Levin Landfill April/June 2023 Quarterly Groundwater, Surface Water and Leachate Monitoring Report

PREPARED FOR Horowhenua District Council | September 2023

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Revision Schedule

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Abbreviations

Abbreviation	Name
ANZECC LDW	ANZECC 2000 Livestock Drinking Water
BDL	Below the detection limit
cfu	Colony-forming unit
COD	Chemical Oxygen Demand
DWSNZ GVs	Drinking Water Standards for New Zealand - Guideline Values for aesthetic determinants
DWSNZ MAVs	Drinking Water Standards for New Zealand – Maximum Acceptable Values
EC	Electrical Conductivity
HDC	Horowhenua District Council
Hg	Soluble mercury
HRC	Horizons Regional Council
mbgl	Metres below ground level
NH ₃ -N	Ammoniacal-nitrogen
NO ₃ -N	Nitrate nitrogen
ppm	Parts per million
scBOD₅	Soluble carbonaceous Biochemical Oxygen Demand (5-day)

Executive Summary

Horowhenua District Council (HDC) is required to carry out quarterly compliance monitoring of groundwater and monthly sampling at selected surface water monitoring locations at the Levin Landfill, as part of the conditions of Resource Consents ATH-2002003982.03 (formerly DP6009), ATH-2002003983.02 (formerly DP6010), ATH-2002003984.02 (formerly DP6011) and ATH-2002009801.02 (formerly DP102259). This report summarises the findings for the monitoring events from the fourth quarter (i.e., February 2023 to April 2023) sampling round¹ and includes results for:

- Background (natural) groundwater (Bores G1S and G1D)
- Landfill leachate (manhole next to leachate pond)
- Groundwater bores, down-gradient of the new landfill (Bores D1, D2, D3rs, D4, D5, D6 and E1S)
- Groundwater bores within the old irrigation area (Bores F1, F2 and F3)
- Shallow aquifers, down-gradient of the old landfill (Bores B1, B2, B3s, C2, C2DS, E2S, G2s, Xs1 and Xs2)
- The deep aquifer (Bores C2DD, D3rd, E1D, E2D and Xd1)
- The Northern Farm Drain (TD1), and
- The Hokio Stream (HS1A, HS1, HS2 and HS3).

Stantec has reviewed the results of this fourth quarter monitoring round on behalf of HDC.

Monitoring results for other aspects of the landfill operations such as for air quality/odour and stormwater quality are reported annually, as per resource consent requirements.

Samples were collected from 27 groundwater bores from around Levin Landfill during April and June¹ 2023, and landfill leachate was sampled at a manhole next to the leachate pond. Additionally, five surface water sites were each sampled during February 2023, March 2023, and April 2023. All samples were analysed for the parameters set out in ATH-2002003983.02, and as listed in the results tables presented in this report.

For samples taken in April 2023, the time between sampling and reception at the laboratory ranged between 28 - 54 hours, which for most samples was outside the normally accepted timeframe of <24 hours. In June 2023, the time between sampling and reception at the laboratory ranged between 9 - 74 hours, obviously well outside of the normally accepted 24 hours timeframe. Meeting the monitoring timeframe is important because it provides greater confidence in the reliability of results, and comparisons with historical data.

The resource consent for the landfill (namely, ATH-2002003983.02) establishes compliance limits for the quality of deeper and shallow groundwater which are based upon the Drinking Water Standards for New Zealand – Maximum Acceptable Values (DWSNZ MAVs), Guideline Values for aesthetic determinants (DWSNZ GVs), and the ANZECC 2000 Livestock Drinking Water (ANZECC LDW) trigger values, respectively. Compliance limits for surface water are based on the ANZECC 2000² default guideline values (DGV) for 95th percentile species protection for toxicants in freshwater, as required by the revised Resource Consent condition approved in December 2019.

The February 2023 to April/June 2023 monitoring results have been assessed against these limits, where they are applicable.

Thirty-two non-compliances with resource consent conditions were recorded across eight monitoring locations, as follows:

- *E. coli* counts exceeded the ANZECC LDW trigger value of 100 cfu/100ml at bore C2 (6,000 cfu/100mL) in April 2023. Elevated E. coli at C2 has been observed historically, but this is the highest recorded level since monitoring began in February 1994.
- E. coli counts exceeded the DWSNZ MAV of NIL at bore E2D (38 cfu/100mL) in June 2023.
- Hardness exceeded the DWSNZ MAV of 200 mg CaCO3/L at bore D3rd (201 mg CaCO3/L) in June 2023. This is characteristic of D3rd.

² Now superseded by the Australian and New Zealand Water Quality Guidelines 2018 (ANZG 2018), however the ANZECC 2000 guideline values are applied in accordance with the resource consent.



¹ Sampling done in April 2023 should have been tested for the comprehensive suite of parameters. Through scheduling errors, this was not done, and a decision was taken to redo the sampling round again. This was completed in June 2023, hence the delay in preparing this report and the reporting on June 2023 results, in addition to the April testing that was done.

- Dissolved manganese concentrations exceeded the DWSNZ MAV of 0.5 mg/L in bores C2DD (0.69 mg/L), E2D (0.45 mg/L), Xd1 (0.58 mg/L) and D3rd (0.49 mg/L) in June 2023. The results for C2DD (from 1997), E2D (from 1997), Xd1 (from March 2021 when sampling started) and D3rd (from October 2021 when sampling started) are within the historical range of concentrations observed. Dissolved manganese is generally elevated in the deep aquifer bores.
- scBOD₅ exceeded the ANZECC (95%ile) DGV of 2 mg/L at TD1 across all dates, with a value of 3 mg/L half the
 detection limit of 6 mg/L. This emphasises the importance of a detection limit below the standard at which a
 parameter is assessed if the detection limit was reduced, these results may have been compliant, but currently
 must be considered exceedances.
- Nitrate-N exceeded the ANZECC (95%ile) DGV of 0.16 mg/L at TD1 in February 2023 (0.57 mg/L), March 2023 (0.7 mg/L), and April 2023 (0.25 mg/L). This site has commonly presented elevated Nitrate-N levels.
- Ammoniacal-N exceeded the ANZECC (95%ile) DGV of 2.1 mg/L at TD1 in February 2023 (6.37 mg/L), March 2023 (11.7 mg/L), and April 2023 (7.77 mg/L).
- scBOD₅ exceeded the ANZECC (95%ile) DGV of 2 mg/L at all Hokio Stream sites in February 2023 and March 2023, with a consistent value of 3 mg/L half the detection limit of 6 mg/L.
- Nitrate-N concentrations exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.16 mg/L in February 2023, March 2023, and April 2023 at HS2 and HS3. N-Nitrate exceedances are not unusual at these sites.
- Ammoniacal-N exceeded the ANZECC (95%ile) DGV and consent trigger value of 2.1 mg/L at HS2 (3.67 mg/L) in March 2023.
- Dissolved aluminium exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.055 mg/L in February 2023 at HS1A with a value of 2580 mg/L. This result is significantly concentrated, and is the greatest level recorded across all Hokio Stream sites (by a considerable amount), since monitoring began. This should be investigated further, to determine if this is erroneous or true. Given the lack of elevated results downstream, it is considered more likely to be an error.

The April/June 2023 results were also considered in the context of background water quality, both within the groundwater aquifers (shallow and deep bores) and the surface water receiving environment. For example, low pH at background bore G1S, and elevated aluminium concentrations in the same bore indicate that groundwater could be being impacted by up-gradient activities unrelated to the landfill operations. This trend will be examined in greater detail in the Annual Report.

There were seven occasions where the leachate effluent quality (at the leachate pond manhole sampling location) was outside the ranges for typical leachate composition, as recorded generally at Class 1 landfills in New Zealand. This occurred for the parameters conductivity, Ammonia-N, dissolved iron, lead, mercury, and nickel. Note that leachate effluent is not subject to any consent limits. Typical leachate concentrations are derived from tables presented in the WasteMINZ *Technical Guidelines*. The data in those tables originate from seven landfills in New Zealand and date back to between 1998 and 1999. More updated data could be sought for comparison purposes.

For *E. coli* the current laboratory detection limit is 100 CFU/100ml. This is impractical, as recent practice has been to halve any results which have fallen below the level of detection (as described in Section 2.1 of this report). The ANZECC LDW is also set at 100 CFU/100ml and the DWSNZ MAV is NIL, thus room for error through unknown values is large.

Methane was detected in eleven of the bores in April 2023, and eight of the bores in June 2023 – including the unlabelled sample. In April 2023, the highest recorded level was 0.12% in bore D6, with the other bores ranging from 0.01 - 0.09%. In June 2023, the highest recorded level was again 0.12% in bore D6, with the other bores ranging from 0.01 - 0.03%. These results are well below the lower explosive limit of 5% and is therefore deemed to represent a 'safe' level.

In April 2023, landfill bore B2 showed the highest carbon dioxide level of 1.48% - a considerable decrease to the previous quarter. This bore has demonstrated such fluctuations historically. However, this result is still relatively higher than all other bores – the next highest being 0.52%. In June 2023, bore C1 presented a significant concentration of 20.2%. This result appears uncharacteristic and should be investigated further. The next greatest concentration of CO₂ for June 2023 was 1.5% at G2s.

Hydrogen sulphide was detected one bore – G1s (1 ppm) in April 2023, which is around the threshold at which a 'rotten egg' smell (commonly associated with H_2S) can be detected. Hydrogen sulphide was not detected at any sites in June 2023.

The possibility of encountering methane (and possible hydrogen sulphide) in groundwater bores endorses the need for appropriate health and safety measures to be adopted during monitoring, as is the case for the landfill gas extraction wells. No smoking should be permitted when personnel undertake groundwater sampling and when in the vicinity of the groundwater monitoring wells, or in fact anywhere else on the Levin Landfill site. For sake of safety a personal gas detector should be worn by all staff when working at the landfill site.

1 Introduction

Horowhenua District Council (HDC) first commissioned Stantec New Zealand (then Montgomery Watson) to carry out environmental reporting for the discharge consent monitoring undertaken at the Levin Landfill site in the early 2000s. Monitoring has been undertaken by contractors every three months at 33 locations, as required by the resource consent conditions (namely for discharge permit ATH-2002003983.02). These sampling locations consist of 27 boreholes penetrating the sand and gravel aquifers; four surface water sampling locations within Hokio Stream; one surface sampling location along the Northern Farm Drain (previously referenced as the Tatana Drain), and one leachate sampling point, as shown in the Site Plan in Appendix A.

The Levin Landfill site is comprised of two landfills: one old, closed, and unlined landfill and one new, lined landfill that has been closed pending a decision by HDC to continue operating it. The new landfill footprint has been developed in stages. The most recent stage was Stage 3C which was developed in 2017, though landfill operations have, until the end of October 2021, occurred over the top of Stages 1A, 2 and 3C. The current landfill within this new footprint has reached capacity and has been capped with a permanent clay capping (0.7m thick) on all sides except for under the access road and on the front face of the landfill where there is a temporary capping (0.3m thick). Council has decided to close the landfill for the disposal of municipal waste and completion of the clay capping is to occur later this year.

The Levin Landfill site is located above two identified aquifers, a shallow sand aquifer and a deeper gravel aquifer. The shallow aquifer is unconfined, has a low to moderate permeability, and flows in a northerly direction. The deeper gravel aquifer is a confined to semi-confined aquifer. Horizons Regional Council hydrology staff advises that 'the general confined groundwater flow direction is towards the west''. Groundwater quality in the area is highly variable because of interaction with peat deposits that are prevalent in the area, localised effects such as from grazing activities, droppings from scavenging birds and from nitrogen-fixing plants such as gorse.

Since July 2010 groundwater has been tested for dissolved metals and nutrients, rather than for total concentrations of these parameters.

A review of the resource consent conditions was finalised in December 2019. Changes have been made to some of the surface water and groundwater monitoring conditions and HDC has acted on all the changes. Sampling since the January 2021 sampling round has been in line with previous monitoring, but different reference parameters have been applied to assess the surface water sampling results, as required by the new consent conditions.

This report presents the results of sampling conducted in April and June 2023, which was required as described further. Sampling done in April 2023 should have been tested for the comprehensive suite of parameters. Through scheduling errors, this was not done, and a decision was taken to redo the sampling round again. This was completed in June 2023, hence the delay in preparing this report and the reporting on June 2023 results, in addition to the April testing that was done.

All test results and laboratory detection limits are attached in Appendix C.

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2 Groundwater and Surface Water Monitoring

2.1 Sample Analyses

Surface water samples were collected by Downer (a contractor to HDC) on 16 February 2023, 8 March 2023, 6 April and 13 April 2023 with the samples being received by the Eurofins ELS Ltd laboratory in Lower Hutt, Wellington. The timeframe between sample collection and laboratory reception varied between 29 and 54 hours which is outside the normally accepted range of within 24 hours.

In April groundwater samples were collected by Downer (a contractor to HDC) on 03, 04,05, and 06 April, with the samples being received by the Eurofins ELS Ltd laboratory in Lower Hutt, Wellington. Whilst samples were collected within the normally accepted monitoring timeframe of within seven days, the time between collection and laboratory reception varied between 28 and 54 hours which is outside the normally accepted range of within 24 hours.

The June re-test groundwater samples were collected on the 12, 13, 14 and 15 June, with the time between collection and laboratory reception varying between 9 and 51 hours, though the sample for bore Xs2 took 74 hours between sampling and delivery to the laboratory, which is not acceptable.

In both the April and June sampling rounds, no record of collection dates/times were recorded for several bores. In this report those dates have been assumed from data of adjacent bores. Additionally, for many bores in the June sampling round, the collection time was recorded as being 00.00 (i.e., just after midnight), which is clearly an error.

Borehole water levels were measured on 6 April and 9 June 2023.

The monitoring schedule for July 2021 - April 2024 is summarised in Appendix B. From July 2019, *E. coli* counts analyses have been included within the indicator and comprehensive analytical suites, as agreed by HDC with the Horizons Regional Council (HRC). This means that *E. coli* counts will be assessed more frequently throughout each year, as compared to the past monitoring regime.

Groundwater samples taken at each of the boreholes and a sample of the leachate effluent should have been analysed for the comprehensive list of parameters, which is outlined in Table 2-1. Because of a scheduling error, this was not done, hence the need to re-sample in June so that the comprehensive suite of parameters could be properly tested for. Surface water samples from Hokio Stream were analysed for the comprehensive list of parameters (see Table 2-1).

Note that, following the revision of the resource consent conditions which were approved in December 2019, 5-day soluble carbonaceous Biochemical Oxygen Demand (scBOD₅) and soluble mercury (Hg) have each been added to the indicator and comprehensive suites of parameters, and *E. coli* added to the comprehensive suite of parameters. The scBOD₅ and *E. coli* parameters replace BOD₅ and faecal coliforms, respectively. Monitoring of these additional parameters began with the April 2020 sampling round.

Table 2-1: Test	Parameters
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Туре	Indicator Parameters	Comprehensive Parameters
Physico-chemical characteristics	pH, Electrical Conductivity (EC)	pH, Electrical Conductivity (EC), Alkalinity, Total Hardness, Suspended Solids
Oxygen demand	Chemical Oxygen Demand (COD), scBOD₅**	Chemical Oxygen Demand (COD), soluble carbonaceous Biochemical Oxygen Demand (scBOD5**)
Nutrients*	Nitrate nitrogen (NO ₃ -N), Ammoniacal-nitrogen (NH ₄ -N)	Nitrate nitrogen (NO ₃ -N), Ammoniacal-nitrogen (NH ₄ -N), Dissolved Reactive Phosphorus (DRP), Sulphate (SO ₄)
Metals*	Aluminium (Al), Manganese (Mn), Nickel (Ni), Lead (Pb), Mercury (Hg)**	Aluminium (Al), Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Iron (Fe)***, Magnesium (Mg), Manganese (Mn), Nickel (Ni), Lead (Pb), Zinc (Zn), Mercury (Hg)**
Other elements	Boron (B), Chloride (Cl)	Boron (B), Calcium (Ca), Chloride (Cl), Potassium (K), Sodium (Na)***
Biological+	E. coli	E. coli

Туре	Indicator Parameters	Comprehensive Parameters
Organics	Not required	Total organic carbon, total phenols, volatile acids

Note:

*Analyses performed for nutrients and metals are for dissolved rather than total concentrations.

** scBOD₅ and Soluble Mercury added as per revised consent conditions for Discharge Permit ATH-2002003983.02, December 2019

*** Iron and sodium are tested at certain groundwater bores only.

Those chemical constituents for which concentrations were below laboratory detection limits during the reporting period have had results set at 50% of the laboratory detection limit, which is then used to calculate a median value for annual reporting purposes. This is standard practice when dealing with chemical concentrations in water, where the constituent is not detected.

For *E. coli*, the current laboratory detection limit, viz.,100 CFU/100ml, is not compatible with the standards defined in the consents. The ANZECC LDW is also set at 100 CFU/100ml and the DWSNZ MAV is NIL, thus room for error through unknown values is large. Whilst results below the detection limit have been described as 'not detected' (ND), due to specific results being unknown, these should be considered with caution. This detection limit is unacceptable and should be remedied for future sampling periods.

2.2 Background Groundwater Quality

The background (natural) quality of the groundwater water up-gradient from the landfill site is not subject to any consent conditions. However, for comparison purposes, both the ANZECC LDW trigger values and the DWSNZ guidelines are regularly used to benchmark the quality of water up-gradient from the landfill site.

Groundwater samples were collected from the two background bores situated hydraulically up-gradient from both the new and old landfills to the southeast of the site in April/June 2023 (bores G1S and G1D, see Site Plan, Appendix A). These two bores were constructed in late 2009 to sample background water quality from the two main hydrogeological units. Bore F3 is also included in the background table as it is near the southern boundary of the landfill site (and further west) and is unlikely to be impacted by landfill activities. A full laboratory report containing analytical results is presented in Appendix C and the historical graphs are presented in Appendix D.

The results are presented in Table 2-2.

Results since 2010 for the background bores indicate that low pH values (i.e., typically between 6.0 and 6.8) are representative of background water quality in the shallow sand aquifer (G1S). The pH level for the June 2023 sampling round was 6.9 which is below the lower limit of the DWSNZ MAV for aesthetic determinants (7.0 pH units). As usual the deeper gravel aquifer (G1D) had a slightly higher pH of 7.1.

During the June 2023 sampling round, the dissolved aluminium concentration at G1S (0.15 mg/L) exceeded the DWSNZ MAV limit of 0.1 mg/L, but this is within the range observed at this location historically.

Dissolved iron concentrations have fluctuated considerably at both the G1S and G1D bores since monitoring of those bores began in 2010 and are mostly above the DWSNZ GV for aesthetic determinants (0.2 mg/L). During both the April 2023 sampling round, and the June 2023 re-testing round, the iron concentration at G1S was between 1.03 and 2.05 mg/L – an exceedance of the DWSNZ GV but still within the historical results range recorded at this bore. Dissolved iron concentrations in G1D varied between 0.23 and 0.32 mg/L – again, within historical ranges. Elevated iron concentrations in groundwater are likely to be related to hydrogeological conditions found at the site and this phenomenon is common in groundwater in this area.

All parameters at bore F3 were within the ANZECC LDW trigger values for April/June monitoring.

The monitoring results suggest that the quality of background groundwater may be being impacted by local ground conditions and/or activities up-gradient of the landfill. Background bore G1S consistently records elevated concentrations of a range of parameters. Overall, monitoring results at G1S indicate that it is likely modified or impacted by anthropogenic activities, and therefore may not be suitable to use as reliable 'control' location for background water quality in the future.

For *E. coli*, the level of laboratory detection fluctuated between 1cfu/100mL and 100 cfu/100mL. This means that levels of non-detection fluctuated above the comparable standard, which is not acceptable analytical practice.



Determinant	Units	DWSNZ MAV	ANZECC LDW	G	1S	G1	D	F	-3	
Sampling date				04 April 2023 12 June 2023 0		04 April 2023#	12 June 2023	04 April 2023	12 June 2023#	
Water Level	mbgl	-	-	13.8	13.55	14.14	14.1	4	4.2	
рН	pH units	7 to 8.5*	6 to 9		6.9		7.2		7.1	
Suspended Solids	mg/l	-	-		43		11		2.5	
Phenol	mg/l	-	-		0.025		0.025		0.025	
VFA	mg/l	-	-		2.5		2.5		2.5	
TOC	mg/L	-	-		15.5		1.9		1.3	
Alkalinity	mg CaCO₃/L	-	-	92	81	64	64	56	57	
Conductivity	mS/m	-	-	46.2	45.5	28.2	27.8	18.3	18.6	
COD	mg/L	-	-	45	48	16	32	7.5	7.5	
scBOD₅	mg/L	-	-	1.5	1.5	1.5	0.5	1.5	0.5	
E. coli	CFU/100ml	NIL	100	ND	ND	ND	ND	ND	ND	
Chloride	mg/L	250*	-	72	81.5	31.7	33.1	16.1	16.4	
Nitrate-N	mg/L	11.3	90.3		0.05		0.005		0.99	
Sulphate	mg/L	250*	1000		7.05		22.3		4.91	
Ammoniacal-N	mg/L	1.17	-	0.03	0.03	0.1	0.14	0.005	0.005	
Hardness	mg CaCO₃/L	200*	-		45		57		32	
Calcium	mg/L	-	1000	8.77	7.98	9.06	8.53	4.67	4.76	
Magnesium	mg/L	-	-		6		8.69		4.92	
Potassium	mg/L	-	-		4.6		6.17		4.88	
Sodium	mg/L	200*	-		69.5		28.2		23	
D.R. Phosphorus	mg/L	-	-	0.04	0.025	0.019	0.023	0.15	0.15	
Dissolved Aluminium	mg/L	0.1*	5	0.065	0.15	0.001	0.004	0.002	0.001	
Dissolved Arsenic	mg/L	0.01	0.5	0.002	0.001	0.002	0.002	0.001	0.002	
Dissolved Boron	mg/L	1.4	5	0.03	0.03	0.04	0.05	0.03	0.04	
Dissolved Cadmium	mg/L	0.004	0.01	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	
Dissolved Chromium (VI)	mg/L	0.05	1	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	

Table 2-2: Background Monitoring Results for April and June 2023.

Determinant	Units	DWSNZ MAV	ANZECC LDW	G1S		Gŕ	ID	F3		
Dissolved Copper	mg/L	2	0.4	0.0056	0.0071	0.00025	0.00025	0.00025	0.00025	
Dissolved Iron	mg/L	0.2*	-	2.05	1.3	0.23	0.32	0.0025	0.0025	
Dissolved Lead	mg/L	0.01	0.1		0.0012		0.0008		0.00025	
Dissolved Manganese	mg/L	0.4	-		0.059		0.068		0.00025	
Dissolved Mercury	mg/L	-	0.002		0.00025		0.00025		0.00025	
Dissolved Nickel	mg/L	0.08	1		0.0013		0.00025		0.00025	
Dissolved Zinc	mg/L	1.5*	20		0.012		0.001		0.001	

Notes:

*denotes guideline values for aesthetic determinants (G.V.)

All '<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

'ND' indicates where E. coli were not detected at or above the laboratory detection limit

n/r - not required to be tested during this monitoring period

Values which exceeded the DWSNZ MAV are shown in **bold**

[#] Sampling date not stated in results report but assumed from other data.

2.3 Groundwater Quality Hydraulically Down-Gradient of the New Landfill

Monitoring is carried out within the two main hydrogeological units for bores hydraulically up-gradient of the old landfill and hydraulically down-gradient of the new landfill.

2.3.1 Shallow Aquifer

Bores D1, D2, D3rs, D4, D6, and E1S (Refer to Site Plan, Appendix A) are located hydraulically up-gradient of the old landfill, but down-gradient of the new landfill. This means they are not influenced by potential leaching from the old landfill and can act as a warning system for any leaching from the new landfill.

Borehole D5 is located at the south-western corner of the site and is expected to provide an indication of shallow background groundwater quality because it is unlikely to be influenced by either landfill.

It is considered unlikely that leachate from the new landfill would significantly affect groundwater quality due to the leachate collection system which is in place at the new landfill; however, these bores would still provide early warning of any potential problems. It is noted that bore D3r was replaced in June 2021 with two bores; D3rs, which is a shallow bore and D3rd, which is a deep bore. Both have been sampled from October 2021 onwards. It is also noted that new bores D3rs and D3rd are required to be monitored for the comprehensive suite of parameters for the first two years following installation.

The results from the April/June 2023 monitoring rounds for these bores are presented in Table 2-3 and the results have been compared with the ANZECC LDW trigger values as per the consent conditions.

The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D.

All sampling results for E. coli, were reported as being below the level of detection (<100 CFU/100ml).

Therefore, there were **no exceedances of the resource consent conditions during the April/June 2023** monitoring rounds in samples from the shallow aquifer.

Table 2-3: D-Series and E1S Monitoring Bore Results for April and June 2023

Determinant	Units	ANZECC LDW		01		02	D3	Brs	D	94	D	5	C	06	E	1S
Sampling date			03 April 2023	13 June 2023	03 April 2023	13 June 2023	03 April 2023	13 June 2023	05 April 2023	15 June 2023	04 April 2023	12 June 2023	04 April 2023	13 June 2023	05 April 2023	15 June 2023
Water Level	mbgl	-	16.6	1.64	21.12	21.5	5.13	5.2	7.55	7.41	0.93	8.8	16.21	1.61	11.09	10.9
рН	pH units	6 to 9		6.9		6.4		6.5		7.1		7.1		6.8		7.1
Suspended Solids	mg/l	-		2.5		7		3		2.5		2.5		2.5		6
Phenol	mg/l	-		0.025		0.025		0.025		0.025		0.025		0.025		0.025
VFA	mg/l	-		2.5		2.5		2.5		2.5		2.5		2.5		2.5
TOC	mg/L	-		1		12		23.3		3.7		2.1		1		4.9
Alkalinity	mg CaCO ₃ /L	-	89	129	147	158	64	65	85	85	84	78	113	123	87	83
Conductivity	mS/m	-	33.6	38.6	48.2	51	20.1	19.7	28.3	27.5	31.8	30.5	37.7	42.8	25.9	26
COD	mg/L	-	7.5	7.5	42	33	67	63	20	7.5	7.5	7.5	7.5	7.5	16	7.5
scBOD₅	mg/L	-	0.5	0.5	0.5	0.5	0.5	0.5	3	0.5	1.5	0.5	1.5	0.5	3	2
E. coli	CFU/100ml	100	ND	ND												
Chloride	mg/L	-	14.3	15.7	50.7	51.4	16.5	16.3	31.4	31.4	30.8	28.4	16.9	22	26.4	27
Nitrate-N	mg/L	90.3		8.01		0.005		0.005		0.005		1.3		12.4		0.005
Sulphate	mg/L	1000		8.69		8.93		2.1		5.01		17.1		6.5		3.66
Ammoniacal-N	mg/L	-	0.005	0.005	0.65	0.69	0.67	0.67	0.23	0.23	0.01	0.005	0.005	0.005	0.21	0.17
Hardness	mg CaCO ₃ /L	-		109		137		47		56		68		123		59
Calcium	mg/L	1000	16.4	19.8	22.8	22.7	11.2	10.6	11.4	10.4	12.8	11.3	19	21.8	11.6	10.9
Magnesium	mg/L	-		14.5		19.4		4.87		7.17		9.61		16.6		7.72
Potassium	mg/L	-		9.03		9.61		3.69		5.62		8.28		7.95		5.92
Sodium	mg/L	-		33.9		42.4		21.4		32.2		28.9		34.4		29.8
D.R. Phosphorus	mg/L	-	0.095	0.099	0.027	0.042	0.065	0.096	0.023	0.029	0.072	0.097	0.106	0.101	0.048	0.069
Dissolved Aluminium	mg/L	5	0.001	0.002	0.009	0.003	0.088	0.066	0.005	0.003	0.002	0.001	0.003	0.001	0.012	0.006
Dissolved Arsenic	mg/L	0.5	0.001	0.001	0.0005	0.0005	0.001	0.001	0.003	0.003	0.0005	0.0005	0.001	0.001	0.002	0.002
Dissolved Boron	mg/L	5	0.05	0.04	0.06	0.04	0.04	0.015	0.2	0.11	0.04	0.05	0.06	0.04	0.1	0.12
Dissolved Cadmium	mg/L	0.01	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (VI)	mg/L	1	0.0005	0.0005	0.0005	0.0005	0.004	0.004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Dissolved Copper	mg/L	0.4	0.00025	0.00025	0.00025	0.00025	0.00025	0.0008	0.00025	0.00025	0.00025	0.0009	0.002	0.0006	0.00025	0.0025
Dissolved Iron	mg/L	-	0.0025	0.0025	5.01	9	17.2	11.4	0.866	1.26	0.117	0.082	0.0025	0.0025	5.14	4.73
Dissolved Lead	mg/L	0.1		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.0015
Dissolved Manganese	mg/L	-		0.00025		0.499		0.346		0.188		0.0189		0.001		0.243
Dissolved Mercury	mg/L	0.002		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025
Dissolved Nickel	mg/L	1		0.00025		0.00025		0.00025		0.0082		0.00025		0.00025		0.0014
Dissolved Zinc	mg/L	20		0.001		0.003		0.003		0.003		0.001		0.001		0.023

Notes:

Results for bore D3rs were not available at the time of writing.

Bold – denotes an exceedance of the ANZECC LDW

<u>Underlined</u> – denotes exceedance of the Consent Trigger Value.

'ND' indicates where E. coli were not detected at or above the laboratory detection limit

All '<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

n/r - not required to be tested during this monitoring period

2.3.2 Deep Gravel Aquifer

Bores E1D, C2DD, E2D, Xd1, and the new replacement bore D3rd all penetrate the deeper gravel aquifer. Deep groundwater flow is assumed to be towards the northwest.

Boreholes E2D and C2DD are located to the north-northwest of both the landfills and are therefore considered to be hydraulically down-gradient of both landfills.

Borehole E1D is located to the southwest of the old landfill and it is therefore considered that this bore would be unlikely to be affected by either landfill.

Bore Xd1 was installed in late 2020 as a requirement of the reviewed resource consent conditions (December 2019). It is located on the western boundary of the site and slightly downstream of the old landfill.

Results for the April/June 2023 compliance monitoring rounds are presented in Table 2-4. The results have been compared with the DWSNZ as per the requirements of discharge consent ATH-2002003983.02. The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D.

There were **six exceedances of the DWSNZ limits** in samples from the deep gravel aquifer during the April/June 2023 monitoring round, as follows:

- E. coli in bore E2D exceeded the DWSNZ MAV of NIL with a value of 38 cfu/100mL in June 2023.
- Hardness in bore D3rd (201 mg CaCO₃/L) exceeded the DWSNZ MAV of 200 mg CaCO₃/L in June 2023. Elevated hardness is characteristic of D3rd.
- The dissolved manganese concentrations in bores C2DD (0.69 mg/L), E2D (0.45 mg/L), Xd1 (0.58 mg/L) and D3rd (0.49 mg/L) exceeded the DWSNZ MAV of 0.4 mg/L in June 2023. The results for C2DD (from 1997), E2D (from 1997), Xd1 (from March 2021 when sampling started) and D3rd (from October 2021 when sampling started) are within the historical range of concentrations observed. Dissolved manganese is generally elevated in the deep aquifer bores.

Table 2-4: Results for Monitoring Bores within the Deep Aquifer for April and June 2023

Determinant	Units	DWSNZ MAV	E	ID	C2	DD	E2	2D	Xo	d1	D3	rd
Sampling date			05 April 2023#	13 June 2023	05 April 2023#	13 June 2023	05 April 2023#	13 June 2023	06 April 2023#	15 June 2023	03 April 2023#	13 June 2023
Water Level	mbgl	-	10.97	2.88	2.58	2.3	4.49	2.3	2.38	2.05	5.73	5.8
рН	pH units	7 to 8.5*		7.8		7.5		7.5		7.7		7.6
Suspended Solids	mg/l	-		13		275		21		16		64
Phenol	mg/l	-		0.025		0.025		0.025		0.025		0.025
VFA	mg/l	-		2.5		2.5		2.5		2.5		2.5
TOC	mg/L	-		3		6.8		3.2		4.4		6.2
Alkalinity	mg CaCO ₃ /L	-	170	172	217	214	158	163	203	188	209	218
Conductivity	mS/m	-	45	44.7	55.3	53.7	44.5	44.9	53.8	53.6	51.8	51.9
COD	mg/L	-	18	7.5	7.5	20	7.5	23	22	22	23	7.5
scBOD₅	mg/L	-	3	0.5	1.5	0.5	1.5	0.5	1.5	0.5	0.5	0.5
E. coli	CFU/100ml	NIL	ND	ND	ND	ND	ND	38	ND	ND	ND	ND
Chloride	mg/L	250*	38.2	39.1	40.3	39.6	40.7	41.7	57.6	57.3	31	31.6
Nitrate-N	mg/L	11.3		0.005		0.005		0.005		0.005		0.005
Sulphate	mg/L	250*		0.01		0.11		0.01		0.01		0.01
Ammoniacal-N	mg/L	1.17	0.2	0.18	0.34	0.26	0.27	0.28	0.35	0.41	0.38	0.4
Hardness	mg CaCO ₃ /L	200*		134		181		129		168		201
Calcium	mg/L	-	33.6	30.9	46.6	45.3	26.1	27.4		38.1	64.5	58.1
Magnesium	mg/L	-		13.9		16.6		14.6		17.7		13.5
Potassium	mg/L	-		5.05		7.35		5.96		6.31		6.45
Sodium	mg/L	200*		36.5		41.1		41.7		44.2		22.4
D.R. Phosphorus	mg/L	-	0.39	0.38	0.67	0.63	0.61	0.62	0.11	0.1	1.24	1.22
Dissolved Aluminium	mg/L	0.1*	0.004	0.002	0.001	0.011	0.002	0.006	0.004	0.001	0.004	0.003
Dissolved Arsenic	mg/L	0.01	0.006	0.006	0.004	0.004	0.001	0.002		0.0005	0.02	0.021
Dissolved Boron	mg/L	1.4	0.15	0.05	0.08	0.09	0.07	0.04	0.64	0.07	0.05	0.03
Dissolved Cadmium	mg/L	0.004	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (VI)	mg/L	0.05	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Dissolved Copper	mg/L	2	0.00025	0.0007	0.00025	0.0013	0.00025	0.002	0.00025	0.00025	0.00025	0.00025
Dissolved Iron	mg/L	0.2*	0.034	0.024	0.013	0.046	0.065	0.12		0.076	0.035	0.022
Dissolved Lead	mg/L	0.01		0.00025		0.00025		0.0014		0.00025		0.00025
Dissolved Manganese	mg/L	0.4		0.22		0.69		0.45		0.58		0.49
Dissolved Mercury	mg/L	-		0.00025		0.00025		0.00025		0.00025		0.00025
Dissolved Nickel	mg/L	0.08		0.00025		0.00025		0.0005		0.00025		0.00025
Dissolved Zinc	mg/L	1.5*		0.006		0.005		0.014		0.001		0.001

Notes:

 $\ensuremath{\textbf{Bold}}$ –denotes an exceedance of the DWSNZ MAV

Underlined – denotes exceedance of the Consent Trigger Value.

