwelling (2017) and to convert the dwelling into the wine shop (2019) have been issued for this property.

Under the Electoral Area “D” Official Community Plan (OCP) Bylaw No. 2603, 2013, the subject property is currently designated part Agriculture (AG) and part Commercial Tourism (CT), and is the subject of Watercourse Development Permit (WDP) and Environmentally Sensitive Development Permit (ESDP) Area designations. The proposed works are not in the ESDP and WDP areas and do not alter the footprint of the existing sign.

Under the Electoral Area “D” Zoning Bylaw No. 2455, 2008, the property is currently zoned part Agriculture (AG1) and part Campground Commercial (CT2) which allows for one sign advertising the sale of agricultural products produced on the property.

Under Section 8.0 (Floodplain Regulations) of the Zoning Bylaw, the subject property is within the floodplain associated with Vaseux Lake, which does not impact the area of the property where the sign will be placed.

The property is within the Agricultural Land Reserve (ALR) and has been classified as part “Residential” (Class 01), part “Light Industry” (Class 05), and part “Business and Other” (Class 06) by BC Assessment.

Public Process:

Adjacent property owners will have received notification of this application with written comments regarding the proposal being accepted, in accordance with Section 2.10 of Schedule ‘4’ of the Regional District’s Development Procedures Bylaw No. 2500, 2011, until 4:30 p.m. on September 29, 2021. All comments received are included as a separate item on the Board’s Agenda.

Analysis:

The OCP encourages sustainable economic diversification through the “growth of agricultural industries [and] value-added processing of local agricultural products”. The Zoning Bylaw permits signs for advertising the sale of agricultural products produced on a property to support the economic development encouraged in the OCP.

The proposed sign is within the height allowed in the Zoning Bylaw and is only larger in total area. The winery is located around a bend on Highway 97 and easy to miss for potential visitors. The larger sign will, as the applicant suggests, make it “easier for our customers to see”.

Further, the signage section of the proposed new Okanagan Valley Zoning Bylaw No. 2800 would allow signs advertising agricultural products up to 5.0 m², which is larger than the request.

The subject property is along a major highway. The proposed sign location is within the subject parcel and setback by 1.0 m as required in the Zoning Bylaw. However, the Ministry of Transportation MoTI and Infrastructure discourages billboards that could be distracting to drivers. MoTI does not have a definition for the size of sign that is considered a billboard.

Alternatives:

1. That the Board deny Development Variance Permit No. D2021.040-DVP.
2. That the Board defer consideration of the application and it be referred to the Electoral Area “D” Advisory Planning Commission.

Respectfully submitted

D.DeVries

Danielle DeVries, Planner 1

Endorsed by:



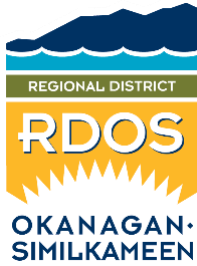
C. Garrish, Planning Manager

Attachments:

No. 1 – Site Photo (Google Streetview)

Attachment No. 1 – Site Photo (Google Streetview)





Development Variance Permit

FILE NO.: D2021.040-DVP

GENERAL CONDITIONS

1. This Development Variance Permit is issued subject to compliance with all of the bylaws of the Regional District of Okanagan-Similkameen applicable thereto, except as specifically varied or supplemented by this Permit.
2. The land described shall be developed strictly in accordance with the terms and conditions and provisions of this Permit, and any plans and specifications attached to this Permit that shall form a part thereof.
3. Where there is a conflict between the text of the permit and permit drawings or figures, the drawings or figures shall govern the matter.
4. This Development Variance Permit is not a Building Permit.

APPLICABILITY

5. This Development Variance Permit is substantially in accordance with Schedules 'A', 'B', and 'C', and applies to and only to those lands within the Regional District described below, and any and all buildings, structures and other development thereon:

Legal Description: Lot 1, Plan KAP1340, Section 16 & 21, Township 85, SDYD
Civic Address: 3500 Highway 97
Parcel Identifier (PID): 011-636-157 Folio: D-08023.000

CONDITIONS OF DEVELOPMENT

6. The land specified in Section 5 may be developed in accordance with the following variances to the Electoral Area "D" Zoning Bylaw No. 2455, 2008, in the Regional District of Okanagan-Similkameen:
 - a) the maximum sign size advertising the sale of an agricultural product produced on the farm in the Agriculture One (AG1) Zone, as prescribed in Section 7.20.3, is varied:
 - i) from: 3.0 square metres
to: 4.5 square metres for the total sign area as shown on Schedule 'C'.

COVENANT REQUIREMENTS

7. Not Applicable

SECURITY REQUIREMENTS

8. Not applicable

EXPIRY OF PERMIT

9. The development shall be carried out according to the following schedule:
- a) In accordance with Section 504 of the *Local Government Act* and subject to the terms of the permit, if the holder of this permit does not substantially start any construction with respect to which the permit was issued within two (2) years after the date it was issued, the permit lapses.
 - b) Lapsed permits cannot be renewed; however, an application for a new development permit can be submitted.

Authorising resolution passed by the Regional Board on _____, 2021.

B. Newell, Chief Administrative Officer

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

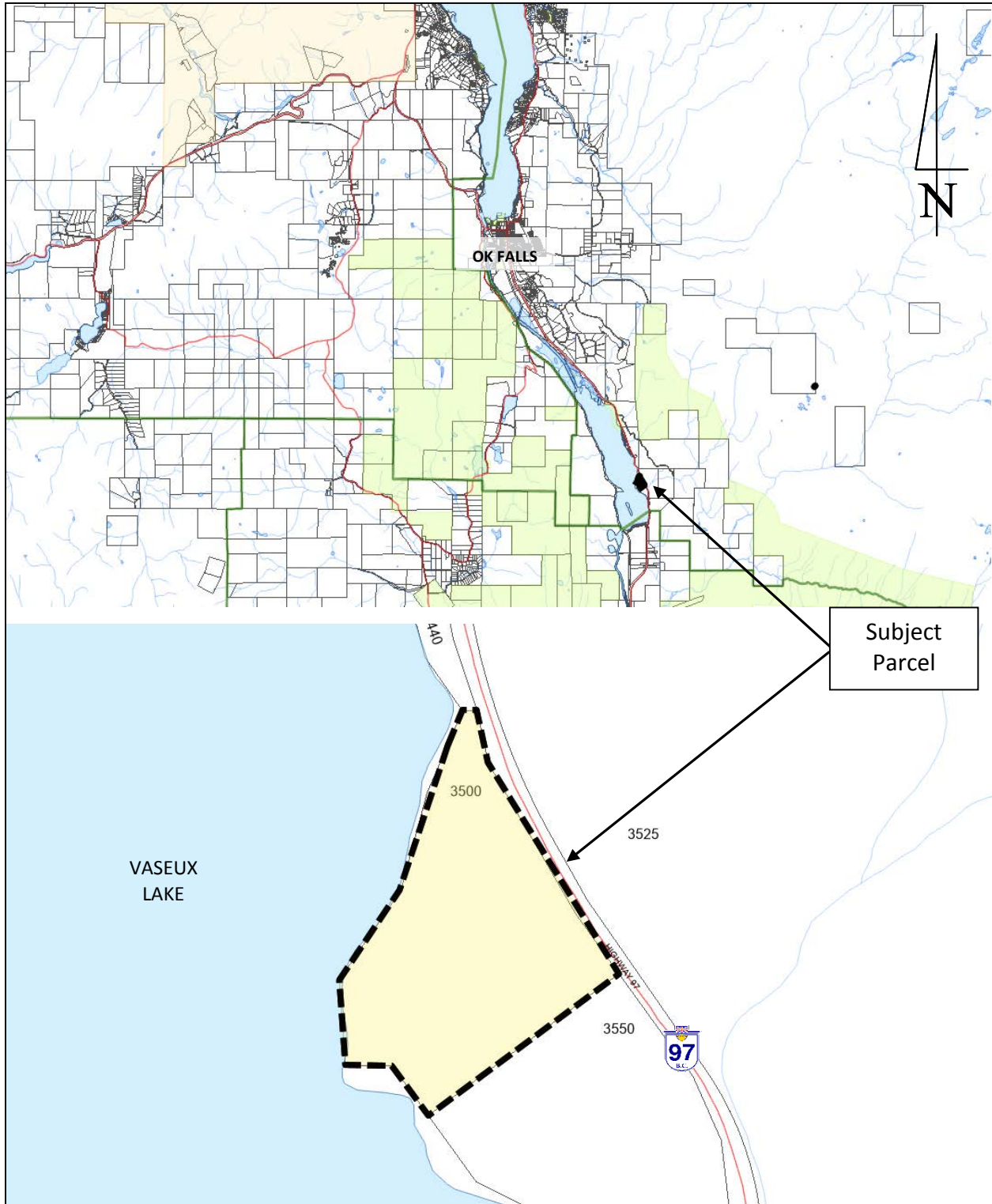
Tel: 250-492-0237 Email: planning@rdos.bc.ca



Development Variance Permit

File No. D2021.040-DVP

Schedule 'A'



Regional District of Okanagan-Similkameen

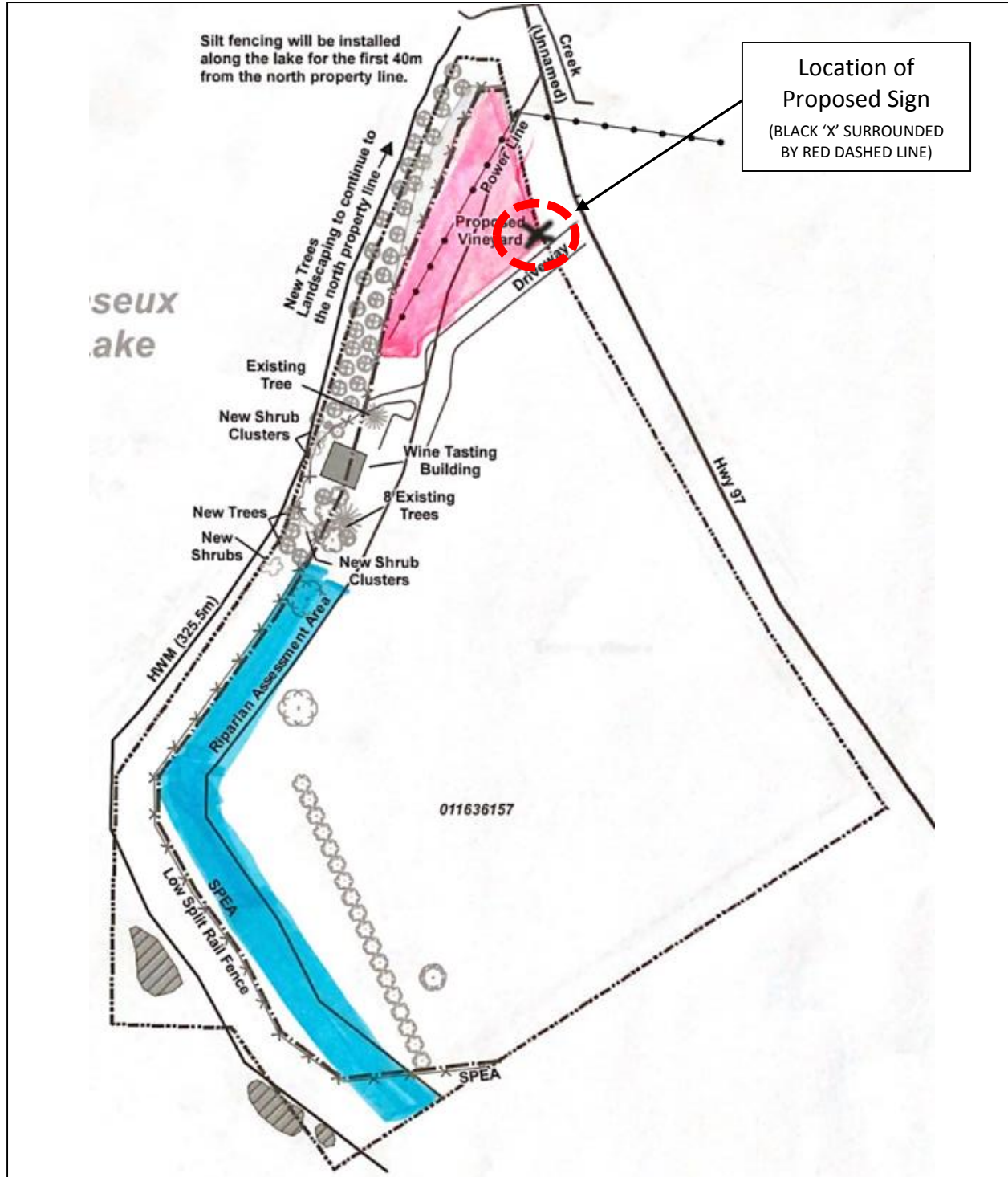
101 Martin St, Penticton, BC, V2A-5J9
Tel: 250-492-0237 Email: planning@rdos.bc.ca



Development Variance Permit

File No. D2021.040-DVP

Schedule 'B'



Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9
 Tel: 250-492-0237 Email: planning@rdos.bc.ca



Development Variance Permit

File No. D2021.040-DVP

Schedule 'C'

PAGE 1 OF 1

CUSTOMER Ramification	CONTACT David Konowalchuk	APPROVED
PHONE 250.498.6365	FAX 250.498.2215	E-MAIL DavidK@Outreachneon.com
DESIGNER Mary Fry	SALESPERSON	FILE NAME # 9499
DATE Aug. 18, 2021	THIS DRAWING IS THE SOLE PROPERTY OF OUTREACH NEON LTD. AND MAY NOT BE COPIED OR REPRODUCED IN ANY FASHION UNLESS PERMISSION IS EXPRESSED IN WRITING BY OUTREACH NEON LTD.	
SCALE NTS		

ADMINISTRATIVE REPORT



TO: Board of Directors
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Temporary Use Permit Application – Electoral Area “E” (E2021.006-TUP)

Administrative Recommendation:

THAT Temporary Use Permit No. E2021.006-TUP for a “vacation rental” use at 1024 Old Main Road, Naramata be approved.

Legal: Lot A, Plan KAP88202, District Lot 207 and 209, SDYD

Folio: E-20139.010

OCP: Agriculture (AG)

Zone: Agriculture One (AG1)

Proposed Development:

To authorize the operation of a short-term rental use of a four bedroom dwelling on the subject property for a one season term to expire on December 31, 2022 through the issuance of a Temporary Use Permit (TUP).

In support of this proposal, the applicant has stated that “we purchased 1024 Old Main Road with the purpose of having a vacation property for our family to enjoy. Since we would like to visit often, renting the property long term was not an option. We would like to rent out the house as a short-term vacation rental, starting May 2021.”

Site Context:

The subject property is approximately 1.688 ha in area and is situated on the south side of Old Main Road and on the west side of Naramata Road. It is understood that the parcel is comprised of a single detached dwelling, a garage/shed and a cherry orchard.

The surrounding pattern of development is generally characterised by agricultural lands interspersed with smaller residential parcels.

Background:

The current boundaries of the subject property were created by a Plan of Subdivision deposited with the Land Titles Office in Kamloops on December 23, 2008 while available Regional District records indicate that a building permit for a single family dwelling (1974) has previously been issued for this property.

Under the Electoral Area “E” Official Community Plan (OCP) Bylaw No. 2458, 2008, the subject property is currently designated Agriculture (AG), an objective of which includes protecting such lands from uses that are inconsistent with agricultural use or are incompatible with existing agricultural uses in the area.

In support of this, Section 9.3 of the Electoral Area “E” OCP Bylaw directs that the principal use of lands designated Agriculture shall be agriculture and also encourages secondary ‘value added’ uses such as agri-tourism for the purpose of diversifying and enhancing farm income, provided that these developments are compatible with the agricultural character of the area, and that they do not present a potential conflict with surrounding properties.

A Health and Safety Inspection was completed on September 16, 2021 and the building inspector identified no deficiencies.

A letter prepared by a Registered On-Site Wastewater Practitioner (ROWP) has been provided stating that the septic system is being updated and “a new sewerage system has been designed for this property that will accommodate a vacation rental with a maximum occupancy of up to 10 persons”

Under the Electoral Area “E” Zoning Bylaw No. 2459, 2008, the property is currently zoned Agriculture One (AG1) which, among other uses, allows for single detached dwellings and agriculture as a principal use, with “agri-tourism accommodation” and “bed and breakfast operations” as secondary uses.

The property is within the Agricultural Land Reserve (ALR) and has been classified as part “Residential” (Class 01) and part “Farm” (Class 09) by BC Assessment.

Public Process:

On May 5, 2021, an electronic Public Information Meeting (PIM) was held via Webex and was attended by approximately five (5) members of the public.

At its meeting of May 10, 2021, the Electoral Area “E” Advisory Planning Commission (APC) resolved to recommend to the RDOS Board that the permit renewed, subject to the renewal date for the permit being May 31, 2022 and that the permitted operating duration be ended on November 30, 2021.

Adjacent property owners will have received notification of this application with written comments being accepted up until one (1) week prior to the Board’s regular meeting at which the application is to be considered. All comments received are included as a separate item on the Board’s Agenda.

Analysis:

The proposed vacation rental use does not remove any land from agricultural production and is proposed to be used in conjunction with the existing orchard and principal dwelling.

The use is secondary to the orchard currently operated under lease and to the existing dwelling, which will be utilized part of the year by the owners. As such, the use of a vacation rental is seen to be ancillary to the primary use of the parcel.

In response to the criteria contained in Section 22.0 of the Electoral Area “E” OCP bylaw, the proposed use is seasonal in nature (May-October) and is not intensive in scale. The impact on the natural environment and neighbouring uses is minimized by being contained within an existing building and parking area on the parcel.

Conversely, the addition of uses within an agricultural area that are more commercial in nature can pose potential land use conflicts with agricultural operations. By allowing additional uses to occur, the

primary use of the property or surrounding properties as agricultural land can become threatened through the introduction of competing interests.

However, changing the duration of stay within an existing dwelling unit is not anticipated to introduce any land use conflicts that would not be present if the dwelling were used for residential purposes. For the reasons listed above, Administration supports approval of the temporary use permit, subject to the conditions contained in the permit.

Respectfully submitted:

Fiona Titley

Fiona Titley

Endorsed By:



C. Garrish, Planning Manager

Attachments: No. 1 – Agency Referral List

No. 2 – Site Photo (April 2021)

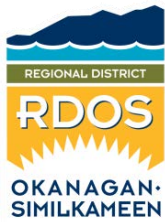
Attachment No. 1 – Agency Referral List

Referrals have been sent to the following agencies as highlighted with a , regarding Temporary Use Permit No. E2021.006-TUP:

<input checked="" type="checkbox"/>	Agricultural Land Commission (ALC)	<input checked="" type="checkbox"/>	Fortis
<input checked="" type="checkbox"/>	Interior Health Authority (IHA)	<input type="checkbox"/>	City of Penticton
<input checked="" type="checkbox"/>	Ministry of Agriculture	<input type="checkbox"/>	District of Summerland
<input type="checkbox"/>	Ministry of Energy, Mines & Petroleum Resources	<input type="checkbox"/>	Town of Oliver
<input type="checkbox"/>	Ministry of Municipal Affairs & Housing	<input type="checkbox"/>	Town of Osoyoos
<input type="checkbox"/>	Ministry of Environment & Climate Change Strategy	<input type="checkbox"/>	Town of Princeton
<input type="checkbox"/>	Ministry of Forest, Lands, Natural Resource Operations & Rural Development (Archaeology Branch)	<input type="checkbox"/>	Village of Keremeos
<input type="checkbox"/>	Ministry of Jobs, Trade & Technology	<input type="checkbox"/>	Okanagan Nation Alliance (ONA)
<input type="checkbox"/>	Ministry of Transportation and Infrastructure	<input type="checkbox"/>	Penticton Indian Band (PIB)
<input type="checkbox"/>	Integrated Land Management Bureau	<input type="checkbox"/>	Osoyoos Indian Band (OIB)
<input type="checkbox"/>	BC Parks	<input type="checkbox"/>	Upper Similkameen Indian Band (USIB)
<input type="checkbox"/>	School District #53 (Areas A, B, C, D & G)	<input type="checkbox"/>	Lower Similkameen Indian Band (LSIB)
<input type="checkbox"/>	School District #58 (Area H)	<input type="checkbox"/>	Environment Canada
<input type="checkbox"/>	School District #67 (Areas D, E, F, I)	<input type="checkbox"/>	Fisheries and Oceans Canada
<input type="checkbox"/>	Central Okanagan Regional District	<input type="checkbox"/>	Canadian Wildlife Services
<input type="checkbox"/>	Kootenay Boundary Regional District	<input type="checkbox"/>	OK Falls Irrigation District
<input type="checkbox"/>	Thompson Nicola Regional District	<input type="checkbox"/>	Kaleden Irrigation District
<input type="checkbox"/>	Fraser Valley Regional District	<input type="checkbox"/>	Irrigation District / improvement Districts / etc.
<input checked="" type="checkbox"/>	Naramata Fire Department		

Attachment No. 2 – Site Photo (April 2021)





TEMPORARY USE PERMIT

FILE NO.: E2021.006-TUP

Owner:

Agent:

GENERAL CONDITIONS

1. This Temporary Use Permit is issued subject to compliance with all of the bylaws of the Regional District of Okanagan-Similkameen applicable thereto, except as specifically varied or supplemented by this Permit.
2. The land described shall be developed strictly in accordance with the terms and conditions of this Permit, and any plans and specifications attached to this Permit which shall form a part thereof.
3. Where there is a conflict between the text of the permit and permit drawings or figures, the drawings or figures shall govern the matter.
4. This Temporary Use Permit is not a Building Permit.

APPLICABILITY

5. This Temporary Use Permit applies to, and only to, those lands, including any and all buildings, structures and other development thereon, within the Regional District as shown on Schedules 'A', 'B', 'C', 'D', and 'E', and described below:

Legal Description: Lot A, Plan KAP88202, District Lot 207 and 209, SDYD
 Civic Address: 1024 Old Main Road
 Parcel Identifier (PID): 027-774-457 Folio: E-02139.010

TEMPORARY USE

6. In accordance with Section 22.0 of the Electoral Area "E" Official Community Plan Bylaw No. 2458, 2008, the land specified in Section 5 may be used for a "vacation rental" use as defined in the Electoral Area "E" Zoning Bylaw, being the use of a residential dwelling unit for the temporary commercial accommodation of paying guests for a period of less than one month.

CONDITIONS OF TEMPORARY USE

7. The vacation rental use of the land is subject to the following conditions:
 - a) the vacation rental use shall occur only between May 1st and October 31st;
 - b) the following information must be posted within the dwelling unit while the vacation rental use is occurring:
 - i) the location of property lines by way of a map;
 - ii) a copy of the Regional District's Electoral Area "E" Noise Regulation and Prohibition Bylaw;
 - iii) measures to address water conservation;
 - iv) instructions on the use of appliances that could cause fires, and for evacuation of the building in the event of fire;
 - v) instructions on the storage and management of garbage;
 - vi) instructions on septic system care; and
 - vii) instructions on the control of pets (if pets are permitted by the operator) in accordance with the Regional District's Animal Control Bylaw.
 - c) the maximum number of bedrooms that may be occupied by paying guests shall be four (4);
 - d) the number of paying guests that may be accommodated at any time shall not exceed eight (8);
 - e) a minimum of four (4) on-site vehicle parking spaces shall be provided for paying guests;
 - f) camping and the use of recreational vehicles, accessory buildings and accessory structures on the property for vacation rental occupancy are not permitted; and
 - g) current telephone contact information for a site manager or the property owner, updated from time to time as necessary, as well as a copy of this Temporary Use Permit shall be provided to the owner of each property situated within 100 metres of the land and to each occupant of such property if the occupier is not the owner.
 - h) vacation rental operation must follow the Ministry of Health's COVID-19 Guidance for the Hotel Sector during the Provincial State of Emergency, including environmental cleaning, staff health and communication, and any subsequent provincial health orders for hotel operators.
 - i) information shall be posted within the dwelling unit during the Provincial State of Emergency for COVID-19 following Provincial recommended communication, signage and posters for the Hotel Sector on the following topics:
 - i) Symptoms of COVID-19

- ii) B.C.'s COVID-19 Self-Assessment Tool
 - iii) Handwashing
 - iv) Respiratory/cough etiquette
 - v) Self-isolation and self-monitoring
- j) a sign must be posted on the front entrance telling staff not to enter the premises if they are feeling ill.
- k) all guests must follow Provincial guidelines during the Provincial State of Emergency for COVID-19, including avoiding non-essential travel as a measure to protect vulnerable people in communities from COVID-19.

COVENANT REQUIREMENTS

8. Not applicable.

SECURITY REQUIREMENTS

9. Not applicable.

EXPIRY OF PERMIT

10. This Permit shall expire on December 31, 2022.

Authorising resolution passed by Regional Board on ____ day of _____, 2021.

