Provincial Agricultural Land Commission - Applicant Submission

Application ID:	101865
Application Type:	Placement of Fill within the ALR
Status:	Submitted to L/FNG
Name:	Bylands Garden Center Ltd. et al.
Local/First Nation Government:	City of Kelowna

1. Parcel(s) Under Application

Parcel #1

Parcel Type	Fee Simple
Legal Description	BLOCK 57 DISTRICT LOT 131 OSOYOOS DIVISION YALE DISTRICT PLAN 186 EXCEPT PARCELS C AND D PLAN B1813 AND PLAN KAP78678
Approx. Map Area	4.95 ha
PID	012-637-858
Purchase Date	Jun 23, 2020
Farm Classification	Yes
Civic Address	1629 KLO Road Kelowna BC
Certificate Of Title	STC - Western Global - 012-637-858 (1).pdf

Land Owner(s)	Organization	Phone	Email	Corporate Summary
Maria Byland	Bylands Garden Center Ltd.	2508706635	maria@bylands.com	corporate summary - Bylands Garden Center Ltd (1).pdf

Sassan Filsoof	Western Global Enterprises	2505405911	sfilsoof@gmail.com	corporate summary - Western Global Enterprises (1).pdf

2. Other Owned Parcels

Do any of the land owners added previously own or lease other parcels that might inform this application process?	No

3. Primary Contact

Type	Third-Party Agent
First Name	Bruce
Last Name	McTavish
Organization (If Applicable)	McTavish Resource and Management
Phone	6042402481
Email	bruce@mctavishconsultants.ca

4. Government

Local or First Nation Government:	City of Kelowna

5. Land Use

Land Use of Parcel(s) under Application

Describe all agriculture that currently takes place on the parcel(s).	Nursery, greenhouse, forage, tree farm, cut flower farm and retail nursery centre

ATTACHMENT A
This forms part of application
A24-0012
City of Kelowna
DEVELOPMENT PLANNING
Planner Initials CD

Describe all agricultural improvements made to the parcel(s).	Greenhouse structures, gravel all weather roads, gravel parking area and cross fencing
Describe all other uses that currently take place on the parcel(s).	small residence

Land Use of Adjacent Parcels

	Main Land Use Type	Specific Activity
North	Residential	Townhouses and 1 home with unused pasture
East	Residential	Single Family
South	Agricultural / Farm	Pasture
West	Residential	Single Family

6. Proposal

Has the ALC previously received an application or Notice of Intent for this proposal?	Yes
Application or NOI ID	NOI ID: 101449
What is the purpose of the proposal?	Placement of fill for container nursery over wintering and seasonal parking for retail nursery outlet. Bylands nursery required a well drained site for container production and seasonal parking for the retail nursery. Note that the gravel has been placed.
Placement of Fill Project Duration	Fill Already Placed

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	Fill to be Placed
Volume	0 m^3
Area	0 m^2
Maximum Depth	0 m
Average Depth	0 m

	Fill already Placed
Volume	745 m^3
Area	2485 m^2
Maximum Depth	0.4 m
Average Depth	0.3 m

Describe the type of soil proposed to be removed.	Clean crushed gravel from local Kelowna gravel supplier.
What alternative measures have you considered or attempted before proposing to place fill?	The area of fill placement has historically been subject to flooding and had been previously disturbed by previous landowners. The increase in elevation with crush gravel is needed for container growing and for seasonal parking.
What steps will be taken to reduce impacts to surrounding agricultural land?	Buffer area between the gravel fill area and crop production areas to the south are already in place. KLO road is adjacent to the fill area to the north and the garden center is located to the west.
Proposal Map / Site Plan	Site overview (1).pdf
Cross Sections	Bylands fill area .png
Reclamation Plan	MRMC_BLN-02_Agrologist_Report_A.1 jm (1).pdf

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7. Optional Documents

Type	Description	File Name

McTAVISH
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LEGEND

- Site boundaries
- Soil pits
- Test pits
- Observation points
- BC Agricultural Capability Mapping

Site land uses

- Garden centre
- Forage field
- Tree nursery

ATTACHMENT B
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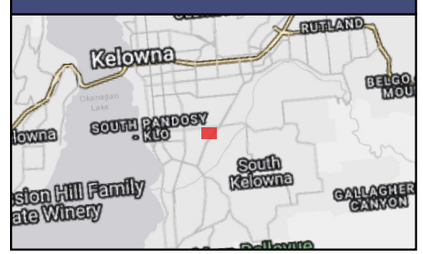
LOCATION OVERVIEW



N

0 0.05 0.1 km

Scale: 1:2000
Spatial Reference: NAD83 / BC Albers

Project ID: BLN-02
Project Description: Bylands Garden Centre
Created By: F.L.
Date: 2024-06-12

Site Overview

McTAVISH
RESOURCE & MANAGEMENT
CONSULTANTS LTD.

Agrologist Report 1629 KLO Road Kelowna, BC

Prepared for: Bylands Nursery Ltd.

REV 0.4

June 2024

Document Details	.
Document title	McTavish Agricultural Capability Report 1629 K.L.O Road Kelowna, BC
Document subtitle	Prepared for: Bylands Nurseries
Date	June 2024
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Document History

Version	Date	Author	Comments
0.1	29 May 2024	Franco Lopez Campomanes	Initial draft
0.2	29 June 2024	Trish Hanuszak	Draft 2
0.3	30 June 2024	Trish Hanuszak	Issue for Review (Internal)
0.4	01 July 2024	Bruce McTavish	Reviewed
A.1	01 July 2024	Trish Hanuszak	Issued for Client Review

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1. INTRODUCTION

McTavish Resource & Management Consultants Ltd. (McTavish) was retained by Bylands (the "Client") to conduct an agricultural assessment of 1629 KLO Road, Kelowna, BC (the "Site"). The purpose of the assessment was collect information on the existing conditions of the Site to provide supporting information for a notice of intent (NOI) to the Agricultural Land Commission (ALC) for the importation of gravel on to the Site.

The Client imported gravel on to the Site between November 2023 and March 2024 to support the expansion of the container nursery winter plant storage, improve the trafficability around the farm buildings and to provide an all-season parking area for the plant retail nursery business operating on 1.4 hectares of the 7.28-hectare Site (**Figure 1**, **Figure 2**, and **Figure 3**) .

The Client has received a notice from the local municipal bylaw office in Kelowna, BC, indicating that they are in violation of Section 20.3(c) of the Agricultural Land Commission Act by not applying via the NOI process for fill prior to importing the gravel. The Client has enlisted the professional support of McTavish to evaluate the extent and purpose of the imported gravel, conduct an agricultural capability assessment of the Site, and to provide support for the NOI process. The Client is seeking to be in compliance with the local municipal bylaw and the ALC regulations.

In 2023 Bylands applied for a non-farm use via the ALC portal for permission to sell soil and bulk products. No decision has been received on this application and it is McTavish's understanding that the City of Kelowna is planning to review the NOI for fill (gravel) and the application for the non-farm use at the same time. The previous retail nursery operators (Better Earth Garden Centre) had a temporary non-farm use for this area for a 3-year period based on an ALC decision of February 24, 2016 (ALC File 54508).

The McTavish project for Bylands involved a desktop review to provide context to historic and on-going land use, review of communications between the Client and the ALC and local bylaw office, a field assessment, and collection of soil samples and photographic images.

This report summarizes the methodology, desktop and field assessments, proposed land use, laboratory analysis, agricultural capability revisions, crop suitability comments, gravel depth, extent, and gravel volume placed by the Client.

Figure 1. Aerial image captured June 2024 facing northeast of gravel parking area and all-season roads for farm vehicles.

