



R.M of Gimli
Box 1246
Gimli, MB R0C 1B0

March 6, 2019

Ms. Siobhan Burland Ross
Director
Environmental Approvals Branch
Manitoba Sustainable Development
1007 Century Street
Winnipeg, Manitoba R3H 0W4

Subject: RM of Gimli Wastewater Treatment Plant - Notice of Alteration Request Environment Act Licence No. 2587 – Request for 2 week Clause No. 16 (c) Suspension

Dear Ms. Burland Ross:

The RM of Gimli is requesting a temporary notice of alteration to Licence 2587 issued on January 20, 2013. The requested change is a two-week suspension of licence clause 16(c) (fecal coliform limit) in order to complete several aspects of the Phase II upgrading works.

To mitigate the impact of the licence clause suspension, Option 4 as described in the attached follow up letter to the June 15, 2017 Notice of Upgrades is proposed to be implemented. Option 4 consists of:

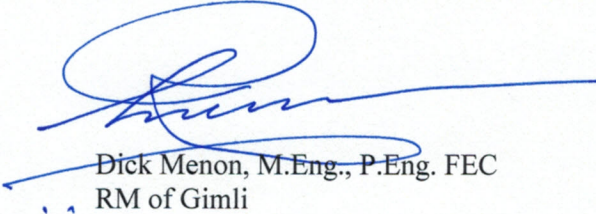
- Commencing by-passing of the UV disinfection on April 1, 2019 and limiting the by-passing to a two-week period.
- By-passing the Town Lift Station to the Town Lagoon and the hauled septage/holding tank contents to Bifrost (pending approval by Bifrost) starting on March 28, 2019 and continuing until the end of the UV by-passing period to reduce the fecal coliform concentration discharged from the plant.

The by-passing of the above influent flows away from the plant decreases the municipal fraction (fecal coliform containing fraction) sent to the plant by approximately 85%. With the remaining influent still receiving secondary treatment, the influent fecal coliforms are further reduced by approximately 96% (Water Environment Federation, Manual of Practice 8, 1998). We feel that Option 4 minimizes the risks to aquatic life and humans, allows the Phase II upgrades to proceed as efficiently as possible to improve the reliability and redundancy of the plant and does not result in any additional odours generated from the plant site.

Attached for your review is the completed Notice of Alteration Form, two hardcopies and one electronic copy of the NOA detailed report (this letter and accompanying attachment).

If you have any questions, please contact me by email at dmenon@rmgimli.com or by phone at 204-396-1000.

Sincerely,



Dick Menon, M.Eng., P.Eng. FEC
RM of Gimli

Attachment: March 6, 2019 follow up letter to the June 15, 2017 Notice of Upgrades as per Phase II of Environment Act Licence No. 2587 Letter

- c. Joann King, RM of Gimli
Darcy Hjelmeland, RM of Gimli
Bonnie McIntosh, Birchtree Consulting Ltd.
Asit Dey, Manitoba Sustainable Development
Yvonne Hawryliuk, Manitoba Sustainable Development
Katie Martin, Manitoba Sustainable Development

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Siobhan Burland Ross
 Director
 Environmental Approvals Branch
 Manitoba Sustainable Development
 1007 Century Street
 Winnipeg, Manitoba R3H 0W4

Subject: RM of Gimli Wastewater Treatment Plant – Follow up to the June 15, 2017 Notice of Upgrades as per Phase II of Environment Act Licence No. 2587 Letter Request for 2 week Clause No. 16 (c) Suspension

Dear Ms. Burland Ross:

The RM of Gimli is requesting a two-week licence clause 16(c) suspension (i.e. fecal coliform limit suspension) in order to complete aspects of their Phase II upgrades. This letter provides information on the options reviewed to mitigate the associated risks for Manitoba Sustainable Development’s review. If the RM’s proposed Option 4 is acceptable, a Notice of Alteration will be submitted.

The plant is currently at its Phase I influent limits during the peak summer season and additional capacity is required to treat the wastewater consistently to the licence effluent limits. The RM of Gimli Wastewater Treatment Plant (WWTP) treats the influent wastewater in two Sequencing Batch Reactors (SBR’s). Secondary effluent then flows by gravity to a small Decant Box, and then on to the Effluent Equalization (EQ) Basin. From the EQ basin, the secondary effluent, which is controlled by an automatic flow control valve and flow meter, is discharged by gravity to the UV disinfection system. From UV disinfection, the disinfected effluent flows by gravity to the Effluent Lift Station.