'ND' indicates where *E. coli* were not detected at or above the laboratory detection limit

All `<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

n/r – not required to be tested during this monitoring period

[#] Sampling date not provided in report, but assumed from other data.

2.4 Impact of Old Landfill on Groundwater Quality

Water sampling is carried out to characterise the groundwater quality in a series of shallow bores situated hydraulically down-gradient from the old unlined landfill.

The Series B boreholes are located within 50m of the old landfill in a line along its northern edge.

The Series C boreholes are located further down the hydraulic gradient from the old landfill towards Hokio Beach Road to detect whether leachate is moving off site.

Borehole E2S is located northwest of the old landfill to detect any leachate moving directly towards the nearest house down-stream of the site.

Bore G2S was installed in late 2009 and is located to the north of the landfill site, hydraulically down-gradient of the old landfill by Hokio Road and the entrance road to the landfill.

Bores Xs1 and Xs2 are located along Hokio Beach Road, within the road reserve. Bore Xs1 is adjacent to the Northern Farm property and bore Xs2 is next to the driveway leading to a Council-owned property. Bore Xs2 is hydraulically upgradient of the old landfill (See Site Plan, Appendix A).

The results from the April/June 2023 consent monitoring rounds for these bores are presented in Table 2-5 and have been compared with the ANZECC LDW trigger values as per the requirements of discharge consent ATH-2002003983.02. The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D.

There was **one exceedance of the ANZECC LDW trigger values** during the April/June 2023 monitoring round, as follows:

The *E. coli* count exceeded the ANZECC LDW trigger value of 100 cfu/100ml at bore C2 (6,000 cfu/100mL) in April 2023. In the January 2023 monitoring round, bores B1, B2, C2 also presented significant exceedances. Elevated *E. coli* at C2 has been observed historically, but this is the highest recorded level since monitoring began in February 1994. Whilst not exceedances, bores B2 and C2DS presented values of 100 cfu/100mL in April 2023 – at the trigger threshold.

Table 2-5: Monitoring Results for Shallow Boreholes Down-Gradient from the Old Landfill for April/June 2023

Determinant	Units	ANZECC LDW	E	2S	E	31	E	32	В	3S	c	21	c	22	C2	DS	G	2S	x	s1	X	ís2
Sampling date			05/04/23	14/06/23	05/04/23	15/06/23	05/04/23	15/06/23	05/04/23	15/06/23	05/04/23	15/06/23	05/04/23	13/06/23	05/04/23	13/06/23 #	04/04/23	12/06/23	06/04/23	13/06/23	06/04/23	13/06/23
Water Level	mbgl	-	5.37	5.1	0.94	0.05	1.17	0.7	0.23	0.05	0.64	0.84	0.2	0.3	2.73	2.3	2.19	2.03	0.68	0.26	2.7	2.07
рН	pH units	6 to 9		7.7		7.7		7.2		7		7		7.2		7.2		7.3		6.7		6.7
Suspended Solids	mg/l	-		13		5		7		84		517		84		116		14		35		21
Phenol	mg/l	-		0.025		0.025		0.025		0.025		0.025		0.025		0.025		0.025		0.025		0.025
VFA	mg/l	-		2.5		2.5		2.5		2.5		2.5		2.5		2.5		2.5		2.5		2.5
TOC	mg/L	-		2.2		24.3		29.5		54.1		23.6		41.2		26.8		7.2		31.6		1.8
Alkalinity	mg CaCO3/L	-	90	97	707	568	653	553	1040	997	353	352	1140	669	497	635	259	217	590	373	48	60
Conductivity	mS/m	-	33.8	33.8	247	238	250	198	244	251	119	119	279	251	115	158	157	93.3	142	92.1	20	20.2
COD	mg/L	-	30	20	90	45	92	105	133	129	73	85	133	107	65	78	27	31	87	78	7.5	7.5
scBOD5	mg/L	-	3	0.5	3	0.5	3	0.5	3	2	3	3	3	2	3	6	1.5	0.5	1.5	1	1.5	0.5
E. coli	CFU/100ml	100	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	6000	ND	100	ND	ND	ND	ND	ND	ND	ND
Chloride	mg/L	-	38.9	40.7	399	386	195	194	135	139	155	147	171	151	85.9	97.1	342	146	114	56.1	18.9	14.9
Nitrate-N	mg/L	90.3		0.005		17.4		32.1		0.37		0.005		0.05		0.05		0.005		0.005		0.82
Sulphate	mg/L	1000		10.1		4.77		17.6		0.15		22.1		0.39		0.16		6.33		6.04		11.9
Ammoniacal-N	mg/L	-	0.08	0.3	9.08	6.39	79.2	102	127	116	11.4	11.6	166	171	1.37	76.6	0.03	0.02	10.9	12.5	0.03	0.02
Hardness	mg CaCO3/L	-		84		451		463		487		233		240		251		115		292		61
Calcium	mg/L	1000	24.7	23.6	82.3	82.1	134	117	69.1	82.7	44.6	44.30	58.2	48.7	101	59.2	64.5	21.7	85.4	73.1	10.9	13.1
Magnesium	mg/L	-		6.15		59.8		41.5		68.1		29.70		28.7		24.9		14.9		26.6		6.74
Potassium	mg/L	-		5.09		21.3		70.9		83		25.8		70.8		33.1		13.3		12.6		4.8
Sodium	mg/L	-		30.1		304		104		120		120		128		92.5		126		52.3		14.1
D.R. Phosphorus	mg/L	-	0.29	0.25	0.12	0.095	0.012	0.013	0.022	0.03	0.01	0.01	0.011	0.018	0.015	0.017	0.012	0.019	0.011	0.029	0.011	0.016
Dissolved Aluminium	mg/L	5	0.021	0.007	0.011	0.007	0.007	0.007	0.006	0.004	0.03	0.02	0.018	0.011	0.004	0.004	0.002	0.001	0.005	0.005	0.007	0.013
Dissolved Arsenic	mg/L	0.5	0.003	0.0005	0.001	0.001	0.002	0.001	0.021	0.016	0.001	0.001	0.002	0.001	0.001	0.001	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Dissolved Boron	mg/L	5	0.16	0.015	2.08	1.84	2.36	2.05	0.98	1.01	0.99	1.02	1.63	1.54	0.76	0.89	0.6	0.6	0.61	0.22	0.06	0.04
Dissolved Cadmium	mg/L	0.01	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (VI)	mg/L	1	0.0005	0.0005	0.002	0.001	0.001	0.001	0.003	0.004	0.0005	0.0005	0.002	0.002	0.0005	0.001	0.0005	0.0005	0.001	0.0005	0.0005	0.0005
Dissolved Copper	mg/L	0.4	0.017	0.00025	0.018	0.012	0.0028	0.0035	0.015	0.0021	0.0046	0.0028	0.0006	0.0019	0.00025	0.0009	0.003	0.0042	0.00025	0.00025	0.0014	0.0008
Dissolved Iron	mg/L	-	0.5	0.082	0.075	0.055	0.25	0.31	0.52	0.86	0.57	0.41	0.9	0.64	2.14	0.42	0.036	0.26	1.1	6.42	0.13	0.041
Dissolved Lead	mg/L	0.1		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025
Dissolved Manganese	mg/L	-		0.24		4.8		3.56		3.57		0.31		0.19		0.79		0.084		1.61		0.041
Dissolved Mercury	mg/L	0.002		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025		0.00025
Dissolved Nickel	mg/L	1		0.00025		0.0048		0.0024		0.0086		0.001		0.0039		0.0025		0.0018		0.0008		0.00025
Dissolved Zinc	mg/L	20		0.001		0.006		0.003		0.001		0.001		0.009		0.007		0.001		0.001		0.001

Notes:

All `<' values represent a non-detection and have been reported as half the detection limit for statistical purposes and are expressed in italics

'ND' indicates where E. coli were not detected at or above the laboratory detection limit

n/r – not required to be tested during this monitoring period

n/p - result not provided at the time of preparing this report

Bold - denotes exceedance of ANZECC LDW

[#] Sampling date not provided in report, but assumed from other data.

2.5 Groundwater Quality Down-Gradient of the Irrigation Area

The F-series boreholes intersect the shallow aquifer down-gradient of the area that was used to irrigate leachate from 2004 to October 2008. All leachate is now pumped to the Levin Wastewater Treatment Plant. The F1 borehole is located within the area where leachate from the new landfill was irrigated. The F2 and F3 boreholes are in an area that was set aside for leachate irrigation but was never used for that purpose. It is expected that bores F2 and F3 would therefore be representative of background groundwater quality.

The results from the F series boreholes are presented in Table 2-6 and have been compared with the ANZECC LDW trigger values, as per discharge consent ATH-2002003983.02. The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D.

There were **no exceedances of the resource consent conditions** in samples from these bores during the April and June 2023 monitoring rounds.

Determinant	Units	ANZECC LDW	F	-1	F	-2	F	3
Sampling Date			04 April 2023	12 June 2023	04 April 2023	12 June 2023#	04 April 2023	12 June 2023 [#]
Water Level	mbgl	-	7.46	7.1	2.19	1.9	4	4.2
рН	pH units	6 to 9		7.7		7.1		7.1
Suspended Solids	mg/l	-		2.5		6		2.5
Phenol	mg/l	-		0.025		0.025		0.025
VFA	mg/l	-		2.5		2.5		2.5
TOC	mg/L	-		6.4		1.8		1.3
Alkalinity	mg CaCO3/L	-	146	149	59	60	56	57
Conductivity	mS/m	-	41.2	42	22.4	22.3	18.3	18.6
COD	mg/L	-	28	25	7.5	7.5	7.5	7.5
scBOD5	mg/L	-	1.5	0.5	1.5	0.5	1.5	0.5
E. coli	CFU/100ml	100	ND	ND	ND	ND	ND	ND
Chloride	mg/L	-	37.4	40.1	24	24	16.1	16.4
Nitrate-N	mg/L	90.3		0.6		0.31		0.99
Sulphate	mg/L	1000		2.18		10.7		4.91
Ammoniacal-N	mg/L	-	0.02	0.005	0.01	0.005	0.005	0.005
Hardness	mg CaCO3/L	-		122		40		32
Calcium	mg/L	1000	16.7	17.5	6.47	6.21	4.67	4.76
Magnesium	mg/L	-		19.1		5.85		4.92
Potassium	mg/L	-		8.71		5.44		4.88
Sodium	mg/L	-		35.4		26.7		23
D.R. Phosphorus	mg/L	-	0.17	0.17	0.13	0.12	0.15	0.15
Dissolved Aluminium	mg/L	5	0.001	0.001	0.002	0.001	0.002	0.001
Dissolved Arsenic	mg/L	0.5	0.002	0.002	0.001	0.001	0.001	0.002
Dissolved Boron	mg/L	5	0.04	0.04	0.04	0.05	0.03	0.04
Dissolved Cadmium	mg/L	0.01	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (VI)	mg/L	1	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005

Table 2-6: Results from Monitoring Bores in the Irrigation Area for April/June 2023

Determinant	Units	ANZECC LDW	F	-1	F2		F	-3
Dissolved Copper	mg/L	0.4	0.0018	0.0027	0.0006	0.0012	0.00025	0.00025
Dissolved Iron	mg/L	-	0.0025	0.0025	0.026	0.013	0.0025	0.0025
Dissolved Lead	mg/L	0.1		0.00025		0.00025		0.00025
Dissolved Manganese	mg/L	-		0.0057		0.0078		0.00025
Dissolved Mercury	mg/L	0.002		0.00025		0.00025		0.00025
Dissolved Nickel	mg/L	1		0.0005		0.00025		0.00025
Dissolved Zinc	mg/L	20		0.001		0.001		0.001

Notes:

All '<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

'ND' indicates where E. coli were not detected at or above the laboratory detection limit

n/r - not required to be tested during this monitoring period

[#] Sampling date not provided in report, but assumed from other data.

2.6 Leachate Effluent Results

Leachate effluent from the landfill is not subject to any water quality consent conditions and is sent to the Levin Wastewater Treatment Plant for treatment. However, for comparison purposes, typical leachate characteristics for landfills, as published by the Waste Management Institute New Zealand (*Technical Guidelines for Disposal to Land*, October 2022, WasteMINZ), have been compared against the leachate quality monitoring results (Table 2-9). The full laboratory report is included in Appendix C and the historical graphs are presented in Appendix D

As stated, typical leachate concentrations are derived from tables presented in the WasteMINZ *Technical Guidelines*. The data in those tables originate from seven landfills in New Zealand and date back to between 1998 and 1999. In future, more updated data could be sought for comparison purposes.

Table 2-7 shows that the concentrations of monitored parameters for leachate effluent samples collected in April and June 2023 were mostly within the typical ranges to be expected for this type of landfill.

Up until April 2022, samples of leachate were tested monthly for the comprehensive suite of parameters, as stated in Table C under condition 3H of discharge permit ATH-2002003983.02. This requirement was for 2 years and condition 3P of discharge permit ATH-2002003983.02 allows the monitoring frequency to shift to a conditional sampling frequency (i.e., six monthly comprehensive, quarterly indicator) if water sample analysis results are consistent and there is no decline in water quality over a period of at least four consecutive sampling rounds. The quality of leachate is considered to have met these criteria and so the change in monitoring from April 2022 was justified. The resource consent conditions allowed this change to occur immediately after the four consecutive sampling rounds were completed.

There were **seven outliers from the typical leachate characteristics in the April/June 2023 results**. In April 2023, conductivity, dissolved iron, lead, mercury, and nickel were all detected below their minimum typical value ranges (or not detected at all). In June 2023, Ammonia-N was detected at an elevated level, and dissolved mercury was not detected, and again thus below its minimum typical value.

The results reported here are generally consistent with those previously reported for leachate monitoring. However, leachate at this site is usually considerably more conductive – besides April 2023, the next lowest conductivity recorded was obtained in December 2020.

Determinant	Units	Typical Leachate Characteristics* (range)	06 April 2023 Result	13 June 2023 Result
рН		5.9 - 8.5	7.7	7.5
Suspended Solids	mg/l	-	124	29
Phenol	mg/L	-		0.025
VFA	mg/L	-		2.5
TOC	mg/L	-	79.4	769
Alkalinity	mg CaCO₃/L	-	377	6,160
Conductivity	mS/m	264 – 27,900	130	1,640
COD	mg/L	84 – 5,090	389	2,830
scBOD ₅	mg/L	-	3	98
E-Coli	CFU/100mL	-	400	50
Chloride	mg/L	45 – 2,584	165	1,240
Nitrate-N	mg/L	-	0.01	0.5
Sulphate	mg/L	-	8.76	17.4
Ammonia-N	mg/L	3.4 – 1,440	33.6	1,590
Hardness	mg CaCO₃/L	-	72	474
Calcium	mg/L	-	16.3	95.6
Magnesium	mg/L	-	7.56	57
Potassium	mg/L	-	92	634

Table 2-7: Results from Leachate Effluent Monitoring for April/June 2023

Determinant	Units	Typical Leachate Characteristics* (range)	06 April 2023 Result	13 June 2023 Result
Sodium	mg/L	50 - 4,000**	140	1,070
D.R. Phosphorus	mg/L	-	0.393	14.2
Dissolved Aluminium	mg/L	-	0.054	0.716
Dissolved Arsenic	mg/L	-	0.041	0.255
Dissolved Boron	mg/L	0.54 – 20.1	0.99	4.36
Dissolved Cadmium	mg/L	-	0.0001	0.0013
Dissolved Chromium	mg/L	-	0.065	0.763
Dissolved Copper	mg/L	-	0.00025	0.0122
Dissolved Iron	mg/L	1.6 – 220	0.286	6.38
Dissolved Lead	mg/L	0.001 - 0.42	0.00025	0.0051
Dissolved Manganese	mg/L	0.03 - 45***	0.199	1.16
Dissolved Mercury	mg/L	0.2 – 50	0.00025	0.00025
Dissolved Nickel	mg/L	0.02 - 2.05**	0.0089	0.107
Dissolved Zinc	mg/L	-	0.002	0.196

Notes:

* for Class 1-type landfills, Table 5-5, p60, Technical Guidelines for Disposal to Land, WasteMINZ October 2022 (same as Table 4.2 of the CAE Landfill Guidelines 2000, but corrections made to Table 5-5 in line with Table 4.2)

**Data taken from Table 5-4, p59 of the same guideline, for parameters for which no differences in concentrations between the phases of landfill development could be observed

***Data taken from Table 5-4, p59 of the same guideline, for parameters during the methanogenic phase

Bold - denotes a deviation from the typical leachate characteristics range

All `<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

'ND' indicates where E. coli and other parameters were not detected at or above the laboratory detection limit

n/r - not required to be tested during this monitoring period

2.7 Northern Farm Drain (Tatana Property)

A drain is located on the Northern Farm, previously known as the Tatana Property (see Site Plan in Appendix A). Since July 2015 HDC has agreed to sample surface water from this drain for a selection of parameters that were set by HRC. Four sampling points were selected to represent the top of the drain (SW1), middle of the drain (SW2 and SW3) and lower drain (SW4) respectively.

The revised consent conditions have since reduced the extent of sampling to a single location. This is known as 'TD1' and is the same sampling location as for the previously denoted 'SW3'.

Results from the February 2023, March 2023, and April 2023 sampling rounds are presented in Table 2-8 and have been compared with the ANZECC³ 95% ile DGVs, as per the revised resource consent conditions.

There have been **nine exceedances of the resource consent conditions** for three monitored parameters in samples from the Northern Farm Drain at the TD1 location during the February 2023, March 2023, and April 2023 sampling rounds. These exceedances are as follows:

- scBOD₅ exceeded the ANZECC (95%ile) DGV of 2 mg/L across all dates with a value of 3 mg/L half the detection limit of 6 mg/L. This emphasises the importance of a detection limit below the standard at which a parameter is assessed – if the detection limit was reduced, these results may have been compliant, but currently have to be considered exceedances.
- The concentration of Nitrate-N exceeded the ANZECC (95%ile) DGV of 0.16 mg/L in February 2023 (0.57 mg/L), March 2023 (0.7 mg/L), and April 2023 (0.25 mg/L). This site has commonly presented elevated Nitrate-N levels.

³Australian and New Zealand Guidelines for Fresh and Marine Water Quality - Aquatic Ecosystems (AE), Australian and New Zealand Environment and Conservation Council (ANZECC), Canberra, Australia, 2000



• The concentration of Ammoniacal-N exceeded the ANZECC (95%ile) DGV of 2.1 mg/L in February 2023 (6.37 mg/L), March 2023 (11.7 mg/L), and April 2023 (7.77 mg/L).

Whilst relatively high, these results are not uncharacteristic of results within the last two years. Localised conditions, such as having stock in the paddock next to Tatana Drain and the slow flow of water in the drain, may contribute to some of the elevated parameters.

		ANZECC DGV	TC	TD1 (formerly SW3)					
Determinant	Units	(95%ile species protection)	February	March	April				
Sampling date			16/02/2023	08/03/2023	06/04/23				
рН	pH units	-	7.7	7.5	8.0				
Suspended Solids	mg/L	-	25	136	23				
Phenol	mg/L	-	0.025	0.025	0.025				
VFA	mg/L	-	2.5	2.5	2.5				
TOC	mg/L	-	29	23.6	15.9				
Alkalinity	mg CaCO ₃ /L	-	237	326	212				
Conductivity	mS/m	-	81.5	95.2	65.9				
COD	mg/L	-	106	132	83				
scBOD₅	mg/L	2	3	3	3				
E-Coli	CFU/100ml	-	9,000	5,500	ND				
Chloride	mg/L	-	103	87.5	68.5				
Nitrate-N	mg/L	0.16	0.57	0.7	0.25				
Sulphate	mg/L	-	4.88	1.45	2.36				
Ammoniacal-N	mg/L	2.1	6.37	11.7	7.77				
Hardness	mg CaCO ₃ /L	-	175	225	140				
Calcium	mg/L	-	33.9	52.2	26.3				
Magnesium	mg/L	-	22	23.1	18.0				
Potassium	mg/L	-	33.1	21.5	21.1				
Sodium	mg/L	-	79.4	69.2	62.4				
D.R. Phosphorus	mg/L	-	0.026	0.034	0.018				
Dissolved Aluminium	mg/L	0.055	0.02	0.008	0.015				
Dissolved Arsenic	mg/L	0.024	0.001	0.0005	0.0005				
Dissolved Boron	mg/L	-	0.56	0.25	0.31				
Dissolved Cadmium	mg/L	0.0002	0.0001	0.0001	0.0001				
Dissolved Chromium	mg/L	-	0.001	0.001	0.0005				
Dissolved Copper	mg/L	0.0014	0.0008	0.0007	0.0007				
Dissolved Iron	mg/L	-	1.04	0.25	0.46				
Dissolved Lead	mg/L	0.0034	0.00025	0.00025	0.00025				
Dissolved Manganese	mg/L	1.9	0.266	0.584	0.086				
Dissolved Mercury	mg/L	0.0006	0.00025	0.00025	0.00025				
Dissolved Nickel	mg/L	0.011	0.0022	0.0014	0.0014				
Dissolved Zinc	mg/L	0.008	0.004	0.005	0.0060				

Table 2-8 Northern Farm Drain Monitoring Results for February 2023, March 2023, and April 2023.

Notes: **Bold** – denotes an exceedance of the ANZECC DGV for 95%ile species protection All `<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

2.8 Hokio Stream

Surface water grab samples are obtained monthly from Hokio Stream at sites HS1A, HS1, HS2 and HS3 (refer to Appendix A) to investigate whether groundwater containing leachate is having an adverse environmental effect on the stream. Sites HS1A and HS1 are situated up-stream of the old landfill, HS2 is situated alongside the old landfill and up-stream of the Tatana Property Drain discharge, and HS3 is located approximately 50m down-stream of the landfill site property boundary and the Tatana Property Drain discharge. Samples from these monitoring locations on Hokio Stream are analysed for a comprehensive suite of parameters every month (as shown in Appendix B).

Results from the February 2023, March 2023, and April 2023 monitoring rounds are presented in Table 2-9 and have been compared with the ANZECC AE 95% ILE DGVs, as per the revised resource consent conditions (2019).

Monitoring for scBOD₅ and soluble mercury concentrations has now been added as per the revised Resource Consent conditions.

There were **sixteen exceedances** of the resource consent conditions in samples from the Hokio Stream during the February 2023, March 2023, and April 2023 sampling rounds.

The exceedances are summarised as follows:

- scBOD₅ exceeded the ANZECC (95%ile) DGV of 2 mg/L at all sites in February 2023 and March 2023, with a consistent value of 3 mg/L half the detection limit of 6 mg/L. This emphasises the importance of a detection limit below the standard at which a parameter is assessed if the detection limit was reduced, these results may have been compliant, but currently must be considered exceedances. It is noted that for April 2023 monitoring, the detection limit was 3 mg/L.
- Nitrate-N concentrations exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.16 mg/L in February 2023, March 2023, and April 2023 at HS2 and HS3. N-Nitrate exceedances are not unusual at these sites.
- Ammoniacal-N exceeded the ANZECC (95%ile) DGV and consent trigger value of 2.1 mg/L at HS2 (3.67 mg/L) in March 2023.
- Dissolved aluminium exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.055 mg/L in February 2023 at HS1A with a value of 2580 mg/L. This result is significantly concentrated, and is the greatest level recorded across all Hokio Stream sites (by a considerable amount), since monitoring began. This should be investigated further, to determine if this is erroneous or a true result. It is noted that downstream results in February were not significantly elevated, which implies that this is an error.

Overall, the differences in monitoring results between the sites are generally marginal and for most determinants there is little to no change in concentrations between upstream and downstream sites on the Hokio Stream. Nitrate-N, Ammoniacal-N and dissolved aluminium provided exceptions to this trend. Nitrate-N appeared to increase downstream, whereas Ammoniacal-N and dissolved aluminium presented localised increases with no downstream effect. Monitoring for dissolved aluminium should continue in future to assess whether the exceedance is anomalous. *E. coli* counts differ significantly between sites and sampling rounds. However, the *E. coli* counts noted in this report are generally within the historical range since sampling began in 1994. The one exception was the result at HS1A in April 2023, which was the highest recorded at the site since monitoring began in April 2020.

Determinant	Units	ANZECC DGV (95%ile species	Consent Trigger Values	HS1A (from April 2020)	HS1	HS2	HS3	HS1A (from April 2020)	HS1	HS2	HS3	HS1A (from April 2020)	HS1	HS2	HS3
		protection)	(Table C1)	February 2023				Marc	h 2023			April	2023		
Sampling date				16/02/23	16/02/23	16/02/23	16/02/23	08/03/23	08/03/23	08/03/23	08/03/23	13/04/23	13/04/23	13/04/23	13/04/23
рН	pH units	-	-	8.6	8.6	7.8	8.3	7.7	7.8	7.2	7.5	7.4	7.6	7.5	7.5
Suspended Solids	mg/l	-	-	35	26	36	27	39	6	87	21	12	8	40	8
Phenol	mg/l			0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
VFA	mg/l			2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
TOC	mg/L	-	-	8.4	8.3	12.7	8.2	7	7.1	14.1	6.8	6.8	7.1	6.9	7
Alkalinity	mg CaCO₃/L	-	-	61	62	94	66	47	59	111	64	59	60	59	63
Conductivity	mS/m	-	-	20.9	21.1	35.2	22.8	21.8	22.1	39.9	24.4	23.2	22.6	23.1	23.3
COD	mg/L	-	-	53	57	68	70	44	33	60	33	28	18	25	20
scBOD₅	mg/L	2	Monthly Avg. 2	3	3	3	3	3	3	3	3	1.5	1.5	1.5	1.5
E. coli	CFU/100 ml	-	-	900	1000	1000	1500	ND	100	100	ND	5400	ND	500	400
Chloride	mg/L	-	-	22.7	23	38.6	25.2	23.6	23.2	48.7	25.9	23.1	23.9	23.9	24.1
Nitrate-N	mg/L	0.16	0.16	0.07	0.07	<u>0.19</u>	<u>0.16</u>	0.15	0.14	<u>0.26</u>	<u>0.25</u>	0.14	0.13	<u>0.2</u>	<u>0.22</u>
Sulphate	mg/L	-	-	18.1	18.1	14.7	17.9	16.4	16	9.38	15.7	14.5	14.9	15.3	15.3
Ammoniacal-N	mg/L	2.1	Max. 2.1 Avg. 0.400	0.02	0.04	1.23	0.14	0.07	0.12	<u>3.67</u>	0.15	0.04	0.02	0.02	0.04
Hardness	mg CaCO₃/L	-	-	51	49	75	54	58	58	134	66	65	62	67	64
Calcium	mg/L	-	-	10.8	10.4	15.4	11.5	12.4	12.4	29	14.3	12.2	11.7	12.8	12.3
Magnesium	mg/L	-	-	5.9	5.56	8.83	6.06	6.68	6.66	14.9	7.34	8.3	7.96	8.42	8.03
Potassium	mg/L	-	-	1.68	1.06	7.62	2.41	1.95	1.86	11.2	2.33	2.45	2.47	2.66	2.71
Sodium	mg/L	-	-	21.8	20.7	31.4	21.8	25.2	25.2	49.2	26.9	20.8	19.4	20.3	19.6
D.R. Phosphorus	mg/L	-	-	0.2	0.21	0.14	0.2	0.4	0.37	0.16	0.32	0.3	0.278	0.27	0.26
Dissolved Aluminium	mg/L	0.055	Med. 0.055	<u>2580</u>	0.019	0.023	0.018	0.011	0.011	0.009	0.008	0.025	0.013	0.017	0.015

Table 2-9: Hokio Stream Monitoring Results for February 2023, March 2023, and April 2023.

Determinant	Units	ANZECC DGV (95%ile species	Consent Trigger Values	HS1A (from April 2020)	HS1	HS2	HS3	HS1A (from April 2020)	HS1	HS2	HS3	HS1A (from April 2020)	HS1	HS2	HS3
		protection)	(Table C1)	February 2023				March 2023			April 2023				
Dissolved Arsenic	mg/L	0.024	Med. 0.024	0.003	0.0005	0.002	0.003	0.004	0.004	0.002	0.004	0.003	0.003	0.003	0.003
Dissolved Boron	mg/L	0.370	-	0.05	0.05	0.14	0.06	0.06	0.05	0.15	0.06	0.07	0.07	0.08	0.08
Dissolved Cadmium	mg/L	0.0002	Med. 0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (VI)	mg/L	0.001	-	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Dissolved Copper	mg/L	0.0014	Med. 0.0014	0.001	0.0008	0.0009	0.0009	0.0009	0.0008	0.0006	0.0008	0.0014	0.001	0.001	0.0013
Dissolved Iron	mg/L	-	-	0.098	0.074	0.32	0.11	0.15	0.16	0.31	0.15	0.12	0.1	0.14	0.12
Dissolved Lead	mg/L	0.0034	Med. 0.0034	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Manganese	mg/L	1.9	-	0.0098	0.0054	0.031	0.014	0.015	0.018	0.12	0.03	0.021	0.018	0.02	0.023
Dissolved Mercury	mg/L	0.0006	Med. 0.0006	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
Dissolved Nickel	mg/L	0.011	Med. 0.011	0.00025	0.00025	0.0007	0.00025	0.0006	0.00025	0.0008	0.002	0.0006	0.00025	0.00025	0.00025
Dissolved Zinc	mg/L	0.008	Med. 0.008	0.001	0.001	0.001	0.001	0.006	0.001	0.001	0.002	0.007	0.003	0.002	0.004

Notes:

Bold – denotes an exceedance of the ANZECC AE 95% protection level trigger values

<u>Underlined</u> – denotes exceedance of the Consent Trigger Value.

All '<' values have been reported as half the detection limit for statistical purposes and are expressed in italics

3 Landfill Gas Detection in Monitoring Wells

Condition 4 of Discharge Permit ATH-2002003984.02 requires that: "...groundwater monitoring wells shall be sampled for landfill gas when groundwater samples are taken from the wells. As a minimum, sampling shall be undertaken for methane, carbon dioxide and oxygen..."

In the past, landfill gas monitoring results were only reported in the Annual Report. A recommendation of the 2019 - 2020 Annual Report was that these results should be included in every quarterly monitoring report so that if any results are unusually high, appropriate action can be promptly undertaken, including putting safeguards in place at the monitoring bores.

Appendix E summarises the results of landfill gas monitoring undertaken on 3 April 2023 and 8/9 June 2023. It is noted that in June 2023, one additional and unlabelled gas sample was taken. It is not known what bore this pertains to.

Out of the 27 groundwater monitoring bores:

- Methane was detected in eleven of the bores in April 2023, and eight of the bores in June 2023 including the unlabelled sample. In April 2023, the highest recorded level was 0.12% in bore D6, with the other bores ranging from 0.01 0.09%. In June 2023, the highest recorded level was again 0.12% in bore D6, with the other bores ranging from 0.01 0.03%. These results are well below the lower explosive limit of 5% and is therefore deemed to represent a 'safe' level. However, the detection of methane reinforces the need for the necessary precautions generally applicable at landfill sites to be taken when conducting sampling.
- In April 2023, landfill bore B2 showed the highest carbon dioxide level of 1.48% a considerable decrease from the previous quarter. This bore has demonstrated such fluctuations historically. However, this result is still somewhat higher than all other bores the next highest being 0.52%. In June 2023, bore C1 presented a significant concentration of 20.2%. This result appears to be very uncharacteristic and should be investigated further. The next greatest concentration of CO₂ for June 2023 was 1.5% at G2s.
- Hydrogen sulphide was detected one bore G1s (1 ppm) in April 2023, which is around the threshold at which a 'rotten egg' smell (commonly associated with H₂S) can be detected. Hydrogen sulphide was not detected at any sites in June 2023.
- The landfill gas levels in April/June 2023 appear to be slightly variable compared to the previous quarter and reinforce the importance of continuing to monitor these changes and map any patterns. The results may be due to seasonal variations (e.g., different ground temperatures and/or groundwater levels), or may be related to prevailing weather conditions (e.g., different air pressures).

The possibility of encountering methane (and possible hydrogen sulphide) in groundwater bores endorses the need for appropriate health and safety measures to be adopted during monitoring, as is the case for the landfill gas extraction wells. No smoking should be permitted when personnel undertake groundwater sampling and when in the vicinity of the groundwater monitoring wells, or in fact anywhere else on the Levin Landfill site. For sake of safety a personal gas detector should be worn by all staff when working in the vicinity of the landfill.

4 Sampling Quality Control and Assurance

4.1 Sampling Quality Control and Assurance

The landfill extends over a significant area and there are many sampling locations. However, it is important that the time span of the sampling period is kept as short as possible because more infrequent (or erratic) sampling can make it difficult to compare results between rounds and determine trends at individual monitoring locations.

Whilst the surface water and groundwater samples were collected within 7-day periods during April and June, most of the samples were received by the laboratory outside the normally accepted 24-hour timeframe between sampling and reception. Meeting the monitoring timeframe is important because it means that there can be greater confidence in reliability of results, and comparisons with historical data.

The level of detection used in the laboratory for testing *E. coli* was set at 100 CFU/100ml for most samples. 100 CFU/100ml as the level of detection is not conducive to assessing compliance with the resource consent conditions, as the ANZECC LDW is also set at 100 CFU/100ml and the DWSNZ MAV is 'NIL'. Checks should be undertaken by the sampling personnel before submitting samples for analysis, including on the Chain of Custody documentation, to ensure that the correct tests are requested and performed, with appropriate limits of detection.

5 Consent Compliance

Discharge permit ATH-2002003983.02 states that quarterly and annual monitoring results for the shallow groundwater aquifer (sand aquifer) shall comply with the ANZECC LDW trigger values, and samples from the deep groundwater (gravel aquifer) shall comply with the applicable DWSNZ values. Furthermore, samples taken from surface water bodies shall comply with ANZECC AE 95% I DGVs. Should any parameters exceed these standards, the permit holder shall report to the Regional Council as soon as practicable on the significance of the results and, where the change can be attributed to the influence of landfill leachate, consult with the Regional Council to determine if further investigations or remedial measures are required.

Background Groundwater Quality

The quality of the natural background groundwater up-gradient from the landfill site is not subject to any consent conditions.

Shallow Aquifer and Irrigation Area

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There were **no exceedances** of consent conditions hydraulically up-gradient of the old landfill and down-gradient of the new landfill during the April/June 2023 monitoring period.