B. Newell, Chief Administrative Officer

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

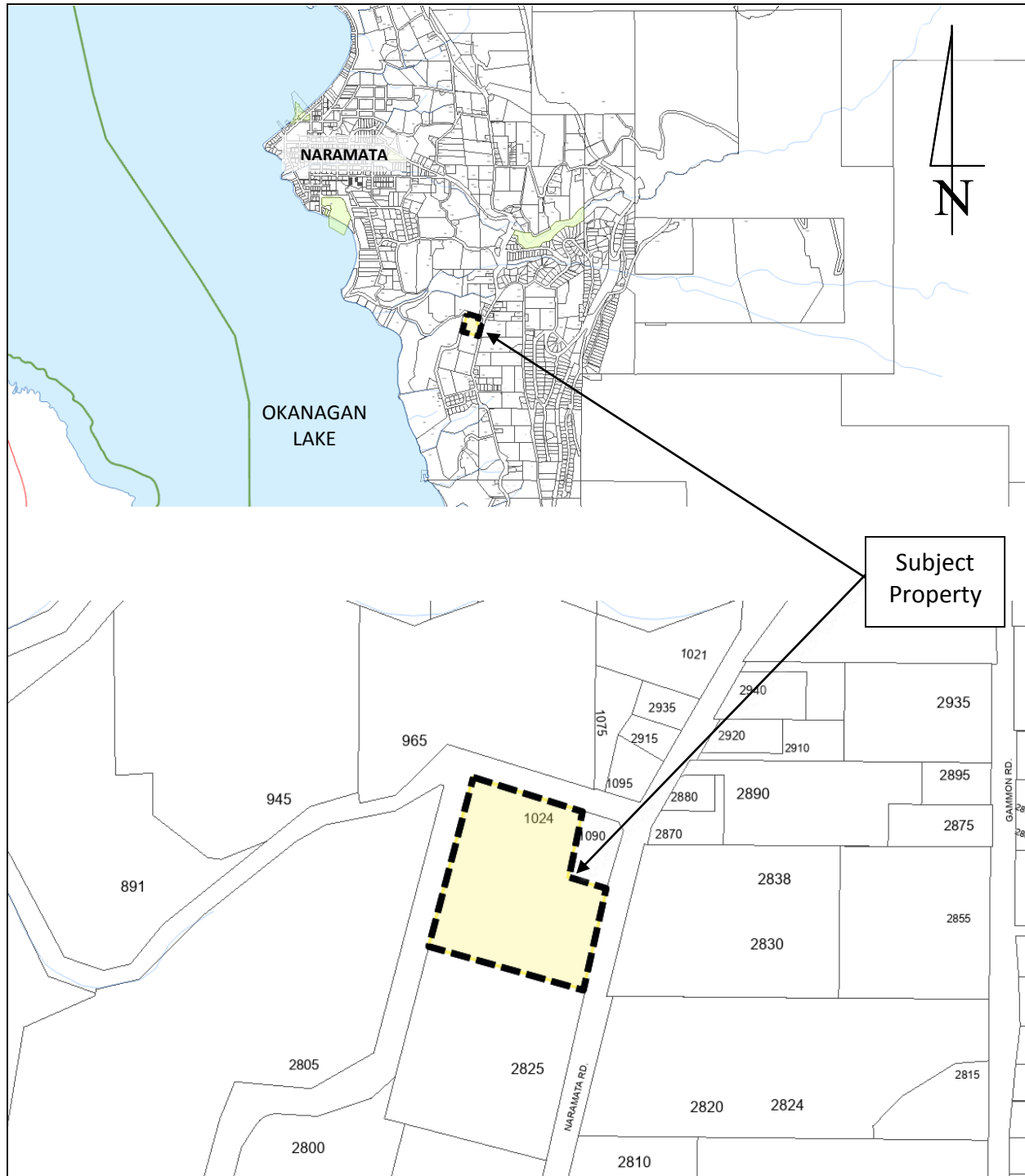
Telephone: 250-492-0237 Email: planning@rdos.bc.ca



Temporary Use Permit

File No. E2021.006-TUP

Schedule 'A'



Temporary Use Permit No. E2021.006-TUP

Page 4 of 8

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

Telephone: 250-492-0237 Email: info@rdos.bc.ca



Temporary Use Permit

File No. E2021.006-TUP

Schedule 'B'



Temporary Use Permit No. E2021.006-TUP

Page 5 of 8

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

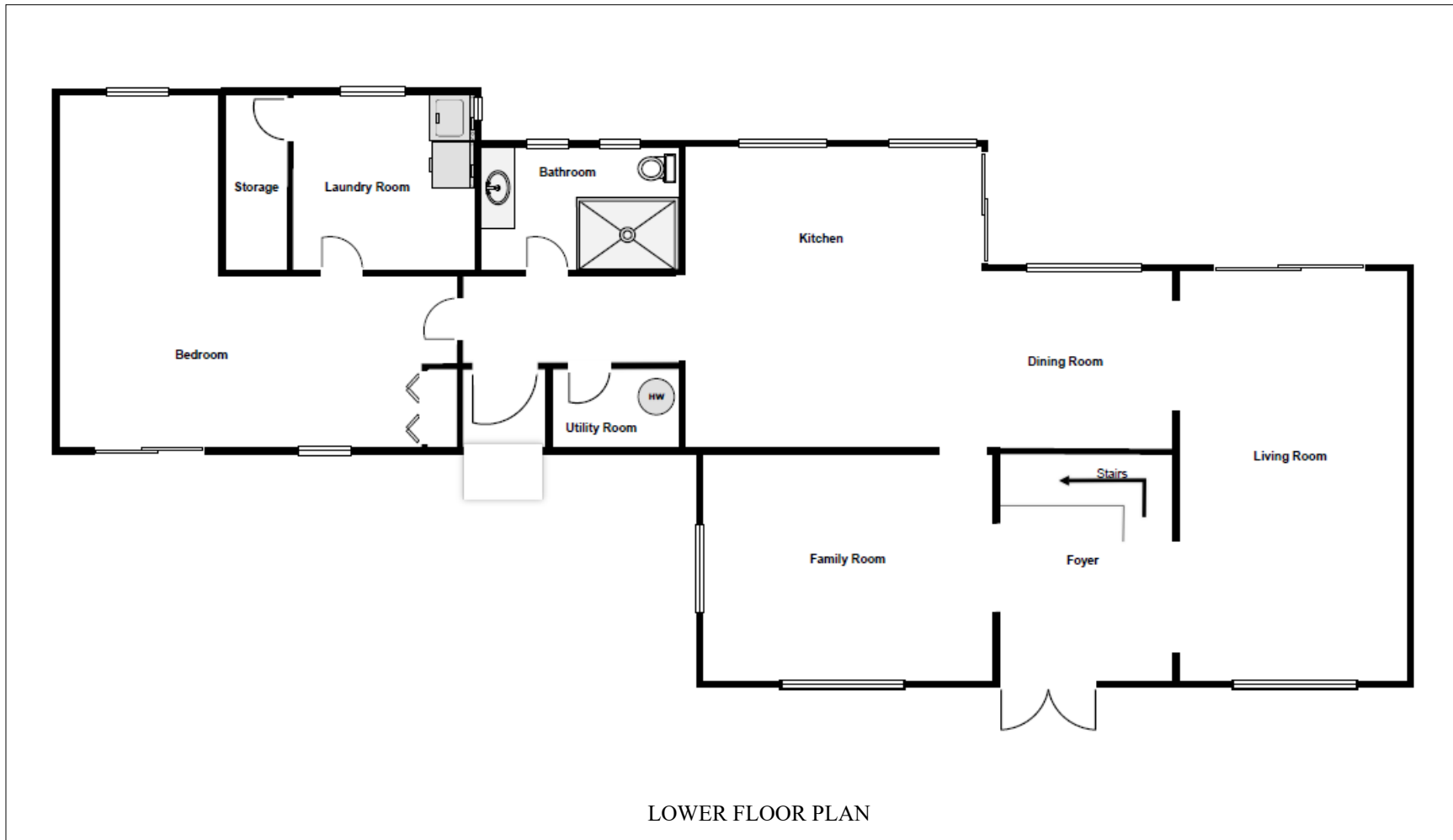
Telephone: 250-492-0237 Email: info@rdos.bc.ca



Temporary Use Permit

File No. E2021.006-TUP

Schedule 'D'



LOWER FLOOR PLAN

Temporary Use Permit No. E2021.006-TUP

Page 7 of 8

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

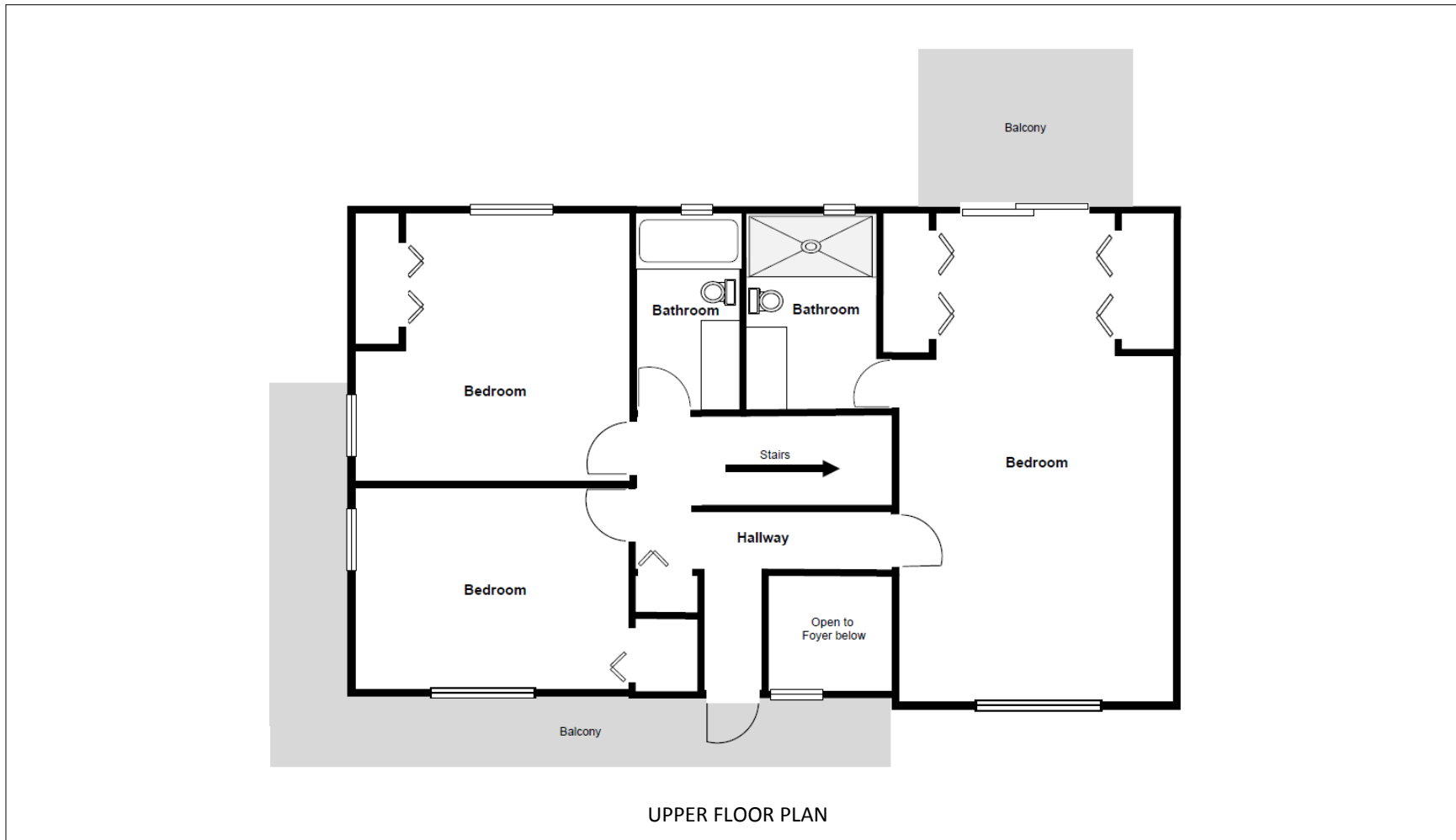
Telephone: 250-492-0237 Email: info@rdos.bc.ca



Temporary Use Permit

File No. E2021.006-TUP

Schedule 'E'



Temporary Use Permit No. E2021.006-TUP

Page 8 of 8



May 12, 2021

JoAnn Peachey
Planner I
Regional District of Okanagan-Similkameen

Sent by email: planning@rdos.bc.ca

Dear JoAnn:

Re: File E2021.006-TUP – Temporary Use Permit at 1024 Old Main Road (PID: 027-774-457) – The Subject Property

Thank you for providing the opportunity for the Ministry of Agriculture, Food and Fisheries (Ministry) to comment on File E2021.006-TUP that proposes to issue a Temporary Use Permit to allow for the operation of a short-term vacation rental use on the Subject Property. From an agricultural perspective, the Ministry offers the following comments:

- The Subject Property is 1.7 ha with approximately 1.4 ha planted with cherry trees.
- The applicant proposes to use the existing four bedroom principal residence on the Subject Property as a short-term vacation from May 1 2021, to October 31, 2021.
- Sections 33 and 34 of the Agricultural Land Reserve (ALR) Use Regulation (ALRUR) allows agri-tourism and tourism accommodation on parcels within the ALR. While it is unclear which section of the ALRUR this TUP re-application is associated with, it appears that the TUP does meet the criteria of section 34(2) of the ALRUR.
- Guests renting the principal residence on the Subject Property may not be aware that they will be staying within an active agriculture area that is associated with farmers using “normal farm practices”. As such, RDOS may wish to add a condition under section 7(b) of the TUP stating that guests should expect to experience “normal farm practices” during their stay on the Subject Property. Suggested wording is:

“Please be advised that you are staying within an active agricultural area that is commonly associated with noise from farm operations at various times of the day, farm odours, chemical spray and dust”

- Ultimately, if the conditions of the TUP are adhered to, the Ministry does not believe that this application will have a negative impact on agriculture both on the Subject Property itself, and on nearby agricultural operations.

Ministry of Agriculture,
Food and Fisheries

Extension and Support Services
Branch

Mailing Address:
PO Box 9120, Stn Prov Gov
Victoria, BC V8W 9B4

Please contact Ministry staff if you have any questions regarding the above comments.

Thank you for the opportunity to provide comments from an agricultural perspective with respect to this file.

Sincerely,



Reed Bailey
Land Use Planner
778-698-3455
Reed.Bailey@gov.bc.ca

Philip Gyug, P.Ag.
Regional Agrologist
250-378-8476
Philip.Gyug@gov.bc.ca

Cc: Sara Huber, Regional Planner – Agricultural Land Commission

the Property is used as part of an active agricultural operation and is within the ALR. Other than that, ALC staff have no objection to the TUP.

The ALC strives to provide a detailed response to all referrals affecting the ALR; however, you are advised that the lack of a specific response by the ALC to any draft provisions cannot in any way be construed as confirmation regarding the consistency of the submission with the ALCA, the Regulations, or any decisions of the Commission.

This response does not relieve the owner or occupier of the responsibility to comply with applicable Acts, regulations, bylaws of the local government, and decisions and orders of any person or body having jurisdiction over the land under an enactment.

If you have any questions about the above comments, please contact the undersigned at 236-468-3258 or by e-mail (Sara.Huber@gov.bc.ca).

Yours truly,

PROVINCIAL AGRICULTURAL LAND COMMISSION

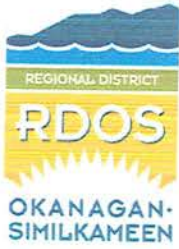


Sara Huber, Regional Planner

Enclosure: Referral of RDOS E2021-006-TUP

CC: Ministry of Agriculture – Attention: Alison Fox (Alison.Fox@gov.bc.ca)

52197m1



Feedback Form

RECEIVED
Regional District

MAY - 4 2021

Regional District of Okanagan Similkameen

101 Martin Street, Penticton, BC, V2A-5J9

Tel: 250-492-0237 / Fax: 250-492-0063 / Email: planning@rdos.bc.ca

101 Martin Street
Penticton BC V2A 5J9

TO: Regional District of Okanagan Similkameen FILE NO.: E2021.006-TUP

FROM: Name: EARL ROWLSTON / BRENDA LENDÉ
(please print)

Street Address: _____ NARAMATA
VOHINI

Date: MAY 1ST 2021

RE: Temporary Use Permit (TUP) Renewal – "Vacation Rental" Use
1024 Old Main Road, Naramata

My comments / concerns are:

- I do support the proposed use at 1024 Old Main Road.
- I do support the proposed use at 1024 Old Main Road, subject to the comments listed below.
- I do not support the proposed use at 1024 Old Main Road.

Written submissions received from this information meeting will be considered by the Regional District Board prior to a decision being made on this TUP application.

WE ARE OPPOSED TO THIS T.U.P. WE SEE NO BENEFIT TO THE COMMUNITY IN VACATION RENTALS. THE ONLY PERSONS THAT BENEFIT ARE THE ONES WHO COLLECT THE RENT & THE PENTICTON GROCERS.

HAVING FIRST HAND EXPERIENCE LIVING BETWEEN 2 VAC. RENTALS, ONE FOR 7 YRS, THE OTHER FOR 3 YRS WE KNOW HOW NOISY & BUSY THEY ARE. THE COMMUNITY WOULD BENEFIT MORE FROM STABLE LONG TERM RENTAL HOUSING THAN IT DOES FROM SHORT TERM RENTALS THAT THEN SIT EMPTY FOR 1/2 THE YEAR.

THE RDOS COMPLETED TEMPORARY USE PERMITS LISTS A TOTAL OF 10 CURRENT T.U.P'S. THE WEB SHOWS WELL OVER 90 HOMES IN NARAMATA THAT ADVERTISE PRIVATE HOMES & SUITES, MOST WITH GOURMET KITCHENS OR AT LEAST A WET BAR. THESE ARE NOT BEBS. VOLUNTARY COMPLIANCE TO APPLY FOR A T.U.P. IS CLEARLY NOT WORKING AND WE FEEL THE RDOS SHOULD ADDRESS THIS ISSUE BEFORE ALLOWING EVEN MORE HOLIDAY HOMES TO OPEN.

Feedback Forms must be completed and returned to the Regional District prior to the Board meeting where the TUP will be considered.

Protecting your personal information is an obligation the Regional District of Okanagan-Similkameen takes seriously. Our practices have been designed to ensure compliance with the privacy provisions of the Freedom of Information and Protection of Privacy Act (British Columbia) ("FIPPA"). Any personal or proprietary information you provide to us is collected, used and disclosed in accordance with FIPPA. Should you have any questions about the collection, use or disclosure of this information please contact: Manager of Legislative Services, RDOS, 101 Martin Street, Penticton, BC V2A 5J9, 250-492-0237.

BRENDA LENDLE / EARL ROWLSTON

Dear Planning Department
(Area E)

NARAMATA, B.C.
VOH 1M1

This letter is regarding vacation rentals in Naramata and T.U.P.s.

Until very recently, we were unaware of T.U.P.s and last spring when two T.U.P.s were posted on Hayman and one on 8th St, a very common walking route for the villagers, it got many people asking, Why am I seeing this and I've never seen one at our neighbours? Us included.

A call to by-laws gave us the information and where to look for it on the RDOS web page. As you know a T.U.P. is an opportunity for community input and for the imposition of specific conditions, such as maximum occupancy, on site parking, manger contacts and others.

We looked at the Completed Temporary Use Permits list and only found 10 current listings, then we looked at vacation rentals in Naramata on the web where we found well over 90 private homes and suites, most with full kitchens some with wet bars. The fee for a T.U.P. is not a lot of money.

All we want is for people to play by the rules and apply for their T.U.P.s and give the whole community an opportunity to voice their concerns.

We are currently between two vacation rentals, neither has a TUP, nor have they ever.

These neighbourhood rentals have meant a complete loss of our privacy. Four times a week we have a new group of holiday makers arrive. We have learned over the last 7 years that as many as seven cars loads of people at a time are all in one house. Well over the limit of 8 occupants.

These people are on holidays, paying a lot of money for accommodations and feel entitled to party late and show little respect to residents who have to work or just want some peace and quiet and privacy. These businesses are busy, crowded, noisy and benefit no one in the community except the person collecting the rent. Indeed, many advertisers of these vacation rentals advise their guest to stock up groceries in Penticton as our little store is not well stocked and rather expensive.

Most of these houses are empty all winter and deprive people of long term rentals, adding to the homeless crisis.

With the increased popularity of vacation rentals among owners and the obvious disregard for voluntary compliance to apply for a T.U.P. this situation is clearly not working and needs to be addressed. On your Temporary Use Permit (TUP) page, paragraph 2; Temporary Use Permits are not intended to be a substitute for a rezoning application with the exception of short-term vacation rental uses, which the Board has resolved to authorise on an on-going basis through the use of TUPs.

The words on-going and temporary are at odds with each other. This issue, over all, really needs to be fixed.

Sincerely,

RECEIVED
Regional District

MAY - 4 2021

101 Martin Street
Penticton BC V2A 5J9

Lauri Feindell

Subject:

FW: TUP Application No. E2021.006-TUP 1024 Old Main Road (Lot A, PlanKAP88202, District Lot 207 and 209, SDYD)

From: Rick Rohrick

Sent: July 31, 2021 9:30 AM

To: Planning <planning@rdos.bc.ca>

Subject: TUP Application No. E2021.006-TUP 1024 Old Main Road (Lot A, PlanKAP88202, District Lot 207 and 209, SDYD)

With regard to the above application, We would request that the applicants strongly be made aware that the area is a residential/agricultural area and that loud noises are not allowed. The sound carries in this area and we are directly across the ravine from the subject property.

In the past the Legend had applied for a distillery and advised the community they would operate between the hours of 9:00 AM to 5:00 PM, basically selling spirits. Within a few months they had opened a restaurant and had various parties with loud partying and amplified music playing on a weekly basis that continued up to 10:00 pm.

As a result of being burnt by the Legend we are very concerned with any additional developments in our area that can potentially create noise problems. For example drunken parties with screaming and laughing to all hours, loud music playing at all hours etc.

The noise issue is a pressing and real concern for us and I trust this will be made clear to the applicants.

Yours truly

Rick and Linda Rohrick



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E02139.010
PIMENTEL



ADMINISTRATIVE REPORT



TO: Board of Directors
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Temporary Use Permit Application – Vacation Rental – Electoral Area “E” (E2021.021-TUP)

Administrative Recommendation:

THAT Temporary Use Permit No. E2021.021-TUP for a “vacation rental” use at 4785 Mill Road, Naramata be approved.

Legal: Lot 3, Plan KAP12051, District Lot 211, SDYD

Folio: E-02293.005

OCP: Small Holdings (SH)

Zone: Small Holdings Five (SH5)

Proposed Development:

To allow for a vacation rental use on the subject property through the issuance of a Temporary Use Permit (TUP).

In support of this proposal, the applicant has stated that the “proposed Temporary Use is an occasional vacation rental during the shoulder seasons as this is the owner's full-time summer residence. Rentals will be locally professionally hosted by a vacation rental manager. Preferred months are Sept/Oct and March-June ...”

Site Context:

The subject property is approximately 0.13 ha in area and is situated on the south-west end of Mill Road. It borders on Okanagan Lake with approximately 47 m of lake front. It is understood that the parcel is comprised of a single-detached dwelling that is in the RDOS water service area and serviced by an on-site septic system.

The surrounding pattern of development is generally characterised by residential to the north along the Lake and agricultural on all other sides.

Background:

The current boundaries of the subject property were created by a Plan of Subdivision deposited with the Land Titles Office in Kamloops on January 23, 1962, while available Regional District records indicate that building permits for demolition of the previous dwelling (February 2006) and building the new single family dwelling (March 2006).

Under the Electoral Area “E” Official Community Plan (OCP) Bylaw No. 2458, 2008, the subject property is currently designated Small Holdings (SH), and is the subject of a Watercourse Development Permit (WDP) Area designation.

Section 22.0 of Electoral Area “E” OCP Bylaw contains criteria in evaluating a temporary use permit application. Section 22.3.5 and 22.3.6 specify conditions for temporary use permits and short-term vacation rentals, respectively.

Under the Electoral Area “E” Zoning Bylaw No. 2459, 2008, the property is currently zoned Small Holdings Five (SH5) which allows a “single detached dwellings” as the principle use as well as “bed and breakfast operation” and “secondary suites” as secondary uses.

BC Assessment has classified the property as Residential (Class 01).

Public Process:

On September 23, 2021, a Public Information Meeting (PIM) was held via WebEx and was not attended by any members of the public.

At its meeting of September 13, 2021, the Electoral Area “E” Advisory Planning Commission (APC) resolved to recommend to the RDOS Board that the subject development application be approved, subject to the conditions of vacation rental TUPs.

Adjacent property owners will have received notification of this application with written comments being accepted up until one (1) week prior to the Board’s regular meeting at which the application is to be considered. All comments received are included as a separate item on the Board’s Agenda.

Analysis:

The Electoral Area “E” OCP Bylaw includes supportive policy for vacation rental uses in residential areas and outlines a number of criteria against which the board will consider such a use.

The proposed use is seasonal in nature (May-June and September-December) and is not intensive in scale. The impact on the natural environment and neighbouring uses is minimized by being contained within an existing building and parking area on the parcel. A health and safety inspection has successfully been completed.

The intent of the Regional District’s “Vacation Rental Temporary Use Permit Policy”, and supportive OCP policies is to allow for a new vacation rental use to operate for one “season” to determine if such a use is inappropriate, incompatible, or unviable at a particular location and, if so, to allow for the permit to lapse or not be renewed.

The applicant has been unable to retain a Registered On-site Wastewater Practitioner (ROWP) to write a positive compliance letter for the septic system to support the proposed vacation rental use.

The professional Engineer who designed the septic system and a local ROWP have confirmed that the system was designed for a four-bedroom home. However, there are inconsistencies with a recent real estate listing for the property and the original Interior Health Record of Sewerage that lead the ROWP to fail the system without conducting a site-visit due to assumptions the home has been modified.

Administration considers the real estate listing to be a marketing tool that inflated the actual usable size of the home and should not be used to inform calculations for the septic system. Further, an RDOS Building Inspector conducted a Health and Safety Inspection of the home and confirmed that no modifications have been made since the building permit was issued in 2006 and the system was installed in 2008.

