

Saskatchewan Land Surveyors Association

Practical Surveying

April, 2023

Time Allowed: 3 hours

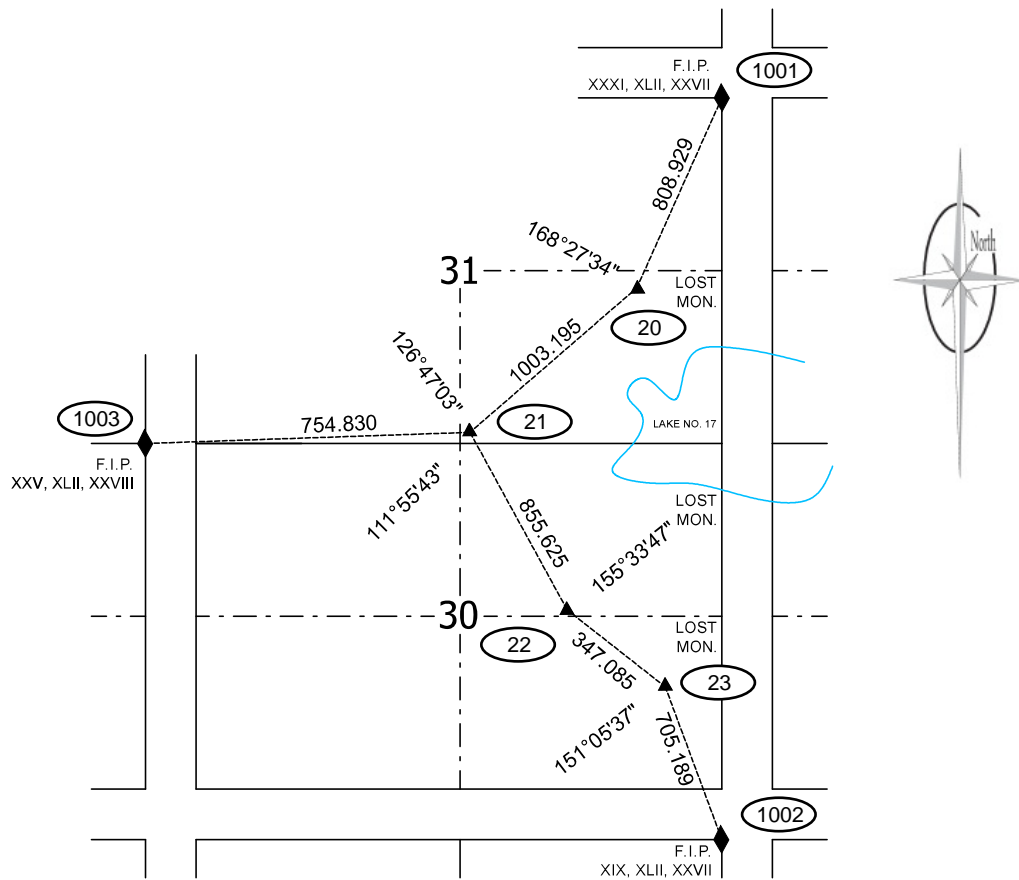
Instructions

- You may use any self contained calculator or computer.
- Partial marks may be awarded for incorrect answers if the solution process can be followed and is correct.
- Intermediate calculations are not necessary, but sketches and/or a brief description of geometric construction will show that you understand the problem and solution process.
- For traverses, a sketch showing the angular and linear input is all that is required. Showing coordinates is not required unless they form part of the answer.
- If the information appears vague, incomplete or incorrect and you make an assumption, state that assumption in your work.

Question 1

The Manito Grazing Association is looking to fence the North/South quarter line of Section 30-42-27-W.3 Mer. and has requested you to stake out the N. ¼ of Section 30. The initial field survey has yielded iron posts at the N.E. 31, N.E. 19 and N.E. 25, all other monuments in the course of the survey have been deemed Lost.

