



May 2, 2013

2400-8400-32640-02

Mr. Stacy Johnson
Canadian Natural Resources Limited
2500, 855 – 2nd Street S.W.
Calgary, AB T2P 4J8

Dear Mr. Johnson:

**RE: PRODUCED WATER DISPOSAL WELL APPROVAL, AMENDMENT #1
CNRL BUICK d-34-H/94-A-14; WA# 14498
BUICK CREEK FIELD - SLAVE POINT "A" POOL**

Deep disposal wells are a key component of oil and gas development and operations. The Oil and Gas Commission (Commission) is amending disposal well approvals to provide clarity and ensure that conditions conform to current expectations.

The subject well was granted approval for disposal of produced water on June 4, 2004. The cumulative disposal volume as of December 2012 was 88,160 m³.

Attached find **Order 04-02-007 Amendment # 1**, designating an area in the Buick Creek field – Slave Point "A" pool a Special Project under section 75 of the *Oil and Gas Activities Act* (OGAA), for use of a storage reservoir for the disposal of produced water and well stimulation flowback fluid.

This Order amendment 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>.

This Order is effective May 16, 2013. Any concerns may be communicated to this office prior to that date.

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).

Should you have any questions, please contact Barry Goss at (250) 419-4479 or Ron Stefik at (250) 419-4430.

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Slocomb', is written over a horizontal line.

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

Attachment

ORDER 04-02-007 AMENDMENT # 1

WHEREAS an approval of June 4, 2004 enabled deep disposal into well CNRL Buick d-34-H/94-A-14,

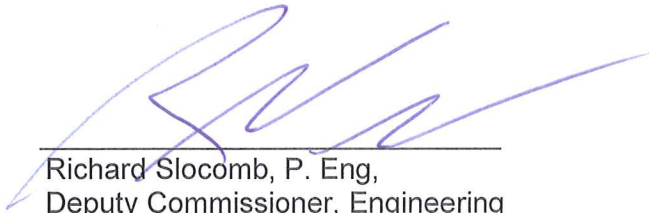
WHEREAS this approval is now known as Order 04-02-007 Amendment # 1,

WHEREAS Canadian Natural Resources Limited is the Permit Holder of the well, and

NOW THEREFORE clauses 1 through 4 of Order 04-02-007 are rescinded and replaced by the following.

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 Slave Point "A" pool – Buick Creek field as a special project in the following area:
NTS 94-A-14 Block H Unit 34.
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 flowback fluids, only into the well CNRL Buick d-34-H/94-A-14 (Well Permit# 14498), Slave Point "A" pool (3217.5 mKB to 3226.0 mKB).
 - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 12,850 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.
 - g) Include the disposal operating hours and the maximum injection pressure values on the monthly disposal statement.
 - h) Cease injection upon reaching a maximum formation pressure of 39,975 kPaa.
 - i) Conduct an annual reservoir pressure test on the formation 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.
 - j)
 - i) Perform a casing inspection log on the subject well if one has not been run in the last 10 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 10 years, and
 - ii) Perform a temperature log on the subject well if one has not been run in the last 5 years, within 6 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.

- k) 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 3rd day of May, 2013.

Advisory Guidance for Order 04-02-007 AMENDMENT# 1

- I. A production packer must be set above the injection interval and the space between the tubing and casing 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 25th day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.