COLDSTREAM
agricultural plan

Background Report

... a future for agriculture

TRUE
CONSULTING GROUP

Investment Agriculture Foundation of British Columbia

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936-011

June 2009

ACKNOWLEDGEMENTS

The Coldstream Agricultural Plan has been developed as a collaborative process involving consultation with the residents of Coldstream, government agencies and local stakeholders. A Planning Group, also met regularly with the District and the consultants to provide valuable input on the plan and the planning process. We wish to thank the following participants for their contribution and commitment to the planning process.

- Agricultural Advisory Committee

  Maria Besso, Council
  Richard Enns, Council

  Dr. Lois E. Philp, Farming/Agriculture Community
  Doug Stevenson, Farming/Agriculture Community

  Mike McMorran, Community at Large
  Perrin Hayes, Community at Large

  Paul Christie, Advisory Planning Commission

  Ted Osborn, Coldstream Ranch

  Stan Combs, Ministry of Agriculture & Lands
  Kevin Murphy, Ministry of Agriculture & Lands

  Craig Broderick, MCIP, Development Services
  Michelle Austin, Development Services

  Jane Mastin, MCIP, TRUE Consulting Group
  Dave Whiting, P. Ag., MCIP, Consultant

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1.0 INTRODUCTION

1.1 PLAN PURPOSE

The purpose of the Agricultural Plan is to improve conditions for agriculture:

"to enhance the viability of the agricultural sector in the District of Coldstream (the District) by addressing farm viability issues arising from resource potential, diversification opportunities, urbanization conflicts and competition for agricultural land." While it is recognized that there are a broad range of issues and jurisdictions that have an impact upon agriculture, the main focus of this Agricultural Plan will be on those issues that lie within the jurisdiction of the District.

1.2 PLAN GOALS & OBJECTIVES

The specific objectives for the Agricultural Plan as outlined in the Terms of Reference for the project are as follows:

a. To undertake a comprehensive analysis of the agricultural industry and the resource base.
b. To identify agricultural issues, trends, opportunities and challenges facing the agricultural industry.
c. To develop strategies and policies to take advantage of opportunities and mitigate challenges.
d. To develop policies to protect agricultural land.
e. To develop policy and establish criteria to assist in the evaluation of ALR exclusion, non-farm use and subdivision applications.
f. To provide recommendations that will promote public awareness of the importance of agriculture.

1.3 RELATIONSHIP TO DISTRICT OCP

The District of Coldstream Official Community Plan (OCP) was adopted by Bylaw No. 1445 on March 14, 2005. The OCP sets out a strategy for growth management in the community and includes policies that guide the management of agricultural lands in the community. The two existing overarching OCP objectives for agriculture are:

No.	*OCP Policy*
3.2.1	Council's objective is to preserve the rural and agricultural character of Coldstream to the greatest extent possible.
3.2.2	Council's objective is to retain the viability of agricultural uses and agricultural land.

The Agricultural Plan will be shaped by the direction expressed in these policy statements and will provide a comprehensive strategy for agriculture that can be adopted as a component of the OCP.

1.4 PLAN LOCATION

The District of Coldstream is located north and east of Kalamalka Lake towards the northern end of the Okanagan valley. District boundaries are shared with the City of Vernon and Electoral Areas B, C and D in the North Okanagan Regional District (RDNO).

1.5 PLAN PROCESS

The Coldstream Agricultural Plan was initiated in the spring of 2008 by the District of Coldstream. An outline of the planning process is provided as Figure 1.

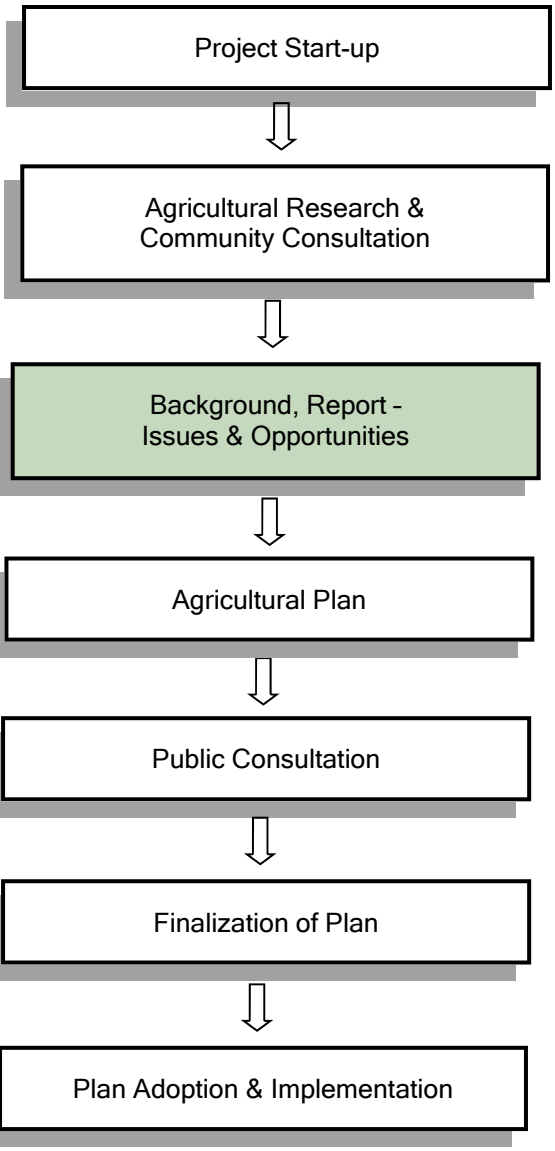
The Background Report presents the results of the research, community consultation and issue identification stages of the planning process. A second report, the Agricultural Plan, will provide policy strategies and recommendations to address relevant issues and opportunities.

1.6 REPORT FORMAT

The Background Report initially provides an overview of the local area and existing agricultural context. The remainder of the report examines issues and opportunities relating to the future of agriculture. Key topics include, land management, servicing, markets and water infrastructure and servicing.

Appendix A provides a list of references consulted for this project; Appendix B includes an Agriculture Overview for Coldstream that was prepared by the Ministry of Agriculture & Lands using data primarily from Statistics Canada; Appendix C provides detailed information on the potential impacts of Climate Change at Coldstream and Appendix D includes a summary of the responses to the agricultural survey.

Figure 1.1 Plan Process



December 2008 – Open House

2.0 THE IMPORTANCE OF AGRICULTURE

2.1 AGRICULTURAL SETTLEMENT HISTORY

The agricultural potential of the Coldstream valley was identified early in the settlement history of the Okanagan area. Photographs from the early 1900's show densely planted orchards and fields. Intensive agriculture production supported a vibrant local agricultural industry that included packing and shipping facilities and slaughterhouses.

Early efforts to settle the area resulted in the subdivision of valley lands into many "small" farm parcels ranging from 4 – 15 ha. The majority of the farm properties in Coldstream are still within this size range (Table 2.1). While many of these small farm properties are independently owned and occupied, there are also a great many smaller lots that are owned and used as part of the Coldstream Ranch (see Section 2.3), one of the largest operating ranches in British Columbia.

Table 2.1 Parcel Size Inventory

Parcel Size		Statistics Canada, 2006	
		No. of Farms	% of Farms
ha	acres		
<4	<10	66.0	49%
4 to 52	10 – 29	59.0	44%
52 to 161	130 – 399	7.0	5%
>161	>400	2.0	1%
	Total	134.0	100%

2.2 AGRICULTURE TODAY

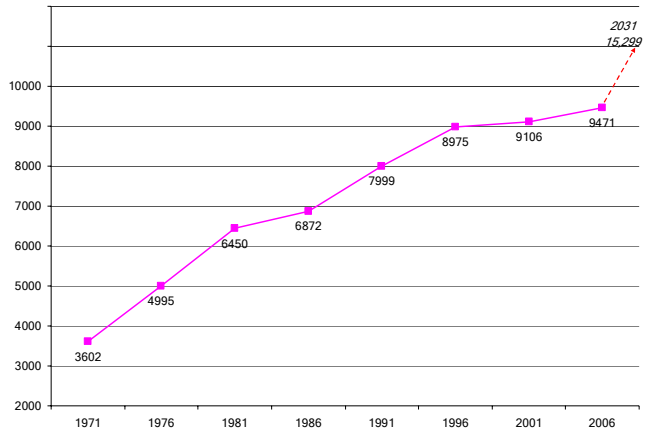
2.2.1 Statistics Canada Review

A comprehensive Agricultural Overview was prepared by the Ministry of Agriculture & Lands (MAL) based primarily on information from the Statistics Canada 2006 Census on Agriculture – Farm Data Tables – British Columbia – Special Run for Coldstream.

The Agricultural Overview is attached as Appendix B. General facts from the overview are as follows.

- population has increased an average of 168 persons/year or 50 to 75 homes per year, from 1971 to 2006;
- there were 134 farms in Coldstream in 2006 - 18 fewer farms than were reported in 1996. The District's farm population is estimated to be 402 persons, using the BC average of 3 persons per farm. (Note: These numbers may be low as the survey of farm properties conducted for this Plan identified 250 separately owned properties with provincial farm assessment classifications);
- only 1.5% of B.C.'s population is classified as "farm" population but in Coldstream this number is over 4.0%;
- 79% of the Coldstream population classify themselves as living in an urban area and 21% report living in a rural setting (1,981 persons);
- the amount of owned farmland has decreased by 310 ha (7%) from 1996 (4,637 ha) to 2006 (4,327 ha);

Figure 2.1 Population Trends (Source: Statistics Canada & City of Vernon Projection)



- the Coldstream Ranch represents:
  - 58% of the land in the ALR
  - 33% of the land in the District of Coldstream.

- the largest agricultural land use is pasture, most of which is leased land that is used to support range cattle;

- "crops" are also an important part of the agriculture sector and are dominated by crops associated with haylage and corn silage production;

- a relatively small area (93 ha) is identified for fruits, nuts and berries, the majority of which is held as orchard in a few farms;

- average gross farm receipts per farm increased from 1995 to 2005 by 15.9% in the District of Coldstream compared to an increase of 59% for BC as a whole during the same period;

- 66% of the farms (89 farms) reported farm receipts less than $10,000, compared to 48% of all BC farms and 54% of farms in the North Okanagan Regional District (RDNO);

- between 1996 and 2006, Coldstream's farm capital increased by over $41.7 million. Just over 90% of this increase was accounted for by increases in the value of land and buildings;

- in 2006, 89% ($104 million) of the division of capital was in land and buildings; and

- 405 persons or 8% of the labour force are employed in agriculture.

2.2.2 Agriculture Land Use Inventory

In the summer of 2008 MAL conducted an inventory of farm land uses. The resulting information is provided as an Agricultural Land Use Map, Figure 2.2. The areas attributed to each of the land uses shown in Figure 2.2 are summarized in Table 2.2 Agricultural Land Use Inventory.

Table 2.2: Agricultural Land Use Inventory

Land Use	Area (ha)	Agricultural Use	Number of Properties
Forage operation	1721.5	38.7%	264
Beef cattle farm	1403.1	31.5%	80
Range	516.9	11.6%	13
Horse farm	250.8	5.6%	106
Orchard	208.0	4.7%	43
Tree Farm	51.2	1.1%	11
Greenhouse Operation	42.4	1.0%	1
Dairy farm	38.9	0.9%	5
Other	37.3	0.8%	4
Ginseng farm	33.1	0.7%	4
Turf Farm	32.4	0.7%	4
Equestrian/ Horse Farm	32.2	0.7%	4
Pasture	23.2	0.5%	13
Livestock operation - Type Unknown	19.4	0.4%	8
Nursery	17.4	0.4%	5
Field vegetable farm	15.9	0.4%	6
Christmas tree farm	3.9	0.1%	1
Sheep/Goat Farm	2.7	0.1%	2
Llama/Alpaca Farm	2.0	0.0%	1
Subtotal - Agricultural	4452.3	100.0%	575
Unknown or Non-agricultural	1905.9	N/A	3331
Total Land Inventoried	**6358.2**	**100**	**3906**

COLDSTREAM
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City of Vernon
Coldstream
Kalamalka Lake Provincial Park
Kalamalka Lake

39th Avenue
25th Avenue
Mission Road
Hwy 97
Hwy 6
CNR
Pottery Road
Middleton Way
Kalamalka Road
Hunter Creek
Coldstream Creek
Palfrey Drive West
Cosens Bay Road
Buchanan Road
Deep Lake
King Edward Lake Road
Learmouth Road
Brewer Road

- District of Coldstream Boundary
- Agricultural Land Reserve (ALR)
- Lakes
- Railway
- Watercourses
- Property Boundaries
- Roads
- Coldstream Ranch

Agricultural Land Uses 2008

- Beef Cattle Farm
- Christmas Tree Farm
- Dairy Farm
- Equestrian Facility
- Field Vegetable Farm
- Forage Operation
- Ginseng Farm
- Greenhouse Operation
- Horse Farm
- Livestock Operation - Type Unknown
- Llama/Alpaca Farm
- Nursery
- Orchard
- Other
- Pasture
- Range
- Sheep/Goat Farm
- Tree Farm
- Turf Farm

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Map Produced: January 27th 2009

Note 1: This figure provides a general representation of properties in the ALR. For exact boundaries consult the maps retained by the Agricultural Land Commission
Note 2: Land use data collected by the Ministry of Agriculture and Lands 2007 and 2008

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Figure 2.2: Agricultural Land Uses

The land use inventory data supports the following general observations:

- the Coldstream Ranch dominates agricultural land use activity in the valley;
- the majority of agricultural land use activities are associated with livestock production including pasture, forage and hay production and beef farms;
- horse/equestrian farms are a significant agricultural activity in the area. Of the 575 "agricultural" parcels surveyed by MAL in 2007, 110 properties were identified with horse or equestrian uses;
- the area supports a diverse array of agricultural land uses although there are relatively few properties supporting more intensive types of agriculture (e.g. field vegetables, berries);
- intensive forms of agriculture (e.g. orchards, nurseries), are located throughout the plan area. This supports observations that there are consistently high agricultural values throughout the plan area;
- agricultural land uses are almost entirely contained within the Agricultural Land Reserve (ALR) boundaries. The exceptions, agricultural lands outside of the ALR boundary, are primarily located on the hillsides and used for grazing;
- MAL focused their study on lands within the ALR. Coldstream Ranch has significant land holdings that are used for grazing and are located out of the ALR. and were included in the survey as shown on Figure 2.2; and
- the agricultural area inventoried by MAL (4452.3 ha) is relatively consistent with the amount of "owned" farmland reported by Statistics Canada (4327 ha).

Figure 2.3 maps farm properties as identified through BC Assessment. To quantify as a farm (Class 9) the property must produce a prescribed amount of qualifying primary agricultural products for sale such as crops or livestock. Farm classification is calculated by BC Assessment as follows:

Minimum income requirements for farm classification are:

a) $10,000 on land less than 8,000 m² (2 ac).
b) $2,500 on land between 8,000 m² (2 ac) and 4 ha (10 ac).
c) On land larger than 4 ha (10 ac) you must earn $2,500 plus five per cent of the actual value of any farm land in excess of 4 ha (10 ac).

It is significant to note that there are 249 separate registered owners of the farm properties shown on Figure 2.3. This suggests that the number of farms in Coldstream is significantly higher than the 134 farms reported in the 2006 Census.

COLDSTREAM
agricultural plan

City of Vernon
Coldstream
Kalamalka Lake Provincial Park
Kalamalka Lake

39th Avenue
25th Avenue
Hwy 6
Hwy 97
CNR
Mission Road
Pottery Road
Middleton Way
Kalamalka Road
Hunter Creek
Coldstream Creek
Pallrey Drive West
Cosens Bay Road
Buchanan Road
Brewer Road
King Edward Lake Road
Learmouth Road
Bluenose Road

Coldstream Ranch
Class 9 Farms
Agricultural Land Reserve
Lake
District of Coldstream Boundary
Property Boundaries
Roads
CN Railway

Total Area of the District of Coldstream = 6355.6 hectares
Total Area of all Class 09 Farms in the District of Coldstream = 4163. 1 hectares

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Map Produced: January 27th 2009

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Figure 2.3: Class 9 Farms

2.2.3 Agricultural Land Reserve

The location and extent of the ALR is shown on Figure 2.4. Figure 2.4 illustrates that the urban areas of both Coldstream and Vernon are pushing against the boundaries of the ALR. Since Coldstream is projected to continue growing, we can anticipate that there will be continued pressure for ALR exclusions.

As evidenced in Section 3, most of the valley land is highly suitable to and capable of supporting agriculture. Most of the Coldstream agricultural lands have improved (irrigated) agricultural capability rating of Class 1 to Class 3, where Class 1 represents the highest agricultural capabilities and Class 7 the lowest. This high capability agricultural land is a valuable resource in B.C., where only 1% falls into the Class 1 to 3 agricultural capability.

The current Coldstream OCP places great importance on the preservation of Coldstream's agricultural land and rural character. The net result is that existing policies protect as much ALR as possible. Nonetheless, the District has also recognized that the high degree of growth is going to place ongoing pressures on ALR. Anticipating ongoing pressures on ALR, the District commissioned an independent study to consider key locations and their suitability for development. The study conducted by Urban Systems in 2006 reviewed 7 sites as shown on Figure 2.4. Six of these sites contain high capability lands and the report concluded that:

> *Given high agricultural capability ratings, the rationale for any potential exclusions would have to be based on demand for non-agricultural uses, or on other factors not related to the agricultural potential. (USL, 2006)*

Agricultural Land Commission (ALC) staff provided an update on the status of these sites in 2008 that is also included in Table 2.3. The results of the 2006 study, and the comments presented in Table 2.3, reinforce the fact that these lands are a valued and significant part of the province's inventory of protected agricultural resources.

Table 2.3 Agricultural Land Review – Key Sites

Site	*Name*	*Comments on ALR Status & Review*
1	Okanagan College	• original authorization for College required use of remaining lands for research and teaching
2	Palfrey-Kidston	• good agricultural capability
3	Palfrey Dr. East	• has been previously reviewed by the Commission
4	Coldstream Meadows	• ALR approval for existing development phases, exclusion may be support upon build-out but requires buffer
5	Coldstream Lumber	• local government requires regional inventory of industrial demand/supply
6	Purshin Site	• has been previously refused exclusion
7	Lavington Industrial Area	• local government requires regional inventory of industrial demand/supply • status of glass factory lands will be considered
8	Portion of Spicer Block (Coldstream Ranch)	• designated for Residential-Mixed Cluster in OCP • subject to ALC conditions (conditions include Coldstream Ranch lot consolidations)

COLDSTREAM
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City of Vernon
Coldstream
Kalamalka Lake Provincial Park
Kalamalka Lake

1. OKANAGAN COLLEGE
2. PALFREY/KIDSTON LANDS
3. PALFREY DRIVE EAST AREA
4. COLDSTREAM MEADOWS
5. COLDSTREAM LUMBER AREA
6. PERSHIN SITE
7. LAVINGTON INDUSTRIAL AREA
8. SPICER BLOCK

39th Avenue
25th Avenue
Pottery Road
Mission Road
Hwy 97
Hwy 6
CNR
Middleton Way
Kalamalka Road
Hunter Creek
Coldstream Creek
Palfrey Drive West
Cosens Bay Road
Buchanan Road
Learmouth Road
Brewer Road
Bluenose Road
Deep Lake

District of Coldstream Boundary
Lakes
Railway
Watercourses
Property Boundaries
Roads
Agricultural Land Reserve (ALR)
Review Sites

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Map Produced: January 27th 2009

Figure 2.4: Agricultural Land Reserve (ALR)

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2.3 COLDSTREAM RANCH

Coldstream Ranch (the Ranch) has had a central role in the development of the regional agricultural economy and it continues to dominate the local agricultural sector. As evidenced in Figure 2.2 and 2.3, the Ranch represents 33.5% of the land area in the District and 51% of the [BC Assessment] Class 9 farmland in the District. Table 2.4 itemizes the parcel sizes held by the Ranch.

Table 2.4 Coldstream Ranch Holdings

Land Inventory: Parcel Size		Coldstream Ranch		
		No. of Parcels	% of Parcels	Area (ha)
ha	acres			
<4	<10	61	47%	161.6
4 to 52	10 - 129	50	39%	787.5
52 to 161	130 - 399	17	13%	787.5
>161	>400	1	1%	394.0
	Total	129	100%	2130.6

A brief overview of the Ranch as provided by the British Columbia Archival Information Network Display demonstrates the influence the Ranch has had on land ownership, the agricultural economy and servicing infrastructure.

Historical Overview

In 1863, three former officers of the British army arrived in the North Okanagan. Two of the officers, brothers Forbes and Charles Vernon, pre-empted land in the Priest Valley area, later to become the City of Vernon. The third officer, Capt. Charles F. Houghton, applied for and received a Crimean War military land grant of 1,450 acres. This area forms the central core of the Coldstream Ranch. In 1871, Capt. Houghton was elected to the House of Commons in Ottawa, and sold the ranch to Forbes Vernon, who began actively purchasing land throughout the Coldstream Valley. Shortly after purchasing the ranch, Vernon also entered politics, and was elected to the B.C. Legislature in 1875. By the year 1891, Forbes Vernon was spending much of his time in Victoria, and decided to sell the then 13,261-acre ranch to Lord and Lady Aberdeen from Scotland. Lord Aberdeen built extensive irrigation and domestic water works and began subdividing the land into lots of 10 to 40 acres, making land available for new settlers and encouraging development in the area. Once this had been done, the Coldstream Ranch became the site of the first commercial orchard in the Okanagan. In 1893, Lord Aberdeen was appointed Governor-General of Canada for a six-year term. In 1906, realizing that additional sources of water were required to service the extensive orchard lands, Lord Aberdeen brought in other shareholders to form Coldstream Estate Limited. An ambitious irrigation canal construction program was then initiated, with major capital supplied by James Buchanan, a British businessman and owner of the 800-acre Lavington Ranch property east of the Coldstream Ranch. He purchased the Coldstream Ranch from Lord Aberdeen in 1920 and later conveyed it to his daughter, Lady Catherine Macdonald-Buchanan, who operated it as a sole proprietorship until 1948. In that year, the Ranch was incorporated with five directors from B.C. In 1994, the ranch was sold to the Keith Balcaen family of Lavington.

(Source: http://aabc.bc.ca/access/aabc/archbc/display/Vern-2)

The Coldstream Ranch continues to be a working cattle ranch owned and operated by Keith Balcaen. General characteristics of the current operation include:

- 7000 – 8000 cattle;
  - 2400 cows
  - 4700 head feedlot
  - 100 bulls
- 300 ha corn;
- onsite staff residences;
- heritage buildings;
- 400 ha hay and irrigated pasture; and
- extensive crown land leases and private land leases for rangeland.

General Comments from Coldstream Ranch

- there are challenges in conducting an intensive farm operation in what is essentially a suburban area;
- there may be opportunities for limited grazing within parts of Kalamalka Park as a sustained fuel management strategy;
- continue to work with MoT to coordinate improvements to the road network to assist farming practices. Encourage continued grading of Highway 6 between Aberdeen to Richardo Roads as approved by ALC and MoT. Roads bordering Ranch property have high traffic volume;
- future underpass to assist the movement of slow moving vehicles and cattle across Highway 6;
- the business requires staff experienced working with animals and there is a shortage of experienced cattlemen. Beef education infrastructure is available in Alberta but there may be opportunities for apprentice programs locally or through Thompson Rivers University, Kamloops;
- the Ranch recognizes the importance of environmental resources, particularly water courses, and commits to working with Ministry of the Environment to manage fishery resources;
- business success is influenced by national and international market forces that are beyond the mandate of the District of Coldstream; and
- business success is also attributed to:
  - diversity of farm related operations (e.g. gravel pit, onsite manure management, forestry);
  - large land base; and
  - existing economies of scale.

3.0 ENVIRONMENTAL

3.1 SOILS & AGRICULTURAL LAND SUITABILITY

The Coldstream Climate

Coldstream has a semi-arid climate characterized by hot, dry summers and crisp, largely overcast, often snow-free winters with air temperatures below freezing for about ten weeks. Cold arctic air occasionally intrudes into the valleys during the winter allowing temperatures to drop to as low as -25°C.

The Climate Capability for Agriculture classification system assesses the agricultural capability as influenced by climate alone. The classification system is based on both thermal and moisture parameters including Freeze Free Period, Growing Degree Days, Effective Growing Degree Days, and Climatic Moisture Deficit. Long term climatic data averages are combined with interpretations of topography (including elevation, slope and aspect) to obtain Climate Capability Classes.

The 11 climate capability classes in British Columbia comprise classes 1 to 7, as well as classes 1a, 1b, 1c and 1d. The highest climate capability class is 1d which can support the cultivation of the greatest variety of crops – class 7 climates cannot support agricultural production due to the severe climatic limitations of temperature and/or moisture.

In the absence of supplemental water from irrigation, the Climate Capability for Agriculture for the District of Coldstream would be class 6A. The sub-class A indicates aridity as a consequence of the semi-arid climate of the area. A moisture deficit between May 1st and September 30th limits plant growth.

In the absence of supplemental water, agriculture is limited to the grazing of native plant species.

Figure 3.1 shows the improved rating of Climate Capability for Agriculture where the provision of supplemental water through irrigation is presumed. The highest class within Coldstream is Class 1cG. This climate is capable of supporting the highest range of crops in the plan area. The sub-class "G" indicates that insufficient heat units limit the area being classified Class Id, the classification found in areas of the South Okanagan and the highest category in the British Columbia climate classification system.

Water Storage Capacity of Soils

Due to the need for irrigation in the District of Coldstream to reduce the climatic moisture deficit and achieve maximum agricultural production, the water storage capacity of soils is an important factor affecting irrigation water demand and timing. Soils vary in their ability to store water as a function of their texture (size of particles) and structure (arrangement of the soil).

The Available Water Storage Capacity (AWSC) is the depth of water that can be retained between field capacity and the permanent wilting point.

Figure 3.2 was produced using the AWSC for each soil series identified in the "Soil Management Handbook for the Okanagan and Similkameen Valleys" published by MAFF in 1994 and applying the ratings to each 1:20,000 soil series map polygon. The AWSC was classified into high (>165), Moderate (90 – 165) and Low (<90) based on the Soil Management Handbook criteria.

Agricultural Capability

Agricultural Capability assessment is based on Climate Capability for Agriculture mapping and soil mapping that includes the assessment of the physical and chemical properties of soils and topography. In general, the Climate Capability for Agriculture component determines the range of crops possible in the area. The soil characteristics govern the type and relative levels of management practices required as an outcome of soil limitations. Both the climate capability theme and the soil characteristic theme are brought together in the Land Capability for Agriculture mapping. (Figure 3.3)

Land classified class 1 for agricultural capability has no management limitations for the agricultural producer as a result of soil or climate characteristics. Increasing levels of management limitations shift the land capability classification through six additional categories from Class 1 to Class 7. Figure 3.3 indicates that within the portion of the District of Coldstream where soil mapping has occurred, Agricultural Capability classes fall within improved classes 1 to 7. These classifications are for "improved" conditions and assume the provision of irrigation water to offset the climate limitation of aridity associated with the local climate. A significant portion of the ALR within the District contains very high capability lands.

The Agricultural Capability for Agriculture in the District of Coldstream was assessed using the modified form for fruits and grapes which rates the limitations associated with stoniness and topography with less strict criteria than the assessment method in most other agricultural areas of BC. These assessment systems are documented in "Land Capability Classification for Agriculture in British Columbia MOE Manual 1".

