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**File No: 11964**

**Via Electronic Submission to the ERO**

March 15, 2020

Julia Tonks, Permit to take Water Evaluator, Ground Water Unit, Drinking Water and  
Environmental Compliance Division, MECP  
733 Exeter Road  
London, ON N6E 1L3

Dear Ms. Tonks,

**Re: Permit to Take Water Application- WM Twin Creeks Landfill  
Comments on Behalf of the Township of Warwick  
ERO #: 019-1117; MECP Reference: 5750-BK9PUD**

We are environmental counsel to the Township of Warwick (the “**Township**”). The purpose of this letter is to provide comments on behalf of the Township with respect to the above referenced application by the Waste Management Corporation of Canada (WM) to renew and expand the Permit to Take Water (“**PTTW Application**”) for the WM Twin Creeks Landfill (the “**Landfill**”) in the Township.

Our submissions are organized in five sections:

1. Introduction/Background
2. Township Technical Review Team Comments on PTTW Application
3. Legal Analysis – Approval Requirements for Proposed Water Taking
4. Recommended Next Steps
5. Summary of Submissions
6. Request to Ministry

For a summary of our comments and request to the MECP with regards to the PTTW Application, please see **Section 5** below.

## **1. Introduction/Background**

### **Township Role in Review of Twin Creeks Landfill Approvals**

The Township of Warwick is the host municipality for the Waste Management of Canada Corporation (“**WM**”) Landfill. In 2007, prior to final approval of the Landfill, WM and the Township entered into a Host Municipality Agreement pursuant to which the Township oversees and direct an annual, independent peer review of Landfill operations. The Technical Review Team (“**TRT**”), a multi-disciplinary team of experts assembled by the Township, conducts detailed reviews of the monitoring information for the Landfill collected by WM and its consulting team.

Pursuant to this Host Municipality Agreement, the Township also undertakes independent peer review of all applications brought by WM to amend existing environmental approvals for the Landfill. The Township has therefore engaged the TRT to review WM’s PTTW Application, as described below.

### **WM PTTW Application**

WM is currently operating under an existing PTTW, number 4430-8PLMKV (the “**Current PTTW**”) which permits WM to take water from five on-site groundwater (dug) wells as well as the Landfill’s four storm water management/sedimentation ponds (the “**Landfill SWM Ponds**”). The Current PTTW was issued January 17, 2012 and is set to expire April 15, 2020.

The Current PTTW allows a maximum water taking of approximately 15 million liters per day. The vast majority of the permitted water taking under the Current PTTW (approximately 14.5 million litres) must be taken from the five dug wells on the Landfill property. Only about 500,000 litres per day is permitted to be taken from the Landfill SWM ponds.

In December 2019, WM submitted to the Ministry of Environment, Conservation and Parks (“**MECP**”) an application to renew and amend the Current PTTW. The primary change proposed under the PTTW Application was a dramatic increase in the amount of water to be taken from the four Landfill SWM ponds, from approximately 500,000 litres per day to over 28 million litres per day. No change was proposed to the amount of water taking currently approved for the five dug wells on the property.

### **Ministry Notification of Application to Amend PTTW**

On January 16, 2020 the MECP notified the Township of the Environmental Registry of Ontario (“**ERO**”) posting for the PTTW Application.<sup>1</sup> Township staff forwarded this notification to our office for review and response. For unique reasons discussed below, that deadline was subsequently extended to March 15, 2020.

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<sup>1</sup> It should be noted that WM’s approach in this case was not in accordance with standard WM-Township protocol for review of amendments to environmental approvals. The long-standing practice is for WM to share a draft of any applications for changes to Landfill environmental approvals with the Township and provide an opportunity for Township/TRT review and resolution of any TRT technical concerns prior to the submission of the application to MECP for approval.

The Township engaged the two members of the TRT with relevant expertise to peer review the PTTW Application and provide comments: Wilf Ruland (surface and groundwater specialist) and Andrew Garfield (landfill engineer). Their reports are attached as **Attachments 1 and 2** to this letter.

