

# Appendix F

MOECC meeting summaries

## Progress Meeting with MOECC

<b>ATTENDEES:</b>	York Region: Wayne Green Mukund Padhye	Durham Region: Barry Laverick	CH2M: Ansel Bather Kim Fries Laurie Boyce Adrienne Willoughby	MOECC: Fred Lam Dorothy Moszynski Ted Belayneh Ross Lashbrook Andrew Evers
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<b>LOCATION:</b>	MOECC Office
<b>PREPARED BY:</b>	CH2M
<b>DATE:</b>	November 7, 2016
<b>PROJECT NUMBER:</b>	676959

### Objectives

The purpose of this meeting was to provide a progress update for the Duffin Creek Water Pollution Control Plant (WPCP) Phosphorus Reduction Action Plan (PRAP) Study. The slides that were presented at the meeting are attached to this meeting summary.

### Summary

No.	Item	Action
<b>1</b>	<b>Introduction</b>	
1.1	The attendees were introduced and the meeting agenda was reviewed.	
1.2	The Town of Ajax and the MOECC have agreed to the revised project schedule which indicates project completion in Q1 of 2018.	
1.3	To date, the project team has issued a draft of TM 1 to the Town of Ajax and has met with the Town of Ajax on three occasions to discuss the PRAP study. The next meeting with Ajax is to be scheduled before the end of 2016 and will include review and discussion of the material presented at this meeting.  <i>* Post-meeting note: the next meeting with the Town of Ajax will be held January 13, 2016.</i>	
<b>2</b>	<b>Technical Memorandum 1 – MOECC Comments</b>	
2.1	The MOECC's comments on TM 1 were distributed to the project team prior to the meeting. The MOECC agrees with the modelling approach used in this study as well as the optimization options that are considered in TM 2.	

2.2	<p>MOECC requested additional analysis of historical data to understand the difference in total phosphorus (TP) removal performance over the past few years of plant operation (particularly when stages were taken offline for refurbishment). CH2M noted that additional analysis is underway and will be included in the next draft of the TM. This includes further analysis of the difference in iron dosing points and how this impacts performance (i.e. dosing in Stages 1&amp;2 vs. Stage 3, and dosing at the primary dose points vs. the secondary dose points). In addition, the model validation will be conducted for two additional years (2012 and 2013) per the recommendations from the Regions' peer reviewer and the Town of Ajax's experts.</p>	<p>CH2M to update draft TM 1 with additional analysis of historical performance data and model validation.</p>
2.3	<p>The Draft Final TM 1 will be distributed to the MOECC and the Town of Ajax once all comments have been addressed.</p>	
<b>3</b>	<b>Technical Memorandum 2</b>	
3.1	<p>The content in TM 2 was reviewed and discussed. The discussion focused on the removal of the different fractions of TP (particulate and soluble) and how this is represented in model simulations. The model inputs are based on two key assumptions:</p> <ul style="list-style-type: none"> <li>• The Duffin Creek WPCP can achieve an effluent SRP concentration of 0.1 mg/L reliably (i.e. at the 50<sup>th</sup> percentile) without any adverse impacts to the biological treatment process (i.e. settleability, nitrification, and BOD removal).</li> <li>• The Duffin Creek WPCP can achieve an effluent TSS concentration of 10 mg/L reliably.</li> </ul>	
3.2	<p>As the model results for the secondary treatment optimization options are based on these key assumptions, a field study is recommended to validate the assumptions and performance projections for TP removal. The MOECC agreed that it is prudent to validate the modelling assumptions with a field study.</p>	
3.3	<p>Model results are interpreted at the 99.9% confidence interval, i.e. effluent concentrations which were achieved in 99.9% of the Monte Carlo simulations based on the model parameters and assumptions. The field study will assess the model predictions values vs. sustainable operational values.</p>	
3.4	<p>The Regions prefer to undertake an 18 month field study in order to understand the difference in plant performance under all seasonal operating conditions. The field study will include clarifier stress testing and testing of various operational stresses (i.e. pumps taken offline) to assess performance risk and to establish an appropriate safety factor to apply to model results. The determination of an appropriate factor of safety will be reported on at a future meeting.</p>	
3.5	<p>The project team is currently working on the workplan to carry out the field study to validate the model assumptions. The workplan will be sent to the MOECC for review as an ECA amendment may be required. The overall project schedule will not be affected (i.e. the field study will be conducted parallel to the current PRAP workplan).</p>	<p>The Regions/CH2M are to send the field study workplan to the MOECC.</p>

