# Central Okanagan Agricultural Background Report

Regional Agricultural Strategy | Winter 2022

**Prepared for:**

Regional District of Central Okanagan

**Prepared by:**

upland agricultural consulting

In association with

URBAN FOOD STRATEGIES

# Acknowledgments

The project team acknowledges that this project is taking place on the traditional and unceded territory of the syilx / Okanagan people including Westbank First Nation, Okanagan Indian Band, and Okanagan Nation Alliance. We recognize, honour, and respect the presence of Indigenous people past, present and future.

This report was created with the input and involvement of the syilx / Okanagan people, local governments (District of Lake Country, City of Kelowna, City of West Kelowna, and District of Peachland), farmers and ranchers, fruit packers and processors, and agricultural organizations across the Central Okanagan. The project team is grateful to Michael Czarny, Senior Planner, Regional District of Central Okanagan, for his leadership and management of this project.

A special thanks to the organizations and individuals who helped build this process, including:

- BC Cherry Association
- BC Fruit Growers Association
- BC Grape Growers Association
- BC Ministry of Agriculture and Food
- Black Mountain Irrigation District
- Central Okanagan Economic Development Commission
- Okanagan Basin Water Board
- Okanagan Collaborative Conservation Program
- Okanagan Kootenay Sterile Insect Release Program
- Regional District of Central Okanagan Agricultural Advisory Committee
- Regional District of Central Okanagan Regional Growth Strategy Steering Committee

The work was conducted by Upland Agricultural Consulting Ltd. in association with Urban & Regional Food Strategies.

This project is funded in part by the Local Government Partnership Program, with funding provided by Agriculture and Agri-Food Canada and the Government of British Columbia through programs delivered by the BC Investment Agriculture Foundation.

DELIVERED BY: FUNDING PROVIDED BY:

IAF Investment Agriculture Foundation

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# Executive Summary

## Background Report Objectives and Phases

Agriculture is an important part of the socio-economic heritage and cultural identity of the Central Okanagan. It contributes to the economy, the landscape, and to the high quality of life enjoyed by residents. At the same time, agriculture continues to compete with other land uses on a limited land base, which is now receiving additional pressures from the impacts of climate change and fast-growing population. The modernization of the Regional District of Central Okanagan's (RDCO) 2005 Regional Agricultural Plan was identified as a priority within the Regional Growth Strategy (RGS) Priority Projects Plan in 2017 and supported by the Regional Board Strategic Priorities in 2019. The first step that the RDCO is taking in developing the Regional Agricultural Strategy (RAS) is to prepare this Background Report (the "Report").

The work for the Report was conducted between August and December 2022, with three key objectives:

1. Review the planning and policy framework for agriculture in the Central Okanagan, with a focus on existing agricultural plans and policies of First Nation communities (Westbank First Nation (WFN) and Okanagan Indian Band (OKIB)), local governments (District of Lake Country, City of Kelowna, City of West Kelowna, and District of Peachland), RDCO Central Okanagan East Electoral Area, RDCO Central Okanagan West Electoral Area, and the province to determine opportunities for partnership and areas or gaps that need to be addressed.
2. Create an up-to-date profile of the Central Okanagan agricultural sector that describes the land base, agricultural activities, and economic indicators.
3. Identify key issues, opportunities, and themes for the sector through engagement with First Nations communities, member municipalities, agriculture and food stakeholders, and the general public.

The process to prepare the Report had three main phases. Throughout these three phases of work, consultants met frequently with RDCO staff to assist with reviewing materials and to ensure that the project remained on track.

**Phase 1: Project initiation, background scoping, and agricultural profile (September 2022).** Phase 1 involved the review of dozens of plans, datasets, reports, websites, and other resources. These are provided as footnotes throughout the report and are summarized in table format in the Appendix.

**Phase 2: Engagement (September – November 2022).** Phase 2 involved meetings and interviews with planning staff from WFN and all four member municipalities. Engagement also included: two meetings with the RDCO Agricultural Advisory Committee (AAC); one meeting with the RGS Steering Committee; 18 interviews with key Central Okanagan agricultural sector leaders, 115 responses to an online public survey; and an open house, which was attended by approximately 50 members of the public. Project updates were communicated through the RDCO's online engagement platform and through newspaper advertisements and articles. A copy of the Engagement Strategy is provided in the Appendix.

**Phase 3: Final report (December 2022).** Phase 3 involved the development of this report and providing draft versions to RDCO staff for review and feedback.

## Policy Framework for Agriculture

Existing First Nations and local government policies and plans, such as the RGS, Official Community Plans (OCPs), Zoning Bylaws, land use bylaws, and local agricultural plans were reviewed and assessed to better understand the role for the RDCO in supporting agriculture. Some OCPs and zoning bylaws are due for an update, which creates an opportunity to modernize food and agriculture sections of these plans. Best practices for modernizing local government bylaws in support of agriculture are also presented.

## Agricultural Plans and Policies

Many of the member municipalities in the Central Okanagan have recently created agricultural plans. These provide an important launching point for a RAS and the role of the RDCO within the greater context of regional agricultural planning. Generally, the role of the RDCO in supporting local agricultural plans can be centred on common areas that extend beyond government boundaries such as climate change, farm worker housing, water management, emergency planning, and economic development, among others.

## Biophysical Context for Agriculture

Biophysical characteristics that pertain to agriculture were reviewed in detail, including weather and climate change projections; geology and soils; water resources (including governance, supply and demand); invasive and noxious species; wildlife; and waste management. The Central Okanagan has good soils and climate for a variety of crops, in particular tree fruits and grapes. The impacts of climate change are projected to bring both opportunity, such as a longer grower season, and pressure to the agriculture sector, such as higher risks of wildfires and droughts, and new pests. The stable availability of water for irrigation will be crucial for the growth of the agriculture sector.

## Agricultural Land Capability, Uses, and Trends

In 2021, there were approximately 66,690 acres (27,000 hectares) of land in the Agricultural Land Reserve (ALR) in the Central Okanagan, with about a third within the City of Kelowna. Additional farm uses take place outside the ALR, indicating the overall fertile nature of the Central Okanagan. Over the last 20 years the greatest transition of agricultural land has been from apple orchards, forage, and pasture lands over to grapes and cherries, indicating a general intensification of agricultural uses over time. In 2021, the top three Central Okanagan agricultural activities, from a land base perspective, included beef and forage; tree fruits; and small fruits (including grapes).

## Agricultural Sector Profile

An agricultural sector profile that examines trends in profitability, current value-added activities, agri-tourism, and other agricultural support activities is presented. This profile was developed using several data sources including the provincial Agricultural Land Use Inventory, federal Census of Agriculture, and BC Assessment farm tax status. Despite growth and success within the sector, the Central Okanagan agricultural community is feeling the impacts of increasing land values. As such, the entry and/or expansion costs related to farming remain high and profit margins on Central Okanagan farms fluctuate year-to-year based on the costs of inputs and supplies.

## Engagement Findings

Engagement occurred with key players across the Central Okanagan, including First Nations, producers, processors, representatives from NGOs, and industry associations to understand

the current challenges and opportunities for the agriculture sector. Findings from engagement underscored challenges associated with labour availability and temporary farm worker housing as key bottlenecks for sector growth. Additional concerns were focused on the future of water availability, soil movement within the region and possible loss of soil to other regions due to development activities, food security, and a dwindling apple sector in the region, as well as a need for public education around agriculture.

## Potential Market Opportunities

The Report identifies several market opportunities for producers and processors in the Central Okanagan, including:

- Shifting a greater proportion of local consumer spending to local products;
- Cautiously embracing agri-technology and alternative growing systems
- Taking advantage of emerging markets and consumer trends;
- Linking producers with the craft beer and spirits market; and
- Growing agri-tourism.

## Key Themes

Several themes for the Central Okanagan agriculture sector arose from work conducted in Phase 1 and Phase 2, which can be further explored through the development of a future RAS. These are presented here in no particular order:

- Identify common agri-food goals with WFN and OKIB;
- Protect agricultural land for the future of food production;
- Address climate change adaptation and mitigation needs;
- Take advantage of regional markets for regional products;
- Attract farm workers and address farm worker housing challenges;
- Advocate on behalf of Central Okanagan agriculture to higher levels of government; and
- Support public education in food and agriculture.

## Conclusions and Considerations

This Report is the first step in developing a RAS, which will establish a vision and provide implementable recommendations to tackle challenges that have been identified. As agriculture in the Central Okanagan continues to intensify production on existing farms and expand up into higher elevations, member stakeholders in the Central Okanagan have an opportunity to explore innovative options and solutions to support agriculture. In particular, emergency planning, water and utilities infrastructure, farm worker housing, climate change and the protection of ecosystem services will likely continue to be priority issues for the regional agricultural sector in the years ahead.

# Table of Contents

# List of Tables

# List of Figures

# Acronyms

| | |
|---|---|
| AAC | Agricultural Advisory Committee |
| AF | BC Ministry of Agriculture and Food |
| ALC | Agricultural Land Commission |
| ALCA | Agricultural Land Commission Act |
| ALR | Agricultural Land Reserve |
| ALUI | Agricultural Land Use Inventory |
| AWDM | Agricultural Water Demand Model |
| BCBTAC | British Columbia Beverage Technology Access Centre |
| BCCA | British Columbia Cattleman's Association |
| BCFGA | British Columbia Fruit Growers Association |
| BCTF | British Columbia Tree Fruits |
| BCVQA | British Columbia Vintners Quality Alliance |
| BMPs | Beneficial Management Practices |
| CCS | Census Consolidated Subdivision |
| CD | Census Division |
| COEDC | Central Okanagan Economic Development Commission |
| CRA | Canada Revenue Agency |
| CSA | Community Supported Agriculture |
| DPA | Development Permit Area |
| EA | Electoral Area |
| EDC | Economic Development Commission |
| EFP | Environmental Farm Plan |
| EMA | Environmental Management Act |
| EMBC | Emergency Management BC |
| EMLI | BC Ministry of Energy, Mines, and Low Carbon Innovation |
| EOC | Emergency Operations Centre |
| FPPA | Farm Practices Protection Act |
| GDD | Growing Degree Days |
| GIS | Geographic Information Systems |
| Ha | Hectare |
| NAICS | North American Industry Classification System |
| OBWB | Okanagan Basin Water Board |
| OCP | Official Community Plan |
| OCCP | Okanagan Collaborative Conservation Program |
| OKIB | Okanagan Indian Band |
| OKSIR | Okanagan Kootenays Sterile Insect Release |
| ONA | Okanagan Nation Alliance |
| PCIC | Pacific Climate Impact Consortium |
| RDC | Research and Development Centre |
| RDCO | Regional District of Central Okanagan |
| RGS | Regional Growth Strategy |
| RLUB | Rural Land Use Bylaw |
| SAWP | Seasonal Agricultural Workers Program |
| SIFT | BC Soil Information Finder Tool |
| TFW | Temporary Farm Worker |
| TFWH | Temporary Farm Worker Housing |
| UBC | University of British Columbia |
| UBCO | University of British Columbia Okanagan |
| WFN | Westbank First Nation |
| WSA | Water Sustainability Act |
| YA | Young Agrarians |
| ZBL | Zoning Bylaws |

# 1.0 Introduction

## 1.1 Project Overview and Objectives

The modernization of the Regional District of Central Okanagan's (RDCO) Regional Agricultural Plan was identified as a priority within the Regional Growth Strategy Priority Projects Plan in 2017 and supported by the Regional Board Strategic Priorities in 2019. It has been 17 years since the RDCO has updated the Regional Agricultural Plan. The evolving nature of the agriculture and food sector and associated land-use planning policies provide motivation for local governments to update policy documents and create forward looking plans.

This Regional Agricultural Background Report (the "Report") is the first phase in updating and modernizing the RDCO's approach to planning for agriculture. The compilation of this Report has three key objectives:

1. Review the planning and policy framework in Central Okanagan, with a focus on the existing agricultural plans and policies of member municipalities, First Nations communities, and Electoral Areas to determine opportunities for partnership and areas or gaps that need to be addressed.
2. Create an up-to-date profile of the Central Okanagan agricultural sector.
3. Identify key issues and opportunities for the sector through engagement with First Nations communities, the agriculture and food sector and the public.

Future phases of the work will be to create an updated Regional Agricultural Strategy (RAS), which is slated for development in 2023. The objective of the RAS will be to develop a plan to protect agricultural land, promote resilience and the economic viability of farming, encourage economically, environmentally, and socially sound agricultural practices and ensure food security, equity, health and well-being of the people living in the Central Okanagan. This Background Report will be used as a tool to provide the foundational knowledge to achieve these objectives of a future Regional Agricultural Strategy.

There are multiple reasons why now is the right time to consider updates to the 2005 Regional Agricultural Plan and create a new RAS based on contemporary issues and opportunities. Agriculture and the agricultural community are facing pressures such as a fast-growing population base, increasing commercial and industrial development growth pressure on farmland, and the need for climate change resiliency. There have been numerous recent changes to provincial policies and regulations related to agriculture, such as the *Agricultural Land Commission Act* and regulations, the legalization of recreational cannabis, and several member municipalities within the Central Okanagan have completed agricultural planning documents for their communities, including District of Lake Country (Agriculture Plan 2020), City of Kelowna (Agriculture Plan 2017) and City of West Kelowna (Westbank Centre Agriculture Plan 2016). This provides the Central Okanagan the opportunity to support and coordinate implementation of region-wide recommendations within these recently completed plans, support region-wide initiatives and facilitate the creation of regionally consistent policies for the agriculture sector.

## 1.2 Regional Context

The Central Okanagan is a portion of the geographical region of the Okanagan Valley, which reaches as far south as Osoyoos and as far north as Vernon, and is the traditional and unceded territory of the syilx / Okanagan people. The Central Okanagan is the third largest urban area in the province and is made up of two unincorporated electoral areas (Central Okanagan West and Central Okanagan East), First Nation lands (including Westbank First

Nation and Okanagan Indian Band), and four member municipalities (District of Peachland, District of Lake Country, City of West Kelowna and City of Kelowna) (Figure 1, next page). Collectively the RDCO member municipalities, Electoral Areas and First Nations are home to over 222,000 people.

Agriculture and farming have a long history in the Central Okanagan and continue to be a vital part of the economic, social and environmental fabric of the region. Agriculture in the Central Okanagan has many assets including: a large farming community, robust agricultural land base, long-history of agriculture, proximity to urban markets and proximity to regional, national, and international distribution nodes. There are approximately 27,000 hectares (66,700 acres) of Agricultural Land Reserve (ALR) in the Central Okanagan. With its fertile soils and favourable growing climate, the Central Okanagan is a major producer of tree fruit crops, grapes, and has a very strong wine and cider industry. In 2021, total farm revenue for the region was over $187 million.[1] The large agricultural land parcels, generations of family-run farms, supportive infrastructure, research and development institutions, and easy access to domestic and international markets make agriculture an important economic contributor within the Central Okanagan and to BC more widely.

[1] Census of Agriculture, 2021. Statistics Canada.

# 2.0 Policy Framework for Agriculture

## 2.1 Senior Government Roles in Agriculture

Agriculture is not an issue addressed by one department, one piece of legislation, or one single level of government. Agricultural land uses are regulated by several levels of government. As a result, farm operations may be governed by local, provincial and federal policies. Some regulations are wide in scope and far-reaching, such as national and international trade agreements, while others are site-specific or issue-specific, such as local zoning or meat inspection regulations. Awareness of jurisdictional responsibilities and authority is key in defining policy, strategies, actions and pilot projects that can be undertaken by local government.

The Government of Canada regulates several areas of agriculture including interprovincial and international trade practices, public health, and food safety. In some instances, municipalities may have to respond to Federal Acts through their local jurisdiction and authority. For example, the Cannabis Act motivated municipalities to create new policies and bylaws related to land use, zoning, business licensing and responding to nuisance complaints. In addition to Acts and Regulations, federal programs can influence in local government policies and bylaws. Of particular importance is the federal Seasonal Agricultural Worker Program (SAWP) and housing for these temporary foreign workers (TFWs).

The Province of BC primarily regulates agriculture through Acts under the responsibility of the Ministry of Agriculture and Food (MAF), and the Agricultural Land Commission (ALC), who oversees the ALR. Activities in the agriculture and food sector also have to comply with Acts under other provincial ministries. Provincial policies and regulations related to agriculture are continuously evolving and local government must incorporate regulatory changes into their Official Community Plans (OCPs) and Zoning Bylaw (ZBL) as required. Legislative tools outlined in B.C.'s *Local Government Act* and *Land Title Act* can assist local governments to encourage a secure and stable working environment for farming in their communities. The legislation works to ensure that agriculture is given appropriate consideration in planning processes.

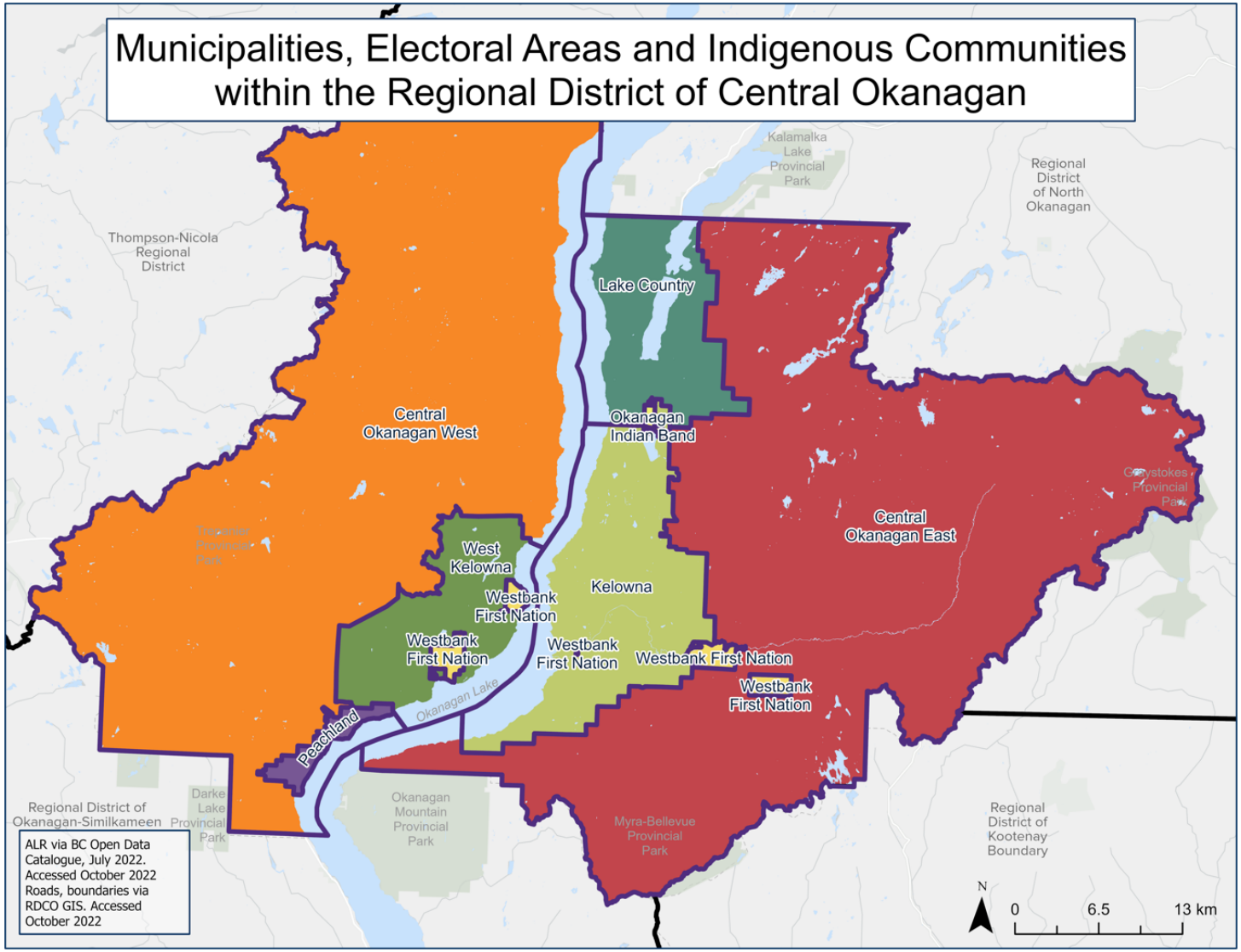


***Figure 1. Municipalities, Electoral Areas, and Indigenous Communities in the RDCO***

### 2.1.1 Agricultural Land Commission Act and Regulations

The ALC is an independent administrative tribunal dedicated to preserving agricultural land and encouraging farming in BC and is the agency responsible for administering the *Agricultural Land Commission Act* (ALCA) and associated regulations. The ALC plays a role in assisting local governments with achieving consistency between their bylaws and the ALCA, Regulation, and any Resolutions of the Commission via the ALC's Bylaw Review Process. ALC staff work with MAF staff in "agri-teams" to provide advice to local government planners to help achieve consistency between bylaws and the ALCA and Regulation. MAF staff review bylaws independently of the ALC Bylaw Review Process, but ALC and MAF staff may discuss bylaw reviews prior to responding. The ALC copies the MAF on all bylaw reviews at the time they are provided to the local government.

**The Agricultural Land Commission Act**

The ALCA sets out the legislative framework for the establishment and administration of the agricultural land preservation program. Section 6 ALCA outlines the purposes of the Commission as follows:

> 6 (1) (a) to preserve the agricultural land reserve;
>
> (b) to encourage farming of land within the agricultural land reserve in collaboration with other communities of interest;
>
> (c) to encourage local governments, First Nations, the government and its agents to enable and accommodate farm use of land within the agricultural land reserve and uses compatible with agriculture in their plans, bylaws and policies.
>
> 6 (2) The commission, to fulfill its purposes under subsection (1), must give priority to protecting and enhancing all of the following in exercising its powers and performing its duties under this Act:
>
> - the size, integrity and continuity of the land base of the agricultural land reserve;
> - the use of the agricultural land reserve for farm use.

**The Agricultural Land Reserve General Regulation 57/2020**

The Regulation identifies the procedures for submitting applications and notices of intent.

**The Agricultural Land Reserve Use Regulation 30/2019**

The Regulation specifies land uses permitted in the ALR. The ALC is responsible for interpreting the Regulation and provides guidance in the ALC Policies.

**Agricultural Land Commission Policies**

The Policies provide interpretation and clarification of the Act and Regulations; outline guidelines, strategies, rules or positions on various issues; and provide clarification and courses of action consistently taken or adopted by the Commissioners.

### 2.1.2 Farm Practices Protection (Right to Farm) Act (FPPA)

A key component of MAF's "Strengthening Farming" program involves the FPPA, which underpins efforts to protect current farm practices and protects a farmer's right to farm. The FPPA protects farmers from nuisance complaints related to normal farm practices, which may include noises, odours, animal control, and other practices. The farm activities must not be in contravention of the *Public Health Act*, *Integrated Pest Management Act*, or *Environmental Management Act*. The FPPA established the Farm Industry Review Board as

a mechanism to resolve complaints about farm practices. The FPPA also enables the Province to make regulations respecting standards for the purpose of defining normal farm practices.

### 2.1.3 Environmental Management Act (EMA)

EMA provides the authority for introducing wastes into the environment, while protecting public health and the environment. The *Code of Practice for Agricultural Environmental Management* is a Minister's regulation under the EMA that regulates storage, siting, and use of manure, compost, other agricultural by-products and materials on agricultural operations.

### 2.1.4 Water Sustainability Act (WSA)

The WSA was brought into force on February 29, 2016 to ensure a sustainable supply of fresh, clean water that meets the needs of B.C. residents today and in the future. The WSA provides for the licensing of activities including use, diversion, and storage of water. The WSA also provides local governments the ability to undertake Water Sustainability Plans, which may include a designation for "dedicated agricultural water", also known as agricultural water reserves. This allows the water sustainability planning process to prioritize or establish unique rules for agriculture, which will be particularly useful when considering how reductions in water use will be handled through drought planning and management. Farm operators are encouraged to apply for water licenses to secure groundwater and surface water rights.

### 2.1.5 Assessment Act

Section 23 of the *Assessment Act* and BC Reg 411/95, the Classification of Land as a Farm Regulation (the "Farm Class Regulation"), set out the requirements that must be met for land to be classified as "Farm" for assessment and tax purposes. Land classified as Farm must be used all or in part for primary agricultural production. The designation of farm tax status is used as a proxy to confer 'bona fide' farm status and is often listed as a criteria within ALC policies and local zoning bylaw.

### 2.1.6 Land Title Act

The Land Title Act gives Approving Officers the power to assess potential impacts of proposed subdivisions on farmland, including considerations for buffers and road patterns. The Approving Officer is responsible for all subdivision applications within the municipal boundaries.

### 2.1.7 Riparian Areas Protection Act

The *Riparian Areas Protection Act* and associated regulation calls on local governments to protect riparian areas during residential, commercial, and industrial development. The regulations applies to municipalities in the regional districts of the Lower Mainland and much of Vancouver Island and parts of the Southern Interior. It applies to all streams, rivers, creeks, ditches, ponds, lakes, springs and wetlands connected to surface flow to a waterbody that provides fish habitat. Local governments may allow development within 30 m of the high water mark provided prescribed riparian assessment methods have been followed. Farming activities are not subject to the regulation, however it does apply to non-farming activities on agricultural lands (e.g. construction of non-farm related buildings, golf courses, or other non-agricultural uses).

### 2.1.8 Mines Act

In some cases, a mining or extraction activity, including exploration or production, may be located or may be proposed to be located on land within the ALR. In such cases, the Ministry

of Energy, Mines, and Low Carbon Innovation (EMLI) and the ALC have concurrent jurisdiction. Section 2 of the *ALC Act* gives the *ALC Act* precedence over, but does not replace, other legislation and bylaws that may apply to land. EMLI Regional Offices review application for mineral and coal exploration activities, placer mines, industrial mineral mines, and aggregate pits/quarries through Notice of Work applications and issue *Mines Act* permits for lands across the Province of BC. The ALC either permits outright, requires the submission of a Notice of Intent, or requires the submission of an Application for Soil or Fill Use to the ALC Commissioners, for mining or extraction activities in the ALR. An ALC decision may require a financial security in order to ensure reclamation to an agricultural standard is completed once mining activities have ceased. EMLI and the ALC have entered in to a Memorandum of Understanding with respect to each party's responsibilities for mining and extraction projects which fall within the ALR.

## 2.2 The Role of Regional Districts in Agricultural Planning

Regional districts are a federation of municipalities, electoral areas and First Nations, which each have representation on the Regional District Board of Directors.[2] Regional districts play a role in region-wide planning by developing a Regional Growth Strategy (RGS) and other Plans and Strategies that link or coordinate the otherwise independent planning and land use regulation choices of the member municipalities. Municipalities are responsible for creating a Regional Context Statement that links their aspirations as expressed in their OCP to the regional vision as expressed in the Regional Growth Strategy. The Regional Context Statement must be accepted by the RDCO Board.

Regional districts can establish Agricultural Advisory Committees (AAC) that are involved in, and support, projects aimed at promoting public awareness, diversification and growth of the agriculture sector and advise the Board of Directors on matters regarding the agricultural sector. The RDCO has an active AAC with this aim.

Regional districts provide emergency planning services and capital financing for local governments, land use planning for electoral areas, regional coordination and sometimes economic development.[3] The RDCO brings together Westbank First Nation (WFN), Okanagan Indian Band (OKIB), member municipalities and Electoral Areas to plan for the future by identifying shared needs and opportunities, and by delivering cost-effective services. The RDCO provides services to residents in the Central Okanagan West and Central Okanagan East Electoral Areas (EA), including water, land use planning and solid waste collection. Each of the incorporated municipalities (Kelowna, West Kelowna, Lake Country and Peachland) have the jurisdiction for land use planning and service provision within their boundaries.

The manner in which agriculture is considered at the regional policy level is through the RGS, OCPs, and subsequently through regulations in ZBLs (Figure 2). Regional Growth Strategies are long-range planning tools that assist the regional districts and member municipalities to plan a coordinated future for their communities while dealing with regional issues and decisions that cross local political boundaries. An OCP provides a long-term vision and strategies for future land use, development and servicing. A Zoning or Land Use Bylaw regulates and permits uses within each zone, representing current land use. Through these documents, local governments can support local food production and increase farm viability.

[2] Government of BC. Accessed October 2022. Regional Districts in B.C.
[3] Government of BC. Accessed October 2022. Regional District Powers and Services.

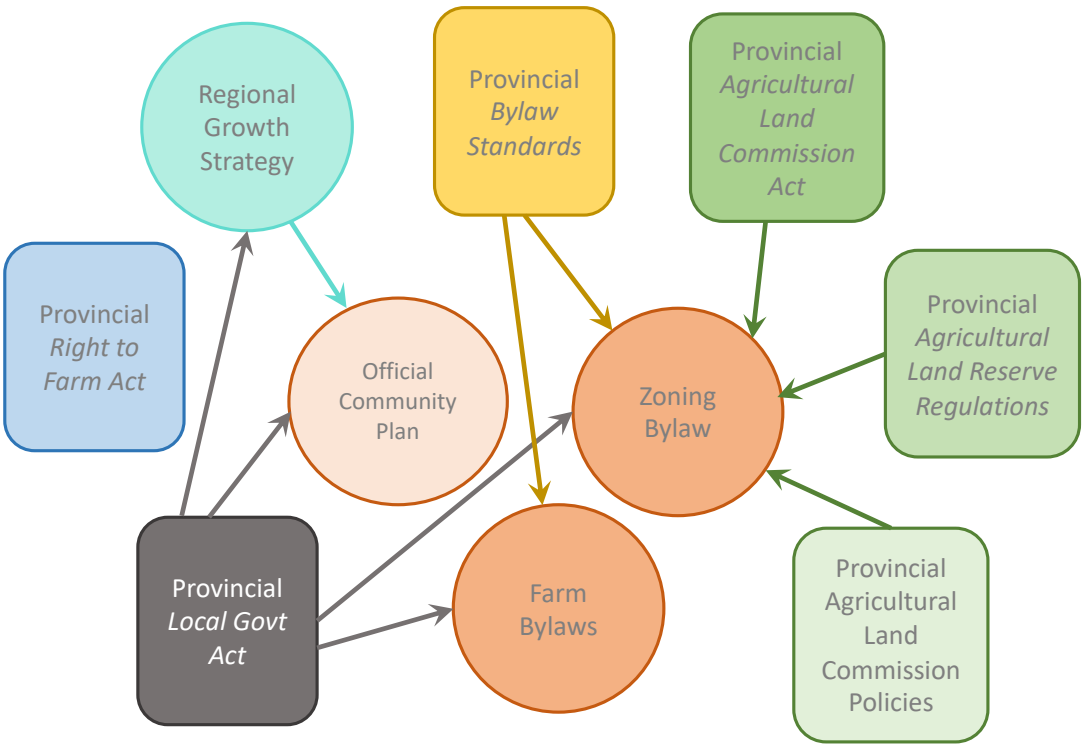


***Figure 2. Legislation and planning that intersect with the agriculture sector.***

### 2.2.1 RDCO Regional Growth Strategy

Taking a region-wide approach to agricultural planning and sector challenges makes sense as agriculture is closely associated with several systems that operate at a regional level. These include tourism, water resources, land development, labour markets, warehousing, packing centres, distribution networks, and the local food system. The Regional Board supports efforts to maintain a healthy community and ensure food security by protecting agricultural land, supporting farmers and their businesses, and providing access to locally grown food. The RDCO Regional Growth Strategy was adopted in 2014 and in 2017 a 5-year action plan (the RGS Priority Projects Plan) was developed to assist in implementing the RGS. A Regional Agricultural Strategy (RAS) was identified (Project No.8) as a priority to provide support for knowledge sharing, data collection, join investments and developing regionally consistent policies for the agriculture sector.

There are several RGS regional issue areas that the RAS will support. These include:

- Our Food: To support a regional food system that is healthy, resilient, and sustainable.
- Our Land: To manage the land base effectively to protect natural resources and limit urban sprawl.
- Our Water Resources: To manage and protect water resources.
- Our Climate: To minimize regional greenhouse gas emissions and respond to the impacts of climate change.
- Our Ecosystems: To be responsible stewards of natural ecosystems to protect, enhance, and restore biodiversity in the region.

The RGS policy directions associated with the Our Food goal include: encouraging cooperation between stakeholders to consider a RAS that will identify issues and the present and future needs of the agriculture sector; preserving and supporting sustainable agricultural activities and the agricultural land base; supporting the expansion of local food markets; encouraging cooperation with the ALC and MAF to promote consistency among bylaws, policies, regulations, and decisions affecting agriculture; supporting appropriate water supply

for the agriculture industry; and promoting the use of agriculture an ALR lands for uses that are consistent with the ALC Act and regulations. These priorities were considered throughout the development of this Background Report.

The future development of the RAS will also support the RGS priority areas of sustainable communities and economic development which were identified as additional priorities for 2019-2022 by the Regional Board.[4]

### 2.2.2 Agricultural Advisory Committees

Agricultural Advisory Committees are an important part of a Regional District's support for agriculture. These committees provide feedback on ALR-related applications and are involved in initiatives aimed at promoting public awareness, diversification and growth of the agriculture sector as well as advising the Board of Directors on matters regarding the agricultural sector, development, and land use planning. The RDCO has an active AAC and should continue to use this committee as one of many avenues for engaging with the agriculture sector. There are also active AACs within the City of Kelowna, District of Lake Country, and City of West Kelowna.

### 2.2.3 Economic Development Commissions

There are two types of Economic Development Commissions (EDC) in BC. The first type is membership funded, and organizations like these tend to play a stronger advocacy role. The second type, which includes the Central Okanagan Economic Development Commission (COEDC), is tax-funded, and focusses more on delivering government objectives and actions related to economic development. EDCs of regional districts can act in several roles relating to agricultural economic development, including as a promoter, a connector, an educator, and enabler and an organizer. For example, being a 'promoter' or 'educator' and sharing information about farm businesses in the region to the public and consumers. Being a 'connector', EDCs play a role in networking and connecting regional agriculture and food sector stakeholders to help facilitate partnerships and identify potential funding pools.

The COEDC plays an important role in promoting, supporting and facilitating growth in the agriculture sector. Promoting agri-tourism in the region as an economic driver is also part of the COEDC's approach. The COEDC Strategic Plan to 2025 identifies agriculture/viticulture as a key industry, with the objective to "foster excellence in agriculture production, food processing, experiential and value-added offerings in the region to support development along the entire supply chain from production to consumption."[5]

The COEDC has many initiatives related to the agriculture sector including offering farm operators, aspiring farm operators and agriculture businesses one-on-one expertise and support. The COEDC conducts and funds research on sector topics such as agricultural asset inventories, agricultural equipment bank studies and local food purchasing studies. The COEDC provides several supporting resources such as a Resource Guide for farm operators, an agriculture/viticulture sector profile as well as critical industry statistics and local success stories.[6] The COEDC presents information and facilitates connections to guide investment into the industry and promote the regional agriculture sector to local consumers and tourists alike.

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[4] Regional Board Strategic Priorities 2019-2022. 2018. Regional District of Central Okanagan.
[5] Moving Forward to 2025. 2020. Central Okanagan Economic Development Commission.
[6] Agriculture and Agri-Tourism Support. Accessed November 2022. Central Okanagan Economic Development Commission.

# 3.0 Research Methods for the Regional Agricultural Background Report

The project team used multiple data sources and research methods to compile the Report. Engagement with stakeholders from the agriculture and food sector including interviews with planning staff from all member municipalities, and Westbank First Nation (WFN) provided key insight into local and regional issues and challenges. A review of mapping data was conducted to develop the Agricultural Land Uses, Agricultural Profile and the Biophysical Context sections of the report using ArcGIS. A policy and regulatory review of relevant provincial and local government policies and regulations was also conducted. These methods are further described below.

## 3.1 Research and Data Sources

Background research and analysis was conducted to understand the context within which Central Okanagan agriculture is situated. This included gathering information related to population, geography, biophysical conditions for agricultural production, agricultural processing and services available and organization and programs that support the sector. A variety of secondary resources were used such as local government OCPs, Agricultural Plans, Zoning Bylaws, reports from MAF, Okanagan Basin Water Board, COEDC and many others. Data from the Agricultural Land Use Inventory (ALUI), 2021 Statistics Canada Census of Agriculture, and BC Assessment data were important sources of data. Each are described in more detail below.

### 3.1.1 Agricultural Land Use Inventory

In the summer of 2014, MAF conducted an ALUI within the RDCO. The ALUI was conducted using visual interpretation of aerial imagery combined with a vehicle based "windshield" survey to capture a snapshot in time of land use and land cover. Land cover is defined as the biophysical material at the surface of the earth while land use is defined as how people utilize the land. A parcel may have numerous land covers and can be assigned up to two land uses beyond agricultural use. The ALUI surveyed 544 parcels, inside ALR and outside of the ALR. The ALUI data is helpful in answering the type and scale of agricultural activities and what proportion of the ALR and agricultural land surveys may be available for farming.

### 3.1.2 Census of Agriculture

The Census of Agriculture collects information from self-reporting individuals every five years as part of the larger Statistics Canada census collection and the completion is mandatory under the Federal *Statistics Act*. Census Division 35 which includes all the RDCO is used for data analysis.

In the 2011 and 2016 Census, a "farm" was defined as any "agricultural operation" that grows or produces agricultural products with the intent to sell these products. This means that farms with no to very low farm revenues were included as long as the agricultural products produced are intended for sale. In the 2021 Census, the definition of a farm changed so that an "agricultural holding" (i.e., the census farm) now refers to a unit that produces agricultural products and reports revenues or expenses for tax purposes to the Canada Revenue Agency. The new definition removes ambiguity in the definition of a farm, focusing on business-

oriented agricultural operations. This change affects the comparability of farm counts and related statistical data from previous census years.[7]

### 3.1.3 BC Assessment Farm Class Data

The *Assessment Act* is administered by BC Assessment, a provincial Crown Corporation responsible for the classification of properties in for property assessment and tax purposes. Farm classification is a voluntary program providing the benefit of a lowered tax rate for assessed properties.

Even though property may be zoned as agricultural land, or located in the provincial ALR, farm classification will only be granted if the land (or at least a portion of it) is being actively used for agricultural production and it meets the other requirements of the Act. Only land can be classified as farmland - buildings (residences and outbuildings) are classified separately. Farm status properties may or may not be located within the ALR and are valuable for noting the distribution of farmed land in both the urban and rural areas. A certain minimum amount of gross income must be produced from the primary agricultural production, and these requirements vary depending on the total land area. Minimum gross income requirements are calculated as follows:

- $10,000 on land less than 0.8 ha (1.98 acres);
- $2,500 on land between 0.8 ha (1.98 acres) and 4 ha (10 acres); and
- On land larger than 4 ha (10 acres), you must earn $2,500 plus 5% of the actual value of any farmland in excess of 4 ha (10 acres).

## 3.2 Engagement Activities

Engagement is vital to understand the regional context, including the assets, gaps, opportunities and challenges faced within the sector and the role local government can have in supporting the sector. Targeted engagement methods were used to connect with stakeholders. Engagement activities included:

a) A project webpage through the RDCO's YourSay.rdco.com online engagement platform
b) Two meetings with the Agricultural Advisory Committee,
c) One meeting with the Regional Growth Strategy Steering Committee,
d) 17 interviews with producers, processors, local government staff, and regional organizations,
e) An online public survey with 115 responses, and
f) A public open house, where approximately 50 people attended.

Results from engagement are presented in Section 8.0. Engagement findings were also used to develop preliminary key themes, opportunities and challenges for the sector which will inform the update of the Regional Agricultural Strategy.

[7] Stats Can changes "Farm" definition. April 2022. The Western Producer.

# 4.0 Review of Agriculture-Related Plans and Policies

## 4.1 Existing Okanagan Agriculture and Food Security Plans

The following agriculture and food security plans were reviewed:

1. City of Kelowna Agricultural Plan (2017)[8];
2. City of West Kelowna Agricultural Plan (2011)[9];
3. City of West Kelowna Westbank Centre Agricultural Plan (2016)[10];
4. District of Lake Country Agricultural Plan (2020)[11];
5. Regional District of North Okanagan Regional Agricultural Plan (2015)[12];
6. Township of Spallumcheen Agricultural Area Plan (2006)[13];
7. Township of Spallumcheen Agri-Hub Feasibility Study (2022)[14];
8. Regional District of Okanagan-Similkameen Electoral Area A and Town of Osoyoos Agricultural Plan (2011)[15]; and
9. Town of Oliver's Food Secure Oliver Plan (2018)[16].

Table 1 (next page) provides plan name, date, vision, and excerpts specifically referring to a role for the RDCO for each of these above-listed plans.

***Figure 3. Open House Ellison Community Hall November 2022.***

[8] Agriculture Plan 2017. City of Kelowna.
[9] Agricultural Plan 2011. City of West Kelowna.
[10] Westbank Centre Agriculture Plan 2016. City of West Kelowna.
[11] Agriculture Plan 2020. District of Lake Country.
[12] Regional Agricultural Plan 2015. Regional District of North Okanagan.
[13] Agricultural Area Plan 2006. Township of Spallumcheen.
[14] Agri-Hub Feasibility Study 2022. Township of Spallumcheen.
[15] RDOS Electoral Area A and Town of Osoyoos Agricultural Plan 2011. Regional District of Okanagan-Similkameen.
[16] Food Secure Oliver 2018. Town of Oliver.