#### Amendment of PTTW Application

On February 13, 2020, immediately prior to the close of the comment period for the PTTW Application, the following notification was added to the ERO posting for the PTTW Application:

*This proposal was originally posted as an amendment to increase the amount of water taken from four ponds, however, the PTTW has been adjusted to remove the four ponds on the PTTW since they are storm water ponds, a PTTW is not needed. This notice is being updated to show this company is now seeking a renewal of their Category 1 PTTW, the ministry has reopened this notice for commenting.*

The effect of this adjustment is that the PTTW Application is now amended (“**Amended PTTW Application**”) to comprise renewal of the existing water takings for the on-site dug wells only. The proposed increase in water-takings from the Landfill SWM ponds are removed from the Amended PTTW Application. The deadline for providing comments on the Amended PTTW Application was also extended to March 15, 2020.

Our firm followed up by phone call to Hugh Geurts, Surface Water Specialist, Surface Water Unit, to obtain clarification on the Environmental Registry posting. In a February 27, 2020 phone call. Mr. Geurts clarified that that the MECP Director for the purposes of the PTTW decision (the “**Director**”) had not made a final determination regarding whether the water takings from the Landfill SWM Ponds should be considered in the PTTW application and indicated that that the Township has the option of communicating its technical comments regarding water taking both from the Landfill SWM Ponds and the dug wells. Mr. Geurts also indicated that the Township was welcome to comment on whether or not the storm water pond takings should be considered as part of a separate application to amend the Landfill’s Industrial Sewage Works approval (“**ISW Approval**”) made pursuant to section 53 of the *Ontario Water Resources Act*, RSO 1990, c O40 (the “**OWRA**” or the “**Act**”).

#### Township Review Process for the PTTW

The Township engaged the two members of the TRT with relevant expertise to peer review the PTTW Application and provide comments: Wilf Ruland (surface and groundwater specialist) and Andrew Garfield (landfill engineer). The TRT’s review comments together with our report on this matter were then presented to Township Council for their review and direction.

At its March 9<sup>th</sup>, 2020 Council meeting, Township Council unanimously passed the following resolution with respect to this matter

*BE IT RESOLVED THAT Council directs that the following action be taken related to the WM PTTW Application:*

- *The Township environmental lawyers, Garrod Pickfield LLP be directed to submit comments on the WM PTTW Application and proposed sedimentation pond water taking to the MECP, with a copy to WM, in advance of the March 15, 2020 filing deadline for comments; and*
- *That these comments relay issues and recommendations identified by the Township TRT with respect to the WM proposed increase in water taking at the Landfill's sedimentation ponds as well as the need to consider these proposed changes in the context of an amendment to the Landfill's Industrial Sewage Works Environmental Compliance Approval;*

*AND THAT Township staff be directed to write to WM requesting that WM confirm its longstanding commitment to follow the practice, and approved Township policy protocol of providing the Township and TRT with an opportunity to provide comments on a draft version of any applications for amendments to environmental approvals at the Landfill prior to filing of such applications with MECP for approval.*

## **2. Township TRT Findings**

The full results of the TRT's preliminary review of the WM PTTW Application are provided at **Attachment 1** (Wilf Ruland, surface and groundwater specialist) and **Attachment 2** (Andrew Garland, landfill engineer) to this letter. These reviews form part of the Township's submission to the Director with respect to the subject PTTW Application.

The key findings can be summarized as follows:

- The four Landfill SWM Ponds currently perform an important water-quality treatment function, ensuring water quality standards are met prior to off-site discharge to adjacent water courses;
- The primary change proposed under the PTTW Application was a dramatic increase in the amount of water to be taken from the four Landfill SWM Ponds, from approximately 500,000 litres per day to over 28 million litres per day – a 56 fold increase.
- The effect of the proposed change to water-taking from the ponds is that approximately 10 billion litres of water per year would be available for water taking from the four on-site storm water ponds.
- The amount of water available to replenish the ponds through precipitation is a small fraction of this proposed water taking;
- WM has not provided any assessment of downstream impacts or off-site impacts on bodies of water resulting from the proposed increase in water takings from the ponds;
- The TRT review has identified potentially significant adverse environmental impacts should the proposed water takings be approved. These impacts could interfere with an

important planned function of the Landfill SWM Ponds, to provide water quality control. Specifically:

- The previous PTTW was approved based on maintaining a consistent water taking of 2.27% of permanent pool storage.
- The requested pond water taking would permit water takings that are several orders of magnitude greater than existing water takings, and for three of the ponds, daily takings are greater than 100% of permanent pool volume. This means full utilization of the proposed new permitted increase would effectively leave the ponds dry.
- The proposed water takings present significant risk of adverse off-site surface water quality impacts due to the vital role that the hydraulic retention time in the ponds play in treating water prior to discharge to surface water features.
- Both Mr. Ruland and Mr. Garland identify the need for further assessment of potential water quality impacts associated with the proposed Landfill SWM Pond water takings prior to consideration for approval and to assess the technical feasibility of the proposal.

