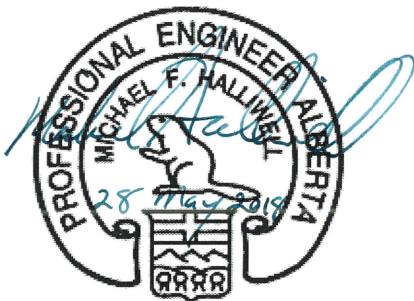




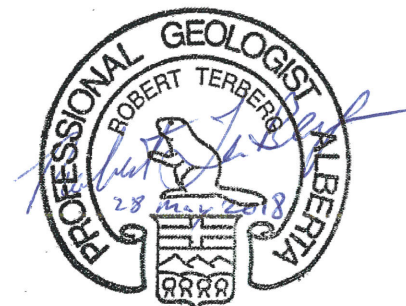
**THURBER ENGINEERING LTD.**

**REVIEW OF AMENDMENT TO EPEA APPROVAL  
10348-03-00 FOR CLEAN HARBORS PROPOSED  
LANDFILL EXPANSION, RYLEY, ALBERTA  
PART II**

Report  
to  
Village of Ryley



Michael Halliwell, M.Eng., P.Eng.  
Environmental Engineer

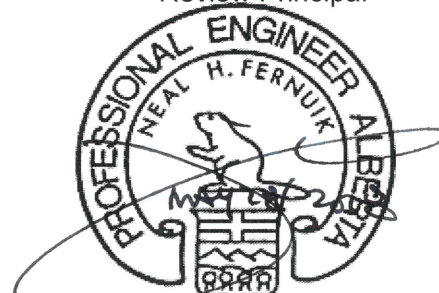


Robert Terberg, M.Sc., P.Geol  
Hydrogeologist

Don Proudfoot, M.Sc., P.Eng.  
Review Principal

<b>PERMIT TO PRACTICE THURBER ENGINEERING LTD.</b>	
Signature	
Date	May 28 / 2018
<b>PERMIT NUMBER: P 5186</b>	
The Association of Professional Engineers and Geoscientists of Alberta	

Date: May 28, 2018  
File: 22596



Neal Fernuik, M.Sc., P.Biol., P.Eng.  
Review Principal



## TABLE OF CONTENTS

1.	INTRODUCTION.....	1
2.	SCOPE OF WORK.....	1
3.	ASSESSMENT.....	1
3.1	Audits.....	2
3.2	Fugitive Dust and Odor Best Management Plan .....	2
3.3	Air Monitoring.....	2
3.4	Ground Water Monitoring.....	3
3.5	Geotechnical and Landfill Design.....	5
3.6	Soil Monitoring Program.....	5

## STATEMENT OF LIMITATIONS AND CONDITIONS

### Appendix A

- Exhibit Table 2-2



## 1. INTRODUCTION

Thurber Engineering Ltd. (Thurber) was retained by the Village of Ryley (Ryley) to conduct a review on Clean Harbors Canada Inc. (Clean Harbors) report titled *Application for Amendment of App of Approval No.: 10348-03-00 as amended Lateral Expansion of the Ryley Hazardous Waste Landfill and Transfer Facility* September 2017 prepared by TetraTech. This report entails the second component (Part II) of the expanded scope of work and should be read in conjunction with Thurber's May 2018 report<sup>1</sup>.

Authorization to undertake the review was provided by Mr. Michael Simpson, Chief Administrative Office of Ryley.

It is a condition of this report that Thurber's performance of its professional services is subject to the attached Statement of Limitations and Conditions.

## 2. SCOPE OF WORK

The scope of work was outlined in Thurber's May 15, 2018 proposal and can be generally summarized as outlined below:

- Identifying any deficiencies within the existing monitoring and reporting practices at the Clean Harbors Ryley facility
- Provide recommendations for updated monitoring systems.