***Table 1. Okanagan agricultural plans and roles and actions for the RDCO.***

| Agricultural Plan | Vision | Key themes and identified roles for the RDCO |
|---|---|---|
| City of Kelowna Agricultural Plan (2017) | *Kelowna is a resilient, diverse, and innovative agricultural community that celebrates farming and values farmland and food producers as integral to our healthy food system, economy, and culture.* | Key themes include: strengthening local policies and actions to protect agriculture; stewarding natural resources and the environment for food production; improving awareness of local agriculture and access to local food; fostering and sustaining farm business and farmland; and actions where the City of Kelowna plays a supportive role.<br>RDCO-oriented recommendations include:<br>• (1.4e) Update the Noxious Insect Control Bylaw and Noxious Weeds & Grass Control Bylaw to include current noxious species and diseases. Work with the Invasive Species Council of BC and the RDCO on this action.<br>• (2c) Implement the actions of the 2015 Central Okanagan Clean Air Strategy to reduce smoke from burning.<br>• (2e) Continue to work with the RDCO to enforce the Noxious Insect Control Bylaw and Noxious Weeds & Grass Control Bylaw. Consider informing residents seasonally through a press release.<br>• (3g) Consider the opportunity for farm tours for elected officials and staff.<br>• (4a) Investigate and support opportunities for alternative ownership models for farmland for the purpose of increasing production levels on farmland. |
| City of West Kelowna Agricultural Plan (2011) | *Recognizing the District's agricultural heritage, the economic value of the industry, and the enhancement to quality of life, the District of West Kelowna will encourage and promote agriculture while fostering diversity, expansion, conservation and sensitivity for the environment.* | Key strategies include: education and promotion; diversity and expansion; and conservation and environmental sensitivity.<br>RDCO-oriented recommendations include:<br>• (4.5.6) The District works closely with neighbouring municipalities, the Agriculture Support Officer and the RDCO to increase the contribution of agriculture to economic development.<br>• (4.5.9) The District encourages the Agriculture Support Officer for the RDCO to create a list of area farms interested in agri-tourism and culinary tourism and encourages the development of appropriate business and marketing strategies for implementation.<br>• (4.5.4) Encourage farmland valuation based on agricultural capability and use, review with other municipalities and regional districts.<br>• (4.6.5) Participate in regional area-wide pest management programs. |

| Agricultural Plan | Vision | Key themes and identified roles for the RDCO |
|---|---|---|
| Westbank Centre Agriculture Plan (2016) | The goal of this plan was to provide an assessment of economic opportunities for agricultural properties in Westbank Centre in an effort to inspire new farm businesses and reduce non-farm speculation. No vision statement was provided. | Three production scenarios were developed for Westbank Centre including cider apples, sweet cherries, and mixed production. A food hub was also explored.<br>• There are no specific references to RDCO actions or collaboration in this plan. |
| District of Lake Country Agricultural Plan (2020) | *Agriculture in the District of Lake Country is sustainable, profitable, and supported by the local community and government. Lake Country's agricultural character is preserved and agri-tourism flourishes. Farming enterprises are respected and represent a source of pride for Lake Country residents. Abundant, healthy, Lake Country food is offered to local, regional, national, and international markets.* | Key goals included: support agriculture throughout government process, policy, and legislation; encourage agricultural production and sector diversification; grow communication, education, and celebration of Lake Country food and agriculture; include agriculture in climate change emergency planning.<br>RDCO-oriented recommendations include:<br>• (1.6) Enhance compliance and enforcement for farmland protection.<br>• (4.2) Engage AGRI and the agricultural community in the planning and development for water infrastructure in the DLC.<br>• (4.3) Control invasive and noxious plants and pests through the enforcement of existing bylaws and protocols.<br>• (4.7) Continue to support wildfire risk reduction initiatives with agricultural stakeholders. |
| Regional District of North Okanagan Regional Agricultural Plan (2015) | *By 2035 agriculture is an important part of the North Okanagan's past, present, and future identity and offers everyone an opportunity to become connected to the local food system.* | Key priorities that may align with the RDCO include: Protecting farmland and farmers; strengthening the local agricultural economy; encouraging sustainable agricultural practices and climate change resilience; managing clean, accessible, and affordable water; ensuring farmland availability for emerging and multigenerational farmers; creating supportive government policies and regulations; and raising awareness through education and celebration of agriculture.<br>• There are no specific references to RDCO actions or collaboration in this plan. |

| Agricultural Plan | Vision | Key themes and identified roles for the RDCO |
|---|---|---|
| Township of Spallumcheen Agricultural Area Plan (2006) | *Allow profitable farming to flourish by promoting best agricultural practices; strengthening and supporting agriculture; encouraging "good neighbour" communications; protecting the rural character; and initiating public education.* | Key issues and opportunities themes that may align with the Central Okanagan include: protection of the resource base; agricultural viability; agro-environmental interface issues; and regulatory issues.<br>• There are no specific references to RDCO actions or collaboration in this plan. |
| Township of Spallumcheen Agri-Hub Feasibility Study (2022) | *The goals of the feasibility study are to: identify ways to increase the robustness of the agricultural sector; describe means to diversify the agricultural economic base of the community; and increase the presence of local food products in the community.* | • There are no specific references to RDCO actions or collaboration in this plan. |
| Regional District of Okanagan Similkameen Electoral Area A and Town of Osoyoos Agricultural Plan (2011) | *The purpose of the plan was to create recommendations for RDOS Electoral Area A and Osoyoos, to provide the community with the opportunity to look ahead and consider their agricultural situation and to identify practical solutions to current issues. No vision statement was provided.* | Recommendations were developed under the following topic areas: local marketing strategies; farm density and development; infrastructure; and environmental health and education.<br>• There are no specific references to RDCO actions or collaboration in this plan. |
| Town of Oliver: Food Secure Oliver (2018) | *Healthy, locally sourced food is available to all and is at the heart of a diverse community culture and local economy.* | Objectives include: increase the visibility and practice of growing food; create, connect, and celebrate a diverse community food culture; link local food to local people; protect natural assets and enable food production, foraging, hunting, and fishing; develop and expand personal and professional food skills; and increase leadership, coordination, and collaboration capacity.<br>• There are no specific references to RDCO actions or collaboration in this plan. |

## 4.2 RDCO Statutory Plans that Address Agriculture

There are four OCPs and one Rural Land Use Bylaw (RLUB) that the RDCO maintains. Each of these rural areas contain ALR lands as well as rural and resource lands:

- Rural Westside OCP No. 1274 (2010, updated 2014)
- Ellison OCP No. 1124 (2006, updated 2017)
- Brent Road/Trepanier OCP No. 1303 (2012)
- South Slopes OCP No. 1304 (2012)
- Joe Rich Rural Land Use Bylaw (RLUB) No. 1195 (2007, updated 2020)

These plans are created, maintained, and implemented by the RDCO. Member municipalities also have OCPs that they create, maintain and implement (i.e., City of Kelowna, District of Lake Country, City of West Kelowna and District of Peachland). There are also community plans for Westbank First Nation (Comprehensive Community Plan 2020)[17] and Okanagan Indian Band (Land use plan and Strategic Plan 2020)[18]. However, the focus of the planning review is placed on the four OCPs and RLUB within the purview of the RDCO.

A review of the four RDCO OCPs and RLUB is provided below in order to determine if there are policies that are missing, need to be removed, or that need updating, based on changes to regulations that apply to the ALR.

The review of the RDCO OCPs, RLUB and existing agriculture plans is based on two main criteria:

1) Updates to Provincial regulations and modernizing local government bylaws regarding agriculture and
2) Best practices in food and agriculture planning and reflection of trends and issues such as climate change, supply chain disruptions.

### 4.2.1 Rural Westside OCP Bylaw No. 1274

**General**

- ALR is designated as “Agriculture” (Map 8)
- Rural residential zones (RU1 and RU2) are parcels that have a minimum size of larger than 4ha (10 acres), allow for forestry and farming
- These two zones make up 78% of all lands in the OCP
- Maintaining rural character is important

**Policies indicate that:**

- ALR land is designated as “agriculture”
- Subdivision in agriculture and large holdings will not be supported
- Buffering is supported
- Reducing pests through enforcing bylaws dealing with non-maintained land
- Reduce impact of road/ utility construction on farmland
- Support for exclusions will be considered
- New developments undertake a fire hazard risk assessment
- Secondary uses in the ALR are encouraged (e.g. home occupation, agri-tourism)
- Economic viability in agriculture is considered

**Potentially missing policies or areas that need updating:**

- Discouraging subdivision on lands adjacent to ALR lands

[17].Comprehensive Community Plan. 2020. Westbank First Nation
[18] Land Use Planning. Accessed November 2022. Okanagan Indian Band.

- Update policies to reflect *Guide for Bylaw Development in Farming Areas*
- Update policies to *Guide for Edge Planning*
- Limits and guidelines for housing size and type in the ALR (or reference to ALC limits)
- Limits and guidelines for farmworker housing in the ALR
- Limits and/or guidelines regarding cannabis production
- Limits and/or guidelines for on-site processing and on-site retail
- Policies regarding alcohol production facilities on farmland
- Agri-tourism activities
- Agri-tourism accommodation
- References to the existing Regional Agricultural Plan.

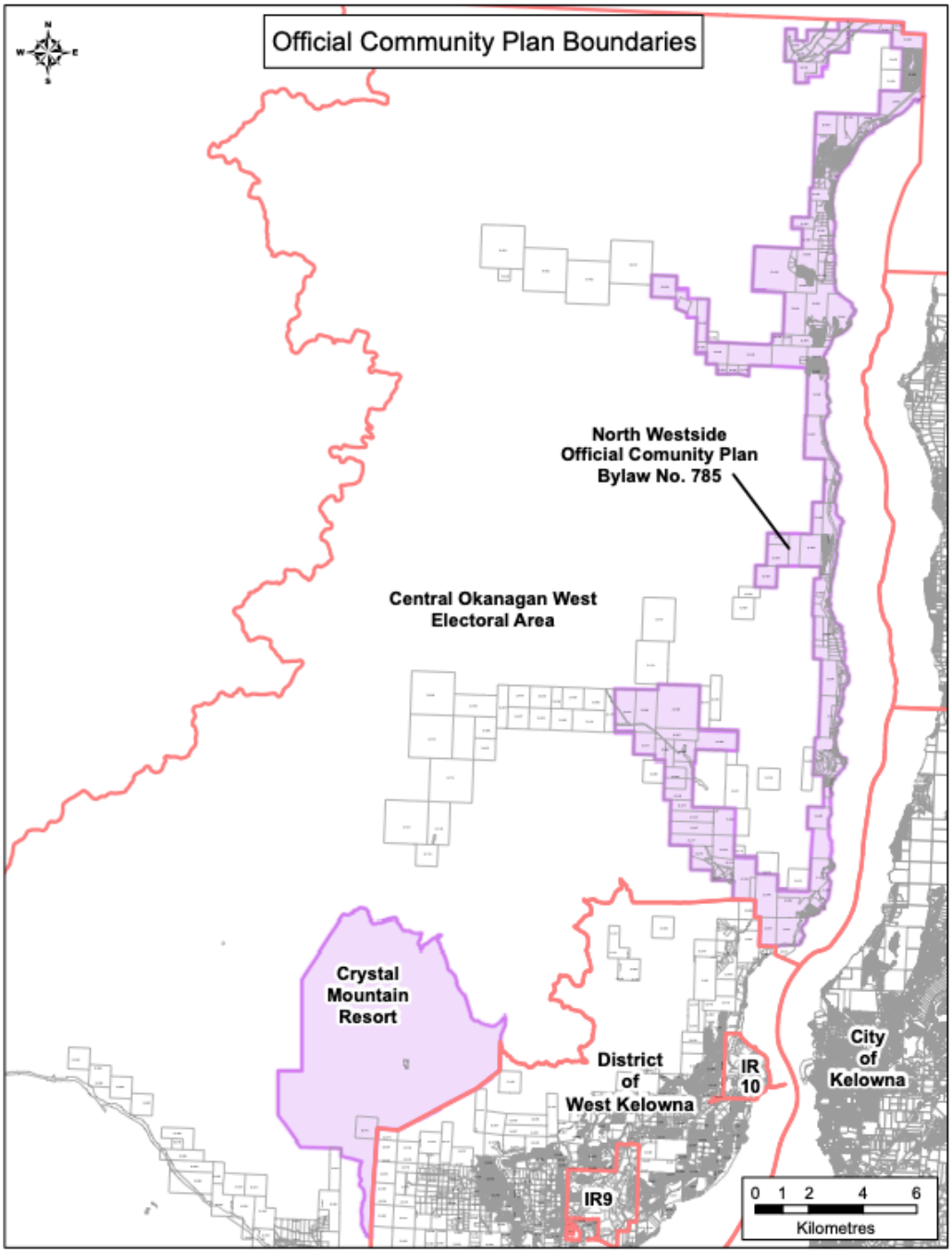


***Figure 4. Rural Westside OCP boundaries.***

### 4.2.2 Ellison OCP No. 1124

**General**

- Section 14 includes Agriculture and Rural Lands
- The 2014 ALUI indicates that there are 2,375 ha (5,870 acres) of land in the ALR within the Ellison study area
- Recognition that secondary uses are needed in agriculture, but may not be common in Ellison
- Rural lands not in the ALR are located on the hillsides between ALR and Crown Land and have very limited servicing

**Policies indicate:**

- Support for agriculture as an economic industry
- Support for a regional agriculture plan
- Support for an AAC
- Support minimum lot sizes in the ALR
- Support preservation of farmland
- Due to road construction, some ALR exclusions may be supported
- Consult with ALC on ALR land use
- Minimizing impact of non-farmland on farmland
- Support for secondary activities that contribute to farming income
- Limiting development in rural, non-ALR lands that have limited servicing
- Evaluate effect of altered drainage patters on down slope agricultural areas
- Support buffers
- Support continuous blocks of farmland, discourage fragmentation
- Consider exclusions applications, where appropriate
- Require an OCP amendment if an exclusion occurs to redesignate land uses
- Consider public use requirements in the ALR
- Support home site severance policy
- Discourage proliferation of non-farm uses
- Require land approved for non-farm uses by the ALC to be rezoned

**Potentially missing policies or areas that need updating**

- Reflect changes to how exclusion or non-farm use applications are sent to the ALC
- Tighten definition of secondary activities to ensure that the RDCO is not inadvertently encouraging non-farm use.
- Support minimum lot sizes in areas outside but adjacent to ALR lands
- Policy that explicitly states “preserve ALR lands”
- Discourage exclusion applications

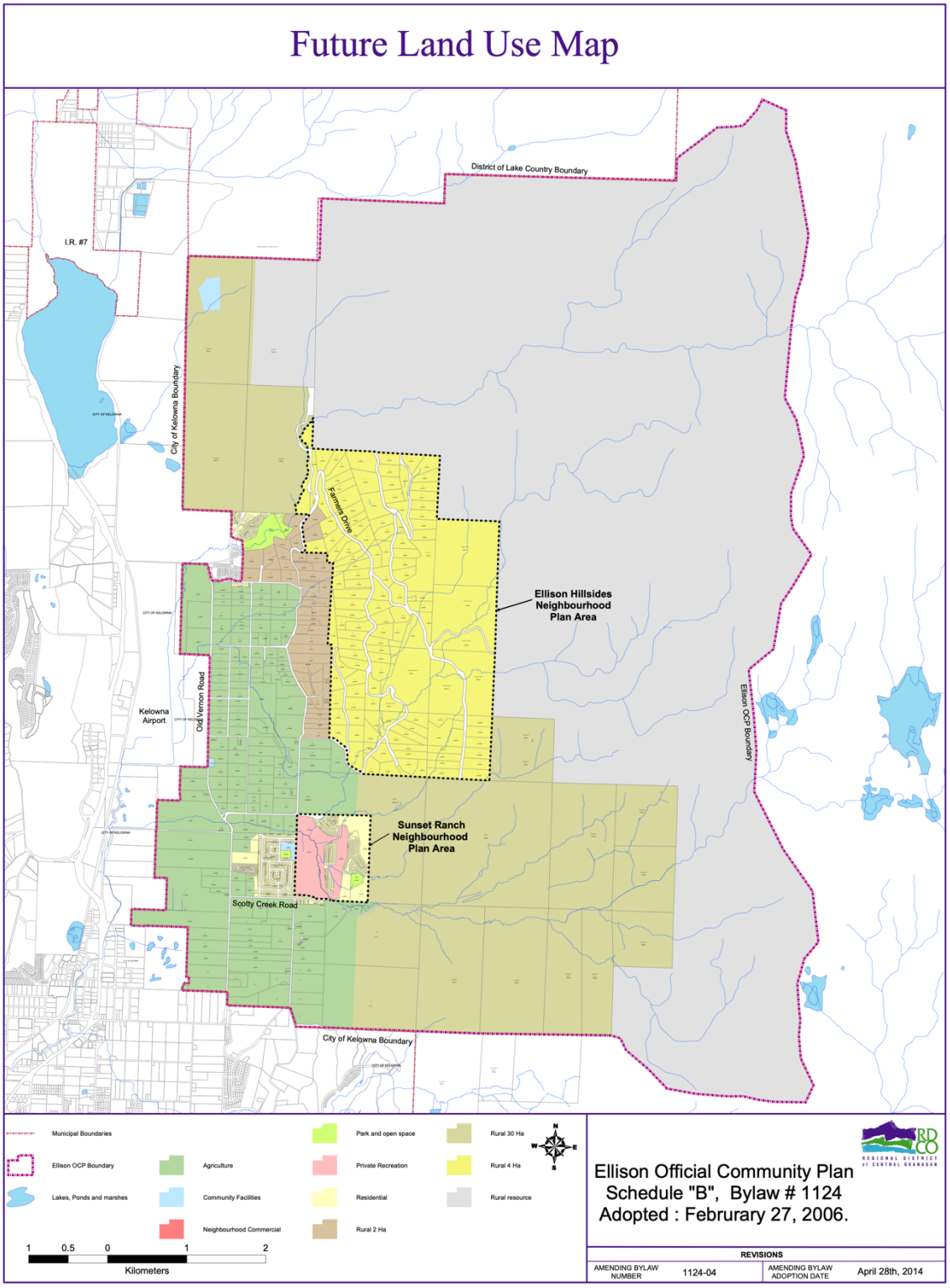


***Figure 5. Ellison OCP boundaries.***

### 4.2.3 Brent Road/Trepanier OCP No. 1303

**General**

- Agriculture is contained within the commercial uses, working lands and economic development chapter 7.
- At the time of adoption, 2012, the ALR comprised 9% of the land based contained in this OCP.

**Policies indicate:**

- An AAC is supported
- General support for agriculture
- Support for secondary activities
- Reducing negative impacts at the ag/urban interface
- Discouraging plantings in non-ALR that could harbour insects harmful to commercial operations
- Stormwater/flood management and drainage

**Potentially missing policies or areas that need updating**:

- Policy to limit/discourage non-farm uses
- Prioritize farm uses on farmland and reducing urban impacts on farmland
- Updates to home based businesses
- Opportunity to bring land into production in previously unfarmed areas in the ALR
- Discouraging subdivision on lands adjacent to ALR lands
- Update policies to reflect *Guide for Bylaw Development in Farming Areas*
- Update policies to *Guide for Edge Planning*
- Limits and guidelines for housing size and type in the ALR (or reference to ALC limits)
- Limits and guidelines for farmworker housing in the ALR
- Limits and/or guidelines regarding cannabis production
- Limits and/or guidelines for on-site processing and on-site retail
- Policies regarding alcohol production facilities on farmland
- Agri-tourism activities
- Agri-tourism accommodation
- References to the existing Regional Agricultural Plan.

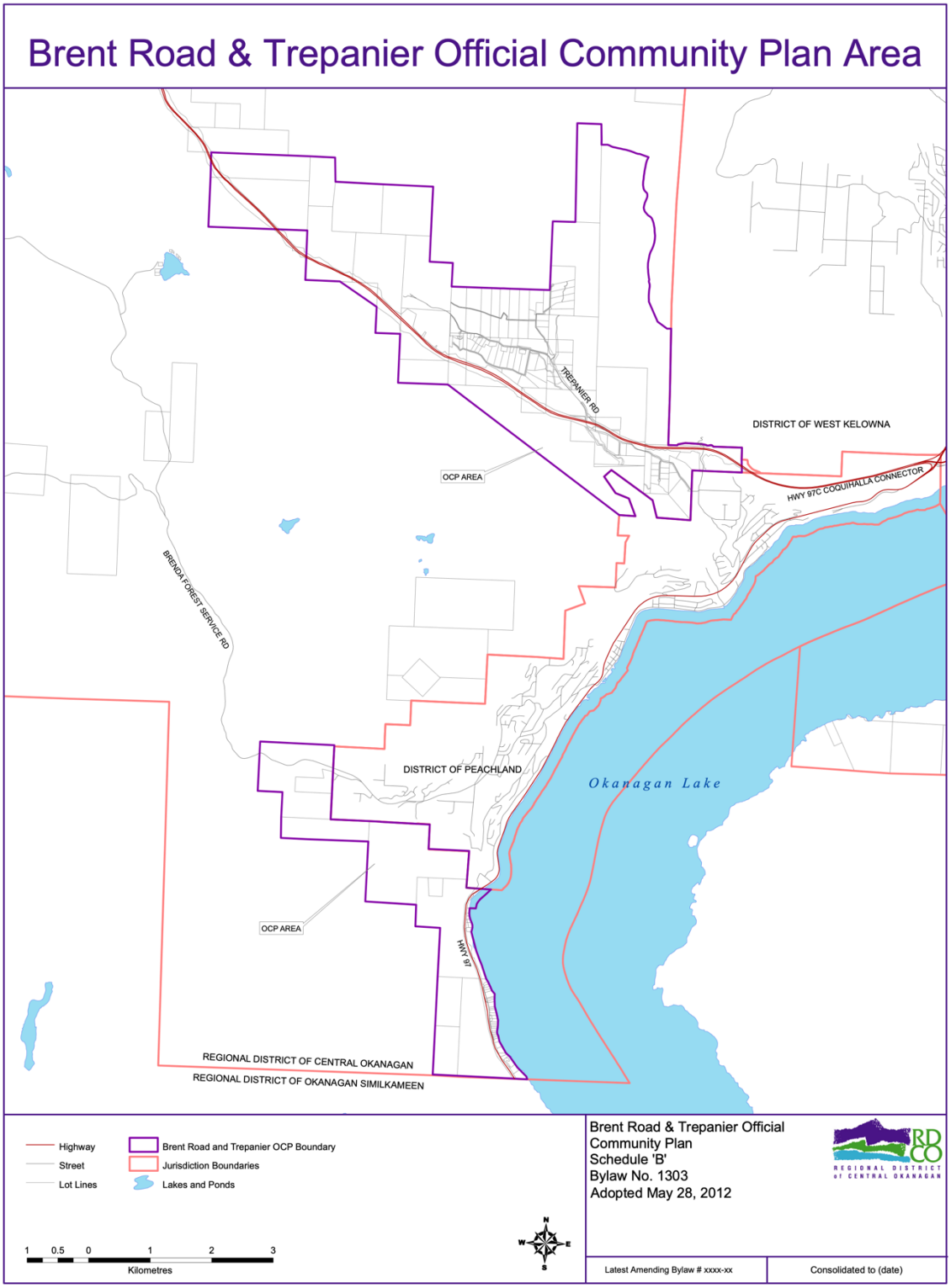


***Figure 6. Brent Road and Trepanier OCP boundaries.***

### 4.2.4 South Slopes OCP No. 1304

**General**

- There are two ALR parcels in this OCP area: one is a 6.62 ha (16.3 ac) winery & orchard
- Agriculture is permitted in most of the rural and resource lands outside of the ALR

**Policies indicate:**

- Support for the regional AAC
- General support for agriculture and secondary activities
- Reducing negative impacts at the ag/urban interface
- Discouraging plantings in non-ALR that could harbour insects harmful to farm operations
- Support for buffering ALR and non-ALR lands and large contiguous parcels.
- Stormwater/flood management and drainage

**Potentially missing policies or areas that need updating**

- Where policies are referring to ALR lands, ensure it is specified in the policy phrasing
- Discourage subdivision on lands adjacent to ALR lands
- Update policies to reflect *Guide for Bylaw Development in Farming Areas*
- Update policies to reflect *Guide for Edge Planning*
- Limits and guidelines for housing size and type in the ALR (or reference to ALC limits)
- Limits and guidelines for farmworker housing in the ALR
- Limits and/or guidelines regarding cannabis production
- Limits and/or guidelines for on-site processing and on-site retail
- Policies regarding alcohol production facilities on farmland
- Agri-tourism activities and accommodation
- References to the existing Regional Agricultural Plan.

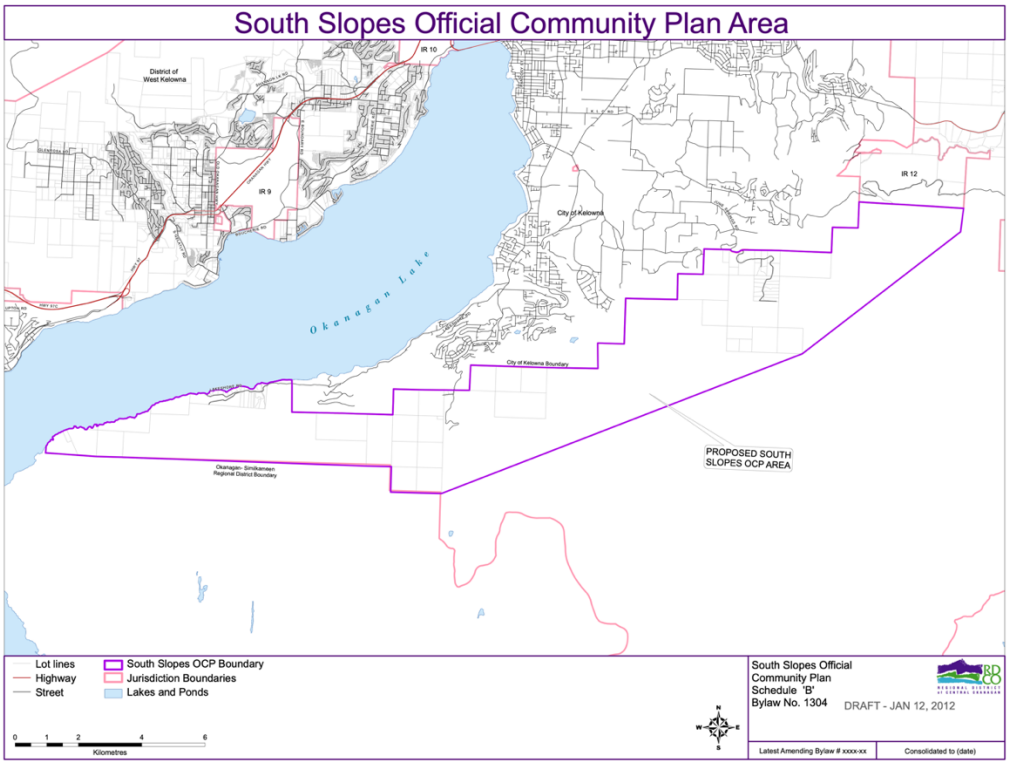


***Figure 7. South Slopes OCP boundaries.***

### 4.2.5 Joe Rich Rural Land Use Bylaw No. 1195 (2007, updated 2020)

The Joe Rich Rural Land Use Bylaw (JRRLUB) is a rural land use plan for areas located around Highway 33, east of Kelowna. The JRRLUB has elements of an OCP as well as a Zoning Bylaw.

**General:**

- Agriculture is defined as: farming, apiaries, horticulture, silviculture, dairying, rearing and husbandry of livestock, fowl and fur bearing animals, cultivation of plants, nurseries, greenhouses and commercial stables and all buildings, structures and accessory uses connected therewith.
- The JRRLUB also defines agri-tourism as well as agritourist accommodation in a way acknowledges additional approvals may be needed.
- The JRRLUB also defines Cannabis, Cannabis Production facility and Cannabis Sales Facility in such a way that refers to Federal and Provincial definitions. Production and sales facilities are prohibited except as explicitly permitted under the JRRLUB.

**Policies indicate:**

- Protection and preservation of land with good quality for agriculture.
- Accommodation of multiple land uses, including agriculture, "that do not interfere with use and enjoyment of adjoining properties".
- Support for the preservation of heritage features.
- Consideration of Crown land for farmers in the Joe Rich Area.
- Support for the ALC.
- Consideration of exclusions where land is poor or has been sterilized by surrounding non-farm uses.

**Potentially missing policies or areas that need updating:**

- Stronger wording about protecting land in the ALR and acknowledgement of the role of the Province in being the final decision-maker on land use changes in the ALR.
- Consideration of including "right to farm" language into policies (e.g. 4.2.3) and how that may impact the development of residential and estate homes in and near the ALR.
- Include "controlled environment structures" in addition to Cannabis.
- Update policies to reflect *Guide for Bylaw Development in Farming Areas.*
- Update policies to *Guide for Edge Planning.*

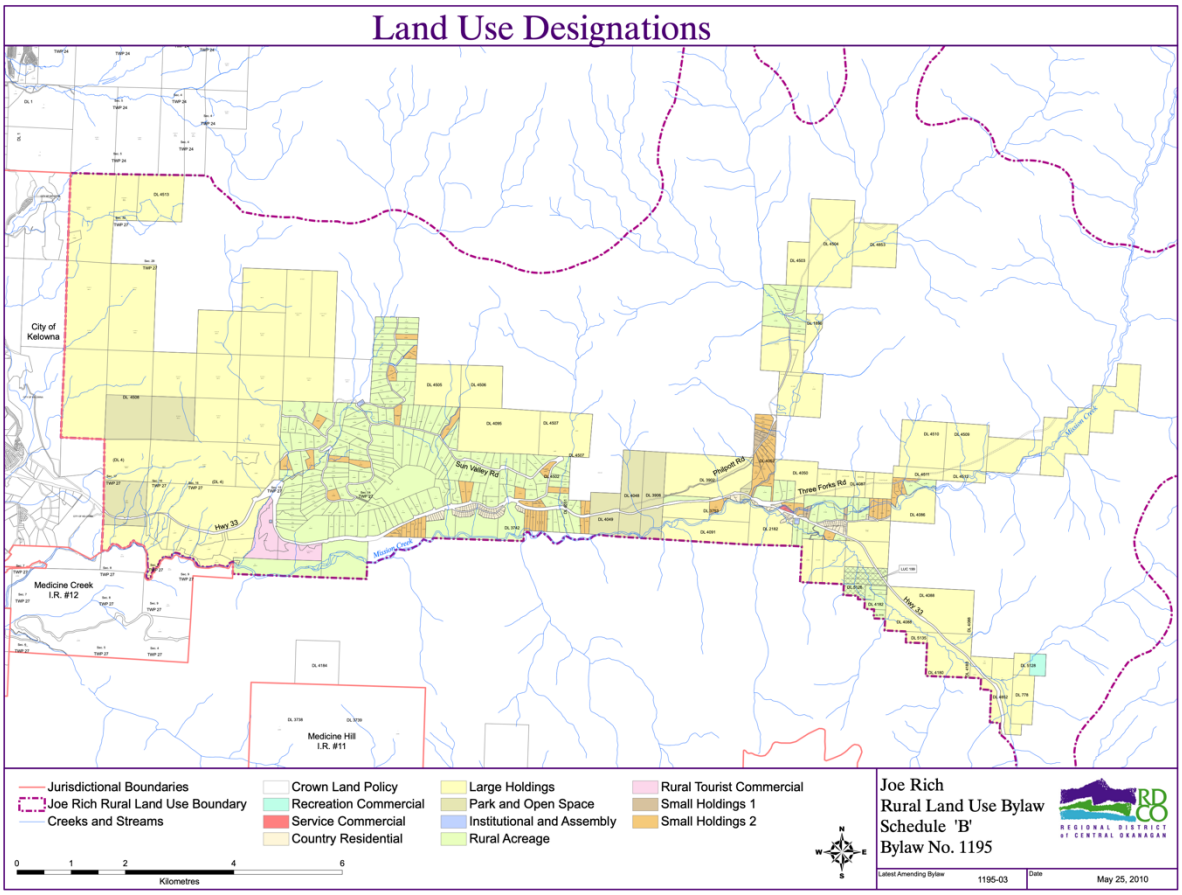


***Figure 8. Joe Rich RLUB boundaries and land use designations.***

## 4.3 Best Practices for Modernizing Local Government Agriculture Bylaws

The OCP and ZBL section below outlines best practices to support future policy review/development. Some of these elements the RDCO is already addressing with others being options for future community/ electoral area bylaw updates.

### 4.3.1 Minister of Agriculture and Food and Agricultural Land Commission Bylaw Guides

MAF and the ALC have produced several guides that are useful for local governments when developing planning policies and regulations. They provided up-to-date best practices and case studies. The guides are summarized below.

**MAF Guide for Bylaw Development in Farming Areas (2020)**

This guide was developed to assist land use planning professionals and local governments to strengthen farming in a manner that takes agricultural and urban interests into account; ensures farming has a place in planning processes; and ensures farmers and ranchers can continue to operate in the ALR. The guide offers standards for developing and amending bylaws affecting farming areas. It also provides general information for handling other planning issues involving agriculture. These standards, also known as the Minister's Bylaw Standards, relate mainly to zoning bylaws. Section 551 of the *Local Government Act* provides authority to MAF to establish agricultural standards. Local governments are encouraged to adopt these standards, which are written such that they can be adapted to any farming area, although there is likely to be variation in the way they are utilized, depending on the needs of different local governments. The standards are included in the guide and include:

- Zoning designations, permitted uses, and minimum lot sizes;
- Lot coverage, setbacks, off-street parking, and heigh limitations;
- Residential uses in the ALR (size and siting);
- Agricultural buildings and riparian setbacks;
- Co-generation (combined heat and power generation);
- Temporary Farm Worker Housing; and
- Medical marihuana (cannabis) production facilities in the ALR.

**ALC Bylaw Review Guide for Local Governments (2018)**

This guide is intended as a resource for staff and elected officials in these local governments. It outlines responsibilities regarding the regulation of land uses in the ALR, provides general guidance for drafting bylaws that are consistent with the ALCA and Regulation, and explains the ALC's Bylaw Review Process. It is intended to support the bylaw development process by providing local governments with information about the preparation, review, and adoption of new or updated plans and bylaws affecting their ALR lands.

**MAF Guide to Edge Planning (2015)**

The purpose of this guide is to provide local governments with a resource to assist in developing best practices around edge planning. It includes a package of policies and recommended criteria that can be adopted by a local government and implemented through regional growth strategies, OCPs, bylaws, signage, and other means. The intent of the guide is to reinforce the notion that the agriculture-urban edge can be managed effectively through clear policies and the application of specific tools.

**MAF Guide to Using and Developing Trails in Farm and Ranch Areas (2005)**

This guide was developed for those involved in planning, design, development, and maintenance of trails that go through agricultural lands. The guide contains many suggestions and recommendations, however site-specific conditions and local

circumstances may demand modification of the techniques and process described in the guide.

**MAF and ALC Guide to Planning Subdivisions Near Agriculture (1997)**

This guide was developed for landowners and local governments to assist in providing a better understanding of agricultural subdivision process and regulations. It provides an explanation of the role of approving officers, the compatibility of uses (e.g. parcel size, configurations, building setbacks, road patterns, drainage patterns, and services and utilities). This guide is currently under review and is being updated.

**ALC Landscaped Buffer Specifications (1993)**

The ALC developed these specifications in an effort to make the rural-urban edge work to the advantage of the farmer and non-farming public. The specifications set out a variety of buffering schedules for use in different circumstances. The ALC uses the specifications, where appropriate, as a condition when considering the approval of applications under the ALC Act. In addition, the specifications provide a practical guide for councils, regional boards, and other agencies where the opportunity exists to create or improve the buffer between agriculture and non-agricultural lands.

### 4.3.2 Official Community Plans (OCP)

The below agricultural bylaw best practices for OCPs include recent changes to provincial legislation as well as other considerations.

**Recognize ALC jurisdiction up-front and Use the Agriculture Land Use Designation throughout the ALR**

Best practices suggest that language recognizing agricultural policy and regulation to the ALC and ALC-related Acts and Regulations should be stated early on within an OCP, and repeated throughout Zoning Bylaws. Although senior level government policy set the framework for local government policies in the ALR, they can also work best together. In short, local governments can regulate but not prohibit. This is intended to allow for local governments to address local concerns and context. For example, the RDCO could:

- Create farm home plates, which are not in the ALR regulations, but are a valuable tool for preserving agricultural land;
- Require farm status for additional residences on farmland; and
- Limit or regulate agri-tourism, non-soil bound cannabis, vertical farming, and home occupations.

Land use designations should include all ALR lands in a single land use designation, such as A1. For instance, the following paragraph could be inserted into OCPs under Context as well as within the Agricultural Policies section:

> *Notwithstanding any other provisions of this bylaw, all lands within the Agricultural Land Reserve (ALR) are subject to the Agricultural Land Commission Act (ALCA), the Agricultural Land Reserve General Regulation and ALR Use Regulation (the Regulations), and any Orders of the Agricultural Land Commission (ALC). The ALCA and Regulations generally prohibit or restrict non-farm use and subdivision of ALR lands, unless otherwise permitted or exempted.*

**Nest Agriculture in Statutory and Non-Statutory Plans**

The most successful agricultural policies are those that are securely nested within a variety of land use planning tools. These include OCPs, Zoning Bylaws, Local Area Plans,

Development Permit Area Guidelines, and Agricultural Plans. The modernization of many of these tools will help to secure this nested approach.

**Update Permitted Residential Uses, Siting, and Sizing on Agricultural Lands**

The ALC Act and Regulations have been updated in recent years to include a maximum house floor area for a principal dwelling and to allow small secondary dwellings in the ALR under certain conditions. There are also robust guidelines set forth by the Ministry of Agriculture and Food regarding the size of the overall footprint of all residential uses, and maximum lot line setbacks for residential uses in the ALR (Guide for Bylaw Development). These guidelines should be reflected in OCPs, Rural Bylaws, and Zoning Bylaws to help guide decision-making regarding the use of the ALR for residential purposes. At a municipal or regional level, it is also recommended that the sizing and siting guidelines be adopted for all land designated as Agriculture outside of the ALR in order to ensure consistency across the agricultural landscape.

**Connect Climate Change, Environment, and Emergency Planning Policies Directly to Agriculture**

There is an opportunity within OCPs to directly connect policies related to climate change, water conservation, environmental protection, and emergency planning to agricultural policies. While these topics are often presented as separate chapters within an OCP, cross-referencing these themes can help underscore the fact that these issues are related and interconnected. Issues such as watercourse protection, aquifer vulnerability, watering restrictions, flooding, and wildfire risk mitigation all hold significant potential to disrupt agricultural activities on farmland. Updating permitted uses in the zoning bylaw to reflect how these priorities may shift land uses should reflect OCPs and rural land use plans.

**Be Consistent with the Use of the Term "Agriculture"**

The terms "food" and "agriculture" are often used interchangeably in local government plans and bylaws. However, the activities associated with agriculture and those permitted or regulated in the ALR encompass more than only food production. Policies should exist for these permitted uses as well. For example, the cultivation of nursery and tree crops, or the raising of livestock and small animals for fibre and fur. The term "food" can refer to activities that are not permitted or are limited in the ALR, such as food processing and manufacturing. It is also worthwhile to include policies and permitted uses regarding secondary or accessory agricultural activities and services in the ALR (such as agricultural product processing, farm equipment sales or maintenance, production of soil amendments, vertical farming, indoor cannabis production, slaughterhouses and/or abattoirs, composting and agricultural waste management) as well as encourage these uses outside of ALR and into industrial and/or commercial areas.

**Reinforce Minimum Parcel Size Adjacent to ALR**

An agricultural land base is only as healthy as a community's ability to also control where, what type of, and how much urban development occurs. The ability for agricultural activities to flourish depends on suppressed land values associated with long-term restrictions on permitted uses of the land. Reducing land speculation on farmland requires predictability and consistency created by local government plans and bylaws. The most effective way to ensure that agricultural land is valued for agricultural activities is to ensure that non-farming development such as residential, commercial, industrial, institutional, and recreational uses are firmly directed away from farmland. Secondarily, planning to create good edges between land uses is a key strategy.[19] Policies that explicitly state that the expansion of utilities (e.g.

[19] Guide to Edge Planning 2015. Ministry of Agriculture and Food.

sewer, water, power, roads) should not be allowed into the ALR should be included in local government plans and bylaws, where appropriate.

**Raise the Profile of Compliance and Enforcement on Agricultural Land**

Compliance and enforcement regarding agricultural land should occur at both a local government and provincial government (ALC) level. Opportunities exist for local bylaw enforcement to support the ALC's Compliance & Enforcement division, and vice versa. Policies in the OCP should clearly state that enforcement of regulations within the ALR is a key pillar of a sustainable agricultural community and provides clarity for investors for economic development purposes.

**Differentiate Between Urban and Rural Agriculture**

Rural agriculture is typically characterized by commercial operations and hobby farms. It is largely governed by senior levels of government. Urban agriculture is significantly smaller in scale, sometimes more intensive, integrated into a more densified urban landscape, and largely governed by local levels of government. These two types of agriculture should receive unique and specific attention in plans and bylaws.

### 4.3.3 Modernizing Zoning Bylaws

Some updates to ZBLs reflect OCP directions as well as respond to any land use policy changes at the Provincial and Federal levels. Other elements presented below are suggested best practices to use when undertaking plan updates or developing new bylaws. The RDCO is already addressing some of these elements, whereas others could be considered in future planning exercises.

**Parcels and Zones**

- Minimize the number of agricultural zone classifications
- Keep parcels as large as possible, e.g. maintain minimum lot sizes in and out of the ALR

**Definitions and Jurisdiction**

- Ensure that the jurisdiction of the ALC is stated upfront and highlighted throughout.
- Provide consistent definitions for agricultural-related terms as well as environmental terms that impact agriculture, such as "watercourses".
- Include new definitions, such as controlled environment structures (vertical farming), and alcohol production facilities.

**Residential Uses**

- Permitted uses in the ALR must align with new ALC rules and regulations, particularly around residential uses in the ALR: e.g. occupying an existing dwelling while constructing a new house; number of dwellings on a parcel; size of secondary dwellings. Deference should be given to the ALC when making any decisions about residential use outside of what is explicitly permitted.

**Home Occupation and Home-Based Businesses**

- Include a strict and consistent size limit for structures associated with home occupation (home based businesses).
- Consider requiring farm tax status for properties using ALR land for home occupation accessory buildings, so that it is not the primary use of farmland.
- Add a statement that home-based businesses in the ALR must comply with ALC rules and regulations. Add specific restrictions around truck parking and vehicle repairs in the ALR.

**Agricultural Buildings and Structures**

- Relax fencing height maximums on ALR lands in order to keep wildlife out of farms. According to Ministry of Agriculture and Food bylaw standards, crop protection and support structures such as deer fencing, netting supports, and trellises should be excluded from height requirements.
- Ensure farm gate sales are permitted across the ALR and consider creating consistency between non-ALR agriculture areas and the ALR with regard to the footprint permitted for farm gate sales.

**Agri-Tourism**

- Ensure B&B regulations are consistent with ALC regulations and are consistent across Electoral Areas.
- Create clarity around permitted Agri-Tourism uses and criteria, as per the ALC Act and Regulations and ensure that it is clear that farm tax status is required.
- Determine how many (if any) Agri-Tourism Accommodations (e.g. camp sites, RVs, cabins) should be allowed on a parcel with farm tax status in the ALR. Consider creating consistency with parcels outside of the ALR with farm tax status.

**Accessory Agricultural Uses Outside Farmland**

- In order to direct farm product processing, commercial composting, and abattoirs outside of productive farmland, these must be included as permitted uses elsewhere, such as in commercial and/or industrial zones.
- Consider allowing food trucks or mobile food vending outside of the ALR and in commercial areas in order to promote local food businesses.
- Ensure that parcel sizes in industrial zones remain as large as possible to accommodate agri-industrial uses, which often require at least 2 ha.
- Allow some limited agriculture, or horticulture, or urban agriculture (definition to be determined) in all zones outside of Agriculture zones.

**New Uses such as Cannabis and Vertical Farming**

The RDCO may see an increase in indoor cannabis production and vertical farming (e.g. controlled environment agriculture) related land uses in the ALR. These are similar uses as they both use enclosed growing systems, often in buildings and not connected to the soil on-site (these are not to be confused with greenhouse production). The definition of "controlled environment structure" was recently added to the ALR Use Regulation,[20] which is considered a farm use that may be prohibited by a local government.

The list below suggests some ways that the Region and member municipalities can become prepared for enclosed growing systems (cannabis, vertical farming) operations locating in the region.

- Where possible, direct appropriate forms of enclosed growing systems and processing into industrial zones. Ensure that industrial zone lot sizes remain as large as possible.
- Consider splitting the definitions of cannabis into "micro" and "standard" – there is precedence for this in other BC local government bylaws (see North Okanagan).
- Maximize the square footage of indoor non-soil-based enclosed system cultivation buildings and processing buildings. This can be done on a "footprint" approach or a "gross floor area" approach and could be scaled based scale and form of production and/or parcel sizes.

[20] Order In Council 83. 2022. Province of BC.

- Consider adding parcel-based minimum and maximum setbacks for enclosed-growing system-related buildings as another form of buffering.
- If water conservation is a concern, facilities could be required to apply for a Water License or method for tracking water use.
- Continue to follow the issue of cannabis and vertical farming farm gate sales, for which the provincial government is in the process of determining guidelines and regulations for, and adjust the RDCO policies as necessary once those guidelines and regulations are published.

*Example Cannabis Bylaws*

- BC Minister of Agriculture's Bylaw Standard on Medical Marihuana (2015)
- District of Sechelt Cannabis Bylaw (2019)
- Regional District of North Okanagan Zoning Bylaw No. 1888, 2003 (updated to 2019).
- Regional District of Central Kootenays Electoral Area B – Rural Creston, Land Use Bylaw No. 2316, 2013 (updated to 2022).
- Commercial Cannabis Production in BC – Best Available Control Technologies

### 4.3.4 Using Development Permit Area Guidelines for Agriculture

Development Permit Area (DPA) guidelines can be a helpful land use planning tool to have more control over development near to agricultural and/or natural areas.

Section 488(1) of the *Local Government Act* provides local governments with the authority to designate a DPA for the "protection of farming". The ALC encourages local governments to designate DPAs in areas where farm and non-farm conflicts are occurring or are likely to occur with development. DPAs must be designated by an OCP, and the OCP must specify the conditions or objectives that justify the designation in addition to the requirements for development.

It is recommended that definitions within DPAs align with Zoning Bylaw definitions and provincial directives such as the Code of Practice for Agricultural Environmental Management.

In the RDCO DPAs could be used for riparian area protection on farmlands and farmland protection.

*Example DPAs*

- Central Okanagan Regional District Aquatic Resource DPA
- City of Kelowna Natural Environment DPA
- City of Kelowna Farm Protection DPA

### 4.3.5 Using Soil Deposit and Removal Bylaws

The ALR Use Regulation was recently updated such that neither "farm use" nor "non-farm use" are defined in any circumstance to include soil removal or fill placement. Only in very limited circumstances, which are expressly identified in the ALR Use Regulation can fill placement or removal of soil or aggregate be undertaken without interaction with the ALC via a Notice of Intent or a Soil or Fill Use Application.

Local Soil Deposit and Removal bylaws can help prevent the dumping of material on farmland, which is a problem that has been identified by the ALC in recent years. Throughout engagement for this Report, members of the public expressed concern about the movement of topsoil within the region and the possibility of losing soil to other regions due to development activities.

Soil deposit and removal bylaws are used by local governments throughout B.C. and are seen as a best practice to protect infrastructure – natural and engineered – and public health and safety. They are also an important tool to address recurring issues, such as:

- protecting topsoil, agricultural lands, riparian areas and watercourses; and
- preventing the introduction, establishment and spread of invasive species.

The bylaw typically requires landowners to obtain permits before carrying out activities that have an impact on infrastructure (natural and engineered). This provides local government staff with an opportunity to educate landowners and developers about best management practices. This also helps as a backstop to ensure that if the landowner is in the ALR that they understand that Notice of Intent or application to the ALC may be required.

The bylaw enables enforcement by creating offences that can act as the basis for issuing tickets, fines and court action. Such regulatory bylaws also bolster the setbacks in zoning bylaws and the conditions in Development Permit Areas (DPAs) by making enforcement simpler.

