



October 23, 2014

2000-2800-32640-02

Scott Hagen
Tervita Corporation
500, 140 – 10th Ave SE
Calgary, AB
T2G 0R1

Dear Mr. Hagen

**RE: NON-HAZARDOUS WASTE AND PRODUCED WATER DISPOSAL
SPECIAL PROJECT APPROVAL
TERVITA BOUNDARY LAKE B06-26-084-14; WA# 30410
BOUNDARY LAKE FIELD - CADOMIN FORMATION**

BC Oil and Gas Commission staff have reviewed the application, dated Sept 17, 2014, requesting approval for deep well disposal of produced water and non-hazardous waste into the Cadomin formation of the subject well.

The subject well, rig released August 30, 2014, was drilled and twinned beside existing well Tervita Boundary A06-26-084-14 (WA# 7474). Well WA 7474 was used for disposal of non-hazardous waste into the Halfway formation from July 1994 to March 2014. Due to reservoir limitations it was determined that the Halfway zone was no longer suitable for injection, and well WA 30410 was drilled to ensure hydraulic isolation in the Cadomin.

Attached please find **Order 14-02-011** designating an area in the Boundary Lake field – Cadomin formation as a Special Project under section 75 of the *Oil and Gas Activities Act*, for the use of a storage reservoir for the disposal of non-hazardous waste and produced water. This Order contains a number of detailed operational conditions. Additional general information regarding disposal wells is available on the Commission's website at <http://www.bcogc.ca/industry-zone/documentation/Subsurface-Disposal>.

The application requested a maximum reservoir pressure limit based on a normal hydrostatic column pressure at the disposal depth. At this time the pressure limit is based on the initial measured reservoir pressure, however an application for amendment of the pressure limit value may be made once performance data is gathered to validate the reservoir model.

In certain circumstances, disposal well operation may induce seismicity. The Commission advises that disposal well permit holders monitor seismic events in proximity to the well and be prepared to modify operations to mitigate induced seismicity. Permit holders may monitor seismic events through the Natural Resources Canada seismic monitoring network at <http://www.earthquakescanada.nrcan.gc.ca/recent/index-eng.php>.

Should you have any questions, please contact the undersigned at (250) 419-4430 or Michelle Harding at (250) 419-4493.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Ron Stefik', written over a horizontal line.

Ron Stefik, Eng.L.
Supervisor, Reservoir Engineering
Oil and Gas Commission

Attachment

ORDER 14-02-011

- 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 non-hazardous waste and produced water, into the Paddy and Cadotte formations – Sunrise field as a special project in the following area:

DLS Twp 84 Rge 14 W6M Section 26 - Lsds 3, 4, 5, 6

- 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 non-hazardous waste and produced water only into the well TERVITA BOUNDARY LAKE B06-26-084-14; WA# 30410 – Cadomin formation (disposal perforations 1155 - 1173 mKB).
 - b) Hold a valid Permit under the Environmental Management Act for the disposal of non-hazardous waste.
 - c) Not exceed an injection pressure, measured at the wellhead on the subject well, of 15,000 kPag or the pressure required to fracture the formation, whichever is lesser.
 - d) Inject only through tubing with a packer set as near as is practical above the injection interval.
 - e) Continually measure and record the wellhead casing and tubing pressures electronically.
 - f) Cease injection and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.
 - g) Submit the annual packer isolation test report to the Commission within 30 days of the completion of the test.
 - h) Include the disposal operating hours and the maximum injection pressure value on the monthly BC-S18 disposal statement.
 - 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) Cease injection upon reaching a maximum formation pressure of 12,400 kPaa.
 - 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 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.
 - l) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.



Ron Stefik, Eng.L.
Supervisor, Reservoir Engineering
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 23rd day of October 2014.

Advisory Guidance for Order 14-02-011

- 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.