## 3. ASSESSMENT

As part of the assessment Thurber reviewed the following reports provided by the Village of Ryley or TetraTech the consultant working on behalf of Clean Harbors;

- Trium, August 2015, *2015 Compliance Audit Summary Report: Alberta Environment Approval 10348-02-00 Clean Harbors, Ryley Facility*
- CH2MHILL February 2013, *2012 Compliance Audit Summary Report: Alberta Environment and Approval 10348-02-00 Clean Harbors, Ryley Facility*
- Clean Harbors, March 2015, *Fugitive Dust & Odour Best Management Plan*
- Clean Harbors Canada, Ryley, Alberta *2015 Annual Air Monitoring Report Village of Ryley*

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<sup>1</sup> Thurber Engineering Ltd., May 15, 2018, *Review of Amendment to EPEA Approval 10348-03-00 for Clean Harbors Proposed Landfill Expansion, Ryley, Alberta.*



- Clean Harbors Canada, Ryley, Alberta *2016 Annual Air Monitoring Report Village of Ryley*
- Clean Harbors Canada, Ryley, Alberta *2017 Annual Air Monitoring Report Village of Ryley*
- GHD Limited, *Alberta Environment and Parks (AEP) 2015 Annual Ambient Air Monitoring Report*
- EBA Engineering Consultants Ltd., January 2010, *2009 Soil Monitoring Report Clean Harbors Class 1 Waste Management Facility AEPEA Approval No. 10348-02-00 SE 09-050-17 W4M Ryley Alberta*
- TetraTech EBA, January 2015, *2014 Soil Monitoring Report Clean Harbors Class 1 Waste Management Facility AEPEA Approval No. 10348-02-00 SE 09-050-17 W4M Ryley Alberta*

### **3.1 Audits**

While the 2012 Audit did find non-compliance items with regards to the Approvals in place for the landfill Thurber agrees with the auditor's comments that the items *do not represent serious and immediate risk to the local environment; and, they could not be construed as a deliberate attempt to circumvent responsible management of the landfill and transfer station.*

The 2015 Audit provided an Exhibit Table 2-2, reproduced in Appendix A, on Summary of Opportunities for Improvement. These items should be considered for the lateral expansion approval to improve the overall landfill operation and reduce some of the non-compliance items found due predominantly wording of the approval.

### **3.2 Fugitive Dust and Odor Best Management Plan**

The Fugitive Dust and Odor Best Management Plan (BMP) outlines both an internal and external form to be used when dust or odors are evident. This is a useful Fugitive Dust and Odor BMP that should form part of Clean Harbors reporting process if not already implemented.

### **3.3 Air Monitoring**

As part of the Approval for the Ryley Industrial Waste Management Facility, Clean Harbors is required to implement the Ambient Air Monitoring Program and has been doing so since the existing landfill opened. It is understood that a mandated Alberta Environment and Protection (AEP) air monitoring location is present on Highway 854, at a location generally downwind of the landfill (note: directions are referenced to the prevailing winds). Clean Harbors has established two additional sampling points: one upwind at the landfill's administration building and one cross-wind at the Ryley School.



The air monitoring reports are well presented, and the monitoring program appears to meet provincial requirements for sampling frequency, duration and analyses. To improve the air monitoring program Thurber proposes the following;

- The particulate matter analyses for the AEP site is for PM<sub>10</sub> (particulate matter with a mean diameter less than 10 µm) while the locations in the Village of Ryley report present readings for Total Particulate Matter (TMP, all particulate matter with an upper limit in size of 100 µm). A uniform particulate monitoring package at all three locations would allow comparison of data from all three locations and permit better identification of background / regional or localized air quality fluctuations.
- Thurber noted instances in the Village of Ryley reports where the particulate readings did not meet the *Alberta Ambient Air Quality Guidelines (AAAQG)* and were generally explained as background concentrations (from background sources, roadways or agricultural land). During some of these events, the similarly shaped plots of particulate concentrations at the two locations show distinct differences between the air quality results (i.e. divergent plots when they usually follow the same general shape). Utilizing the weather data and information from all three monitoring locations, it may be possible to provide additional explanations regarding the sampling events that do not meet the AAAQG. For example, where the administration building TPM values high in May and the Ryley School values were low, it may be possible to indicate the wind was from the southeast to the northwest, add in that the AEP site was also high and cite a possible cause of off-site agricultural activity to the southeast. Without the additional data, alternative potential sources for the divergent readings could be possible (i.e. wind from the southeast with excessive dust generation from the landfill site itself).