Most Soil Deposit and Removal Bylaws provide a means of managing incremental changes that can degrade habitat and cause pollution; many of these activities are currently unaccounted for as they do not involve rezoning or subdivision. The bylaw typically prohibits the deposit or removal of soil within the local government area except in accordance with the bylaw, and it prohibits the deposit of "*other material*" on any land without a valid permit or exemption under the *Environmental Management Act*. Other material could include construction and demolition waste, masonry rubble, concrete, asphalt, wood waste, unchipped lumber, drywall, refuse, undecomposed organic matter, contaminated soil, soil containing invasive species, and other similar matter.

A permit may not be required where the deposit or removal of soil is:

- less than 10 cubic metres ($m^3$) of soil in a calendar year;
- related to and in accordance with a valid building permit;
- being relocated within the boundaries of the parcel from which it originates;
- undertaken as a permitted "*farm use*" on land located within the ALR.

Example soil bylaws:

- Regional District of North Okanagan
- Cowichan Valley Regional District
- City of Kelowna

## 4.4 Summary of review of OCPs and Municipal Agricultural Plans

Based on the above review of OCPs and RLUB and member municipality Agricultural Plans, some ideas to consider when developing the RAS have been identified. These will be further explored in during the development of the RAS so that specific recommendations can be tailored for each OCP, ZBL, and the RLUB. These include but are not limited to:

- WFN has indicated they are going to be developing a Food Sovereignty Plan. This could have synergies with the RAS and conversations should continue.
- There are some common gaps in all the member municipality OCPs such as alignment with updated MAF and ALC agricultural regulations and guidelines. These common gaps could form recommendations in the RAS.
- Most of the RDCO OCPs and RLUB are due for a review. This creates an opportunity to make updates and other changes to modernize policies and work towards region-wide consistency as well as collaboration on common objectives.

- There are some areas in the RDCO (e.g. Trepanier Road) that are in the ALR but have never been farmed. These lands could be considered for agricultural expansion, if road and water access is sufficient.
- All OCPs and RLUB in the RDCO that were reviewed should address recent changes to MAF and ALC regulations as well as emerging issues in agriculture. Some plans, such as the Joe Rich RLUB, already address emerging issues such as cannabis and agri-tourism. However, most of the plans reviewed would benefit from updating and modernizing agriculture and related land use policies. Common areas to consider in updating local plans and policies include, but are not limited to:
    - Discouraging subdivision on lands in and adjacent to ALR lands;
    - Adding stronger wording about the protection of ALR and agricultural lands;
    - Setting large minimum lot sizes near and in the ALR;
    - Updating policies to reflect *Guide for Bylaw Development in Farming Areas;*
    - Updating policies to *Guide for Edge Planning;*
    - Developing policies that limit soil deposit and removal;
    - Providing limits and guidelines for housing size and type in the ALR (or reference to ALC limits);
    - Providing consistent limits and guidelines for farmworker housing in the ALR;
    - Providing limits and/or guidelines regarding cannabis production and "controlled environment structures";
    - Providing limits and/or guidelines for on-site processing and on-site retail;
    - Developing policies regarding alcohol production facilities on farmland;
    - Monitoring agri-tourism activities; and
    - Providing consistent agri-tourism accommodation policies.
- The region plays a key role in both leading and supporting actions that impact agriculture in member municipalities. Some common threads in the RDCO role identified in member municipality Agricultural Plans include air quality, noxious and invasive weeds, and pest management. Considerations for additional common threads for the RAS could include education, water management, emergency preparedness, response and recovery and sector development.

# 5.0 Biophysical Context for Agriculture in the RDCO

This section describes the biophysical and environmental context in which the agriculture sector is situated. Information related to soils, growing conditions, weather, as well as climate change projections and impacts for the region are presented. Water resources within the region including those available for the agriculture sector are described, along with other factors influencing the sector such as natural hazards and invasive plants.

## 5.1 Weather and Growing Conditions

The Central Okanagan is known for its warm dry climate, relatively mild winters, and springs with a long frost-free period. Central Okanagan is semi-arid, hot, and sunny due to the rain shadow of the cascade mountains. The spring and summer growing seasons are characterized by high-pressure systems that bring hot weather to the valleys, often with thunderstorms. The lack of precipitation is the most limiting factor for the Central Okanagan's agricultural production, necessitating irrigation for most crops.[21] With the use of irrigation however, the Okanagan's hot and sunny climate is perfect for a wide variety of production including fruit, vegetables, grains and pasture. Climate norms are used to understand the average climate of a region and as a benchmark for analyzing changing climate patterns over time. The Central Okanagan climate norms are based on data collected from Environment Canada from 1981 to 2010 and include Okanagan Centre, Kelowna East and Peachland Weather Stations. The norms point to a region with hot summers, cold winters, and fairly even precipitation amounts year-round. Some highlights of these norms are presented in Table 2.[22] Historically, average temperatures at the Kelowna weather station range from -2.6°C in December up to 20.4°C in July. Large fluctuations in temperature occur throughout the year; daily maximum temperatures could reach 27.2°C in July and daily minimum temperatures drop to -5.3°C in December.[23]

***Table 2. Weather and Climate Norms for Central Okanagan[24].***

| | Okanagan Centre | Kelowna | Peachland |
|---|---|---|---|
| **Station Elevation (m)** | 370 | 490 | 345 |
| **Longitude** | 119°26'W | 119°23' W | 119°43' W |
| **Latitude** | 50°03'N | 49° 51' N | 49° 47' N |
| **Precipitation (annual total mm)** | 425 | 414 | 393 |
| **Days per year with minimum temperatures <= than 0°C** | 97 | 124 | 84 |
| **Days per year with maximum temperatures > than 20°C** | 115 | 118 | 116 |
| **Days per year with maximum temperatures > than 0°C** | 340 | 327 | 339 |
| **Days per year of rain (>= 0.2 mm)** | 114 | 110 | 111 |
| **Days per year of snow (>= 0.2 mm)** | 22 | 28 | 22 |
| **Degree days[25] greater than 10°C** | 1234 | 1192 | 1317 |
| **Degree days greater than 5°C** | 2274 | 2190 | 2384 |

[21] Okanagan Regional Adaptation Series. 2016. BC Climate Action Initiative.
[22] Historical Weather Data. Okanagan Centre Station. Accessed September 2022. Environment Canada.
[23] Historical Weather Data. Winfield Station. Accessed September 2022. Environment Canada.
[24] Weather and Climate Norms for Central Okanagan weather stations. Environment Canada 1981-2010
[25] Degree-days for a given day represent the number of degrees Celsius that the mean temperature is above or below a given base. Norms represent the average accumulation for a given month or year.

| | Okanagan Centre | Kelowna | Peachland |
|---|---|---|---|
| **Frost Free days** | n/a | 188 | n/a |
| **Average date of last spring frost** | n/a | April 12 | n/a |
| **Average date of first fall frost** | n/a | October 18 | n/a |

### 5.1.1 Growing Degree Days

Growing degree days (GDD) are a weather-based indicator for assessing crop development. It is a measure of heat accumulation used to predict plant and pest development rates such as the date that a crop reaches maturity. Daily GDD values are added together from the beginning of the season, providing an indication of the energy available for plant growth. Growing degrees are defined as the mean daily temperature (average of daily maximum and minimum temperatures) above a certain threshold base temperature accumulated on a daily basis over a period of time.

GDD units can be used to assess the suitability of a region for production of a particular crop; estimate the growth-stages of crops, weeds or the life stages of insects; predict maturity and cutting dates of forage crops; estimate the heat stress on crops; plan spacing of planting dates to produce separate harvest dates. The following GDDs are calculated for the Central Okanagan region weather stations using a base temperature of 10°C (Table 3).[26]

***Table 3. Growing Degree Days in the Central Okanagan[27].***

| | Okanagan Centre | Kelowna | Peachland |
|---|---|---|---|
| **January** | 0 | 0 | 0 |
| **February** | 0 | 0 | 0 |
| **March** | 1 | 1 | 2 |
| **April** | 26 | 28 | 29 |
| **May** | 128 | 125 | 138 |
| **June** | 236 | 226 | 246 |
| **July** | 330 | 321 | 355 |
| **August** | 322 | 311 | 337 |
| **September** | 162 | 159 | 176 |
| **October** | 28 | 20 | 35 |
| **November** | 1 | 1 | 1 |
| **December** | 0 | 0 | 0 |
| **TOTAL** | 1234 | 1192 | 1317 |

This level of GDDs indicates a relatively long growing season with enough heat to grow field tomatoes and peppers. It is also a good level for grapes and tree fruits. These GDDs could easily be increased by using polyhouse and other minimal greenhouse technologies, thereby increasing the growing season of crops produced in the area.

## 5.2 Climate Change and Related Impacts on Agriculture

Farmers are accustomed to the weather influencing their activities and weather-dependent decisions are a part of farming life. Adapting to climate change, however, involves a more systematic assessment and response. Agriculture is highly vulnerable to changes in climatic

[26] Historical Weather Data. Okanagan Centre Station. Accessed September 2022. Environment Canada.
[27] Growing Degree Days in the Central Okanagan. Accessed November 2022.Environment Canada.

conditions and even small shifts could have significant consequences for farm viability and food production. Various climate change modelling scenarios developed by the University of British Columbia (UBC), and the Pacific Agri-Food Research Centre in Summerland all predict that winter snow-packs will decrease as the climate warms and the snow level moves higher up the mountains.

The 2020 Climate Projections Report[28] which was co-created across the North Okanagan, Central Okanagan and Okanagan-Similkameen regional districts identified a series of significant changes across the Okanagan Valley. Such changes include increasing temperatures year-round, resulting in considerably hotter summers, warmer winters, and an increased duration of the growing season, especially in the valley bottoms. The region can also expect increased precipitation across all seasons except for summer. This will change the water holding capacity of the landscape and impact hydrological systems[29] which is likely to result in increased risk of forest fires in summer, with floods and associated landslides in spring and fall. With changes to snowpack and winter temperatures, runoff peaks are likely to occur earlier in the season, with lower discharge rates later in the summer.[30] Spring runoff will likely occur sooner and with greater magnitude, followed by drier summers. Annual total water yield will likely increase, though much of it will fall in colder seasons.

Despite the challenges of applying broad climate models, some general projections are anticipated in BC between now and 2050. For the Central Okanagan, climate projections from the Pacific Climate Impact Consortium (PCIC)[31] suggest significant increases in temperature as early as the 2050's, overall reduced snowfall in winters with increased precipitation as rain, and an extension of the productive season through increased growing degree days and frost-free days. Table 4 offers a more in-depth look at the current projections in Central Okanagan.

***Table 4. Climate Projections for the Central Okanagan in the 2020s, 2050s, and 2080s[32].***

| | | 2020 change from 1961-1990 baseline | | 2050 change from 1961-1990 baseline | | 2080 change from 1961-1990 baseline | |
|---|---|---|---|---|---|---|---|
| Characteristic | Season | Range | Median | Range | Median | Range | Median |
| Mean Temperature | Annual | +1.3°C to +2.0°C | +1.7°C | +2.1°C to +4.3°C | +3.2°C | +3.8°C to +6.7°C | +5.0°C |
| Precipitation | Annual | -3.1% to +4.1% | -1.2% | -2.9% to +7.4% | +1.5% | -2.3% to +13% | +5.1% |
| | Summer | -19% to +4.0% | -4.7% | -34% to +3.9% | -5% | -45% to +6.5% | -14% |
| | Winter | -5.2% to +7.6% | -0.27% | -1% to +7.4% | +3.3% | +1.7% to +18% | +10% |
| Snowfall | Winter | -22% to +12% | -16% | -27% to -21% | -24% | -46% to -31% | -40% |
| | Spring | -46% to -28% | -35% | -64% to -38% | -49% | -86% to -57% | -75% |
| Growing Degree Days | Annual | +202 to +398 | +347 degree days | +387 to +911 | +631 degree days | +711 to +1550 | +1040 degree days |

[28] Climate Projections Report for the Okanagan Region. 2020. RDCO, RDNO, RDOS.
[29] Okanagan Regional Adaptation Series. 2016. BC Climate Action Initiative.
[30] Ibid.
[31] Plan 2 Adapt – Central Okanagan. Accessed September 2022. Pacific Climate Impact Consortium.
[32] Ibid.

| | | 2020 change from 1961-1990 baseline | | 2050 change from 1961-1990 baseline | | 2080 change from 1961-1990 baseline | |
|---|---|---|---|---|---|---|---|
| Characteristic | Season | Range | Median | Range | Median | Range | Median |
| | | degree days | | degree days | | degree days | |
| Frost-free days | Annual | +17 to +35 days | +28 days | +37 to +68 days | +49 days | +65 to +110 days | +80 days |

Agricultural water demands are expected to increase as climate change creates hotter summers and longer growing seasons. Climate change, population growth, and expansion of the agricultural land base are expected to result in significantly increased water withdrawals from surface and groundwater sources in the Okanagan Basin, especially during summer months,[33] bringing with it the challenge of balancing water needs in times of drought and high supply.

Although there is consensus regarding the impacts of climate change, the effect on specific microclimates is uncertain – yet critical for agricultural producers concerned with climate change and precipitation within their specific locale. Warmer temperatures and longer growing seasons can lead to more productivity, and sometimes even the ability for new crops and species to become viable in an area. However, it is likely that increases in variability and extreme events (e.g., droughts, storms, and heat waves) will overshadow the possible agricultural benefit of increasing temperatures and longer growing seasons if not accounted for in long-term policy and infrastructure planning. Potential impacts to agriculture in the Central Okanagan from these changing weather and climate conditions are described in Table 5.

***Table 5. Climate change conditions and impacts within the Central Okanagan.[34]***

| **Climate Change Conditions and Impacts** | **Potential Agricultural Impacts** |
|---|---|
| Changing hydrological regime | • Decrease in productivity and quality of crops and livestock under water stress,<br>• Reduction in water supply (at times of high demand and drought),<br>• Earlier and higher magnitude spring run-off incl. risk of flooding and erosion. |
| Increasing precipitation and variability of precipitation (especially in winter) | • Interruptions to planting, input applications and harvesting,<br>• Increase in excessive moisture and site-specific flood risk, and soil erosion and landslides,<br>• Increase in crop damage and losses (e.g., hailstorms),<br>• Increase in pressure on drainage and water management,<br>• Interruptions to pollination,<br>• Decrease in light levels,<br>• Increase in nutrient and input leaching. |
| Changing crop suitability ranges due to increase in temperatures, growing | • Inconsistent productivity and quality,<br>• Difficulty in identifying suitable varieties for crops with long time horizons as change continues (e.g., tree fruit), |

[33] Okanagan Basin Water Supply & Demand Project. 2010. Okanagan Basin Water Board.
[34] Okanagan Regional Adaptation Series. 2016. BC Climate Action Initiative.

| Climate Change Conditions and Impacts | Potential Agricultural Impacts |
|---|---|
| degree days and frost-free days | • Changes to irrigation needs and possible land use competition,<br>• Potential Opportunities: increase in suitability for new crop varieties; opportunity for season extension and additional harvest of certain crops. |
| Changes in pests and diseases due to warmer winter temperatures and shifting precipitation patterns | • Increase in winter survival rates of pests,<br>• Increase in number of pest cycles in a year,<br>• Introduction of new pests and diseases,<br>• Increase in delays or prevention of pollination,<br>• Impacts to livestock health due to pests/diseases,<br>• Reduction in forage quality. |
| Increase in extreme weather events (storms, wind, extreme heat) | • Decrease in productivity and quality<br>• Increase in building maintenance and damage costs<br>• Decrease in heating costs and increase in cooling and ventilation costs<br>• Interruptions to regional infrastructure and supply lines<br>• Impacts to livestock health and productivity |
| Increase in risk of wildfires | • Damage and losses to agricultural assets and infrastructure<br>• Loss of production and decrease in quality (e.g., due to smoke)<br>• Impacts on livestock health<br>• Reduction in agri-tourism<br>• Increasing costs associated with preparing for, managing, and responding to wildfire<br>• Impacts on agricultural water supply (competing use for fighting fires) |

## 5.3 Geology and Soils

The geologic history of the Okanagan has contributed to the fertile agricultural lands found in the Central Okanagan today. The valley soils were formed through several glacial advances and retreats together with glaciofluvial action have produced a variety of deposits and sediments that form most of the soil parent materials. The valley bottom is infilled with a thick, complex arrangement of Tertiary intermountain basin sediments and more recent unconsolidated Quaternary (including recent Holocene) sediments from repeated glaciation, glaciolacustrine, and alluvial processes. Surficial geologic deposits are comprised of various depositional facies and landforms, including glaciofluvial deposits, kettled outwash, raised and present-day alluvial fans, and glaciolacustrine sediments.[35] During the Pleistocene, ice sheets extended over the Okanagan up to 7,000 feet in elevation. The weight and friction of the ice rounded the hills and caused pre-existing soils and loose materials to move into and mix with the ice.[36] Large rock formations were crushed into a variety of soil textural sizes. As the glaciers retreated over time from the mountaintops, the valleys were partly blocked by remnants of the ice sheets. This debris accumulated to form till that was redistributed over

[35] Late glacial history and surficial deposits of the Okanagan Valley, British Columbia. 1962. By H. Nasmith. Bulletin 46, BC Ministry of Energy, Mines and Petroleum Resources.
[36] Soil Survey of the Okanagan and Similkameen Valleys. 1949. British Columbia Department of Agriculture.

the valley through glacier meltwater and filled the valley bottoms. Differences in chemical composition between soils in the area is generally the result of water sorting.

In the 1940s, the Federal government conducted soil surveys across the entire Okanagan Valley[37] and found that there are dozens of soil types within the region. The original reports are available online,[38] following a more detailed survey in the 70's, modern day tools such as the BC Soil Information Finder Tool (SIFT) have been created to provide detailed descriptions of soils in the region and across BC.

The soils surveys completed by the Federal government in the 1940s in the Central Okanagan area are presented in Figures 9 and 10 (Page 39). The soil series are a combination of:

- **Glenmore (GLc):** Glenmore soils are derived from lacustrine sediment deposits. The GLc variety are clay soils with undulating topography, generally located at elevations between 1,150 and 1,500 feet. The heavy clay causes drainage issues when irrigation water is used in excess. The surface is brownish grey, heavy clay with a brownish grey subsoil. These soils are suitable for a range of agricultural crops including grains such as wheat. In order to successfully grow other crops subsurface drainage is recommended.
- **Kalamalka (K):** These sandy loam soils occur mainly within the vicinity of Oyama. These soils may contain angular rock debris and sand with depth. Drainage is generally good in the sandy loam layers and, when irrigated, these soils can be very agriculturally productive. Theses soils are well suited to orchards, tree fruits, and grapes, alfalfa, tomatoes, peppers, cucumbers, and other vegetables. Care must be taken to manage temperature fluctuations, which may incur frost damage to trees.
- **Armstrong (A):** Armstrong soils are derived from glacial till and occur above the elevation of stratified soil materials along the valley bottom. Topography consists of sloping south exposures along the valley sides and rolling surfaces, which contain a few small lakes and sloughs. The Armstrong soils are sandy loams with stones and gravel throughout the soil profile. They constitute an extensive area and the main asset is for livestock grazing. Good range management is required to ensure that the original grasses are maintained and not overtaken by weeds.
- **Kelowna (W):** Kelowna soils occur through surface weathering of glacial till. The topography consists of sloping valley sides and rolling surfaces of low hills. These soils are very extensive between Okanagan Landing and the USA border on the higher valley slopes. The soils are sandy loams with varying amounts of stones, and good drainage. These soils are challenging to cultivate but if water is available for irrigation they may succeed. They are better suited for grazing and rangelands.
- **Nisconlith (N with subclass groups of No, Nl, Nsi, Ncl, and Nc):** Nisconlith soils are part of a group of mineral soils that exist where the water table fluctuates at different levels within the soil complex. Drainage is therefore restricted. These soils occur in the colluvial fans and low floodplains of streams, where the water table is within a few inches of the surface for short periods during the spring freshet season. The topography is gently sloping or flat, and they are usually found at elevations between 903 and 1,700 feet above sea level. Damage to crops may occur if they are overirrigated due to poor natural drainage. Installing drains is recommended.
- **Oyama (OY):** Oyama soils are derived from sandy terraces at elevations between 1,150 and 2,500 feet. Drainage is good to excessive and the soil surface is brown to

[37] Ibid.
[38] Ibid.

dark brown, losing silt and clay content from the surface downward. The structure is finely granular and becomes structureless with depth.

- **Rough Mountainous Land (RM) and Rubble (Ru)** indicate areas where topsoil is either thin or nonexistent.
- **Organic mulch (Om):** These are typically remnants of wetland areas.

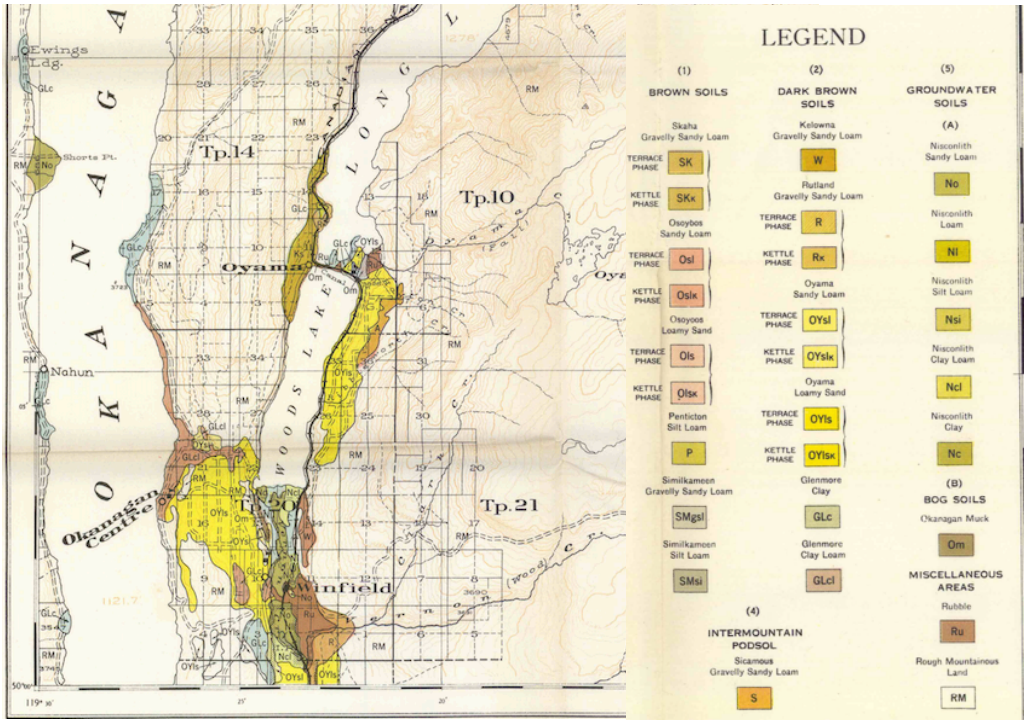


***Figure 9. Okanagan Valley Soil Survey for Winfield Area.***

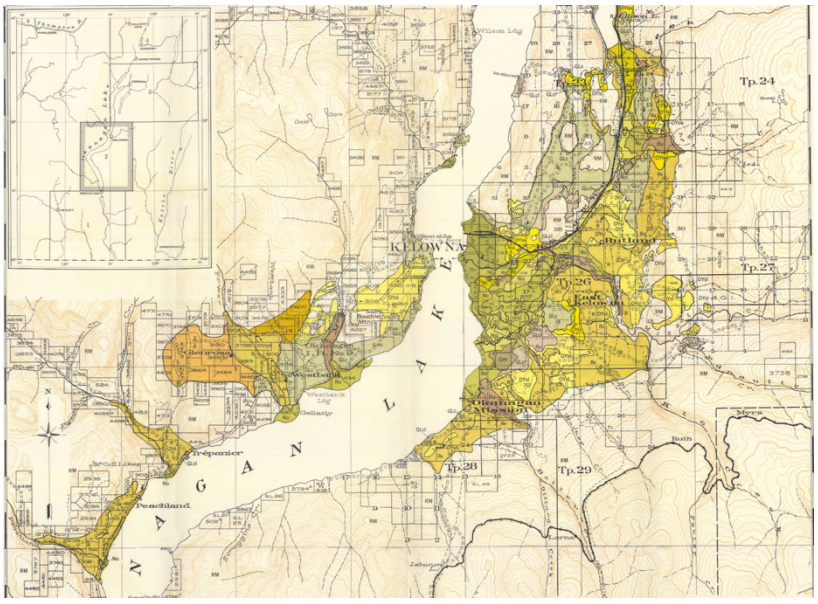


***Figure 10. Original Okanagan Valley Soil Survey for Kelowna Area.***

## 5.4 Water Resources

The Central Okanagan is a part of the Okanagan Basin comprised of an interior plateau and tributary streams that flow from the plateau surface in narrow valleys into the Okanagan Lake with water flowing south. Two-thirds (67%) of the water used by humans in the Okanagan Basin is derived from surface sources (lakes and streams), and 22% is derived from groundwater.[39]

The syilx / Okanagan people are the original stewards of water (siwłkʷ) in the Central Okanagan, and themselves have a Water Declaration, Strategy and partnerships which guide use and care for water in the area. The *Syilx Water Declaration* is a living document which informs on the syilx / Okanagan people relations and values to water, including that water is a part of the people and a part of life, a sacred entity, a medicine, and a teacher. [40]

> *The Okanagan Nation has accepted the unique responsibility bestowed upon us by the Creator to serve for all time as protectors of the lands and waters in our territories, so that all living things return to us regenerated. When we take care of the land and water, the land and water takes care of us. This is our law.* [41]

The *Syilx Water Strategy* serves as a guiding document in protecting water which includes an action plan with six distinct priorities.[42] The objective of the *Syilx Water Strategy* is to overcome the lifestyle, governance, biophysical and geo-climactic threats to water through the six priority areas: alignment with the Declaration, asserting syilx / Okanagan people's water authority, protecting and restoring water, leading water research, engaging in adaptation planning, and building collective water consciousness.

### 5.4.1 Water Governance and Planning

The Provincial government plays an important role in water resource management, particularly through the *Water Sustainability Act* (WSA). The WSA provides for the licensing of activities including use, diversion, and storage of water, for both surface water and ground water.[43] Farm operators must apply for water licenses to secure groundwater and surface water rights for irrigation. The WSA also provides local governments the ability to undertake Water Sustainability Plans, which may include a designation for "dedicated agricultural water", also known as agricultural water reserves. This allows the water sustainability planning process to prioritize or establish unique rules for agriculture, which will be particularly useful when considering how reductions in water use will be handled through drought planning and management.

The Government of BC produced a water plan for the province, Living Water Smart, in 2008.[44] The plan provides an assessment of the cultural and economic value of water and presents a set of recommendations within the context of climate change. The plan provides a vision for agricultural water whereby farms and ranches have enough water to irrigate crops and use efficient irrigation methods; grow crops suited to BC's soils and climate; preserve topsoil to absorb and retain water; use reclaimed water where possible; have healthy streams with restored riparian zones running through them; keep livestock out of waterways; minimize the use of chemicals; and capture and filter runoff from farmland.

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[39] Water Supply and Demand in the Okanagan Basin. Accessed October 2022. Okanagan Basin Water Board.
[40] Syilx Nation siwłkʷ Declaration. 2014. Syilx Okanagan Nation Alliance.
[41] Ibid
[42] Syilx siwłkʷ Strategy. 2021. Syilx Okanagan Nation Alliance.
[43] Government of British Columbia. 2016. Water Sustainability Act.
[44] Living Water Smart, 2008. Government of BC.

The POLIS Water Sustainability Project is a research-based think tank that began in 2003 as a focused initiative of the University of Victoria. The organization focuses its work on fundamental governance issues—including long-term, comprehensive, watershed-based planning and innovative institutional and ecosystem-based legal reforms. The POLIS team includes researchers, staff, and expert advisors with backgrounds in law, policy, governance, economics, geography, public policy, government, ethics, environmental communication, and knowledge mobilization. POLIS brings together experience from the academic, public, private, and practitioner sectors to develop applied research and offer practical solutions and best practices for a sustainable freshwater future. Some of the POLIS resources that are relevant to Central Okanagan agriculture includes work on assessing agricultural water management in Canada[45];

Governance of water resources also occurs at a watershed scale. The RDCO has representatives of the Board of Directors of the Okanagan Basin Water Board (OBWB). The OBWB includes representatives from the three Okanagan regional districts, the Okanagan Nation Alliance, the Water Supply Association of BC and the Okanagan Water Stewardship Council. The OBWB is a water governance body with the objective to undertake strategic projects and programs at the Basin scale that meet the collective needs of Okanagan citizens for long-term sustainable water supplies while supporting the capacity of member jurisdictions to meet their own water management goals.[46]

The OBWB has released some critical guiding documents for Okanagan water governance including the 2019 "Okanagan Sustainable Water Strategy: Action Plan 2.0" which is designed to protect water, plan for flood and drought, manage demand, collect and share data, and collaborate and build partnerships. [47] In addition to publications, the OBWB offers a resource library[48] of planning guides, policies, strategies and toolkits to help navigate legislation and data pertinent to water use as well as a resource guide for agricultural water users to increase water use efficiency, respond to drought and reduce agricultural impacts on water systems.[49]

### 5.4.2 Water Distribution Systems

Water stewardship is a long-held priority of the RDCO.[50] The Regional District administers six water distribution systems: Falcon Ridge, Deitrich/Star Place/Trepanier, Killiney Beach, Westshore Estates, Sunset Ranch, Upper Fintry/Shalal Road/Valley of the Sun (Figure 11), which primarily serve the non-agricultural properties. In addition to the public water distribution systems, there are two privately run Irrigation Districts; Black Mountain Irrigation District and Glenmore Ellison Improvement District. These Irrigation Districts administer and oversee the management of water in important agricultural areas of Kelowna, Lake Country and Central Okanagan East. Their responsibilities include enacting water restrictions for all users when required, and they dictate water allotments for agricultural producers.

There are several community watersheds in the electoral areas of the RDCO (Figure 12). A community watershed is all or part of the drainage area that is upslope of the lowest point from which water is diverted for human consumption by a licensed waterworks (as defined under the Forest & Range Practices Act).[51] Community watersheds must also be designated

[45] Agricultural Water Management in Canada. Accessed November 2022.POLIS webinar.
[46] Overview. Accessed November 2022.Okanagan Basin Watershed Board.
[47] Okanagan Sustainable Water Strategy: Action Plan 2.0. 2019. Okanagan Basin Water Board.
[48] Resource Library. Accessed December 2022. Okanagan Basin Water Board.
[49] Resources for Agricultural Water Users in the Okanagan. Accessed December 2022. Okanagan Basin Water Board.
[50] Regional Growth Strategy Priority Projects Plan. 2017. Regional District of Central Okanagan.
[51] Community Watersheds. Accessed October 2022. BC Ministry of Agriculture and Food.

under the Government Actions Regulation. Community watersheds play an important part in protecting water quality for communities and private water users that rely on surface water sources. To protect the water that is diverted for human consumption, such areas require special management to:

- Conserve the quality, quantity and timing of water flow
- Prevent cumulative hydrological effects having a material adverse effect on water

### 5.4.3 Agricultural Water Practices and Demand

**Agricultural Water Demand Model**

In 2010, MAF, along with numerous partners, developed an Agricultural Water Demand Model (AWDM) to provide current and future agriculture water demand estimates for the Okanagan Basin. The model calculates water use on ALR properties and obtains a total for the entire basin or sub-basins. Crop, irrigation system type, soils and climate data are used to calculate the water demand. The AWDM found that agricultural crop irrigation represented 64% of the outdoor water use in the Okanagan Basin, in 2003.[52] Land use surveys conducted in 2006 and 2014 in the Okanagan Basin found that there was a large shift to efficient irrigation systems in horticultural crops, with 68% of the horticultural area under drip and micro-irrigation in 2014 compared with 38% in 2006.[53] Between 2006 and 2014, the area in wine grapes has greatly increased and the amount of drip irrigation had increased five-fold in the Central Okanagan.

As noted in Section 5.2, climate change is projected to change the timing and amount of water available in the Okanagan Basin, which will increase the risk of water supply disruption to all water users in the region. Demand for water in the entire Okanagan Basin is projected to increase by 36-54% (42 million $m^3$ – 64 million $m^3$) by 2100.[54] Adaptation to potential shortfalls in water supply due to current production methods can best be achieved through changes in irrigation management. Conversion to low pressure irrigation systems (drip, micro-sprinkler, LP-center pivot) increases irrigation efficiency to 78% and greater.[55] This provides a number of benefits to producers including the ability to target water spatially and temporally to meet plant demand; to produce plants which are tolerant of partially dry soils and to allow maintenance of the same irrigation practice under mild drought conditions if water use is well below maximum allocations. Ensuring the availability of water to the agriculture sector as it grows, while ensuring efficient use of that water, is crucial for food and water security in Central Okanagan.

**Stormwater Runoff**

Stormwater runoff can contribute to flooding and water quality degradation, particularly in areas that receive frequent and severe rainstorms or heavy snowfalls that produce large quantities of surface runoff.

There are two different categories of stormwater runoff:

1. Non-point source runoff which originates from fields and forests
2. Point source runoff which flows from specific - usually impervious - areas such as roofs

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[52] Agricultural Water Demand Model, Report for the Okanagan Basin. 2010. Van der Gulik, T., Neilsen, D., & Fretwell, R.
[53] Landscape Based Agricultural Water Demand Modeling—A Tool for Water Management Decision Making in British Columbia, Canada. *Frontiers in Environmental Science*, *6*, 74. 2018. Neilsen, D., Bakker, M., Van der Gulik, T., Smith, S., Cannon, A., Losso, I., & Warwick Sears, A.
[54] Ibid.
[55] Ibid.

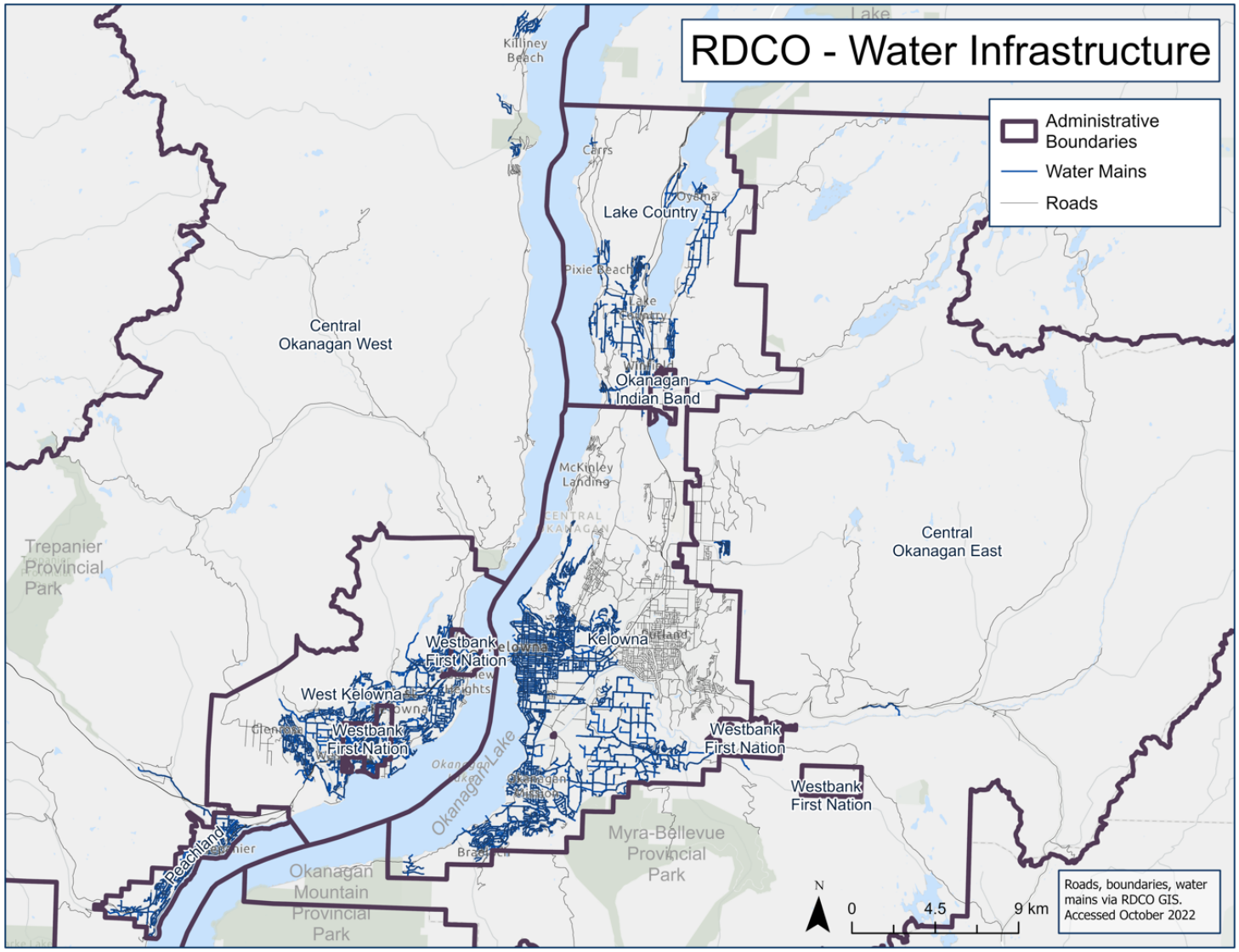


***Figure 11. Water mains and distribution systems managed by the RDCO***

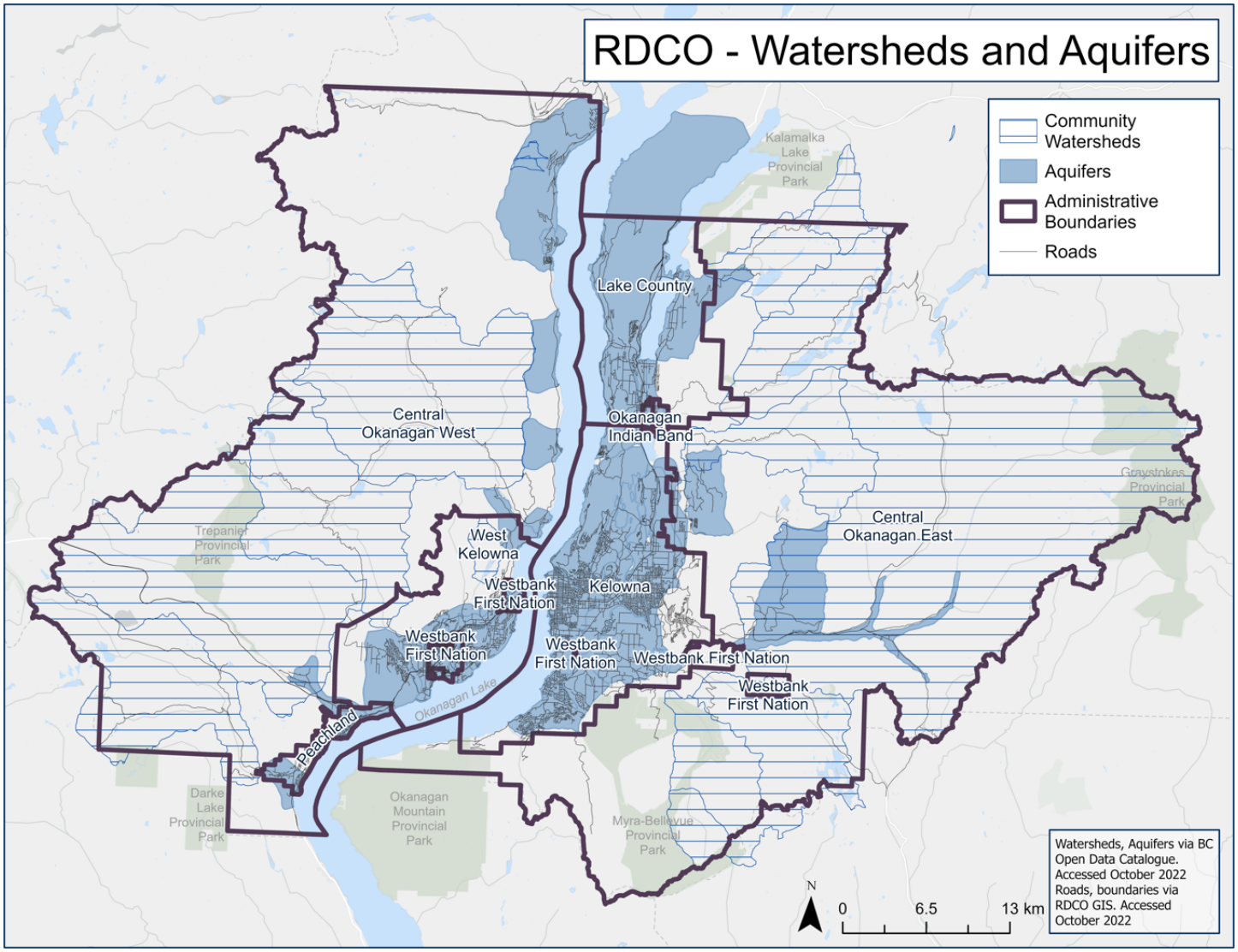


***Figure 12. Community watersheds and aquifers in the RDCO.***

Stormwater runoff from impervious surfaces on farm operations should be permitted to enter local drainage systems or natural watercourses if a stormwater management plan has been prepared in accordance with local bylaws. For large impervious areas, such as large-scale greenhouses, local governments may require storage structures such at detention ponds to reduce post-development peak flows to those prior to development.

Improperly managed runoff can cause downstream erosion; can contaminate lakes, streams, marshes and other surface waters with sediment and nutrients; and can cause extensive flooding to low lying areas. Many agricultural areas experience problems associated with poor stormwater management, especially in urbanized upland areas. In many cases, uphill residential development (which is often characterized by impervious surfaces) can create flash flooding and runoff concerns on farmland located in valley bottoms.

There are best practices that agricultural landowners can take to minimize stormwater runoff, for example:

- Manage the riparian areas of watercourses to slow the infiltration and flow of runoff into water systems.
- Ensure streambanks are healthy to mitigate channel degradation.
- Adhere to soil and water conservation techniques.
- Fence off riparian areas from livestock access and/or utilize off-stream watering systems.
- Follow the *Agricultural Environmental Management Code of Practice* for setbacks from watercourses.
- Provide proper storage and cover for compost and other materials that are piled on farms.
- Consider collecting, storing, and re-using rainwater and/or snowmelt from large impervious areas such as greenhouse or barn roofs.
- Plant cover crops, use conservation tillage techniques, buffer strips, and/or subsurface drainage systems to minimize the risk of field runoff.

**Irrigation**

The lack of precipitation in the growing season requires that irrigation be used for almost all crops grown in Central Okanagan. Surface water provides water for 75% of the irrigated agricultural land in the region which includes both private licenses and water purveyors. Surface water is particularly vulnerable to impacts from prolonged drought. Figure 13 (next page) illustrates the number of groundwater and surface water licenses as of October 2022 in the RDCO used for irrigation and livestock watering.

The Census of Agriculture reported that 5,081 hectares (12,500 acres) of land are under irrigation in Central Okanagan (Table 6). However, it is highly likely that total hectares under irrigation are greater than reported by the Census of Agriculture, due to the reduced number of farms reporting to the 2021 census.

***Table 6. Area of irrigated farmland in RDCO[56].***

| | **2011** | **2016** | **2021** |
|---|---|---|---|
| **Number of Farms Reporting** | 854 | 775 | 671 |
| **Hectares** | 5,159 | 5,621 | 5,081 |
| **Acres** | 12,750 | 13,890 | 12,555 |

[56] Census of Agriculture, 2021. Statistics Canada.

