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Robert Boswick, P.Eng.
Environmental Engineer
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Manitoba Sustainable Development
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Dear Mr. Boswick:

Project No: **60430450**

Regarding: **File: 2708.02 – Notice of Alteration – Winkler Wastewater Treatment Plant: Project Update and Responses to the Technical Advisory Committee**

Thank you for your review dated April 5, 2017 of Notice of Alteration (NOA) for the Winkler Wastewater Treatment Plant submitted by AECOM on behalf of the City of Winkler. This letter responds to the comments and questions to the updated NOA.

Comment 1: *The following effluent standards should be in place for the City of Winkler wastewater treatment facility as per the Manitoba Water Quality Standards, Objectives and Guidelines Regulation (196/2011).*

- *CBOD 25 mg/L,*
- *BOD 25 mg/L,*
- *TSS 25 mg/L,*
- *Fecal Coliforms or Escherichia coli 200 MPN/100 mL,*
- *Total phosphorus < 1 mg/L,*
- *Total nitrogen < 15 mg/L,*
- *Water Quality Management Section recommends the use of Equation 1 as a license requirement to calculate the effluent limits based on effluent pH and temperature. The equation can be found in Manitoba Water Stewardship Report 2011-01, Manitoba Water Quality Standards, Objectives, and Guidelines November 28, 2011. (**Water Quality Management Section**)*

Answer 1: The above noted effluent standards were used in design of the treatment plant in Winkler; however, we are requesting a modification of the "not to exceed" requirement for BOD and TSS. Results for total phosphorus are reviewed on a 30 day rolling average as noted in the regulation.

On page 4 of the Manitoba Water Quality Standards, Objectives, and Guidelines noted above, the following is noted:

> *"Carbonaceous biochemical oxygen demand and biochemical oxygen demand standards are intended to be applied as not to exceed maximum concentrations.*

However, some flexibility on a site-specific basis can be added to provide an allowance for minimal variability at continuously discharging facilities."

BOD and TSS have mainly chronic effects, rather than acute effects. BOD can reduce the dissolved oxygen in the receiving water shifting the ecology to those that thrive in low oxygen water. TSS can reduce light penetration through the water column, affecting photosynthesis. Also, TSS can settle on the bottom of the receiving stream altering the ecology of the benthic organisms. Although these effects of BOD and TSS are important they are mainly chronic i.e. not significantly affected by short-term spikes in BOD and TSS.

The industry's standard textbook for wastewater treatment plants "*Wastewater Engineering, Treatment and Resource Recovery*" provides some typical statistical values for effluent BOD and TSS concentration. The geometric standard deviations for BOD and TSS can typically be up to 2.0 and 1.8, respectively for a BNR plant. This means that with these geometric standard deviations, the BOD and TSS concentrations would exceed the 25 mg/L value 17 times per year for BOD and 12 times per year for TSS.

As most facilities typically have excursions where BOD and SS moderately exceed licence limits, we are requesting that this be incorporated into the licence. We are requesting that the BOD and SS limits have a 97% compliance rate. This would allow an estimated 11 excursions per year, while still meeting a monthly average 25 mg/L for BOD and SS.

Comment 2: *Total P was consistently omitted from the list of effluent criteria to be met (as prescribe under Manitoba Water Quality Standards, Objectives and Guidelines. (**Compliance and Enforcement**)*

Answer 2: As indicated in **Section 2.2.8**, there will be online phosphorus analysers that will measure phosphorus in the secondary effluent and if the level exceeds a set point of approximately 0.8 mg/L (adjustable), ferric sulphate will be added to the secondary clarifier influent.

Comment 3: *The required concentration of ammonia as N at 24°C and pH 7.5 should be 2.37 mg/L, not 3.39 mg/L as stated in the NOA. (**Compliance and Enforcement**)*

Answer 3: The concentration of ammonia as N at 24°C and pH 7.5 as 2.37 mg/L has been noted.

Comment 4: *The NOA states that the primary concern with biosolids application to ground is the leaching and/or surface runoff of nitrogen and phosphorus. It should be noted that heavy metal build-up in the soil from continuous application could be a concern to be monitored in agricultural lands receiving biosolids application. (**Compliance and Enforcement**)*

Answer 4: This has been noted.

