

A17-0003

PHOTOS

Photo 1. Screening / Composting Operation



Photo 2. Tree Service Operation (Storing Vehicles)



Photo 3. Composting and Screening Operation



Photo 4: Historic Wood Waste



Photo 6: Composting Operation (Foreground) and Tree Service Company (Background)





File: A-17-003

To: City of Kelowna

Comments for consideration regarding application for non-farm use @ 982 Old Vernon Road:

- It's not in the best interest of agriculture to lose potentially productive farm land to non-farm uses. Non-farm uses are considered by ALC to allow for the greatest flexibility for future agricultural use.
- Current state of the property & costs of clean up are acknowledged, however information to support a level of contamination and compaction on the site that would preclude future soil based agriculture are not clear. Soil capability subclasses provide insight into management considerations but don't preclude agricultural production.
- Options for non-soil based agriculture enterprises in the ALR, even if deemed not currently feasible should not be discounted as agriculture production, practices & markets are constantly changing & uses for greenhouse, poultry, swine etc may be potential future uses.
- The parcel is situated & supported as a farming area, productivity of surrounding orchards should be considered.
- Commercial/industrial businesses have the option to locate within other areas; farming depends on being able to access land in the ALR for primary production. Long term access to ALR lands is in the interest of agriculture and food security.
- Temporary/short term non-farm use would provide flexibility to support future agriculture use. Low impact non-farm use would be preferable, that will minimize impacts of further contamination and compaction.
- Non-agricultural uses in the ALR, have potential to create conflict with adjacent agriculture use as practices may not always be compatible.
- Regardless of current agriculture use on adjacent land, consider adequate set-backs & buffers to address noise, dust or odour from future operations on farmed property. If long term non-farm use is permitted, a requirement for planting and maintaining a vegetative buffer on the non-farmed property to mitigate conflict and disturbances which can include industrial farms or intensive agriculture operations. ["Guide to Edge Planning" BC Ministry of Agriculture] GUIDE TO EDGE PLANNING .

Thanks for the opportunity to comment.

Anne Skinner *P.Ag* – Regional Agrologist
BC Ministry of Agriculture, Kelowna
250-861-7272 Email: anne.skinner@gov.bc.ca

Provincial Agricultural Land Commission - Applicant Submission

Application ID: 56157

Application Status: Under LG Review

Applicant: MANRAJ KANDOLA , Jeetender Kandola

Local Government: City of Kelowna

Local Government Date of Receipt: 03/09/2017

ALC Date of Receipt: This application has not been submitted to ALC yet.

Proposal Type: Non-Farm Use

Proposal: We are applying for non farm use as this property historically has been utilized as an industrial sawmill operation. The operations ceased in 2005 and since then many efforts have been attempted to reclaim back to farm land. As per Agrologist report (See attached) it is almost impossible to bring back to viable farm land.

With non-farm uses we could hopefully generate enough income to remediate the land further as there is large amounts of wood/debris to be dealt with. Eventually remove contaminated soil and replace with clean fill.

Mailing Address:

982 OLD VERNON ROAD

KELOWNA , BC

VIX 6T8

Canada

Current Use of Parcels Under Application

1. Quantify and describe in detail all agriculture that currently takes place on the parcel(s).

No agriculture activity.

Previously sawmill operation.

2. Quantify and describe in detail all agricultural improvements made to the parcel(s).

When sawmill operation seized in 2002, wood piles were approximately estimated at 160,000 cubic meters.

We have picked away at the pile of wood debris and have approximately 30,000 cubic meters of wood left over.

To further make land improvements , attached are non farm uses we think may help in remediating the land to somewhat of a agriculture standard.

Biggest hurdle now is how to remove rest of the oversize contaminated wood.

3. Quantify and describe all non-agricultural uses that currently take place on the parcel(s).

Piles of wood debris still on property that needs to be dealt with from seized sawmill operation.

Adjacent Land Uses

North

Land Use Type: Agricultural/Farm

Specify Activity: Residential/Hay Field

East

Land Use Type: Agricultural/Farm

Specify Activity: Residential/Remnant Sawmill

South

Land Use Type: Agricultural/Farm

Specify Activity: Residential/Agritourist Accomodation (RV Park)

West

Land Use Type: Agricultural/Farm

Specify Activity: Residential

Proposal

1. How many hectares are proposed for non-farm use?

4 ha

2. What is the purpose of the proposal?

We are applying for non farm use as this property historically has been utilized as an industrial sawmill operation. The operations ceased in 2005 and since then many efforts have been attempted to reclaim back to farm land. As per Agrologist report (See attached) it is almost impossible to bring back to viable farm land.

With non-farm uses we could hopefully generate enough income to remediate the land further as there is large amounts of wood/debris to be dealt with. Eventually remove contaminated soil and replace with clean fill.

3. Could this proposal be accommodated on lands outside of the ALR? Please justify why the proposal cannot be carried out on lands outside the ALR.

This is a unique property where sawmill operations predated the ALC rules and regulations so it was grandfathered to continue operating as a sawmill operation on ALR land. This orphaned sawmill on ALR land needs to be reclaimed back to somewhat agriculture status. Therefore the reason for asking "non-farm use" is to continue to reclaim farm land.

4. Does the proposal support agriculture in the short or long term? Please explain.

In the long run there may be benefits to agriculture use. This project isn't a small undertaking as we have already invested over a decade in trying to reclaim the land back to agriculture use. Any property heavily utilized for Industrial operation for decades is going to have its challenges. The property wasn't monitored over the years as there are other products than wood dumped on this property.

There are no promises as there will be more challenges as we proceed with a non farm use to help off set some costs to rehabilitate the land. We have asked for a broad range of uses as we don't know which project would work best for this property.

In the last decade we have had to shift gears many times as we had many hurdles to overcome as we get deeper into the wood piles hence why we ask for a broad range of uses for "non-farm use".

Applicant Attachments

- Professional Report - Agrologist Appendices A
- Professional Report - Agrologist Report
- Professional Report - Agrologist Report Appendices B
- Professional Report - Agrologists Report Appendices C
- Professional Report - Agrologist Report Appendices D
- Professional Report - Agrologist Report Appendices E
- Professional Report - Agrologist Report Addendum
- Proposal Sketch - 56157
- Certificate of Title - 012-206-687

ALC Attachments

None.

Decisions

None.

Uses we are requesting to be approved for Non Farm Uses - 982 Old Vernon Road, Kelowna BC:

We are asking for many general uses as we will try to advertise and see which business would best fit in contributing towards reclaiming this property.

General Storage: RV's, Boat, Vehicles, Storage Containers, Heavy Equipment

**Land Capability Assessment
982 Old Vernon Rd., Kelowna, BC
Lot 3, Plan 546, Section 1, Township 23, ODYD
PID 012-206-687**

**For: Kandola
982 Old Vernon Rd.,
Kelowna, BC V1X 6T8**

File: 12E043

January 9, 2013

Executive Summary

Valhalla Environmental Consulting Inc. (VEC) was retained by Manraj and Jeetender Kandola (Landowners) of 982 Old Vernon Rd., Kelowna, BC to complete a Land Capability Assessment for agriculture on a parcel in the City of Kelowna, BC. The purpose of this inspection was to assess the agricultural capability and suitability of the Subject Property. The Clients requested this inspection to explore their land use options on the Subject Property that is wholly within the Agricultural Land Reserve (ALR).

The Subject Property is 982 Old Vernon Rd., Kelowna, BC and is legally described as Lot 3, Plan 546, Section 1, Township 23, ODYD, PID 012-206-687. The site is a 4 hectare (10 acre) parcel and is entirely contained within the ALR. The site was used as a wood mill from the 1950s to the 2000s.

This assessment determined that +/-91% (3.65 ha) of the property area has an unimproved rating of Class 5 agricultural capability due to a soil moisture deficit in the summer, and excess water conditions in the spring, fall and winter. This area is improvable to Class 3 with the addition of irrigation in the warm months and water control such as ditching and/or artificial drainage for the spring, fall and winter months. A root restricting layer and low perviousness were consistent across the property and represented a soil structure limitation of Class 3. The soil structure limitation is less severe than the soil moisture limitations and may be improvable by an intensive and costly process of removal of poor quality admixed fill, decompaction of the underlying clay layer, and replacement of top soil to a depth of at least 0.75m.

The Subject Property was included in the ALR when the reserve was established (1974-1976), but apparently was permitted to continue with the industrial non-farm use (sawmill) that pre-dated the ALR. As the mill operated into the mid 2000's cumulative impacts have occurred over 35+ years since the inclusion of the Subject Property into the ALR. The Landowners report that to the best of their knowledge, the Subject Property has not been used for agricultural purposes since the 1950's. Site improvements have been done by the current Landowners to remediate some of the impacts of the historic use and rehabilitate the site. Though significant, these improvements have not been completed as they have proved to be economically non-feasible for an end-use of agricultural purposes. The recovery of the rehabilitation and improvement expenses by an agricultural production operation would be unlikely and may prove to be economically prohibitive.

While the landowners are exploring several options for future land uses of the Subject Property, they have not decided upon a specific activity at this time. However, due to the significant amount of site rehabilitation yet required, it may be difficult for them to recover their total investment costs.

The Subject Property does not contribute to regional and local Agricultural Capacity. The Subject Property has not been farmed since the 1950's, during which time it

appears that the agricultural capability has continued to deteriorate. Continued industrial use on the Subject Property will not adversely affect the local Agricultural Capacity.