There was **one exceedance** of consent conditions hydraulically down-gradient of the old landfill during the April/June 2023 monitoring round, as follows:

• The *E. coli* count exceeded the ANZECC LDW trigger value of 100 cfu/100ml at bore C2 (6,000 cfu/100mL) in April 2023. In the January 2023 monitoring round, bores B1, B2, C2 also presented significant exceedances. Elevated *E. coli* at C2 has been observed historically, but this is the highest recorded level since monitoring began in February 1994.

There were **no exceedances** of consent conditions during the April/June 2023 sampling round for samples obtained from bores within the irrigation area.

Deeper Gravel Aquifer

There were **six exceedances** of consent conditions in samples from the deep gravel aquifer during the April/June 2023 monitoring round, as follows:

- E. coli in bore E2D exceeded the DWSNZ MAV of NIL with a value of 38 cfu/100mL in June 2023.
- Hardness in bore D3rd (201 mg CaCO₃/L) exceeded the DWSNZ MAV of 200 mg CaCO₃/L in June 2023. Elevated hardness is characteristic of D3rd.
- The dissolved manganese concentrations in bores C2DD (0.69 mg/L), E2D (0.45 mg/L), Xd1 (0.58 mg/L) and D3rd (0.49 mg/L) exceeded the DWSNZ MAV of 0.4 mg/L in June 2023. The results for C2DD (from 1997), E2D (from 1997), Xd1 (from March 2021 when sampling started) and D3rd (from October 2021 when sampling started) are within the historical range of concentrations observed. Dissolved manganese is generally elevated in the deep aquifer bores.

Leachate Effluent

Leachate effluent from the Levin Landfill is not subject to any water quality consent conditions and is sent to the Levin Wastewater Treatment Plant for treatment.

However, there were seven outliers from the typical leachate characteristics in the April/June 2023 results. In April 2023, conductivity, dissolved iron, lead, mercury, and nickel were all detected below their minimum typical value ranges (or not detected at all). In June 2023, Ammonia-N was detected at an elevated level, and dissolved mercury was not detected, and again thus below its minimum typical value.

Northern Farm Drain

There have been **nine exceedances** of consent conditions for three monitored parameters in samples from the Northern Farm Drain at the TD1 location during the February 2023, March 2023, and April 2023 sampling rounds. These exceedances are as follows:

- scBOD₅ exceeded the ANZECC (95%ile) DGV of 2 mg/L across all dates with a value of 3 mg/L half the detection limit of 6 mg/L.
- The concentration of Nitrate-N exceeded the ANZECC (95%ile) DGV of 0.16 mg/L in February 2023 (0.57 mg/L), March 2023 (0.7 mg/L), and April 2023 (0.25 mg/L). This site has commonly presented elevated Nitrate-N levels.
- The concentration of Ammoniacal-N exceeded the ANZECC (95%ile) DGV of 2.1 mg/L in February 2023 (6.37 mg/L), March 2023 (11.7 mg/L), and April 2023 (7.77 mg/L).

Hokio Stream

There were **sixteen exceedances** of consent conditions in samples from the Hokio Stream during the February 2023, March 2023, and April 2023 sampling rounds. The exceedances are as follows:

- scBOD₅ exceeded the ANZECC (95%ile) DGV of 2 mg/L at all sites in February 2023 and March 2023, with a consistent value of 3 mg/L half the detection limit of 6 mg/L.
- Nitrate-N concentrations exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.16 mg/L in February 2023, March 2023, and April 2023 at HS2 and HS3. N-Nitrate exceedances are not unusual at these sites.
- Ammoniacal-N exceeded the ANZECC (95%ile) DGV and consent trigger value of 2.1 mg/L at HS2 (3.67 mg/L) in March 2023.
- Dissolved aluminium exceeded the ANZECC (95%ile) DGV and consent trigger value of 0.055 mg/L in February 2023 at HS1A with a value of 2580 mg/L. This result is significantly concentrated, and is the greatest level recorded across all Hokio Stream sites (by a considerable amount), since monitoring began. The fact that downstream samples were not similarly elevated indicates that this may well be an error.

6 Conclusions

Testing of samples taken in April 2023 was incorrectly done, which required additional sampling to be undertaken. This was completed in June 2023. This report provides comments on all the testing results received from the April and June 2023 sampling rounds.

Monitoring results obtained in the April/June 2023 sampling rounds suggest that the groundwater at the background monitoring sites at the Levin Landfill is being impacted by local ground conditions and/or activities up-gradient of the landfill.

During the April/June 2023 monitoring period there were 32 exceedances of the resource consent conditions: one in the shallow aquifer hydraulically down-gradient of the old landfill, six from the deep aquifer, nine in samples from the Northern Farm drain, and the remaining sixteen from surface water monitoring at locations along the Hokio Stream.

For *E. coli*, the laboratory detection limit was set at either 1 cfu/100mL or 100 cfu/100ml. 100 cfu/100mL was used for most samples, and as stated in previous guarterly reports, is not compatible with the standards defined in the consents.

Methane was detected in eleven of the bores in April 2023, and eight of the bores in June 2023 – including the unlabelled sample. In April 2023, the highest recorded level was 0.12% in bore D6, with the other bores ranging from 0.01 - 0.09%. In June 2023, the highest recorded level was again 0.12% in bore D6, with the other bores ranging from 0.01 - 0.03%. These results are well below the lower explosive limit of 5% and is therefore deemed to represent a 'safe' level.

In April 2023, landfill bore B2 showed the highest carbon dioxide level of 1.48% - a considerable decrease to the previous quarter. This bore has demonstrated such fluctuations historically. However, this result is still relatively higher than all other bores – the next highest being 0.52%. In June 2023, bore C1 presented a significant concentration of 20.2%. This result appears to be very uncharacteristic and should be investigated further. The next greatest concentration of CO₂ for June 2023 was 1.5% at G2s.

Hydrogen sulphide was detected one bore – G1s (1 ppm) in April 2023, which is around the threshold at which a 'rotten egg' smell (commonly associated with H_2S) can be detected. Hydrogen sulphide was not detected at any sites in June 2023.

The possibility of encountering methane (and possible hydrogen sulphide) in groundwater bores endorses the need for appropriate health and safety measures to be adopted during monitoring, as is the case for the landfill gas extraction wells. No smoking should be permitted when personnel undertake groundwater sampling and when in the vicinity of the groundwater monitoring wells, or in fact anywhere else on the Levin Landfill site. For the safety of site personnel, a personal gas detector should be worn by all workers at the landfill site.

Appendices

We design with community in mind



Appendix A Site Plan

		K HS2	- Etter		/.
	ion -	7 H52		HOKIO STREAM	4
	HOKIO STREAM		BHXS1	12:EVER	
		2	binor	HOKIO BEA	CHROAD S HS1A
		TD1	TATANA'S		
	HS2				BHG2 🔄 🖉 🔮 BHXS2
				BHC2 UNNAMED BORE	BHC1
		BHXD1	BHC2D(D)	BHC2D(S)	
ASK		BHE2(d) BHE2(s)	BHB3(s) 🧬 BH3(n)		<u> </u>
SCALE - IF IN DOUBT		INSIDE SAME BHC3 STANDPIPE			 BHB1B (OLD STOCKWATER BORE)
ALE - IF I					📀 ВНВ1
			<i>Vs</i> ,		
BORE HOLE NO			0.02	CONTROL POINT	
A2 (DESTROYED A3 (DESTROYED	D) SHALLOW AQUIFER			(ORM-3)	
A4 A5	659 271.67 276 354.72 10.10 SHALLOW AQUIFER 659 530.47 276 185.91 9.62 SHALLOW AQUIFER		0 02 0 55 CONTROL POINT		
B1 B1B (STOCK BOR					
B2 B3(s) B3(n)	659 576.32 276 683.50 9.42 3.5 50 SHALLOW AQUIFER 659 651.19 276 519.52 7.76 2.83 50 SHALLOW AQUIFER 659 664.26 276 524.38 7.49 2.33 32 DEEP AQUIFER				
- <u>C1</u> C2	659 649 64 276 777.83 7.47 3.60 50 SHALLOW AQUIFER 659 669.80 276 631.22 7.50 2.81 32 SHALLOW AQUIFER	BHA5		IT 3 MWH	
- C2D(s) C2D(d)	659 671.19 276 641.63 10.13 12.88 32 SHALLOW AQUIFER 659 671.19 276 641.63 10.11 18.85 32 DEEP AQUIFER		· William · · · · · · · · · · · · · · · · · · ·		
- C3 D1	659 704.29 276.246.89 7.22 2.8 32 SHALLOW AQUIFER 659 134.97 276 771.65 27.46 23.69 50 EARLY DETECTION 020 01/0 200 01/0 020 01/0 020 01/0 020 01/0 020 01/0 020 01/0 020 01/0 020 01/0 020 01/0 020 01/0 020 01/0 020	-		IT 2 MWH	
D2 D4	669 101.02 276 642.06 32.12 29.46 50 EARLY DETECTION 659 293.20 276 366.60 17.97 17.0 SHALLOW AQUIFER 676 09.00 276 306.40 17.97 17.0 SHALLOW AQUIFER				
2 D5 D6 8 F1/d)	659 00:00 276 02:40 20.65 16 BACKGROUND 659 200:31 276 761.08 26.41 16.07 50 EARLY DETECTION			//////////////////////////////////////	• PP • PP • NAIL 2 MWH • PP
8 E1(d) E1(s) E2(s)	659 349.54 276 329.48 20.91 37.80 32 SHALLOW AQUIFER 659 349.54 276 329.48 20.91 20.05 32 DEEP AQUIFER 659 667.30 276 354.69 13.15 15.24 32 SHALLOW AQUIFER		BHE1(d)		
2 E2(d) F1	659 667.30 276 354.69 13.15 28.66 32 DEEP AQUIFER	-	BHE1(s) INSIDE SAME	LITI MWH 358 (NAIL 1N	
8 F2	659 037.10 276 925.50 18.90 15.0 50 IRRIGATION 659 105.00 276 218.00 13.50 10.2 50 SHALOW AQUIFER LECHATE IRRIGATION	-	STANDPIPE		BHD6 POND
53 F3	658 951.70 276 434.00 16.70 10.5 50 SHALLOW AQUIFER LEACHATE IRRIGATION		• BH4A 2	R and	
G1(s) ⁴ G1(d) ⁴	658 786.00 277 046.00 24 15 50 SHALLOW AQUIFER BACKGROUND 658 786.00 277 046.00 24 31.5 50 DEEP AQUIFER BACKGROUND		BORROW AREA 1	IH THE REAL PROPERTY OF THE RO	BHD1
G2 ⁴	659 673.00 276 835.00 8 4 50 SHALLOW AQUIFER COORDINATES FOR BORE HOLES BELOW ARE APPROXIMATE ONLY		1 ST 1111		PAP For SW4 F 120 (RI URI SW4 F 120
© D3(r) s D3(r) d BHXS1	659 089.60 276 585.30 18 10 50 EARLY DETECTION 659 089.60 276 585.30 18 32 50 EARLY DETECTION 659 797.20 276 617.30 - 4 50 SHALLOW AQUIFER	5	EXISTING BORROW AREA	PEGIMWH	
BHXS2 BHXD1	659 620.80 276 984.30 - 4 50 SHALLOW AQUIFER 659 620.80 276 984.30 - 35 50 DEEP AQUIFER			FUTURE STAGE 5	BHD2 IRII (0.2m DWN)
<u>دەر</u>	ORDINATES ARE IN TERMS OF NEW ZEALAND GEODETIC DATUM 1949: WANGANUI CIRCUIT		BORROW AREA 2	50 BHD3(r)s	
L SIZE			20.0 THAREA 2	SW2 BHD3(r)d + H	LANDFILL STAGE 3
ž –	LEGEND			0 SI FUTURE 0 02 STAGE 4	
	 MONITORING SAMPLING LOCATION MONITOR BORES CURRENTLY SAMPLED (FROM JAN 2010) 	0 02 0 02 0 02 0 52 0 52 0 52 0 52 0 52		0.02	a 4 5 11 11 11 STAGE 2
	BORES NOT SAMPLED	005			
Q	B SHALLOW HANDAUGER STANDPIPES NOT ABLE TO BE LOCATED		20.0	STAGE 1	B
		30 0 F			
	 SOIL SAMPLING LOCATION PEG - NOT MONITORED EXISTING STORMWATER SOAKAGE AREA 			BHF3	R(0.2m DWN)
	PROPOSED STORMWATER SOAKAGE AREA		ZSS Z ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ		SM SM
	PROPOSED BORROW AREAS	BHD5 50			
		0'52'			
		SURVEYED M			HOROWHENUA DISTRICT COUNCIL
E FOR INFORMATION	N - BHD3(r)s AND BHD3(r)d ADDED, AND CONTOURS UPDATED FROM JULY 2021 SURVEY N - BORROW AREA 2 RELOCATED, DEFINED AREAS OF FUTURE STAGES 1B, 4 AND 5 N - BORROW AREA AND LANDFULL AREA UPDATES AND BORE HOLES AND SAMPLING LOCATIONS ADDED FOR	BCJ PSL PSL 24.09.21 DRAWN Brent BCJ PSL PSL 01.06.21 CAD REVIEW Brent	James 08.2019 James 23.09.21 Stanted		
은 HOKIO STREAM AN	ND TATANA DRAIN N - BORROW AREA AND LANDFILL AREA UPDATES	BCJ PSL PSL 24.03.21 BCJ PSL PSL 22.09.20 APPROVED Phil La BC1 PSL PSL 22.09.40 PROVED Phil La			MONITORING BORES, SOIL SAMPLING LC SITE PLAN, LOCATION AND DETAILS
V9Z REV	REVISIONS RAWINGS SHALL ONLY BE USED FOR THE PURPOSE FOR WHICH THEY WERE SUPPLIED. ANY RE-USE IS PROHIBITED AND NO PART OF THIS DOCUMENT MAY BE	DRN CHK APP DATE PROF REGISTRATION:			STIE FLAN, LOCATION AND DETAILS pw:\lstantec-ap-pw.bentley.com:stantec-ap-pw-01\Docume



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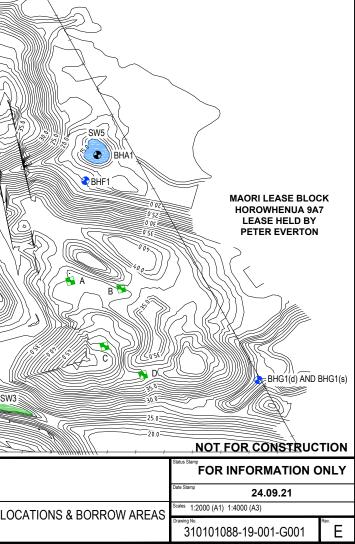
PROPERTY

COORDINATES OF SURVEY CONTROL MARKS							
COORDINA	TES OF SUR		UL MARKS				
PT	NORTHING mN	EASTING mE	RL				
ORM 1	659 498.38	276 412.21	38.94				
ORM 2	659 510.09	276 422.72	34.98				
ORM 3	659 505.14	276 612.86	21.10				
ORM 4(OP/W)	659 380.16	276 511.94	30.92				
MWH NAIL 1	659 272.67	276 656.87	27.61				
MWH NAIL 2	659 278.98	276 695.22	28.40				
MWH IT 1	659 267.33	276 576.02	30.03				
MWH IT 2	659 361.94	276 627.00	33.70				
MWH IT 3	659 428.24	276 593.00	32.74				
MWH PEG 1	659 160.94	276 548.30	32.99				
MWH PEG 2	659 227.86	276 479.35	30.49				
IRII	659 075.85	276 698.70	30.04				
OIR	658 903.62	276 579.37	30.35				
IRI	659 121.09	276 679.47	40.00				
IR	276 625.10	658 981.29	21.30				
COORDINATES ARE IN TERMS OF NEW ZEALAND GEODETIC DATUM 1949: WANGANUI CIRCUIT							

SOIL	CO-ORE	DINATES	LEVEL
MONITORING LOCATIONS	NORTHING mN	EASTING mE	(m)
PEG A	658 938.80	276 882.30	39.2
PEG B	658 917.00	276 932.10	39.5
PEG C	658 862.70	276 899.00	46.1
PEG D	658 822.90	276 930.40	40.4
PEG E	658 965.50	276 294.00	36.6
PEG F	659 046.20	276 169.10	32.9
PEG G	658 878.00	276 520.20	32.6
PEG H	658 827.40	276 667.60	23.5

BORROW AREA 1 SET-OUT COORDINATES		
POINT NO.	NORTHINGS mN	EASTINGS mE
1	659 230.38	276 453.28
2	659 247.32	276 413.49
3	659 257.33	276 349.62
4	659 280.93	276 269.42
5	659 233.27	276 243.39
6	659 201.34	276 302.68

- NOTES: 1. LEVELS ARE TOP OF STANDPIPE. WHERE THERE IS NO STANDPIPE, LEVELS ARE TOP OF PVC PIPE. 2. BHA2, BHA3 AND BHD3 HAVE BEEN LOST DUE TO
- SITE WORKS.
- "A" SERIES BORE HOLES ARE AUGER HOLES ONLY AND MAY NOT BE ABLE TO BE LOCATED.
 BORES INSTALLED IN AUG 2009. DETAILS ARE APPROXIMATE.
- 5. CONTOUR INTERVALS: 5m MAJOR, 1m MINOR



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Appendix B Sampling Schedule

Horowhenua District Council // Levin Landfill April/June 2023 Quarterly Groundwater, Surface Water and Leachate Monitoring Report Page | 27

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LEVIN LANDFILL - SUMMARY OF SURFACE AND GROUNDWATER MONITORING REQUIREMENTS (July 2023 - April 2026).

(The testing regime is based on Consent Conditions following the completion of the 2015 Resource Consent Review process)

			Table A	(Conditio	on 3, ATH DP 6	-2002003 010)	3983.02, 1	formerly								Table B	(Conditio	n 3, ATH	2002003	3983.02 <i>,</i> 1	formerly	DP 6010))							Table	C (Condit		H-200200 6010))3983.02	, formerly
Repo	orts Due	Sampling Month		[Deep Aqu	ifer Bore	S									Shallo	w Aquife	r Bores									Irrigatio	on Bores			Hokio Sti	ream ^{(4), (8}		(0)	Leachate Pond ⁽⁵⁾
Annua	l Quarterly		C2dd	E1d	E2d	G1d	Xd1	D3rd ⁽¹⁾	C1	C2 ⁽⁶⁾	C2ds ⁽⁶⁾	D4	B1	B2	B3s	E1s	E2s	D1 ⁽²⁾	D2 ⁽²⁾	D3rs ^(1,2)	D6 ⁽²⁾	G1s	G2s	Xs1 ⁽⁶⁾	Xs2 ⁽⁶⁾	D5 ⁽³⁾	F1 ⁽³⁾	F2 ⁽³⁾	F3 ⁽³⁾	HS1	HS1A	HS2	HS3	TD1 ⁽⁷⁾	
Sep-23	3 Aug-23	Jul-23	I	I + SW	I	I	С	С	I	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	I	I + SW	1	С	С	I	I	1	I + SW	nth / npr	, pr	nth / npr	nth / rpr	nth / npr	nth npr
	Nov-23	Oct-23	1	I + SW	I	I	С	С	I	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	1	I + SW	1	С	С	I	I	1	I + SW	Moi L	Con J	Moi Ly Con	Moi Con e	Moi Con e	Moi Con
	Feb-24	Jan-24	1	I + SW	I	I	С	C	1	1	1	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	1	I + SW	1	С	С	I	I	1	I + SW	-	I	I	I	I	I
	May-24	Apr-24	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	une	С	С	С	С	C+A
Sep-24	4 Aug-24	Jul-24	1	I + SW	I	I	I	С	1	1	I	I + SW	I	I	I	I + SW	I + SW	1	I + SW	C + SW	1	I + SW	1	1	1	1	I	1	I + SW	onti	1	I	1	1	1
	Nov-24	Oct-24	1	I + SW	I	1	I	С	1	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	1	I + SW	1	1	1	I	I	1	I + SW	disc	С	С	С	С	С
	Feb-25	Jan-25	I	I + SW	I	I	I	С	1	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	C + SW	1	I + SW	1	I	I	I	I	1	I + SW	o be c adv	I	I	I	1	I
	May-25	Apr-25	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	51 to HRC	С	С	С	С	C+A
Sep-25	5 Aug-25	Jul-25	1	I + SW	I	1	1	1	1	1	1	I + SW	I	I	I	I + SW	I + SW	I	I + SW	I + SW	1	I + SW	1	1	1	1	I	1	I + SW	at HS hen	1	1	I	I	1
	-	Oct-25	I	I + SW	I	I	I	I	1	1	I	I + SW	I	I	I	I + SW	I + SW	I	I + SW	I + SW	1	I + SW	1	1	1	I	I	1	I + SW	ing : v	С	С	С	С	С
	Feb-26	Jan-26	I	I + SW	I	I	I	1	1	1	1	I + SW	I	I	I	I + SW	I + SW	I	I + SW	I + SW	1	I + SW	1	1	1	1	1	1	I + SW	du	1	1	1	1	1
	May-26	Apr-26	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C + A	C+A	C + A	C+A	C + A	C+A	C+A	C+A	C+A	C+A	C + A	C + A	Sa	C	C	C	С	C + A

Notes:

(1) Replacement bore D3r consists of two nested piezometers that have been called D3rs and D3rd. Testing for comprehensive to continue to provide 2 year's of comprehensive monitoring.

See table below (2)

(3) If irrigation re-commences then the annual sampling is to change from comprehensive + 3 times indicator to bi-annual comprehensive + indicator (Clause D of Condition 3, DP 6010).

(4) See table below

See table below (5)

(6) Measure water level at C2, C2ds, Xs1 and Xs2 when taking monthly samples at TD1 and within the Hokio Stream. Testing of X-series bores to continue at comprehensive to provide 2 year's of comprehensive data.

- Start taking comprehensive samples at TD1 every month when sampling the Hokio Stream sites. Also note the depth of water in the drain invert at TD1. Continue monthly comprehensive sampling to October 2023 to give 24 month's continuous data. (7)
- (8) Start measuring approximately the depth of flow in the Hokio Stream at each sampling site when sampling monthly. Monthly sampling at comprehensive level to continue to, and including, October 2023, to give a full continuous 24 months of data.
- (9) Northern Farm Drain is a name change from the former 'Tatana Drain'

Comprehensive list (see below) С

Indicator list (see below)

Α Pesticide and SVOC analysis

SW Add sodium and iron analysis (for stormwater consent 102559)

A reduction in sampling frequency at any groundwater monitoring point is conditional on (Clauses A - D of Condition 3, DP 6010):

A. Completion of the initial monitoring program;

B. Good consistency of groundwater sample analysis results, or a clearly identified reason for inconsistent results that excludes the contaminant source being landfill operations, stored waste or leachate;

C. No decline in groundwater quality as determined from indicator parameter trends over a period of four consecutive sampling rounds;

D. If a well being monitored on a conditional frequency becomes non-compliant with condition C, the monitoring frequency for that well should return to the initial monitoring frequency until conditions B and C are again being fulfilled.

If site management planning indicates any early detection monitoring well is likely to become buried or otherwise destroyed within the following year as a result of normal operations (Clauses E - H, Condition 3, DP 6010):

E. This must be communicated to the regional council;

- F. A replacement well is to be constructed in a position agreed upon with Horizons Regional Council
- G. The replacement well should be installed in a position suitable to act as a early detection well and be classed as an early detection well;
- H. The replacement well should be constructed as a nested well (or two separate wells) with screens positioned in both shallow and deep aquifers.

A reduction in sampling frequency at the Hokio Stream monitoring locations (HS1A, HS2 and HS3) is conditional on (Clauses I - L, Condition 3 of DP 6010):

I. No significant increases in the concentrations between monitoring sites HS1A and HS3, for parameters exceeding the trigger values contained in Table C1 at Site HS3.

J. A statistical analysis approach is to be used to determine if there is a significant increase in contaminant levels between HS1A and HS3.

K. Following the 24 month monitoring period, there shall be no significant increases in concentrations between monitoring sites HS1A and HS3.

L. If the Hokio Stream monitoring locations are being sampled on a conditional frequency and do not meet condition K, the monitoring locations (HS1A, HS2 and HS3) shall return to the base case intensive monitoring until conditions J and K are again being fulfilled.

A reduction in sampling frequency at the leachate pond outlet is conditional on (Clauses M - P, Condition 3, DP 6010):

M. Completion of the initial 2 year monitoring program;

N. Good consistency of water sample analysis results, or a clearly identified reason for inconsistent results;

O. No decline in water quality over a period of four consecutive sampling rounds;

P. If the leachate pond outlet is being sampled on a conditional frequency and becomes non-compliant with condition O, the monitoring frequency should return to the base case intensive monitoring until conditions N and O are again being fulfilled.

COMPREHENSIVE PARAMETER LIST (Table E of Condition 3, DP 6010)

рН
electrical conductivity (EC)
alkalinity
total hardness
suspended solids
COD and scBOD ₅
NO3-N, NH4-N, DRP and SO ₄
Al, As, Cd, Cr, Cu, Fe, Mg, Mn, Ni, Pb, Zn and Hg
B, Ca, Cl, K and Na
Total organic carbon, total phenols, volatile acids
E. coli

INDICATOR PARAMETER LIST (Table F, Condition 3, DP 6010)

Characterising	pH
parameters	electrical conductivity (EC)
Oxygen demand	COD and scBOD ₅
Nutrients*	NO3-N and NH4-N
Metals*	AL, Mn, Ni, Pb and Hg
Other elements	B and Cl
Riological ⁺	E coli

* Analyses performed for nutrients and metals are for dissolved rather than total concentrations

⁺ E. coli added from April 2019 sampling onwards

* Analyses performed for nutrients and metals are for dissolved rather than total concentrations

Appendix C Analytical Results



AR-23-NW-017870-01 Page 1 of 6

Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	AR-	23-NW-017	870-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642		n)			
	4741 Levin					
	NEW ZEALAN	ID				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmir	0			·	orowhenua.govt.nz), Yvettef
Contact fo Contract:	or your orders:	Gabriela C Landfill	arvalhaes		Order code:	EUNZWE-00116910
SAMPLE	CODE	812-2023	-00048857			
Client Ref	erence:	283031-0				
	Point code: Date & Time:	Ground wa WIL-B1 06/04/2023			Sampling Point nam	ne: Levin B1
Analysis S	Start Date & Time				Analysis Ending Dat	
-	Date & Time	05/04/2023	3 13:00		Sampler(s)	Client nominated external sample
Sampled I	by Eurofins	No	DE0: 11 70	(11)0557411-3	() i e e	
			RESULIS	(UNCERTAINT)	r) loq	
	mmonia Nitroge			(- 1 00) "		
	mmoniacal nitroger	()	9.08	(± 1.36) mg/l	0.01	
	rsenic - Soluble			(+ 0 0004)		
	rsenic (As)		0.001	(± 0.0004) mg/l	0.001	
	OD5 - Soluble C	arbonaceou	IS			
	BOD5		<6	mg/l	1	
	alcium - Dissolv			(
	Calcium (Ca)		82.3	(± 8.23) mg/l	0.01	
	hemical Oxygen					
	Chemical oxygen der	mand (COD)	90	(± 14) mg/l	15	
NW007 C						
	Chloride (Cl)		399	(± 20.0) mg/l	0.02	
	onductivity					
	Conductivity		247	(± 4.9) mS/m	0.1	
	issolved Reactiv	-		(
	hosphorus (soluble		0.117	(± 0.023) mg/l	0.005	
	numeration of E		-			
	scherichia coli		<100	cfu/100 ml	100	
	on - Dissolved			(
	ron (Fe)		0.075	(± 0.015) mg/l	0.005	
	oluble Aluminiu					
	luminium		0.011	(± 0.001) mg/l	0.002	
NW103 S	oluble Boron					
	Boron (B)		2.08	mg/l	0.03	

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Food & Water Testing

NW106 5 NW108 5 NW228 5	Soluble Cadmium Cadmium (Cd) Soluble Chromium Chromium (Cr) Soluble Copper Copper (Cu) SVOC (GC-MSMS) Acenaphthene Acenaphthylene Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldicarb Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(a,h,i)perylene	<0.0002 0.002 0.0176 <0.0001 <0.001 <0.0010 <0.0001 <0.001 <0.001 <0.0001 <0.0001 <0.0001	(± 0.0001) mg/l (± 0.0004) mg/l (± 0.0035) mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	0.0002 0.001 0.0005 0.0001 0.0001 0.0001 0.1 0.001 0.001 0.001 0.001	
NW106 5 NW108 5 NW228 5	Cadmium (Cd) Soluble Chromium Chromium (Cr) Soluble Copper Copper (Cu) SVOC (GC-MSMS) Acenaphthene Acenaphthylene Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldcarb Aldciarb Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(a,h,i)perylene	0.002 0.0176 <0.0001 <0.001 <0.0010 <0.001 <0.001 <0.001 <0.001 <0.001	(± 0.0004) mg/l (± 0.0035) mg/l mg/l mg/l mg/l mg/l mg/l mg/l	0.001 0.0005 0.0001 0.0001 0.0001 0.1 0.001	
IW106 S IW108 S IW228 S	Soluble Chromium Chromium (Cr) Soluble Copper Copper (Cu) SVOC (GC-MSMS) Acenaphthene Acenaphthylene Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldicarb Aldicarb Aldicarb Aldrin Anthracene Benz(a)anthracene Benzo(a,h,i)perylene	0.002 0.0176 <0.0001 <0.001 <0.0010 <0.001 <0.001 <0.001 <0.001 <0.001	(± 0.0035) mg/l mg/l mg/l mg/l mg/l mg/l mg/l	0.001 0.0005 0.0001 0.0001 0.0001 0.1 0.001	
IW108 5 IW228 5 	Chromium (Cr) Soluble Copper Copper (Cu) SVOC (GC-MSMS) Acenaphthene Acenaphthylene Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldicarb Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(g,h,i)perylene	0.0176 <0.0001 <0.0010 <0.0001 <0.1 <0.001 <0.001 <0.001	(± 0.0035) mg/l mg/l mg/l mg/l mg/l mg/l mg/l	0.0005 0.0001 0.001 0.0001 0.0001 0.1 0.001	
IW108 5 IW228 5 	Soluble Copper Copper (Cu) SVOC (GC-MSMS) Acenaphthene Acenaphthylene Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldicarb Aldicarb Aldrin Anthracene Benz(a)anthracene Benzo(a,h,i)perylene	0.0176 <0.0001 <0.0010 <0.0001 <0.1 <0.001 <0.001 <0.001	(± 0.0035) mg/l mg/l mg/l mg/l mg/l mg/l mg/l	0.0005 0.0001 0.001 0.0001 0.0001 0.1 0.001	
W228 S	Copper (Cu) SVOC (GC-MSMS) Acenaphthene Acenaphthylene Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldicarb Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(g,h,i)perylene	<0.0001 <0.0010 <0.0001 <0.1 <0.001 <0.001 <0.0001	mg/l mg/l mg/l mg/l mg/l mg/l	0.0001 0.001 0.0001 0.0001 0.1 0.001	
NW228 5	SVOC (GC-MSMS) Acenaphthene Acenaphthylene Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldicarb Aldicarb Aldrin Anthracene Benz(a)anthracene Benzo(a,h,i)perylene	<0.0001 <0.0010 <0.0001 <0.1 <0.001 <0.001 <0.0001	mg/l mg/l mg/l mg/l mg/l mg/l	0.0001 0.001 0.0001 0.0001 0.1 0.001	
	Acenaphthene Acenaphthylene Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldicarb Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(g,h,i)perylene	<0.001 <0.0010 <0.1 <0.001 <0.001 <0.001	mg/l mg/l mg/l mg/l mg/l	0.001 0.0001 0.1 0.001	
	Acenaphthylene Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldicarb Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(a)pyrene Benzo(g,h,i)perylene	<0.001 <0.0010 <0.1 <0.001 <0.001 <0.001	mg/l mg/l mg/l mg/l mg/l	0.001 0.0001 0.1 0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA) Alachlor Aldicarb Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(a)pyrene Benzo(g,h,i)perylene	<0.0010 <0.0001 <0.1 <0.001 <0.001 <0.0001	mg/l mg/l mg/l mg/l	0.0001 0.0001 0.1 0.001	
	ester (DEHA) Alachlor Aldicarb Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(a)pyrene Benzo(g,h,i)perylene	<0.0001 <0.1 <0.001 <0.001 <0.0001	mg/l mg/l mg/l mg/l	0.0001 0.1 0.001	
	Aldicarb Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(a)pyrene Benzo(g,h,i)perylene	<0.1 <0.001 <0.001 <0.0001	mg/l mg/l mg/l	0.1 0.001	
	Aldrin Anthracene Atrazine Benz(a)anthracene Benzo(a)pyrene Benzo(g,h,i)perylene	<0.001 <0.001 <0.0001	mg/l mg/l	0.001	
, , , ,	Anthracene Atrazine Benz(a)anthracene Benzo(a)pyrene Benzo(g,h,i)perylene	<0.001 <0.0001	mg/l		
, 	Atrazine Benz(a)anthracene Benzo(a)pyrene Benzo(g,h,i)perylene	<0.0001		0.001	
I	Benz(a)anthracene Benzo(a)pyrene Benzo(g,h,i)perylene		ma/l		
I	Benzo(a)pyrene Benzo(g,h,i)perylene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene		mg/l	0.0001	
		<0.0001	mg/l	0.0001	
I		<0.001	mg/l	0.001	
I	Bromacil	<0.005	mg/l	0.005	
(Carbofuran	<0.001	mg/l	0.001	
(Chlordane	<0.0001	mg/l	0.0001	
(Chlordane, gamma	<0.001	mg/l	0.001	
(Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001	
(Chrysene	<0.0001	mg/l	0.0001	
(Cyanazine	<0.005	mg/l	0.005	
(d-BHC	<0.0001	mg/l	0.0001	
I	DDD, p,p'-	<0.0001	mg/l	0.0001	
1	DDE, p,p-	<0.0001	mg/l	0.0001	
1	DDT, p,p'-	<0.001	mg/l	0.001	
1	Diazinon	<0.0001	mg/l	0.0001	
I	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001	
I	Dieldrin	<0.0001	mg/l	0.0001	
I	Dimethoate	<0.001	mg/l	0.001	
I	Diuron	<0.001	mg/l	0.001	
I	Endosulfan, alpha-	<0.001	mg/l	0.001	
I	Endosulfan, beta-	<0.005	mg/l	0.005	
I	Endosulfan-sulfate	<0.0001	mg/l	0.0001	
I	Endrin	<0.0001	mg/l	0.0001	
I	Endrin ketone	NotRecovere d	mg/l	0.0001	
I	Endrin-aldehyde	<0.001	mg/l	0.01	
	Fluoranthene	<0.0001	mg/l	0.0001	
	Fluorene	<0.0001	mg/l	0.0001	
	HCH, alpha-	<0.0001	mg/l	0.0001	
	HCH, beta-	<0.0001	mg/l	0.0001	
	Heptachlor	<0.0001	mg/l	0.0001	
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001	
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001	

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		RESULTS	(UNC	ERTAINT
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	
	Lindane (gamma-HCH)	<0.0001	mg/l	
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	
	Metolachlor	<0.0001	mg/l	
	Metribuzin	<0.0001	mg/l	
	Molinate	<0.0001	mg/l	
	Naphthalene	<0.0001	mg/l	
	Oxadiazon	<0.0001	mg/l	
	PCB 101	<0.0001	mg/l	
	PCB 138	<0.001	mg/l	
	PCB 183	<0.0001	mg/l	
	PCB 28	<0.0001	mg/l	
	PCB 7	<0.0001	mg/l	
	Pendimethalin	<0.002	mg/l	
	Permethrin (sum of isomers)	<0.0001	mg/l	
	Phenanthrene	<0.0001	mg/l	
	Pirimiphos-methyl	<0.0001	mg/l	
	Procymidone	<0.0001	mg/l	
	Propanil	<0.001	mg/l	
	Propazine	<0.0001	mg/l	
	Pyrene	<0.0001	mg/l	
	Pyriproxyfen	<0.0001	mg/l	
	Simazine	<0.0001	mg/l	
	Terbuthylazine	<0.0001	mg/l	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	
	Trifluralin	<0.0001	mg/l	
NW003	Total Alkalinity			
	Alkalinity total	707	(± 71 CaC0	
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	
	1,1,1-Trichloroethane	<0.0005	mg/l	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	
	1,1,2-Trichloroethane	<0.0005	mg/l	
	1,1-Dichloroethane	<0.0005	mg/l	
	1,1-Dichloroethene	<0.0005	mg/l	
	1,1-Dichloropropene	<0.0005	mg/l	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	
	1,2,3-Trichloropropane	<0.0005	mg/l	
	1,2,4 trimethylbenzen	<0.0005	mg/l	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	
	1,2-Dibromo-3-chloropropane	<0.0003	mg/l	
	1,2-Dibromoethane	<0.001	mg/l	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	
	1,2-Dichloroethane	<0.0005	mg/l	
	1,2-Dichloropropane	<0.0005	mg/l	

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				LOQ	
		RECOLIC		LOQ	
NW229	VOC (GC-MS)				
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0010	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.001	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001	
		d			
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-Isopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	
	- · · /		-		

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
ZM2GA	Escherichia coli E (Water) INZI <100 >6 000 000 /100 ml

A Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

ix ~

Gordon McArthur Senior laboratory Analyst

Amitesh Kumar Supervisor



Maria Norris Laboratory Manager, Microbiology

Divina Cunanan Supervisor Lagazon

Signature

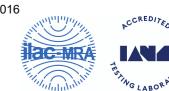
Ganesh Ilancko Supervisor

EXPLANATORY NOTE

Test is not accredited

- ${f O}$ Test is subcontracted within Eurofins group and is accredited
- ③ Test is subcontracted within Eurofins group and is not accredited
- ${f I}$ Test is subcontracted outside Eurofins group and is accredited
- Test is subcontracted outside Eurofins group and is not accredited
 Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

N/A means Not Applicable
Not Detected means not detected at or above the Limit of
Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



The test result(s) in this report apply only to the sample as received.

