

Growing Knowledge



Ministry of
Agriculture

Agricultural Land Use Inventory

Reference Number: 800.510-90.2015

Green Lake OCP Area Agricultural Land Use Inventory Summer 2015



**Strengthening Farming Program
British Columbia Ministry of Agriculture**

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- British Columbia Ministry of Agriculture
- Partnership for Water Sustainability
- Cariboo Regional District

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We would like to acknowledge and thank the farmers who stopped to talk to the survey crew and answered questions about farming in the region.



the partnership
for water sustainability in bc



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Contact Information

For further information on the content and development of this report please contact:

Ministry of Agriculture
Innovation & Adaptation Services Branch,
Strengthening Farming Program
1767 Angus Campbell Rd, Abbotsford, BC V3G 2M3
(604) 556-3001 or 1-888-221-7141 (toll free)

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Acronyms

AGRI	BC Ministry of Agriculture
ALR	Agricultural Land Reserve
ALUI	Agricultural Land Use Inventory
AUE	Animal Unit Equivalent
CRD	Cariboo Regional District
GIS	Geographic Information Systems
OCP	Official Community Plan
TNRD	Thompson-Nicola Regional District

Executive Summary

Green Lake straddles the boundary of the Cariboo and the Thompson-Nicola Regional Districts. Land use planning for the Green Lake area is unique as planning activities are conducted by Cariboo Regional District for areas north of Green Lake, and by Thompson-Nicola Regional District for areas south of Green Lake.

In the summer of 2015, the BC Ministry of Agriculture and its partners conducted an Agricultural Land Use Inventory (ALUI) in the Green Lake Official Community Plan (OCP) area. This inventory is part of a larger ALUI project in the Green Lake Watershed and in the Cariboo Regional District. The project was funded by the BC Ministry of Agriculture, with in kind contributions from the Partnership for Water Sustainability and the Cariboo Regional District.

ALUIs can be used to understand the type and extent of agricultural activities within the Agricultural Land Reserve (ALR). The ALUI data quantifies how much land is currently used for agriculture, how much land is unavailable for agriculture, and how much land may have potential for agricultural expansion. The data provides baseline information that can be used to track trends in agricultural land use and to measure changes over time. The data also enables the estimation of agricultural water demand with the use of an irrigation water demand model.

Highlights:

Within the Green Lake OCP area:

- 76% of the effective ALR is used for natural pasture & rangeland
- 5% of the effective ALR is in farmed land cover that includes cultivated crops and barns
- There are 824 ha of cultivated crops in the ALR and 456 ha of crops outside the ALR. Forage & pasture is the dominant crop in the region.
- 64% of all crops utilize subsurface irrigation and 3% utilize sprinkler systems
- Beef and equine are the most common types of livestock. Beef have the greatest number of estimated animal unit equivalents (2,600). Equine occur frequently in the region, however, most operations are small and have fewer than 25 animals.
- There are 4 large scale beef and 1 large scale equine operations in Green Lake (>100 AUEs).
- 3% of the ALR parcels are used for farming (42 parcels), 20% are used for grazing (252 parcels), and 77% are not used for farming or grazing (979 parcels).
- Of the privately owned ALR parcels, 79% (772 parcels) are unavailable due to an existing land use or low availability of suitable land while 17% (161 parcels) may be available for farming.

Area of Interest and Methodology

Included in the inventory were all parcels:

- completely or partially within the ALR, or
- classified by BC Assessment as having “Farm” status for tax assessment, or
- containing an active water licence for farming or irrigation purposes, or
- containing an active Crown lease for agricultural purposes, or
- zoned by local government bylaws to permit agriculture, greater than 1 acre¹ and showing signs of agriculture on aerial photography

The ALR in Green Lake consists of 26,117 ha. Of this area:

- 65% or 17,117 ha met one of the inventory criteria and was included in the survey
- 35% or 9,060 ha was outside of legally surveyed parcels in Crown land

¹ 1 acre is approximately 0.404 ha.

This report focuses on the 65% or 17,117 ha of the ALR that is within legally surveyed parcels. This land is considered the “effective ALR” as local and provincial governments may have an opportunity to influence land use decisions on this area.

The ALUI was conducted using visual interpretation of aerial imagery combined with a drive-by “windshield” survey to capture a snapshot in time of land use and land cover. Land cover is defined as the biophysical material at the surface of the earth while land use is defined as how people utilize the land.

Land Cover and Farming Activities

In the ALR by land cover, 5% of the effective ALR was farmed (875 ha), 2% of the effective ALR (386 ha) was otherwise anthropogenically modified in buildings, vegetation, and roads, and 93% of the effective ALR (27,472 ha) was in a natural or semi-natural state. Included in the natural or semi-natural land was 12,994 ha (76% of the ALR) of natural pasture or rangeland. An additional 478 ha of land outside the ALR was farmed.

There were 1,280 ha of cultivated field crops in Green Lake (824 ha in the ALR and 456 ha outside the ALR). Forage & pasture was the only significant crop recorded; there were 935 ha of pasture, 176 ha of forage, and 169 ha in fields used for both forage and pasture.

Irrigation use was captured by crop type and irrigation system type to aid in developing a water demand model for agriculture. In total, 67% of Green Lake’s cultivated crops utilize irrigation with subsurface systems being the most common.

Natural pasture and rangeland plays an important role for the beef industry in Green Lake. A total of 19,236 ha of natural pasture & rangeland were recorded in the area. This includes 15,071 ha (78%) on Crown owned parcels and 4,165 ha (22%) on privately owned parcels. The majority of all natural pasture and rangeland are in “treed closed” land cover where >60% of the vegetation is treed. This is significant as densely treed land cover offers lower forage yields to grazing livestock than open grasslands.

Livestock

Livestock activities were recorded, but were difficult to measure using a windshield survey. Livestock may not be visible if they are housed in barns, or are on another land parcel. The inventory data does not identify animal movement between parcels that make up a farm unit, but reports livestock at the parcel where the animals or related structures were observed. Livestock findings are reported as a range of animal unit equivalents for each parcel.

In Green Lake, beef and equine are the most common types of livestock. Beef accounts for 67% of the estimated animal unit equivalents (AUEs) while equine accounts for 25% of the AUEs. Equines had the greatest number of individual occurrences, however, most equine activities had only a few animals.

ALR Utilization

Land use was applied on a parcel basis. To determine land use, the entire parcel was examined and a “Used for farming” or “Not used for farming” category was assigned based on the percentage of the parcel in cultivated crops, farm infrastructure, and/or the scale of livestock production. Refer to the glossary for the full “**Used for farming**” definition.

In the ALR by land use, 3% of the parcels were “Used for farming” with 41 parcels having private ownership and 1 parcel having Crown ownership. Twenty percent (20%) of the ALR parcels were

“Used for grazing” with 73 parcels having private ownership and 179 parcels having Crown ownership. The remaining 77% of ALR parcels were “Not used for farming or grazing”. On privately owned ALR parcels, the average “Used for farming” parcel size was 51 ha while the average “Not used for farming or grazing” parcel size was much smaller at 2 ha. A significant number of ALR parcels have residential land use with 83% of all private ALR parcels being used for residential purposes.

ALR Availability

Parcel availability for farming was assessed based on the extent of existing land uses and land covers and their compatibility for agriculture. Parcels considered “Not used for farming” or “Used for grazing” were further categorized as available or unavailable for more intensive farming. Unavailable for farming parcels either had a land use that makes agricultural development improbable (e.g. golf course, school, etc.) or had little suitable land with potential for agricultural development. Of the privately owned ALR parcels:

- 41 parcels (4%) were “Used for farming”
- 161 parcels (17%) were “Available for farming”
- 772 parcels (79%) were “Unavailable for farming”

By ALR parcel area, 34% of the ALR area is “Used for farming”, 60% of the ALR area is “Available for farming, and 6% is “Unavailable for farming”.

A parcel is considered to be available for farming if it is not already “Used for farming” and it has at least 50% of its area and at least 0.4 ha in land that is available for farming. Available for farming parcels indicate the maximum area of land that may be available for farming. Ownership and land prices are not considered when assessing parcel availability. Of the privately owned “Available for farming” parcels:

- 57 parcels (37%) were less than 2 ha in size
- 63 parcels (64%) were less than 4 ha in size
- 102 parcels (36%) were greater than 4 ha in size
- 69 parcels (11%) were greater than 16 ha in size

There is evidence that small parcels are less likely than larger parcels to be utilized for farming. In Green Lake there are 799 privately owned ALR parcels less than 1 ha. Of these parcels, <1% (1 parcel) was “Used for farming”, 43 parcels (5%) were “Available for farming”, and 755 (95%) were “Unavailable for farming”. Residential use accounts for the majority of the small and “Unavailable for farming” parcels.

Agrologist Comments

In the 1800s fur traders for the Hudson's Bay Company travelling between Fort Kamloops and Fort Alexandria passed along Green Lake on the Fur Brigade Trail. Agriculture began in earnest in the area during construction of the Cariboo Wagon Road in the Gold Rush of the 1860's. The community of 70 Mile House started as a road house that served the construction crews building the road and then the travellers hoping to strike it rich in the gold fields to the north. 70 Mile House owes its name to being 70 miles from Mile 0 of the Cariboo Wagon Road, more properly known as Lillooet. These roadhouses were geared to serving the construction crews, travellers and transportation/freight companies like Barnard's Express (later BX) and Cataline's mule train. The roadhouses generally grew much of their own vegetables as well as feed for the working horses, and the beef, dairy, chickens & hogs used to feed the hungry travellers. Cattle drives and ranches soon followed to feed the growing population. After the Gold Rush there was mining of a different nature around 70 Mile House and Clinton. Soda carbonate for washing and Epsom Salts (magnesium sulfate) were collected from a number of the alkaline potholes in the area. The construction of the Pacific Great Eastern Railway in 1919 made it easier to transport and access these compounds, but the onset of the Great Depression decimated the industry. Since then, logging, ranching, and tourism, including Guest Ranches (Flying U & Watch Lake Lodge) that offer a combination of Agri-tourism & water-based recreation, fishing resorts, and a number of Provincial Parks on the waterfront, have been the mainstays of economic activity in the area.

Green Lake is situated on the Green Timber Plateau, between the Fraser & Thompson Plateaus. The glaciers of the last ice-age left a veneer of loamy glacial till over a base of lava. The variability of the glacial till has created a hummocky terrain with numerous hollows that are filled with lakes or organic meadows. The soils which developed on lacustrine silts (where glacial lakes were) tend to have higher salinity levels and generally constitute the pocket grasslands seen in the area. The forested soils can be very coarse and very stony.

Green Lake has an elevation of 1106 meters (3360 ft), resulting in a climate with a Mean Annual Temperature of 2°C, a relatively high moisture deficit, and a short frost free period (warm dry days but cold nights during the growing season). These factors create conditions that support only a limited number of short season vegetable crops and forages for livestock. The organic meadows tend to provide the most reliable hay crops and grazing due in large part to the natural sub surface irrigation. Forested areas provide pinegrass for grazing animals and logging cutblocks tend to be more productive from a grazing perspective. Consequently, beef production, and the associated forage, (hay, pasture, and natural grazing) are the primary agricultural activities in the Green Lake area. Note: Forage is an essential foundation for the herbivorous livestock industries such as beef and horses. If the forage land base is not maintained these livestock industries must move elsewhere, taking that economic activity with them.

The increasing seasonal recreational use of Green & Watch lakes has caused some conflicts for agriculture in the area, from the parcelization of the grassland areas along the shoreline to complaints from vacationing urbanites who don't want cows tramping through their property or defecating on roads, from livestock being hit by vehicles and harassed by off-road vehicles (ORVs), to the introduction & spread of invasive species and ORV impacts on the pocket grasslands.

Beef and forage production is more efficient on larger tracts of land. Parcelization is the primary threat to agriculture and to the ALR in the Green Lake area, and the numbers in this report outline the impact quite vividly. Of the 799 privately owned ALR parcels that are less than one hectare in size, only 1 fell

into the “Used for farming” category, and 95% of them were outright “Unavailable for farming”. By area, 24% of all privately held ALR in the Green Lake survey area is not used for farming or grazing.

While there are significant ALR lands in the area held by the crown, these lands are currently being utilized by existing ranches under their grazing tenures and hay cutting permits, which corresponds with their agricultural capability, so deeding and developing these lands is not likely to produce much of a net gain in agricultural production.

1. General Information

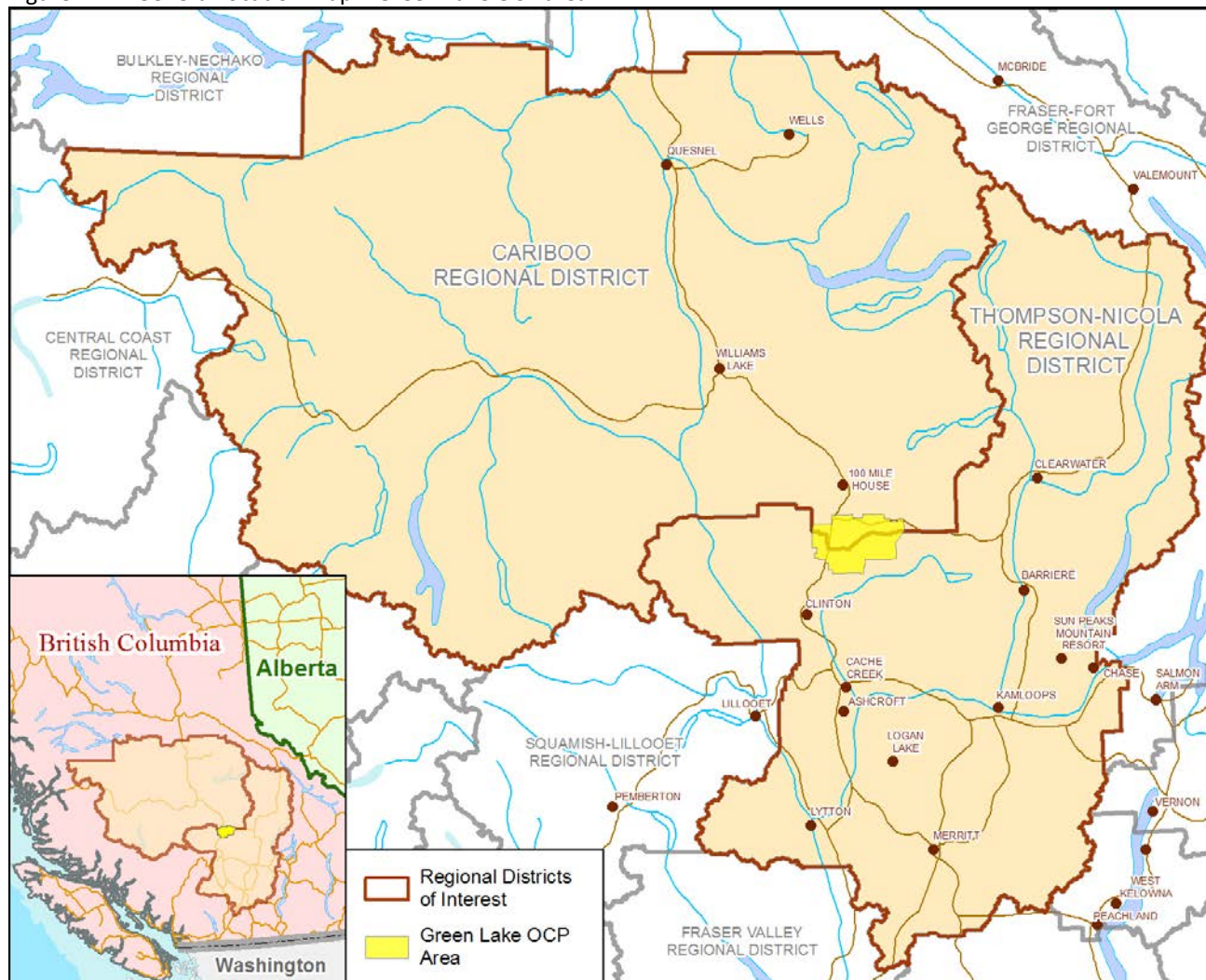
1.1 OVERVIEW

Green Lake is located approximately 40 kilometers south of 100 Mile House and straddles the boundary of the Cariboo and the Thompson-Nicola Regional Districts. The area requires careful attention to maintain the health of Green Lake and the natural environment as development occurs. Land use planning is currently conducted by Cariboo Regional District (CRD) for areas north of Green Lake, and by Thompson-Nicola Regional District (TNRD) for areas south of Green Lake.

