

**Dey, Asit (SD)**

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**From:** Daniel Burns [d.burns@bmce.ca]  
**Sent:** August-04-16 9:49 AM  
**To:** Dey, Asit (SD)  
**Cc:** Ryan Johnston; Ashley Haigh  
**Subject:** 2014-166 - New Rosedale Lagoon

Asit,

I have reviewed our detailed spreadsheet for the calculations we discussed yesterday. There was a typo in the table in the EAP; see the revised table below. The storage volume should be 13,236 m<sup>3</sup>. I have also considered the truckwash wastewater. The term truckwash maybe causing the issue. This is more of a washbay that will be used like a carwash on site to wash all vehicles and equipment. I don't have an issue with you including in the license that livestock trailers are not permitted to be washed within the washbay. We will also require that they post a sign that no washing of livestock trailers is permitted within the washbay. Will this satisfy your department?

<b>Parameter</b>		<b>Result</b>	
<b>DOMESTIC WW LOADING</b>			
Detention Time (days)		230	
Population		150	
Hydraulic Loading Rate (L/c/d)		300	
Required Storage Volume (m <sup>3</sup> )		10,350	
<b>TRUCK WASH</b>			
Detention Time (days)		230	
Running Time (h/day)		4	
Weekly Usage (days/week)		6	
Hydraulic Loading Rate (L/min)		18.9	
Required Storage Volume (m <sup>3</sup> )		895	
<b>ABATTOIRE</b>			
<b>LIVESTOCK LOADING RATE</b>			
Livestock Type	Quantity	Washwater Loading	Annual Loading
	(head)	(L/head)	(L)
Broilers	5,000	11	55,000
Ducks	1,000	11	11,000
Geese	200	11	2,200
Turkeys	600	11	6,600
Hogs	30	757	22,700
Beef Cattle	6	1,514	9,100
Annual Washwater Loading Rate (m <sup>3</sup> /year)		106.6	

Avg Daily Washwater Loading Rate (m <sup>3</sup> /d)	0.29
Detention Time (d)	230
Required Storage Volume (m <sup>3</sup> )	67
<b>STORAGE VOLUME</b>	
<b>*Minimum Required Hydraulic Storage (m<sup>3</sup>)</b>	<b>11,878</b>
Minimum Required Primary Cell Organic Volume (m <sup>3</sup> )	2,688
Minimum Required Secondary Cell Volume (m <sup>3</sup> )	10,534
<b>Total Storage Volume Required (m<sup>3</sup>)</b>	<b>13,222</b>
Primary Cell Storage Volume Proposed(m <sup>3</sup> )	2,694
Secondary Cell Storage Volume Proposed(m <sup>3</sup> )	10,542
<b>Total Storage Provided (m<sup>3</sup>)</b>	<b>13,236</b>
<b>ORGANIC LOADING</b>	
Detention Time (days)	230
Population	150
Individual Organic Loading Rate (kg BOD <sub>5</sub> / c / d)	0.077
Daily Population BOD <sub>5</sub> Loading (kg BOD <sub>5</sub> / d)	11.55
Poultry – Washwater BOD <sub>5</sub> Concentration(mg/L)	1,648
Hogs – Washwater BOD <sub>5</sub> Concentration (mg/L)	4,711
Cattle – Washwater BOD <sub>5</sub> Concentration (mg/L)	14,545
Poultry – Washwater BOD <sub>5</sub> Loading (kg BOD <sub>5</sub> /d)	0.37
Hogs – Washwater BOD <sub>5</sub> Loading (kg BOD <sub>5</sub> /d)	0.30
Cattle – Washwater BOD <sub>5</sub> Loading (kg BOD <sub>5</sub> /d)	0.34
Total Livestock – Washwater Loading (kg BOD <sub>5</sub> /d)	1.01
Total BOD <sub>5</sub> Loading (kg BOD <sub>5</sub> / d)	12.56
Organic Loading per Area (kg BOD <sub>5</sub> / ha·d)	56
Minimum Primary Cell Area (m <sup>2</sup> )	2,242
Primary Cell Area (m <sup>2</sup> )	2,242
<b>LAGOON DIMENSIONS</b>	
Active Storage Depth (m)	1.50
Freeboard (m)	1.00
Dead Space (m)	0.30
Total Depth (m)	2.50
Cell Interior Side Slope	5:1
Primary Cell Outer Dimensions - L x W x H (m)	90.0 x 46.3 x 2.5
Primary Cell Floor Dimensions - L x W (m)	65.0 x 21.3
Secondary Cell Outer Dimensions - L x W x H (m)	134.6 x 90.0 x 2.5
Secondary Cell Floor Dimensions - L x W (m)	109.6 x 65.0

Regards,

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Senior Engineer



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