Dayqual Developments Ltd.

AGRICULTURAL IMPACT ASSESSMENT
EATON AND EMERY ASP
NW 19-49-24, W4M

Reference number: B-0328-18

Prepared by:
Basin Environmental Ltd.
115 Nottingham Road
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Submitted to:
Dayqual Developments Ltd.
Attn: Shane Gerein
September 20, 2018
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1.0 INTRODUCTION

Basin Environmental Ltd. (Basin) was retained by Dayqual Developments Ltd. (Dayqual) to prepare an Agricultural Impact Assessment (AIA) report for the proposed Eaton and Emery Area Structure Plan (ASP) located on the southeast corner of the intersection of Rollyview Road and C.W. Gaetz Road, Leduc, Alberta (the Project). More specifically, the Project is located within the northwest quarter of Section 19, Township 49, Range 24, and west of the 4th meridian (Figures 1 and 2).

1.1. OBJECTIVES

This report provides details on the current and historical land use and present bylaw zoning within the study area: including an analysis of historical aerial photographs and field survey. The purpose of the AIA was to complete the following:

- provide a desktop review of soil, topography, water, and land use that can influence agricultural capability;
- conduct a field assessment to document agricultural production such as equipment, landscape, and operability conditions; and,
- interview with occupant (i.e., lease holder) and agricultural foreman to discuss current and historical agricultural operations and constraints.

The information obtained was used to summarize agricultural capacity and constraints for the study area.

1.2. STUDY AREA

The study area is within the Central Parkland Natural Subregion. This is the transition area between the prairie grassland and boreal forest. Undulating till plains and hummocky uplands are the dominant landforms. Lacustrine and fluvial deposits are locally common in the northern and eastern parts of the Natural Subregion, and there are some eolian deposits. The mean annual temperature is approximately 1.5 degrees (°) Celsius (C). The mean summer temperature is 15°C and the mean winter temperature is -12.5°C. The mean annual precipitation ranges from 400 millimeters (mm) to 500 mm. Almost all the area is cultivated, but a mosaic of aspen and prairie vegetation occupies remnant native parkland areas. Black chernozemic soils usually occur under grasslands, and dark grey chernozems and luvisols usually occur under aspen forests (Natural Regions Committee, 2006).
FIGURE 1 LOCATION OF THE PROJECT
1.3. PROPOSED PROJECT

The Eaton and Emery ASP is proposed as a mixture of low- and medium-density residential, commercial, and commercial business development with associated infrastructure, including roadways, stormwater management facilities, and municipal reserve lands (Figure 3). The ASP will be used as a tool to guide and evaluate future zoning, subdivision, and development of the subject lands in an effective manner.
FIGURE 3 EATON AND EMERY ASP DRAFT PLAN
2.0 PLANNING AND CONTEXTUAL FACTORS

2.1. APPLICABLE PLANNING POLICIES AND REGULATIONS

The Project area has been zoned as Urban Reserve, according to the City of Leduc Land Use Bylaw 809-2013. The Urban Reserve District is intended to reserve those areas of the Municipality, which are rural in character or Land Use until the land is required for urban purposes. The reclassification of land to other Land Use districts will normally occur subsequent to the acceptance of an Area Structure Plan and as part of the Subdivision approval process.

EDMONTON METROPOLITAN REGIONAL GROWTH PLAN

One of the guiding principles of the Edmonton Metro Regional Growth Plan is to ensure the wise management of prime agricultural resources. The Edmonton Metropolitan Regional Growth Plan was reviewed against the Eaton and Emery ASP to ensure the ASP was in line with the plan (Table 1).