To summarize, the climate and soil characteristics for agriculture within the District of Coldstream are of extremely high capability relative to other agricultural areas within Canada. A very wide variety of crops can be grown. This potential, however, can only be realized with supplemental irrigation.

COLDSTREAM
agricultural plan

City of Vernon
Coldstream
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Learmouth Road
Brewer Road
King Edward Lake Road

Climate Capability for Agriculture (assuming supplemental irrigation)

Climate Class	Frost Free Period	Growing Degree Days accumulated above 5°C
1c	Greater than 150 days	2060-2225
1b	Greater than 150 days	1780-2059
1a	120-150 days	1505-1779
1	90-119 days	1310-1504

Climate subclass

Climate subclass	Limitations suppressing agricultural capability
F	Minimum temperature near freezing will adversely affect plant growth during the growing season
G	Insufficient heat units during the growing season

- Property Boundaries
- Watercourses
- Railway
- Lakes
- Agricultural Land Reserve (ALR)
- District of Coldstream Boundary
- Roads
- 1cG
- 1bG
- 1aF
- 1aFG
- 1 F

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Map Produced: January 27th 2009

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Figure 3.1: Climate Capability for Agriculture

COLDSTREAM
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City of Vernon
Coldstream
Kalamalka Lake Provincial Park
Kalamalka Lake

39th Avenue
25th Avenue
Hwy 6
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Brewer Road
Learmouth Road

District of Coldstream Boundary
Agricultural Land Reserve (ALR)
Lakes
Railway
Watercourses
Property Boundaries
Roads

Available Water Storage Capacity (AWSC)
Low
Moderate
High

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Figure 3.2: Available Water Storage Capacity (AWSC)

COLDSTREAM
agricultural plan

City of Vernon
Coldstream
Kalamalka Lake Provincial Park
Kalamalka Lake

39th Avenue
25th Avenue
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Learmouth Road

District of Coldstream Boundary
Agricultural Land Reserve (ALR)
Lakes
Railway
Watercourses
Property Boundaries
Roads

Land Capability Class

- *1 - Land in this class has no or only slight limitations that restrict its use for the production of trees fruits or grapes
- *2 - Land in this class has minor limitations that require good ongoing management practices or slightly restrict its use for the production of tree fruits or grapes, or both.
- *3 - Land in this class has limitations that require moderately intensive management practices or moderately restrict its use for the production of tree fruits or grapes, or both.
- 1 - Land in this class has no or only slight limitations that restrict its use for the production of common agricultural crops.
- 2 - Land in this class has no or only slight limitations that require good ongoing management practices or slightly restrict the range of crops, or both.
- 3 - Land in this class has limitations that require moderately intensive management practices or moderately restrict the range of crops, or both.
- 4 - Land in this class has limitations that require special management practices or severely restrict the range of crops or both.
- 5 - Land in this class has limitations that restrict its capability to producing perennial forage crops or specially adapted crops
- 6 - Land in this class is nonarable but is capable of producing native and/or uncultivated perennial forage crops
- 7 - Land in this class has no capability for arable culture or sustained natural grazing
- X - Unclassified organic soils

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N

1:45,000

0 0.5 1 2 3 4 Kilometers

Map Produced: January 27th 2009

The capability classification of each soil polygon represents the dominant classification of soil types within the polygon. This dominant classification could represents between 40% to 100% of the polygon area.

X:\LandProjects2007\936-011\p\936-011-Coldstream_Agricultural_Capacity_Map.mxd

Figure 3.3: Land Capability for Agriculture, Improved

3.2 CLIMATE & CLIMATE CHANGE

A comprehensive review of select climate variables is provided in Appendix C – Climate Change at Coldstream Past and Future. The key findings as they related to a future for agriculture in the Coldstream Valley are as follows:

Key Findings – Climate Change Trends:

- the climate of Coldstream will continue to become warmer. The ClimateBC model predicts an increase from historical normals in Mean Annual Temperature of between 2.0 and 4.0 C° by the 2050s across the District depending on the climate change scenario and local micro-climates. The warming climate is primarily as a result of warmer nights resulting from increased cloud cover; and
- The ClimateBC model predicts an increase in frost free days from historical normals of between 20 and 40 days depending on the climate change scenario and topography.

Key Findings – Potential Impacts on Agriculture:

- higher crop productivity;
- higher rates of evapo-transpiration and associated water demand;
- longer irrigation season;
- greater range of potential crops including:
  - increase of tropical species in greenhouse operations; and
  - grape and soft fruit production;
- increased number of hay harvests;
- increased wildfire hazard;
- decreased winter heating costs associated with greenhouse operations and poultry and livestock facilities;
- increased summer cooling costs associated with greenhouse operations and poultry and livestock facilities;
- low temperatures appear to be becoming less variable and there is a reduced frequency of extreme cold events. Variability of low temperature appears to be decreasing at different temporal scales – annual, seasonal and daily. The potential impacts of low temperature variability on agriculture include:
  - decreased potential from crop damage from extreme cold;
  - winter survival, and more life cycles, of pests and diseases; and
  - greater variety of pests and diseases;
- summer precipitation, as predicted by the climate variable maps, shows little change from the map showing 1960 – 1990 normals. This is consistent with the graph of historical data of summer precipitation (Appendix C – Figure 5) over the past 100 years. The increasing precipitation shown historically in the graph falls within the category (92-137 mm). Consistent precipitation, in conjunction with higher summer temperatures, will result in an increase in evapo-transpiration. This will result in an increased demand for supplementary irrigation of agricultural crops. The increased demand may be tempered slightly be greater summer precipitation; and
- precipitation as snow reflects the interplay of temperature and precipitation. At high elevations, climate change can result in more snow as a result of an increase of precipitation where temperatures are below freezing. At lower elevations climate change can result in less precipitation as snow due to the precipitation occurring at temperatures above freezing. In the case of Coldstream, the ClimateBC model does not indicate change from the 1960 – 1990 normals in the precipitation as

snow. The categories on the maps are too large to indicate the changes. It is important to note, however, in the areas of the Okanagan Highlands both North and South of Coldstream within the watersheds managed for Coldstream irrigation, the ClimateBC model indicates a decrease in precipitation as snow. This could influence the optimal management of the irrigation reservoirs.

3.3 SENSITIVE ECOSYSTEMS & WATERCOURSES

Figure 3.4 identifies sensitive ecosystems and watercourses in the plan area. As shown, the areas with higher sensitivity ratings are located on lands above the Coldstream Valley. The sensitive ecosystem ratings presented in Figure 3.4 were developed by the Okanagan Collaborative Conservation Program (OCCP) to assist local government planning. The sensitivity ratings rank habitats and key movement corridors as follows:

Low – little or no inherent ecological value or importance as wildlife habitat

Medium – moderate ecological importance based on ecosystem rarity and sensitivity and/or value to rare wildlife

High – locally and provincially significant ecosystems and are of critical importance to rare wildlife species

The Sensitive Ecosystem Ranking (SER) is derived from 1:20,000 Terrestrial Ecosystem Mapping (TEM) and Sensitive Ecosystem Inventory (SEI) map products. These assessments have provincially-set standards and are undertaken by multi-disciplinary teams that assess soils, terrain, vegetation, ecosystems and wildlife habitat values to produce the three map products. TEM is undertaken initially, sensitive ecosystems are then inventoried within the TEM polygons, and finally the sensitive ecosystems are ranked to produce the SER map. The Coldstream area was part of wider regional TEM, SEI and SER initiatives undertaken as well in the Bellavista – Goose Lake Range, Coldstream – Vernon, and Vernon Commonage areas between 2002 and 2008 (Iverson, K. and Uunila, P., 2008)

In terms of agricultural planning, the relationship between agriculture and sensitive environments will need to address:

- maintaining appropriate buffers and setbacks from sensitive watercourses;
- monitoring water quality and minimizing the migration of agricultural by-products into the water system;
- management of sensitive grasslands used for grazing; and
- limiting agricultural intrusion into grasslands, particularly where intensive crop plantings (e.g. vineyards) completely eradicate grasslands.

COLDSTREAM
agricultural plan

City of Vernon
Coldstream
Kalamalka Lake Provincial Park
Kalamalka Lake

39th Avenue
25th Avenue
Hwy 6
Hwy 97
CNR
Mission Road
Pottery Road
Middleton Way
Kalamalka Road
Hunter Creek
Coldstream Creek
Palfrey Drive West
Cosens Bay Road
Deep Lake
Buchanan Road
Brewer Road
King Edward Lake Road
Learmouth Road
Bluenose Road

District of Coldstream Boundary
Agricultural Land Reserve (ALR)
Lakes
Railway
Watercourses
Property Boundaries
Roads
20m Contours

Sensitive Ecosystem Ranking
Low
Medium
High

N
0 0.5 1 2 3 4 Kilometers
1:45,000
Map Produced: January 27th 2009

TRUE CONSULTING GROUP

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Figure 3.4: Sensitive Ecosystem Ranking

4.0 GROWTH & INFRASTRUCTURE

4.1 GROWTH

The City of Vernon, in the process of regional transportation planning, projects a population growth for Coldstream of 15,299 persons by 2031. This is based on a growth rate of approximately 2% per year (2% in urban areas and 0.4% in rural areas).

Growth projections for the area anticipate a population increase in the next 25 years that is comparable to the increase experienced over the previous 35 years (5800 persons). With the average household size of 2.8 persons, this represents a projected demand for approximately 2000 new housing units. This growth rate may be optimistic for Coldstream because:

- provincial projections are typically lower (approximately 1.25%);
- there is a substantial inventory of new building opportunities in other nearby areas such as RDNO and Vernon; and
- an aging population may not support continued demand for the traditional large lot, and single family housing stock that dominates the Coldstream housing inventory.

In consideration of these factors, more conservative projections for Coldstream are estimated at 4200 – 4750 persons or 1500 new households from 2009 to 2034/44.

An inventory of development opportunities (land designated for new development) was conducted as part of this planning process that identified development opportunity for approximately 1000 new units. New residential development is also supported for the Town Centre (approximately 100 units) and there may be some additional build-out for the Coldstream Meadows Project. Additionally, a portion of the Spicer Block site is supported in the OCP for future development. The Spicer Block is not included in the projections for this project because development approvals are dependent on the Ranch agreeing to consolidate some of the historical parcels that are part of its prime crop production lands. Since there is no real "push" for the Ranch to consolidate its properties, and because of the significant opposition to recent development proposals for the Spicer Block, the Ranch and/or the District may re-evaluate development opportunities on the Spicer Block.

In conclusion, the District has a land inventory of 1000 - 1200 units that will accommodate most of the 25 year projected growth. Since all identified properties are located on non-ALR lands, the District can adopt policies to re-enforce and protect land for agriculture within the ALR. Applications for exclusions from the ALR would not be supported and it is hoped that the effects of land speculation would be reduced.

Accommodating Growth in Coldstream

- Population projection scenarios envision net growth for the next 25 years that is equivalent to the growth experienced over the previous 35 years.
- Development opportunities are available to meet most, if not all of projected growth needs without further encroachment into the ALR.
- Compact, multi-family and/or infill development is required to meet growing demands.
- Pressure on the ALR can be expected to continue particularly since no new acreage sites will be supported.
- Planning strategies to re-enforce the commitment to respect the ALR boundaries can include:
  - designation of a Rural Sustainability Boundary;
  - establishment of "home plate" regulation that discourages development of trophy homes that monopolize farmland and diminish opportunities for future farm practices; and
  - strategies to encourage lot or base consolidations.

4.2 ROADS

The District is well serviced with community roads and a road network plan is provided in the OCP. Road network issues of concern in agricultural planning are as follows.

- upgrade of the Kalamalka/Highway 6 intersection;
- raise the awareness of the need for slow moving farm vehicles on the roads; and
- consider the needs of pedestrians, cyclists and horseback riders when upgrading or designing new road improvements.

4.3 WATER INFRASTRUCTURE

4.3.1 History

The current irrigation system in Coldstream traces its origin to the decision to survey and build an irrigation ditch for the Coldstream Ranch in 1892.

In 1905, W.C. Ricardo had the Duteau (Jones) Creek watershed and Lake Aberdeen surveyed, which would lead to the construction of the Grey and South Canals along the north and south sides of the Coldstream Valley. To run the system, the White Valley Power and Irrigation Co. Ltd. was formed in 1907, and in 1909 the system was extended to serve lands to the east of B.X. Creek. The Grey Canal was extended west and north, across the Swan Lake Valley to Goose Lake in 1910 and to the north and south eventually to spill into Okanagan Lake in 1914.

The cost of upgrading and repairing the system became too expensive, so an Improvement District was created under the Water Act, giving birth to the Vernon Irrigation District (V.I.D.) in 1920.

Between 1965 and 1972, the V.I.D. system was modernized with the assistance of the federal/provincial infrastructure program (A.R.D.A.). The work included installation of underground pipes, booster pumping stations, intake works and dam renewals at a cost of $7.9 million.

In the late 1980s, concerns regarding long-term water quality and the ability of supplies to meet future needs of the region were identified, and a series of engineering studies showed that regional water management would be the wave of the future.

In the late 1990s, the Master Water Plan was commissioned which would eventually lead to the creation of Greater Vernon Water in February 2003, a single regional utility replacing services of three local water utilities.

Source: www.greatervernon.ca/index.php?p-2.01

4.3.2 Greater Vernon Services Committee

The Greater Vernon Services Committee was established under Regional District of North Okanagan Bylaw No. 1720. The Committee, under Regional District of North Okanagan Bylaw No. 1721, was delegated the authority to govern and administer the water and parks, recreation, and culture services on behalf of the City of Vernon, District of Coldstream and Electoral Areas 'B' and 'C'.

The Committee is composed of seven elected members, plus an appointed agricultural representative for water issues only, including:

- Three (3) members of the City Council, as appointed by the Council of the City of Vernon;
- Two (2) members of the District Council, as appointed by the Council of the District of Coldstream;
- The Director of Electoral Area 'B';
- The Director of Electoral Area 'C'; and
- One (1) member of the Agricultural Community as appointed to the Committee (for water issues only).

4.3.3 Water Issues & Opportunities

1. The Coldstream Irrigation District administration model has amalgamated into a regional governance model. The agricultural industry sits on the Greater Vernon Services Committee for water issues only. Coldstream also has 2 elected representatives on the Committee. With irrigation for agriculture using an estimated 80% of the water supplied by Greater Vernon Services it is important that agriculture retains a voice in the decision making.

2. The existing water delivery model may be in jeopardy because, as noted in the Vernon OCP, the City of Vernon has recently notified the provincial government that they would like to initiate a distribution service withdrawal from the Greater Vernon Water Service but still remain part of the Committee for water supply issues. The City is interested in managing the distribution infrastructure that it uses within the City boundary. Of further interest to the City is water quality, how the water licensees are managed, environmental impact at the source and how the water supply

interests and needs of the city are met through the existing licenses and policies of Greater Vernon Services.

The District recognizes the rationale for this municipal perspective, however, when evaluating Vernon's request it will be important to consider:

- impacts on funding sources for future upgrades and maintenance of water services for irrigation;
- protocols for the allocation of water;
- maintaining an "agricultural" voice in decision making;
- protection of an affordable water supply for agriculture; and
- opportunities for new untreated water sources to service agriculture.

5.0 LEGISLATIVE & POLICY CONTEXT

The agricultural sector in Coldstream is regulated and influenced by a broad range of legislation and policies put in place by regional, provincial, and federal jurisdictions. Awareness of these jurisdictional differences can be helpful in determining the nature of efforts that can be made by local government in enhancing agricultural conditions.

5.1 DISTRICT OF COLDSTREAM POLICY & LEGISLATION

Current District of Coldstream policies and regulations are in place that have significant bearing on agricultural activities.

Official Community Plan Bylaw No. 1445, 2005

The District of Coldstream OCP was adopted by Bylaw 1445 in 2005. The OCP outlines the community's objectives and policies regarding land use (including farmland and agricultural activities) and establishes a framework for decision-making regarding land use, servicing and overall development. The OCP process included a community survey in which the importance of agriculture and the protection of rural lifestyles was identified by the community as a whole.

The Rural land use policies in the OCP are comprehensive and reinforce the following planning strategies:

- support and protection of agricultural land;
- identification of areas for future growth (Spicer Block and Town Centre) and tie development approvals to a benefit to agriculture (lot consolidation);
- encourage buffering for ALR lands; and
- setting of minimum parcel sizes to discourage further subdivision of agricultural lands.

District of Coldstream Zoning Bylaw No. 1382, 2002

A number of zoning categories provide for agricultural activities within the Zoning Bylaw.

The RU.1 (Rural One) Zone has limited application in agricultural areas as it provides for a minimum lot size of 1 hectare (2.471 acres). The OCP recommends a minimum parcel size of 30 hectares (74.11 acres) for agricultural areas however this recommendation has not been implemented.

The RU.2 (Rural Two) Zone applies to most of the agricultural lands in Coldstream, and is based on a minimum parcel size of 2.0 hectares (4.94 acres). The zone provides for permitted uses including agriculture, intensive livestock agriculture, agri-tourism, home-based businesses, residence and accessory buildings and structures, and a number of other selected uses.

The Zoning Bylaw also defines and regulates activities such as agri-tourism and home based businesses and accessory residences and regulates the number of animals based on the number of permitted animal units. Farm animal types are standardized to establish a base animal unit (e.g. 1 cow and 250 bees both equal one animal unit). There are also buffering and setback requirements for land uses such as single household residences or large multiple residential unit buildings that neighbour farmland. The Zoning Bylaw also contains Schedule G – Agricultural Setbacks in Rural Zones.

Subdivision, Development & Servicing Bylaw No. 1535, 2008

This Bylaw sets out the servicing standards and requirements for subdivision in Coldstream. It regulates standards for roadways and associated installations, water distribution systems, sanitary sewer disposal, storm drainage systems, slope stability and lighting. Subdivision bylaws can also provide additional requirements where land is being proposed for subdivision near farming operations within the Agricultural Land Reserve. Provisions may include adequate buffering (e.g. fencing) or separation of the development from farming (e.g. setbacks).

District of Coldstream Fire Services & Fire Prevention Bylaw No. 1520, 2008

The Bylaw applies to all lands, inclusive of agricultural lands, within the District of Coldstream.

Bylaw 1520 outlines requirements regarding the issuance of burning permits, air quality prohibitions to burning, nature of burning material, and the timing and duration of burning. Burning permits are limited to properties greater than 2 ha in size between March 15th to April 15th and are for the burning of prunings and non-compostable garden refuse.

5.2 CITY OF VERNON OFFICIAL COMMUNITY PLAN

It is important to consider the land use legislation of the City of Vernon because there are many issues that cross over the shared boundaries (economic, environmental and social conditions). Accordingly, it is important for the District to acknowledge City of Vernon policies relating to agriculture and to work collaboratively and cooperatively where necessary. Some of the OCP policy themes that are aligned in both communities and may provide opportunities for partnerships are:

- protection and support for the ALR;
- support for regional farm planning (Regional Agricultural Area Plan);
- infrastructure support for agriculture;
- support for regional agricultural economic development strategies;
- support for community access to local food;
- maintaining larger parcel sizes in agricultural areas; and
- support for buffering between urban and rural areas.

5.3 PROVINCIAL POLICY AND LEGISLATION

An extensive system of legislation put in place by the Province of British Columbia influences many agricultural practices and procedures in the District of Coldstream.

Local Government Act

The *Local Government Act* provides legislation related to agriculture through the following:

- Regional Growth Strategies
- Official Community Plans
- Development Permits
- Regulation of Farm Businesses in Farming Areas

Land Titles Act

The *Land Titles Act* gives Approving Officers the power to assess the impacts of proposed subdivisions on farmland. The potential intrusion and impact of new roadways on abutting agricultural lands is also

considered in the process of Land Title designation (Sec. 86).

Recent clarifications to the *Land Title Act* now recognize leases that are for terms longer than 3 years, even if they have not been registered on title. This clarification is seen as a strategy to encourage the long-term leasing of agricultural lands and investment in these lands for farming.

The *Land Titles Act* allows for the placement of covenants on title where those covenants are supported by policy, in the public interest or for protection of the public. Such covenants may place extra requirements specific to that particular property.

Agricultural Land Commission

The *Agricultural Land Commission Act* was initially enacted in 1973 (with major amendments in 2002) to establish guidelines for the preservation of lands designated as ALR. This Act supports the maintenance of a comprehensive farm sector in communities across British Columbia. There is potential for agreements to further delegate authority to local governments in determining the outcome on non-farm use or subdivision applications within their communities. Such delegation, however, needs to meaningful and the benefit of delegation needs to be assessed relative to the costs to the District of Coldstream.

The Agricultural Land Commission (ALC or the Commission) has structured its organization to create six regional panels to work in closer collaboration with local governments. The Commission panel for the Okanagan currently has members who reside in the Okanagan area.

Agricultural Land Reserve Use, Subdivision and Procedure Regulation (2002)

The Agricultural Land Reserve Use, Subdivision and Procedure Regulation was adopted in 2002 to specify and standardize permitted uses of ALR. This regulation encompasses areas including soil removal and placement, application filing, subdivision, government applications and commission proposals, owner applications, commission meetings, owner applications to include land, applications for non-farm use and subdivision of agricultural land, general provisions.

The ALC has advanced significant orders, policy directions, and guidelines on a range of topics including farm retail sales, home occupations, agri-tourism accommodations, farm help dwellings, golf courses, homesite severances, parcels under 2 acres, wineries, outright uses and special cases, and landscape buffer/ fencing.

Farm Practices Protection (Right to Farm) Act

The *Farm Practices Protection (Right to Farm) Act* was enacted as Provincial legislation in 1996 to afford protection to agricultural communities from nuisance complaints resulting from dust, odour, noise or other occurrences arising from normal farm operating practices. The Act established the Farm Industry Review Board, which serves as a forum to hear complaints concerning farming activities. In many instances, complaints can be resolved in dialogue between Ministry of Agriculture and Lands representatives, farmers and complainants without referral to the Board.

Water Act (RSBC 1996) Chap. 483

The provincial *Water Act* provides for the licencing of activities including use, diversion, and storage of water, along with the volumes of water being licenced. The Act also addresses the nature of changes to be permitted to stream courses under application. Related water legislation in the Water Protection Act (RSBC) Chap. 484, provides the regulatory basis for the removal or transfer of water within and between jurisdictions.

Livestock Act (RSBC 1996) Chap, 270

The *Livestock Act* provides the basis for designation of livestock districts, the control of animals at large, and the characteristics of the bull population in specified areas.

Weed Control Act (RSBC 1996) Chap. 487

The *Weed Control Act* addresses the duty and responsibilities for weed control, and the provision for local governments to appoint Committees and Inspection personnel to administer the provisions of the Act.

Environmental Management Act (SBC 2003) Chap. 482

The Agricultural Waste Control Regulations (B.C. Reg. 131/92) prescribe the practices for using, storing, and managing agricultural waste material in an environmentally-sound manner.

Assessment Act (RSBC 1996) Chap. 20

The *Assessment Act*, within the provisions of B.C. Regulations 411/95, defines Class 9, Farm Land as one of the eight land use categories. The nine categories include Residential, Utilities, Unmanaged Forest Land (repealed), Major Industry, Light Industry, Business Other, Managed Forest Land, Recreational Property, Non-profit Organization and Farm. Properties with differing uses can fall into more than one classification.

Land classified as Farm must be used all or in part for primary agricultural production, farmer's dwelling, or the training and boarding of horses in conjunction with horse rearing. All farm structures are classified as residential, including the farmer's dwelling.

To qualify for Farm status, the property must generate a minimum income annually. The minimum income in 2008 was $10,000 gross annual sales on land less than 8,000 sq. metres (2 ac.), $2500 on land between 8,000 sq. metres and 4 ha (10 ac.), and for parcels larger than 4 ha, $2500 plus 5 per cent of the regulated farmland value of remaining land over 4 ha.

Marketing Boards

The Farm Industry Review Board, created in 1934 under provisions of the *Natural Products Marketing (B.C.) Act*, is the provincial organization that oversees the activities of all commodity marketing boards or commissions, including those specific to the agriculture industry. The mandate of the Farm Industry Review Board is to ensure the maintenance of orderly market conditions in the province by monitoring product demand, production quotas and price structures. There are currently eight (8) Boards/Commissions in place under the umbrella of the Provincial Board as follows: B.C. Broiler Hatching Egg Commission; B.C. Chicken Marketing Board; B.C. Cranberry Marketing Commission; B.C. Egg Marketing Board; B.C. Hog Marketing Commission; B.C. Milk Marketing Board; B.C. Turkey Marketing Board; and, B.C. Vegetable Marketing Commission.

British Columbia Wine Act

The *British Columbia Wine Act* (RSBS 1996) Chapter 39, amended and consolidated in 2004, defines the composition and powers of the British Columbia Wine Institute to regulate wine quality in the Province, and outlines the responsibilities of the member wine producers and processors.

5.4 FEDERAL POLICY AND LEGISLATION

A broad range of federal policies and legislation has significant bearing on the agricultural industry within the District of Coldstream.

World Trade Organization (WTO)

The WTO, established by the 1994 Marrakech Agreement, is the primary multilateral institution for addressing cross-border trade agreements, negotiations, dispute resolution, trade policy monitoring and technical assistance for its membership. The WTO Agreement on Agriculture, ratified in 1995, focused on the establishment and maintenance of a fair and market-oriented international trading system for agricultural goods. The Doha Declaration of 2001 provides the mandate for follow-up negotiation on implementation of Agreements, including Agriculture.

North American Free Trade Agreement (NAFTA)

NAFTA is a trilateral agreement established in 1994 between Canada, United States and Mexico to encourage and facilitate increased trade and investment between the member nations, and to work toward the elimination of all tariff and non-tariff trade barriers. Many agricultural interests were addressed in a Canada-U.S. agreement signed in 1998, which provided for the bilateral removal of tariffs on most goods. Also, a Canada-Mexico agreement signed in 1994 provides for the graduated removal of tariffs between those countries by 2003, with notable exceptions including dairy, poultry, egg products and sugar.

Canadian Agricultural Products Act

The *Canadian Agricultural Products Act*, under the umbrella of Agriculture and Agri-Food Canada, regulates the import, export and inter-provincial trade marketing of agricultural products. The Canadian Food Inspection Agency administers much of the agricultural import and export activities. This Act standardizes agricultural grading and inspecting procedures across Canada.

Canada-British Columbia Implementation Agreement (2003)

The Canada-British Columbia Implementation Agreement was adopted in 2003 as a roadmap for the implementation of the national Agricultural Policy Framework (APF) within British Columbia. The Agreement addresses a broad range of issues including risk management, food safety and food quality, science and innovation, environment and renewal management. This agreement has now expired and a new agreement is being negotiated. The new agreement is known as Growing Forward: The New Agricultural Policy Framework. Growing Forward puts more emphasis on building a profitable sector through:

- more investment in innovation;
- action on the key regulatory priorities;
- environment and food safety programs; and
- measures that enable farmers to be proactive in managing risk when faced with disaster.

Species at Risk Act (2003)

The *Species at Risk Act* was enacted as Federal legislation in 2003 to encourage protection of endangered fish and wildlife species. The possibility of including a mechanism within the Act that would allow for provision of compensation to farmers who are affected by conservation agreements is currently under consideration.

