

July 28, 2009

By RESS & Courier

Ontario Energy Board,
2300 Yonge Street, Suite 2700
Toronto, Ontario.
M4P 1E4

Attention: Ms. Kirsten Walli, Board Secretary

Dear Ms. Walli:

**Re: EB-2009-0144
Union's Submissions pursuant to Procedural Order No. 1
regarding 2009 Storage Enhancement Project**

These are Union's Submissions, pursuant to Procedural Order No. 1 with respect to the 2009 Storage Enhancement Project.

Consultation

Prior to submitting the Storage Enhancement Project application, Union sent letters to all landowners in the pools subject to the application informing them about Union's proposal. Union did not receive any responses to that letter. Five responses were received during the notice period identified in the Board's Letter of Direction/Notice of Application. Union has discussed the project with the majority of the individuals who responded to the Letter of Direction/Notice of Application. The following is a summary of their concerns and Union response:

The Township of Dawn Euphemia reiterated the concern they identified with water wells in the area. Union's response to the Townships issue is set out under the heading Water wells.

Judith and Doug McLachlin, landowners in the Bentpath East Pool, expressed a concern regarding storage activities and the potential impact on water wells. Union is aware of the concern that the McLachlin's had during development of the Pool. Union will inform the McLachlin's that if they experience any additional problems with their water well, to contact Union, and Union will have a hydrogeologist review the situation. Additional information regarding water wells can be found in the section dealing with Water Wells.

Tom and Kim Wilkin, landowners in the Oil City Pool, had general concerns regarding the project. Union's understanding is that through discussions with the Wilkin's, Union has resolved all of the issues that the Wilkin's had identified with the Storage Enhancement Project.

Fred and Pat Sterling had concerns regarding the safe operation of the Oil City Pool. This issue is addressed later in this letter under the headings of Reef Integrity and Operation of Facilities.

William and Barbara Cascaden identified a number of concerns some of which relate back to the Storage Compensation Proceeding, and others which deal with the current proposal. All of those issues are addressed below.

Based on the meetings and conversations Union has had with the people that responded to the Letter of Direction/Notice of Application, Union believes that it has addressed the concerns that have been identified to the greatest extent possible.

Water Wells

Union has a long standing water well monitoring program to ensure that Union's pipeline and storage operations do not negatively impact water wells in the vicinity of its operations. Union retains Hydrogeologists to review the aquifer conditions, and the water wells in the vicinity of the proposed operations, to develop water well monitoring programs that determine if the aquifer has been impacted by Union's activities. Specific to the Bentpath East Pool, Union monitored water wells during initial construction of the Pool. The Water Well Monitoring program did not identify any issues. There were no complaints at that time, or since the pool went in-service in 1999 that could be linked to the development of the Storage Pool.

Union has retained Dillon Consulting who have Hydrogeologists on staff to review and comment on the potential impacts of the Storage Enhancement Project. Attached to this letter is a copy of the review that was completed by Dillon.

Reef Integrity

A thorough evaluation of all subsurface activities and their potential impact on the integrity of the storage facility was conducted in accordance with CSA Z341. The technical information reviewed indicated that there is minimal risk regarding the potential migration of natural gas between any known existing wells within 1 km, and existing operations within 5 km, of the Storage Pools. In addition, geomechanical tests were conducted on core samples extracted from the Pools to confirm that the caprock properties of the Storage Pools are competent and are capable of withstanding operating pressures in excess of the proposed operating pressures.

Operation of Facilities

As part of the 2009 Storage Enhancement Project, Union has conducted an engineering evaluation of all the above ground piping and related facilities, and below ground facilities impacted by this project. Casing inspection logs and cement bond logs have been completed on all wells, in accordance with CSA Z341, to verify the integrity of the cement and casing in each well. In addition, Union is in the process of replacing four wellheads, twelve wellhead master valves and installing new production casing in one well. This work will be completed prior to increasing the pressure in the pools. All facilities are in accordance with the applicable CSA codes and can safely be operated at the increased pressure.

Leases and Compensation

Union agrees with the Cascadens that it does not have a storage lease for the Cascaden property. Union is relying on the Ontario Energy Board ("OEB") Order's for the Oil City Pool for the legal right to inject, store, and withdraw gas, and operate the Pool under the Cascaden property. Union has had many discussions with the Cascadens regarding this issue but has been unsuccessful in reaching an agreement with them. Compensation for storage rights has been the main reason that Union has not been able to reach an agreement with the Cascadens. This issue was raised in the Storage Compensation Proceeding by the Lambton County Storage Association ("LCSA"). In 2004, when the OEB decision on the Storage Compensation Proceeding was made, the Cascadens were members of LCSA. The LCSA withdrew this issue during settlement negotiations. Based on the LCSA withdrawal, and the wording of the settlement agreement, the Cascadens issues were addressed. Union has compensated the Cascadens as per the 2004 LCSA settlement agreement. Even though the Cascadens have not signed the 2009 LCSA agreement Union is willing to provide annual compensation to them at the increased rates. If the Cascadens have issues related to compensation, they have the right to bring forward a Section 38 application to the OEB.

Summary

Union first started operating Storage Pools safely at 16.51kPa/m (0.73 psi/ft) in 2001. Since that time Union has operated 13 Storage Pools at that pressure with out any incidents. Union has met with the Ministry of Natural Resources to discuss the proposed operation of these Pools and has provided them with

additional studies to confirm that the Pools can be operated safely with the small pressure increases that are proposed. Union has informed the landowners of the proposed change and has met and discussed the changes with the majority of landowners who identified concerns with the project, and believes that it has addressed the concerns to the greatest extent possible.