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The tests are identified by a five-digit code, their description is available on request.

Accreditation does not apply to comments or graphical representations.

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END OF REPORT





Page 1 of 7 AR-23-NW-032719-01

Food & Water Testing

ANALYTICAL REPORT

REPORI	I CODE	AR-2	23-NW-032	719-01	REPORT DATE	04/07/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642		ו)			
	4741 Levin					
	NEW ZEALAN	1D				
Phone	(06) 367 2705				Copy to: Water and Waste	
Email	horowhenuaadmi	-			· _	rowhenua.govt.nz), McMillan
Contact f Contract:	or your orders:	Gabriela Ca Landfill	arvalhaes		Order code:	EUNZWE-00127741
SAMPLE	CODE	812-2023-	00081089			
Client Re	ference:	299994-0				
) Point code: n Date & Time:	Ground wat WIL-B1 15/06/2023			Sampling Point name	: Levin B1
Analysis	Start Date & Time. Date & Time		16:08		Analysis Ending Date Sampler(s)	: 04/07/2023 Client nominated external sampler
Sampled	by Eurofins	No				
			RESULTS	(UNCERTAINT)	′) LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger	_	5.39	(± 0.96) mg/l	0.01	
W341	BOD5 - Soluble C	arbonaceou	s			
	BOD5	<	:1	mg/l	1	
W020	Chemical Oxygen	Demand				
	Chemical oxygen de		5	(± 8) mg/l	15	
W007 (Chloride					
	Chloride (Cl)	3	86	(± 19.3) mg/l	0.02	
W023 (Conductivity					
	Conductivity	2	38	(± 4.8) mS/m	0.1	
1 860WV	Dissolved Alumin	ium				
	Aluminium	C	.007	(± 0.001) mg/l	0.002	
NW583 I	Dissolved Arsenio	C				
	Arsenic (As)	C	0.001	(± 0.0004) mg/l	0.001	
W103 I	Dissolved Boron					
	Boron (B)	1	.84	mg/l	0.03	
W104 I	Dissolved Cadmii	um				
	Cadmium (Cd)	<	0.0002	(± 0.0001) mg/l	0.0002	
W457 I	Dissolved Calciur	n				
	Calcium (Ca)	8	32.1	(± 8.21) mg/l	0.01	
W106 I	Dissolved Chrom	ium				
	Chromium (Cr)	C	0.001	(± 0.0004) mg/l	0.001	
NW108 I	Dissolved Coppe	r				
	Copper (Cu)		0.0124	(± 0.0025) mg/l	0.0005	

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		RESULTS	(UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	0.055	(± 0.011) mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW462					
	Magnesium (Mg)	59.8	(± 5.98) mg/l	0.01	
NW113	Dissolved Manganese		(· · · · · · · · · · · · · · · · ·	0.01	
1444113	-	4.80	(± 0.480) mg/l	0.0005	
	Manganese (Mn)		(± 0.400) mg/i	0.0005	
NW114	Dissolved Mercury	<0.0005			
	Mercury (Hg)	-0.0000	mg/l	0.0005	
NW116	Dissolved Nickel	0.0049			
	Nickel (Ni)	0.0048	(± 0.0015) mg/l	0.0005	
NW117	Dissolved Potassium	04.0			
	Potassium (K)	21.3	mg/l	0.01	
NW193	Dissolved Reactive Phosph				
	Phosphorus (soluble reactive)	0.095	(± 0.019) mg/l	0.005	
NW469	Dissolved Sodium				
	Sodium (Na)	304	(± 30.4) mg/l	0.02	
NW125	Dissolved Zinc				
	Zinc (Zn)	0.006	(± 0.0009) mg/l	0.002	
ZM2GA	Enumeration of Escherichia	a coli By Memb	rane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
NW010	Nitrate-N				
	Nitrate-N	17.4	(± 0.87) mg/l	0.01	
①NW195	рН				
	рН	7.7	(± 0.2)	0.1	
③VQ088	Phenolics (Total)				
	Total phenols	<0.05	mg/l	0.05	
NIW011	Sulphate		ing/i	0.05	
		4.77	(± 0.48) mg/l	0.00	
	Sulphate		(_ 0.70) mg/i	0.02	
NW206	Suspended Solids	5			
	Suspended Solids	v	mg/l	3	
NW228	SVOC (GC-MSMS)	~0.0004			
	Acenaphthene	<0.0001 <0.001	mg/l	0.0001	
	Acenaphthylene	<0.001 <0.0001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)		mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001 <0.001	mg/l	0.0001	
	Benzo(g,h,i)perylene	~ 0.001	mg/l	0.001	

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		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.003
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.0001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005		
	d-BHC	<0.0001	mg/l	0.005
		<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin		mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.0001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	0.001
	-	<0.0001		0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101		mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)		mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	

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	Food & Water resting					
		RESULT	S (UNCERTAINTY)	LOQ		
NW228	SVOC (GC-MSMS)					
	Procymidone	<0.0001	mg/l	0.0001		
	Propanil	<0.001	mg/l	0.001		
	Propazine	<0.0001	mg/l	0.0001		
	Pyrene	<0.0001	mg/l	0.0001		
	Pyriproxyfen	<0.0001	mg/l	0.0001		
	Simazine	<0.0001	mg/l	0.0001		
	Terbuthylazine	<0.0001	mg/l	0.0001		
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001		
	Trifluralin	<0.0001	mg/l	0.0001		
NW003	Total Alkalinity		-			
	Alkalinity total	568	(± 57) mg CaCO3/I	1		
NW029	Total Hardness					
		451	(± 45) mg	4		
	Hardness		CaCO3/I	1		
NW210	Total Non-Purgeable Orga	nic Carbon				
	Total Organic Carbon	24.3	(± 2.4) mg/l	0.1		
NW229	-		-	5.1		
	, , , , , , , , , , , , , , , , , , ,	<0.0005	ma/l	0.0005		
	1,1,1,2-Tetrachloroethane	< 0.0005	mg/l	0.0005		
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005		
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005		
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005		
	1,1-Dichloroethane	<0.0005	mg/l	0.0005		
	1,1-Dichloroethene	<0.0005	mg/l	0.0005		
	1,1-Dichloropropene	<0.0005	mg/l	0.0005		
	1,2,3-Trichlorobenzene		mg/l	0.0005		
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005		
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005		
	1,2,4-Trichlorobenzene	< 0.0005	mg/l	0.0005		
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002		
	1,2-Dibromoethane	<0.0002	mg/l	0.0002		
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005		
	1,2-Dichloroethane	<0.0005	mg/l	0.0005		
	1,2-Dichloropropane	<0.0005	mg/l	0.0005		
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005		
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005		
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005		
	1,3-Dichloropropane	<0.0005	mg/l	0.0005		
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005		
	2,2-Dichloropropane	<0.0005	mg/l	0.0005		
	2-Chlorotoluene	<0.0005	mg/l	0.0005		
	3-chloropropene	<0.0005	mg/l	0.0005		
	4-Chlorotoluene	<0.0005	mg/l	0.0005		
	4-methyl-2-pentanone	<0.0010	mg/l	0.0005		
	Benzene	<0.0005	mg/l	0.0005		
	Bromobenzene	<0.0005	mg/l	0.0005		
	Bromochloromethane	<0.0012				
	Bromochioromethalle		mg/l	0.0012		

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			ater restin	ng
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	NotRecovered	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
VQ876	Volatile Fatty Acids (VFA)	by GC-MS		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	lso caproic acid	<5	mg/l	5
	lsobutyric acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	d ^{<5}	mg/l	5
	volatile latty acids as acetic aci	u ~	ing/i	5

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B		HA Online Edition 4110 B PHA Online Edition 4110 B	
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Food & Water Testing

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NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium:
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: Al
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganes
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: AP
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APH
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive P 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: A
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): In
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carb B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: A
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): AP
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (W (0-3) m-FC Agar-F: Si

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I: APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Signature

m

Jennifer Mont

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

Supervisor

Ganesh Ilancko Supervisor

Divita C. Lagopon

Divina Cunanan Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst







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the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

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END OF REPORT







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Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE		R-23-NW-017	873-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642	•	vin)			
	4741 Levin					
	NEW ZEALAN	ID				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmir	<u> </u>				prowhenua.govt.nz), Yvettef
Contact fo Contract:	or your orders:	Gabriela Landfill	Carvalhaes		Order code:	EUNZWE-00116910
SAMPLE	CODE	812-202	3-00048876			
Client Ref	erence:	283032-0				
	Point code: Date & Time:	Ground v WIL-B2 06/04/202	vater 23 17:18		Sampling Point nam	e: Levin B2
	Start Date & Time				Analysis Ending Date	
-	Date & Time	05/04/20	23 13:00		Sampler(s)	Client nominated external sample
Sampled I	by Eurofins	No	DEOUTO			
			RESULIS	(UNCERTAINT)	Y) LOQ	
	mmonia Nitroge			(1, 7,02)		
	mmoniacal nitroger		79.2	(± 7.92) mg/l	0.01	
	rsenic - Soluble)		(+ 0 0004)		
	rsenic (As)		0.002	(± 0.0004) mg/l	0.001	
	OD5 - Soluble C	arbonaced	ous			
	OD5		<6	mg/l	1	
	alcium - Dissolv	ed				
	Calcium (Ca)		134	(± 13.4) mg/l	0.01	
	hemical Oxygen			<i>.</i> "		
	chemical oxygen der	mand (COD) 92	(± 15) mg/l	15	
NW007 C						
	chloride (Cl)		195	(± 9.75) mg/l	0.02	
	onductivity			,		
	Conductivity		250	(± 5.0) mS/m	0.1	
	issolved Reactiv	-		(
	hosphorus (soluble	-	0.012	(± 0.003) mg/l	0.005	
	numeration of E	scherichia	-			
	scherichia coli		100	cfu/100 ml	100	
	on - Dissolved			(
	ron (Fe)		0.248	(± 0.050) mg/l	0.005	
	oluble Aluminiu	m				
	luminium		0.007	(± 0.001) mg/l	0.002	
NW103 S	oluble Boron					
	oron (B)		2.36	mg/l	0.03	

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
IW106	Soluble Chromium			
	Chromium (Cr)	0.001	(± 0.0004) mg/l	0.001
W108		0.001	(0.001
**100	Soluble Copper	0.0000	(± 0.0006) mg/l	
	Copper (Cu)	0.0028	(± 0.0000) mg/i	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001

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		RESULT	S (UNCERTAINTY) LOQ	
NW228	SVOC (GC-MSMS)				
	Hexazinone	<0.001	mg/l	0.001	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001	
	Lindane (gamma-HCH)	< 0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	<0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	<0.0001	mg/l		
	PCB 138	<0.001	mg/l	0.0001 0.001	
	PCB 183	<0.0001	mg/l	0.001	
	PCB 28	<0.0001	mg/l		
	PCB 7	<0.0001	mg/l	0.0001	
	PCB / Pendimethalin	<0.0001	mg/l	0.0001 0.002	
	Permethrin (sum of isomers)	<0.002	mg/l		
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
		<0.0001		0.0001	
	Procymidone		mg/l	0.0001	
	Propanil Propanil	<0.001	mg/l	0.001	
	Propazine	< 0.0001	mg/l	0.0001	
	Pyrene	< 0.0001	mg/l	0.0001	
	Pyriproxyfen	< 0.0001	mg/l	0.0001	
	Simazine	< 0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	653	(± 65) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	0.0005	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
		-0.0000	iiig/i	0.0003	

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Food & Water Testing

				esting	
		RESULTS	(UNCERTAINTY)	LOQ	
NW229	VOC (GC-MS)				
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0010	mg/l	0.0005	
	Chlorobenzene	0.0083	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.001	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001	
		d	5	0.001	
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-lsopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	
			0		

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml

Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Amitesh Kumar Supervisor



Ganesh Ilancko Supervisor

Signature

Supervisor

AR-23-NW-017873-01

Gordon McArthur Senior laboratory Analyst

Divina Cunanan Lagazon

Leo Cleave Senior Analyst Senior Analyst

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ)

- ②Test is subcontracted within Eurofins group and is accredited
- ③ Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited ⑤Test is subcontracted outside Eurofins group and is not accredited
- 6 Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit





The test result(s) in this report apply only to the sample as received.

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END OF REPORT







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Food & Water Testing

ANALYTICAL REPORT

REPOR	RT CODE	AR-23-NW-03	32717-01	REPORT DATE	04/07/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642	· ,			
	4741 Levin				
Dhana	NEW ZEALAN (06) 367 2705	ID			
Phone Email	horowhenuaadmir	n@downer.co.nz		Copy to: Water and Waste Te (waterandwasteteam@horow	
-	for your orders:	Gabriela Carvalhaes		Order code:	EUNZWE-00127741
Contrac	-	Landfill			
SAMPL	E CODE	812-2023-0008100	9		
	eference:	301298-0			
-	:: ig Point code: on Date & Time:	Ground water WIL-B2 15/06/2023 15:10		Sampling Point name:	Levin B2
Analysis	s Start Date & Time			Analysis Ending Date:	04/07/2023
-	d Date & Time d by Eurofins	15/06/2023 07:38 No		Sampler(s)	Client nominated external sampler
Sampley			S (UNCERTAINT)	() LOQ	
NW179	Ammonia Nitrogo				
111111	Ammonia Nitrogen	100	(± 10.2) mg/l	0.04	
NW341	BOD5 - Soluble Ca		(o)g,:	0.01	
1111341	BOD5 - Soluble Ca		mg/l	1	
NW020	Chemical Oxygen	Domand	mg/i	I	
1111020	Chemical oxygen der		(± 12) mg/l	15	
NW007	Chloride		() 3	15	
	Chloride (Cl)	194	(± 9.71) mg/l	0.02	
NW023	Conductivity		. , -	0.02	
	Conductivity	198	(± 4.0) mS/m	0.1	
NW098	-	ium		0.1	
	Aluminium	0.007	(± 0.001) mg/l	0.002	
NW583	Dissolved Arsenic	2			
	Arsenic (As)	0.001	(± 0.0004) mg/l	0.001	
NW103	Dissolved Boron				
	Boron (B)	2.05	mg/l	0.03	
NW104	Dissolved Cadmiu	um			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
NW457	Dissolved Calcium	n			
	Calcium (Ca)	117	(± 11.7) mg/l	0.01	
NW106	Dissolved Chromi				
	Chromium (Cr)	0.001	(± 0.0004) mg/l	0.001	
NW108	Dissolved Copper				
	Copper (Cu)	0.0035	(± 0.0007) mg/l	0.0005	
NW460	Dissolved Iron				

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		RESULTS	(UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	0.306	(± 0.061) mg/l	0.005	
NW110				0.000	
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW462			· · · · · · · · · · · · · · · ·	0.0003	
1111402	······································	41.5	(± 4.15) mg/l	0.04	
	Magnesium (Mg)		(± 4.10) mg/i	0.01	
NW113	6	3.56	(102E6) mg/l		
	Manganese (Mn)	5.50	(± 0.356) mg/l	0.0005	
NW114	···· ·	-0.0005			
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel				
	Nickel (Ni)	0.0024	(± 0.0007) mg/l	0.0005	
NW117	Dissolved Potassium				
	Potassium (K)	70.9	mg/l	0.01	
NW193	Dissolved Reactive Phospl	norus			
	Phosphorus (soluble reactive)	0.013	(± 0.003) mg/l	0.005	
NW469	,				
	Sodium (Na)	104	(± 10.4) mg/l	0.02	
NW125			. , -	0.02	
	Zinc (Zn)	0.003	(± 0.0007) mg/l	0.000	
7M2GA				0.002	
ZINZGA	Enumeration of Escherichi	а соп ву мет <100		100	
	Escherichia coli	100	cfu/100 ml	100	
NW010		32.1	(1.4.00)		
	Nitrate-N	32.1	(± 1.60) mg/l	0.01	
DNW195	рН				
	рН	7.2	(± 0.2)	0.1	
3) VQ0 88	Phenolics (Total)				
	Total phenols	<0.05	mg/l	0.05	
NW011	Sulphate				
	Sulphate	17.6	(± 0.88) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	7	mg/l	3	
NW228			-	-	
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
		<0.001	mg/l	0.001	
	Anthracene		0		
	Anthracene Atrazine	<0.0001	mg/l	0.0001	
		<0.0001 <0.0001		0.0001 0.0001	
	Atrazine	<0.0001	mg/l		

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		RESULTS	(UNCERTAINTY)	LOQ
W228	SVOC (GC-MSMS)			
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001

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NW228 NW003 NW029	Alkalinity total	<0.0001 <0.001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001	S (UNCERTAINTY) mg/l mg/l mg/l mg/l mg/l mg/l mg/l (± 55) mg CaCO3/l	LOQ 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001
NW003	Procymidone Propanil Propazine Pyrene Pyriproxyfen Simazine Terbuthylazine Total Benzo(b) and Benzo(k) fluoranthene Trifluralin Total Alkalinity Alkalinity total Total Hardness	<0.001 <0.0001 <0.0001 <0.0001 <0.0001 <0.001 <0.001	mg/l mg/l mg/l mg/l mg/l mg/l (± 55) mg	0.001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001
	Propanil Propazine Pyrene Pyriproxyfen Simazine Terbuthylazine Total Benzo(b) and Benzo(k) fluoranthene Trifluralin Total Alkalinity Alkalinity total Total Hardness	<0.001 <0.0001 <0.0001 <0.0001 <0.0001 <0.001 <0.001	mg/l mg/l mg/l mg/l mg/l mg/l (± 55) mg	0.001 0.0001 0.0001 0.0001 0.0001 0.0001 0.001
	Propanil Propazine Pyrene Pyriproxyfen Simazine Terbuthylazine Total Benzo(b) and Benzo(k) fluoranthene Trifluralin Total Alkalinity Alkalinity total Total Hardness	<0.0001 <0.0001 <0.0001 <0.0001 <0.001 <0.001	mg/l mg/l mg/l mg/l mg/l mg/l (± 55) mg	0.001 0.0001 0.0001 0.0001 0.0001 0.0001 0.001
	Propazine Pyrene Pyriproxyfen Simazine Terbuthylazine Total Benzo(b) and Benzo(k) fluoranthene Trifluralin Total Alkalinity Alkalinity total Total Hardness	<0.0001 <0.0001 <0.0001 <0.0001 <0.001 <0.0001	mg/l mg/l mg/l mg/l mg/l mg/l (± 55) mg	0.0001 0.0001 0.0001 0.0001 0.0001 0.001
	Pyrene Pyriproxyfen Simazine Terbuthylazine Total Benzo(b) and Benzo(k) fluoranthene Trifluralin Total Alkalinity Alkalinity total Total Hardness	<0.0001 <0.0001 <0.0001 <0.001 <0.0001	mg/l mg/l mg/l mg/l mg/l (± 55) mg	0.0001 0.0001 0.0001 0.0001 0.001 0.001
	Pyriproxyfen Simazine Terbuthylazine Total Benzo(b) and Benzo(k) fluoranthene Trifluralin Total Alkalinity Alkalinity total Total Hardness	<0.0001 <0.0001 <0.001 <0.0001	mg/l mg/l mg/l mg/l (± 55) mg	0.0001 0.0001 0.0001 0.001 0.0001
	Simazine Terbuthylazine Total Benzo(b) and Benzo(k) fluoranthene Trifluralin Total Alkalinity Alkalinity total Total Hardness	<0.0001 <0.001 <0.0001	mg/l mg/l mg/l (± 55) mg	0.0001 0.0001 0.001 0.001
	Terbuthylazine Total Benzo(b) and Benzo(k) fluoranthene Trifluralin Total Alkalinity Alkalinity total Total Hardness	<0.001 <0.0001	mg/l mg/l mg/l (± 55) mg	0.0001 0.001 0.0001
	Total Benzo(b) and Benzo(k) fluoranthene Trifluralin Total Alkalinity Alkalinity total Total Hardness	<0.0001	mg/l mg/l (± 55) mg	0.001 0.0001
	Total Alkalinity Alkalinity total Total Hardness		(± 55) mg	
	Alkalinity total Total Hardness	553		
	Alkalinity total Total Hardness	553		
NW029				1
		463	(± 46) mg CaCO3/I	1
NW210	Total Non-Purgeable Organ	nic Carbon		
	Total Organic Carbon	29.5	(± 3.0) mg/l	0.1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.0005
	1,2-Dibromoethane	< 0.0002	mg/l	0.002
	1,2-Dichlorobenzene (2)	< 0.0005		
	1,2-Dichloroethane	< 0.0005	mg/l	0.0005
		< 0.0005	mg/l	0.0005
	1,2-Dichloropropane	< 0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	< 0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0010	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene		mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012

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			ater restin	
		RESULTS	UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	0.0073	mg/l	0.0005
	Chloroethane	NotRecovered	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
③VQ876	Volatile Fatty Acids (VFA) by	y GC-MS		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	lso caproic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B		HA Online Edition 4110 B PHA Online Edition 4110 B	
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Lower Hutt		lac-MRA	

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Food & Water Testing

NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminiur
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: A
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganes
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: AF
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APH
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: /
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS):
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carl B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APH
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: /
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): AF
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (V (0-3) m-FC Agar-F: S

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Signature

Jennifer Mont

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Gabriela Carvalhaes

Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

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Senior Analyst Senior Analyst

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END OF REPORT





N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ)

LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



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Food & Water Testing

ANALYTICAL REPORT

REPOR	RT CODE	AR-23-NW-032	2916-01	REPORT DATE	05/07/2023
Attentior	Downer NZ Ltd Horowhenua A P O Box 642 4741 Levin NEW ZEALAN	dmin			
Phone	(06) 367 2705	D		Copy to: Water and Waste Te	am
Email	horowhenuaadmin	@downer.co.nz		(waterandwasteteam@horowl	
Contact Contrac	for your orders: t:	Gabriela Carvalhaes Landfill		Order code:	EUNZWE-00127741
SAMPL	E CODE	812-2023-00081090			
	eference:	301299-0			
Recepti	ig Point code: on Date & Time:	Ground water WIL-B3 15/06/2023 16:03		Sampling Point name:	Levin B3s
-	s Start Date & Time d Date & Time	15/06/2023 16:05 15/06/2023 07:38		Analysis Ending Date: Sampler(s)	05/07/2023 Client nominated external sampler
Sample	d by Eurofins	No			
		RESULTS	S (UNCERTAINT)	r) loq	
NW179	Ammonia Nitroger				
	Ammoniacal nitrogen	(N) 116	(± 11.6) mg/l	0.01	
NW341	BOD5 - Soluble Ca				
	BOD5	2	mg/l	1	
NW020	Chemical Oxygen				
	Chemical oxygen den	nand (COD) ¹²⁹	(± 14) mg/l	15	
NW007	Chloride	100	<i>,</i>		
	Chloride (Cl)	139	(± 6.93) mg/l	0.02	
NW023	Conductivity	054	(= 0) = 0(
	Conductivity	251	(± 5.0) mS/m	0.1	
NW098		um 0.004	(1.0.001)		
	Aluminium		(± 0.001) mg/l	0.002	
NW583	Dissolved Arsenic	0.016	(± 0.002) mg/l		
	Arsenic (As)	0.010	(± 0.002) mg/i	0.001	
NW103	Dissolved Boron	1.01			
NW404	Boron (B) Dissolved Cadmiu		mg/l	0.03	
1104	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0000	
NW457	Dissolved Calcium		(0.0002	
	Calcium (Ca)	82.7	(± 8.27) mg/l	0.01	
NW106	Dissolved Chromi		· · · ·	0.01	
	Chromium (Cr)	0.004	(± 0.0005) mg/l	0.001	
NW108	Dissolved Copper		、 , J	0.001	
	Copper (Cu)	0.0021	(± 0.0005) mg/l	0.0005	
NW460	Dissolved Iron				

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		RESULTS	(UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	0.860	(± 0.172) mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW462					
	Magnesium (Mg)	68.1	(± 6.81) mg/l	0.01	
NW113	Dissolved Manganese			0.01	
	Manganese (Mn)	3.57	(± 0.357) mg/l	0.0005	
NW114			(, g	0.0005	
	Dissolved Mercury	<0.0005		0.0005	
	Mercury (Hg)	0.0000	mg/l	0.0005	
NW116	Dissolved Nickel	0.0086	(1.0.0000)		
	Nickel (Ni)	0.0080	(± 0.0026) mg/l	0.0005	
NW117	Dissolved Potassium				
	Potassium (K)	83.0	mg/l	0.01	
NW193	Dissolved Reactive Phosph				
	Phosphorus (soluble reactive)	0.030	(± 0.006) mg/l	0.005	
NW469	Dissolved Sodium				
	Sodium (Na)	120	(± 12.0) mg/l	0.02	
NW125	Dissolved Zinc				
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002	
ZM2GA	Enumeration of Escherichi	a coli By Memb	orane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
NW010					
	Nitrate-N	0.37	(± 0.09) mg/l	0.01	
DNW195	рН				
	рН	7.0	(± 0.2)	0.1	
3VQ088	Phenolics (Total)		()	0.1	
		<0.05	ma/l	0.05	
	Total phenols		mg/l	0.05	
NW011	•	0.15	(± 0.04) mg/l		
	Sulphate	0.10	(± 0.04) mg/i	0.02	
NW206		84			
	Suspended Solids	04	mg/l	3	
NW228	SVOC (GC-MSMS)				
	Acenaphthene	< 0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001 <0.0001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)		mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001 <0.0001	mg/l	0.001	
	Atrazine	<0.0001 <0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001 <0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene	-0.001	mg/l	0.001	

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			Vater lesti	ng
		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001

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	T OOU & Water Testing				
		RESULT	S (UNCERTAINTY)	LOQ	
NW228	SVOC (GC-MSMS)				
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	-	<0.001	mg/l		
	Total Benzo(b) and Benzo(k) fluoranthene	<0.0001		0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	997	(± 100) mg CaCO3/I	1	
NW029	Total Hardness				
	Hardness	487	(± 49) mg	1	
			CaCO3/I	I	
NW210	Total Non-Purgeable Organ	nic Carbon			
	Total Organic Carbon	54.1	(± 5.4) mg/l	0.1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	<0.0005			
		<0.001	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.0002	mg/l	0.002	
	1,2-Dibromoethane	< 0.0005	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane		mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	< 0.0005	mg/l	0.0005	
	2-Chlorotoluene	< 0.0005	mg/l	0.0005	
	3-chloropropene	< 0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0010	mg/l	0.0005	
	_	0.0007	mg/l	0.0005	
	Benzene		5		
	Benzene Bromobenzene	<0.0005 <0.0012	mg/l	0.0005	

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Food & Water Testing

				LOQ
		REGOLIO		LOQ
NW229	VOC (GC-MS)	<0.0005		
	Bromodichloromethane		mg/l	0.0005
	Bromoform	<0.0005 <0.001	mg/l	0.0005
	Bromomethane (zone 2)		mg/l	0.001
	Carbon tetrachloride	< 0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	< 0.0005	mg/l	0.0005
	Chlorobenzene	0.0012	mg/l	0.0005
	Chloroethane	NotRecovered	mg/l	0.001
	Chloroform	< 0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	< 0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
3)VQ876	Volatile Fatty Acids (VFA) by	/ GC-MS		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	lso caproic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5
				5

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B		HA Online Edition 4110 B PHA Online Edition 4110 B	
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85 Port Road Seaview	www.eurofins.co	.nz	PCC 180
Lower Hutt		ilac-MRA	

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Food & Water Testing

NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA O
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium:
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium:
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: AP
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APH
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Pr 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: AP
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): Inte
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbo B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: AP
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APH
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Wa (0-3) m-FC Agar-F: SM

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Signature

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Jennifer Mont

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

Supervisor

Ganesh Ilancko Supervisor

uita C. Lagozon

Divina Cunanan Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst



4 datate





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- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
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END OF REPORT





N/A means Not Applicable

Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



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Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	Α	R-23-NW-017	871-01	REPORT DATE	18/04/2023	
Attention	Downer NZ Lt Horowhenua A P O Box 642	•	evin)				
	4741 Levin						
	NEW ZEALAN	١D					
Phone					Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), Yvettef		
Email	horowhenuaadmi	0					
Contact fo	or your orders:	Gabriela Landfill	a Carvalhaes		Order code:	EUNZWE-00116910	
SAMPLE	CODE	812-20	23-00048868				
Client Ref	ference:	283033					
	Point code: n Date & Time:	Ground WIL-B3 06/04/2			Sampling Point nam	e: Levin B3s	
Analysis	Start Date & Time				Analysis Ending Date		
-	Date & Time		023 13:00		Sampler(s)	Client nominated external sample	
Sampled	by Eurofins	No	DE0: 11 - 20	(11)0557411-3	<u>^</u>		
			RESULIS	(UNCERTAINT)	r) loq		
	Ammonia Nitroge			(
	Ammoniacal nitroger	()	127	(± 12.7) mg/l	0.01		
	Arsenic - Soluble)		(
	Arsenic (As)		0.021	(± 0.002) mg/l	0.001		
NW341 E	3OD5 - Soluble C	arbonace	eous				
	BOD5		<6	mg/l	1		
	Calcium - Dissolv	ved					
	Calcium (Ca)		69.1	(± 6.91) mg/l	0.01		
NW020 (Chemical Oxyger	Demand	1				
	Chemical oxygen de	mand (CO	D) 133	(± 14) mg/l	15		
NW007 (
	Chloride (Cl)		135	(± 6.74) mg/l	0.02		
	Conductivity						
	Conductivity		244	(± 4.9) mS/m	0.1		
W193 [Dissolved Reactiv	ve Phosp					
	Phosphorus (soluble		0.022	(± 0.005) mg/l	0.005		
ZM2GA	Enumeration of E	scherich	ia coli By Mem	brane Filtration			
	Escherichia coli		<100	cfu/100 ml	100		
W460 I	ron - Dissolved						
I	lron (Fe)		0.518	(± 0.104) mg/l	0.005		
VW098 S	Soluble Aluminiu	m					
	Aluminium		0.006	(± 0.001) mg/l	0.002		
NW103 S	Soluble Boron						
F	Boron (B)		0.98	mg/l	0.03		
NW104 s	Soluble Cadmium						

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106	Soluble Chromium			
	Chromium (Cr)	0.003	(± 0.0005) mg/l	0.001
NW108		0.000	(, , , , , , , , , , , , , , , , , , ,	0.001
1444 100		0.0450	(± 0.0030) mg/l	
	Copper (Cu)	0.0152	(± 0.0050) mg/i	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	0.003	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001

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			S (UNCERTAINTY)	L
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.0001
	Methoxychlor	<0.001	mg/l	
	Metolachlor	<0.0001	mg/l	0.0001 0.0001
	Metribuzin	<0.0001	mg/l	
	Molinate	<0.0001	mg/l	0.0001 0.0001
	Naphthalene	<0.0001	-	
	Oxadiazon	<0.0001	mg/l	0.0001
			mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	< 0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity			
	Alkalinity total	1040	(± 100) mg CaCO3/I	1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	< 0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	< 0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	< 0.0005	mg/l	0.0005
	1,1-Dichloroethane	< 0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	
	1,2,4-Trichlorobenzene	<0.0005	•	0.0005
			mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005

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			a valer i	esting
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	0.0008	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0010	mg/l	0.0005
	Chlorobenzene	0.0014	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.001	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001
		d		
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml

Mont

Jennifer Mont Supervisor



Gordon McArthur Senior laboratory Analyst

EXPLANATORY NOTE

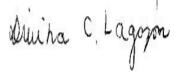
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- Tested at the sampling point by Eurofins and is not accredited
- (1) Tested at the sampling point by Eurofins and is accredited

Signature

Amitesh Kumar Supervisor

Maria Norris Laboratory Manager, Microbiology



Divina Cunanan Supervisor Lagazon

(0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Ganesh Ilancko Supervisor

 N/A means Not Applicable
 Not Detected means not detected at or above the Limit of Quantification (LOQ)
 LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

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The test result(s) in this report apply only to the sample as received.