Fisheries Act

The *Canadian Fisheries Act* addresses the protection of fish habitats and outlines measures for pollution prevention. The Act stipulates that agricultural applications such as fertilizers, pesticides, fuel, manure or suspended solids must not adversely affect fish habitats, and that farming activities must not damage or obstruct any fish-bearing waterways.

Additional Federal Legislation Affecting Agriculture

Additional federal legislation that address various aspects of the agriculture industry include: *Canada Grain Act; Canada Wildlife Act; Consumer Packaging and Labeling Act; Customs Act; Export and Import Permits Act; Feeds Act; Fertilizers Act; Food and Drugs Act, Health of Animals Act; Migratory Birds Convention Act; Pest Control Products Act; Plant Protection Act; Seeds Act; Transportation of Dangerous Goods Act;* and*, Wildlife Act*.

Excise Act and Excise Act, 2001

The federal *Excise Act and Excise Act, 2001* provides for payment of duties at the time of delivery to the purchaser. The duties apply to a range of products including wine, spirits and beer made in Canada.

5.5 OTHER AGRICULTURAL PROGRAMS

Sterile Insect Release Program

The Sterile Insect Release Program is a joint Federal-Provincial-Regional program initiated in 1992 and directed to control of codling moth infestation of apple and pear fruit. The Program currently has the cooperative participation of five Regional Districts (Okanagan Silmilkameen, Central Okanagan, North Okanagan, Columbia Shuswap, Central Kootenay), B.C. Ministry of Agriculture and Lands, Agriculture and Agri-Food Canada, seven First Nations Bands, and representatives of the major fruit growers organizations.

The federal and provincial governments shared in the funding of the SIR rearing facility. Currently, the participating regional governments levy a parcel tax on commercial apple and pear producers, and a general mill rate assessment to provide operating revenues for the Program.

The participating areas are included within 1 of 3 Zones. Zone 1 encompasses the South Okanagan, Similkameen and Creston Valleys. Zone 2 includes the Central Okanagan broadly from north of Summerland to north of the City of Kelowna boundary. Zone 3 includes the North Okanagan and Shuswap areas. Implementation activities to date have achieved significant reductions in the required application of the organophosphate pesticide used for codling moth control.

Replant Program

The Orchard Replant Program, funded partially by the Province of British Columbia, provides assistance to owners or lessee growers to replant on lands where orchards have been removed. The Program is

delivered by the BC Fruit Growers Association is directed at tree fruit production, and encourages plantings of new varieties such as gala apples or late season cherries.

The funding assistance to growers is based on an amount for each acre of land and each tree planted, to a maximum contribution per acre. The 2009 program maximums are $7000 per acre for apples, and $4000 per acre for soft fruit and pears.

Environmental Farm Plan Program

The Canada-BC Environmental Farm Plan Program is a voluntary program intended to assist farmers in developing an environmental action plan for their farm. This is a plan that enhances natural resources and reduces the possibility of accidental harm to soil, air, water and biodiversity values.

6.0 ISSUE OPPPORTUNITY SUMMARY

6.1 FARM COMMUNITY SURVEY

The District mailed 249 surveys to properties with farm classification (Class 9) in 2008 as reported by BC Assessment. Members of the Agriculture Advisory Committee, staff and the project consultants also conducted interviews with farmers in various agricultural sectors (e.g. ranch, greenhouse, orchard). 92 surveys were completed representing a 37% return rate.

Survey Results:

- 78% of properties identified forage production as their main agricultural activity (alfalfa, hay, pasture);
- 58% of reporting properties had livestock, 50% horses and/or cattle;
- the percentage of properties engaged in forage production (78%) was the same for small properties' (<10 acres sites); for properties over 10 acres; and, for properties earning less than 10% of their income from farming; and
- for properties earning more than 10% of their income from farming, only 58% listed income from forage production.

Figure 6.1 Survey Results

Parcel Size		No. of Farms	% of Farms
ha	acres		
< 4	< 10	49	53%
4 - 10	10 - 25	28	30%
10 - 20	25 to 50	5	5%
> 20	> 50	7	8%
Coldstream Ranch		1	1%
incomplete response		2	2%
Total		**92**	**100%**

Product Destination

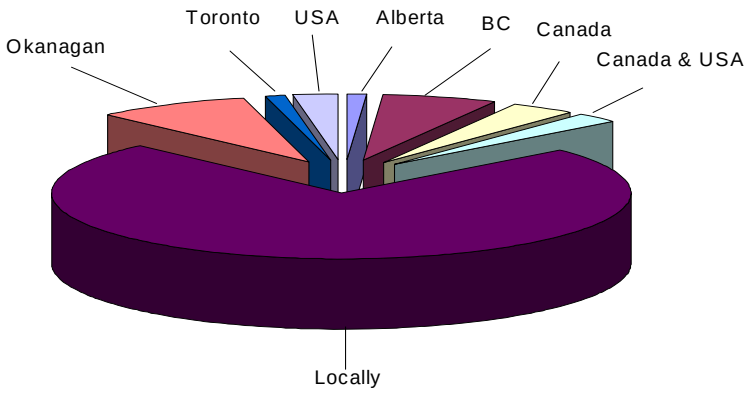

Figure 6.2 Condition of Agricultural Sector

Opinion	Number of Responses	Percent
Very Strong & Growing	4.0	4.4
Somewhat Strong	37.0	40.7
Declining	44.0	48.4
No Opinion	2.0	2.2
No Response	4.0	4.4
Total	**91.0**	**100.0**

Figure 6.3 Concerns about ALR & Agricultural Land Base

Concerns	Times Mentioned
Subdivisions/Development	31
Land being removed from the ALR	28
Small Holdings being in the ALR	12
Water Use	11
Regulations	8
Unsuitable land in ALR	7
Chemical Pesticides/Pollution	6
Value of Crops	3
Gravel Operations	2
Buffer Zones not Enforced	2
Economic factors	1
ALR Decisions should be regionalized	1
Others	3
Total	**115**

Product Marketing Methods

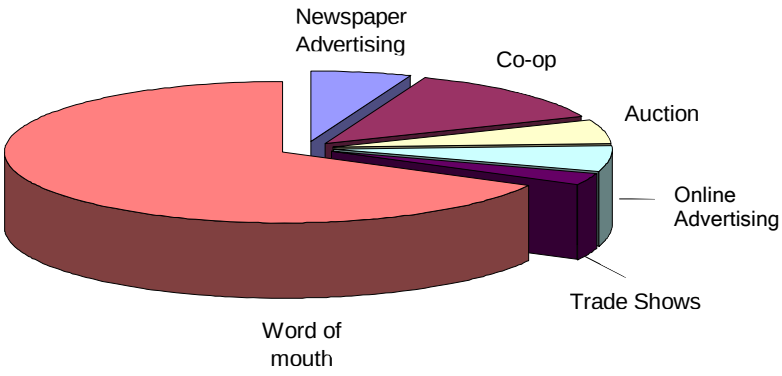

Figure 6.4 Support for ALR

Opinion	Number of Responses	Percent
Very	61	67.0
Somewhat	21	23.1
Not at all	6	6.6
No Opinion	1	1.1
No Response	2	2.2
Total	**91**	**100.0**

Figure 6.5 Suggestions for Strengthening Farming

Concerns	Times Mentioned
Improved Relations with the District	13
Market for Local Produce	11
Improved Water Supply	11
Improve Farming Bylaws	11
Protect the ALR	9
Environmentally Friendly	7
Removal of Unsuitable Land from ALR	2
Others	9
Total	**73**

Figure 6.6 Income from Farming

Percent	Number of Responses	Percent
0 - 10	40	44.0
11 - 20	7	7.7
21 - 30	3	3.3
31 - 40	4	4.4
41 - 50	3	3.3
51 - 60	0	0.0
61 - 70	1	1.1
71 - 80	1	1.1
81 - 90	1	1.1
91 - 100	6	6.6
No Response	25	27.5
Total	**91**	**100.0**

Natural risks for farming.

Agri-tourism opportunities.

Figure 6.7 Top Constraints (Risks) for Agriculture

Opinion	Times Mentioned
Development	33
Water Shortages & Cost	32
Cost of Farming	21
Conflicts with Urban Uses	19
Low Incomes from Farming	14
Government Involvement/Regulations	13
Economy	7
Lack of a Slaughterhouse	7
Taxes	8
Lack of Labour	7
Size of Farms	5
Weather	5
High Prices	4
Land moved out of the ALR	4
Cost of Land	3
Local Bylaws	3
Environmental Restrictions	2
Soil Quality	2
Lack of Agricultural Education	2
Pollution	2
Aging Farmers	1
Canada/US Trade	1
Imports	1
Total	**196**

General Comment Themes from Farm Survey

1. Relations with government (local and provincial)
   - burning permits;
   - farm status requirements;
   - service delivery;
   - effective agricultural plan; and
   - share of service delivery.

2. Recreation to support rural lifestyle
   - riding trails; and
   - safe roads.

3. Infrastructure for agriculture
   - carcass disposal;
   - protection and management of water supply;
   - accommodation for workers; and
   - safe roads.

4. Environmental Management
   - burning;
   - watercourse protection; and
   - protection of ALR land base.

5. Rural/Urban Conflicts
   - educate public;
   - buffers for agriculture; and
   - growth pressures.

6. Economic and business development for agriculture
   - promote local food;
   - supports for local agricultural enterprises; and
   - network of local production.

7. Global economic conditions
   - changing markets; and
   - rising costs.

See Appendix D for detailed comments.

6.2 LEGISLATIVE/GOVERNANCE

1. **Official Community Plan.** The Coldstream OCP contains policies that are supportive of the ALR. The success of these policies was acknowledged during the background research stage by contacts who stated that existing problems such as small parcels and the lack of interface planning are historical in nature and not associated with current policies.

   Issues related to edge planning can be addressed more thoroughly through the OCP using such tools as:

   - development Permits requiring buffering on the urban side of the rural/urban boundary; and
   - identification of a Rural Sustainability Boundary to strengthen the commitment to retaining ALR lands for future agricultural use.

   The RSB is particularly necessary in areas where there is a history of pressure on ALR boundaries. The RSB will help the District limit further sprawl and plan for a defined edge to growth.

2. **ALC Delegation Agreement.** Section 26 of the *Agricultural Land Commission Act* allows for the Agricultural Land Commission to delegate decision making authority to willing local government(s) based on a mutually agreeable decision making framework, such as an Official Community Plan or Zoning Bylaw. However, this authority may not offer sufficient incentives to balance the impacts of added costs and responsibilities. City Council dealt with this and decided not to go this route.

3. **Farm Bylaws.** Farm Bylaws provide an emerging tool to manage farm lands. Important community issues such as the siting and operation of intensive agriculture (e.g. poultry farm, illuminated greenhouses and feedlots) can be addressed through Farm Bylaws. Farm Bylaws must receive the approval of the Ministry of Agriculture and Lands. While a Farm Bylaw would proactively assist in addressing future intensive livestock agricultural activities, farmers may perceive additional regulatory layers as excessive and overly restrictive to agriculture.

   Farm Bylaws are likely more appropriate in a growing, diversified agricultural area and an option that Coldstream could consider in the future.

4. **Farm classification for taxation purposes.** The *Assessment Act* specifies how properties are classified as farms and ultimately contribute to taxation. This Provincial Act is outside the mandate of the District but was identified as both an issue and opportunity from a variety of perspectives:

   - the annual requirements for retaining farm status was considered onerous;
   - assessment classification may be a disincentive to farm diversification through agri-tourism because classification rules quickly move agri-tourism elements into commercial assessments;
   - farm assessments may be too “soft” on the hobby farm, requiring only $2500 gross annual income for small farms (0.8 ha to 4.0 ha); and
   - farm classification was seen as a way to further recognize and benefit agriculture (lower taxes and more money to support agricultural business).

The province is currently reviewing the farm assessment structure and the District of Coldstream may wish to contribute directly to this research and consultation component of the process. The final report and recommendations to provincial government on the findings of the review are due to be delivered before July 21st, 2009.

6. **Agri-tourism.** The ALC has progressively recognized shifts towards agri-tourism but there is little evidence of the farm industry taking advantage of these new policies in terms of expanded tourist activities and new accommodation units in Coldstream. While the policies are certain about permitting a maximum of 10 accommodation units, they are less clear about defining "agri-tourism" uses. The research and consultation process identified businesses in the District that had found it difficult to expand their business within the policies of the ALC and the District. There may be opportunities to craft policies on a site specific basis to recognize and balance the multifaceted needs of community planning and ALC directions.

7. **Environmental Farm Plan Program.** The Environmental Farm Program is a voluntary, proactive approach to farm management that can assist farmers and the environment. The BC Agricultural Council is the delivery agent for the Environmental Farm Plan Program. The District is also independently involved in environmental management through such activities as a review of water quality in Coldstream River.

8. **Farm Labour.** Farmers indicated that they have roles for both seasonal and full time farm labour. They indicated that they have challenges finding skilled works and also accommodating seasonal workers. Although the Farm labour force is relatively small, it is critical to the industry. BC Fruit Growers Association is currently looking at housing options.

9. **Regional Context.** Farming in Coldstream is impacted by many external forces that are beyond the jurisdiction of the District, however there are a number of opportunities for regional partnerships and collaborations that could strengthen the farm industry. In planning for a future for agriculture, Coldstream can benefit from having strong connections to: other regional leaders and advocates for farming. As well, Coldstream can benefit from collaborating with areas to make more efficient use of research and services (e.g. research on irrigation strategies or regional marketing promotions). Aside from the Coldstream Ranch, most of the farms in Coldstream operate on a very small scale and serve a unique market-niche (e.g. 1 greenhouse, 2 sheep/goat farms). It is difficult for them to fund investments in marketing and research, even if they operate collectively. A regional focus would provide opportunities for economics of scale. Some of the areas where regional collaborations are necessary are:

   - research and planning for the future of water, including: water conservation; the funding of future infrastructure; costs to agriculture; future opportunities and constraints;
   - economic development and marketing;
   - research to enhance the agricultural industry;
   - employment;
   - transportation; and
   - agri-tourism.

   Consultation with farmers indicated that 66% of agricultural products are sold locally, 52% by word of mouth. As consumers shift to healthy, locally grown and/or organic foods there is room to

expand this focus, although it is unlikely that the Coldstream market is sufficient to support the needed infrastructure (e.g. local food marketing cooperative) on its own. Opportunities for a local farm market could also be considered.

10. **Okanagan Valley Vision.** Throughout the Okanagan Valley there are many communities that have developed Agricultural Plans (e.g. Summerland, Central Okanagan Regional District, Lake Country, Salmon Arm). Many of these areas are facing similar challenges as they work toward a stronger future for farming. There may be an opportunity to coordinate the regional planning work for an area-wide vision.

11. **Parcelization.** The background research has indicated that almost half of the farm properties are small lots (less than 4 ha (10 acres)). Farmers noted that these smaller lots were challenging to farm. Farmers producing hay crops, for example, are leasing acreages from non-farmers on rural properties.

6.3 ECONOMICS

1. **Advocacy for Economic Issues.** There are many external factors influencing agricultural viability in Coldstream. The District has limited capacity to influence these external conditions but can act as an advocate for agriculture. Possible avenues for advocacy include:

   - input for the Farm Assessment Review
   - linking local farmers to new farm subsidy programs, e.g. replant programs
   - defraying costs for water infrastructure improvements (e.g. costs for metering)

2. **Land Values.** High agricultural land vales were identified as a disincentive for agriculture. The 2006 census reported that 89% of the division of farm capital was in land and buildings. Speculation of ALR by the real estate industry and large investments in rural hobby farms were identified as the factors contributing most to high values that restrict opportunities for farmers to purchase ALR land for agriculture.

   The one positive note in this picture is that agricultural land values in the Okanagan are still lower relative to the Fraser Valley and some industries are fragmenting or relocating their operations to take advantage of these conditions (e.g. milk production). However, prices in Coldstream are still relatively high and parcels too small to encourage dairy farm relocation from the lower mainland.

3. **Other Costs.** Farms also face challenges, in addition to high land values, that impact opportunities for farm diversification, upgrading and expansion. Some of these challenges include:

   - accessing marketing or processing facilities (e.g. slaughterhouses);
   - Assessment Authority land classification system for new farm initiatives (e.g. agri-tourism); and
   - costs to farmers for new servicing infrastructure (e.g. irrigation).

   There is also an issue of economic risk for farmers using leased land. Although only 217 ha (2006) of land is leased privately, those leasing may limit their investment without long term lease opportunities.

4. **Ancillary Facilities.** The agricultural industry requires the support of a number of facilities, e.g. Kin Race Track and Farmers Market. The location of these in Vernon suggests a need for the District of Coldstream and Vernon to work cooperatively on planning for the future of these facilities.

6.4 RURAL-URBAN FRINGE ISSUES

1. **Pre-existing Land Use Patterns.** The majority of the rural-urban fringe issues are the result of historical development patterns. In particular, subdivisions were not designed with adequate buffering and have created fragmented farm areas. There are few strategies available to address or rectify these conditions. As new development proceeds next to agricultural areas the District will be required to manage the resulting rural-urban fringe pattern over the long-term.

2. **Recreation.** A growing population continues to create a demand for outdoor recreation opportunities, particularly for trails. Trails are desired both in the upland areas and in the developed areas as pedestrian corridors along the roads and in natural areas (e.g. stream corridors). Conflicts with recreational trail users and agriculture were noted by Coldstream Ranch, particularly in reference to uncontrolled access to Deep Lake. No trespassing signs were also posted on the home ranch site. However, in the farm survey it was more common for residents to identify a need for safe trails along the road than to identify a need to resolve conflicts with public use on private lands. Future opportunities for future trail networks may exist along the former irrigation canal right-of-way, the railway right-of-way or along Coldstream Creek. Pedestrian corridor planning should consider the ALC guidelines and best practices for trails and will need to address requirements of the Riparian Area Regulations if the trail is located near a watercourse. The OCP encourages trails to be acquired through the following conditions:

- as part of a residential subdivision application process;
- direct dedication from a property owner; and
- property owner agrees to allow a right-of-way.

Trails can also be incorporated into the agricultural buffer areas as part of new development proposals. The District of Coldstream has a pedestrian/trail network plan as part of its OCP policies. Road design standards may need to be reviewed to address needs for horse riders.

The strength of the horse industry in the plan area is evident from the mapping of farm land use (Figure 2.2). Infrastructure needs that have been recommended to support the horse industry include:

- facilities for sporting events (e.g. stables, race tracks and competition arenas). The Kin Race Track and the Vernon & District Riding Club were identified as facilities needed to support the local horse industry. Since the Kin Race Tract is managed by Vernon, the District of Coldstream could only act in an advisory capacity;
- medical and professional equine services; and
- recreational trails.

6.5 ENVIRONMENT

1. **Environmental Farm Planning.** The Environmental Farm Plan Program provides new opportunities to enhance the current environmental stewardship practices of BC farmers. Sensitive grasslands and watercourses are located in the Coldstream area and it is important to find ways to recognize ecological values while meeting farm objectives. The Environmental Farm Plan Program provides an opportunity to discuss these issues on a farm by farm basis. Best management practices can be supported by the District and implemented on individual farms.

2. **Stream Protection.** There are federal and provincial stream protection regulations that pertain to agriculture. Federal stream protection regulations are well established and stringent. BC has developed criteria for agriculture near riparian areas and encourages riparian area planning as part of the environmental farm planning program. Although the District supports a commitment to stream protection, issues related to watercourse protection were not emphasized by the public through the consultation process. The District and the Ministry of the Environment review water quality conditions on a regular basis (e.g. Coldstream Creek).

3. **Organic Farming.** Environmental quality may become a more specific issue if future agricultural interests include niche markets such as organic foods. This type of initiative would require area-wide policies on herbicides, pesticides and fertilizers. There is a lot of growth in the organic farm movement in B.C. and it is becoming increasingly more profitable. There may be opportunity for this type of specialization in Coldstream.

4. **Climate Change.** There will be ongoing discussion of the impacts of climatic change on the viability of regional agriculture, particularly the impacts warmer temperatures will have on crop opportunities as discussed in Section 3.

5. **Water Supply.** Water availability is necessary for agricultural production and also requires a focus on:

   - understanding agricultural supply needs;
   - maintaining existing supply conditions at affordable rates;
   - stream water quality and quantity for fishery resources;
   - aquifer protection;
   - drought management;
   - balancing domestic and irrigation demands;
   - providing opportunities for new agricultural production; and
   - regional trends in water use.

   Overall, the District's focus on water supply is related to the following.

   - reserving water for agriculture – without water, there is no future for agriculture;
   - retaining an "agricultural" voice in the water decision making process;
   - implementation of practical water conservation strategies; and
   - affordable water delivery models.

6. **Sterile Insect Release Program (SIR).** The SIR Program, directed at control of coddling moth infestation in apple and pear orchards, includes the participation of the Regional District of North Okanagan and four other interior regional districts. There has been substantial dialogue by participating members on the merits and drawbacks to continuation of the Program. Costs

and project effectiveness have been among the issues expressed.

6.6 INFRASTRUCTURE

1. **Water Systems.** Water is a necessary requirement for agricultural production in Coldstream. As noted in Section 4.3.3 and 6.5.5 there will be significant issues to address with respect to water delivery over the next decades. Particularly there is a need to address the following issues:

    - equitable allocation of a finite resource for competing farm and urban uses;
    - funding costs for irrigation upgrades and extensions over the long term;
    - emergency and drought management planning;
    - need for urban and agricultural water conservation approaches; and
    - retaining the "agricultural" voice in decision making.

2. **Waste Management.** The Coldstream Ranch successfully operates a waste/composting program that allows regular fertilization of productive crop lands. The main waste management issue identified by smaller independent farmers related to the issue of burning waste, particularly from tree pruning. Concerns from orchardists varied from not being able to burn at a preferred time to issues with the permitting process. Survey respondents also noted concerns about the potential for reduced air quality associated with burning periods.

Wood Chipper Feasibility

One of the ideas being put forward to combat and reduce the challenge of dealing with pruning waste is for the District to purchase, lease or contract out the use of a wood chipper to local orchardists. A similar program has been run for the last six years by the Central Okanagan Regional District (CORD) under the function of the Regional Air Quality Program; however it is contracted out to the City of Kelowna (who had existing fully trained staff). For the first two years of its existence it was funded by a MOE grant, but for the last four years it has been funded by ($80,000 per annum). The chippers are leased from a local company on a 5 year contract. The cost to the orchardist is $7.66 per finished cubic meter of chips (the City's surveyor measures the chip piles when they are ready). The program has proved to be a very popular way of disposing of prunings.

Currently the North Okanagan Regional District only offers a free chipping service at its landfills, for brush and prunings in the spring and fall for six weeks at each time. On the off season the cost is $20 per ton ($35 per ton of logs and stumps). The District of Coldstream in conjunction with this program offers a free drop off program at its landfill for pruning waste. Wood waste is then transported at no extra cost to the RDNO landfill to be disposed of during the free period. The City of Vernon offered a portable grinder service for orchardists as a trial two years ago through an MOE grant. The City now offers a portable grinder service once a year for residential garbage customers, usually in late March or early April.

The Kalamalka Seed Orchards is part of the Tree Improvement Branch of the BC Ministry of Forests and Range, and is located in the District of Coldstream. It operates a portable grinder onsite for prunings. Prunings are processed as mulch for fruit trees. When whole trees need grinding a larger chipper is contracted and chips are supplied to the nearby Ogogrow facility where they are added to urban wastewater to create fertilizer. The

chipper is not available to private orchardists in the District.

The District has several options for applying these experiences:

- exploring the option of sharing a portable grinder with the North Okanagan Regional District and the City Vernon, whether this means buying one new or using the existing one in Vernon;
- scaling back the six week drop off period in the spring and fall to enable financial resources to be directed towards a portable grinder;
- keeping the cost to orchardists low, as in Kelowna. This will hopefully increase usage and keep the number of burns down; and
- follow the example of Kalamalka Seed Orchards by transporting chippings to the Ogogrow Facility (partially run by the City of Vernon).

3. **Traffic.** Traffic was identified as an issue in terms of aspect that may have an impact on public safety (e.g. horseback riders, and pedestrians using the roads). High traffic volumes were also noted as an issue for the Coldstream Ranch when they were moving cattle from the Home Ranch to grazing areas.

4. **Affordable Housing for Workers.** Local orchardists noted a need for more affordable seasonal accommodation to support the farm industry. Coldstream may have a role in supporting affordable housing through such mechanisms:

   - zoning provisions for employee housing. This zone may facilitate development by permitting reduced servicing standards to reflect the temporary seasonal nature of the use; and
   - temporary accommodation on designated public lands.

6.7 EDUCATION

1. **Education Opportunities.** There are many programs, regulations and opportunities targeting the farm industry. There is a need for improved farmer awareness of these opportunities. Education opportunities for farmers that assist them in developing new and better business practices would also be of value. The Ministry of Agriculture & Lands has important staff resources in this regard who may be accessible for local workshops.

2. **Promote the Value of Agriculture.** The future health of agricultural sector can be improved with increased public awareness of the value of agriculture. The role of the ALR should be promoted within the region and be part of the community vision over the long-term. A local producer noted additional processing capabilities but a lack of farms to source agricultural products.

3. **Buy Local.** There is an opportunity to emphasize the value of the "buy local" approach. Farmers will advertise their products locally and potentially develop local niche markets. Consumers can also benefit from a better understanding of the merits of buying locally.

4. **Appreciation of Agriculture.** Future generations will have a better appreciation of agriculture and farm practices if presented with ongoing educational opportunities. These may occur at a variety of scales including:

   - agricultural museums and local heritage facilities;

- educational opportunities inclusive of a variety of generations;
- UBCO (Agricultural) research opportunities; and
- agriculture in the Classroom opportunities.

7.0 OPPORTUNITY SUMMARY

7.1 LEGISLATIVE/GOVERNANCE

1. Strengthen the Official Community Plan policies relating to agriculture including enhancing and protecting agricultural lands, and establishing a rural sustainability boundary. Policies supporting urban agriculture and community gardens will also help reinforce a culture that supports local agriculture.

2. Provide input to the RDNO Regional Growth Strategy process that reinforces the roles of agriculture in the region. Use this process as a vehicle for the discussion of regional partnerships to enhance conditions for agriculture.

3. Establish a partnership or joint task force with the North Okanagan Regional District and the City of Vernon to prioritize actions to enhance conditions for agriculture. The emphasis will be on regional activities that can benefit from the joint efforts of the three levels of government. Possible topics for regional partnerships and collaborations include:

   - preparation of a regional, overarching Agricultural Plan;
   - establishment of a local food cooperative to market and promote local foods to businesses and residents in the region;
   - sharing and coordinating information and strategies of the regions Agricultural Advisory Committees;
   - Drought Management Planning;
   - provide a consolidated regional voice on common issues, e.g. Okanagan basin water, climate change, marketing and promotion to enhance agriculture;
   - cost sharing of region-wide services (e.g. economic development officer for agricultural sector) and equipment (e.g. chipper for wood waste from agriculture);
   - address regional demands for farm workers and worker housing; and
   - establishment of a 'one-stop' shopping resource centre for distribution of information on the wide range of plans and programs available to the agricultural community. This may include extension programs of MAL.

4. Encourage input in the BC Farm Assessment review process. Topics of concern include:

   - potential for grants or waivers to reduce farm tax rates;
   - strategies to decrease the impacts of inflation and speculation on farm values;
   - the classification and taxation of non-farm activities – farm industry and farm commercial; and
   - the classification of very small farms that are engaged in agricultural production.