This application has highlighted the need for greater clarity in the Regional District's Development Procedures Bylaw regarding confirmation of septic compliance when a new use, a change of use or new development (i.e. dwelling addition) is being proposed on a parcel.

Alternatives:

1. THAT the Board of Directors deny Temporary Use Permit No. E2021.021-TUP; or
2. THAT the Board of Directors defer consideration of Temporary Use Permit No. E2021.021-TUP for the following reasons:
 - i) *TBD*

Respectfully submitted:

D. DeVries _____

Danielle DeVries, Planner 1

Endorsed By:

 _____

C. Garrish, Planning Manager

Attachments: No. 1 – Agency Referral List

No. 2 - Applicant's Site Plan

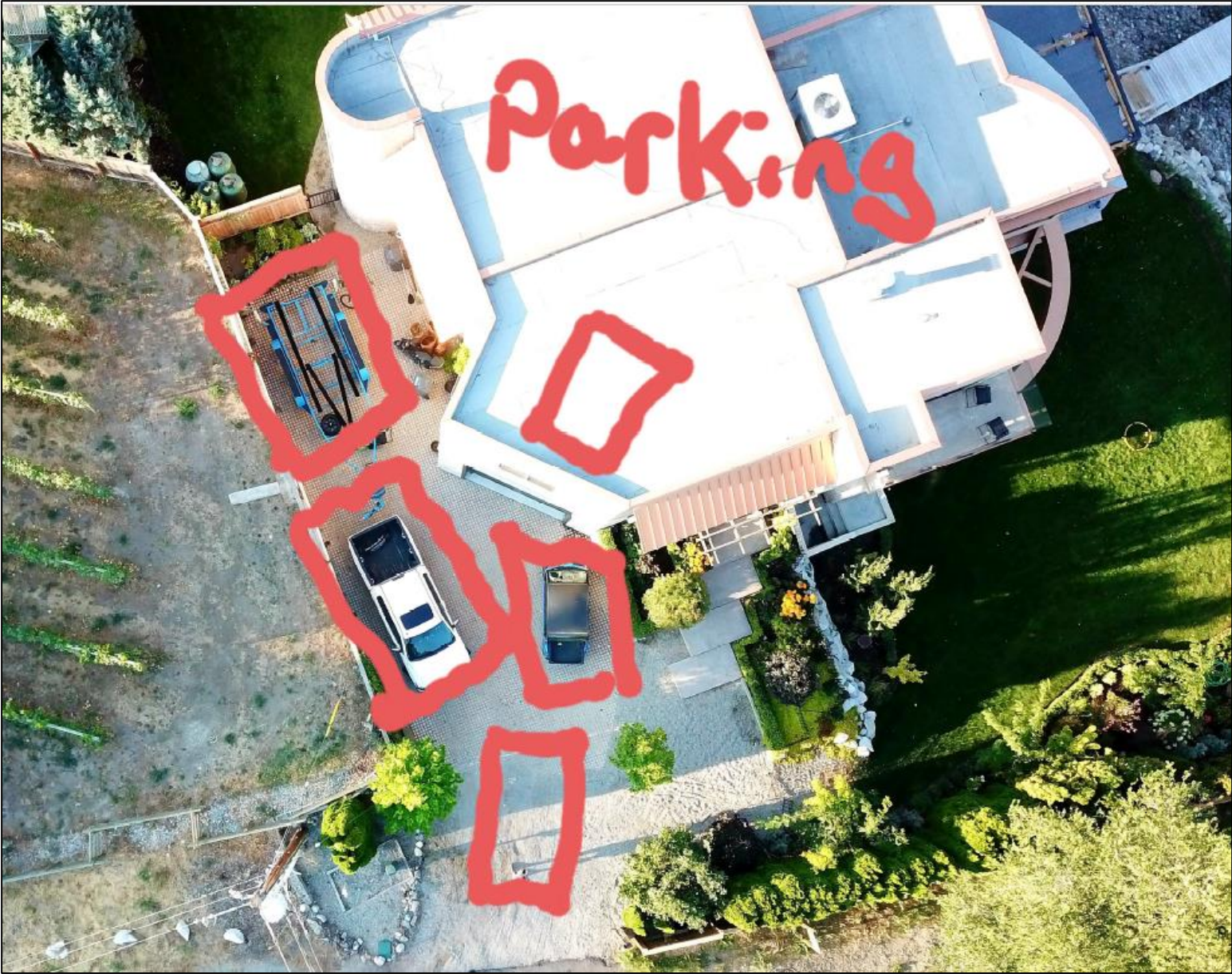
No. 3 – Site Photo (2017)

Attachment No. 1 – Agency Referral List

Referrals have been sent to the following agencies as highlighted with a , prior to Board consideration of TUP No. E2021.019-TUP:

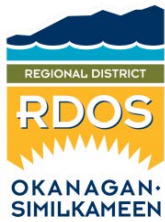
<input type="checkbox"/>	Agricultural Land Commission (ALC)	<input checked="" type="checkbox"/>	Fortis
<input checked="" type="checkbox"/>	Interior Health Authority (IHA)	<input type="checkbox"/>	City of Penticton
<input type="checkbox"/>	Ministry of Agriculture	<input type="checkbox"/>	District of Summerland
<input type="checkbox"/>	Ministry of Energy, Mines & Petroleum Resources	<input type="checkbox"/>	Town of Oliver
<input type="checkbox"/>	Ministry of Municipal Affairs & Housing	<input type="checkbox"/>	Town of Osoyoos
<input type="checkbox"/>	Ministry of Environment & Climate Change Strategy	<input type="checkbox"/>	Town of Princeton
<input checked="" type="checkbox"/>	Ministry of Forest, Lands, Natural Resource Operations & Rural Development (Archaeology Branch)	<input type="checkbox"/>	Village of Keremeos
<input type="checkbox"/>	Ministry of Jobs, Trade & Technology	<input type="checkbox"/>	Okanagan Nation Alliance (ONA)
<input type="checkbox"/>	Ministry of Transportation and Infrastructure	<input type="checkbox"/>	Penticton Indian Band (PIB)
<input type="checkbox"/>	Integrated Land Management Bureau	<input type="checkbox"/>	Osoyoos Indian Band (OIB)
<input type="checkbox"/>	BC Parks	<input type="checkbox"/>	Upper Similkameen Indian Band (USIB)
<input type="checkbox"/>	School District #53 (Areas A, B, C, D & G)	<input type="checkbox"/>	Lower Similkameen Indian Band (LSIB)
<input type="checkbox"/>	School District #58 (Area H)	<input type="checkbox"/>	Environment Canada
<input checked="" type="checkbox"/>	School District #67 (Areas D, E, F, I)	<input type="checkbox"/>	Fisheries and Oceans Canada
<input type="checkbox"/>	Central Okanagan Regional District	<input type="checkbox"/>	Canadian Wildlife Services
<input type="checkbox"/>	Kootenay Boundary Regional District	<input type="checkbox"/>	OK Falls Irrigation District
<input type="checkbox"/>	Thompson Nicola Regional District	<input type="checkbox"/>	Kaleden Irrigation District
<input type="checkbox"/>	Fraser Valley Regional District	<input type="checkbox"/>	Irrigation District / improvement Districts / etc.
<input checked="" type="checkbox"/>	Naramata Fire Department		

Attachment No. 2 – Applicant’s Site Plan



Attachment No. 3 – Site Photo (2017)





TEMPORARY USE PERMIT

FILE NO.: E2021.021-TUP

GENERAL CONDITIONS

1. This Temporary Use Permit is issued subject to compliance with all of the bylaws of the Regional District of Okanagan-Similkameen applicable thereto, except as specifically varied or supplemented by this Permit.
2. The land described shall be developed strictly in accordance with the terms and conditions of this Permit, and any plans and specifications attached to this Permit which shall form a part thereof.
3. Where there is a conflict between the text of the permit and permit drawings or figures, the drawings or figures shall govern the matter.
4. This Temporary Use Permit is not a Building Permit.

APPLICABILITY

5. This Temporary Use Permit applies to, and only to, those lands, including any and all buildings, structures and other development thereon, within the Regional District as shown on Schedules 'A', 'B', 'C', and 'D' and described below:

Legal Description: Lot 3, Plan KAP12051, District Lot 211, SDYD

Civic Address: 4785 Mill Road

Parcel Identifier (PID): 009-467-921 Folio: E-02293.005

TEMPORARY USE

6. In accordance with Section 22.0 of the Electoral Area "E" Official Community Plan Bylaw No. 2458, 2008, the land specified in Section 5 may be used for "vacation rental" use as defined in the Electoral Area "E" Zoning Bylaw No. 2459, 2008 section 4.0, being the use of a residential dwelling unit for the accommodation of paying guests occupying the dwelling unit for a period of less than 30 days.

CONDITIONS OF TEMPORARY USE

7. The vacation rental use of the land is subject to the following conditions:

- a) the vacation rental use shall occur only between March 1st and June 30th and between September 1st and October 31st;
- b) the following information must be posted within the dwelling unit while the vacation rental use is occurring:
 - i) the location of property lines by way of a map;
 - ii) a copy of the Regional District's Electoral Area "E" Noise Regulation and Prohibition Bylaw;
 - iii) measures to address water conservation;
 - iv) instructions on the use of appliances that could cause fires, and for evacuation of the building in the event of fire;
 - v) instructions on the storage and management of garbage;
 - vi) instructions on septic system care; and
 - vii) instructions on the control of pets (if pets are permitted by the operator) in accordance with the Regional District's Animal Control Bylaw.
- c) the maximum number of bedrooms that may be occupied by paying guests shall be four (4);
- d) the number of paying guests that may be accommodated at any time shall not exceed eight (8);
- e) a minimum of four (4) on-site vehicle parking spaces shall be provided for paying guests;
- f) camping and the use of recreational vehicles, accessory buildings and accessory structures on the property for vacation rental occupancy are not permitted; and
- g) current telephone contact information for a site manager or the property owner, updated from time to time as necessary, as well as a copy of this Temporary Use Permit shall be provided to the owner of each property situated within 100 metres of the land and to each occupant of such property if the occupier is not the owner.

COVENANT REQUIREMENTS

8. Not applicable.

SECURITY REQUIREMENTS

9. Not applicable.

EXPIRY OF PERMIT

10. This Permit shall expire on October 31, 2022.

Authorising resolution passed by Regional Board on ____ day of _____, 2021.

B. Newell, Chief Administrative Officer

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

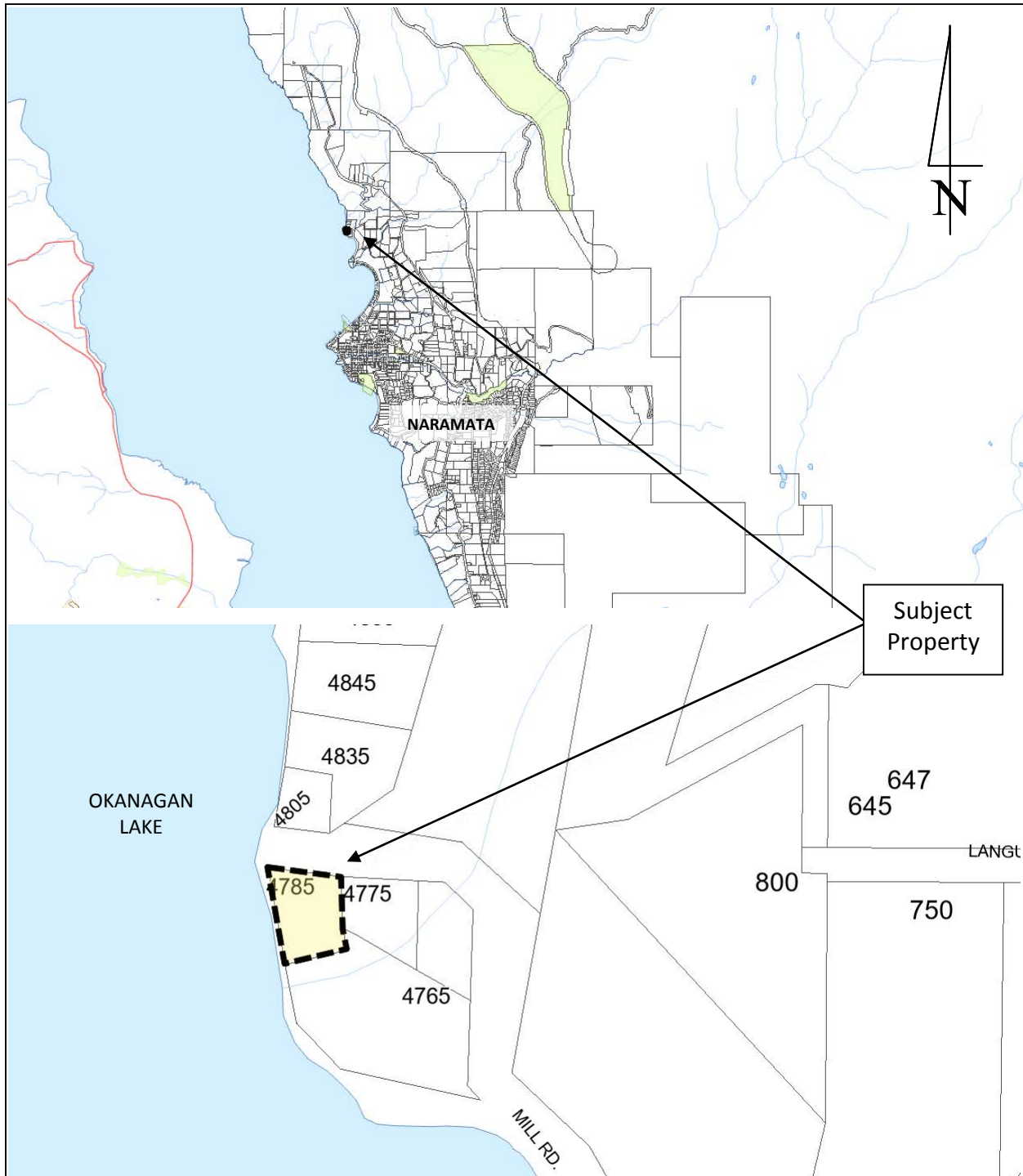
Telephone: 250-492-0237 Email: planning@rdos.bc.ca



Temporary Use Permit

File No. E2021.021-TUP

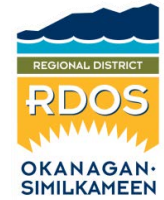
Schedule 'A'



Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

Telephone: 250-492-0237 Email: planning@rdos.bc.ca



Temporary Use Permit

File No. E2021.021-TUP

Schedule 'B'



Temporary Use Permit No. E2021.021-TUP

Page 5 of 7

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

Telephone: 250-492-0237 Email: planning@rdos.bc.ca



Temporary Use Permit

File No. E2021.021-TUP

Schedule 'C'



Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

Telephone: 250-492-0237 Email: planning@rdos.bc.ca



Temporary Use Permit

File No. E2021.021-TUP

Schedule 'D'





Interior Health

September 29, 2021
Danielle DeVries, Planner
Regional District of Okanagan-Similkameen
101 Martin Street
Penticton, BC, V2A-5J9

Sent via email: planning@rdos.bc.ca

Danielle DeVries:

RE: File E2021.021-ZONE: 4785 Mill Road: Lot 3, Plan KAP12051, District Lot 211, SDYD

Thank you for the opportunity to provide comments on this application. It is our understanding that the above referenced application seeks approval for a Temporary Use Permit (TUP) to allow the subject property to be used as a short-term vacation rental. This referral has been reviewed from a Healthy Community Development perspective. The following comments are for your consideration:

Housing is a key determinant of health. It has a significant influence on our physical and mental health, social well-being, and indirectly influences many other determinants of health such as income, early childhood development, educational opportunities, and access to health services. Healthy housing is attainable, stable, high quality, and in a location and community that meets our needs and supports health and well-being.

While this vacation rental can contribute to the property owner's income and support tourism through accommodation for the travelling public, it also reduces the availability of long-term housing units available in the community. It is important to balance long term housing needs with support for visitors and economic opportunity. As noted in the RDOS 2020 Housing Needs Assessment, there is an acute shortage of long-term rental availability.

A sewerage system file review has also been conducted (see attached sewerage record). There are concerns about the long term sustainability for onsite sewage servicing for this lot. All onsite sewerage systems have a limited lifespan. Depending on how well the system is maintained over the course of its life, will impact the length of its life. When the existing system malfunctions new land appropriate for a sewage dispersal field must be found. The more site constraints on a parcel, such as small parcel size and distance to waterways, the more difficult, and costly, the replacement system. Having said all of this, the estimated amount of sewage that would be produced by the proposed vacation rental is within the amount the system was designed for (i.e. 4 bedroom vacation rental; system designed for 4 bedrooms).

We recognize and acknowledge that we are collectively gathered on the traditional, ancestral, and unceded territories of the seven Interior Region First Nations, where we live, learn, collaborate, and work together. This region is also home to 15 Chartered Métis Communities. It is with humility that we continue to strengthen our relationships with First Nation, Métis, and Inuit peoples across the Interior.



Interior Health

Interior Health suggests this TUP not be approved without the applicant first demonstrating that a long term rental option is not feasible. In addition, that an Authorized Person, under the BC Sewerage System Regulation [B.C. Reg. 326/2004] complete a performance inspection of the existing system to ensure the system is in good working order, and that a back up area of land for a future replacement sewerage system be identified. Protecting this land with a covenant would also be prudent.

Interior Health is committed to improving the health and wellness of all by working collaboratively with local governments and community partners to create policies and environments that support good health. Should you have any questions about the information provided above, please don't hesitate to call or email – my contact information can be found on the bottom of this letter.

Sincerely,

Tanya Osborne, BAHS
Healthy Communities

We recognize and acknowledge that we are collectively gathered on the traditional, ancestral, and unceded territories of the seven Interior Region First Nations, where we live, learn, collaborate, and work together. This region is also home to 15 Chartered Métis Communities. It is with humility that we continue to strengthen our relationships with First Nation, Métis, and Inuit peoples across the Interior.



TUP Referral

Regional District of Okanagan-Similkameen
 101 Martin Street, Penticton, BC, V2A-5J9
 Telephone: 250-492-0237 / Email: planning@rdos.bc.ca

OFFICE USE ONLY	
Date:	September 3, 2021
Folio:	E-02293.005
File:	E2021.021-ZONE

You are requested to comment on the attached Temporary Use Permit (TUP) for potential effect on your agency's interests. We would appreciate your response **WITHIN 26 DAYS**. If no response is received within that time, it will be assumed that your agency's interests are unaffected.

Please email your reply to planning@rdos.bc.ca by **Wednesday, September 29, 2021**.

PURPOSE OF THE TEMPORARY USE PERMIT:

This application seeks approval for a Temporary Use Permit (TUP) to allow for the operation of a short-term vacation rental use at the subject property.

LEGAL DESCRIPTION: Lot 3, Plan KAP12051, District Lot 211, SDYD

CIVIC ADDRESS: 4785 Mill Road

PID: 099-467-921

AREA OF PROPERTY AFFECTED:

0.13 ha

ALR STATUS:

No

OCP DESIGNATION:

Small Holdings (SH)

ZONING DISTRICT:

Small Holdings Five (SH5)

OTHER INFORMATION:

The applicant is proposing to operate a vacation rental use from the primary dwelling on the parcel, which is indicated as four bedrooms for up to eight (8) occupants. The parcel contains a single-detached dwelling.

The subject property is serviced by on-site septic system and community water. It is in the Okanagan Lake and Baerg Creek watercourse area.

Additional information can be found at the following location:

<https://www.rdos.bc.ca/development-services/planning/current-applications-decisions/electoral-area-e/e2021-021-tup/>

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

Thank you,

D. DeVries

Danielle DeVries

Planner 1

Agency Referral List

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> Interior Health Authority | <input checked="" type="checkbox"/> Ministry of Forest, Lands, Natural Resource Operations & Rural Development | <input checked="" type="checkbox"/> School District #67 |
| <input checked="" type="checkbox"/> Naramata Volunteer Fire Department | <input checked="" type="checkbox"/> Fortis BC | |

RESPONSE SUMMARY

TEMPORARY USE PERMIT NO. E2021.021-TUP

Approval Recommended for Reasons
Outlined Below

Interests Unaffected

Approval Recommended Subject to
Conditions Below

Approval Not Recommended
Due to Reasons Outlined Below

See attached letter.

Signature:  _____

Signed By: Tanya Osborne

Agency: Interior Health

Title: Community Health Facilitator

Date: Sept 29, 2021

Sewerage System Letter of Certification

Tax Assessment Roll #: 17-67-715-02293.005 Date: JUNE 15/09
(Day/Month/Year)

To: Interior Health

Re: Sewerage system at: 4785 MILL ROAD, NARAMATA, B.C.
Street Address or General Location

LOT 3, PLAN 12051, D.L. 211, SOYD.
Legal Description

Planner: C. JEFFREY OLAND, P.Eng. Installer: GARY DICKIEM.

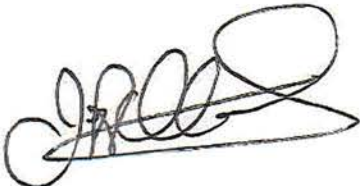

Owner: _____

The construction of the proposed sewerage system on the above described property was completed on JUNE 12/09
(Day/Month/Year)

I, the undersigned, am an authorized person as defined in the Sewerage System Regulation, BC Reg. 326/2004 and certify that:

1. the owner will be provided with
 - a copy of the sewerage system plans and specifications as they were built;
 - a maintenance plan for the sewerage system that is consistent with standard practice; and,
 - a copy of this letter of certification;
2. the sewerage system has been constructed in accordance with standard practice;
3. the sewerage system has been constructed substantially in accordance with the plans and specifications filed with the Health Authority;
4. the estimated daily domestic sewage flow through the sewerage system will be less than 22,700 litres; and,
5. if operated and maintained as set out in the maintenance plan, the sewerage system will not cause or contribute to a health hazard.

A plan of the sewerage system as it was built and a copy of the maintenance plan for the sewerage system have been appended to this letter.

<p>AUTHORIZED PERSON'S SEAL</p> 	<p>DATE LETTER OF CERTIFICATION ACCEPTED</p> 
---	---

White: Health Protection
820083 Feb 06

Canary: Owner

Pink: Building Authority

Blue: Authorized Person

13-179-00816

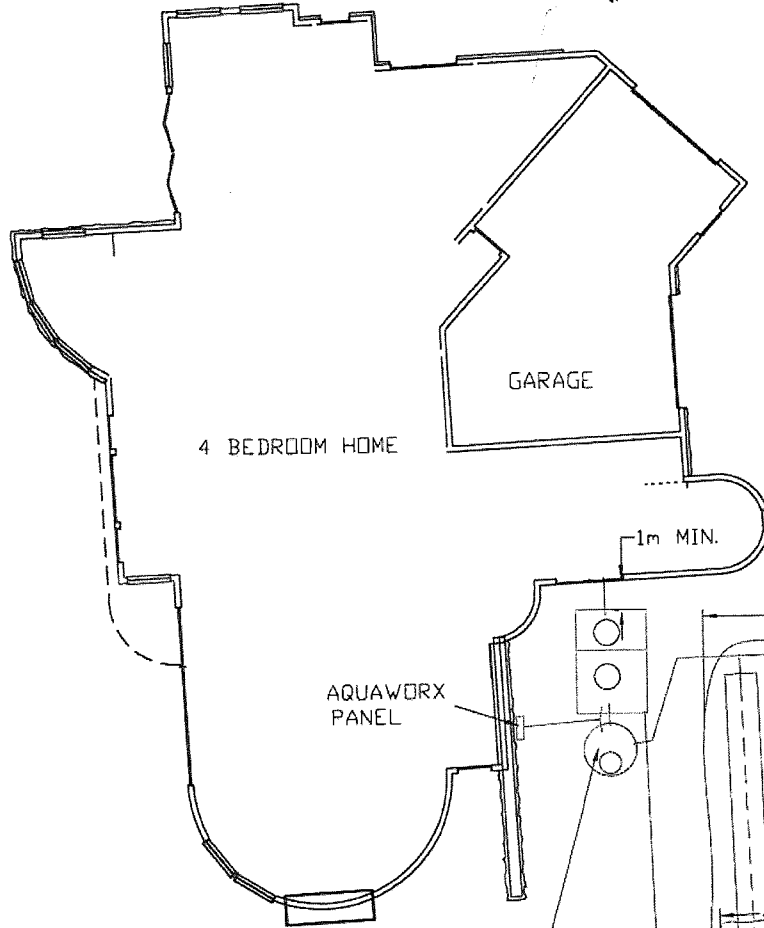
ENTERED JUN 29 2009

MILL ROAD

34.947



APPROX. LOCATION
WATER LINE



4 BEDROOM HOME

GARAGE

1m MIN.

AQUAWORK
PANEL

TREATMENT PLANT
AND PUMP STATION

35.453

OKANAGAN LAKE

46.808

24m±

30.051

EXHAUST PORT

REM LOT 2
PLAN 27775

SOILS:
0 - 0
0.2m
1.0m
PERC.

CALCUL
4 BEC
NATIVE
SAND E
DESIGN
C33 SA
2270 L
DESIGN

MAJOR
MICROF
16 SEC
PIPE S
50 Cu.
25m±
20m±
1.5m X
6m X
3 X 12
REMOV
EFFLUI
DR
2" SCH
TH
AQUAV
3
T

2 X
TRE

PER
12m

6m)
ENV

SOILS:

0 - 0.2 m SANDY LOAM, SOME GRAVEL
0.2m - 1.0m SILTY SAND
1.0m - 1.3m SILTY SAND, SOME GRAVEL
PERC. RATE 20 MIN./IN. AND 16 MIN./IN.