The Green Lake Official Community Plan (OCP) is a cross-jurisdictional plan that aims to work towards the common goals of protecting the environment and integrating development in a sustainable manner. The OCP focuses on Green Lake and the watersheds that drain into it. One component of the OCP includes supporting and encouraging agriculture and ranching in the area.

The Agricultural Land Use Inventory supports the agriculturally related OCP goals by providing baseline data to understand the current extent of agricultural activities. It also serves as input into an Agricultural Water Demand Model which estimates future agricultural water demand based on different climate scenarios.

Figure 1. General location map – Green Lake OCP area



1.2 AGRICULTURAL LAND RESERVE

The Agricultural Land Reserve (ALR) is a provincial land use zone that was designated in 1973 in which agriculture is recognized as the priority use. Within the ALR, farming is encouraged and non-agricultural uses are controlled.

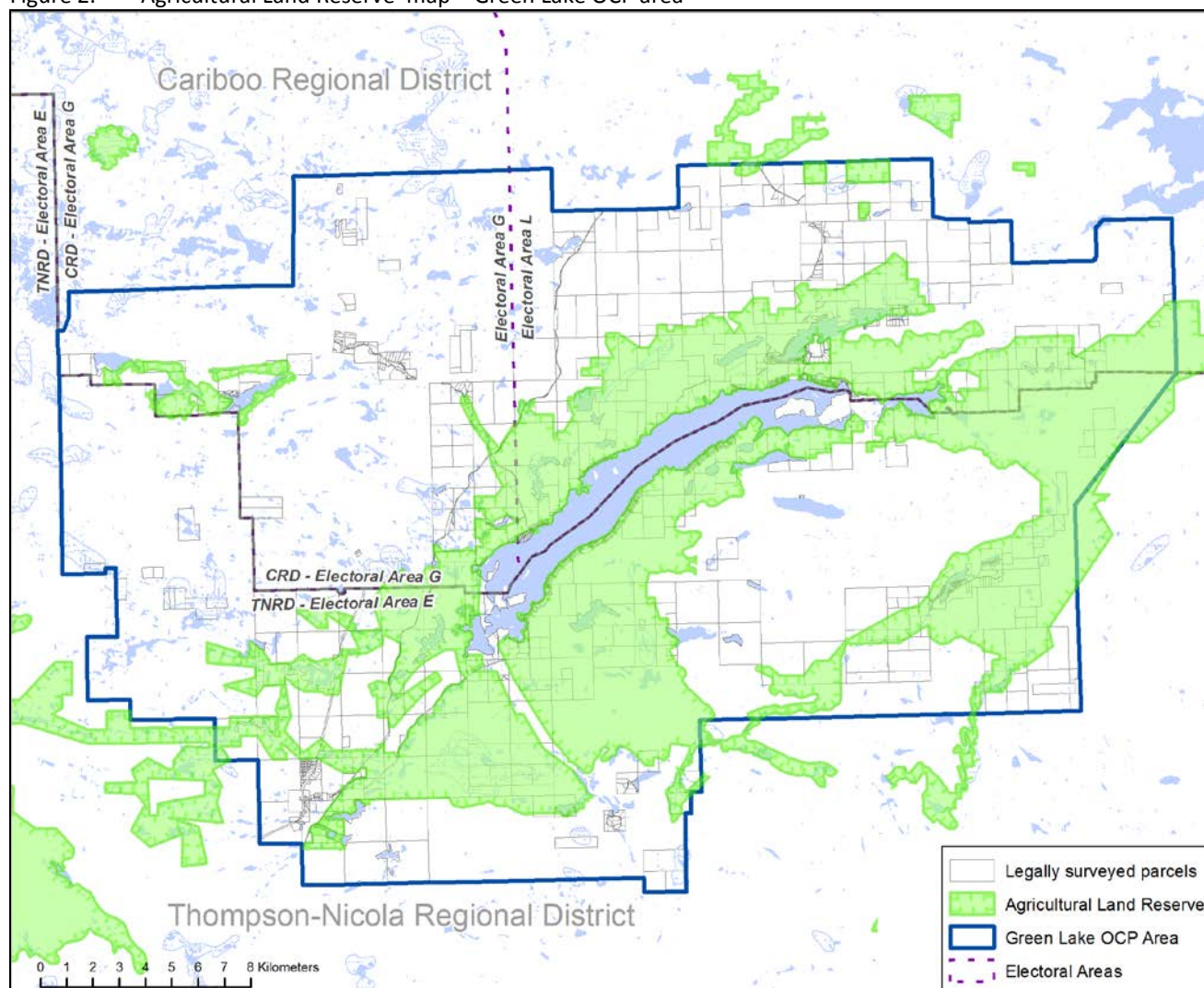
The Green Lake OCP area is approximately 87,250 ha² and has 43% of its area (37,556 ha²) in legally surveyed parcels.

There are 26,177 ha² of ALR within the Green Lake OCP area (see Figure 2). In total, 30% of the OCP area is in the ALR, and 70% of the legally surveyed parcel area is in the ALR. Of the Green Lake OCP ALR area, 34% is within CRD and 66% is within the TNRD. The ALR area includes:

- 17,117 ha on inventoried parcels
- 9,060 ha outside legally surveyed parcels (unsurveyed Crown land)

The 17,117 ha of ALR on inventoried parcels is considered the ‘**effective ALR**’ and forms the basis of this report.

Figure 2. Agricultural Land Reserve map – Green Lake OCP area



² Calculated in GIS.

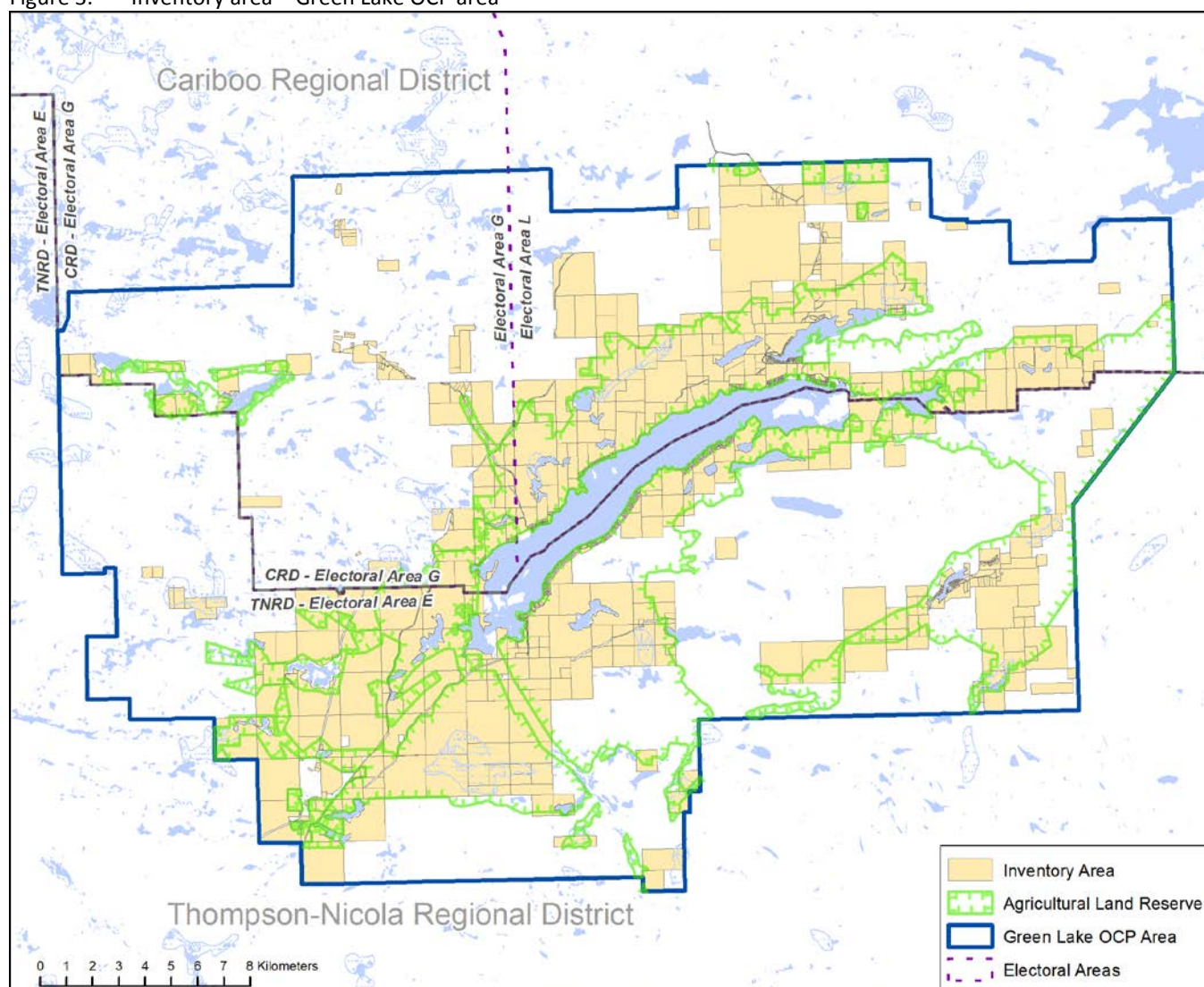
1.3 INVENTORY AREA

The total inventory area encompasses 1,455 parcels with a combined area of 29,522 ha. Included were all parcels:

- completely or partially within the Agricultural Land Reserve, or
- classified by BC Assessment as having “Farm” status for property tax assessment, or
- zoned to permit agriculture by local government bylaws and/or exhibiting signs of agriculture on aerial photography, or
- containing an active water licence for farming or irrigation purposes, or
- containing an active Crown lease for agricultural purposes

The amount of ALR land included in the inventory area is 17,117 ha. The other 12,405 ha of inventoried land was on parcels completely outside the ALR that met one of the other inventory criteria.

Figure 3. Inventory area – Green Lake OCP area



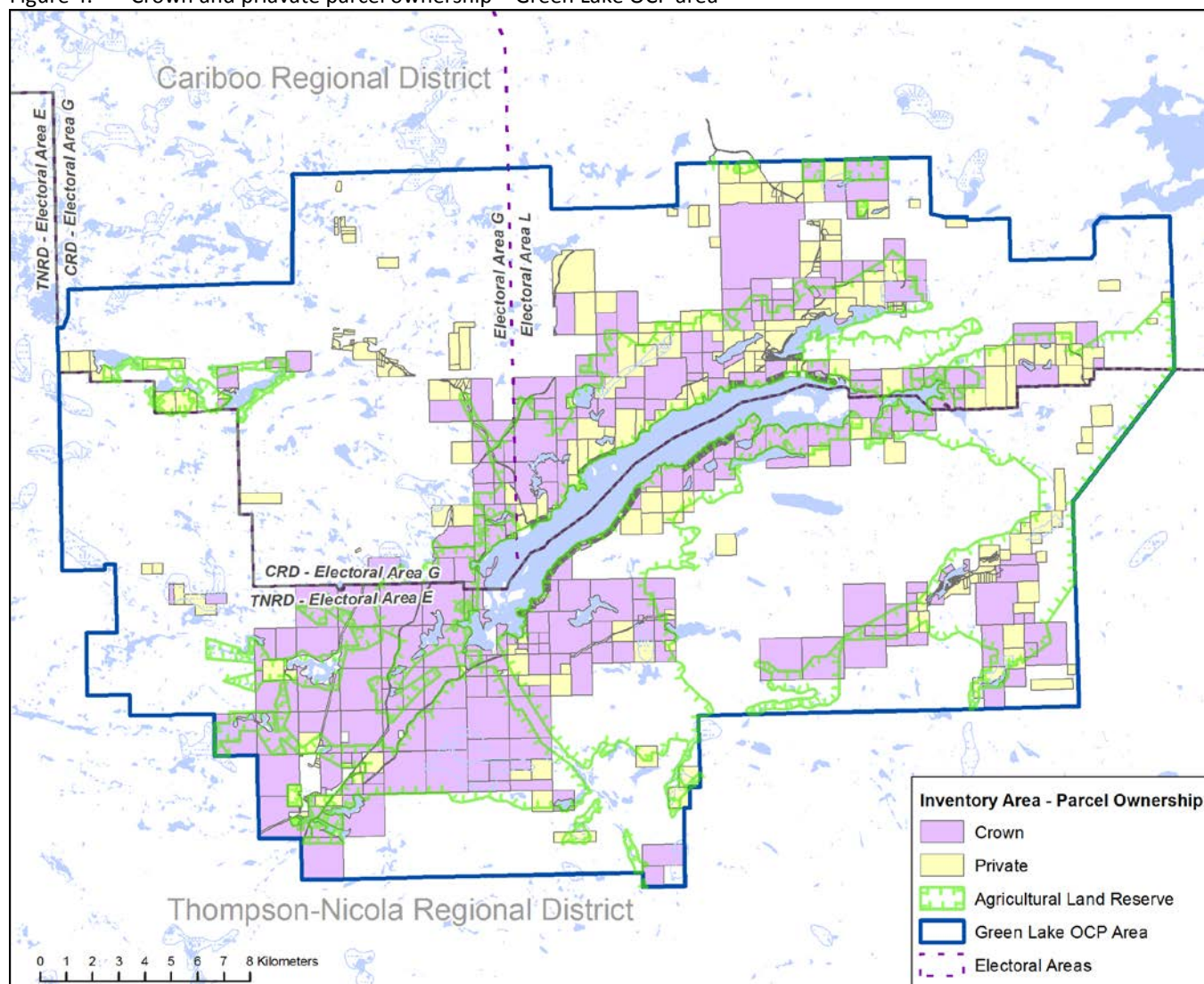
1.4 PARCEL OWNERSHIP

Crown owned parcels are owned by municipal or provincial governments. Crown land is separated from private land throughout much of the report as the agricultural activities that are likely to occur on Crown owned land are limited and may be subject to specific restrictions.