In summary, it is the opinion of the TRT that allowing increased water takings from the storm water ponds may adversely impact downstream waters. As such, the Director should refuse to approve the Amended PTTW Application, which removes the storm water ponds from the PTTW, until further studies can be done which assess the impacts of the increased water takings, and a companion application to amend the ISW Approval can be made.

It should be noted that no technical concerns have been identified with approval of the Amended PTTW as this would simply involve renewing the existing water taking for the dug wells. The TRT has not identified and impacts with these water takings.

### **3. Legal Analysis**

#### **Is a Permit to Take Water Required?**

Section 34 of the OWRA prohibits a person from taking more than 50,000 litres of water in a given day without a PTTW issued under section 34.1 of the Act.<sup>2</sup> The language is broad, covering all water takings and does not expressly preclude water takings from stormwater ponds<sup>3</sup>. It should also be noted that the definition of “Sewage” in the Act includes “Storm Water”, though there is nothing in the Act that precludes “Storm Water” from also being considered “water” for the purposes of section 34 of the Act.

<sup>2</sup> Subsections 34(2), (3) and (4) provide statutory exemptions to the section 34(1) requirement to obtain a PTTW, none of which apply to the Landfill.

<sup>3</sup> Neither “water” nor “water taking” are defined terms in the OWRA or the EPA. It should be noted that “waters” (plural) is defined in section 1(1) of the Act as: “a well, lake, river, pond, spring, stream, reservoir, artificial watercourse, intermittent watercourse, ground water or other water or watercourse”.

Based on this, in our opinion, a PTTW is required for the proposed increased in water takings from the four Landfill SWM ponds.

It should be noted that the MECP manual which provides guidance on Permits to Take Water issued under the OWRA<sup>4</sup> includes the following statement:

*“Permits are not typically issued for sewage works (e.g. storm water management ponds) where these facilities are regulated under Section 53 of the OWRA.”*

There is no statutory basis for this statement. Further in our opinion, this statement is not intended as guidance on when a permit to take water would be required for a water taking, but simply an indication that sewage works are not typically dewatered and therefore don't require a water taking permit. While it may be true that in most cases a PTTW would not be required for a sewage works, in this atypical case, substantial water taking is being proposed from the sewage works, and therefore a PTTW is required.

This approach is consistent with previous Directors' decisions for pond water taking at the Landfill. The existing PTTW approved by the Director for the Landfill regulates water takings from both the dug wells and the stormwater management ponds at the Landfill.

#### EASR Registration Does Not Apply to the Pond Water Takings

Some water takings are eligible for registration under the Environmental Activity and Sector Registry (“EASR”), pursuant to the *Environmental Protection Act*, RSO 1990, c E19 (“EPA”) instead being regulated by the OWRA. Section 20.21 of the EPA prohibits activities that are prescribed by Ontario Regulation 63/16, *Registrations Under Part II.2 of the Act - Water Taking* (“O Reg 63/16”). Activities that are listed in O Reg 63/17 require EASR registration. For example, section 7(1) of O Reg 63/16 prohibits the taking of storm water for the purpose of dewatering construction sites without registration. EASR registration is possible for water takings between 50,000L/day and 400,000L/day. Water takings below this threshold require neither EASR registration nor a PTTW. Water takings over 400,000L/day cannot be registered in the EASR.

Mechanically, O Reg 63/16 functions as an exemption from the requirements of section 34 of the OWRA: if one meets the requirements of section 20.21 of the EPA and O Reg 63.16, one can register the water taking with the EASR rather than being required to apply for a PTTW, which is a more rigorous process. If the proposed water taking does not fall within this exemption, the water taking continues to be regulated by the OWRA permitting process.