Figure 2. Aerial image captured June 2024 facing north of gravel installed on top of previous parking area and landscaping fabric to support container nursery production and winter plant storage.

Figure 3. Aerial image captured June 2024 of the 1.4-hectare plant retail nursery operating on the 7.28-hectare Site.

1.1 Site Overview

The Site is located within the BC Agricultural Land Reserve (ALR) and is therefore subject to the *Agricultural Land Commission Act* (2002) and its associated regulations. The specific characteristics of the Site are described in **Table 1-1.** An overview map of the Site and surrounding areas is provided in **Appendix I**.

Table 1-1. Site characteristics and associated land use

Address	PID	Zoning	Current Land Use	Area (ha)
1629 & 1649 KLO Rd Kelowna, BC	012-637-858; 012-637-874; 012-637-882	A1 – Agricultural	Nursery and greenhouse production	1.4
			Alfalfa hay production	3.6
			Outdoor cut flower production	2.0
			Total Area	**7.28**

1.2 Bylands Nurseries KLO Location Overview

1.2.1 Location Rationale

The following business location rationale was provided by the Client:

> Bylands is one of the largest wholesale nurseries in Western Canada with a total production area of ~ 450 acres, 143 employees and revenue of $27 million per year. The nursery produces ornamental plants that are sold across Canada and the United States. Bylands also has a retail outlet in West Kelowna that has been in existence since the early 1950's. Bylands expanded to the Kelowna nursery and greenhouse facility at KLO to grow and sell farm products to the local community. For years, Kelowna customers have been asking Bylands to expand to Kelowna to reduce travel to the West Kelowna location which often involves heavy and restricting traffic over the Okanagan Lake Bridge. Opening a retail location in Kelowna also allows more of Bylands-grown products to remain in the Okanagan, versus being shipped to Alberta and beyond.
>
> Byland expansion to Kelowna with a new nursery and retail location allows for the local community in Kelowna to have greater access to locally grown trees, shrubs, flowers, fruit and vegetable plants to support their own gardening needs. Prior to this location opening consumers had few sources to purchase locally grown plants in Kelowna's urban center.

1.2.2 Products and Services

The intent of the KLO locations was initially for Bylands to sell 100% of their own nursery and greenhouse products on Site. However, a business analysis conducted by the Client indicated that the local consumers were interested in enhancement products for their backyard gardening and food production needs, this includes the ability to purchase soil/compost for their gardens. Bylands applied in 2023 for a non-farm use for selling soil and bulk supplies from this Site.

Bylands is also supplying landscape contractors with plants which will be sold wholesale (discounted from the retail value). This is not considered retail sales and it is a normal farm practice for wholesale nursery and greenhouse growers to sell their products wholesale from their production operations.

1.2.2.1 Farm Production and Sales Summary

- All plant materials on Site are 100% grown by Bylands wholesale operation, imported and grown on by Bylands Nursery or grown directly at the retail outlet.
- 100% of bulk materials sold on Site including compost, soil, wood mulch, etc., are locally sourced from Kelowna, West Kelowna, or Penticton,
- Less than 15% of the products sold on Site are gardening supplies including fertilizers, seeds, containers, etc.,
- farm products (cut flowers) produced on the 2-hectare outdoor cut flower farm (operated by Casa Verde) will be sold on Site from the Bylands farm outlet garden center and wholesale to larger commercial buyers, and
- alfalfa produced on the 3.6-hectare fields will be sold from the property to local cattle producers.

1.2.3 Site History

Prior to Bylands securing the 1629 KLO Road location in Kelowna in August 2023, the land and buildings on Site were previously used as a garden center for 10 + years under the business Better Earth Garden & Tropicals. The business sold bulk soil, compost, landscaping rocks, indoor and outdoor plants, hanging baskets, trees, shrubs and other perennials. The bulk materials yard was originally located on the west side of the property and in 2013 was moved to the east side of the property adjacent to KLO road. This move facilitated more greenhouse container production and storage buildings on the west side of the property to be build and for the bulk yard to be expanded. Customer parking was located on the northwest corner adjacent to the KLO road for the lifetime of the business.

1.2.4 Changes to the Site by Bylands

Bylands secured the Site in August 2023. Between October 2023 and March 2024 Bylands imported gravel on to the Site and enhanced the container production and retail space expanding the area from 0.17 hectares in size to 0.4 hectares in size. Bylands converted the old parking area to a container production and container plant sales area and moved the parking area to the former bulk materials yard located on the east side of the Site. Bylands removed up to 20 cm of surface soil material from the bulk area and stockpiled it on the eastern property boundary and spread gravel for a level well draining parking area. The bulk yard was moved and placed behind the parking area (**Figure 4**).

The newly graveled area has two purposes. During the retail outlet operation (March to October) it is used for customer parking. From November to the beginning of March this area is used for wholesale nursery production. The primary use in these months is to provide additional space for the overwintering of hardy plants such as Junipers that are being produced at multiple other Bylands wholesale nursery locations. The area directly behind the soil bulk bins (**Figure 5**) will be converted into pot in pot nursery production in 2025.

Figure 4. Aerial imagery captured June 2024 facing south towards bulk materials area and alfalfa fields.

1.2.5 Site Disturbance Summary

The changes made to the Site by Bylands did not change the original disturbance footprint of the former garden center operating at that location for 10+ years. Changes to the Site are primarily from spreading gravel to provide a surface for higher trafficability for farm vehicles, seasonal parking area for customers, and a well draining surface for both container production and garden center outdoor potted containers.

2. METHODOLOGY

To evaluate the extent and purpose of the imported gravel, determine agricultural capability and document the existing conditions on the Site, McTavish conducted both field and desktop assessments, including the:

- review of elevations, topography, and drainage from available mapping;
- review of historical land uses;
- review of published soils and agricultural capability;
- review of surrounding land use and agricultural activities;
- determination of the soil types/series and depths present on the Site through a detailed soil survey;
- collection of aggregate soil samples for chemical and physical analysis; and
- gathering of information related to farming practices and nursery operations and sales.

The Project field sampling and interpretation adhered to BC Agricultural Land Commission (ALC) Criteria for Agricultural Capability Assessments Policy P-10 (BC ALC 2024).

2.1 Desktop Assessment

The following available information sources were reviewed to characterize existing conditions and to assess agricultural capability of the Site:

- Aerial imagery (Google Earth 2024; City of Kelowna 2024) – displays land use changes over time including urban development, changes in rural land use, and disturbances to parcels including addition of buildings, and soil disturbances.
- British Columbia Biogeoclimatic Ecosystem Classification (BEC) Zones (BC MOF 2023) – provides information on vegetation, topography, soils, moisture, and temperature, and classifies areas into ecoregions that share a broadly homogenous macroclimate.
- BC Soil Information Finder Tool (SIFT) (Province of BC 2018) – provides information on mapped soils, including soil classification, soil type (i.e., organic, mineral), parent material, land formations, slope, and soil profile. SIFT data is based on detailed soil surveys that occurred in the 1950s to 1970s. As land use has changed significantly since these reports were published, many soils have been modified and no longer belong to their original groups. A summary of soils present on the Site is provided in **Appendix II.**
- Agricultural Capability Mapping and Classifications (Province of BC 2018) – provides information on the capability of land for a range of soil bound agricultural purposes. The classification system rates land on its capability as well as providing an indication of the management constraints. Under the system, land is ranked as Class 1 to 7, where Class 1 is best suited for agriculture and Class 7 is non-arable (Kenk and Cotic 1983). For organic soils (not including peaty phases of mineral soils), the land capability classes are designated as Class O1 to O7. Various subclasses describe the factors that limit agriculture. Detailed descriptions of agricultural capability classes and subclasses present on the Site are provided in **Appendix II.**
- Climate and moisture data (Government of Canada 2022) – used in a version of the Priestly-Taylor equation to calculate potential evapotranspiration (PET) on the Site. PET indicates the potential for precipitation and weather conditions to limit agricultural capability and is used to determine the Climate Moisture Deficit (CMD) and the Soil Moisture Deficiency (SMD). The analysis followed the methods described in *Land Capability Classification for Agriculture in British Columbia* (Kenk and Cotic 1983).
- Client correspondence for land use and Site history
- Review of drone pictures of the Site provided by the Client
- Review of ALC and local municipal bylaw communications with the Client

The desktop review provided guidance for the placement of the detailed soil pit investigation sites that would allow for pits to be installed based on mapped soil polygons and Site history rather than placement driven by property boundaries alone.