Of the 1,455 parcels surveyed as part of the inventory:

- 347 parcels are Crown owned. This includes:
 - 20,764 ha or 70% of the inventory area
 - 299 parcels are in the ALR and have a total parcel area of 17,074 ha
 - 48 parcels are outside the ALR and have a total parcel area of 3,690 ha
- 1,108 parcels are privately owned. This includes:
 - 8,758 ha or 30% of the inventory area
 - 974 are in the ALR and have a total parcel area of 6,117 ha
 - 134 parcels are outside the ALR and have a total parcel area of 2,641 ha

Figure 4. Crown and private parcel ownership – Green Lake OCP area



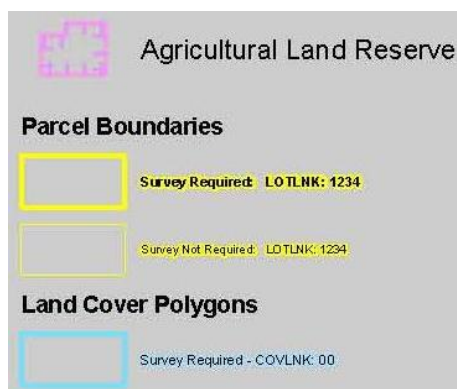
2. Methodology

2.1 INVENTORY METHODOLOGY

AgFocus is an Agricultural Land Use Inventory System developed by BC Ministry of Agriculture's Strengthening Farming Program. AgFocus employs a "windshield" survey method designed to capture a snapshot in time of land use and land cover on legal parcels. For more information on AgFocus, please refer to these documents available from the Strengthening Farming Program:

- AgFocus – A Surveyor's Guide to Conducting an Agricultural Land Use Inventory
- AgFocus – Field Guide to Conducting an Agricultural Land Use Inventory
- AgFocus – A GIS Analyst's Guide to Agricultural Land Use Inventory Data

The Green Lake OCP Agricultural Land Use Inventory was conducted in the summer of 2015 by a BC Ministry of Agriculture agrologist and data technician. The survey crew visited each property and observed land use, land cover, and agriculture activity from the road. Where visibility was limited, data was interpreted from aerial photography in combination with local knowledge. The technician entered the survey data into a database on a laptop computer.



Field survey maps provided the basis for the survey and included:

- The legal parcel boundaries (cadastre)³
- Unique identifier for each legal parcel
- The preliminary land cover polygon boundaries (digitized prior to field survey using aerial photography)
- Unique identifier for each preliminary land cover polygon
- The boundary of the Agricultural Land Reserve (ALR)
- Base features such as streets, street names, watercourses and contours
- Aerial photography



³ Cadastre mapping was provided by Cariboo Regional District and Thompson-Nicola Regional District.

2.2 DESCRIPTION OF THE DATA

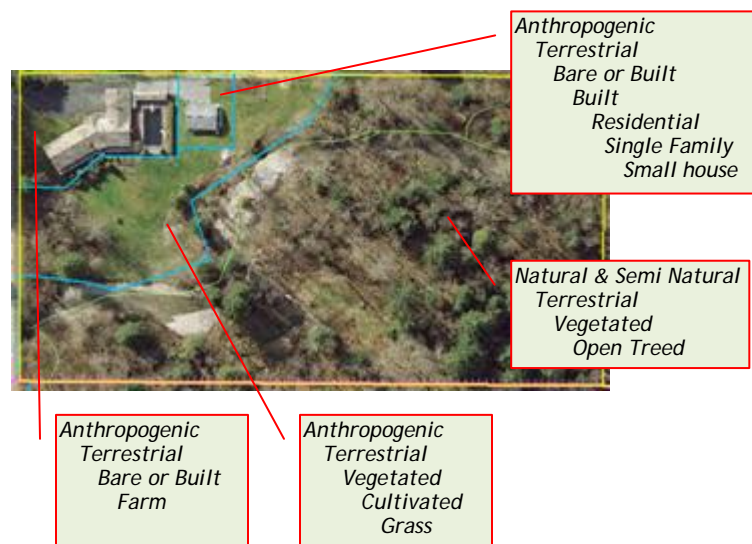
For each property in the study area, data was collected on general land use and land cover. For properties with agriculture present, data was collected on agricultural practices, irrigation, crop production methods, livestock, agricultural support (storage, compost, waste), and activities which add value to raw agricultural products.

Once acquired through the survey, the data was brought into a Geographic Information System (GIS) to facilitate analysis and mapping. Digital data, in the form of a tabular database and GIS spatial layers (for maps), may be available with certain restrictions through a terms of use agreement.

Land cover:

Land cover refers to the biophysical features of the land (e.g. crops, buildings, forested areas, woodlots, streams). Land cover was surveyed by separating the parcel into homogeneous components and assigning each a description. Prior to field survey, polygons were delineated in the office using orthophotography. Further delineation occurred during the field survey until one of the following was achieved:

- Minimum polygon size (500 sq m ~5400 sq ft) or minimum polygon width (10 m ~33 ft)
- Polygon is homogeneous in physical cover and homogeneous in irrigation method
- Maximum level of detail required was reached

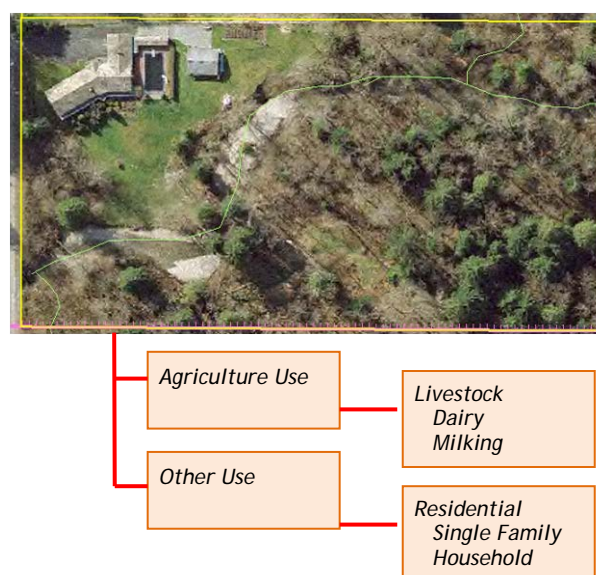


In most cases, more than one land cover was recorded for each parcel surveyed.

General land use:

Up to two general land uses (e.g. residential, commercial) were recorded for each property based on an assessment of overall economic importance, the property's tax status, and/or the extent of the land use. The survey for general land use focuses solely on human use and considers:

- The actual human use of land and related structures and modifications to the landscape
- Use-related land cover (where land cover implies a use or is important to interpreting patterns of use)
- Declared interests in the land (which may limit use) such as parks



In addition, the availability of properties for future farming was assessed based on the amount of potential land for farming on the property and the compatibility of existing uses with future farming activities.

Livestock: Livestock operations and confinement methods along with the scale of the activity were estimated and recorded. Livestock not visible at the time of survey may have been inferred based on grazed pastures, manure storage, size of barn and other evidence.

Agricultural practices: Surveyors recorded agricultural practices associated with crops or livestock activities. For example, if a forage crop was being harvested for hay, it was recorded. Irrigation was also recorded, including the type of system used.

Agricultural crop production: Crop production and crop protection methods observed on the parcel were recorded such as wildlife scare devices, temperature or light control, or organic production. Organic production is not always visible and may have been recorded based on local knowledge or farmer interviews.

Agricultural support: Ancillary agricultural activities, such as storage, compost or waste, supporting the production of a raw commodity on a farm unit were recorded.

Agricultural value added: Activities that add value to a raw commodity where at least 50% of the raw commodity is produced on the farm unit were recorded. This value-added activity included processing, direct sales and agri-tourism activities.

2.3 PRESENTATION OF THE DATA

The data in this report is presented in the form of summarized tables and charts. In the final formatting of the tables and charts, data values are rounded to the nearest whole number. As a result, the data may not appear to add up correctly.

3. Land Cover and Farmed Area

3.1 LAND COVER AND FARMED AREA

Land cover describes the biophysical material at the surface of the earth and is distinct from land use which describes how people utilize the land. Refer to Section 5 for more information on land use.

Land cover is surveyed by separating the parcel into polygons of homogeneous components and assigning each a description such as landscape lawn, natural open treed, natural waterbody, blueberries, road, or small single family house. Most surveyed parcels have numerous different land cover types with each describing a different area of the parcel. Land cover more closely approximates the actual area of land in agricultural production than land use, which is assigned on a parcel basis.

Four land cover types are considered “**Farmed**”:

- **Cultivated field crops:** vegetation under cultivation for harvest or pasture including land temporarily set aside from farming and perennial crops that were not harvested or grazed in the current growing season
- **Farm infrastructure:** built structures associated with farming such as barns, stables, corrals, riding rings, and their associated yards
- **Greenhouses:** permanent enclosed glass or poly structures with or without climate control facilities for growing plants and vegetation under controlled environments
- **Crop barns:** permanent enclosed structures with non-translucent walls for growing crops such as mushrooms or bean sprouts

Forage and pasture field crops which have not been cut or grazed during the current growing season (unused), unmaintained field crops, and unmaintained greenhouses are considered “Farmed” land covers but are considered inactive.

Natural pasture and rangeland are areas with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock. These areas are considered “Grazed” and not “Farmed” although these areas are often extensions of more intensive farming areas.

Land cover types which may support farming, such as farm residences, vegetative buffers and farm road access, are not considered “Farmed” land cover.

Figure 5. Land cover in the effective ALR

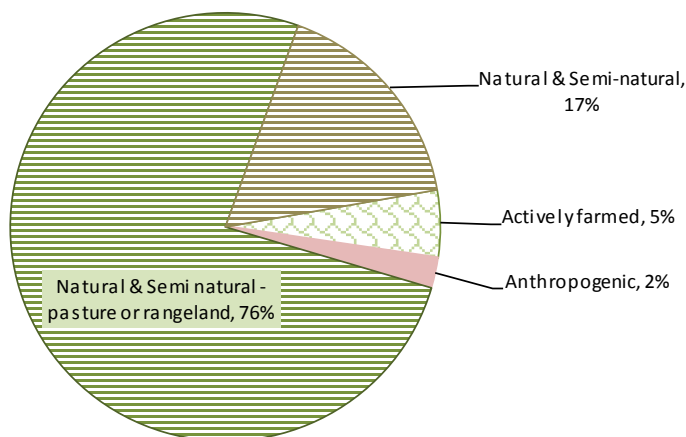


Figure 5 shows the proportion of different land cover categories across the effective ALR in Green Lake.

Over three quarters (76%) of the ALR land is in “natural pasture or rangeland”

Another 5% is in actively farmed land cover. Land used in support of farming such as farm residences, vegetative buffers or roadways is not included as farmed land cover.

Table 1. Land cover and farmed area

Land cover*		ALR		ALR Ownership		Outside ALR (ha)	Total area (ha)
		In ALR (ha)	% of effective ALR*	Privately owned ALR (ha)	Crown owned ALR (ha)		
Actively farmed	Cultivated field crops	817	5%	719	97	424	1,241
	Farm infrastructure	51	< 1%	50	<1	22	73
Inactively farmed	Unmaintained field crops	8	< 1%	8	-	32	39
FARMED SUBTOTAL		875	5%	777	98	478	1,353
Anthropogenic (not farmed)	Residential footprint	227	1%	196	30		
	Transportation	98	< 1%	38	60		
	Managed vegetation	26	< 1%	25	<1		
	Non Built or Bare	22	< 1%	2	20		
	Waterbodies	11	< 1%	4	7		
	Settlement	3	< 1%	2	1		
ANTHROPOGENIC SUBTOTAL		386	2%	266	120		
Natural & Semi-natural	Natural pasture or rangeland	12,994	76%	2,777	10,217		
	Vegetated - Other	1,740	10%	1,136	603		
	Wetlands & waterbodies	1,121	7%	470	651		
NATURAL & SEMI-NATURAL SUBTOTAL		15,855	93%	4,383	11,472		
TOTAL		17,117	100%	5,427	11,690		

* Refer to the glossary for terms used in this table.

Table 1 shows the extent of different land cover types across the ALR in Green Lake.

There were 875 ha of “Farmed” land cover in the ALR. An additional 478 ha of “Farmed” land cover was identified outside the ALR.

There were 12,994 ha of ALR in “natural pasture or rangeland”.

Figure 6. Land cover in the effective ALR by ownership class

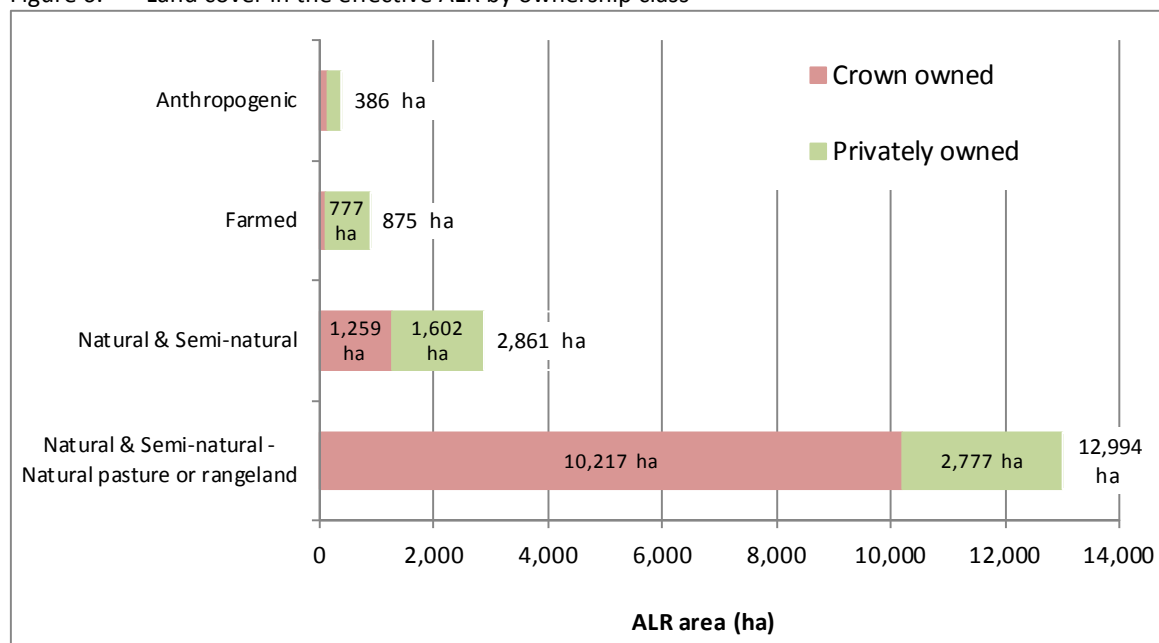


Figure 30 details the amount of effective ALR by land cover category and ownership class.

Of the 12,994 ha of ALR in natural pasture or rangeland, 79%, or 10,217 ha is on Crown owned parcels.

4. Farming Activities

4.1 CULTIVATED FIELD CROPS

Cultivated field crops were captured in a geographic information system (GIS) at the field or land cover polygon level by crop type (e.g. vegetables, forage or pasture, berries). The total land area was then evaluated for each crop. Excluded are crops grown in crop cover structures such as greenhouses or mushroom barns.

Forage & pasture is the main crop type in Green Lake.

- Forage is a cultivated crop that is cut and made into silage or hay for livestock feed.
- Pasture is a cultivated crop that is used for grazing only and is not cut.
- Forage & pasture is grazed for 1 - 3 months per year and is also cut for silage or hay.

