

June 28, 2013

6600-2600/2800-32640-02

Mr. Andrew McDicken
ARC Resources Ltd.
1200, 308 – 4th Avenue S.W.
Calgary, AB T2P 0H7

Dear Mr. McDicken:

**RE: PRODUCED WATER DISPOSAL WELL APPROVAL
ARCRES ET AL PARKLAND 7-9-81-16 W6M; WA# 22580
PARKLAND FIELD; BLUESKY AND CADOMIN FORMATIONS**


Oil and Gas Commission (Commission) staff have reviewed the application, dated May 10, 2013, requesting approval to dispose of produced water and fracture flowback fluid into the Bluesky and Cadomin formations of the subject well. Deep disposal wells are a key component of oil and gas development and operations.

The subject well, rig released February 17, 2007, was completed in the Doig and Halfway formations, but never placed on production. The Bluesky and Cadomin formations are mapped as regional aquifers, with no identified hydrocarbon potential for a significant distance.

Attached find **Order 13-02-003**, designating an area in the Parkland field – Bluesky and Cadomin formations 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 includes a number of detailed operational conditions, including: maximum wellhead injection pressure, ultimate reservoir pressure limit, wellbore integrity monitoring and reporting requirements, and conditions of operation provide for disposal into 2 zones in an unsegregated state. Additional general information regarding disposal wells is available on the Commission's website at <http://bcogc.ca/node/5997/download>.

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

Sincerely,



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

Attachment

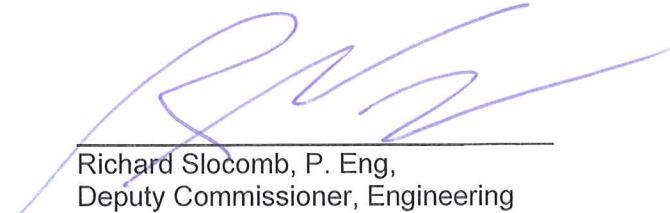
ORDER 13-02-003

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 Bluesky and Cadomin formations (the formations) – Parkland field as a special project in the following area:

DLS Twp 81 Rge16 W6M Section 9 - 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 ARCRES et al Parkland 7-9-81-16 (Well Permit # 22580), Bluesky (1137.0 mKB to 1141.0 mKB) and Cadomin (1284.0 mKB to 1305.0 mKB) formations.
- b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 14,900kPag 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) Report the disposal volumes on the monthly disposal statement to the Bluesky and Cadomin formation each 50%.
- i) Cease injection upon reaching a maximum formation pressure of 9,850 kPaa.
- j) Conduct an annual reservoir pressure test on the unsegregated 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) Isolate the individual formations anytime disposal operations are suspended for 3 months or longer.
- l) 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 initial disposal.
ii) Perform a hydraulic isolation temperature log on the subject well, 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.
- m) 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 28th day of June, 2013.
Advisory Guidance for Order 13-02-003

- 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.