2.2 Field Assessment

The field assessment was conducted on June 4th, 2024, by Justin McTavish, PAg and Trish Hanuszak, PAg.

The assessment comprised of:

- Recording observations of conditions on the Site that may promote or limit agriculture (e.g., existing farm infrastructure, environmental conditions, drainage, topography, debris content). Topography was assessed based on the definitions provided by Luttmerding (1981).
- Conducting a detailed soil survey following the requirements of the ALC Policy P-10 (BC ALC 2017). ALC Policy P-10 requires that the soil survey meet the Survey Intensity Level 1 (SIL1), as outlined in the *Soil Inventory Methods for British Columbia* (Resources Inventory Committee, 1995). SIL1 requires one detailed soil pit per 1 to 5 ha.

- Evaluating extent and use of imported gravel

A total of 4 detailed soil pits were installed across the Site on the active agricultural parcels and 4 test holes were installed in the gravel parking lot to determine gravel depth, volume and soils below. The detailed soil pits ensured assessment of the mapped soil polygon that occur on the Site. Each soil pit was hand dug to the C horizon, or until shovel refusal. The detailed soil survey included the documentation of soil characteristics based on *Soils Illustrated – Field Descriptions, 1st Edition* (Watson 2007).

2.3 Soil Laboratory analysis

Soil samples were collected from the topsoil (A) and subsurface (B) horizons of each soil pit during the field assessment. When pits had similar soil characteristics and land management practices, the individual samples were bulked into a single composite sample comprising soil from the same horizon (i.e., A or B) from up to four pits. Pits that did not share similar characteristics were sampled individually.

Soil samples were analyzed to determine soil physical and chemical properties that may promote or limit agriculture. The samples were analyzed at Element Materials Testing Laboratory accredited by the Standards Council of Canada (SCC) to ISO17025.

Topsoil samples were analyzed to determine particle-size analysis (PSA), soil macro[1]- and micro[2]- nutrient content, pH, electrical conductivity (EC), base saturation (BS), organic matter (OM) content, and cation exchange capacity (CEC). Subsurface soil samples were analyzed to determine particle-size analysis (PSA), soil nitrogen (N), soil sulfur (S), pH, and electrical conductivity (EC).

[1] Plant macronutrients are essential nutrients required in relatively large amounts and include nitrogen (N), potassium (K), calcium (Ca), Magnesium (Mg), phosphorus (P), and sulfur (S).

[2] Plant micronutrients are essential nutrients used in smaller amounts (when compared to macronutrients) and include chlorine (Cl), iron (Fe), boron (B), manganese (Mn), zinc (Zn), copper (Cu), molybdenum (Mo), and nickel (Ni). However, Mo and Ni were excluded from laboratory analysis.

3. DESKTOP ASSESSMENT RESULTS

The following provides the results of the desktop assessment.

3.1 Site Location and Historical Use

Located in south Kelowna, approximately 2.5 km west of the north of the Okanagan Lake, the Site is bordered by KLO Road to the north, residential properties to the east and west, and a tree nursery to the south (**Appendix I**). The Site has farm roads connecting all parcels with three roads access/egress points: KLO road, Benvoulin Road, and St Amand Road. The Site has a surface drainage channel that runs along Benvoulin Road.

Adjacent land use to the Site includes agricultural properties to the north and south ranging in size from 1.3 to 2.5 ha and residential properties to the east and west. The agricultural production in the surrounding area is predominantly forage/hay and tree nurseries.

Available satellite imagery from Google Earth and Kelowna City mapping for the period between 2000 – 2024 was retrieved to assess historic lands use. Historic satellite imagery indicates that most of the Site has been in agricultural production (i.e., forage and tree production) since at least 2000. Satellite imagery between 2000-2009 indicate that most of the Site was under tree production with exception of the north of the Site which had store buildings and outdoor storage facilities encompassing approximately 0.3 ha. Imagery between 2009-2013 indicates the expansion of a garden centre area from approximately 0.3 to 1.3 ha which included the removal and relocation of topsoil to the southern field and the addition of fill material on all garden centre areas. Imagery from 2013-2017 indicates the transition from tree to forage production across most of the Site which included land regrading after the removal of fill and addition of topsoil as noted in the ALC Resolution #67/2015 (ALC File 54508).

3.2 Climate

Biogeoclimatic Ecosystem Classification (BEC) mapping provides an indication of the overall anticipated moisture and temperature conditions. The Site is within the Ponderosa Pine, Very Dry Hot (PPhx1) BEC zone (MOF 2023). This BEC zone extends along elevations ranging between 400-1000 meters in the Okanagan and Similkameen valley bottoms. The PPhx1 zone is characterized by very dry conditions with mild winters, hot springs and summers, and very hot autumns (Ryan et al. 2022).

The Site is located approximately 2.2 km southeast of the Kelowna PC Burnetts Nursery Climate station (Climate ID 1123992). Climate Normals from 1981 to 2003 for this station indicate that that the climate of the Site is characteristic of the PPhx1 BEC zone (Government of Canada 2022). The station data indicates mean daily temperature in December of -1.1°C and mean daily temperature in August of 20.4°C. The mean annual precipitation is 344.5 mm, including a mean annual snowfall of 63.5 cm. There were on average (and with 90% probability) 187 frost-free days per year with the first fall frost falling on average on October 24, and the last spring frost on April 15. There were on average 2261.4 growing degree days above 5°C and 1236.3 growing degree days above 10°C.

A climatic moisture deficit exists for the study area. Modeled estimates of potential evapotranspiration (PET) indicate that the Site is characterized by a soil moisture deficit from March to October when the mean monthly precipitation is less than the estimated PET (Government of Canada 2022; Kenk and Cotic 1983). According to the Climatic Capability Classification for Agriculture in British Columbia (BC MOE 1981), the Site has a Climate Capability Class of 7A due to the presence of a climatic moisture deficit (CMD) of 534 mm and a soil moisture deficit (SMD) of 429-474 mm in the upper 50 cm of soil during the growing season. The 7A classification indicates that the site is climatically limited by a moisture deficit that can be improved to Class 1 (no limitations) by installing irrigation.

3.3 Published Soil Series

One soil polygon from two soil series is documented to occur on the Site (**Table 3.3-1**; Province of BC 2018). The soil series on the Site occur in a complex (i.e., multiple soil series per polygon) consisting of mineral soils developed from fluvial deposits (Wittneben 1986).

Descriptions of the mapped soil series are provided in **Appendix II.** An overview map indicating the published soil series is provided in **Appendix III.**

Table 3.3-1. Summary of Published Soil Series Polygons on the Site.

Soil Series Polygon	Mapped Soil Series 1	Soil Series 1 Classification	%	Mapped Soil Series 2	Soil Series 2 Classification	%	Area (ha)
1	Guisachan	Orthic Humic Gleysol	70	Tanaka	Rego Humic Gleysol	30	7.32

Note: Soil mapping data is from BC SIFT (Province of BC 2018).