Table 2. All crop types by total area

Type	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of effective ALR			
Pasture	689	4%	245	935	73%
Forage	102	< 1%	73	176	14%
Forage & pasture	32	< 1%	137	169	13%
Nursery	< 1	< 1%	-	< 1	< 1%
TOTAL	824	5%	456	1,280	100%

Table 2 shows that pasture is the main crop type in Green Lake, followed by forage and fields used for both forage & pasture.

Over one-third of the cultivated crops occur outside of the ALR (36% or 456 ha).

Figure 7. Main field crop types by percentage

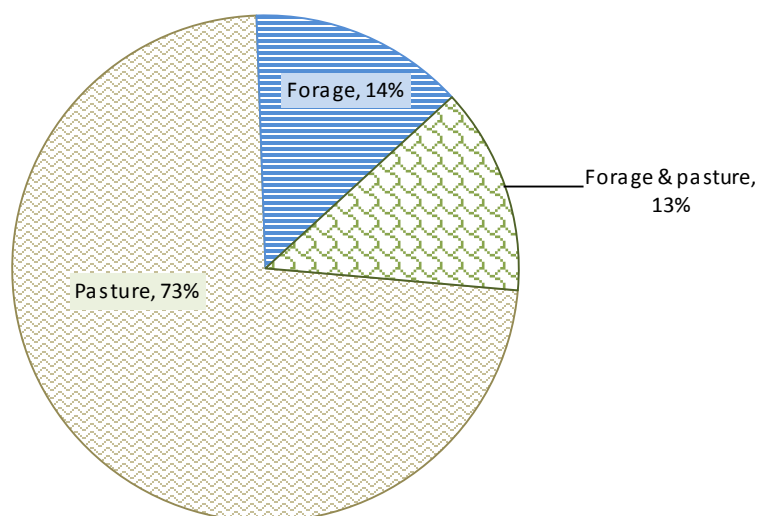


Figure 7 shows the proportion of the crop types in Green Lake.

Pasture accounts for 73% of all crops, forage accounts for 14% and fields used for both forage & pasture account for 13%.

Forage & pasture

Hydrophytic grass occurs on organic soils with a high water table and includes species such as Reed canary and Meadow foxtail. Fields of harvested hydrophytic grass are sometimes referred to as organic meadows or riparian meadows.

Table 3. Forage and pasture crops detail

Forage & pasture crops		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of effective ALR			
Forage	Mixed grass / legume	45	< 1%	24	69	5%
	Grass hydrophytic	37	< 1%	22	59	5%
	Grass	21	< 1%	27	48	4%
Subtotal		102	< 1%	73	176	14%
Forage & pasture	Grass hydrophytic	4	< 1%	95	99	8%
	Grass	28	< 1%	35	63	5%
	Mixed grass / legume	-	-	7	7	< 1%
Subtotal		32	< 1%	137	169	13%
Pasture	Grass hydrophytic	457	3%	167	624	49%
	Grass	209	1%	47	256	20%
	Mixed grass / legume	16	< 1%	-	16	1%
Subtotal		682	4%	214	896	70%
Unused	Grass hydrophytic	8	< 1%	32	39	3%
Subtotal		8	< 1%	32	39	3%
TOTAL		824	5%	456	1,280	100%

Table 3 details the crop type on forage and pasture fields. Hydrophytic grass is the most abundant crop type comprising 65% of all forage and pasture crops.

Figure 8. Forage & pasture fields by size and type

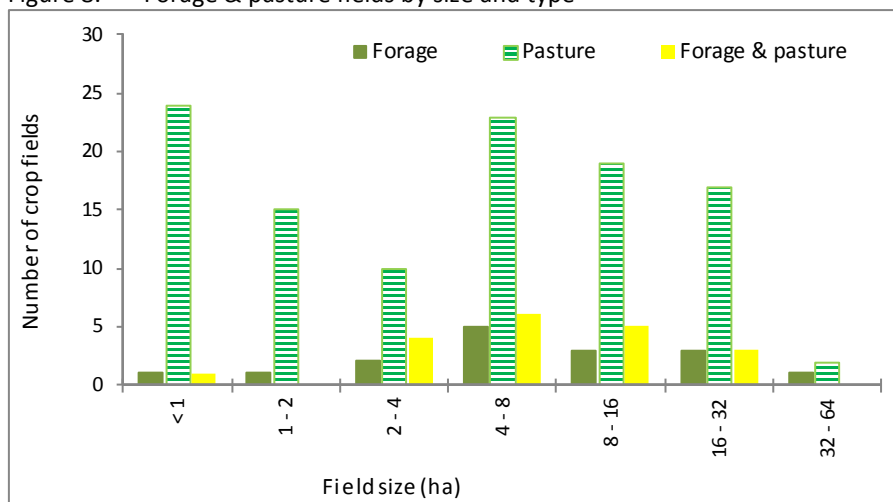


Figure 8 illustrates the size distribution of forage and pasture fields in Green Lake.

There are far more pasture than forage fields. This is consistent with pasture being the most abundant crop in the region (refer to Table 2).

4.2 IRRIGATION

Irrigation is the artificial application of water to the land or soil and may be used to assist in the growing of agricultural crops, the maintenance of managed vegetation, and the control of soil erosion or dust. The availability of water delivery infrastructure and good quality water for irrigation are often requirements for growing high-value crops. Insufficient water sources or water delivery infrastructure can limit the potential to increase agricultural production through irrigation.

Irrigation information was recorded at the field or land cover level by system type (e.g. giant gun, trickle, sprinkler) and then summarized by crop type to the total land area under irrigation.

An Agricultural Water Demand Model (AWDM) is being created for the Thompson-Nicola Regional District that includes much of the Green Lake Area. The AWDM is a water management planning tool that estimates current and future agricultural water needs. The model utilizes Agricultural Land Use Inventory crop and irrigation data, as well as soil and climate data from external sources. The Thompson-Nicola Regional District AWDM Report⁴ will highlight the results from several climate change scenarios and water management practices.

Figure 9. Irrigation systems by percentage of cultivated land

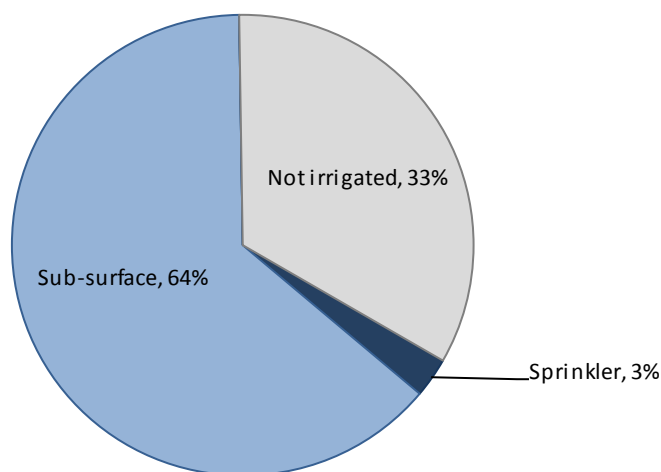


Figure 9 illustrates the proportion of cultivated crops that are irrigated by irrigation system type.

Subsurface irrigation is the most common system type in the area.

⁴ <http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/water-management/agriculture-water-demand-model>

4.3 NATURAL PASTURE & RANGELAND

Natural pasture and rangeland areas have uncultivated (not sown) natural or semi-natural grasses, herbs, shrubs or trees that are used for grazing domestic livestock such as cattle, sheep or equine. Natural pastures are smaller fenced areas usually occurring on private land while rangeland refers to larger blocks of land (extensive areas from hundreds to thousands of acres in size), often with perimeter fencing, that may encompass many parcels or district lots. Rangeland tends to be on provincial Crown land.

Natural pastures are often on land not suited for cultivation due to poor soils (stoniness), seasonal flooding, or slope. In many cases, these areas are remote from the infrastructure necessary to facilitate agriculture improvements such as irrigation. Although some of these natural areas could be used for hay, most are grazed allowing cattle to cycle nutrients on site.

Most natural pastures and rangelands are influenced by humans to some degree. Fire may be used to control woody plants and to remove over mature vegetation. Introduction of livestock also has an effect on natural vegetation that can lead to changes in vegetation composition. Bush-clearing, fencing, drainage, introduction of grasses and legumes, and application of fertilizers and trace elements are more intensive methods which influence natural vegetation as pasture. In some cases, these practices have increased susceptibility to invasive plant species.

Natural pastures and rangelands were captured in a geographical information system at the field or land cover polygon level by the natural vegetation type that dominates the upper canopy (grassland, open treed, etc.). Each vegetation type was then summarized to the total land area.

Table 4. Natural pasture and rangeland by parcel ownership

Parcel ownership		ALR		Outside ALR (ha)	Total area (ha)	% of rangeland & natural pasture
		In ALR (ha)	% of effective ALR			
Crown	Rangeland (natural)	9,845	58%	4,719	14,564	76%
	Pasture (natural)	373	2%	134	507	3%
Subtotal		10,218	60%	4,853	15,071	78%
Private	Pasture (natural)	2,234	13%	1,115	3,350	17%
	Rangeland (natural)	542	3%	273	815	4%
Subtotal		2,776	16%	1,389	4,165	22%
TOTAL		12,994	76%	6,242	19,236	100%

Table 4 details the amount of natural pasture and rangeland on Crown and privately owned parcels.

Of the total area in natural pasture and rangeland, 78% or 15,071 ha is on Crown owned parcels while 22% or 4,165 ha is on privately owned parcels.

Natural pasture or rangeland occurring outside of legally surveyed parcels is not accounted for as part of the inventory.

Table 5. Natural pasture and rangeland by vegetation type

Natural pasture and rangeland		ALR		Outside ALR (ha)	Total area (ha)	% of rangeland & natural pasture
		In ALR (ha)	% of effective ALR			
Rangeland	Treed - closed	7,462	29%	3,440	10,903	57%
	Treed - regenerating	1,406	5%	1,052	2,458	13%
	Treed - open	521	2%	299	819	4%
	Grass	606	2%	163	769	4%
	Herb	238	< 1%	9	248	1%
	Shrub	154	< 1%	29	183	< 1%
Subtotal		10,387	40%	4,992	15,379	80%
Natural pasture	Treed - closed	1,249	5%	815	2,064	11%
	Treed - open	567	2%	217	783	4%
	Grass	584	2%	160	743	4%
	Treed - regenerating	209	< 1%	58	267	1%
Subtotal		2,607	10%	1,250	3,857	20%
TOTAL		12,994	50%	6,242	19,236	100%

Table 5 details the vegetation type on areas used for natural pasture and rangeland.

“Treed – closed”, where between 60% - 100% of the canopy cover is native trees, is the most abundant land cover type on both rangeland and natural pasture.

Vegetation type is important for natural pasture or rangeland as open grasslands offer a higher grazing yield than densely treed areas.

4.4 LIVESTOCK

Livestock activities are challenging to measure using a windshield survey. Livestock are often confined to structures making it difficult to see the animals. Local knowledge and other indicators such as animal confinement type (barn type), feeder system type, manure handling system type, and other visible elements may be used to infer the type of livestock and scale of activity that exist on a parcel. In addition, livestock are mobile and may utilize more than one land parcel. This inventory reports livestock homesites where the animals or related structures were observed.

Intensity

"Intensive" livestock activities utilize specialized structures such as barns, feedlots and stockyards designed for confined feeding at higher stocking densities.

"Non-intensive" livestock activities allow animals to graze on a pasture and often utilize non-intensive barns and corrals/paddocks.

"Unknown livestock" refers to activities where non-specialized livestock related structures were present but the livestock were not visible and the specific type of livestock could not be determined.

Homesite

Homesite refers to the location of the main ranch or main barn of a livestock operation or farm unit⁵. Other types of farm infrastructure, such as corrals, paddocks, barns, and feeding/watering facilities, as well as the farm residence, are often also at this location. The homesite is the primary location of the farm unit where most livestock management occurs.

Non Homesite refers to a location where livestock were observed, but livestock do not permanently reside at the location. Non homesites are often used only for pasturing and are secondary to an operation's primary (or homesite) location.

Scale

An animal unit equivalents (AUE) scale system is used to describe the livestock operations. AUEs are a standard measure used to compare different livestock types. One animal unit equivalent is equal to approximately one adult cow or horse. The scale system includes 4 levels:

- **"Very Small"** Approximately 1 cow or horse or bison, 3 hogs, 5 goats or deer, 10 sheep, 50 turkeys, 100 chickens (1 animal unit equivalent). Estimated AUE: 1
- **"Small"** LESS THAN 25 cows or horses or bison, 75 hogs, 125 goats or deer, 250 sheep, 1250 turkeys, 2500 chickens (2 - 25 animal unit equivalents). Estimated AUE: 13
- **"Medium"** LESS THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5000 turkeys, 10,000 chickens (25 - 100 animal unit equivalents). Estimated AUE: 63
- **"Large"** MORE THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5000 turkeys, 10,000 chickens (over 100 animal unit equivalents). Estimated AUE: 150

Estimated animal unit equivalents are calculated using the midpoint of each scale range described above. This number enables the relative importance of each livestock type to be compared. The actual number of animals may be under estimated, especially for large operations.

Number of activities. Each occurrence of livestock on a parcel is counted as one activity. A small mixed farm with 1-2 cows and a large commercial milking operation are each counted as one activity. Additionally, if equine and beef are recorded on the same parcel, each is identified as a unique activity.

⁵ Farm unit includes all the property belonging to a farm and may incorporate more than one parcel.

Table 6. Livestock activities

Livestock group	Estimated animal unit equivalents	Number of activities
Beef	2,600	20
Equine	960	51
Poultry	90	15
Unknown livestock	80	3
Specialty livestock (bison)	60	1
Sheep / goat	40	5
Llama / alpaca	30	2
Swine	10	1
TOTAL	3,870	98

Table 6 details the number of estimated animal unit equivalents by livestock type and number of activities.

Beef has the greatest estimated animal unit equivalents.

Although equine has the greatest number of individual activities (51), equine ranks second in terms of estimated animal unit equivalents.

Estimated Animal Unit Equivalents (AUEs)

Figure 10. Proportion of livestock activities by estimated animal unit equivalents

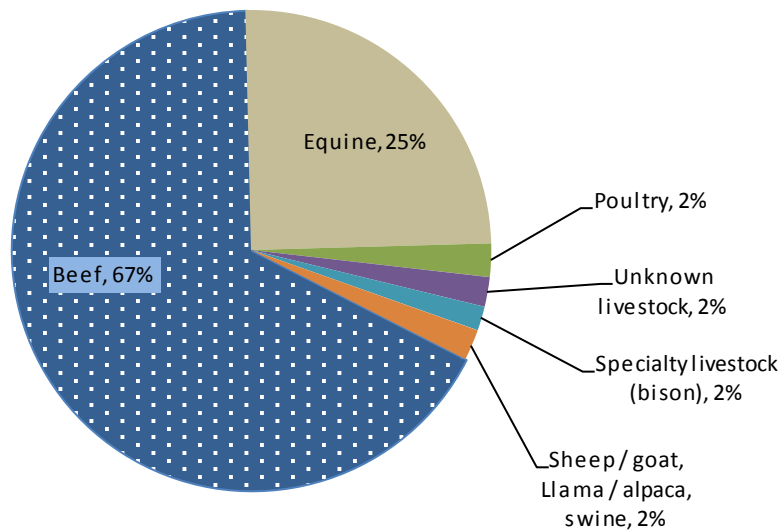


Figure 10 illustrates the proportion of livestock types in Green Lake by estimated animal unit equivalents.

