

## COMPARING THE ALTERNATIVES

Alternative		Advantages	Disadvantages	Capital Costs <sup>(1)</sup>
1	<b>Do Nothing</b>	-	Does not reduce impact of current practice. <b>Not an acceptable option.</b>	-
2	<b>Treat at WPCP</b> <ul style="list-style-type: none"> <li>Equalization tank on site</li> <li>Pump to sewer at controlled rate to reduce hydraulic surges</li> </ul>	<ul style="list-style-type: none"> <li>Simple operation</li> <li>Very low land requirement</li> <li>Low capital and operations costs</li> </ul>	<ul style="list-style-type: none"> <li>Increased flow to the sewer</li> <li>Increased hydraulic and solids loading to the WPCP</li> </ul>	<b>Not Considered Feasible</b> due to limitation on sewer capacity.
3A	<b>Partially Treat On-Site, with Solids to WPCP</b> <ul style="list-style-type: none"> <li>Gravity settling or clarification of filter washwater on-site – discharge of sludge to sewer.</li> <li>Settling tank residues from semi-annual cleaning discharged directly to sewer</li> <li>Clarified supernatant returned to Lake.</li> </ul>	<ul style="list-style-type: none"> <li>Relatively simple operation</li> <li>Reduce hydraulic impact on the sewer and WPCP</li> <li>Low land requirement</li> <li>Relatively low capital and operations cost.</li> </ul>	<ul style="list-style-type: none"> <li>Discharge of settling tank sludge must be timed to minimize impacts on sewer and WPCP</li> <li>Increased solids loading to the WPCP when settling tank solids are discharged – short duration, high loading</li> </ul>	<b>\$ 3.0 Million</b>
3B	<b>Same as 3A except</b> <ul style="list-style-type: none"> <li>Continuous sludge removal from settling tanks (instead of semi-annual cleaning discharged directly to sewer)</li> </ul>	<ul style="list-style-type: none"> <li>Eliminates semi-annual settling tank cleaning</li> <li>Reduce hydraulic impact on the sewer and WPCP</li> <li>Opportunity to link with CSO works for the disposal of settling tank residues</li> <li>Relatively simple operation</li> <li>Low land requirement</li> <li>Relatively low capital and operations cost.</li> </ul>	<ul style="list-style-type: none"> <li>Relatively constant hydraulic and solids loading to WPCP</li> <li>Increased solids loading to the WPCP</li> <li>High capital costs</li> </ul>	<b>\$3.8 Million</b>
4	<b>Further Treatment On-Site with Solids sent to WPCP</b> <ul style="list-style-type: none"> <li>Equalization, clarification and thickening of WPP residues on-site</li> <li>Continuous sludge removal from settling tanks</li> <li>Clarified supernatant returned to Lake</li> <li>Haul by truck or pump thickened WPP residues to WPCP for disposal</li> </ul>	<ul style="list-style-type: none"> <li>Eliminates semi-annual settling tank cleaning</li> <li>Larger land requirement</li> <li>Reduced hydraulic load to WPCP</li> </ul>	<ul style="list-style-type: none"> <li>More complex operation</li> <li>High capital costs</li> <li>High operational and maintenance costs</li> <li>Increased solids loading to the WPCP</li> </ul>	<b>\$7.3 Million</b>
5	<b>Treat On- Site</b> <ul style="list-style-type: none"> <li>Clarification, thickening and mechanical dewatering of WPP residues on-site</li> <li>Continuous sludge removal from settling tanks</li> <li>Clarified supernatant discharged to Lake</li> <li>Sludge cake hauled by truck to landfill</li> </ul>	<ul style="list-style-type: none"> <li>All operations can be performed on site</li> <li>Eliminates semi-annual settling tank cleaning</li> <li>No impacts on sewers or WPCP</li> <li>Concentrated solids for ultimate disposal</li> </ul>	<ul style="list-style-type: none"> <li>Complex operation</li> <li>Very high operations and maintenance cost</li> <li>High capital costs</li> <li>Increased truck traffic on roads</li> </ul>	<b>\$8.5 Million</b>
6	<b>Treat Off –Site, Freeze-Thaw Lagoons</b> <ul style="list-style-type: none"> <li>Equalization and Clarification on site, Pump/haul wastes for treatment in an off-site lagoon</li> <li>Residues, thickened and dewatered in lagoons</li> <li>Supernatant decanted and discharged to surface water</li> <li>Sludge removal every 5 to 10 years –on-site or landfill</li> </ul>	<ul style="list-style-type: none"> <li>No impact on sewer system and WPCP</li> <li>Simple operation and low maintenance costs</li> </ul>	<ul style="list-style-type: none"> <li>High capital cost</li> <li>Requires a very large land area</li> <li>Lack of availability of suitable land within a reasonable distance of the King Street Water Plant probably means that this option is not feasible</li> </ul>	<b>\$6 to \$8 Million</b>

Note:

- Estimated capital costs are approximate for the option concept, and are accurate to plus/or minus 40 percent.
- Land availability for lagoons must be assessed. Cost is exclusive of land costs, and assumes a 10 kilometre long forcemain to pump wastes to lagoon site.