The O Reg 63/16 registration requirement only applies for water takings for either road construction or construction site dewatering and, even then, only for dewatering up to 400,000L/day. Storm water takings that do not involve construction dewatering, or involve construction dewatering over 400,000L/day, are regulated by the OWRA.

In this case, the proposed dewatering of the Landfill SWM Ponds is neither for road construction

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<sup>4</sup> *Permit to Take Water Manual* (Ontario Ministry of the Environment, 2005)



nor to dewater a construction site. In fact, it is the stormwater ponds themselves that are being dewatered so the water can be utilized for Landfill-related operations. Further, even if it could be characterized as such, the water taking proposed far exceeds the 400,000 L/day limit. Based on this, it is our opinion that the EASR exemption from the OWRA PTTW requirement has no application in this case.

#### Is an Amendment to the Industrial Sewage Works Approval Required?

The proposed water taking involves substantial changes to the design and function of the four Landfill storm water ponds which form part of the overall storm water management system for the Landfill, approved under the current ISW Approval. According to the current ISW Approval, the storm water management ponds are “*designed to provide quantity and quality control*”. The proposed increase in water takings from these ponds have never been technically assessed for potential downstream or off-site impacts, and are not being assessed by WM in its PTTW Application.

Whether or not the Director agrees that water takings from the four ponds require a PTTW, WM requires approval under section 53 of the Act for any amendment to its sewage works (which includes storm water management systems). This includes sewage works that discharge directly or indirectly into a ditch or waters, which is how the Landfill’s storm water ponds function.<sup>5</sup> Section 53(1) of the Act states:

*Subject to section 47.3 of the Environmental Protection Act, no person shall use, operate, establish, alter, extend or replace new or existing sewage works except under and in accordance with an environmental compliance approval.*<sup>6</sup>

Section 53(6.1) of the OWRA also states that “*This section does apply to sewage works described in clause (6)(a) if (b) more than one sewage works is located on a lot or parcel of land and they have, in total, a design capacity in excess of 10,000 litres per day*”.

As the Landfill’s storm water ponds have a design capacity well in excess of 10,000 litres per day, approval is required under section 53 of the Act for the use, operation, establishment, alteration or extension or replacement of sewage works. Allowing WM to increase its water taking from the storm water ponds from 500,000 L/day to 28,000,000 L/day would constitute a substantial “alteration” of the approved industrial sewage works.

It should also be emphasized that the requirement to obtain an amendment of the Landfill’s current Industrial Sewage Works ECA in this case is consistent with the purpose of the OWRA: “*to provide for the conservation, protection and management of Ontario’s waters and for their efficient and sustainable use, in order to promote Ontario’s long-term environmental, social and economic well-being*”. As outlined section 3 above, the level of additional water taking proposed in this case has the potential impact the quality of the water that is discharged from the storm water ponds into nearby “waters” as defined by the OWRA.

<sup>5</sup> Section 53(6)(a) of the Act.

<sup>6</sup> See footnote 1, regarding the Landfill’s ISW Approval prior to the amendment to the OWRA requiring an ECA.

Before the Director considers permitting the proposed increase in water taking from the storm water ponds, in our opinion, it is required to consider whether these proposed water takings have been adequately addressed in an amended ISW Approval and what changes to the conditions of approval would be appropriate to address any potential impacts associated with the increase water taking.

#### **4. Recommended Next Steps**

Given that a PTTW is required for the storm water pond takings in the original PTTW Application, approval of the current Amended PTTW Application, which removes the Landfill SWM Ponds entirely from the permit, would mean that WM would no longer be able to take water from the four Landfill SWM Ponds at their current cumulative permitted rate of up to 500,000 L/day. Conversely, approval of the original PTTW is not recommended given the potential impacts and additional information and assessment needs to support increased water takings from the Landfill SWM Ponds. Neither outcome would be appropriate or desirable.

Given the circumstances, it is respectfully submitted that the Director should neither refuse nor approve the application, but instead request that WM provide additional information pursuant to section 34.1 (5) to support the application. In this case the required information would include additional data and analysis to assess the potential off-site surface water impacts of the proposed Landfill SWM pond water takings. This approach would also insure that the existing water taking permissions are maintained at the Landfill until the Director makes a final decision on this matter.