Comment 5: *It is not clear in the NOA how much of the projected Average Annual Flow (AAF) will originate from industrial/commercial developments in the City of Winkler and from the RM of Stanley. Table 5 presented no value for wastewater flows from commercial/industrial lots. City of Winkler currently has wet industries and businesses that are contributing to wastewater flow to the lagoon. There are also existing businesses in the RM of Stanley that are generating wastewater. (**Compliance and Enforcement**)*

Answer 5: The flows in Table 5 of the NOA were based on actual consumption records in the community and were projected forward based on flow and anticipated growth. The industrial/commercial developments are included within the per capita flows in Table 5 as they are not large contributors. It is assumed that wastewater generation is the same as water consumption. As background information, the existing larger users in both the City of Winkler and the Corridor are provided in the **Table 1** and **Table 2** below. It should be noted that future growth in the community is anticipated to include additional industrial and commercial developments, as included in the flow projections. Residential account names were changed to "Resident 1, 2..." to keep names confidential.

Table 1: City of Winkler Water Consumers Rate of Consumption from 2015 to 2017

Name of Water Consumer	m^3/day
Winkler Meats Ltd	78
Four Seasons Potato Ltd	57
Salem Home Inc	55
Kroeker Farms Limited	40
Winkler Valley Auto Spa	36
Winkler Consumers Co-Operative Ltd	27
Schinkel Properties Inc.	23
4356714 Manitoba Ltd	19
Winkler Heritage Village Inc.	18
Crocus Village Inc	18
Winkler Concrete Ltd	17
Mobile Home Park (Economy Consolidated)	16
4120990 Manitoba Ltd	15
Loblaws Inc.	15
Super Sudz Inc	15
Monarch Industries Ltd	14
7151692 Manitoba Ltd.	14
Maple Leaf Foods Inc.	14
Winkler Potato Co Ltd	13
Canadian Tire Properties	13
Integra Castings Inc	12
Woodhaven Capital Corp.	12
4991525 Manitoba Ltd.	12
Eden Residential Care Services Inc	10
Buhler Active Living Centre Inc.	10
Garden Valley School Div No 26	10
Eden Mental Health Centre	9
Wal-Mart Canada Corp.	9
Winkler Home For The Aged Inc	9
Woodhaven Capital Corp.	8
Triple E Canada Ltd	8
5087806 Manitoba Ltd.	8

Name of Water Consumer	m^3/day
Arty's Air Service Ltd	8
4160223 Manitoba Ltd	8
Essen Transport Ltd	7
Triple E Canada Ltd	7
Garden Valley School Div No 26	7
Mcdonalds Restaurant Msis 3022	7
69559 Manitoba Corporation	6
Ryan Property Tax Services	6
Canadian Tire Properties	6
City of Winkler	6
4582048 Manitoba Ltd	6
Total Large Users In Winkler	**711**

Table 2. Corridor Consumers Rate of Consumption from 2012 to 2014

North of Highway 3	m^3/day
Pembina Air Holdings	0.1
Wentworth Ag	0.1
Centre-Line Pupil (WSD)	1.1
Rockey Mountain Dealership	1.9
Greenvalley Equipment	1.9
Tektite	1.4
South of Highway 3	
MB Hydro	2.6
PJ Trailers	0.5
Resident 1	0.3
Greenvalley Equipment	2
Cargil	0.6
Resident 2	0.6
Sun Valley RV/Triple E	1
Threshermens	1
Little Morden Service	2.5
Hospital 6129	99
Hospital 6130	0.02
Hospital 6131	0.6
North of Highway 14	
BDO	0.8
Access	0.7
RM of Stanley	0.4
Co-Op	8.9
Resident 3	1.1
Resident 4	0.9

North of Highway 3	m^3/day
Resident 5	0.6
Resident 6	0.8
Resident 7	0.6
Resident 8	2
South of Highway 14	
Morden Nurseries	0.2
Resident 9	0.6
Dig All	2
Hespler Ent.	5.3
Agassiz Trailers	0.7
Resident 10	0.4
Resident 11	0.9
Resident 12	1.1
Dickens Road	
Q-Line	0.3
Jelcan	0.2
Resident 13	0.4
Denray Tire	0.2
Impel Transport	0.3
Resident 14	0.4
Total In Corridor	**147.02**

Should you have any additional questions, please contact me at 204-477-5381.

Sincerely,
AECOM Canada Ltd.

Paul Barsalou

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