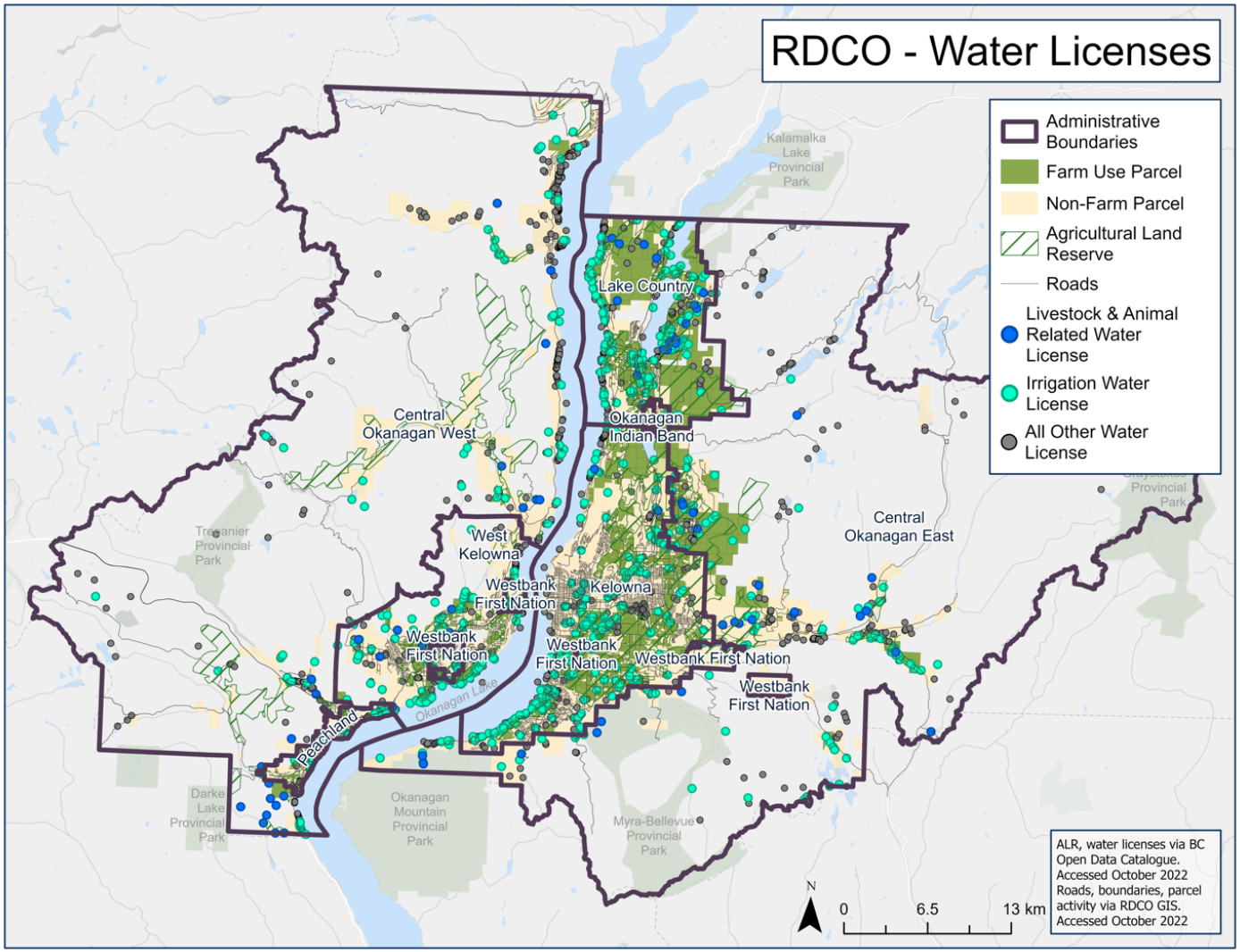


***Figure 13. Water licenses in the RDCO.***

## 5.5 Invasive and Noxious Weeds, Pests, and Wildlife Challenges

Invasive species, primarily plants, have known impacts to the agriculture and livestock industry. Loss of native grasslands to the spread of invasive plants has led to the loss of forage for both livestock and wildlife. In addition to threatening native grasslands and pasture, Invasive plant species may pose health risks to livestock and wildlife due to toxins or burrs which can cause physical injury.

### 5.5.1 Invasive Species Council of BC

The Invasive Species Council of BC conducts several initiatives aimed at reducing the proliferation of these species. The Invasive Species Online Okanagan[57] and the RDCO[58] have both created online resources outlining key invasive weeds in the region, including: Common Bugloss; Common Mullein; Puncturevine; Wild Mustard; and Western Goatsbeard.

### 5.5.2 RDCO Noxious Insect and Pest Infestation Control Bylaw

Furthermore, the Regional District of Central Okanagan has a Noxious Insect and Pest Infestation Control Bylaw (NO. 879) which outlines the noxious and invasive pests of concern in the region. These pests are known to cause significant damage to crops such as grapes, tree fruits and berries, they include:

- Codling moth – *Cydial pomonella* (L.)
- Western cherry fruit fly – *Rhagoletis indifferens Curran*
- Black cherry fruit fly – *Rhagoletis fausta* (O.S.)
- San Jose scale – *Quadraspidiotus perniciosus* (Comst.)
- European fruit scale – *Quadraspidiotus ostreaeformis* (Curt.)
- Pear psylla – *Cacopsylla pyricola Foerst*
- Fruit tree leafroller – *Archips argyrospila (Wlk.)*
- European leafroller – *Archips rosana (L.)*
- Obliquebanded leafroller – *Choristoneura rosaceana (Harr.)*
- Threelined leafroller – *Pandemis limitata (Rob.)*
- Apple-and-thorn skeletonizer – *Choreutis pariana (Cl.)*
- Apple mealybug – *Phenacoccus aceris (Sign.)*
- Apple ermine moth – *Yponomeuta malinella Zell.*
- Gypsy moth – *Lymantria dispar (L.)*
- Apple maggot – *Rhagolitis ponomella (Walsh)*
- Oriental fruit moth – *Grapholita molesta (Bst.)*
- Cherry bark tortrix – *Enarmonia formosana (Scop.)*
- Cherry ermine moth – *Yponomeuta padellus (L.)*

### 5.5.3 Okanagan – Kootenay Sterile Insect Release Program

In coping with pests, the RDCO in partnership with Okanagan Similkameen, North Okanagan, and the Columbia Shuswap fund and advocate on behalf of the Okanagan – Kootenay Sterile Insect Release (OKSIR) program.[59] OKSIR is an area wide Integrated Pest Management approach which is funded through the collection of property tax and parcel taxes from residents within the programs area. Initiated in 1992, the program rears sterile male coddling moths which when released into the wild are incapable of producing viable offspring, effectively reducing the population of the pest.

[57] Okanagan Invasive Species Online. Accessed September 2022.
[58] Invasive Weed Control Bylaw. Accessed September 2022. Regional District of Central Okanagan.
[59] OKSIR Home. Accessed October 2022. Okanagan Kootenay Sterile Insect Release Program.

The program has seen significant success with pesticides against codling moth being reduced by 96% since 1991.[60] The success of the program has also benefited orchard workers and neighbouring residents to orchards with reduced pesticide exposure, created opportunities for Okanagan fruit producers to sell into markets favourable to low pest prevalence, and has established a reputation for the southern interior as a centre of excellence in horticultural research and innovation. [61]

The OKSIR program is supported by growers who cooperate with OKSIR to monitor their pest presence and contribute to the program through parcel tax payments. Other partners on the program are residential tree owners who allow program staff to access their properties to control infestations, fruit handlers, fruit tree retailers, and senior government scientists. The OKSIR program is successful example of a collaborative and inter-regional program which approaches agricultural issues with a whole system perspective. Figure 14 (next page) shows the apple and pear orchards that participated in the OKSIR program in the 2022 season.

### 5.5.4 Wildlife

Agricultural crops are often at risk from wildlife species such as birds, bears, rodents and deer. In the Central Okanagan one such wildlife pest is the starling. The starling is an invasive species introduced to North America in the 1890's and first spotted in the Central Okanagan in 1952. Starlings breed quickly and in great numbers, they flock and feed in very large groups causing severe damage to grape, berry and tree fruit crops. Likewise, Starlings threaten livestock operations as they consume animal feed and contaminate drinking water with their droppings, transferring diseases to livestock. They are largely immune to sound deterrents and other forms of deterrents such as netting or falconers are expensive and often impractical. In the Okanagan Similkameen alone, it is estimated that starlings account for annual losses of $4 million.

Funded by the Okanagan Regional Districts and administered by the BC Grape Growers Association, the Starling Control Program[62] works to capture and euthanize starlings in an effort to reduce their numbers and control crop losses. As a result of the program both flock numbers and damage by starlings has decreased.

Beyond threats to agricultural crops, much of the wildlife in the Central Okanagan serves an important role in the region's sensitive ecosystems. The Okanagan Collaborative Conservation Program (OCCP) works to conserve ecosystems and wildlife in the region through ecosystem connectivity projects which create corridors. Ecosystem connectivity provide supports species migration, hunting and foraging, access to genetic diversity within wildlife and shelter for wildlife[63]. Furthermore, connectivity through corridors benefits both ecosystems and agricultural land by reducing groundwater evaporation and soil loss, providing flood control areas and providing a natural buffer for wildfires.

Working in collaboration with provincial governments, conservation organizations, industry, and First Nations, OCCP was successful in a protecting a corridor which runs from Okanagan Mountain Provincial Park to Kalamalka Provincial Park[64]. This initiative expands on the RDCOs plan for ecosystem connectivity in the Central Okanagan[65] and is reliant on the support of the regional district as well as industries, First Nations and producers who hold

[60] Program Benefits. Accessed October 2022. Okanagan Kootenay Sterile Insect Release Program.
[61] Ibid.
[62] Starling Control Program. Accessed October 2022. BC Grape Growers Association.
[63] Ecosystem Connectivity in the Okanagan. Accessed November 2022. Okanagan Collaborative Conservation Program.
[64] Ibid.
[65] Planning for ecosystem connectivity in the Central Okanagan. 2015. Regional District of Central Okanagan.

land along the corridor. The OCCP is continuing work on developing conservation corridors in the region, which will necessitate further collaboration with these key players and careful consideration of the impacts and benefits a corridor can provide.

## 5.6 Hazards and Emergency Planning

Due to the mountainous nature and dry climate of the RDCO, the area is susceptible to a number of natural hazards including floods, landslides and wildfires. This section summarizes those known hazards and the emergency preparedness and response systems in place.

### 5.6.1 Floods and Landslides

Floods are part of the natural environment which can be beneficial to agriculture by enriching floodplain soils and providing soil moisture; however, they can also cause detrimental impacts to agricultural land and farms and disrupt supply chains. Central Okanagan's 27 creeks and Okanagan Lake are all susceptible to flooding and erosion. In 2022 the Central Okanagan saw abnormally high precipitation which raised the levels of streams and creeks, which flow into Okanagan Lake. Both Okanagan Lake and Mission Creek were at risk of breaching their banks and the city of Kelowna was put into a local state of emergency. Incidents like this can create ripple effects into distribution lines and productivity due to evacuation orders. In the case of flooding, water saturation in agricultural fields can reduce on farm productivity by preventing equipment from accessing land or introducing mould or rot into crops.

Along with floods, many parts of the Central Okanagan are prone to landslides and rockfalls due to the steep slopes, shifts in spring freshet and unstable terrain. Landslides and subsequent road washouts not only pose safety risks to residents in the immediate area, but also cause disruptions in supply chain, impact viability of productive land, and can further complicate evacuation and emergency response procedures. Even small landslides in the Central Okanagan have led to evacuation of residents and disruptions to daily activities.[66] Within the Central Okanagan certain slopes have been identified which are susceptible to slippage or erosion and are deemed to have a high level of instability.

### 5.6.2 Wildfires

Wildfires have always occurred in the Central Okanagan but their intensity and frequency has increased over the last decades. With the effects of climate change these wildfires are only expected to worsen and bracing for wildfires has become an annual process for producers.

In addition to disrupted supply chains, evacuations and threatened orchards, crops and livestock, producers in the Central Okanagan deal with the effects of smoke on agricultural production. Even when crops and homes are not threatened, smoke distorts the sun's ability to reach crops and can halt the growth of annual and perennial plants while falling ash can dirty the harvests of ripening fruit and vegetables. The RDCO completed a Wildfire Community Protection Plan in 2010 for the Electoral Areas which includes a community risk profile and action plans which address education and communication, protection, emergency response, training and equipment, vegetation management and implementation.[67] As a part of developing the plan, a map of the Wildfire Risk Areas (Figure 15, next page) was created in 2010. The map shows the highest probability of wildfire occurrence is in the valleys between the mountains, with much of the Electoral Areas being at moderate risk of wildfire.

[66] Landslide prompts evacuation. May 13, 2017. Castanet.
[67] Wildfire Community Protection Plan. 2010. Regional District of Central Okanagan.

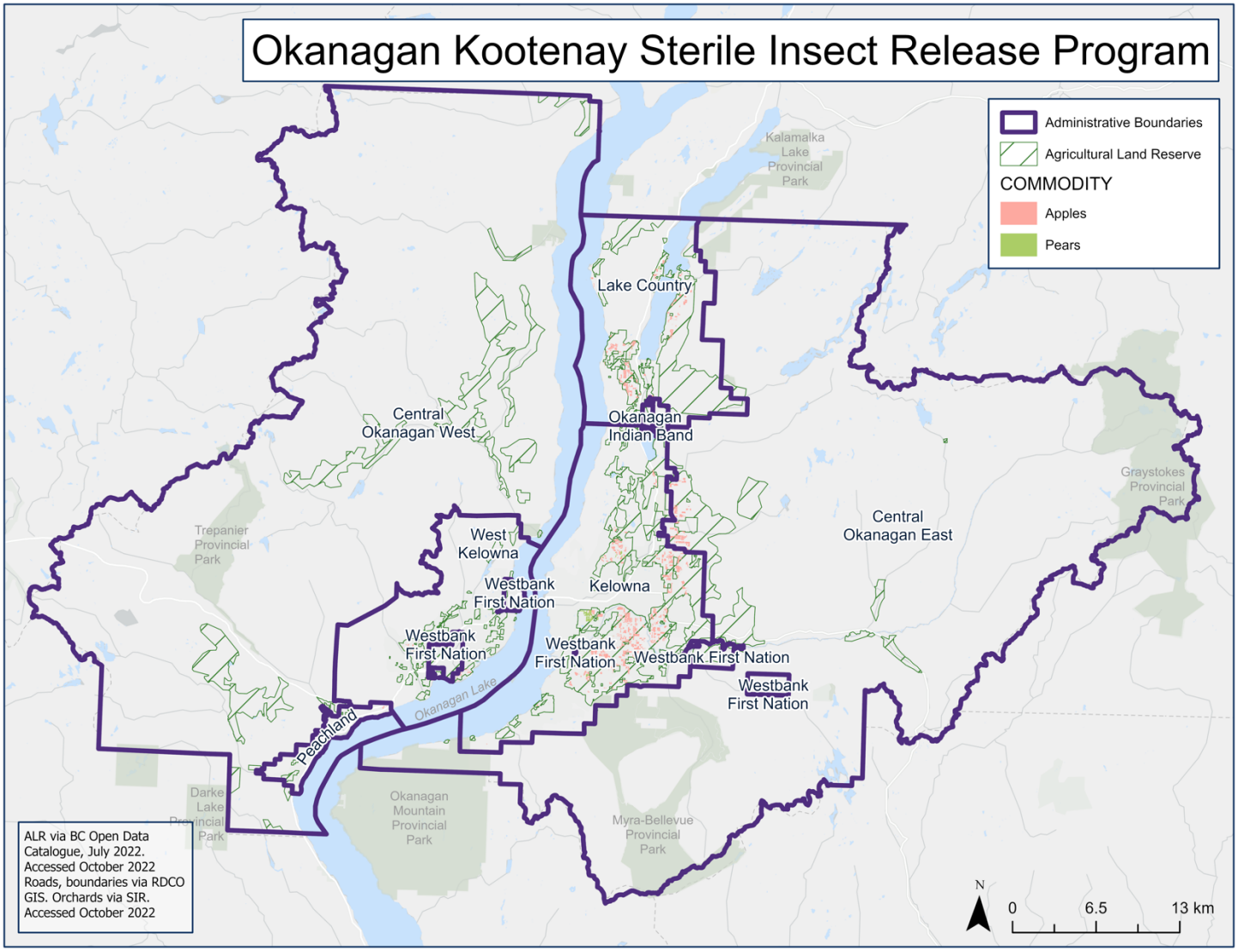


***Figure 14. Apple and pear orchards in the OKSIR program in 2022.***

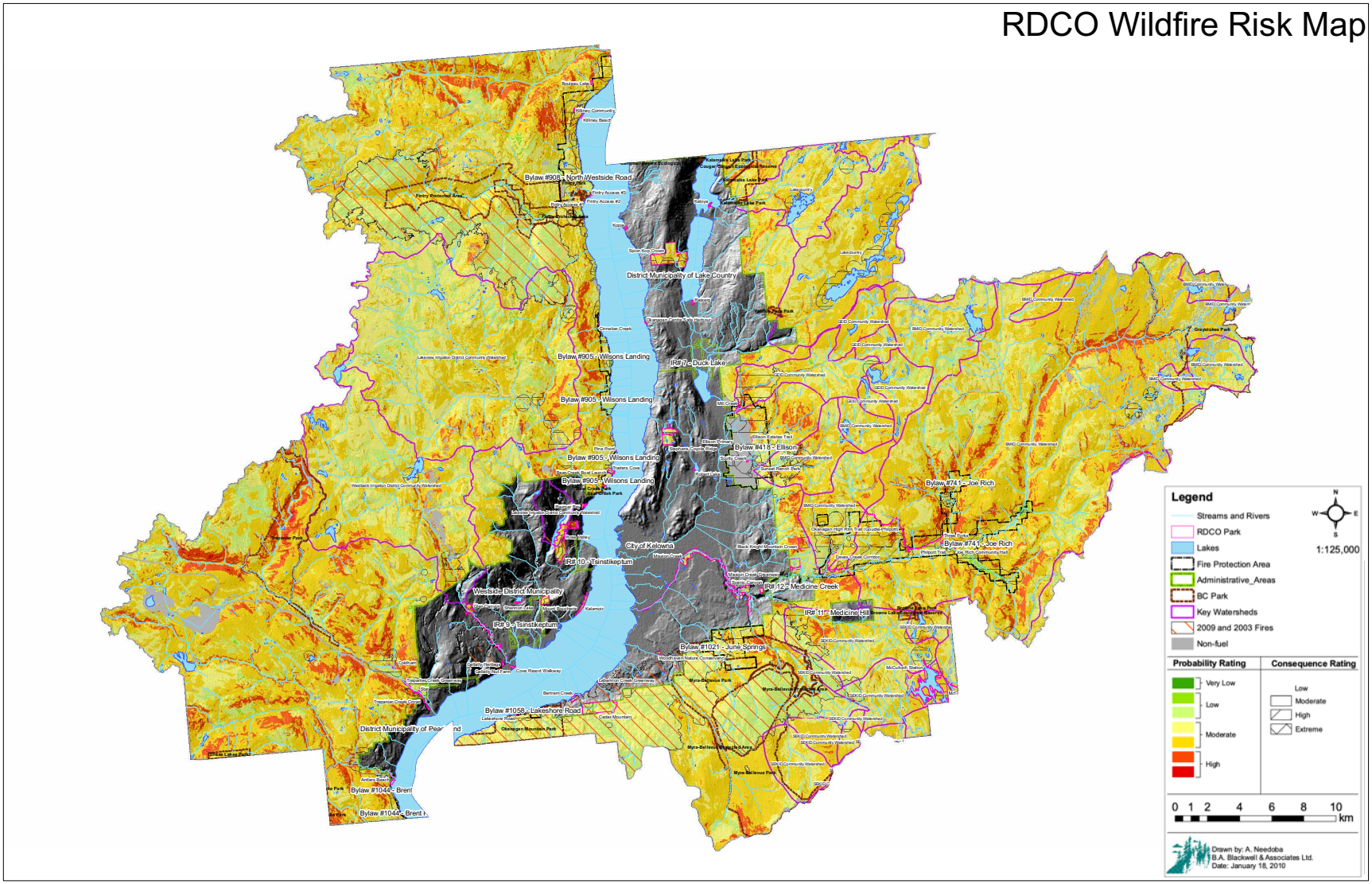


***Figure 15. RDCO Wildfire Risk Map.***

### 5.6.3 Emergency Preparedness and Response

The RDCO has a regional emergency plan in place which is coordinated by the City of Kelowna Fire Department on behalf of the RDCO, the associated municipalities and West Bank First Nation.[68] The Emergency Plan provides a framework for emergency response by designed to educate all participants and staff about the emergency management program regarding their roles and responsibilities during an emergency and ensure the RDCO is prepared to respond. This includes the criteria for activating the Emergency Operations Centre (EOC), specifies the chain of command within the EOC, and emergency communications protocols. The EOC supports emergency response workers while also providing up to date information in response to any emergency in the Central Okanagan including evacuation orders.

The emergency response systems in the Central Okanagan are robust however, they cater exclusively to protecting human lives and systems, and omit agricultural systems and farm animals. Central Okanagan Emergency Operations provides a number of preparedness tools including an interactive map updated with current hazards, wildfires and evacuation orders, resources such as checklists and emergency preparation guides for residents of the Central Okanagan. Advice for emergency preparedness regarding farm animals is directed to the federal resources for emergency preparedness for farm animals.[69] The BC Climate Change Adaptation Program has also compiled a list of resources for producers related to wildfire preparedness.[70]

## 5.7 Agricultural Waste Management

Orchards are the most common crops grown in Central Okanagan and as such there are large amounts of wood waste created during re-plantings. The RDCO supports several programs to promote environmental best practices for managing the wood waste to reduce air pollution associated with open burning. The Agricultural Wood Waste Chipping Program and the Mow/chip/rent-it Rebate Program is available to farms that have large or small volumes of wood waste to manage.[71] The programs are free or provide rebates for farmers to hire contractors or rent/buy equipment to chip wood waste on-farm. Chipping the wood waste reduces air pollution that arises when wood waste is burned, and the chipped wood is a valuable source of mulch for re-use on the farm. The programs were developed in part as a response to wildfires that impacted the region in the 1990s and 2000s, in an effort to reduce fuel and fibre loads on farms, thereby reducing fire risk.

Other agricultural wastes include non-woody organic plant materials, plastics, and hazardous wastes (e.g. pesticide containers), among others, and are not accepted at Central Okanagan landfill or compost facilities. Agricultural waste is regulated under the *Environmental Management Act* and specifically the Agricultural Environmental Management Code of Practice, which encourages on-site management of organic material and non-organic wastes generated by farms. MAF has several resources and programs available to producers for best practices to managing many types of agricultural wastes, such as the On-Farm Composting Guide[72] and the Environmental Farm Plan (EFP)[73] program.

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[68] Emergency Management. Accessed November 2022. Regional District of Central Okanagan.
[69] Get Prepared. Emergency Preparedness for Farm Animals. Accessed November 2022. Government of Canada.
[70] Wildfire and Climate Change Adaptation. Accessed November 2022. Climate Change Adaptation Program.
[71] Agricultural Wood Waste Chipping Program. Accessed November 2022. Regional District of Central Okanagan.
[72] On-Farm Composting Guide. 2020. Ministry of Agriculture and Food.
[73] Environmental Farm Plan program. Accessed December 2022. Investment Agriculture Foundation BC.

# 6.0 Agricultural Land Capability, Uses and Trends

This section describes the characteristics of agricultural land in the Central Okanagan, analyzes trends occurring on ALR and identifies potential opportunities for future agricultural land uses.

## 6.1 Agricultural Land Reserve

The vast majority of productive agricultural land in Central Okanagan is located in the ALR (Figure 16, next page). The ALR is a provincially designated zone that preserves agricultural land for the future. However, there are lands outside of the ALR that may be suitable for certain types of crop production or livestock, particularly in lands zoned as rural in the RDCO. It should also be noted that not all land in the ALR is suitable for farming due to existing land uses such as schools, golf courses, residential structures and other uses. In addition, not all ALR land is of the same quality for agricultural activities due factors such as soils and topography (see Section 6.3 for more detail).

As Figure 16 (next page) and Table 7 illustrates, RDCO East have large areas of ALR. Approximately 7% (482 ha (1,191 acres)) of the ALR in Central Okanagan West is on Crown land and only 2 ha (5 acres) in Central Okanagan East.[74]

While ALR lands are identified on Federal Indian Reserve (IR) lands, and can indicate potential soil viability, the Provincial *ALC Act* and regulations are superseded by federal policies and regulations. Therefore, while maps may indicate that ALR land is located within IR lands, there is no requirement to submit applications to the ALC for non-farming uses in those areas.

***Table 7. ALR in RDCO member municipalities, electoral areas and First Nation Reserves.***

| JURISDICTION | AREA IN ALR (HA) | AREA IN ALR (ACRES) | PERCENT IN ALR |
|---|---|---|---|
| **KELOWNA** | 8,466 | 20,919 | 31.2% |
| **LAKE COUNTRY** | 4,783 | 11,820 | 17.6% |
| **OKANAGAN INDIAN BAND** | 121 | 298 | 0.4% |
| **PEACHLAND** | 126 | 311 | 0.5% |
| **RDCO EAST E.A.** | 4,063 | 10,041 | 15.0% |
| **RDCO WEST E.A.** | 7,145 | 17,656 | 26.4% |
| **WEST KELOWNA** | 1,147 | 2,833 | 4.2% |
| **WESTBANK FIRST NATION** | 1,260 | 3,114 | 4.6% |
| ***GRAND TOTAL*** | ***27,111*** | ***66,990*** | **100%** |

[74] Crown land is where a parcel's ownership title is Federal or Crown Provincial. This doesn't include Crown Agency (e.g. BC Hydro, BC Assessment); however those areas in the RDCO are negligible.

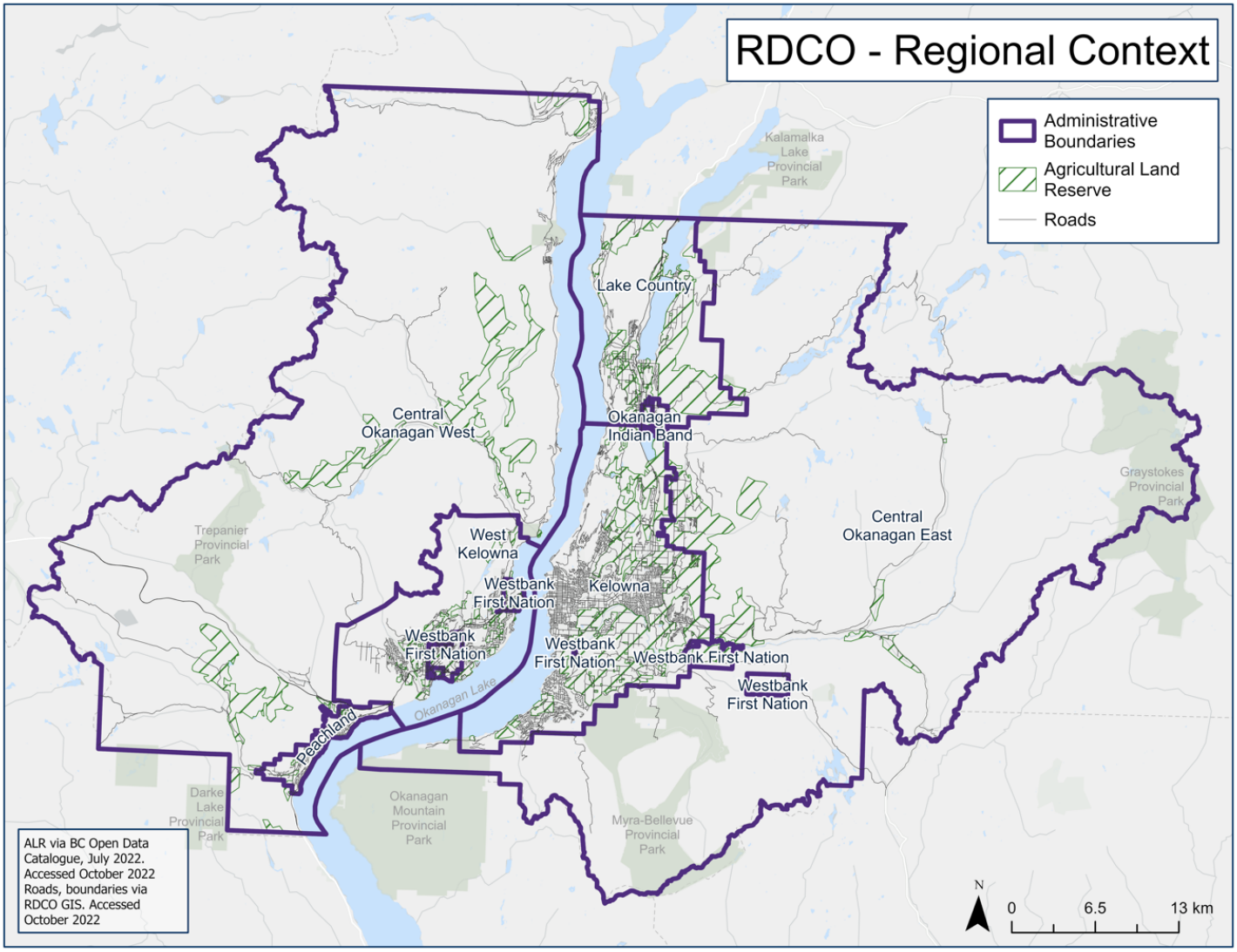


***Figure 16. ALR in the RDCO as of 2022.***

### 6.1.1 ALR Trends in the RDCO

The ALC is the administrative tribunal that adjudicates applications for non-farm use and/or exclusion of land from the ALR while prioritizing and protecting the ALR land base and its use for agriculture. Since 2016, applications to the ALC have been published online in a database, which facilitates analysis of applications.[75] Between 2016 and September 2022, there were 12 applications submitted to the ALC from RDCO EAs, with 8 of them approved and 4 currently undecided. The applications within the RDCO EAs included five non-farm uses, four non-adhering residential uses, two transportation/utility/trail, and one exclusion (Table 8, next page). In 2016, within Central Okanagan West and City of Kelowna, there were 15 hectares (37 acres) of excluded from the ALR associated with the expansion of the Kelowna Airport (Figure 17), and a 9 hectares (22 acres) approval approved for non-farm use associated with airport activities. In 2022, around 56 hectares (138 acres) were approved for exclusion from the ALR for the planned Kelowna transit facility.[76] The most common applications throughout Central Okanagan are for non-farm use which can include a range of activities from farm structures to placement of fill on properties, to anything that is not directly farming the land.

Local governments have an important role to play in ALC applications. Property owners submit an application to the local government, who then can either support the application which is then sent to the ALC or can refuse the application and decide not to send it to the ALC. The RDCO consults their AAC when ALC applications come through for advice on whether or not the applications are appropriate and how the changes to the property will benefit agriculture.

Beginning in 2021, all exclusion applications must be made directly to the ALC by local governments, First Nations governments, or prescribed body as defined by the ALR General Regulations, rather than emanating from private landowners. This new direction from the ALC is to ensure that significant changes to the ALR boundary, should they occur, are in keeping with longer term local government planning.

***Figure 17. ALR lands adjacent to the Kelowna Airport.***

[75] Application decision database portal. Accessed November 2022. Agricultural Land Commission.
[76] This was a decision based historical ALC endorsements of City of Kelowna's long term planning documents and is not indicative of a desire or ability to exclude ALR land more generally.

*Table 8. Applications to the ALC from the Central Okanagan 2016 - 2022.*

| Community | Decision outcome | Non-Adhering Residential use | Non-Farm Use | Sub-division | Transport-ation /Utility/ Trail | Exclusion | Inclusion |
|---|---|---|---|---|---|---|---|
| **District of Lake Country** | Refused | 1 | 5 | 0 | 0 | 0 | 0 |
| | Approved | 4 | 5 | 7 | 0 | 6 | 2 |
| **City of Kelowna** | Refused | 0 | 3 | 2 | 0 | 0 | 0 |
| | Approved | 12 | 8 | 8 | 9 | 3 | 0 |
| **City of West Kelowna** | Refused | 0 | 3 | 0 | 0 | 3 | 0 |
| | Approved | 0 | 3 | 1 | 4 | 2 | 3 |
| **District of Peachland** | Refused | 0 | 0 | 0 | 0 | 0 | 0 |
| | Approved | 1 | 1 | 0 | 0 | 0 | 0 |
| **RDCO EAs** | Refused | 0 | 0 | 0 | 0 | 0 | 0 |
| | Approved | 2 | 4 | 0 | 1 | 1 | 0 |
| **Total** | **Refused** | **1** | **11** | **2** | **0** | **3** | **0** |
| | **Approved** | **19** | **21** | **16** | **14** | **12** | **5** |

Figure 18 shows the numbers and types of applications approved within Central Okanagan. The City of Kelowna, District of Lake Country, and City of West Kelowna have a larger population on and near ALR lands, which is partly why there are more applications received and approved for these municipalities.

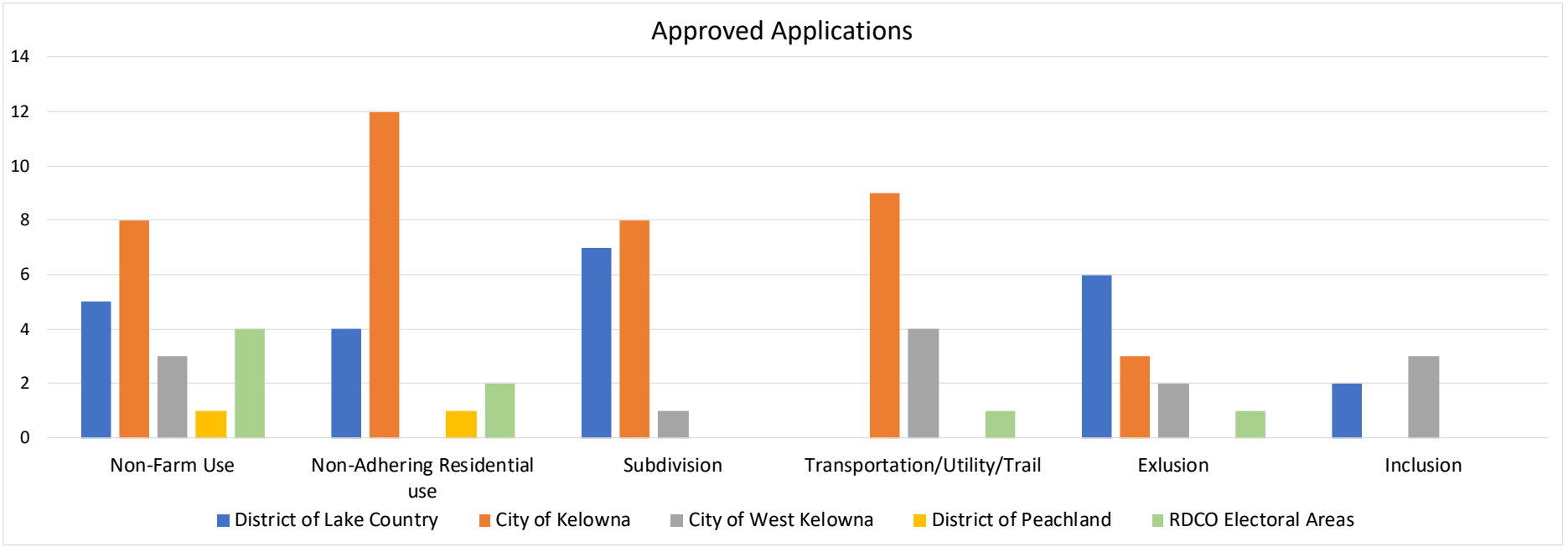


***Figure 18. Approved Applications to the ALC within Central Okanagan from 2016 - 2022.***

### 6.1.2 Compliance and Enforcement on Agricultural Lands

Throughout the RDCO, there are issues with non-permitted uses occurring on farmland such as illegally depositing fill, vehicle and equipment storage and large structural footprints and production facilities. In 2019 and 2020, the RDCO convened a working group to address these issues and began the Regional Agricultural Compliance and Enforcement Strategy project. Project partners included staff from RDCO incorporated municipalities (City of Kelowna, City of West Kelowna, District of Peachland, and District of Lake Country), Westbank First Nation, the District of Summerland, ALC, B.C. Assessment, Interior Health, and MAF. A survey was conducted and several meetings occurred to discuss the compliance and enforcement issue on agricultural lands.[77]

The top three issues were identified as:

- The deposition of fill;
- Large structural footprints and production facilities; and,
- Storage of vehicles and equipment.

The top three tools identified as being helpful to partnering jurisdictions includes:

- Better collaboration and engagement with ALC staff;
- Developing an educational campaign to inform landowners (e.g. brochures, bulletins, news releases); and,
- Exploring a Memorandum of Understanding between project partners and the ALC.

A future RAS will help to determine if these priorities and tools remain relevant, in addition to determining any further steps that the RDCO may undertake related to compliance and enforcement.

## 6.2 Agricultural Land Uses

The ALUI completed in 2014 reviewed the land uses and characteristics of parcels in the ALR in the RDCO EAs. The study found that in RDCO EAs, much of the ALR is unavailable for farming (Figure 19).[78] "Unavailable for farming" parcels either had a land use making agricultural development improbable (e.g. golf course, school, etc.) or had little land with potential for farming. However, some limitations of these lands may be overcome using innovative practices such as using agroforestry where land is forested. The ALUI found that there were parcels of ALR available for farming. A parcel is considered to be "Available for farming" if it is not already "Used for farming", does not have a land use that excludes agriculture, and has at least 50% of its area and at least 0.4 ha (0.9 acres) in land with potential for farming. Land prices and ecological goods and services, such as land with forests or wetlands, are not considered when assessing parcel availability. While this data is several years old, it points to opportunities in the RDCO to increase the utilization of agricultural lands.

[77] Governance & Services Committee: Regional Agricultural Compliance and Enforcement Strategy. 2020. Regional District of Central Okanagan.
[78] Agricultural Land Use Inventory for Central Okanagan. (Preliminary results). 2015. Ministry of Agriculture and Food.

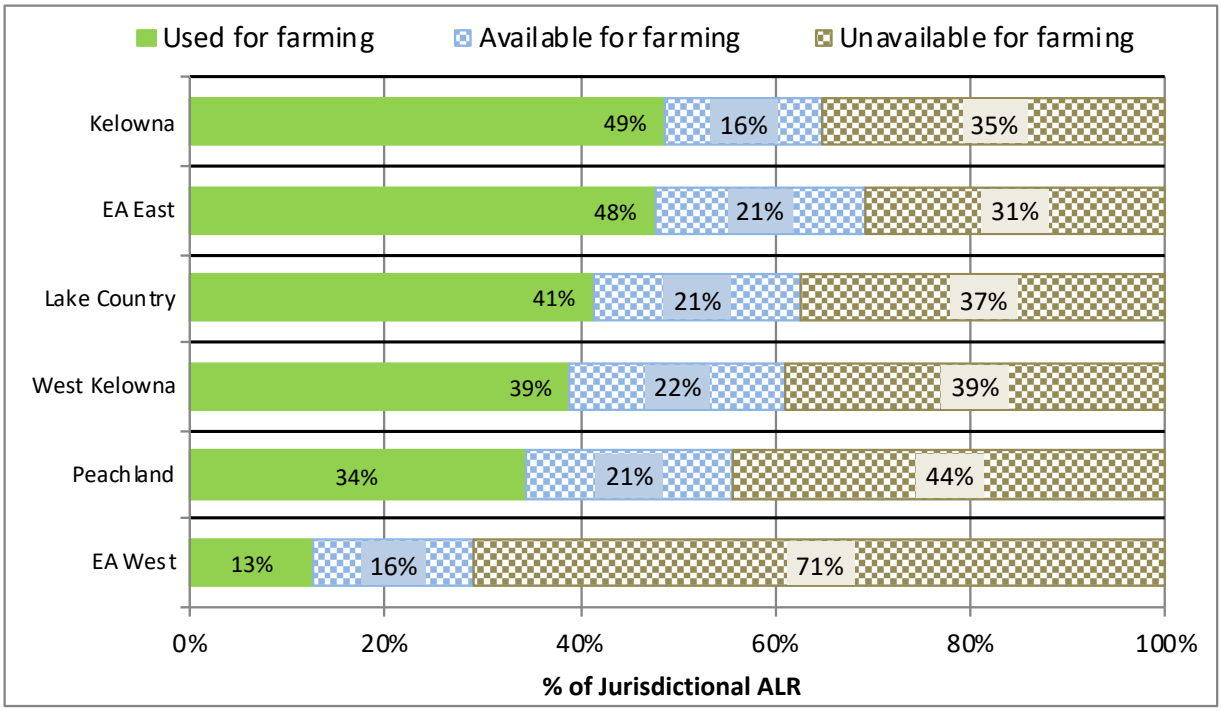


***Figure 19. Parcel Use and availability for farming in the RDCO in 2015 as per ALUI.***

The ALUI, Census of Agriculture and BC Assessment data all provide information that can be used to identify agricultural land uses in the RDCO. According to the Census of Agriculture, just over 50% of total farm area in Central Okanagan is being used as natural land for pasture (11,192 ha or 27,656 acres). The total farm area within the RDCO has decreased since 2011 (Table 9). Without having associated data regarding the size of the parcels or the types of crops involved in this shift it can be difficult to draw conclusions, particularly for the drop between 2011 and 2016. However the largest shift in terms of acreage appears to be a drop in the amount of natural land for pasture, which then rose again in 2021. For the subsequent decline between 2016 and 2021 at least a portion of the shift in numbers is likely attributable to the change in the definition of a census farm, with only farms reporting expenses and revenues captured in the Census. Due to this change in a census farm, it is difficult to draw definitive conclusions about trends of the number of farms and land uses. Since smaller farms typically participate in direct sales to consumers, who do not report to the CRA, their land uses and products are no longer being captured through the Census. Regardless of the change in definition, the amount of land in crops (a subcategory of total farm area) has increased over time, albeit on a smaller number of farms, indicating an intensification of agricultural use.

***Table 9. Land uses on farms in the RDCO in 2021[79].***

| | 2011 | | | 2016 | | | 2021 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | # of farms | ha | acres | # of farms | ha | acres | # of farms | ha | acres |
| **Total Farm Area** | **1,020** | **31,368** | **78,420** | **879** | **23,461** | **57,973** | **807** | **20,888** | **51,615** |

[79] Census of Agriculture, 2021. Statistics Canada.

The Census of Agriculture does not parse the data down into the specific electoral areas, member municipalities or First Nation reserves within the RDCO. However, BC Assessment data and the ALUI can provide insight into agricultural land uses on a finer detail.

According to the BC Assessment data from 2021, there are 19,638 ha (48,526 acres) of land classified as having farm tax status in the entire RDCO, which includes farms inside and outside of the ALR (Figure 20). Central Okanagan West has 373 ha (921 acres) of parcels with farm tax status and Central Okanagan East has 3,841 ha (9,491 acres). In addition to qualifying for lower property taxes, parcels in the ALR pay a reduction in school taxes. Whether or not a parcel has farm tax status also has bearing on the opportunity to apply for certain provincial agricultural grants, and is part of the criteria that is review for ALC notices of intent and applications.

Figure 21 and Figure 22 (next pages) present the BC Assessment data for farming activity occurring in 2021 in RDCO EAs. In Central Okanagan West, there are few farms, with most occurring outside of the ALR (Figure 22). The ALR in this area is mostly forested, and accessible by dirt roads or has no road access, which is likely why there are few farms reporting to BC Assessment. In Central Okanagan East, there are numerous types of farms throughout the EA, in particular tree fruits, beef, and grain & forage land uses.

MAF assessed changes in cultivated lands, grapes and cherries between 2006 and 2014.[80] While this data is several years old, it is still useful in understanding the changes in agricultural land use. Cultivated lands mostly remained steady throughout the RDCO, with some losses in lands cultivated (Table 10).

***Table 10. Gains or losses of cultivated lands in the RDCO from 2006-2014 as per ALUI.***

| REGION | NET CHANGE OF CULTIVATED LANDS (HA) | NET CHANGE OF CULTIVATED LANDS (ACRES) |
|---|---|---|
| **KELOWNA** | -376 | -929 |
| **LAKE COUNTRY** | -88 | -217 |
| **WEST KELOWNA** | -50 | -124 |
| **CENTRAL OKANAGAN WEST** | +24 | +59 |
| **CENTRAL OKANAGAN EAST** | +21 | +52 |
| **PEACHLAND** | -1 | -2.5 |

There have been and continue to be changes in crops cultivated on agricultural lands. Between 2006 and 2014, there were 279 new hectares (690 acres) of grape plantings and 316 new hectares (780 acres) of cherries planted. For grape plantings, a variety of agricultural land uses were transitioned to grapes (

Figure 23, next pages). The transition to cherries has primarily occurred by removing apple orchard plantings. This trend of an increase in cherry orchards and a decrease in apple orchards is also apparent in the Census of Agriculture data from 2011 to 2021 (see Section 7). The ability to shift between crop types is an indication of a healthy agricultural sector that is flexible in its response to market demands. It is also important to consider that with changes in crop types there can be associated changes with water usage, labour needs, and farm practices in general. The impacts to the surrounding properties, and considerations (such as water, waste, and land use planning) for the RDCO are dependent on the specific shifts in crop types.

[80] Agricultural Land Use Inventory for Central Okanagan. (Preliminary results). 2015. Ministry of Agriculture and Food.

