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February 27, 2014

Jennifer Abel, P. Eng.  
Chief Petroleum Engineer  
Petroleum Branch  
Manitoba Innovation, Energy and Mines  
227 King Street, Virden Manitoba

Re: Sinclair Unit #9: 2013 Annual EOR Report

Dear Ms. Abel:

Please accept the attached annual EOR report for the Sinclair Unit #9. This was the first year of operation for the Sinclair Unit #9 Waterflood project.

Should you require any further information or clarification; please contact Ben MacIsaac at 403-930-2842 or via email at [bmacisaac@redriveroil.ca](mailto:bmacisaac@redriveroil.ca) at your earliest convenience.

Regards,

Ben MacIsaac  
Production Engineer  
Red River Oil Inc.  
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## Sinclair Unit #9: EOR Report 2013

### Overview

The Sinclair Unit # 9 waterflood is a one section (30-007-29W1), one pattern flood within the Bakken Three Forks formation operated by Red River Oil Inc. ("Red River" or the "Company"). The pattern consists of seven horizontal wellbores oriented north-south and spaced at 185-300 m. Three injectors are located at 00/13-30, 00/14-30 and 00/15-30 while four producers are located at 02/14-30, 02/15-30, 00/16-30 and 02/16-30. There is one abandoned vertical well at 11-30. Figure #1 attached is a Unit map showing the wellbore layout.

Production from Section 30-007-29W1 commenced in July 2009 (00/16-30), with the most recent horizontal (02/16-30) coming on production July 2013. All horizontals in the section have been multi-stage hydraulically fractured, ranging from 8 to 23 zones of 3.4 to 12 tonnes per stage. Water injection in Unit #9 commenced in late October 2013 (00/13-30 – Oct 19, 00/15-30 – Oct 21, 00/14-30 – Oct 23).

The main productive zones within the Three Forks in section 30-007-29W2 are the Upper Devonian Lyleton A Dolomitic Siltstone member and the overlying Mississippian Middle Bakken Siltstone member. Horizontal wells in section 30 have undulated through both the Three Forks Lyleton A Member and the Bakken Siltstones over the length of the laterals.

Red River estimates that original-oil-in-place for Unit #9 is  $1,212 \times 10^3 \text{ m}^3$  (7,629 mstb). Current recovery to date is  $19.2 \times 10^3 \text{ m}^3$  (120.7 mstb) or 1.6% of the OOIP. Primary recovery is expected to recover 3.1% based on 4 wells per section and 5.5% with infill drilling. An incremental 10% secondary recovery ( $121 \times 10^3 \text{ m}^3$  or 761 mstb) is expected, bringing the total recovery factor to 15%.

Results to date from early injection are encouraging. The 02/15-30 producer has begun to show a higher total fluid rate, resulting in a slight net oil gain compared to pre-injection production. A similar response is being seen in the 02/16-30 well but it is too early to quantify as the Unit #9 flood is still in its infancy.

The requested data referred to in clauses 1(a) to (c) and (f) of subsection 73(1) of the Oil and Gas Act (C.C.S.M. c. 034) is attached in graphical and tabular form in Figure #2 attached. VRR

and WOR values were 0.39 and 3.95 respectively in 2013, which equates to cumulative values of 0.11 and 3.34 respectively.

### **73(1)(d) Reservoir Pressure Surveys**

There were no pressure surveys executed in Unit #9 in 2013.

### **73(1)(e) Well Servicing**

Other than routine pump changes, there were no well servicing operations completed within Unit #9 in 2013.

### **73(1)(g) Injection Fluid Quality Control and Treatment**

Injection fluid for Unit #9 is sourced from the Lodgepole formation through the 15-18-007-29W1 source water well. The produced water from the 15-18 SWW is produced to the 15-18 injection facility. At this facility the water is cascaded through two water production tanks to allow any large solids to gravity separate, the water then is pumped to the filtration skid where it completes three stages of filtration. The primary filter stage is a 1-micron nominal bag filter, secondary is a 1-micron absolute bag filter and a tertiary 0.5-micron polisher cartridge filter. After the water is filtered it enters the injection pipeline system via a positive displacement pump. The injection pressure is limited to 5,000 kpa, although this pressure was not reached at any of the injectors to the end of 2013.