### TABLE 1 EDMONTON METROPOLITAN REGIONAL GROWTH PLAN REVIEW

<table>
<thead>
<tr>
<th>Edmonton Metropolitan Regional Growth Plan</th>
<th>Eaton and Emery ASP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6.1</strong> Identify and conserve an adequate supply of prime agricultural lands to provide a secure local food source for future generations</td>
<td><strong>6.1.1</strong> Use Schedule 11 to identify prime agricultural lands, until the land evaluation and site assessment tool is completed. <em>(Located in Appendix A)</em></td>
</tr>
<tr>
<td><strong>6.1.3</strong> In the metropolitan area, prime agricultural lands identified through the land evaluation and site assessment tool shall be conserved for agricultural purposes for as long as possible, recognizing that these lands will urbanize over time to accommodate growth.</td>
<td>Using Schedule 11 identifies the project area as Class 3 soils, these are considered prime soils for agriculture.</td>
</tr>
<tr>
<td><strong>6.2</strong> Minimize the fragmentation and conversion of prime agricultural lands for non-agricultural uses</td>
<td><strong>6.2.4</strong> In the metropolitan area, the fragmentation and conversion of prime agricultural lands for non-agricultural uses will only be considered when the proposed</td>
</tr>
<tr>
<td></td>
<td>A. The lands are contiguous with built-up urban areas and/or planned areas</td>
</tr>
<tr>
<td></td>
<td>The project area is contiguous with built-up urban areas on both the south and west boundaries. Furthermore, north of the property is planned for business industrial.</td>
</tr>
<tr>
<td>Edmonton Metropolitan Regional Growth Plan</td>
<td>Eaton and Emery ASP</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>development meets all of the following criteria</td>
<td>The project area has a Greenfield Residential Density 35.8 upnrha which is above the minimum density of 35upnrha required.</td>
</tr>
<tr>
<td>C. If residential uses are proposed, the lands are within a proposed statutory plan in conformance with the applicable minimum greenfield density identified in Schedule 6.</td>
<td>An agricultural impact assessment has been completed to identify any potential adverse impacts.</td>
</tr>
<tr>
<td>D. An agricultural impact assessment has been completed to identify the potential adverse impacts of the proposed development on agricultural lands and existing agricultural operations on-site and offsite in the surrounding area</td>
<td>Mitigation measures are incorporated in the form of a municipal reserve (park and greenways) located on south east of the land. This will act as a barrier between agriculture and Urban land use. Additional mitigation measures are recommended within this report.</td>
</tr>
<tr>
<td>E. Mitigation measures recommended through an agricultural impact assessment are incorporated in the planning and design of the proposed development to minimize potential adverse impacts on agricultural lands and active agricultural operations on-site and off-site in the surrounding area from near neighbour impacts of urban growth</td>
<td></td>
</tr>
</tbody>
</table>
CITY OF LEDUC MUNICIPAL DEVELOPMENT PLAN

The City of Leduc Municipal Development Plan (MDP) identifies the need for protection, conservation, and enhancement of Leduc’s natural and constructive environments, and employs sound planning principles to promote the sustainable growth and development of the city. The City of Leduc MDP was reviewed against the Eaton and Emery ASP to ensure the ASP was in compliance with the plan (Table 2).

TABLE 2  CITY OF LEDUC MDP REVIEW

<table>
<thead>
<tr>
<th>City of Leduc MDP</th>
<th>Eaton and Emery ASP</th>
</tr>
</thead>
<tbody>
<tr>
<td>4B General land use planning</td>
<td>1. Preserving agricultural land and protecting agricultural operations that are compatible with urban uses until such agricultural land is required for urban development</td>
</tr>
<tr>
<td></td>
<td>The Project area is located within the Leduc City Limits and has been zoned for Urban reserve to accommodate urban growth.</td>
</tr>
</tbody>
</table>

CITY OF LEDUC / LEDUC COUNTY INTERMUNICIPAL DEVELOPMENT PLAN

The City of Leduc and Leduc County have developed an Intermunicipal Development Plan (IDP) which guides the growth and development of interjurisdictional lands and addresses issues and interests for both municipal jurisdictions. One of the Smart Growth Principles of the IDP is to support responsible development and preservation of agricultural land. The City of Leduc and Leduc County IDP was reviewed against the Eaton and Emery ASP to ensure compliance with the IDP (Table 3).