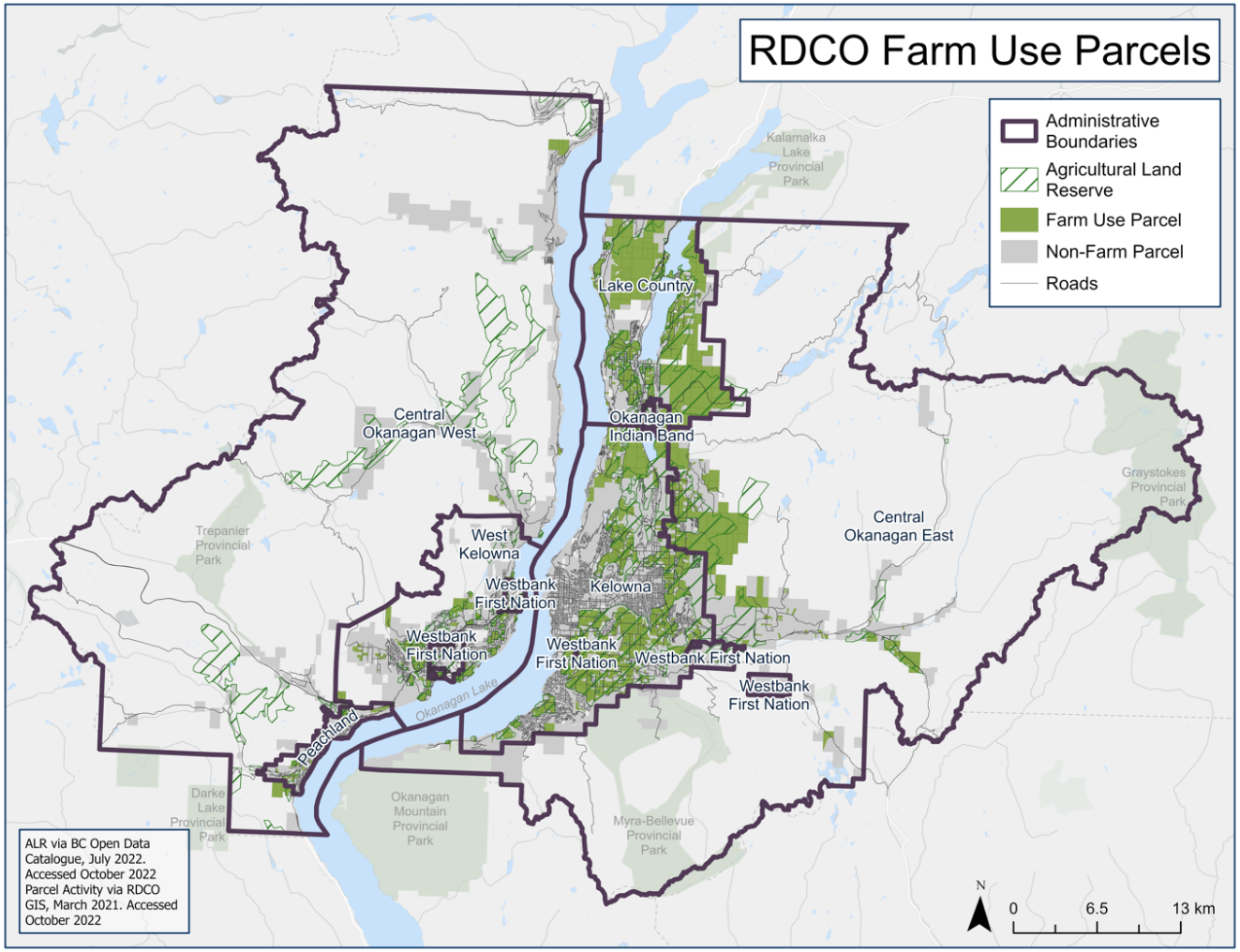


***Figure 20. Farm use parcels as identified by BC Assessment in the RDCO.***

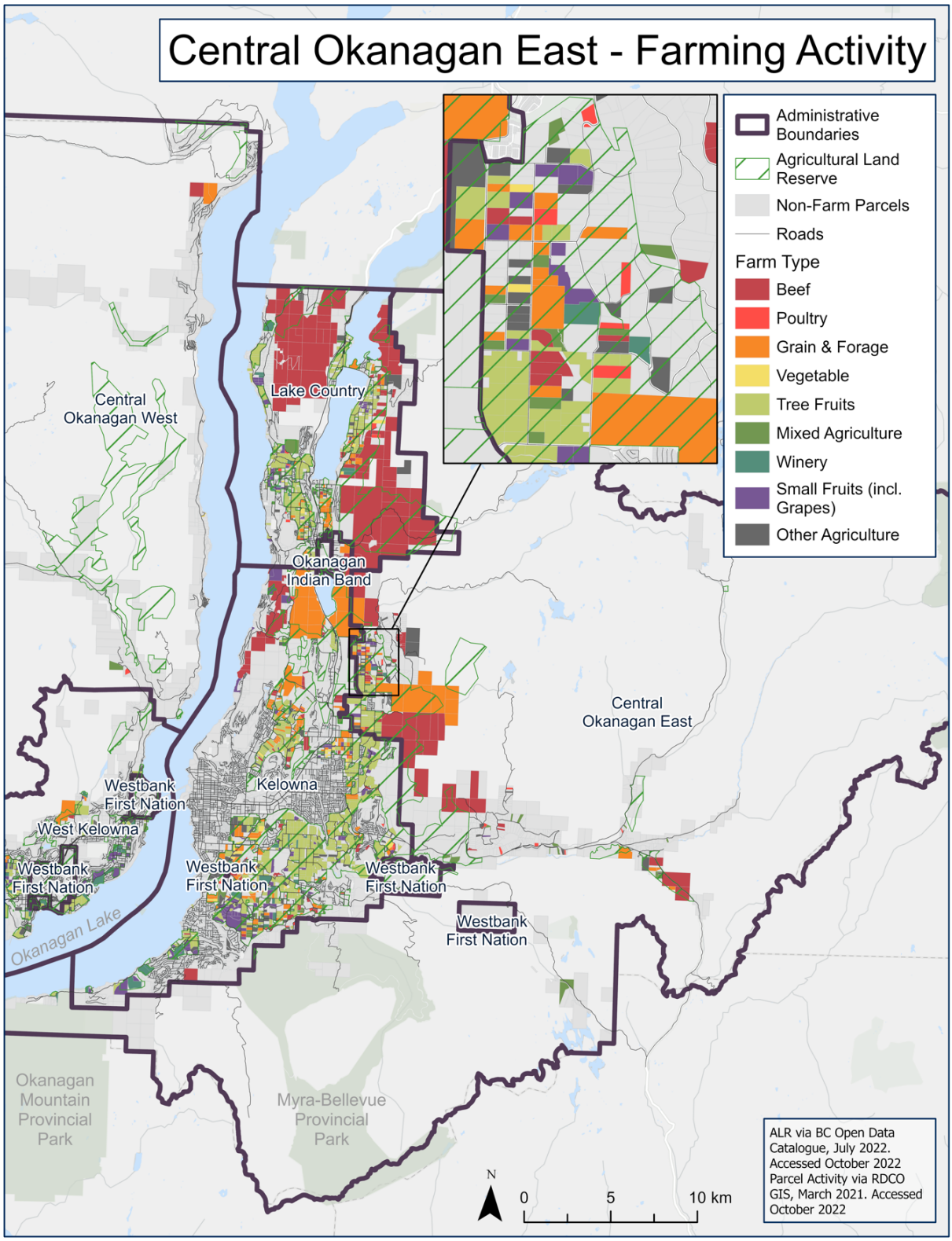


***Figure 21. Farm types as identified by BC Assessment in Central Okanagan East.***

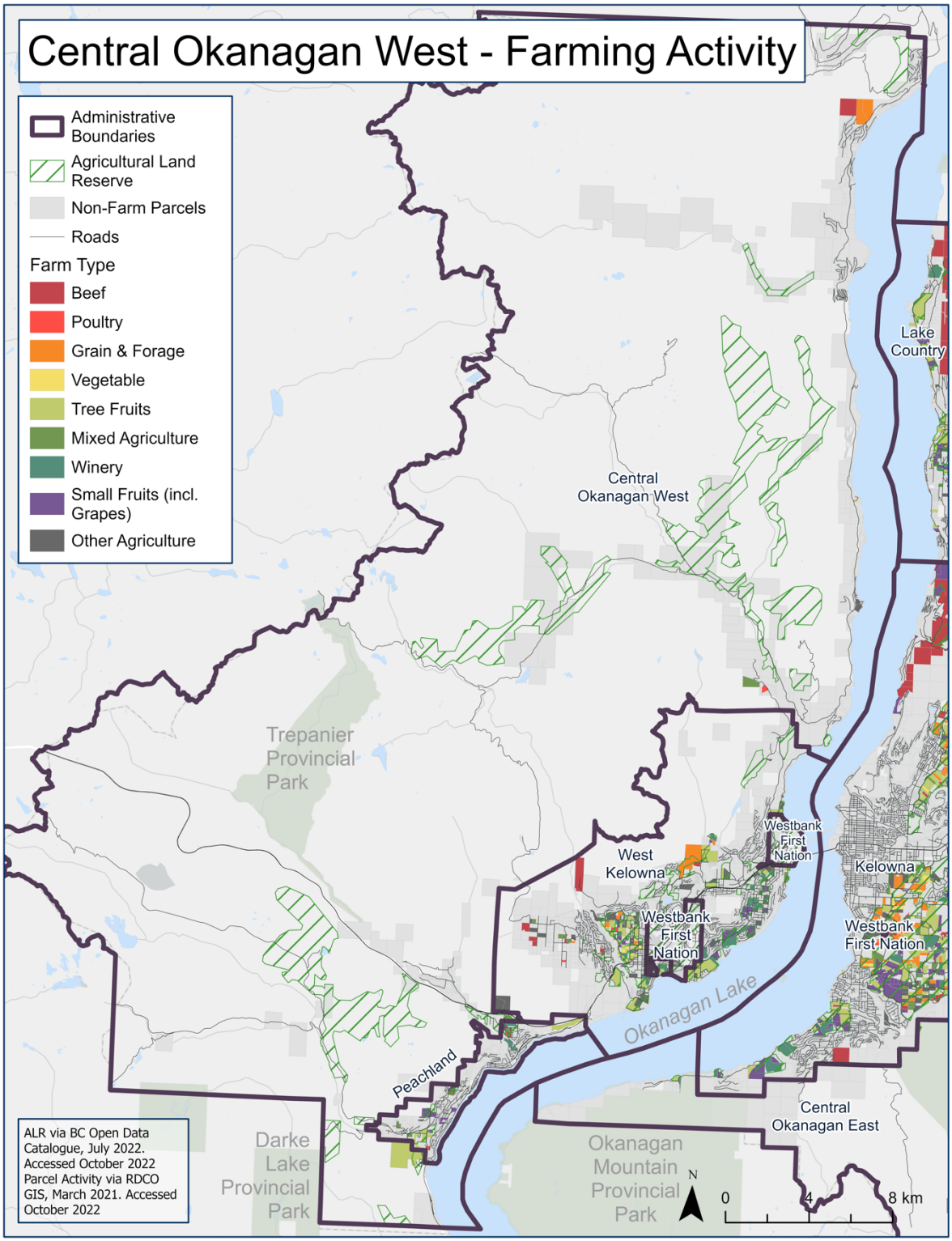


***Figure 22. Farm types as identified by BC Assessment in Central Okanagan West.***

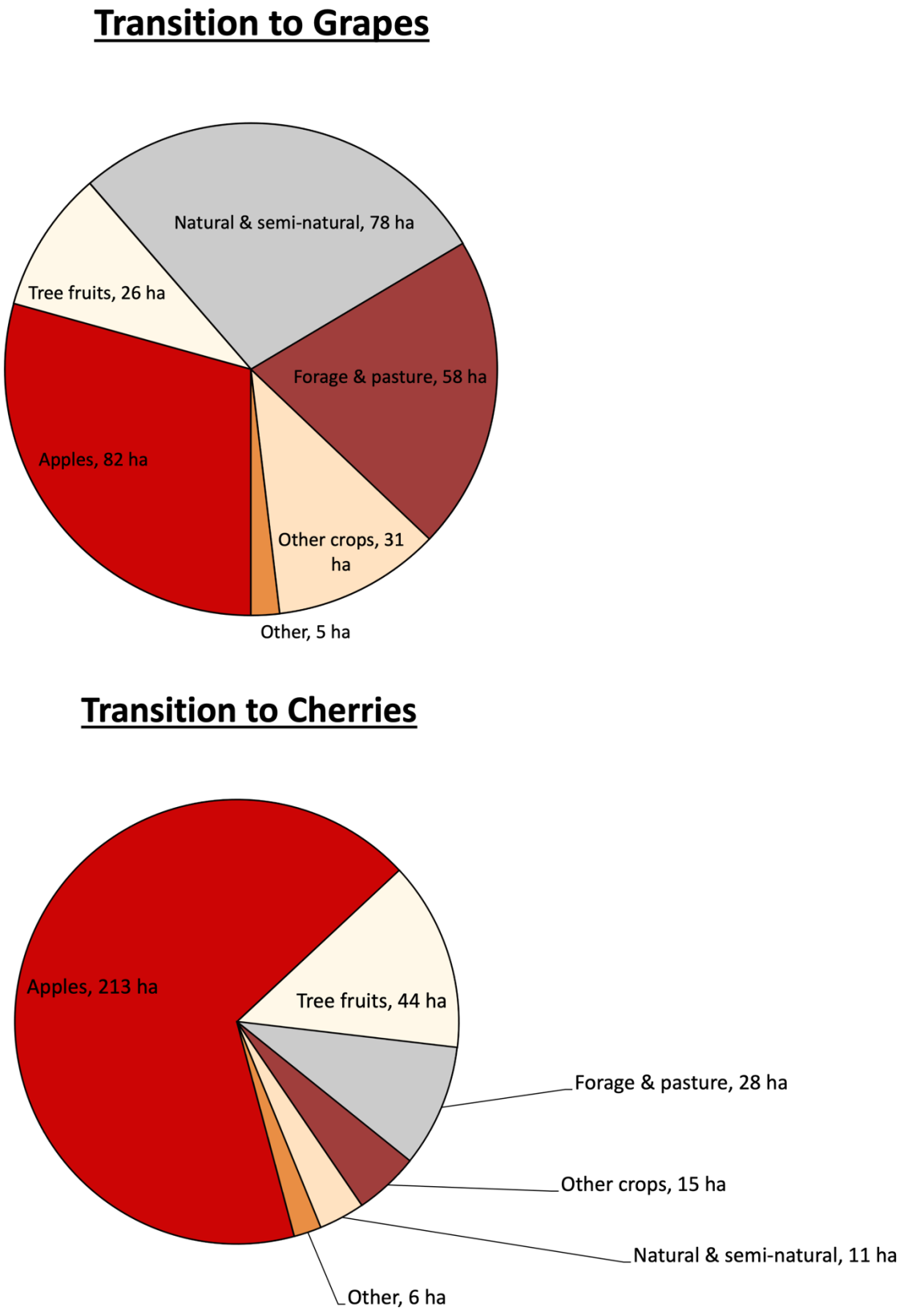


***Figure 23. Transition to grapes and cherries in the RDCO from 2006-2014.***

## 6.3 Agricultural Capability of Farmland and Opportunities for Growth

Not all agricultural lands are created equal and not all agricultural land is capable of, or suitable for, producing all agricultural products. Some agricultural land is more suitable for certain crops than others, and some land is best suited to pasture or grazing lands for livestock. BC's diverse agriculture industry needs all classes of land to thrive.

There are three dominant limiting factors to agricultural lands in RDCO and BC[81]:

1. Climate - defined by the heat energy and moisture inputs available for agricultural production.
2. Soil variability - properties and characteristics affect the land's ability to sustain agricultural products.
3. Topography - can limit access and the ability to use cultivation equipment.

The Canada Land Inventory, developed in the 1980s, used criteria to apply agricultural capability rating for soils in the ALR. There are seven classes[82]:

- Class 1 land is capable of producing the very widest range of crops. Soil and climate conditions are optimum, resulting in easy management.
- Class 2 land is capable of producing a wide range of crops. Minor restrictions of soil or climate may reduce capability but pose no major difficulties in management.
- Class 3 land is capable of producing a fairly wide range of crops under good management practices. Soil and/or climate limitations are somewhat restrictive.
- Class 4 land is capable of a restricted range of crops. Soil and climate conditions require special management considerations.
- Class 5 land is capable of production of cultivated perennial forage crops and specially adapted crops. Soil and/or climate conditions severely limit capability.
- Class 6 land is important in its natural state as grazing land. These lands cannot be cultivated due to soil and/or climate limitations. However, in areas which are climatically suitable for growing tree fruits and grapes the limitations of stoniness and/or topography on some Class 6 lands are not significant limitations to these crops.
- Class 7 land has no capability for soil bound agriculture.

The following are not considered in the classification: distance to market, available transportation facilities, location, farm size, type of ownership, cultural patterns, skill or resources of individual operators, and hazard of crop damage by storms.

The mountainous landscape of the Central Okanagan limits some types of soil-based agriculture, with soil fertility at its highest in the valley bottom. The land in Central Okanagan is largely rated as 4, 5 and 6 in agricultural capability, with pockets of 2 and 3 in the valley bottom. Figure 24 (next page) illustrates the agricultural capability classes in the RDCO. In some cases, agricultural lands can also be improved to produce certain crops through various farm and land management practices such as installing drainage and adding soil amendments.

[81] Agricultural capability and the ALR. 2021. Agricultural Land Commission.
[82] Land Capability Classification for Agriculture in British Columbia.1983. Ministry of Agriculture and Food, Ministry of Environment.

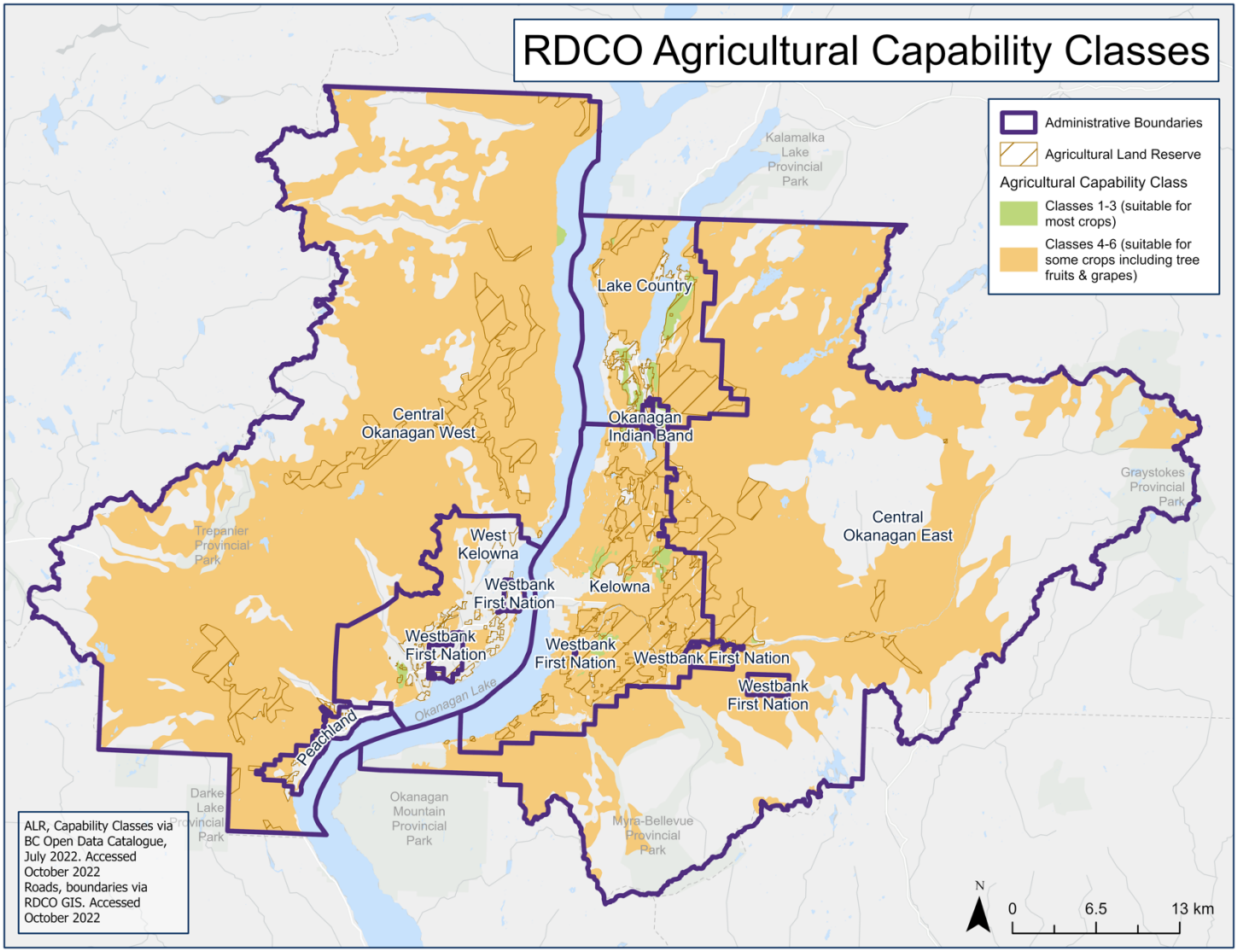


***Figure 24. Agricultural Capability Classes in the RDCO.***

Mapping the ALR and agricultural capability classes can provide some insight into potential future areas of soil based agricultural production. The following four figures identify areas in the Central Okanagan of ALR where soil conditions are potentially suitable for a variety of agricultural uses and where there are currently no farms (as classified by BC Assessment). The 'non-farm parcels' outlined in grey on ALR land are areas where agricultural activities may be developed in the future. Although much of these are Class 5 and 6 agricultural capability lands, they may be agriculturally productive where topography and climate allow and through implementation of land and farming practices that can improve growing conditions. For example, some Class 5 and 6 lands in the Central Okanagan currently support grape production. These maps do not take into consideration any market conditions, or whether or not land uses already occurring on the parcels are incompatible with agriculture.

Potential areas of interest for agricultural expansion may be the corridor along Hwy 33 in Central Okanagan East, and Bear Lake Road area in Central Okanagan West. The corridor along Hwy 33 has areas already cleared of vegetation, has Class 5 or 6 soils, are zoned to allow for agricultural activities and many parcels have no current uses or structures. ALR along Bear Lake road is mainly forested, with small areas of cleared land, with Class 5 or 6 soils. In both areas, limitations to the potential for agricultural growth includes the availability of water and topography. Some of these areas have steep, dirt roads which may be difficult for accessing properties with farm equipment.

As the market conditions in the agriculture sector change, it may become more financially feasible to establish agricultural activities on some of these lands. Producer decisions to put a particular parcel into a particular agricultural production is not a sole reflection of its agricultural capability or suitability. Agricultural business costs, physical accessibility and market vagaries may result in a certain block of land being used or left fallow and this may vary over time. Further, with enough investment, most land can be amended to be suitable for some form of agriculture.

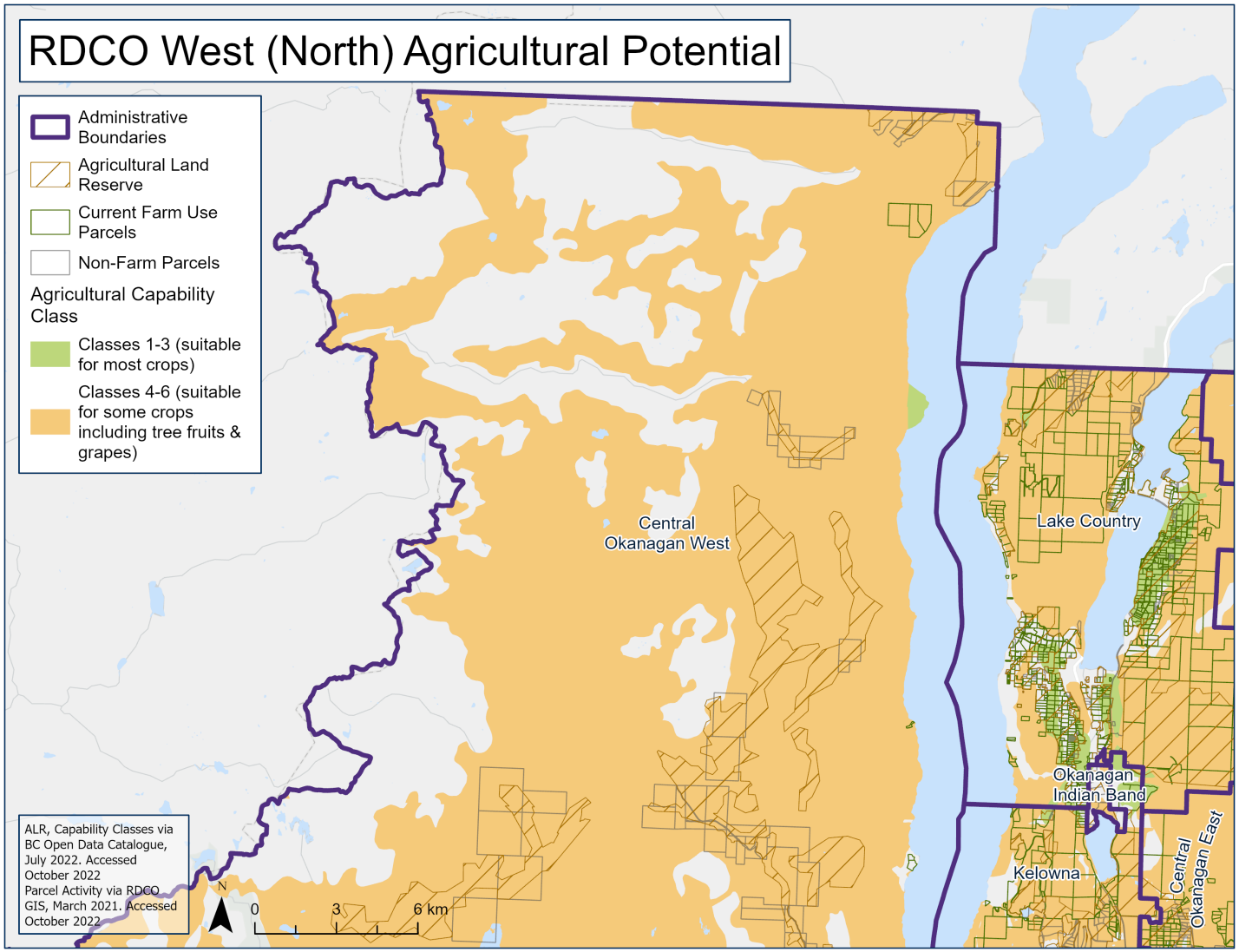


***Figure 25. Farmed (green outline) and non-farmed (grey outline) parcels northwest of Okanagan Lake in RDCO.***

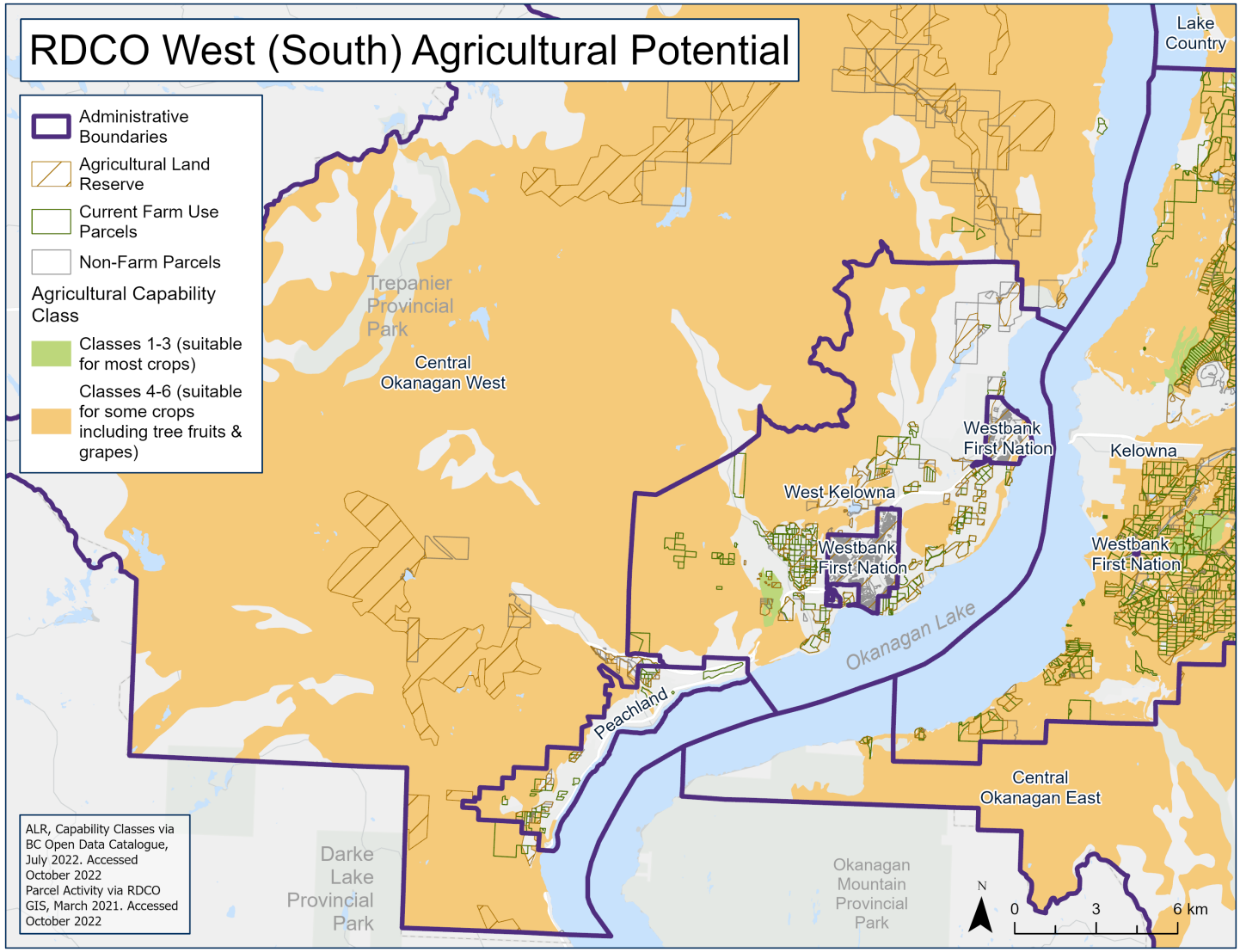


***Figure 26. Farmed (green outline) and non-farmed (grey outline) parcels northwest of Okanagan Lake in RDCO.***

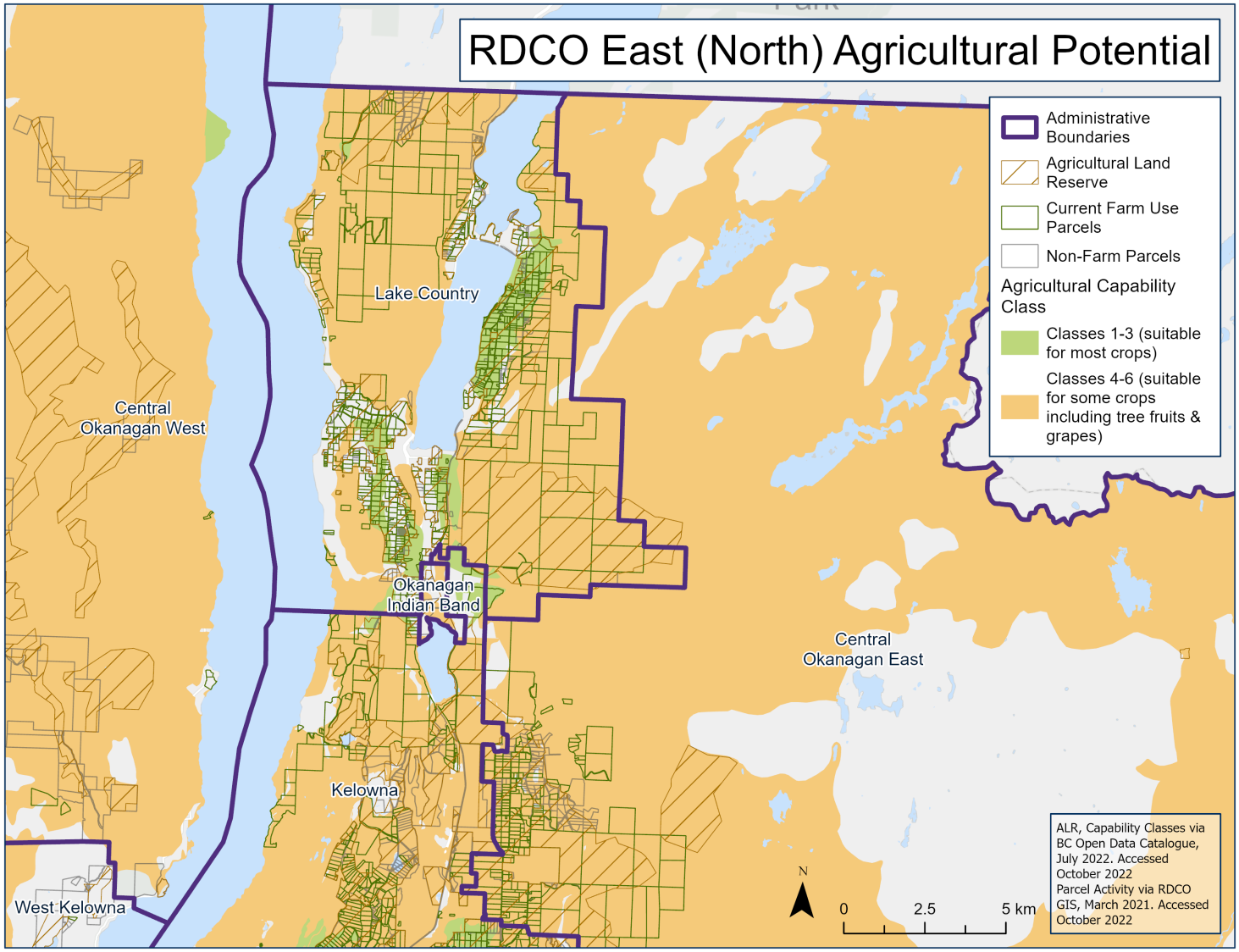


***Figure 27. Farmed (green outline) and non-farmed (grey outline) parcels northeast of Okanagan Lake in RDCO.***

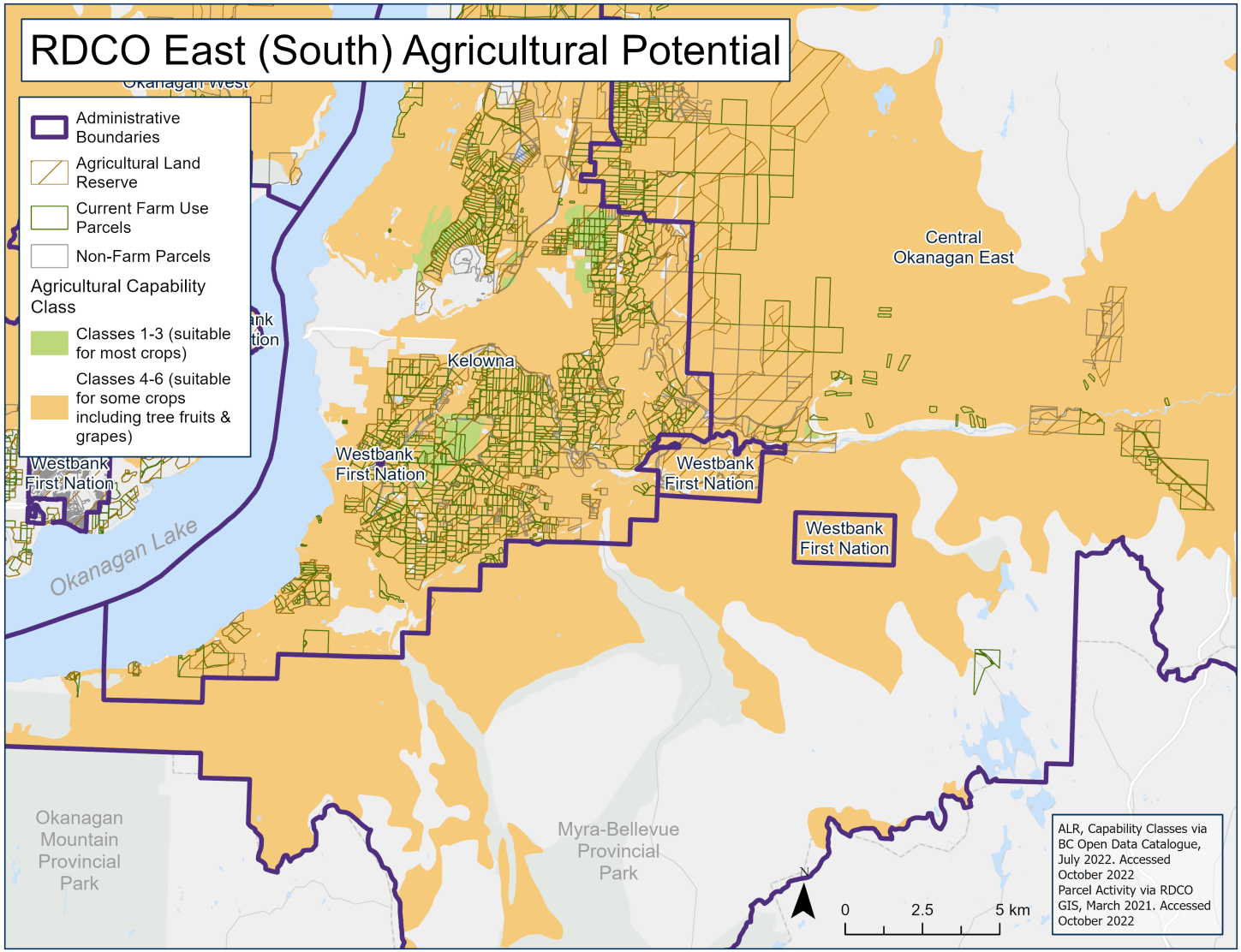


***Figure 28. Farmed (green outline) and non-farmed (grey outline) parcels southeast of Okanagan Lake in RDCO.***

# 7.0 Agriculture Sector Profile

An agriculture profile provides a detailed view of the characteristics of the agriculture sector in Central Okanagan. The information illustrates trends in the sector over time, highlights challenges and gaps, and helps to identify opportunities for sector growth. The Agriculture Profile of the Central Okanagan was constructed primarily using the 2021 Census of Agriculture data from Statistics Canada. The Census of Agriculture data includes all the member municipalities, Electoral Areas and First Nation reserve lands in the RDCO. When possible, BC Assessment farm tax status data is used to describe the characteristics of agriculture in the RDCO EAs.

## 7.1 Farm Characteristics

### 7.1.1 Number, Size and Type of Farm

As mentioned, the majority of the farms in the RDCO are located on the east side of Okanagan Lake. The 2021 Census of Agriculture reports 98 farms on the west side of the lake and 709 farms on the east side. Farms in the Central Okanagan are small in size, with 48% under 10 acres and 41% between 10-69 acres. The small sizes of farms in Central Okanagan are likely related to the type of agricultural production in the region, as fruit and vine crop operations require less of a land base than livestock or dairy operations. Only 5% of farms are over 180 acres, which has risen by 20% since 2011 (from 3.7% to 4.9%) despite a reduction in the total number of farms from 1,020 to 807 during the same time period (Table 11). The decrease in the number of farms less than 69 acres, from 936 to 715, between 2011 and 2021 is likely due in part to the change in how "farm" is defined in the 2021 Census of Agriculture.

***Table 11. Farm sizes in the RDCO in 2011, 2016, and 2021[83].***

| | 2011 | | 2016 | | 2021 | |
|---|---|---|---|---|---|---|
| | # of farms | % | # of farms | % | # of farms | % |
| **Total** | 1,020 | 100 | 879 | 100 | 807 | 100 |
| **Under 10 acres** | 434 | 43 | 393 | 45 | 383 | 47 |
| **10 - 69 acres** | 502 | 49 | 406 | 46 | 332 | 41 |
| **70 – 129 acres** | 30 | 3.0 | 40 | 4.5 | 30 | 3.7 |
| **130 – 179 acres** | 14 | 1.5 | 10 | 1.1 | 23 | 2.9 |
| **180 – 239 acres** | 5 | 0.5 | 4 | 0.4 | 10 | 1.2 |
| **240 – 399 acres** | 12 | 1.1 | 9 | 1.0 | 12 | 1.5 |
| **400 – 559 acres** | 3 | 0.3 | 5 | 0.5 | 2 | 0.3 |
| **560 – 759 acres** | 4 | 0.4 | 1 | 0.1 | 3 | 0.4 |
| **760 acres and over** | 16 | 1.5 | 11 | 1.2 | 12 | 1.5 |

Census of Agriculture data indicates that the most common types of farm operations in the Central Okanagan in 2021 were fruit and nut trees, including grapes (51%), followed by hay production (10%), and vegetable production (7%). Notably, the number of fruit and nut tree farms has been on a steady decrease since 2011. Vegetable farms have been slowly rising, with only a slight dip between 2016 and 2021. Hay, beef, and egg production have all risen between 2011 and 2021, despite the reduction in total number of farms. The number of farm

[83] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.

operations with horses has seen a decline since 2011, which may be due to the change in census "farm" definition or to the increasing costs associated with keeping horses, or a combination of both. There were no floriculture operations reported in the Central Okanagan in 2021 (Table 12).

***Table 12. Number of each type of farm in the RDCO in 2011, 2016, and 2021[84].***

| | 2011 | | 2016 | | 2021 | |
|---|---|---|---|---|---|---|
| | # of farms | % | # of farms | % | # of farms | % |
| **Total** | 1020 | 100 | 879 | 100 | 807 | 100 |
| **Fruit, grapes, and tree nuts** | 517 | 51 | 445 | 50 | 410 | 51 |
| **Hay** | 103 | 10 | 68 | 8 | 84 | 10 |
| **Vegetable** | 45 | 4 | 62 | 7 | 59 | 7 |
| **Horse and equine** | 115 | 11 | 100 | 11 | 57 | 7 |
| **Beef cattle** | 50 | 5 | 39 | 4 | 48 | 6 |
| **Nursery tree** | 68 | 7 | 44 | 5 | 37 | 5 |
| **Poultry and egg** | 30 | 3 | 33 | 4 | 41 | 5 |
| **Apiculture** | 10 | 1 | 16 | 2 | 15 | 2 |
| **Sheep** | 8 | <1 | 11 | 1 | 9 | 1 |
| **Goat** | 8 | <1 | 4 | <1 | 1 | <1 |
| **Dairy cattle** | 0 | 0 | 0 | 0 | 1 | <1 |
| **Hog and pig** | 2 | <1 | 1 | <1 | 2 | <1 |
| **Floriculture** | 13 | 1 | 8 | 1 | 0 | 0 |
| **Oilseed and grain** | 4 | <1 | 3 | <1 | 5 | <1 |

A closer look at livestock inventories for the region show that poultry are most commonly reported on farms, and were present on 140 farms in 2021, down from 167 farms in 2016 (Table 13, next page). A total of 4,303 cattle and calves were found on 83 farms in 2021, a number that has fluctuated by less than 10% since 2011. Goats have seen a large decline with only one farm reporting as primarily a goat operation, and 27 farms reporting goats on mixed operation, which is down from 38 farms in 2016 (Table 13).

Of all of the crops produced in Central Okanagan, fruit (including grapes), berries and nuts are the most common, with sweet cherries making up most of the crop area (1,620 ha (4,000 acres)), followed by apples (1,402 ha (2,460 acres)) and grapes (595 ha (1,470 acres)). Grapes have seen a decline in the area under production in 2021. Alfalfa is also quite commonly produced, being grown on 1,151 ha (2,840 acres) across 118 farms (Note "x" indicates Statistics Canada has suppressed results for privacy reasons, Table 14).

***Table 13. Animal trends on farms in the RDCO in 2011, 2016, and 2021[85].***

| | 2011 | | 2016 | | 2021 | |
|---|---|---|---|---|---|---|
| | **# of farms** | **# of animals** | **# of farms** | **# of animals** | **# of farms** | **# of animals** |
| **Cattle & calves** | 96 | 4,215 | 78 | 3,733 | 83 | 4,303 |
| **Horses & ponies** | 183 | 1,327 | 152 | 1,092 | 76 | 664 |

[84] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.
[85] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.

| | 2011 | | 2016 | | 2021 | |
|---|---|---|---|---|---|---|
| | **# of farms** | **# of animals** | **# of farms** | **# of animals** | **# of farms** | **# of animals** |
| **Llamas & alpacas** | 29 | 224 | 18 | 99 | 11 | 120 |
| **Hens & chickens** | 157 | 76,087 | 167 | 10,883 | 140 | x |
| **Sheep & lambs** | 29 | 1,007 | 44 | 806 | 29 | x |
| **Pigs** | 10 | 79 | 12 | 44 | 15 | x |
| **Goats** | 38 | 329 | 32 | 241 | 27 | x |

Note: "x" indicates Statistics Canada has supressed the results for privacy reasons.