Using the field note sketch and traverse provided as well as the *Township Plat (Twp 42, Rge.27 W.3 Mer.)* provided in Appendix A, answer the following questions.



20 marks

I) Compute the distances and angles for the East boundaries of Section 31 and Section 30. Use the bearings from the township plat information when establishing the corners.

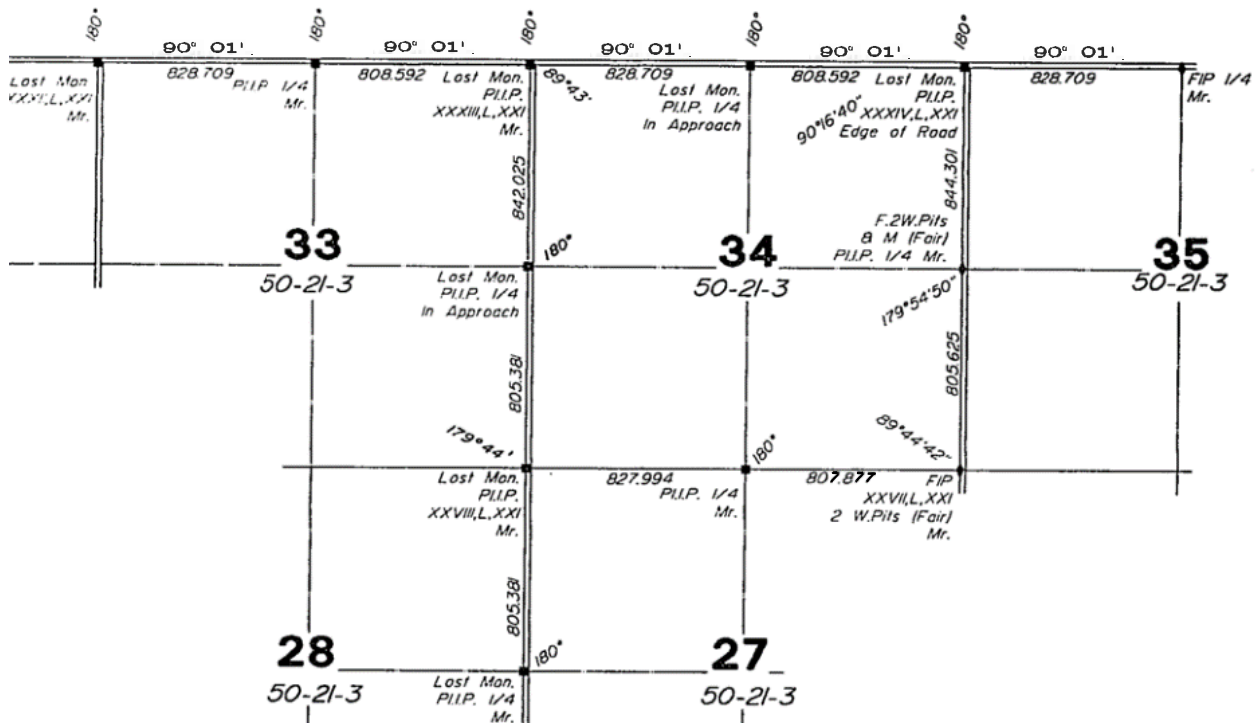
5 marks

II) Calculate the angle and distance (to the nearest millimeter) for the field crew to lay out the N. ¼ Section 30 from the existing traverse.

Question 2

Your firm has been engaged to survey a parcel comprised of the most southerly 625 links in perpendicular width throughout LSD 4 within Section 34-50-21-W3Mer. It is required that you use the **Policy and Procedure Number GO-05/005** and provide the minimum requirement for monumentation when establishing a parcel on a legal subdivision boundary.

Using the Restoration Plan 100225347 provided below, answer the following questions.