TABLE 3  CITY OF LEDUC / LEDUC COUNTY INTERMUNICIPAL DEVELOPMENT PLAN

<table>
<thead>
<tr>
<th>City of Leduc / Leduc County IDP</th>
<th>Eaton and Emery ASP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.1 Smart Growth</td>
<td>Support responsible development and preservation of agricultural land. Preserve open space, agricultural land, natural beauty and critical environmental areas</td>
</tr>
<tr>
<td></td>
<td>The Eaton and Emery ASP contains some current agricultural lands; however, the IDP identifies important agricultural lands outside of the Eaton and Emery ASP that should be preserved as such.</td>
</tr>
</tbody>
</table>
3.2.3 Growth Staging

Protection of natural areas and agriculture by directing growth away from better agricultural lands and creeks that are located to the west of the Edmonton International Airport.

5. Area Policies

5.3.1 Area C - Transitional Residential Mixed Use

Part of the Eaton and Emery ASP lands fall within this area which is planned for a mix of higher density residential and commercial development and supporting infrastructure.

5.3.8 Area G - Southeast Business Industrial

Part of the Eaton and Emery ASP lands fall within this area which aims to provide commercial, office, business and light industrial development while respecting surrounding uses.
3.0 EXISTING CONDITIONS

The physical resource inventory included a review of information collected through historical aerial photography and databases, interviews with current lease owner and the agricultural field man, along with a site visit.

3.1. LAND USE

LOCAL AND REGIONAL

The Project location is within Leduc city limits and is rural in character and land use but is zoned as Urban Reserve. The surrounding rural agricultural land within the city limits is also zoned accordingly. A map of land use of the site and surrounding area can be found in Figure 4, below.

Based on aerial photographs and site visit, the surrounding agricultural land to the northeast was cultivated and to the east was hay land. North of Rollyview Road appeared to be cultivated at the time of the site visit; however, are considered vacant lands designated for Business Industrial uses in the Intermunicipal Development Plan and the City of Leduc MDP. No pasture or livestock were observed or recorded for the property or adjacent agricultural land. The developing residential communities of Robinson and Meadowview Park are located to the south and west respectively.
Currently, the majority of the ASP area is used for agriculture with the exception of two acreages and associated storage sheds developed in the northeast corner of the plan area. The southeast corner of the plan area is covered by aspen dominated forest (Figure 2). The wetland and forested areas make up 13.6 ha, which is the equivalent of 21% of the Project area, while the residence covers 3.8 ha, which is approximately 5%. Cultivated lands constitutes approximately 47.3 ha, which is approximately 74% of the Project area. Based on information collected through an interview with the current lease holder, wheat and canola crops are the main crops with rotations year over year. An attempt to reach the previous owner was unsuccessful.
Historically the study area was utilized for agricultural purposes. The majority of the study area appears virtually unchanged over time except for the northwest corner. The dugout in this area was constructed between 1962 and 1969. Buildings and infrastructure are constructed in the vicinity of the dugout between 1987 and 1998. The historical aerials are attached in Appendix C.
3.2. AGRICULTURAL CAPABILITY

LOCAL AND REGIONAL

In Leduc County, soils are considered to be highly productive agricultural soils. Canola is the primary agricultural crop; however, wheat and barley as well as peas are also grown in the region. There have been very few agricultural improvements in Leduc County. Clubroot, a soil disease affecting canola, has been a major problem in the region, having been documented in over 50 fields in Leduc County.

ONSITE

The study area has fertilizer and herbicides applied once a year during seed but does not have any major weed or soil/plant disease concerns. The current equipment used on the study site includes: tractor, combine, grain cart, seed roller, and sprayer.

The agricultural soil resource capability of the project area was analyzed by using the Land Suitability Rating System (LSRS) through the Government of Alberta Soil Information Viewer. The Project area is associated with two soil polygons (Figure 3). Much of the quarter section has a Land Suitability Rating of 3(10) and has a rating of moderate limitations to growth (Table 4). The other intersecting polygon has a Land Suitability Rating of 2H(6)-3(4). 60% of the area is Class 2 and 40% is Class 3 indicating slight and moderate limitations to growth (Table 4). The limitation is caused by inadequate heat units for optimal growth. The breakdown of these ratings can be found in Table 4, below.