5. Review the agricultural zoning provisions to ensure consistency with the Official Community Plan and Agricultural Area Plan. Particularly, ensure there is a Rural Zone for large agricultural acreages (>30 ha); and, to regulate the size and siting of the residential building footprint on agricultural land.

6. Continue to support Home Site Severance requests as a strategy to allow existing farm operators to age-in-place where the requirements of the ALC Act are met.

7. Establish Terms of Reference for an ongoing Coldstream Agricultural Advisory Committee. The following points should be considered when developing the Terms of Reference.

   - include AAC representative from the farming community;
   - promote activities that represent new education and training opportunities for farming;
   - provide recommendations to Council on ways to preserve, protect and enhance conditions for agriculture;
   - promote strategic directions for agriculture;
   - forge new relationships for agriculture, e.g. research and development through the University of BC Okanagan, Thompson Rivers University (sustainability chair) and the Summerland Research station;
   - maintain relations with the urban residents, promoting both sides as "good neighbours";
   - apply a consistent and informed approach to reviewing ALR applications, as required. Factors to be considered represent an original screening for the ALC and should prioritize issues considered by the ALR. A Review Checklist could assist with this process; and
   - respond to referrals on water servicing issues as they relate to agriculture.

7.2 ECONOMICS

1. Support initiatives to market local agricultural products provincially, nationally and internationally while building and encouraging the important local market with a buy local campaign.

2. Explore strategies to develop a local food cooperative and seasonal farmers market that promotes local food.

3. Pursue the reduction of speculative land marketing and purchases of agricultural land by clear and concise expression of commitment to the long-term protection of the agricultural land base in the District of Coldstream. The designation of a Rural Sustainability Boundary will help set a "line in the sand" that land speculation should not venture across.

4. Encourage the development of value-added product opportunities in all sectors of the agricultural industry in the region, ensuring that local government application approvals processing minimizes cost and time requirements.

5. Establish a budget for programs to enhance conditions for agriculture, recognizing that research shows agriculture uses proportionately less of the municipal budget than residential land uses.

6. Work with local educational institutions, particularly UBCO, to implement actions to improve conditions for agriculture, including extension and research work.

Some of the areas for discussion with area educational institutions are the following:

- the extent of quality education and training programs in place that support the local agricultural industry;
- the extent of research in place related to the agricultural industry;
- the extent of planning and strategizing for the future being done on a regular basis;
- improving the relationships between agricultural industry and funding agencies dedicated to agricultural development such as the Investment Agriculture Foundation;
- improving linkages between the agricultural industry and interested educational institutions including increased levels of cooperation and industry involvement on education advisory committees;
- enhancing the spirit of cooperation and collaboration between the agricultural industry and interested educational institutions fostered by regular contact and opportunities to work together;
- increase levels of student awareness and participation in local farm businesses;
- opportunities for communication on the accomplishments of the local educational institutions;
- promote opportunities to communicate or strategize on the application of sustainable agriculture practices in Coldstream;
- encourage Okanagan College to retain their ALR lands, consistent with their initial agreements, and to use these lands to support agriculture through teaching research and extensions. Research topics could include studies of climate change and the impact on agriculture; and
- ways to mentor new agricultural development.

7. Consider strategies to improve local awareness of senior government programs to assist farmers.

8. Encourage farm owners to provide lease arrangements for longer-terms to encourage lease upgrades that could be carried out on a reasonable cost-return basis.

9. Monitor and enforce Bylaw provisions for controlling weed and pest control on inactive or abandoned farmland toward avoiding potential additional costs to be borne by adjacent operations.

10. Work with Real Estate Industry to encourage support for agriculture and the ALR over the long term rather than viewing the ALR as a future development and investment opportunity.

11. Encourage the governments of Canada and British Columbia to continue to support programs that support farm businesses (e.g. replant programs).

12. Encourage means to support farm succession within families in the interest of maintaining continuity of expertise and practices passed on within the farm family structure.

13. Support farmers considering value-added, vertical integration, agri-tourism opportunities, culinary tourism or other diversification efforts by providing supportive regulatory environment as long as those efforts result in limited impact on the agricultural land. Zoning changes may need to be expedited to support these initiatives.

14. Pursue means to encourage small-area hobby farms to contribute to the overall level of agricultural production in the region. Possible strategies include:

    - implement more stringent regulations regarding building footprints for residential uses;
    - review income and parcel size requirements for maintaining farm status; and
    - information sharing and training on farm management and product opportunities.
    - review of farm definitions.

15. Work closely with the agricultural community and the farmers' market managers to review alternative locations or additional marketing days that could be introduced. A Coldstream location may be considered.

16. Create a dialogue with BC Parks to explore opportunities in Kalamalka Lake Park to enhance conditions for agriculture. The District recognizes the constraints of the *BC Park Act*. Possible items for discussions include:

    - grazing use;
    - recreational access and trail development; and
    - land uses to support agri-tourism industries

7.3 RURAL-URBAN FRINGE CONDITIONS

1. Emphasize commitment to protection of agricultural land base, and strengthening of edge planning to achieve optimal interface conditions. This may involve the designation of a Development Permit Area to address buffering, consistent with ALC guidelines.

2. Introduce a Restrictive Covenant for properties adjacent to agricultural lands, acknowledging the farm presence and rights to operate on ALR lands.

3. Assist farmers with community education and notification of farm practices such as spraying. Municipal assistance may include:

    - notices to households;
    - spraying signs; and
    - notices of spraying information and scheduling posted on the municipal web page.

4. Discourage incidence of vandalism, theft and trespass on farm lands as part of public education program explaining the nature of agricultural operations.

5. Inform farm operators about the importance of maintaining positive relations with their urban neighbours, including carrying out normal farm practices that will minimize the impacts of noise, dust, the spread of weeds and other nuisance factors.

6. Consider implementing a maximum limit for dwelling size and setbacks on hobby farm parcels to minimize the impact of non-farm uses in agricultural areas – set "home plate".

7. Advise the public regarding the rights and responsibilities associated with range land areas; a Restrictive Covenant in new subdivisions could used to advise of the presence of range land.

8. Closely monitor edge conditions. Ensure property owners are meeting buffering requirements.

7.4 ENVIRONMENT

1. Advise the agricultural community about the opportunities associated with the Environmental Farm Plan Program in terms of improved farm operations and environmental protection.

2. Support the initiatives of the voluntary Environmental Farm Plan Program to ensure farm operator activities are carried out to protect water quality.

3. Inform both the rural and urban communities about the initial tangible results being realized by the Sterile Insect Release Program in the reduced required applications of toxic organophosphate pesticide.

4. Continue active support of the regional burn control program in the interest of maintaining positive air quality conditions in the region.

5. Consider implementation of a wood chipping initiative to assist farmers disposing of tree prunings.

6. Consider opportunities to harmonize programs across jurisdictional boundaries (e.g. wood burning and chipping).

7. Ensure there is adequate attention given to the education of farmers as the water metering program advances. Other levels of government may be involved to improve understanding and application of water-use efficiencies. It is recognized that there is considerable room for improved efficiencies if farmers move from forage production (irrigation inefficient) to crops with new irrigation technologies (drip-line).

8. Encourage expansion of research and monitoring of climate change conditions in cooperation with the Agriculture faculty at the University of British Columbia Okanagan.

9. Ensure distribution of information to farmers regarding the need for adherence to provincial requirements and practices of herbicide and pesticide use; public education on the rationale and procedures for herbicide and pesticide use; improved farm practices including consideration of integrated pest management and organic production.

10. Stress appropriate aggregate extraction practices to ensure protection of drainage corridors and water quality.

11. Explore the potential to provide improved conditions for agriculture when approving new aggregate extraction activity.

12. Increase awareness of need to minimize the risk of wildfire damage to agricultural operations situated near wildland interface areas.

7.5 INFRASTRUCTURE

1. Ensure the agricultural industry is engaged in processes that involve the allocation or pricing of water.

2. Support major regional water protection and conservation initiatives for both urban and rural communities stressing limitations.

3. Support ongoing research that improves the efficiencies of irrigation practices (e.g. soil moisture content).

4. Support formulation of a regional water management plan that will address the long-term allocation of adequate water resources to sustain the agricultural industry as part of the overall resource utilization. The Plan should include a drought management strategy that considers options for protecting access to water for farmers.

5. Pursue means to assist the farm community in water conservation measures by adapting to new irrigation technologies.

6. Encourage University of British Columbia Okanagan and the Summerland Research station to conduct research activities directed at development of new crop varieties that will require reduced water application.

7. Encourage senior governments to provide enhanced financial programs directed at assisting farmers to convert to irrigation technologies and plant varieties requiring reduced water volumes.

8. Encourage senior governments to upgrade the Kalamalka Road/Highway 6 intersection and to plan roadway systems that separate urban and rural traffic wherever possible. Develop roadway systems that do not necessarily provide for extension into agricultural lands for future development purposes.

9. Include pedestrian and bicycles as part of all road improvement projects with a particular focus on those pedestrian corridors identified in the OCP.

10. Seek the support of the Agricultural Land Commission in requiring that improvement works on farm lands are carried out such that on-site and off-site drainage conditions are not adversely impacted.

11. Investigate the feasibility of utilizing treated wastewater as a source of irrigation for agricultural crops.

12. Expand a program of roadway and pedestrian signage directed at informing the public about the nature and significance of the agricultural industry in the community.

13. Encourage the expansion and upgrading of irrigation services to consider potential future connections to sources that could supply more untreated water.

7.6 RECREATION

1. Limit the number of recreational trails through agricultural areas. Trails are typically concentrated on along stream corridors, agricultural buffer areas, roads or other features that form logical edges to agricultural areas. In Coldstream the Grey Canal right-of-way is a logical trail corridor but requires consideration of a number of trail management issues such as:

   - responsibility/ownership/liability;
   - signage;

- fire risks;
- parking; and
- user groups

2. Provide educational, directional and behavioural signage along public recreation corridors that traverse agricultural areas of the community; encourage event organizers to provide advance notification in the community, enabling farmers or the public to make any desired adjustments.

3. Investigate recreation opportunities that could complement the agri-tourism industry.

4. Facilitate a community planning process with Coldstream Ranch that would explore opportunities to manage public access to key recreational amenity areas (e.g. Deep Lake or upland hiking and riding trails).

7.7 EDUCATION

1. Consider the potential role of a regional economic development service as an agricultural information distribution centre, directed at consolidating the wide range of materials available to the agricultural community on programs, regulations, research and emerging trends.

2. Develop a heightened awareness of the nature and critical role of agriculture as an integral part of the community-at-large, through education initiatives directed at all segments of the population; publication of Growers Guide similar to Comox Valley that lists producers, fresh food and value-added products, community information.

3. Actively encourage a buy-local shopping attitude for locally-grown and raised products.

4. Support the promotion of agricultural history and heritage in the region.

5. Pursue enhancement of agricultural interests through cooperative field research and training ventures with the Agriculture faculty and Agroecology Degree Program at UBCO and the Summerland Research Station, and support initiatives such as the UBCO – BCFGA agreement to work jointly on a broad range of agricultural interests. Encourage Okanagan College to consider uses on the ALR lands adjacent to the Vernon campus that will enhance understanding and education on new crop varieties and agricultural practices. A relationship between Okanagan College and UBC's Faculty of Land & Food Systems may be fostered to develop new opportunities for land uses on the Okanagan Campus lands. Partnerships could also be fostered with the Thompson Rivers University.

8.0 NEXT STEPS

The Agricultural Plan Background Report is intended to:

- provide an overview of agricultural conditions in Coldstream;
- summarize the results of background consultation and research conducted for the Agricultural Plan.
- provide preliminary comments on issues and opportunities in the plan area;
- stimulate discussion on issues or opportunities for improving conditions for agriculture as part of the overall planning process; and
- provide direction for the policies and implementation strategies outlined in the Coldstream Agricultural Plan.

The Coldstream Agriculture Plan – Planning Strategy document evolves from this research and the subsequent review process. The Planning Strategy document is intended as a independent policy document that is supported by research and documentation contained in the Background Report.

Appendix A – References

British Columbia Archival Information Network Display. Coldstream Ranch.
http://aabc.bc.ca/access/aabc/archbc/display/VERN-2

City of Vernon, Official Community Plan, 2008

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http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=15353

Okanagan Basin Water Board – Conservation Efforts. Structure & Governance.
http://www.obwb.ca

Urban Systems, District of Coldstream Agricultural Land Review Draft Report, 2006.

APPENDIX B

District of Coldstream
Agricultural Overview

District of Coldstream
AGRICULTURAL OVERVIEW

Corporate Name	The Corporation of the District of Coldstream
Date of Incorporation	December 21, 1906
Postal Address	9901 Kalamalka Road Coldstream, BC V1B 1L6
Phone	(250) 545-5304
Fax	(250) 545-4733
E-mail	info@districtofcoldstream.ca
Internet	http://www.districtofcoldstream.ca/

For additional information visit the Coldstream website.

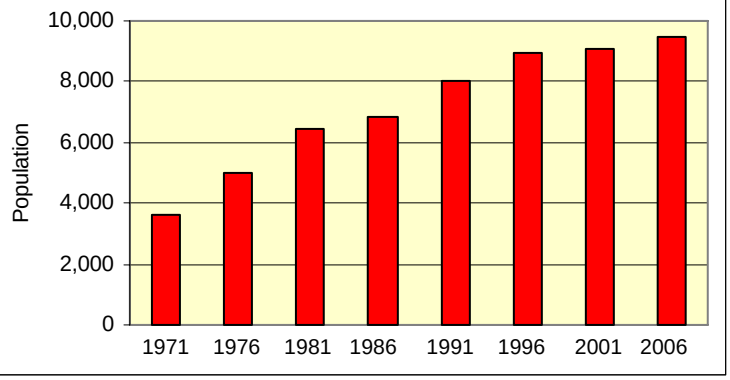
CONTENTS

2 District of Coldstream AGRICULTURAL OVERVIEW

• Population - 1971 to 2006[1]

1971	=	3,602
1976	=	4,995
1981	=	6,450
1986	=	6,872
1991	=	7,999
1996	=	8,975
2001	=	9,106
2006	=	9,471

Graph 1 Coldstream Population - 1971 to 2006 -



- Population Increase 1971 to 2006

= 5,869
= 168 persons / year on average

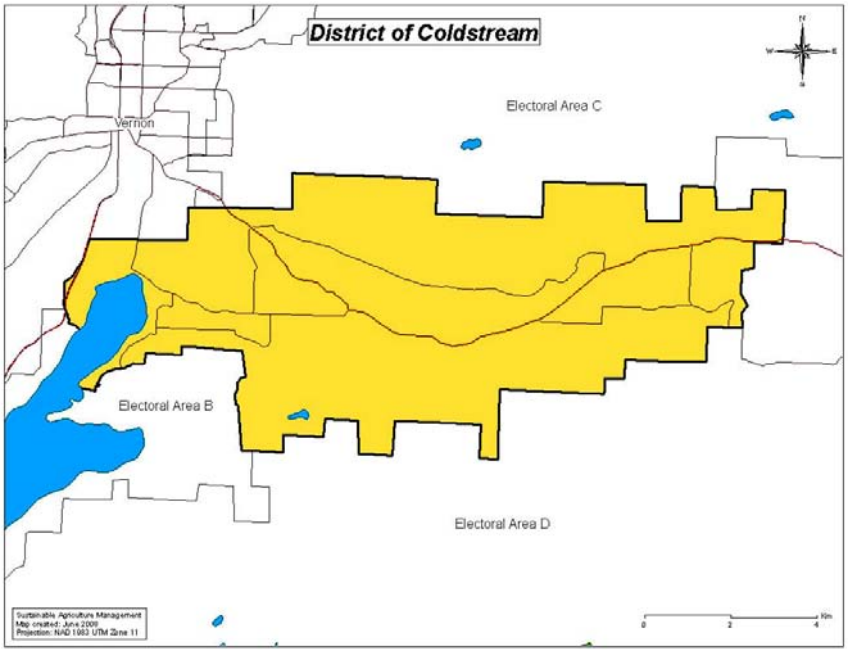
- 2006 Urban / Rural Split

Urban	=	7,490	(79%)
Rural	=	1,981	(21%)

There were 134 farms reported in the District of Coldstream in 2006. The District's farm population is estimated to be 402 persons or 4.2% of Coldstream's total 2006 population (based on the BC average of 3 persons per farm). A similar calculation provincially sets the farm population at approximately 1.5% of B.C.'s total 2006 population.

• Jurisdictional Area [2]

Land	=	6,429 ha
Water	=	276 ha
Total	=	6,705 ha



[1] Ministry of Municipal Affairs, "Statistics Relating to Regional and Municipal Governments in British Columbia" - 1990 & 1998 and Statistics Canada, Ottawa - http://www.statcan.ca/start.html

[2] Correspondence: Brittany Johnson, Statistics Officer; Ministry of Community Services (see: Table - 2006 Mun Land and Water Area.xls).

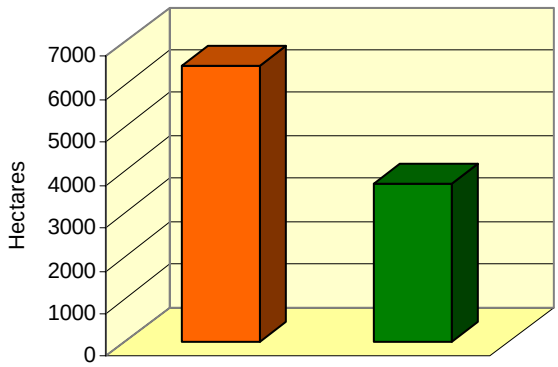
Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

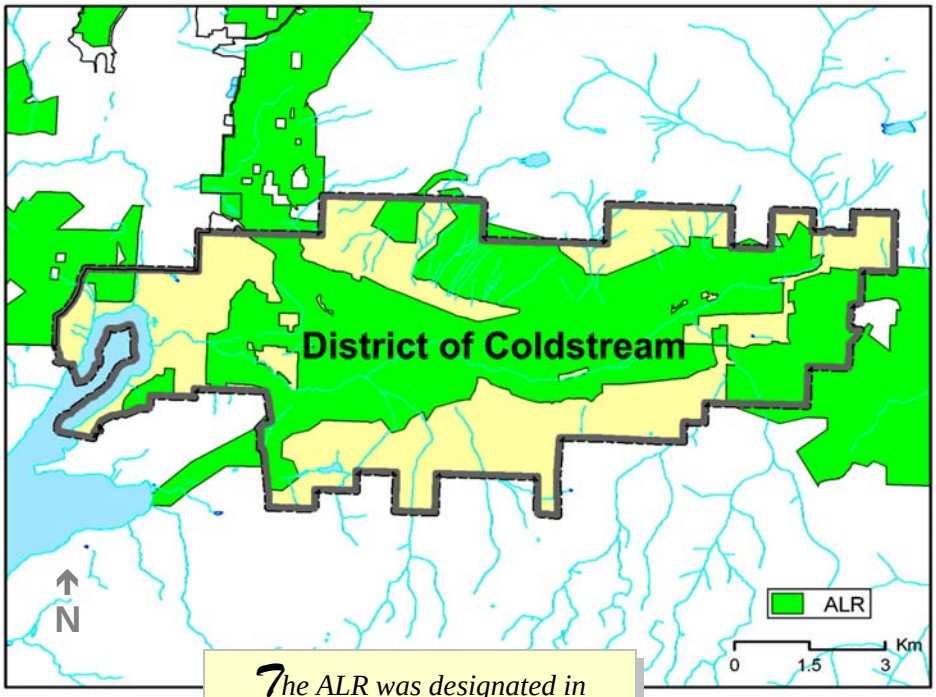
- **Agricultural Land Reserve (ALR)**

= 3,685 hectares [3]

Approximately 57% of Coldstream's land base is within the ALR and accounts for about 5.3% of land in the Agricultural Land Reserve within the Regional District of North Okanagan.

Graph 2 **Coldstream - Land & ALR Area -**





The ALR was designated in Coldstream on March 15, 1974 as part of the Regional District of North Okanagan's ALR Plan.

[3] Source: Agricultural Land Commission - ALR as of January 2008.

4 District of Coldstream AGRICULTURAL OVERVIEW

- **Total Area Farmed** [4]

1996	=	5,106 ha
2001	=	10,760 ha
2006	=	15,640 ha

- **Number of Farms** [5] **Reporting**

1996	=	152
2001	=	129
2006	=	134

- Average Farm Size (hectares)

	1996	2001	2006
District of Coldstream[6]	**33.6 ha**	**83.4 ha**	**116.7 ha**
Regional District of North Okanagan	49.3 ha	61.8 ha	62.5 ha
Okanagan[7]	38.7 ha	44.6 ha	48.9 ha
British Columbia	115.8 ha	127.5 ha	142.9 ha

- Farm Size

	1996		2001		2006	
	Farms	Percent	Farms	Percent	Farms	Percent
<4 ha (10 acres)	74	49%	43	33%	66	49%
4 to 52 ha (10 to 129 acres)	69	45%	79	61%	59	44%
52 to 161 ha (130 to 399 acres)	6	4%	5	4%	7	5%
>161 ha (400 acres & greater)	3	2%	2	2%	2	2%
Total	152	100%	129	100%	134	100%

[4] The amount of land farmed in Coldstream dramatically increase between 1996 and 2001 and again between 2001 and 2006. In fact the amount of land noted as being farmed in Coldstream is far more than the size of the District's jurisdictional area. The reason for this apparent discrepancy is due to the manner in which Statistics Canada reports on farm areas due to the **Headquarters Rule**. Because agricultural operations are often composed of numerous parcels of land in a number of locations, the "headquarters rule" assigns all data collected for the agricultral operation to the area where the farm headquarters is located.

[5] Over time, the census definition of "farm" or "farm operation" has changed. An explanation of these changes can be found at: http://www.statcan.ca/english/freepub/95-629-XIE/2007000/terms.htm#farm. In **2006**, an "agricultural operation" was defined as a farm, ranch or other agricultural operation producing agricultural products for sale or the intention of sale in the past 12 months. For a complete definition of agricultural operation and agricultural products, see: http://www.statcan.ca/english/agcensus2006/glossary.htm#gt3

[6] As noted in Footnote 4, the increase in the Average Farm Size is being affected by the Headquarters Rule.

[7] 'Okanagan' includes the Regional Districts of Okanagan-Similkameen, Central Okanagan and North Okanagan.

Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

• Tenure[8]

	1996		2001		2006	
Farmland Owned	4,637 ha	(91%)	4,357 ha	(40%)	4,327 ha	(28%)
Farmland Leased, etc.	469 ha	(9%)	6,403 ha	(60%)	11,382 ha	(72%)
Total	5,106 ha	(100%)	10,760 ha	(100%)	15,709 ha	(100%)

Between 1996 and 2006 the amount of farmland owned remained relatively constant. The amount of farmland leased, however, displayed dramatic increases that were most likely influenced by the Headquarters Rule (see footnote #4) that was possibly associated with the leasing of range land beyond Coldstream's boundaries.

- Farmland Leased

	1996		2001		2006	
From governments	205 ha	(44%)	x[9] ha	na	x ha	na
From others	264 ha	(56%)	x ha	na	217 ha	(1.9%)
Crop shared from others	na[10]	na	78 ha	(1%)	x ha	na
Through other arrangements	na	na	na	na	23 ha.	(0.2%)
Total	469 ha	(100%)	6,403 ha	(100%)	11,382 ha	(100%)

[8] Note: Figures related to tenure for 2006 are not comparable to previous Census data due to a significant revision to the questionnaire and reformatting of the data by Statistics Canada. For this reason, the total area farmed in 2006 (p. 4) is not the same as the total in the Tenure table.

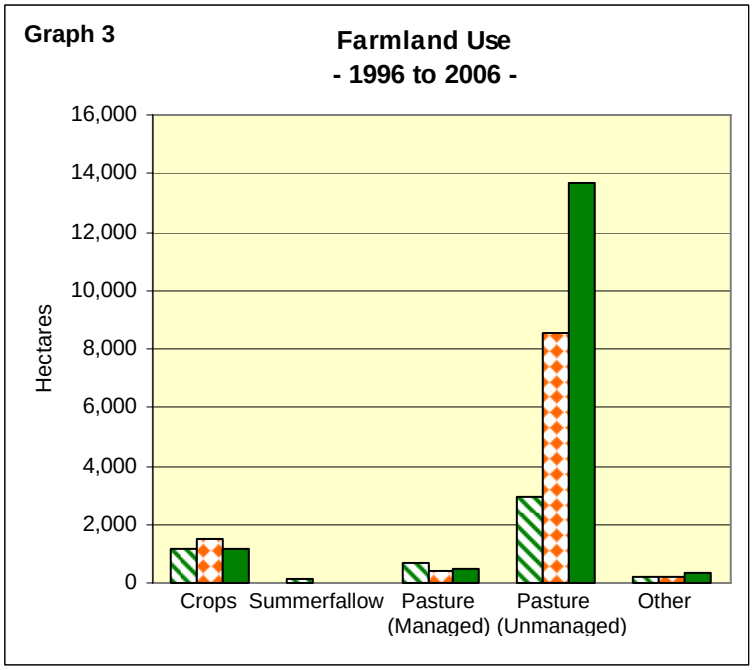
[9] Throughout the report 'x' indicates that farms are reporting but further information is not provided for reasons of confidentiality.

[10] "na" indicates that data was not available for the year and category in question.

Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

- **Hectares of Farmland in:**

	1996		2001		2006	
	Farms	Hectares	Farms	Hectares	Farms	Hectares
Crops	112	1,171	103	1,529	102	1,130
Summerfallow	11	128	6	5	3	6
Pasture (managed)	50	674	39	408	35	491
Pasture (unmanaged)	49	2,949	39	8,580	45	13,675
Other[11]	115	185	96	239	88	338
Total[12]	na	5,107[13]	na	10,761[13]	na	15,640



Graph #3 and its associated table clearly indicate that the dramatic increase in farmland attributed to Coldstream by Census of Agriculture in 2001 and 2006 due to the "Headquarters Rule" was primarily in the form of unmanaged pasture.

[11] "Other" includes 'Other Unimproved Land', 'Other Improved Land' and 'Woodland'.

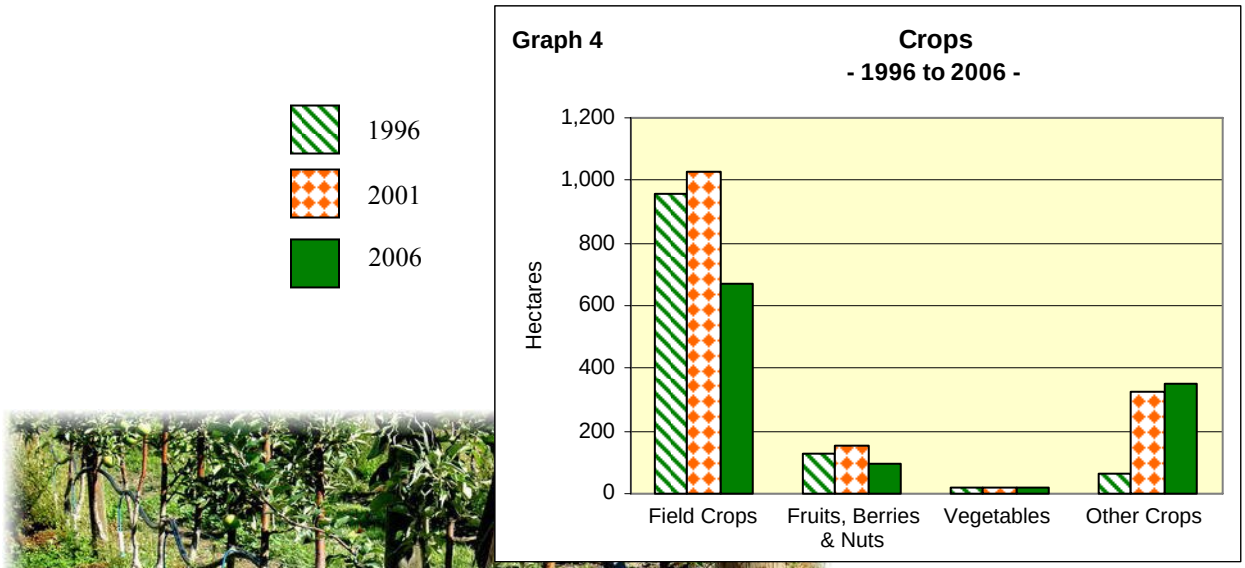
[12] Note: A total for the number of farms in each year is not provided to avoid double counting of mixed farms.