3.4 Published Agricultural Capability

One agricultural capability polygon with two capability subclasses is documented to occur on the Site (**Table 3.4-1**; Province of BC 2018). The published unimproved agricultural capability of the Site ranges from Class 4 to Class 5 with the limitations due to excess water within the soil profile (W). The published improved rating ranges from Class 2 to Class 3 with limitations due to excess water (W) and fertility (F).

Detailed descriptions of all agricultural capability subclasses are provided in **Appendix II.** An overview map delineating the published agricultural capability polygons that occur across the Site is provided in **Appendix III.**

Table 3.4-1. Summary of Published Agricultural Capability Polygons on the Site.

Ag. Cap. Polygon	Mapped Soil Series	Slope Class	Mapped Agricultural Capability	Improvable Agricultural Capability	Area (ha)
1	Guisachan (70%) / Tanaka (30%)	Nearly level to very gently sloping (aB)	^{7}4W ^{3}5W	^{7}2W ^{3}3WF	7.32

Note: Superscript numbers represent proportion of polygon out of 10. Published ratings are from BC SIFT (Province of BC 2018).

3.5 Topography

Available topographic mapping indicates that topography on the Site varies from 349 – 352 m above sea level (masl; Google Earth, 2024). The highest point on the Site is in southwestern side adjacent to a low depression in the alfalfa fields. In general, the topography is nearly level with an elevation of 351 masl and only minor i.e., <1 or 2 m changes across the Site.

4. FIELD ASSESSMENT RESULTS

4.1 Site Observations

The Site assessment verified the importation of gravel as observed on recent Google Earth Imagery and drone pictures, the new access/egress location for the plant nursery on the east side of the buildings, and the expansion of the container nursery/retail plant sale area of the Site as described in the desktop review. The Site is divided into 3 land use sections with cross fencing running east-west. The section closest to KLO Road (Section 1) consisted of the container nursery (retail and production), bulk materials yard, garden outlet retail center, a residential dwelling, storage building, and a section of alfalfa production. The middle section (Section 2) was entirely alfalfa production, and the southern section (Section 3) is a flower farm (**Figure 5**).

Figure 5 Aerial imagery captured June 2024 facing south towards alfalfa fields and flower farm on the Site.

4.1.1 Section 1 Observations – Container Nursery and Retail Nursery Store

The onsite observations of gravel extent and recent land use aligned with the desktop assessment and communications with the Client. A vegetated soil stockpile was observed along the northeast boundary and after communication with the Client it was determined that the stockpile was surface material / soil salvaged from the parking area prior to the gravel being placed. The Client was under the impression that the 20 cm depth of soil they removed was the topsoil for that area. The four investigation pits installed in a north-south transect across the gravel parking lot indicated that 20-30 cm of topsoil still remains underneath the gravel (**Figure 6**). The gravel was deepest close to the road (~30 cm) and tapered in depth towards to south where the bulk materials yard is located. The Client representative onsite indicated the gravel was placed in that manner to level out the parking area.

Gravel placed around the greenhouses and storage building was generally placed on pre-existing landscape fabric and asphalt near the original parking lot entrance. The imported gravel in these areas is being used to improve the trafficability of the surface for farm equipment, retail nursery foot traffic, and to improve drainage on the Site for container nursery section of the operation.

A detailed soil pit installed in the alfalfa field behind the equipment storage shed and bulk materials yard s indicated a recent land use as a horse barn. This assumption was confirmed with Google Earth Imagery dated April 2022.

Figure 6. Depth of crush gravel present on one portion of the gravel parking area

4.1.2 Section 2 Observations – Alfalfa Field

This section of the Site is in alfalfa production with a fence on the north side of the. Irrigation valves were observed near the center of the section along the fence line. The surface of the soil indicated a recent (this year) application of composted manure (chicken). Three detailed soil pits were installed in this section. The operator of the flower farm indicated an area near the western parcel boundary to investigate as they mentioned the soil was an anomaly. Upon inspection McTavish observed imported coarse fragments and imported soil which indicate that stockpile had been previously placed there. (**Figure 7**)**.** This area was identified by the ALC decision for a temporary non-farm use in 2016. The ALC noted that "The Agent removed 1944 m^3 of material left on the properties by previous tenants. They are currently rehabilitating the land to return it to growing alfalfa"[3]. Google Earth Imagery for the Site dated May 2012 indicates use as a stockpile area for bulk materials. A stockpile of mixed debris (coarse fragments, soil and garbage) remains on the southeast corner of this section.

[3] ALC decision February 24, 2016. Resolution #67/2015 ALC File 54508

Figure 7. Imported coarse fragments observed in a previously identified disturbance area near the center of the Site.

4.1.3 Section 3 Observations - Flower Farm

This section of the Site was not fully investigated due to different operators and operations for the Site. The flower farm was in full production at the time of the visit and no soil pits were installed.

Site photographs from the field assessment are provided in **Appendix IV.**

4.2 Imported Gravel Observations

Gravel was imported in two locations within Section 1. The areas within the retail plant nursery and greenhouses and the area used for seasonal parking and winter container plant production. The gravel placed in the area within the retail and production facility was placed on top of existing gravel, asphalt, and landscaping fabric. McTavish believes the volume placed in these areas is within the allowable limit for maintaining an existing farm road, based on the total annual volume being equal or less than the ratio of 50m^3 to 100m of existing road length.

Based on client communication and review of historical imagery, the area where gravel has been deposited in the current parking area was historically disturbed before the property was leased by Bylands. Evidence of disturbance is visible on satellite imagery starting in 2013 where soil piles and soil storage bins were under construction. From 2013 onwards, the area appears to be heavily trafficked likely by previous garden center equipment and vehicle traffic. The area where crushed gravel was deposited by Bylands (between November 2023 and March 2024) encompasses the previous disturbed footprint and was field verified by McTavish GPS to be approximately 2485m^2 (0.61 acres). Based on an average depth of 30cm, the total estimated amount of gravel deposited in this area is approximately 745m^3.

4.3 Soil Observations

The detailed soil survey comprised the excavation of 4 detailed soil pits across the agriculturally active areas of the Site and 1 detailed soil pit installed in the gravel parking area (see **Appendix III** for soil pit locations). No detailed soil pits were installed on the active cut flower farm section of the Site. Four additional investigation holes were installed in the gravel areas to determine presence and type of soil underneath the gravel and the depth and extent of gravel present. Based on the results of the detailed soil survey the soil pits indicated consistency with the soil complexes mapped across the Site. Each soil pit varied slightly from the last working south on the property. The soil pits generally showed characteristics of

both the Guisachan and Tanaka series within the soil profile. Soil pits in closer proximity to one another had more overlap in characteristics compared to soil pits installed further apart.

Soil pit 1 was installed in the gravel parking area on the north side of the Site. The soil surface was present under 40 cm of crush gravel in this location and the pit indicated a 25 cm mineral topsoil (Ap) was present below the gravel followed by a modified subsoil (Bm). Both horizons had a silty loam texture, were free of coarse fragments, rapidly draining, and had a fine to medium subangular blocky structure.

Soil pit 2 and soil pit 3 were similar exhibiting features of both the disturbed by agriculture versions of the Guisachan and Tanaka soil series. Both soil pits had an Ap horizon deeper than the general mapped soil descriptions indicating deeper tillage and cultivation practices occurring on the Site. Soil pits 2 and 3 were closer to the described Guisachan series with gleying present at 45+ cm in both soil pits. The surface material present at Soil pit 2 indicated former use of the area for a horse stall due to the aged manure and bedding present. Both soil pits had soil horizons ranging from silty loam at the surface to sandy loam to sand with depth, both free of coarse fragments, imperfectly drained, fine to medium subangular blocky, and had mottles that were coarse, few and distinct present at depths around 45 cm.