**TABLE 4  SUMMARY OF LAND SUITABILITY RATING SYSTEM (LSRS) FOR THE EATON AND EMERY ASP**

<table>
<thead>
<tr>
<th>Polygon ID</th>
<th>Land Suitability Rating</th>
<th>Class</th>
<th>General Restrictions</th>
<th>Subclass</th>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>14408</td>
<td>3(10)</td>
<td>Class 3- Moderate limitations</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>100% of polygon area</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14404</td>
<td>2H(6)</td>
<td>Class 2- Slight limitation</td>
<td>Climate</td>
<td>Temperature</td>
<td>Inadequate heat units for the optimal growth</td>
</tr>
<tr>
<td></td>
<td>60% of polygon area</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3(4)</td>
<td></td>
<td>Class 3- Moderate limitations</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>40% of polygon area</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note that the LSRS is a national rating system and due to climate, Alberta has no Class 1 land**
Soil conditions for the study area were gathered from the Alberta Soil Information Viewer (AGRASID). The majority of the study site falls within the soil polygon 14408 (Figure 6). This polygon has undulating landform and it is broken into two components, Mid-slope make up 80% of the area and Upper slope 20%. The Mid-slope soils consist of A horizon (18cm depth) of Silty Loam, two B horizons (30cm and 45cm depths) of Loam and Clay Loam, and a C horizon (120cm depth) of Clay Loam. The Upper-slope soils consist of two A horizons (17cm and 23cm depths) of Loam, two B horizons (70cm and 100cm depths) of Clay Loam and a C horizon (120cm depth) of Clay Loam.

The southeast corner of the study site overlays the 14404 soil polygon (Figure 6). This polygon also has undulating landforms and consist of 4 components (Mid-slope 30%, Mid-slope 30%, Depression 30% and Upper-slope 10%). The first Mid-slope soils consist of four A horizons...
(18cm, 30cm, 35cm and 40cm depths) of Loam and Silty Loam, two B horizons (60cm and 80cm depth) of Clay Loam and Loam, and a C horizon (120cm depth) of Clay Loam. The second Mid-slope soils consist of three A horizons (18cm, 43cm and 53cm depths) of Loam, and two B horizons (79 cm and 100 cm depths) of Loam. The Depression soils component consist of two A horizon (20cm and 23 cm depths) of Loam, a B horizon (51cm depth) of Clay Loam, and two C horizons (66cm and 100 cm depths) of Clay Loam. Finally, the Upper-slope soil portion consists of two A horizons (18 cm and 20 cm depths) of Silty Loam, a B horizon (50cm depth) of Clay Loam and a C horizon (100 cm depth) of Clay Loam. These baseline soils were consistent with the soil findings during the field site visit. The soil pit data from the Project area can be located in Appendix D.

### 3.3. DRAINAGE, FLOOD CONTROL AND IRRIGATION IMPROVEMENTS

Within the Project site, overall drainage is from the south east to the north west, eventually draining into Telford lake (Figure 8). No irrigation improvements were identified for Leduc County or the City of Leduc (Appendix B).

The ASP purposes two storm water management facilities (SWMF) to help with flood control. In minor storm events water will be directed by storm pipes to these SWMF’s and from there will be discharged to an existing storm line located on C.W Gaetz Rd west of the location. This will ultimately drain north to Telford Lake.

### 3.4. SLOPE AND TOPOGRAPHY

The topography of the Project area is generally flat (approximately 0.6% slope) and generally drains from southeast to northwest (Figure 8).
FIGURE 7 REGIONAL ELEVATION AND DRAINAGE
3.5. GROUNDWATER AND IRRIGATION

According to the Geotechnical investigation, the water table was observed to be in the shale bedrock materials, between approximately 2.5 and 4.5 metres below the ground surface.

According to the Alberta Government Water Wells Database, one well can be found on this property. The well was drilled in 1989 and had a total drill depth of 16.76 m where water bearing sandstone was located. The water yield test indicated a static water level of 2.44 m. The full water well drilling report can be found in Appendix A.
4.0 AGRICULTURAL VIABILITY

While the Eaton and Emery ASP is proposed on current agricultural lands, this area is located outside of those lands identified in the City of Leduc and Leduc County IDP as “better agricultural lands”. This ASP is proposed within the Urban Reserve zone, which is planned for future urban development and growth of the City of Leduc. While the soil conditions are considered high quality for agricultural production, minimal infrastructure upgrades have been installed in the general vicinity of the Project location.