Of all estimated AUEs, 67% are beef and 25% are equine.

Figure 11. Estimated animal unit equivalents by livestock type and intensity

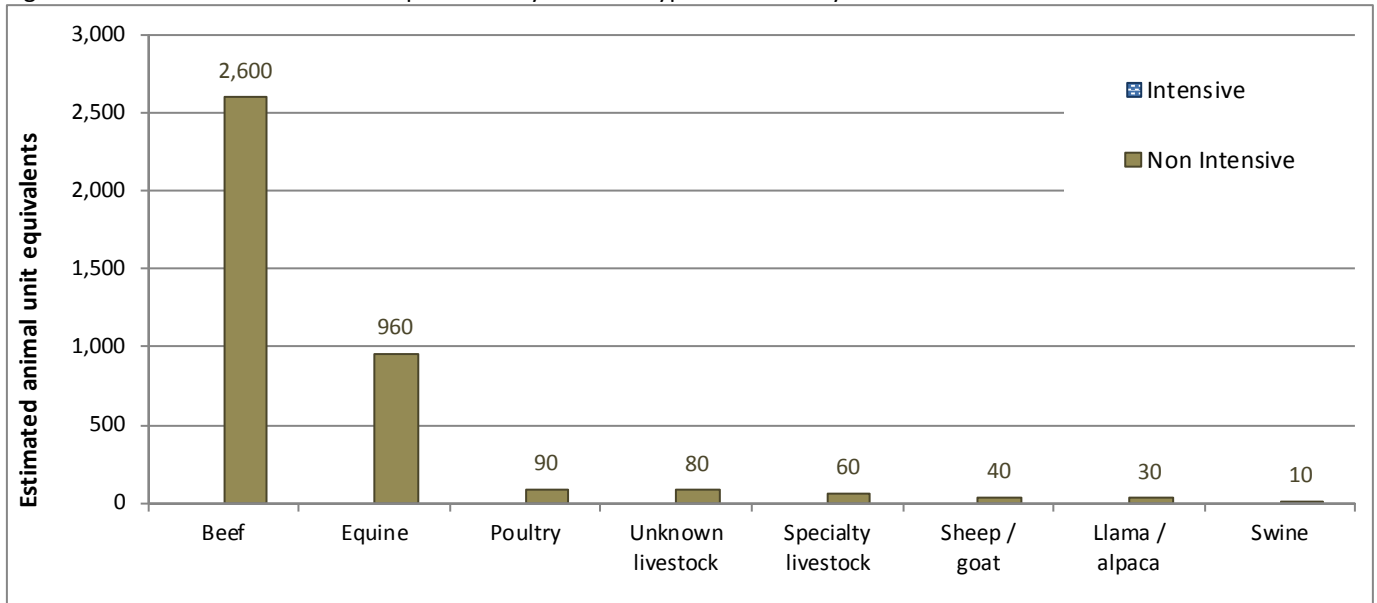


Figure 11 illustrates the number of estimated animal unit equivalents by livestock type and intensity in Green Lake. All recorded livestock are found in “non-intensive” facilities.

Figure 12. Estimated animal unit equivalents by livestock type and scale

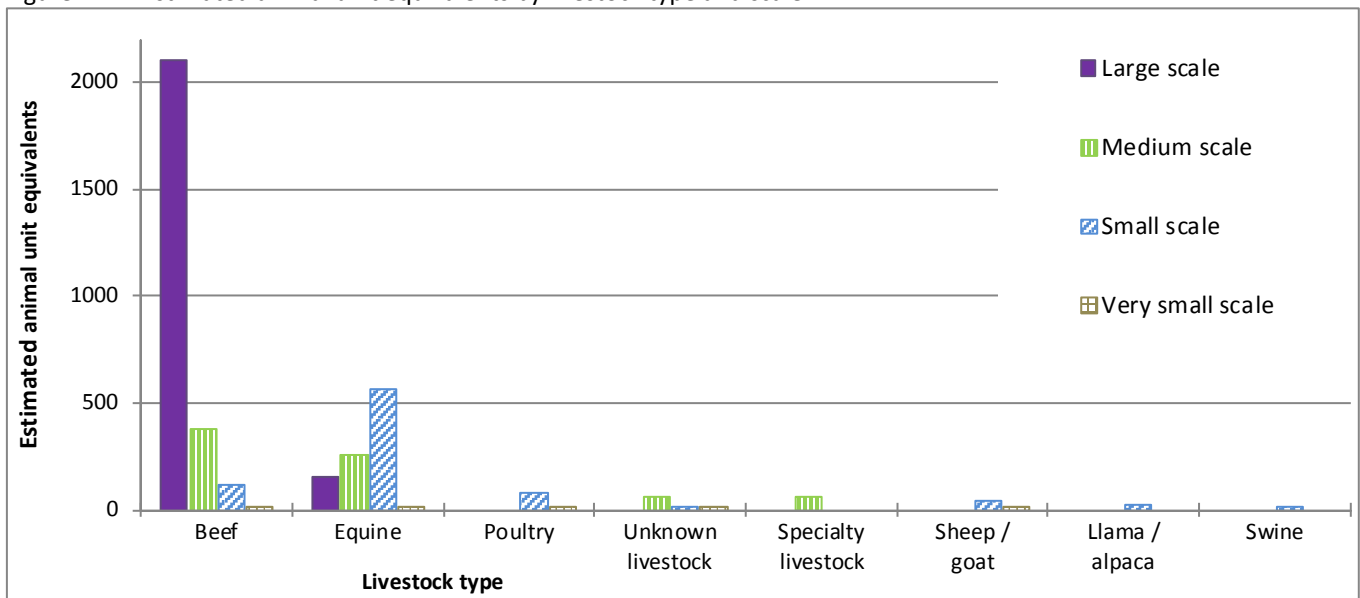


Figure 12 illustrates the number of estimated animal unit equivalents by scale and livestock type in Green Lake. The majority of all beef cattle are found in “large” scale operations (> 100 AUEs). Beef and equine are the only livestock types to occur on a “large” scale”

Figure 13. Estimated animal unit equivalents by livestock type and scale – large scale not included

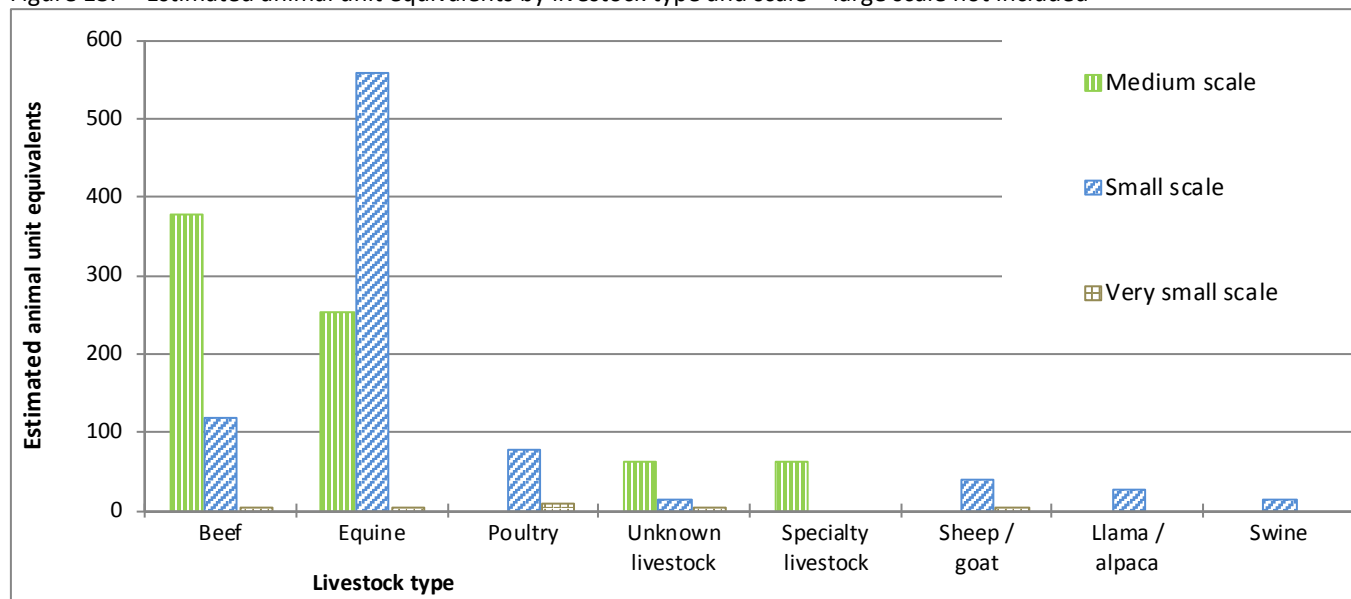


Figure 13 illustrates the number of estimated animal unit equivalents by scale and livestock type in Green Lake, excluding large scale activities (> 100 AUEs).

Number of livestock activities (occurrences)

Figure 14. Number of livestock activities by scale

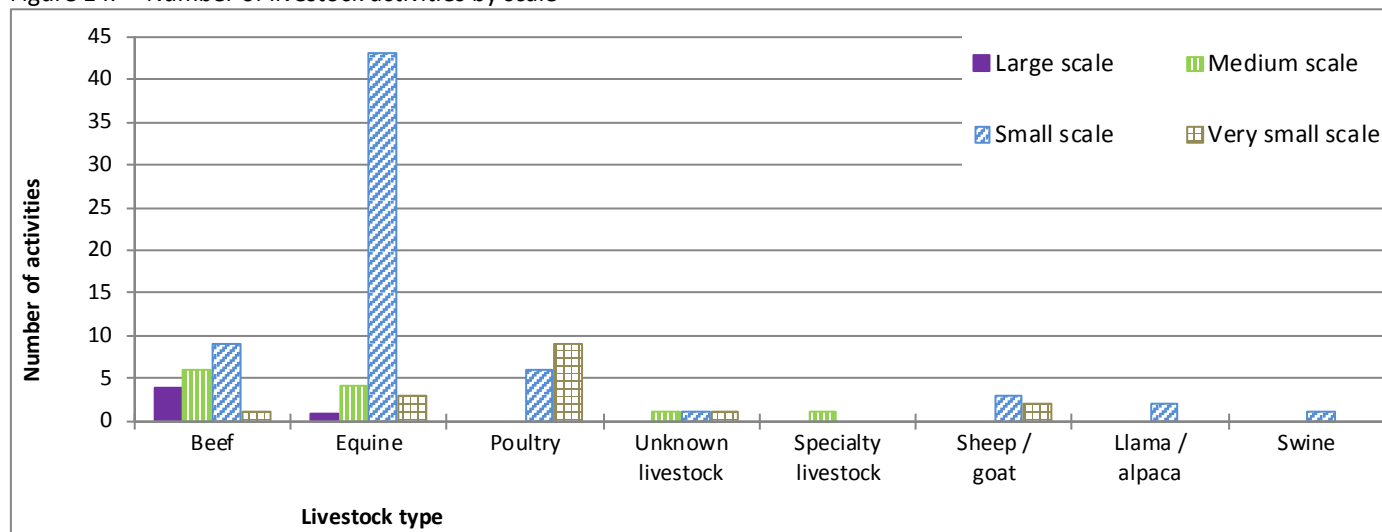


Figure 14 illustrates the number of livestock activities by scale and livestock type in Green Lake. Equine activities occur the most frequently, however, most occurrences are “small” scale with less than 25 animals.

5. ALR Utilization

5.1 PARCEL INCLUSION IN THE ALR

Since much of the following analysis is parcel based, it is important to note that the ALR boundaries do not always align with parcel boundaries. As a result, many parcels have only a portion of their area in the ALR.

Figure 15 illustrates the frequent misalignment between parcel boundaries and the ALR boundary. Given that the dark green line represents the ALR boundary, Lot A is completely in the ALR and Lots B and C have a portion of their area in the ALR. Lot D is completely outside the ALR.

To achieve an accurate picture of the ALR in Green Lake, only parcels that meet the following criteria are included in this section of the report:

- parcels > 0.05 ha in size with at least half their area ($\geq 50\%$) in the ALR, or
- parcels with at least 10 ha (≥ 10 ha) of ALR land.

In total, 1,273 parcels, with 16,930 ha or 99% of the effective ALR met the above criteria and were included in the further analysis of the ALR. 'Effective ALR' is the total ALR area excluding land outside of legally surveyed parcels and excluding land on Indian reserves.

Of the 1,273 ALR parcels:

- 299 parcels with 11,543 ha of ALR are Crown owned and
- 974 parcels with 5,387 ha of ALR are privately owned

Figure 15. Parcel inclusion in the ALR



Figure 15 illustrates the distinction between parcels considered to be within or outside the ALR:

Considered to be within the ALR:

- lot A is completely in the ALR
- lot B has 50% or more of its area in the ALR.

Considered to be outside the ALR:

- lot C has less than 50% of its area and less than 10 ha in the ALR
- lot D is completely outside the ALR.

5.2 LAND USE AND FARM USE

Land use focuses solely on human use and describes the economic function or type of establishment using the parcel. A parcel can have a variety of activities on the land, yet serve a single use. For example, two parcels are said to be “Used for farming”, even if one is a dairy farm and the other is in blueberries. Another example is commercial land use; if one parcel is a hotel, another is a retail store, and a third is a gas station, all are considered to have commercial land use.

Up to two general land uses (e.g. residential, commercial, protected area) are recorded for each parcel. Evaluation of land uses are based on the overall economic importance and/or the extent of the land use.

Used for farming – Parcels where the majority of the parcel area is utilized for farming or parcels which exhibit significant evidence of intensive farming. Refer to the glossary for a complete definition. Many “Used for farming” parcels are also used for other purposes such as residential. This report does not attempt to determine which use is primary.

Used for grazing – Parcels that do not meet the “Used for farming” criteria, but have a significant portion of their area in natural pasture or rangeland and have evidence of grazing domestic livestock.

Not used for farming – Parcels that do not meet the “Used for farming” definition.

Crown owned

Table 7. Land use and farming use in the ALR – Crown owned parcels

Land use on Crown owned parcels*		Number of ALR parcels	% of ALR parcels	Total parcel area (ha)**	Average parcel size (ha)	Median parcel size (ha)
Used only for farming - no other use		1	<1 %	15	15	15.0
USED FOR FARMING SUBTOTAL		1	<1 %	15	15	15.0
Used for grazing - no other use		104	8 %	6,536	63	43.4
Grazing - Mixed use	Forestry	64	5 %	6,775	106	64.7
	Wildlife management	5	<1 %	535	107	65.0
	Transportation & utilities	4	<1 %	427	107	64.0
	Recreation & leisure	2	<1 %	114	57	57.2
USED FOR GRAZING SUBTOTAL		179	14 %	14,388	80	61.4
Not used for farming	Residential	36	3 %	49	1	0.3
	Forestry	36	3 %	1,081	30	0.4
	No apparent use	18	1 %	416	23	4.7
	Protected area / park / reserve	12	1 %	595	50	1.0
	Transportation & utilities	5	<1 %	30	6	5.7
	Recreation & leisure	5	<1 %	135	27	8.3
	Wildlife management	3	<1 %	352	117	64.7
	Institutional & community	3	<1 %	2	< 1	0.5
	Garbage dumps	1	<1 %	11	11	11.0
NOT USED FOR FARMING OR GRAZING SUBTOTAL		119	9 %	2,671	22	0.4
TOTAL		299	23 %	17,074	57	32.3

* See "Land Use" in the glossary for terms used in this table.