Soil pits 4 and 5 were similar to soil pits 2 and 3 in the following characteristics: each had a deep Ap horizon (~30 cm) and were imperfectly drained. Apart from those similarities, the soil textures present in soil pit 4 and 5 differed from the previous soil textures observed. The Ap horizon was consistently identified in field as a silt loam (0-50 cm depth), followed by a sandy loam for the Bm horizon (50-80 cm depth) and a silty clay loam for the Cg horizon (80-90+ cm depth).

Due to mottling and gleying present in the upper 50 cm of pit 2 and 3 and slight gleying observed in the upper 50-80 cm of pit 4 and 5 and the texture classes present across the Site, the drainage class was determined to be imperfect to poor across the study area. At the time of the field assessment, the water table was not present within the soil profile.

Detailed soil descriptions representative of the soil pits excavated on the Site are provided in **Appendix V.**

4.4 Laboratory Results

Soil nutrient analysis results of the topsoil samples indicated optimum to excess levels for most macronutrients apart from nitrogen in the form of nitrate which was observed to be deficient in the composite sampled collected. These results are fairly consisted with what would be expected early in the growing season prior to crop uptake though the higher values indicate nutrient applications may be exceeding crop requirements. Low levels of nitrate in the laboratory results could indicate the primary form of nitrogen present in the soils is ammonium at the time of sampling. Mean subsoil macronutrient values ranged from deficient in nitrate to optimal for sulfate.

Organic matter content (%) in the topsoil was 2.2% and the pH present at both depths ranged from 8.2 - 8.6 indicating an alkaline soil that may limit some nutrient availability for certain macronutrients.

All samples measured electrical conductivities of <1 dS/m indicating no salinity issues.

A summary of laboratory results is provided in **Table 4.4-1**. Full laboratory results are provided in **Appendix VI**.

Table 4.4-1. Nutrient Test results of Soils on the Site.

Sample	pH	EC	Total OM	Available			
				N	P	K	S
		dS/m	%	ppm	ppm	ppm	ppm
Aggregate topsoil of Pit 2-5 (0-30cm)	8.2	0.48^{M}	2.2^{A}	7^{VL}	110^{VH}	989^{VH}	S^{SH}
Aggregate subsoil of Pit 2-5	8.6	0.45^{M}	-	7^{VL}	-	-	17^{SH}

Note: Values are ranked according to general crop requirements: VL = Very Low, L = Low, M = Moderate, A = Adequate, SH = Slightly High, H = High, VH = Very High

5. DISCUSSION

5.1 Agricultural Capability Revisions

The detailed soil survey and site assessment indicated that the agricultural capability of the Site is consistent with the improved capability rating published for the Site. Historical modifications to the surrounding areas including ditching system improvements have potentially led to the reduction in frequency and duration for high water in the soil profile within the growing season. High ground water during the production year was the main influence on the mapped unimproved agricultural capability rating for the Site. Note that only dominant limitations are identified in **Table 5.1-1**. Descriptions of the limitations affecting the soils on the Site are provided in **Appendix II.**

The **W** subclass applies to soils for which excess free water limits their use for agriculture (Kenk and Cotic 1983). Soil conditions observed during the detailed soil survey were consistent with improved capability subclass ratings for the soil complexes present. The published 4W to 5W (unimproved rating) was amended to subclass 2W and 2W based on field observations of mottling and gleying (including noting depth and visual characteristics), absences of water table, and determined drainage classification. Conditions typical of subclass 4W and 5W (i.e., frequent or continuous occurrence of excess water during the growing period making land suitable only for perennial forage crops and/or improved pasture) were not observed.

The **F** subclass (limitations due to soil fertility) describes the soils inherent low natural fertility due to a lack of available nutrients, high acidity or alkalinity, low exchange capacity, high levels of calcium carbonate or presence of toxic compounds which will impact the productivity and agricultural capability of the Site. Due to the high pH observed throughout both soil depths sampled from soil pit 2 – 5, the soil conditions align with the criteria for subclass 2F and 3F which describe soils with minor fertility limitations in the upper 50 cm and or soils that require ongoing additions of fertilizers or other soil amendments to maintain productivity.

Table 5.1-1. Soil Series and Agricultural Capability Ratings on the Site – Based on Field Assessment Results

		Published				Assessed				
Polygon	Soil Pits	Soil Series	Unimproved Capability Rating (CC)	Improved Capability Rating (IC)	Area (ha)	Soil Series	Unimproved Capability Rating (CC)	Improved Capability Rating (IC)	Area (ha)	Capability Rating Revision*
1	2 – 5	Guisachan (70%) Tanaka (30%)	^{7}4W ^{3}5W	^{7}2W ^{3}3WF	7.32	Guisachan (70%) Tanaka (30%)	^{7}2W ^{3}3WF	N/A	7.32	-Change to mapped improved rating

Note: Source of published unimproved and improved ratings area from BC SIFT and superscript numbers represent proportion of polygon out of 10. Published ratings are from BC SIFT (Province of BC 2018).

*Discussion of justification for revisions can be found in Section 5.1.

5.2 Current Land Use & Crop Suitability

The Site is able to support a wide range of crops based on the Class 2 and Class 3 capability ratings determined during the field assessment. The subclass ratings present across the site 2W to 3WF have minor limitations for crop production that management of inputs and installation of subsurface drainage can easily address. The current soil bound agricultural uses on the Site (cut flowers and alfalfa) indicate that the agricultural capability rating is accurate.

General crops suited to conditions on the Site include alfalfa, annual vegetable crops, cereals, corn, forage crops, nursery and Christmas trees, pears, raspberries and strawberries. Apples can be suitable if subsurface drainage is installed (Gough, et al. 1994). However, the naturally high alkaline soils present on the Site may limit production of some crops without further amendment to the Site to lower the pH.

6. SUMMARY

The majority of the Site (5.88 Ha out of the total 7.28 or 81%) is used for soil-based agriculture (alfalfa and cut flowers).

The northern portion of the Site (~1.4 Ha) has historically been used for nursery and greenhouse production and retail sales and bulk sales of soil and other products. Bylands improved the area within the nursery/greenhouse production and retail section of the Site by the top dressing the existing gravel, asphalt and landscape fabric with new gravel. This was done to improve the trafficability of these areas for equipment and foot traffic. McTavish believes that the gravel placed in this area is within the $50m^3/100$ m of road and therefore falls within the allowable limits as described in Information Bulletin 07 Soil or Fill Uses in the ALR (August 11, 2022).

The $2485m^2$ (0.61 acres) area that is being used for seasonal parking for the retail nursery outlet and for container plant overwinter storage does not fall within the ALC allowable limits and a NOI should have been submitted prior to the work commencing. Bylands wish to be in compliance with the City of Kelowna bylaws and the ALC regulations and are therefore submitting a NOI for the 745 m^3 of gravel (fill) that has been placed on the Site.

7. CLOSING

We trust this is the information that you require at this time. Should you have any questions regarding this report please contact the undersigned.

Sincerely,

MCTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.