1	INTRODUCTION	1
1.1	Report Description	1
1.2	Proposed Land Use & Agricultural Development Plan	1
1.3	Statement of Qualifications	1
2	SITE CONDITIONS & LAND USE	2
2.1	Site Conditions.....	2
2.2	Land Use: Subject Property and Surrounding Area	2
2.2.1	Historic Land Use.....	3
2.2.2	Improvements to Date	3
2.2.3	Future Improvements	4
2.2.4	Brownfield Concerns.....	4
3	SOILS INFORMATION.....	5
3.1	Government of British Columbia – Soil survey.....	5
3.2	Soils on Site Inspection – Methods.....	6
3.3	Comparison to BC Government Soil Survey & Mapping	7
4	CLIMATIC CAPABILITY FOR AGRICULTURE.....	8
4.1	Government of British Columbia – Climatic Capability	8
4.2	Site Inspection	8
4.3	Comparison of BC Government and On-Site Inspection Ratings	9
5	AGRICULTURAL CAPABILITY.....	10
5.1	Government of British Columbia – Agricultural Capability	10
5.2	Soils on Site Inspection	11
5.3	Comparison of BC Government and On-Site Inspection Ratings	12
5.4	Feasibility of Improvements.....	13
6	AGRICULTURAL SUITABILITY	14

7	IMPACT ANALYSIS	16
8	SUMMARY AND CONCLUSIONS	17
8.1	Subject Property.....	17
8.2	Soils and Agricultural Capability	17
8.3	Proposed Project	18
8.4	Conclusion.....	18
9	REFERENCES	19
10	LIMITATIONS	20

APPENDICES

APPENDIX A: Maps & Figures – 982 Old Vernon Rd., Kelowna BC

APPENDIX B: Site & Soil Pit Photos - 982 Old Vernon Rd., Kelowna BC

APPENDIX C: Agricultural Capability Reference Documents (Excerpts)

APPENDIX D: Analytical Data - 982 Old Vernon Rd., Kelowna BC

1 Introduction

1.1 Report Description

Valhalla Environmental Consulting Inc. (VEC) was retained by Manraj and Jeetender Kandola, land owners of 982 Old Vernon Rd. Kelowna, BC, to complete a Land Capability Assessment for agriculture on a parcel in the City of Kelowna, BC. The purpose of this inspection was to assess the agricultural capability and suitability of the Subject Property. The Client requested this inspection to explore their land use options on the Subject Property that is wholly within the Agricultural Land Reserve (ALR).

1.2 Proposed Land Use & Agricultural Development Plan

The purpose of the assessment is to classify the land capability for agriculture of the site to explore land use options for the Subject Property. The proposed future land use is industrial.

1.3 Statement of Qualifications

Matthew Davidson, P.Ag., Senior Environmental Scientist, Assessor

Matthew is an Environmental Scientist and consulting Professional Agrologist with 11 years experience in environmental assessments, impact assessments, soil surveys, land remediation, reclamation and ecological restoration. Matthew has been a registered professional agrologist (PAg) in British Columbia since 2008.

Catherine Orban, P.Ag., Senior Agrologist, Report Review

Catherine Orban has a Master of Science Degree in Geography, specializing in Soil Science. She has been conducting soils assessments since 1985. She has been a registered professional agrologist (PAg) since 1999, first in Alberta, and later in British Columbia. Catherine has worked on a variety of soils assessment, management, remediation and reclamation projects in the agricultural, oil and gas, and environmental sectors in both provinces.

2 Site Conditions & Land Use

2.1 Site Conditions

The Subject Property is 982 Old Vernon Rd., Kelowna, BC and is legally described as Lot 3, Plan 546, Section 1, Township 23, ODYD, PID 012-206-687. The site is a 4 hectare (10 acre) parcel and is entirely contained within the ALR. The site is approximately level and was used as a wood mill from the 1950s to the 2000s. See Appendix A Figures 1 & 2 for more detail on site size and location.

2.2 Land Use: Subject Property and Surrounding Area

Approximately 0.36 ha of the property is built upon and used for the residential purposes at this location. Buildings on the Subject Property include one house and storage shed. Outside of the buildings is residential yard and parking area. The remaining area 3.64 ha has been used historically as the mill site. Wood waste, equipment parking and gravel roads encompass this area. Past agricultural uses were unknown to the landowner as the site has operated as a mill from the 1950's to 2005.

The zoning for the subject property is Agriculture 1 (A1) which permits 4 ha lots, except when in the ALR where 2 ha lots are permitted. A1 zoning also allows one detached home, one mobile home and one accessory building home per lot.

Adjacent properties to the south, east and west have Agriculture 1 (A1) zoning. Southeast of the property is a subdivision (outside of the ALR) that has been constructed with a combination of Rural Residential 3 (RR3) (this zoning permits 1 ha lots un-serviced and fully serviced lots at 0.16ha) and Two Dwelling Housing (RU6) (allowing lot sizes down to 0.04 ha). West southwest of the property is a property with Parks and Open Spaces (P3) zoning which remains in the ALR and is used as a golf driving range. The properties adjacent to north are cultivated fields and are in the RDCO.

Table 1: 982 Old Vernon Rd., Kelowna, BC – Surrounding Land Use

Location	Land Use	ALR Status	Approximate Lot Size ha
Subject Site	old mill / residential	In	4
North	residential / hay field	In	8
Northwest	golf course	Out	43
West	hayfield / commercial lot	In	4
South	hayfield / residential / RV parking	In	8
Southeast	subdivision	out	18
East	old mill / residential / commercial	In	4

2.2.1 Historic Land Use

The Subject Property was included in the ALR when the reserve was established (1974-1976), but apparently was permitted to continue with the industrial non-farm use (sawmill) that pre-dated the ALR. As the mill operated into the mid 2000's cumulative impacts occurred over 35+ years from the inclusion of the Subject Property into the ALR. The Landowners report that to the best of their knowledge, the Subject Property has not been used for agricultural purposes since the 1950's. To date, a number of site improvements have been completed to remediate some of the impacts of the historic industrial use and rehabilitate the site. Though significant, these improvements and rehabilitation have not been completed as they have proved to be economically non-feasible for an end-use of agricultural purposes. A summary of the remediation work to date and estimated costs of remaining agricultural rehabilitation can be viewed in below, sections 2.2.2 and 2.2.3.

2.2.2 Improvements to Date

The current Landowners obtained the Subject Property in 2005. Since 2005 the Landowners have undertaken the following improvements to remediate some of the impacts from historic land uses. The information for improvements to date has been provided by the Landowner, Manraj Kandola through personal communication (pers.comm. – MK). All costs are approximate.

2005

- Land purchased by current owners 4.01 ha (10 acres) at 982 Old Vernon Rd metric is generally used for volume and area calculations – eg.0.75 m topsoil
- Upon purchase Landowners shut the sawmill down, as it was outdated and hazardous.
- ~122,330 m³ (160,000 yards³) of wood waste was stockpiled on the Subject Property at this time

2006

- Controlled curtain burner set up for 3 months to eliminate wood waste
- Approximately \$100,000 was spent to reduce total wood waste volume

2007

- Numerous fires caused by spontaneous combustion of the wood waste
- City of Kelowna, Fire Department attended the site numerous times
- Largest fire attended by City of Kelowna fire department required them on site for 3 days to containing the fires, which cost the City of Kelowna approximately \$80,000.
- Private water tankers and excavators were employed full time by the Landowners to control the fires
- Landowners purchased fire equipment for the site at a cost of \$50,000

2008-2011

- Contractor hired to screen and truck the wood waste to a cogeneration plant in Armstrong, BC (Tolko)

- \$25,000 in additional costs incurred
- Wood waste screening (~75% of volume remaining) was done to mitigate fire risks and facilitate further site rehabilitation
- An oversized pile of wood waste remains which requires grinding
- As of 2012, approximately 100,000 m³ (130,000 yd³) of the original 122,330m³ (160,000 yd³) of wood waste have been processed and/or removed from Subject Property. Currently, approximately 23,000m³ (30,000 yd³) of wood waste remains on the Subject Property.

Approximate costs incurred to date for rehabilitation by property owners: \$175,000; and

Cost to City of Kelowna for Fire Protection: \$80,000

2.2.3 Future Improvements

To be suitable for intensive soil bound agriculture, the Subject Property requires additional rehabilitation and improvements including:

- Wood waste grinding of oversized materials, approximate costs provided by a grinding contractor \$150,000 (pers.comm. – MK)
- Import and spread clean topsoil to a depth of 0.75m for 3.65 hectares (27,375m³ or 35,805 yd³)

Soil Cost Estimate

- 27,375m³ needed at \$26/m³ = \$711,698
- Soil costs were determined by an average of quoted prices from 4 suppliers in the Kelowna area for large volume sales.

Trucking Cost Estimate

- Assume trucking cost of \$ 119.5/hr
- Assume 18m³ (24yd³) truck & pup = 1520 truck loads for
- Assume 1hr trip per load = 1520 hrs
- Trucking cost of 1520 x 117.66/hr = \$ 178,941

Trucking costs were determined by an average of quoted prices from 4 service providers in the Kelowna area.

*Costs for spreading and grading were not included in this estimate

The estimated remaining cost for remediation of this site for agricultural purposes is approximately \$1,040,639

2.2.4 Brownfield Concerns

Due to the historic uses of the subject lot and current uses on neighbouring lots, there is potential for contamination of soils and, or groundwater on the Subject Property. Site investigations with respect to contamination and land remediation are outside the scope of this assessment, but may be required prior to returning this property to agricultural or alternative uses. The cost of such investigations and land remediation has not been included in this assessment but should not be overlooked in consideration of future uses on the Subject Property. Such assessments are costly

as are any soil or groundwater remediation projects. Site investigation costs may be required and would therefore add to the cost of total remediation before the site may be used for future purposes (for example: industrial, residential, agricultural).

3 Soils Information

Soil conditions are a key factor in determining the overall agricultural capability and suitability of any given site. The soil conditions on the Subject Property are described in this section including; published government survey information and a description of the existing soil conditions, based on the lab data and observations made during the on-site inspection, conducted on October 24, 2012.