In addition, or alternatively, the Director should request that WM provide this additional information and analysis together with an application to amend its Industrial Sewage Works Approval to allow the water takings as an alteration to its ISW approval. In either case, no PTTW renewal should issue until the proposed water takings from the Landfill SWM Pond have been fully assessed and it has been demonstrated that propose water takings will not adversely impact off-site surface water features and resources.

Overall, in our opinion, amendments will be required to both the current PTTW and the ISW Approval for the Landfill. The approval process for these two amendments can and should be coordinated and integrated so that appropriate changes to both approval instruments can be made.

#### **5. Summary of Submissions**

The Township of Warwick and its Technical Review Team have completed both a technical and legal review of the application by WM to amend it existing permit to take water for the WM Twin Creeks Landfill. Key findings and conclusions reached include the following:

- WM is proposing to increase water takings from the Landfill's four storm water management ponds from approximately 500,000 litres per day to 28 million litres per day – a 56 fold increase.



- The PTTW application filed with the Director in support of this change did not provide any assessment of downstream impacts or off-site impacts on bodies of water resulting from this proposed increase in water takings from the ponds.
- Based on its review of the PTTW Application, the TRT found that the proposed increased water takings from the Landfill SWM Ponds has the potential to adversely impact downstream waters by circumventing the water quality control design function of the storm water ponds.
- A permit to take water is required for the proposed water taking from the Landfill SWM Ponds. Section 34 of the OWRA prohibits anyone from taking more than 50,000 litres of water in a given day without a PTTW issued under section 34.1 of the Act. While the Act contains exceptions to this requirement, none apply in this case.
- In addition, the proposed increased water takings constitute a significant “alteration” to the Landfill’s sewage works, and therefore an amendment to the Landfill’s ISW Approval is also required.
- Given the TRT’s finding that additional work is required to evaluate the impact of the proposed water taking on downstream off-site surface water quality, additional information and assessment is required to support both applications. Both applications should be considered in concert to ensure an efficient and coordinated approval process, resulting in appropriate amendments to both approval instruments.
- In order to ensure that the existing PTTW after expiry, the Director should request the additional testing and studies required to support the proposed Landfill SWM Pond water takings pursuant to section 34.1(5) of the OWRA. In addition the Director should advise WM of the need to amend its ISW Approval to support the Landfill SWM Pond water takings.

## **6. Request to Ministry**

Based on the above findings and conclusions the Township of Warwick is respectfully requesting that the Director:

- a. Request that WM provide additional testing and studies required to support the proposed Landfill SWM Pond water takings pursuant to section 34.1(5) of the OWRA
- b. Advise WM that in order to support the proposed Landfill SWM Pond water takings and companion application must also be made to amend its Industrial Sewage Works Approval pursuant to section 53(1) of the OWRA
- c. Confirm that until a decision is made by the Director on the PTTW Application, the existing PTTW for the Landfill is deemed to continue in force, pursuant to the operation of section 34.1(6) of the OWRA.

On behalf of the Township of Warwick, thank you for the opportunity to make comments on this application.

By copy of this letter to WM, we are inviting them arrange to meet with the Township's TRT to discuss its technical concerns with the PTTW Application.

Yours truly,

A handwritten signature in black ink, appearing to be 'Peter C. Pickfield', written in a cursive style.

Peter C. Pickfield

cc. Waste Management of Canada Corporation c/o Reid Cleland and Wayne Jenken  
Amanda Gubbels, CAO/Clerk, Township of Warwick  
Landfill Public Liaison Committee, c/o Angela McLachlan  
Hugh Geurts, Surface Water Specialist, Surface Water Unit, MECP

Attachments:

1. Correspondence from Wilf Ruland on PTTW Application, February 8, 2020.
2. Correspondence from Andrew Garland, BM Ross on PTTW Application, February 12, 2020.

# ATTACHMENT 1

The Corporation of the Township of Warwick  
c/o Mr. Alex Ciccone and Mr. Peter Pickfield  
Garrod Pickfield  
9 Norwich St. W  
Guelph, ON  
N1H 2G8

February 8, 2020

Dear Peter,

At your request, I have reviewed the Dec. 20, 2019 Waste Management of Canada Corporation (WM) application for a Permit to Take Water (PTTW). My comments follow below.