Per

Trish Hanuszak, P.Ag., M.Sc., B.i.T., EFP PA

Project Agrologist

Bruce McTavish, M.Sc., MBA., P.Ag., R.P.Bio., P.Biol

Senior Project Agrologist | President

REFERENCES

Agricultural Land Commission Act, SBC 2002, c. 36 https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/02036_01

[BC ALC] BC Agricultural Land Commission. 2017. Policy P-10, Criteria for Agricultural Capability Assessments. Amended in February 2024. https://www.alc.gov.bc.ca/assets/alc/assets/legislation-and-regulation/policies/alc_-_policy_p-10_-_criteria_for_agricultural_capability_assessments.pdf (accessed June 2024).

[BC MOE] BC Ministry of Environment. 1981. Climatic Capability Classification for Agriculture in British Columbia. RAB Technical Paper 4. https://www.alc.gov.bc.ca/assets/alc/assets/library/agricultural-capability/climatic_capability_for_agriculture_in_bc_1981.pdf (accessed June 2024).

[BC MOF] BC Ministry of Forests. 2023. BEC Map. https://catalogue.data.gov.bc.ca/dataset/f358a53b-ffde-4830-a325-a5a03ff672c3 (accessed June 2024).

City of Kelowna. (2024). Kelowna Map Viewer. https://maps.kelowna.ca/public/mapviewer/ (accessed June 2024).

Google Earth. 2024. Google Earth Pro Version 7.3.6.9345. https://www.google.com/earth/

Gough, NA., Hughes Games, GA, and Nikkel, DC. 1994. Soil Management Handbook for the Okanagan and Similkameen Valleys. First Edition. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/soil-nutrients/610000-6_soil_mgmt_handbook_okanagan.pdf (accessed June 2024).

Government of Canada. 2022. Canadian Climate Normals 1981-2010. Station Data ID 1123992. https://climate.weather.gc.ca/climate_normals/index_e.html (accessed June 2024).

Kenk, E. and I. Cotic. 1983. Land Capability Classification for Agriculture in British Columbia, MOE Manual 1. BC Ministry of Environment and BC Ministry of Agriculture and Food, Kelowna, BC. https://www.alc.gov.bc.ca/assets/alc/assets/library/agricultural-capability/land_capability_classification_for_agriculture_in_bc_1983.pdf (accessed June 2024).

[PCIC] Pacific Climate Impacts Consortium. 2020. Okanagan-Similkameen – 2020's (2010 -2039) climate change predictions. Plan2Adapt Tool (2020 Update). https://services.pacificclimate.org/plan2adapt/app/ (accessed June 2024).

Province of BC. 2018. British Columbia Soil Information Finder Tool (SIFT). https://www2.gov.bc.ca/gov/content/environment/air-land-water/land/soil/soil-informationfinder. (accessed June 2024).

Resources Inventory Committee. 1995. Soil Inventory Methods for British Columbia. Government of British Columbia.

Ryan, M Ryan, M., D. Lloyd, and K. Iverson. 2022. A field guide to ecosystem classification and identification for the Southern Thompson–Okanagan. Prov. B.C., Victoria, B.C. Land Management Handbook 76.

Watson, K. 2007. Soils Illustrated – Field Descriptions – First Edition. International Remote Sensing Limited, Kamloops British Columbia.

Wittneben, U. 1986. Soils of the Okanagan and Similkameen Valleys (Report No. 52). British Columbia Soil Survey. Victoria, BC.

APPENDIX I. AREA OVERVIEW MAP

McTAVISH
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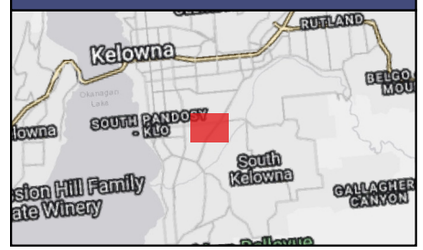
LEGEND

- Site boundaries
- Agricultural Land Reserve (ALR)

ATTACHMENT C
This forms part of application
A24-0012
Planner Initials CD
City of Kelowna
DEVELOPMENT PLANNING

LOCATION OVERVIEW



N

0 0.1 0.2 km

Scale: 1:5000
Spatial Reference: NAD83 / BC Albers

Project ID: BLN-02
Project Description: Bylands Garden Centre
Created By: F.L.
Date: 2024-06-04

GENERAL OVERVIEW MAP

APPENDIX II. DESCRIPTIONS OF SOIL SERIES AND AGRICULTURAL CAPABILITY CLASSES AND SUBCLASSES

Description of Soil Series Present on the Site

Soil series descriptions have been retrieved from Wittneben (1986).

Guisachan soils are classified as *Orthic Humic Gleysol* and have developed in a medium to moderately coarse-textured, stone free veneer, usually between 30 and 100 cm thick, which overlies gravelly, coarse-textured fluvial fan and deltaic deposits. Guisachan soils occur on the upper parts of the gentle undulations in the nearly level to gently sloping landscapes. Surface and subsurface soil textures are either loam, silt loam or sandy loam. Subsoil textures are very gravelly sand or very gravelly loamy sand. Guisachan soils are poorly drained, moderately pervious, and have high water storage capacities and slow surface runoff. The groundwater table is near the surface during winter and spring and gradually recedes by autumn. Guisachan soils, with artificial drainage, are suited to most crops not usually sensitive to occasional high water tables. Almost all areas are cleared and cultivated and uses currently range from vegetable production to hay and pasture. Uncleared areas support willows, black cottonwood, sedges and reeds.

Tanaka soils are classified as *Rego Humic Gleysol* and have developed in the lower aprons of fluvial fans in gravel-free, mostly medium to moderately coarse textured fluvial fan deposits. Tanaka soils are nearly level to gently sloping and are associated with Guisachan, Rumohr and Winslow soils. Surface and subsurface soil textures range from sandy loam to silt loam with occasional silty clay loam. Subsoil textures are sandy loam or gravelly sandy loam. Tanaka soils are poorly to very poorly drained, moderately to slowly pervious, and have moderate to high water holding capacity and slow surface runoff. The water table fluctuates between the surface and 1.5 meters with depressional areas often being subject to flooding. The soils are moderately to strongly calcareous. Tanaka soils are limited for agricultural uses by high water tables. Developed areas are currently used for pasture and hay, turf, some field crops and vegetables. The natural vegetation in uncleared areas consists of black cottonwood, willow, cattail, sedges, water birch and some grasses.

Cameron Lake soils are classified as *Gleyed Regosol* and have developed from coarsely textured fluvial deposits. These soils occur on the nearly level and very gentle sloping lower portion of the Mission Creek fan and have sandy loam or loamy sand textures. At depth gravelly material usually is present. Cameron Lake soils are imperfectly drained and have subsoil mottling due to a fluctuating water table. Cameron Lake soils are suited for most agricultural crops although coarse textures and fluctuating high water tables may be limiting in some areas. Cultivated areas are mostly used for forage or vegetable production. Native vegetation consists of various shrubs, willows, cottonwood, and grasses interspersed with Ponderosa pine and minor amounts of Douglas-fir.

Description of Agricultural Capability Classes and Subclasses present on the Site

In BC, land is rated for its agricultural capability through a classification system known as *The Land Capability Classification for Agriculture in British Columbia* by Kenk and Cotic (1983) . Using this system, land in BC is rated between Class 1 to 7, where Class 1 is land best suited for agriculture and Class 7 is non-arable land (**Table AII-1**). For organic soils (not including peaty phases of mineral soils), the land capability classes are designated as Class O1 to O7. Various subclasses describe the factor(s) that limit agriculture (**Table AII-2**).

The agricultural land capability classification indicates the range of crops that can be grown and/or the management inputs required based on soil and climate parameters. The ratings can be "unimproved" based on the conditions that exist at the time of the survey without any management inputs or "improved" based on the rating after the limitations have been alleviated through improvements.