- 6 marks I) What is the misclosure of Section 34? This survey was completed on January 18th, 1999, what is the standard of accuracy set out in *The Land Survey Regulations*? Using proper survey theory and techniques, explain how this misclosure will be dealt with in your calculation.
- 15 marks II) Provide a sketch showing the LSD boundary calculation as well as the interior angles and distances of the newly created parcel. Clearly indicate where monuments are to be placed on the sketch and their markings, if any.
- 4 marks III) The title for the SW34-50-21-W3Mer is provided in Appendix B. What will the extension number be for the new parcel? What will the extension number be for the remainder of the quarter section?

Question 3

The oil and gas company, Exploration Third Meridian Ltd., has asked your firm to survey a new horizontal well location and to provide them with a plan of survey. The survey is to take place in Section 34-50-21-W3Mer. which can be found in Question 2. The client has requested the surface location be placed in the exact center of LSD 16. The Intermediate Casing Point (ICP) is requested 300m South and 100m West of the well location, and the Bottom Hole (BH) is requested 300m South and 1600m West of the well location.

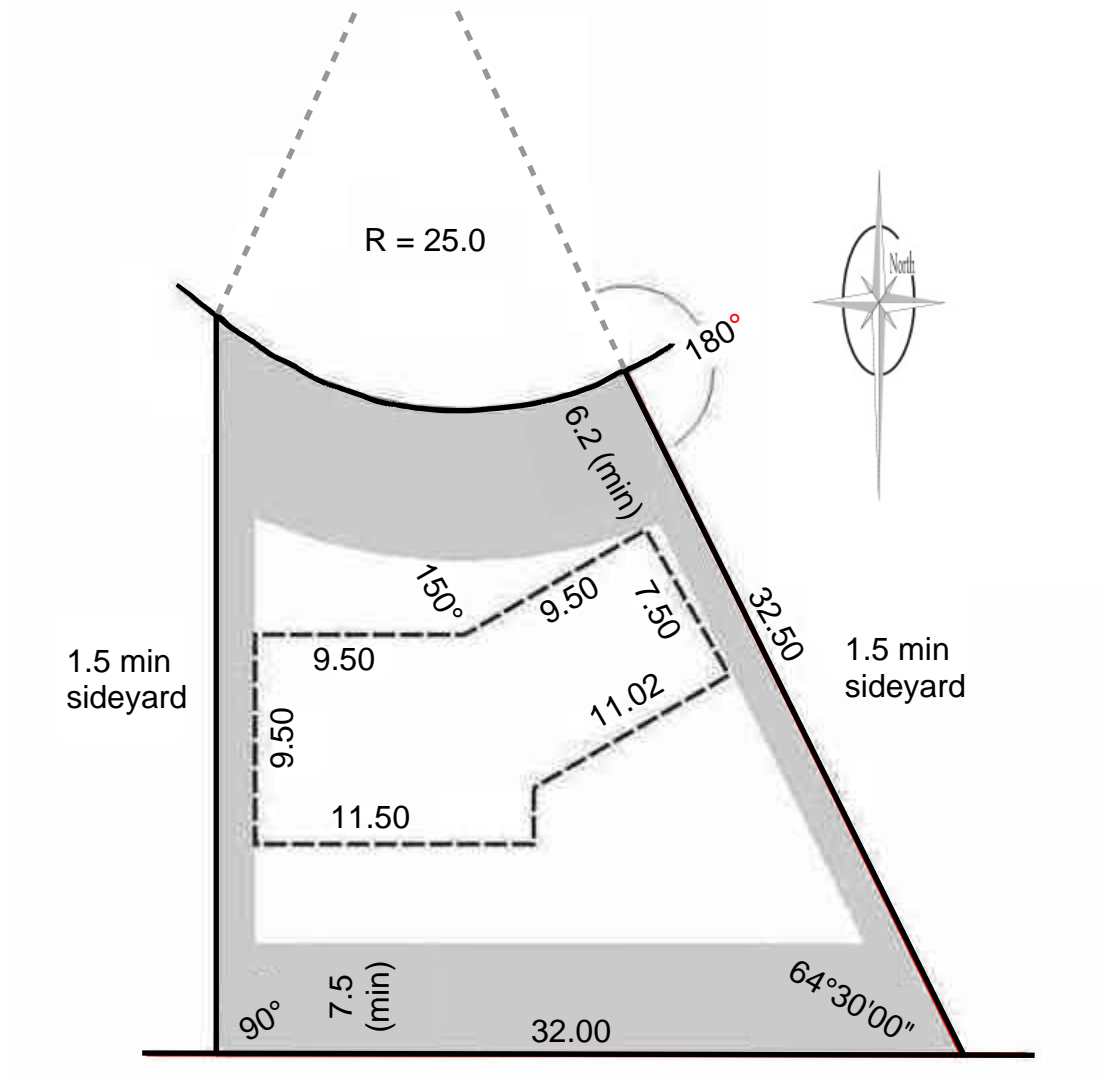
Using the information provided answer the following questions.