The Eaton and Emery ASP is surrounded by current and proposed developments from all directions except for lands to the east which remain agricultural lands. As urban development continues, the lands would be further fragmented from regional agriculture activities. Fragmentation of agricultural lands is known to have impact on viability of agriculture due to reduction in economic viability and efficiency and increases in operating costs. The lands provide contiguous connection to proposed non-agricultural developments within the City of Leduc.
5.0 POTENTIAL IMPACTS ON AGRICULTURE AND MITIGATION MEASURES

The proposed ASP encompasses approximately 55.7 ha of land which is currently zoned as Urban Reserve land, indicating that the area is reserved for future development as required. Of the Project area, only 47.3 ha of land is currently used for agricultural purposes. Based on the information collected, minimal agricultural improvements (e.g., irrigation infrastructure) have been installed at the site. Additionally, the Project area has been planned for Transitional Residential Mixed Use and Business Industrial within the City of Leduc and Leduc County IDP. Within the IDP, high priority agriculture lands have been identified elsewhere (e.g., west of the Edmonton International Airport).

The property located to the east is zoned as agriculture and not Urban reserve. Other land to the north and northeast of the project area are being used for agricultural purposes; however, these lands are not intended for long-term agricultural purposes as they have been zoned as Urban Reserve.

To prevent impacts to surrounding agriculture, buffering techniques are preferable to minimize effects from urban development. Existing roadways currently provide a buffer to lands on all sides of the Project. In addition, the ASP also proposes a municipal reserve to the southeast which will create a buffer between urban land use and agriculture. Along with the park, greenways (multiway trails) are located throughout the area.

The proposed ASP includes plans for the installation of two storm water management facilities (SWMF). These landscape SWMF’s will be located to the south in the residential area and to the north in the commercial area. Existing storm line on C.W. Gaetz Road located to the west will accept discharge from both SWMF’s and will direct water north to Telford Lake. The planned SWMF’s and supporting infrastructure will aid in flood control and will limit impacts to agriculture to the east of the Project.
6.0 ALTERNATE LOCATION ANALYSIS

The proposed location is located on Urban Reserve Lands which is dedicated for the development of future growth within the City of Leduc. Furthermore, the Project area has been planned for Transitional Residential Mixed Use and Business Industrial within the City of Leduc and Leduc County IDP. Within the IDP, high priority agriculture lands have been identified elsewhere (e.g., west of the Edmonton International Airport). The location of the Eaton and Emery ASP is the most logical next step for development, and the ASP provides a framework for land use planning to meet the needs of urban growth in the City of Leduc.
7.0 CLOSURE

The report has been prepared by Basin Environmental Ltd., for the exclusive use of Dayqual Developments Ltd. This report presents information available at the time of writing, as well as best management practices and provincial and federal regulations effective at the time of writing.

If you have any questions, or require additional details, please contact the undersigned.

Sincerely,

Basin Environmental Ltd.

Report Prepared by: Reviewed by:

Meagan Robson, B.Sc. Darcy O’Brien, B.Sc., RPF
Environmental Technician Principal, Senior Project Manager

Project Manager, Biologist Principal, Senior Project Manager
8.0 REFERENCES


APPENDIX A

RESULTS OF DATABASE SEARCHES
**Water Well Drilling Report**

**Location**

<table>
<thead>
<tr>
<th>Grid</th>
<th>SEC</th>
<th>TWP</th>
<th>RGE</th>
<th>W of MER</th>
<th>Lot</th>
<th>Block</th>
<th>Plan</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N1W4</td>
<td>19</td>
<td>49</td>
<td>24</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GPS Coordinates in Decimal Degrees WAC 03**

- Latitude: 50.246008
- Longitude: -113.500173

**Formation Log**

<table>
<thead>
<tr>
<th>Depth (m) from ground level</th>
<th>Water Bearing</th>
<th>Lithology Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.36</td>
<td>Topsoil</td>
<td></td>
</tr>
<tr>
<td>1.15</td>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>3.85</td>
<td>Gravel</td>
<td></td>
</tr>
<tr>
<td>5.18</td>
<td>Clay &amp; Boulders</td>
<td></td>
</tr>
<tr>
<td>7.92</td>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>16.76</td>
<td>Yes, Water Bearing Sandstone</td>
<td></td>
</tr>
</tbody>
</table>