Table AII-1. Descriptions of BC Land Capability Classes for Agriculture

Class	Description
1	Land has little or no limitations, is level or nearly level, and is easily maintained for a wide range of field crops. Soils are deep, hold moisture well, and can be managed without difficulty.
2	Land has minor limitations that either require good ongoing management practices or may restrict the range of crops (or both). Soils are deep, hold moisture well, and can be managed with little difficulty.
3	Land has limitations that require moderately intensive management practices, or may moderately restrict the range of crops, or both. Limitations may restrict choice of crop, timing and ease of tillage, planting and harvesting, and methods of soil conservation.
4	Land may only be suitable for a few crops, or a wide range of crops with low yield. Risk of crop failure is high. Soil conditions are such that special development and management practices are required. Limitations may restrict choice of crop, timing and ease of tillage, planting and harvesting, and methods of soil conservation.
5	Land has limitations that make it suitable for perennial forage or other specially adapted crops. Crops such as cranberries may be appropriate, or fruit trees or grapes if area is climatically suitable (stoniness and/or topography are not significant limitations to these crops). Productivity of these suited crops may be high. Class 5 lands may be used to cultivate field crops, provided intensive management is employed. If adverse climate is the main limitation, cultivated crops may be grown, however crop failure is expected under average conditions.

Table AII-2. Descriptions of BC Land Capability Subclasses for Agriculture.

Subclass	Description
W Excess Water	The W subclass describes how imperfect or poor drainage due to high water tables, seepage, or runoff may limit or prevent agriculture. On **Class 1** land, excess water is not a limiting factor. **Class 2W** land may have occasional excess water during the growing season and without other contribution limiting factors, is not likely to significantly impact agriculture or the range of crops that can be grown. **Class 3W** has occasional occurrences of excess water during the growing season and the occurrence of excess soil water during the winter months that would adversely affect perennial crops. **Class 4W** has frequent or continues excess water during the growing season and the water level is at the surface most of the winter and into mid spring. This may force late seeding and/or restrict the crop type or production in a moderate way. **Class 5W** has frequent or continuous occurrence of excess water during the growing period making land suitable only for perennial forage crops and/or improved pasture. In this case, water level is at the surface until early summer.
F Fertility	The F subclass describes the soils inherent low natural fertility due to a lack of available nutrients, high acidity or alkalinity, low exchange capacity, high levels of calcium carbonate or presence of toxic compounds which will impact the productivity and agricultural capability of the site. Low inherent fertility is correctable with constant and careful management in the use of fertilizers and soil amendments or is difficult to correct in a feasible way. In **Class 1** land, soil is well supplied with nutrients easily and are continuously available to plants. Class **2F** includes both soils with minor fertility limitations in the upper 50 cm and/or soils with moderate to severe fertility problems below the 50 cm depth. Class 2F is highly responsive to fertilizers and amendments. The low fertility of **Class 3F** soils does not restrict the range of crops, but moderate, ongoing additions of fertilizer and/or other soil amendments are required to maintain productivity.

APPENDIX III. PUBLISHED SOIL SERIES AND AGRICULTURAL CAPABILITY MAPS

McTAVISH
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LEGEND

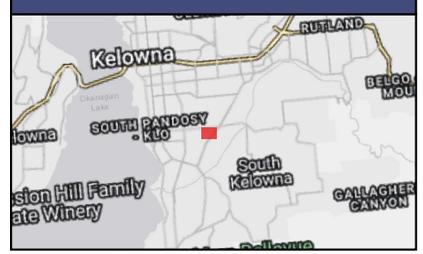
- Site boundaries
- Soil pits
- Test pits
- Observation points
- BC Agricultural Capability Mapping

Site land uses

- Garden centre
- Forage field
- Tree nursery

ATTACHMENT C
This forms part of application
A24-0012
Planner Initials CD
City of Kelowna
DEVELOPMENT PLANNING

LOCATION OVERVIEW



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Scale: 1:2000
Spatial Reference: NAD83 / BC Albers

Project ID: BLN-02
Project Description: Bylands Garden Centre
Created By: F.L.
Date: 2024-06-12

MAPPED AGRICULTURAL CAPABILITY ON THE SITE

McTAVISH
RESOURCE & MANAGEMENT CONSULTANTS LTD.

LEGEND

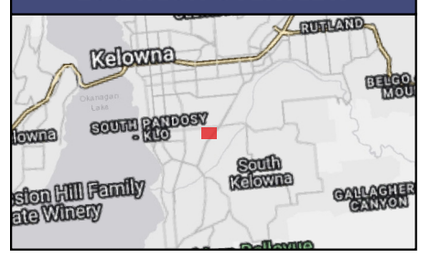
- Site boundaries
- Soil pits
- Test pits
- Observation points
- BC Soil Survey

Site land uses

- Garden centre
- Forage field
- Tree nursery

ATTACHMENT C
This forms part of application
A24-0012
City of Kelowna
DEVELOPMENT PLANNING
Planner Initials CD

LOCATION OVERVIEW



N

0 0.05 0.1 km

Scale: 1:2000
Spatial Reference: NAD83 / BC Albers

Project ID: BLN-02
Project Description: Bylands Garden Centre
Created By: F.L.
Date: 2024-06-12

MAPPED SOIL SERIES ON THE SITE

APPENDIX IV. SOIL PIT DESCRIPTIONS

Soil Pit 1

General Description

Land Use:
Plant retail nursery

Mapped Soil Series:
Guisachan (70%) / Tanaka (30%)

Mapped Soil Classification:
Orthic Humic Gleysol (70%) / Rego Humic Gleysol (30%)

General Observations
Rooting Depth (cm): NA
Water Table Depth (cm): NA
Drainage Class: Rapid
General Comments: 20 - 48 cm of gravel over native soil profile.

Figure 1. Pit 1 representative landscape.

Figure 2. Soil Pit 1 profile.

Horizon	Depth	Coarse Fragments (%) and notes		Texture	Structure – dominant	Consistence	Colour	Mottling (size, abundance, contrast)
?	0 – 25 cm	0%	NA	Sandy loam (SL)	Medium subangular blocky (SBK)	Friable	7.5YR 2.5/1	NA
Bm	25 – 40+ cm	0%	NA	Sandy loam (SL)	Fine subangular blocky (SBK)	Very friable	10YR 3/2	NA

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Completed by: Franco Lopez Campomanes, AAg	Latitude: 49.860682°N	Longitude: 119.461633°W

Soil Pit 2 - 3

General Description

Land Use:
Agricultural – alfalfa

Mapped Soil Series:
Guisachan (70%) / Tanaka (30%)

Mapped Soil Classification:
Orthic Humic Gleysol (70%) / Rego Humic Gleysol (30%)

General Observations
Rooting Depth (cm): NA
Water Table Depth (cm): NA
Drainage Class: NA
General Comments: NA

Figure 1. Pit 2 representative landscape.

Figure 2. Soil Pit 2 profile.

Horizon	Depth	Coarse Fragments (%) and notes		Texture	Structure – dominant	Consistence	Colour	Mottling (size, abundance, contrast)
Ap	0 – 28 cm	0%	NA	Silty loam (SiL)	Medium subangular blocky (SBK)	Slightly firm	7.5YR 2.5/1	NA
Bm	28 – 49 cm	0%	NA	Sandy loam (SL)	Medium SBK breaking into single grain	Friable	10YR 3/2	NA
BCg	48 – 75 cm	0%	NA	Sandy loam (SL)	Fine SBK breaking into single grain	Loose	10YR 5/3	Coarse, few, distinct
Cg	79 – 90+cm	0%	NA	Medium sand (S)	Single grain	Loose	10YR 4/2	NA

Field Baseline Assessment – Soil Sampling	Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Latitude: 49.859857°N	Longitude: 119.462474°W
Completed by: Franco Lopez Campomanes, AAg		

Soil Pit 4 – 5

General Description

Land Use:
Agricultural – alfalfa

Mapped Soil Series:
Guisachan (70%) / Tanaka (30%)

Mapped Soil Classification:
Orthic Humic Gleysol (70%) / Rego Humic Gleysol (30%)

General Observations
Rooting Depth (cm): NA
Water Table Depth (cm): NA
Drainage Class: Imperfect.
General Comments: NA

Figure 1. Pit 4 representative landscape.

