



October 17, 2018

8157-2800/2850-32640-02

Trevor Befus
Environment and Regulatory Planner
Catapult Environmental Inc.
Suite 1620, 700 – 9th Ave S.W.
Calgary, AB T2P 3V4

Dear Mr. Befus,

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL
CATAPULT TOWER 13-26-81-17; WA# 20155
TOWER LAKE FIELD – CADOMIN AND NIKANASSIN FORMATIONS**

Commission staff have reviewed the application from Catapult Environmental Inc., dated August 2nd, 2018, requesting produced water disposal approval into the Cadomin and Nikanassin formations of the subject well.

The subject well was approved for disposal into the Bluesky formation on March 22, 2018. However injectivity into the Bluesky zone declined quickly after disposal activity started and soon reached uneconomic rates. Catapult requested and received an extended injectivity test approval for the Cadomin and Nikanassin zones to determine the injection potential. The test results indicate a viable disposal opportunity and therefore, suitable for long-term disposal approval.

Attached please find **Order 18-02-006 Amendment #1**, designating an area in the Tower Lake field, Cadomin and Nikanassin formations, as a Special Project under section 75 of the Oil and Gas Activities Act. Additional general information regarding disposal wells is available on the Commission's website at <http://www.bcogc.ca/industry-zone/documentation/Subsurface-Disposal>.

For the inspection requirement of Order condition 2k), please arrange via email to OGCPipelines.Facilities@bcogc.ca.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Richard Slocomb", written over a horizontal line.

Richard Slocomb, P.Eng.
Vice President, Reservoir, Field Engineering and Tech Svcs.
Oil and Gas Commission

ORDER 18-02-006 Amendment #1

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

DLS Twp 81 Rge 17 W6M Section 26 - Lsds 11, 12, 13 and 14

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 only into the well Catapult Tower 13-26-81-17; WA# 20155 – Cadomin (perforations 1235.0 to 1263.0 mKB) and Nikanassin (perforations 1287.0 to 1301.0 mKB) formations.

a) Not exceed an injection pressure, measured at the wellhead on the subject well, of 17,650 kPag or the pressure required to fracture the formation, whichever is lesser.

b) Inject only through tubing with a packer set as near as is practical above the injection interval.

c) Continually measure and record the wellhead casing and tubing pressures electronically.

d) Cease injection and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.

e) Submit the annual packer isolation test report to the Commission within 30 days of the completion of the test.

f) Include the disposal operating hours and the maximum injection pressure value on the monthly BC-S18 disposal statement.

g) 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.


h) Cease injection upon reaching a maximum formation pressure of 13,400 kPaa, measured at 1249.0 mKB TVD.

i) 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 and submit results to the Commission within 30 days of the completion of logging, at an interval of not more than every 5 years, commencing from the date of initial disposal.

j) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.

k) Complete an inspection, satisfactory to the Commission, within 4 weeks of initial disposal operations.



Richard Slocomb, P. Eng.

Vice President, Reservoir, Field Engineering & Technical Svcs
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 18th day of October, 2018.

Advisory Guidance for Order 18-02-006

- I. A production packer must be set above the injection interval and the space between the tubing and casing filled with corrosion and frost inhibiting fluids, as per section 16(2) of the Drilling and Production Regulation.
- II. Annual packer isolation tests are required to be submitted, as per section 16(3) of the Drilling and Production Regulation.
- III. Injected fluids must be metered and the injection pressure measured at the wellhead, 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.
 - b) Seismic events must be reported and disposal operations suspended as per section 21.1 of the Drilling and Production Regulation.