3.1 Government of British Columbia – Soil survey

Baseline soils information was obtained from the BC Ministry of Environment (MOE) Soils of the Okanagan and Similkameen Valleys, which comprises Report No. 52 of the BC Soil Survey (1986); and the accompanying mapping at 1:20,000 scale. The Subject Property is found on Mapsheet 82E.094 (Appendix A, Figure 5), which indicates that three soil complexes are found on the parcel. The general characteristics of these soils are summarized in Table 2, below:

Table 2: 982 Old Vernon Rd. Kelowna BC – Surrounding Land Use

Site Map Polygon	80% Westbank (WK) / 20% Summerland (SR)	100% Westbank (WK)	100% Glenmore (GL)
Location	The northwestern corner	Northeast / Central portion	Southern Portion of the property
Landform	Nearly level to strongly sloping stratified glaciolacustrine sediments / Nearly level to moderately sloping stratified glaciolacustrine sediments	Nearly level to strongly sloping stratified glaciolacustrine sediments	Nearly level to moderately sloping stratified glaciolacustrine sediments
Description	100 or more cm of clay, clay loam or silty clay / 100 cm or more of silt loam, silty clay loam or clay loam	100 or more cm of clay, clay loam or silty clay	100 cm or more of silt loam, silty clay loam or clay loam
Soil Profile Drainage	Moderately well / Well to Moderately Well	Moderately well	Well to moderately well
Stone Content	non-stoney	non-stoney	non-stoney
Agricultural Suitability	(WK) Tree fruits, Vineyards, Hay production, Pasture / (SK) Poorly suited for arable agriculture	(WK) Tree fruits, Vineyards, Hay production, Pasture	(GL) Pasture, Hay, Tree Fruits
Soils	Othic Grey Luvisol / Eluviated Dark Brown	Othic Grey Luvisol	Eluviated Dark Brown

Source: MoE, Technical Report 52, Soils of the Okanagan and Similkameen Valleys, which comprises Report No. 52 of the BC Soil Survey (1986)

3.2 Soils on Site Inspection – Methods

Three soil test pits (TP1 to TP3) were excavated to depths of 130 cm by a small tracked excavator on October 24, 2012. All test pits were located on sites that represented variations in topography, vegetation, land use and, or mapped soil characteristics. The soil test pits and site features were mapped and photographed (Appendix A, Figures 7 & 8; and Appendix B). The soil profiles were examined and described according to conventions from the Canadian System of Soil Classification, Third Edition (Soil Classification Working Group, 1998). It was not within the scope of this assessment to examine the soils for the purposes of classification at the Series level. A total of 8 representative soil samples were taken from all of the test pits and submitted for laboratory analysis of one or more of the following parameters: various soil nutrients, pH, electrical conductivity, available water storage capacity, and soil particle sizes/textures. (Appendix D).

Four soil units were identified on the Subject Property (as indicated by Roman numerals I - IV) through the detailed soils assessment at a mapping scale intensity of +/- 1:3,000 (Appendix A, Figure 9; and Table 3, below). Information obtained

during the site inspection was combined with the lab results to provide site-specific details that were used to fine-tune the soils data presented in Soil Report No. 52 (1986), which was based on mapping at 1:20,000. The soil units were primarily defined by soil physical and morphological properties. The profiles at each test pit within each unit shared a number of similarities including horizon properties, depths and sequences. Detailed test pit logs and photographs have been included with this report (Appendix B, Photos 3-9). The soil units as mapped for the Subject Properties at a scale of +/-1:3,000 are described in Table 3, below

TABLE 3: 982 Old Vernon Rd., Kelowna, BC - Site Inspection : Soil Unit Summary

Soil Unit	Test Pits	Top Soil Depth (cm) / Colour	Soil Profile Texture ¹	Stone Content ²	Soil Profile Drainage	Topography	Land Use	Area (ha)	%Total Area	Notes
I	1	54 / Br	Sandy Loam / Clay / Heavy Clay	10% / 0% / 0%	Poorly Drained	Nearly Level Slope 1%	Former Mill Yard	0.59	15%	Mixed soil in top layer with wood waste
II	2	15 / DkBr	Clay / Clay / Heavy Clay	10% Gravel / 0% Gravel / 0% Gravel	Poorly Drained	Nearly Level Slope 1%	Former Mill Yard	2.02	50%	Mixed soil in top layer with wood waste, rooting depth 30cm
III	3	35 / Br	Loam / Heavy Clay / Heavy Clay	non-stoney	Poorly Drained	Nearly Level Slope 2%	Former Mill Yard	1.04	26%	Mixed soil in top layer with wood waste, rooting depth 30cm
VI	NA	NA	NA	NA	NA	Gentle slope 5%	House, shed, yard	0.36	9%	Residential portion of the lot

¹ based by laboratory testing

² visual observation

3.3 Comparison to BC Government Soil Survey & Mapping

With the exception of the extensively disturbed upper, admixed fill-soil horizon, the distribution of soil types as identified in the site inspection was generally consistent with the information presented in Soil Survey Report No. 52. In general, the minor differences in soil mapping have been attributed to the different scale intensities as they applied to the site. The BC Soil Survey is based on generalized mapping at a scale of 1:20,000, which is too broad to capture all the subtle variations in site conditions that were identified during the site inspection which was conducted at a detailed mapping scale intensity of +/- 1:3,000.

4 Climatic Capability for Agriculture

Climatic capability for agriculture is based on the limitations associated with the combined influence of the climate and soil moisture regimes as well as the thermal limitations for any given location. Climatic capability is a modifying component used in determining the overall agricultural capability and suitability of a given site. The climatic capability for agriculture of the Subject Property is described in this section; beginning with published government information, followed by that obtained during the on-site inspection.

4.1 Government of British Columbia – Climatic Capability

General reference information as well as baseline climatic data for the Kelowna area was found in Climatic Capability for Agriculture (BC Ministry of Environment, 1981), and Land Capability Classification for Agriculture in British Columbia, Manual 1 (BC Ministry of Agriculture and Food and Ministry of Environment, 1983).

It is important to note that the climatic capability ratings are based entirely on climatic conditions (primarily precipitation and temperature) at a given site. Soil characteristics and other site conditions are not considered in these ratings. The overall agricultural capability of the Subject Property is addressed in Section 5 of this report.

The MOE Technical Paper 4; Climate Capability Classification for Agriculture in British Columbia and accompanying mapping 82E/NW indicates the area of the Subject Property sits on a boundary between Class 5 (west portion) or 6 (east portion) improvable to Class 1bF / 1cG respectively, which indicates an estimated annual climatic moisture deficit (CMD) of 350 mm (BC MOE, 1981, Table 1). Class 5 land has restricted use for perennial forage and specially adapted crops. Class 6 land is considered non-arable but capable of producing native or uncultivated perennial forage crops. Soil moisture deficiency (A) is indicated as a primary limitation. Areas in Class 1aF have occurrences of minimum temperature near freezing that adversely affect plant growth during the growing season. Areas in Class 1cG have insufficient heat units during the growing season. See Appendix A Figure 7 for more detail.

4.2 Site Inspection

Site-specific climatic capability for agriculture was determined using data from TP1-TP3 which are located in, and representative of, different soil units throughout the Subject Property. Lab data obtained for the soil samples was used in conjunction with published regional data to calculate the available water storage capacity (AWSC) and soil moisture deficit (SMD) values for the upper 50 cm of the soil profiles. The results were used to determine site-specific climatic and soil capability ratings for agriculture on the Subject Property which have been summarized in Table 4, below. A description of agricultural/climatic capability classifications is found in Appendix C.

TABLE 4: 982 Old Vernon Rd., Kelowna BC - Soil Moisture Balance & Climatic Capability Ratings

Site & Soil Horizon	Soil Moisture Balance							Climate Capability Rating				
	Total Depth	Matrix Texture	Matrix AWSC ¹	Matrix Fraction	CF Adjusted AWSC	Interval AWSC	Climate H ₂ O Deficit ²	Soil H ₂ O Balance ³	Unimproved H ₂ O Subclass ⁴	Improved H ₂ O Subclass ⁴	Thermal Rating ²	Improved Overall Subclass
	cm	lab	mm/cm	lab	mm/cm	mm	mm	mm				
TP1/SU-I												
Fill*	50	SL	0.75	0.89	0.67	33.53						
Interval	50					33.53	350	-316.48	5A	3A	1aF	3A
TP2/SU-II												
Fill	15	C	2.22	0.89	1.98	29.77						
B	20	C	1.33	1.00	1.33	26.57						
C**	15	HC	1.37	1.00	1.37	20.53						
Interval	50					76.87	350	-273.13	5A	1	1aF	1
TP3/SU-III												
Fill	35	L	1.99	0.79	1.58	55.16						
B	15	HC	1.48	1.00	1.48	22.13						
Interval	50					77.30	350	-272.70	5A	1	1aF	1

* Used Ap data for TP2 as top horizon was similar in texture and coarse fragment content

** Used Ap data for TP1 as top horizon was similar in texture and coarse fragment content

¹ From Lab Data

² Technical Paper 4, 1981, MoE Climatic Capability Classification for Agriculture in British Columbia

³ (Interval AWSC) - (Climate H₂O Deficit) = Deficit (negative) or Surplus (positive)

⁴ Based on - MoE Manual 1 (BC Ministry of Environment, 1983)

4.3 Comparison of BC Government and On-Site Inspection Ratings

In general the site inspection finding showed that the climatic capability for this location corresponds with the provincial climatic capability mapping. Approximately 76% of the Subject Property was rated at Class 5 improvable to Class 1. Approximately 15% of the Subject Property was rated at Class 5 improvable to Class 3. The remaining 9% of the Subject Property was not assessed as it was deemed unavailable for agricultural use. The differences between the site inspection findings and provincial mapping are in part due to the different scale intensities as they applied to the Subject Property. The MOE ratings were based on mapping at a scales of 1:100,000, which are not intended to account for the all the subtle variations in site-specific conditions (eg. soil texture, coarse fragment content, topography, slope angle and aspect) that were identified during the on-site inspection, at a detailed mapping scale intensity of +/- 1:3,000.

Please see Section 5.3 for a comparison between the overall agricultural capability mapping by MOE (including climatic capability) and the capability as determined by this assessment.