CALCULATIONS:

4 BEDROOMS = 1700 L/D PLUS ADDITIONAL AREA = 2270 L
NATIVE SOIL PERC. RATE = 15 TO 20 MIN./ IN.: TYPE 3 HLR = 74 L/Sq.m/D
SAND BED AREA REQUIRED = 2270 L/D / 74 L/Sq.m./D = 31 Sq.m.
DESIGN BED AREA = 100 Sq.m.
C33 SAND PERC. RATE = 2 MIN./ IN. : TYPE 3 HLR = 128 L/Sq.m/D
2270 L/D / 128 L/Sq.m/D = 17.7 Sq.m TRENCH AREA REQUIRED
DESIGN = 2 TRENCHES X 9.8m X 0.9m = 17.7 Sq.m.

MAJOR COMPONENTS

MICROFAST MODEL 0.6 C/W CONC. TANK, CONTROL PANEL, AIR PUMP ETC.
16 SECTIONS OF QUICK-4 (34" WIDE) STANDARD INFILTRATOR C/W 4 END CAPS
PIPE STANDS OR HEAVY PLASTIC TIE STRAPS INSIDE INFILTRATORS
50 Cu.m. C33 SAND
25m± X 38mm SCHED 40 PVC PIPE + FITTINGS AND 1/4" HOLES AS SHOWN
20m± X 50mm SCHED. 40 PVC PIPE + FITTINGS
1.5m X 100mm PVC C/W CAP FOR SAMPLE PORT
6m X 6m 20 MIL. RPE LINER OR EQUIVILANT
3 X 12" DIA. IRRIGATION BOX
REMOVAL 50 Cu.m. NATIVE SOIL AS REQUIRED
EFFLUENT PUMP: MYERS ME3F, 230V, 6AMP
OR GOULDS WE0312M OR L, 230V, 5 AMP
2" SCHED 40 PVC PIPING C/W BRASS CHECK, SCHED 80 BALL VALVE
THREADED UNION AND FITTINGS AS SHOWN
AQUAWORX SIMPLEX PANEL, NEMA 4X ENCLOSURE, C/W TRANSDUCOR DR
3 FLOATS AS SHOWN. TIME DOSE OPTIONAL. SET FOR
TIME SETTING (ON FOR 1 MIN OFF FOR 3 HOURS)

2 X 9.8m INFILTRATOR
TRENCHES
PERIMETER OF
12m X 4.5m SAND BED
6m X 6m 25 MIL. RPE OR
ENVIROFLEX LINER

REM LOT 2
PLAN 27775

**ON-SITE SEWAGE DISPOSAL
TYPE 3 SYSTEM ASBUILT FOR:
LOT 3, PLAN 12051, DL. 211
SDYD
4785 MILL ROAD
NARAMATA, B.C.**

OWNER:

SCALE: 0 2 4 6 8 10
1:200 (METRIC)

NOTES:

1. THE TREATMENT PLANT SHALL BE LOCATED TO PROVIDE A MIN. FALL OF 1/8" PER FOOT IN ALL BUILDING SEWER DRAINS AND PLACED ON UNDISTURBED NATIVE SOIL.
2. ROOF & SITE DRAINAGE SHOULD BE DIVERTED AWAY FROM TANK & FIELD AREA.
3. THE TREATMENT PLANT SHALL BE UNDER MAINTENANCE AGREEMENT AND SERVICED AT LEAST QUARTERLY.
4. THE DISPOSAL FIELD SHALL BE COVERED TO PROVIDE A MIN. 2% GRADE FOR SURFACE DRAINAGE AND BE PROPERLY SEEDDED AND MAINTAINED.
5. THE SITE IS LIKELY TO REMAIN SUITABLE FOR ON-SITE DISPOSAL INDEFINATELY SUBJECT TO PROPER OPERATION, MAINTENANCE AND PARTS REPLACEMENT
6. WATER-SAVING DEVICES AND PRACTICES SHOULD BE IMPLEMENTED.
7. SAMPLES FROM MONITORING WELL SHALL BE TESTED FOR BOD, SS, AND TOTAL COLIFORM FOLLOWING 6 MONTHS OF OPERATION

ISSUED FOR REVIEW

DATE: NOV. 5/08

ISSUED FOR CONSTRUCTION

DATE:

ASBUILT INSPECTION

DATE:

DRAWN BY:



**OLAND
ENGINEERING
LIMITED**

11183 BOND ROAD
LAKE COUNTRY, B.C., V4V 1J6
PHONE: (250) 766-5114 CELL: (250) 862-6322
FAX: (250) 766-5077 EMAIL: joland@silic.net

(Handwritten Signature)
C. JEFFREY OLAND, P.ENG.

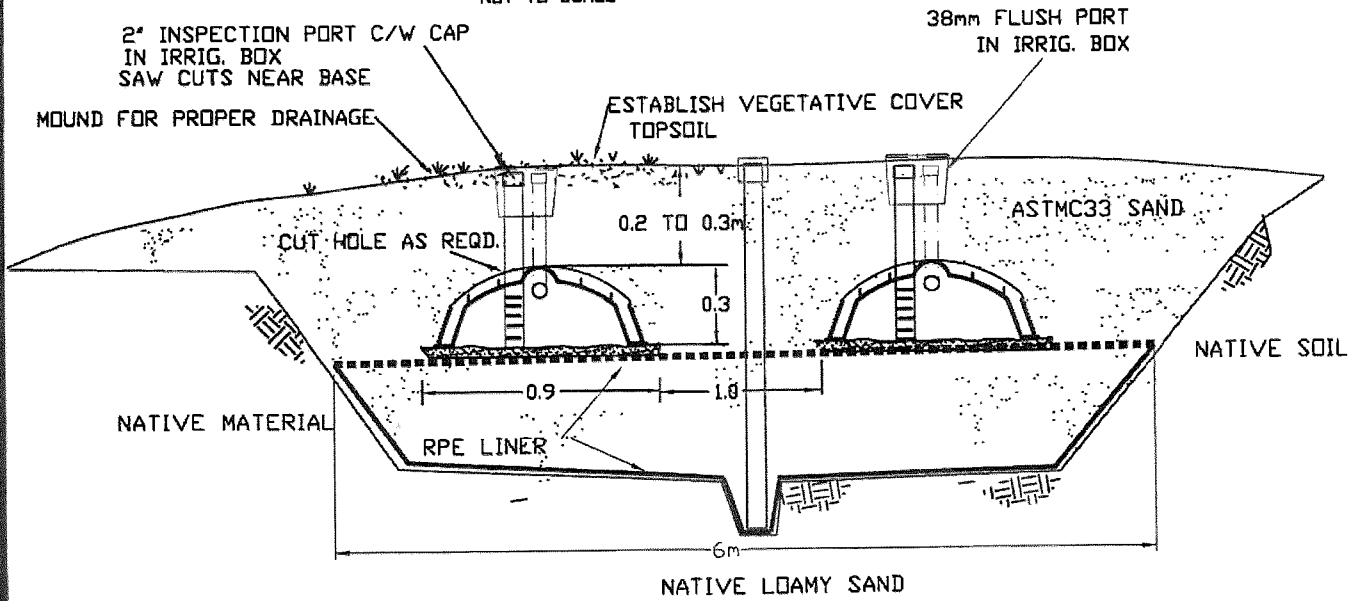
DATE: June 15, 2009 08-57.SITE.AB

TYPE 3 SEWERAGE ASBUILT DETAILS
 LOT 3, PLAN 12051, DL. 211
 SDYD
 4785 MILL ROAD
 NARAMATA, B.C.

PANEL:
 AQUAWOR
 NEMA 4X
 C/W PRE

SECTION 'B-B'
 NOT TO SCALE

INFILTRATOR Q-4 STANDARD DETAIL
 NOT TO SCALE

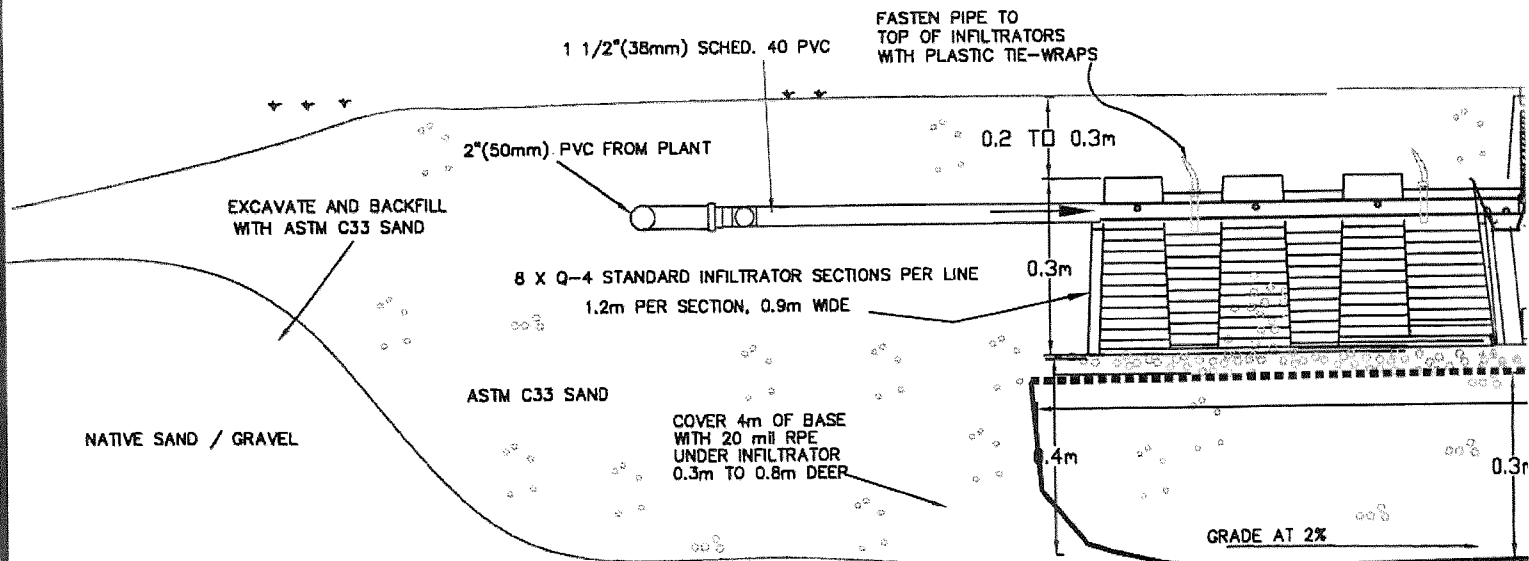


POW
 AS
 ELEC

GROU
 INSI

SECTION 'A-A'
 NOT TO SCALE

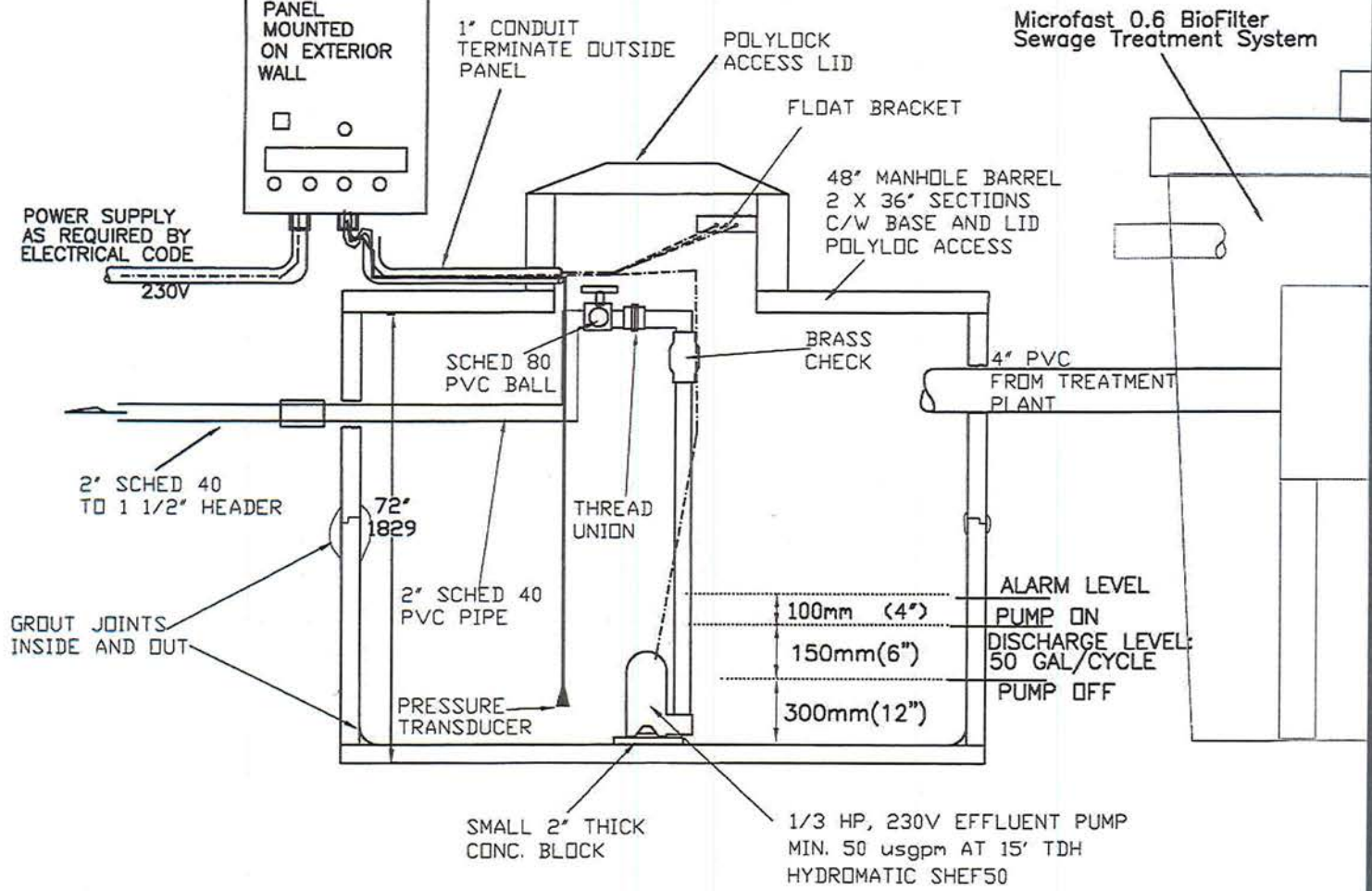
PRESSURE DISTRIBUTION BY
 1/4" HOLES APPROX. 0.6m(2') SPAC
 2 HOLES PER INFILTRATOR SECTION,



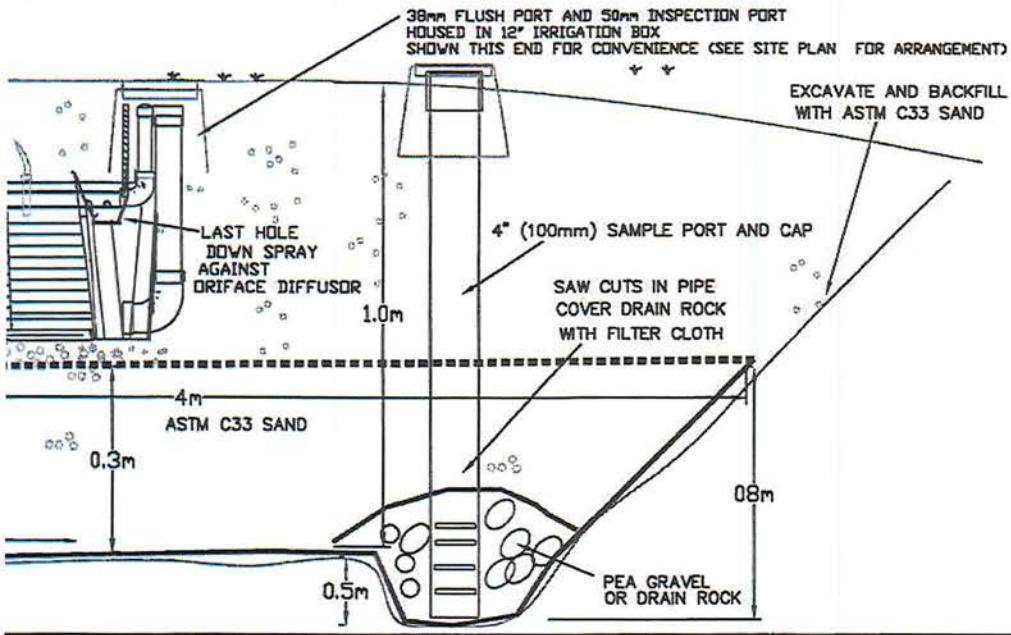
PANEL:
 AQUAWORX IPC, PROGRAMABLE
 NEMA 4X PANEL
 C/W PRESSURE TRANSDUCOR

PUMP STATION DETAIL

NOT TO SCALE



ITION SYSTEM:
 2') SPACING AT 16 HOLES PER LINE = 32 HOLES TOTAL
 SECTION, 1.5" SCHED. 40 PVC,



OLAND ENGINEERING LIMITED
 11183 BOND ROAD
 LAKE COUNTRY, B.C., V4V 1J6
 PHONE: (250) 766-5114 CELL: (250) 862-6322
 FAX: (250) 766-5077 EMAIL: joiland@silkenet

PROFESSIONAL ENGINEER
 C. JEFFREY OLAND, P.ENG.
 DATE: 04/16/09 08-57-DETAIL.AB



Please complete this entire form. If the form is incomplete, the filing may not be accepted and it will be returned to the Authorized Person.

TAX ASSESSMENT ROLL# 17-715-02293.005		<input checked="" type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> ALTERATION	<input type="checkbox"/> REPAIR <input type="checkbox"/> AMENDMENT/UPDATE ONLY	<input type="checkbox"/> ORDER ATTACHED
1. LOT INFORMATION Where sewerage system is to be constructed	LEGAL DESCRIPTION LOT 3, PLAN 12051, D.L. 211, SD4D.			
	STREET ADDRESS OR GENERAL LOCATION 4785 MILL ROAD.		CITY NARATHATA	POSTAL CODE VOH 1N0
	NAME OF LEGAL OWNER OR STRATA CORPORATION			
2. OWNER INFORMATION	CITY		PROVINCE	POSTAL CODE
	MAILING ADDRESS (PO BOX #, SUITE #, STREET #, STREET NAME)			
3. AUTHORIZED PERSON INFORMATION	NAME OF AUTHORIZED PERSON C. JEFFREY OLAND, P.Eng.		MAILING ADDRESS (PO BOX #, SUITE #, STREET #, STREET NAME)	
	CITY LAKE COUNTRY	PROVINCE B.C.	POSTAL CODE V4V 1S6	TELEPHONE NUMBER 250-766-5114
	REGISTRATION NUMBER APPE 6-38		REGISTRATION NUMBER 10829	
	NAME OF AUTHORIZED PERSON			
4. FACILITY INFORMATION	SEWERAGE SYSTEM WILL SERVE: <input checked="" type="checkbox"/> SINGLE FAMILY DWELLING <input type="checkbox"/> DUPLEX <input type="checkbox"/> OTHER (SPECIFY):		NO. OF BEDROOMS 3+1	EST. DAILY SEWAGE FLOW (l/day) 2270
	TOTAL LIVING AREA (m ²) INCL. FINISHED BSMT 400 I		LOT SIZE (ha) 0.13	
	DISTANCE OF PROPOSED DISCHARGE AREA FROM (IN METRES): >10 WATER LINES >20 STREAM OR LAKE >20 BREAKOUT POINT N/A NEIGHBOURING WELLS N/A OWN WELL >30 DOMESTIC WATER		DEPTH OF EXISTING FILL IN THE DISCHARGE AREA (cm) 0	TOTAL DEPTH TO HIGHEST WATER TABLE OR RESTRICTIVE LAYER (cm) >200
5. SITE INFORMATION	DISCHARGE AREA WILL BE <30m TO ANY SOURCE OF DRINKING WATER: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		SLOPE (%) 5%	
	ARE THERE ANY RESTRICTIVE COVENANTS/EASEMENTS WHICH WILL AFFECT THE DESIGN OR LOCATION OF THE SEWERAGE SYSTEM? IF YES, PLEASE EXPLAIN AND ATTACH SUPPORTING DOCUMENTS. <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
6. SYSTEM INFORMATION	VERTICAL SEPARATION BETWEEN BOTTOM OF DISCHARGE AREA TO HIGHEST WATER TABLE OR RESTRICTIVE LAYER (cm) >200	TOTAL FINISHED DEPTH TO HIGHEST WATER TABLE OR RESTRICTIVE LAYER (cm) >220	TREATMENT METHOD <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3	IF TYPE 2 OR 3 IS PROPOSED, GIVE MAKE MODEL: MIMRO FAST 0-6
	SEPTIC TANK MANUFACTURER N/A.	MATERIAL OF SEPTIC TANK N/A.	LIQUID VOLUME OF TANK(S) (litres) N/A.	TREATMENT CAPACITY (l/day) 2250
	DISCHARGE AREA <input checked="" type="checkbox"/> BED <input checked="" type="checkbox"/> TRENCH <input type="checkbox"/> OTHER (SPECIFY): SAND BED / Antiholator		METHOD OF EFFLUENT DISCH. <input type="checkbox"/> GRAVITY <input checked="" type="checkbox"/> PRESSURE <input type="checkbox"/> OTHER	LOADING RATE (l/day/m ²) 74/128 Soil / Sand.
	<input type="checkbox"/> SAND MOUND <input type="checkbox"/> LAGOON: SIZE (m ²)		EFFLUENT PUMP <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
7. PLANS AND SPECIFICATIONS	<input checked="" type="checkbox"/> PLOT PLAN (TO SCALE) AND SPECIFICATIONS ARE ATTACHED, AS PER THE STANDARD PRACTICE MANUAL.			
8. FREEDOM OF INFORMATION	This form is required to administer the Sewerage System Regulation (326/2004) and the collection of personal information complies with the Freedom of Information and Protection of Privacy Act. If you have any questions about the collection or use of this information, please contact your local Health Protection Office.			
9. AUTHORIZED PERSON'S SIGNATURE AND SEAL	The information on this form is accurate and true to the best of my knowledge. I am an Authorized Person according to Sewerage System Regulation BC Reg 326/2004. The plans and specifications attached to this form are consistent with standard practice and will not contribute to a health hazard.			
	<input checked="" type="checkbox"/> I have consulted with the Ministry of Health's publication "Sewerage System Standard Practice Manual". <input checked="" type="checkbox"/> I have consulted with another source of standard practice - copy attached, or listed here: USEPA MANUAL.			
AUTHORIZED PERSON'S SEAL	OFFICE USE ONLY		DATE ACCEPTED FOR FILING	
	RECEIPT NUMBER 935354		DATE FORM RECEIVED	
	DATE FORM RECEIVED		PENTICTON, B.C.	
DATE: Nov. 5/08	INTERIOR HEALTH DEC 08 2008 KELOWNA HEALTH CENTRE		DEC 12 2008 Interior Health Authority	
			FILING NUMBER 13-179-00816	

ENTERED DEC 12 2008

SOILS:

- 0 - 0.2 m SANDY LOAM, SOME GRAVEL
- 0.2m - 1.0m SILTY SAND
- 1.0m - 1.3m SILTY SAND, SOME GRAVEL
- PERC. RATE 20 MIN./IN. AND 16 MIN./IN.

CALCULATIONS:

4 BEDROOMS = 1700 L/D PLUS ADDITIONAL AREA = 2270 L
 NATIVE SOIL PERC. RATE = 15 TO 20 MIN./ IN.: TYPE 3 HLR = 74 L/Sq.m/D
 SAND BED AREA REQUIRED = 2270 L/D / 74 L/Sq.m./D = 31 Sq.m.
 DESIGN BED AREA = 100 Sq.m.
 C33 SAND PERC. RATE = 2 MIN./ IN. : TYPE 3 HLR = 128 L/Sq.m/D
 2270 L/D / 128 L/Sq.m/D = 17.7 Sq.m TRENCH AREA REQUIRED
 DESIGN = 2 TRENCHES X 9.8m X 0.9m = 17.7 Sq.m.