**Formation Log Measurements**

<table>
<thead>
<tr>
<th>Water Bearing</th>
<th>Lithology Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topsoil</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Gravel</td>
<td></td>
</tr>
<tr>
<td>Clay &amp; Boulders</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Yes, Water Bearing Sandstone</td>
<td></td>
</tr>
</tbody>
</table>

**Yield Test Summary**

- Recommended pumping rate: 0.00 L/min
- Test Date: 1992/09/17
- Water Removal Rate (L/min): 46.91
- Static Water Level (m): -2.49

**Well Completion**

- Total Depth Drilled: 16.76 m
- Finished Well Depth: 16.76 m
- Start Date: 1982/07/17
- End Date: 1982/07/17
- Screen Diameter (cm): 3.57
- From (m): 13.24
- To (m): 15.24

**Surfacing**

- Steel Sizing: 13.57 cm
- Size 10: 13.57 cm
- Size 12: 11.43 cm
- Well Thickness: 0.620 cm
- Top of Screen: 6.62 cm
- Bottom: 16.76 m

**Perforations**

- From (m): 12.19
- To (m): 13.24
- Diameter or Slot Width (cm): 0.319
- Slot Length (cm): 30.48
- Hole or Slot Intervals: 0, 10

**Contractor Certification**

**Agricultural Impact Assessment**

**September 2018**
# Water Well Drilling Report

**Owner:** DESNOYER, ANDRE  
**Address:** Leduc  
**Town:** Leduc  
**Province:** Alberta  
**Country:** Canada  
**Postal Code:** T0C  

## Well Identification and Location

<table>
<thead>
<tr>
<th>Well ID</th>
<th>Location</th>
<th>GPS Coordinates (Decimal Degrees, NAD 83)</th>
<th>Measurement in Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>154249A</td>
<td>NW 49 16</td>
<td>Latitude: 53.249887</td>
<td>Elevator: 0 m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Longitude: -113.300730</td>
<td>How Location Obtained: Not Obtained</td>
</tr>
</tbody>
</table>

## Additional Information

<table>
<thead>
<tr>
<th>Distance from Top of Casing to Ground Level</th>
<th>Recommended Pump Rate</th>
<th>Recommended Pump Intake Depth (from TDC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 ft</td>
<td>0.60 L/min</td>
<td>11.72 m</td>
</tr>
</tbody>
</table>

**Type:** Foot-Valve  
**Make:** HP  
**Model:** (Output Rating)  

**Depth:**  
- Ground Water: 450 ft  
- Depth to Water: 16 ft  

**Well Drilled Upon Completion:**  
- Geophysical Log Taken:  
- Submitted to ESGD:  

**Sample Collected for Potability:**  
- Submitted to ESGD:  

## YIELD TEST

<table>
<thead>
<tr>
<th>Test Date</th>
<th>Start Time</th>
<th>Static Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>19800717</td>
<td>12:30 AM</td>
<td>2.44 m</td>
</tr>
</tbody>
</table>

**Method of Water Removal:**  
- Type: Ballast  
- Recovery Rate: 42.81 L/min  
- Depth Withdrawn From: 16 ft  

**IF water removal period was > 2 hours, explain why:**

## Water: Diverted for Drilling

**Water Source:**  
**Amount Taken:**  
**Inversion Date & Time:**  

## Contractor Certification

<table>
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<tr>
<th>Name of person(s) responsible for drilling/constructed of well</th>
<th>Certification No.</th>
<th>Copy of Well report provided to owner</th>
<th>Date approval/receiver signed</th>
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**Printed on:** 08/25/2018 10:01 AM
SCHEDULE 11: Agricultural Land Suitability Ratings

NOTE:
- The suitability ratings are based on the Land Suitability Rating System (LSRS) developed by Agriculture and Agri-Food Canada. The ratings are derived from a combination of soil, climate, and topography indices.
- The suitability ratings are used to determine the potential for agricultural production and to identify areas suitable for specific crops or land uses.