** Total parcel area includes ALR and non-ALR land.

Table 7 shows the number of Crown owned ALR parcels in Green Lake by land use and farming status.

Many of the land uses on “Not used for farming or grazing” parcels utilize a lease or licence. For example, there are 36 Crown owned parcels with residential land use that have either a rural residential or a recreational residential lease.

Privately owned

Table 8. Land use and farming use in the ALR – privately owned parcels

Land use on privately owned parcels*		Number of ALR parcels	% of ALR parcels	Total parcel area (ha)**	Average parcel size (ha)	Median parcel size (ha)
Used only for farming - no other use		18	1 %	869	48	47.9
Farming - Mixed use	Residential	22	2 %	1,147	52	63.1
	Recreation & leisure	1	<1 %	111	111	111.2
USED FOR FARMING SUBTOTAL		41	3 %	2,128	52	62.1
Used for grazing - no other use		48	4 %	1,930	40	41.9
Used for grazing	Residential	23	2 %	580	25	18.0
	Forestry	2	<1 %	26	13	13.1
USED FOR GRAZING SUBTOTAL		73	6 %	2,536	40	41.3
Not used for farming	Residential	759	60 %	810	1	0.3
	No apparent use	93	7 %	573	6	0.3
	Recreation & leisure	3	<1 %	63	21	3.5
	Institutional & community	2	<1 %	< 1	< 1	0.3
	Forestry	2	<1 %	1	< 1	0.4
	Transportation & utilities	1	<1 %	7	7	7.1
NOT USED FOR FARMING OR GRAZING SUBTOTAL		860	68 %	1,454	2	0.3
TOTAL		974	77 %	6,117	6	0.3

* See "Land Use" in the glossary for terms used in this table.

** Total parcel area includes ALR and non-ALR land.

Table 8 shows the number of privately owned ALR parcels in Green Lake by land use and farming status.

In total, 3% of the privately owned ALR parcels (41 parcels) are "Used for farming", 6% are "Used for grazing", and 68% are "Not used for farming or grazing".

The "Used for farming" parcels have an average parcel size of 52 ha while the "Not used for farming or grazing" parcels are much smaller with an average parcel size of 2 ha and a median parcel size of 0.3 ha.

Privately owned ALR parcels in Green Lake have a total area of 6,117 that includes 5,387 ha of ALR. Although privately owned ALR parcels comprise 77% of all ALR parcels, they comprise only 31% of the total ALR area (5,387 ha out of 17,117 ha).

5.3 RESIDENTIAL USE

The ALR is a provincial zone in which agriculture is the priority use and some residential use is considered a necessary accessory to the agricultural use of a property. However, residential use which is not an accessory to agriculture can effectively limit the ability of agriculture to grow, intensify and respond to market demands. When the primary motivation for ownership of ALR land is residential use, the residence is often placed to maximize privacy and views with little consideration for agricultural opportunities on the parcel. Houses that are not adjacent to the frontage road alienate portions of land from future agriculture. If the occupants are non-farmers, they are more likely to be affected by noise, odour, or dust from neighbouring farm operations.

The size of the residence may be another factor to consider. Properties with larger residences tend to have higher property values which can make it more difficult for a farmer to acquire and convert this land to farmland in the future.

In the following analysis cabins/cottages, mobile homes, single-family houses, duplexes, townhouses, apartments, dormitories, and institutional living buildings are included.

Figure 16. Residential land use on ALR parcels – privately owned parcels

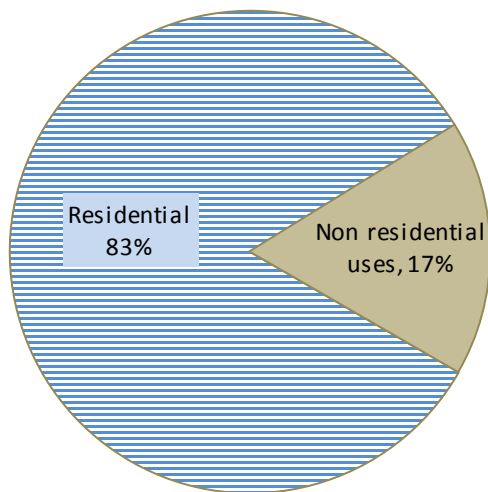


Figure 16 shows that 83% of the privately owned ALR parcels are used for residential purposes.

The majority of parcels with a residential use in Green Lake are “Not used for farming or grazing”. Many occur on small lots and are utilized for seasonal or recreational purposes.

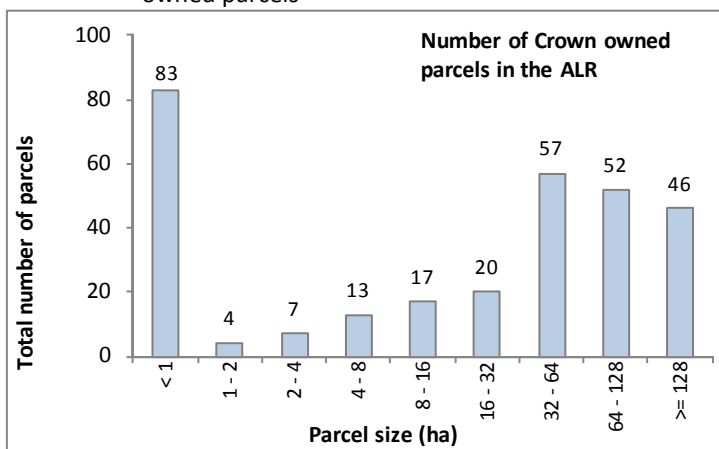
5.4 FARM USE & PARCEL SIZE

Parcel size must be considered when determining the agricultural potential of a parcel. Larger parcels usually allow farmers greater flexibility to expand or change their type of operation as the economy and markets change. Some types of agriculture can be successful on small parcels, (e.g. intensive market gardens, nurseries, poultry), however, the number of viable farming options generally decreases with a reduced parcel size. Small parcels may also be suitable for start-up farmers and established farmers wanting to expand through leases.

A farming operation may utilize more than one parcel as a farm unit⁶, however, it is generally more efficient to run a farm on fewer large parcels than on many small parcels. Smaller parcels are generally more costly per hectare than larger parcels and can easily be disassembled from larger farm units and sold. Larger parcels accommodate equipment more efficiently and reduce the need to move farm equipment on public roads. Furthermore, smaller parcels are more impacted by bylaws designed to reduce potential land use conflicts, such as setbacks from lot lines and road allowances.

Crown Owned

Figure 17. Number of parcels in the ALR by parcel size – Crown owned parcels

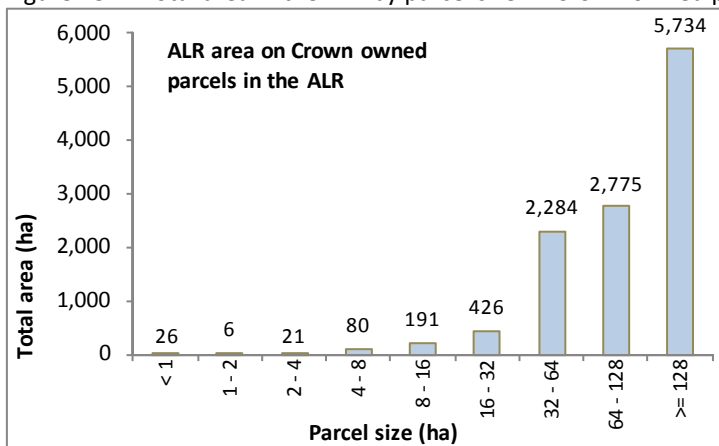


Crown owned ALR parcels have an average parcel size of 57.1 ha and a median parcel size of 32.3 ha.

Figure 17 illustrates that of the 299 Crown owned parcels in the ALR:

- 28% (83 parcels) are less than 1 ha.
- 31% (94 parcels) are less than 4 ha.
- 4% (13 parcels) are between 4 and 8 ha.
- 6% (17 parcels) are between 8 and 16 ha.
- 59% (175 parcels) are greater than 16 ha.

Figure 18. Total area in the ALR by parcel size – Crown owned parcels



Most of the ALR area on Crown owned parcels in Green Lake occurs on larger parcels.

Figure 18 illustrates that of the 11,543 ha of ALR on Crown owned ALR parcels:

- <1% (26 ha) is on parcels less than 1 ha.
- <1% (53 ha) is on parcels less than 4 ha.
- 1% (80 ha) is on parcels between 4 and 8 ha.
- 2% (191 ha) is on parcels between 8 and 16 ha.
- 97% (11,219 ha) is on parcels greater than 16 ha.

⁶ Farm Unit – An area of land used for a farm operation consisting of one or more contiguous or non-contiguous parcels, that may be owned, rented or leased, which form and are managed as a single farm.

Table 9. Number of farmed and not farmed parcels in the ALR – Crown owned parcels

Farming status on Crown parcels	Number of ALR parcels	% of Crown ALR parcels
Used for farming	1	<1 %
Used for grazing	179	60 %
Not used for farming or grazing	119	40 %
TOTAL	299	100 %

Table 9 demonstrates that of the 299 Crown owned parcels in the ALR, 179 or 60% are “Used for grazing”.

Figure 19. Number of parcels in the ALR by farming status and parcel size – Crown owned parcels

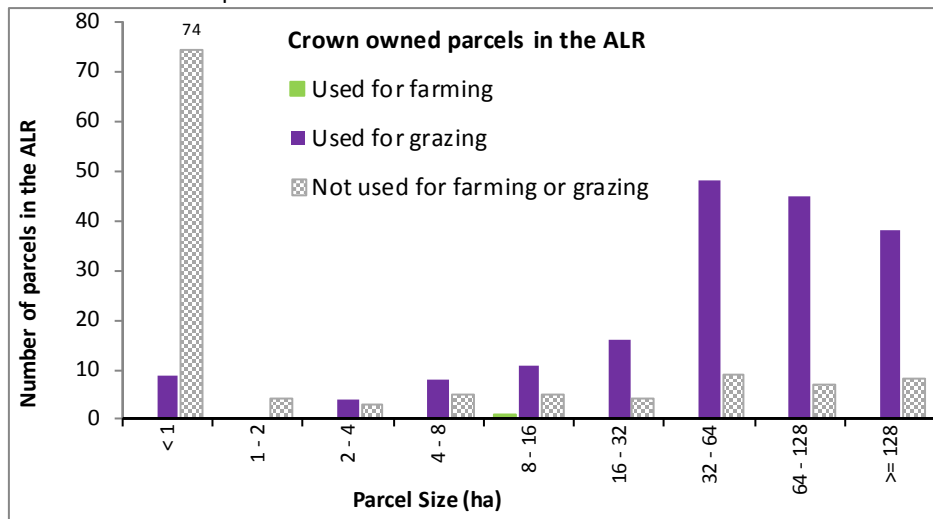
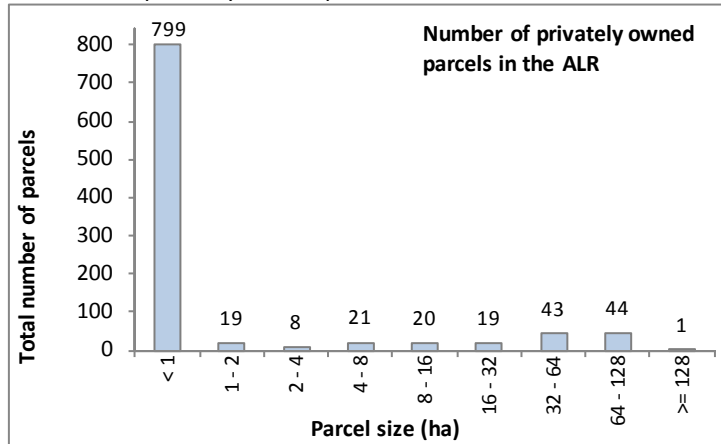


Figure 19 compares the distribution of “Used for farming” parcels with other parcels in the ALR.

The largest proportion of “Not used for farming or grazing” parcels occurs on parcels less than 1 ha. In total, 88% of all parcels less than 1 ha are “Not used for farming or grazing”, which indicates that small parcels are less likely to be utilized for farming.

Privately Owned Parcels

Figure 20. Number of parcels in the ALR by parcel size – privately owned parcels

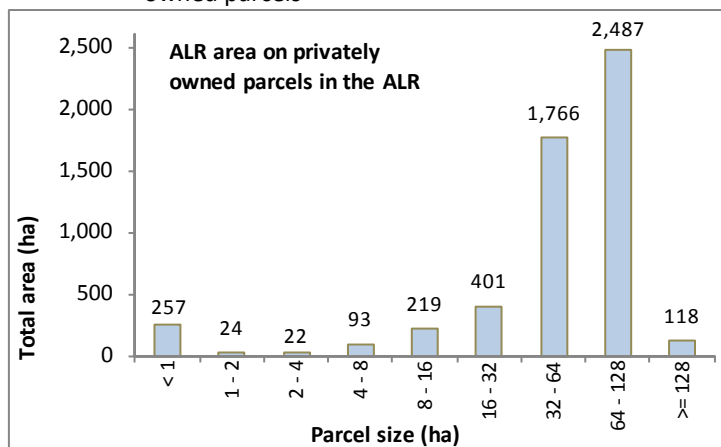


Privately owned ALR parcels in Green Lake have an average parcel size of 6.3 ha and a median parcel size is 0.3 ha.

Figure 20 illustrates that of the 974 privately owned parcels in the ALR:

- 82% (799 parcels) are less than 1 ha.
- 85% (826 parcels) are less than 4 ha.
- 2% (21 parcels) are between 4 and 8 ha.
- 2% (20 parcels) are between 8 and 16 ha.
- 11% (107 parcels) are greater than 16 ha.

Figure 21. Total area in the ALR by parcel size – privately owned parcels



Although there are a large number of small parcels in Green Lake, the majority of the privately owned ALR area occurs on larger parcels.

Figure 21 illustrates that of the 5,387 ha of ALR on privately owned ALR parcels:

- 5% (257 ha) is on parcels less than 1 ha.
- 6% (303 ha) is on parcels less than 4 ha.
- 2% (93 ha) is on parcels between 4 and 8 ha.
- 4% (219 ha) is on parcels between 8 and 16 ha.
- 88% (4,772 ha) is on parcels greater than 16 ha.

Table 10. Number of farmed and not farmed parcels in the ALR – privately owned parcels

Farming status on privately owned parcels	Number of ALR parcels	% of private ALR parcels
Used for farming	41	4 %
Used for grazing	73	7 %
Not used for farming or grazing	860	88 %
TOTAL	974	100 %

Table 10 demonstrates that of the 974 privately owned parcels in the ALR, only 41 parcels (4%) are considered "Used for farming" and 73 parcels (7%) are considered "Used for grazing".