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The tests are identified by a five-digit code, their description is available on request.

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END OF REPORT





AR-23-NW-017868-01 Page 1 of 6

Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	AR-2	23-NW-017	868-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lte Horowhenua A P O Box 642		ר)			
	4741 Levin					
	NEW ZEALAN	ID				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmii	<u> </u>			·	prowhenua.govt.nz), Yvettef
Contact fo Contract:	or your orders:	Gabriela Ca Landfill	arvalhaes		Order code:	EUNZWE-00116910
SAMPLE	CODE	812-2023-	00048820			
Client Ref	erence:	283027-0				
	Point code: Date & Time:	Ground wa WIL-C1 06/04/2023			Sampling Point nam	e: Levin C1
-	Start Date & Time				Analysis Ending Date	
-	Date & Time	05/04/2023 No	09:02		Sampler(s)	Client nominated external sample
sampied t	by Eurofins	No	DEQUITO			
			RESULIS	(UNCERTAINT)	Y) LOQ	
	mmonia Nitroge			(1.4.4.4)		
	mmoniacal nitroger		1.4	(± 1.14) mg/l	0.01	
	rsenic - Soluble			(1.0.0004)		
	rsenic (As)		0.001	(± 0.0004) mg/l	0.001	
	OD5 - Soluble C					
	BOD5		<6	mg/l	1	
	alcium - Dissolv			(1.4.40)		
	Calcium (Ca)		14.6	(± 4.46) mg/l	0.01	
	hemical Oxygen			(
	Chemical oxygen de	mand (COD) 7	73	(± 12) mg/l	15	
NW007 C				/··· ㅋ ㅋ		
	Chloride (Cl)	1	155	(± 7.75) mg/l	0.02	
	onductivity					
	Conductivity		19	(± 2.4) mS/m	0.1	
	issolved Reactiv	•		(1.0.000) "		
	hosphorus (soluble	,	0.009	(± 0.002) mg/l	0.005	
	numeration of E		-			
	scherichia coli	<	<100	cfu/100 ml	100	
	on - Dissolved			(1.0.440)		
	ron (Fe)).565	(± 0.113) mg/l	0.005	
	oluble Aluminiu			(1.0.000) "		
	luminium	C	0.028	(± 0.003) mg/l	0.002	
NW103 S	oluble Boron					
	Boron (B)).99	mg/l	0.03	

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		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001
NW108	Soluble Copper			0.001
		0.0040	(± 0.0009) mg/l	0.0005
	Copper (Cu)	0.0046	(± 0.0000) mg/r	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001

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		RESULTS	(UNCERT	
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	
	Lindane (gamma-HCH)	<0.0001	mg/l	
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	
	Metolachlor	<0.0001	mg/l	
	Metribuzin	<0.0001	mg/l	
	Molinate	<0.0001	mg/l	
	Naphthalene	<0.0001	mg/l	
	Oxadiazon	<0.0001	mg/l	
	PCB 101	<0.0001	mg/l	
	PCB 138	<0.001	mg/l	
	PCB 183	<0.0001	mg/l	
	PCB 28	<0.0001	mg/l	
	PCB 7	<0.0001	mg/l	
	Pendimethalin	<0.002	mg/l	
	Permethrin (sum of isomers)	<0.0001	mg/l	
	Phenanthrene	<0.0001	mg/l	
	Pirimiphos-methyl	<0.0001	mg/l	
	Procymidone	<0.0001	mg/l	
	Propanil	<0.001	mg/l	
	Propazine	<0.0001	mg/l	
	Pyrene	<0.0001	mg/l	
	Pyriproxyfen	<0.0001	mg/l	
	Simazine	< 0.0001	mg/l	
	Terbuthylazine	< 0.0001	mg/l	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	
	Trifluralin	<0.0001	mg/l	
NW003			5	
1111005	Alkalinity total	353	(± 35 CaC0	
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	
	1,1,1-Trichloroethane	<0.0005	mg/l	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	
	1,1,2-Trichloroethane	<0.0005	mg/l	
	1,1-Dichloroethane	<0.0005	mg/l	
	1,1-Dichloroethene	<0.0005	mg/l	
		<0.0005	•	
	1,1-Dichloropropene		mg/l	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	
	1,2,3-Trichloropropane	<0.0005	mg/l	
	1,2,4 trimethylbenzen	<0.0005	mg/l	
	1,2,4-Trichlorobenzene	< 0.0005	mg/l	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	
	1,2-Dibromoethane	<0.0002	mg/l	
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	
	1,2-Dichloroethane	<0.0005	mg/l	
	1,2-Dichloropropane	<0.0005	mg/l	

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			a valer r	caung
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	< 0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0010	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.001	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001
		d	-	
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Trichlorofluoromethane Vinyl chloride	<0.0005 <0.0005	mg/l mg/l	0.0005 0.0003

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NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Mont

Jennifer Mont Supervisor



Gordon McArthur Senior laboratory Analyst

EXPLANATORY NOTE

Test is not accredited

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- Tested at the sampling point by Eurofins and is not accredited
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Signature

Amitesh Kumar Supervisor

Maria Norris Laboratory Manager, Microbiology

Divita C. Lagopon

Divina Cunanan Supervisor Lagazon

Ganesh Ilancko Supervisor

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 Not Detected means not detected at or above the Limit of Quantification (LOQ)
 LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-NW-03	2720-01	REPORT DATE	04/07/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642	· ,			
	4741 Levin				
	NEW ZEALAN	D			
Phone	(06) 367 2705			Copy to: Water and Waste T (waterandwasteteam@horow	
Email	horowhenuaadmir	Gabriela Carvalhaes		Order code:	EUNZWE-00127741
Contract	for your orders: :	Landfill		Order code:	EUNZWE-00127741
SAMPLE	ECODE	812-2023-00081091	1		
Client Re		301300-0			
	g Point code: n Date & Time:	Ground water WIL-C1 15/06/2023 16:04		Sampling Point name:	Levin C1
Analysis	Start Date & Time	:15/06/2023 16:08		Analysis Ending Date:	04/07/2023
-	Date & Time	15/06/2023 05:08		Sampler(s)	Client nominated external sampler
Sampled	by Eurofins	No		0	
			S (UNCERTAINT)	() LOQ	
	Ammonia Nitroge	11.0	(
	Ammoniacal nitrogen	(IN)	(± 1.16) mg/l	0.01	
NW341	BOD5 - Soluble Ca				
	BOD5	<6	mg/l	1	
	Chemical Oxygen				
	Chemical oxygen der	mand (COD) ^{oo}	(± 14) mg/l	15	
NW007		4 47			
	Chloride (Cl)	147	(± 7.35) mg/l	0.02	
	Conductivity	110			
	Conductivity	119	(± 2.4) mS/m	0.1	
	Dissolved Alumini	ium 0.020	(± 0.002) mg/l		
	Aluminium		(± 0.002) mg/i	0.002	
	Dissolved Arsenic	0.001	(1.0.0004)		
	Arsenic (As)	0.001	(± 0.0004) mg/l	0.001	
	Dissolved Boron	1.02			
	Boron (B)		mg/l	0.03	
	Dissolved Cadmiu	im <0.0002	(± 0.0001) mg/l		
	Cadmium (Cd)		(± 0.0001) mg/i	0.0002	
	Dissolved Calcium	n 44.3	(± 4.43) mg/l		
	Calcium (Ca)		(± + . + 0) mg/l	0.01	
	Dissolved Chromi	-0.001	(± 0.0004) mg/l	0.001	
	Chromium (Cr)		(± 0.0004) mg/l	0.001	
	Dissolved Copper	0.0028	(± 0.0006) mg/l	0.0005	
	Copper (Cu)	0.0020	(± 0.0000) mg/l	0.0005	
NW460	Dissolved Iron				

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		RESULTS	(UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	0.408	(± 0.082) mg/l	0.005	
NW110					
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW462			. , .	0.0003	
	Magnesium (Mg)	29.7	(± 2.97) mg/l	0.01	
NW113			(= =,	0.01	
	0	0.307	(± 0.0307) mg/l		
	Manganese (Mn)	0.001	(± 0.0007) mg/r	0.0005	
NW114		<0.0005			
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	210001104				
	Nickel (Ni)	0.0010	(± 0.0004) mg/l	0.0005	
NW117	Dissolved Potassium				
	Potassium (K)	25.8	mg/l	0.01	
NW193	Dissolved Reactive Phosph	horus			
	Phosphorus (soluble reactive)	0.010	(± 0.003) mg/l	0.005	
NW469	Dissolved Sodium				
	Sodium (Na)	120	(± 12.0) mg/l	0.02	
NW125	Dissolved Zinc				
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002	
ZM2GA	Enumeration of Escherichi	a coli By Memh	rane Filtration	0.002	
	Escherichia coli	<100	cfu/100 ml	100	
NW010				100	
		<0.01	(± 0.003) mg/l	0.04	
	Nitrate-N		(± 0.000) mg/i	0.01	
DNW195	рН	7.0	(1.0.2)		
	рН	1.0	(± 0.2)	0.1	
3)VQ088	Phenolics (Total)	-0.05			
	Total phenols	<0.05	mg/l	0.05	
NW011	Sulphate				
	Sulphate	22.1	(± 1.11) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	517	mg/l	3	
NW228	SVOC (GC-MSMS)				
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	< 0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
		0.000			
	Benzo(a)pyrene Benzo(g,h,i)perylene	<0.0001 <0.001	mg/l mg/l	0.0001	

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Food & Water Testing

			vater lesti	ing
		RESULTS	(UNCERTAINTY)	LOQ
W228	SVOC (GC-MSMS)			
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001

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SVOC (GC-MSMS) Procymidone		(UNCERTAINTY)	LOQ
Procymidone	<0.0001		
	<0.0001	mg/l	0.0001
Propanil	<0.001	mg/l	0.001
Propazine	<0.0001	mg/l	0.0001
Pyrene		mg/l	0.0001
Pyriproxyfen	<0.0001	mg/l	0.0001
Simazine	<0.0001	mg/l	0.0001
Terbuthylazine	<0.0001	mg/l	0.0001
Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
Trifluralin	<0.0001	mg/l	0.0001
Total Alkalinity			
Alkalinity total	352	(± 35) mg CaCO3/I	1
Total Hardness			
Hardness	233	(± 23) mg	1
i la di looo		CaCO3/I	I
Total Non-Purgeable Orga	nic Carbon		
Total Organic Carbon	23.6	(± 2.4) mg/l	0.1
VOC (GC-MS)			
1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
1,1,1,1-Trichloroethane	<0.0005	mg/l	
1,1,2,2-tetrachloroethane	< 0.0005	-	0.0005
	< 0.0005	mg/l	0.0005
1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
1,1-Dichloroethane	< 0.0005	mg/l	0.0005
1,1-Dichloroethene	< 0.0005	mg/l	0.0005
1,1-Dichloropropene	< 0.0005	mg/l	0.0005
1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
1,2-Dibromoethane		mg/l	0.0002
1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
1,2-Dichloroethane	<0.0005	mg/l	0.0005
1,2-Dichloropropane	<0.0005	mg/l	0.0005
1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
1,3-Dichloropropane	<0.0005	mg/l	0.0005
1,4-dichlorobenzene	<0.0005	mg/l	0.0005
2,2-Dichloropropane	<0.0005	mg/l	0.0005
2-Chlorotoluene	<0.0005	mg/l	0.0005
3-chloropropene	<0.0005	mg/l	0.0005
4-Chlorotoluene	<0.0005	mg/l	0.0005
4-methyl-2-pentanone	<0.0010	mg/l	0.0005
Benzene	<0.0005	mg/l	0.0005
Bromobenzene	<0.0005		0.0005
	<0.0012		0.0012
	2-Chlorotoluene 3-chloropropene 4-Chlorotoluene 4-methyl-2-pentanone Benzene	2-Chlorotoluene<0.0005	2-Chlorotoluene<0.0005mg/l3-chloropropene<0.0005

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			ater lestin	ng
		RESULTS ((UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	NotRecovered	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	< 0.0005	mg/l	0.0005
	sec-Butylbenzene	< 0.0005	mg/l	0.0005
	Styrene	< 0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005 <0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)		mg/l	0.0005
③VQ876	Volatile Fatty Acids (VFA) by			
	Acetic acid	<5	mg/l	5
	Butyric acid	<5 <5	mg/l	5
	Heptanoic Acid C7:0		mg/l	5
	Hexanoic acid	<5 <5	mg/l	5
	lso caproic acid	<5 <5	mg/l	5
	Isobutyric acid	<5 <5	mg/l	5
	Isovaleric acid	<5 <5	mg/l	5
	Propionic acid	<5 <5	mg/l	5
	Valeric acid	<5 <5	mg/l	5
	Volatile fatty acids as acetic acid	-0	mg/l	5

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B		HA Online Edition 4110 B PHA Online Edition 4110 B	
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Seaview			
Lower Hutt		Hac-MRA	

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Food & Water Testing

NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA O
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium:
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: AF
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APH
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Pl 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: AF
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): Int
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbo B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: AF
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APH
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Wa (0-3) m-FC Agar-F: SM

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Signature

Jennifer Mont

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

Supervisor

Ganesh Ilancko Supervisor

iiha C. Lagozon

Divina Cunanan Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst



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- Test is not accredited
- ②Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
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- ${f O}$ Tested at the sampling point by Eurofins and is not accredited
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- The test result(s) in this report apply only to the sample as received.
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N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

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END OF REPORT







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Food & Water Testing

ANALYTICAL REPORT

	CODE	AR	-23-NW-017	869-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lte Horowhenua A P O Box 642		/in)			
	4741 Levin NEW ZEALAN	۱D				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmii	0				orowhenua.govt.nz), Yvettef
Contact fo	or your orders:	Gabriela Landfill	Carvalhaes		Order code:	EUNZWE-00116910
SAMPLE	CODE	812-202	3-00048855			
Client Ref	erence:	283028-0				
	Point code: Date & Time:	Ground w WIL-C2 06/04/202			Sampling Point nam	e: Levin C2
Analysis S	Start Date & Time Date & Time	06/04/202 05/04/202			Analysis Ending Dat Sampler(s)	e: 18/04/2023 Client nominated external sample
-	by Eurofins	No				
			RESULTS	(UNCERTAINT)	() LOQ	
NW179 A	Ammonia Nitroge	n				
ŀ	Ammoniacal nitroger	ו (N)	166	(± 16.6) mg/l	0.01	
NW583 A	Arsenic - Soluble)				
ŀ	Arsenic (As)		0.002	(± 0.0004) mg/l	0.001	
NW341 E	BOD5 - Soluble C	arbonaced	ous			
E	BOD5		<6	mg/l	1	
W457 C	alcium - Dissolv	ed				
(Calcium (Ca)		58.2	(± 5.82) mg/l	0.01	
NW020 C	hemical Oxygen	Demand				
(Chemical oxygen de	mand (COD)	133	(± 14) mg/l	15	
NW007 C	Chloride					
(Chloride (Cl)		171	(± 8.53) mg/l	0.02	
NW023 C	Conductivity					
C	Conductivity		279	(± 5.6) mS/m	0.1	
NW193 [Dissolved Reactiv	ve Phosph	orus			
F	Phosphorus (soluble	reactive)	0.011	(± 0.003) mg/l	0.005	
ZM2GA E	numeration of E	scherichia	coli By Mem	brane Filtration		
E	Escherichia coli		6000	cfu/100 ml	100	
W460 I	ron - Dissolved					
I	ron (Fe)		0.901	(± 0.180) mg/l	0.005	
NW098 S	Soluble Aluminiu	m				
ŀ	Aluminium		0.018	(± 0.002) mg/l	0.002	
NW103 S	Soluble Boron					
	Boron (B)		1.63	mg/l	0.03	

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		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106				
	Chromium (Cr)	0.002	(± 0.0004) mg/l	0.001
W108		0.002	(, 0	0.001
100	Soluble Copper		(± 0.0002) mg/l	
	Copper (Cu)	0.0006	(± 0.0002) mg/l	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	0.005	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001

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		RESULT	S (UNCERTAINTY) LOQ	
NW228	SVOC (GC-MSMS)				
	Hexazinone	<0.001	mg/l	0.001	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001	
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	<0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	<0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.0001	mg/l	0.0001	
	PCB 28	<0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity		-		
	Alkalinity total	1140	(± 110) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	< 0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	< 0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	< 0.0005	mg/l	0.0005	
	1,1-Dichloropropene	< 0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	< 0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.000	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.002	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	0.0002	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
		-0.0000	iiig/i	0.0003	

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229 VOC (GC-MS) 1.3,5-Tichlorobenzene <0.0005 mg/l 0.0005 1.3,5-Tinnethylbenzene <0.0005 mg/l 0.0005 1.3-Dichlorobenzene <0.0005 mg/l 0.0005 1.3-Dichloropropane <0.0005 mg/l 0.0005 2.2-Dichloropropane <0.0005 mg/l 0.0005 2.Chlorobluene <0.0005 mg/l 0.0005 3-chloropropane <0.0005 mg/l 0.0005 4-Chlorobluene <0.0005 mg/l 0.0005 Berzene <0.0005 mg/l 0.0005 Berzene <0.0005 mg/l 0.0005 Bromochloromethane <0.0005 mg/l 0.0005 Bromochloromethane <0.0005 mg/l 0.0005 Bromochloromethane <0.0005 mg/l 0.0005 Bromochloromethane <0.001 mg/l 0.0005 Carbon terachloride <0.001 mg/l 0.0005 Chlorobenzene <0.0005 mg/l 0.0005 <th></th> <th></th> <th></th> <th></th> <th>LOQ</th> <th></th>					LOQ	
1.3.5-Tinchlorobenzene <0.0005	W229	VOC (GC-MS)				
1.3.5-Trimethylbenzene <0.0005			<0.0005	ma/l	0 0005	
1.3-Dichloroptopane <0.0005				-		
1,3-Dichloropropane <0.0005		•		-		
1,4-dichlorobenzene <0.0005						
2.2-Dichloropropane <0.0005						
2-Chlorotoluene <0.0005		-		-		
3-chloropropene 0.0005 mg/l 0.0005 4-Chlorotoluene <0.0005				-		
4-Chlorotoluene <0.0005						
4-methyl-2-pentanone <0.0050						
Benzene <0.0005 mg/l 0.0005 Bromobenzene <0.0005				-		
Bromobenzene <0.0005 mg/l 0.0005 Bromochloromethane <0.0012				-		
Bromochloromethane <0.0012 mg/l 0.0012 Bromodichloromethane <0.0005						
Bromodichloromethane <0.0005 mg/l 0.0005 Bromoform <0.0005		Bromochloromethane				
Bromoform <0.0005				•		
Bromomethane (zone 2) <0.001				-		
Carbon tetrachloride <0.0005 mg/l 0.0005 Carbondisulphide (CS2) <0.0010						
Carbondisulphide (CS2) <0.0010 mg/l 0.0005 Chiorobenzene <0.001						
Chlorobenzene <0.0005 mg/l 0.0005 Chloroethane <0.001				-		
Chloroethane <0.001		,		-		
Chloroform <0.0005 mg/l 0.0005 Chloromethane <0.001						
Chloromethane <0.001 mg/l 0.006 cis-1,2-Dichloroethene <0.0005		Chloroform				
cis-1,2-Dichloroethene <0.0005				-		
cis-1,3-Dichloropropene <0.0005		cis-1,2-Dichloroethene		-		
Dibromochloromethane <0.0005 mg/l 0.0005 Dibromomethane <0.0005						
Dibromomethane <0.0005 mg/l 0.0005 Dichlorodifluoromethane NotRecovere mg/l 0.001 d Dichloromethane <0.005						
Dichlorodifluoromethane NotRecovere d mg/l 0.001 Dichloromethane <0.005		Dibromomethane		-		
d Dichloromethane <0.005 mg/l 0.005 Hexachlorobutadiene <0.0002		Dichlorodifluoromethane	NotRecovere	-		
Hexachlorobutadiene <0.0002 mg/l 0.0002 Isopropylbenzene (Cumene) <0.0005				Ū		
Isopropylbenzene (Cumene) <0.0005 mg/l 0.0005 m,p-Xylene, Ethylbenzene <0.0015		Dichloromethane	<0.005	mg/l	0.005	
m,p-Xylene, Ethylbenzene <0.0015		Hexachlorobutadiene	<0.0002	mg/l	0.0002	
Naphthalene <0.0005 mg/l 0.0005 n-Butylbenzene <0.0005		Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
n-Butylbenzene<0.0005mg/l0.0005n-Propylbenzene<0.0005		m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
n-Propylbenzene <0.0005		Naphthalene	<0.0005	mg/l	0.0005	
p-lsopropyltoluene <0.0005 mg/l 0.0005 sec-Butylbenzene <0.0010		n-Butylbenzene	<0.0005	mg/l	0.0005	
sec-Butylbenzene <0.0010 mg/l 0.0005 Styrene <0.0005		n-Propylbenzene	<0.0005	mg/l	0.0005	
Styrene <0.0005 mg/l 0.0005 tert-Butylbenzene <0.0005		p-lsopropyltoluene	<0.0005	mg/l	0.0005	
tert-Butylbenzene <0.0005		sec-Butylbenzene	<0.0010	mg/l	0.0005	
Tetrachloroethene <0.0005		Styrene	<0.0005	mg/l	0.0005	
Toluene <0.0005 mg/l 0.0005 trans-1,2-Dichloroethene <0.0005		tert-Butylbenzene	<0.0005	mg/l	0.0005	
trans-1,2-Dichloroethene <0.0005		Tetrachloroethene	<0.0005	mg/l	0.0005	
trans-1,3-Dichloropropene <0.0005		Toluene	<0.0005	mg/l	0.0005	
Trichloroethene <0.0005 mg/l 0.0005 Trichlorofluoromethane <0.0005		trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
Trichlorofluoromethane <0.0005 mg/l 0.0005 Vinyl chloride <0.0005		trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
Vinyl chloride <0.0005 mg/l 0.0003		Trichloroethene	<0.0005	mg/l	0.0005	
		Trichlorofluoromethane	<0.0005	mg/l	0.0005	
		Vinyl chloride	<0.0005	mg/l	0.0003	
Xylene (ortho-) <0.0005 mg/l 0.0005		Xylene (ortho-)	<0.0005	mg/l	0.0005	

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NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

EXPLANATORY NOTE

①Test is not accredited

- ② Test is subcontracted within Eurofins group and is accredited
- $\ensuremath{\mathfrak{I}}$ Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- Test is subcontracted outside Eurofins group and is not accredited
 Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- (1) Tested at the sampling point by Eurofins and is accredited

Signature

Amitesh Kumar Supervisor

Ganesh Ilancko Supervisor

Divita C. Lagozon

Divina Cunanan Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



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The test result(s) in this report apply only to the sample as received.

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END OF REPORT







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Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR	-23-NW-032	917-01	REPORT DATE	05/07/2023
Attention	Downer NZ Ltc Horowhenua A P O Box 642 4741 Levin NEW ZEALAN	dmin	rin)			
Phone	(06) 367 2705				Copy to: Water and Waste	Team
Email	horowhenuaadmin	@downer.co	o.nz		(waterandwasteteam@horo	whenua.govt.nz), McMillan
Contact Contract	for your orders: ::	Gabriela (Landfill	Carvalhaes		Order code:	EUNZWE-00127741
SAMPLE	ECODE	812-202	3-00081085			
	eference:	301301-0				
Receptio	g Point code: on Date & Time: Start Date & Time	Ground w WIL-C2 15/06/202	23 15:52		Sampling Point name: Analysis Ending Date:	Levin C2 05/07/2023
-	Date & Time	13/06/202			Sampler(s)	Client nominated external sampler
-	by Eurofins	No			·····	
			RESULTS	(UNCERTAINT	Y) LOQ	
NW179	Ammonia Nitroger	า				
	Ammoniacal nitrogen		171	(± 17.1) mg/l	0.01	
NW341	BOD5 - Soluble Ca	arbonaceo	us			
	BOD5		2	mg/l	1	
NW020	Chemical Oxygen	Demand				
	Chemical oxygen den	nand (COD)	107	(± 12) mg/l	15	
NW007	Chloride					
	Chloride (CI)		151	(± 7.53) mg/l	0.02	
NW023	Conductivity					
	Conductivity		251	(± 5.0) mS/m	0.1	
NW098	Dissolved Alumini	um				
	Aluminium		0.011	(± 0.001) mg/l	0.002	
NW583	Dissolved Arsenic					
	Arsenic (As)		0.001	(± 0.0004) mg/	l 0.001	
NW103	Dissolved Boron					
	Boron (B)		1.54	mg/l	0.03	
NW104	Dissolved Cadmiu	m				
	Cadmium (Cd)		<0.0002	(± 0.0001) mg/	0.0002	
NW457	Dissolved Calcium	ו	40 7	,		
	Calcium (Ca)		48.7	(± 4.87) mg/l	0.01	
NW106	Dissolved Chromi	um	0.000			
	Chromium (Cr)		0.002	(± 0.0004) mg/	0.001	
NW108	Dissolved Copper		0.0040	(
	Copper (Cu)		0.0019	(± 0.0004) mg/	0.0005	
NW460	Dissolved Iron					

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		RESULTS	(UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	0.636	(± 0.127) mg/l	0.005	
NW110	Dissolved Lead		· · · -	0.000	
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NIMAGO			(_ 0.0000_)	0.0005	
NW462	Dissolved Magnesium	28.7	(± 2.97) mg/l		
	Magnesium (Mg)	20.7	(± 2.87) mg/l	0.01	
NW113	Dissolved Manganese	0.407	(
	Manganese (Mn)	0.187	(± 0.0187) mg/l	0.0005	
NW114	Dissolved Mercury				
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel				
	Nickel (Ni)	0.0039	(± 0.0012) mg/l	0.0005	
NW117	Dissolved Potassium				
	Potassium (K)	70.8	mg/l	0.01	
NW193	Dissolved Reactive Phosph	norus	0		
	Phosphorus (soluble reactive)	0.018	(± 0.004) mg/l	0.005	
NW469	Dissolved Sodium		· · · -	0.000	
	Sodium (Na)	128	(± 12.8) mg/l	0.00	
NW125			(_ · _ ·) · · · g/·	0.02	
1999125	Dissolved Zinc	0.009	(± 0.001) mg/l		
714004	Zinc (Zn)			0.002	
ZM2GA	Enumeration of Escherichia	a coli By Mem <100			
	Escherichia coli	<100	cfu/100 ml	100	
NW010	Nitrate-N	o (o			
	Nitrate-N	<0.10	(± 0.02) mg/l	0.01	
①NW195	рН				
	рН	7.2	(± 0.2)	0.1	
3VQ088	Phenolics (Total)				
	Total phenols	<0.05	mg/l	0.05	
NW011	Sulphate				
	Sulphate	0.39	(± 0.10) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	84	mg/l	3	
NW228	SVOC (GC-MSMS)		3	Ū	
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.0001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001	

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				sting		
		RESULTS	(UNCERTAINTY	LOQ		
NW228	SVOC (GC-MSMS)					
	Bromacil	<0.005	mg/l	0.005		
	Carbofuran	<0.001	mg/l	0.001		
	Chlordane	<0.0001	mg/l	0.0001		
	Chlordane, gamma	<0.001	mg/l	0.001		
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001		
	Chrysene	<0.0001	mg/l	0.0001		
	Cyanazine	<0.005	mg/l	0.005		
	d-BHC	<0.0001	mg/l	0.0001		
	DDD, p,p'-	<0.0001	mg/l	0.0001		
	DDE, p,p-	<0.0001	mg/l	0.0001		
	DDT, p,p'-	<0.001	mg/l	0.001		
	Diazinon	<0.0001	mg/l	0.0001		
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001		
	Dieldrin	<0.0001	mg/l	0.0001		
	Dimethoate	<0.001	mg/l	0.001		
	Diuron	<0.001	mg/l	0.001		
	Endosulfan, alpha-	<0.001	mg/l	0.001		
	Endosulfan, beta-	<0.005	mg/l	0.005		
	Endosulfan-sulfate	<0.0001	mg/l			
	Endrin	<0.0001	mg/l	0.0001 0.0001		
	Endrin ketone	<0.0001	mg/l			
	Endrin-aldehyde	<0.001	mg/l	0.0001 0.01		
	Fluoranthene	<0.0001	mg/l			
	Fluorene	<0.0001	mg/l	0.0001		
	HCH, alpha-	<0.0001	mg/l	0.0001		
	HCH, beta-	<0.0001	-	0.0001		
	Heptachlor	<0.0001	mg/l	0.0001		
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001		
	Heptachlorobenzene (HCB)	<0.0001	mg/l	0.0001		
		<0.001	mg/l	0.0001		
	Hexazinone	<0.0001	mg/l	0.001		
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001		
	Lindane (gamma-HCH)	<0.001	mg/l	0.0001		
	Metalaxyl	<0.0001	mg/l	0.001		
	Methoxychlor	<0.0001	mg/l	0.0001		
	Metolachlor	<0.0001	mg/l	0.0001		
	Metribuzin	<0.0001	mg/l	0.0001		
	Molinate	<0.0001	mg/l	0.0001		
	Naphthalene	<0.0001	mg/l	0.0001		
	Oxadiazon	<0.0001	mg/l	0.0001		
	PCB 101	<0.001	mg/l	0.0001		
	PCB 138	<0.001	mg/l	0.001		
	PCB 183	<0.0001	mg/l	0.0001		
	PCB 28	<0.0001	mg/l	0.0001		
	PCB 7		mg/l	0.0001		
	Pendimethalin	<0.002	mg/l	0.002		
	Permethrin (sum of isomers)		mg/l	0.0001		
	Phenanthrene	< 0.0001	mg/l	0.0001		
	Pirimiphos-methyl	<0.0001	mg/l	0.0001		

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	F		valer restri	iy
		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k)	<0.001	mg/l	0.0001
	fluoranthene	<0.0001		
	Trifluralin	10.0001	mg/l	0.0001
NW003	Total Alkalinity			
	Alkalinity total	669	(± 67) mg CaCO3/I	1
NW029	Total Hardness			
	Hardness	240	(± 24) mg	1
			CaCO3/I	•
NW210	Total Non-Purgeable Orga			
	Total Organic Carbon	41.2	(± 4.1) mg/l	0.1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005		
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
		<0.001	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	< 0.0002	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene		mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005 <0.0005	mg/l	0.0005
	1,3-Dichloropropane		mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	< 0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0010	mg/l	0.0005
	Benzene	0.0007	mg/l	0.0005
	Benzene Bromobenzene	0.0007 <0.0005 <0.0012	mg/l mg/l	0.0005 0.0005

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		RESULTS	UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	NotRecovered	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
③VQ876	Volatile Fatty Acids (VFA) by	y GC-MS		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	lso caproic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

Wellington 5010

NEW ZEALAND

NW003 Total Alkalinity: APHA Online Edition 2320 B		Online Edition 4110 B Online Edition 4110 B	
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Lower Hutt		Hac-MRA	



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Food & Water Testing

NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA O
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium:
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: AF
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APH
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Pl 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: AF
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): Int
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbo B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: AF
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APH
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Wa (0-3) m-FC Agar-F: SM

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Signature

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

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Divina Cunanan Supervisor Lagazon

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Senior Analyst Senior Analyst

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N/A means Not Applicable **Not Detected** means not detected at or above the Limit of Quantification (LOQ)

LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



ANALYTICAL REPORT

REPOR	T CODE	AR	-23-NW-017	525-01	REPORT DATE	17/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	•	/in)			
	4741 Levin					
	NEW ZEALAN	1D				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmi					orowhenua.govt.nz), Yvettef
Contact f	for your orders: ::	Gabriela Landfill	Carvalhaes		Order code:	EUNZWE-00116448
SAMPLE	ECODE	812-202	3-00046686			
Client Re		283022-0				
Product:		Ground w WIL-C2do			Compling Doint nor	ne: Levin C2dd
	g Point code: on Date & Time:	05/04/202			Sampling Point nam	
	Start Date & Time				Analysis Ending Dat	e: 17/04/2023
Sampler((s)	Custome	r		Sampled by Eurofine	s No
			RESULTS	(UNCERTAINT	Y) LOQ	
NW179	Ammonia Nitroge	en				
	Ammoniacal nitroger	ר (N)	0.34	(± 0.10) mg/l	0.01	
NW583	Arsenic - Soluble)				
	Arsenic (As)		0.004	(± 0.0005) mg/	0.001	
NW341	BOD5 - Soluble C	arbonaced	ous			
	BOD5		<3	mg/l	1	
NW457	Calcium - Dissolv	ved		-		
	Calcium (Ca)		46.6	(± 4.66) mg/l	0.01	
	Chemical Oxyger	Demand				
	Chemical oxygen de		<15	(± 5) mg/l	15	
	Chloride					
	Chloride (CI)		40.3	(± 2.01) mg/l	0.02	
	Conductivity				0.02	
	Conductivity		55.3	(± 1.1) mS/m	0.1	
	Dissolved Reactiv	ve Phosph			0.1	
	Phosphorus (soluble	-	0.667	(± 0.133) mg/l	0.005	
	Enumeration of E	,		brane Filtration	0.000	
	Escherichia coli		<100	cfu/100 ml	100	
	Iron - Dissolved				100	
	Iron (Fe)		0.013	(± 0.003) mg/l	0.005	
	Soluble Aluminiu	m			0.000	
	Aluminium		<0.002	(± 0.001) mg/l	0.002	
	Soluble Boron				0.002	
	Boron (B)		0.08	mg/l	0.03	
	Soluble Cadmium	'n			0.00	
	Cadmium (Cd)	•	<0.0002	(± 0.0001) mg/	0.0002	

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW108		\$0.00 T	(, - , - , - , - , - , - , -	0.001
	Soluble Copper		(± 0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001

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		RESULTS	6 (UNCERTAINT	Y) LOQ	
NW228	SVOC (GC-MSMS)				
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	<0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	<0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.0001	mg/l	0.0001	
	PCB 28	<0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	217	(± 22) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	< 0.0005	mg/l	0.0005	
	1,1-Dichloroethene	< 0.0005	mg/l	0.0005	
	1,1-Dichloropropene	< 0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	< 0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	0.0002	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
				0.0000	

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		REJULIJ		LOQ
NW229	VOC (GC-MS)			
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere d	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Trichlorofluoromethane Vinyl chloride	<0.0005 <0.0005	mg/l mg/l	0.0005 0.0003

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Food	&	Water	Testing
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NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Supervisor

Divina Cunanan Lagazon

Supervisor Ganesh Ilancko

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Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

Amitesh Kumar Supervisor

Maria Norris

Laboratory Manager, Microbiology

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The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.

The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.

This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.

Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer. Eurofins General Terms and Conditions apply.