Legend:
- Suitability Ratings:
  - 54% Class 1 (Best): Highly suitable
  - 54% Class 2 (Good): Moderately suitable
  - 54% Class 3 (Fair): Marginally suitable
  - 44% Class 4 (Poor): Unsuitable

- Land Use:
  - Agricultural Areas
  - Rural Residences
  - Secured Residences
  - Industrial
  - Parks
  - Rail lines

- Conservation Areas:
  - Municipal
  - Provincial
  - National

- Waterbodies:
  - Major Waterbodies
  - Minor Waterbodies

- High Risk Areas:
  - Floodplain
  - Sinkholes

- Other:
  - Ferry Terminals
  - Special Areas

- Miscellaneous:
  - Special Use
  - Special Rules

Source: Data derived from Agriculture and Agri-Food Canada and other relevant sources.
APPENDIX B

OCCUPANT AND AGRICULTURAL FOREMAN INTERVIEWS
Occupant (Lease Holder) Interview

What was the agricultural operations at the study area? Was it used for cultivation or livestock? If so how long?

- Cultivated, this year is wheat, last year was Canola. He said they rotate between the two.

What was the study site used for before they owned the land?

- The first year he took over they did a summer harvest
- He thinks they were doing barley or wheat before him

If cultivated, what crops were grown? What were the crop rotations (type and years)? What were the range and average yields?

- Canola 52 Bushels per Acre last year
- Wheat 45 Bushels per Acre 2016 (That’s as far back as he can remember)

If used for livestock, what kinds of livestock? How many heads of livestock (range and average)?

- No Livestock has been on the site that he knows of

Did they apply fertilizers, pesticides, or herbicides? If so, which types, and how much and often?

- He uses Fertilizer and Herbicides
- Once a year when the seed
- Did not say how much or what kind

Any soil / plant diseases present currently / historically (i.e., clubroot, black leg, etc)

- Not that he is aware of

Any major weed concerns?

- Not when then are cultivating it but can have problems if they let it grow on its own
- Scentless chamomile (Tripleurospermum perforatum) and Buckwheat (Fagopyrum esculentum)

What facilities/equipment did they have on the study site (combines, tractors, etc)
o Tractor, combines, grain cart, seed roller and sprayer

If possible, what revenues did they get in operating the study area?

o Does not wish to answer

Any agricultural constraints on the study site?

o No, he doesn’t think so
o He did say it’s in a flight path but did not think that was a constraint
Agricultural Foreman (Leduc County) Interview

Known Clubroot Infestations in the area

- Yes, lots in the area. He said its basically everywhere, big problem around the city of Leduc and Edmonton

Irrigation improvements or infrastructure related to agriculture in general area

- No, they don’t have much at all, he said a little bit North of Edmonton, but Leduc county has none.

Comment on general agriculture industry conditions in surrounding area of Leduc County, particularly within the City Limits.

- With regards to soil quality they have a lot of number 1 and 2 soils, this is good, high productive agricultural land soils

- The area grows mostly canola, wheat and barley with some peas

- Crop yield averages: Canola-50 bushels/acre, Wheat- 65 and Barley- 80-100

Restrictions on agriculture in vicinity

- He can’t think of any. He said that there are restrictions on growing canola when clubroot is found in a field, but he didn’t think that was related to what we are writing about.
APPENDIX C

HISTORICAL AERIAL PHOTOGRAPHS
Approximate Site Boundary (in RED)
APPENDIX D

SITE VISIT-SOIL PIT INFORMATION
<table>
<thead>
<tr>
<th>Soil Pit</th>
<th>Horizons</th>
<th>Depth (cm)</th>
<th>Colour</th>
<th>Texture</th>
<th>Structure</th>
<th>Coarse Frag (%)</th>
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</table>
APPENDIX E

SITE PHOTOGRAPHS
PHOTO
View of Study Area from NE corner (1)

PHOTO
View of Study Area from NE corner (2)
PHOTO
View of Study Area from NW corner (1)

PHOTO
View of Study Area from NW corner (2)
PHOTO

View of Study Area from SE corner (1)

PHOTO

View of Study Area from SE corner (2)
PHOTO
View of Study Area from SW corner (1)

PHOTO
View of Study Area from SW corner (2)