Figure 2. Soil Pit 4 profile.

Horizon	Depth	Coarse Fragments (%) and notes		Texture	Structure – dominant	Consistence	Colour	Mottling (size, abundance, contrast)
Ap	0 – 50 cm	0%	NA	Silty loam (SiL)	Medium subangular blocky (SBK)	Hard	10YR 3/1	NA
Bm	50 – 80 cm	0%	NA	Sandy loam (SL)	Single grain	Loose	10YR 3/1	NA
Cg	80 – 90+cm	0%	NA	Silty clay loam (SiCL)	Medium subangular blocky (SBK)	Slightly sticky	10YR 4/1	Few, fine, faint

Field Baseline Assessment – Soil Sampling	Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Completed by: Franco Lopez Campomanes, AAg	Latitude: 49.859294°N
		Longitude: 119.462514°W

APPENDIX V. LABORATORY RESULTS

Element
#104, 19575-55 A Ave.
Surrey, British Columbia
V3S 8P8, Canada

T: +1 (604) 514-3322
F: +1
E: info.vancouver@element.com
W: www.element.com

Farm Soil Analysis

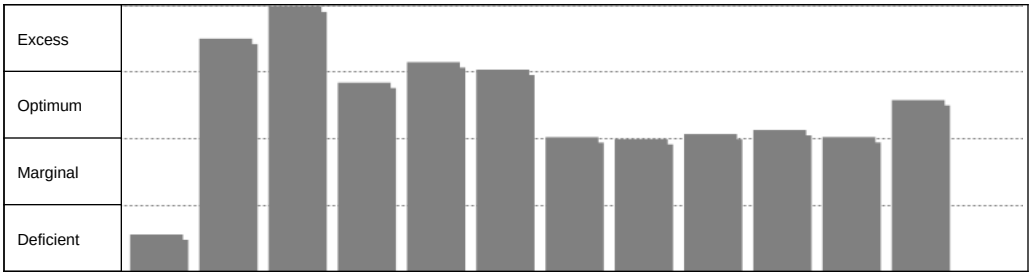
Bill To:	McTavish Resource &	Grower Name:	McTavish	Lot ID:	1738291
Address:		Site ID:		Report Number:	3014464
	203-19292 60 Ave.	Field Name:	BLN-02 TS 0-25	Report Type:	Final Report
	Surrey, BC., Canada	Acres:		Date Received:	Jun 11, 2024
	V3S 3M2	Legal Location:		Date Reported:	Jun 14, 2024
Agreement:	36394	Previous Crop:	Crop not provided	Event Code:	

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Na
0" - 12"	7	110	989	8	2320	380	31.6	0.8	2.3	1.2	3.1	61.2	83
12" - 18"	7			17									

Soil Quality

pH	EC(dS/m)	OM(%)	Lot Ref #
8.2	0.48	2.2	26412
8.6	0.45		26413



Alkaline	*Extreme*	*High*
Neutral	*Very High*	*Normal*
Acidic	*High*	*Low*
Very Acidic	*Good*	*Very Low*

Total lbs/acre	43	444	3956	68
Estimated lbs/acre	45	310	1981	72

Texture *Sandy Loam* Hand Texture *n/a*

Sand 52.0 % Silt 34 % Clay 14 %

Ammonium n/a

BS 100 % CEC 17.6 meq/100 g

Ca 65.8 % Mg 17.8 % Na 2.1 % K 14.4 %

TEC 17.6 meq/100 g

Lime n/a Buffer pH n/a K/Mg Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Alfalfa - New					Crop not provided				
Macro-nutrients	**Yield**	**N**	**P2O5**	**K2O**	**S**	**Yield**	**N**	**P2O5**	**K2O**	**S**
Growing Condition	T/ac	To be added (lbs/acre)					To be added (lbs/acre)			
Excellent	1.5	0	0	0	0					
Average	1.2	0	0	0	0					
Your Goal	0.0									
Removal Rate (Seed/Total)	1.5	0 / 96	0 / 23	0 / 99	0 / 10					
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)	0.0	0.0	0.0	0.0	0.0					

Comments:

ATTACHMENT C
This forms part of application
A24-0012
Planner Initials CD
City of Kelowna
DEVELOPMENT PLANNING

Element uses nutrient extraction and analytical methods specifically developed for western Canadian soils.

The modified Kelowna extractant used to analyze key nutrients in this Farm Soil Analysis report is the standard method used in soil fertility research in western Canada. It is used in developing crop response curves to fertilizer in the prairies. The Element "RECOMMENDATIONS FOR BALANCED CROP NUTRITION" are based on those research data. Element recommendations are accurate but should not replace responsible judgement.

ATTACHMENT D
This forms part of application
A24-0012
Planner Initials CD
City of Kelowna
DEVELOPMENT PLANNING

October 9, 2024

File No: 0280-30
Local Government File No: A24-0012

Corey Davis, Development Engineering Technologist
City of Kelowna
1435 Water Street
Kelowna, BC V1Y 1J4
Via E-mail: planninginfo@kelowna.ca

Dear Corey Davis:

Re: Placement of Fill Application for 1629-1649 KLO Road (PID: 003-270-386; ALC Application ID: 101865)

Thank you for providing B.C. Ministry of Agriculture and Food staff the opportunity to comment on the proposed placement of fill on the Subject Property for the purpose expanding the container growing and parking areas for a nursery within the Agricultural Land Reserve (ALR). Ministry staff offer the following comments:

- Increasing elevation with crushed gravel for nursery container growing and seasonal parking is a common practice that may be considered in the nursery industry when expanding production areas. The advantages are:
  - Improved drainage
  - Accessibility and stability
  - Weed and erosion control.

  Disadvantages may include:
  - Cost
  - Runoff concerns and heat retention (gravel), which may stress plants.
  - Maintenance as the gravel may shift or compact, requiring upkeep.
- While this is a common practice in the sector, it needs to be adapted to specific and operational conditions. The applicants may wish to consider:
  - -Proper grading for drainage and slope for elevated gravel areas to avoid standing water and improve water runoff management
  - Using the appropriate depth of crushed rock (4-6 inches/10-15 cm) to support heavy container loads and vehicles.

    - Using lighter colored crushed rock to reduce heat absorption or shade structures to minimize heat stress on plants.
    - Incorporating retention ponds, buffer strips permeable surface to water runoff and plan for regular maintenance as gravel areas require periodic maintenance to prevent compaction and ensure adequate drainage
- The owners of the Subject Property are also experienced nursery operators with other sites comprising their operation. With all of these point in mind, Ministry staff have no objection to the application proceeding to the Agricultural Land Commission (ALC) for decision.

If you have any questions regarding our comments, please feel free to contact me via phone or email.

Sincerely,

Alison Fox, P.Ag.
Land Use Agrologist
B.C. Ministry of Agriculture and Food
Alison.Fox@gov.bc.ca
(778) 666-0566

Email copy: Chris Zabek, Regional Agrologist, B.C. Ministry of Agriculture and Food
Claire Buchanan, Regional Planner, ALC ALC.Referrals@gov.bc.ca