5 Agricultural Capability

Agricultural capability ratings are site-specific and based primarily on the influence of soils and climate, as modified by topography for any given location. The Canada Land Inventory (CLI) rating system uses a variety of measurable parameters (some of which are listed below) to provide objective classifications of agricultural capability:

- Slope angle and complexity;
- Depth to bedrock;
- Soil moisture deficits;
- Excess soil moisture;
- Coarse fragment content (stoniness);
- Soil texture;
- Depth to groundwater;
- Soil fertility; and
- Soil salinity

This interpretive system groups soils into seven classes according to potentials and limitations for agriculture (See Appendix C for capability class and limitation descriptions). Lands in Classes 1 to 4 inclusive are considered capable of sustained production of common cultivated field crops. Class 5 lands are capable of use only for producing perennial forage crops or specially adapted crops. Class 6 lands are capable of only providing sustained natural grazing for domestic livestock. Class 7 lands are incapable of use for either arable culture or grazing. (BC Ministry of Agriculture and Food, and Ministry of Environment, April 1983).

In most cases, both "unimproved" and "improved" agricultural capability ratings are determined for the area that is under consideration. The unimproved rating reflects the capability of the property in its natural or current state. The improved rating is theoretical and represents the anticipated agricultural capability of the property after improvements (eg. irrigation, enhanced drainage, soil amendments, fill placement, stone-picking, and/or subsoil decompaction) are made to mitigate the limitations. Some limitations, such as shallow bedrock, slope complexity and slope angle, are not considered to be improvable under "typical farming practices".

5.1 Government of British Columbia – Agricultural Capability

General reference information for agricultural capability was provided by Land Capability Classification for Agriculture in British Columbia, Manual 1 (BC Ministry of Agriculture and Food and Ministry of Environment, 1983; Appendix C). Site-specific agricultural capability mapping for the Subject Property was found on Mapsheet 82E.094 @1:20,000 (BC Ministry of Environment, 1987). (Appendix A, Figure 6).

The MOE agricultural capability polygons corresponded directly to the soil polygons mapped in Soil Survey Report No. 52, and are summarized in Table 5, below:

TABLE 5: 982 Old Vernon Rd., Kelowna BC- MOE Agricultural Capability Mapping @ 20,000

Location	Agricultural Capability Rating	
	Unimproved	Improved
Northwestern Area	8:8AD 2:6WN	8:3D 2:4WD
Northeastern and Central Area	4AD	3D
Southern Area	3AD	7:3D 3*3D

A - Soil Moisture Deficit

D - Soil Structure

N - Salinity

W - Excess Water

Soils on Site Inspection

The overall agricultural capability ratings for the Subject Property were mapped and then compared to the soil unit polygons as defined by the site inspection (Section 3.2, above). In this case, the boundaries for the agricultural capability (AC) Units as determined by the field investigation (indicated by numbers 1-3) do not entirely correspond to those mapped for the soil units (Appendix A, Figures 9 and 10). AC unit 1 corresponds with SU 1. AC unit 2 is comprised of SU 2 and 3. Information obtained from the field inspection was combined with published soils, topography and climate data (as described in Sections 3.0 and 4.0) then applied to the criteria presented in MOE Manual 1 to determine the site-specific agricultural capability ratings at a mapping scale intensity of +/-1:3,000. The agricultural capability ratings for the Subject Property, based on the site inspection are summarized in Table 6, below:

TABLE 6: 982 Old Vernon Rd., Kelowna BC- Site Inspection: Agricultural Capability Ratings

Soil Unit	Ag Capability Unit	TP	Unimproved Ag Capabiltiy ²	Improved Overall Ag Capability ²	Area (ha)	% Total Area ³
I	1	1	5AW	3WAD	0.59	15%
II	2	2	5AW	3WD	2.02	50%
III		3	5AW	3WD	1.04	26%
IV	3	NA	NA	NA	0.36	9%
Total					4.01	100%

¹ Ratings based on lab results & field investigation. See Table 7 for class descriptions

² See appendix C for Capability descriptions

³ Estimates based on lab results, field investigations and aerial photography

Excess water during the wet months, and soil moisture deficits in the growing season were identified as the most extensive and severe limitations to agricultural capability on the Subject Property. Undesirable soil structure was considered to be an extensive, but less severe limitation.

AC Unit 1 (including Soil Unit I) accounts for +/- 15% (0.59 ha) of land on the Subject Property. This area was rated at Class 5 (unimproved) due to a soil

moisture deficit in the summer, and excess water conditions in the spring, fall and winter. This area is improvable to Class 3 with the addition of irrigation in the warm months and water control such as ditching and/or artificial drainage for the spring, fall and winter months. Irrigation is expected to raise the soil moisture deficit ("A") limitations to Class 1 throughout this agricultural capability unit. A root restricting layer and low perviousness were consistent across the property and represent a soil structure limitation of Class 3 that may be improvable by removal of poor quality admixed fill, decompaction of the underlying clay layer and replacement of top soil to a depth of at least 0.75m.

AC Unit 2 (including Soil Units II & III) accounts for +/-76% (3.06 ha) of land on the property. This area was rated at Class 5 (unimproved) due to a soil moisture deficit in the summer, and excess water conditions in the spring, fall and winter. This area is improvable to Class 3 with the addition of irrigation in the warm months and water control such as ditching and/or artificial drainage for the spring, fall and winter months. Because of the coarse texture of the soils in this agricultural capability unit, irrigation is only expected to raise the "A" limitation to Class 3

The remaining +/-9% (0.36 ha) of the Site, which has been mapped as AC Unit 3, occupies land in the southern area. This area has been rated at Class "AN" for anthropogenic alterations and is not considered to be available for agriculture due to the existence of a home, yard, driveway and outbuildings.

5.2 Comparison of BC Government and On-Site Inspection Ratings

The unimproved and improved agricultural capability ratings applied to the Subject Properties based on the on-site inspection were somewhat consistent with the ratings ascribed by the MOE mapping, as summarized below (See also Tables 5 and 6; and Appendix A, Figure 9).

The on-site agricultural capability ratings revealed a greater extent of excess water limitation ("W") on the property although it was not as severe as depicted by the MOE mapping. As well, the published mapping showed that all areas of the Subject Property had an unimproved rating of 3A to 4A. By contrast, the on-site assessment identified persistent soil moisture deficiencies with an unimproved rating of 5A across the property. The improved ratings increased to Class 1 (northwest corner) to 3A (south and central area) with irrigation.

In summary, the on-site inspection agricultural capability ratings were somewhat consistent with both MOE climatic and overall agricultural capability ratings. There was a greater variability in the unimproved ratings mapped by the MoE, while the on-site inspection results were more homogeneous ascribing the same unimproved and improved ratings to 76% of the Subject Property. The homogeneity noted is likely due to the significant modification that has occurred to the surface soils across the site.

5.3 Feasibility of Improvements

All improvements provided are theoretical in nature and based on best management practices as outlined the MOE Manual 1. These improvements are based on an assumption of land that is generally free of waste and contaminants. This assumed condition is not represented on the Subject Property.

The Subject Property has undergone historic improvements (see section 2.2.2). However, significant remaining rehabilitation is needed for the property to be suitable for agriculture (see section 2.2.3). The cost of the remaining improvements and rehabilitation that are necessary to prepare this property for agricultural use are not likely to be feasible. Furthermore, the required improvements (ie. Removal of wood waste material and replacement of the topsoil layer across 91% of the Subject Property) greatly exceed what would be considered "typical farm improvement practices", both in terms of the scope and costs for this work. The recovery of the improvement expenses by an agricultural production operation would be unlikely and is expected to be economically prohibitive.

The proposed future improvements based on MoE Manual 1 BMPs include supplemental moisture (irrigation) during the dry months and water control/drainage enhancements for excess moisture (ditching and/or artificial drainage). The results of this assessment suggest that these improvements would be feasible for AC Unit 1 and 2 which accounts for +/-91% (3.65 ha) of the Subject Property. The agricultural capability rating on AC 1 which accounts for +/-15% (0.59 ha) of the Subject Property is expected to improve from Class 5AW to Class 3WAD. The agricultural capability rating on AC 2 which accounts for +/-76% (3.06 ha) of the Subject Property is expected to improve from Class 5AW to Class 3WD. Improvements are not considered to be feasible for the remaining +/-6% (0.6 ha) of the Subject Property. This area is in AC Unit 3 which is unavailable due to existing residential structure and out buildings.

6 Agricultural Suitability

Agricultural suitability is related to agricultural capability, but involves the interpretation of a wider variety of factors as they relate to the potential for specific uses on a given property. While agricultural capability is based on physical features and measurable parameters, agricultural suitability assessments include a range of site conditions and external influences. The following factors were considered in assessing the agricultural suitability of the Subject Property:

- Feasibility of improvements;
- Availability of additional good quality topsoil;
- Overall size of the Subject Property;
- Location and context of the Subject Property (proximity to urban/suburban/rural land use and zoning);
- Land use on subject property – historical, current and future plans;
- Land use in surrounding area – historical, current and future plans;
- Diversifications, innovations and improvements to date;
- MoE agricultural capability ratings (at 1:20,000 mapping scale); and
- Agricultural capability ratings as determined by this assessment (at +/- 1:3,000 mapping scale).