Sincerely,

[Original signed by]

Bill Wachsmuth
Senior Administrator, Regulatory Projects

July 15, 2009

Union Gas Limited
P.O. Box 2001
50 Keil Drive
Chatham Ontario
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Attention: Mr. Doug Schmidt, Principal Environmental Planner

Dawn-Euphimia Concerns Re: Water-Well Interference, Bentpath-East Gas Storage Pool

Dear Doug:

As requested, Dillon Consulting Limited (Dillon) has reviewed the available information related to the Delta pressuring proposal for the Bentpath-East storage pool, including data collected in the late 1990s, and in 2008 in the vicinity of the storage pool. In response to the questions you have asked us to address, we have the following comments. The questions have been provided in italics, below.

- 1) Describe the local aquifer, and provide an opinion on the potential effects of increasing the pressure in the pool on drinking water for the local residents that currently use the aquifer for water supply.*

The interface aquifer that is drilled into for drinking water supplies in Dawn-Euphima consists of approximately a 3 m sequence of coarse sand and gravels, located below the clay till overburden that is present in Lambton County. The clay till is approximately 40 m thick in the vicinity of the Bentpath-East pool. Underlying the sand and gravel are shales of the Kettle Point Formation, which in turn are underlain by additional sequences of shales, dolomite, limestone, etc. that make up the Palaeozoic rock sequence of the subsurface. The storage pool is located at a depth of approximately 640 m below ground surface, within the Silurian aged Guelph Formation.

The vertical hydraulic gradient, which is the direction that water flows, in the aquifer has been determined to be downward in various studies completed by the University of Waterloo. The downward hydraulic gradient and the thick sequence of shales beneath the aquifer provide protection from impacts from deeper sources. In addition, the horizontal hydraulic gradient is quite low, so that the movement of groundwater laterally is quite slow.

The Ontario Ministry of Natural Resources (MNR) regulate the construction of the various gas wells that are completed into the storage pool. Through the

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**Dillon Consulting
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application of gas well construction standards (both Canadian Standards Association and MNR), the interface aquifer is protected from potential impacts from the wells that penetrate the clay and pass through the aquifer. The well casings are cemented in place through the entire sequence of the well, and as such, effectively isolate the aquifer from potential impacts.

The Ontario Ministry of the Environment (MOE) completed a groundwater study for Lambton County in 2004. The study concluded that for much of Lambton County there is a low susceptibility to contamination from surficial activities for the interface aquifer. Given the nature of the clay sequence, the conclusion that we draw is that Union's surface activities at the Bentpath-East pool will not affect the interface aquifer.

The interface aquifer is recharged from areas to the east of Lambton County, at a considerable distance from the Bentpath-East pool. As the use of the aquifer has been declining over the past 20 years, as more areas are placed onto a piped drinking water supply, less water is being drawn out of the aquifer. The typical low yield of the wells preclude the development of large water taking operations in the area, which is the one activity that could influence the long term quantity of water available to the local residents from their wells. Union's Delta Pressuring activities are not considered to be a technical concern related to water supply availability as the increased pressure in the storage pool has no effect on the interface aquifer.

2) What were the results of the water well monitoring programs that were conducted when the Bentpath-East pool was developed?

Over the years a series of water well samples have been collected for chemical analyses. The chemical analyses have included general chemical parameters, as well as methane analyses. Water samples collected from private wells in the area in the late 1990s, and in 2008. The chemical analyses between the two events is quite similar, and is consistent with the general chemistry reported by the MOE in their 2004 Lambton Groundwater Study. Generally, the water is somewhat mineralized with chloride levels up to 300 mg/L. The salt concentrations increase toward the west side of the township.

The interface aquifer is known to contain methane in varying amounts, as the underlying Kettle Point Shales "leak" methane into the aquifer. As part of the groundwater monitoring program completed in 2008, samples of the methane in the water wells were collected and analysed. To develop an understanding of the origin of the methane, methane was extracted from the water samples and analyzed for stable isotopes of carbon at the University of Waterloo. The results

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indicated that the methane had an isotopic signature that is consistent with previous studies of methane in southern Ontario, and is indicative of methane generated at relatively low temperatures. In contrast, the methane that Union injects into the storage pool is from western Canada, and has a high temperature signature.

3) *What is Union's past experience with water wells associated with storage pools?*

Over the past 20 years, testing of groundwater wells in the vicinity of Union Gas storage pools for pool development and pipeline construction programs) have indicated that groundwater impacts (both in terms of supply and quality) have not occurred. In areas of possible concern, Union has typically undertaken an assessment of the hydrogeology of the area, and have modified construction programs if believed necessary to protect the aquifer. By following the standard drilling practices as required by the MNR, the subsurface activity is also protective of the aquifer.

Conclusion

The sub-surface Silurian reefs in Lambton County appear to be ideally suited for development as natural gas storage pools. The very thick sequence of dense silty-clay till overlying the interface aquifer provides an impermeable barrier to the downward movement of anthropogenic compounds. This protects the water quality from surface influences. The thick shale sequences that underlie the interface aquifer act as aquitards and provide a protective barrier between the gas storage pool and the interface aquifer. The testing that has been completed over the past 20 years has shown that natural gas storage pool development has not impacted groundwater supplies in the vicinity of the storage pools.

It is our opinion that Union's delta pressuring program does not pose a threat to the groundwater supply of the interface aquifer.

Sincerely,

DILLON CONSULTING LIMITED


K.J. O'Shea, M.Sc., F.G.A.S. P. Geo.
Partner



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Our File: 08-9699