- 3 marks I) Calculate the section offsets required to be shown on the plan of survey for the well location, ICP, and BH?
- 3 marks II) Calculate the cartesian coordinates referred to the nearest section corner required to be shown on the plan of survey for the well location, ICP, and BH?
- 2 marks III) Unless defined by a Pool Order or Spacing Area Order, what is the minimum inter-well setback of a productive interval of a horizontal well?
- 2 marks IV) The Horizontal Pool order has determined the inter-well set-back is 120m. What drainage radius will be shown on the plan of survey when calculating the ultimate drainage area of the productive interval of the well?
- 10 marks V) The Horizontal Pool order has determined the inter-well set-back is 120m. Calculate the ultimate drainage area of the productive interval of the well given the size of the drainage unit is 1 legal subdivision (LSD) and Section 34-50-21-W3Mer is 100% Freehold mineral rights and Section 33-50-21-W3Mer is 100% Crown-owned mineral rights.

Question 4

15 marks

The client wishes to place his house on the lot as shown on the sketch, minimizing the setback from the street as much as possible. The limits of the house are shown as a heavy dashed line. Note that the deflection in the house is 30 degrees. The west side of the house is to be parallel with the west boundary of the lot. The minimum side yard is 1.5 metres and the minimum setback from the street is 6.2 metres. The unshaded part of the lot is where the house can be positioned within these limits. Calculate the position of the house and show your side-yard ties and the front and rear setback distances to the nearest centimeter.



Question 5

You have just completed a survey of several corner pins and one pin does not agree with the position shown on the registered plan. The pin has been in the ground long enough that you can't determine if it has been disturbed or planted in error.

- 4 marks Describe what checks you could make in the field to try and resolve the discrepancy.
- 6 marks Based on your thorough investigation, you conclude that the corner pin was placed in error. Please explain how you would proceed to have the situation corrected.
- 5 marks You are registering a new subdivision adjacent to this existing survey, how would you show the corner pin in error on your survey plan to be registered at ISC?

