



June 17, 2019

2985-6200-32640-02

Kimberley Toews-Koch
Engineering Technologist
TAQA North Ltd.
2100, 308 - 4th Ave S.W.
Calgary, Alberta T2P 0H7

Dear Ms. Toews-Koch:

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL, AMENDMENT #2
TAQA NORTH ET AL CHINCHAGA d-33-H/94-H-08; WA# 10834
CHINCHAGA RIVER FIELD – BELLOY FORMATION**

Approval for disposal of produced water, Order 98-02-002, was issued for the subject well, Belloy formation, on February 2, 1998. Order 98-02-002 Amendment #1 was issued on July 4, 2016; updating conditions to conform to current requirements. Appendix A of the order specified groundwater monitoring requirements that included baseline sampling from two proximal water wells known as "TAQA Chinchaga Camp" (identified as Provincial Well Tag Number 105359) well and "TAQA Chinchaga Plant" (Identified as Provincial Well Tag number 105360) well. Results of sampling from these water wells in 2012 and 2016 were submitted. The Commission considers the submitted results sufficient to represent baseline conditions for groundwater at the noted water wells. Further ground water sampling is not required at this time and Appendix A has been amended to reflect this change in requirements.

Please note that the Commission may, at any time, require additional sampling, further investigation, and/or reporting respecting groundwater conditions.

Attached please find **Order 98-02-002 Amendment #2**, designating an area in the Chinchaga River field – Belloy 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. This Order updates existing conditions to refer to Petrinex where applicable, clarifies calculation depth for formation pressure, and includes a revised Appendix A, as described above.

Additional general information regarding disposal wells is available on the Commission's website at <http://www.bcogc.ca/industry-zone/documentation/Subsurface-Disposal>.

Should you have any questions, please contact Kathryn Archibald at (250) 419-4406 or the undersigned at (250) 419-4430.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Ron Stefik'.

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

Attachments

ORDER 98-02-002 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 Belloy formation – in the Chinchaga River field as a special project in the following area:

NTS 94-H-8 Block H Unit 33

- 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 TAQA North et al Chinchaga d-33-H/94-H-08; WA# 10834 – Belloy formation (disposal perforations 1136.0 – 1170.0 mKB).
 - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 2,575 kPag or the pressure required to fracture the formation, whichever is lesser.
 - c) Inject only through tubing with a packer set as near as is practical above the injection interval.
 - d) Continually measure and record the wellhead casing and tubing pressures electronically.
 - 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 value in Petrinex.
 - h) Conduct a reservoir pressure test on the formation in the subject well once every two years, 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.
 - i) Cease injection upon reaching a maximum formation pressure of 10,400 kPaa, measured at 1153 mKB.
 - j) Maintain and manage the well head to prevent surface liquids from entering the well bore through the annulus outside or between casing and conductor strings.
 - 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.
 - m) Implement a groundwater monitoring program as detailed in Appendix A.



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

DATED AT the City of Victoria, in the Province of British Columbia, this 17th day of June, 2019.

Advisory Guidance for Order 98-02-002 Amendment #2

- 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 via Petrinex not later than the 20th 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.

Appendix A – Groundwater Monitoring Requirements

TAQA North et al Chinchaga d-33-H/94-H-08 (WA# 10834) Produced Water Disposal

- Baseline groundwater chemistry results have been submitted to the Commission for two water wells known as “TAQA Chinchaga Camp” (identified as Provincial Well Tag Number 105359) well and “TAQA Chinchaga Plant” (identified as Provincial Well Tag number 105360) well. No additional sampling is required at this time.
- Please be advised that the Commission may, at any time, require additional sampling, further investigation, and/or reporting respecting groundwater conditions.