Figure 22. Number of ALR parcels by parcel size and farm status – privately owned parcels

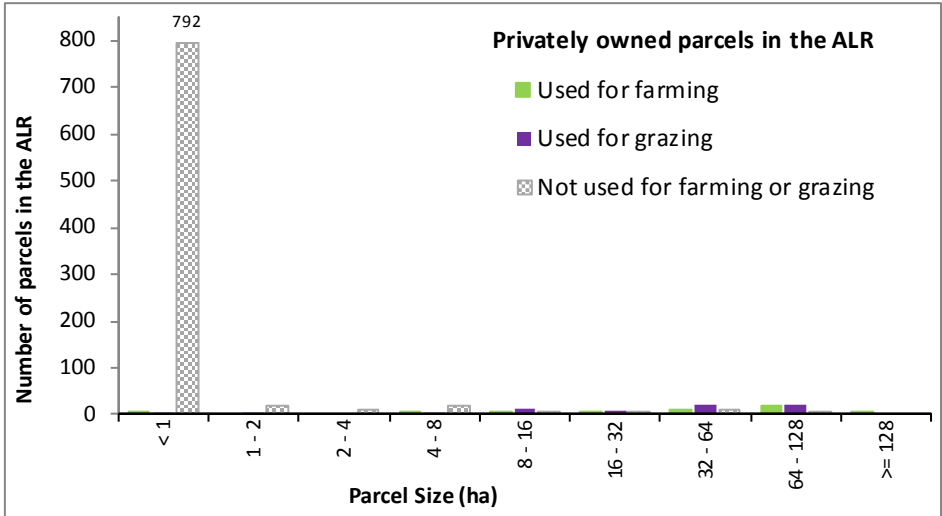


Figure 22 compares the size distribution of privately owned ALR parcels by their farming status.

Nearly all parcels considered “Not used for farming or grazing” are less than 1 ha.

Small parcels are less likely to be utilized for farming or grazing.

Figure 23. Proportion of parcels farmed and not farmed by parcel size in the ALR – privately owned parcels

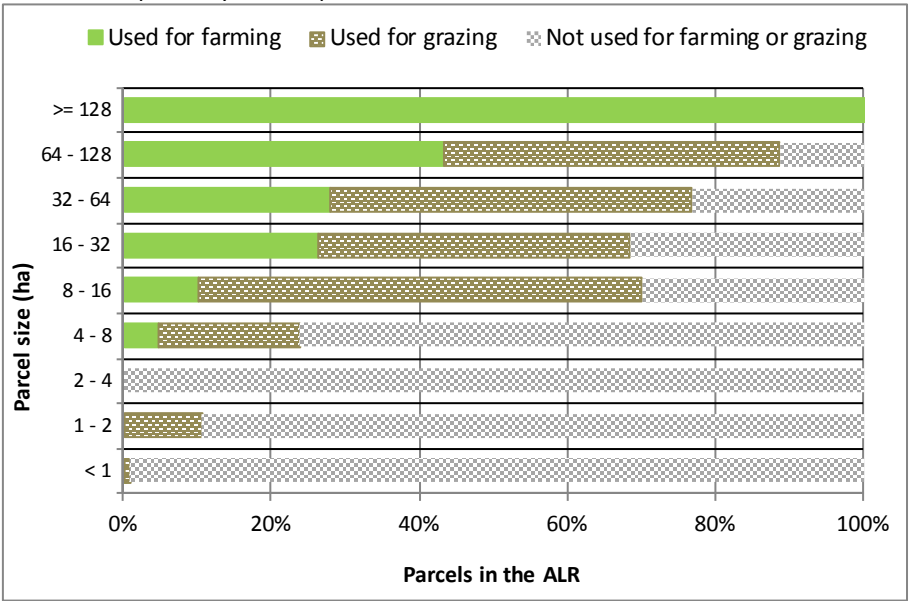


Figure 23 shows that the proportion of parcels “Used for farming” generally increases as the parcel size increases. The proportion of parcels “Used for grazing” also increases with larger parcel sizes.

There is 1 parcel ≥ 128 ha that is “Used for farming” and is associated with pasture for beef and equine.

6. ALR Availability for Farming

6.1 ALR PARCEL AVAILABILITY OVERVIEW

There is a strong demand for agricultural products produced in British Columbia. This demand is expected to increase with population growth and an available agricultural land base will be important to meet future agricultural needs. This section presents analysis on the characteristics of privately owned parcels that are available and unavailable for farming. Crown lands are not considered in this section as they offer little opportunity for capital investment and intensive agricultural development. In addition, Crown owned lands include areas outside of legally surveyed parcels that are beyond the scope of ALUI reporting.

Used for farming – Parcels where the majority of the parcel area is utilized for farming or parcels which exhibit significant intensity of farming. Does not include parcels “Used for grazing”. Refer to the glossary for a complete definition.

Not used for farming – Parcels that do not meet the “Used for farming” definition. Includes parcels that are *available* and *unavailable* for farming.

Unavailable for farming – “Not used for farming” parcels where future agricultural development is improbable because of a conflicting land use or land cover that utilizes the majority of the parcel. E.g. land uses such as golf courses, parks, schools, and small residential lots are considered incompatible with agriculture. These properties may be altered in a way that is incompatible with agriculture, may have little land available, and/or tend to have very high land values. It is usually uneconomical for a farmer to lease or to acquire and convert these properties to farmland given the limited potential for farming. Parcels with little to no land available for farming are also considered “Unavailable for farming”. E.g. A parcel completely covered by trees and a steep slope is “Unavailable for farming” due to the limited farming potential on the slope.

Available for farming – “Not used for farming” parcels with no or insignificant agricultural activity, no apparent land use, or an existing land use that is compatible with agriculture. Available for farming parcels have at least 50% of the parcel area and least 0.4 ha in land cover that has potential for farming.

Areas considered to have **potential for farming** include:

- natural and semi-natural vegetation that is free from physical limitations such as steep slopes, rocky soils and riparian areas. Although some crops can thrive in areas with physical limitations (e.g. grapes on steep slopes), it is assumed these areas will not be utilized for farming purposes. Some of these areas may be used for grazing.
- Anthropogenic managed vegetation (managed for landscaping, dust or soil control). E.g. very large lawns or rough grass areas (> 0.4 ha) may be available for conversion to agriculture. Parks and golf courses are not considered to have potential for farming.

Built structures, wetlands and waterbodies are considered to have no potential for farming. It is assumed these areas would not likely be removed or filled in to create land with cultivation potential.

Parcels that are available for farming reflect the maximum amount of land that may be available for farming. These parcels may be providing ecological goods and services (soil stabilization, water purification, wildlife habitat, etc.), may be serving purposes that were not apparent during the field survey, or may have an unobserved physical limitation (rocky soils, poor drainage, etc.). Available for farming parcels provide an initial selection of parcels that may be available for agricultural expansion.

Table 11. Availability status of parcels in the ALR – privately owned parcels

Parcel status with respect to farming	Privately owned ALR parcels			
	Number of parcels	% of parcels	Total ALR area (ha)*	% ALR area (ha)
Used for farming	41	4 %	1,857	34 %
Available for farming	161	17 %	3,232	60 %
Unavailable for farming	772	79 %	299	6 %
TOTAL	974	100 %	5,387	100 %

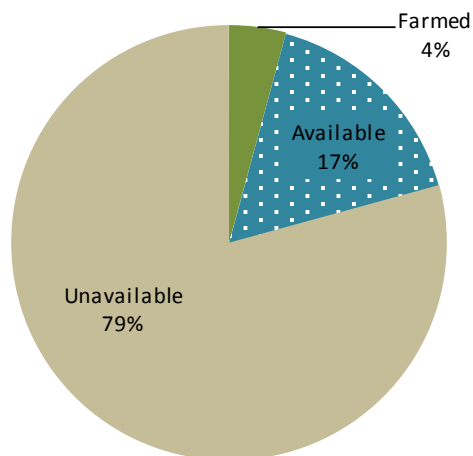
* This is the total area in the ALR . The entire parcel area may not be farmed or available for farming.

Table 11 demonstrates that of the 974 privately owned parcels in the ALR, 79% are “unavailable for farming”

Seventeen percent (17%) of the private ALR parcels are potentially available for agricultural expansion.

Figure 24. Availability status of privately owned parcels in the ALR by parcel count and by ALR area

Availability by parcel count



Availability by ALR area

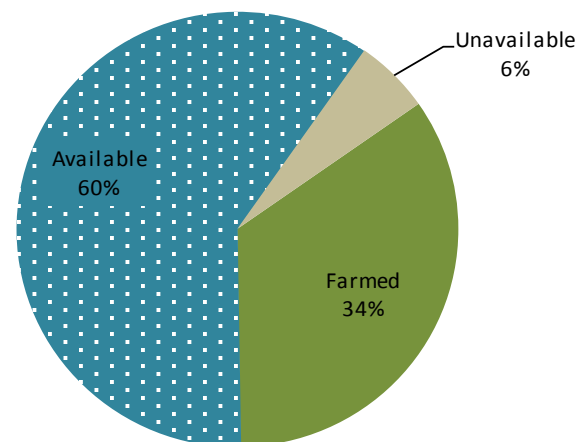


Figure 24 details the availability status of privately owned parcel in the ALR by the number of parcels and by the total ALR area. Although 79% of all privately owned ALR parcels are unavailable for farming, these parcels comprise only 6% of the total ALR area.

6.2 AVAILABLE FOR FARMING

Privately owned ALR parcels that are available for farming offer the greatest potential for agricultural expansion. For a parcel to be considered available for farming it:

- Must not already be “Used for farming”
- Must not have an existing use that excludes agricultural development (e.g. parks, golf courses)
- Must have at least 50% of the parcel area and at least 0.4 ha in land with potential for farming

Figure 25. Land use on available for farming ALR parcels – privately owned parcels

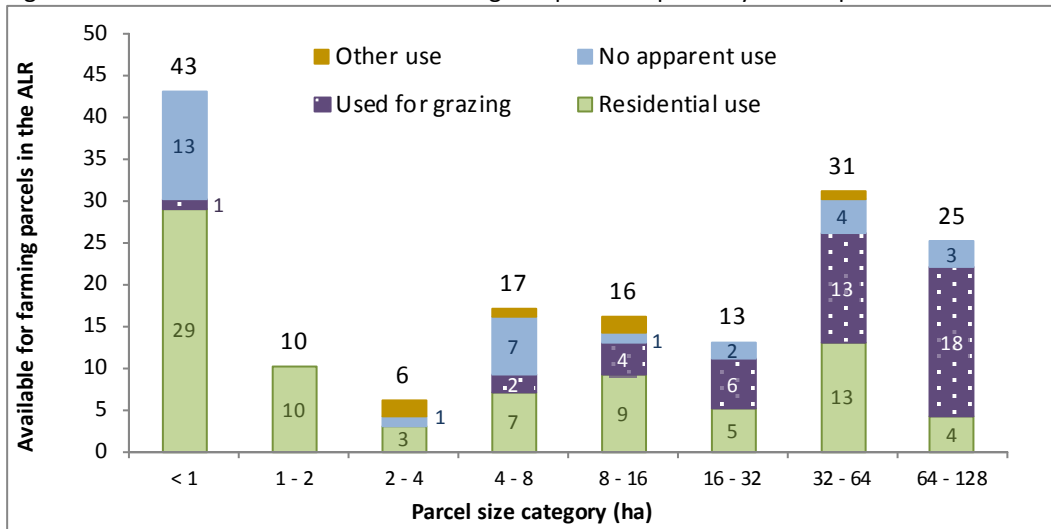


Figure 25 shows the existing land uses on the 161 privately owned ALR parcels that are available for farming. In total, 50% of the available parcels have a residential land use, 27% have a grazing use and 19% have no apparent use. The remaining 4% have other uses including forestry, recreation and transportation.

Parcels that have no apparent land use or that are utilized only for grazing may provide the greatest opportunities to increase agricultural use. These parcels generally have little to no development and low improvement values.

Figure 26. Available for farming ALR parcels with no apparent use or grazing use – privately owned parcels

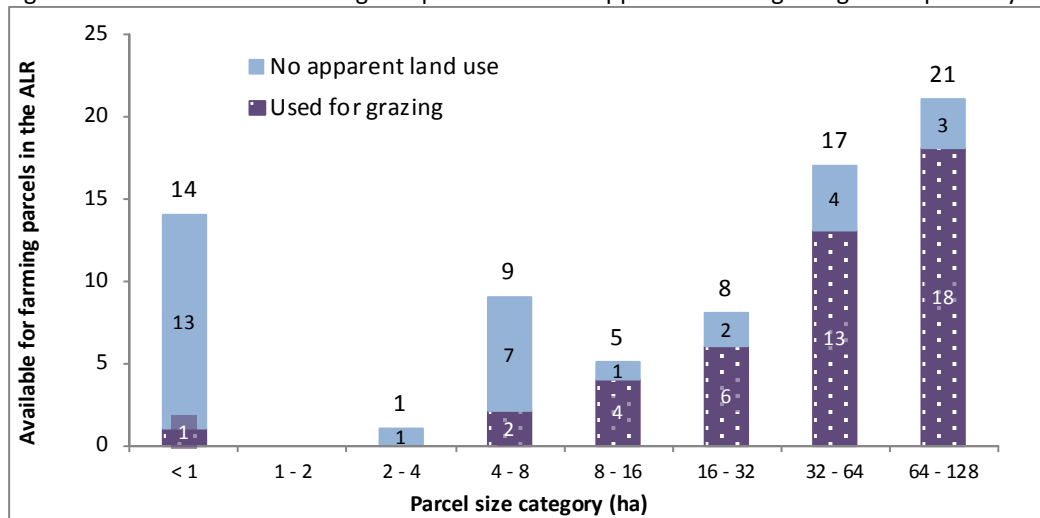


Figure 26 shows the size distribution of the 75 privately owned ALR parcels that are available for farming and that have no apparent land use or a grazing use.

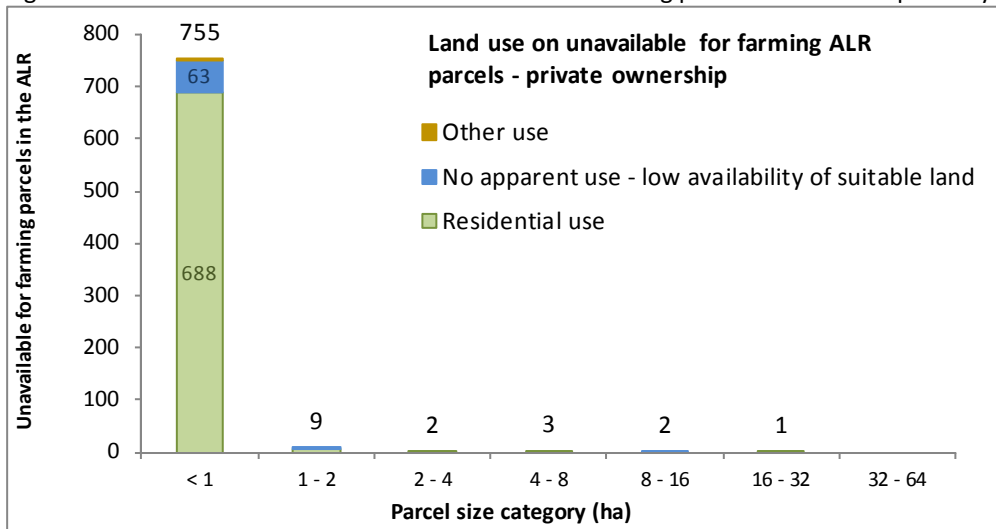
Most available parcels over 4 ha in size have a grazing land use.

