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Dear Ms. Winsor:

**RE: Request for Minor Notice of Alteration to R3 Innovations License 2870 RRR; Client 2754.10**

This notice of alteration request is submitted on behalf of R3 Innovations Inc. for the single removal of solids material from stored wastewater in the original industrial wastewater treatment facility (IWWTF). The wastewater stored in the old IWWTF was placed there due to a series of transfers due to operational constraints experienced by R3 Innovations and approved by the department of Sustainable Development. The removal of the solids material is the initial stage in treating this material to a state in which it can then be further treated by R3 Innovations with an eventual discharge as per license 2870 RRR.

In January 2018, HyLife had sent Manitoba Sustainable development our plan for the transfer of the existing lagoon effluent to the R3 Innovations facility for treatment. This plan had indicated that as of April 2019, we had anticipated transferring this material to R3 Innovations for treatment. During the course of commissioning the new cut floor associated with HyLife Foods and the additional equipment at R3 Innovations, it was determined that based on the current treatment capacity at R3 Innovations and the strength of the effluent within the lagoons that inclusion of this waste stream presented a potential risk to the overall operational integrity of the wastewater treatment facility. It was then determined that an alternate strategy was required to deal with this waste stream.

It was determined that a staged approach of solids removal would improve the treatability of this waste stream while allowing R3 Innovations additional time to optimize treatment and increase treatment capacity within the system. Through this, Kayden Industries from Calgary Alberta presented a viable option of dewatering lagoon solids through the use of centrifuge technology that would remove a large proportion of solid material. At present, the overall concentration of the remaining centrate is not fully known, but it is anticipated that a significant amount of the solids material will be removed through this process.

The remaining dried solids are requested to be disposed of at the Waste Connections Landfill in Winnipeg which is the approved disposal method that is currently being utilized by R3 Innovations for the disposal



of our WAS and DAF sludge material. The solids material is anticipated to be in the range of 25% dry matter content and should easily pass a slump test in accordance with their licensing requirements. Waste Connections has also indicated that they have approval to accept this material and capacity to deal with the additional production. The proposed process is very similar to the existing solids disposal process that R3 Innovations engages with today aside from the centrifuges being utilized are not within the facility itself.

Liquid centrate from the centrifuges will be redirected back into the old IWWTF primary and secondary cells. No liquid is leaving the facility and will be further tested to determine the overall remaining concentration of the material and development of further treatment options to bring this material to its final treatment at R3 Innovations and eventual discharge to the Whitemud River as per license 2870 RRR.

Below is the analysis of the raw wastewater that was performed at R3 Innovations. The specific composition of the solids material post centrifuging is difficult to ascertain at this point in time as there are numerous dependencies that will impact these results and will only be fully understood post treatment. It can be assumed that the material will be a concentrated form of the liquid waste stream as described below:

TSS – 2300 mg/L  
pH – 6.92  
COD – 670 mg/L  
TN – 319 mg/L  
Nitrates – 1.52 mg/L  
Ammonia – 267.6 mg/L  
TP – 52.3 mg/L

As can be seen above, the wastewater material appears to be a concentrated form of the raw wastewater received at R3 Innovations and overall reduction of this materials solids content and waste constituents will vastly improve the overall success of treatment.

Currently, there is approximately 2.0 million imperial gallons of raw wastewater in the primary cell of the lagoon and 2.2 million gallons combined in the 2 secondary treatment cells. The primary goal of the solid's removal is to focus on treating the primary cell effluent and cycling the centrate material into the secondary cells that have remaining capacity of approximately 1 – 1.5 million gallons. Once capacity is reached centrate will be recirculated in the primary cell. Once solids removal has been accomplished within the primary cell, should there be additional time allowed with the equipment, we will proceed to remove solids from the secondary cells. It is important to note that this equipment can not operate in sub zero temperatures and all activities must be completed prior to freezing.

Solids removed from the wastewater will be stored in lined, Waste Connections Canada roll off bins, similar to those currently use at R3 Innovations for this purpose and removed as required and transferred to their licensed landfill facility. It is difficult to determine the exact quantity of solids that would be extracted from this material, but an educated guess would be between 150 to 300 tonnes of solids will be generated from this activity. It is important to note that these solids would be removed through normal treatment processes at R3 Innovations had this wastewater been processed through the normal channel and these are not "additional solids" on top of what is typically generated at the facility.

The removal of this material at this point in time is critical on a couple of accounts. First of all, the contractor with the capacity to process this waste is available and in fact lined up to perform this work. Secondly and most importantly, the treatment of this material is a required for the R3 Innovations facility and these sequential steps of removal of solids to the eventual treatment of this material is critical. Taking this initial step will allow for further analysis of the remaining effluent and provide the following winter months to delineate a strategy to further treat this material to an acceptable level. As these are open air lagoons, treatment of this material through the winter months is not possible and delaying this activity will further delay the final remedy of this situation another year.

As this is a time sensitive request, R3 Innovations would like to enact this activity September 17, 2019 in order to take advantage of the available contractor and complete this work prior to freeze up.

Thank you in advance for consideration of this request. Any further questions or concerns, please feel free to contact the undersigned at (204) 355-7775.

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