

May 13, 2016

3600-2800-32640-02

Nicholas Haddow, Regulatory Specialist  
Aqua Terra Water Management Inc.  
#108, 32 Burnt Lake Crescent  
Red Deer, AB T4S 0K6

Dear Mr. Haddow:

**RE: PRODUCED WATER AND NON-HAZARDOUS WASTE DISPOSAL  
GROUNDWATER MONITORING PROGRAM  
AQTWM FT ST JOHN 11-12-084-19 W6M; WA# 3010  
FORT ST JOHN FIELD – CADOMIN FORMATION**

The Commission has received Aqua Terra's request, dated April 28, 2016, to alter the groundwater monitoring requirements outlined in Appendix A of Order 16-02-002 Amendment #2.

The requirements for groundwater monitoring programs for disposal wells include the installation of a minimum of three dedicated groundwater monitoring wells at locations surrounding the disposal well, with specific requirements for locations, depths, and construction details determined on a case by case basis accounting for relative locations of groundwater use and other site-specific or well-specific information. In the case of the subject well, an existing monitoring well network at the site was considered in determining the specific requirements for the installation of groundwater monitoring wells.

It is our understanding that five existing groundwater monitoring wells at the site were installed in conjunction with site remediation work in 1997-1998, which was focused in the area of a former flare pit and underground tank/piping. While the locations of the existing monitoring wells may have been appropriate for the purpose of the site remediation and investigation conducted at that time, they do not fully satisfy requirements for disposal well groundwater monitoring well locations required under the Special Project Order. Specifically, there are no existing groundwater monitoring wells between the disposal well location and areas with high potential for domestic water use to the north and northwest. Therefore the requirement to drill the 2 additional monitoring wells to the northwest and north of site will **not** be waived.

A 3<sup>rd</sup> monitoring well was requested to be drilled near existing monitoring well P14-02. This is based on concerns that the existing monitoring wells drilled in 1997 may not fully meet current monitoring well condition and construction standards for environmental investigations. The requirement to drill the 3<sup>rd</sup> well **may** be waived if information is provided to document the construction details, age, and the condition of the existing monitoring wells, confirming the suitability of the existing monitoring wells for representative sample collection for the detection of changes in groundwater quality over the long term. This information may be included in the required "reference groundwater assessment report".

Subject to requirements for sampling from groundwater monitoring wells at locations defined in Appendix A, and comments provided above, the Commission **agrees to an extension of the deadline** for the submission of the reference report to 90 days.

In regard to reservoir pressure testing of the deep disposal formation, a preliminary review of the March 2016 pressure test shows a stable formation pressure in line with the November 2015 pressure test measured at WA 3060 (AQTWM Ft St John 6-24-84-19). This pressure is slightly elevated at ~101% of the initial Cadomin pressure measured in May 2009 at WA 3060. These pressure results indicate that the Cadomin formation at both locations may be in pressure communication. Therefore,

the virgin reservoir pressure will still be considered as the initial pressure measured at the WA 3060 location. The maximum reservoir pressure will **not** be changed.

Should you have any questions, please contact Michelle Harding at (250) 419-4493 or Laurie Welch at (250) 980-6066.

Sincerely,

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

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

Attachment