3.6	Following the field study, TM 2 will be re-issued with the final projections for optimization options which includes results from both modelling and the field study.	
3.7	TM 2 includes benchmarking soluble reactive phosphorus (SRP) removal at the Duffin Creek WPCP and other similar WWTPs including the Skyway WWTP. Prior to constructing tertiary treatment at the Skyway WWTP, the plant was unable to meet the current ECA limits for TP. Ted Belayneh noted that the Skyway WWTP has had significant wet weather issues in the past which could be a contributing factor.	
3.8	The MOECC requested that the cumulative distribution plots of the effluent SRP for each of the model simulations are to be included in TM 2a.	CH2M to include SRP distribution plots in the draft TM 2a.
3.9	TM 2b will incorporate the results of the field study and recommendations for an operational safety factor.	
<b>4</b>	<b>Technical Memorandum 3</b>	
4.1	The content for TM 3 was reviewed which includes the assessment methodology of the secondary treatment optimization options and the tertiary treatment options.	
4.2	The MOECC noted that consideration of seasonal treatment options is important.	
4.3	MOECC noted that it is not necessary to conduct a thorough assessment of quaternary treatment processes (i.e. reverse osmosis) as this is not feasible at the Duffin Creek WPCP. The project team will include a brief summary of the technology to satisfy the MOECC Order item 2e) <i>“Determination of option that would result in the lowest achievable level of total phosphorus levels in the effluent...”</i>	
4.4	The MOECC noted that they will not impose limits that cannot be met by the WPCP. Therefore, a field test is required to validate the modeling assumptions and projected TP removal performance.	
4.5	It is not clear whether the Minister requires the project team to make a final recommendation for the PRAP. The MOECC attendees will follow up with management on this. It is likely that this will be determined at a later time once the results from the PRAP Study are completed.	MOECC to follow up on whether a final recommendation is required for the PRAP Study.
<b>5</b>	<b>Next Steps and Other Business</b>	
5.1	The MOECC requested monthly progress updates on the PRAP study. The monthly updates will include a log of activities completed in that month (i.e. project team meetings, deliverable distributions, field study activities). The progress reports are to be sent to Dorothy Moszynski.	The Regions/CH2M are to provide monthly progress reports to the MOECC moving forward.
5.2	The MOECC requested to review the meeting summaries from project team meetings with the Town of Ajax. The summaries are to be sent to Dorothy Moszynski.	The Regions/CH2M are to send previous meeting summaries with Ajax to the MOECC.

## Progress Meeting with MOECC

ATTENDEES:	York Region: Wayne Green Mukund Padhye	Durham Region: Barry Laverick	CH2M: Ansel Bather Laurie Boyce Adrienne Willoughby	MOECC: Fred Lam Dorothy Moszynski Paul Martin Tina Dufresne
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LOCATION:	Duffin Creek WPCP
PREPARED BY:	CH2M
DATE:	October 11, 2017
PROJECT NUMBER:	676959

### Objectives

The purpose of this meeting was to provide a progress update for the Duffin Creek Water Pollution Control Plant (WPCP) Phosphorus Reduction Action Plan (PRAP) Study. The slides that were presented at the meeting are attached to this meeting summary.