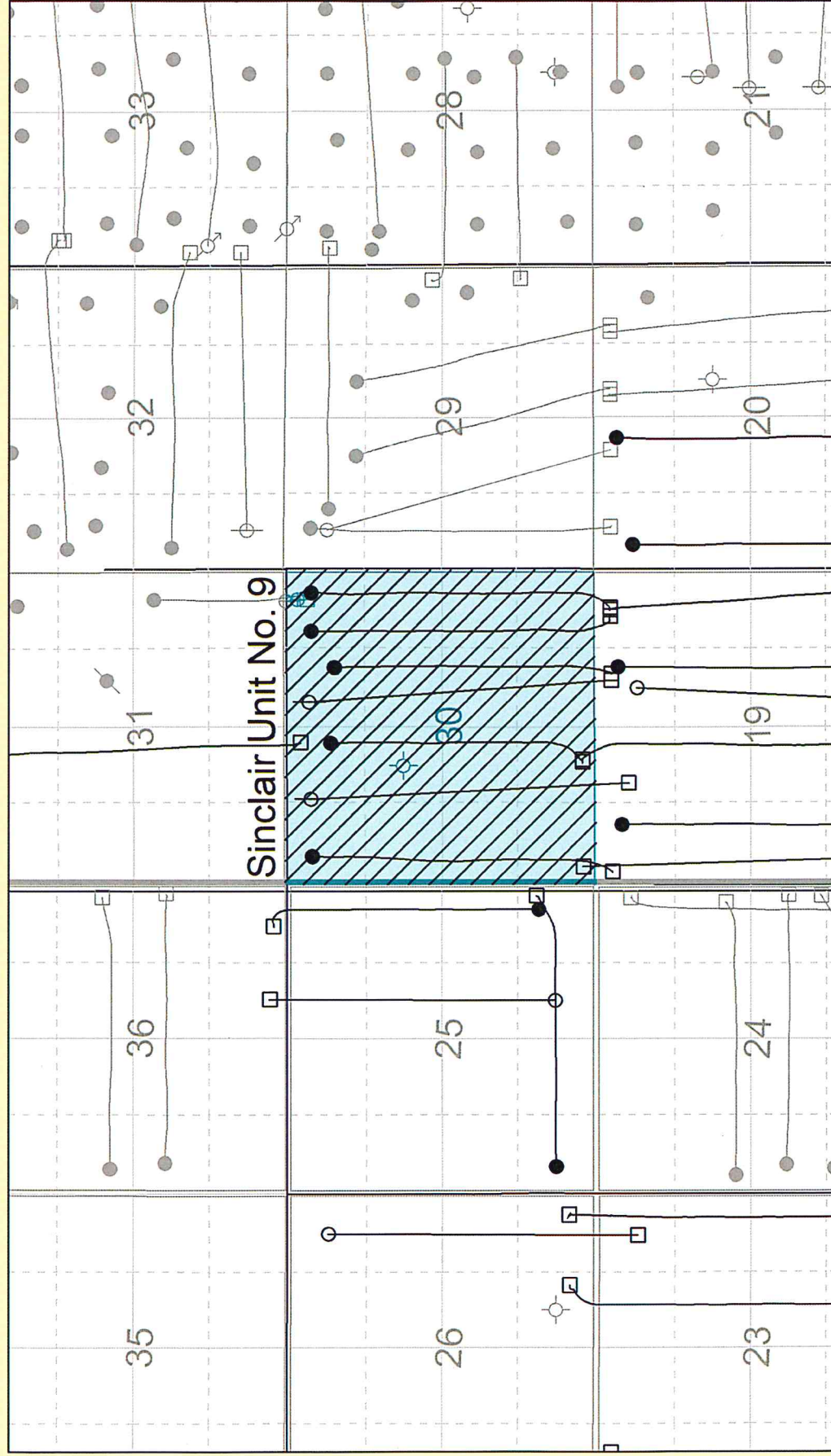
## **List of Attachments**

1. Map of Sinclair Unit #9
2. Figure #2: Sinclair Unit #9 data in graphical and tabular form



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Figure #2: Sinclair Unit #9 Produced Fluids