***Table 14. Most common crops grown in the RDCO in 2011, 2016, and 2021.***[86]

| **Crops** | **2011** | | | **2016** | | | **2021** | | |
|---|---|---|---|---|---|---|---|---|---|
| | # of farms | ha | acres | # of farms | ha | acres | # of farms | ha | acres |
| **Fruits, berries & nuts** | 572 | 3,409 | 8,424 | 502 | 3,677 | 9,086 | 474 | 3,879 | 9,585 |
| *Cherries* | 184 | 640 | 1,582 | 172 | 868 | 2,145 | 175 | 1,620 | 4,003 |
| *Apples* | 284 | 1,625 | 4,016 | 245 | 1,569 | 3,877 | 242 | 1,402 | 3,464 |
| *Grapes* | 144 | 855 | 2,113 | 148 | 946 | 2,338 | 128 | 595 | 1,470 |
| *Peaches* | 105 | 65 | 160 | 93 | 53 | 131 | 90 | 56 | 138 |
| *Apricots* | 65 | 13 | 32 | 67 | 25 | 62 | 48 | 15 | 37 |
| *Raspberries* | 37 | 8 | 20 | 40 | 6 | 15 | 43 | 7 | 17 |
| *Strawberries* | 10 | 5 | 12 | 21 | 4 | 10 | 22 | 7 | 17 |
| **Alfalfa** | 191 | 1,428 | 3,529 | 149 | 942 | 2,328 | 118 | 1,151 | 2,844 |
| **Field vegetables** | 107 | 163 | 403 | 121 | 121 | 299 | 119 | 98 | 242 |
| **Tame hay & fodder** | 47 | 442 | 1,092 | 42 | 325 | 803 | 69 | x | x |
| **TOTAL** | **917** | **5,442** | **13,448** | **814** | **5,065** | **12,516** | **780** | **5,128** | **12,672** |

[86] Ibid.

The BC Assessment farm class data provides details about the numbers and types of farm operations within each Electoral Area (Table 15).[87]

***Table 15. Area assessed as farm tax class in RDCO Electoral Areas in 2021.***

| Farm Type | Central Okanagan West | | Central Okanagan East | |
|---|---|---|---|---|
| | **hectares** | **acres** | **hectares** | **acres** |
| **Tree Fruits (including grapes)** | 159 | 393 | 333 | 823 |
| **Small Fruits** | 0 | 0 | 72 | 178 |
| **Vegetable** | 2 | 5 | 8 | 20 |
| **Grain & Forage** | 86 | 213 | 1,053 | 2,602 |
| **Beef** | 65 | 160 | 1,897 | 4,688 |
| **Dairy** | 0 | 0 | 0 | 0 |
| **Poultry** | 7 | 17 | 39 | 96 |
| **Mixed** | 41 | 101 | 160 | 395 |
| **Winery** | 0 | 0 | 17 | 42 |
| **Other** | 13 | 32 | 262 | 647 |
| **Total** | **373** | **922** | **3,851** | **9,516** |

The 2021 Census reported 41 greenhouses across the Central Okanagan, with a coverage of 67,815m$^2$ in total floor area. Greenhouse numbers have been on a steady and consistent rise from 31 farms in 2011 to 41 farms in 2021

Table 16). Unfortunately, the Census did not report the areas of greenhouse fruits and vegetables grown because of unreliable data. The largest use of reported greenhouse space in 2021 is potted plants (Table 17).

***Table 16. Number of greenhouses and area in use in RDCO in 2011, 2016, and 2021[88].***

| | 2011 | | 2016 | | 2021 | |
|---|---|---|---|---|---|---|
| | # of farms | m$^2$ | # of farms | m$^2$ | # of farms | m$^2$ |
| **Greenhouse farms and area in use** | 31 | 38,204 | 30 | 42,026 | 41 | 67,815 |

***Table 17. Greenhouse production in RDCO in 2021 as per Census of Agriculture.***

| | 2021 | |
|---|---|---|
| | # of farms | m$^2$ |
| **Greenhouse fruits and vegetables** | 29 | x |
| **Greenhouse cut flowers** | 2 | 4,075 |
| **Greenhouse potted plants** | 9 | 36,553 |
| **Other greenhouse crops** | 12 | 13,922 |

[87] BC Farm Tax Assessment parcel data, 2021. BC Assessment.
[88] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.

### 7.1.2 Environmental Farm Practices

From 2011 to 2021, there have not be large changes in the percentage of farms using certain environmental land practices. Plowing down green crops has remained relatively steady with 4% of farms utilizing this practice and winter cover cropping which is practiced by about 3% of farms. Windbreaks and shelterbelts on farms have increased by 10% since 2011 (Table 18). These overall small proportions of farms using these activities suggests opportunities for expansion of environmental practices over more of the land base.

***Table 18. Land practices utilized on farms in the RDCO in 2011, 2016, and 2021.[89]***

| Land Practice | 2011 | | 2016 | | 2021 | |
|---|---|---|---|---|---|---|
| | # of farms | % | # of farms | % | # of farms | % |
| **Total** | 1,020 | 100 | 879 | 100 | 879 | 100 |
| **Rotational grazing** | 129 | 13 | 109 | 12 | 109 | 12 |
| **In-field winter grazing** | 73 | 7 | 94 | 11 | 94 | 11 |
| **Windbreaks or shelterbelts** | 92 | 10 | 105 | 12 | 105 | 12 |
| **Plowing down green crops** | 73 | 7 | 41 | 5 | 41 | 5 |
| **Winter cover crops** | 57 | 6 | 32 | 4 | 32 | 4 |

Commercial fertilizers and herbicides are each used on 5% fewer farms in 2021 than in 2011 (Table 19). Insecticides were used on 8% fewer farms in 2021 as compared to 2011 and are a part of a longer trend of pesticide reduction which may be associated with the Okanagan-Kootenay Sterile Insect Release (OKSIR) program.

***Table 19. Agricultural land inputs utilized on farms in the RDCO in 2011, 2016, and 2021.90***

| | 2011 | | | 2016 | | | 2021 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Inputs** | # of farms | ha | acres | # of farms | ha | acres | # of farms | ha | acres |
| **Commercial fertilizer** | 449 | 4,338 | 10,719 | 356 | 3,726 | 9,207 | 322 | 3,204 | 7,917 |
| **Manure or compost incorporated in soil** | 115 | 647 | 1,599 | 123 | 800 | 1,977 | 87 | x | X |
| **Manure or compost not incorporated in soil** | 60 | 189 | 467 | 86 | 328 | 811 | 63 | x | x |
| **Herbicides** | 375 | 8,672 | 21,429 | 319 | 3,341 | 8,256 | 253 | 2,483 | 6,136 |
| **Insecticides** | 372 | 3,172 | 7,838 | 305 | 3,152 | 7,789 | 197 | 2,322 | 5,738 |

[89] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.
[90] Ibid.

### 7.1.3 Agricultural Workforce

There are several data sources that can be used to estimate the labour and employment numbers related to the Central Okanagan agriculture sector. Statistics Canada's Canadian Business Counts show 272 registered businesses within agriculture, food, and/or beverage North American Industry Classification System (NAICS) codes in the Kelowna Census Metropolitan Area (which includes the City of Kelowna, District of Lake Country and City of West Kelowna) as of June 2022 (Table 20). These businesses include crop production, animal production and aquaculture, and businesses which provide support for agriculture and forestry.

***Table 20. Registered businesses with employees in the Kelowna CMA in June 2022.***[91]

| NAICS Category [industry codes] | Number of Businesses |
|---|---|
| **Crop production [111]** | 157 |
| **Animal production and aquaculture [112]** | 29 |
| **Support activities for agriculture and forestry [115]** | 19 |
| **Beverage manufacturing [3121]** | 67 |
| **Total** | **272** |

The Census of Population provides labour counts based on the NAICS industry sector of agriculture, forestry, fishing, and hunting. Although it is difficult to tease out agriculture from this dataset, it provides an additional data point when exploring agricultural labour counts (Table 21).

***Table 21. Agricultural sector labour counts for Central Okanagan communities in 2021.***[92]

| NAICS Category 11: Agriculture, forestry, fishing, and hunting | Labour force |
|---|---|
| **Regional District of Central Okanagan East** | 95 |
| **Regional District of Central Okanagan West** | 55 |
| **District of Lake Country** | 365 |
| **City of Kelowna** | 1,315 |
| **City of West Kelowna** | 285 |
| **District of Summerland** | 325 |
| **Total** | **2,440** |

[91] Canadian Business Counts for the Kelowna Census Metropolitan Area, June 2022. Statistics Canada.
[92] Census of Population Labour Statistics, 2021. Statistics Canada.

More detailed Census of Population data is available for 2016, which reveals the number of employees on farms in the Central Okanagan as of 2016 as 970 individuals, with a further 615 individuals identifying as self-employed (Table 22).

***Table 22. Employment by industry category in the Central Okanagan in 2016[93].***

| NAICS Categories [codes] | Employee | Self-employed |
|---|---|---|
| **Farms [111 & 112]** | 970 | 615 |
| **Support activities for farms [1151 & 1152]** | 80 | 20 |
| **Food manufacturing [311]** | 590 | 85 |
| **Beverage manufacturing [3121]** | 610 | 75 |
| **Total** | **2,250** | **795** |

Full time and part time farm labour has remained fairly steady in the Central Okanagan between 2016 and 2021, with over 600 employees working in these categories according to the Census of Agriculture (Table 23). A majority of the labour force is being employed as seasonal or temporary workers however, which saw numbers reduced by more than half between 2016 and 2021 (3,801 employees to 1,790 employees). This drop is likely associated with the reduced number of farms captured in the Census of Agriculture as well as implications associated with the COVID-19 pandemic that created difficulties for national and international labourers to travel to the region for seasonal and temporary employment. There was also a drop in the number of farms reporting family members working on farms between 2016 and 2021. This could be related to slight change in wording between the 2016 and 2021 census. The 2016 census specified "an employee who is a family member" which may capture individuals working in sales, marketing or agri-tourism, while the 2021 census states "an agricultural worker who is a family member", limiting the potential roles to those of agricultural production.

***Table 23. Farm labour characteristics in the RDCO in 2016 and 2021.[94]***

| | 2016 | | 2021 | |
|---|---|---|---|---|
| **Labour Types** | Farms reporting | Total employees | Farms reporting | Total employees |
| **Year-round full time** | 91 | 414 | 80 | 378 |
| **Year-round part time** | 53 | 252 | 53 | 228 |
| **Seasonal/ Temporary** | 272 | 3,801 | 154 | 1,790 |
| **Family members (agricultural workers)** | 154 | 290 | 72 | 150 |

According to the Census of Agriculture, farms in in Central Okanagan are most often run by two operators (Table 24). Operators are also most often (60%) male. Despite the increasing average age of operators, which sits at 59 in 2021, only 75 (9%) of Central Okanagan's 807 farms have a written succession plan.

[93] Census of Population, 2016. Statistics Canada.
[94] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.

*Table 24. Farm demographics in the RDCO[95].*

| | 2011 | 2016 | 2021 |
|---|---|---|---|
| **Total number of operators** | 1,520 | 1,300 | 1,215 |
| **Farms with one operator** | 535 | 475 | 410 |
| **Farms with two or more operators** | 990 | 825 | 800 |
| **Male operators** | 985 | 845 | 735 |
| **Female operators** | 535 | 450 | 475 |
| **Average age** | 57 | 58 | 59 |
| **Farms with written succession plans** | x | 79 | 75 |

### 7.1.4 Farmland Tenure

Farmland tenure can be an indicator of farm stability within a region, with land ownership indicating the most stability. In Central Okanagan, a vast majority of farms (95%) are operating on land that is owned (Table 25, next page). Many also operate using a combination of owned and leased land.

[95] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.

***Table 25. Land tenure on farms in the RDCO in 2011, 2016, and 2021[96].***

| | 2011 | | | | 2016 | | | | 2021 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **# farms reporting** | **ha** | **acres** | **% of farms** | **# farms reporting** | **ha** | **acres** | **% of farms** | **# farms reporting** | **ha** | **acres** | **% of farms** |
| **Total farm area** | **1,020** | **31,368** | **77,511** | **100%** | **879** | **23,461** | **57,973** | **100%** | **807** | **20,888** | **51,615** | **100%** |
| **Owned** | 967 | 19,566 | 48,348 | 95% | 839 | 16,811 | 41,541 | 95% | 766 | 14,716 | 36,363 | 95% |
| **Leased from governments** | 22 | 6,543 | 16,168 | 2% | 13 | 5,142 | 12,706 | 1% | 16 | 4,714 | 11,649 | 2% |
| **Rented or leased from others** | 149 | 5,460 | 13,492 | 15% | 127 | 3,118 | 7,705 | 14% | 120 | x | x | 15% |
| **Crop-shared land used by the operation** | 19 | 294 | 119 | 2% | 31 | 300 | 742 | 4% | 23 | x | x | 3% |
| **Other land used by the operation** | 33 | 158 | 391 | 3% | 19 | 91 | 158 | 10% | 15 | x | x | 2% |
| **Total area of land used by others** | 89 | 478 | 1,180 | 9% | 59 | 4,945 | 2,001 | 7% | 66 | 1,806 | 4,463 | 8% |

Note: The "number of farms reporting" does not equal the sum of the parts because farms reporting more than one category (or activity) are only counted once. "Total farm area" is the difference between the sum of all land tenures minus "Total area used by others."

[96] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.

## 7.2 Farm Profitability

Producers in the region must offset revenues with expenses for capital assets (e.g. land, buildings, equipment) and operational needs (e.g. labour, inputs and fuel). Outside of supply-managed commodities, such as dairy or eggs, most BC producers struggle to afford to reinvest and/or expand their operations. Many farmers rely on financial assistance through grants or loans and often one family member must work off the farm. Farm profitability is difficult to measure or to estimate. The following proxies can be used:

- Farm capital and assets
- Gross farm receipts, revenues and gross margin
- Average farm revenues

These are each discussed within the Central Okanagan context below.

### 7.2.1 Farm Capital and Assets

Total farm capital in the Central Okanagan has risen by over $407.7 million since 2016, most of which can be attributed to rise in the value of capital assets, such as land and buildings (Table 26). This rise is likely due to the large increase in the value of land which is seen across BC. Note that all Census of Agriculture dollar values are based on the current dollar of the reference year and therefore do not account for inflation. The value of land and buildings owned, leased, and/or rented reflects present market values as reported by respondents. In addition to land and buildings, machinery and equipment saw a rise of over $9 million in value. This is likely associated with equipment upgrades including improving technology.

For the Okanagan Valley (including north, central, and south Okanagan regions) the value of farmland rose by 21% in 2021, for an average of $29,700/acre ($73,300/ha), with a range from $20,700 – $88,300/acre or $51,100-218,100/ha.[97] This greater equity can have a benefit to farm operators, in that it can result in eligibility for additional borrowing from lending agencies to reinvest in land, buildings, equipment, livestock, or operational expenses. However with rising inflation and interest rates, it is likely that this opportunity for increased borrowing has been tempered. The rise in land values has a knock-on effect on the impact of new entrants and the challenges involved in gaining access to land. With such high land values, real estate transactions involving farmland can sway towards sales to higher net worth buyers who are not farmers, which in turn can lead to an erosion of the agricultural character of the community if it results in farmland sitting unproductive and idle.

***Table 26. Farm capital in the RDCO[98].***

| | 2011 ($) | 2016 ($) | 2021 ($) |
|---|---|---|---|
| **Total farm capital** | 1,928,948,986 | 2,021,183,744 | 2,428,892,768 |
| **Land & buildings (owned)** | 1,537,770,546 | 1,700,845,537 | 1,897,037,901 |
| **Machinery & equipment** | 66,362,653 | 73,714,123 | 82,941,957 |
| **Livestock & poultry** | 6,185,158 | 9,794,434 | 9,202,460 |

[97] Farmland Values Report. 2021. Farm Credit Canada.
[98] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.

At the time of writing, a search of real estate listings online indicated 16 active listings in the ALR for the Central Okanagan region (Table 27)[99]. Properties with residences are priced 3 -5 times higher than vacant properties in the ALR.

***Table 27. Agricultural Real Estate Listings in the Central Okanagan in 2022 [100].***

| Community | Listing Price | Size (acres/ha) | $/acre $/ha | Residence |
|---|---|---|---|---|
| **West Kelowna** | $2,150,000 | 9.4 / 3.8 | $228,723 /acre $565,789 /ha | None |
| **Kelowna (South)** | $4,250,000 | 6.6 / 2.7 | $643,939 / acre $1,574,074 /ha | House built in 1959 3 bedrooms |
| **Kelowna (South)** | $3,595,000 | 18.0 / 7.3 | $199,722 / acre $492,465 / ha | House built in 1968 3 bedrooms |
| **Kelowna (South East)** | $2,500,000 | 5.2 / 2.1 | $480,769 / acre $1,190,476 / ha | House built in 1972 4 bedrooms |
| **Kelowna (South East)** | $3,700,000 | 8.3 / 3.4 | $445,783 / acre $1,088,235 / ha | House built in 2016 4 bedrooms |
| **Kelowna (South East)** | $2,700,000 | 29.9 / 12.1 | $90,301 / acre $223,140 / ha | None |
| **Kelowna (South)** | $1,250,000 | 5.0 / 2.0 | $250,000 / acre $625,000 / ha | None |
| **Kelowna (South)** | $1,650,000 | 5.1 / 2.0 | $330,000 / acre $825,000 / ha | House built in 1970 4 bedrooms |
| **Kelowna** | $2,995,000 | 5.5 / 2.2 | $544,545 / acre $1,361,363 / ha | House built in 2006 5 bedrooms |
| **Kelowna** | $4,995,000 | 13.4 / 5.4 | $372,761 / acre $925,000 / ha | House built in 1998 3 bedrooms |
| **Kelowna** | $15,000,000 | 30.4 / 12.3 | $493,421 / acre $1,219,512 / ha | None |
| **Kelowna** | $4,600,000 | 10.0 / 4.0 | $460,000 / acre $1,150,000 / ha | House built in 2005 4 bedrooms |
| **Kelowna** | $1,690,000 | 10.0 / 4.0 | $169,000 / acre $422,500 / ha | House built in 2005 3 bedrooms |
| **Kelowna** | $3,299,000 | 10.0 / 4.0 | $329,900 / acre $824,750 / ha | House built in 1980 4 bedrooms |
| **Lake Country (Oyama)** | $7,598,000 | 26.8 / 10.9 | $283,507 / acre $697,064 / ha | None |
| **Lake Country** | $625,000 | 10.5 / 4.1 | $59,524 / acre $152,439 / ha | None |

[99] Online search for agricultural properties in the Central Okanagan. Accessed December 2022. Multiple Listing Services (MLS) Canada

[100]. Census of Agriculture, 2011, 2016, 2021. Statistics Canada

### 7.2.2 Gross Farm Receipts, Revenues and Gross Farm Margin

Due to the change in the method Statistics Canada gathers information on farm revenues, it is difficult to compare revenue trends over time.[101] An observation that can be drawn is that operating revenues (2021 data) and gross receipts (2011 and 2016 data) are under $25,000 for the majority of farms over the past decade (Table 28). In 2021, 70 farms in the Central Okanagan reported no revenues at all, but were captured in the census because they reported expenses to the CRA. There are large differences in revenues reported for Central Okanagan farms. In contrast to those with low operating revenues, 100 farms (12%) reported operating revenues of $250,000 or more.

***Table 28. Gross Farm Receipts in the RDCO in 2011, 2016, and 2021.[102]***

| Distribution Category | 2011 Gross Farm Receipts | 2016 Gross Farm Receipts | 2021 Farm Operating Revenue |
|---|---|---|---|
| **Total farms (%)** | 1,020 (100%) | 879 (100%) | 807 (100%) |
| **$0** | N/A | N/A | 70 (9%) |
| **$1- $9,000** | 547 (54%) | 411 (47%) | 305 (38%) |
| **$10,000 – $24,999** | 136 (13%) | 140 (16%) | 108 (13%) |
| **$25,000 - $49,999** | 101 (10%) | 84 (9%) | 80 (10%) |
| **$50,000 - $99,000** | 85 (8%) | 84 (9%) | 67 (8%) |
| **$100,000 – $249,999** | 80 (8%) | 69 (8%) | 77 (10%) |
| **$250,000 – $499,999** | 41 (4%) | 50 (6%) | 40 (5%) |
| **$500,000 and above** | 30 (3%) | 41 (5%) | 60 (7%) |

Gross margin is another indicator of profitability can be calculated by determining the net revenues, which are gross revenues less operating expenses, and then presenting that difference as a percent of the gross farm revenues.

In 2021, gross margin for farms in the Central Okanagan was 10.0%, down from 13.7% in 2016 (Table 29, next page).

[101] Note from Statistics Canada: The data for 2020 total farm operating revenues and expenses use a different concept and a different source than previous Censuses of Agriculture. To reduce the burden on respondents, total farm operating revenues and expenses come from the Agriculture Taxation Data Program and reflect the tax revenues and expenses of farm businesses reporting to the Canada Revenue Agency. Previously, revenues and expenses for agricultural operations were reported to the Census of Agriculture. Caution should be taken when comparing the 2021 Census of Agriculture data with previous censuses.

[102] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.

***Table 29. Gross Margin of Farm Operations in the RDCO[103].***

| Year | Gross farm revenues (Million $) | Total operating expenses (Million $) | Net Revenues ($) | Gross margin (%) |
|---|---|---|---|---|
| **2011** | 96,546,394 | 92,955,812 | 3,590,582 | 3.7% |
| **2016** | 120,147,514 | 102,449,395 | 17,697,786 | 14.7% |
| **2021** | 187,375,495 | 168,578,590 | 18,796,905 | 10.0% |

### 7.2.3 Average Farm Revenues

The net revenues for the Central Okanagan agricultural sector can be divided by the number of farms to get a sense of the average net revenues per farm. This average does not account for the type of farming occurring, the land tenure (whether a mortgage exists on the property or not) or the intensity of farming. However, even without adjusting for inflation there is a marked increase in net revenues between 2011 and 2016, even with a reduction in overall farm numbers. This can point to an intensification in the farming activities occurring on per farm basis. The farm revenues for the Central Okanagan are also heavily influenced by fluctuations in the price points of a few commodity groups such as apples and cherries. The net revenues per farm calculated in Table 30 should therefore be used with caution, given the above considerations.

***Table 30. Average gross revenue per farm in the RDCO in 2021[104].***

| Year | # of Farms | Total Farm Revenues ($) | Total Operating Expenses ($) | Net Revenues ($) | Net Revenues per Farm ($) |
|---|---|---|---|---|---|
| **2011** | 1,020 | 96,546,394 | 92,955,812 | 3,590,582 | 3,520 |
| **2016** | 879 | 120,147,514 | 102,449,395 | 17,697,786 | 20,134 |
| **2021** | 807 | 187,375,495 | 168,578,590 | 18,796,905 | 23,292 |

If the average net revenues per farm in 2021 is estimated at roughly at $23,000, this translates to about $2,000 per month. With farmland valued at an average of $29,700/acre ($73,300/ha), a 10 acre (4 ha) property would cost at least $297,000. With a residence on the property the values would be much higher (see Table 27).

For new entrants wishing to purchase land, the investment is very high compared to the potential annual revenues from the land. This presents a huge challenge for farm economic viability. For producers that have owned land for generations, or do not have large mortgages, profit margins and net revenues will be larger. Profitability will also depend on the type of agricultural activity; for example, ranches have larger areas of land with lower input costs and lower revenues per hectare than a winery or cherry orchard. The fluctuation in prices producers fetch for their products on the open market also impacts overall revenues and profitability.

[103] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.
[104] Ibid.

## 7.3 Cannabis

In 2018, the federal *Cannabis Act* legalized recreational cannabis use in Canada. The *Cannabis Act* regulates several areas related to the legalization of cannabis including providing access to a quality-controlled supply of cannabis and protect the health of young persons by restricting their access to cannabis. In 2019, the ALR Use Regulation was created and designated all forms of cannabis production as an allowable farm use in the ALR.[105] However, the ALR Use Regulation specifically allows local governments to prohibit cannabis production in certain forms, and certain other activities associated with cannabis production, such as fill placement or soil removal, may still require proponents to engage with the Agricultural Land Commission.

Local governments play a significant role in determining what kind of cannabis production occurs in their community. Local governments may regulate or prohibit certain kinds of cannabis production, though may not prohibit all forms of cannabis production. Section 8 of the ALR Use Regulation provides:

1) The use of agricultural land for producing cannabis lawfully may not be prohibited as described in section 4 if the cannabis is produced (a) outdoors in a field, or (b) inside a structure that, subject to subsection (2), has a base consisting entirely of soil.

2) The use of agricultural land for producing cannabis lawfully may not be prohibited as described in section 4 if the cannabis is produced inside a structure that meets both of the following conditions: (A) the structure was, before July 13, 2018, constructed for the purpose of growing crops inside it, including but not limited to producing cannabis lawfully, or under construction for the purpose referred to in subparagraph (i), if that construction was being conducted in accordance with all applicable authorizations and enactments, and (B) continues without interruption from the date it began until the date the structure is completed, other than work stoppages considered reasonable in the building industry; the structure has not been altered since July 13, 2018 to increase the size of its base or to change the material used as its base.

The City of Kelowna, City of West Kelowna, District of Lake Country and District of Peachland have all created and/or updated land use bylaws that address the cultivation and sales of retail within their boundaries. The RDCO addresses Cannabis in Section 3.13 and 3.31 of the Zoning Bylaw (No. 871). Generally, this bylaw prohibits Cannabis sales facilities in all zones and Cannabis production facilities are prohibited in the ALR unless it is field production with buildings on a soil base, among other conditions. The ZBL No. 871 also regulates parcel size, setbacks, and possible negative impacts associated with operations. Additionally, Part 2, Section 3.14.5 and 3.17 of the Joe Rich Rural Land Use Bylaw regulates Cannabis-related land uses in a similar way to the RDCO ZBL (No. 871).

It is difficult establish the exact number of outdoor cannabis farms and indoor cannabis production facilities in the RDCO. According to business licenses, there are approximately 10 cannabis production activities in the City of Kelowna.[106]

## 7.4 Agri-tourism

Agri-tourism is an established activity in the RDCO and many agri-tourism operations are thriving and operating as economic drivers for the region. Over 2 million people visit the Okanagan and many people come to the region for reasons directly related to the agricultural sector. While the Central Okanagan offers a variety of agricultural offerings, the wine industry

[105] Cannabis Production in the ALR. 2018. Agricultural Land Commission
[106] Business Licence database. Accessed November 2022. City of Kelowna,

is the largest driver of agri-tourism in the region.[107] The 2018 Statistics Canada Business Counts for Central Okanagan registered 794 agri-food businesses in the region the top three sectors by total businesses were:

- Fruit and tree nut farming (299)
- Other crop farming (103)
- Beverage manufacturing (73)

Often agri-tourism activities include a strong educational component which is valued by visitors. Agri-tourism also offers an opportunity for producers to diversify their income streams, by hosting events, tours, educational sessions, or u-picks. Agri-tourism is also driven by non-farming organizations who aim to raise awareness for local food production and to showcase the agricultural offerings of a region.

In Kelowna Feast of Fields is an example of a non-farm-based event which serves as an agri-tourism opportunity. Hosted in part by Farm Folk City Folk and in collaboration with local producers and chefs, Okanagan Feast of Fields in an annual celebration of local food and beverages through three-hour wandering gourmet harvest festival that highlights the connections between farmers and chefs, field and table, and farm folks and city folks.[108]

Central Okanagan Economic Development Commission has been a key player in supporting agri-tourism within Central Okanagan. For example, in the winter of 2019-2020 they initiated informal networking sessions with members of the agricultural community, including attendance from the Director of Food, Wine and Tourism at Okanagan College, BC Tree Fruits CEO, BC Ministry of Agriculture staff, Tourism Kelowna and UBCO Interior University Research Coalition Director, amongst others. In the past, the COEDC has had a program to support agri-tourism business planning for producers. Agri-tourism activities occurring on ALR must operate according to the ALC Act and Regulations.

## 7.5 Breweries, Cideries, and Wineries

The Okanagan Valley is known for having ideal conditions for grape production, which has contributed to it becoming BCs most popular wine region. Many of the wineries in the Okanagan Valley maintain the standards of the British Columbia Vintners Quality Alliance (BC VQA). The BC VQA recognizes that the regional wines have specific qualities and characteristics due to the unique growing conditions of the valley. This standard is an asset to the valley as it sets a reputation and standard for wine in the region and fuels the tourism sector. The BC wine industry is an economic driver for the province, employing 12,000 people and creating an economic impact of $2.8 billion annually.[109] The entire Okanagan Valley is home to 84% of the total vineyard acreage in BC with 186 licensed wineries covering 9,617 acres in grape production.[110]

As a portion of the Okanagan Valley beverage industry, Central Okanagan wineries and cideries draw both locals and tourists in with tasting rooms, farm tours and special events such as weddings, concerts and farm to table dinners. The area has a reputation for winery hopping, which is facilitated by bike tours, bus tours and self-guided exploration. Wines of British Columbia has created a resource to help people navigate the many wineries in the region including an interactive map.[111] In 2017 when the latest data was made available at the regional level, there were just under 90 wineries, cideries and meaderies[112] with 74

[107] Central Okanagan Agriculture Sector Report. 2019. Central Okanagan Economic Development Commission.
[108] Okanagan Feast of Fields. Accessed November 2022. Farm Folk City Folk.
[109] BC Wine Facts. Accessed November 2022. Government of Canada.
[110] Okanagan Valley. Accessed November 2022. Wines of British Columbia.
[111] Ibid.
[112] Ibid.

registered beverage manufacturing businesses including mead, cider, and kombucha,[113] employing 684 individuals across the Central Okanagan.[114]

## 7.6 Processing and Support Services

Agricultural support services, such as extension officers, farm equipment dealers, irrigation and drainage specialists, local processing, and value-added infrastructure can all assist in maximizing the ability for individual farming operations to succeed. Agriculture in the region is supported by food processing facilities, administration infrastructure, post-secondary horticulture and agriculture programs, reliable transportation routes, and proximity to dense population centres. These are summarized within the Central Okanagan context below.

### 7.6.1 Meat Processing

Each link in the local meat supply chain is vital - a local abattoir allows farmers to get their animals processed in a timely manner and cut and wrap shops (butchers) allow farmers to sell their products in cuts that are tailored to the appropriate market. Successful local abattoirs have developed business cases that include total cost accounting; are able to match maneuverability vs. workflow limitations; and have invested in producer-processor relationships to build trust through education and celebrate successes. While there may never be one simple solution for something as complex as the meat sector, some relatively small investments in local infrastructure can provide enhanced income streams for area farmers and employment opportunities for area residents.

In 2007, the province amended meat processing regulations such that licensing and certification was more stringent and involved additional administrative oversight. These changes, along with other challenges in the industry such as the Bovine Spongiform Encephalopathy crisis, resulted in more than 300 abattoirs closing throughout BC over the last 15 years.

In 2021, following years of review, and in response to shortages of slaughter and processing options, the BC government updated the meat processing licensing system. The new system replaces the Class A, B, D, and E system with “Abattoir”, “Farmgate Plus” and “Farmgate” licenses. The Abattoir license allows for slaughtering of an unlimited number of animals (own and custom for other producers) with sales to retail or direct to customer across the province. Farmgate plus allows for slaughter of a farmer’s own animals and limited custom slaughter for other producers, with sales throughout BC to the retail market and direct to consumer. The Farmgate Licenses only allow for slaughter of a farmer’s own animals and sales are restricted to direct to consumer at farmgate, and at farmers markets in the regional district and within 50 km of where the meat is produced. Further meat processing, including cut and wrap requires a Food Premises Permit obtained from a health authority for all levels of licensing. There are currently three Abattoir licenses within Central Okanagan. The following is a list of those facilities at the time of this document’s publication:[115]

- Patton Farms Inc., Kelowna (Chicken & Turkey)
- Lentelus Farms, Kelowna (Lamb, Sheep, Goat, Chicken, Turkey, Rabbit)
- Longhorn Farms, Kelowna (Cattle)

The Farmgate licenses allow slaughter 1-5 animal units (an animal unit meaning a combined animal weight, when measured alive, of 455 kg/1,000 lbs). The Farmgate Plus licenses allow

[113] Agriculture/ Viticulture. Accessed November 2022. Central Okanagan Economic Development Commission.
[114] Business Counts. December 2017. Statistics Canada.
[115] Licensed Seafood and Meat Processors: Online Map. Accessed September 2022. BC Ministry of Agriculture and Food.

producers to slaughter to a maximum of 25 animal units. Currently, there is one Farmgate Plus licence in West Kelowna that processes hogs.

### 7.6.2 Fruit Processing and Storage

Food processing, distribution and storage infrastructure exists throughout the Central Okanagan. There are several privately owned fruit packing houses which grade, pack, store and ship tree fruit products, including, Coral Beach Farms, Sandher Fruit Packing and Jealous Fruits. Several cooperatives exist including the Okanagan North Growers Cooperative, which operates their large packing house and distribution facility from Bottom Lake Road in Lake Country, and the BC Tree Fruit Cooperative. The BC Tree Fruit Cooperative has been undergoing structural and operational changes over the past couple of years. The BC Tree Fruit Cooperative packing house located in Lake Country is closing in the fall of 2022 and plans to build a packing facility in Kelowna have been cancelled. As an alternative the Cooperative will be investing in the existing Oliver facility to consolidate work and assets.[116] Throughout 2021, MAF conducted stakeholder consultations with the tree fruit industry, the "tree fruit stabilization project", to address issues and a plan was released with recommendations for the future of the tree fruit industry. The plan provides numerous recommendations related to labour, data collection, extension services, development of new varieties, marketing and sales, fruit quality, pests, climate change and many other topics.[117]

Beyond sorting, packing, and shipping, processing tree fruits can take the shape of juicing, freezing, drying and freeze drying resulting in value added products. Processing fruit in this way requires specialized equipment but can often make use of fruit which does not meet the grade 1 standard of distributors or supermarkets. Some producers opt to grow primarily for value added purposes, and thus may invest in dehydrators, freezers, or juicers. However, some producers may only want to process a portion of their crop, or fruits are of a lower grade. In this scenario, shared or rentable processing equipment provides an opportunity to process fruits without huge upfront costs associated with acquiring and housing the necessary equipment.

Okanagan Mobile Juicing is an independent company based in Coldstream and servicing the Okanagan Valley.[118] Okanagan Mobile Juicing provides a juicing service which goes straight to the source of the fruit. Offering cold pressing, pasteurization and packaging, Okanagan Mobile Juicing helps producers create value added products to diversify their offerings and increase their profit margins on apples, cherry, and berry crops.

### 7.6.3 Food Hubs

Food Hubs are a relatively new concept to the Central Okanagan and have largely been spurred by the Ministry of Agriculture's initiative to create a Food Hub Network. Food hubs frequently fall into two categories, those which focus on household food security and food sovereignty, and food hubs which are geared towards community food security. The former often facilitates fresh meals, food literacy, and community development around food, the latter provides storage, processing and marketing resources for producers and food processors. In the Central Okanagan and the Okanagan Valley, there are two proposed food hubs which aim to support household food security; the UBC Food Hub,[119] and the North Okanagan Regional Community Food Hub Initiative.[120] Additionally, the Township of Spallumcheen has completed a food hub feasibility study. These food hubs are each in

[116] BC Tree Fruits to Close Lake Country Plant, Invest in Oliver. August 2022. Penticton Western News.
[117] The path forward: a blueprint for B.C.'s tree fruit industry. 2021. BC Ministry of Agriculture and Food.
[118] Home. Accessed November 2022. Okanagan Mobile Juicing.
[119] The Foodhub. Accessed November 2022. University of British Columbia.
[120] North Okanagan Regional Community Food Hub Initiative. November 2022. Land to Table Network.

development phase, but once established may contribute to the agriculture sector within Central Okanagan as anchors within the community where the public can access local food products and learn about regional food offerings.

Food Hubs which are geared towards providing processing, storage and marketing resources are less common, and currently there are none in Central Okanagan or the Okanagan Valley. However, following MAF's Food Hub Network Initiative, the District of Summerland developed a business plan for the South Okanagan Food Innovation and Processing Hub in 2019. The South Okanagan Food Hub is in the development phase as of this writing. Once established it would help grow the local agri-food economy by offering food producers, value-added processors and agri-tech businesses access to commercial production spaces with specialized food processing and packaging equipment and learning spaces to help them scale up their food enterprises.[121]

### 7.6.4 Distribution and Sales

Many transportation and distribution networks exist throughout the Central Okanagan, with Highway 97, Highway 33, and Highway 97C travelling through a significant section of RDCO. Producers within the region have excellent access to local communities and markets as well as a number of major cities such as Vernon, Kamloops, Summerland and Penticton by road, as well as Vancouver, Calgary and Edmonton by both ground and air transportation. However, while these transportation routes exist, the cost of the fuel and freight out of the Central Okanagan region makes shipping and transportation prohibitive for many producers. The need to ship livestock out of the region to be finished and/or processed is a major transportation-related concern. Shipping fruit for packing and processing to out-of-region facilities also comes with a significant price tag.

Support systems and infrastructure for collecting, storing, processing, and distributing food to major retail markets have long been established and operate efficiently at the provincial and national levels. In the Central Okanagan such distributors are Sysco, and TGP (The Grocery People). The retail grocery industry is increasingly consolidated and operates with a combination of contract and proprietor transportation and storage facilities. The normal practise is block buying to supply all Western Region stores. The retail grocers do consider a range of Community scale commercial storage and distribution networks operate throughout the Central Okanagan, the Thompson-Okanagan and beyond. These networks are less well known but gaining in market share as the consumer demand for "local" increases.

Community scale food distribution networks are operated by Farm Bound in Vernon, Seasons Harvest in Kelowna, Urban Harvest in Kelowna and Valley Direct Foods in Armstrong. Independent local grocery retailers such as Askew's Foods, Butcher Boys, Choices Market, IGA, Nature's Fare, Nestor's Market, Sunshine Market, Swan Lake Nurseryland, Urban Fare, Valoroso Foods, and others, happily buy from local growers with some Okanagan growers marketing to Kootenay Boundary grocery retailers including Nelson's Kootenay Co-op Grocery Store. Consistent supply is the most important factor to retail grocery buyers. Valley Direct Foods offers weekly delivery to Nelson.

In the Central Okanagan 318 farms (out of 807 total farms) report selling direct to customers in 2021 (Table 31). Direct sales are done through various streams, some through farm gate (243), farmers markets (46) or direct deliveries to customers (127).

[121] Okanagan Food and Innovation Hub Business Plan. March 2022. District of Summerland.

*Table 31. Producers selling direct to consumers in the Central Okanagan[122].*

| | Number of Farms | |
|---|---|---|
| | **2016** | **2021** |
| **Total number of farms reporting direct sales** | 329 | 318 |
| **Sales of Unprocessed Agricultural Products** | 318 | 309 |
| **Using Farm Gate, Stands, Kiosks, U-pick** | 307 | 243 |
| **Using Farmers' Markets** | 66 | 46 |
| **Sales of Value-added Products** | 30 | 28 |
| **Community Supported Agriculture** | 10 | x |
| **Direct deliveries to consumers** | x | 127 |

The Central Okanagan is home to seven farmers markets, 6 of which run through the spring, summer and fall, and one which is active in winter months. Table 32 outlines the markets, their locations and operating dates. Producers also sell at farmers markets outside of the RDCO.

*Table 32. Farmers markets across the RDCO as of 2022.*

| **Farmers Market** | **Location** | **Operating** |
|---|---|---|
| **Kelowna Farmers and crafters Market** | Orchard Park Mall, Kelowna | April – October<br>Wed & Sat 8am – 1pm |
| **Kelowna Farmers and Crafters Market - Downtown** | Kerry Park and Bernard Ave, Kelowna | June – September<br>Sun 9am – 2pm |
| **Kelowna Farmers and Crafters Market - Winter** | Parkinson Recreation Centre, East Kelowna | November – March<br>Sat 9am – 1pm |
| **Westbank Market** | Westridge Shopping Centre, West Kelowna | July - September<br>Sat 9am – 1pm |
| **East Kelowna Community Market** | East Kelowna Community Hall, Kelowna | Select Sundays<br>10am – 2:30pm |
| **Lake Country Farmers Market** | Swalwell Park, Lake Country | June - September<br>Friday 3pm – 7pm |
| **Peachland Farmers and Crafters Market** | Heritage Park, Peachland | May – September<br>Sunday 10am – 2pm |

### 7.6.5 Extension Support and Industry Organizations

There are numerous support services available to the agri-food sector. There are government institutions such as the Summerland Federal Research and Development Centre, Provincial Ministry of Agriculture and Food offices, as well as colleges and universities with agri-sector programs and research. Numerous programs (relating to pest management, crop production, business development, sustainable farming practices, and others) at the federal, provincial and local government level are available to the sector. The RDCO supports several programs such as the Okanagan-Kootenay Sterile Insect Release Program, the Starling Control Program and the Agricultural Wood Waste Chipping Program, to name a few.

The organizations outlined are just a few of the extension and industry supports available to producers. The COEDC as produced two documents (Resources for Farm Operators in the

[122] Census of Agriculture, 2011, 2016, 2021. Statistics Canada.

Central Okanagan and the Central Okanagan Agriculture Asset Inventory that provide detailed information about supporting services and organizations available to the sector.

### 7.6.6 Research Infrastructure

The Central Okanagan is a hub for research which is critical to the development of the agriculture sector. Home of the Agriculture and Agri-Food Canada – Summerland Research and Development Centre (RDC)[123] as well as a number of educational institutions contributing critical research and resources to the growth and development of the agriculture sector.

**Agriculture and Agri-Food Canada- Summerland Research and Development Centre**

The Summerland RDC was established in 1914 and addresses the mitigation of environmental pressures, control of biological threats and integration of sustainable production and processing systems for the delivery of high quality, value-added horticultural and agri-food products. Research at the RDC focus on high value crops including wine grapes and tree fruits to develop environmentally and economically sustainable methodologies and strategies to ensure long term success of the sector.[124]

**University of British Columbia - Okanagan**

The University of British Columbia Okanagan (UBCO) has a variety of research excellence clusters[125] which bring together researchers in various fields with industry partners and government authorities to better understand solve industry issues. Previously-funded clusters at UBCO include:

- Agricultural Technologies and Bioproducts,
- Biocomposites,
- Wine & Grapes, and
- Enhancing Ecosystem Sustainability.

UBCO is also home to research institutes and centres which leverage campus facilities such as laboratories, technology, cooler/ freezer space and human intellect to further research relevant to the agriculture sector. These institutes and centres have collaborative ties to government ministries and NGOs.

**Okanagan College**

Okanagan College is a technical institution offering horticulture and viticulture programs. The college also serves as an applied research hub, with research occurring into innovation in hydroponics and greenhouses, and the promotion of generational wine purchasing. Okanagan College is also home to the British Columbia Beverage Technology Access Centre (BC BTAC).[126] BC BTAC works within a collaborative framework with individuals, companies, and organizations to support the beverage industry's innovation and growth by providing a range of expert analytical, commercial and sensory services and resources. The BC BTAC offers a range of laboratory and analytical services capable of testing smoke taint, corkiness, pesticides, herbicides and many other elements that may appear in beverages to improve the offerings of Canada's beverage industry.

**Kwantlen Polytechnic University – Okanagan Bioregion Food Systems Project**

The Institute for Sustainable Food Systems within the Kwantlen Polytechnic University (KPU) operates a number of research initiatives and project across BC aimed at supporting the

[123] Summerland Research and Development Centre. Accessed November 2022. Government of Canada.
[124] Summerland Research and Development Centre. Accessed November 2022. Government of Canada.
[125] Research Clusters. Accessed November 2022. UBC. Okanagan Campus.
[126] British Columbia Beverage Technology Access Centre. Accessed November 2022. Okanagan College.

development of robust and secure local food systems. In the Okanagan Valley, KPU undertook the Okanagan Bioregion Food System Projected.[127] The project explored the economic, environmental stewardship, and food self-reliance potentials of a more regionalized food system in the Okanagan utilizing data driven information around economic, environmental, and social benefits and trade-offs of a regional food system. The outcomes of the project included technical research reports, policy assessments, and a full project report to help guide future food system decisions in the region.

[127] Okanagan Bioregion Food Systems Project. Accessed November 2022. Kwantlen Polytechnic University.

# 8.0 Engagement Findings

Engagement with key players in the agriculture and food sector across the RDCO was crucial in the development of the Regional Agricultural Background Report. Engagement objectives were to understand the regional context, including the assets, gaps, opportunities and challenges faced within the sector, and identify and communicate the role local government can have in supporting the sector. The following section summarizes the engagement activities completed and the findings from these activities.