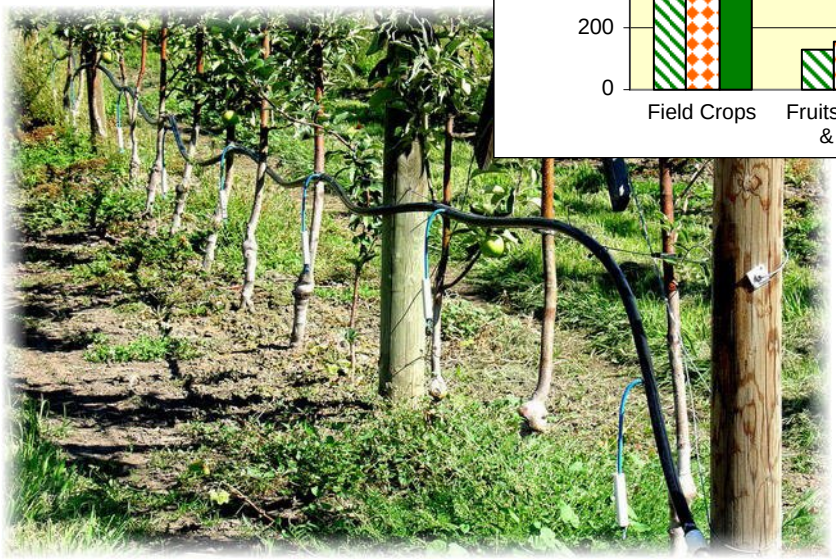
[13] A minor 1 hectare discrepancy of the Total Farmland in this table compared with the figure for 'Total Area Farmed' on page 4 is due to rounding.

Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

- **Crops** (hectares)

	1996	2001	2006
Field Crops[14]	958	1,030	668
Tree Fruits	125	na	na
Berries & Grapes	4	na	na
Fruits, Berries & Nuts[15]	na	154	93
Vegetables	17	17	17
Other[16]	67	328	352
Total	1,171[17]	1,529	1,130





[14] Note: In the case of hectares in Field Crops, a total was not provided. In some cases, individual field crop area figures were not provided for reasons of confidentiality. As a result, the figures provided equal only the sum of those individual field crops in which Statistics Canada provide an area figure.

[15] In 1991 and 1996, data was split between 'Tree Fruits' and 'Berries & Grapes'. In 2001 & 2006, this data was grouped as Fruits, Berries & Nuts, resulting in no data being available (na) in this category in 1991 and 1996.

[16] "Other" Crops also account for area figures not provided due to confidentiality.

[17] Excluding Christmas tree area

Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

District of Coldstream
AGRICULTURAL OVERVIEW

	1996		2001		2006	
	Farms	Hectares	Farms	Hectares	Farms	Hectares
• **Field Crops**[18]	**na**	**958**	**na**	**1,030**	**na**	**668**
Wheat	0	0	1	x[19]	0	0
Oats	2	x	2	x	0	0
Barley	2	x	0	0	0	0
Mixed Grains	0	0	1	x	0	0
Buckwheat	1	x	1	x	0	0
Rye	1	x	1	x	1	x
Corn for Silage	3	225	3	x	1	x
Alfalfa	56	495	49	614	50	447
All other Tame Hay & Fodder Crops	24	212	23	416	28	221
Flax Seed	0	0	0	0	1	x
Potatoes	1	x	1	x	0	0
Ginseng	0	0	6	9	3	x
Triticale	0	0	0	0	1	x
Other field crops	9	26	0	0	1	x

	1996		2001		2006	
Fruits, Berries & Nuts	Farms	Hectares	Farms	Hectares	Farms	Hectares
	45	**129**	**36**	**154**	**33**	**93**
Apples	32	115	26	134	24	82
Pears	13	3	3	1	7	1
Plums & Prunes	15	2	7	2	8	1
Sweet Cherries	15	2	7	6	8	4
Sour Cherries	3	x	1	x	0	0
Peaches	6	1	3	2	4	1
Apricots	9	1	1	x	3	0.4
Other tree fruits	6	x	na	na	na	na
Strawberries	6	3	3	2	2	x
Raspberries	7	x	1	0.4	3	1
Blueberries	1	x	3	x	1	x
Saskatoons	na	na	0	0	1	x
Grapes	0	0	2	x	3	x
Other fruits, berries & nuts	1	x	3	4	4	1

[18] Note: A total for the number of farms is not provided to avoid double counting in the case of mixed farms.
[19] 'x' indicates that there are farms reporting but further information is not provided due to confidentiality.

Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

	1996		2001		2006	
	Farms	Hectares	Farms	Hectares	Farms	Hectares
• **Vegetables**	**16**	**17**	**12**	**17**	**11**	**17**
Sweet Corn	5	2	7	3	7	4
Tomatoes	7	1	4	2	6	1
Cucumbers	3	1	5	2	4	1
Green Peas	3	1	3	1	2	x
Green or Wax Beans	3	1	3	0.4	3	1
Cabbage	1	x	2	x	1	x
Cauliflower	1	x	2	x	1	x
Broccoli	1	x	3	0.4	1	x
Brussels Sprouts	0	0	0	0	1	x
Carrots	3	0.4	4	1	4	2
Beets	2	x	4	1	3	x
Radishes	1	x	1	x	2	x
Dry / Other Onions	3	0.4	2	x	3	x
Green (Bunching) Onions & Shallots	1	x	0	0	1	x
Lettuces	1	x	2	x	0	0
Spinach	1	x	2	x	1	x
Squash, Pumpkins & Zucchini	1	x	3	2	4	2
Rhubarb					na	na
Asparagus	3	3	2	x	0	0
Peppers	6	1	3	1	4	x
Other Vegetables	6	7	4	4	4	1

Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

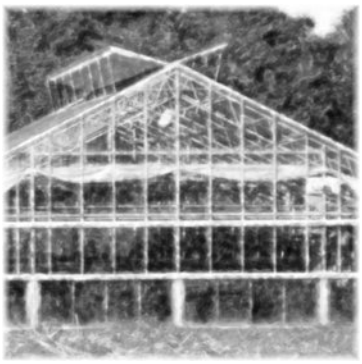
• Organic Farms

	Farms 2001	Farms 2006
Total	**1**	**0**
Fruits, Veg. or Greenhouse	1	0
Field Crops	1	0
Animal	0	0
Other	0	0

• Greenhouse Production

	1996 Farms	1996 Square Metres	1996 % of Total	2001 Farms	2001 Square Metres	2001 % of Total
Flowers	2	x	na	2	x	na
Vegetables	2	x	na	1	x	na
Other Greenhouse Products	1	x	na	0	0	0%
Area not in use on date of census	4	277	51 %	2	x	na
Total [20]	4	542	100%	2	x	100%

	2006 Farms	2006 Square Metres	2006 % of Total
Flowers	3	3,702	100%
Vegetables	0	0	0%
Other Greenhouse Products	0	0	0%
Area not in use on date of census	0	0	0%
Total [20]	3	3,702	100%



	1996 Farms	1996 Hectares	2001 Farms	2001 Hectares	2006 Farms	2006 Hectares
• **Nursery Products**	7	8	5	7	4	5
• **Sod Grown for Sale**	0	0	1	x	1	x
• **Christmas Trees**	4	2	1	x	4	5

[20] Note: A single greenhouse may be engaged in more than one form of production.

Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

• Livestock

	1996		2001		2006	
	Farms	Livestock	Farms	Livestock	Farms	Livestock
Hens & Chickens	16	1,015	19	1,586	14	1,350
Turkeys	1	x	1	x	3	52
Total Other Poultry	12	155	4	45	2	x
Cattle & Calves	52	3,983	39	5,386	31	6,974
- Dairy Cows	5	117	3	200	2	x
- Beef Cows	27	1,320	23	1,568	18	2,740
Pigs	2	x	4	25	4	46
Sheep & Lambs	7	42	2	x	6	196
Horses & Ponies	51	482	41	353	51	442
Goats	4	18	4	113	5	9
Wild Boar	na	na	0	0	2	x
Bison	na	na	0	0	2	x
Rabbits	6	23	0	0	na	na
Llamas & Alpacas	2	x	3	5	2	x
Colonies of Bees for Honey	7	116	6	74	4	35

• Land Management Practices

	1996		2001		2006	
	Hectares	% of Farmland	Hectares	% of Farmland*	Hectares	% of Farmland*
• **Irrigation**	1,868	37%	1,791	17%	1,879	12%
• **Commercial Fertilizers**	1,258	25%	1,248	12%	1,138	7%
• **Manure**[21]	142	3%	149	1%	217	1%
• **Herbicides**	435	9%	1,593	15%	557	4%
• **Insecticides**	142	3%	115	1%	96	1%
• **Fungicides**	150	3%	140	1%	87	1%

* Note: It is highly likely that the 'Percent of Farmland' figures above for the years 2001 and 2006 have, in some cases, been skewed downwards because of the inclusion of farmlands not within the jurisdictional area of Coldstream due to the 'Headquarters Rule' discussed previously.

[21] In the case of some forms of manure application, data was not provided. Figures represent only where data is provided.

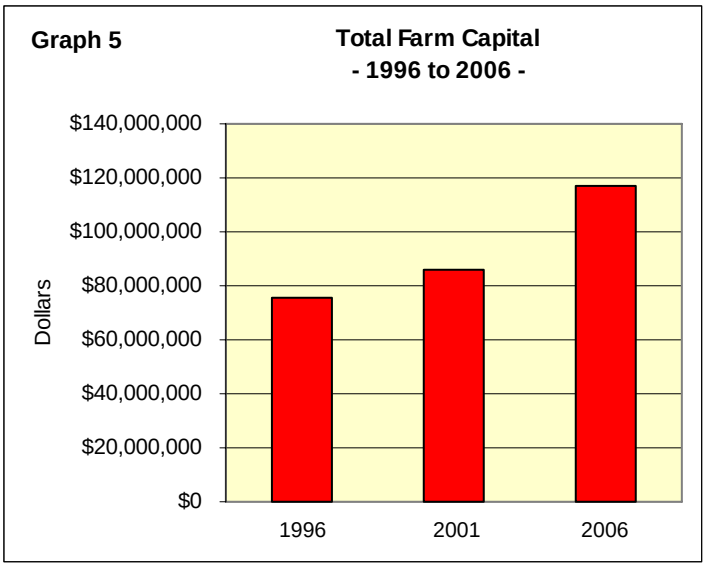
Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

• Total Farm Capital

1996 = $75,348,630
2001 = $85,958,289
2006 = $117,387,839

Between 1996 and 2006, Coldstream's Total Farm Capital increased by over $41.7 million. Just over 90% of this increase was accounted for by increases in the value of land and buildings.

Graph 5 Total Farm Capital - 1996 to 2006 -

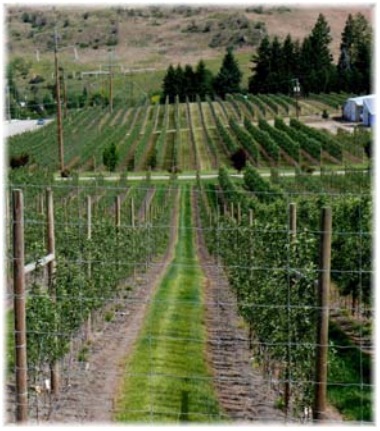


Division of Capital - 2006

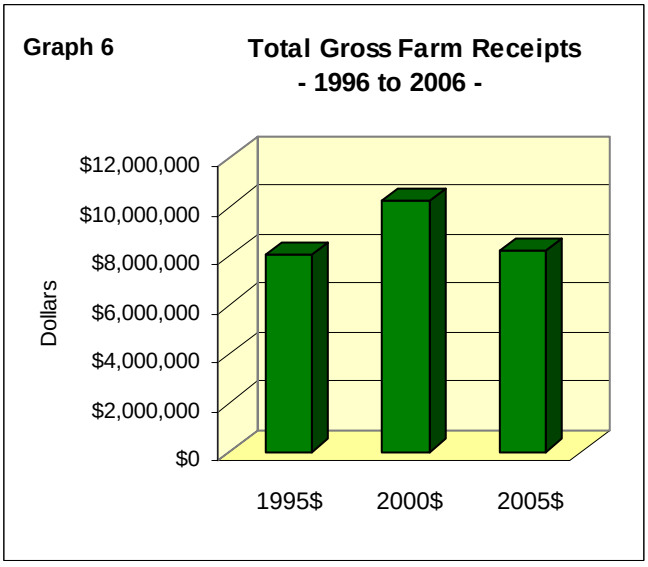
	Value ($)	% of Total
• Land and buildings	$104,515,833	89%
• Farm machinery & equipment	$8,199,848	7%
• Livestock & poultry	$4,672,358	4%

• Total Gross Farm Receipts

1996 = $8,053,286 (1995$)
2001 = $10,265,018 (2000$)
2006 = $8,229,284 (2005$)



Graph 6 Total Gross Farm Receipts - 1996 to 2006 -



Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

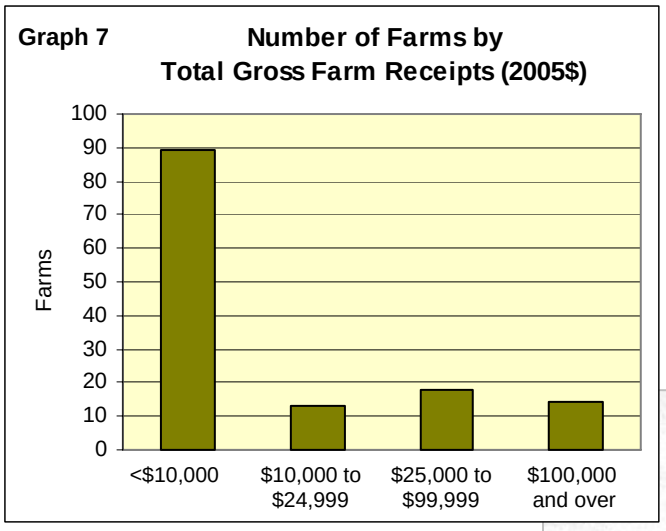
- Average Gross Farm Receipts per Farm

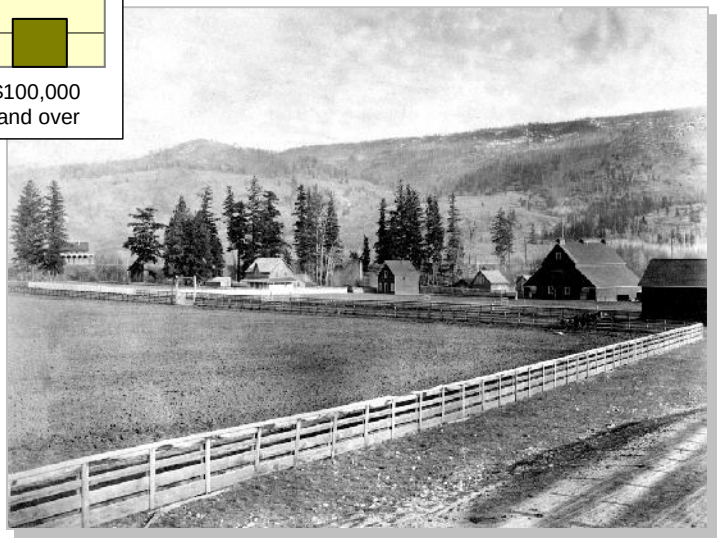
	1995	2000	2005
District of Coldstream	$52,982	$79,574	$61,413
Regional District of North Okanagan	$66,268	$71,484	$90,777
British Columbia	$84,233	$113,736	$133,641

- Number of Farms by Total Gross Farm Receipts 2005

	Coldstream		RD of North Okanagan		B.C.	
	Farms	% of Coldstream Total	Farms	% of RDNO Total	Farms	% of BC Total
< $10,000	89	66%	659	54%	9,466	48%
$10,000 - $24,999	13	10%	192	16%	3,194	16%
$25,000 - $99,999	18	13%	195	8%	3,629	18%
$100,000 and over	14	11%	181	15%	3,555	18%
Total	134	100%	1,227	100%	19,844	100%

Graph 7 **Number of Farms by Total Gross Farm Receipts (2005$)**





"Lord Aberdeen's Ranch "Coldstream" - (189-)

Source: BC Archives
Photographer/Artist: Halliday
Call No. A-07993

Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

- **Total Operating Expenses & Cash Wages Paid**

		Expenses	Wages
1995$	=	$8,178,013	$1,744,613
2000$	=	$11,283,456	$1,938,949
2005$	=	$8,691,698	$1,988,305

	1995	2000	2005
• **Total Paid Labour** (weeks)	4,650	4,187	4,185
- **Year Round vs. Seasonal Paid Labour**			
% Year Round	63%	57%	35%
% Seasonal	37%	43%	65%
% Year Round British Columbia	57%	62%	63%

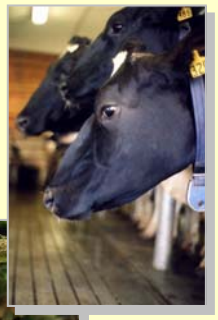
Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

BC Agriculture - A Snapshot

B.C. - 2006 - Census of Agriculture		
No. of Farms	-	19,844
Total Area of Farms	-	2,835,458 ha

Agriculture is a significant and expanding industry in British Columbia with more than 290,000 people employed on farms, ranches, orchards, greenhouses, nurseries, as well as warehouses, veterinary offices, hatcheries, grocery stores, and other food-related services in 2006. The primary agriculture sector generates more than $782 million towards the province's total Gross Domestic Product. Although the industry is relatively small by itself, it contributes significantly to spinoffs in the food processing, food wholesaling, food retailing and food service sectors. This translates in total gross revenues for this industry of more than $36 billion a year.

Climatic conditions in the province make it possible for British Columbia farmers to grow a wide variety of crops - approximately 200 different commodities. The top farm commodities in terms of sales in 2006 B.C. were dairy, chicken, floriculture, cattle, nursery, greenhouse tomatoes, mushrooms, calves, and blueberries. Total farm cash receipts reached $2.3 billion in 2006 and total crop receipts reached over $1.1 billion in 2006. The livestock sector, which includes cattle, hogs, poultry, eggs, dairy, honey, fur and game-farm animals, reached $1.2 billion in 2006.



The **Southern Interior** is well-suited for the production of tree fruits and grapes. The **Fraser Valley** and southern **Vancouver Island**, with a cooler, wetter climate, are extremely favourable for the production of berries and vegetables. Most of the province's grain and oilseed crops are grown in the **Peace River** region.

Beef cattle are concentrated in the **North**, **Cariboo** and **Thompson-Okanagan** regions. Large dairy herds are found mostly in the **Lower Mainland**, southeastern **Vancouver Island** and the **Okanagan-Shuswap** area. Hog, poultry and egg production are concentrated in the **Lower Mainland**.

Nationally, in 2006, BC ranked 1st in receipts generated in four commodities

Commodity	BC Share of Canada's Gross Farm Receipts	National Ranking
Sweet Cherries	84.6%	1
Raspberries	58.1%	1
Blueberries	49.3%	1
Cranberries	45.0%	1

Nationally, B.C. ranked 2nd in a further eight agricultural commodities - greenhouse peppers, greenhouse tomatoes, nursery products, apples, grapes, mushrooms, floriculture and greenhouse cucumbers.

From: "Fast Stats - Agriculture, Aquaculture and Food 2007"'
Ministry of Agriculture and Lands

Data source: Statistics Canada standard or custom tabulations, 1996, 2001, 2006 Census of Agriculture, unless otherwise noted.

Sources:

- Statistics Canada, British Columbia Agriculture, 1986, Census Catalogue 96-112.
- Statistics Canada, Small Area Data British Columbia, July 1992.
- Statistics Canada, 1996 Census of Agriculture Profile Data - British Columbia.
- Statistics Canada, 2001 Census of Agriculture Profile Data - British Columbia
- Statistics Canada, 2006 Census of Agriculture - Farm Data Tables - British Columbia - Special Run
- Correspondence: Brittany Johnson, Statistics Officer, Ministry of Community Services.
- Ministry of Municipal Affairs, Municipal Statistics (Including Regional Districts), March , 1998
- Statistical Reports & Files of the Provincial Agricultural Land Commission.

Sources: Photos and Illustrations

All photos and illustrations are from the BC Ministry of Agricultural and Lands with the exception of:

- Page 3 - ALR Map produced by the Resource Management Branch. Data provided by Integrated Land Management Bureau, Ministry of Agriculture and Lands.
- Page 13 - B.C. Archives: Call No. A-07993

WANT MORE INFORMATION ABOUT AGRICULTURE IN B.C.?

See:

the Ministry of Agriculture and Lands at:

http://www.gov.bc.ca/al/

the Provincial Agricultural Land Commission at:

http://www.alc.gov.bc.ca/

Agriculture and Agri-Food Canada at:

http://www.agr.gc.ca/

Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

PLEASE NOTE:

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Planning strategy suggestions from the farming community:

Water:

- Goal: To ensure affordable water sufficient to serve agricultural needs.
- Suggested Strategies:
  - ensure agriculture has representation on Board of Greater Vernon Services (voting member?).
  - reserve water for agriculture.
  - make more irrigation water available and for a longer season.
  - support water system improvements required to provide a separate, untreated irrigation system for agriculture.
  - meter water use and provide affordable service.

Economy:

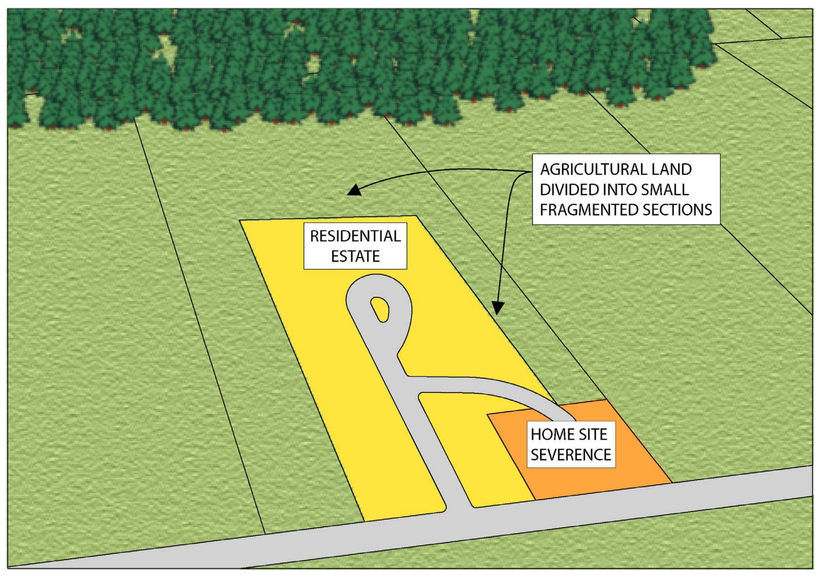
- Goal: To improve economic viability of local agriculture.
- Suggested Strategies:
  - explore opportunities to provide more affordable accommodation for farm workers.
  - consider economic development partnerships with other local areas to promote regional agriculture.
  - find ways to subsidize agriculture and lands in the ALR
  - encourage a buy local program.
  - establish Coldstream farmers market.

Managing Development:

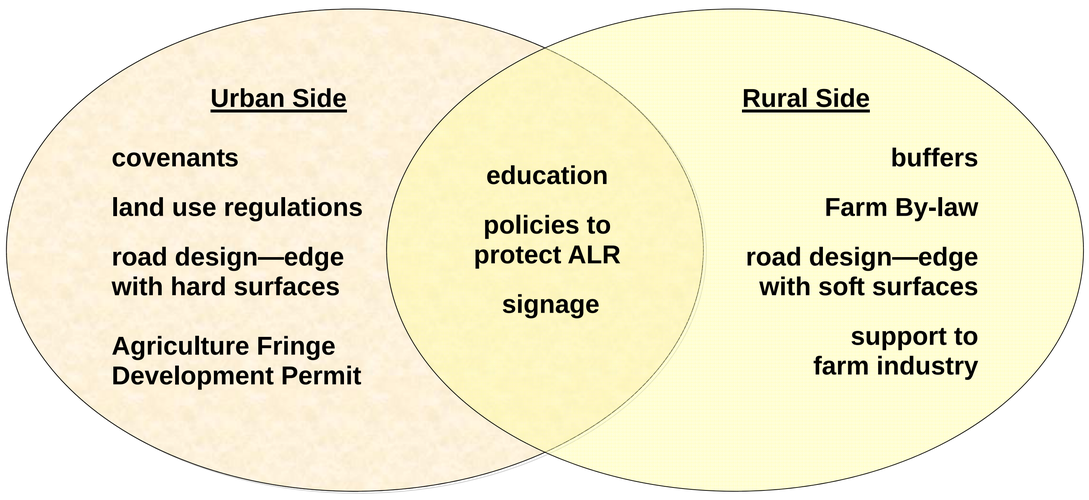
- Goal: To protect lands in the ALR for agricultural use.
- Suggested Strategies:
  - implement edge planning strategies.
  - establish policies that define the footprint for future building sites to optimize land available for future agricultural use (see illustration).
  - More relaxed municipal regulations (e.g. burning permits).
  - discourage non-farm use of ALR.
  - support the mandate of the Agricultural Land Commission.
  - ensure new hillside development areas are planned to maximize development opportunities on adjoining land where lands are not in the ALR.
  - raise community awareness of the role of agriculture and the nature of agricultural activities.

