

August 14, 2013

7750-2800/2850-32640-02

Mr. Rod McDougall, P. Eng  
Canadian Natural Resources Ltd.  
Suite 2500, 855 – 2nd Street S.W.  
Calgary, AB T2P 4J8

Dear Mr. McDougall:

**RE: WATER SOURCE AND PRODUCED WATER DISPOSAL WELL APPROVAL  
CNRL SEPTIMUS A7-5-82-19 W6M; WA# 22061  
SEPTIMUS FIELD - CADOMIN AND NIKANASSIN FORMATIONS**

Oil and Gas Commission (Commission) staff have reviewed the application, dated June 26, 2012, requesting approval to use the Cadomin and Nikanassin formations of the subject well for source water and disposal of produced water and fracture flowback. Deep disposal wells are a key component of oil and gas development and operations. Sourcing water from subsurface formations reduces dependency on fresh surface water.

The subject vertical well was originally completed in the Montney formation in June 2007. It produced gas from December 2007 to February 2009. In October 2009, the Montney zone was suspended and the well was recompleted in the Cadomin/Nikanassin as a water source well. With varying need for source and disposal depending on the operations being conducted, CNRL is requesting flexibility to use this well for both purposes.

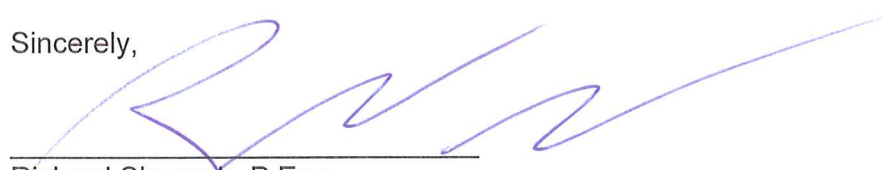
Attached find **Order 13-02-004**, designating an area in the Septimus field – Cadomin and Nikanassin formations a Special Project under section 75 of the *Oil and Gas Activities Act* (OGAA), for use as a storage reservoir for the disposal of produced water and well stimulation flowback fluid. This Order includes a number of detailed operational conditions, including: maximum wellhead injection pressure, ultimate reservoir pressure limit, wellbore integrity monitoring and reporting requirements. Additional general information regarding disposal wells is available on the Commission's website at <http://bcogc.ca/node/5997/download>.

Disposal wells are subject to regular field inspection and audit. Contravention of a condition of this Order may be subject to enforcement under section 62 of OGAA, or suspension or cancellation of the Order under section 75(2)(b).

This Order is effective August 14, 2013. Any concerns may be communicated to this office prior to that date.

Should you have any questions, please contact Michelle Gaucher at (250) 419-4482 or Ron Stefik at (250) 419-4430.

Sincerely,



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Richard Slocomb, P.Eng  
Deputy Commissioner, Engineering  
Oil and Gas Commission

Attachment

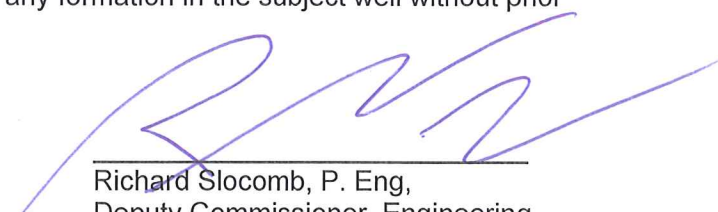
**ORDER 13-02-004**

1. Under Section 75(1)(d) of the *Oil and Gas Activities Act*, the Oil and Gas Commission (Commission) designates the operation and use of a storage reservoir for the disposal of produced water, including flowback from fracturing operations into the Cadomin and Nikanassin formations – Septimus field as a special project in the following area:

DLS Twp 82 Rge19 W6M Section 5 - Lsds 1,2,7 and 8.

2. Under section 75(2) of the *Oil and Gas Activities Act*, the special project designation in this Order is subject to the following conditions. The Permit Holder shall:

- a) Inject produced water, including well flowback completion fluids, only into the well CNRL Septimus A07-05-082-19 (Well Permit # 22061), Cadomin (1141.0 mKB to 1165.0 mKB) and Nikanassin (1269.0 mKB to 1280.0 mKB) formations.
- b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 17,000 kPag or the pressure required to fracture the formation, whichever is lesser.
- c) Inject only through tubing.
- d) Continually measure and record the wellhead casing and tubing pressures.
- e) Cease injection and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.
- f) Submit the annual packer isolation test report to the Commission within 30 days of the completion of the test. Include tests on each of the 3 packers included in the completion of this well.
- g) Include the disposal operating hours and the maximum injection pressure values on the monthly disposal statement.
- h) Report the disposal volumes on the monthly disposal statement to the Cadomin (90%) and Nikanassin (10%) formations.
- i) Cease injection upon reaching a maximum formation pressure of 11,760 kPaa.
- j) Conduct an annual reservoir pressure test on the formations in the subject well, with a shut-in period of sufficient length to provide data for calculation of the reservoir pressure, and submit a report of the test within 60 days of the end of the test.
- k) i) Perform a casing inspection log on the subject well and submit results to the Commission within 30 days of the completion of logging, at an interval of not more than every 10 years, commencing from the date of original disposal.  
ii) Perform a hydraulic isolation temperature log on the subject well if one has not been run in the last 5 years, within six months of the date of this Order and submit results to the Commission within 30 days of the completion of logging, and thereafter at an interval of not more than every 5 years, commencing from the date of initial disposal.
- l) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.



Richard Slocomb, P. Eng,  
Deputy Commissioner, Engineering  
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 14<sup>th</sup> day of August 2013.

## Advisory Guidance for Order 13-02-004

- I. A production packer must be set above the injection interval and the space between the tubing and casing (including the space between the 3 packers) filled with corrosion inhibiting fluids, as per section 16(2) of the Drilling and Production Regulation.
- II. Annual packer isolation tests are required, as per section 16(3) of the Drilling and Production Regulation.
- III. Injected fluids must be metered, as per section 74 of the Drilling and Production Regulation.
- IV. A monthly disposal statement must be submitted to the Commission not later than the 25<sup>th</sup> day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.