## 8.1 Regional Tour of Farming Areas

In late September, members of the consultant team conducted a driving tour of the RDCO. During the tour, the consultants visited areas throughout the RDCO within the agricultural land reserve and agriculturally zoned lands. The following key take-aways were observed:

- The urban/agricultural interfaces are very pronounced in many areas, with little to no vegetative buffers between residential and agricultural land uses.
- There is agricultural land that has not been cultivated with the potential for various types crops and livestock production.
    - In some cases this land is along dirt roads, surrounded by forests, and may have limited access to water, which pose some challenges and risks.
- Various types and situations of farm-worker housing were observed on agricultural land.
- Recent orchard plantings were noted in several areas.
- Many agricultural areas are near the forest edge, which poses risks related to wildfires.

While the consultants have been familiar with the agriculture sector in Central Okanagan for many years, this tour provided recent context to activities occurring on agricultural lands.

## 8.2 Dialogue with Indigenous Government

The project team reached out to both WFN as well as Okanagan Indian Band. The purpose of this dialogue was to share what the RDCO is working on and to begin understanding potential areas of alignment. The project team was also looking for the best way to describe the Indigenous history related to food systems in the area. A presentation was made to the WFN Economic Development Committee to elicit discussion and feedback regarding issues and opportunities for agriculture in the region. Several follow up items were identified including addressing the pertinence of ALR zoning within First Nations reserve lands, sharing information on the guiding documents for water management, as well as meeting further with Elders and Youth to gain additional perspectives for the RAS. WFN also provided information regarding a community Food Security initiative that is underway.

## 8.3 Key Player Interviews and Meetings

A total of 18 interviews were conducted by the consultant team with key players in the agri-food sector in Central Okanagan during September and November of 2022. Interviewees included WFN and OKIB, local governments, and the following sectors and organizations:

- Apple, pear and cherry producers and processors
- Vineyard and wine producers
- Industry associations including BC Fruit Growers Association and Cherry Association of BC
- WFN and OKIB
- Local governments
- Okanagan Kootenay Sterile Insect Release Program

- Central Okanagan Economic Development Commission
- Okanagan Collaborative Conservation Program

Many themes were raised throughout the conversations and the top common themes are summarized in this section. These themes combine challenges and gaps with opportunities, the summaries are not verbatim although they communicate the main points made by the interviewees.

### 8.3.1 The Central Okanagan was recognized for having critical supports for the agriculture sector

The strengths identified in the Central Okanagan included the regional districts support for and involvement in important agricultural resources such as the Starling Control Program, the Okanagan Sterile Insect Release Program and the Agricultural Wood Waste Chipping Program. In addition to these programs, the Okanagan Basin Water Board, and various research institutions within and near the Central Okanagan including the Summerland Research and Development Center and UBCO were seen as valued contributors to the agriculture sector in the region.

### 8.3.2 Housing temporary foreign workers was cited as a primary issue in the Central Okanagan

While it was noted that the federal programs by which producers can hire temporary foreign workers require a significant amount of work and often have long processing times, housing for Temporary Foreign Workers (TFWH) is a more pressing issue. Housing regulations on ALR land make it challenging to erect temporary housing, with applications for housing often taking 2 years to process. The expansion of the cherry sector in Central Okanagan is expected to increase the need for TFWH, raising further concerns among producers. Some interviewees felt that creative solutions to TFWH needed to be identified such as joint housing off agricultural land, or clear guidelines including Best Management Practices (BMPs) for temporary housing which can help expedite approval processes through the ALC. It was also mentioned that many producers in the region are farming areas which cross jurisdictional lines, meaning produces may need to abide by different housing rules on different sections of their land, creating further challenges.

### 8.3.3 Interviewees are concerned about long term water sustainability

Interviewees across the region noted water security is a concern moving into the future. In some cases, producers noted that the current restrictions for agriculture were at times too low, making irrigation difficult. Many stakeholders expressed concerns for the future, when permitted water usage becomes more restrictive. Many interviewees noted a need to plan for the future of water security, including balancing the needs of rural and urban residents in times of drought. Water storage both on farm and at a regional level were also mentioned, including a desire to capture more spring run-off from the mountains for use in drier times.

### 8.3.4 Interviewees expressed changes in land use as a threat to regional food security

Interviewees noted a shift in land use from food-producing agricultural land to viticulture, commercial use or agri-tourism. This shift signaled for some interviewees an impact on the long-term food security of the region as productive land was being lost to non-food uses and that finding a balance between these demands was important. In addition to the viticulture and commercial use shift, some interviewees cited hobby farms and other small-scale acreages which are achieving the bare minimum production required for farm tax status as a threat to agricultural land. Some interviewees suggested it was important to find interventions

to deter this shift in land use for the sake of protecting food production for future generations. Such suggestions were to raise the minimum requirements for farm tax status.

### 8.3.5 Interviewees raised alarms about a dwindling apple sector across the Okanagan Valley

The fate of the apple sector was a commonly cited issue during interviews. Interviewees, some of which were apple producers, pointed to a number of reasons the apple sector is struggling. It was noted that producers of apples in the Central Okanagan have a very low return on their crops after various inputs and labour expenses. Interviewees alleged that grocers in the Central Okanagan are stocking minimal local apples, and rather filling the shelves with cheaper apples from Washington. Additionally, the closing of the BC Tree Fruit packing facility in Lake Country applies further strain to apple producers who are now required to ship their apples to Oliver for storage. Furthermore, a slow roll out of new apple varieties in the region is a cause for concern for future apple sales. For these reasons, many apple producers are removing apple orchards and planting cherries.

### 8.3.6 There is a need for public education around food and agriculture

The identification of a need for public educations came up around a number of issues during interviews. One such example was the need for public education on the value of TFWH, as producers sometimes face adverse neighbourhood reactions to proposed temporary housing. Additionally, education around commercial scale agriculture in the region and its inherent values was suggested as some interviewees noted that residents are often in support of small scale local food producers, but do not hold commercial producers to the same light. Furthermore, Interviewees noted that the public was lacking in an understanding of Agricultures role as an ecosystem as well as the potential for the sector to support ecosystems and ecosystem services, noting that if public support is needed for ecosystem conservation on farmland, the public will require educational resources on the issue.

## 8.4 Open House

An Open House was held for the general public at Ellison Heritage Community Hall on November 3rd, 2022 between 5:00pm and 7:00pm. The Open House was attended by 45-50 people who had the opportunity to provide feedback on the preliminary challenges and strengths identified as well as participate in conversations with the RDCO staff and consultants to share their ideas and perspectives. Feedback was collected on a variety of subjects and is summarized in this section.

### 8.4.1 Strengths and assets

Attendees noted support public for local food as a strength within the region, however additional comments specified that this support was for producers who sold direct to market, and that there was an overall lack of support for conventional food operations which produce food on larger scales.

Additional strengths noted were a long history of family farms and farm knowledge, proximity to urban markets and popularity of the region for agri-tourism.

### 8.4.2 Issues and Challenges

One challenge which rose to the top during the open house was labour and associated housing. While acquiring seasonal labour through the federal temporary workers programs is effective, many producers found the challenge with labour lay in an inability to house temporary workers on farm due to ALC temporary housing restrictions. It was believed by attendees that in some cases, the lack of support on temporary housing from ALC and RDCO led to illegal or unsafe living conditions for migrant workers, or a total inability to harvest fruits.

Another challenge which was prolific during the open house was conflicts between agriculture and surrounding non-farm use. This conflict was largely related to hobby farms or properties within the ALR where marginal farming activities are occurring for the perceived sake of acquiring a farm tax break. Attendees commented that these types of farms should not be considered in the agriculture strategy, rather they should be discouraged. In addition to non-farm use, many comments noted the shift in once food producing land to viticulture operations as a threat to local food security.

Additional comments were around issues around compliance and enforcement from the ALC, illegal dumping, and a subsequent need for no-dumping signs, as well as a concern for soil dumping and the related loss of good topsoil. The increasing average age of farmers paired with a lack of succession plans was also noted, as this may compromise the future of agriculture in the region.

### 8.4.3 Attendees see a need for action on water conservation in Central Okanagan

The general theme was that water scarcity is a political issue rather than an environmental issue. Producers at the event found the water allocations for agricultural use to be too restrictive and expressed an interest in rolling over water allotment from years of plenty to drier years. Overall, feedback expressed a need to address long term sustainable use while finding a balance between rural and urban water needs during droughts. Producers also expressed a need for additional support with navigating the new groundwater licensing process.

## 8.5 Community Survey

A public survey ran from October to November on the RDCO YourSay website. The survey was promoted on social media and through key stakeholder networks. The survey was open to all residents and included specific questions for farmers or other members of the agri-food sector. The objective of the survey was to gather feedback on issues, challenges, and opportunities framed under the context of what actions are within the RDCO's authority. The survey received 115 responses. Survey results are summarized below.

### 8.5.1 Survey respondents came from across the Central Okanagan

Survey responses came from a variety of individuals across the Okanagan (Figure 29), most respondents indicated they were not personally involved in the food or agriculture sector (Figure 30). Of those who selected other, respondents indicated that they worked in roles that support to the agriculture sector, such as in distribution or as farm labourers.

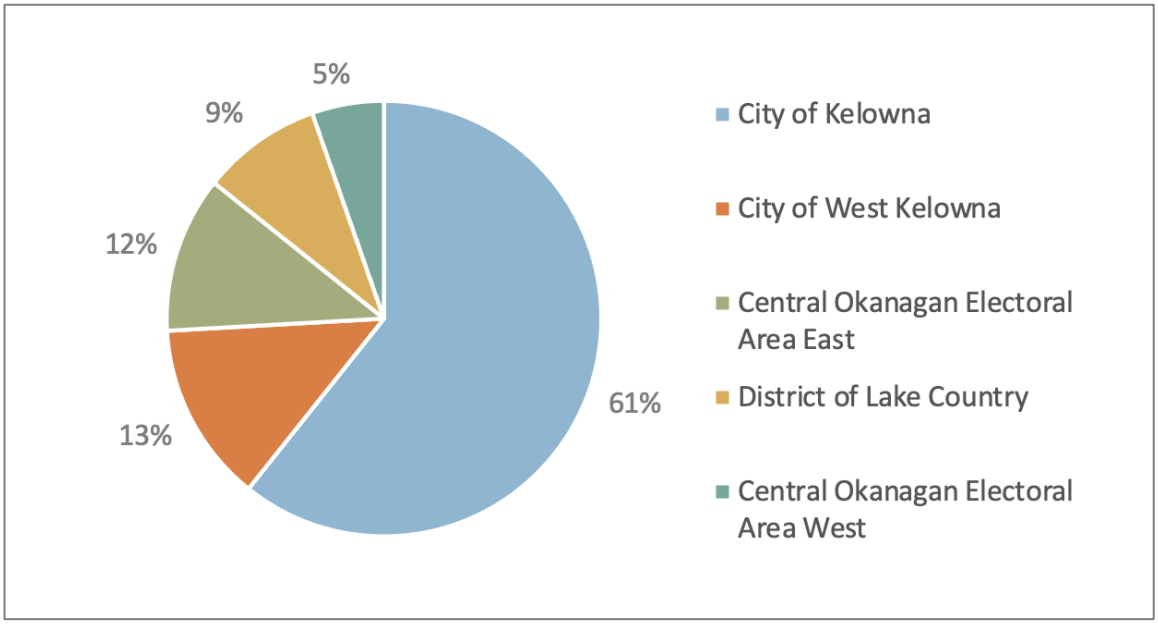


***Figure 29. Central Okanagan location of residency.***

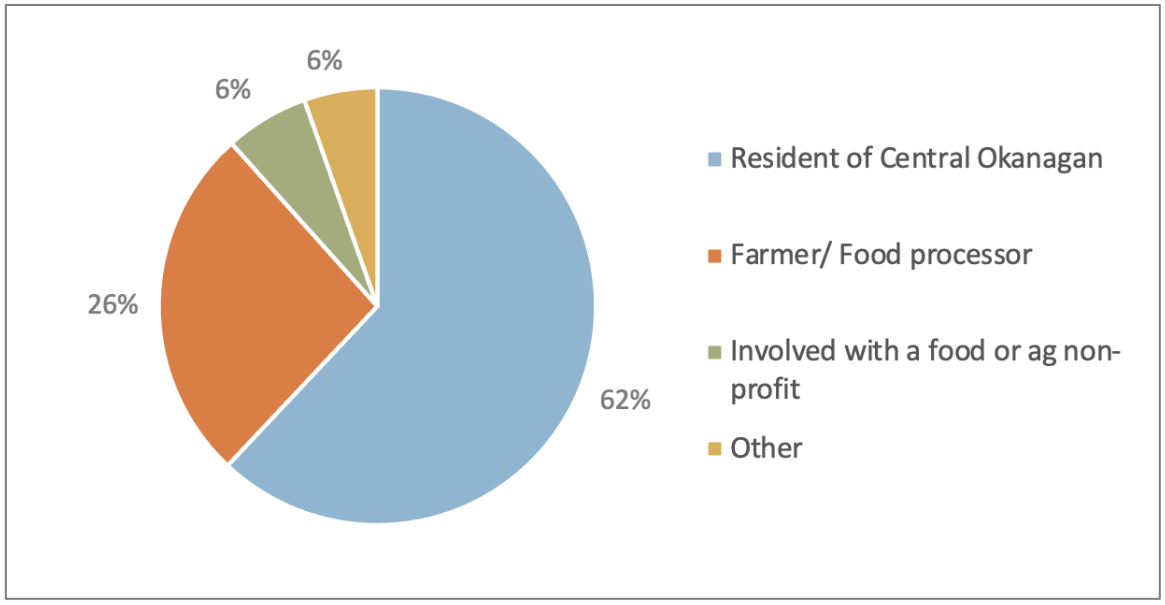


***Figure 30. Description of connection to regional food and agriculture.***

### 8.5.2 Respondents frequently purchase locally produced products

Most respondents to the survey indicated that they purchased local products on a weekly or monthly basis (Figure 31). No respondent indicated that they never purchased local products.

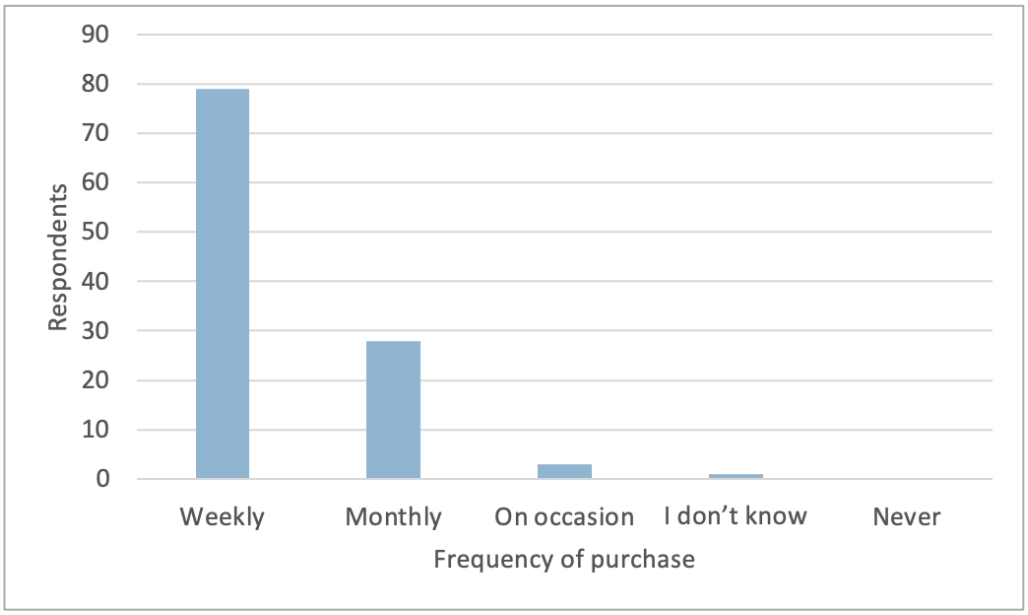


***Figure 31. Frequency of purchasing locally produced products.***

### 8.5.3 Respondents cite convenience as the primary influence in purchasing more local products

Increasing convenience in purchasing local products was selected by nearly 80 respondents (Figure 32). Other important factors included resources to find local products, increased variety of products, and improved affordability. Those who selected "Other" indicated that they would like to see local products in grocery stores, as well as information about the environmental benefits of purchasing locally products.

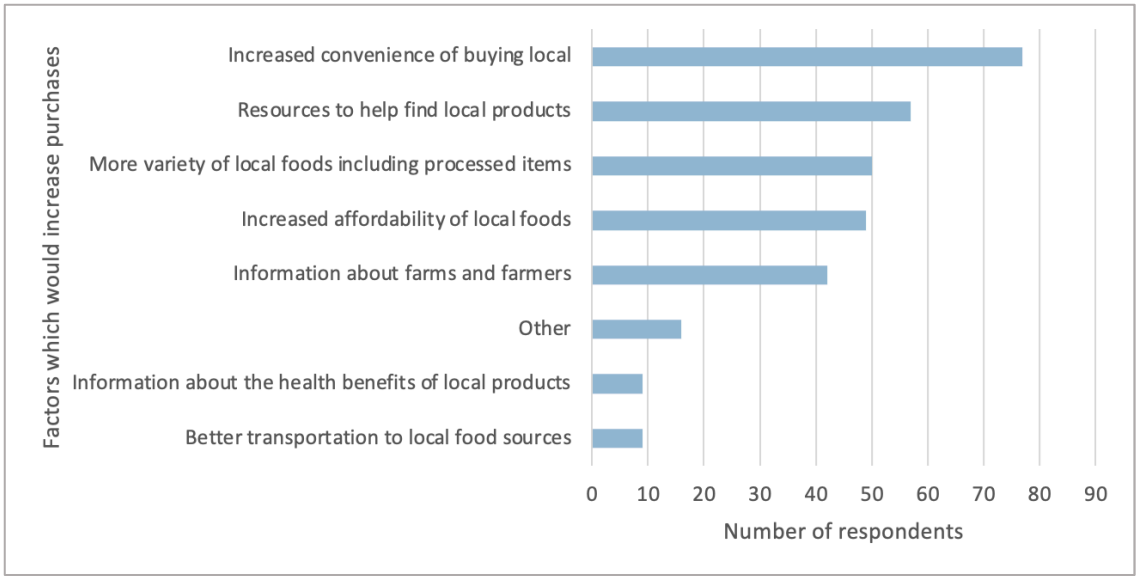


***Figure 32. Factors that would encourage more purchasing of local food products.***

### 8.5.4 Respondents view farmland protection policies as very important

Over 90% of respondents indicated that they perceived farmland protection policies were important or very important. Only 2% of respondents felt they were not important (Figure 33).

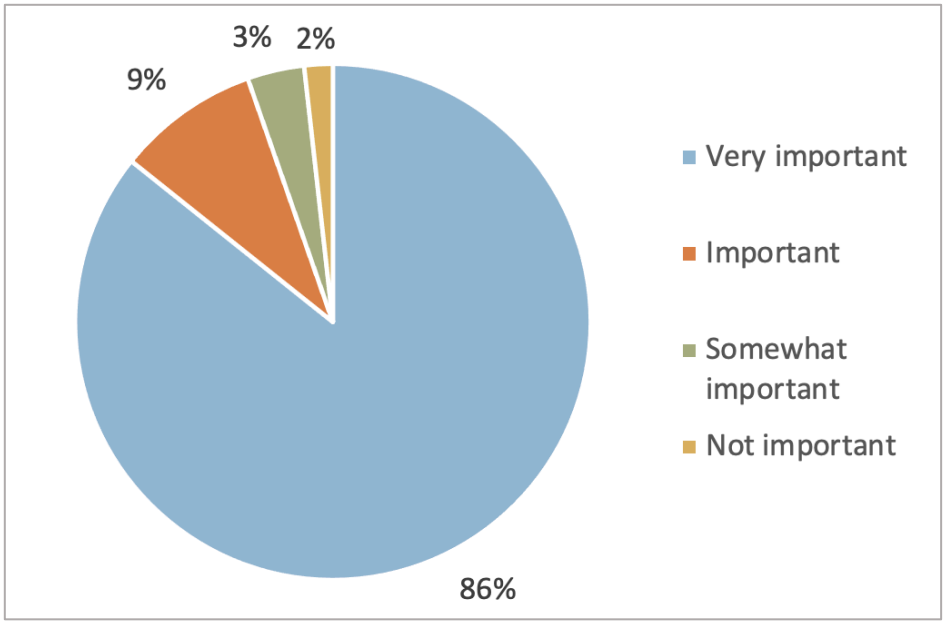


***Figure 33. Importance of policies that protect farmland in the Central Okanagan.***

On a scale of 1-7, respondents ranked reasons to support local agriculture, with 1 being the most important and 7 being the least. Preserve agricultural land for future generations was seen as the most important reason, while maintaining views and landscapes was ranked as the least important reason (Figure 34).

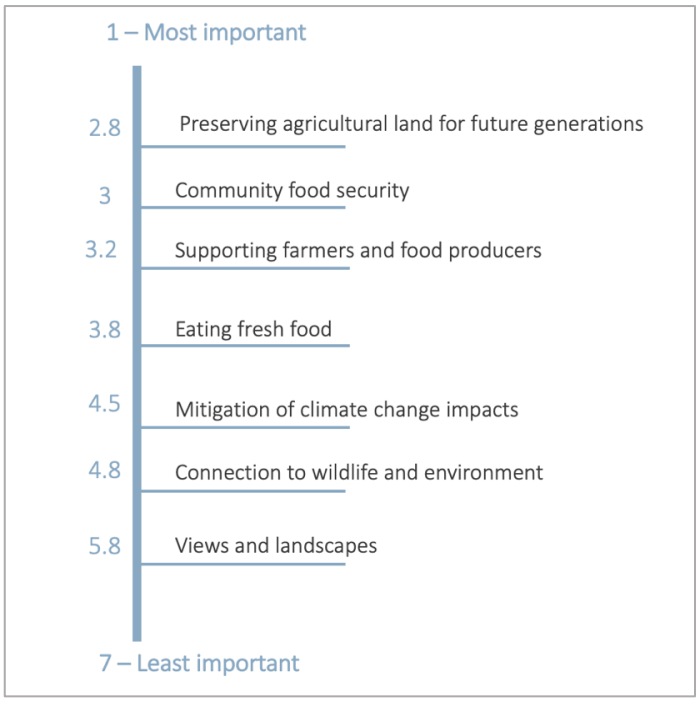


***Figure 34. Ranking of reasons to support local agriculture.***

### 8.5.5 Respondents appreciate the landscapes which come with living near farmland, but not the spray drift

Respondents identified a number of positive aspects of living near farmland, landscapes were the most mentioned aspect, but quickly followed by access to local and fresh foods (Figure 35). Very few respondents found zero positive aspects. The most common negative aspect of living near farmland were spray drift into gardens and households, as well as noise from helicopters and bird cannons (Figure 36) Twenty people commented that there were no negatives.

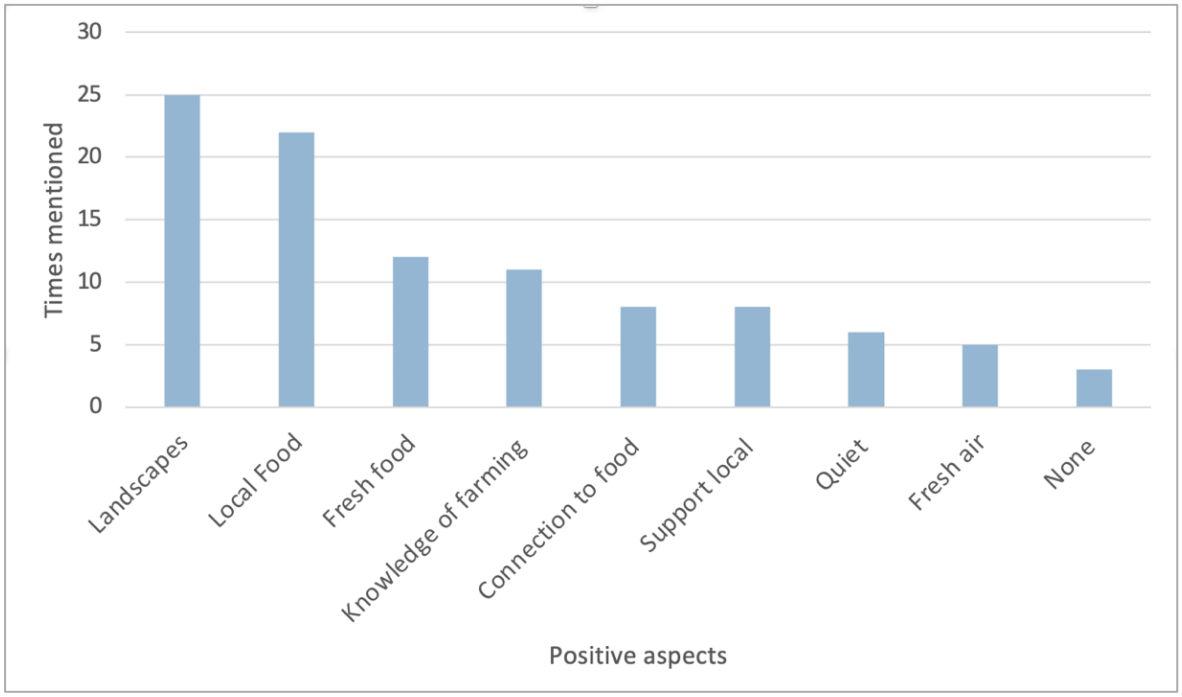


***Figure 35. Positive aspects of living near farmland.***

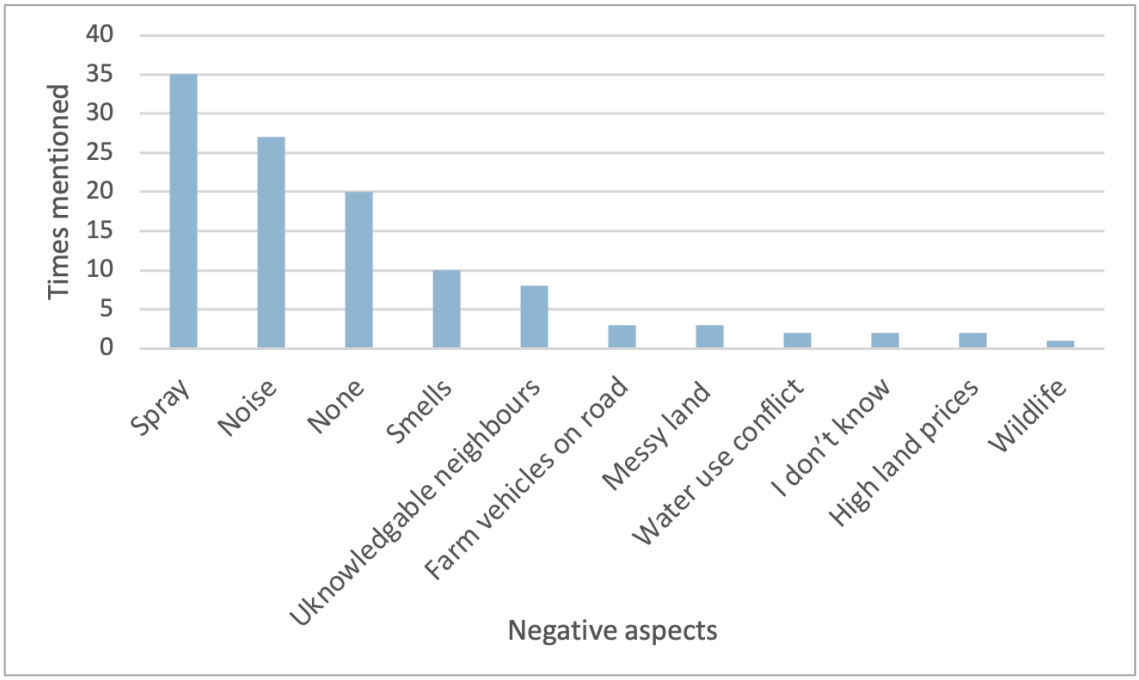


***Figure 36. Negative aspects of living near farmland.***

### 8.5.6 Respondents are in support of initiatives which help support ecosystem health on farmland

Respondents are largely in favor of initiatives which support ecosystem health on farmland (Figure 37) but are less willing to contribute to pay for this support with 50% disagreeing or strongly disagreeing with the idea of paying (Figure 37).

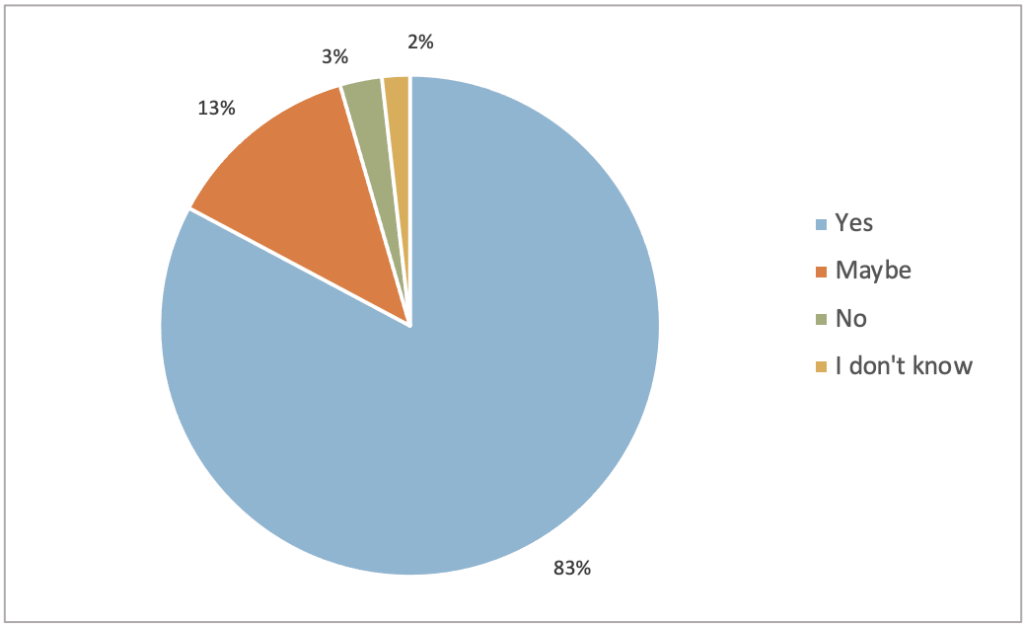


***Figure 37. Support for initiatives that work with farmers to support ecosystem health.***

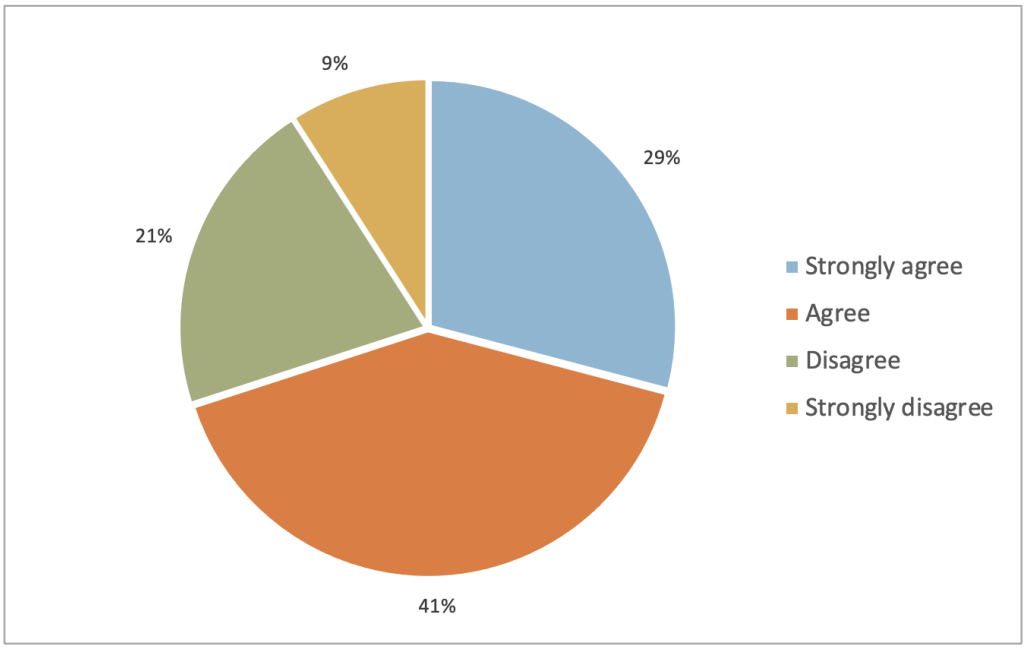


***Figure 38. Willingness to pay to support ecosystem health on farmland.***

Over 50% of respondents are willing to pay towards a program to help farmers support ecosystem health on farmland. Nearly 40% responded between $5 and $10 (Figure 39). Respondents who selected "other" had a range of comments, including that they would need more information about the use of funds, that they felt it was unnecessary to pay producers to do this, or that the municipalities should pay. Those who were in agreement with payment suggested they would pay anywhere from "above $10" to $200 annually, with one respondent citing they would pay up to $1,200.

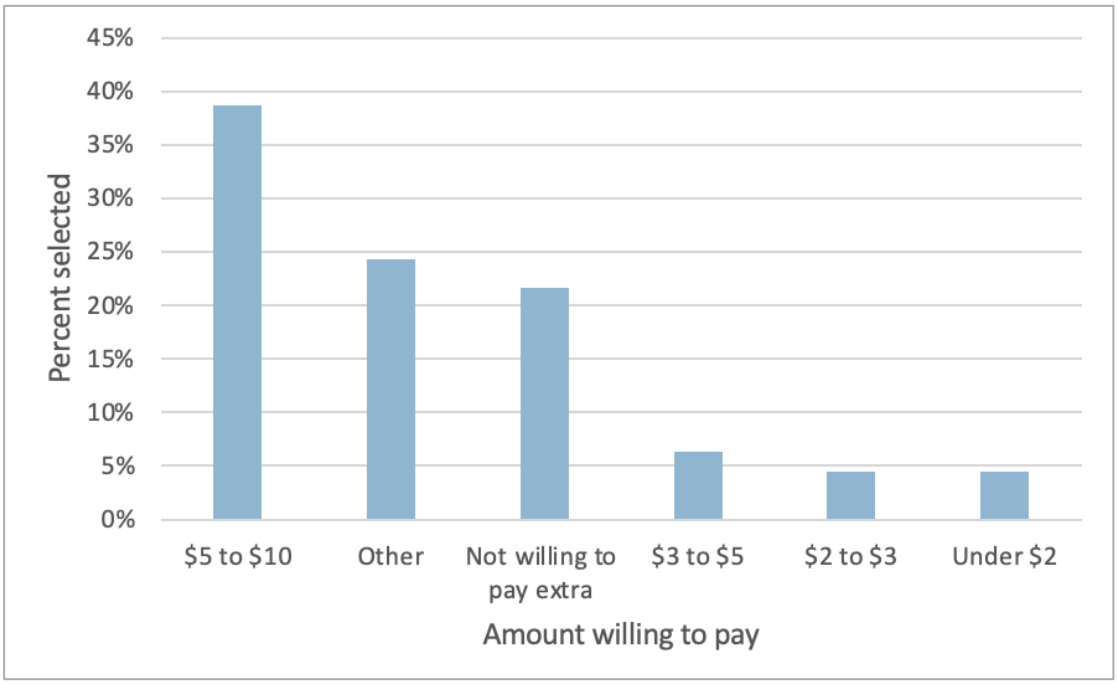


***Figure 39. Amount willing to pay per year to support ecosystem health on farmland.***

### 8.5.7 Respondents are most familiar with farmers markets and the ALR

Over 100 respondents were familiar with their communities' farmers markets, as well as the Agricultural Land Commission and Reserve (Figure 40). Over 70 respondents were familiar with the Okanagan Basin Water Board. Of respondents who selected "other" the following organizations were listed: Grower associations, COEDC agriculture support, Investment Agriculture Foundation, UBC Okanagan, Okanagan College, Helen's Acres Community Farm, Central Okanagan Fruit Tree Project Society and Community Gardens.

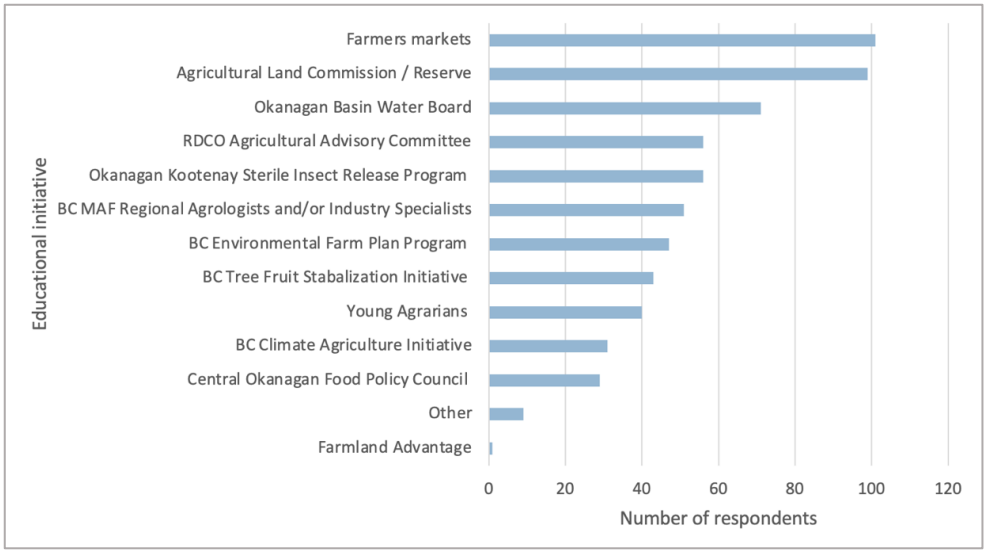


***Figure 40. Familiarity with food & agriculture initiatives and organizations.***

### 8.5.8 Respondents note a variety of ways the RDCO can support agriculture

Respondents most strongly agreed that the RDCO could support agriculture by informing municipal staff and councils about agricultural matters, followed by including agriculture in economic development initiatives and supporting public education around agriculture (Figure 41).

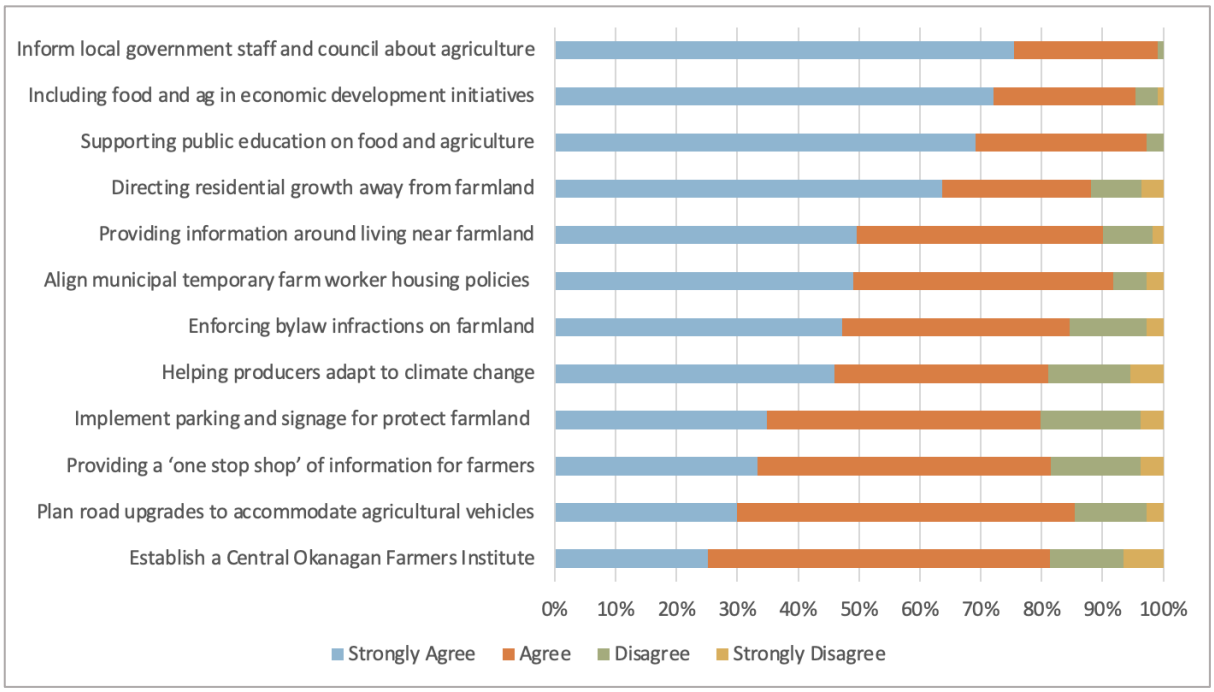


***Figure 41. Most important ways the RDCO can support the agriculture community.***

### 8.5.9 Survey respondents see development as the greatest threat to agriculture

Overwhelmingly, respondents point to urban development as the greatest threat to agriculture in the Central Okanagan (Figure 42). This includes development for both residential and commercial use, as well as speculation of new lands for development and the conversion of land out of the ALR for non-farm purposes. Following development as a top threat, climate change and the cost of land were identified. Other threats noted were a lack of support from municipal governments, competitive international markets which impact the ability of local producers to sell their products for a reasonable price, as well as the overall economic feasibility of farming, including expectations for low priced foods and rising cost of inputs. Lack of public education around agriculture was also cited as a source of conflict and potential threat to agriculture as well as impending water scarcity.

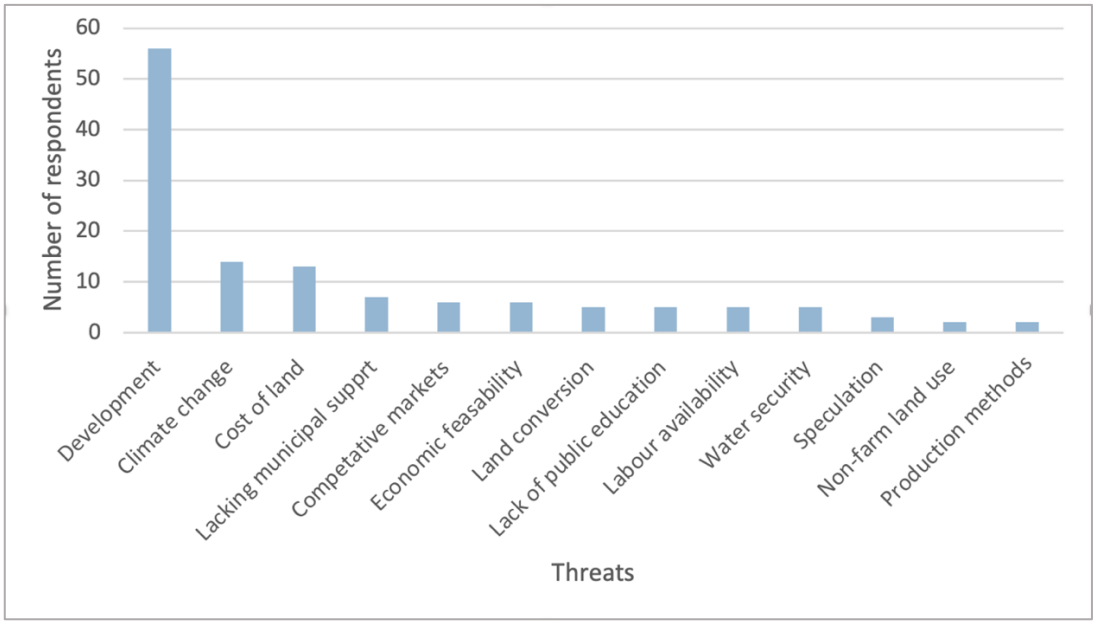


***Figure 42. Greatest threats to agriculture in the Central Okanagan.***

### 8.5.10 Improving support for local products is the greatest opportunity for agricultural resilience

Respondents frequently commented that supporting local agricultural products was the greatest opportunity in the Central Okanagan, ranging from encouraging grocers to carry local products, to garnering greater support from the community for local products through direct sales opportunities (Figure 43). Protecting farmland for food production was the second most frequently mentioned opportunity, followed by providing economic support for farmers to ensure farming was economically viable. Other opportunities included Addressing climate change, Water resource planning, encouraging diverse crops and lowering the entry bar for new entrants into agriculture.