Appendix A

SASKATCHEWAN

40 Plan of Township 42, Range 27, West of the Third Meridian

THIRD EDITION

SCALE 40 CHAINS TO AN INCH

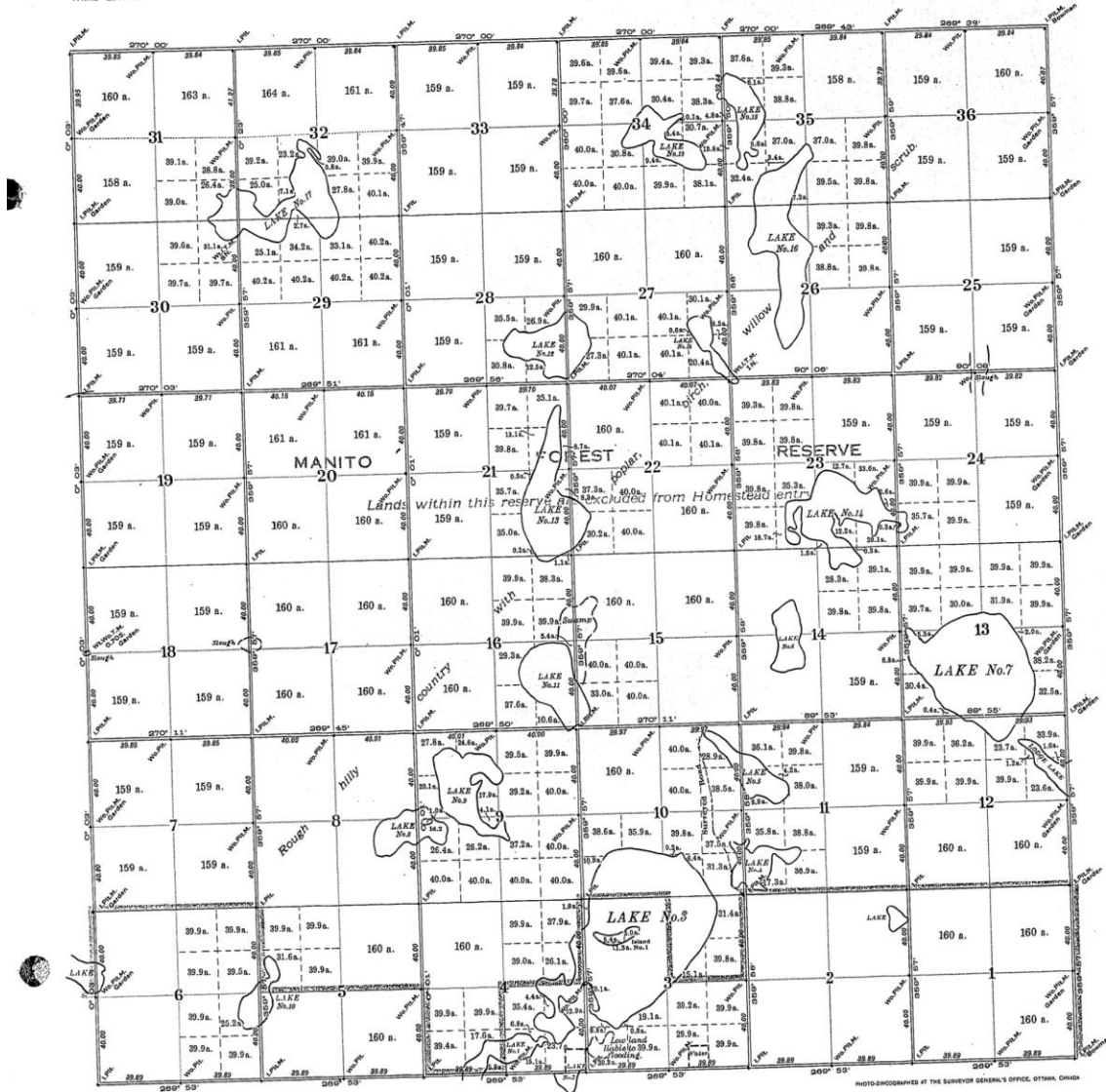



PHOTO-ENGRAVED AT THE SURVEYOR GENERAL'S OFFICE, OTTAWA, CANADA

Department of the Interior, Ottawa, 25th March, 1919

Compiled from official surveys by
 J. F. Garden.....D.L.S.....29th September.....1883
 H. J. Bowman.....D.L.S.....10th September.....1903
 J. W. Tyrrell.....D.L.S.....10th August.....1904
 L. E. Fontaine.....D.L.S.....7th September.....1906
 G. A. Bennett.....D.L.S.....7th August.....1918

