


Comparison of SIA Leachate to Typical Leachate (Table 1)


Table 1: Comparisons of SIA Leachate to Typical Leachate Characteristics

Table 1 shows leachate sampling results as derived from analytical results of 23 separate sampling events from May 2017 to September 2019. These comparisons indicate that the leachate generated from the SIA landfill is generally in line with typical leachate characteristics except for chloride, sodium and sulphate, which exceed the typical range. This is not unexpected because the landfill received marine sediments which would naturally contain high concentrations of those parameters.

Parameter ²	Leachate Characteristics				
	Typical Leachate Characteristics		South Island Aggregates Leachate Results ¹		
	Study Range ³	SWANA, 1991 ⁴	Average	Minimum	Maximum
<i>General Parameters</i>					
Alkalinity, Total as CaCO ₃ (mg/L)	730 - 15,050	1,000 - 10,000	52.2	4.8	113
pH	NS	5.3 - 8.5	7.03	6.28	7.55
Total Dissolved Solids (mg/L)	1,000 - 20,000	NS	NI	NI	NI
<i>Anions</i>					
Chloride (mg/L)	47 - 2,400	100 - 3,000	3210	1460	5730
Nitrite (as N) (mg/L)	NS	5 - 40	0.712	0.472	0.951
Sulphate (mg/L)	20 - 730	100 - 1,500	1660	767	2090
Total Hardness as CaCO ₃ (mg/L)	NS	300 - 10,000	3000	1300	3910
<i>Dissolved Metals</i>					
Calcium, dissolved (mg/L)	240 - 2,330	200 - 3,000	818	352	1080
Chromium, dissolved (mg/L)	0.5 - 1.0	NS	0.00170	0.00052	0.00988
Copper, dissolved (mg/L)	0.1 - 9.0	NS	0.00304	0.000760	0.00567
Lead, dissolved (mg/L)	ND - 1.0	NS	0.00035	0.00035	0.00035
Magnesium, dissolved (mg/L)	4 - 780	50 - 1,500	233	101	339
Manganese, dissolved (mg/L)	ND - 400	NS	20.6	0.0972	35.3
Potassium, dissolved (mg/L)	28 - 1,700	200 - 2,000	23	8.8	33.2
Sodium, dissolved (mg/L)	85 - 3,800	200 - 2,000	1590	670	2630
<i>Total Metals</i>					
Total Iron (mg/L)	0.1 - 1,700	50 - 600	0.122	0.012	1.18
Total Phosphorus (mg/L)	NS	1 - 70	ND	ND	ND

Notes:

 Analytical results in excess of the Typical Leachate Characteristics range for Municipal Solid Waste landfills

 Analytical result within the range of Typical Leachate Characteristics for Municipal Solid Waste landfills

ND: Not Detected

NI: Not Indicated/Not Sampled

1: Values derived from analytical results of 23 separate sampling events from May 2017 to September 2019.

2: Parameter list - Although historical sampling of leachate and old wells included hydrocarbons (which were generally not detected), the approved Closure Plan does not include hydrocarbon sampling. Ministry staff are working to clarify that hydrocarbon sampling should be included moving forward to be extra cautious.

3: Typical Leachate Quality of Municipal Waste, as reported by Water Encyclopedia (<http://www.waterencyclopedia.com/La-Mi/Landfills-Impact-on-Groundwater.html>). Ranges provided are a combination of three separate studies

4: Typical Leachate Characteristics as referenced in the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills (https://www2.gov.bc.ca/assets/gov/environment/waste-management/garbage/guidelines_environmental_monitoring_municipal_solid_waste_landfills.pdf)