

## Permits

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**From:** Miki Ehrlich  
**Sent:** Tuesday, September 1, 2015 11:27 AM  
**To:** Permits  
**Subject:** FW: Compilation past results  
**Attachments:** Reported exceedences at YK landfill and in YK Stormwater.XLS

Please post email and attachment to MV2009L3-0007 – Permit-Licence-Other issuances – SNP Program  
Title: City of YK – ENR compilation of past monitoring results and discussion – Aug25-15

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**From:** Jeanne Arsenault [mailto:Jeanne\_Arsenault@gov.nt.ca]  
**Sent:** Tuesday, August 25, 2015 3:18 PM  
**To:** Miki Ehrlich  
**Subject:** Compilation past results

Hi Miki,

I am sharing with you a compilation of past monitored results in and around Yellowknife. It appears that most parameters with exceedences detected to date in surface water landfill runoff are currently being monitored at the landfill SNP stations, with the exception of Uranium.

While the City is to submit a SWF Groundwater Monitoring Program in the near future, ENR notes that the following groundwater parameters were reported in exceedences in the Landfill Drainage Study (LDS): Dissolved Chloride, Dissolved Nitrite, Dissolved Sulphate, Arsenic, Dissolved Cadmium, Copper, Iron, Lead, Molybdenum, Dissolved Mercury, Nickel, Selenium and Zinc. Groundwater results for Phosphorus were also obtained/monitored during the LDS of <0.1 mg/L (MW1A, MW1B, MW2A), up to 0.2 to 0.3 mg/L (MW2B, MW3, MW5B), and up to 0.5 to 0.6 mg/L (MW4, MW5A, MW7). Groundwater wells MW4, MW5A and MW5B are located in the southwest to mid-south portion of the old landfill cell.

On June 9<sup>th</sup> 2015, ENR inspector Nahum Lee recommended the following nutrient parameters be monitored in landfill runoff: Total Phosphorus, Ortho-Phosphorus & Dissolved Organic Carbon. Results from the monitoring of these three parameters will provide different pieces of information and help determine if landfill runoff plays a role in the impacts to surrounding lakes. In the case of Jackfish Lake, the MVLWB may also want to consider other potential sources of impact to the water body, and should review whether operations at the Jackfish Lake power plant may be interacting with Jackfish Lake.

Lastly, the City as a proponent may be able to reduce their sampling requirements by validating (through review of collected data) that certain parameters no longer need to be monitored if the results suggest that the City's operations are not a potential source of a specific parameter. For parameters that remain elevated or in exceedance of acceptable limits, the City is to continue/intensify/accelerate mitigations implementation (such as landfill capping), research and monitoring until such a time as concentrations of these parameters are no longer of concern.

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SURFACE WATER PARAMETERS EXCEEDENCES AT WW TREATMENT SYSTEMS (LAGOONS AND SUCH)		YK - Landfill runoff @ SNP	YK - Stormwater SNP	YK - GW (LDS)	At KBL (Beside Landfill)	Parameters	CCME - WSER (MWW Efflu)	ALBERTA LANDFILL GW	SW - Monitored at YK SNP	SW - Recommended additi
		SW	ST	GW	KBL		AB	SW	AD	
<b>GENERAL &amp; INORGANICS</b>		SW	ST	GW	KBL					
	pH					pH				
						Alkalinity				
	Cyanide (free) Fluoride					Cyanide (free) Fluoride				
						Electrical Conductivity				
						Hardness				
	Sulphide (as H2S)					Sulphide (as H2S)				
<b>MAJOR IONS</b>		SW	ST	GW	KBL					
						Bicarbonate				
						Carbonate				
						Hydroxide				
	Chloride	XX	XX			Chloride				
						Dissolved Chloride (Cl)				
	Calcium									
	Magnesium									
	Nitrite (as nitrogen)					Nitrite (as nitrogen)				
	Dissolved Nitrite (N)	XX	XX							
	Nitrate					Nitrate				
	Dissolved Nitrate (N)	XX	XX							
	Potassium									
	Sodium					Sodium				
	Sulphate					Sulphate				
	Dissolved Sulphate (SO4)	XX	XX							
<b>NUTRIENTS</b>		SW	ST	GW	KBL					
	Ammonia					Ammonia				
	Total Ammonia					Total Ammonia				
	Ammonia as Nitrogen									
	Dissolved Organic Carbon (DOC)									
	Total Phosphorus									
	Ortho-Phosphorus									
	Total Dissolved Solids									
						TSS	25			
						Total Kjeldahl Nitrogen				
<b>METALS</b>		SW	ST	GW	KBL					
	Aluminum					Aluminum				
	Antimony					Antimony				
	Arsenic					Arsenic				
	Barium					Barium				
						Beryllium				
	Boron					Boron				
	Bromate					Bromate				
	Cadmium					Cadmium				
	Dissolved Cadmium	XX								
	Chromium					Chromium				
	Cobalt					Cobalt				
	Copper					Copper				
	Iron					Iron				
	Lead					Lead				
						Lithium				
	Manganese					Manganese				
						Molybdenum				
	Mercury					Mercury				
	Dissolved Mercury	XX								
	Nickel					Nickel				
						Potassium				
	Selenium					Selenium				
						Silicon				
	Silver					Silver				