Managing Residential Building Footprints in Agricultural Areas

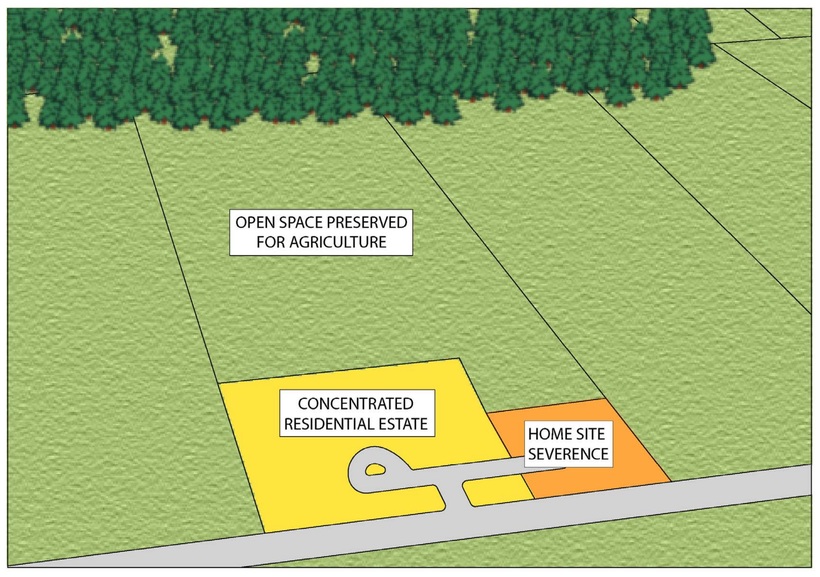
Conventional Rural Residential Estate



Recommended Strategies for Edge Planning



Conservation for Agriculture



District of Coldstream

Survey Results
Agricultural Plan

TRUE CONSULTING GROUP

APPENDIX C

Climate Change at Coldstream – Past and Future

CLIMATE CHANGE AT COLDSTREAM – PAST AND FUTURE

PREPARED BY DAVE WHITING, P.AG, MCIP AND CLARENCE LAI, A.AG

FEBRUARY 2009

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INTRODUCTION

This document provides information to the District of Coldstream regarding select climate variables associated with agriculture at Coldstream and in the North Okanagan Regional District. These variables are discussed in the context of historical data as well as predictive data associated with two different climate change scenarios. Climate variable information is conveyed using regional maps produced using data generated by ClimateBC, a computer/web based application that integrates climate scenarios with topographical data sets to produce spatial information for map production. Interpretations of the maps and historical data are provided from an agricultural production perspective.

COLDSTREAM'S CLIMATE

INSIGHTS FROM HISTORICAL DATA

The District of Coldstream has a mid-latitude steppe climate (Koeppen BSk) characterized by semi-arid conditions, and a monthly average temperature ranging from -5C to 19C. A weather station at Coldstream Ranch has a 105 year record of weather observation data. This data[i], collected over the past century and analyzed by the authors, indicate changes that are occurring to the North Okanagan climate. These climate changes are reflected in attributes of both temperatures and precipitation. These changes that are occurring provide context to potential climate change scenarios reflected in climate variable maps later in this appendix.

TEMPERATURE

Figure 1 indicates the trends in average annual maximum (red) temperatures and average annual minimum (blue) temperatures since 1902. Both graphs indicate an increase in average temperatures. It is interesting to note that the climate is getting warmer more as a result of higher night temperatures than higher day temperatures. This is consistent with either an increase in greenhouse gas concentrations or an increase in cloud cover, since both of these phenomena will diminish the amount of overnight cooling.

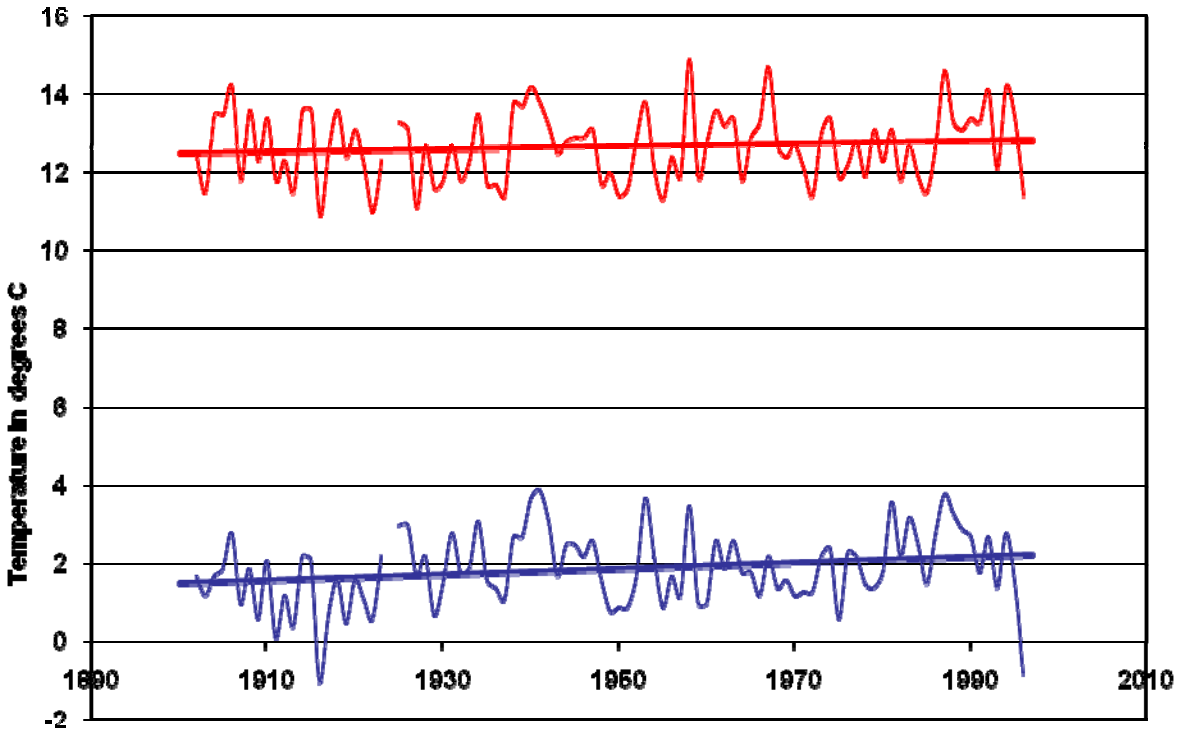


Figure 1 Trends in Annual Average Max. and Min. Temperatures at Coldstream Ranch

Temperature Variability

Deriving average temperatures is independent of the variation in the measurements. Over a period of time, average temperatures can remain constant while there can be changes to the variability of the data reflecting an increased magnitude of extreme temperature events. To ascertain if the variability of temperature has changed over time, an analysis has been undertaken to determine if the magnitude of the difference of extreme high and low temperature events from the mean August maximum and January minimum respectively are increasing or decreasing.

Using the temperature data recorded at Coldstream Ranch, records of the extreme maximum temperature for August and the extreme minimum temperature for January were selected for each year from 1900 to 1997. The difference between each maximum and minimum temperature value and the mean August maximum and January minimum temperatures respectively was derived. These values are plotted in Figures 2 and 3 respectively.

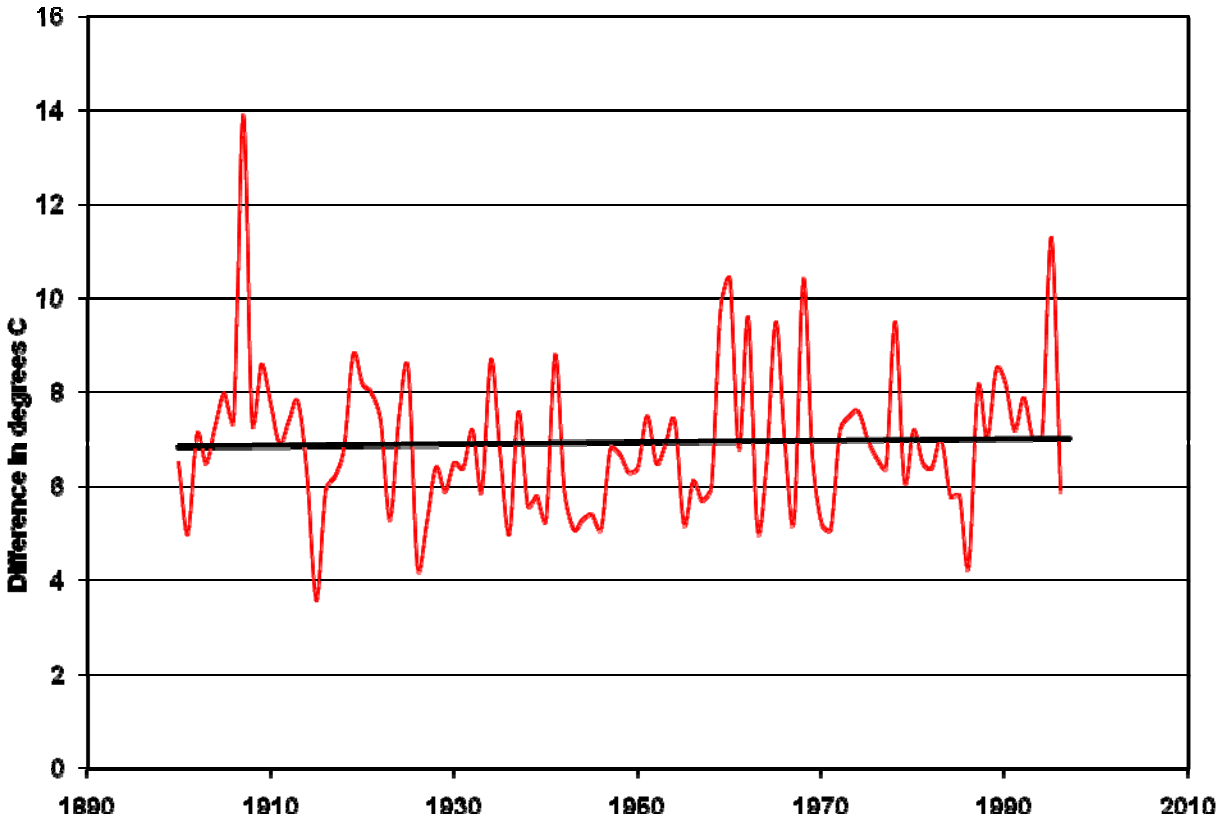


Figure 2 Variability in Extreme Maximum August Temperatures at Coldstream Ranch

The analysis reveals that the variability of extreme daily maximum temperatures in August has changed very little in the past century. The probability of extreme high temperatures in August does not appear to be increasing.

A similar analysis for extreme minimum temperatures for January is shown in Figure 3. In this case, the variability of extreme minimum temperatures is decreasing. On average, extreme January minimum temperatures are now approximately 1.5 Celsius degrees closer to the January average. Again this phenomenon may be attributed to the increase in cloud cover and associated insulating effect.

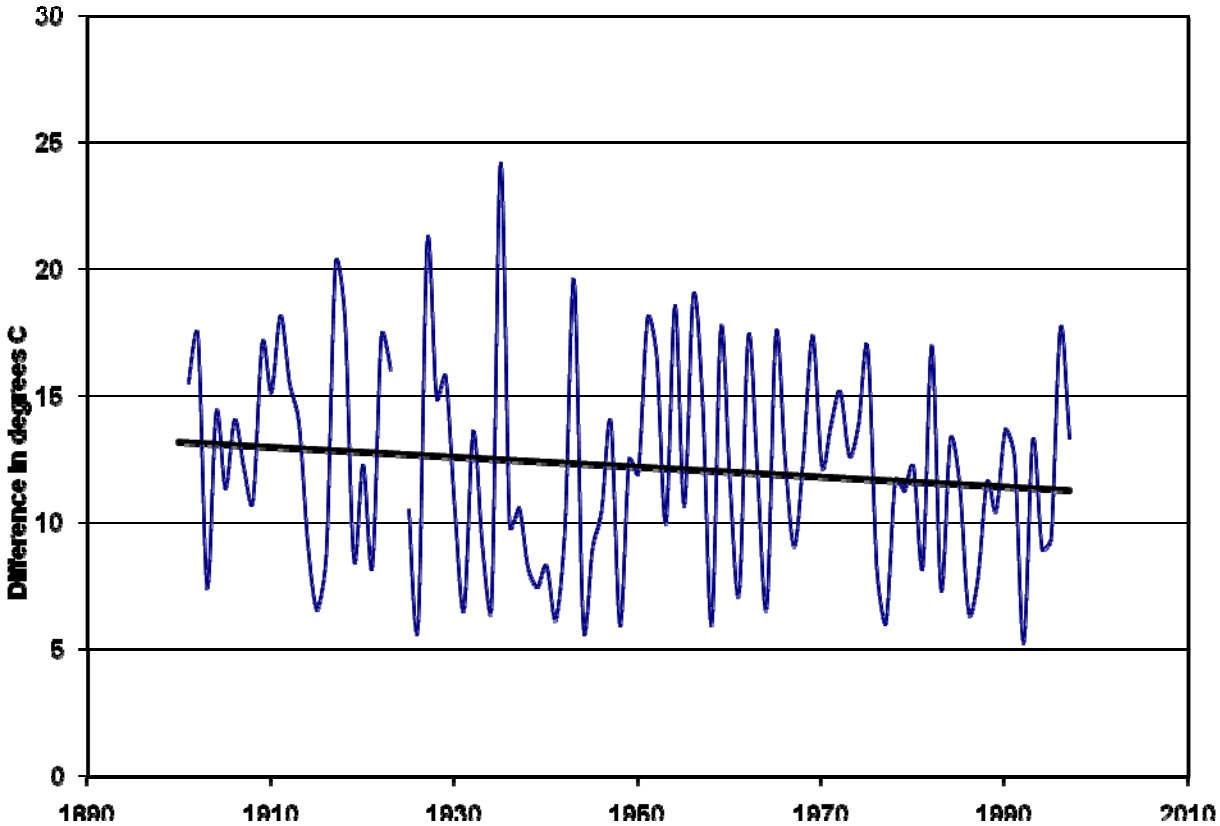


Figure 3 Variability in Extreme Minimum January Temperatures at Coldstream Ranch

PRECIPITATION

As well as getting warmer, the District of Coldstream's climate is also getting wetter. This may reflect a larger global trend towards an increase in precipitation believed to be a natural consequence of the hydrological cycle in response to rising global temperatures. Figure 4 shows an approximate 30% increase in annual precipitation over the past century at the Coldstream Ranch.

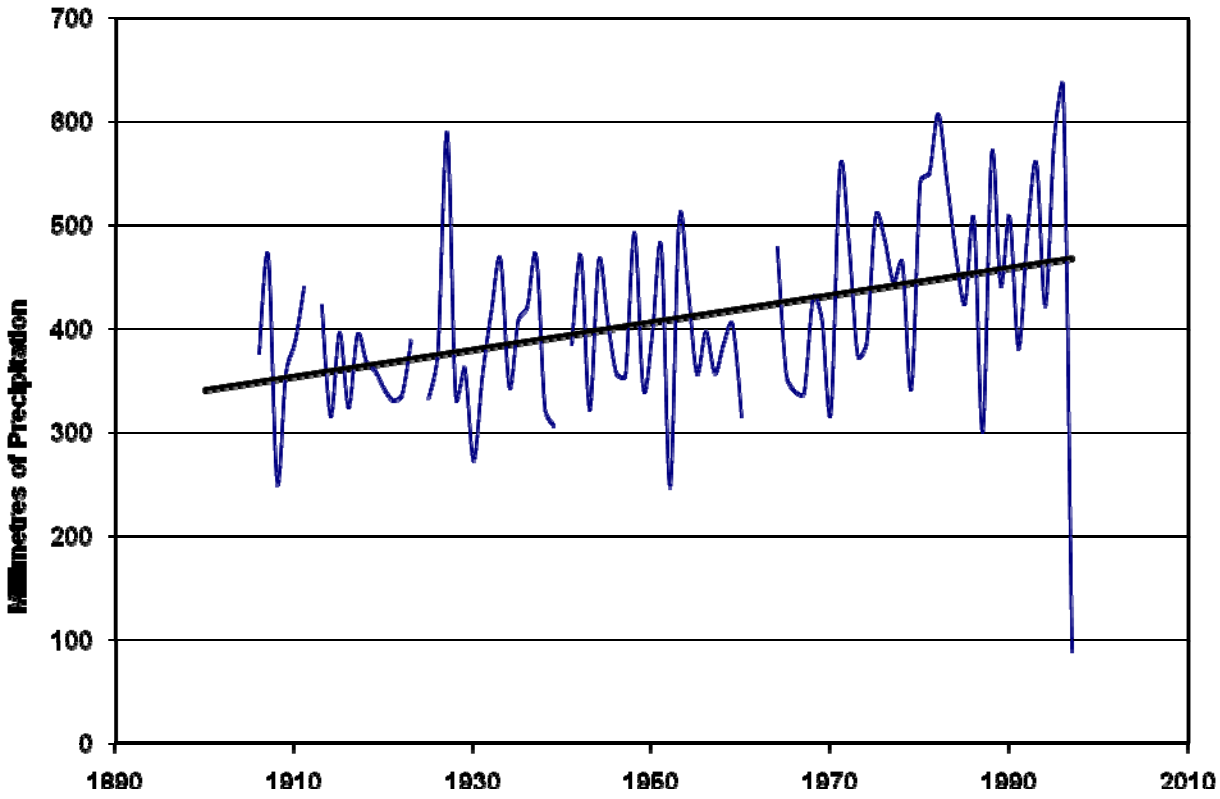


Figure 4 Annual Precipitation at Coldstream Ranch

The following chart shows how the precipitation record has been distributed over the four seasons: winter (December-February), fall (September-November), spring (March-May) and summer (June-August). It is important to note that all seasons are showing a trend of increased precipitation.

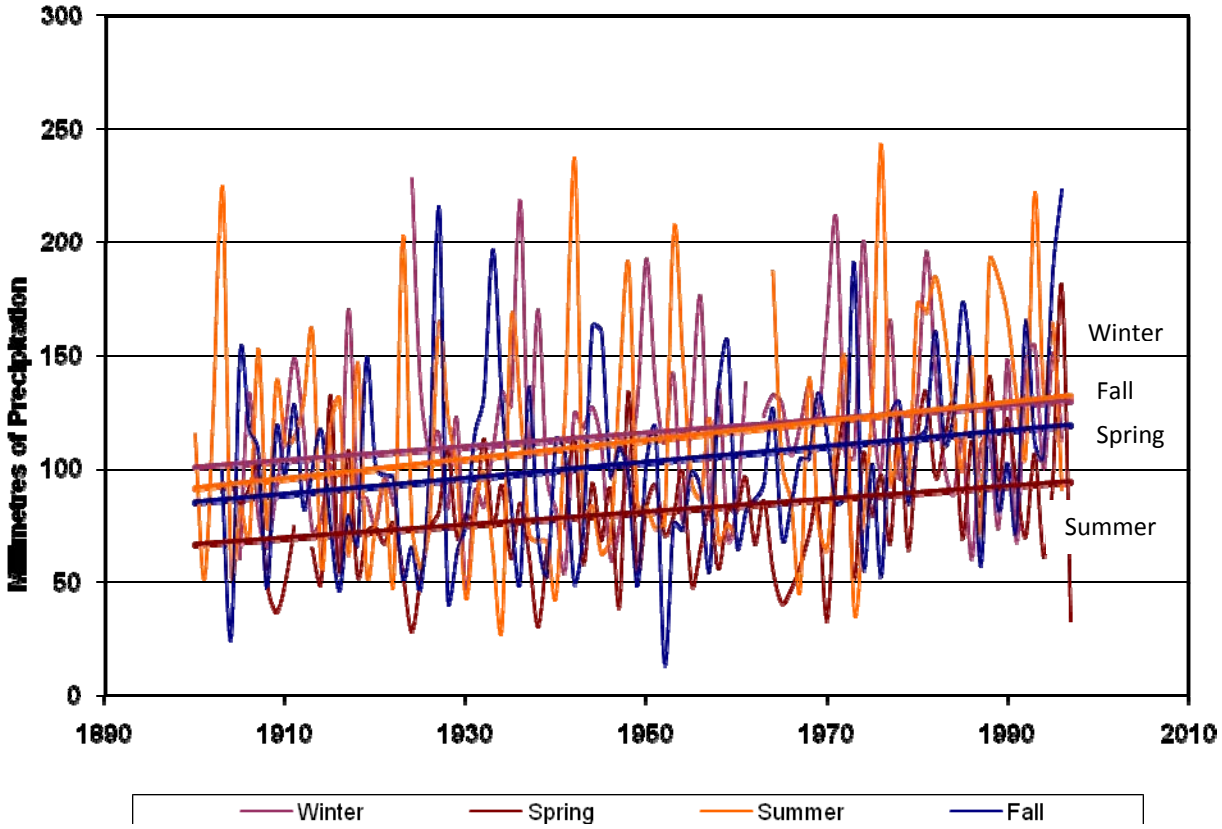


Figure 5 Seasonal Precipitation at Coldstream Ranch

The relative contribution of precipitation to the annual total from each season is reflected in Figure 6. It shows how the relative contribution of the seasons to annual precipitation is slowly changing. The proportion of the contribution to the annual total from the winter is increasing at the expense of the fall proportion of the contribution to the annual total. This probably reflects a seasonal shift in global circulation patterns, particularly the arrival of mid-latitude cyclones on the West Coast.

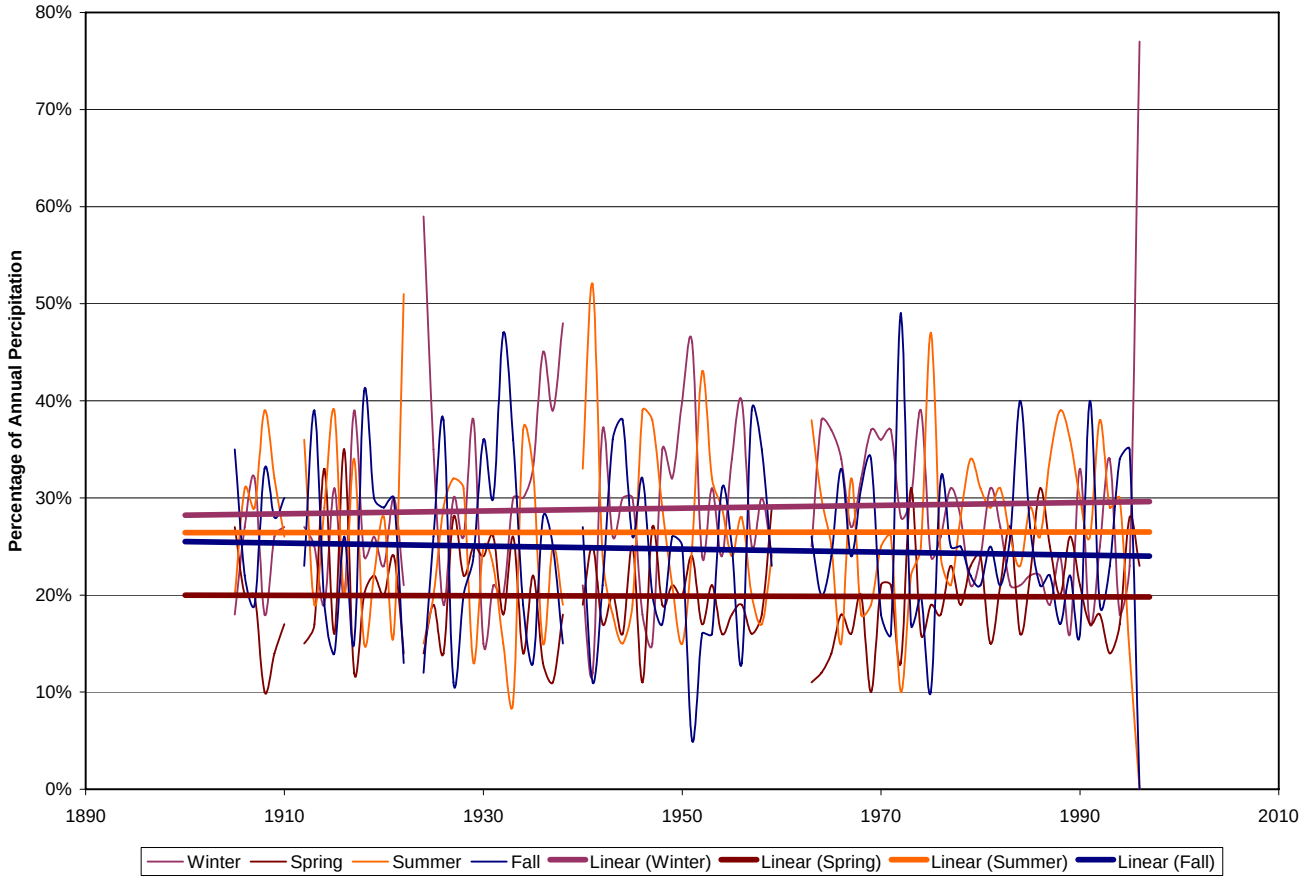


Figure 6 Relative Contribution of Seasonal Precipitation to Annual Precipitation at Coldstream Ranch

INSIGHTS FROM PREDICTIVE DATA

THE CLIMATE BC APPLICATION TOOL

The following maps are derived from historic climate data associated with temperature and precipitation between 1961 and 1990 and predictive climate data using the ClimateBC v 3.2 program[ii] jointly developed by the Province of British Columbia and University of British Columbia scientists. The program allows for a number of different climate variables pertinent to agricultural production to be calculated or derived for a geographical area. The program also provides for the production of climate variables based on future climate data sets generated by various global circulation models and climate change scenarios.

Four sets of maps produced by the Climate BC program follow, each reflecting the regional distribution of a climate variable important to North Okanagan agriculture:

- Mean Annual Temperature
  This climate variable is calculated by averaging the twelve monthly average temperatures. The average monthly temperatures are calculated by determining the mean of the daily temperatures within the month. Mean daily temperature is the average of the highest and lowest temperature in a 24-hour period.

- Number of Frost Free Days
  Frost-free period can be defined as the number of days between the average last spring frost date and the average first fall frost date.

- Precipitation as Snow
  This is the total annual precipitation as snow in millimeters

- Summer Precipitation
  This is the total precipitation for the months of June, July and August

The predictive maps reflect the 2050s time period (2040 – 2069).

Each group of maps contains a map showing the climate variable based on historical data (1961-1990 Normals) and two maps of predicted climate data based on two global climate change storylines-scenarios , A1F1 and B2 being applied to the Canadian Global Circulation Model 2 (CGCM2).

The storylines/scenarios are a tool to explore how developments in the global environment in the 21st century will affect the production of greenhouse gases. Each storyline/scenario represents different demographic, social, economic, technological, and environmental development.

The A1F1 storyline emphasizes a future world of very rapid economic development, global population that peaks in mid-century and declines thereafter, and rapid introduction of new and more efficient fossil fuel technologies. The B2 storyline emphasizes a future world of intermediate economic development with continuously increasing population. It is a world where there is a strong emphasis on local solutions to economic, social and environmental sustainability. The two storylines are considered equally valid with no assigned probabilities of occurrence.

