BC Oil & Gas COMMISSION

July 3, 2018 2800-7400-32640-02

Lesley Jorgensen
Engineering Tech
Storm Resources Ltd.
200, 640 – 5th Ave S.W.
Calgary, Alberta T2P 3G4

Dear Mr. Evans,

RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL; AMENDMENT #2
SRL W BUICK a-92-L/94-A-14; WA# 21764
BUICK CREEK WEST FIELD – DEBOLT FORMATION

Commission staff have reviewed the application from Storm Resources Ltd. dated June 19, 2018, requesting removal of condition 2h)i) from Order 17-02-012 Amendment #1, requiring a reservoir pressure test following the injection of 10,000 m^3 into the Debolt. The subject well was approved for disposal into the Debolt formation on December 6, 2017, under Order 17-02-012 Amendment #1.

Following the injection of 6,299 m^3, Storm Resources obtained a reservoir pressure on the subject well, indicating a value of 104.4% of initial pressure. Based on this result, the remaining disposal volume has been calculated as 23,304 m^3. Storm intends to inject 6,000 m^3 – 6,500 m^3 per year until fill-up is reached, and to take annual pressure tests to verify this projection.

Attached please find **Order 17-02-012 Amendment #2**, designating an area in the Buick Creek West field, Debolt formation, as a Special Project under section 75 of the *Oil and Gas Activities Act*, for the operation and use of a storage reservoir for the disposal of produced water. It should be noted that the Order format has been altered slightly, with certain conditions removed from Order 17-02-012 Amendment #1 that re-iterated Drilling and Production Regulation requirements. These requirements are now covered under the Advisory Guidance section. The Commission is satisfied that the subject well can be prudently operated with annual reservoir pressure tests, as per condition 2e). The condition requiring a pressure test following the injection of 10,000 m^3 has been removed. However, should well operation change, such as continuous service, consideration must be taken to ensure that the maximum formation pressure in condition 2f) is not exceeded between annual pressure tests.

In certain circumstances, disposal well operation may induce seismicity of values that require modification of operations to mitigate.

Disposal of fluid with high total dissolved solids content requires adjustment of the wellhead injection pressure to remain below formation fracture pressure

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

Sincerely,

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

Attachment

BC Oil & Gas COMMISSION

ORDER 17-02-012 Amendment #2

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, into the Debolt formation – Buick Creek West field as a special project in the following area:

NTS 94-A-14 Block L Unit 92

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 SRL W Buick a-92-L/94-A-14; WA# 21764 – Debolt formation (disposal perforations 1778.0 to 1802.0 mKB).

b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 14,600 kPag or the pressure required to fracture the formation, whichever is lesser.

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

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

e) 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.

f) Cease injection upon reaching a maximum formation pressure of 18,625 kPaa, measured at 1790.0 mKB.

g) 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.

h) 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 3rd day of July, 2018.

Advisory Guidance for Order 17-02-012 Amendment #2

I. A production packer must be set as near as is practical 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, and failures repaired without unreasonable delay, 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, indicating the quantity of fluid injected, the maximum wellhead injection pressure and the total monthly operating hours, 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.

V. Seismic events must be reported and disposal operations suspended as per section 21.1 of the Drilling and Production Regulation.