6.3 UNAVAILABLE FOR FARMING

Parcels that are unavailable for farming have either an existing land use that excludes agricultural development (e.g. golf courses, schools, parks small lot residential), or have little land with potential for farming. Parcels that do not meet the minimum parcel availability criteria (at least 50% of the parcel area and at least 0.4 ha in land cover with potential for farming) are considered unavailable for farming. Examples of parcels not meeting the minimum availability criteria include:

- A parcel completely covered in trees and a steep slope. There is no available land due to the slope.
- A parcel with 0.3 ha of available land (insufficient available land).
- A parcel with 45% of its total area in land with potential for farming (insufficient available land).

Figure 27. Parcel size distribution of unavailable for farming parcels in the ALR – privately owned parcels



Most parcels that are unavailable for farming are less than 1 ha in size.

In total, Green Lake has 799 privately owned ALR parcels (refer to Figure 20). Of these small parcels, 755 parcels or 95% are unavailable for farming.

7. Farming Outside the ALR

7.1 FARMING OUTSIDE THE ALR

Farming outside of the ALR contributes to the economy and to the general agricultural landscape. In the Green Lake OCP area, 35% of the farmed land cover occurs outside of the ALR (refer to Table 1).

Despite the many opportunities to farm outside of the ALR, non-ALR areas do not receive the same level of protection as land within the ALR. Farmed lands outside of the ALR are more subject to restrictions related to noise, nuisances, and disturbances.

Figure 28. Distribution of farmed land cover

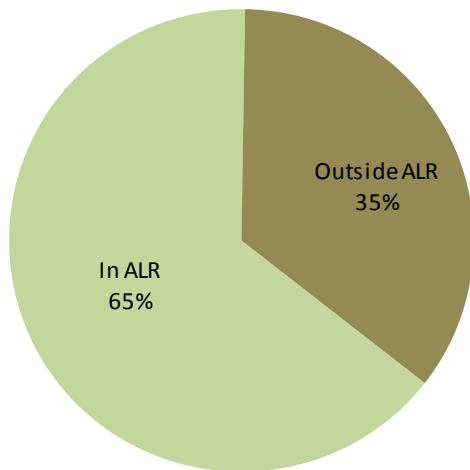


Figure 28 shows that 35% of the farmed land cover in Green Lake occurs outside of the ALR. The farmed land cover outside the ALR accounts for 478 ha of cultivated crops and farm infrastructure.

Table 12. Crops outside the ALR

Cultivated Crops	Outside ALR (ha)
Pasture	245
Forage	73
Forage & pasture	137
TOTAL	456

Table 12 shows that 456 ha of pasture, forage, and forage & pasture were identified outside of the ALR.

Table 13. Livestock activities outside the ALR

Livestock group	Scale of activity outside the ALR				Total activities
	Very small scale	Small scale	Medium scale	Large scale	
Equine	-	21	1	-	22
Poultry	6	-	-	-	6
Beef	1	1	2	-	4
Unknown livestock	1	-	-	-	1
Sheep / goat	1	-	-	-	1
Llama / alpaca	-	1	-	-	1
TOTAL	9	23	3	-	35

Table 13 shows the number of livestock activities outside of the ALR.

Of the 35 identified livestock activities, 9 are "very small" or backyard scale. The remainder are primarily "small" scale equine activities with 2 – 25 animals.

Appendix A – Glossary

Actively farmed – Land cover considered **Farmed** but excludes unused / unmaintained field crops, and unmaintained greenhouses. Does not include natural pasture or rangeland.

Agricultural Land Reserve (ALR) – A provincial zone in which agriculture is recognized as the priority use. Farming is encouraged and non-agricultural uses are controlled.

Animal Unit Equivalent – A standard measure used to compare different livestock types. One animal unit equivalent is approximately equal to one adult cow or horse.

Anthropogenic – The term *anthropogenic* describes an effect or object resulting from human activity. In this report, the term anthropogenic refers to land cover originating and maintained by human actions but excludes farmed land cover; cultivated field crops, farm infrastructure, and crop cover structures.

Anthropogenic – Built up - Other – Lands covered by various unused or unmaintained built objects (structures) and associated yards that are not directly used for farming.

Anthropogenic – Managed vegetation – Lands seeded or planted for landscaping, dust or soil control but not cultivated for harvest or pasture. Includes parklands, golf courses, landscaping, lawns, vegetated enclosures, remediation areas.

Anthropogenic – Non Built or Bare – Human created bare areas such as extraction or disposal sites. Includes piles, pits, fill dumps, dirt parking or storage areas.

Anthropogenic – Residential – Lands covered by built objects (structures) and their associated auxiliary buildings, yards, roads, and parking. Includes single family dwellings, multifamily dwellings, and mobile homes.

Anthropogenic – Residential footprint – Includes the main residence plus its associated yard, driveway, parking and any auxiliary buildings or structures. When two residences are on a property, areas associated to both (such as shared driveways, parking or yard), are assigned to the closest residence.

Anthropogenic – Settlement – Lands covered by built objects (structures) and their associated yards, roads, and parking. Includes institutional, commercial, industrial, sports / recreation, military, non linear utility areas and storage / parking.

Anthropogenic – Transportation – Lands covered by built objects (structures). Includes roads, railways, airports and associated buffers and yards.

Anthropogenic – Utilities – Lands covered by built objects (structures). Includes linear features such as pipelines or transmission lines.

Anthropogenic Waterbodies – Areas covered by water, snow or ice due to human construction. Includes reservoirs, canals, ditches, and artificial lakes - with or without non cultivated vegetation.

Available for farming – Parcels that can be used for agricultural purposes without displacing a current use. Includes all parcels that do not meet the “Unavailable for farming” criteria.

BC Assessment – The Crown corporation which produces annual, uniform property assessments that are used to calculate local and provincial taxation. The database purchased from BC Assessment

contains information about property ownership, land use, and farm classification, which is useful for land use surveys.

Cadastral – The GIS layer containing parcel boundaries, i.e. legal lot lines.

Crop cover structures – Land covered with built objects including permanent enclosed glass or poly structures (**greenhouses**) with or without climate control facilities for growing plants and vegetation under controlled environments, and barns used for growing crops such as mushrooms. Excludes non-permanent structures such as hoop or tunnel covers.

Crown ownership – Crown ownership includes parcels which are owned by provincial or federal governments. Parcel ownership is determined by the Integrated Cadastral Fabric maintained by the Parcel Fabric Section of the BC Government.

Cultivated field crops - Land under cultivation for harvest or pasture. Includes crop land, fallow farmland, unused forage or pasture, un-housed container crops and crops under temporary covers. Excludes natural pasture, rangeland, greenhouses, mushroom barns and other crop houses.

Effective ALR – The **Agricultural Land Reserve** area that is in legally surveyed parcels and under the jurisdiction of the area of interest. The effective ALR is the total ALR excluding ALR on Indian reserves and ALR outside of legally surveyed parcels. Effective ALR can be used to compare land cover categories across different jurisdictions.

Farm classification for tax assessment – Applies to parcels producing the minimum dollar amount to be classified as a farm by BC Assessment. Local governments apply a tax rate to farmland which is usually lower than for other land. To receive and maintain the farm classification, the land must generate annual income from agricultural production.

Farm infrastructure – Land covered by farm related built objects (structures) and their associated yards, roads, parking. Includes barns, storage structures, paddocks, corrals, riding rings, farm equipment storage, and specialized farm buildings such as hatcheries. Excludes greenhouses, mushroom barns and other crop houses.

Farm Unit – An area of land used for a farm operation consisting of one or more contiguous or non-contiguous parcels, that may be owned, rented or leased, which form and are managed as a single farm.

Farmed – Land cover directly contributing to agricultural production (both actively farmed and inactively farmed) and intentionally planted or built. Includes land in **Cultivated field crops**, **Farm infrastructure** and **Crop cover structures** (see individual definitions). Does not include natural pasture or rangeland.

Grazed – Land in **natural pasture or rangeland** that is used for grazing domestic livestock. These areas are considered separate from **Farmed** land cover.

Greenhouses – See **Crop cover structures**.

Homesite (livestock) – The homesite is the primary location of a farm unit or livestock operation where most livestock management occurs. It is the location of the main ranch or main barn of a **farm unit**.

Inactively farmed – Land cover considered “Farmed” but is currently inactive. Includes unused / unmaintained forage and pasture, unmaintained field crops, and unmaintained greenhouses or crop barns. Does not include natural pasture or rangeland.

Intensive livestock – Intensive livestock have specialized structures such as barns, feedlots, or stockyards designed for confined feeding at high stocking densities.

Land use – Dumps & deposits – Parcels with landfills, green waste, or outdoor composting facilities. Also includes parcels with significant fill deposits.

Land use – First Nations – Parcels designated for ceremonial use, food & material harvesting, or cultural landforms. These parcels are outside of federally designated Indian reserves.

Land use – Institutional & community – Parcels with churches, cemeteries, hospitals, medical centers, education facilities, correctional facilities, or government and First Nation administration.

Land use – Land in transition – Parcels with developed land in transition. Includes construction sites, large scale tree removal, and demolished buildings.

Land use – No apparent use – Parcel with no apparent human use; natural areas, long term fallow land, cleared land not in production, abandoned or neglected land, abandoned or unused structures.

Land use – Protected area / park / reserve – Includes provincial parks, other parks, and ecological reserves. Areas may have passive recreation such as hiking, nature viewing, or camping.

Land use – Recreation & leisure – Parcels with intensive recreation (such as zoos, rinks, courts, walking/biking trails), or extensive recreation (such as horseback riding, wilderness camping sites, fishing, hunting, skiing, etc.). Golf course are reported separately.

Land use – Water management – Areas used to actively or inactively manage water. Includes reservoirs, managed wetlands, dykes and land which provides natural flood/erosion protection (land outside dyke).

Land use – Wildlife management – Areas used to actively or inactively manage wildlife. Includes wildlife reserves, breeding areas, fishing areas, and fish ladders/hatcheries.

Limited potential for farming – See **potential for farming**.

Livestock operation scale – See **Scale of livestock operations**.

Natural and Semi-natural – Land cover which has not originated from human activities or is not being maintained by human actions. See descriptions below. Includes regenerating lands, and old farm fields.

Natural and Semi-natural – Grass – Land cover dominated by naturally occurring grasses with some sedges or rushes. May include non-native naturalized species. If greater than 50% cover is grass, the land is categorized as grass.

Natural and Semi-natural – Herbaceous – Land cover dominated by low, non woody plants such as ferns, grasses, horsetails, clovers and dwarf woody plants. If greater than 10% crown cover is trees, the land is categorized as treed.

Natural and Semi-natural – Natural bare areas – Includes bare rock areas, sands and deserts.

Natural and Semi-natural – Natural pasture – Smaller fenced areas usually on private land with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock.

Natural and Semi-natural – Rangeland – Larger areas usually on Crown land with uncultivated (not sown) natural or semi-natural vegetation used for grazing domestic livestock.

Natural and Semi-natural – Shrubs – Land where less than 10% crown cover is native trees and at least 20% crown cover is multi-stemmed woody perennial plants, both evergreen and deciduous.

Natural and Semi-natural – Treed - closed – Land where between 60 and 100% of crown cover is native trees.

Natural and Semi-natural – Treed - open – Land where between 10 and 60% of crown cover is native trees.

Natural and Semi-natural – Vegetated – Land covered by **Natural and Semi-natural** vegetation including, grasses, herbs, shrubs, and trees. **Natural pasture or rangeland** is reported separately.

Natural pasture or rangeland – Land with uncultivated (not sown) natural or semi-natural vegetation used for grazing domestic livestock. This land cover is considered “Used for grazing” and “Not used for farming” although these areas are usually extensions of more intensive farming areas.

Non homesite (livestock) – A location where livestock are present, but related infrastructure is minimal. Non homesites are used for pasturing and are secondary to the farm units primary (homesite) location.

Non intensive livestock – Non intensive livestock have the ability to graze on pasture and often utilize non intensive barns and corrals/paddocks.

Not used for farming – Parcels that do not meet the “Used for farming” criteria.

Not used for farming but available – Parcels that do not meet the “Used for farming” criteria but can be used for agricultural purposes without displacing a current use.

Scale of livestock operations – The scale system used in this report to describe livestock operations includes 4 levels:

- **“Very Small** Approximately 1 cow or horse or bison, 3 hogs, 5 goats or deer, 10 sheep, 50 turkeys, 100 chickens (1 animal unit equivalent)
- **“Small”** LESS THAN 25 cows or horses or bison, 75 hogs, 125 goats or deer, 250 sheep, 1250 turkeys, 2500 chickens (2 - 25 animal unit equivalents)
- **“Medium”** LESS THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5,000 turkeys, 10,000 chickens (25 - 100 animal unit equivalents)
- **“Large”** MORE THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5,000 turkeys, 10,000 chickens (over 100 animal unit equivalents)

Potential for farming – Land without significant topographical, physical or operational constraints to farming such as steep terrain, land under water, or built structures. For example, land with little slope, sufficient soils and exhibiting a natural treed land cover would be considered as having potential for farming. Areas less than 1 acre in size are considered to have limited potential for farming.

Unavailable for farming – “Not used for farming” parcels where future agricultural development is improbable because of a conflicting land use or land cover that utilizes the majority of the parcel area. For example, most residential parcels are considered unavailable for farming if the parcel size is less than 0.4 hectares (approximately 1 acre) since most of the parcel is covered by built structures, pavement and landscaping.

Unmaintained field crops – Land under cultivation for field crops which has not been maintained for several years and probably would not warrant harvest.

Unmaintained forage or pasture – Land under cultivation for forage or pasture which has not been cut or grazed during the current growing season and has not been maintained for several years.

Unused forage or pasture – Land under cultivation for forage or pasture which has not been cut or grazed during the current growing season.

Used for farming – See final page of glossary.

Used for grazing – Parcels “Not used for farming” with a significant portion of their area in natural pasture or rangeland and evidence of active grazing domestic livestock.

Used for farming – Parcels where the majority of the parcel area is farmed OR parcels which exhibit significant intensity of farming are considered “Used for farming”. Specifically, parcels that meet at least one of the following criteria:

- medium or large scale livestock, apiculture or aquaculture operations
- at least 45% parcel area in cultivated field crops (excluding unused forage or pasture)
- at least 50% parcel area built up with farm infrastructure
- at least 25% parcel area built up with crop cover structures (excluding unmaintained structures)
- at least 40% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure and small scale livestock, apiculture or aquaculture operations
- at least 33% parcel area in cultivated field crops (excluding unused forage or pasture) and at least 55% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure
- at least 10% parcel area in crop cover structures (excluding unmaintained structures) and at least 40% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure
- at least 20% parcel area and at least 20 ha in cultivated field crops (excluding unused forage or pasture)
- at least 25% parcel area and at least 10 ha in cultivated field crops (excluding unused forage or pasture)
- at least 30% parcel area and at least 5 ha in cultivated field crops (excluding unused forage or pasture)
- at least 10% parcel area and at least 2 ha built up with crop cover structures (excluding unmaintained structures)
- at least 20% parcel area and at least 1 ha built up with crop cover structures (excluding unmaintained structures)