END OF REPORT







ANALYTICAL REPORT

REPOR	T CODE	AR-23-N	W-017872-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lt Horowhenua / P O Box 642	. ,			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705			Copy to: Water and Waste	
Email	horowhenuaadmi	-		(waterandwasteteam@hor	
Contact 1 Contract	for your orders: :	Gabriela Carval Landfill	naes	Order code:	EUNZWE-00116910
SAMPLE	ECODE	812-2023-000	48875		
	eference:	283029-0			
	g Point code: on Date & Time:	Ground water WIL-C2ds 06/04/2023 17:	17	Sampling Point name	: Levin C2ds
-	Start Date & Time			Analysis Ending Date:	
-	Date & Time by Eurofins	05/04/2023 12: No	59	Sampler(s)	Client nominated external sampler
Sampled				// 100	
	• • • • •		SULTS (UNCERTAINT)	r) loq	
	Ammonia Nitroge		(1021) mg/		
	Ammoniacal nitroger	()	(± 0.21) mg/l	0.01	
	Arsenic - Soluble		(1.0.0004)		
	Arsenic (As)	0.001	(± 0.0004) mg/l	0.001	
NW341	BOD5 - Soluble C				
	BOD5	<6	mg/l	1	
	Calcium - Dissolv		(
	Calcium (Ca)	101	(± 10.1) mg/l	0.01	
	Chemical Oxyger		<i>/ // /</i>		
	Chemical oxygen de	mand (COD) 65	(± 11) mg/l	15	
	Chloride		(
	Chloride (Cl)	85.9	(± 4.30) mg/l	0.02	
	Conductivity		, <u>.</u> .		
	Conductivity	115	(± 2.3) mS/m	0.1	
	Dissolved Reactiv	-			
	Phosphorus (soluble	-	(± 0.003) mg/l	0.005	
			y Membrane Filtration		
	Escherichia coli	100	cfu/100 ml	100	
	Iron - Dissolved				
	Iron (Fe)	2.14	(± 0.214) mg/l	0.005	
	Soluble Aluminiu				
	Aluminium	0.004	(± 0.001) mg/l	0.002	
NW103	Soluble Boron				
	Boron (B)	0.76	mg/l	0.03	
NW104	Soluble Cadmium	1			

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		RESULTS	(UNCERTAINTY)	LOQ	
NW104	Soluble Cadmium				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
NW106	Soluble Chromium				
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001	
NW108	Soluble Copper			0.001	
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005	
NI\A/220		<0.0003	(_ 0.000_)g,:	0.0005	
NW228	SVOC (GC-MSMS)				
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	< 0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001	
	Bromacil	<0.005	mg/l	0.005	
	Carbofuran	0.003	mg/l	0.001	
	Chlordane	<0.0001	mg/l	0.0001	
	Chlordane, gamma	<0.001	mg/l	0.001	
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001	
	Chrysene	<0.0001	mg/l	0.0001	
	Cyanazine	<0.005	mg/l	0.005	
	d-BHC	<0.0001	mg/l	0.0001	
	DDD, p,p'-	<0.0001	mg/l	0.0001	
	DDE, p,p-	<0.0001	mg/l	0.0001	
	DDT, p,p'-	<0.001	mg/l	0.001	
	Diazinon	<0.0001	mg/l	0.0001	
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001	
	Dieldrin	<0.0001	mg/l	0.0001	
	Dimethoate	<0.001	mg/l	0.001	
	Diuron	<0.001	mg/l	0.001	
	Endosulfan, alpha-	<0.001	mg/l	0.001	
	Endosulfan, beta-	<0.005	mg/l	0.005	
	Endosulfan-sulfate	<0.0001	mg/l	0.0001	
	Endrin	<0.0001	mg/l	0.0001	
	Endrin ketone	NotRecovere d	mg/l	0.0001	
	Endrin-aldehyde	<0.001	mg/l	0.01	
	Fluoranthene	<0.0001	mg/l	0.0001	
	Fluorene	<0.0001	mg/l	0.0001	
	HCH, alpha-	<0.0001	mg/l	0.0001	
	HCH, beta-	<0.0001	mg/l	0.0001	
	Heptachlor	<0.0001	mg/l	0.0001	
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001	
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001	

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		RESULTS	6 (UNCEF	
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	
	Lindane (gamma-HCH)	<0.0001	mg/l	
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	
	Metolachlor	<0.0001	mg/l	
	Metribuzin	<0.0001	mg/l	
	Molinate	<0.0001	mg/l	
	Naphthalene	<0.0001	mg/l	
	Oxadiazon	<0.0001	mg/l	
	PCB 101	<0.0001	mg/l	
	PCB 138	<0.001	mg/l	
	PCB 183	<0.0001	mg/l	
	PCB 28	< 0.0001	mg/l	
	PCB 7	< 0.0001	mg/l	
	Pendimethalin	<0.002	mg/l	
	Permethrin (sum of isomers)	<0.0001	mg/l	
	Phenanthrene	<0.0001	mg/l	
	Pirimiphos-methyl	<0.0001	mg/l	
	Procymidone	<0.0001	mg/l	
	Propanil	<0.0001	mg/l	
	Propazine	<0.001	mg/l	
		<0.0001		
	Pyrene		mg/l	
	Pyriproxyfen	< 0.0001	mg/l	
	Simazine	< 0.0001	mg/l	
	Terbuthylazine	<0.0001	mg/l	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	
	Trifluralin	<0.0001	mg/l	
NW003	Total Alkalinity			
	Alkalinity total	497	(± 50 CaC0	
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	
	1,1,1-Trichloroethane	< 0.0005	mg/l	
	1,1,2,2-tetrachloroethane	< 0.0005	mg/l	
	1,1,2-Trichloroethane	<0.0005	mg/l	
	1,1-Dichloroethane	<0.0005	mg/l	
	1,1-Dichloroethene	<0.0005	mg/l	
	1,1-Dichloropropene	<0.0005	mg/l	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	
	1,2,3-Trichloropropane	<0.0005	•	
			mg/l	
	1,2,4 trimethylbenzen	<0.0005	mg/l	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	
	1,2-Dibromoethane	< 0.0002	mg/l	
	1,2-Dichlorobenzene (2)	< 0.0005	mg/l	
	1,2-Dichloroethane	<0.0005	mg/l	
	1,2-Dichloropropane	<0.0005	mg/l	

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			a valer r	esting
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0010	mg/l	0.0005
	Chlorobenzene	< 0.0005	mg/l	0.0005
	Chloroethane	< 0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.001	mg/l	0.006
	cis-1,2-Dichloroethene	< 0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001
		d		0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
			-	0.0005
	Trichlorofluoromethane	<0.0005	mg/i	0.0003
	Trichlorofluoromethane Vinyl chloride	<0.0005 <0.0005	mg/l mg/l	0.0003

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NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

- NW583 Arsenic Soluble: APHA Online Edition 3125 B mod.
- ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Supervisor Jennifer Mont

Gordon McArthur Senior laboratory Analyst

EXPLANATORY NOTE

Test is not accredited

- ②Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited 6 Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

Signature

Amitesh Kumar Supervisor

Ganesh Ilancko Supervisor

AR-23-NW-017872-01

Supervisor Divina Cunanan Lagazon

Leo Cleave

Senior Analyst Senior Analyst

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit





The test result(s) in this report apply only to the sample as received.

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The tests are identified by a five-digit code, their description is available on request.

Accreditation does not apply to comments or graphical representations.

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This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.

Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.

All samples become the property of Eurofins to the extent necessary for the performance of the Services.

Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-2	3-NW-032	723-01	REPORT DATE	04/07/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642))			
	4741 Levin					
	NEW ZEALAN	1D				
Phone	(06) 367 2705		_		Copy to: Water and Waste	e Team owhenua.govt.nz), McMillan
Email Contract (horowhenuaadmi	Gabriela Ca				EUNZWE-00127741
Contract	for your orders: :	Landfill	arvainaes		Order code:	EUN2WE-00121141
SAMPLE	ECODE	812-2023-	00081084			
	eference:	301303-0				
Product:	. Deint eeder	Ground wat WIL-C2ds	er		Complian Daint nome	Levin C2ds
	g Point code: n Date & Time:	15/06/2023	15:49		Sampling Point name:	Levin Czus
Analysis	Start Date & Time				Analysis Ending Date:	04/07/2023
-	Date & Time	13/06/2023	13:06		Sampler(s)	Client nominated external sampler
Sampled	by Eurofins	No				
			RESULTS	(UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge					
	Ammoniacal nitroger	I (IN)	6.6	(± 7.66) mg/l	0.01	
NW341	BOD5 - Soluble C					
	BOD5	6		mg/l	1	
	Chemical Oxygen		_			
	Chemical oxygen de	mand (COD) ⁷	8	(± 13) mg/l	15	
NW007	Chloride					
	Chloride (Cl)	9	7.1	(± 4.85) mg/l	0.02	
NW023	Conductivity					
	Conductivity	1	58	(± 3.2) mS/m	0.1	
NW098	Dissolved Alumin					
	Aluminium	0	.004	(± 0.001) mg/l	0.002	
NW583	Dissolved Arsenie					
	Arsenic (As)	0	.001	(± 0.0004) mg/l	0.001	
NW103	Dissolved Boron					
	Boron (B)		.89	mg/l	0.03	
	Dissolved Cadmin		0.0000	(
	Cadmium (Cd)		0.0002	(± 0.0001) mg/l	0.0002	
	Dissolved Calciur		0.0	(1.5.00)		
	Calcium (Ca)		9.2	(± 5.92) mg/l	0.01	
	Dissolved Chrom		001	(
	Chromium (Cr)		.001	(± 0.0004) mg/l	0.001	
	Dissolved Coppe		0000	(1.0.0000) "		
	Copper (Cu)	0	.0009	(± 0.0003) mg/l	0.0005	
NW460	Dissolved Iron					

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		RESULTS	G (UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	0.415	(± 0.083) mg/l	0.005	
NW110	Dissolved Lead			0.000	
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW462					
	Magnesium (Mg)	24.9	(± 2.49) mg/l	0.01	
NW113	Dissolved Manganese		. , 0	0.01	
	Manganese (Mn)	0.785	(± 0.0785) mg/l	0.0005	
NW114			(0.0005	
111114	Dissolved Mercury	<0.0005		0.000-	
	Mercury (Hg)	-0.0000	mg/l	0.0005	
NW116	Dissolved Nickel	0.0005	(1.0.0000) "		
	Nickel (Ni)	0.0025	(± 0.0008) mg/l	0.0005	
NW117	Dissolved Potassium				
	Potassium (K)	33.1	mg/l	0.01	
NW193	Dissolved Reactive Phospl				
	Phosphorus (soluble reactive)	0.017	(± 0.004) mg/l	0.005	
NW469	Dissolved Sodium				
	Sodium (Na)	92.5	(± 9.25) mg/l	0.02	
NW125	Dissolved Zinc				
	Zinc (Zn)	0.007	(± 0.0009) mg/l	0.002	
ZM2GA	Enumeration of Escherichi	a coli Bv Men	nbrane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
NW010				100	
	Nitrate-N	<0.10	(± 0.02) mg/l	0.04	
		-	(_ 0.02)	0.01	
DNW195	pH	7.2	(+ 0 2)		
	pH	1.2	(± 0.2)	0.1	
3)VQ088	Phenolics (Total)	<0.05	-		
	Total phenols	<0.05	mg/l	0.05	
NW011	•	o 4 o			
	Sulphate	0.16	(± 0.04) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	116	mg/l	3	
NW228	SVOC (GC-MSMS)				
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001	

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		RESULTS	(UNCERTAINTY)	LOQ		
NW228	SVOC (GC-MSMS)					
	Bromacil	<0.005	mg/l	0.005		
	Carbofuran	<0.001	mg/l	0.001		
	Chlordane	<0.0001	mg/l	0.0001		
	Chlordane, gamma	<0.001	mg/l	0.001		
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001		
	Chrysene	<0.0001	mg/l	0.0001		
	Cyanazine	<0.005	mg/l	0.005		
	d-BHC	<0.0001	mg/l	0.0001		
	DDD, p,p'-	<0.0001	mg/l	0.0001		
	DDE, p,p-	<0.0001	mg/l	0.0001		
	DDT, p,p'-	<0.001	mg/l	0.001		
	Diazinon	<0.0001	mg/l	0.0001		
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001		
	Dieldrin	<0.0001	mg/l	0.0001		
	Dimethoate	<0.001	mg/l	0.001		
	Diuron	<0.001	mg/l	0.001		
	Endosulfan, alpha-	<0.001	mg/l	0.001		
	Endosulfan, beta-	<0.005	mg/l	0.005		
	Endosulfan-sulfate	<0.0001	mg/l	0.0001		
	Endrin	<0.0001	mg/l	0.0001		
	Endrin ketone	<0.0001	mg/l	0.0001		
	Endrin-aldehyde	<0.001	mg/l	0.01		
	Fluoranthene	<0.0001	mg/l	0.0001		
	Fluorene	<0.0001	mg/l	0.0001		
	HCH, alpha-	<0.0001	mg/l	0.0001		
	HCH, beta-	<0.0001	mg/l	0.0001		
	Heptachlor	<0.0001	mg/l	0.0001		
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001		
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001		
	Hexazinone	<0.001	mg/l	0.001		
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001		
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001		
	Metalaxyl	<0.001	mg/l	0.001		
	Methoxychlor	<0.0001	mg/l	0.0001		
	Metolachlor	<0.0001	mg/l	0.0001		
	Metribuzin	<0.0001	mg/l	0.0001		
	Molinate	<0.0001	mg/l	0.0001		
	Naphthalene	<0.0001	mg/l	0.0001		
	Oxadiazon	<0.0001	mg/l	0.0001		
	PCB 101	<0.0001	mg/l	0.0001		
	PCB 138	<0.001	mg/l	0.001		
	PCB 183	<0.0001	mg/l	0.0001		
	PCB 28	<0.0001	mg/l	0.0001		
	PCB 7	<0.0001	mg/l	0.0001		
	Pendimethalin	<0.002	mg/l	0.002		
	Permethrin (sum of isomers)		mg/l	0.0001		
	Phenanthrene	<0.0001	mg/l	0.0001		
	Pirimiphos-methyl	<0.0001	mg/l	0.0001		

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		RESULT	S (UNCERTAINTY)) LOQ
NW228	SVOC (GC-MSMS)			
	()	<0.0001	ma/l	0.000/
	Procymidone	<0.001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001 <0.001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene		mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity			
	Alkalinity total	635	(± 63) mg CaCO3/I	1
NW029	Total Hardness			
	Hardness	251	(± 25) mg CaCO3/l	1
NW210	Total Non-Purgeable Orga	nic Carbon	0a003/1	
	Total Organic Carbon	26.8	(± 2.7) mg/l	0.1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	< 0.0005	mg/l	0.0005
	1,1-Dichloroethene	< 0.0005		
	1,1-Dichloropropene	< 0.0005	mg/l	0.0005
		< 0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	< 0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0003	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane		mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	< 0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0010	mg/l	0.0005
	Benzene	0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
				0.0012

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Food & Water Testing

			(UNCERTAINTY)	LOQ	
		RESULIS		LOQ	
NW229	VOC (GC-MS)				
	Bromodichloromethane	< 0.0005	mg/l	0.0005	
	Bromoform	< 0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	< 0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	NotRecovered	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.006	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001	
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-Isopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0005	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	
VQ876	Volatile Fatty Acids (VFA) by	/ GC-MS			
	Acetic acid	<5	mg/l	5	
	Butyric acid	<5	mg/l	5	
	Heptanoic Acid C7:0	<5	mg/l	5	
	Hexanoic acid	<5	mg/l	5	
	Iso caproic acid	<5	mg/l	5	
	Isobutyric acid	<5	mg/l	5	
	Isovaleric acid	<5	mg/l	5	
	Propionic acid	<5	mg/l	5	
	Valeric acid	<5	mg/l	5	
		<5		0	

LIST OF METHODS

Wellington 5010

NEW ZEALAND

NW003 Total Alkalinity: APHA Online Edition 2320 B		A Online Edition 4110 B A Online Edition 4110 B	
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85 Port Road Seaview	www.eurofins.co.n		PCCOLLED
Lower Hutt		lac-MRA	



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Food & Water Testing

			•••••
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminiun
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium:
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: A
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganes
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: AP
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APH
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive F 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: A
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): Ir
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carb B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APH
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: A
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): AP
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (M (0-3) m-FC Agar-F: S

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Signature

Jennifer Mont

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

Supervisor

Ganesh Ilancko Supervisor

uita C. Lagozon

Divina Cunanan Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst

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- ${f Q}$ Test is subcontracted within Eurofins group and is accredited
- ③Test is subcontracted within Eurofins group and is not accredited
- ${f 4}$ Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
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- ${f O}$ Tested at the sampling point by Eurofins and is not accredited
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END OF REPORT





N/A means Not Applicable Not Detected means not detected at or above the Limit of

Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



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Food & Water Testing

ANALYTICAL REPORT

REPORT	T CODE	AR-23-NW-0	17336-01	REPORT DATE	15/04/2023
Attention	Downer NZ Lt Horowhenua P O Box 642	· /			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705			Copy to: Water and Waste	
Email	horowhenuaadmi			(waterandwasteteam@horc	
Contact f Contract:	for your orders: :	Gabriela Carvalhaes Landfill		Order code:	EUNZWE-00116315
SAMPLE	ECODE	812-2023-0004627	' 4		
Client Re		283036-0			
	g Point code: n Date & Time:	Ground water WIL-D1 04/04/2023 16:35		Sampling Point name:	Levin D1
Analysis	Start Date & Tim	e:04/04/2023 17:10		Analysis Ending Date:	15/04/2023
•	Date & Time	03/04/2023 12:55		Sampler(s)	Client nominated external sampler
Sampled	by Eurofins	No			
			TS (UNCERTAINTY) LOQ	
NW179	Ammonia Nitroge	en			
	Ammoniacal nitroge		(± 0.003) mg/l	0.01	
NW583	Arsenic - Soluble	9			
	Arsenic (As)	0.001	(± 0.0004) mg/l	0.001	
NW341	BOD5 - Soluble C	arbonaceous			
	BOD5	<1	mg/l	1	
NW457	Calcium - Dissolv	ved			
	Calcium (Ca)	16.4	(± 1.64) mg/l	0.01	
NW020	Chemical Oxyger	n Demand			
	Chemical oxygen de	emand (COD) <15	(± 5) mg/l	15	
NW007	Chloride				
	Chloride (Cl)	14.3	(± 0.72) mg/l	0.02	
NW023	Conductivity				
	Conductivity	33.6	(± 0.7) mS/m	0.1	
NW193	Dissolved Reactiv	ve Phosphorus			
	Phosphorus (soluble	e reactive) 0.095	(± 0.019) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia coli By Me	embrane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
NW460	Iron - Dissolved				
	Iron (Fe)	<0.005	(± 0.002) mg/l	0.005	
NW098	Soluble Aluminiu	m			
	Aluminium	<0.002	(± 0.001) mg/l	0.002	
NW103	Soluble Boron				
	Boron (B)	0.05	mg/l	0.03	
NW104	Soluble Cadmiun				

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106			-	
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW108		0.001	(, C	0.001
100	Soluble Copper	-0.0005	(± 0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/i	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	< 0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	< 0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	< 0.001	mg/l	0.001
	Diuron	< 0.001	mg/l	0.001
	Endosulfan, alpha-	< 0.001	mg/l	0.001
	Endosulfan, beta-	< 0.005	mg/l	0.005
	Endosulfan-sulfate	< 0.0001	mg/l	0.0001
	Endrin Endrin kotono	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001

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Food & Water Testing

Indeno(1,2,3-cd)pyrene <0.0001 mg Lindane (gamma-HCH) <0.0001 mg Metalaxyl <0.0001 mg Methoxychlor <0.0001 mg Metnoxychlor <0.0001 mg Metribuzin <0.0001 mg Molinate <0.0001 mg Oxadiazon <0.0001 mg PCB 101 <0.0001 mg PCB 183 <0.0001 mg PCB 7 <0.0001 mg PCB 7 <0.0001 mg Prospanil <0.0001 mg Prosymidone <0.0001 mg Propanil <0.0001 mg Propanil <0.0001 mg Propanil <0.0001 mg Propazine <0.0001 mg Pyrene <0.0001 mg Total Alkalinity <0.001 mg Total Alkalinity <0.001 mg 1,1,2-Tetrachloroethane <0.0005 mg	
Indeno(1,2,3-cd)pyrene <0.0001	
Indeno(1,2,3-cd)pyrene <0.0001	
Metalaxyl <0.001 mg/l Methoxychlor <0.0001	ne
Methoxychlor <0.0001	H)
Metolachlor <0.0001 mg/l Metribuzin <0.0001	
Metribuzin <0.0001 mg/l Molinate <0.0001	
Molinate <0.0001	
Naphthalene <0.0001	
Oxadiazon <0.0001 mg/l PCB 101 <0.0001	
PCB 101 <0.0001 mg/l PCB 138 <0.001	
PCB 138 <0.001	
PCB 183 <0.0001	
PCB 28 <0.0001	
PCB 7 <0.0001 mg/l Pendimethalin <0.002	
Pendimethalin <0.002 mg/l Permethrin (sum of isomers) <0.0001	
Permethrin (sum of isomers) <0.0001 mg/l Phenanthrene <0.0001	
Phenanthrene <0.0001 mg/l Pirimiphos-methyl <0.0001	
Pirimiphos-methyl <0.0001 mg/l Procymidone <0.0001	om
Procymidone <0.0001 mg/l Propanil <0.001	
Propanil <0.001 mg/l Propazine <0.0001	
Propazine <0.0001 mg/l Pyrene <0.0001	
Pyrene <0.0001 mg/l Pyriproxyfen <0.0001	
Pyriproxyfen <0.0001 mg/l Simazine <0.0001	
Pyriproxyfen <0.0001 mg/l Simazine <0.0001	
Simazine <0.0001 mg/l Terbuthylazine <0.0001	
Terbuthylazine <0.0001 mg/l Total Benzo(b) and Benzo(k) <0.001	
Total Benzo(b) and Benzo(k) <0.001 mg/l fluoranthene Trifluralin <0.0001	
003 Total Alkalinity Alkalinity total 89 (± 9) r CaCC 229 VOC (GC-MS) 1,1,1,2-Tetrachloroethane <0.0005	en:
Alkalinity total 89 (± 9) r CaCO 229 VOC (GC-MS) 1,1,1,2-Tetrachloroethane <0.0005	
Alkalinity total 89 (± 9) CaCC 229 VOC (GC-MS) 1,1,1,2-Tetrachloroethane <0.0005	
1,1,1,2-Tetrachloroethane <0.0005	
1,1,1-Trichloroethane <0.0005	
1,1,1-Trichloroethane <0.0005	າar
1,1,2,2-tetrachloroethane <0.0005	
1,1,2-Trichloroethane <0.0005	
1,1-Dichloroethane <0.0005	
1,1-Dichloroethene <0.0005	
1,1-Dichloropropene <0.0005	
1,2,3-Trichlorobenzene <0.0005	
1,2,3-Trichloropropane <0.0005	ıe
1,2,4 trimethylbenzen <0.0005	
1,2,4-Trichlorobenzene <0.0005	
1,2-Dibromo-3-chloropropane <0.001	
1,2-Dibromoethane <0.0002	
1,2-Dichlorobenzene (2) <0.0005	PIC
1,2-Dichloroethane <0.0005 mg/l	(2)
-	(≃,

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Food & Water Testing

		RESULIS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001
		d		
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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LIST OF METHODS

NW0	03	Total Alkalinity: APHA Online Edition 2320 B
NW02	20	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW09	98	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW10	04	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW1	28	Soluble Copper: APHA Online Edition 3125 B mod.
NW19	93	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW2	29	VOC (GC-MS): Internal Method, HS-GC-MS
NW4	57	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW58	33	Arsenic - Soluble: APHA Online Edition 3125 B mod.

	Chioride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

NW007 Chlorida, ADUA Online Edition 4110 D

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabro

Marylou Cabral Laboratory Manager

Supervisor Divina Cunanan Lagazon

Ganesh Ilancko Supervisor

EXPLANATORY NOTE

Test is not accredited

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- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

Gordon McArthur Senior laboratory Analyst

Supervisor

Amitesh Kumar Supervisor

Maria Norris

Laboratory Manager, Microbiology

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

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Signature

Jennifer Mont

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END OF REPORT





AR-23-NW-017339-01 Page 1 of 6

Food & Water Testing

ANALYTICAL REPORT

REPORT	T CODE	AR-23-	NW-017339-01	REPORT DATE	15/04/2023
Attention	Downer NZ Lt Horowhenua / P O Box 642	. ,			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705			Copy to: Water and Wast	
Email	horowhenuaadmi	0			rowhenua.govt.nz), Yvettef
Contact f Contract:	for your orders: :	Gabriela Carva Landfill	alhaes	Order code:	EUNZWE-00116315
SAMPLE	CODE	812-2023-00	046280		
Client Re	ference:	283037-0			
	g Point code: n Date & Time:	Ground water WIL-D2 04/04/2023 16	S:41	Sampling Point name	e: Levin D2
Analysis	Start Date & Tim			Analysis Ending Date	
-	Date & Time	03/04/2023 12 No	2:56	Sampler(s)	Client nominated external sample
Sampled	by Eurofins	No			
			ESULTS (UNCERTAIN	FY) LOQ	
	Ammonia Nitroge		(1.0.40)		
	Ammoniacal nitroge		(± 0.19) mg/l	0.01	
	Arsenic - Soluble		(1.0.0004)	. 0	
	Arsenic (As)	<0.0	01 (± 0.0004) mg	^{j/l} 0.001	
	BOD5 - Soluble C	arbonaceous			
	BOD5	<1	mg/l	1	
	Calcium - Dissolv		(
	Calcium (Ca)	22.8	(± 2.28) mg/l	0.01	
	Chemical Oxyger				
	Chemical oxygen de	mand (COD) 42	(± 8) mg/l	15	
NW007 (
	Chloride (Cl)	50.7	(± 2.53) mg/l	0.02	
	Conductivity				
	Conductivity	48.2	(± 1.0) mS/m	0.1	
	Dissolved Reacti	-			
	Phosphorus (soluble	-		0.000	
			By Membrane Filtration	n	
	Escherichia coli	<100) cfu/100 ml	100	
	Iron - Dissolved				
	Iron (Fe)	5.01	(± 0.501) mg/	0.005	
NW098	Soluble Aluminiu	m			
	Aluminium	0.00	9 (± 0.001) mg/	0.002	
NW103	Soluble Boron				
	Boron (B)	0.06	mg/l	0.03	
NW104 9	Soluble Cadmiun	า			

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001
W108	Soluble Copper			0.001
		-0.0005	(± 0.0002) mg/l	0.0005
	Copper (Cu)	<0.0005	(± 0.0002) mg/r	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
			mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001		

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Food & Water Testing

		RESULT	S (UNCERTAINT)	Y) LOQ	
NW228	SVOC (GC-MSMS)				
	Hexazinone	<0.001	mg/l	0.001	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001	
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	<0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	< 0.0001	mg/l	0.0001	
	PCB 138	< 0.001	mg/l	0.001	
	PCB 183	< 0.0001	mg/l	0.0001	
	PCB 28	< 0.0001	mg/l	0.0001	
	PCB 7	< 0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.002	mg/l	0.002	
	Phenanthrene	< 0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.0001	mg/l		
		<0.001		0.001	
	Propazine		mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	< 0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	147	(± 15) mg CaCO3/l	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	< 0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	< 0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	< 0.0005	mg/l	0.0005	
	1,1-Dichloroethane	< 0.0005	mg/l	0.0005	
	1,1-Dichloroethene	< 0.0005	mg/l	0.0005	
	1,1-Dichloropropene	< 0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
		<0.0005	•		
	1,2,4 trimethylbenzen		mg/l	0.0005	
	1,2,4-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	

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		11000		esting
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001
	Dichloromethane	d <0.005	ma/l	0.005
	Hexachlorobutadiene		mg/l	0.005
		<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	< 0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	< 0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	< 0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene Toluene	<0.0005	mg/l	0.0005
		<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	< 0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

.....

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabro

Marylou Cabral Laboratory Manager

Signature

Jennifer Mont

Amitesh Kumar Supervisor

Supervisor Divina Cunanan Lagazon

Ganesh Ilancko Supervisor

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- Tested at the sampling point by Eurofins and is accredited

Gordon McArthur Senior laboratory Analyst

Supervisor

Maria Norris

Laboratory Manager, Microbiology

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AR-23-NW-017339-01 Page 5 of 6

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If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice. The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.

The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.

The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.

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END OF REPORT





ANALYTICAL REPORT

REPOR	T CODE	AF	R-23-NW-017	338-01	REPORT DATE	15/04/2023
Attention	Downer NZ Li Horowhenua P O Box 642	•	vin)			
	4741 Levin					
	NEW ZEALAN	ND				
Phone	(06) 367 2705				Copy to: Water and Wa	
Email	horowhenuaadm	<u> </u>				norowhenua.govt.nz), Yvettef
Contact Contract	for your orders: ::	Gabriela Landfill	Carvalhaes		Order code:	EUNZWE-00116315
SAMPLE	ECODE	812-202	23-00046276			
	eference:	283105-0				
	g Point code:	Ground V WIL-D3r	d		Sampling Point nar	ne: Levin D3rd
	on Date & Time: Start Date & Tim				Analysis Ending Da Sampled by Eurofin	
Sampler	(3)	Custome				5 110
			RESULIS		Y) LOQ	
NW179	Ammonia Nitroge			(1.0.11)		
	Ammoniacal nitroge	()	0.38	(± 0.11) mg/l	0.01	
NW583	Arsenic - Soluble	9		(1.0.002)		
	Arsenic (As)		0.020	(± 0.002) mg/l	0.001	
NW341	BOD5 - Soluble C	arbonace				
	BOD5		<1	mg/l	1	
NW457	Calcium - Dissolv	ved		(0 (=) //		
	Calcium (Ca)		64.5	(± 6.45) mg/l	0.01	
NW020	Chemical Oxyger					
	Chemical oxygen de	emand (COD) 23	(± 6) mg/l	15	
NW007	Chloride					
	Chloride (Cl)		31.0	(± 1.55) mg/l	0.02	
NW023	Conductivity					
	Conductivity		51.8	(± 1.0) mS/m	0.1	
NW193	Dissolved Reacti	ve Phosph	orus			
	Phosphorus (soluble	e reactive)	1.24	(± 0.124) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia	a coli By Mem	brane Filtration		
	Escherichia coli		<100	cfu/100 ml	100	
NW460	Iron - Dissolved					
	Iron (Fe)		0.035	(± 0.007) mg/l	0.005	
NW098	Soluble Aluminiu	m				
	Aluminium		0.004	(± 0.001) mg/l	0.002	
NW103	Soluble Boron					
	Boron (B)		0.05	mg/l	0.03	
NW104	Soluble Cadmiun	n				
	Cadmium (Cd)		<0.0002	(± 0.0001) mg/	0.0002	

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		RESULTS	(UNCERTAINTY)	LOQ
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW108		40.001	(, , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , ,	0.001
	Soluble Copper		(± 0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001

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		RESULTS	(UNCERTAINTY)) LOQ	
NW228	SVOC (GC-MSMS)				
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	<0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	<0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.0001	mg/l	0.0001	
	PCB 28	<0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	209	(± 21) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane 1,3,5-Trichlorobenzene	<0.0005 <0.0005	mg/l mg/l	0.0005 0.0005	

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)		. /	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005 0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere d	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Food	&	Water	Testing
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NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Supervisor

Divina Cunanan Lagazon

Supervisor Ganesh Ilancko

EXPLANATORY NOTE

Test is not accredited

- ${f O}$ Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- 6 Test result is provided by the customer and is not accredited Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

Signature

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

Amitesh Kumar Supervisor

Maria Norris

Laboratory Manager, Microbiology

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



The test result(s) in this report apply only to the sample as received.

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The tests are identified by a five-digit code, their description is available on request.

Accreditation does not apply to comments or graphical representations.

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This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.

Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.

All samples become the property of Eurofins to the extent necessary for the performance of the Services.

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END OF REPORT





ANALYTICAL REPORT

REPOR	T CODE	AR-23-NW-07	17337-01	REPORT DATE	15/04/2023
Attention	Downer NZ Lt Horowhenua P O Box 642	, ,			
	4741 Levin				
	NEW ZEALA	ND			
Phone	(06) 367 2705			Copy to: Water and Waste	
Email		in@downer.co.nz		(waterandwasteteam@horov	
Contact f Contract	for your orders:	Gabriela Carvalhaes Landfill		Order code:	EUNZWE-00116315
	E CODE	812-2023-0004627	5		
	eference:	283106-0	•		
Product:		Ground water			
	g Point code:	WIL-D3rs		Sampling Point name:	Levin D3rs
	n Date & Time:	04/04/2023 16:37 e:04/04/2023 17:10		Analysis Ending Date:	15/04/2023
-	Date & Time	03/04/2023 17:10 03/04/2023 12:58		Analysis Ending Date: Sampler(s)	Client nominated external sample
-	by Eurofins	No			
		RESULT		() LOQ	
W 179	Ammonia Nitroge	en			
	Ammoniacal nitroge	n (N) 0.67	(± 0.20) mg/l	0.01	
W583	Arsenic - Soluble	e			
	Arsenic (As)	0.001	(± 0.0004) mg/l	0.001	
W341	BOD5 - Soluble C	Carbonaceous			
	BOD5	<1	mg/l	1	
W457	Calcium - Dissol	ved			
	Calcium (Ca)	11.2	(± 1.12) mg/l	0.01	
W020	Chemical Oxyger	n Demand			
	Chemical oxygen de	emand (COD) 67	(± 11) mg/l	15	
W007	Chloride				
	Chloride (CI)	16.5	(± 0.83) mg/l	0.02	
VW023	Conductivity				
	Conductivity	20.1	(± 0.4) mS/m	0.1	
W193	Dissolved Reacti	ve Phosphorus			
	Phosphorus (soluble	e reactive) 0.065	(± 0.013) mg/l	0.005	
ZM2GA	Enumeration of E	Escherichia coli By Me	mbrane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
W460	Iron - Dissolved				
	Iron (Fe)	17.2	(± 1.72) mg/l	0.005	
W098	Soluble Aluminiu	ım			
	Aluminium	0.088	(± 0.009) mg/l	0.002	
NW103	Soluble Boron				
	Boron (B)	0.04	mg/l	0.03	
NW104	Soluble Cadmiun	2			

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106				0.0002
	Chromium (Cr)	0.004	(± 0.0005) mg/l	0.001
NW108		0.004	(, , ,	0.001
100	Soluble Copper	-0.0005	(± 0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/i	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	1 1 7		-	

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		RESULTS	(UNCE	RTAINTY
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg	ı/I
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	
	Lindane (gamma-HCH)	<0.0001	mg/l	
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	
	Metolachlor	<0.0001	mg/l	
	Metribuzin	<0.0001	mg/l	
	Molinate	<0.0001	mg/l	
	Naphthalene	<0.0001	mg/l	
	Oxadiazon	<0.0001	mg/l	
	PCB 101	<0.0001	mg/l	
	PCB 138	<0.001	mg/l	
	PCB 183	<0.0001	mg/l	
	PCB 28	<0.0001	mg/l	
	PCB 7	<0.0001	mg/l	
	Pendimethalin	<0.002	mg/l	
	Permethrin (sum of isomers)	<0.0001	mg/l	
	Phenanthrene	<0.0001	mg/l	
	Pirimiphos-methyl	<0.0001	mg/l	
	Procymidone	<0.0001	mg/l	
	Propanil	<0.001	mg/l	
	Propazine	<0.0001	mg/l	
	Pyrene	<0.0001	mg/l	
	Pyriproxyfen	<0.0001	mg/l	
	Simazine	<0.0001	mg/l	
	Terbuthylazine	<0.0001	mg/l	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	
	Trifluralin	<0.0001	mg/l	
NW003	Total Alkalinity			
	Alkalinity total	64	(± 6) CaC0	
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	
	1,1,1-Trichloroethane	<0.0005	mg/l	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	
	1,1,2-Trichloroethane	<0.0005	mg/l	
	1,1-Dichloroethane	<0.0005	mg/l	
	1,1-Dichloroethene	<0.0005	mg/l	
	1,1-Dichloropropene	<0.0005	mg/l	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	
	1,2,3-Trichloropropane	<0.0005	mg/l	
	1,2,4 trimethylbenzen	<0.0005	mg/l	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	
		<0.001	mg/l	
	1,2-Dibromo-3-chioropropane		0	
	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane	<0.0002	mg/l	
	1,2-Dibromoethane	<0.0002 <0.0005	-	
			mg/l mg/l mg/l	

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		REJULIJ	(UNCERTAINTY)	LOQ	
W229	VOC (GC-MS)				
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.006	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001	
		d			
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-Isopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	< 0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	
	, ,			0.0000	

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

.