### **3.4 Ground Water Monitoring**

Overall the groundwater monitoring program provisions in the Application were complete. We noted the following items for clarification with TetraTech's response outlined in *italics*:

1. What's driving the work? Please reference the AEP request for the changes in this Amendment to the Approval 10348-03-00; list the specific changes requested or provide them as an Appendix.

*The proposed monitoring program is identical to that which is currently implemented for the existing Ryley Facility, with the exception of a proposed amendment to the frequency of detection level sampling (see response to question 3 below).*



2. What's driving the compliance? Please reference the target guidelines for compliance. These may be in the original Approval, but we couldn't find an obvious section describing applicable guidelines and modifications, if any. i.e. February 2010 "Standards for Landfills in Alberta"; February 2016 "Alberta Tier 1 Soil and Groundwater Remediation Guidelines".
3. The Application and PGWMP flow chart would benefit from a clear statement or reference of what guidelines will govern the work going forward. It is not immediately clear that there is a gap whereby supporting documents in the Application for Amendment are governed by a one-year extension of Approval 10348-02-00 to March 2017 which complies to Canadian Environmental Quality Guidelines (CEQG) for drinking water; while Approval 10348-03-00 complies to February 2016 "Alberta Tier 1 or 2 Soil and Groundwater Remediation Guidelines". We recognize that background levels are pending assessment and will govern guidelines, nevertheless it would help to have a separate section clarifying the current status and proposed guidelines moving forward.

*Response to 2 and 3: The target guidelines for compliance are not yet set, and will not be set until the background level monitoring is complete. The background level monitoring will be undertaken to establish water quality representative of pre-development conditions. Section 1.2.4(a) of the proposed program describes how we will evaluate the results of detection level monitoring, including use of the results of the program to develop control limits.*

4. Detection level monitoring frequency in Application for Amendment GMP is once/year when baseline monitoring is not (typo?) being undertaken.
5. AEP February 2010 "Standards for Landfills in Alberta" for landfills with a liner and leachate collection system specifies detection level monitoring frequency is twice/year and once per year when background parameters are being sampled. If this is the proposed change to groundwater monitoring, please introduce it as such with reference to the original requirement.

*Response to 4 and 5: We are suggesting a modification to the Standards once the initial baseline program (i.e. first four years, or until baseline levels have been established) is complete. As noted in Section 1.2.1, any consideration of modification of parameters for the detection level program would be verified with AEP prior to initiation of the detection level program; we would extend this intent also to the frequency of detection level monitoring, and would verify with AEP that our recommended frequency for the detection*



*level program is appropriate prior to initiation of that program, based on the results of the baseline program.*

### **3.5 Geotechnical and Landfill Design**

Thurber recommends that during the detailed design phase of work, a detailed slope stability assessment be carried out to confirm that the design landfill cell, berm, waste and final cover (cap) slopes will remain stable at various phases of waste filling to avoid future instabilities that could affect the functionality of the landfill. The results will need to confirm that there will be an adequate factor of safety for the various slope inclinations shown on the current design drawings.

Clarification on subdrains, closure plan and Construction Quality Assurance Plan and a Construction Quality Control Plan were provided by TetraTech.

### **3.6 Soil Monitoring Program**

Both the 2009 and 2014 soil monitoring program are as per the Approval reporting process of five years. There were some polycyclic aromatic hydrocarbons (PAH) concentrations in surficial soil samples that did not meet the guidelines. A plan should be in place to address the potential source of PAHs or other constituents that do not meet the guidelines or background conditions rather than deferring to the next soil monitoring program that are at five year intervals.



## Appendix A

Exhibit Table 2-2