MAJOR COMPONENTS

- MICROFAST MODEL 0.6 C/W CONC. TANK, CONTROL PANEL, AIR PUMP ETC.
- 16 SECTIONS OF QUICK-4 (34" WIDE) STANDARD INFILTRATOR C/W 4 END CAPS
- PIPE STANDS OR HEAVY PLASTIC TIE STRAPS INSIDE INFILTRATORS
- 50 Cu.m. C33 SAND
- 25m± X 38mm SCHED 40 PVC PIPE + FITTINGS AND 1/4" HOLES AS SHOWN
- 20m± X 50mm SCHED. 40 PVC PIPE + FITTINGS
- 1.5m X 100mm PVC C/W CAP FOR SAMPLE PORT
- 6m X 6m 20 MIL. RPE LINER OR EQUIVILANT
- 3 X 12" DIA. IRRIGATION BOX
- REMOVAL 50 Cu.m. NATIVE SOIL AS REQUIRED

REM LOT 2
PLAN 27775

2 X 9.8m INFILTRATOR
TRENCHES

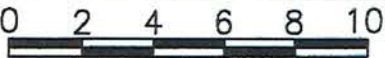
PERIMETER OF
12m X 4.5m SAND BED

6m X 6m 25 MIL. RPE DR
ENVIROFLEX LINER

**ON-SITE SEWAGE DISPOSAL
TYPE 3 SYSTEM DESIGN FOR:
LOT 3, PLAN 12051, DL. 211
SDYD**

**4785 MILL ROAD
NARAMATA, B.C.**

OWNER:

SCALE: 
1:200 (METRIC)

NOTES:

1. THE TREATMENT PLANT SHALL BE LOCATED TO PROVIDE A MIN. FALL OF 1/8" PER FOOT IN ALL BUILDING SEWER DRAINS AND PLACED ON UNDISTURBED NATIVE SOIL.
2. ROOF & SITE DRAINAGE SHOULD BE DIVERTED AWAY FROM TANK & FIELD AREA.
3. THE TREATMENT PLANT SHALL BE UNDER MAINTENANCE AGREEMENT AND SERVICED AT LEAST QUARTERLY.
4. THE DISPOSAL FIELD SHALL BE COVERED TO PROVIDE A MIN. 2% GRADE FOR SURFACE DRAINAGE AND BE PROPERLY SEEDDED AND MAINTAINED.
5. THE SITE IS LIKELY TO REMAIN SUITABLE FOR ON-SITE DISPOSAL INDEFINATELY SUBJECT TO PROPER OPERATION, MAINTENANCE AND PARTS REPLACEMENT
6. WATER-SAVING DEVICES AND PRACTICES SHOULD BE IMPLEMENTED.
7. SAMPLES FROM MONITORING WELL SHALL BE TESTED FOR BOD, SS, AND TOTAL COLIFORM FOLLOWING 6 MONTHS OF OPERATION

ISSUED FOR REVIEW

DATE: NOV. 5/08

ISSUED FOR CONSTRUCTION

DATE: _____

ASBUILT INSPECTION

DATE: _____

DRAWN BY:



11183 BOND ROAD
LAKE COUNTRY, B.C., V4V 1J6
PHONE: (250) 766-5114 CELL: (250) 862-6322
FAX: (250) 766-5077 EMAIL: joland@stik.net


C. JEFFREY OLAND, P.ENG.
DATE: Dec 8/08

08-57.SITE

OKANAGAN LAKE

MILL ROAD

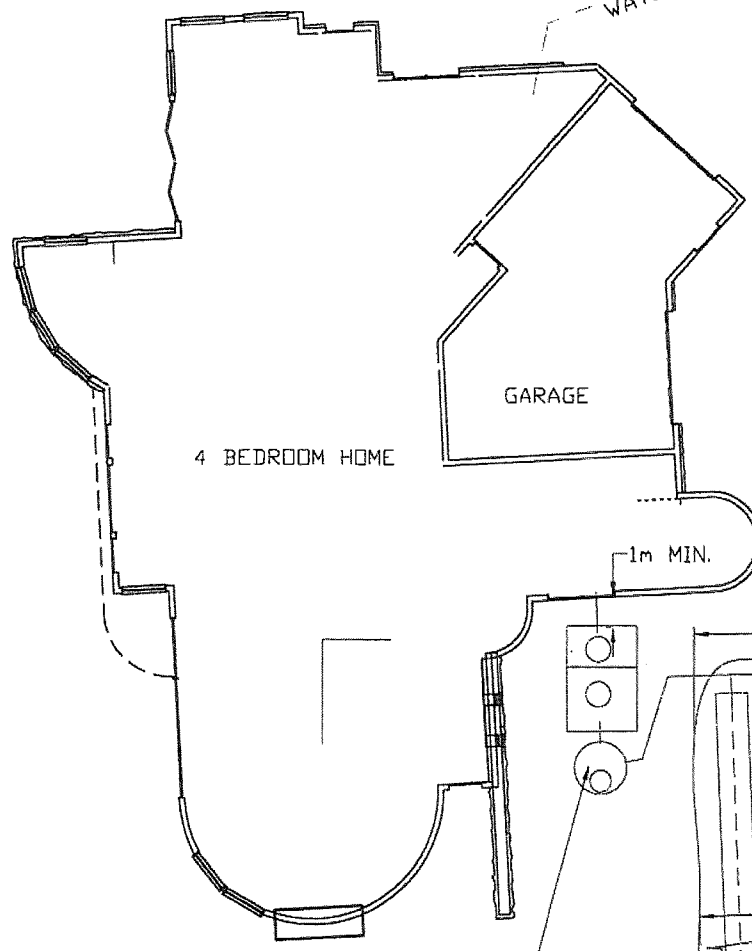
34.947



SOILS:
0 - 0.
0.2m -
1.0m -
PERC. 1

CALCULA
4 - BEDI
NATIVE S
SAND BI
DESIGN
C33 SAM
2270 L/
DESIGN

APPROX. LOCATION
WATER LINE



35.453

4 BEDROOM HOME

GARAGE

1m MIN.

TREATMENT PLANT
AND PUMP STATION

MAJOR I
MICROFA
16 SECT
PIPE ST/
50 Cu.m
25m± X
20m±
1.5m X
6m X 6
3 X 12'
REMOVAL

2 X
TREN

PERI
12m

6m X
ENVIR

46.808

24m±

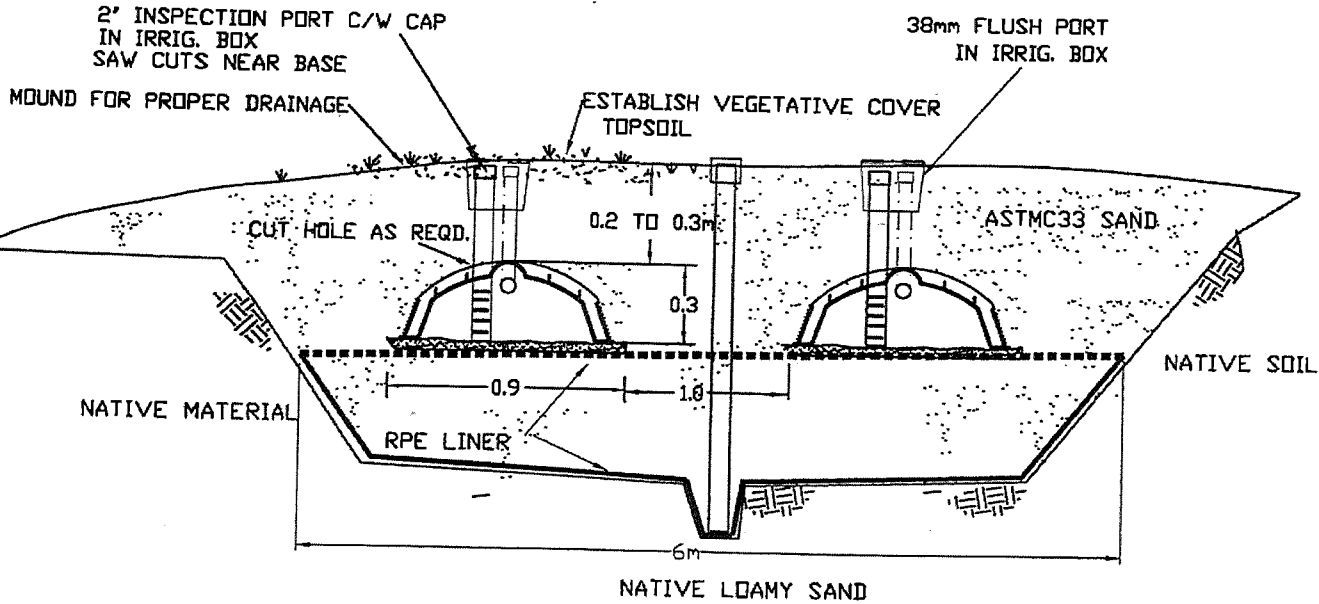
30.051

REM LOT 2
PLAN 27775

TYPE 3 SEWERAGE DETAILS
 LOT 3, PLAN 12051, DL. 211
 SDYD
 4785 MILL ROAD
 NARAMATA, B.C.

PANEL:
 AQUAWDRX I
 NEMA 4X PAI
 C/W PRESSU

SECTION 'B-B'
 NOT TO SCALE
 INFILTRATOR Q-4 STANDARD DETAIL
 NOT TO SCALE



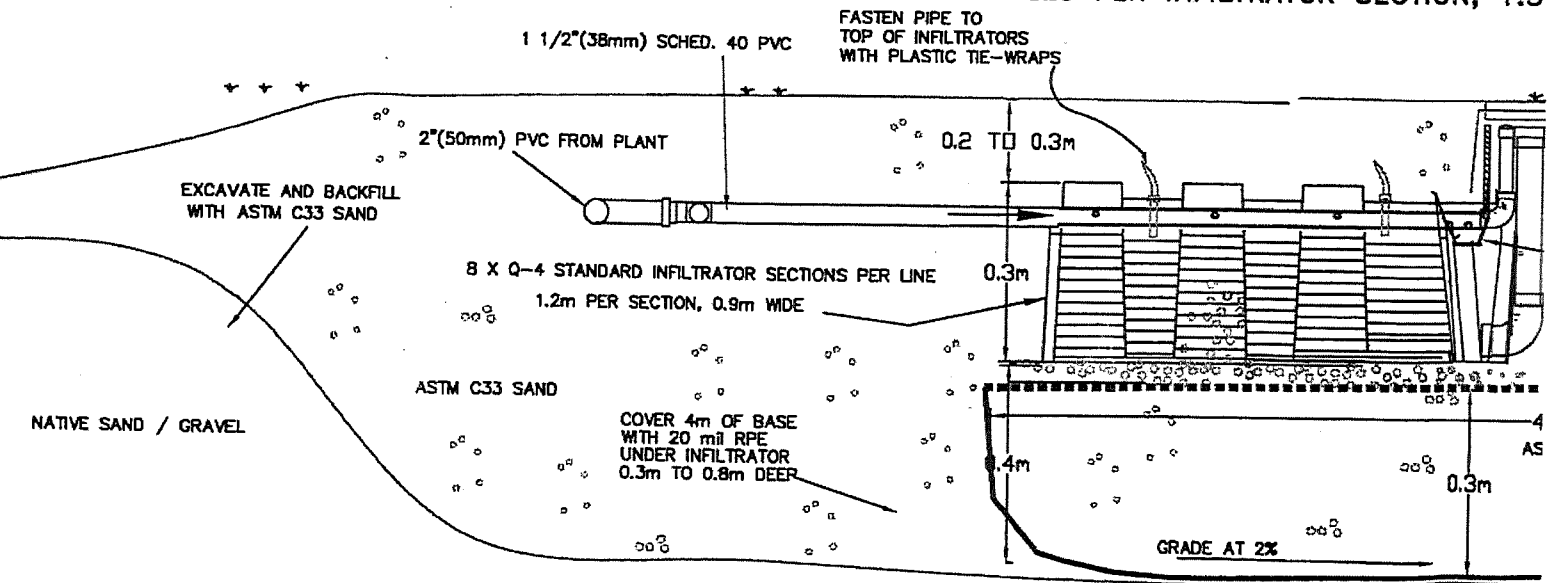
POWER :
 AS REQL
 ELECTRIC

2"
 TO

GROUT J
 INSIDE A

SECTION 'A-A'
 NOT TO SCALE

PRESSURE DISTRIBUTION SYSTEM
 1/4" HOLES APPROX. 0.6m(2') SPACING
 2 HOLES PER INFILTRATOR SECTION, 1.5'



ADMINISTRATIVE REPORT



TO: Board of Directors
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Development Variance Permit Application — Electoral Area “H” – H2021.039-DVP

Administrative Recommendation:

THAT Development Variance Permit No. H2021.039-DVP to allow for the development of an accessory building at 518 Dagur Way be approved.

Legal: Parcel B (KM100239), District Lots 1 and 3528, SDYD, Plan KAP56749 Folio: H-00606.006

OCP: Low Density Residential (LR) Zone: Residential Single Family One (RS1)

Variance Request: to increase the maximum height for an accessory building from 4.5 metres to 4.8006 metres

Proposed Development:

This application is seeking a variance to the maximum building height of an accessory building that applies to the subject property in order to construct an RV and two-car garage.

Specifically, it is being proposed to increase the maximum height of an accessory building in the Residential Single Family One (RS1) Zone for an accessory building from 4.5 m to 4.8006 m.

In support of this request, the applicant has stated that “the variance allows the structure to house a travel trailer over 10 feet in height” and “the RV portion is required for the travel trailer to fit with no interference to the structure. The 2 car garage portion will allow for a car hoist to accommodate extra storage using the existing height. This will keep the footprint of the structure to a minimal”.

Site Context:

The subject property is approximately 0.42 ha in area and is situated on the north side of Dagur Way and to east of the Similkameen River. The property is currently developed with a single family dwelling and garage. The surrounding pattern of development is characterised by residential development.

Background:

Available Regional District records indicate that building permits were issued for a single family dwelling (1998) and a garage and breezeway to a single family dwelling (1998).

Under the Electoral Area “H” Official Community Plan (OCP) Bylaw No. 2497, 2012, the subject property is currently designated Low Density Residential, and is the subject of a Watercourse Development Permit (WDP) area.

Under the Electoral Area “H” Zoning Bylaw No. 2498, 2012, the property is currently zoned Residential Single Family One (RS1) which “permits accessory buildings and structures, subject to Section 7.12”.

File No: H2021.039-DVP

Under Section 8.0 (Floodplain Regulations) of the Zoning Bylaw, the subject property is partially within the floodplain associated with Similkameen River.

BC Assessment has classified the property as “Residential” (Class 01).

Public Process:

Adjacent property owners will have received notification of this application with written comments regarding the proposal being accepted, in accordance with Section 2.10 of Schedule ‘4’ of the Regional District’s Development Procedures Bylaw No. 2500, 2011, until 4:30 p.m. on October 1, 2021. All comments received are included as a separate item on the Board’s Agenda.

Analysis:

This variance request is to accommodate a travel trailer which is over 3.0 metres (10 feet) in height. The application also notes that the 2-car garage portion would allow for a car hoist in order to accommodate extra storage.

Regulating the height of accessory structures through the Zoning Bylaw is done to ensure that a building does not impact the shade and outdoor privacy of adjacent properties, or views to significant landmarks, water bodies or other natural features.

Building height is also an important component of the built form of a neighbourhood and, depending upon the location of an accessory structure (i.e. near a street frontage) an excessive height can have an impact upon established streetscape characteristics.

Accordingly, when assessing variance requests a number of factors are taken into account, including the intent of the regulation; the presence of any potential limiting physical features on the subject property; established streetscape characteristics; and whether the proposed development would have a detrimental impact upon the amenity of the area and/or adjoining uses.

The proposed variance is minor in nature (with an increase of 0.3006 metres) and does not find that the accommodation of an over-height garage would impact shade, views or outdoor privacy of adjacent properties.

The subject property currently contains a single family dwelling with a garage and that the proposed variance would allow for the construction of an additional garage.

There is a potential of large, over-height accessory buildings to be converted into an accessory dwelling in the future, which is not permitted in the RS1 zone. However, it is noted that the proposed garage would be one-storey with no plumbing; as such, the concern of the structure being used or converted to an accessory dwelling is mitigated.

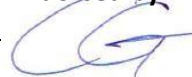
Alternatives:

1. That the Board deny Development Variance Permit No. H2021.039-DVP.
2. That the Board defer consideration of the application and it be referred to the Electoral Area “H” Advisory Planning Commission.

Respectfully submitted



Endorsed by:



File No: H2021.039-DVP

Shannon Duong, Planner I

C. Garrish, Planning Manager

Attachments: No. 1 – Aerial Photo

No. 2 – Streetview Photos (2021)

Attachment No. 1 – Aerial Photo



Proposed Location of
Accessory Building
(APPROXIMATE)

Attachment No. 2 – Streetview Photos (2021)



Proposed Location of
Accessory Building
(APPROXIMATE)



Development Variance Permit

FILE NO.: H2021.039-DVP

Owner:

Agent:

GENERAL CONDITIONS

1. This Development Variance Permit is issued subject to compliance with all of the bylaws of the Regional District of Okanagan-Similkameen applicable thereto, except as specifically varied or supplemented by this Permit.
2. The land described shall be developed strictly in accordance with the terms and conditions and provisions of this Permit, and any plans and specifications attached to this Permit that shall form a part thereof.
3. Where there is a conflict between the text of the permit and permit drawings or figures, the drawings or figures shall govern the matter.
4. This Development Variance Permit is not a Building Permit.

APPLICABILITY

5. This Development Variance Permit is substantially in accordance with Schedules 'A', 'B', and 'C', and applies to and only to those lands within the Regional District described below, and any and all buildings, structures and other development thereon:

Legal Description: Parcel B (KM100239), DL 1 & 3528, SDYD, Plan KAP56749

Civic Address: 518 Dagur Way

Parcel Identifier (PID): 024-272-311 Folio: H-00606.006

CONDITIONS OF DEVELOPMENT

6. The land specified in Section 5 may be developed in accordance with the following variances to the Electoral Area "H" Zoning Bylaw No. 2498, 2012, in the Regional District of Okanagan-Similkameen:
 - a) the maximum height of an accessory building in the Residential Single Family One (RS1) Zone, as prescribed in Section 12.1.6(b), is varied:
 - i) from: 4.5 metres

to: 4.8006 metres as shown on Schedule 'B'.

COVENANT REQUIREMENTS

7. Not Applicable

SECURITY REQUIREMENTS

8. Not applicable

EXPIRY OF PERMIT

9. The development shall be carried out according to the following schedule:

- a) In accordance with Section 504 of the *Local Government Act* and subject to the terms of the permit, if the holder of this permit does not substantially start any construction with respect to which the permit was issued within two (2) years after the date it was issued, the permit lapses.
- b) Lapsed permits cannot be renewed; however, an application for a new development permit can be submitted.

Authorising resolution passed by the Regional Board on _____, 2021.

B. Newell, Chief Administrative Officer

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

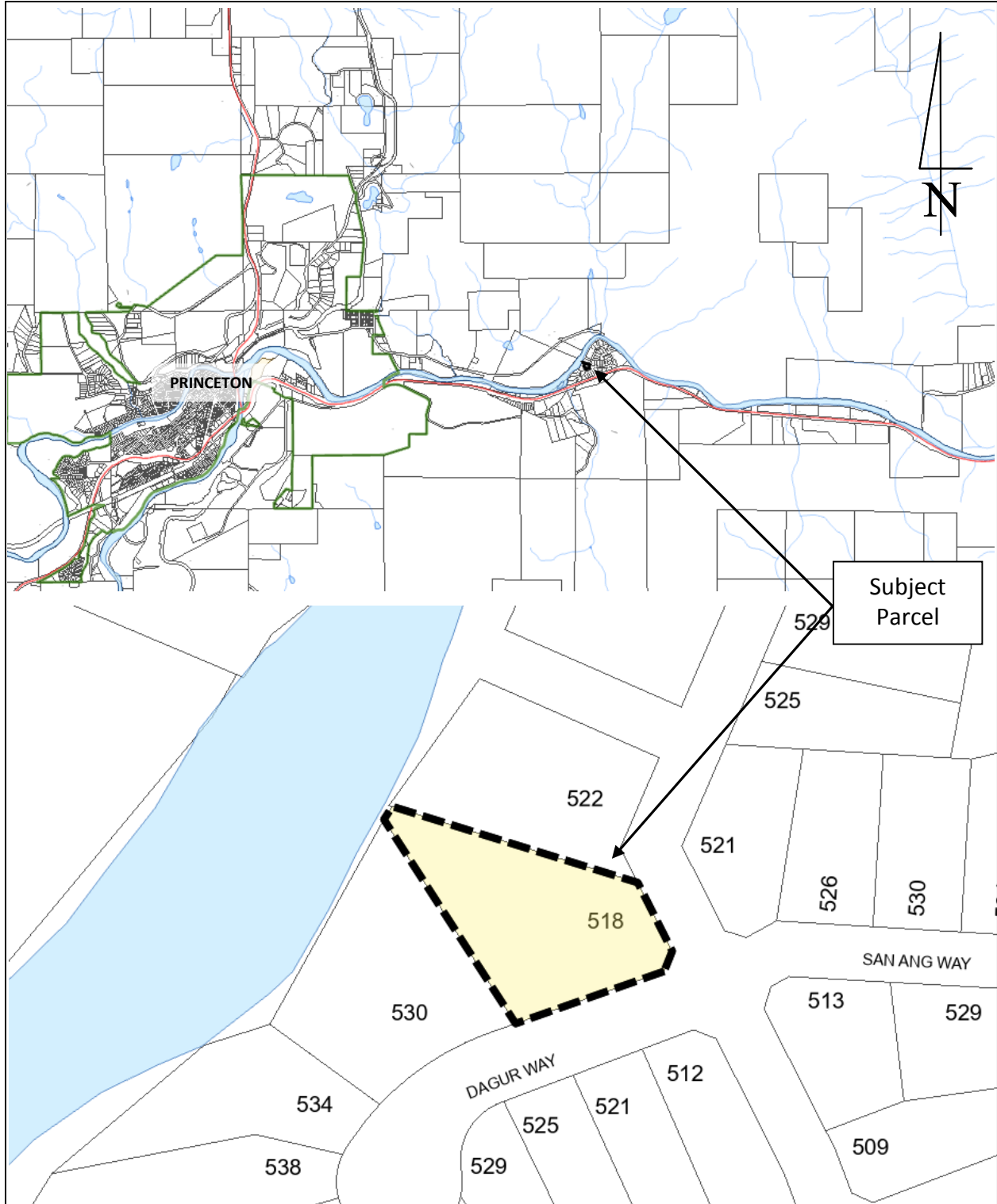
Tel: 250-492-0237 Email: planning@rdos.bc.ca



Development Variance Permit

File No. H2021.039-DVP

Schedule 'A'



Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

Tel: 250-492-0237 Email: planning@rdos.bc.ca



Development Variance Permit

File No. H2021.039-DVP

Schedule 'B'

4.8006 m

18'-0"

10'

40'

24'

Exterior Elevation Front

Exterior Elevation Left

Exterior Elevation Back

40'

32'-0"

18'-0"

Exterior Elevation Right

NO.	DESCRIPTION	BY	DATE

SHEET TITLE
Exterior Elevations

PROJECT INFORMATION
 Project Name: [Redacted]
 Location: [Redacted]
 Date: [Redacted]

DRAWINGS PROVIDED BY:
 [Redacted]
 [Redacted]

DATE:
03/Aug/21

SCALE:
1/4" = 1'

SHEET:
2

Development Variance Permit No. H2021.039-DVP

Page 4 of 5

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

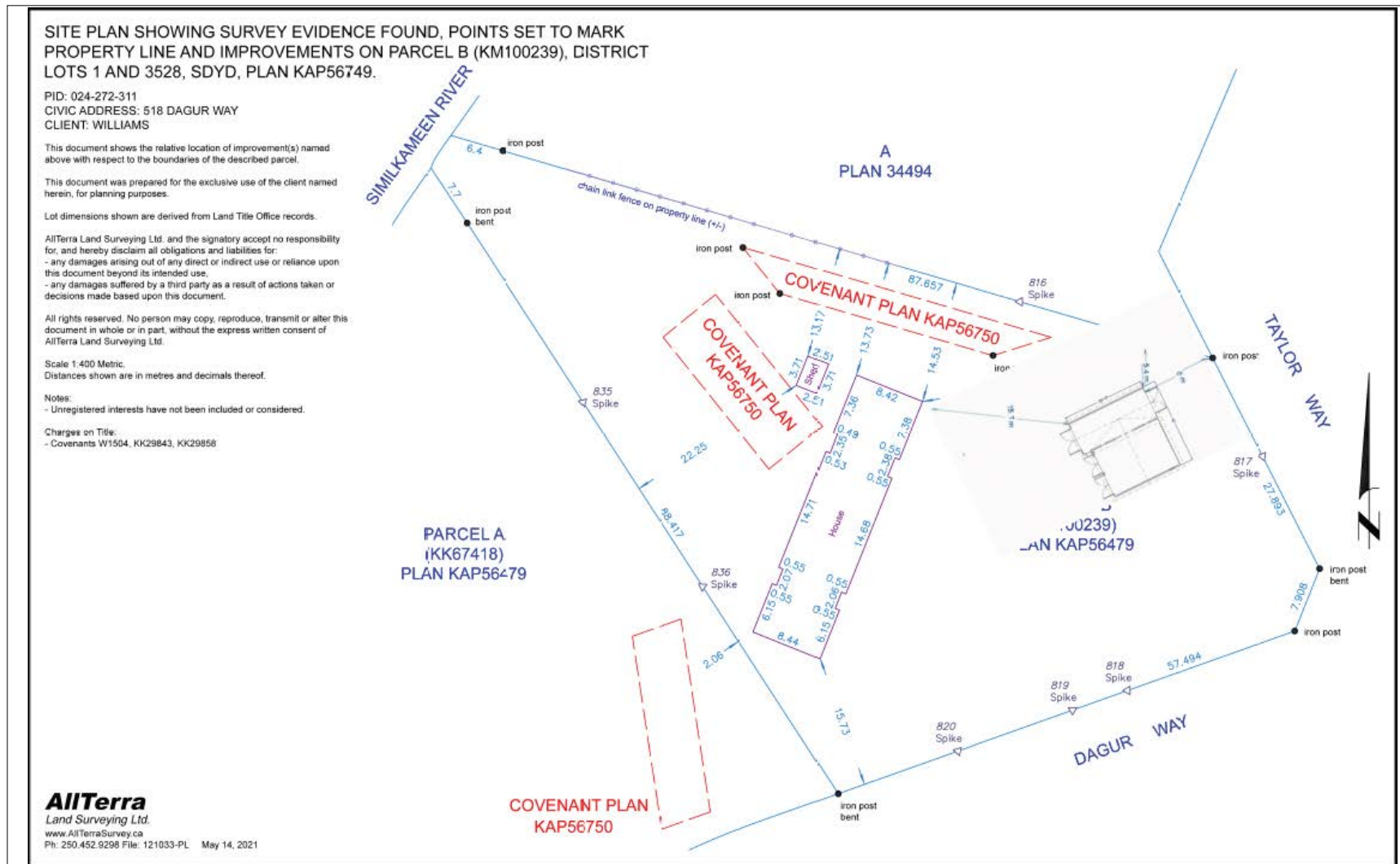
Tel: 250-492-0237 Email: planning@rdos.bc.ca



Development Variance Permit

File No. H2021.039-DVP

Schedule 'C'



Development Variance Permit No. H2021.039-DVP

Page 5 of 5

September 21, 2021

To: Shannon Duong, Planner

This is response to your letter regarding development variance permit application No.H2021.039-DVP that involves land at 518 Dagur Way Princeton BC. In my opinion counts, I'd like to vote "Yes" to proposed variance permit. I see no problems in granting our new neighbours this variance. We wish them all the best in their home improvement endeavour

Sincerely

Maria Bella

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: October 7, 2021

RE: Bylaw Enforcement — Untidy & Unsightly - 4908 10th Avenue, Okanagan Falls

Administrative Recommendation:

THAT the owner of the property legally described as Lot 11, District Lot 374, SDYD, Plan 5823, being 4908 10th Avenue, Okanagan Falls, be formally notified that the property is not in compliance with the Regional District of Okanagan-Similkameen Untidy and Unsightly Premises Regulatory Control Bylaw No. 2326, 2004; and,

THAT if after 30 days the non-compliance has not been rectified, the Regional District commence direct action to bring Lot 11, District Lot 374, SDYD, Plan 5823, being 4908 10th Avenue, Okanagan Falls into compliance; and,

THAT costs of undertaking the above work be recovered in the same manner and with the same remedies as property taxes in arrears.