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabre

Signature

Jennifer Mont

Marylou Cabral Laboratory Manager

Supervisor Divina Cunanan Lagazon

Leo Cleave

Senior Analyst Senior Analyst

EXPLANATORY NOTE

Test is not accredited

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- Tested at the sampling point by Eurofins and is accredited

Gordon McArthur Senior laboratory Analyst

Supervisor

Amitesh Kumar Supervisor

Ganesh Ilancko Supervisor

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

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END OF REPORT





AR-23-NW-032714-01 Page 1 of 7

Food & Water Testing

ANALYTICAL REPORT

REPOF	RT CODE	AR-23-NW-032	2714-01	REPORT DATE	04/07/2023	
Attentior	Downer NZ Lto Horowhenua A P O Box 642	· ,				
	4741 Levin					
		ID			_	
Phone Email	(06) 367 2705 horowhenuaadmir	n@downer.co.nz		Copy to: Water and Waste T (waterandwasteteam@horow		
	for your orders:	Gabriela Carvalhaes		Order code:	EUNZWE-00127552	
Contrac	•	Landfill				
SAMPL	E CODE	812-2023-00080223	6			
Client R	leference:	301309-0				
Product		Ground water		• • • • • •		
-	ng Point code: on Date & Time:	WIL-D3rs 14/06/2023 15:42		Sampling Point name:	Levin D3rs	
		3: 14/06/2023 15:49		Analysis Ending Date:	04/07/2023	
-	d Date & Time	13/06/2023 00:00		Sampler(s)	Customer	
Sample	d by Eurofins	No				
		RESULTS	3 (UNCERTAINTY) LOQ		
NW179	Ammonia Nitroge					
	Ammoniacal nitroger	n (N) 0.67	(± 0.20) mg/l	0.01		
NW341	BOD5 - Soluble C					
	BOD5	<1	mg/l	1		
NW020	Chemical Oxygen					
	Chemical oxygen der	mand (COD) ⁶³	(± 11) mg/l	15		
NW007	Chloride					
	Chloride (Cl)	16.3	(± 0.82) mg/l	0.02		
NW023	Conductivity					
	Conductivity	19.7	(± 0.4) mS/m	0.1		
NW098	Dissolved Alumin					
	Aluminium	0.066	(± 0.007) mg/l	0.002		
NW583	Dissolved Arsenio		<i>,</i>			
	Arsenic (As)	0.001	(± 0.0004) mg/l	0.001		
NW103	Dissolved Boron	<0.02				
	Boron (B)	<0.03	mg/l	0.03		
NW104	Dissolved Cadmiu	um <0.0002	(1.0.0001) mg/			
	Cadmium (Cd)		(± 0.0001) mg/l	0.0002		
NW457		n 10.6	(± 1.06) mg/l			
	Calcium (Ca)		(± 1.06) mg/l	0.01		
NW106	Dissolved Chromi	ium 0.004	(± 0.0005) mg/l	0.001		
	Chromium (Cr)		(± 0.0005) mg/l	0.001		
IN WY 108	Dissolved Copper	r 0.0008	(± 0.0002) mg/l	0.0005		
	Copper (Cu)	0.0000	(± 0.0002) mg/f	0.0005		
110400	Dissolved Iron					

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		RESULTS	(UNCERTAINTY)	LOQ
NW460	Dissolved Iron			
	Iron (Fe)	11.4	(± 1.14) mg/l	0.005
NW110	Dissolved Lead			
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005
NW462				
	Magnesium (Mg)	4.87	(± 0.49) mg/l	0.01
NW113	Dissolved Manganese		(/ 0	0.01
NW III	Manganese (Mn)	0.346	(± 0.0346) mg/l	0.0005
			(± 0.00 10) mg/r	0.0005
NW114	Dissolved Mercury	<0.0005		
	Mercury (Hg)	-0.0000	mg/l	0.0005
NW116	Dissolved Nickel	<0.0005	(+ 0 0000)	
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005
NW117	Dissolved Potassium			
	Potassium (K)	3.69	mg/l	0.01
NW193	Dissolved Reactive Phosph			
	Phosphorus (soluble reactive)	0.096	(± 0.019) mg/l	0.005
NW469	Dissolved Sodium			
	Sodium (Na)	21.4	(± 2.14) mg/l	0.02
NW125	Dissolved Zinc			
	Zinc (Zn)	0.003	(± 0.0007) mg/l	0.002
ZM2GA	Enumeration of Escherichia	a coli By Memb	rane Filtration	
	Escherichia coli	<100	cfu/100 ml	100
NW010	Nitrate-N			
	Nitrate-N	<0.01	(± 0.003) mg/l	0.01
①NW195	рН			0.01
	рН	6.5	(± 0.2)	0.1
③VQ088	Phenolics (Total)			0.1
	Total phenols	<0.05	mall	0.05
NI\A/044			mg/l	0.05
	Sulphate	2.10	(± 0.21) mg/l	
	Sulphate	2.10	(± 0.21) mg/i	0.02
NW206	•	<6		
	Suspended Solids	-0	mg/l	3
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001 <0.001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	NU.UUU I	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001

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		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.003
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.0001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005		
	d-BHC	<0.0001	mg/l	0.005
		<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin		mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.0001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	0.001
	-	<0.0001		0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101		mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)		mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	

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		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity			
	Alkalinity total	65	(± 7) mg CaCO3/I	1
NW029	Total Hardness			
	Hardness	47	(± 5) mg CaCO3/I	1
NW210	Total Non-Purgeable Orga	nic Carbon		
	Total Organic Carbon	23.3	(± 2.3) mg/l	0.1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.0003
	1,2-Dibromoethane	<0.0002	mg/l	0.002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0002
	1,2-Dichloroethane	<0.0005	mg/l	
		<0.0005	-	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005 <0.0005	mg/l	0.0005
	2-Chlorotoluene		mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0010	mg/l	0.0005
	Benzene	< 0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
		<0.0012		

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		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	NotRecovered	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	< 0.0005	mg/l	0.0005
	Styrene	< 0.0005	mg/l	0.0005
	tert-Butylbenzene	< 0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	< 0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005 <0.0005	mg/l	0.0005
	Trichloroethene	<0.0005 0.0006	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)		mg/l	0.0005
③VQ876	Volatile Fatty Acids (VFA) b	-		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5 <5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	lso caproic acid	<5 <5	mg/l	5
	Isobutyric acid		mg/l	5
	Isovaleric acid	<5 <5	mg/l	5
	Propionic acid	<5 <5	mg/l	5
	Valeric acid	_	mg/l	5
	Volatile fatty acids as acetic acid	·0	mg/l	5

LIST OF METHODS

Wellington 5010

NEW ZEALAND

NW003 Total Alkalinity: APHA Online Edition 2320 B		A Online Edition 4110 B A Online Edition 4110 B	
Eurofins ELS Limited 85 Port Road	Phone www.eurofins.co.n	+64 4 576 5016	CCREDITEA
Seaview	www.curonnis.co.in		
Lower Hutt		Hac-MRA	



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Food & Water Testing

		NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabrol

Marylou Cabral Laboratory Manager

Signature

m

Maria Norris

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water **Testing Chemistry**

EXPLANATORY NOTE

Jennifer Mont Supervisor

Laboratory Manager, Microbiology

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N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

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END OF REPORT







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Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-1	NW-017864-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lt Horowhenua P O Box 642	· ,			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705			Copy to: Water and Was	
Email	horowhenuaadmi	0			prowhenua.govt.nz), Yvettef
Contact : Contract	for your orders: ::	Gabriela Carva Landfill	llhaes	Order code:	EUNZWE-00116910
SAMPL	ECODE	812-2023-000	048797		
	eference:	283030-0			
	g Point code: on Date & Time:	Ground water WIL-D4 06/04/2023 16	::14	Sampling Point nam	e: Levin D4
Analysis	Start Date & Tim			Analysis Ending Date	
-	Date & Time	05/04/2023 09):01	Sampler(s)	Client nominated external sampler
Sampled	l by Eurofins	No			
			ESULTS (UNCERTAINT	Y) LOQ	
\W179	Ammonia Nitroge				
	Ammoniacal nitroge	. ,	(± 0.07) mg/l	0.01	
NW583	Arsenic - Soluble	9			
	Arsenic (As)	0.003	3 (± 0.0004) mg/	0.001	
W341	BOD5 - Soluble C	arbonaceous			
	BOD5	<6	mg/l	1	
NW457	Calcium - Dissol	/ed			
	Calcium (Ca)	11.4	(± 1.14) mg/l	0.01	
NW020	Chemical Oxyger				
	Chemical oxygen de	emand (COD) 20	(± 6) mg/l	15	
NW007	Chloride				
	Chloride (Cl)	31.4	(± 1.57) mg/l	0.02	
W023	Conductivity				
	Conductivity	28.3	(± 0.6) mS/m	0.1	
W193	Dissolved Reacti	ve Phosphorus			
	Phosphorus (soluble			0.005	
ZM2GA	Enumeration of E	scherichia coli	By Membrane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
NW460	Iron - Dissolved				
	Iron (Fe)	0.866	6 (± 0.173) mg/l	0.005	
NW098	Soluble Aluminiu	m			
	Aluminium	0.00	5 (± 0.001) mg/l	0.002	
NW103	Soluble Boron				
	Boron (B)	0.20	mg/l	0.03	
NW104	Soluble Cadmiun	n			

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
W108		-0.001	() 0	0.001
100	Soluble Copper		(± 0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001

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		RESULTS	6 (UNCERTAINT	Y) LOQ	
NW228	SVOC (GC-MSMS)				
	Hexazinone	<0.001	mg/l	0.001	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001	
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	< 0.0001	mg/l	0.0001	
	Metolachlor	< 0.0001	mg/l	0.0001	
	Metribuzin	< 0.0001	mg/l	0.0001	
	Molinate	< 0.0001	mg/l	0.0001	
	Naphthalene	< 0.0001	mg/l	0.0001	
	Oxadiazon	< 0.0001	mg/l	0.0001	
	PCB 101	< 0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.001	mg/l	0.0001	
	PCB 28	<0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.0001	mg/l	0.0001	
	Permethrin (sum of isomers)	<0.002	mg/l	0.002	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l		
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	-	0.0001	
	Proparine	<0.001	mg/l mg/l	0.001	
		<0.0001	-	0.0001	
	Pyrene		mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	85	(± 8) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	< 0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.0003	mg/l	0.0005	
	1,2-Dibromoethane	<0.001	mg/l	0.002	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	0.0002	
	1,2-Dichloroethane	<0.0005	mg/l		
	1,2-Dichloropropane	<0.0005		0.0005	
	1,2-Dichiolopiopane	~0.0000	mg/l	0.0005	

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229 VOC (GC-MS) 1.3,5-Tichlorobenzene <0.0005 mg/l 0.0005 1.3,5-Tinnethylbenzene <0.0005 mg/l 0.0005 1.3-Dichlorobenzene <0.0005 mg/l 0.0005 1.3-Dichloropropane <0.0005 mg/l 0.0005 2.2-Dichloropropane <0.0005 mg/l 0.0005 2.Chlorobluene <0.0005 mg/l 0.0005 3-chloropropane <0.0005 mg/l 0.0005 4-Chlorobluene <0.0005 mg/l 0.0005 Berzene <0.0005 mg/l 0.0005 Berzene <0.0005 mg/l 0.0005 Bromochloromethane <0.0005 mg/l 0.0005 Bromochloromethane <0.0005 mg/l 0.0005 Bromochloromethane <0.0005 mg/l 0.0005 Bromochloromethane <0.001 mg/l 0.0005 Carbon terachloride <0.001 mg/l 0.0005 Chlorobenzene <0.0005 mg/l 0.0005 <th></th> <th></th> <th></th> <th></th> <th>LOQ</th> <th></th>					LOQ	
1.3.5-Tinchlorobenzene <0.0005	W229	VOC (GC-MS)				
1.3.5-Trimethylbenzene <0.0005			<0.0005	ma/l	0 0005	
1.3-Dichloroptopane <0.0005				-		
1,3-Dichloropropane <0.0005		•		-		
1,4-dichlorobenzene <0.0005						
2.2-Dichloropropane <0.0005						
2-Chlorotoluene <0.0005		-		-		
3-chloropropene 0.0005 mg/l 0.0005 4-Chlorotoluene <0.0005				-		
4-Chlorotoluene <0.0005						
4-methyl-2-pentanone <0.0050						
Benzene <0.0005 mg/l 0.0005 Bromobenzene <0.0005				-		
Bromobenzene <0.0005 mg/l 0.0005 Bromochloromethane <0.0012				-		
Bromochloromethane <0.0012 mg/l 0.0012 Bromodichloromethane <0.0005						
Bromodichloromethane <0.0005 mg/l 0.0005 Bromoform <0.0005		Bromochloromethane				
Bromoform <0.0005				•		
Bromomethane (zone 2) <0.001				-		
Carbon tetrachloride <0.0005 mg/l 0.0005 Carbondisulphide (CS2) <0.0010						
Carbondisulphide (CS2) <0.0010 mg/l 0.0005 Chiorobenzene <0.001						
Chlorobenzene <0.0005 mg/l 0.0005 Chloroethane <0.001				-		
Chloroethane <0.001		,		-		
Chloroform <0.0005 mg/l 0.0005 Chloromethane <0.001						
Chloromethane <0.001 mg/l 0.006 cis-1,2-Dichloroethene <0.0005		Chloroform				
cis-1,2-Dichloroethene <0.0005				-		
cis-1,3-Dichloropropene <0.0005		cis-1,2-Dichloroethene		-		
Dibromochloromethane <0.0005 mg/l 0.0005 Dibromomethane <0.0005						
Dibromomethane <0.0005 mg/l 0.0005 Dichlorodifluoromethane NotRecovere mg/l 0.001 d Dichloromethane <0.005						
Dichlorodifluoromethane NotRecovere d mg/l 0.001 Dichloromethane <0.005		Dibromomethane		-		
d Dichloromethane <0.005 mg/l 0.005 Hexachlorobutadiene <0.0002		Dichlorodifluoromethane	NotRecovere	-		
Hexachlorobutadiene <0.0002 mg/l 0.0002 Isopropylbenzene (Cumene) <0.0005				Ū		
Isopropylbenzene (Cumene) <0.0005 mg/l 0.0005 m,p-Xylene, Ethylbenzene <0.0015		Dichloromethane	<0.005	mg/l	0.005	
m,p-Xylene, Ethylbenzene <0.0015		Hexachlorobutadiene	<0.0002	mg/l	0.0002	
Naphthalene <0.0005 mg/l 0.0005 n-Butylbenzene <0.0005		Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
n-Butylbenzene<0.0005mg/l0.0005n-Propylbenzene<0.0005		m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
n-Propylbenzene <0.0005		Naphthalene	<0.0005	mg/l	0.0005	
p-lsopropyltoluene <0.0005 mg/l 0.0005 sec-Butylbenzene <0.0010		n-Butylbenzene	<0.0005	mg/l	0.0005	
sec-Butylbenzene <0.0010 mg/l 0.0005 Styrene <0.0005		n-Propylbenzene	<0.0005	mg/l	0.0005	
Styrene <0.0005 mg/l 0.0005 tert-Butylbenzene <0.0005		p-lsopropyltoluene	<0.0005	mg/l	0.0005	
tert-Butylbenzene <0.0005		sec-Butylbenzene	<0.0010	mg/l	0.0005	
Tetrachloroethene <0.0005		Styrene	<0.0005	mg/l	0.0005	
Toluene <0.0005 mg/l 0.0005 trans-1,2-Dichloroethene <0.0005		tert-Butylbenzene	<0.0005	mg/l	0.0005	
trans-1,2-Dichloroethene <0.0005		Tetrachloroethene	<0.0005	mg/l	0.0005	
trans-1,3-Dichloropropene <0.0005		Toluene	<0.0005	mg/l	0.0005	
Trichloroethene <0.0005 mg/l 0.0005 Trichlorofluoromethane <0.0005		trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
Trichlorofluoromethane <0.0005 mg/l 0.0005 Vinyl chloride <0.0005		trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
Vinyl chloride <0.0005 mg/l 0.0003		Trichloroethene	<0.0005	mg/l	0.0005	
		Trichlorofluoromethane	<0.0005	mg/l	0.0005	
		Vinyl chloride	<0.0005	mg/l	0.0003	
Xylene (ortho-) <0.0005 mg/l 0.0005		Xylene (ortho-)	<0.0005	mg/l	0.0005	

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml

(0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

ix m

Gordon McArthur Senior laboratory Analyst

Amitesh Kumar Supervisor



Maria Norris Laboratory Manager, Microbiology

Supervisor Divina Cunanan Lagazon

Signature

Phone

Ganesh Ilancko Supervisor

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N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit





The test result(s) in this report apply only to the sample as received.

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The tests are identified by a five-digit code, their description is available on request.

Accreditation does not apply to comments or graphical representations.

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END OF REPORT





AR-23-NW-032718-01 Page 1 of 7

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-NW-03	32718-01	REPORT DATE	04/07/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642	· /			
	4741 Levin				
	NEW ZEALAN	D			
Phone	(06) 367 2705			Copy to: Water and Waste T (waterandwasteteam@horow	
Email	horowhenuaadmir	n@downer.co.nz Gabriela Carvalhaes		Order code:	EUNZWE-00127741
Contact	for your orders: :	Landfill		Order code:	EUNZWE-00127741
SAMPLE	ECODE	812-2023-0008108	3		
Client Re	eference:	301308-0			
	g Point code: n Date & Time:	Ground water WIL-D4 15/06/2023 15:46		Sampling Point name:	Levin D4
-		:15/06/2023 16:08		Analysis Ending Date:	04/07/2023
-	Date & Time by Eurofins	15/06/2023 05:08 No		Sampler(s)	Client nominated external sampler
Sampleu	by Euronnis			/ 100	
			S (UNCERTAINT)	() LOQ	
	Ammonia Nitroge	0.00	(1007) mg/		
	Ammoniacal nitrogen		(± 0.07) mg/l	0.01	
NW341	BOD5 - Soluble Ca	arbonaceous <1			
	BOD5		mg/l	1	
	Chemical Oxygen		(± 5) mg/l		
	Chemical oxygen der	mand (COD)	(± 5) mg/l	15	
NW007		31.4	(+ 1 57) ma/l		
	Chloride (Cl)	51.4	(± 1.57) mg/l	0.02	
	Conductivity	27.5	(+ 0 6) mS/m		
	Conductivity		(± 0.6) mS/m	0.1	
	Dissolved Alumini	0.003	(± 0.001) mg/l		
	Aluminium		(± 0.001) mg/i	0.002	
	Dissolved Arsenic	0.003	(± 0.0004) mg/l		
	Arsenic (As)	0.000	(± 0.0004) mg/i	0.001	
	Dissolved Boron	0.11			
	Boron (B)		mg/l	0.03	
	Dissolved Cadmiu	im <0.0002	(± 0.0001) mg/l	0.0000	
	Cadmium (Cd) Dissolved Calciun		(_ 0.0001) mg/l	0.0002	
	Calcium (Ca)	n 10.4	(± 1.04) mg/l	0.04	
	Dissolved Chromi		(0.01	
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001	
	Dissolved Copper		(_ 0.0000) mg/i	0.001	
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005	
	Dissolved Iron		(,g)	0.0005	
1111400	ISSUIVED IFON				

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		RESULTS	(UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	1.26	(± 0.126) mg/l	0.005	
NW110	Dissolved Lead		. , .	0.000	
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW462	· · ·		(,,	0.0005	
199402	Dissolved Magnesium	7.17	(± 0.72) mg/l		
	Magnesium (Mg)	7.17	(± 0.72) mg/i	0.01	
NW113	Dissolved Manganese	0.400	(
	Manganese (Mn)	0.188	(± 0.0188) mg/l	0.0005	
NW114	Dissolved Mercury				
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel				
	Nickel (Ni)	0.0082	(± 0.0025) mg/l	0.0005	
NW117	Dissolved Potassium				
	Potassium (K)	5.62	mg/l	0.01	
NW193	Dissolved Reactive Phosph	orus	-		
	Phosphorus (soluble reactive)	0.029	(± 0.006) mg/l	0.005	
NW469	Dissolved Sodium			0.000	
	Sodium (Na)	32.2	(± 3.22) mg/l	0.02	
NW125	Dissolved Zinc		(_ •··_) ···g··	0.02	
1100125		0.003	(± 0.0007) mg/l		
714004	Zinc (Zn)			0.002	
ZMZGA	Enumeration of Escherichia	a coli By Memb <100			
	Escherichia coli	<100	cfu/100 ml	100	
NW010	Nitrate-N				
	Nitrate-N	<0.01	(± 0.003) mg/l	0.01	
①NW195	рН				
	рH	7.1	(± 0.2)	0.1	
③VQ088	Phenolics (Total)				
	Total phenols	<0.05	mg/l	0.05	
NW011	Sulphate				
	Sulphate	5.01	(± 0.50) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	<5	mg/l	3	
NW228	SVOC (GC-MSMS)		0	Ū	
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001	

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Food & Water Testing

			vater lesti	iig
		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.003
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.0001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005		
	d-BHC	<0.0001	mg/l	0.005
		<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin		mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.0001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	0.001
	-	<0.0001		0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101		mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)		mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	

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		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.0001 0.001
	Propazine	<0.0001		
	Propazine Pyrene	<0.0001	mg/l	0.0001
	•	<0.0001	mg/l	0.0001
	Pyriproxyfen Simazine	<0.0001	mg/l	0.0001
		<0.0001	mg/l	0.0001
	Terbuthylazine	<0.001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity			
	Alkalinity total	85	(± 9) mg CaCO3/I	1
NW029	Total Hardness			
	Hardness	56	(± 6) mg	1
	ria anos		CaCO3/I	I
NW210	Total Non-Purgeable Organ	nic Carbon		
	Total Organic Carbon	3.7	(± 0.4) mg/l	0.1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	
	1,1-Dichloroethane	<0.0005		0.0005
	1,1-Dichloroethene	< 0.0005	mg/l	0.0005
	•	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)		mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	< 0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0010	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromoonioromounano		1119/1	0.0012

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Food & Water Testing

			ater restir	19
		RESULTS ((UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	NotRecovered	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
VQ876	Volatile Fatty Acids (VFA) by	y GC-MS		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	lso caproic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
		<5	mg/l	
	Valeric acid		ilig/i	5

LIST OF METHODS

Wellington 5010

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NW003 Total Alkalinity: APHA Online Edition 2320 B		Online Edition 4110 B Online Edition 4110 B	
Eurofins ELS Limited	Phone	+64 4 576 5016	
85 Port Road	www.eurofins.co.nz	and the second sec	PCCREDITED
Seaview			
Lower Hutt		Hac-MRA	



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Food & Water Testing

NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminiun
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium:
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: A
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganes
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: AP
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APH
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive F 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: A
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): Ir
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carb B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APH
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: A
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): AP
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (W (0-3) m-FC Agar-F: S

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Signature

Jennifer Mont

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Testing Chemistry

Manager Food and Water

EXPLANATORY NOTE

Supervisor

Ganesh Ilancko Supervisor

uita C. Lagozon

Divina Cunanan Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst







- Test is not accredited
- ②Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
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- (5) Test is subcontracted outside Eurofins group and is not accredited
- **()** Test result is provided by the customer and is not accredited
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- (1) Tested at the sampling point by Eurofins and is accredited
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END OF REPORT





N/A means Not Applicable Not Detected means not detected at or above the Limit of

Quantification (LOQ) ${\bf LOQ}$ means Limit of Quantification and the unit of LOQ is the same as the result unit



AR-23-NW-017531-01 Page 1 of 6

Food & Water Testing

ANALYTICAL REPORT

REPUR	T CODE	A	R-23-NW-017	531-01	REPORT DATE	17/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642		evin)			
	4741 Levin					
	NEW ZEALAN	١D				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmi	<u> </u>				orowhenua.govt.nz), Yvettef
Contact f	for your orders: :	Gabriel Landfill	a Carvalhaes		Order code:	EUNZWE-00116448
SAMPLE	ECODE	812-20	23-00047475			
Client Re	ference:	283042				
	g Point code: n Date & Time:	Ground WIL-D5 05/04/2			Sampling Point nam	e: Levin D5
Analysis	Start Date & Time				Analysis Ending Dat	
-	Date & Time		023 10:46		Sampler(s)	Client nominated external sample
Sampled	by Eurofins	No			0 100	
			RESULIS	(UNCERTAINT)	() LOQ	
	Ammonia Nitroge					
	Ammoniacal nitroger		0.01	(± 0.005) mg/l	0.01	
	Arsenic - Soluble	•		(1.0.0004)		
	Arsenic (As)		<0.001	(± 0.0004) mg/l	0.001	
	BOD5 - Soluble C	arbonac				
	BOD5		<3	mg/l	1	
	Calcium - Dissolv	ved		(1.4.00)		
	Calcium (Ca)		12.8	(± 1.28) mg/l	0.01	
	Chemical Oxyger					
	Chemical oxygen de	mand (CO	D) <15	(± 5) mg/l	15	
	Chloride					
	Chloride (Cl)		30.8	(± 1.54) mg/l	0.02	
	Conductivity					
	Conductivity		31.8	(± 0.6) mS/m	0.1	
	Dissolved Reactiv	-		(10045) "		
	Phosphorus (soluble		0.072	(± 0.015) mg/l	0.005	
	Enumeration of E	scherich	-			
	Escherichia coli		<100	cfu/100 ml	100	
	Iron - Dissolved			(1.0.000) "		
	Iron (Fe)		0.117	(± 0.023) mg/l	0.005	
	Soluble Aluminiu	m		(
	Aluminium		0.002	(± 0.001) mg/l	0.002	
NW103	Soluble Boron					
	Boron (B)		0.04	mg/l	0.03	

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW108		40.001	(, - , - , - , - , - , - , -	0.001
100	Soluble Copper		(1.0.0002)	
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity	0.0001		0.0001
111005	Alkalinity total	84	(± 8) mg CaCO3/I	1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	•	
	1,2,4 trimethyidenzen 1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
			mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1.2 Dichlorohonzona (2)		ma/l	0.0005
	1,2-Dichlorobenzene (2) 1,2-Dichloroethane	<0.0005 <0.0005	mg/l mg/l	0.0005 0.0005

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Food & Water Testing

			a valer i	esting
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere d	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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Signature

Jennifer Mont

NIN 1007

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

.....

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabro

Marylou Cabral Laboratory Manager

Supervisor Divina Cunanan Lagazon

Ganesh Ilancko Supervisor

EXPLANATORY NOTE

Test is not accredited

- 2 Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

Gordon McArthur Senior laboratory Analyst

Supervisor

Amitesh Kumar Supervisor

Maria Norris

Laboratory Manager, Microbiology

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



The test result(s) in this report apply only to the sample as received.

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Accreditation does not apply to comments or graphical representations.

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

REPURI	CODE	AR-2	23-NW-017	534-01	REPORT DATE	17/04/2023
Attention	Downer NZ Lte Horowhenua A P O Box 642		1)			
	4741 Levin					
	NEW ZEALAN	ID				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmii	0				orowhenua.govt.nz), Yvettef
Contact fo Contract:	or your orders:	Gabriela Ca Landfill	arvalhaes		Order code:	EUNZWE-00116448
SAMPLE	CODE	812-2023-	00047486			
Client Ref	erence:	283039-0				
	Point code: Date & Time:	Ground wat WIL-D6 05/04/2023			Sampling Point nam	e: Levin D6
-	Start Date & Time				Analysis Ending Date	
-	Date & Time by Eurofins	04/04/2023 No	10:44		Sampler(s)	Client nominated external sample
sampled t		No			/ 100	
DA/4 = 0 -			RESULIS	(UNCERTAINT)	() LOQ	
	mmonia Nitroge			(1000)		
	mmoniacal nitroger	()	0.01	(± 0.004) mg/l	0.01	
	rsenic - Soluble			(+ 0 0004)		
	rsenic (As)		0.001	(± 0.0004) mg/l	0.001	
	OD5 - Soluble C	arbonaceou	S			
	BOD5		:3	mg/l	1	
	alcium - Dissolv	ed				
	Calcium (Ca)		9.0	(± 1.90) mg/l	0.01	
	hemical Oxygen			<i>. .</i>		
	Chemical oxygen de	mand (COD) <	:15	(± 5) mg/l	15	
NW007 C				(
	Chloride (Cl)	1	6.9	(± 0.85) mg/l	0.02	
	onductivity					
	Conductivity		57.7	(± 0.8) mS/m	0.1	
	issolved Reactiv	-		(
	hosphorus (soluble	,	.106	(± 0.021) mg/l	0.005	
	numeration of E		-			
	scherichia coli	<	:100	cfu/100 ml	100	
	on - Dissolved					
	ron (Fe)		0.005	(± 0.002) mg/l	0.005	
	oluble Aluminiu					
	luminium	C	0.003	(± 0.001) mg/l	0.002	
1W103 S	oluble Boron					
	Boron (B)		.06	mg/l	0.03	

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ	
W104	Soluble Cadmium				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
W106	Soluble Chromium				
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001	
W108		S0.001	(0.001	
100	Soluble Copper		(1.0.0004) =========		
	Copper (Cu)	0.0020	(± 0.0004) mg/l	0.0005	
W228	SVOC (GC-MSMS)				
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001	
	Bromacil	<0.005	mg/l	0.005	
	Carbofuran	<0.001	mg/l	0.001	
	Chlordane	<0.0001	mg/l	0.0001	
	Chlordane, gamma	<0.001	mg/l	0.001	
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001	
	Chrysene	<0.0001	mg/l	0.0001	
	Cyanazine	<0.005	mg/l	0.005	
	d-BHC	<0.0001	mg/l	0.0001	
	DDD, p,p'-	<0.0001	mg/l	0.0001	
	DDE, p,p-	<0.0001	mg/l	0.0001	
	DDT, p,p'-	<0.001	mg/l	0.001	
	Diazinon	<0.0001	mg/l	0.0001	
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001	
	Dieldrin	<0.0001	mg/l	0.0001	
	Dimethoate	<0.001	mg/l	0.001	
	Diuron	<0.001	mg/l	0.001	
	Endosulfan, alpha-	<0.001	mg/l	0.001	
	Endosulfan, beta-	<0.005	mg/l	0.005	
	Endosulfan-sulfate	<0.0001	mg/l	0.0001	
	Endrin	<0.0001	mg/l	0.0001	
	Endrin ketone	NotRecovere d	mg/l	0.0001	
	Endrin-aldehyde	<0.001	mg/l	0.01	
	Fluoranthene	<0.0001	mg/l	0.0001	
	Fluorene	<0.0001	mg/l	0.0001	
	HCH, alpha-	<0.0001	mg/l	0.0001	
	HCH, beta-	<0.0001	mg/l	0.0001	
	Heptachlor	<0.0001	mg/l	0.0001	
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001	
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001	

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Food & Water Testing

		RESULT	S (UNCERTAINT)	Y) LOQ	
NW228	SVOC (GC-MSMS)				
	Hexazinone	<0.001	mg/l	0.001	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001	
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	< 0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	< 0.0001	mg/l	0.0001	
	Oxadiazon	< 0.0001	mg/l	0.0001	
	PCB 101	< 0.0001	mg/l	0.0001	
	PCB 138	< 0.001	mg/l	0.001	
	PCB 183	< 0.0001	mg/l	0.0001	
	PCB 28	<0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.0001	mg/l	0.002	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	< 0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.001	mg/l		
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
		<0.0001		0.0001	
	Terbuthylazine		mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	113	(± 11) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	< 0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	0.0005	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
				0.0000	

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Food & Water Testing

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		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere d	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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NIN 1007

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NVV007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

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ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabro

Marylou Cabral Laboratory Manager

Supervisor Divina Cunanan Lagazon

Ganesh Ilancko Supervisor

EXPLANATORY NOTE

Test is not accredited

- 2 Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

Gordon McArthur Senior laboratory Analyst

Amitesh Kumar Supervisor

Maria Norris

Laboratory Manager, Microbiology

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



Signature

Supervisor Jennifer Mont

The test result(s) in this report apply only to the sample as received.

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Accreditation does not apply to comments or graphical representations.