Characteristics of the two storylines are summarized in the table below[iii]:

	Global Climate Storyline A1F1	Global Climate Storyline B2
World	• Market-orientated	• Local solutions
Economy	• Fastest per capita growth	• Intermediate growth
Population	• 2050 peak, then decline	• Continuously increasing
Governance	• Strong regional interactions, income convergence	• Local and regional solutions to environmental protection and social equity
Technology	• Rapid introduction of new and more efficient technologies • Fossil energy intensive	• Less rapid introduction of new and more efficient technologies • More diverse energy technology

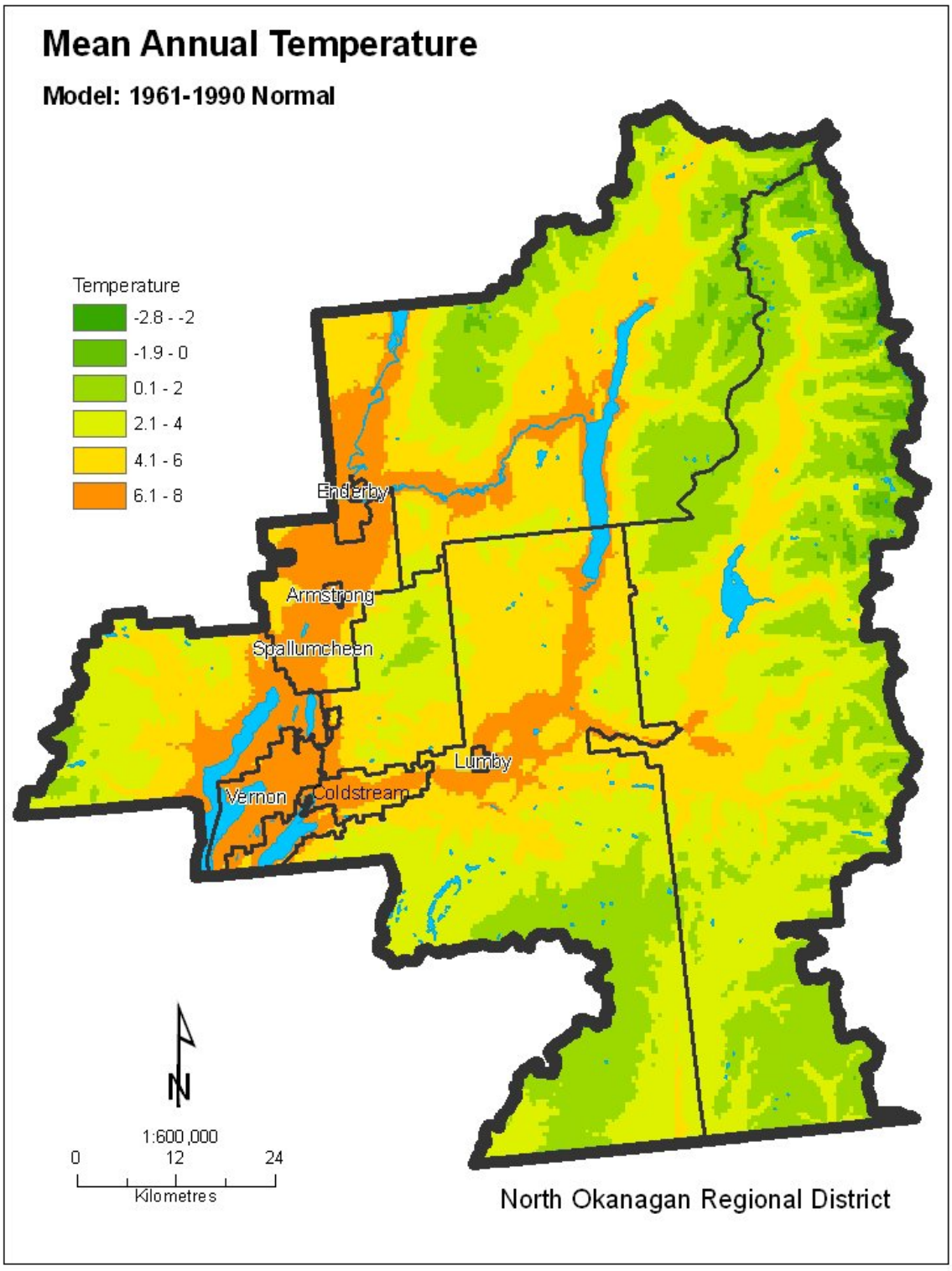
The ClimateBC tool allows the users to input single or multiple geographic locations that generate spatial data that can be used for producing maps or graphs.. This information can be displayed on maps and interpreted broadly at a regional scale but caution should be exercised when interpreting these maps for small specific areas such as a farm or community.

When interpreting the maps from an agricultural production perspective, it is important to note that soil types and topography are significant factors that affect the agricultural potential of land. These factors are not reflected in the maps.

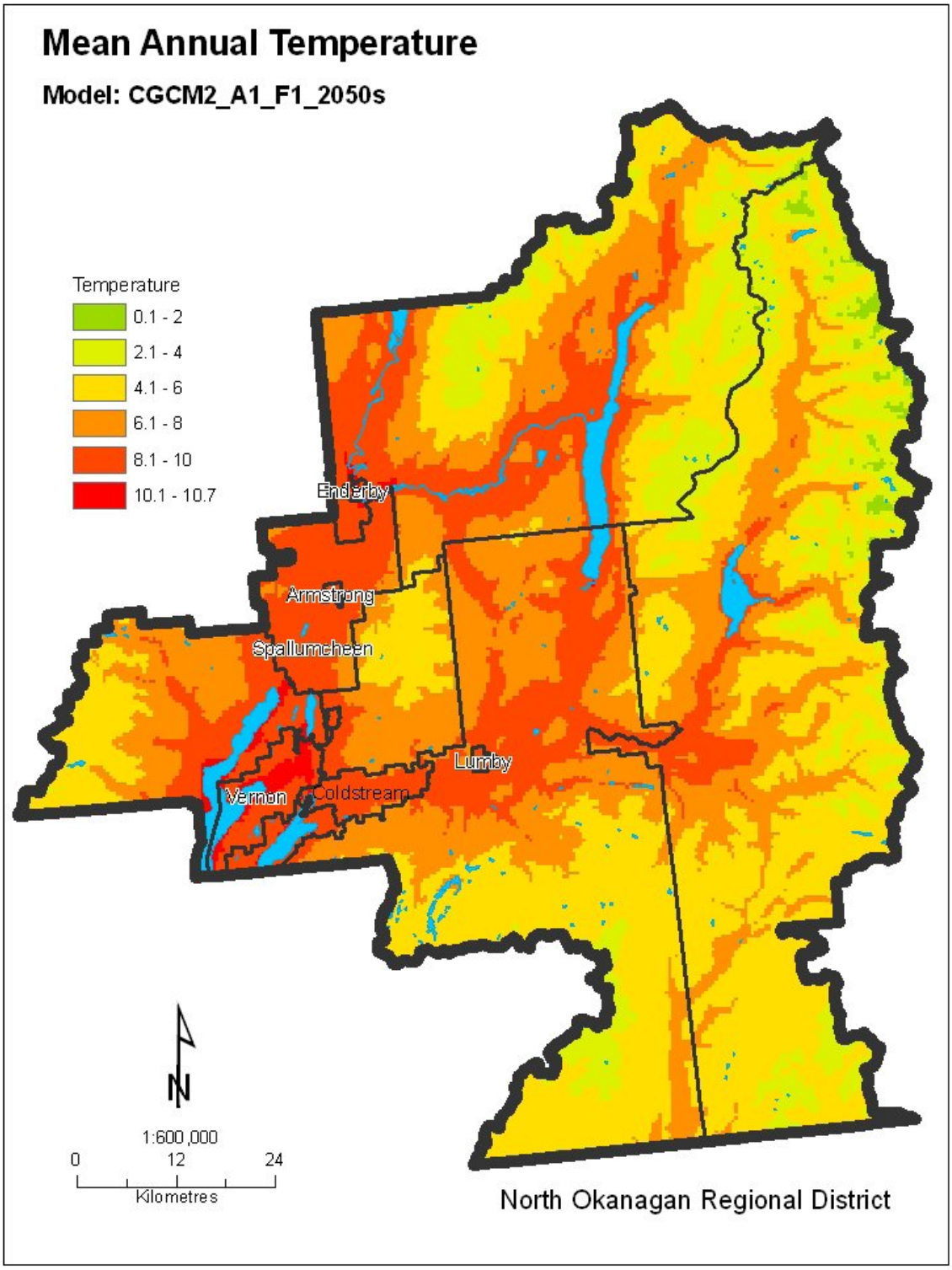
CLIMATE VARIABLE MAPS

The following maps are derived by displaying the data generated by the ClimateBC tool in a Geographical Information System (GIS). One of the inputs into the ClimateBC model is land elevation. This study used a 20 metre interval.

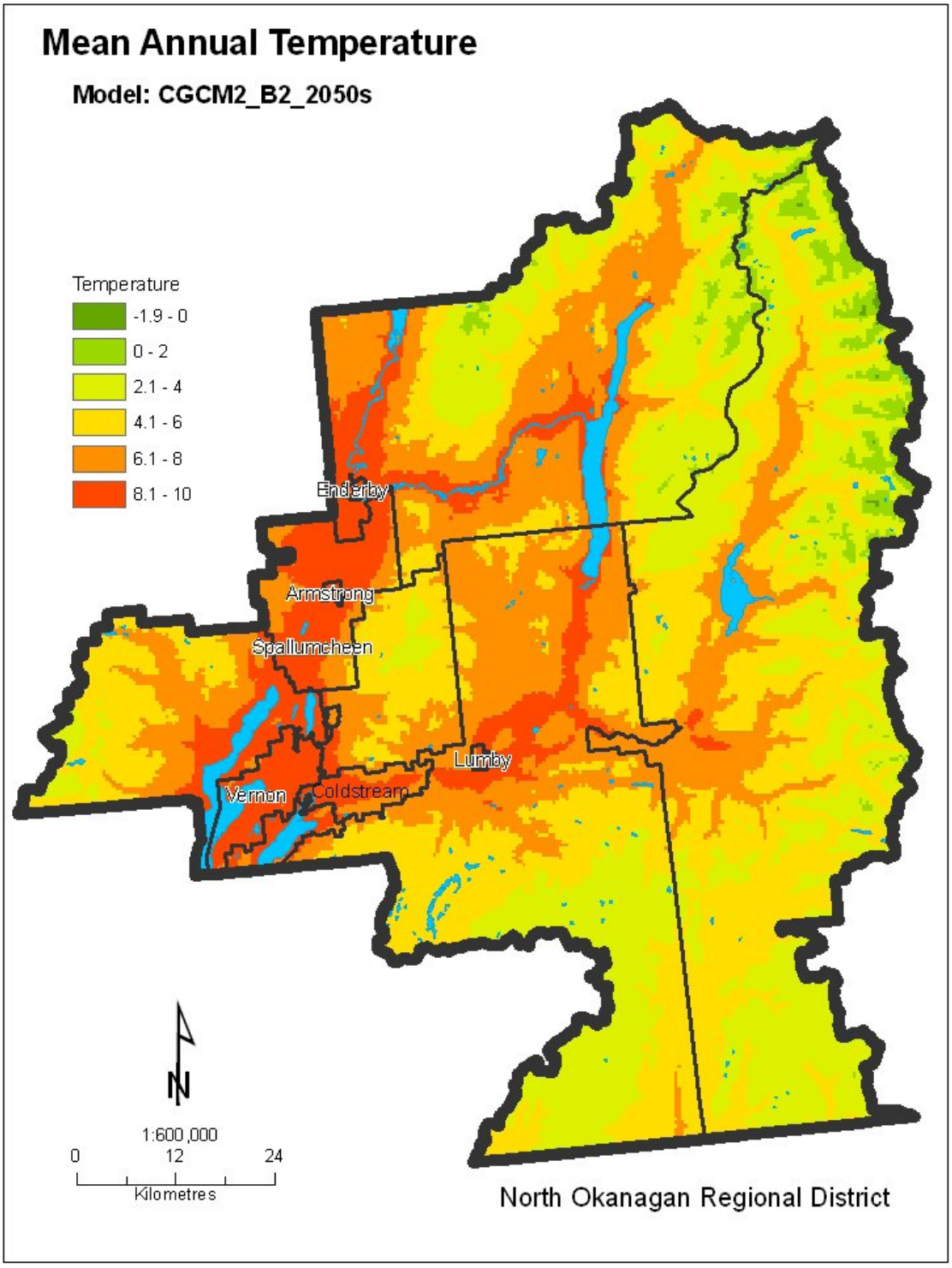
Two climate variables, Mean Annual Temperature and Number of Frost Free Days, are associated with temperature. Two climate variables, Precipitation as Snow is associated with both precipitation and temperature. For each climate variables three maps have been produced – Climate Normal (1960 – 1990) which is based on historical information and two potential global climate change models (A1F1 and B2) which are based on predictive information.



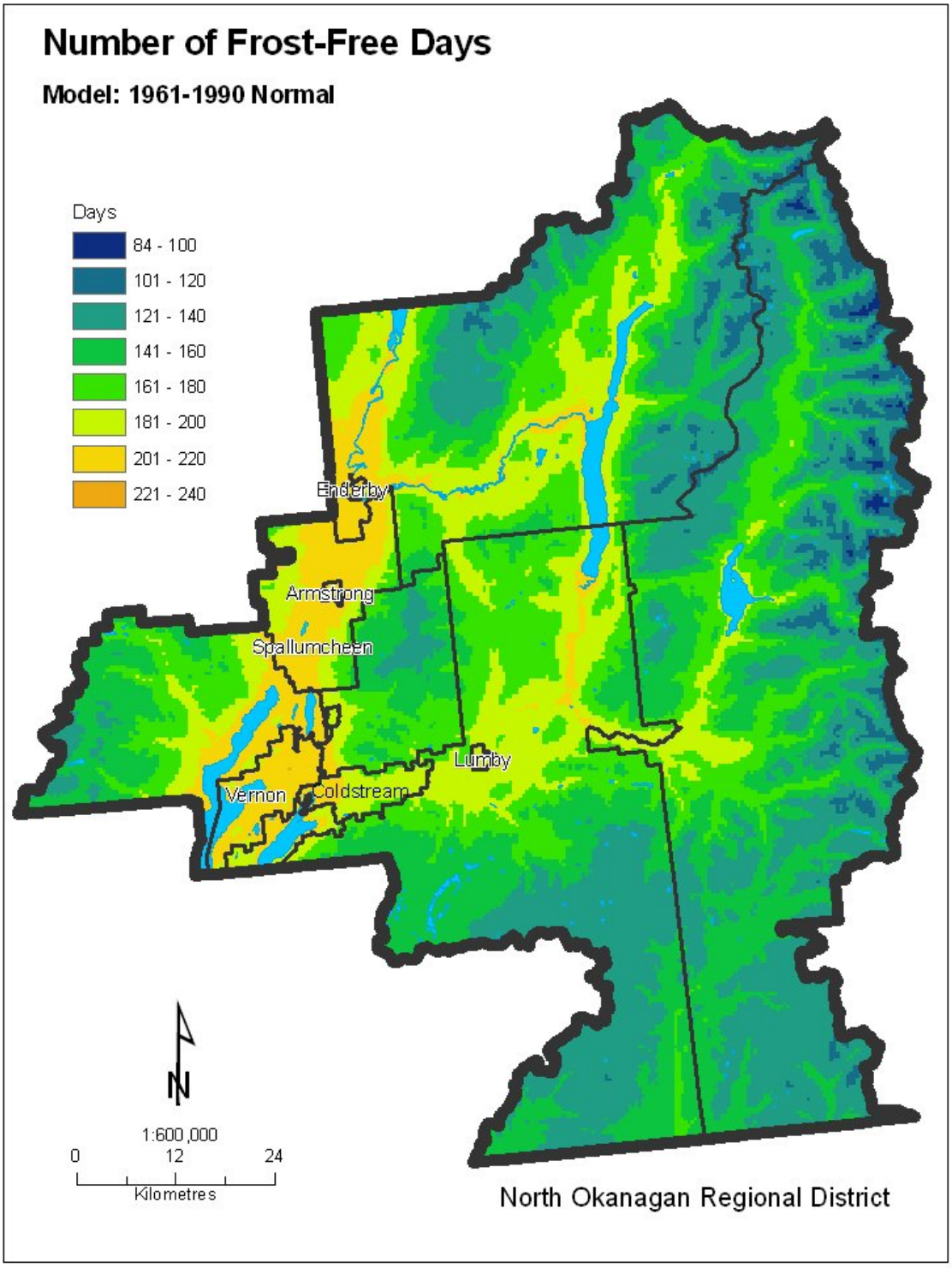
Map 1 Mean Annual Temperature Normal (1960 - 1990)



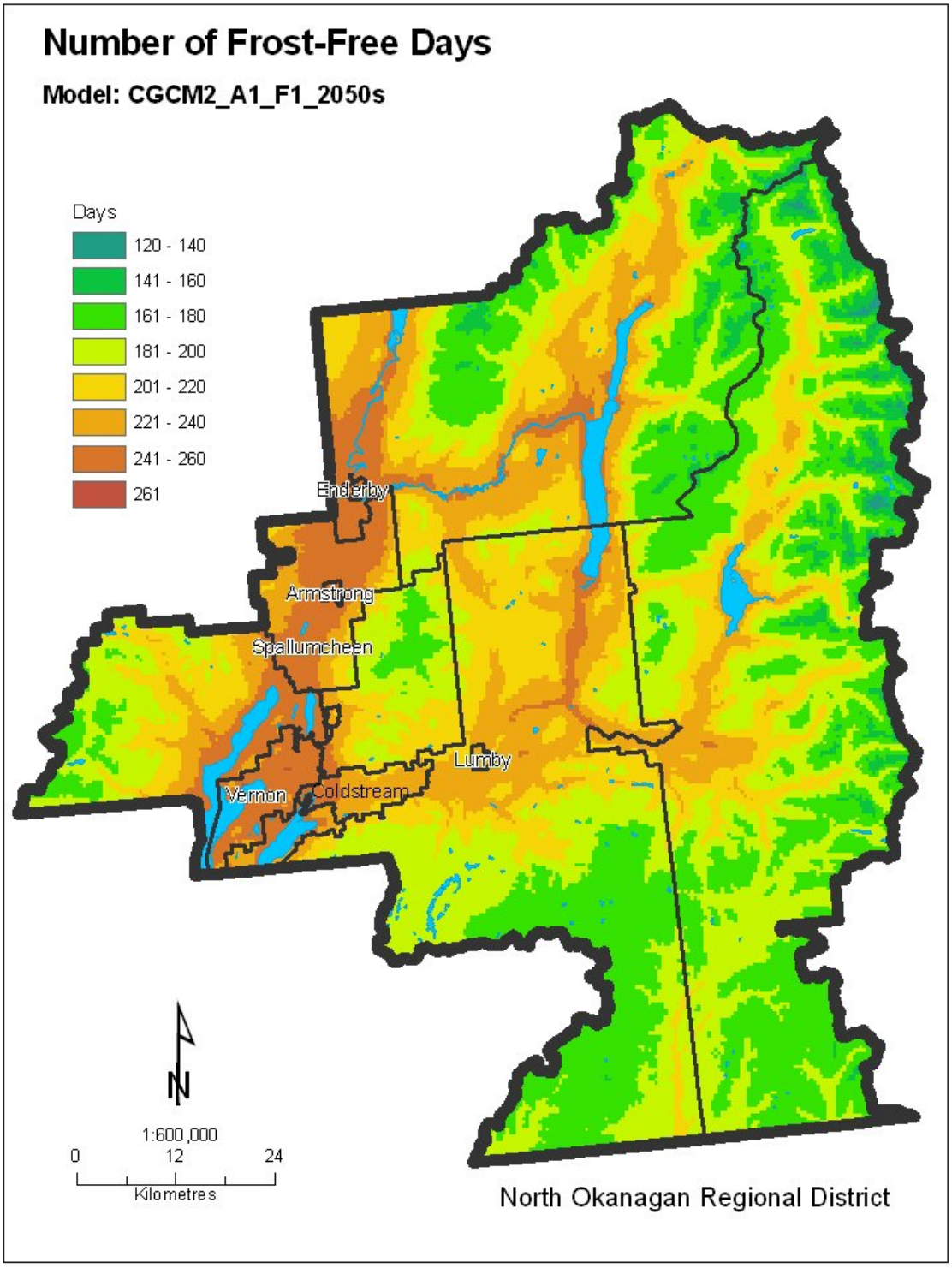
Map 2 Predicted Mean Annual Temperature CGCM2 A1F1 (2050)



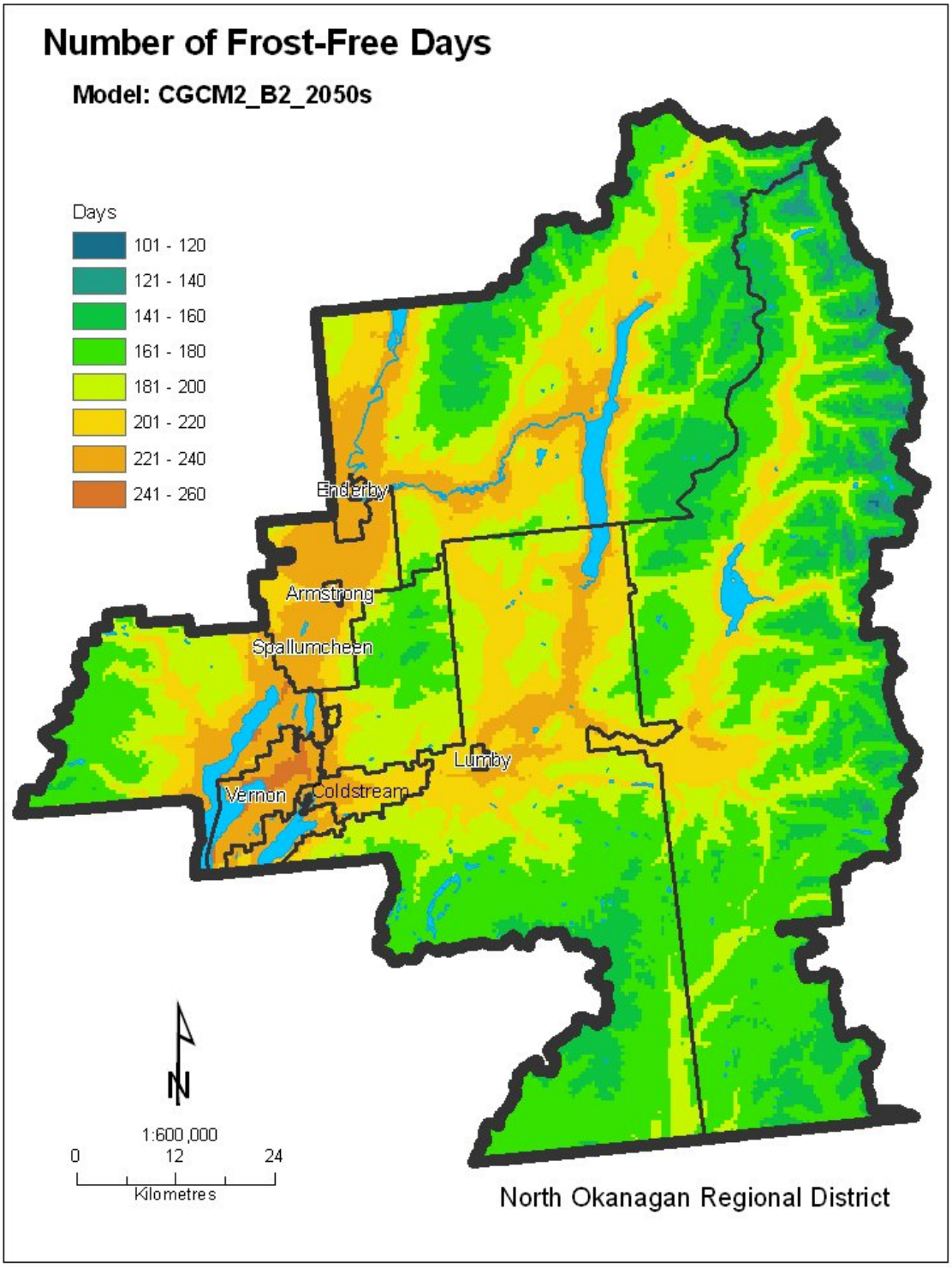
Map 3 Predicted Mean Annual Temperature CGCM2 B2 (2050)



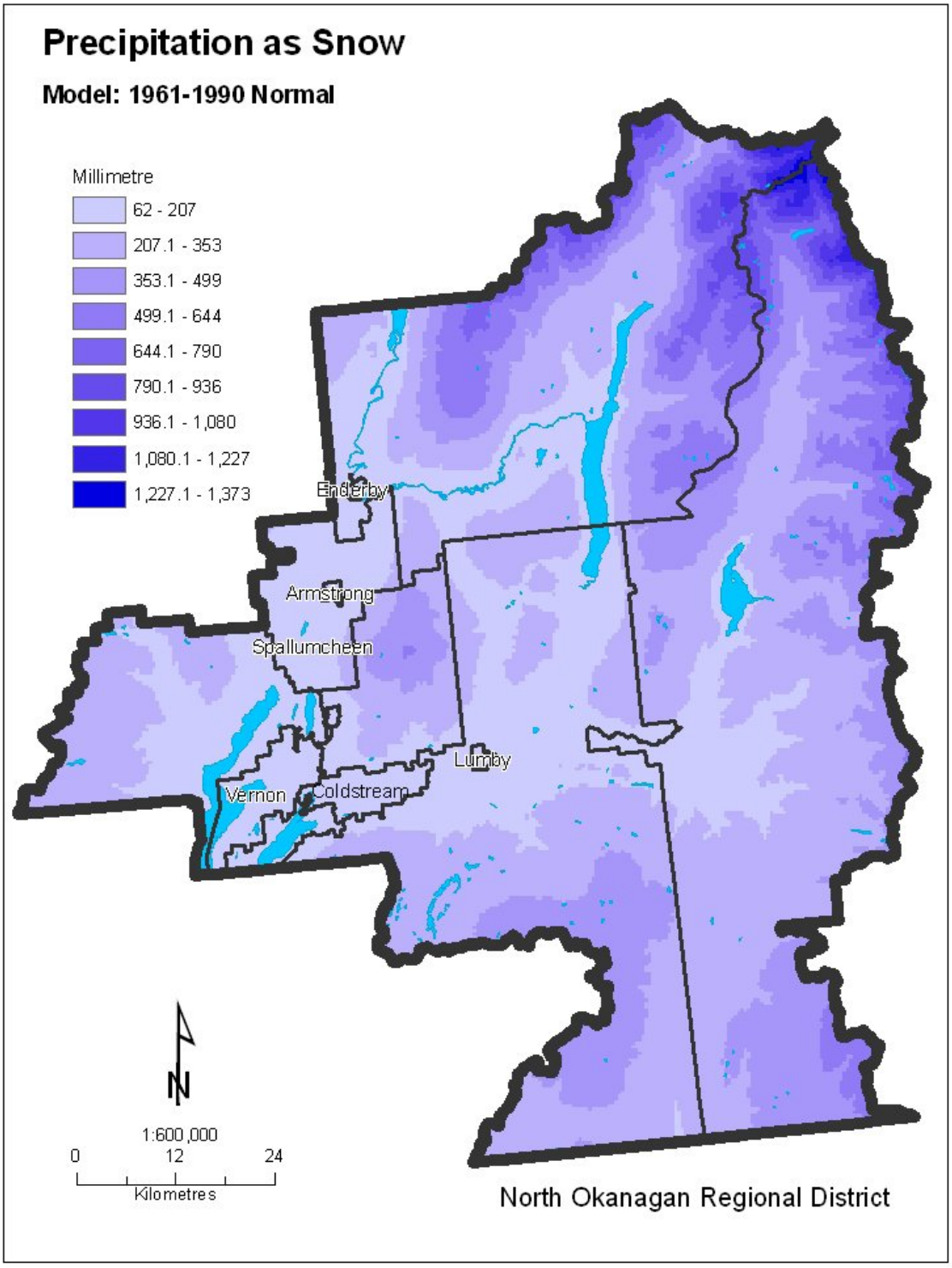
Map 4 Frost Free Days Normal (1960 - 1990)