Civic: 4908 10th Avenue, Okanagan Falls

Folio: D-00927.000

Legal: Lot 11, District Lot 374, SDYD, Plan 5823

Zone: Low Density Residential Two Zone (RS2)

Purpose:

To commence the process to clean up a property in contravention of the Untidy and Unsightly Premises Regulatory Control Bylaw No. 2326, 2004 (“Untidy Bylaw”).

Site Context:

The subject property is approximately 558 m² (.05 ha) in area and is situated one block east of Hwy 97 at the northeast corner of Tenth Avenue and Birch Street. The property currently comprises a single detached dwelling and detached garage both of which are in a state of disrepair.

Background:

The subject property has a history of non-compliance with the Untidy/Unsightly Bylaw. The most recent complaint dates back to August 2017 with the initial file dating back to 2012. The owner has

periodically made attempts to clean up the property and deal with the yard maintenance when notified by the Regional District however this is a longstanding and continuing enforcement action.

The Bylaw Enforcement Officer attended the site on July 19, 2017 after reactivation of the enforcement file. At that time he noted that most areas of the property were overgrown with weeds, trees, shrubs and fallen tree branches. The property is the subject of complaints and, when reviewed, was considered in contravention of the Bylaw.

The property has continued to be monitored and a summary of the site investigations are appended as Attachment 3 to this report. At each inspection, photos were taken documenting waste materials including old tires, metals and other apparent scrap items in various locations on the site. Each report notes that the property remains in contravention of the Untidy and Unsightly bylaw.

A Warning Notice of Violation was hand delivered to the property owner on July 28, 2017. The warning notice gave a time limit of August 8, 2017 to have the grass cut, dead tree branches, and other weeds and dead foliage removed.

Several complaints have also been received about undesirable persons “squatting” on the property. The property is considered to pose a fire hazard and safety risk.

The property owner was notified in February 2021 that this matter would be proceeding to the Board of Directors with a recommendation to commence direct action to bring the property into compliance. At that time, the property owner was also reminded about the outstanding bylaw offence notice which has not been paid.

The property owner has received numerous letters and opportunities to rectify this matter through voluntary compliance.

Analysis:

Due to the length of non-compliance it is apparent that the matter requires direct action to effect compliance with the provisions of the Untidy and Unsightly Bylaw. Fines have been issued and remain unpaid. It is anticipated that this method of enforcement will not be effective.

Section 4 of the Untidy and Unsightly Bylaw gives authority for the RDOS to undertake direct action through its own forces, or those of a contractor, to carry out the work necessary to comply with the provisions of the bylaw at the expense of the owner or occupier. Upon failure to pay, the Regional District may recover the costs of undertaking the work through property taxes.

The bylaw further provides that whenever items of apparent value are removed from the property by the Regional District, the District may place such items in storage and give notice to the occupants that unless within one month the owner pays the costs for the removal and storage and takes possession of the items, that the Regional District may dispose of them.

To avoid the cost of obtaining a storage unit, transferring items to storage for a month, then arranging for disposal after a month (whether by auction or transferring them to a landfill), it is proposed that the property owner receive 30 days notice of commencement of direct action to give an opportunity to remove items of value from the property.

The RDOS will arrange for a private contractor to attend the site immediately after 30 days having elapsed to remove all remaining items in contravention of the Bylaw. Items of value will be sold with the sale proceeds applied to the cost of the clean-up initiative.

Alternatives:

1. That the RDOS abandon enforcement of the Regional District of Okanagan-Similkameen's Untidy and Unsightly Premises Regulatory Control Bylaw No. 2326, 2004 against Lot 11, District Lot 374, SDYD, Plan 5823;
2. That the RDOS pursue enforcement against Lot 11, District Lot 374, SDYD, Plan 5823, through the issuance of Bylaw Offence Notices until such time that the property has been brought into compliance.

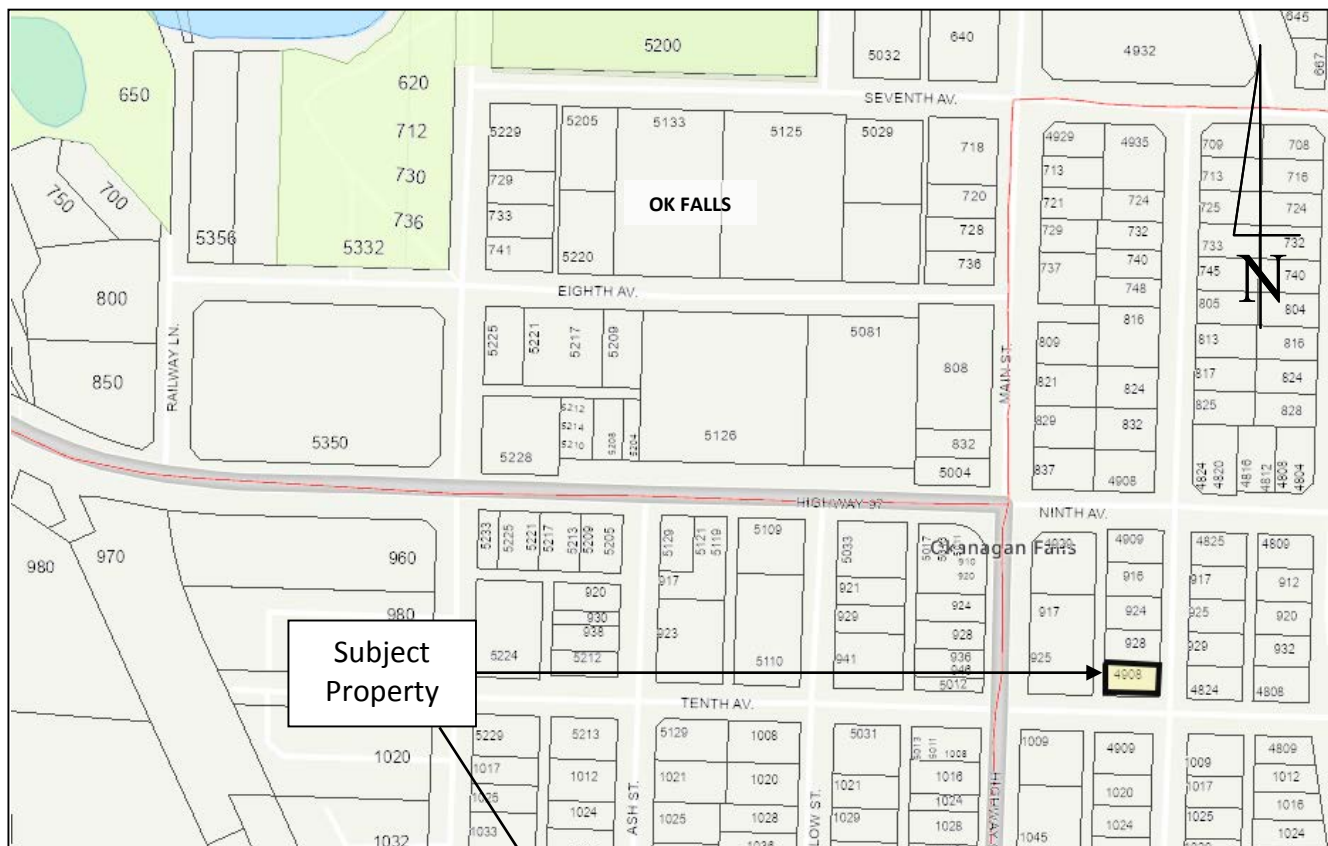
Respectfully submitted:



L. Miller, Building & Enforcement Services Manager

- Attachments: No. 1 – Context Maps
No. 2 – Current photos
No. 3 – summary of site inspections

Attachment No. 1 – Context Maps



Attachment No. 2 – Photos





Attachment 3 - Summary of BEO Site investigations

July 19, 2017 - house abandoned for several years and does not appear habitable. Lawn area appeared to be cut much earlier in the growing season. Most areas overgrown with weeds, trees and shrubs that have self seeded and are wildly growing on most areas of the property. Old fallen tree branches litter the yard areas. The property has the appearance of having been almost completely neglected for the growing season, following previous years of only minimal tending to the overgrown land and no apparent control of the rampant growth of trees and shrubs. The overgrown untended nature of this property would certainly present increased danger to nearby properties should fire occur.

July 28, 2017 - Warning Notice of Violation was hand delivered to the property owner on July 28, 2017. The warning notice gave a time limit of August 8, 2017 to have the grass cut, dead tree branches, and other weeds and dead foliage removed.

August 10, 2017 – BEO attended property – noted that some cleanup had been initiated but was not completed. Squatter appeared to be residing on property

March 21, 2018 – letter hand delivered to owner advising that property remained in contravention of the Untidy Bylaw. To be brought into compliance within 30 days.

May 17, 2018 – BEO notes that the grass in the yard has not been mown and is long and unsightly. Dead cedar hedge bushes and weed: shrubs remain as previously reported. Property remains in contravention of Untidy Bylaw with no apparent effort of bringing property into compliance

March 5, 2019 – the BEO attended for a further site inspection and notes that the property has been unoccupied for several years with little or no maintenance done to the yard or structures except for minimal yard work after receiving warnings. Several areas contain old metal scap, tires and various other items piled adjacent to the building. A pile of old tires has a tree growing up through the middle. The house is in a state of disrepair and the garage had large holes in the roof with evidence that transient persons may have lived there.

August, 2019 – BEO notes the property had the grass cut for the second time in 2019. No work done to garage or other unsightly conditions

October 18, 2019 – BEO notes the property remains in violation of the Unsightly Property Bylaw. There is a house, a large garage/shop and several small sheds on the property. The house has not been lived in for many years and has clearly received little or no maintenance over those years. The visible roof on the house is rotting around the edges, with the gutter falling off in one area and is heavily moss and leaf covered. The sheds have been forced open and remain with doors open. The garage building is not secure and has apparently been used by transient persons to live in. There are several examples of human feces, bedding and other garbage in and beside the garage. The garage

roof has large holes where it has rotted out and it appears that the remaining roof will collapse as it continues to rot away. T

May 12, 2020 – BEO re-inspected property. House is unoccupied. All remains as per the previous report with the exception that the garage building had been secured. Grass and brush in the yard has not been cut or otherwise tended. The house and garage buildings continue to rot and pieces are falling. Old tires, metals and other apparent scrap items remain in various locations on the site. The property appears abandoned and is likely home to various local vermin as well as being an eyesore to the neighbourhood. BON issued \$100 for unsightly condition

July 3, 2020 – BEO reinspection. Grass had been cut since May although is again becoming overgrown. Shrubs remain untouched. All as per last report with the exception of graffiti being sprayed on the house.

November 18, 2020 – BEO reinspection. Property remains in a neglected and untended condition. No apparent maintenance to the house or property. Carport roof has partially collapsed. The house has areas of visible rot and the garage/shop roof is full of large rotted out holes.

August 16, 2021 – BEO reinspection. All remains as per previous inspections.

September 17, 2021 – BEO reinspection. Minimal work undertaken. Lawn roughly cut but remains long and unsightly. Some shrubs hacked down but left on property. Property remains in violation of bylaws

ADMINISTRATIVE REPORT



TO: Board of Directors
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Development Variance Permit Application — Electoral Area “C” (C2021.037-DVP)

Administrative Recommendation:

THAT Development Variance Permit No. C2021.037-DVP to formalize the placement of seven metal storage containers at 5481 Sawmill Road be approved, on the condition that storage on top of the containers be prohibited.

Legal: Lot 328, Plan KAP1862, District Lot 2450S, SDYD Folio: C-05782.000

Zone: part Site Specific General Industrial (I1s) and part Residential Single Family One (RS1)

Variance Request: to reduce the minimum interior side parcel line setback from 4.5 metres to 0.0 metres.

Proposed Development:

This application is seeking a variance to the interior side parcel line setback from 4.5 metres to 0.0 metres to formalize seven (7) existing shipping containers.

In support of this request, the applicant has stated that the “containers have been there for 15 years or more and do not block the view.”

Site Context:

The subject property is approximately 1.4 ha in area and is situated on the south side of Sawmill Road and abutting Reed Creek (often referred to as Oxbow) on the south side of the property. The property is currently developed to include a single-detached dwelling, a workshop, several accessory structures (shipping containers), and a car salvage business.

The surrounding pattern of development is characterised by residential uses to the east and west on Small Holdings (SH3) and Low Density Residential (RS2) zoned parcels and Agriculture (AG1) to the north and south.

Background:

The current boundaries of the subject property were created on February 18, 1998, while available Regional District records indicate that building permits for the workshop (1978), manufactured home (2011), and additions to the manufactured home (2013) have previously been issued for this property. Under the Electoral Area “C” Official Community Plan (OCP) Bylaw No. 2452, 2008, the subject property is designated Small Holdings (SH), and is the subject of a Watercourse Development Permit (WDP) Area designation.

File No: C2021.037-DVP

Under the Electoral Area “C” Zoning Bylaw No. 2453, 2008, the property is zoned part Site Specific General Industrial (I1s) and part Residential Single Family (RS1) which allows for the operation of the car salvage business on the industrial portion of the property with an interior parcel line setback of 4.5 metres.

The property is within the floodplain associated with Reed Creek and Okanagan River.

The Regional District has received written complaints regarding a dilapidated fence (2013) and the safety and setbacks of the metal storage containers (2019) that are the subject of this application.

The property is within the Agricultural Land Reserve (ALR) and has been classified as part “Residential” (Class 01) and part “Business and Other” (Class 06) by BC Assessment.

Public Process:

Adjacent property owners will have received notification of this application with written comments regarding the proposal being accepted, in accordance with Section 2.10 of Schedule ‘4’ of the Regional District’s Development Procedures Bylaw No. 2500, 2011, until 4:30 p.m. on September 29, 2021. All comments received are included as a separate item on the Board’s Agenda.

Analysis:

The Zoning Bylaw’s use of setback regulations is generally to provide physical separation between neighbouring properties to protect privacy and prevent the appearance of overcrowding. Minimum setbacks from parcel lines are also used to maintain a minimum space between houses in a residential neighbourhood to allow access to sunlight, to provide separation for fire safety, or to mitigate nuisances (like noise) that might come from an adjacent building.

In the case of the subject property, the metal storage containers are being used as a visual barrier between an existing industrial use and the adjacent residential use. A reduced setback will allow for the metal storage containers to remain in place and continue to provide a physical separation between the two properties.

Further, the property owners use the containers to provide dry storage space for their salvage business. The owners stated moving the containers away from the property line would be onerous and that they “need all the space [they] can get for their parts”.

The storage of materials (i.e. derelict cars) on top of the metal containers does not seem appropriate and is the subject of complaints. Removal of the containers would open the industrial use to adjacent residential properties and would benefit neither the applicant or the neighbours.

The Zoning Bylaw suggests a solid screen of at least 2.4 metres in height is required as a visual barrier for the neighbour to enjoy residential use of their property when bordering an industrial salvage yard, which could be achieved with a fence.

Alternatives:

1. That the Board deny Development Variance Permit No. C2021.037-DVP.
2. That the Board defer consideration of the application and it be referred to the Electoral Area “C” Advisory Planning Commission.

Respectfully submitted

D. DeVries

Danielle DeVries, Planner 1

Endorsed by:



C. Garrish, Planning Manager

Attachments: No. 1 – Site Photo (Google Streetview 2012)

Attachment No. 1 – Site Photo (Google Streetview 2012)





Development Variance Permit

FILE NO.: C2021.037-DVP

GENERAL CONDITIONS

1. This Development Variance Permit is issued subject to compliance with all of the bylaws of the Regional District of Okanagan-Similkameen applicable thereto, except as specifically varied or supplemented by this Permit.
2. The land described shall be developed strictly in accordance with the terms and conditions and provisions of this Permit, and any plans and specifications attached to this Permit that shall form a part thereof.
3. Where there is a conflict between the text of the permit and permit drawings or figures, the drawings or figures shall govern the matter.
4. This Development Variance Permit is not a Building Permit.

APPLICABILITY

5. This Development Variance Permit is substantially in accordance with Schedules 'A' and 'B', and applies to and only to those lands within the Regional District described below, and any and all buildings, structures and other development thereon:

Legal Description: Lot 328, Plan KAP1862, District Lot 2450S, SDYD, Except Plan B6434 B5088 4334 6176 10220

Civic Address: 5481 Sawmill Road

Parcel Identifier (PID): 011-091-550 Folio: C-05782.000

CONDITIONS OF DEVELOPMENT

6. The land specified in Section 5 may be developed in accordance with the following variances to the Electoral Area "C" Zoning Bylaw No. 2453, 2008, in the Regional District of Okanagan-Similkameen:
 - a) the minimum interior side parcel line setback for an accessory building or structure in the General Industrial Site-Specific (I1s) Zone, as prescribed in Section 15.1.6 (b)(iii), is varied:
 - i) from: 4.5 metres
 - to: 0.0 metres to the outermost projection as shown on Schedule 'B'.

7. The storage of materials, goods, or equipment on top of the accessory building or structure permitted at Section 6 is prohibited.

COVENANT REQUIREMENTS

8. Not Applicable

SECURITY REQUIREMENTS

9. Not applicable

EXPIRY OF PERMIT

10. The development shall be carried out according to the following schedule:
 - a) In accordance with Section 504 of the *Local Government Act* and subject to the terms of the permit, if the holder of this permit does not substantially start any construction with respect to which the permit was issued within two (2) years after the date it was issued, the permit lapses.
 - b) Lapsed permits cannot be renewed; however, an application for a new development permit can be submitted.

Authorising resolution passed by the Regional Board on _____, 2021.

B. Newell, Chief Administrative Officer

Regional District of Okanagan-Similkameen

101 Martin St, Penticton, BC, V2A-5J9

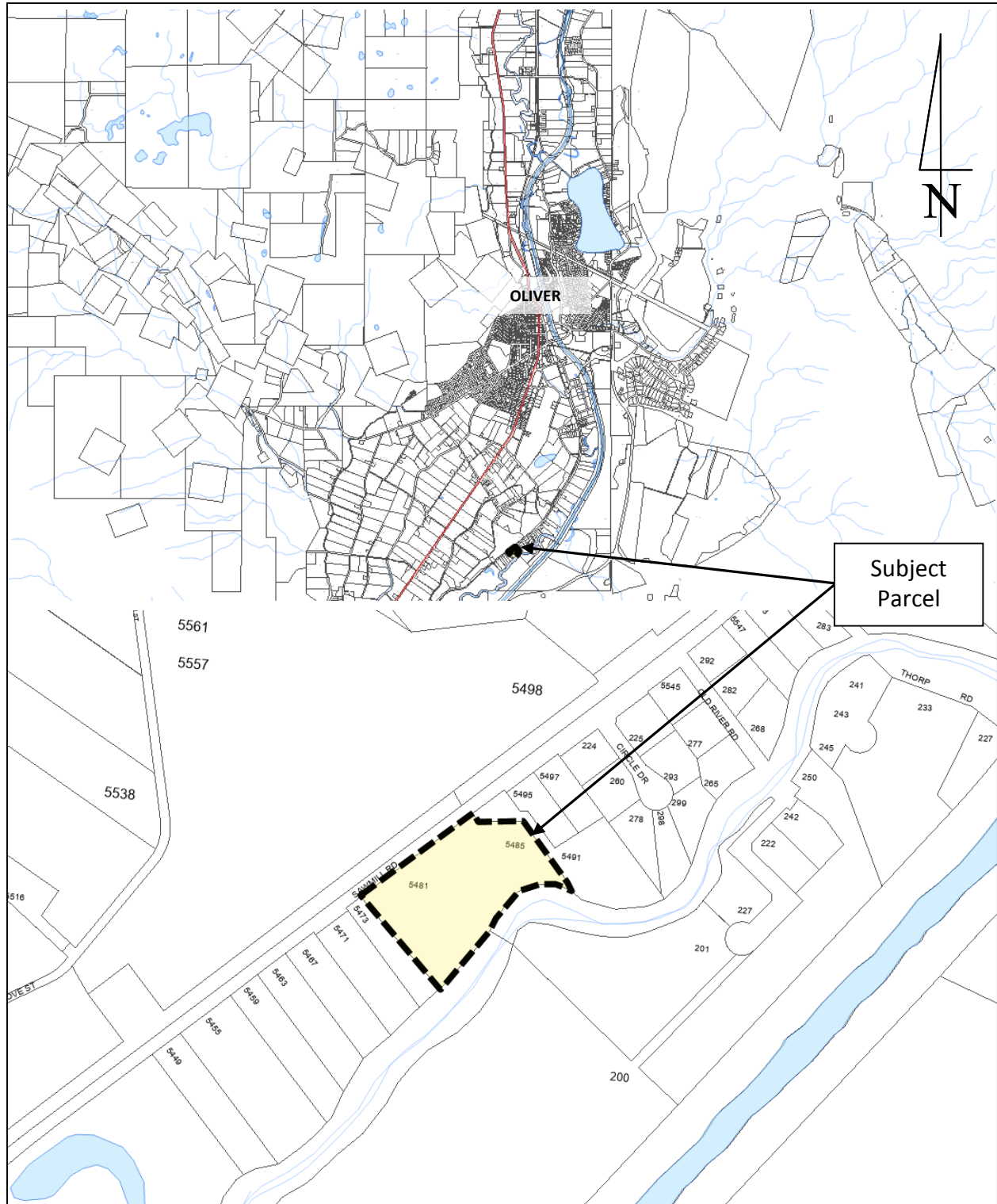
Tel: 250-492-0237 Email: planning@rdos.bc.ca



Development Variance Permit

File No. C2021.037-DVP

Schedule 'A'



Regional District of Okanagan-Similkameen

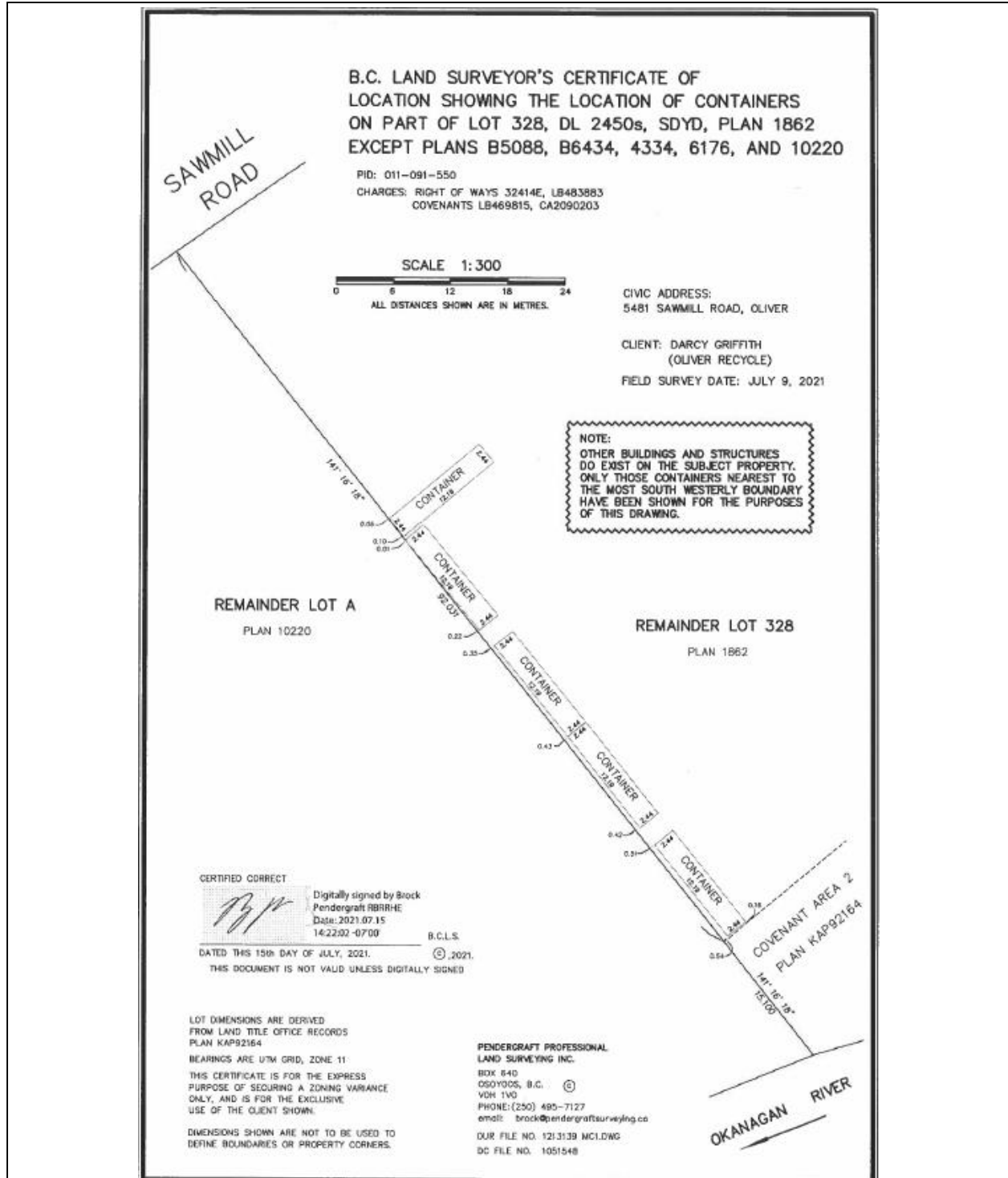
101 Martin St, Penticton, BC, V2A-5J9
 Tel: 250-492-0237 Email: planning@rdos.bc.ca



Development Variance Permit

File No. C2021.037-DVP

Schedule 'B'



Lauri Feindell

Subject: FW: 5481 Sawmill rd Variance for setback

From: Catherine Ellis
Sent: September 14, 2021 3:26 PM
To: Info E-Box <info@rdos.bc.ca>
Subject: 5481 Sawmill rd Variance for setback

I'm writing a response to the letter I received from RDOS about wanting my opinion for 5481 Sawmill Rd, setback for shipping containers. We feel it puts us in a tight position, so were writing you guys directly. We are his neighbours 5473 Sawmill rd. We don't want to come off rude but were shocked that this is up for discussion as this could be a serious liability in the future and shows a bit of favouring towards Darcy Griffith. We think this should be a decision you guys make, considering we didn't create the interior parcel setback. We are not at fault and I appreciate you guys asking for my opinion but this should be an obvious No to his variance. 5481 Sawmill Rd does not need any special favours he operates beside houses and an oxbow, safety of his surrounding neighbours and the oxbow in the back should be held with importance. There is a reason for interior parcel setbacks, yet you need my opinion. If you give an ok to his variance, it gives him the right to stack things on top and do whatever he pleases with those shipping containers. It also devalues our property, which isn't fair. Its time to seperate private dwelling/property from this junk yard. I do not purpose this variance and nor should you. The interior parcel setback of 4.5m atleast is needed for these shipping containers, using shipping containers as a fence line is not fair or safe for us or anyone who buys this property next. This decision should be a given and it should come from RDOS.