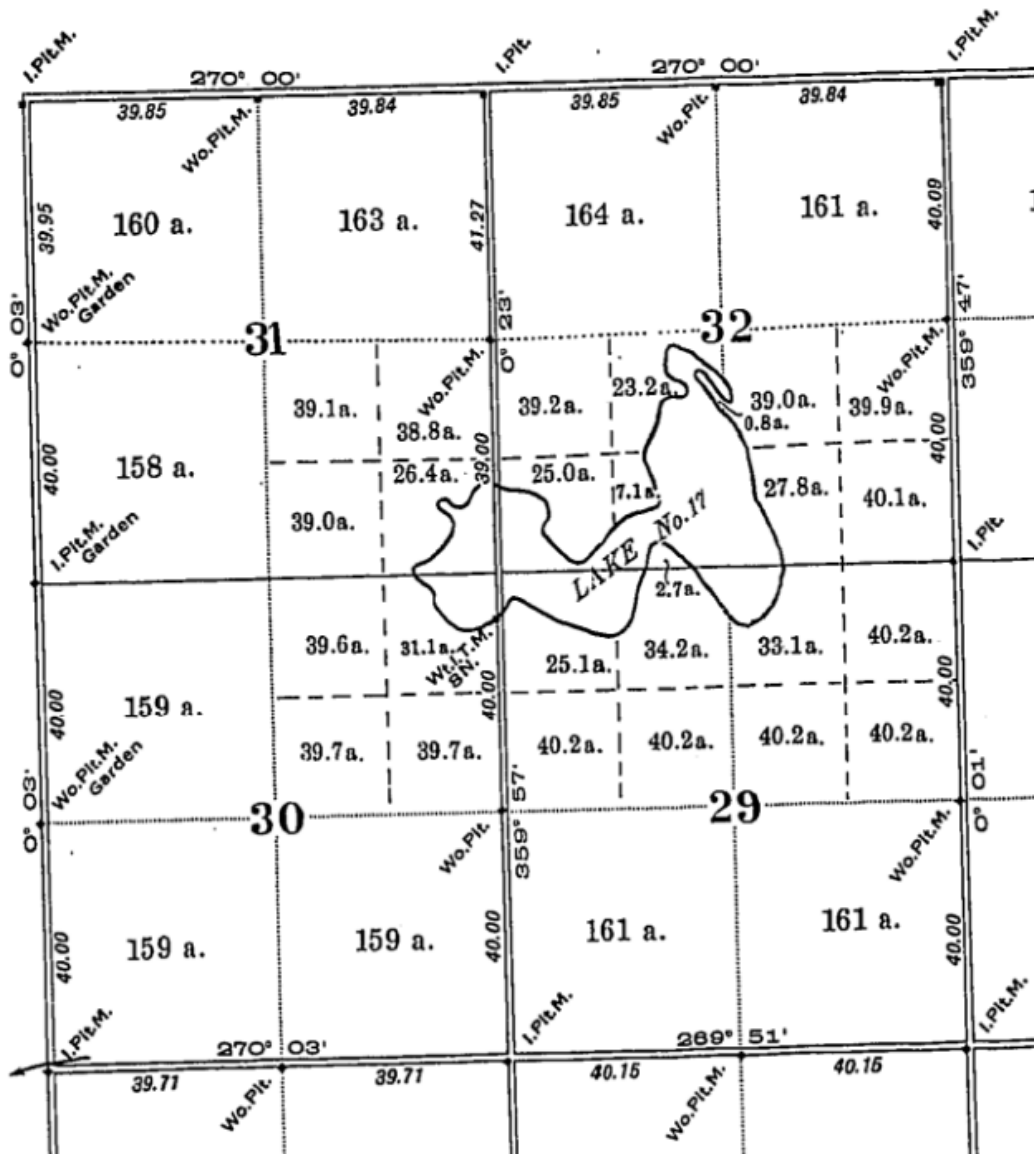
NOTE: The subdivisions of quarter-sections shown upon this plan are legal subdivisions and quarters of legal subdivisions. Distances are in chains. Bearings are reckoned from the astronomical meridian through the centre of the township. Areas in acres are marked on all lands surveyed, except lands that have been patented. The name of a monument is that of the surveyor who erected or restored the monument. All monuments not so designated were erected or restored by J. W. Tyrrell.
 I, stands for old pattern iron post; W, for wooden post; P, for four pits; M, for mound; W, for well; T, for trench.