The suitability of the Subject Property for various agricultural purposes has been evaluated in terms of the factors listed above and has been summarized in Table 7, below:

TABLE 7: 982 Old Vernon Rd., Kelowna BC – Site Inspection: Agricultural Suitability

AC Unit	Area (ha)	% Total Area	Ag Capability Unimproved (Improved)	Suitability for Agriculture Activities
Soil Bound Agriculture				
1&2	3.65	91%	Class 5 (Class 3)	These Agricultural Capability Units represent all of the property outside of the home site. The topsoil layer on this portion of the property has been completely admixed by the mill practices and would require significant remediation to be used for soil bound agriculture (section 2.2.3 for more detail). If rehabilitation was feasible, this area would potentially be suitable for perennial forage and select crops. The nearby Kelowna Airport, Environment Canada weather station data indicates that this area of Kelowna is a frost pocket which has on average 34 more days per year with minimum temperatures below 0C, when compared with East Kelowna and Kelowna weather stations. The risk of crop damage or failure may be increased due to the excess water and fewer frost free days. However, it would not be feasible to rehabilitate this area for soil bound agriculture due to the prohibitive costs of such improvements.
3	0.36	9%	NA	NA
Intensive Soil Bound Livestock - Operations which depend, in whole, or in part, on growing their own feed for livestock production (eg. Beef cattle (cow, calf or feeder), dairy cows, sheep, goats, and other livestock at a commercial scale)				
1&2	3.65	91%	Class 5 (Class 3)	These Agricultural Capability Units represent all of the property outside of the home site. The topsoil layer on this portion of the property has been completely admixed by the mill practices and would require significant remediation to be used for the production of livestock feed. If rehabilitation was feasible, this area would potentially be suitable for perennial forage. However, it would not be feasible to rehabilitate this area for livestock feed/production due to the prohibitive costs of such improvements.
3	0.36	9%	NA	NA
Intensive Non-Soil Bound Livestock - Uses which do not rely on growing crops in soil to support the enterprise (eg. Beef feedlots, hog production and poultry ie. Eggs and meat birds)				
1&2	3.65	91%	Class 5 (Class 3)	The property is located in a rural/residential area and near to a residential subdivision. Conflicts regarding the odours, noise and traffic associated with an intensive feedlot operation may be an issue with neighbouring rural residential property owners. For access reasons and potential conflict with neighbouring property owners this site is not suitable for intensive non-soil bound livestock. However, it would not be feasible to rehabilitate this area for non-soil bound livestock due to the prohibitive costs of such improvements.
3	0.36	9%	NA	NA
Intensive Non-soil bound Horticultural Agriculture (eg. green houses and container nursery)				
1&2	3.65	91%	Class 5 (Class 3)	The site is largely level. After remediation this property could be made suitable for Non-soil bound Horticultural Agriculture operation. However, it would not be feasible to rehabilitate this area for non-soil bound horticulture due to the prohibitive costs of such improvements.
3	0.36	9%	NA	NA

7 Impact Analysis

The potential impacts associated with the industrial land use on the Subject Property on the local and regional agricultural context have been summarized in Table 8, below. One of the advantages of having the Subject Property rehabilitated for industrial use would be the opportunity to install buffers between the site and surrounding properties that are being used for agricultural activities.

TABLE 8: 982 Old Vernon Rd., Kelowna BC – Potential Impacts of Continuing Industrial Land Use

Area of Concern	Anticipated Impacts from Proposed Land Use	Comments
Industrial Land Use of Subject Property on Surrounding Lands	The Subject Property was the site of a saw mill operation for over 50 years (35+ years since inclusion in the ALR). Further industrial land use would require extensive rehabilitation and improvements to the property. Such improvements can be expected to have a positive impact on the surrounding properties.	The Subject Property is located in a rural/residential area and is generally surrounded by agricultural properties with apparent light commercial/industrial uses on the neighbouring property to the east. There is a nearby small lot residential subdivision.
Regional and Local Agricultural Capacity	The Subject Property is not contributing to regional or local Agricultural Capacity. The property has not been used for agriculture since the 1950's. A non agricultural use on this property will not negatively impact the local Agricultural Capacity.	The site has not been used for agricultural purposes for over 50 years. There will be no impacts on local capacity if non-agricultural uses are permitted at this site.
Surrounding Agricultural Operations	Nearby agricultural operations include intensive soil bound agriculture to the north and south and hay fields to the west. A remediated industrial site including perimeter buffers would be an improvement for all neighbouring properties.	The property operated as an industrial site for about 50 years (35+ years since inclusion in the ALR) at this location. Clean up and redevelopment for further industrial use will require removal of unsightly and potentially deleterious wood waste and allow for the inclusion of buffers to be added to the site to ALC specifications. The buffering measures to be implemented will mitigate the negative impacts of future land uses on the neighbouring agricultural operations and properties.
Precedent of Industrial Land Use for Triggering Future Applications	The Subject Property shares commonalities with the neighbouring site to the east, as both were part of the original sawmill operation. The Subject Property was included in the ALR as an operating mill and operated for another 30 years at this location. Permitted non-farm land-use on the subject property may serve as a precedent for application on the property directly adjacent to the east (the remainder of the mill site). Beyond those sites there is no clear, likely precedent as all remaining surrounding lands are apparently used primarily for agriculture, or are not in the ALR	

8 Summary and Conclusions

8.1 Subject Property

The Subject Property has been used as a saw mill for over 50 years (35+ years since inclusion in the ALR). There has been no agricultural land use on the Subject Property in that time. Despite significant and costly rehabilitation efforts to the property, it remains in a state that is not suitable for agriculture. The estimated costs to complete the rehabilitation and make the Subject Property suitable for agricultural production are economically unfeasible when compared to the expected returns from an agricultural production business. In addition, such rehabilitation would fall well beyond the scope and cost of typical farm improvements.

Land use in the vicinity of the Subject Property is primarily rural / residential with agriculture being actively practised on the adjacent properties to the north, south and west of the property. The remainder of the original saw mill operation is located on the property directly adjacent to the east and is apparently being used for industrial activities, with no apparent agricultural use. While the majority of the property directly adjacent to the west is being used for hay, it is also being used to park heavy equipment. Across Old Vernon Rd. to the south is an agricultural property, approximately half of which is used to produce specialty market items (eg. Sauces, jams, pickled vegetables). The other half is not currently being used for any agricultural or industrial activities.

8.2 Soils and Agricultural Capability

This assessment rated the soil moisture deficiencies at Class 5A (unimproved) for the entire Subject Property. The improved ratings for soil moisture on +/-91% of the Subject Property, based on the addition of irrigation, ranged from Class 3A to 1. The remaining 9% of the lot is unavailable for agricultural use. Variations in the soil moisture deficiency across the Subject Property were related to site-specific soil conditions (eg. soil texture) and anticipated responses to supplemental moisture;

This assessment rated undesirable soil structure at Class 3D for +/-91% of the Subject Property and was found to be a minor limitation on throughout the site. The remaining 9% of the lot is unavailable for agricultural use;

This assessment found that excess water was a limitation with a 4W (unimproved) rating on 91% of the Subject Property. The improved ratings for this portion of the property are 3W, based on ditching and/or installing artificial drainage to control the water in wetter months. The remaining 9% of the lot is unavailable for agricultural use;

The proposed improvements on the Subject Property included supplemental moisture (irrigation) during the dry months, as well as enhanced surface and soil profile drainage for the wet months. The results of this assessment suggest that these

improvements would be feasible for +/-91% (3.65 ha) of the Subject Property, where the agricultural capability ratings are expected to improve from Class 5 to Class 3;

The proposed improvements are not considered to be feasible for the remaining +/-9% (0.36 ha) of the Subject Property. This area is unavailable for agriculture due to existing residential structures and out buildings;

Under the current circumstances, and considering the cost and scope of required improvements for the Subject Property, no suitable agricultural uses have been identified for the Subject Property. The investments to date, combined with the high cost of removing wood waste and completing further assessments preclude the possibility of non-soil bound uses such as horticultural agricultural or an intensive livestock operation.

8.3 Proposed Project

The landowners are exploring a variety of potential future land uses, including the possibility of returning to an industrial use on the Subject Property. A specific activity has not been designated at this time. However, due to the significant scope and onerous costs of site rehabilitation still required agricultural production is not considered to be a feasible option.

8.4 Conclusion

The Subject Property is located in a rural/residential area of the City of Kelowna; it was operated historically as a saw mill until 2005, and has little to no current use on 91% of the property. While significant site rehabilitation and improvements could theoretically make the Subject Property suitable for agricultural production; the scope and costs of this work are well beyond what is generally considered to be typical farm improvement practices. Therefore, the rehabilitation of Subject Property for any agricultural purposes is not considered to be economically or practically feasible.

Generally speaking, inclusion of land that is improvable to class 3 into the ALR would be considered good practice; however, due to the historic industrial use of the Subject Property, rehabilitation of the Subject Property for agricultural use at the time of creation of the ALR (1974-1976) may already have well exceeded the potential returns from an agricultural operation. These conditions have been compounded to present day further limiting the land use options available to the current Landowners.

9 References

BC Ministry of Agriculture and Food and Ministry of Environment, April 1983. Land Capability for Agriculture in British Columbia. MOE Manual 1. Surveys and Resource Mapping Branch and Soils Branch: Kelowna, BC

BC Ministry of Environment, 1981. Climatic Capability Classification for Agriculture in British Columbia. Climatology Unit - Air Studies Branch; Victoria, BC

City of Kelowna, 2003, Consolidated Zoning Bylaw No. 8000, Kelowna BC
<http://www.kelowna.ca/CM/page2561.aspx>

BC Ministry of Environment, 1985 Soils of the Okanagan and Similkameen Valleys, MoE, Victoria BC

BC Ministry of Environment, 1975. Land Capability for Agriculture of the Okanagan and Similkameen Valleys, Mapsheet 82L.094t 1:20,000. Thematic Mapping Unit, Surveys and Resource Mapping Branch: Victoria, British Columbia

City of Kelowna, City of Kelowna Map Viewer (online),
http://www.kelowna.ca/website/ikelowna_map_viewer/viewer.cfm , Kelowna, BC

10 Limitations

I, Matthew Davidson certify that I supervised and carried out the work as described in this report. The report is based upon and limited by circumstances and conditions referred to throughout the report and upon information available at the time of the site investigation. I have exercised reasonable skill, care and diligence to assess the information acquired during the preparation of this report. I believe this information is accurate but cannot guarantee or warrant its accuracy or completeness. Information provided by others was believed to be accurate but cannot be guaranteed.

The information presented in this report was acquired, compiled and interpreted exclusively for the purposes described in this report. I do not accept any responsibility for the use of this report, in whole or in part, for any purpose other than intended or to any third party for any use whatsoever. This report is valid for one year only after the date of production.

Respectfully Submitted,



Matthew Davidson, P.Ag.
Senior Environmental Scientist
Valhalla Environmental Consulting Inc.

Historic Land Use Additional Detail

The Subject Property was included in the ALR when the reserve was established (1974-1976). Encroachment of mill operations in the form of wood waste occurred after 1976, as indicated by historic aerial photography. Know approved expansion of the mill operations onto the Subject Property occurred in 1985 and 2000.