1) It is clear from my review of the PTTW application that WM is seeking a massive increase in the permitted amounts of water which it is proposing to take from the on-site Sedimentation Ponds. Interestingly, the PTTW application does not really make clear the magnitude of the proposed increases in water takings from the ponds.

**Table 1** below provides a comparison between takings allowed under the current PTTW, and takings proposed by WM in the future. Comparison of the figures in **Table 1** shows that WM is requesting permission to take between about 100 times and 600 times more water from the on-site ponds than was permitted under the existing PTTW.

Current permitted takings are about 4 to 26 million litres/year from the various ponds. In its PTTW application, WM is seeking to raise this to 2.6 billion Litres per year per pond.

By any measure, these are dramatic requested increases in the site's water takings.

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**Table 1**

**Current Permitted vs. Proposed Future Water Takings from On-Site Ponds**

	<u>Permitted Taking</u>	<u>Proposed Taking</u>
<b><u>Pond 1</u></b>	82,700 Litres/day	<b>7,085,520 Litres/day</b>
	8,683,500 Litres/year	<b>2,586,214,800 Litres/year</b>
<b><u>Pond 2</u></b>	246,700 Litres/day	<b>7,085,520 Litres/day</b>
	25,903,500 Litres/year	<b>2,586,214,800 Litres/year</b>
<b><u>Pond 3</u></b>	110,100 Litres/day	<b>7,085,520 Litres/day</b>
	11,560,500 Litres/year	<b>2,586,214,800 Litres/year</b>
<b><u>Pond 4</u></b>	41,200 Litres/day	<b>7,085,520 Litres/day</b>
	4,326,000 Litres/year	<b>2,586,214,800 Litres/year</b>

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2) There is little justification provided for the proposed massive increases in the water takings which WM is requesting. The various uses to which the taken water would be put are outlined, but no estimates are provided regarding the annual amounts needed for each of these uses.

3) Taken together, the maximum possible water taking from the on-site ponds which WM is seeking approval for under the PTTW is about 10 billion Litres of water per year.

By comparison, the annual amount of water which is available for runoff from precipitation onto the property is a small fraction of the proposed water taking. What this means in real world terms, is that if the requested water taking is approved then WM would have approval to effectively eliminate all surface water discharges from its property.

4) The question of whether water takings of this magnitude would have downstream effects has not been addressed in the PTTW application.

5) The question of whether water takings of this magnitude would have downstream effects was also not addressed in the Environmental Assessment for the landfill.

Page 6-235 of the Environmental Assessment stated the following with respect to surface water flows from the site:

*“The baseline characteristics of quantity and timing of runoff will be maintained through construction of ditches and swales on site to replace any physical losses of existing channels. As a result, no net loss or displacement of surface water resources will occur.”*

It is difficult to reconcile the above assurance from the Environmental Assessment with the scale of the proposed water takings.

6) It is my recommendation that more information is needed from WM including the following:

- description of any past operational challenges related to constraints in the current PTTW;
- a water balance for the site, which provides estimates of annual surface water flows from the WM property (in low, average, and high precipitation years);
- a realistic estimated range of water volumes which would need to be taken by WM under anticipated go-forward landfill operational scenarios;
- discussion of best management practices which could be employed to reduce water needs in the landfill operation;
- discussion of the merits of taking the needed water from groundwater vs. surface water sources;
- discussion of the degree to which a reduction in fill rates at the landfill would reduce the need for water under the PTTW.



Please feel free to contact me with any questions that you may have about these comments. I wish you all the best in the meantime.

Yours sincerely,

*Wilf Ruland*

Wilf Ruland (P. Geo.)

766 Sulphur Springs Road

Dundas, Ontario

L9H 5E3

tel: (905) 648-1296

deerspring1@gmail.com

# ATTACHMENT 2

February 12, 2020

**VIA EMAIL ONLY**

The Corporation of the Township of Warwick  
c/o Mr. Alex Ciccone and Mr. Peter Pickfield  
Garrod Pickfield  
9 Norwich St. W  
Guelph, ON N1H 2G8

**RE: Twin Creeks Landfill – Application to Amend PTTW**

We have reviewed the application package dated December 20, 2019, to amend Permit to Take Water (PTTW) No. 4430-8PLMKV for the Twin Creeks Landfill. We have also reviewed comments provided by Wilf Ruland, P. Geo. in a February 8, 2020 letter summarizing his own review. We have the following comments.