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: October 7, 2021

RE: Town of Osoyoos - Regional Context Statement (RCS)

Administrative Recommendation:

THAT the Regional District accept the Regional Context Statement as proposed in the revised Town of Osoyoos Official Community Plan;

Purpose:

Prior to the implementation of a new Official Community Plan (OCP) Bylaw by the Town of Osoyoos, “acceptance” of a revised Regional Context Statement (RCS) by the Regional District Board of Directors is required.

Background:

On April 1, 2010, the Regional District Board adopted the South Okanagan Sub-Regional Growth Strategy (RGS) Bylaw No. 2421, 2007. The RGS Bylaw applies to Electoral Areas “A”, “C”, “D”, “E” & “F” as well as the municipalities of Penticton, Summerland, Oliver and Osoyoos.

After an RGS Bylaw has been adopted, the *Local Government Act* requires that all municipalities update their OCP Bylaws within 2 years in order to include a Regional Context Statement (RCS), and that the RCS *must* identify the relationship between the OCP and the RGS and how the two are consistent, or will be made consistent over time.

At its meeting of June 16, 2011, the Board resolved to accept the Town of Osoyoos’s current RCS, which was subsequently incorporated into the Town’s OCP Bylaw (by Amendment Bylaw No. 1230.10, 2011).

In 2019, the Town of Osoyoos initiated a comprehensive update of its OCP Bylaw (Bylaw No. 1230), which had last been reviewed in 2007. This review requires that the Town’s RCS also be updated.

Statutory Requirements:

Under Section 446 of the *Local Government Act*, if a RGS applies to the same area of a municipality as an OCP, the OCP must include a RCS that is accepted by the Board of the applicable Regional District.

After acceptance of an RCS, Section 448 of the Act requires that a Council submit any amendments to their RCS for acceptance by the Regional District, and review their RCS at least once every 5 years after its latest acceptance by the Regional District and, if no amendment is proposed, to submit the statement to the Regional District for its continued acceptance.

Upon receiving an RCS, the Board must respond, by resolution, within 120 days after receipt indicating whether or not it accepts the RCS or, if it objects to the RCS, each provision to which it objects, and the reasons for its objection. If the Board fails to respond within 120 days, the Board is deemed to have accepted the RCS.

Analysis:

The Regional Context Statement provided by the Town of Osoyoos has been structured to reflect seven themes, which include:

1. Housing and Development
2. Ecosystems, Natural Areas & Parks
3. Transportation and Infrastructure
4. Community Health and Wellbeing
5. Regional Economic Development
6. Engagement and Collaboration
7. Energy Emissions and Climate Change

In support of these themes, the draft OCP continues to support the Town of Osoyoos' focus as a Primary growth area on development through infill and redevelopment in areas with existing infrastructure in a manner that is sensitive to, and compatible with, the existing character of the community and is sensitive to the environmental features of the area.

Alternative:

1. THAT the Board not accept the Town of Oliver's Regional Context Statement and provides reasons for its objection to each specific provision it does not accept.

Respectfully submitted:

Fiona Titley

F. Titley, Planner I

Endorsed by:

CG

C. Garrish, Planning Manager

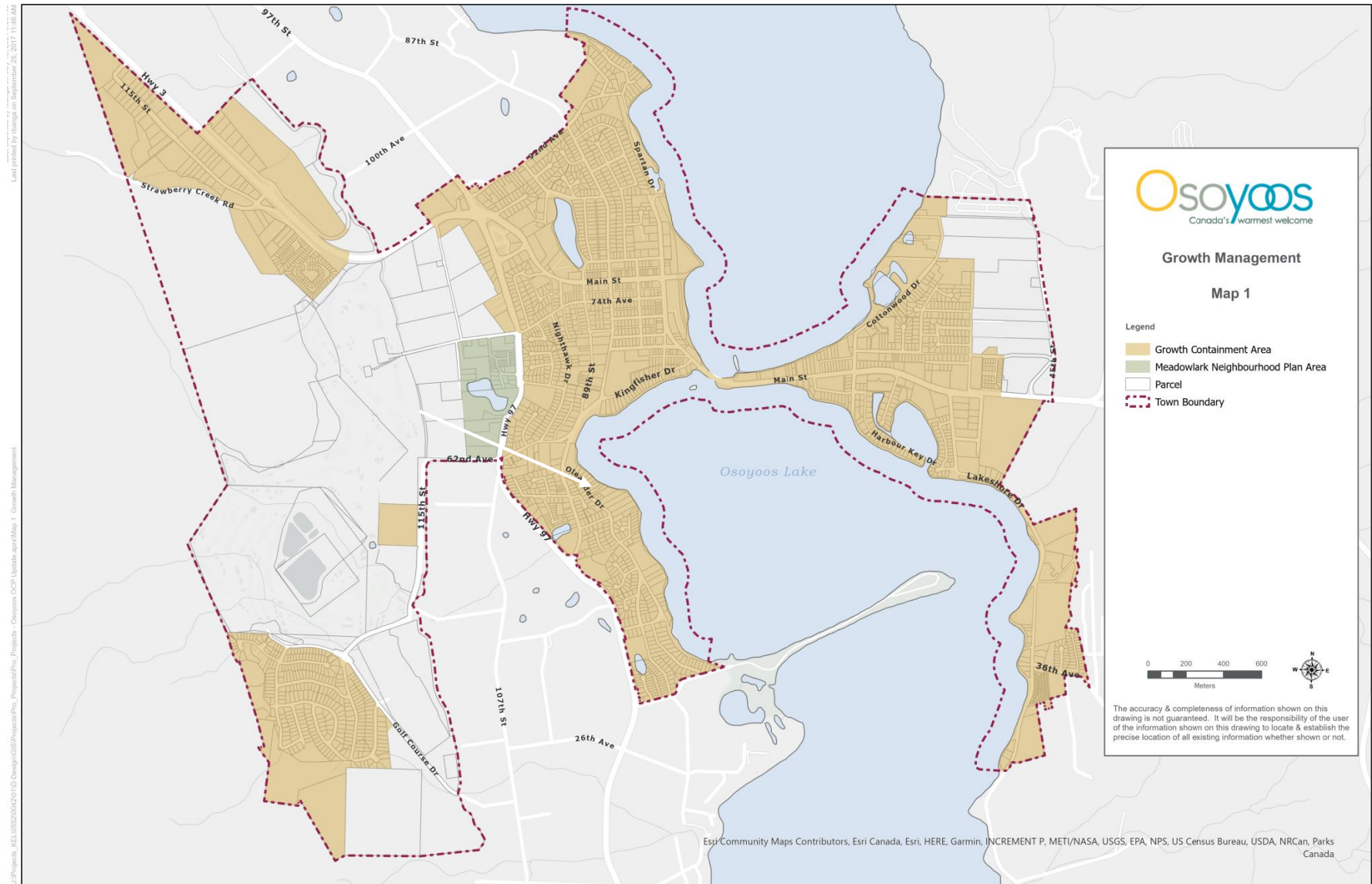
Attachments: No. 1 — Regional Context Statement

No. 2 — Town of Osoyoos Growth Containment Boundary

Attachment No. 1 — Regional Context Statement

RGS Policy Areas and Supporting Goals	Alignment with Osoyoos OCP	OCP Section
<p>Housing and Development</p> <p>Goal 1: <i>Focus development to serviced areas in designated Primary Growth Areas and Rural Growth Areas.</i></p>	<p>Osoyoos is identified as a Primary Growth Area in the RGS because it is one of the larger communities in the South Okanagan. The OCP anticipates and plans for sustainable residential development by encouraging infill and redevelopment in already developed areas.</p>	<ul style="list-style-type: none"> • 5. Growth Management • 6.B. Housing and Our Neighbourhoods • 7.B. Residential
<p>Ecosystems, Natural Areas and Parks</p> <p>Goal 2: <i>Protect the health and biodiversity of ecosystems in the south Okanagan.</i></p>	<p>Osoyoos is situated on Osoyoos Lake and is surrounded by hillsides to the east and west. That being said, the community is home to a number of sensitive environmental features and habitats. These are protected through Development Permit Areas and policies that direct new growth to existing developed areas in the Town.</p>	<ul style="list-style-type: none"> • 5. Growth Management • 7.G. Environment • DPA-5 Foreshore and Lake • DPA-6 Environmentally Sensitive • DPA-7 Riparian • DPA-8 Hillside
<p>Infrastructure and Transportation</p> <p>Goal 3: <i>Support efficient and effective infrastructure services and an accessible multi-modal transportation network.</i></p>	<p>Development is prioritized in areas with existing servicing infrastructure. Alternative modes of transportation are encouraged through improving infrastructure and creating compact neighbourhood development forms that allow for walking and cycling.</p>	<ul style="list-style-type: none"> • 5. Growth Management • 6.C Connectivity • 6.D Community Vibrancy • 7.J Transportation • 7.K Infrastructure
<p>Community Health and Wellbeing</p> <p>Goal 4: <i>Foster healthy, safe communities that provide accessible recreational, educational and cultural opportunities.</i></p>	<p>Healthy, safe, and inclusive communities are encouraged through policy direction that promotes compact development, easy access to community amenities, and the provision of quality recreational and cultural facilities and infrastructure.</p>	<ul style="list-style-type: none"> • 6.A Our Local Identity and Quality of Life • 6.C Connectivity • 6.D Community Vibrancy • 7.F Institutional • 7.H Parks and Recreation
<p>Regional Economic Development</p> <p>Goal 5: <i>Achieve a sustainable, resilient and prosperous South Okanagan regional economy.</i></p>	<p>The Town sees value in regional partnerships and undertaking actions that will ensure economic prosperity for the entire South Okanagan. Policies promote economic development initiatives for both Osoyoos and the region.</p>	<ul style="list-style-type: none"> • 6.E Economic Prosperity • 6.F Our Connection to the Valley
<p>Engagement and Collaboration</p> <p>Goal 6: <i>Foster and support regional cooperation, collaboration and civic engagement.</i></p>	<p>The OCP was developed in collaboration and consultation with community members, stakeholders, and regional partners such as the Osoyoos Indian Band, RDOS, and South Okanagan-Similkameen Conservation Program. Such partnerships are encouraged in the plan and their importance is recognized.</p>	<ul style="list-style-type: none"> • 1.3 Community Engagement Process • 6.A Our Local Identity and Quality of Life • 6.F Our Connection to the Valley
<p>Energy Emissions and Climate Change</p> <p>Goal 7: <i>Reduce energy emissions and ensure the South Okanagan is prepared for a changing climate.</i></p>	<p>Strategies are outlined in the OCP that aim to reduce greenhouse gas emissions, mitigate and prepare for climate change impacts, and protect the natural environment.</p>	<ul style="list-style-type: none"> • 6.G Greenhouse Gas Emissions and Climate Change • 7.G Environment

Attachment No. 2 — Town of Osoyoos Growth Containment Boundary



ADMINISTRATIVE REPORT



TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: October 7, 2021

RE: APC Bylaw Amendment – Removal of Members – Bylaw 2339.04

Administrative Recommendation:

THAT Bylaw No. 2339.04, being a bylaw to amend the Advisory Planning Commission Bylaw to address the removal of APC members be read a first, second and third time and adopted.

Background:

August 19, 2021 - a Notice of Motion was made “that staff bring forward amendment recommendations to the APC bylaw to address non-attendance by APC members”, and was subsequently carried at the Board’s meeting of September 2, 2019.

September 23, 2021 - the Planning and Development (P&D) Committee recommended that “if any member of a Commission is continuously absent from three consecutive meetings, unless due to illness or some other unavoidable reason that is temporary in nature, their appointment may be rescinded by the Board of Directors.”

Analysis:

Introducing a provision to provide clarity to the Board and APC Members regarding expectations about attendance at Commission meetings is seen to have merit.

In the event that an APC member were to be unexplainably absent from 3 consecutive meetings of an APC, the proposed amendments to the Bylaw would not result in the automatic removal of that member. Rather, it is anticipated that the applicable Electoral Area Director would determine next steps, including formal consideration by the Board of removal.

The rationale for 3 consecutive meetings as opposed to the 4 consecutive meetings referenced in the *Local Government Act* is in recognition that APCs meet irregularly in comparison to the Board (i.e. it is not uncommon for multiple APC meetings to be cancelled due to an absence of items).

The Parks and Recreation Commission Establishment Bylaw establishes a threshold of two (2) meetings, after which the person “shall cease to be a member of the Commission.”

Respectfully submitted:

A handwritten signature in blue ink, appearing to read 'C. Garrish', is written over a horizontal line.

C. Garrish, Planning Manager

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BYLAW NO. 2339.04, 2021

**A Bylaw to amend the Regional District of Okanagan Similkameen
Advisory Planning Commission Bylaw No. 2339, 2006**

The REGIONAL BOARD of the Regional District of Okanagan-Similkameen in open meeting assembled, ENACTS as follows:

1. This Bylaw may be cited for all purposes as the “Regional District of Okanagan Similkameen Advisory Planning Commission Amendment Bylaw No. 2339.04, 2021.”
2. The “Regional District of Okanagan Similkameen Advisory Planning Commission Bylaw No. 2339, 2006” is amended by:
 - i) adding a new sub-section 4.8 under Section 4.0 (Membership of the Commission) to read as follows:
 - 4.8 If any member of a Commission is continuously absent from three (3) consecutive meetings of an APC, unless due to illness or some other unavoidable reason that is temporary in nature, their appointment may be rescinded by the Board.

READ A FIRST, SECOND AND THIRD TIME this ____ day of _____, 2021.

ADOPTED this ____ day of _____, 2021.

Board Chair

Corporate Officer

ADMINISTRATIVE REPORT



TO: Board of Directors
FROM: B. Newell, Chief Administrative Officer
DATE: October 7, 2021
RE: Development Procedures Bylaw Amendment - Landscaping Securities – X2021.006-DPB

Administrative Recommendation:

THAT Bylaw No. 2500.23, 2021, being a bylaw to amend the Development Procedures Bylaw to introduce a minimum threshold of \$25,000.00 before requiring a landscaping security, be read a first, second and third time and adopted.

Background:

Under Section 502 of the *Local Government Act*, the Regional District may, as a condition of a land use permit, require an applicant to provide a security in an amount stated in the permit as either an irrevocable letter of credit or the deposit of an acceptable security.

The Regional District is currently administering 57 performance securities, representing a total value of \$354,737.88. While the average value of these securities is approximately \$6,223.47, the median average is \$3,079.00.

September 23, 2021 - the Planning and Development (P&D) Committee recommended that Bylaw No. 2500.23 be initiated and that “all landscaping securities currently held by the Regional District as a condition of a development permit with a value of less than \$25,000.00 be refunded.”

Analysis:

The Regional District is currently administering a large number of low dollar value landscaping securities that appear to have been abandoned by property owners as simply the “cost of doing business” in relation to a project or “written off” as just another fee required in order to obtain a development permit from the Regional District.

In other instances, the low dollar value of the security has created a financial disincentive to completing the works as the expense to a property owner of having a qualified professional (i.e. Biologist) conduct a site visit and prepare an assessment confirming that prescribed landscaping has been completed can sometimes equal or exceed the value of the security being retained by the Regional District.

The Regional District has also not historically used securities to complete required landscaping on behalf of a property owner when that owner has failed to comply with a permit condition.

The intent is to capture only larger projects with extensive landscaping proposals/requirements and that the value of these landscaping works will create a sufficient incentive for property owners to seek the return of their security.

Respectfully submitted:

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke extending to the right.

C. Garrish, Planning Manager

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BYLAW NO. 2500.23, 2021

A Bylaw to amend the Development Procedures Bylaw

The REGIONAL BOARD of the Regional District of Okanagan-Similkameen in open meeting assembled, ENACTS as follows:

1. This Bylaw may be cited for all purposes as the “Regional District of Okanagan-Similkameen Development Procedures Amendment Bylaw No. 2500.23, 2021.”
2. The Regional District of Okanagan-Similkameen Development Procedures Bylaw No. 2500, 2011, is amended by replacing 3.7.3(a) under Section 3.7 (Performance Security) in its entirety with the following:
 - (a) in the case of a condition in a permit respecting landscaping, the amount shall be 115% of the cost of the landscaping works, payable before the permit will be issued, except that if the cost of the landscaping works is less than \$25,000.00 no security under this section shall be required.

READ A FIRST SECOND AND THIRD TIME this ____ day of _____, 2021.

ADOPTED this ____ day of _____, 2021.

Board Chair

Corporate Officer

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: October 7, 2021

RE: Electoral Area “I” Community Grant in Aid

Administrative Recommendation:

That the Board approve the following Electoral Area “I” Grant in Aid applications:

	Purpose	Amount
Kaleden Community Association	Host “Get-Jazzed” event to raise funds to support community projects (KVR benches, KCA post-secondary bursary, KCA small grant program) .	\$600
Kaleden Community Association – Seniors Committee	Assist with costs associated with the Kaleden Outdoor Winter Market. Costs include advertising, printing, facility rental and signage.	\$1,195
Kaleden Community Association – Kaleden Firesmart Committee	Hire a local contractor to help with fire mitigation on a few Kaleden properties. Other costs may include bin rental and canvas bags for debris removal.	\$2,000

Reference:

The Kaleden Community Association (KCA) has submitted three applications to Electoral Area “I” for Community Grant in Aid funding. During the application review process, it was noted that Director Monteith is a director on the KCA board.

Analysis:

Due to the Area “I” Director being a Director for the Kaleden Community Association, there may be a real or perceived conflict of interest with the approval of these applications in isolation, hence the submission to the Board.

Alternatives:

Kaleden Community Association’s Community Grant in Aid applications are denied.

Respectfully submitted:

“Noelle Evans-MacEwan”
N. Evans-MacEwan, Finance Supervisor

Endorsed by:

“Jim Zaffino”
 J. Zaffino, Manager of Finance



APPENDIX A ELECTORAL AREA COMMUNITY GRANT IN AID APPLICATION FORM

PLEASE READ THE ELECTORAL AREA COMMUNITY GRANTS GUIDELINES PRIOR TO SUBMITTING APPLICATION

NAME OF ORGANIZATION Kaleden Community Association		AMOUNT REQUESTED 600.00
MAILING ADDRESS Box 136, Kaleden, BC		
POSTAL CODE VOH1K0	CONTACT PERSON (NAME AND TITLE) Randy Cranston, Chair	
TELEPHONE NUMBER	EMAIL ADDRESS chair@kaledencommunity.com	

INFORMATION REGARDING THE APPLICANT ORGANIZATION:

IS YOUR ORGANIZATION A REGISTERED NOT FOR PROFIT SOCIETY IN BC? YES NO
 IF "YES" PROVIDE REGISTERED SOCIETY NUMBER 844305202BC0001, S0003671
 IF "NO" PROVIDE PROOF OF BANK ACCOUNT IN ORGANIZATION'S NAME (as an attachment to application)
 HAS YOUR ORGANIZATION RECEIVED FUNDING FROM THE RDOS BEFORE? YES NO
 IF "YES"; WHEN 2020 AND AMOUNT RECEIVED: \$ 2000.00

DETAILS OF GRANT REQUEST

Please provide the following information in a brief narrative in the following order. (maximum 2 pages)

1. Project/Program Abstract

- Brief summary of the proposed project/program including:
- Total estimated costs;
- The amount requested from the Regional District and how the funds will be used;
- Other principal sources of support.

2. Project/Program Description

- Specify project/program outcomes that you plan to achieve.
- Who and how many will be served and why are you serving them? Why would they use your particular services? What geographic area does this project/program target?
- How will you reach the population you plan to serve?
- What strategies will be used to achieve the proposed outcomes?
- How will you know if you have achieved the outcomes proposed?

3. Funding Considerations

Describe plans for obtaining other funding needed to carry out the project/program, including amounts requested of other funders and any volunteer labour and/or in-kind donations.

If the project/program is expected to continue beyond the grant period describe plans for ensuring continued funding after the grant period.

PLEASE CHECK ALL ELECTORAL AREAS THAT WILL BENEFIT FROM YOUR PROJECT/PROGRAM

ELECTORAL AREA "A"		ELECTORAL AREA "B"		ELECTORAL AREA "C"	
ELECTORAL AREA "D"		ELECTORAL AREA "E"		ELECTORAL AREA "F"	
ELECTORAL AREA "G"		ELECTORAL AREA "H"		ELECTORAL AREA "I"	X

CHECKLIST - DOCUMENTS TO SUBMIT WITH YOUR APPLICATION

X

_____ Copy of Event or Initiative Budget – A detailed budget (see attached template) including costs, revenues and fees charged. Where possible please provide copies of cost estimates obtained

X

_____ Details of your Organization’s structure (include Directors names and Phone numbers)

_____ For Community Organizations without a Registered Society number, proof of bank account in Organizations name

Please ensure you have answered all sections of this form and provided all the requested documents.

SIGNATURE	DATE July 13, 2021
NAME (PLEASE PRINT) Randy Cranston	TITLE Chair

SUBMIT TO:

Regional District of Okanagan Similkameen
 101 Martin Street
 Penticton, BC V2A 5J9
 Email: info@rdos.bc.ca
 Attention: Finance Supervisor

FOR OFFICE USE ONLY

AMOUNT OF GRANT REQUESTED	\$
AMOUNT OF GRANT APPROVED (enter 0 if grant is denied)	\$
ELECTORAL AREA DIRECTOR SIGNATURE	

RDOS ELECTORAL AREA COMMUNITY GRANT IN AID BUDGET TEMPLATE	
Organization Name:	Kaleden Community Association
For period	From Feb 17, 2021 to _____.
REVENUE	
Grants (provide Names of grantors)	
from Government	500.00 (NHSP), 600.00 (RDOS)
from Foundations	
from Corporations	
Earned Income (ie interest)	
Individual contributions.	
Fundraising events and product sales.	
Membership income	
Additional revenue (please specify)	
Ticket Sales	2500.00
Beverage Sales, 50/50 Raffle	1000.00
Discount from chef	1000.00
TOTAL INCOME	5600.00
EXPENSES	
Salaries and wages	500.00
Consultant and professional fees (e.g. accounting, legal, etc.)	
Travel	
Equipment	
Supplies	350.00
Advertising and printing	820.00
Rent	
Utilities (ie electric, gas, telephone, cable)	
Other expenses (please specify)	
Meal/Beverage Cost	2800.00
Licences	300.00
TOTAL EXPENSES	4770.00
IN KIND SUPPORT (PLEASE PROVIDE DETAILS)	
community volunteers	
grocery store coupon donations	
produce grower donations	

1. Project/Program Abstract

Summary of Proposed Project:

KCA: Get Jazzed: Dinner/Dance: Thursday February 17, 2022

To further develop community connections by hosting the third "Get Jazzed" event focused on raising funds to support community projects: KCA Small Grant program, KCA post-secondary bursary, KVR benches.