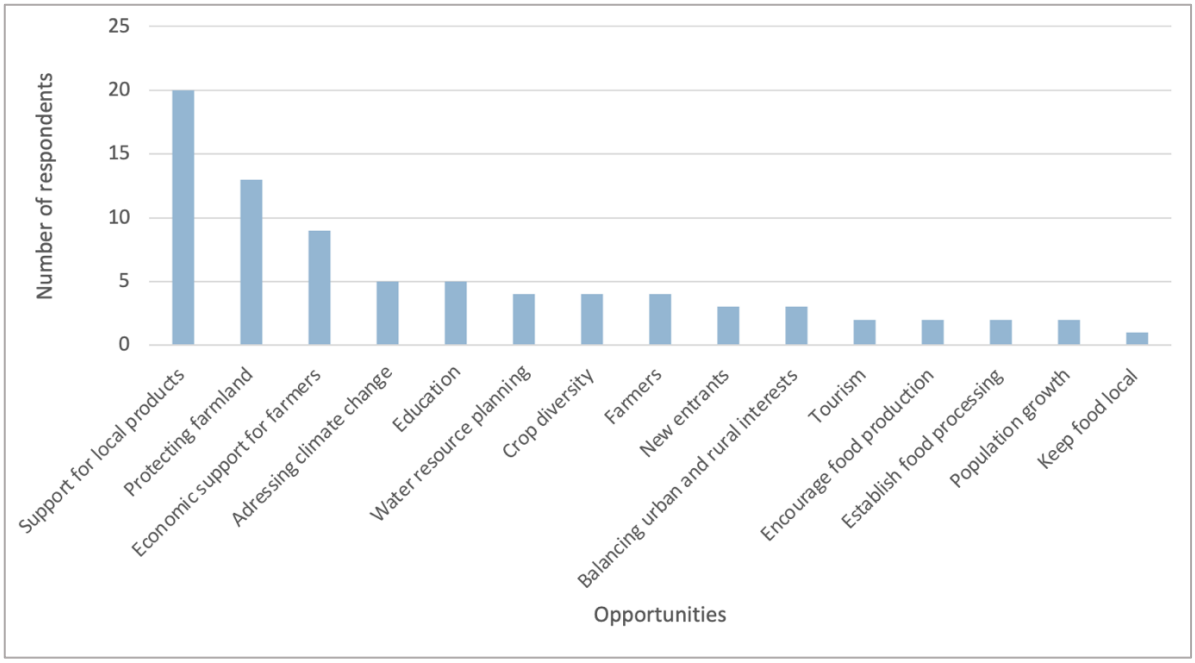


***Figure 43. Opportunities for agricultural resilience in the Central Okanagan.***

### 8.5.11 Respondents had diverse ideas of an ideal future for agriculture

The most frequently mentioned element of an ideal future in Central Okanagan was the availability of local food (16), this included availability through farmgate sales and big box stores. The second most common element was protected farmland (15) including putting an end to urban sprawl and halting the removal of land from the ALR. Respondents also ideated about a food secure future in the Central Okanagan (11) and the preservation of land for food production (10) rather than tourism or non-food crops. Diversified production (8) was also mentioned as well as increasing greenhouses in the valley (6) to provide year-round local foods. The following figure expresses key ideas from respondents' comments, where popularity of use is indicated by the size of each box (Figure 44).


***Figure 44. Vision for agriculture in the Central Okanagan in the next 10 years.***

# 9.0 Market Opportunities Assessment

The characteristics of Central Okanagan, such as its proximity to large markets, well developed transportation infrastructure, processing facilities and educational/research institutes, provide numerous opportunities for successful agri-food sector businesses, of all sizes.

## 9.1 COEDC Identified Market Opportunities in the Central Okanagan

These opportunities have been explored by the Central Okanagan Economic Development Commission (COEDC) in a 2019 report. According to this report, key market opportunities for agriculture in Central Okanagan include: [128]

- **To strengthen the capacity of the existing sector, including producers selling to international markets and locally through:**
    - Supporting enhanced efficiencies through the adoption of emerging production and distribution technologies.
    - Supporting/facilitating expanded value-added processing of primary products.
    - Supporting local producers in their succession planning efforts to protect diversity and ensure long term sustainability.
    - Enhancing the capacity of producers to identify and leverage agri-tourism opportunities cohesively and sustainably that both brings economic value and supports the growth of the agri-tourism sector overall.
- **To attract foreign direct investment to the following areas of the sector:**
    - Functional foods and ingredients such as grape-based food additives, dietary supplements, and bulk nutraceuticals,
    - Automation of packing and processing agricultural products,
    - Precision agriculture technologies, including water and high-value crop sensors that track grape and cherry growth,
    - Farm production, processing and packing equipment manufacturing
    - Cannabis growers, processors, and products developers
    - Supply chain development of agricultural chemicals, animal food, plastic and rubber products for the supply chain and equipment, and, machinery and electrical equipment.

## 9.2 Potential Market Opportunities for Food and Agriculture in the RDCO

Based on the research provided by the COEDC (2019), regional food economy development strategies from other jurisdictions, as well as additional market analysis provided for the development of the Lake Country Agriculture Plan, several market opportunities or market development strategies, have been identified. Although this list is not exhaustive, it is offered here to provide evidence-based rationale for continuing to grow the regional food and agriculture economy. This is primarily important to the long-term viability of a wide-range of food producers and processors.

[128] Central Okanagan Agricultural Sector Report. 2019. Central Okanagan Economic Development Commission.

### 9.2.1 Market Opportunity 1: A 10% shift to local

Central Okanagan is the fastest growing area in Canada, the population grew 14% from 2016 to 2021 reaching just over 222,000. This represents a rapidly growing market for regionally produced foods.

The average Canadian household spends $10,300 on food per year ($7,500 on food from stores, $2,800 on food from restaurants).[129] Given the population of the Central Okanagan is approximately 220,000 and average household size is 2.5 people,[130] there are approximately 88,000 households in the Central Okanagan. The currently market size for household food purchases in the Central Okanagan is approximately $900 million. This estimate does not include institutional purchasing or procurement of alcohol.

If household spending could shift to 10% local products, this would represent $90 million directly invested in the regional food economy. This directly contributes to farm profitability and long-range viability. Several regions across North America have studied their local food economy and its economic and social impact on the community (e.g. job creation, local multiplier effect).

It is likely that many households already buy a certain amount of agricultural products produced in the Central Okanagan and BC, but is likely this percentage is lower than 5% of total food spending.

While population growth, combined with rising labour and housing costs, will put pressure on land uses and the agriculture and agri-food sector industry, the increase in population is also an opportunity to increase productivity and profitability. Already, the increases in population and interest in the Central Okanagan has been accompanied by an expansion in the tourism industry with a major component being agri-tourism driven primarily by the region's wine industry.[131]

Strategies for shifting to 10% local food purchasing could be further explored in the RDCO agriculture planning process.

### 9.2.2 Market Opportunity 2: Cautiously embracing agri-technology

Cannabis, vertical growing, aquaponics and other enclosed growing systems that use advanced technology for production are a relatively new area for regulators and economic developers. These operations use technology, such as robotics, to produce more food using fewer resources such as land and water. Given the need to tightly manage water use in the Okanagan and the availability of smaller ALR parcels, agri-tech could bring significant benefits to the Central Okanagan.

While proponents indicate many benefits of enclosed growing systems, there is a reason to be cautious about locating these operations, known as "controlled environment structures"[132] within the ALR as they can require permanent buildings and fill, which could lead to the degradation of soils and farmland over-time. However, the Province of BC is optimistic and in 2021 provided eight-million dollars in funding to the agri-tech sector.[133] Research centres, post-secondary institutions, and business accelerators are all developing this sector.

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[129] Household Spending, 2021. Statistics Canada.
[130] Profile Table, Central Okanagan Regional District. 2021. Statistics Canada.
[131] Central Okanagan Agricultural Sector Report. 2019. Central Okanagan Economic Development Commission.
[132] Agricultural Land Use Regulation. 2022. Government of BC.
[133] Agri-Technology in British Columbia. Accessed November 2022. Government of BC.

From a regional land use planning perspective, these types of growing technologies can be regulated but not prohibited. Generally, best practice is to locate soil-based production in the ALR and enclosed growing systems outside of the ALR.[134]

### 9.2.3 Market Opportunity 3: Taking advantage of emerging markets and consumer trends

Several agricultural market expansion opportunities were identified in the *District of Lake Country Market Analysis and Expansion Opportunities Report (*2020) prepared by AG Consulting. These are also likely relevant for the RDCO and are summarized below.

- **Tree nuts:** More recently, the hazelnut industry in the Fraser Valley has been devastated by Eastern Filbert Blight, so much so that the B.C. government has committed funds to help the industry re-plant with newer, blight resistant cultivars. In 2019, the B.C. Ministry of Agriculture commissioned a Hazelnut Market Study[135] and produced a new Hazelnut Reference Guide[136]. An existing nut grower south of Kelowna International Airport has been working with the Engineering students at UBCO to design and refine a black walnut shelling machine, suitable to the scale of nut production in the Okanagan. The intent is to produce fresh, high quality, shelled nuts for the Okanagan market. The Canadian market for nuts is approximately 92% shelled and 8% in the shell. One of the interested market channels is Rancho Vignola Dried Fruit and Nuts, an Okanagan based distributor importing fresh crop nuts, seeds and dried fruit and selling throughout BC and Alberta in pre-Christmas sales over the last 30 years. A further opportunity exists to collaborate with other nut growers to consolidate volumes in order to supply other British Columbia Interior markets. Organic hazelnut growers in Oregon formed a co-operative in 2018 intended to facilitate processing and marketing activities.
- **Certified organic ground crops.** There are a number of ground crops with Okanagan business to business, value chain potential. Okanagan buyers identify pumpkins, garlic, grains and oilseeds as ingredients that they would be prepared to contract with local certified organic producers for their annual requirements. These crops all meet the low irrigation requirements, are suitable to Lake Country agronomic considerations, are scale appropriate for mixed operations up to 10 acres or more and work well together in rotation with a soil-building legume. (Certified organic pepitas, milled, dehydrated and seed garlic, organic grain and oilseed). Additional processing/manufacturing facilities would be needed to process raw products.
- **Fruit juice.** Okanagan Mobile Juicing uses European technology to produce shelf-stable, retail ready juice from a wide variety of tree fruit and berries, custom pressing up to 8,000 lbs/hour of fruit and pasteurising and packaging up to 1,200 L of juice/hour on the orchard or farm where the fruit was grown. The opportunity exists for tree fruit growers to pre-sort their fruit on-farm, have it custom pressed and market their juice beyond the Okanagan Valley by using currently available commercial cold storage and refrigerated shipping services into the Cariboo/Central Interior and Kootenays grocery and hospitality markets. A further opportunity exists to collaborate with other growers to consolidate volumes in order to supply Vancouver Island and out-of-province markets. A second market opportunity exists to supply juice to the growing artisanal craft cider industry in the Thompson/Okanagan.

[134] Cannabis Production in the ALR. 2019. Agricultural Land Commission.
[135] Results of the Hazelnut Marketing Study: Presentation to the BC Hazelnut Association. 2019. Hart & Associates Management Consulting.
[136] Hazelnut Reference Guide. 2019. BC Ministry of Agriculture and Food.

Additional market research that explores agronomic, market, regulatory, processing, and economic considerations for specific food and agriculture opportunities could be included in future agriculture strategy development phases and/or discussed in collaboration with COEDC and others. For example mushrooms (edible and medicinal), meat alternative products, prepared meal kits, and powderized fruit/veg additives for smoothie products, among other ideas, could potentially be a market opportunity for farmers, ranchers, food processors and distributors.

### 9.2.4 Market Opportunity 4: Linking producers with the craft beer and spirits market

In order for a distillery to obtain and maintain a 'craft' designation, they must adhere to standards set by the Province of BC. These rules require that only BC grain, fruit, and produce is used for fermentation.[137] This includes base and specialty malts as well as aromatics and other flavoured ingredients. Currently, the craft designation rules only apply to distilleries, although craft breweries also buy BC malts and aromatics. While the Peace region is better at growing base malt barley, the Okanagan could grow the aromatics and flavourings used in craft beer and spirits. The size of this market opportunity for Central Okanagan producers is not currently known, and could become a research question in future agriculture planning phases.

### 9.2.5 Market opportunity 5: Growing Agri-tourism

Agri-tourism is another area that was explored in the District of Lake Country Market Opportunities assessment prepared by AG Consulting. The Central Okanagan Economic Development Commission initiated informal networking sessions throughout the winter of 2019-2020 with members of the agricultural community, including attendance from the Director of Food, Wine and Tourism at Okanagan College, BC Tree Fruits CEO, BC Ministry of Agriculture staff, Tourism Kelowna and UBCO Interior University Research Coalition Director, amongst others. Discussions are underway regarding the opportunity for collaborative Central Okanagan branding centred around celebrating Okanagan terroir.

Potential strategies include:

- Self-guided farm tours. Self-guided walking, biking, and driving tours with venues related to agriculture and the area's farming heritage. Initial project is publication of a road map that directs visitors to a variety of specialty farm-gate vendors, open air markets, eateries, wineries, heritage sites and agriculture related special events. Circle Farm Tour is a successful collaboration operating in several communities in the Fraser Valley.
- Coordinate a "Farm Open House" event inviting public to visit RDCO food producers and processors.
- Farm to Chef events: "Farm to Chef" – strengthen the relationships between food producers and chefs to increase the demand for and supply of local food in the community. (e.g. long table dinners, regional culinary competitions, tours for restaurant staff)
- Explore potential collaborations with art-oriented community organizations to host events such as farm-themed art event, eg. Art Walk, Foodie Film Festival, Storytelling Evening

[137] Craft Distillers Guild of BC.

# 10.0 Key Themes

Several key themes that consider challenges and opportunities for the Central Okanagan agriculture sector arose from the engagement, background research, and analysis. These are presented here, along with opportunities to support next steps in developing the Regional Agricultural Strategy in 2023.

## 10.1 Identify common goals with WFN and OKIB

Both WFN and OKIB have plans and connections to food and agriculture. For example, WFN has identified the creation of a Community Food Security Plan, which the RAS could become aligned with. Through both of these processes, opportunities to collaboration in implementation could be identified. Also, continuing to understand and learn about Indigenous perspectives and histories in food and agriculture could be part of next steps in developing the RAS.

- Engage with Indigenous Elders and Youth to learn more about Indigenous histories and perspectives on food and agriculture.
- Discuss shared water utility management as well as demand side management of water in all sectors.
- Support the examination of ALR being shown on all WFN lands, where much of that land has been developed. Support conversations with the ALC on potentially adjusting the boundaries of the ALR to better reflect on-the-ground realities.

## 10.2 Protect agricultural land for the future of food production

Pressures on agricultural land within the Central Okanagan come from residential development, as well as land use change to non-food crops and agri-tourism. There has been a notable shift away from food production and towards grapes for wine production within the region, as well as an increase in hobby farms and residential estates. Based on interviews and survey results, there is an interest from the public and a need to protect agricultural land for future generations to produce food. Some options for protecting agricultural land in the region are as follows:

- Develop a Regional Agricultural Strategy to support consistent protection of all agricultural lands in the RDCO.
- Support the updates of OCPs, RLUB and ZBLs to modernize agriculture policies.
- Seek to find a balance between the value provided by agri-tourism and the need for food production on agricultural land.
- Deter land use changes which remove fertile and farmable land from food production in favour of tourism, viticulture and estate homes.
- Direct residential growth away from agricultural land.
- Develop Soil Deposit and Removal bylaws to restrict the movement of topsoil within the region.

## 10.3 Address climate change adaptation and mitigation needs

The impacts of climate change are already being felt by the agricultural sector in the Central Okanagan. These include increasing extreme heat conditions in the summer, a longer and more persistent wildfire season, and changes to rain and snow patterns. In particular, an increasing population and a changing climate are adding pressure to water systems, impacting both water availability and quality. As agriculture is necessarily a water intensive industry, the future of water security in the region is both a concern for the agriculture sector and an issue which the agriculture sector must be supported in addressing.

As agriculture is necessarily a water intensive industry, the future of water security in the region is both a concern for the agriculture sector and an issue which the agriculture sector must be supported in addressing. Opportunities for working towards a secure climate future are as follows:

- Explore drought-tolerant crop varieties.
- Plan for on-farm flooding preparedness.
- Engage with producers around the region to understand the water needs of various crops, sectors and geographical areas as a baseline for developing water management regulations such as water allocations.
- Identify ways to balance urban and rural water needs in times of drought.
- Encourage the implementation of water storage infrastructure both on farms and at a community level.

## 10.4 Take advantage of regional markets for regional products

Despite the abundance of agricultural production in the Central Okanagan, people indicated that if regional foods were easier to access, they would buy more of them. Much of the fruit produced in the region is shipped to international markets. Likewise, consumers have a difficult time finding local produce in grocery stores, citing convenience of purchase as one of the primary factors which would influence greater consumption of local products. Additionally, proposed changes to the role of BCTF infrastructure adds uncertainty. Opportunities to support the availability of local foods are as follows:

- Assist producers in achieving direct to consumer sales by supporting the farmers market in securing a permanent location.
- Support opportunities to develop or maintain processing, packing and sorting facilities in the central Okanagan.
- Include food and agriculture in economic development initiatives to promote sustainable growth of the sector.

## 10.5 Attract farm workers and address farmworker housing challenges

Labour shortages and housing for farm workers is a primary issue in the Central Okanagan as much of the agriculture sector relies on temporary foreign workers to harvest produce. Housing workers has proven difficult for producers as policy and zoning restrictions dictate the number of structures which can be developed, and the permitting process can be lengthy. Inconsistencies exist between member municipalities within the RDCO which is problematic particularly for those with farms that cross jurisdictional boundaries. Many producers mentioned TFWH as one of the biggest bottlenecks for the success of their businesses as well as the growth of the sector. Some opportunities to address this issue are as follows:

- Work with ALC to develop standardized temporary housing BMPs to create clarity in expectation for TFWH in the region.
- Work with ALC to develop an expedited application for TFWH in the region.
- Work with municipalities to align regulations across jurisdictions within the Central Okanagan to reduce regulatory strain and improve clarity for producers who operate in multiple jurisdictions.
- Explore alternative housing options for TFWH.
- Address TFWH associated cost burdens.

## 10.6 Advocate on behalf of producers, processors and RDCO agriculture

While there are limits to what local governments can directly do to support agriculture, advocacy to higher levels of government can go a long way in shifting federal and provincial

policies and regulations. Some ways the RDCO can advocate for the agriculture sector are as follows:

- Grow and maintain connections to producers and industry associations to stay up-to-date on what is happening in the industry.
- Inform local government staff and elected officials about issues and context relevant to the agriculture sector.
- Meet with the Minister of Agriculture and/or the ALC at the Union of BC Municipalities forum.
- Ensure that the agricultural sector is included in provincial emergency operations.
- Provide feedback to provincial agencies, such as BC Assessment, Ministry of Forests, and Ministry of Environment and Climate Change Strategy, that make policy decisions that directly impact agricultural land.

## 10.7 Support public education in food and agriculture

During engagement, residents of the Central Okanagan largely expressed an appreciation for the presence of agriculture in the region as it pertained to availability of food and landscapes. However, complaints were also noted which could be solved with better availability of information about agricultural activities. Some opportunities for rectifying ongoing conflicts between the farming and non-farming communities are as follows:

- Launch a public education campaign to improve public perspective on commercial food producers as economic drivers and food security assets for the region.
- Work with real estate agents to develop educational materials for new homeowners on the realities of buying and living next to farmland.
- Provide ongoing informational materials to residents who neighbour farmland about the importance of farm activities such as bird cannons, helicopters, and farm worker housing.
- Develop resources to help direct consumers towards local products such as fruits, vegetables, meat and dairy.
- Work to inform the community about the potential for farmland to support ecosystem services, and the broad benefits which stem from this.

# 11.0 Conclusions and Considerations

The Central Okanagan's identity is in many ways shaped by the orchards, vineyards, and pasturelands that define its landscape. Agriculture shapes regional land use and contributes to the high quality of life enjoyed by residents. At the same time, agriculture continues to compete with other land uses on a limited land base, which is now receiving additional pressures from the impacts of climate change and fast-growing population. The dual pressures of urban development and climate change impacts on farmland further underscore the importance of integrating best practices for land use planning, environmental protection and climate change mitigation and adaptation. These challenges indicate the need for a long-range regional vision and plan for agriculture.

This Report provides a foundation and resource for developing the RAS. However, while the Report is comprehensive, it is acknowledged that it is not an exhaustive compilation of all available facts. The Report provides a starting place for developing the RAS, which will need to consider dynamic trends and initiatives within the Central Okanagan agricultural sector and beyond. The challenges and opportunities uncovered as part of this project have been grounded in the Central Okanagan context through engagement and research. The RDCO now has a set of key themes and potential market opportunities to move forward and begin to undertake the development of the RAS collectively as a region.

With the objectives for this Report being met, consideration for next steps include, but are not limited to:

- Present and share this Report with stakeholders and members of the public;
- Scope and launch the process to develop the RAS;
- Continue to reach out to producers and processors in the region;
- Continue to build relationships with WFN and OKIB in agri-food areas of common interest; and
- Support further research into market opportunities and regional economic development strategies for agriculture.

As agriculture in the Central Okanagan continues to intensify production on existing farms, and expand up into new territory, the RDCO and member stakeholders have an opportunity to explore innovative options and solutions to address emerging land use issues and support agriculture. In particular, emergency planning, water and utilities infrastructure, farmworker housing, and the protection of ecosystem services will likely continue to be priority issues for the regional agricultural sector in the years ahead.

# Appendix A: Engagement Plan

## Engagement Framework

### Engagement Objective

The development of the Regional Agricultural Background Report will focus on engaging with key stakeholders in the agriculture and food sector across the RDCO. Engagement objectives are to understand the regional context, including the assets, gaps, opportunities and challenges faced within the sector and the role local government can have in supporting the sector.

Our approach to stakeholder engagement is guided by the International Association for Public Participation's engagement goals and spectrum. The following levels of engagement will guide public engagement activities. These levels are presented for internal purposes for RDCO staff and the project team to create a shared understanding of the engagement approach.

- Inform: To provide balanced and objective information to assist the agricultural and local communities in understanding the problems, alternatives, opportunities, and/or solutions facing agriculture in the RDCO;
- Consult: To obtain feedback and input from the agriculture and local community on the analysis, alternatives, and/or decisions through the planning process;
- Involve: To work closely with the agriculture and local community throughout the planning process to ensure concerns and aspirations are consistently understood and considered; and
- Collaborate: To work with key stakeholders throughout the planning process on each aspect of the plan to find common ground and identify preferred solutions.

## Engagement Guiding Principles

Our guiding principles for engagement with the public will be based on the following guiding principles:

- Inclusive: involve and enable the participation of all interested parties. We will actively engage with and listen to a diversity of members from the agriculture and local community in the RDCO.
- Transparent: decision-making processes are accessible, honest and understandable. Respective roles and responsibilities will be clearly communicated. Feedback will be provided on what stakeholders shared and how their opinion was considered by decision makers.
- Clear and Accessible information: information and instructions related to public engagement will be provided in clear and simple language and easily understood by the community. Complex ideas will be shared in ways that are easy to grasp and the impact of different decision options will be explained.
- Respectful: engagement requires the mutual respect of all participants. Listening with an open mind will show consideration and value for another person's point of view.
- Honest: be truthful, follow through on commitments and act in a trustworthy manner.
- Adaptive: adapt traditional in-person engagement activities to digital platforms, while ensuring "analog" forms of outreach and engagement, such as phone calls, paper surveys and in-person meetings are made available where possible and necessary.
- Suitable process: Design and implementation of public engagement processes will reflect the size, complexity and community impact of any initiative.

- Consistency: opportunities are presented in a predictable and consistent manner to build understanding of participants' roles and how they can be involved.
- Regional perspective: recognize the unique values and perspectives of RDCO's varied and diverse communities and stakeholder groups. Engagement activities will be developed to balance the specific needs of individual communities with the region as a whole.

## Engagement Activities

### Stakeholder Group Meetings

The consultants will meet with key groups on multiple occasions over the course of the project timeline. These include:

- Agricultural Advisory Committee (AAC) (3-4 meetings)
- Regional Growth Strategy (RGS) Steering Committee (2 meetings)
- Regional Board (3 meetings, in person)

### Stakeholder Interviews

Interviews will be completed with up to 20 key representatives. Interviews will be targeted at including producers, processors, distributors as well as other organizations in the agricultural industry (e.g. COEDC, Invest Kelowna, Young Agrarians, BC Fruit Growers Association, MAF, Farmers Markets, Interior Health, Central Okanagan Food Policy Council, etc.).

The interview questions and discussions will be tailored to the specific interviewee; however, common questions to be discussed will include:

- How would you describe agriculture in the RDCO?
- What do you see as key issues and opportunities for the agriculture sector?
- What do you see as the key gaps in policy, regulations and/or support from the RDCO?
- What with respect to the agriculture sector, is working well in the RDCO?
- What role can local governments play in supporting the sector? [consultants will briefly outline RDCO's authority and provide examples from other jurisdictions]

### Survey

A community-wide survey will be open to all residents but will include specific questions for those who identify as being farmers or other members of the agri-food sector. The objective of the survey will be to gather feedback on issues, challenges, and opportunities framed under the context of what actions are within the RDCO's authority. Survey questions may include topics such as:

- Level of understanding, awareness, and participation in the regional agriculture
- Issues and challenges that exist within the agri-food sector
- Identification of existing food assets in the community
- Market opportunities for local agriculture
- Identification of opportunities for the RDCO to support agriculture

The consultants can distribute the survey on-line using the RDCO's online community engagement platform (YourSayRDCO). The consulting team will assist with promotion of the survey will be done through local social media, websites, and newspapers.

### Site Visits

Some members of the consulting team will travel through the region to ground-truth the landscape and meet with any farmers who prefer in-person interviews. The site visits will

occur during a day associated with in-person Regional Board meeting in order to minimize travel costs.

### Open House

The consultants will facilitate an in-person Open House, open to the general public, in late October/early November. The consultants will prepare all the necessary materials for the event, such as poster boards outlining the project results to date and writing materials for attendees to participate in small break-out groups. The exact format will depend largely on COVID-19 event planning requirements. The RDCO will assist with providing a venue and printing any required documents for the Open House. The objective of the Open House will be to gather information to ground-truth mapping results, collect information relevant to the Market Opportunities Analysis, and present the draft Background Report.

If the event must be held virtually to meet health restriction requirements, it can be hosted through the consulting team's professional Zoom account, to allow participants to provide feedback by speaking to the entire group or putting their feedback in the 'Chat' box. In tandem with Zoom, the consultants can use Mentimeter, a program that allows for interactive polling and visual displays of results in real-time. The consultants have used Mentimeter most recently in a virtual event for the Tri-Cities in which over 75 community members attended and participated in identifying issues and opportunities for the food sector.

## Communication

### RDCO Staff Check-ins

The consultant team will communicate with RDCO staff regularly throughout the project. Communication will occur by email and/or phone on a weekly basis and scheduled check-in meetings will occur at key stages of the project. For example, meetings will occur to discuss the engagement strategy, share results of the background report, policy analysis and engagement results, and discuss the draft AAP.

### Media and Promotion

The consultant team will assist RDCO staff in creating media-ready content with press releases and statements. Media interviews and media briefings/columns/articles can be drafted for local media outlets at key points along the project timeline.

Website content will be produced for the RDCO to be placed on the YourSay project webpage. This will include any 'social media ready' content to help build a following and keep people up to date as much as possible.

## Engagement Timeline

| Event | Date | Purpose |
|---|---|---|
| **AAC** | August 24, 2022 | Introductions |
| **AAC** | September 14, 2022 | Engagement strategy and stakeholder list |
| **RGS Steering Committee** | September 22, 2022 | Introductions and progress |
| **Field Tour of RDCO** | September 26, 2022 | Tour sites of interested and meet with farmers |
| **Regional Board** | September 26, 2022 | Project update |
| **Online Survey** | October-November, 2022 | Public input on key issues |
| **AAC** | October, 2022 | Progress report and open house |
| **Open House** | November 2, 2022 | Public input on key issues |
| **Regional Board** | December 15, 2022 | Presentation of final report |

## Appendix B: Background Report Resources

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 2015 | Agriculture Governance | Guide to Edge Planning | Ministry of Agriculture and Food BC | https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/strengthening-farming/planning-for-agriculture/823100-3_edge_guide_2015.pdf |
| 2021 | Agriculture Governance | ALC Bylaw Review Guide | Agricultural Land Commission | https://www.alc.gov.bc.ca/assets/alc/assets/library/land-use-planning/alc_bylaw_review_guide.pdf |
| 2005 | Agriculture Governance | Using and Developing Trails in Farm and Ranch Areas | Ministry of Agriculture and Food BC | https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/strengthening-farming/planning-for-agriculture/trails-in-farm-and-ranch-areas |
| 1997 | Agriculture Governance | Planning Subdivisions Near Agriculture | Ministry of Agriculture and Food BC | https://www.alc.gov.bc.ca/assets/alc/assets/library/land-use-planning/planning_subdivisions_near_agriculture_1997.pdf |
| 2020 | Agriculture Governance | Guide for Bylaw Development in Farming Areas | Ministry of Agriculture and Food BC | https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/strengthening-farming/local-government-bylaw-standards/840000-1_guide_for_bylaw_development_in_farming_areas.pdf |
| 1998 | Agriculture Governance | Landscape Buffer Specifications | Agricultural Land Commission | https://www.alc.gov.bc.ca/assets/alc/assets/library/land-use-planning/landscape_buffer_specifications_1993.pdf |
| 2020 | Agriculture Governance | On-Farm Composting Guide | Ministry of Agriculture and Food BC | https://farmwest.com/wp-content/uploads/2020/09/composting_guide.pdf |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 2022 | Agriculture Governance | Application Decision Database Portal | Agricultural Land Commission | https://a100.gov.bc.ca/pub/oatsp/list;jsessionid=1014066D8A6AFBF9FEF7AAFB0831FDFF?execution=e1s1 |
| 2020 | Agriculture Governance | Governance and Service Committee: Regional Agriculture Compliance and Enforcement Strategy | Regional District of Central Okanagan | https://pub-rdco.escribemeetings.com/filestream.ashx?DocumentId=2812 |
| 2019 | Agriculture Governance | Cannabis Production in the ALR | Agricultural Land Commission | https://www.alc.gov.bc.ca/assets/alc/assets/legislation-and-regulation/information-bulletins/information_bulletin_04_cannabis_production_in_the_alr.pdf |
| 2021 | Agriculture land | Agriculture Capability and the ALR | Agricultural Land Commission | https://www.alc.gov.bc.ca/assets/alc/assets/library/agricultural-capability/agriculture_capability__the_alr_fact_sheet_2013.pdf |
| 1983 | Agriculture land | Land Capability Classification for Agriculture in British Columbia | Ministry of Agriculture and Food BC | https://www.alc.gov.bc.ca/assets/alc/assets/library/agricultural-capability/land_capability_classification_for_agriculture_in_bc_1983.pdf |
| No date | Agritourism | Okanagan Feast of Fields | Farm Folk City Folk | https://farmfolkcityfolk.ca/feast-of-fields/okanagan-feast/ |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 2018 | Agritourism | BC Wine Facts | Government of BC | https://www.canada.ca/en/agriculture-agri-food/news/2018/04/bc-wine-facts.html |
| No date | Agritourism | Okanagan Valley | Wines of British Columbia | https://winebc.com/discover-bc-wine-country/okanagan-valley/ |
| 2016 | Climate | Climate Projections for the Okanagan Region | Regional District Central Okanagan, Regional District North Okanagan, Regional District Okanagan Similkameen, Pinna Sustainability | https://www.rdno.ca/sites/default/files/2021-04/200303_OK_ClimateReport_Final_0.pdf |
| 2016 | Climate | Okanagan Regional Adaptation Series | BC Climate Initiative | https://www.bcagclimateaction.ca/wp/wp-content/media/RegionalStrategies-Okanagan.pdf |
| 2022 | Climate | Okanagan Central Station Weather Data | Environment Canada | https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnProv&lstProvince=BC&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=1032&dispBack=0 |
| 2022 | Climate | Winfield Station Weather Data | Environment Canada | https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnProv&lstProvince=BC&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=1074&dispBack=0 |
| 2022 | Climate | Plan 2 Adapt - Central Okanagan | Pacific Climate Impact Consortium | https://services.pacificclimate.org/plan2adapt/app/ |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 1962 | Climate | Late Glacial History and Surficial Deposits of the Okanagan Valley | BC Department of Mines and Petroleum Resources | https://a100.gov.bc.ca/pub/acat/documents/r15765/Glacial_History_Okanagan_1229638479345_3b14c7d11bc41141a63e69fdd84aa684c1f8536fbf3c4a39a4f7248e0349c8fd.pdf |
| 2020 | Economic Development | Moving Forward to 2025 | Central Okanagan Economic Development Commission | https://www.investkelowna.com/application/files/6816/0442/2029/Moving_Forward_to_2025_-_Economic_Development_Strategic_Plan_2020_-_2025.pdf |
| 2022 | Economic Development | Agriculture and Agri-tourism Support | Central Okanagan Economic Development Commission | https://www.investkelowna.com/how-we-help/local-business-support/agriculture-agri-tourism-support/ |
| 2019 | Economic Development | Central Okanagan Agriculture Sector Report | Regional District of Central Okanagan & Economic Development Commission | https://www.investkelowna.com/application/files/8515/7687/0019/Central_Okanagan_Agricultural_Sector_Report_.pdf |
| 2019 | Economic Development | Agriculture/ Viticulture Sector Profile | Central Okanagan Economic Development Commission | https://www.investkelowna.com/application/files/4015/7539/5128/Agriculture_-_Viticulture_Sector_Profile.pdf |
| 2022 | Economic Development | Licensed Seafood and Meat Operators: Interactive Map | Ministry of Agriculture and Food BC | https://experience.arcgis.com/experience/e9a5cfddac8440f4846f5f4bf8e986a1/page/App-Home/ |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 2022 | Economic Development | BC Tree Fruits to Close Lake Country Plant: Invest in Oliver | Penticton Western News | https://www.pentictonwesternnews.com/news/bc-tree-fruits-to-close-lake-country-plant-invest-in-oliver/ |
| 2021 | Economic Development | A Path Forward: A Blueprint for BC's Tree Fruit Industry | Ministry of Agriculture and Food BC | https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/crop-production/tree-fruit-stabilization-plan/the_path_forward_-_a_blueprint_for_bcs_tree_fruit_industry.pdf |
| No date | Economic Development | Okanagan Mobile Juicing | Okanagan Mobile Juicing | https://www.mobilejuicing.com/ |
| No date | Economic Development | The Food Hub | University of British Columbia | https://foodhub.ubc.ca/ |
| No date | Economic Development | North Okanagan Regional Community Food Hub Initiative | North Okanagan Land to Table Network | https://landtotablenetwork.com/food-hub/ |
| 2022 | Economic Development | Okanagan Food and Innovation Hub Business Plan | District of Summerland | https://www.summerland.ca/docs/default-source/default-document-library/ofih-business-plan-2022_v4.pdf?sfvrsn=8b4bcefb_0 |
| 2017 | Hazards and Emergencies | Landslide Prompts Evacuation | Castanet | https://www.castanet.net/news/Kelowna/196989/Landslide-prompts-evac |
| 2010 | Hazards and Emergencies | Community Wildfire Protection Plan | Regional District of Central Okanagan | https://www.rdco.com/en/living-here/resources/Fire-Services/Community-Wildfire/RDCO_CWPP_FinalWeb_April2010.pdf |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| No date | Hazards and Emergencies | Emergency Management | Regional District of Central Okanagan | https://www.rdco.com/en/living-here/emergency-management.aspx#White-Rock-Lake-wildfire-community-recovery |
| No date | Hazards and Emergencies | Emergency Preparedness for Farm Animals | Government of Canada | https://www.getprepared.gc.ca/cnt/rsrcs/pblctns/frm-nmls/index-en.aspx |
| No date | Hazards and Emergencies | Wildfire | BC Climate Initiative | https://bcclimatechangeadaptation.ca/climate-issues/wildfire/ |
| 2022 | Invasive Species | Okanagan Invasive Species Online | Okanagan Invasive Species Online | https://www.oiso.ca/ |
| 2022 | Invasive Species | Invasive Weed Control Bylaw | Regional District of Central Okanagan | https://www.rdco.com/en/your-government/invasive-weed-control-bylaw.aspx#:~:text=RDCO%20Bylaw&text=179%20requires%20property%20owners%20within,noxious%20weeds%20and%20tall%20grasses. |
| No date | Invasive Species | OKSIR Home | Okanagan Kootenay Sterile Insect Release | https://www.oksir.org/ |
| No date | Invasive Species | Program Benefits | Okanagan Kootenay Sterile Insect Release | https://www.oksir.org/the-program/program-benefits/ |
| No date | Invasive Species | Starling Control Program | Grape Growers Association | http://www.grapegrowers.bc.ca/starling-control-program |
| 2015 | Plans/ Strategies | Regional Agricultural Plan | Regional District of North Okanagan | https://www.rdno.ca/sites/default/files/2021-06/150915_RAP_Final.pdf |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 2020 | Plans/ Strategies | Agriculture Plan | District of Lake Country | https://www.lakecountry.bc.ca/en/business-information/resources/Document-Manager/Reference-Documents/Agriculture-Plan.pdf |
| 2017 | Plans/ Strategies | Agriculture Plan | City of Kelowna | https://www.kelowna.ca/sites/files/1/docs/related/agriculture_plan_final_august_2017.pdf |
| 2011 | Plans/ Strategies | Agricultural Plan | District of West Kelowna | https://www.westkelownacity.ca/en/city-hall/resources/Documents/Agricultural-Plan.pdf |
| 2016 | Plans/ Strategies | Westbank Centre Agriculture Plan | District of West Kelowna | https://www.westkelownacity.ca/en/City-Hall/resources/Documents/Westbank-Centre-Agriculture-Plan.pdf |
| 2011 | Plans/ Strategies | Agricultural Plan | Regional District of Okanagan-Similkameen Rural Area A & the Town of Osoyoos | https://www.rdos.bc.ca/assets/PLANNING/AreaA/2011/AAP/AAPFinal2011.pdf |
| 2008 | Plans/ Strategies | Agricultural Area Plan | Regional District of Okanagan-Similkameen Rural Area C & the Town of Oliver | https://www.rdos.bc.ca/assets/PLANNING/AreaC/AGPlanC/AreaC-Ag-PlanJun2008.pdf |
| 2020 | Plans/ Strategies | Comprehensive Community Plan | West Bank First Nation | https://www.wfn.ca/docs/westbank_ccp_web.pdf |
| 2022 | Plans/ Strategies | Land Use Planning | Okanagan Indian Band | https://okib.ca/departments/lands-economic-development/land-use-planning |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 2006 | Plans/ Strategies | Agricultural Area Plan | Township of Spallumcheen | https://spallumcheen.civicweb.net/document/7105/ |
| 2022 | Plans/ Strategies | Agri-hub feasibility Study | Township of Spallumcheen | https://www.spallumcheentwp.bc.ca/docs/2022-09-27_-_spallumcheen_agri-hub_final_report_lgp006.pdf |
| 2018 | Plans/ Strategies | Food Secure Oliver | Town of Oliver | https://www.oliver.ca/sites/oliver.ca/files/2022-03/Food-Secure-Oliver-V4.0.pdf |
| 2022 | Policy | Regional Board Strategic Priorities: 2019 - 2022 | Regional District of Central Okanagan | https://www.rdco.com/en/environment/resources/Documents/2019_2022---StrategicPriorities.pdf |
| 2022 | Policy | Regional Districts in BC | Government of BC | https://www2.gov.bc.ca/gov/content/governments/local-governments/facts-framework/systems/regional-districts |
| No date | Policy | Regional Districts Powers and Services | Government of BC | https://www2.gov.bc.ca/gov/content/governments/local-governments/governance-powers/powers-services/regional-district-powers-services/regulatory-powers |
| 2022 | Policy | Order in Council 83 | Province of BC | https://www.bclaws.gov.bc.ca/civix/document/id/oic/oic_cur/0083_2022 |
| No date | Research and Development | Summerland Research and Development Centre | Government of Canada | https://profils-profiles.science.gc.ca/en/research-centre/summerland-research-and-development-centre |
| 2021 | Research and Development | Research Clusters | University of British Columbia | https://research.ok.ubc.ca/research-excellence/research-clusters/ |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| No date | Research and Development | British Columbia Beverage Technology Access Centre | Okanagan College | https://www.okanagan.bc.ca/bcbtac |
| 2021 | Research and Development | Bringing Our Food Home: Okanagan Bioregion Food Systems Project | Kwantlen Polytechnic University | https://issuu.com/emmyhansen/docs/bringing_our_food_system_home_okanagan_web_version |
| 1949 | Soils | Soil Survey of the Okanagan and Similkameen Valleys | BC Department of Agriculture | https://sis.agr.gc.ca/cansis/publications/surveys/bc/bc52/index.html |
| 2022 | Statistics | Stats Can changes “Farm” definition | The Western Producer | https://www.producer.com/news/statcan-changes-farm-definition/ |
| 2021 | Statistics | Farmland Values Report | Farm Credit Canada | https://www.fcc-fac.ca/fcc/resources/2021-farmland-values-report-e.pdf |
| 2021 | Statistics | Census of Agriculture | Statistics Canada | https://www.statcan.gc.ca/en/census-agriculture |
| 2016 | Statistics | Census of Agriculture | Statistics Canada | https://www.statcan.gc.ca/en/census-agriculture |
| 2011 | Statistics | Census of Agriculture | Statistics Canada | https://www.statcan.gc.ca/en/census-agriculture |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 2022 | Statistics | Tax Status Data Set for Central Okanagan | BC Assessment | Custom data set |
| 2015 | Statistics | Agricultural Land Use Inventory | Ministry of Agriculture and Food BC | https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/strengthening-farming/planning-for-agriculture/agricultural-land-use-inventories/okanagan |
| 2021 | Statistics | Canadian Business Counts | Statistics Canada | https://www150.statcan.gc.ca/n1/daily-quotidien/220818/dq220818d-eng.htm |
| 2021 | Statistics | Census of Population | Statistics Canada | https://www12.statcan.gc.ca/census-recensement/index-eng.cfm |
| 2022 | Statistics | Business Licenses | City of Kelowna | https://opendata.kelowna.ca/datasets/business-licence/explore?location=49.899681%2C-119.458400%2C12.55 |
| No date | Waste | Agriculture Wood Waste Chipping Program | Regional District of Central Okanagan | https://www.rdco.com/en/environment/wood-waste-disposal.aspx |
| 2008 | Water | Living Water Smart | Government of BC | https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/water-planning/livingwatersmart_book.pdf |
| 2014 | Water | Syilx Nation siwɬkʷ Declaration | Syilx Okanagan Nation Alliance | https://www.syilx.org/wp/wp-content/uploads/2016/11/Okanagan-Nation-Water-Declaration_Final_CEC_Adopted_July_31_2014.pdf |
| 2021 | Water | Syilx siwɬkʷ Strategy | Syilx Okanagan Nation Alliance | https://www.syilx.org/natural-resources/water/syilx-siw%C9%ACk%CA%B7-strategy/ |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 2021 | Water | Agriculture Water Management in Canada | POLIS Project on Ecological Governance | https://poliswaterproject.org/polis-event-webinar/agricultural-water-management-in-canada/ |
| 2010 | Water | Water Supply and Demand in the Okanagan Basin | Okanagan Basin Water Board | https://www.obwb.ca/wsd/ |
| 2016 | Water | Water Sustainability Act | Government of BC | https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/14015 |
| 2019 | Water | Okanagan Sustainable Water Strategy Action Plan 2.0 | Okanagan Basin Water Board | https://www.obwb.ca/newsite/wp-content/uploads/Okanagan_Sustainable_Water_Strategy_Action_Plan_2_0.pdf |
| No date | Water | Resource Library | Okanagan Basin Water Board | https://www.obwb.ca/library/ |
| No date | Water | Resources for Agricultural Water Users in the Okanagan | Okanagan Basin Water Board | https://www.obwb.ca/ag/ |
| 2017 | Water | Regional Growth Strategy: Priority Projects Plan | Regional District of Central Okanagan | https://www.rdco.com/en/business-and-land-use/resources/Documents/Regional-Growth-Strategy-Priority-Projects-Plan.pdf |
| 2022 | Water | Community Watersheds | Government of BC | https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/community-watersheds |

| Date | Theme | Title | Author/ Organization | Link |
|---|---|---|---|---|
| 2010 | Water | Agriculture Water Demand Model: Report for the Okanagan Basin | Okanagan Basin Water Board, Canada & BC Governments | https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/agriculture-water-demand-model/500300-3_agric_water_demand_model-okanagan_report.pdf |
| 2018 | Water | Landscape Based Agricultural Water Demand Modeling—A Tool for Water Management Decision Making in British Columbia, Canada | Neilsen et al. | https://www.frontiersin.org/articles/10.3389/fenvs.2018.00074/full |
| No date | Wildlife | Ecosystem Connectivity in the Okanagan | Okanagan Collaborative Conservation Program | https://okcp.ca/projects/current-projects/548-ecosystem-connectivity-in-the-okanagan |
| No date | Wildlife | Planning for Ecosystem Connectivity in the Central Okanagan | Okanagan Collaborative Conservation Program | https://okcp.ca/images/projects/planning-for-ecosystem-connectivity-workshop-report-nov-2016.pdf |