1. We fully agree with comments and concerns expressed in Mr. Ruland's February 8, 2020 letter with respect to water balance and a need to further assess impacts associated with eliminating surface water discharges from the site.
2. We focused our review on potential sedimentation pond performance complications that could arise due to the changes proposed in the PTTW amendment application. We have definite concern that the proposed takings have not considered original pond design intentions. Enclosed is a summary table to support the following comments:
  - a. It would appear that original design of the ponds and establishment of current PTTW rates were considered jointly, based on the observation that the existing maximum daily permitted takings for each pond represent a consistent 2.27% of the permanent pool storage for each pond. In our opinion, the consistency observed is not likely to be a coincidence.
  - b. The requested daily water takings are several orders of magnitude greater than existing, and for three of the four ponds the daily takings are greater than 100% of the permanent pool volume. If there was an attempt to fully utilize the requested takings on a regular basis, the ponds would effectively be left "dry." Even takings on an intermittent basis could cause a deterioration in pond performance, as discussed further below.
  - c. The hydraulic retention time within the permanent pool plays a vital role in quality of the surface water to be discharged. Because of this, we have concern that the

proposed takings have not fully considered potential quality impacts. In our opinion, to mitigate risk of adverse surface water quality, one of two scenarios is required:

- i. Scenario 1 - Daily water takings must be limited to a rate that will allow sufficient hydraulic retention time for treatment to actually occur, if discharges off the site will occur. The original design basis appears to have considered this, but the current request does not. Additional technical analysis would be required to demonstrate how treatment will be achieved.
  - ii. Scenario 2 - Surface water discharges must be fully eliminated from the site which would by essence ensure no inadequately renovated surface water is leaving site. This is, perhaps inadvertently, what the current application is effectively asking for, but as noted there needs to be more support provided to demonstrate this is an acceptable thing to do.
- d. When considering physical integrity of the sedimentation ponds, we would recommend that the instantaneous water pumping rate consider what currents/velocities may be induced in the pond contents when pumping. When taking rate is relatively high compared to currently stored volume, there may be a risk of causing erosion to the pond bed or scour in certain locations.
3. We did not review pumping station or secondary drainage layer takings as those values are not proposed to change, and we assume there are no concerns that need to be reviewed or addressed.

In summary, it is our opinion that a further explanation is required to clearly indicate whether the proposal is to effectively eliminate surface water discharges from the site, or if discharges will continue but at a lesser rate/frequency. In either case, additional detail is required to demonstrate the technical feasibility of what is being proposed.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per   
 Andrew Garland, P. Eng.

AJG:es  
 Encl.

Pond	Storage Volume Info from ECA No. 3506-7M5PU3, July 9/09			Existing PTTW No. 4430-8PLMKV, January 17/12			Requested PTTW Modifications			Compare Daily Takings as Percentage of Pond Permanent Pool	
	Total Volume (m <sup>3</sup> )	Permanent Pool (m <sup>3</sup> )	Extended (m <sup>3</sup> )	Permitted Daily Taking (m <sup>3</sup> /day)	Maximum Taking Duration (hrs/day)	Maximum Taking Per Minute (L/min)	Requested Daily Taking (m <sup>3</sup> /day)	Requested Taking Duration (hrs/day)	Requested Taking Per Minute (L/min)	Existing PTTW	Requested PTTW
1	21,429	3,651	17,778	82.7	10	2400	7085.52	24	4921	2.27%	194.07%
2	48,954	10,856	38,098	246.7	10	2400	7085.52	24	4921	2.27%	65.27%
3	24,996	4,843	20,053	110.1	10	2400	7085.52	24	4921	2.27%	146.30%
4	8,328	1,812	6,516	41.2	10	2400	7085.52	24	4921	2.27%	391.03%

values taken from ECA, but appears to contain 100 m<sup>3</sup> error