Total estimated costs: \$ 4700.00

Amount requested from RDOS: 600.00

How funds will be used: To help underwrite the following costs: advertising, printing: event tickets, menus, posters, event coordinator, decorations, appetizer snacks, various licencing requirements and supplies

Other principal sources of support: New Horizons for Seniors Program Grant: \$ 500.00

In-kind support from

- local wineries and breweries (product at half price or donated)
- local grocery stores (gift certificates to purchase food)
- Penticton Concert Band (musicians providing music)
- local farmers (providing food)
- KJ Coffee (chef providing discount on meal cost)
- community volunteers

2. Project/Program Description

Outcomes

- enhance community connections by providing a social/cultural event in the local community
- enhance community volunteerism
- raise funds for the local community to support the KCA Small Grant program which encourages residents to apply for up to 150.00 to sponsor events that create community connections
- raise funds to support a KCA post-secondary bursary
- raise funds to add benches to the KVR trail and Pioneer Park
- celebrate local chefs, musicians, wineries and breweries

Who/How Many Served/Why Serving/Why use service?

Advertising for this event will be directed towards adult residents of Kaleden and the broader area encouraging local residents to attend the event. Approximately 100 attendees can be accommodated in the Kaleden Community Hall for this type of event. Residents have expressed a wish for social/cultural events that provide an opportunity to engage with each other, have

fun and socialize, getting to know each other and their neighbours better. Community members will attend the event, connecting and re-connecting with each other experiencing a fun filled evening raising money for local community projects, mostly notably a KCA post-secondary bursary that is focused on a youth with a history of volunteering.

Geographic areas targeted: Kaleden, Twin Lakes, St. Andrews by the Lake and the surrounding communities

How reach the population you plan to serve?

The event will be advertised in Skaha Matters: vendor recruitment and actual event, the KCA website, community Facebook page, the elementary school newsletter as well as community poster boards. The event will also be announced at other community events in the fall and early winter.

Strategies to achieve proposed outcomes:

Information will be shared through various social and print media about the event in particular focusing on the goals of the event of raising money to support community projects including park benches, post-secondary bursary, and small grant program.

How know if achieved proposed outcomes?

All tickets to the event are sold and we are able to raise funds to support ongoing and new activities and projects. Funds were raised to support the KCA bursary, the small grant program and benches for Pioneer Park.

3. Funding Considerations

How obtain other funding needed? (volunteer labour/in-kind donations)

Partial funding to support this event has been secured through the New Horizons for Seniors Program grant for 2021/22 to support the cost of hiring an event coordinator. Committee volunteers will work with the event coordinator to ensure the event is a success. Local wineries, breweries, grocery stores and produce growers will be approached to donate or sell at cost materials to support this event. All monies raised will go towards the stated project outcomes

Organization Structure

Chair: Randy Cranston:
Vice Chair: Eryn Wiedner:
Treasurer: Gail Jeffery:
Secretary: Rita Masson:

Committee Members:

Jaynie Molloy:

Pinky Bata-Reidman:

Neal Dockendorf:

Glenda Livolsi:

Subrina Monteith:

Karen Smith:



APPENDIX A ELECTORAL AREA COMMUNITY GRANT IN AID APPLICATION FORM

PLEASE READ THE ELECTORAL AREA COMMUNITY GRANTS GUIDELINES PRIOR TO SUBMITTING APPLICATION

NAME OF ORGANIZATION Kaleden FireSmart Committee with (KVFD/KCA)		AMOUNT REQUESTED 2000.00
MAILING ADDRESS		
POSTAL CODE V0H 1K0	CONTACT PERSON (NAME AND TITLE) Linda Dahl	
TELEPHONE NUMBER	EMAIL ADDRESS	

INFORMATION REGARDING THE APPLICANT ORGANIZATION:

IS YOUR ORGANIZATION A REGISTERED NOT FOR PROFIT SOCIETY IN BC? YES * _____ NO _____

IF "YES" PROVIDE REGISTERED SOCIETY NUMBER 25696

IF "NO" PROVIDE PROOF OF BANK ACCOUNT IN ORGANIZATION'S NAME (as an attachment to application)

HAS YOUR ORGANIZATION RECEIVED FUNDING FROM THE RDOS BEFORE? YES * _____ NO _____

IF "YES"; WHEN 2019 AND AMOUNT RECEIVED: \$ 2000.00 with KCA

DETAILS OF GRANT REQUEST

Please provide the following information in a brief narrative in the **following order**. (maximum 2 pages)

1. Project/Program Abstract

Brief summary of the proposed project/program including:

Total estimated costs;

The amount requested from the Regional District and how the funds will be used;

Other principal sources of support.

2. Project/Program Description

Specify project/program outcomes that you plan to achieve.

Who and how many will be served and why are you serving them? Why would they use your particular services? What geographic area does this project/program target?

How will you reach the population you plan to serve?

What strategies will be used to achieve the proposed outcomes?

How will you know if you have achieved the outcomes proposed?

3. Funding Considerations

Describe plans for obtaining other funding needed to carry out the project/program, including amounts requested of other funders and any volunteer labour and/or in-kind donations.

If the project/program is expected to continue beyond the grant period describe plans for ensuring continued funding after the grant period.

PLEASE CHECK ALL ELECTORAL AREAS THAT WILL BENEFIT FROM YOUR PROJECT/PROGRAM

ELECTORAL AREA "A"		ELECTORAL AREA "B"		ELECTORAL AREA "C"	
ELECTORAL AREA "D"		ELECTORAL AREA "E"		ELECTORAL AREA "F"	
ELECTORAL AREA "G"		ELECTORAL AREA "H"		ELECTORAL AREA "I"	

CHECKLIST - DOCUMENTS TO SUBMIT WITH YOUR APPLICATION

- yes
 Copy of Event or Initiative Budget – A detailed budget (see attached template) including costs, revenues and fees charged. Where possible please provide copies of cost estimates obtained
 yes
 Details of your Organization’s structure (include Directors names and Phone numbers)
 NA
 For Community Organizations without a Registered Society number, proof of bank account in Organizations name

Please ensure you have answered all sections of this form and provided all the requested documents.

SIGNATURE Linda Dahl	DATE July 18th/ 2021
NAME (PLEASE PRINT) Linda Dahl	TITLE FireSmart member (LFR)

SUBMIT TO:

Regional District of Okanagan Similkameen
 101 Martin Street
 Penticton, BC V2A 5J9
 Email: info@rdos.bc.ca
 Attention: Finance Supervisor

FOR OFFICE USE ONLY

AMOUNT OF GRANT REQUESTED	\$
AMOUNT OF GRANT APPROVED (enter 0 if grant is denied)	\$
ELECTORAL AREA DIRECTOR SIGNATURE	

Electoral Area Community Grant in Aid Application

Details of Grant Request:

The proposed project is to hire a local contractor to help with mitigation on a few local properties in Kaleden . One set of properties borders the KVR trail and there is a major fire concern along this corridor due to years of pine needle build up and low lying branches. Many of the residents are not able to physically work on the steep slope and a trained professional could make a difference in reducing the burnable debris in this area.

The other property to be worked on is along the Sumac, Greyledge slope that impacts residents along Birch and Dogwood Aves.

The estimated costs would be above \$5,000 if all work was done but we could do a limited number of properties for \$2,000 that would make a significant difference.

We are requesting up to \$2000 from the RDOS fun non-volunteer costs such as a certified faller, bin rental and canvas bags for debris removal .

We would encourage the home owners to apply for the Community Resiliency Initiative (CRI) to offset some of the work.

Project\Program Description:

Kaleden has been promoting FireSmart Initiatives for 5 years and the community is beginning to see the effects of the hard work. Every year, more people are asking for property assessments, requesting help to get work done and are actively involved in keeping this community Fire Safe.

There are over approximately 30 properties along East side Pineview Ave and most slope all the way down to the KVR. Some people are able to clear a portion of the property around their homes but the slope is a challenge for most home-owners. The slope is also the biggest concern for fire. Some homeowners have hired people to

clear the pine needles closest to their homes as they are physically not able to do this work. This is a challenge for a good portion of Pineview residents. Many of the residents along the Dogwood/Birch Greyledge area have done some work but more is needed on a bigger scale. The FireSmart Committee feels they can help significantly with this project with financial help.

The FireSmart Committee has recently circulated a questionnaire to all Kaleden residents asking what their concerns are. The clearing of the slope along Pineview is a major concern for many. We are hoping that our requested funds can tackle at least 5 of these properties for this year.

Before and after photos will show the changes the work does. Happy homeowners will be our number one achievement.

Funding Considerations:

The funding we hope to get through this grant will be for work focussed on the upper portion of the slope closer to resident's homes in the Pineview area and the lower slope on the Birch area. We are in the process of getting a Prescription for the amount it would take to do the lower portion of Pineview properties that border the KVR. A Community Assessment done a few years ago targeted the KVR/Pineview area as a major threat and concern to the community. This work would require more funding from the RDOS/Province and Forestry would possibly need to be involved.

Residents chosen for the upper slope work would be required to assist as they are able and apply for the CRI program .

Because both our targeted areas are so vulnerable to the community for Fire risk, the slope work on all properties will take some time. Once we get started, it is hoped that work in those areas will be done on a continued basis. Encouraging neighbours to work together on overlapping properties is key to the success of this project as well. Our annual FireSmart initiative promote neighbourhood work and the community has shown it can come together for a common cause.

RDOS ELECTORAL AREA COMMUNITY GRANT IN AID BUDGET TEMPLATE

Organization Name:	Kaleden FireSmart Committee
For period	From August 2021 to May 2022 to _____.
REVENUE	
Grants (provide Names of grantors)	
from Government	
from Foundations	
from Corporations	Partners in Protection \$500 Fortis- \$1500 for Chipper
Earned Income (ie interest)	
Individual contributions.	
Fundraising events and product sales.	
Membership income	
Additional revenue (please specify)	
TOTAL INCOME	\$2000.00
	These funds were used for our Annual Chipping event in May of 2021
EXPENSES	
Salaries and wages	
Consultant and professional fees (e.g. accounting, legal, etc.)	\$1000.00 -non volunteer professional work professional faller/tree limbing
Travel	
Equipment	\$1000.00 bin rental and equipment
Supplies	
Advertising and printing	
Rent	
Utilities (ie electric, gas, telephone, cable)	
Other expenses (please specify)	
TOTAL EXPENSES	\$2000.00
IN KIND SUPPORT (PLEASE PROVIDE DETAILS)	
	<small>Community members, KVFD and FireSmart committee members will provide volunteer time whenever and wherever needed.</small>
	Tools, food and muscle power to remove and haul debris.

Kaleden FireSmart Committee - 2021

Neal Dockendorf - Committee Chair

Denis Gaudry- Committee Member- KVFD Fire Chief

Linda Dahl- Committee Member- LFR

Mike Gain- Committee Member- LFR

Hugh Winter- Committee Member- secretary

Patte Winter- Committee member- book keeping

Warwick Smith- committee member



APPENDIX A ELECTORAL AREA COMMUNITY GRANT IN AID APPLICATION FORM

PLEASE READ THE ELECTORAL AREA COMMUNITY GRANTS GUIDELINES PRIOR TO SUBMITTING APPLICATION

NAME OF ORGANIZATION Kaleden Seniors Committee		AMOUNT REQUESTED 1195.00
MAILING ADDRESS Box 136, Kaleden, BC		
POSTAL CODE V0H1K0	CONTACT PERSON (NAME AND TITLE) Sarah Tupholme	
TELEPHONE NUMBER	EMAIL ADDRESS	

INFORMATION REGARDING THE APPLICANT ORGANIZATION:

IS YOUR ORGANIZATION A REGISTERED NOT FOR PROFIT SOCIETY IN BC? YES NO
 IF "YES" PROVIDE REGISTERED SOCIETY NUMBER 844305202BC0001 50003671
 IF "NO" PROVIDE PROOF OF BANK ACCOUNT IN ORGANIZATION'S NAME (as an attachment to application)
 HAS YOUR ORGANIZATION RECEIVED FUNDING FROM THE RDOS BEFORE? YES NO
 IF "YES"; WHEN 2020 AND AMOUNT RECEIVED: \$ 1070.00

DETAILS OF GRANT REQUEST

Please provide the following information in a brief narrative in the following order. (maximum 2 pages)

1. Project/Program Abstract

- Brief summary of the proposed project/program including:
- Total estimated costs;
- The amount requested from the Regional District and how the funds will be used;
- Other principal sources of support.

2. Project/Program Description

- Specify project/program outcomes that you plan to achieve.
- Who and how many will be served and why are you serving them? Why would they use your particular services? What geographic area does this project/program target?
- How will you reach the population you plan to serve?
- What strategies will be used to achieve the proposed outcomes?
- How will you know if you have achieved the outcomes proposed?

3. Funding Considerations

Describe plans for obtaining other funding needed to carry out the project/program, including amounts requested of other funders and any volunteer labour and/or in-kind donations.

If the project/program is expected to continue beyond the grant period describe plans for ensuring continued funding after the grant period.

PLEASE CHECK ALL ELECTORAL AREAS THAT WILL BENEFIT FROM YOUR PROJECT/PROGRAM

ELECTORAL AREA "A"		ELECTORAL AREA "B"		ELECTORAL AREA "C"	
ELECTORAL AREA "D"		ELECTORAL AREA "E"		ELECTORAL AREA "F"	
ELECTORAL AREA "G"		ELECTORAL AREA "H"		ELECTORAL AREA "I"	X

CHECKLIST - DOCUMENTS TO SUBMIT WITH YOUR APPLICATION

- X _____ Copy of Event or Initiative Budget – A detailed budget (see attached template) including costs, revenues and fees charged. Where possible please provide copies of cost estimates obtained
- X _____ Details of your Organization’s structure (include Directors names and Phone numbers)
- _____ For Community Organizations without a Registered Society number, proof of bank account in Organizations name

Please ensure you have answered all sections of this form and provided all the requested documents.

SIGNATURE	DATE July 12, 2021
NAME (PLEASE PRINT) Sarah Tupholme	TITLE Chair

SUBMIT TO:

Regional District of Okanagan Similkameen
 101 Martin Street
 Penticton, BC V2A 5J9
 Email: info@rdos.bc.ca
 Attention: Finance Supervisor

FOR OFFICE USE ONLY

AMOUNT OF GRANT REQUESTED	\$
AMOUNT OF GRANT APPROVED (enter 0 if grant is denied)	\$
ELECTORAL AREA DIRECTOR SIGNATURE	

RDOS ELECTORAL AREA COMMUNITY GRANT IN AID BUDGET TEMPLATE	
Organization Name:	Kaleden Seniors Committee
For period	From <u>Nov 20, 2021</u> to _____.
REVENUE	
Grants (provide Names of grantors)	
from Government	450.00 (NHSP), 1195.00 (RDOS)
from Foundations	
from Corporations	
Earned Income (ie interest)	
Individual contributions.	
Fundraising events and product sales.	
Membership income	
Additional revenue (please specify)	
Vendor Table Rental	150.00
Facility Rental Subsidy	
	100.00
TOTAL INCOME	1895.00
EXPENSES	
Salaries and wages	800.00
Consultant and professional fees (e.g. accounting, legal, etc.)	
Travel	
Equipment	75.00
Supplies	
Advertising and printing	770.00
Rent	250.00
Utilities (ie electric, gas, telephone, cable)	
Other expenses (please specify)	
TOTAL EXPENSES	1895.00
IN KIND SUPPORT (PLEASE PROVIDE DETAILS)	
vendor donations of prizes	
committee volunteer labour	

1. Project/Program Abstract

Summary of Proposed Project:

Kaleden Outdoor Winter Market – Saturday November 20, 2021
To further enhance community connections and celebrate local artisans and crafters. Vendors will be set up outdoors throughout the community. Those that wish to be indoors will be provided space at the local church. A map with all vendor locations will be available at a central spot as well as from the vendors. Draw prizes will be donated by vendors.

Total estimated costs: \$1895.00

Amount requested from RDOS: 1195.00

How funds will be used: To help underwrite the following costs: advertising for vendors, advertising of market, printing: map, posters, directional signage, facility rental, event coordinator, decorations

Other principal sources of support: New Horizons for Seniors Program Grant: \$450.00; vendor table rental: 150.00; subsidy for facility rental: 100.00

2. Project/Program Description

Outcomes

- enhance community connections particularly after a year when so many people have felt more isolated
- enhance community volunteerism
- celebrate local artisans and crafters
- heighten a feeling of joy and celebration

Who/How Many Served/Why Serving/Why use service?

Families from the local area as well as surrounding communities will attend the event, connecting and re-connecting with each other, experiencing an outdoor market atmosphere. Food and hot beverages will be available. We hope to attract hundreds of people to attend the Outdoor Winter Market by advertising broadly on social media and in print.

Geographic areas targeted: Kaleden, Twin Lakes, St. Andrews by the Lake and the surrounding communities

How reach the population you plan to serve?

The event will be advertised in Skaha Matters: vendor recruitment and actual event, the KCA website, community Facebook page, the elementary school newsletter as well as community poster boards. The event will also be announced at other community events in the fall.

Strategies to achieve proposed outcomes:

Information will be shared through various social media platforms to ensure the broader community is aware of the event. Vendors will be recruited by advertising in local media and social platforms. As well vendors will be personally contacted. The community will be decorated for the season, food and hot beverages will be available. A passport will be developed to encourage the visiting of all the vendors. Completed passports will be entered into prize draws contributed by vendors.

How know if achieved proposed outcomes?

Attendance at the event, participation by vendors, contributions by vendors towards passport prizes, comments from attendees and vendors

3. Funding Considerations

How obtain other funding needed? (volunteer labour/in-kind donations)

Partial funding to support this event has been secured through the New Horizons for Seniors Program grant for 2021/22 to support the cost of hiring an event coordinator. Committee volunteers will work with the event coordinator to ensure the event is a success. This will include distributing/displaying posters, emailing residents, set up/take down of event, posting signage, greeting vendor and participants, distributing vendor map, etc.

In-kind donations

Subsidy of facility rental: 100.00

Donations from vendors towards passport prizes: 400.00

Organization Structure

Chair: Sarah Tupholme:

Treasurer: Rita Masson:

Secretary: Jen Charlish:

Committee Members:

Jaynie Molloy:

Margie O'Brien:

Randy Cranston:

Paula Marfleet:

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: October 7, 2021

RE: **Oliver and District Arena Conversion and Service Establishment**

Administrative Recommendation:

THAT Bylaw No. 2942, 2021, a bylaw to convert the Oliver and District Arena Service from a Supplementary Letters Patent to a Service established by bylaw, be adopted.

Background:

The Oliver and District Arena function was established through a Supplementary Letters Patent (SLP) issued July 9, 1968. Through a service agreement, Oliver Parks and Recreation Society operates the arena on behalf of the Regional District, which owns the asset. Residents from the Town of Oliver and Electoral Area “C” fund the operation and maintenance of the facility.

Analysis:

During analysis of the Oliver and District Loan Authorization Bylaw No. 2844, it was determined that the SLP limits the amount of debt the Regional District is permitted to incur to \$200,000. In order to proceed with the loan authorization bylaw and complete capital upgrades to the arena, it is necessary to convert the SLP to a service continuation and establishment bylaw.

Oliver and District Arena Conversion and Service Establishment Bylaw No. 2942, 2021, has received statutory approval from the Inspector of Municipalities. The Regional District may now adopt the bylaw.

Alternatives:

THAT first, second and third readings of Bylaw No. 2942 be rescinded and the bylaw abandoned.

Respectfully submitted:

“Gillian Cramm”

G. Cramm, Legislative Services Coordinator

Endorsed by:

“Christy Malden”

C. Malden, Manager of Legislative Services

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BYLAW NO. 2942, 2021

A bylaw to convert and establish a service to construct, operate and maintain an arena within the Town of Oliver

WHEREAS by Supplementary Letters Patent dated July 9, 1968, as amended by Supplementary Letters Patent dated January 22, 1969, the Regional District was granted the function of constructing, operating and maintaining a skating arena within the Regional District with only the Town of Oliver and Electoral Area "C" participating;

AND WHEREAS the *Local Government Act* authorizes the Regional District Board to convert a function established by supplementary letters patent to a service exercised under the authority of a bylaw establishing the service;

AND WHEREAS the Board has obtained the required consent of at least 2/3 of the participants of the original function;

NOW THEREFORE, the Board of Directors of the Regional District of Okanagan-Similkameen in open meeting assembled enacts as follows:

1 CITATION

- 1.1 This Bylaw shall be cited as the "Oliver and District Arena Conversion and Service Establishment Bylaw No. 2942, 2021."

2 CONVERSION AND ESTABLISHMENT

- 2.1 The function of constructing, operating and maintaining a skating arena as established by Supplementary Letters Patent dated July 9, 1968, and as amended by Supplementary Letters Patent dated January 22, 1969 is converted and established as the Oliver and District Arena Service.
- 2.2 The Board may operate the service and without limitation, enter into a contract with a third party to implement the service.

3 SCOPE OF SERVICE

- 3.1 The service established by this bylaw is to construct, maintain and operate the Oliver and District Arena.

4 SERVICE AREA

4.1 The boundaries of the service area are the boundaries of Electoral Area “C” and the Town of Oliver.

5 PARTICIPATING AREAS

5.1 The participating areas are Electoral Area “C” and the Town of Oliver.

6 METHODS OF COST RECOVERY

- 6.1 As provided in the Local Government Act, the annual costs of the Service shall be recovered by one or more of the following:
- a. property value taxes imposed in accordance with Division 3 [requisition and Tax Collection] of the *Local Government Act*;
 - b. parcel tax imposed in accordance with Division 3 of the *Local Government Act*;
 - c. fees and charges imposed under section 397 [imposition of fees and charges] of the *Local Government Act*.
 - d. revenues raised by other means authorized under a provincial enactment;
 - e. revenues received by way of agreement, enterprise, gift, grant or otherwise.

7 LIMIT

7.1 The maximum amount that may be requisitioned annually for the service shall not exceed \$650,000 or \$0.3649 per \$1,000 net taxable value of land and improvements in the service area, whichever is greater.

READ A FIRST, SECOND, AND THIRD TIME this 5th day of August, 2021.

ELECTORAL AREA DIRECTOR CONSENT OBTAINED this 10th day of August, 2021.

TOWN OF OLIVER CONSENT OBTAINED this 23rd day of August, 2021.

APPROVED by the Inspector of Municipalities this 9th day of September, 2021.

ADOPTED this ___ day of ___, 20__

RDOS Board Chair

Corporate Officer

FILED WITH THE INSPECTOR OF MUNICIPALITIES this ___ day of ___, 20__

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: October 7, 2021

RE: **Area G Community Works (Gas Tax) Reserve Expenditure Bylaw No. 2947**

Administrative Recommendation:

THAT Electoral Area “G” Community Works Program (Gas Tax) Reserve Expenditure Bylaw No. 2947, 2021, being a bylaw to authorize an expenditure of \$30,000 from the Electoral Area “G” Community Works Reserve to fund the construction of a portion of the Similkameen Rail Trail, be read a first, second, and third time and be adopted.

Reference:

Bylaw No. 2406, 2006 - Electoral Area “G” Community Works (Gas Tax) Reserve Fund Establishment Bylaw.

Background:

The Regional District holds a License of Occupation over the former VVE (Victoria, Vancouver and Eastern) rail right-of-way and has developed a trail network which it maintains to encourage safe, active recreation in the Similkameen Valley.

Analysis:

A trail re-route is required within a portion of the un-built Ministry of Transportation and Infrastructure right-of-way to bypass an active agricultural parcel. The completion of this 250m path will connect the terminus of the rail bed to Highway 3, where the Province is currently negotiating an off-highway bypass route along the perimeter of an active ranch. This route will connect to the ongoing trail construction project in Cawston in Electoral Area “B”.

The funds will also be used to re-surface a portion of existing rail-bed towards the Village of Keremeos.

Specifically, the funds will be used for:

- 1) Land preparation, including grading, sub-base compaction and ditching
- 2) Supply and delivery of asphalt millings, which are used for trail surfacing
- 3) Spreading, watering and compacting of trail asphalt millings to a width of 3m

These projects meet the criteria set out in the Community Works Gas Tax Guidelines.

The current uncommitted balance in the Electoral Area “G” Community Works Program (Gas Tax) Reserve account is \$397,211.42.

Alternatives:

THAT Bylaw No. 2947 receives no readings and is abandoned.

Respectfully submitted:

Endorsed by:

“Gillian Cramm”

G. Cramm, Legislative Services Coordinator

C. Malden, Manager of Legislative Services

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BYLAW NO. 2947, 2021

A bylaw to authorize the expenditure of monies from the Electoral Area “G” Community Works Program (Gas Tax) Reserve Fund for construction of a portion of the Similkameen Rail Trail.

WHEREAS Section 377 of the *Local Government Act*, and Section 189 of the *Community Charter* authorises the Board, by bylaw adopted by at least 2/3 of its members, to provide for the expenditure of any money in a reserve fund and interest earned on it;

AND WHEREAS the Electoral Area “G” Community Works Program (Gas Tax) Reserve Fund, established by Bylaw No. 2406, 2006, has sufficient monies available for community capital projects;

NOW THEREFORE, the Board of the Regional District of Okanagan-Similkameen in open meeting assembled enacts as follows:

1 CITATION

1.1 This Bylaw shall be cited as the Electoral Area “G” Community Works Program (Gas Tax) Reserve Expenditure Bylaw No. 2947, 2021”

2 INTERPRETATION

2.1 The expenditure of \$30,000 from the Electoral Area “G” Community Works Program (Gas Tax) Reserve Fund is hereby authorized toward the construction of a portion of the Similkameen Rail Trail project.

READ A FIRST, SECOND, AND THIRD TIME this ____ day of _____, 20__

ADOPTED BY TWO-THIRD VOTE this ____ day of _____, 20__

RDOS Board Chair

Corporate Officer

This is the final page of the Agenda Package