The Subject Property has reportedly been previously used by Better Earth Products a composting company. The owner, at that time, of Better Earth (Del Kohnke) reported operating from 2008 to 2011 on the Subject Property. The initial operation by this individual and by extension, this company is referred to in section 2.2.1 of the report as a wood waste contractor, who was screening and trucking the waste to Tolko Industries in Armstrong for use in their cogeneration plant. Due to contamination issues with the wood waste (such as paint) Tolko would no longer receive the product so Mr. Kohnke explored compost opportunities for the remaining wood waste material with his existing composting business Better Earth. As some of the material had naturally composted it was initially sold directly to market, however with little success. Introduction of green nitrogen sources was applied but did not produce a saleable product. The operation of Better Earth on the Subject Property became economically prohibitive and was not viewed as a success by the owner (pers.comm. DK).

Appendix A – Maps and Figures
982 Old Vernon Rd., Kelowna, BC

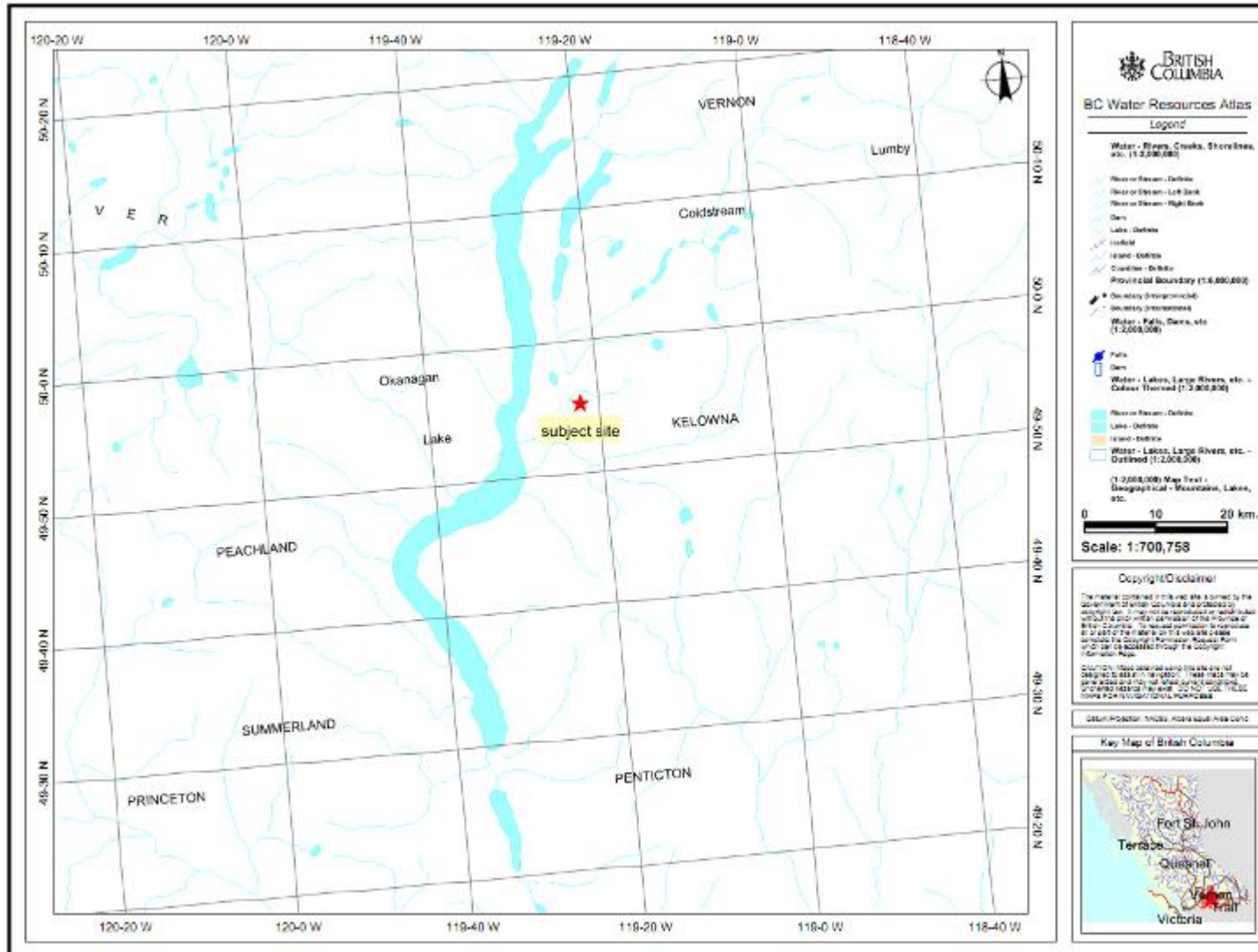


Figure 1: Regional Scale Location Map, 982 Old Vernon Rd., Kelowna BC (Not to scale for discussion purposes only)

Source: http://www.env.gov.bc.ca/wsd/data_searches/wrbc/index.html



Figure 2: Location Map, 982 Old Vernon Rd., Kelowna, BC

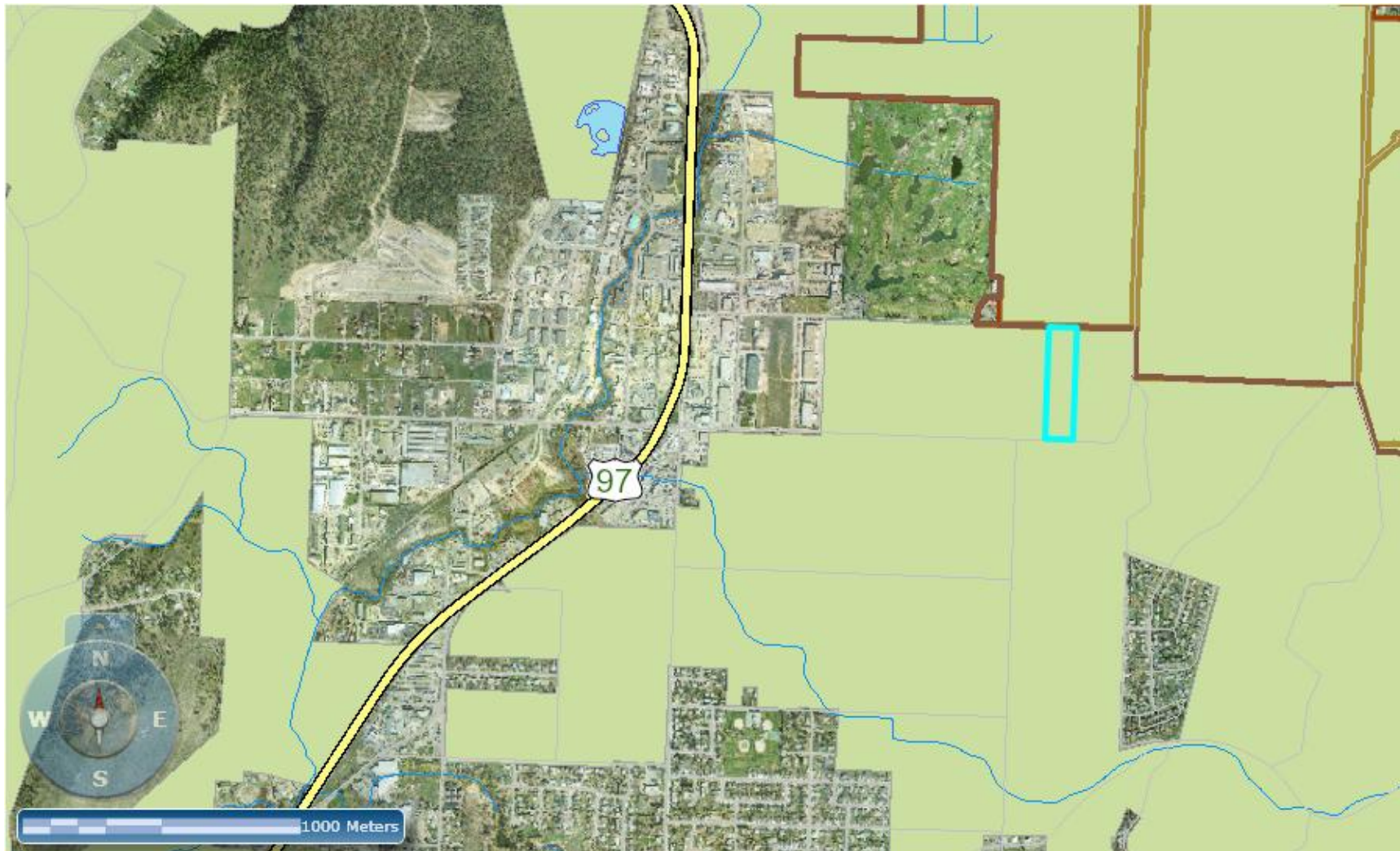


Figure 3: ALR, 982 Old Vernon Rd., Kelowna, BC

Source: RDCO Mapping - Accessed Nov. 15 2012
http://www.rdcogis.com/GIS_App/RDCO_GIS_App.html

site

ALR



**Figure 4: Contours, 982 Old Vernon Rd., Kelowna BC,
1m contour interval**

Source: City of Kelowna - Accessed Nov 15 2012
http://www.kelowna.ca/website/ikelowna_map_viewer/viewer.cfm