### Summary

No.	Item	Action
<b>1</b>	<b>Introduction</b>	
1.1	The attendees were introduced and the meeting agenda was reviewed.	
1.2	Background information on the Outfall EA recommendations and the MOECC letter for the PRAP Study was reviewed. The status of each of the PRAP Study deliverables was reviewed.	
<b>2</b>	<b>Consultation</b>	
2.1	To date, the collaboration with the Town of Ajax has been positive. The project team stated that the consultation requirements outlined by the Region of Durham council resolution have been exceeded. Ajax has had opportunity to review and provide input on each deliverable throughout the project.	
2.2	The major difference in opinion between the Regions and Ajax is the impact that the Duffin Creek WPCP has on the nearshore water quality, which is out of the scope of the PRAP Study.	
2.3	The next meeting with Ajax is October 16 <sup>th</sup> and the purpose of the meeting is to review TM 4 (tertiary treatment options) and the outlines for TM 5 (phosphorus reduction strategy) and the PRAP Study Final Report.	
<b>3</b>	<b>PRAP Study findings: secondary treatment optimization</b>	

3.1	<p>The historical plant performance was reviewed. It was observed that as the influent flows and loads approach the plant’s design capacity, it becomes more difficult to meet the objectives and limits. Therefore, optimization is required in the future at Duffin Creek WPCP to meet the current ECA objectives and limits.</p> <p>In 2015-2016, the percent hydraulic capacity utilization had increased on account of Stages 1 and 2 being taken offline for upgrades.</p>	
3.2	<p>The results from the desktop modelling study (presented at the last meeting with MOECC in November 2016) were reviewed. The model projected that a monthly average effluent TP concentration in the range of 0.3 to 0.45 mg/L may be achievable.</p>	
3.3	<p>The results collected to date from the field study show that the model projected performance is not able to be achieved under all circumstances, particularly during peak wet weather events and unexpected maintenance events. July 2017 monthly average effluent TP concentration from the test trains was 0.5 mg/L. This highlights the importance of including a factor of safety on potential new effluent objectives or limits.</p>	
3.4	<p>Fred discussed a new framework that the MOECC is adopting for measuring monthly average effluent concentrations for reporting to the MOECC. The new method considers days that have poor performance as well as good performance. A flow-weighted monthly average effluent concentration based on the good and bad days is proposed.</p> <p>The new ECA reporting requirements are still under discussion and review within the MOECC.</p>	<p>Fred to send an example ECA with the new monthly average effluent calculations to the PRAP team.</p> <p>Post meeting note: this has been received.</p>
3.5	<p>The potential achievable effluent TP concentrations will be recommended in the PRAP study for the Ministry to consider in a revised ECA to increase capacity to 630 MLD. Seasonal average objectives are not typically implemented for TP (usually only NH3-N) but are possible to be implemented.</p>	
3.6	<p>Ansel noted that seasonal performance is potentially lower in the winter due to the higher risks associated with operating at a longer sludge age for nitrification and therefore higher solids loading rate in secondary clarifiers.</p>	
<b>4</b>	<b>PRAP Study findings: tertiary treatment</b>	
4.1	<p>Tertiary treatment located downstream of disinfection is uncommon. Fred will confirm whether or not the MOECC has policies or guidelines that recommend disinfection as the last treatment stage.</p> <p>From a regulatory standpoint, what matters most is that the final effluent samples are taken after the last stage of treatment. Fred noted that owners generally assume the operational risks of atypical implementations.</p>	<p>Fred to confirm MOECC policies on tertiary treatment downstream of disinfection.</p>
4.2	<p>A comparison of secondary treatment vs. tertiary treatment was presented including costs, carbon footprint, etc. CH2M is to send the completed TMs and the PRAP Study Final Report table of contents to the MOECC for review and comment.</p>	<p>CH2M to send the completed TMs and the draft final report table of contents to the MOECC.</p>
<b>5</b>	<b>Next Steps</b>	

5.1	The PRAP Study Final Report will be issued for the 45-day public review period early January 2018. The MOECC confirmed that the Regions will have an opportunity to respond to the comments that are received during the 45-day review period.	
5.2	The Regions asked how comments on the lake water quality (i.e. out of the PRAP Study scope) should be handled. The MOECC noted that the nature of comment responses is the Regions' decision.	
5.3	Dorothy said that the PRAP study meets the intended scope of what was required by the Minister's letter, however the MOECC reserves any official comment on the study findings until the study is fully completed and submitted to the Ministry. Dorothy also noted that stakeholders comments that are received during the 45 day review period will also be taken into consideration by the Minister in his review of the PRAP study.	