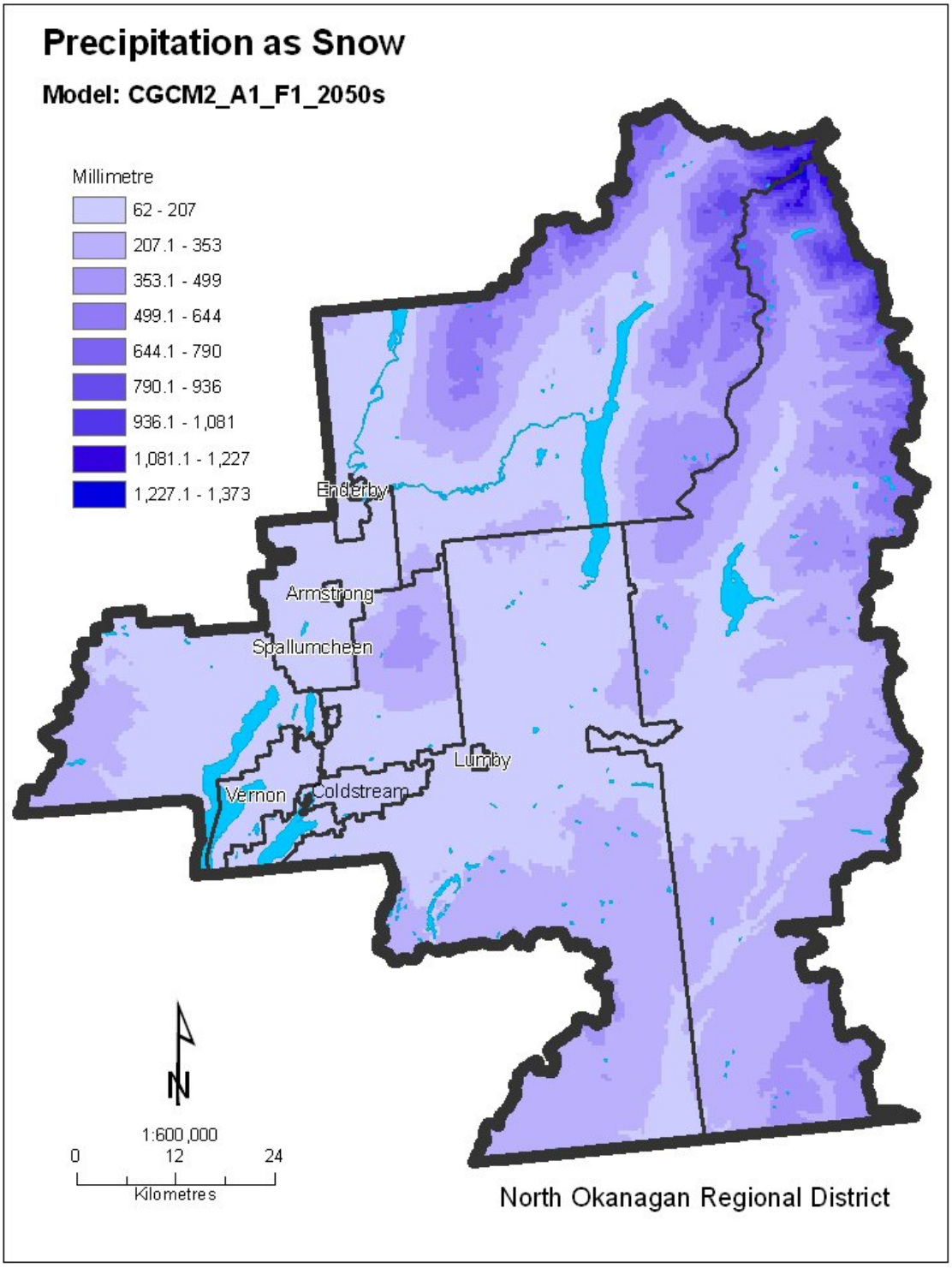
Map 5 Predicted Frost Free Days CGCM2_A1F1(2050)



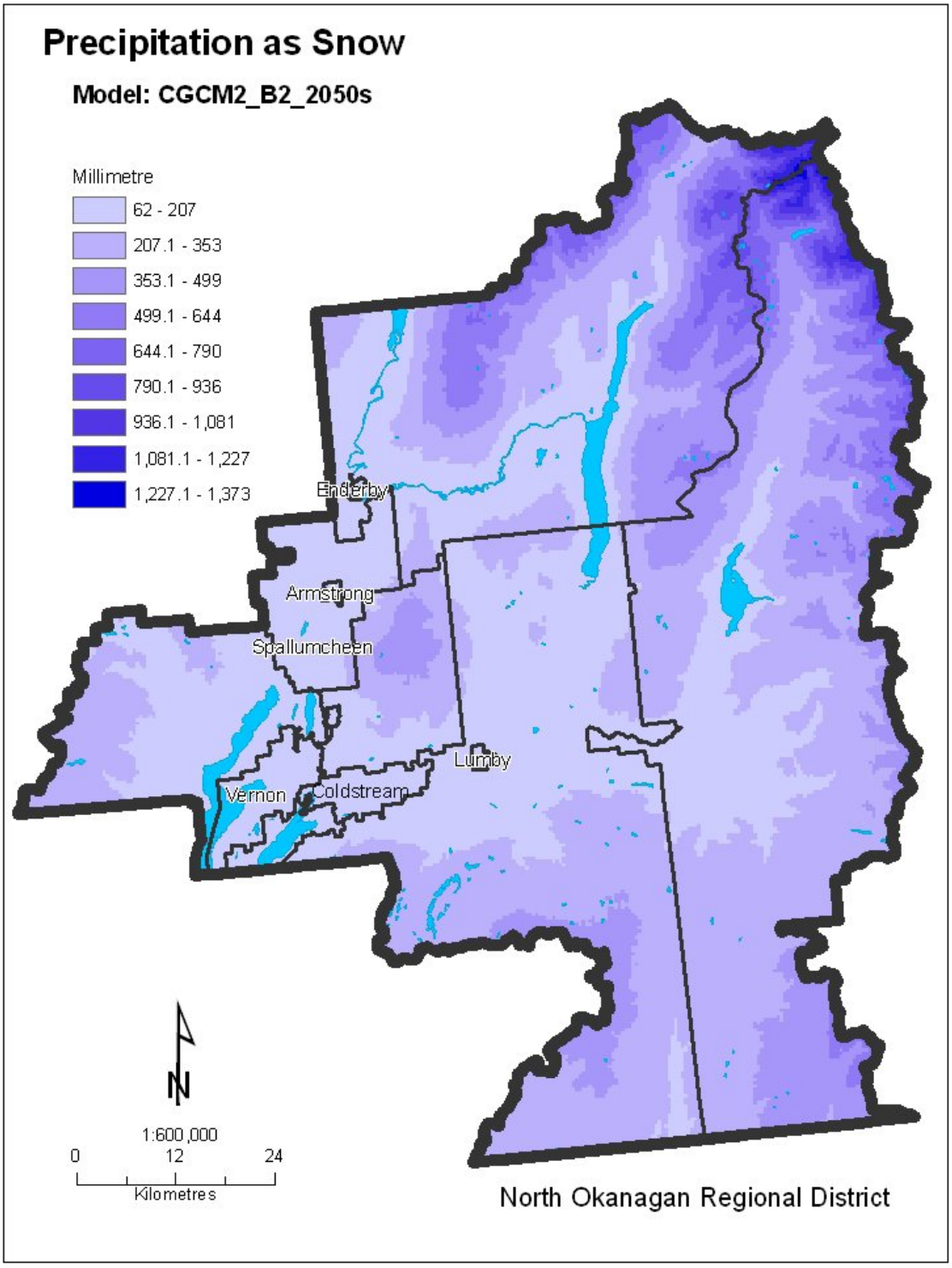
Map 6 Predicted Frost Free Days CGCM2 B2 (2050)



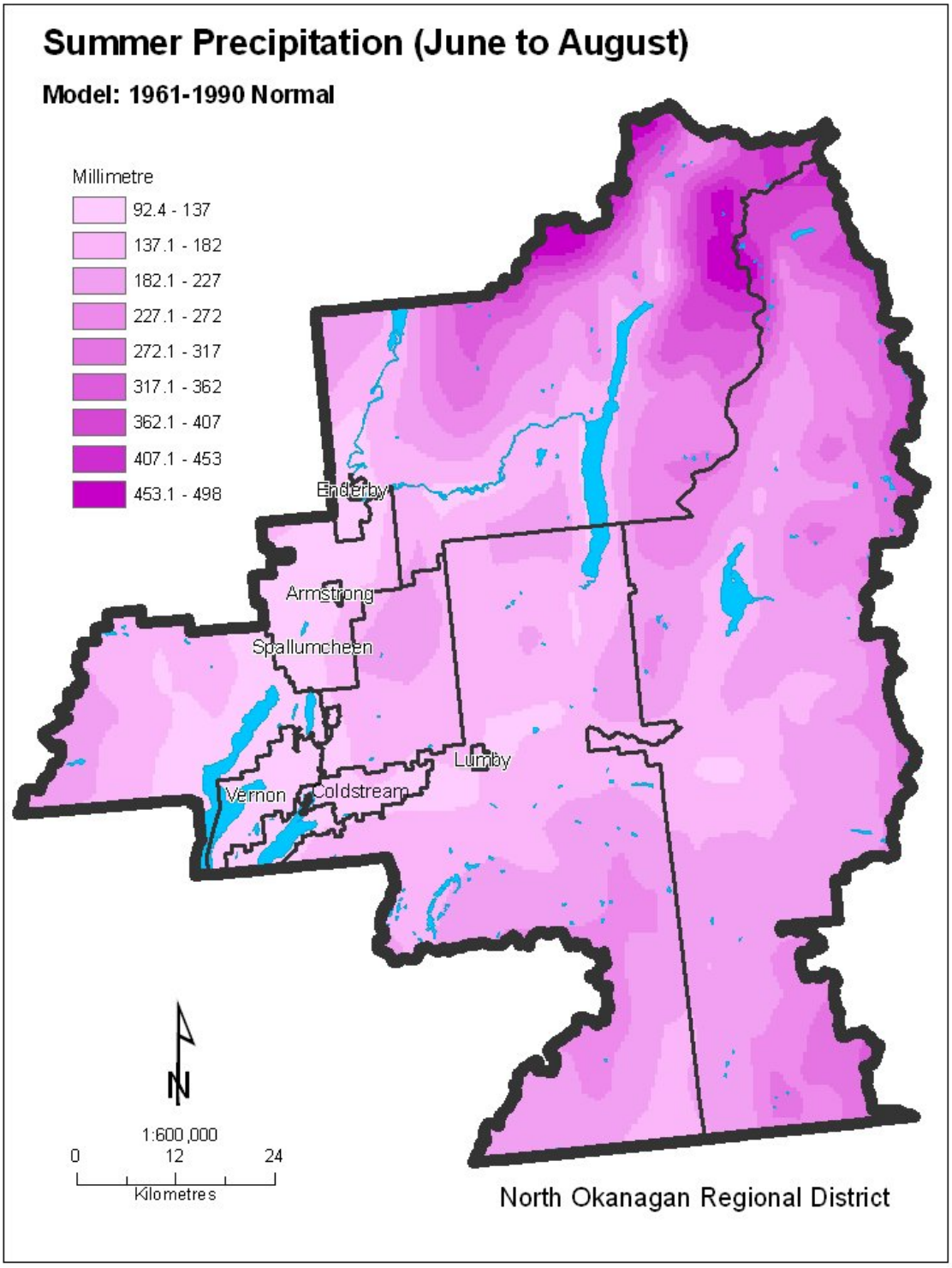
Map 7 Precipitation as Snow Normal (1960 - 1990)



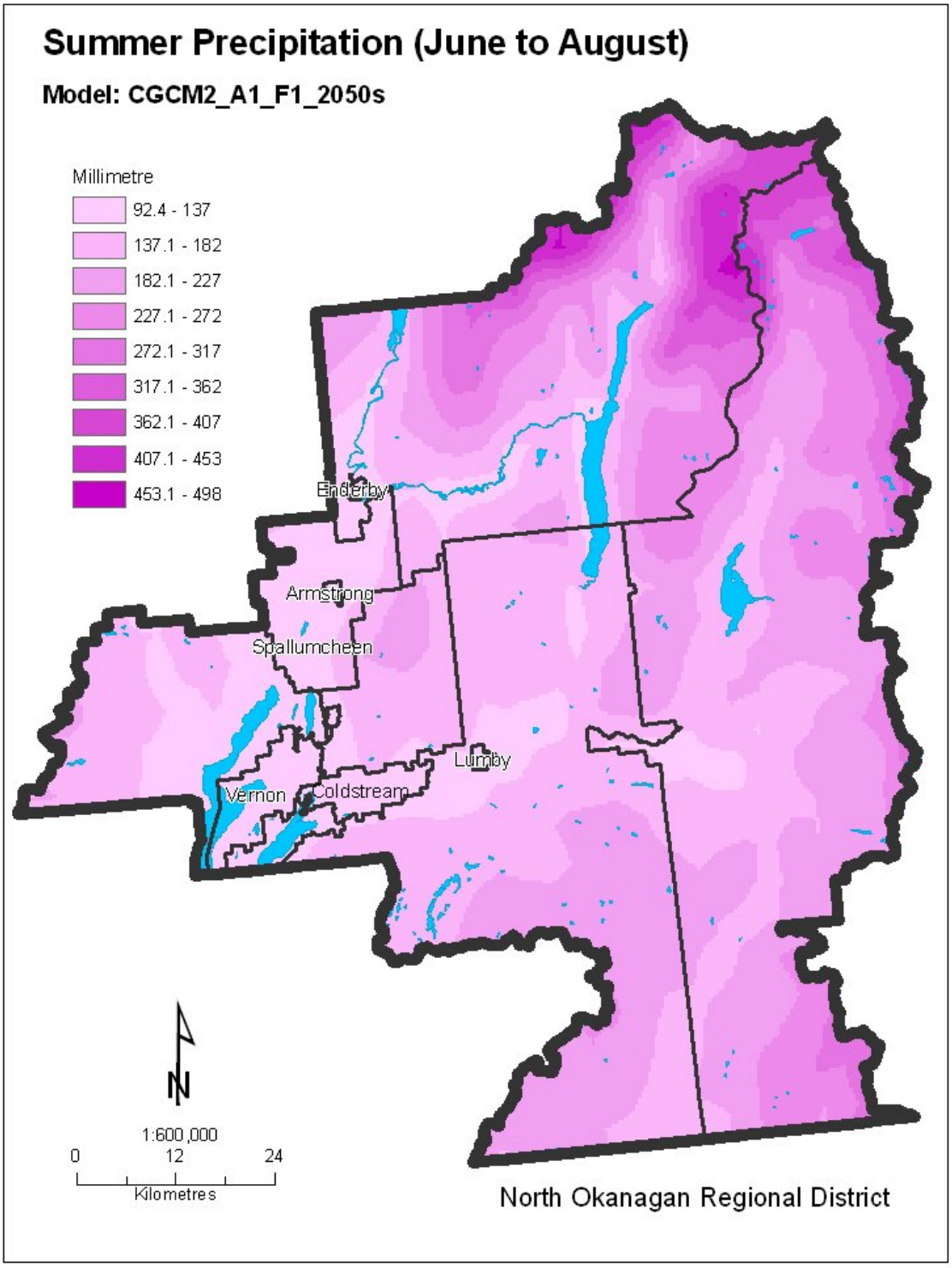
Map 8 Predicted Precipitation as Snow CGCM2_A1F1



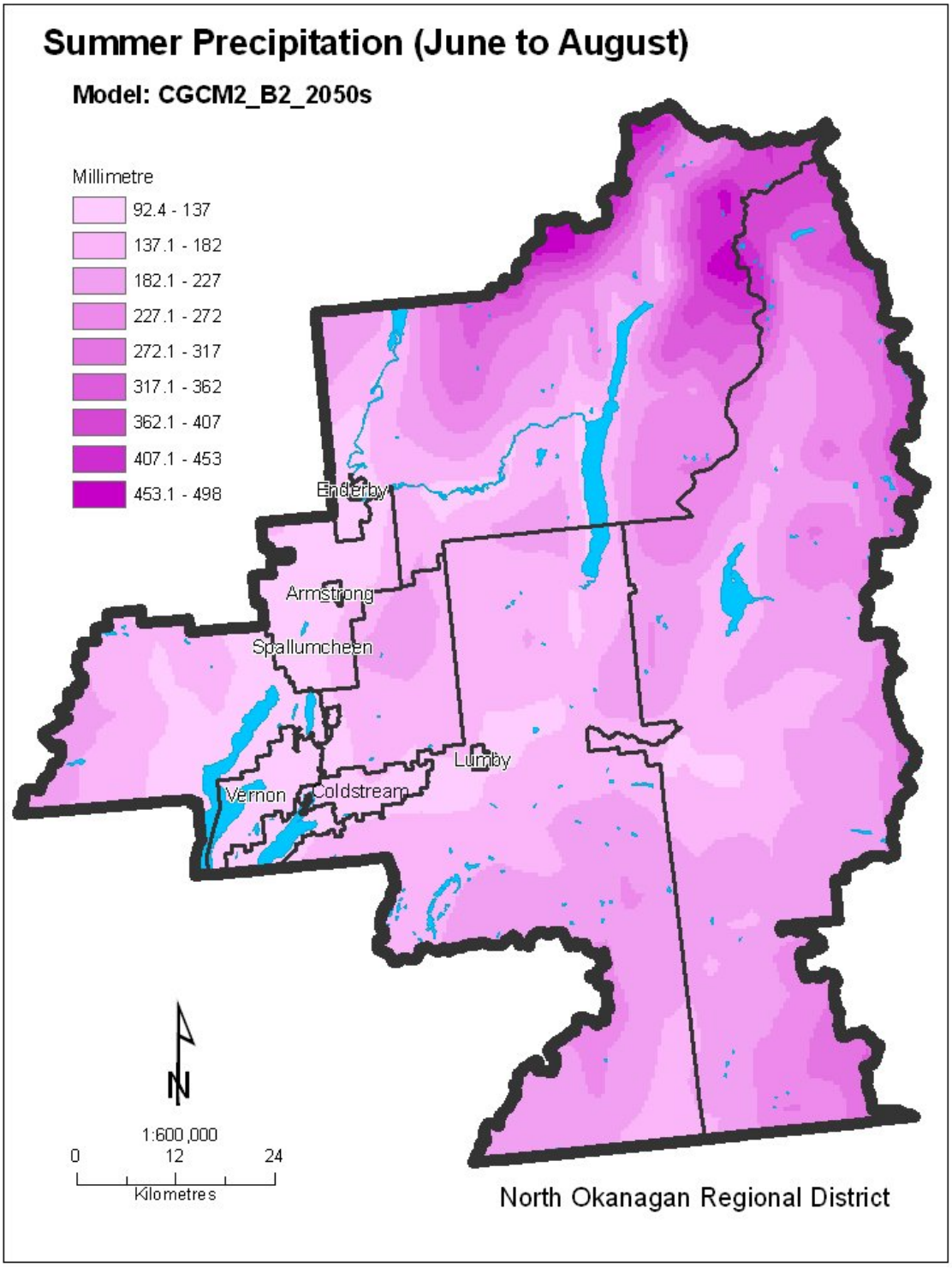
Map 9 Predicted Precipitation as Snow CGCM2 B2 (2050)



Map 10 Spring Precipitation Normal (1960 - 1990)



Map 11 Predicted Summer Precipitation CGCM2 A1F1 (2050)



Map 12 Predicted Summer Precipitation CGCM2 B2 (2050)

How climate variables differ from the maps of climate normals (1960 – 1990) under a "conservative" climate change scenarios (B2) and under a more drastic scenario (A1F1) are reflected in a general manner in the table below. These figures are for the District of Coldstream derived from the climate variable maps.

		Normal (1960-1990)	Future Scenario A1F1	Future Scenario B2
	Mean Annual Temperature (°C)	6.1 – 8.0	8.1 – 10.0	6.1- 8.0 East 8.1 – 10.0 West
	Number of Frost Free Days	181-200	221-240	201-220 East 221-240 West
	Precipitation as Snow(mm)	62-207	62-207	62-207
	Summer Precipitation (mm)	92-137	92-137	92-137

KEY FINDINGS

Agriculture is often considered to be among one of the most vulnerable economic sectors to the risks and impacts of climate change.[iv] For agricultural producers in general, climate change impacts can be summarized as:

- Crop/livestock losses due to extreme events
- Crop/livestock losses due to altered levels of soil moisture
- Crop/livestock losses due to change and severity of pests
- Crop/livestock losses due to increased variability in weather
- Increased opportunities for growing new varieties and finding new markets

The climate variable maps in this study inform decision makers regarding some climate change impacts associated with some of the above impact categories. Other potential impacts of climate change on North Okanagan agriculture could be investigated in further research.

Based on the observations of the historical data from Coldstream Ranch and on the predictive climate variable maps and associated tables, some potential impacts of climate change on future agricultural production in the District can be identified.

- The climate of Coldstream will continue to become warmer. The ClimateBC model predicts an increase from historical normals in Mean Annual Temperature of between 2.0 and 4.0 C^{o} by the 2050s across the District depending on the climate change scenario and local micro-climates. The warming climate is primarily as a result of warmer nights resulting from increased cloud cover.
- The ClimateBC model predicts an increase in frost free days from historical normals of between 20 and 40 days depending on the climate change scenario and topography.
- Potential impacts on agriculture include:
    - Higher crop productivity
    - Higher rates of evapo-transpiration and associated water demand
    - Longer irrigation season
    - Greater range of potential crops including :

        - increase of tropical species in greenhouse operations
        - grape and soft fruit production
    - increased number of hay harvests
    - Increased wildfire hazard
    - Decreased winter heating costs associated with greenhouse operations and poultry and livestock facilities
    - Increased summer cooling costs associated with greenhouse operations and poultry and livestock facilities
- Low temperatures appear to be becoming less variable and there is a reduced frequency of extreme cold events. Variability of low temperature appears to be decreasing at different temporal scales – annual, seasonal and daily. The potential impacts of low temperature variability on agriculture include:
    - Decreased potential for crop damage from extreme cold
    - Winter survival, and more life cycles, of pests and diseases
    - Greater variety of pests and diseases
- Summer precipitation, as predicted by the climate variable maps, shows little change from the map showing 1960 – 1990 normals. This is consistent with the graph of historical data of summer precipitation (Figure 5) over the past 100 years. The increasing precipitation shown historically in the graph falls within the category (92-137 mm). Consistent precipitation, in conjunction with higher summer temperatures, will result in an increase in evapo-transpiration. This will result in an increased demand for supplementary irrigation of agricultural crops. The increased demand may be tempered slightly by greater summer precipitation.
- Precipitation as snow reflects the interplay of temperature and precipitation. At high elevations, climate change can result in more snow as a result of an increase of precipitation where temperatures are below freezing. At lower elevations climate change can result in less precipitation as snow due to the precipitation occurring at temperatures above freezing. In the case of Coldstream, the ClimateBC model does not indicate change from the 1960 – 1990 normals in the precipitation as snow. The categories on the maps are too large to indicate the changes. It is important to note, however, in the areas of the Okanagan Highlands both North and South of Coldstream within the watersheds managed for Coldstream irrigation, the ClimateBC model indicates a decrease in precipitation as snow. This could influence the optimal management of the irrigation reservoirs.

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[i] Environment Canada Climate Data http://climate.weatheroffice.ec.gc.ca/climateData/canada_e.html

[ii] A description of the ClimateBC program is available in The Climate Network, Vol 10, No.1, April 2005 published by the Canadian Institute for Climate Studies http://www.genetics.forestry.ubc.ca/cfcg/res_climate-models/CICS%20Newsletter%200405%5B1%5D.pdf

iii IPCC Special Report on Emissions Scenarios www.grida.no/climate/ipcc/emission/003.htm

[iv] Agricultural Adaptation in a Changing Climate, Summary Report for March 1, 2002 Workshop, University of Guelph

Appendix D – Agricultural Survey – General Comments

1. Relations with Government (Local and {Provincial)

- good service from District with watermain breakage
- burning permit should be weekends as well.
- burning permit should not leave room for interpretation.
- need burning opportunity in fall – spring burn is of wet wood that produces more smoke.
- waive income requirement for farm status.
- burning permit should not be restricted
- government needs to subsidize ALR land to make farming profitable.
- agricultural plan must be productive not more regulation.
- frustrated with proving farm status each year.
- local farmers need relaxation in farm signs to promote agriculture – e.g. allow off-site signs.
- urban residents have better access to municipal regulations (e.g. complain about burning) that farmers (e.g. dog control).
- farming can't be viable with restrictions on normal activities (e.g. burning, irrigation).
- should be allowed to burn.
- APC should have one representative that is a bonafide farmer.
- municipal resident receive most of the government support.
- farmers are over regulated.
- take land out of the ALR.
- Coldstream should keep costs for farmers under control to encourage farmers to maintain rural lifestyle.
- maintain District of Coldstream as separate municipality.
- District needs to tax lands that are fallow.
- governments need to co-ordinate their tax policy.
- make agricultural plan – viable, realistic & practical – without loop holes for development.

2. Recreation to Support Rural Lifestyle

- need horse trails.

3. Infrastructure for Agriculture

- irrigation period is too short.
- need place to dispose of dead animals.
- fewer trails for riding now.
- roads not safe for inexperienced rider.
- need more water in order to add more trees.
- meters and backflow preventers should belong to the municipality.
- shouldn't use treated water for agriculture.
- need to address accommodations for seasonal workers.
- farmers need more control of the water.
- small properties used to grow own food but are very sensitive to water price.
- extend irrigation season (earlier in spring & later in fall).
- all ALR land should have access to water to encourage farming.

4. Environmental Management

- need to protect water (streams, lake) from intensive livestock holding.
- need to preserve agriculture and green space.
- educate public rather than restrict farmers (e.g. burning).
- don't allow construction of non-farm buildings or gravel coverage of lot.
- the "potential" for agriculture must be protected.

5. Rural/Urban Conflicts

- irregular parcel size makes farming difficult & there are too many neighbors.
- want to be able to subdivide, need more small acreages, or small acreage owners need to supplement their income from off-property.
- limit new development to hillsides.
- educate public rather than restrict farmers (e.g. burning).
- urban neighbors complain about farm activities.
- re-enforce value of agriculture & discourage encroachment of urban uses & services.
- problems of farming are particularly difficult next to school because of limitations on spraying and burning.
- public is poorly educated.
- education regarding noxious weeds.

6. Economic and Business Development for Agriculture

- need local opportunities for farmers to take action to make things work – not just complaining.
- promote ALR for local food production.
- should be growing more food for local consumption, not just for cattle.
- need start-up support for local producers.
- help farmers with action plan – how to get started, possible opportunities, horseradish, dwarf trees, shrubs, Christmas trees, asparagus and berries.
- high input costs not reflected in product cost therefore profit margins shrinking.
- zoning restrictions for non-farmers uses make it hard for farmers to supplement income.
- key to farming success is high quality product and buy local program.
- need to grow our own Canadian food so that we need to keep our own land.
- should be promoting local "organic" produce.
- create a local market at Coldstream Elementary.
- bed & breakfast zoning, organic dairy, local slaughter facilities, branding of local produce.
- directory of local producers.
- food security & local food is important.
- need centralized farmers market area.
- support farm gate sales.

7. Global Economic Conditions

- high input costs not reflected in product cost therefore profit margins shrinking.
- US/Canada Free Trade is killing agriculture.