In order to complete the Phase II upgrades, the existing EQ Basin and Effluent Lift Station, that are upstream and downstream respectively of UV disinfection, need to be by-passed for work to be performed within the respective tankage. Without the EQ basin in service, flow cannot get to the UV disinfection unit and even if it could, its hydraulic capacity would be exceeded causing flooding in the piping gallery and a loss of the plant. There is also no way of diverting flow after the UV disinfection and by-passing the Effluent Lift Station. The planned EQ and Effluent Lift Station work consists of:

Table 1: Phase II Proposed Changes

Description of Change	Reason for Change
Installing an interconnecting valve and pipe spool between the existing EQ basin and a new SBR 3 EQ basin for SBR 3	- To gain the flexibility to discharge the three SBR’s to either UV disinfection unit (new or existing). This will not only increase the plant’s reliability should one UV unit be out of service, but if there is a process upset, both UV systems can be run to provide an increased UV dosage.

Description of Change	Reason for Change
	<ul style="list-style-type: none"> - To allow one EQ basin to be taken out of service for maintenance, repair or inspection without having to by-pass the UV. - To increase the EQ capacity to match the new SBR 3 discharge flow rate. - To allow the existing EQ basin to be taken out of service to install a new UV feed flow control valve that has a failsafe close position. Currently when there is a power outage, and until the backup generator starts up, the existing valve fails open. As a result, flow from the EQ basin continues to flow through the non-powered UV to the Effluent Lift Station, where the effluent pumps are not working. Since power outages frequently occur with high rain events and during the high flow recreation season, this has led to flooding of the piping gallery. This flooding has the potential to shut down the plant causing significant damage to the plant and longer term licence violations.
Installing solids return pump suction line in the existing EQ Basin	<ul style="list-style-type: none"> - To return any solids washed out of the SBR basins into EQ basin (if there is a plant upset). Presently, if this occurs, the solids are discharged to the receiving water body. - To reduce the time and impact of any process upsets. - To provide a method to dewater the EQ basins for maintenance.
Install access hatch into the EQ basin tank roof	<ul style="list-style-type: none"> - To allow for safer access into this confined entry basin.
Install third effluent pump in Effluent Lift Station	<ul style="list-style-type: none"> - To increase the effluent pumping capacity to the Phase II hydraulic flow capacity. The current one duty/one standby pump arrangement only provides for the Phase I flows. With the flows having increased recently due to the switchover of many septic/holding tanks to a low pressure sewer system and the apparent larger and more frequent storm events, this work cannot be delayed.
To install the discharge line from the new second UV channel into the existing Effluent Lift Station	<ul style="list-style-type: none"> - Without this line installed, the installation of the second UV train cannot be completed. - The second UV train is being installed to increase the disinfection system reliability and redundancy by having an inline spare or extra disinfection capacity.
To install the effluent composite sampler line suction line in the Effluent Lift Station	<ul style="list-style-type: none"> - To take representative effluent composite samples of the combined effluent from all three SBR's.

To complete this work, numerous options were reviewed, with varying impacts on the environment, risks, etc.

Table 2: Options to Complete the Planned Work

	Option 1: Perform UV by-passing over a two-week period prior to March 31, 2019	Option 2: Perform UV by-passing over a two week period prior to March 31, 2019. By-pass the Town Lift Station to the Town Lagoon. See Note 1 below.	Option 3: Same as Option 2 but with the septage / holding tank hauling to diverted to a nearby community (pending approval by Bifrost)	Option 4: Same as Option 3 but with the by-passing delayed until April 1, 2019	Option 5: Same as Option 4 but delay by-passing until November 2019	Option 6: Same as Option 3 but have a shorter by-pass starting April 1, 2019 with flow additionally by-passed to the Plant Lagoon and a second by-passing in Nov. 2019. See Note 2.	Option 7: Perform UV by-passing over a two week period prior to March 31, 2019. Add chlorine to Decant Box
Pros							
Non-recreational limits				- No ice fishing shacks will be on the lake yet. Non-recreational fecal coliform standards should apply.	- No ice fishing shacks will be on the lake yet. Non-recreational fecal coliform standards should apply.	- By-passing is done during non-recreational periods	N/A
Fecal Coliform Reduction		- The fecal coliform contaminated municipal fraction of wastewater being sent to the plant decreases by approximately 80%. This also decreases the influent flow from approximately 2100 m ³ /d to 1600 m ³ /d.	- The fecal coliform contaminated municipal fraction of wastewater being sent to the plant decreases by approximately 85%. This also decreases the influent flow from approximately 2100 m ³ /d to 1540 m ³ /d.	- Same as Option 3	- Same as Option 3		Disinfected effluent
		- Of the remaining 1600 m ³ /d being sent to the plant, approximately 90% of this (approximately 1450 m ³ /d) is from Diageo, which is mainly from their process and void of fecal coliforms. The municipal fecal coliform contaminated fraction of Diageo's waste is estimated at 5 m ³ /d.	- Of the remaining 1540 m ³ /d being sent to the plant, approximately 94% of this (approximately 1445 m ³ /d) is from Diageo's process waste (a non-fecal coliforms contaminated fraction).	- Same as Option 3	- Same as Option 3		
Secondary Treatment Objectives Achieved	- Yes	- Yes	- Yes	- Yes	- Yes	- Yes	- Yes