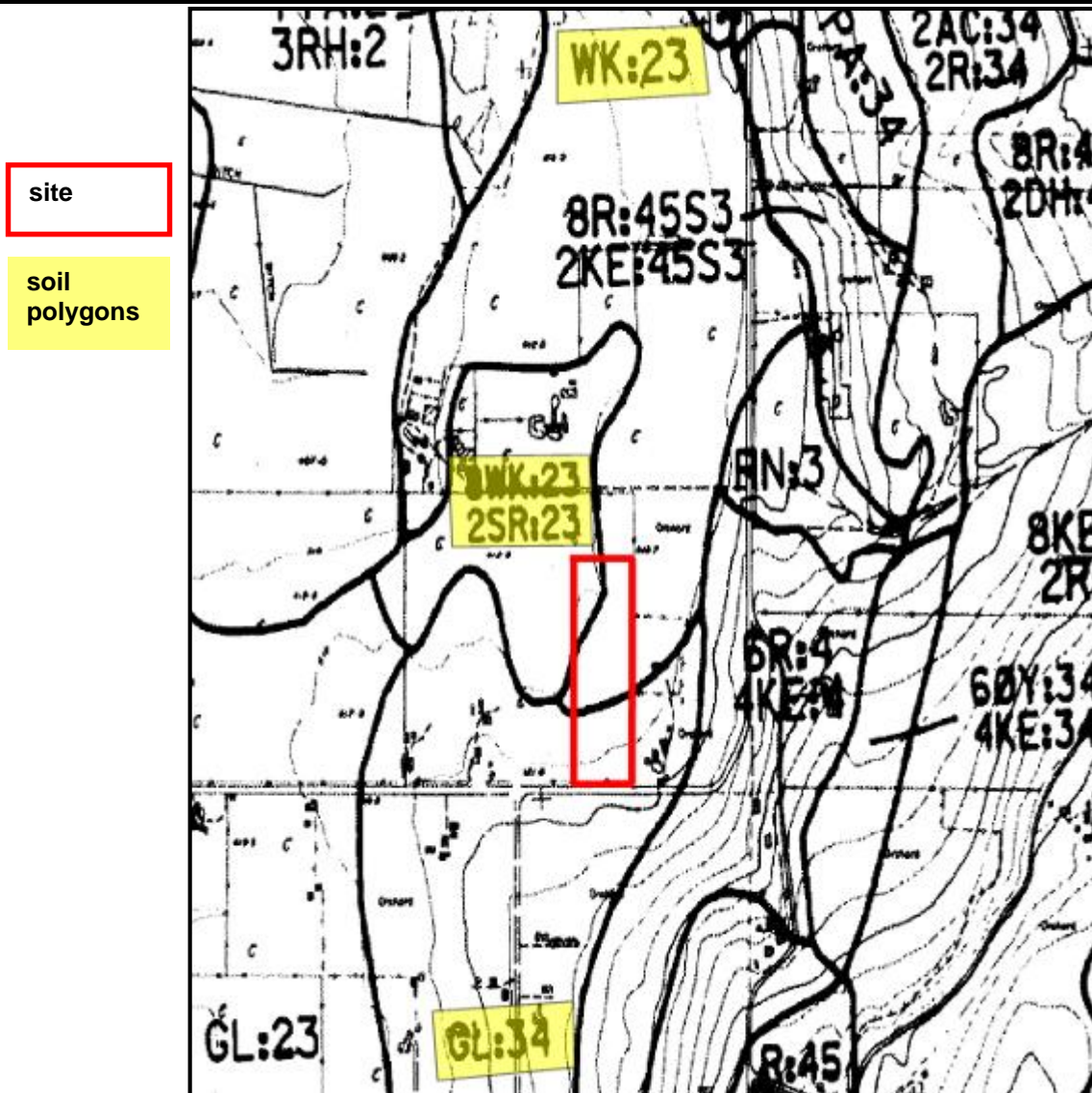


Figure 5: Soils Mapping, 982 Old Vernon Rd., Kelowna, BC,
5m contour interval

Source: BC MOE; Soil Survey Report No. 52 (1982); Mapsheet 82E.094 @1:20,000 (1987)

WK	WESTBANK	nearly level to strongly sloping stratified glaciolacustrine sediments	100 cm or more of clay, clay loam or silty clay	moderately well	Orthic Gray Luvisol
SR	SUMNERLAND	nearly level to strongly sloping fluvial veneer over glaciolacustrine sediments	10 to 100 cm of silty clay loam grading to clay loam	dominantly poor, ranging to imperfect; fluctuating groundwater table or seepage, subject to flooding	Orthic Humic Gleysol: calcareous and saline phases
GL	GLENMORE	nearly level to moderately sloping stratified glaciolacustrine sediments	100 cm or more of silt loam, silty clay loam or clay loam	well to moderately well	Eluviated Dark Brown

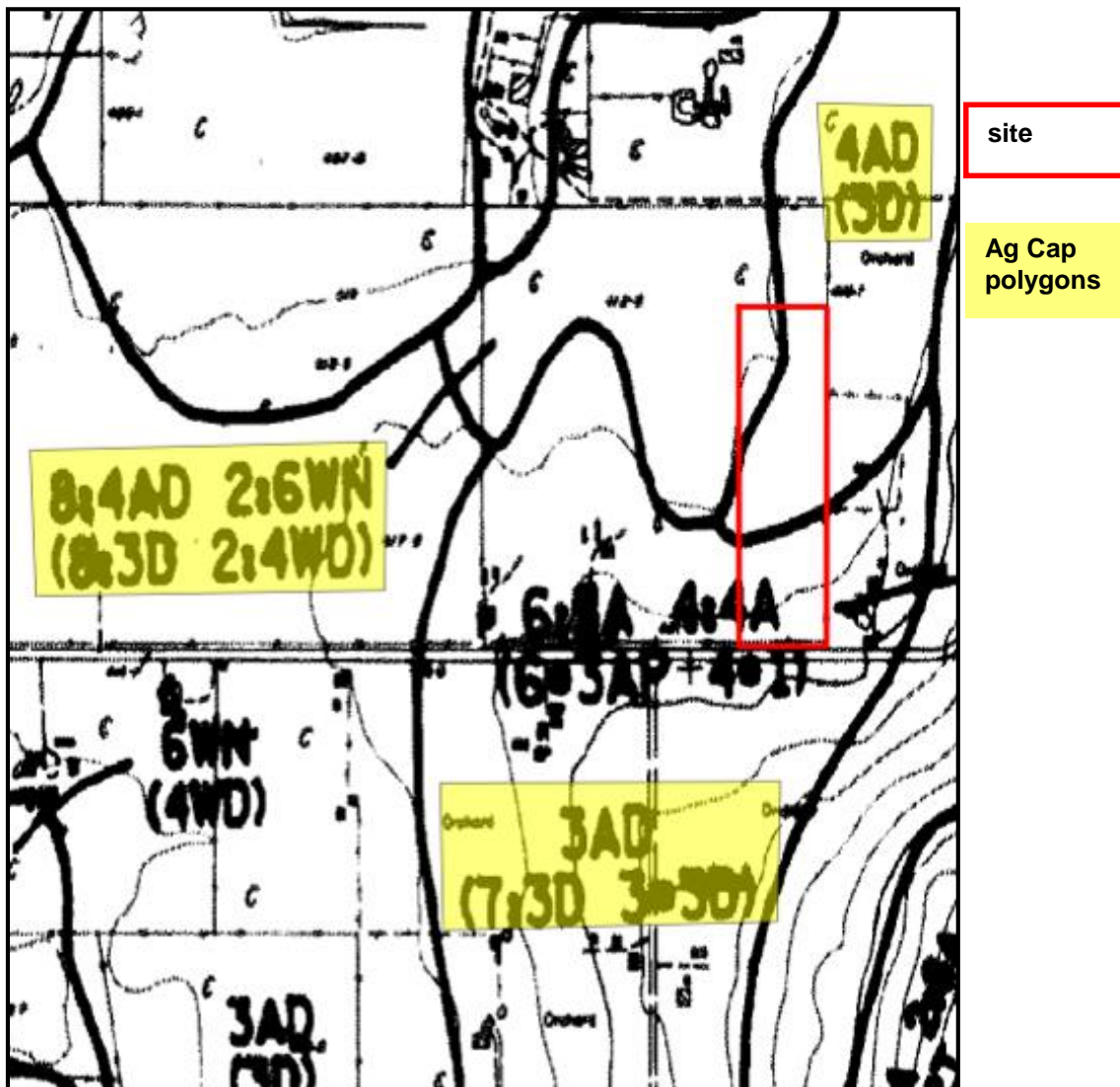


Figure 6: Agricultural Capability Mapping, 982 Old Vernon Rd., Kelowna, BC
Source: BC MOE; Mapsheet 82E.094 @1:20,000 (1987)