13	14	15	16
12	11	10	9
5	6	7	8
4	3	2	1

Approved and Confirmed

 Surveyor General.

40. Plan of Township 42, 1

THIRD EDITION



Appendix B

Province of Saskatchewan Land Titles Registry Title																							
Title #: 112069469	As of: 24 Mar 2023																						
Title Status: Active	Last Amendment Date: 20 Feb 2013 15:29:40.920																						
Parcel Type: Surface	Issued: 07 Aug 2002 20:05:29.936																						
Parcel Value: N/A																							
Title Value: N/A	Municipality: RM OF MERVIN NO. 499																						
Converted Title: 74B10845A																							
Previous Title and/or Abstract #: 74B10845A																							
<p>is the registered owner of Surface Parcel #128560956</p> <p>Reference Land Description: SW Sec 34 Twp 50 Rge 21 W 3 Extension 20 As described on Certificate of Title 74B10845A.</p> <p>This title is subject to any registered interests set out below and the exceptions, reservations and interests mentioned in section 14 of <i>The Land Titles Act, 2000</i>.</p> <p>Registered Interests:</p> <table><tr><td>Interest #: 152072029</td><td>Lease - less than 10 years</td><td>Value: N/A</td></tr><tr><td></td><td></td><td>Reg'd: 08 Jul 2010 15:23:10</td></tr><tr><td></td><td></td><td>Interest Register Amendment Date: N/A</td></tr><tr><td></td><td></td><td>Interest Assignment Date: 20 Feb 2013 15:29:41</td></tr><tr><td></td><td></td><td>Interest Scheduled Expiry Date: N/A</td></tr><tr><td></td><td></td><td>Expiry Date: N/A</td></tr></table> <p>Holder: CENOVUS ENERGY INC. Box 6525 Station D Calgary, Alberta, Canada T2P 3G7 Client #: 112342991</p> <p>Int. Register #: 116580203</p> <p>Addresses for Service:</p> <table><thead><tr><th>Name</th><th>Address</th></tr></thead><tbody><tr><td></td><td>Box 61 Turtleford, Saskatchewan, Canada S0M 2Y0</td></tr></tbody></table> <p>Client #: 107875334</p> <p>Notes:</p> <p>Under The Planning and Development Act, 2007, the title for this parcel and parcels 128560866, 145206008 may not be transferred or, in certain circumstances, mortgaged or leased separately without the approval of the appropriate planning authority. If you believe this restriction does not apply to this parcel, please contact 1-866 ASK-ISC1 to have the restriction reviewed.</p> <p>Parcel Class Code: Parcel (Generic)</p>		Interest #: 152072029	Lease - less than 10 years	Value: N/A			Reg'd: 08 Jul 2010 15:23:10			Interest Register Amendment Date: N/A			Interest Assignment Date: 20 Feb 2013 15:29:41			Interest Scheduled Expiry Date: N/A			Expiry Date: N/A	Name	Address		Box 61 Turtleford, Saskatchewan, Canada S0M 2Y0
Interest #: 152072029	Lease - less than 10 years	Value: N/A																					
		Reg'd: 08 Jul 2010 15:23:10																					
		Interest Register Amendment Date: N/A																					
		Interest Assignment Date: 20 Feb 2013 15:29:41																					
		Interest Scheduled Expiry Date: N/A																					
		Expiry Date: N/A																					
Name	Address																						
	Box 61 Turtleford, Saskatchewan, Canada S0M 2Y0																						