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By-passing outside of spawning season	- Yes	- Yes	- Yes	- Yes	- Yes	- Yes	- Yes
Avoids high spring rain flows, which may exceed the EQ/UV by-pass pumping capacity and increases the risk to Workers in the EQ basin/Lift Station during the by-pass event.	- Yes	- Yes	- Yes	- Yes	- Yes	- Yes	- Yes
Eliminates By-pass related odour complaints	- Yes						- Yes
Requires only one bypass	- Yes	- Yes	- Yes	- Yes	- Yes		- Yes
Reduces inflow / infiltration originating in the Town, the risk of high flows during by-passing and the risk that the capacity of the pumps are exceeded		- Yes	- Yes	- Yes	- Yes	- Yes	
Cons							
Tw by-passes required						- Yes	
Bypass to occur when ice fishing shacks are on the lake and near outfall	- Yes	- Yes	- Yes				Yes

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Estimated fecal coliforms discharged	- Municipal secondary effluent concentrations range from 11,000 to 1,580,000 MPN/100mL ¹ . Since Diageo's non-municipal fraction consists of approximately 69% of the flow during the winter, the effluent concentration is expected to be in the range of 3,410 to 489,800 MPN/100 mL	- Secondary effluent fecal coliform range is estimated to decrease to between 1,100 to 158,000 MPN/100mL. Option 2 is however a significant improvement over Option 1 with regards to the fecal coliforms.	- Secondary effluent fecal coliform concentration range is estimated to be reduced to 660 to 94,800 MPN/100mL. This Option 3 is an improvement over Option 2 with regards to the fecal coliforms.	- Secondary effluent fecal coliform range is estimated to be 660 to 94,800 MPN/100mL.	- Secondary effluent fecal coliform range is estimated to be 660 to 94,800 MPN/100mL.	- The first by-pass lasting up to one week will required approximately 100 m ³ /d to be by-passed at an estimated fecal coliform concentration range of 11,000 to 1,580,000 MPN/100mL. - The second by-pass will consist of approximately 1540 m ³ /d at an estimated secondary effluent fecal coliform concentration range of 660 to 94,800 MPN/100mL.	200 MPN/100 mL
Anticipated project delays					- 6 months.	- 2 to 3 months.	
Public perception	- Negative public perception if the ice shacks need to be relocated.	- Negative public perception if the ice shacks need to be relocated.	- Negative public perception if the ice shacks need to be relocated.				
Possible affect from quick snow melt – Increased risk to Workers in tankage	- Yes - Potential the by-pass pumps cannot keep up. Work would have to be abandoned if unmanageable high flows occur.	- Yes – Potential the by-pass pumps cannot keep up. Work would have to be abandoned if unmanageable high flows occur. This risk reduced as compared to Option 1.	- Yes – Potential the by-pass pumps cannot keep up. Work would have to be abandoned if unmanageable high flows occur. This risk reduced as compared to Option 1.	- Yes – Potential the by-pass pumps cannot keep up. Work would have to be abandoned if unmanageable high flows occur. This risk reduced as compared to Option 1.			

¹Water Environment Federation, Design of Municipal Wastewater Treatment Plants, MOP 8.