CAPABILITY CLASSIFICATIONS

5AP - Unimproved Rating

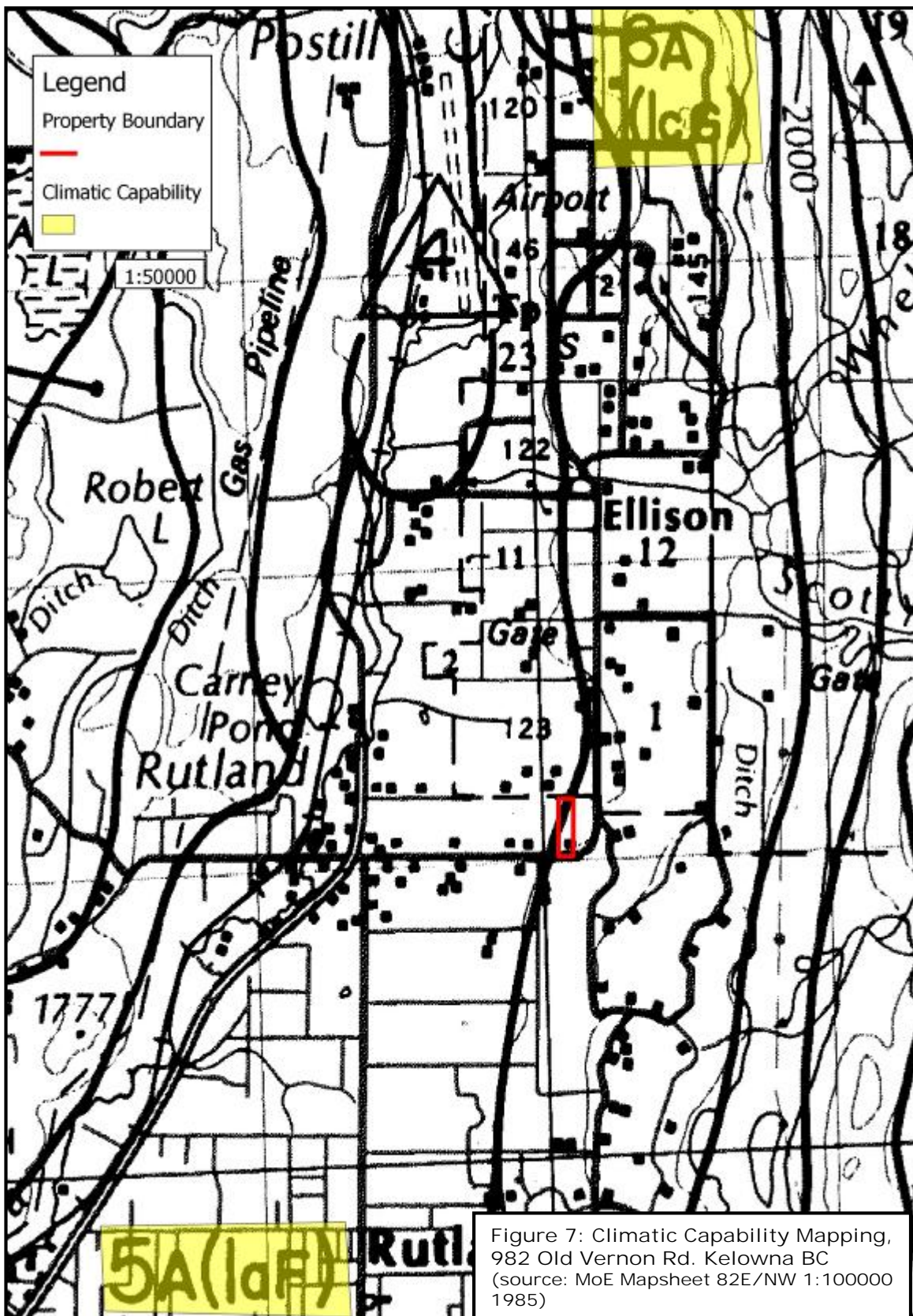
(3AP) - Improved Rating

*The asterisk is used with the Modified Land Capability Classification for Tree Fruits and Grapes.

It indicates the modified topography and/or stoniness classes have been used.

CLASS RATINGS

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



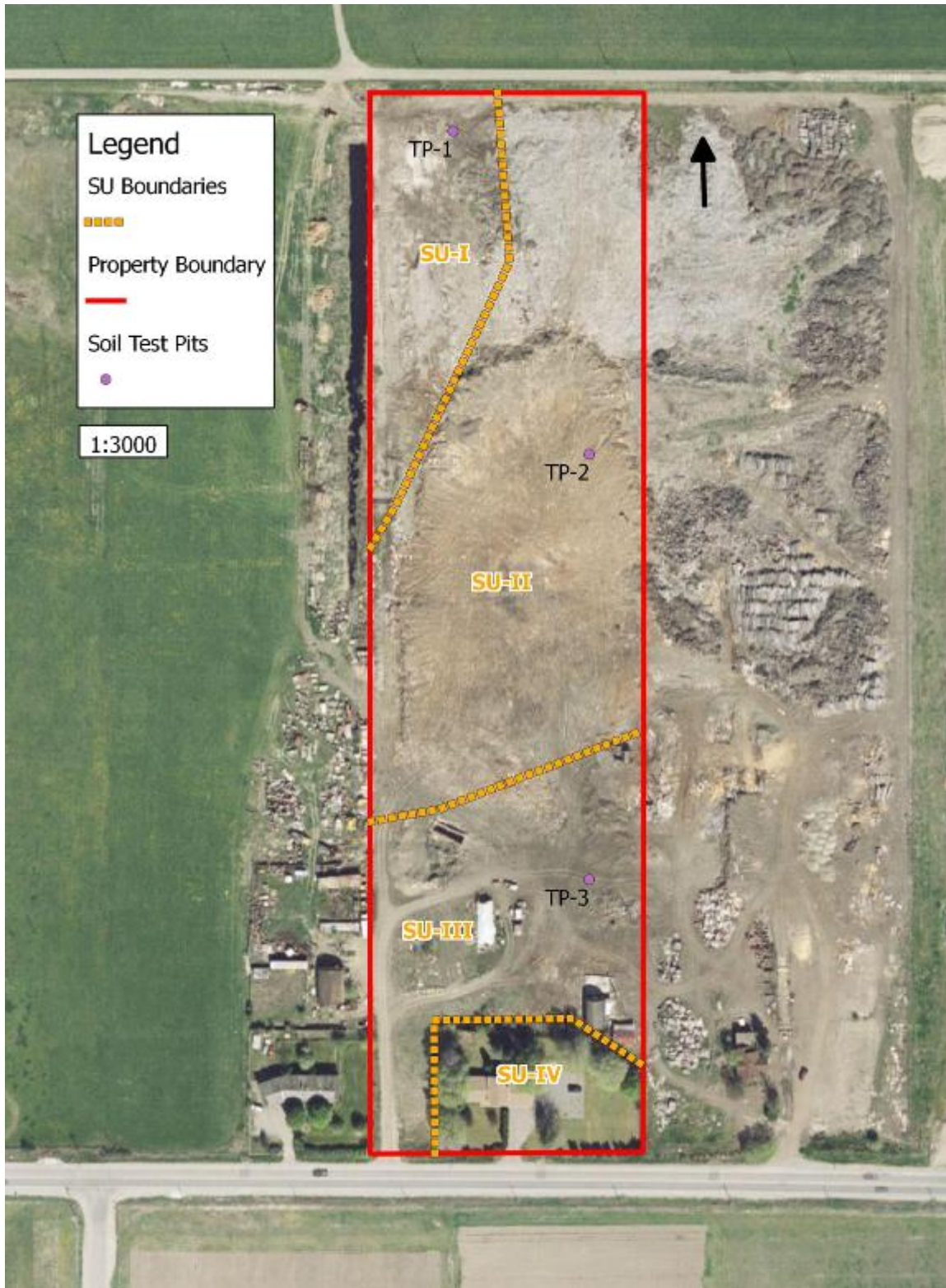


Figure 8: Soil Units and Test Pit Mapping, 982 Old Vernon Rd. Kelowna BC

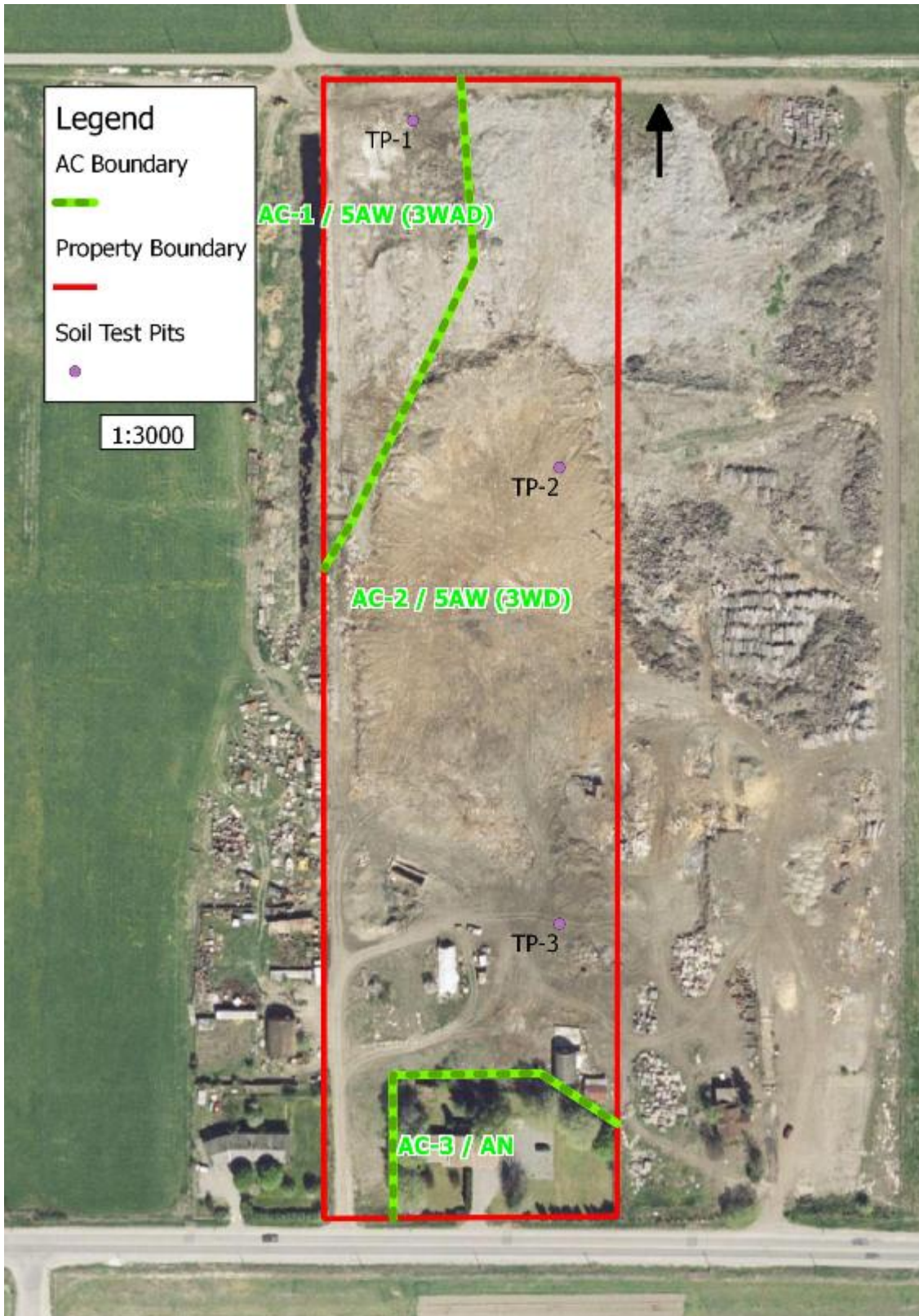


Figure 9: Agricultural Land Capability Mapping, 982 Old Vernon Rd., Kelowna BC