

## Dey, Asit (SD)

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**From:** Dey, Asit (SD)  
**Sent:** August-27-18 4:21 PM  
**To:** 'Brett McCormac'; 'Michelle Halls'  
**Cc:** Genaille, Dee (MR); 'Jason Cousin'; Burland Ross, Siobhan (SD); Matthews, Rob (MWS) (Rob.Matthews@gov.mb.ca); Assefa, Bereket (CON) (Bereket.Assefa@gov.mb.ca); Crocker, Peter (SD); Nayar, Rena (SD); Boswick, Robert (SD)  
**Subject:** 2018-08-27\_RM of Pipestone - Reston Lagoon Upgrade and Expansion - Approval Request to Utilize Cell No. 3 and 4

Hello Brett and Michelle,

Good afternoon. Receipt of the soil liner test results submitted by Mr. Brett McCormac, P.Eng., of JR Cousin Consultants Ltd. on August 21, 2018 for the recently constructed Cell No. 3 and No. 4 of the Rural Municipality of Pipestone's (Licencee) wastewater treatment lagoon (lagoon) is acknowledged.

The test results indicate that the soil liner of Cell No. 3 and the repaired north dyke of Cell No. 4 of the lagoon meets the requirements of Clause 18 of Environment Act Licence No. 2564 RR (Licence) regarding hydraulic conductivity. Authorization to temporarily operate Cell No. 4 of the lagoon with a maximum operating depth of 0.75m was provided to the Licencee on December 22, 2017.

Authorization to operate the Cell No. 3 and No. 4 of the lagoon, and in accordance with the limits, terms, and conditions of the Licence is hereby provided pursuant to Clause 48 of the Licence.

As ST-11 (3.5'-5.5') does not comply with Clause 18(c) of the Licence regarding hydraulic conductivity, the RM of Pipestone will be required to ensure that any repairs to the east and south dykes of the Expanded Primary Cell and Existing Storage Cell No. 2 meet the requirements of Clause 18 of the Licence. The Licencee is hereby recommended not to place riprap on the inner side slopes of the Expanded Primary Cell and Existing Storage Cell No. 2.

If you have any questions regarding these matters, please contact me at (204) 945-2614 or at [asit.dey@gov.mb.ca](mailto:asit.dey@gov.mb.ca).

Thanks,

Regards,

Asit Dey  
Environmental Approvals Branch  
Municipal and Industrial Section  
T: (204) 945-2614 F: (204) 945-5229  
Email: [asit.dey@gov.mb.ca](mailto:asit.dey@gov.mb.ca)

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**From:** Brett McCormac [mailto:[bmccormac@jrcc.ca](mailto:bmccormac@jrcc.ca)]  
**Sent:** August-21-18 11:24 AM  
**To:** Dey, Asit (SD) <[Asit.Dey@gov.mb.ca](mailto:Asit.Dey@gov.mb.ca)>  
**Cc:** 'RM of Pipestone' <[michelle@rmofpipestone.com](mailto:michelle@rmofpipestone.com)>; Genaille, Dee (MR) <[Dee.Genaille@gov.mb.ca](mailto:Dee.Genaille@gov.mb.ca)>  
**Subject:** RM of Pipestone - Reston Lagoon

Good morning,

Attached are the HC test results from the Shelby tube samples taken from the Reston Lagoon Expansion on July 30, 2018. Below is a summary of the results:

Sample # and Depth	Description of Location	HC Result
ST2 from 7'-9'	repaired north dike of Cell 4	$6.5 \times 10^{-8}$ cm/s
ST7 from 1'-3'	the floor of Cell 3	$1.1 \times 10^{-8}$ cm/s
ST8 from 6'-8'	south cut-off wall of Cell 3	$1.4 \times 10^{-8}$ cm/s
ST11 from 3.5'-5.5'	core of the east dike of existing Storage Cell 2	$1.1 \times 10^{-7}$ cm/s

All tests from the new Cells 3 and 4 passed the licence requirements. Please provide approval to begin using the new Cell 3 and Cell 4.

The result from the existing lagoon dike of  $1.1 \times 10^{-7}$  is slightly below the licence requirement of  $1 \times 10^{-7}$  cm/s however the exceedance is considered insignificant. The licence requirement of a 1m liner at  $1 \times 10^{-7}$  cm/s results in water taking 31.7 years to flow through the liner, a 1 m liner at  $1.1 \times 10^{-7}$  cm/s would take 28.9 years. The entire 3 m wide core of the dike of the existing lagoon is constructed with the same clay type material which would take water 86.5 years to pass through the 3.0 m core of the dike. Furthermore, the entire inside slope of the dike was constructed with the same clay type material which would further reduce the permeability of the dike.

Four test holes were taken in the core of the existing dikes (TH6, TH7, TH8 and TH9) during the geotechnical investigation in September of 2013. Lab analysis from that testing showed the core of the dikes were constructed with suitable clay for a liner which was confirmed with laboratory testing (TH9 0.6 – 1.2 m –  $1.9 \times 10^{-8}$  cm/s). Attached is a test hole location plan, TH logs and lab analysis report.

Potential leakage from the existing lagoon was discussed with the lagoon operator who has seen no signs of leakage from the lagoon and has not noticed the water level in the lagoon dropping.

In summary, based on the information above it is the opinion of JRCC that remedial works on the liner of the existing lagoon cells are unnecessary.

Please provide approval to place rip rap on the inner side slopes of the existing lagoon as per the design. The Contractor will be returning to site next week to place rip rap on the new Cell 3 and would like to place rip rap on the existing cells at that time as well so a quick response would be appreciated.

Please contact me if you would like to discuss further.

Brett McCormac, P.Eng.  
Environmental Engineer

JR Cousin Consultants Ltd.  
Phone: (204) 489-0474  
Fax: (204) 489-0487  
[www.jrcc.ca](http://www.jrcc.ca)

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