	Option 1: Perform UV by-passing over a two-week period prior to March 31, 2019	Option 2: Perform UV by-passing over a two week period prior to March 31, 2019. By-pass the Town Lift Station to the Town Lagoon. See Note 1 below.	Option 3: Same as Option 2 but with the septage / holding tank hauling to diverted to a nearby community (pending approval by Bifrost)	Option 4: Same as Option 3 but with the by-passing delayed until April 1, 2019	Option 5: Same as Option 4 but delay by-passing until November 2019	Option 6: Same as Option 3 but have a shorter by-pass starting April 1, 2019 with flow additionally by-passed to the Plant Lagoon and a second by-passing in Nov. 2019. See Note 2.	Option 7: Perform UV by-passing over a two week period prior to March 31, 2019. Add chlorine to Decant Box
Requires defrosting of lines to the lagoon		- Yes	- Yes	- Yes			
Potential for odour complaints		- Yes - from the Town Lagoon.	- Yes - from the Town Lagoon.	- Yes - from the Town Lagoon.	- Yes - from the Town Lagoon.	- Yes - Significant odours would result with Diageo's wastewater by-passed to the Plant Lagoon. - Yes – from the Town Lagoon.	
Delay of odour control system start-up					- Yes	- Yes	
Operational issues					- Capacity increase delays will result in prolonged operational issues due to a lack of reliability, redundancy and capacity within the plant. The plant may be out of compliance for a period since the plant is right at its capacity in the summer due to summer population increase	- Capacity increase delays will result in prolonged operational issues due to a lack of reliability, redundancy and capacity within the plant. The plant may be out of compliance for a period since the plant is right at its capacity in the summer due to the summer population increase	
Likelihood of high emergency costs and out of compliance issues					- Higher – risk increases due to the prolonged lack of plant reliability, redundancy and capacity.	- Higher – risk increases due to the prolonged lack of plant reliability, redundancy and capacity.	
Increases risk of Plant Lagoon wall failure						- Yes - Increases the risk of a lagoon wall failure, risking the life and safety of the workers working next to the lagoon in the excavation. Due to the time of year, there is a high probability of higher flows to the Plant Lagoon.	

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Increases the risk of Plant Lagoon leaking						- Yes - By-passing to the Plant Lagoon will increase the risk of the lagoon leaking since the Contractor without permission removed the upper portion of the lagoon wall.	
Increases bypass time						- This option would likely increase the overall by-pass time from 2 to 3 weeks.	
Discharges harmful disinfection by-products							- Yes – with only a few seconds of contact time in the Decant Box, the contact time would be in the effluent pipe and no dechlorination would be possible.

Note 1: The WWTP would continue to receive Diageo’s wastewater and the municipal flow from South Beach Lift Station, Pelican Beach Lift Station, Loni Beach Lift Station, the Industrial Park, Aspen Park Lift Station, Center Lift Station and the Septage Receiving Lift Station.

Note 2: This option involves having a shorter by-pass starting April 1, 2019 to do the Effluent Lift Station work sooner and installing the EQ basin interconnection line only. During this period, Town Lift Station would be diverted to the Town Lagoon and the Diageo flow and the flow from the Pelican Beach Lift Station, Loni Beach Lift Station, the majority of the Industrial Park, Aspen Park Lift Station and Center Lift Station would be diverted to the plant lagoon. The septage would also continue to be discharged to the plant. The bulk of the EQ basin by-pass work would be delayed to Nov. 2019, when all flow would be diverted similar to Option 3.

The Option that the RM of Gimli is requesting permission to proceed with is Option 4. Option 4 involves delaying the start of the by-passing until April 1, 2019 so that the ice fishing shacks are off of the lake, by-passing the Town Lift Station to the Town Lagoon and by-passing the hauled septage to a nearby community to reduce the fecal coliforms discharged to the plant.

We feel that this option minimizes the risk to the aquatic life and humans and does not create additional odours from the plant site. In addition, this option allows the project to proceed as quickly as possible to avoid future emergency situations such as occurred in January to March 2018 due to a lack of reliability and redundancy.

The fecal coliform estimates provided are based on literature Water Environment Federation MOP-8 values. The RM of Gimli has sent a fecal coliform sample to ALS to confirm the literature values. The results will be forwarded to Manitoba Sustainable Development once they are received.

It is the RM's preference not to delay the project further (Options 5 and 6) as these options would create other legal and contractual problems for the RM of Gimli that cannot be quantified.

If you have any questions, please contact me by email at BMcIntosh@bt-consult.ca or by phone at 204-229-5681.

Sincerely,

Birchtree Consulting Ltd.



Bonnie McIntosh, M.Sc., P. Eng.
Project Manager, Birchtree Consulting Ltd.

- c. Joann King, RM of Gimli
- Darcy Hjelmeland, RM of Gimli
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