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

	TCODE	AR-23-NW-032	745 04	REPORT DATE	04/07/2023
REFUR		AR-23-NVV-032	715-01	REPORT DATE	04/07/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	· /			
	4741 Levin				
Discuss		ID		• · · · · · · · · · · ·	_
Phone Email	(06) 367 2705 horowhenuaadmii	n@downer.co.nz		Copy to: Water and Waste T (waterandwasteteam@horow	
-	for your orders:	Gabriela Carvalhaes		Order code:	EUNZWE-00127552
Contrac	-	Landfill			
SAMPL	E CODE	812-2023-00080234			
Client R	eference:	301310-0			
Product		Ground water		• •• •• •	
	g Point code: on Date & Time:	WIL-D6 14/06/2023 15:46		Sampling Point name:	Levin D6
		3: 14/06/2023 15:49		Analysis Ending Date:	04/07/2023
-	d Date & Time	13/06/2023 00:00		Sampler(s)	Customer
Sampleo	d by Eurofins	No			
		RESULTS	(UNCERTAINT)	r) loq	
NW179	Ammonia Nitroge				
	Ammoniacal nitroger	n (N) <0.01	(± 0.003) mg/l	0.01	
NW341	BOD5 - Soluble C				
	BOD5	<1	mg/l	1	
NW020	Chemical Oxygen				
	Chemical oxygen de	mand (COD) ^{<15}	(± 5) mg/l	15	
NW007	Chloride				
	Chloride (CI)	22.0	(± 1.10) mg/l	0.02	
NW023	Conductivity				
	Conductivity	42.8	(± 0.9) mS/m	0.1	
NW098	Dissolved Alumin				
	Aluminium	<0.002	(± 0.001) mg/l	0.002	
NW583	Dissolved Arsenie				
	Arsenic (As)	0.001	(± 0.0004) mg/l	0.001	
NW103	Dissolved Boron				
	Boron (B)	0.04	mg/l	0.03	
NW104	Dissolved Cadmin				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
NW457					
	Calcium (Ca)	21.8	(± 2.18) mg/l	0.01	
NW106	Dissolved Chrom				
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001	
NW108	Dissolved Copper				
	Copper (Cu)	0.0006	(± 0.0002) mg/l	0.0005	
NW460	Dissolved Iron				

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		RESULTS	(UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	<0.005	(± 0.002) mg/l	0.005	
NW110	Dissolved Lead		. , -	0.000	
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW462	(),		(0.0005	
1111402	······································	16.6	(± 1.66) mg/l	0.04	
	Magnesium (Mg)		(± 1.00) mg/i	0.01	
NW113	J	0.0010	(+ 0 0002) mg/l		
	Manganese (Mn)	0.0010	(± 0.0003) mg/l	0.0005	
NW114	···· ·				
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel				
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005	
NW117	Dissolved Potassium				
	Potassium (K)	7.95	mg/l	0.01	
NW193	Dissolved Reactive Phospl	norus			
	Phosphorus (soluble reactive)	0.101	(± 0.020) mg/l	0.005	
NW469	Dissolved Sodium				
	Sodium (Na)	34.4	(± 3.44) mg/l	0.02	
NW125				0.02	
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002	
7M2GA	Enumeration of Escherichi	a aali By Mam		0.002	
ZWIZGA		а соп Бу мет <100		100	
	Escherichia coli		cfu/100 ml	100	
NW010		12.4	(1062) mg/l		
	Nitrate-N	12.4	(± 0.62) mg/l	0.01	
DNW195	рН				
	рН	6.8	(± 0.2)	0.1	
3VQ088	Phenolics (Total)				
	Total phenols	<0.05	mg/l	0.05	
NW011 NW206	Sulphate				
	Sulphate	6.50	(± 0.65) mg/l	0.02	
	Suspended Solids				
	Suspended Solids	<5	mg/l	3	
NW228	•				
-	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
		<0.0001	mg/l	0.0001	
	Benz(a)anthracene		ilig/i	0.0001	
	Benz(a)anthracene Benzo(a)pyrene	<0.0001 <0.001	mg/l	0.0001	

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		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.000
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.0001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005		
	d-BHC	<0.0001	mg/l	0.005
		<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin		mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.0001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	0.001
	-	<0.0001		0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101		mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)		mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	

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			waler rest	ing	
		RESULTS	S (UNCERTAINTY)	LOQ	_
NW228	SVOC (GC-MSMS)				
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	-		
	-	< 0.001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene		mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	123	(± 12) mg CaCO3/l	1	
NW029	Total Hardness				
	Hardness	123	(± 12) mg	1	
			CaCO3/I	I	
NW210	Total Non-Purgeable Organ	nic Carbon			
	Total Organic Carbon	1.0	(± 0.1) mg/l	0.1	
NW229	VOC (GC-MS)			-	
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l		
		< 0.0002		0.002	
	1,2-Dibromoethane	<0.0005	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005	
	1,2-Dichloroethane	< 0.0005	mg/l	0.0005	
	1,2-Dichloropropane	< 0.0005	mg/l	0.0005	
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane		mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	< 0.0005	mg/l	0.0005	
	4-Chlorotoluene	< 0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0010	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
		<0.0005 <0.0012	-		

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TESTING LABORATO

Food & Water Testing

	1.1			•
		RESULIS	(UNCERTAINTT)	LOQ
NW229	VOC (GC-MS)	<0.0005		
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride		mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005 NotRecovered	mg/l	0.0005
	Chloroethane	<0.0005	mg/l	0.001
	Chloroform		mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	< 0.0005	mg/l	0.0005
	Dibromochloromethane	< 0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	< 0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	lsopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
VQ876	Volatile Fatty Acids (VFA) by	/ GC-MS		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	lso caproic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5
			···ə·	×

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B		PHA Online Edition 4110 B PHA Online Edition 4110 B	
Eurofins ELS Limited	Phone	+64 4 576 5016	
85 Port Road	www.eurofins.co	o.nz	PCCREDITED
Seaview			
Lower Hutt		Hac-MRA	

Seaview Lower Hutt Wellington 5010 NEW ZEALAND



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C. Lagopon

Supervisor

Food & Water Testing

		NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 92221; APHA Online

mbecabro

Marylou Cabral Laboratory Manager

Signature

m

Maria Norris

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water **Testing Chemistry**

EXPLANATORY NOTE

Jennifer Mont Supervisor

Divina Cunanan

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Laboratory Manager, Microbiology



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N/A means Not Applicable Not Detected means not detected at or above the Limit of

Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



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Food & Water Testing

ANALYTICAL REPORT

REPOR	TCODE	AR-23-NW-	017866-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642	. ,			
	4741 Levin				
	NEW ZEALAN	D			
Phone	(06) 367 2705			Copy to: Water and Was	
Email	horowhenuaadmin	-			prowhenua.govt.nz), Yvettef
Contact f	for your orders:	Gabriela Carvalhae Landfill	es	Order code:	EUNZWE-00116910
SAMPLE		812-2023-00048 283023-0	503		
Client Re Product:		Ground water			
	g Point code:	WIL-E1d		Sampling Point nam	e: Levin E1d
	n Date & Time:	06/04/2023 16:16			10/04/00000
-	Start Date & Time	:06/04/2023 16:30 No		Analysis Ending Date	e: 18/04/2023
campica			LTS (UNCERTAINTY	/) LOQ	
NI\//170	Ammonia Nitrogo				
	Ammonia Nitrogen		(± 0.06) mg/l	0.04	
	Ammoniacal nitrogen Arsenic - Soluble		(± 0.00) mg/i	0.01	
			(± 0.0007) mg/l	0.004	
	Arsenic (As)	0.006	(± 0.0007) mg/r	0.001	
NW341	BOD5 - Soluble Ca				
	BOD5	<6	mg/l	1	
	Calcium - Dissolve		(± 3.36) mg/l		
	Calcium (Ca)	33.6	(± 3.30) mg/i	0.01	
	Chemical Oxygen		(+ 6) mg/l		
	Chemical oxygen den	nand (COD) 18	(± 6) mg/l	15	
	Chloride		(1.1.01) mg/		
	Chloride (Cl)	38.2	(± 1.91) mg/l	0.02	
	Conductivity				
	Conductivity	45.0	(± 0.9) mS/m	0.1	
	Dissolved Reactiv	-	(+ 0.070)		
	Phosphorus (soluble	-	(± 0.078) mg/l	0.005	
		-	Membrane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
	Iron - Dissolved		(± 0.007) mg/l		
	Iron (Fe)	0.034	(± 0.007) mg/i	0.005	
	Soluble Aluminiun		(+ 0 001) ~~"		
	Aluminium	0.004	(± 0.001) mg/l	0.002	
	Soluble Boron	a :			
	Boron (B)	0.15	mg/l	0.03	
	Soluble Cadmium		(1.0.0004)		
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	

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		RESULTS	(UNCERTAINTY)	LOQ
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW108		-0.001	(, - , - , - , - , - , - , -	0.001
	Soluble Copper		(± 0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/i	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001

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		RESULTS	6 (UNCERTAINT	Y) LOQ	
NW228	SVOC (GC-MSMS)				
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	<0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	<0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.0001	mg/l	0.0001	
	PCB 28	<0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	170	(± 17) mg CaCO3/l	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	< 0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	< 0.0005	mg/l	0.0005	
	1,1-Dichloroethane	< 0.0005	mg/l	0.0005	
	1,1-Dichloroethene	< 0.0005	mg/l	0.0005	
	1,1-Dichloropropene	< 0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.0003	mg/l	0.0003	
	1,2-Dibromoethane	<0.001	mg/l	0.002	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	0.0002	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005			
		<0.0005	mg/l	0.0005	
	1,3,5-Trichlorobenzene 1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
	1,0,0-111116U19IDE1126116	~0.0003	mg/l	0.0005	

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ	
W229	VOC (GC-MS)				
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	< 0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0010	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.001	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001	
		d			
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-Isopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Food &	Water	Testing
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NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Signature

Amitesh Kumar Supervisor



Maria Norris Laboratory Manager, Microbiology

Divina Cunanan Supervisor Lagazon

Ganesh Ilancko Supervisor

Gordon McArthur Senior laboratory Analyst

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 LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit





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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE		R-23-NW-017	867-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642		vin)			
	4741 Levin					
	NEW ZEALAN	ID				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmi	<u> </u>				prowhenua.govt.nz), Yvettef
Contact fo Contract:	or your orders:	Gabriela Landfill	Carvalhaes		Order code:	EUNZWE-00116910
SAMPLE	CODE	812-202	3-00048807			
Client Ref	erence:	283034-0				
	Point code: Date & Time:	Ground v WIL-E1s 06/04/20	vater 23 16:16		Sampling Point nam	e: Levin E1s
Analysis S	Start Date & Time				Analysis Ending Date	e: 18/04/2023
-	Date & Time	05/04/20	23 09:01		Sampler(s)	Client nominated external sample
Sampled I	by Eurofins	No	DE0: 11 20			
			RESULIS	(UNCERTAINT)	Y) LOQ	
	mmonia Nitroge			(* 0.00) "		
	Ammoniacal nitroger		0.21	(± 0.06) mg/l	0.01	
	rsenic - Soluble)		(+ 0 0004)		
	Arsenic (As)		0.002	(± 0.0004) mg/l	0.001	
	OD5 - Soluble C	arbonaceo	ous			
	30D5		<6	mg/l	1	
	alcium - Dissolv	ed				
	Calcium (Ca)		11.6	(± 1.16) mg/l	0.01	
	hemical Oxygen			<i>i</i> -> <i>n</i>		
	Chemical oxygen de	mand (COD)16	(± 6) mg/l	15	
NW007 C						
	Chloride (CI)		26.4	(± 1.32) mg/l	0.02	
	onductivity					
	Conductivity		25.9	(± 0.5) mS/m	0.1	
	issolved Reactiv	-		(
	Phosphorus (soluble	-	0.048	(± 0.010) mg/l	0.005	
	numeration of E	scherichia	-			
	Escherichia coli		<100	cfu/100 ml	100	
	on - Dissolved					
	ron (Fe)		5.14	(± 0.514) mg/l	0.005	
	oluble Aluminiu	m				
	Aluminium		0.012	(± 0.001) mg/l	0.002	
NW103 S	oluble Boron					
	Boron (B)		0.10	mg/l	0.03	

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
W106	Soluble Chromium			-
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001
W108		40.001	(, 5	0.001
100	Soluble Copper		(1.0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.0001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.001	mg/l	
	Endosulfan-sulfate	<0.000	mg/l	0.005
	Endrin	<0.0001	mg/l	0.0001 0.0001
	Endrin ketone		mg/l	
		NotRecovere d		0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001

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		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity			0.0001
111005	Alkalinity total	87	(± 9) mg CaCO3/I	1
NW229	VOC (GC-MS)		00000/1	
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	,	<0.0005	•	
	1,1-Dichloropropene 1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
		<0.0005 <0.0005	mg/l	0.0005
	1,2,3-Trichloropropane		mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005 <0.001	mg/l	0.0005
	1.0 Dibrom- 0 -blance	<111111	mg/l	0.002
	1,2-Dibromo-3-chloropropane		•	0.0000
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
			•	0.0002 0.0005 0.0005

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		1000	a valer i	esting
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0010	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.001	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001
	Dichloromethane	d <0.005	mg/l	0.005
	Hexachlorobutadiene	<0.000	mg/l	0.005
	Isopropylbenzene (Cumene)	<0.0002		0.0002
	m,p-Xylene, Ethylbenzene	<0.0005	mg/l mg/l	0.0005
	Naphthalene	<0.0015	mg/l	0.0015
	n-Butylbenzene	<0.0005	mg/l	0.0005 0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0003	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)			
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
ZM2GA	Escherichia coli E (Water) INZI <100 >6 000 000 /100 ml

Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

ix m

Gordon McArthur Senior laboratory Analyst

Amitesh Kumar Supervisor



Maria Norris Laboratory Manager, Microbiology

Supervisor Divina Cunanan Lagazon

Signature

Phone

Ganesh Ilancko Supervisor

EXPLANATORY NOTE

Test is not accredited

- ②Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited 6 Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit





The test result(s) in this report apply only to the sample as received.

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END OF REPORT





ANALYTICAL REPORT

REPOR	RT CODE	AR-23-NW-0	17526-01	REPORT DATE	17/04/2023	
Attention	Horowhenua P O Box 642 4741 Levin					
		ND		-		
Phone Email	(06) 367 2705	in@downor.co.nz		Copy to: Water and Waste Te (waterandwasteteam@horowl		
-	for your orders:	in@downer.co.nz Gabriela Carvalhaes		Order code:	EUNZWE-00116448	
Contract	-	Landfill		Order code:	EOINZWE-00110440	
SAMPL	E CODE	812-2023-0004668	39			
Client R	eference:	283024-0				
-	:: ig Point code: on Date & Time:	Ground water WIL-E2d 05/04/2023 11:54		Sampling Point name:	Levin E2d	
	s Start Date & Tim	e:05/04/2023 11:58 Customer		Analysis Ending Date: Sampled by Eurofins	17/04/2023 No	
-		RESUL	TS (UNCERTAINT)			
NW179	Ammonia Nitroge		•]
	Ammoniacal nitroge		(± 0.08) mg/l	0.01		
NW583	Arsenic - Soluble			0.01		
	Arsenic (As)	0.001	(± 0.0004) mg/l	0.001		
NW341	BOD5 - Soluble C		(, , , , , , , , , , , , , , , , , , ,	0.001		
1444541	BOD5 - Soluble C	<3	ma/l			
			mg/l	1		
199437	Calcium - Dissolv		(± 2.61) mg/l			
	Calcium (Ca)	26.1	(± 2.01) mg/i	0.01		
NW020			(+ 5) mg/l			
	Chemical oxygen de	emand (COD) <15	(± 5) mg/l	15		
NW007			(1.0.02)			
	Chloride (CI)	40.7	(± 2.03) mg/l	0.02		
NW023	Conductivity		(1.0.0) == 0/==			
	Conductivity	44.5	(± 0.9) mS/m	0.1		
NW193		-	(* 0.400) #			
	Phosphorus (soluble		(± 0.122) mg/l	0.005		
ZM2GA	Enumeration of E	Escherichia coli By Mo	embrane Filtration			
	Escherichia coli	<100	cfu/100 ml	100		
NW460	Iron - Dissolved					
	Iron (Fe)	0.065	(± 0.013) mg/l	0.005		
NW098	Soluble Aluminiu	ım				
	Aluminium	0.002	(± 0.001) mg/l	0.002		
NW103	Soluble Boron					
	Boron (B)	0.07	mg/l	0.03		
NW104	Soluble Cadmiun	n				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002		

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		RESULTS	(UNCERTAINTY)	LOQ
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW108		\$0.00 T	(, - , - , - , - , - , - , -	0.001
	Soluble Copper		(± 0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001

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		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	
	Pendimethalin	<0.0001	mg/l	0.0001
		<0.002	-	0.002
	Permethrin (sum of isomers) Phenanthrene	<0.0001	mg/l	0.0001
		<0.0001	mg/l	0.0001
	Pirimiphos-methyl		mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	< 0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
W003	Total Alkalinity			
	Alkalinity total	158	(± 16) mg CaCO3/I	1
W229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	< 0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	.,.,.	2.3000	···ə·'	0.0000

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		REJULIJ		LOQ	
W229	VOC (GC-MS)				
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.006	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere d	mg/l	0.001	
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	lsopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-lsopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Page 5 of 6 AR-23-NW-017526-01

Food	&	Water	Testing
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NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Supervisor

Divina Cunanan Lagazon

Supervisor Ganesh Ilancko

EXPLANATORY NOTE

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Signature

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

Amitesh Kumar Supervisor

Maria Norris

Laboratory Manager, Microbiology

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



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END OF REPORT





AR-23-NW-017865-01 Page 1 of 6

Food & Water Testing

ANALYTICAL REPORT

	CODE	AR-23-NW-07	17865-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642	· ,			
	4741 Levin				
	NEW ZEALAN	١D			
Phone	(06) 367 2705			Copy to: Water and Waste	
Email	horowhenuaadmir	0		(waterandwasteteam@horo	
Contact fo	or your orders:	Gabriela Carvalhaes Landfill		Order code:	EUNZWE-00116910
SAMPLE	CODE	812-2023-0004879	8		
Client Ref	erence:	283035-0			
	Point code: Date & Time:	Ground water WIL-E2s 06/04/2023 16:14		Sampling Point name:	Levin E2s
Analysis S	Start Date & Time	e:06/04/2023 16:30		Analysis Ending Date:	18/04/2023
-	Date & Time	05/04/2023 09:01		Sampler(s)	Client nominated external sample
sampled i	by Eurofins	No		/) I 00	
			S (UNCERTAINT)	r) loq	
	mmonia Nitroge		(1.0.00)		
	mmoniacal nitroger		(± 0.02) mg/l	0.01	
	rsenic - Soluble		(+ 0 0005)		
	rsenic (As)	0.003	(± 0.0005) mg/l	0.001	
	OD5 - Soluble C	arbonaceous			
	BOD5	<6	mg/l	1	
	alcium - Dissolv				
	Calcium (Ca)	24.7	(± 2.47) mg/l	0.01	
	hemical Oxygen		<i>.</i> _, _,		
	Chemical oxygen der	mand (COD) 30	(± 7) mg/l	15	
NW007 C					
	Chloride (Cl)	38.9	(± 1.95) mg/l	0.02	
	onductivity				
	Conductivity	33.8	(± 0.7) mS/m	0.1	
	issolved Reactiv	-			
	hosphorus (soluble	-	(± 0.058) mg/l	0.005	
		scherichia coli By Me			
	scherichia coli	<100	cfu/100 ml	100	
	on - Dissolved				
	ron (Fe)	0.504	(± 0.101) mg/l	0.005	
NW098 S	oluble Aluminiu				
	luminium	0.021	(± 0.002) mg/l	0.002	
NW103 S	oluble Boron				
			mg/l		

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
W106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
W108	Soluble Copper			0.001
	Copper (Cu)	0.0174	(± 0.0035) mg/l	0.0005
14/000		0.0174	(± 0.0000) mg/i	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	< 0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	I have the second description of the	<0.0001	mg/l	
	Heptachlor epoxide, cis-	<0.0001	mg/i	0.0001

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		RESULT	S (UNCERTAINTY)	LOQ	
NW228	SVOC (GC-MSMS)				
	Hexazinone	<0.001	mg/l	0.001	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001	
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	<0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	<0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.0001	mg/l	0.0001	
	PCB 28	< 0.0001	mg/l	0.0001	
	PCB 7	< 0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001	
	Phenanthrene	< 0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	< 0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l		
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001 0.0001	
	Simazine	<0.0001	mg/l		
	Terbuthylazine	<0.0001		0.0001	
	Total Benzo(b) and Benzo(k)	<0.001	mg/l mg/l	0.0001 0.001	
	fluoranthene				
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	90	(± 9) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.0000	mg/l	0.002	
	1,2-Dibromoethane	<0.001	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	0.0002	
	1,2-Dichloroethane	<0.0005	-		
			mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	

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				esting
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0010	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.001	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001
	Dichloromethane	d <0.005	ma/l	0.005
	Hexachlorobutadiene		mg/l	0.005
		<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	< 0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene Naphthalene	<0.0015	mg/l	0.0015
		<0.0005	mg/l	0.0005
	n-Butylbenzene	< 0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005 <0.0005	mg/l	0.0005
	tert-Butylbenzene		mg/l	0.0005
	Tetrachloroethene Toluene	<0.0005	mg/l	0.0005
		<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	< 0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
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NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml

Content and the sector of t

Amitesh Kumar Supervisor



Maria Norris Laboratory Manager, Microbiology

Duiha C. Lagozon

Supervisor

Signature

Km

Gordon McArthur Senior laboratory Analyst

.

Divina Cunanan Lagazon

Ganesh Ilancko Supervisor

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If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice. The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.

The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.

The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.

This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.

Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer. Eurofins General Terms and Conditions apply.

END OF REPORT





AR-23-NW-017527-01 Page 1 of 6

Food & Water Testing

ANALYTICAL REPORT

REPORT	T CODE	AR	-23-NW-017	527-01	REPORT DATE	17/04/2023
Attention	Downer NZ Lt Horowhenua / P O Box 642	•	in)			
	4741 Levin					
	NEW ZEALAN	١D				
Phone	(06) 367 2705				Copy to: Water and Water	
Email	horowhenuaadmi	<u> </u>				orowhenua.govt.nz), Yvettef
Contact f Contract:	for your orders: :	Gabriela (Landfill	Carvalhaes		Order code:	EUNZWE-00116448
SAMPLE	ECODE	812-2023	3-00047466			
Client Re	ference:	283043-0				
	g Point code: n Date & Time:	Ground w WIL-F1 05/04/202			Sampling Point nan	ne: Levin F1
	Start Date & Time				Analysis Ending Dat	e: 17/04/2023
-	Date & Time	04/04/202	3 10:45		Sampler(s)	Client nominated external sample
Sampled	by Eurofins	No			-	
			RESULTS	(UNCERTAINT)	() LOQ	
VW179	Ammonia Nitroge	en				
	Ammoniacal nitroge	n (N)	0.02	(± 0.006) mg/l	0.01	
NW583	Arsenic - Soluble	9				
	Arsenic (As)		0.002	(± 0.0004) mg/l	0.001	
NW341	BOD5 - Soluble C	arbonaceo	us			
	BOD5		<3	mg/l	1	
NW457	Calcium - Dissolv	ved				
	Calcium (Ca)		16.7	(± 1.67) mg/l	0.01	
NW020	Chemical Oxyger	n Demand				
	Chemical oxygen de	mand (COD)	28	(± 7) mg/l	15	
NW007	Chloride					
	Chloride (Cl)		37.4	(± 1.87) mg/l	0.02	
NW023	Conductivity					
	Conductivity		41.2	(± 0.8) mS/m	0.1	
W193	Dissolved Reactiv	ve Phospho	orus			
	Phosphorus (soluble	e reactive)	0.172	(± 0.034) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia	coli By Mem	brane Filtration		
	Escherichia coli		<100	cfu/100 ml	100	
W460	Iron - Dissolved					
	Iron (Fe)		<0.005	(± 0.002) mg/l	0.005	
NW098	Soluble Aluminiu	m				
	Aluminium		<0.002	(± 0.001) mg/l	0.002	
NW103	Soluble Boron					
	Boron (B)		0.04	mg/l	0.03	
NW104	Soluble Cadmiun	•				

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
W106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
W108	. ,	\$0.00 T	(1111) 3	0.001
100			(1.0.0004) mg/l	
	Copper (Cu)	0.0018	(± 0.0004) mg/l	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001

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Food & Water Testing

		RESULTS	6 (UNCERTAINT)) LOQ	
NW228	SVOC (GC-MSMS)				
	Hexazinone	<0.001	mg/l	0.001	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001	
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	<0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	<0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.0001	mg/l	0.0001	
	PCB 28	<0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
W003	Total Alkalinity				
	Alkalinity total	146	(± 15) mg CaCO3/l	1	
W229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	< 0.0005	mg/l	0.0005	
	1,2-Dichloroethane	< 0.0005	mg/l	0.0005	
			J.		

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WHH I



Food & Water Testing

		1000		esting
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.000	mg/l	
	Carbon tetrachloride	<0.001		0.001
	Carbondisulphide (CS2)	<0.0005	mg/l mg/l	0.0005
	Chlorobenzene	<0.0005	-	0.0005
	Chloroethane	<0.0003	mg/l	0.0005
	Chloroform	<0.001	mg/l	0.001
	Chloromethane		mg/l	0.0005
		<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	< 0.0005	mg/l	0.0005
	Dibromochloromethane	< 0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere d	mg/l	0.001
	Dichloromethane	۵ <0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0002		
	m,p-Xylene, Ethylbenzene	<0.0005	mg/l mg/l	0.0005
	Naphthalene	<0.0015	mg/l	0.0015
	•	<0.0005		0.0005
	n-Butylbenzene n-Propylbenzene	<0.0005	mg/l	0.0005
			mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	< 0.0005	mg/l	0.0005
	tert-Butylbenzene	< 0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	< 0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	< 0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	< 0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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Signature

Jennifer Mont

NIN 1007

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NVV007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

.....

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabro

Marylou Cabral Laboratory Manager

Supervisor Divina Cunanan Lagazon

Ganesh Ilancko Supervisor

EXPLANATORY NOTE

- Test is not accredited
- 2 Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

Gordon McArthur Senior laboratory Analyst

Supervisor

Amitesh Kumar Supervisor

Maria Norris

Laboratory Manager, Microbiology

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit





The test result(s) in this report apply only to the sample as received.

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The tests are identified by a five-digit code, their description is available on request.

Accreditation does not apply to comments or graphical representations.

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This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

REFUR	T CODE	A	R-23-NW-017	532-01	REPORT DATE	17/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642		evin)			
	4741 Levin					
	NEW ZEALAN	١D				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmi	<u> </u>			(waterandwasteteam@h	orowhenua.govt.nz), Yvettef
Contact f	for your orders: :	Gabriel Landfill	a Carvalhaes		Order code:	EUNZWE-00116448
SAMPLE	ECODE	812-20	23-00047476			
Client Re	ference:	283044				
	g Point code: n Date & Time:	Ground WIL-F2 05/04/2			Sampling Point nan	ne: Levin F2
Analysis	Start Date & Time				Analysis Ending Dat	
-	Date & Time		023 10:45		Sampler(s)	Client nominated external sample
Sampled	by Eurofins	No			0 100	
			RESULIS	(UNCERTAINT)	() LOQ	
	Ammonia Nitroge			(1.0.004)		
	Ammoniacal nitroger	. ,	0.01	(± 0.004) mg/l	0.01	
	Arsenic - Soluble	•		(
	Arsenic (As)		0.001	(± 0.0004) mg/l	0.001	
W341	BOD5 - Soluble C	arbonac	eous			
	BOD5		<3	mg/l	1	
	Calcium - Dissolv	ved		(
	Calcium (Ca)		6.47	(± 0.65) mg/l	0.01	
	Chemical Oxyger			<i>i</i> = , <i>n</i>		
	Chemical oxygen de	mand (CO	D) <15	(± 5) mg/l	15	
	Chloride					
	Chloride (Cl)		24.0	(± 1.20) mg/l	0.02	
	Conductivity					
	Conductivity		22.4	(± 0.4) mS/m	0.1	
	Dissolved Reactiv	-				
	Phosphorus (soluble	-	0.133	(± 0.027) mg/l	0.005	
	Enumeration of E	scherich	-			
	Escherichia coli		<100	cfu/100 ml	100	
	Iron - Dissolved			(
	Iron (Fe)		0.026	(± 0.005) mg/l	0.005	
	Soluble Aluminiu	m				
	Aluminium		0.002	(± 0.001) mg/l	0.002	
NW103	Soluble Boron					
	Boron (B)		0.04	mg/l	0.03	

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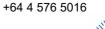




Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
W108	Soluble Copper			0.001
		0.0000	(± 0.0002) mg/l	0.0005
	Copper (Cu)	0.0006	(± 0.0002) mg/r	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001

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		RESULTS	UNCERTAINT	Y) LOQ	
NW228	SVOC (GC-MSMS)				
	Hexazinone	<0.001	mg/l	0.001	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001	
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	< 0.001	mg/l	0.001	
	Methoxychlor	< 0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	< 0.0001	mg/l	0.0001	
	Naphthalene	< 0.0001	mg/l	0.0001	
	Oxadiazon	< 0.0001	mg/l	0.0001	
	PCB 101	< 0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.0001	mg/l	0.0001	
	PCB 28	< 0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.0001	mg/l	0.002	
	Permethrin (sum of isomers)	<0.002	mg/l	0.002	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l		
	Propanil	<0.0001	mg/l	0.0001	
	Propazine	<0.001	mg/l	0.001	
	Pyrene	<0.0001	mg/l	0.0001	
	-	<0.0001		0.0001	
	Pyriproxyfen Simazine	<0.0001	mg/l	0.0001	
			mg/l	0.0001	
	Terbuthylazine	<0.0001 <0.001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene		mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	59	(± 6) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.000	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	0.0002	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
		-0.0000	g/i	0.0003	

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				LOQ	
W229	VOC (GC-MS)		,		
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	< 0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	< 0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	< 0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.006	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001	
		d	-		
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-lsopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	
1111341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

.....

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabre

Signature

Jennifer Mont

Marylou Cabral Laboratory Manager

Divina Cunanan

Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst

EXPLANATORY NOTE

Test is not accredited

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- $\ensuremath{\mathfrak{O}}$ Test is subcontracted within Eurofins group and is accredited
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- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

Supervisor

Gordon McArthur Senior laboratory Analyst

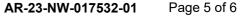
Amitesh Kumar Supervisor

Ganesh Ilancko Supervisor

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit







The test result(s) in this report apply only to the sample as received.

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

REPORT	T CODE	AR-23-NW	/-017530-01	REPORT DATE	17/04/2023
Attention	Downer NZ Lt Horowhenua / P O Box 642	, ,			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705			Copy to: Water and Waste	
Email	horowhenuaadmi	9		(waterandwasteteam@horo	
Contact f	for your orders: :	Gabriela Carvalha Landfill	aes	Order code:	EUNZWE-00116448
SAMPLE	ECODE	812-2023-00047	7471		
Client Re	ference:	283045-0			
	g Point code: n Date & Time:	Ground water WIL-F3 05/04/2023 16:17		Sampling Point name:	Levin F3
		e:05/04/2023 16:33		Analysis Ending Date:	17/04/2023
-	Date & Time	04/04/2023 10:45	5	Sampler(s)	Client nominated external sample
Sampled	by Eurofins	No			
			ULTS (UNCERTAINTY) LOQ	
VW179	Ammonia Nitroge	en			
	Ammoniacal nitroge	()	(± 0.004) mg/l	0.01	
NW583	Arsenic - Soluble	9			
	Arsenic (As)	0.001	(± 0.0004) mg/l	0.001	
NW341	BOD5 - Soluble C	arbonaceous			
ļ	BOD5	<3	mg/l	1	
NW457 (Calcium - Dissolv	ved			
	Calcium (Ca)	4.67	(± 0.47) mg/l	0.01	
NW020 (Chemical Oxyger	n Demand			
	Chemical oxygen de	emand (COD) <15	(± 5) mg/l	15	
NW007 (Chloride				
	Chloride (Cl)	16.1	(± 0.81) mg/l	0.02	
NW023 (Conductivity				
	Conductivity	18.3	(± 0.4) mS/m	0.1	
W193 [Dissolved Reactiv	ve Phosphorus			
ļ	Phosphorus (soluble	e reactive) 0.152	(± 0.030) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia coli By	Membrane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
W460 I	Iron - Dissolved				
I	Iron (Fe)	<0.005	(± 0.002) mg/l	0.005	
NW098	Soluble Aluminiu	m			
	Aluminium	0.002	(± 0.001) mg/l	0.002	
NW103 \$	Soluble Boron				
,	Boron (B)	0.03	mg/l	0.03	
NW104 g	Soluble Cadmiun	n			

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		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
W106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001
W108		40.001	(, , , , , , , , , , , , , , , , , , ,	0.001
100	Soluble Copper		(± 0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
		<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	ilig/i	0.0001

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		RESULTS		Y) LOQ
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	< 0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	< 0.0001	mg/l	0.0001
	Metolachlor	< 0.0001	mg/l	0.0001
	Metribuzin	< 0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	
	PCB 101	<0.0001	-	0.0001
	PCB 138	<0.0001	mg/l	0.0001
			mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	< 0.002	mg/l	0.002
	Permethrin (sum of isomers)	< 0.0001	mg/l	0.0001
	Phenanthrene	< 0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity			
	Alkalinity total	56	(± 6) mg CaCO3/I	1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	< 0.0005	mg/l	0.0005
	1,1-Dichloroethane	< 0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	
	1,2,3-Trichlorobenzene	<0.0005	-	0.0005
			mg/l	0.0005
	1,2,3-Trichloropropane	< 0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005

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		1000		esting
		RESULTS	(UNCERTAINTY)	LOQ
W229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere d	mg/l	0.001
	Dichloromethane	u <0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.002
	Isopropylbenzene (Cumene)	<0.0002	mg/l	0.0002
	m,p-Xylene, Ethylbenzene	<0.0005	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0000	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
			····;;;··	0.0000
			ma/l	0 0005
	Trichlorofluoromethane Vinyl chloride	<0.0005 <0.0005	mg/l mg/l	0.0005 0.0003

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabro

Marylou Cabral Laboratory Manager

Signature

Jennifer Mont

Amitesh Kumar Supervisor

Supervisor Divina Cunanan Lagazon

Ganesh Ilancko Supervisor

EXPLANATORY NOTE

- Test is not accredited
- 2 Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
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- S Test is subcontracted outside Eurofins group and is not accredited
- Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited

Tested at the sampling point by Eurofins and is accredited

Gordon McArthur Senior laboratory Analyst

Supervisor

Maria Norris

Laboratory Manager, Microbiology

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



The test result(s) in this report apply only to the sample as received.

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	AR-23-NW	/-017533-01	REPORT DATE	17/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	. ,			
	4741 Levin				
	NEW ZEALAN	1D			
Phone	(06) 367 2705			Copy to: Water and Waste	
Email	horowhenuaadmi	-		(waterandwasteteam@horo	
	or your orders:	Gabriela Carvalha Landfill	aes	Order code:	EUNZWE-00116448
Contract:					
SAMPLE		812-2023-00047 283025-0	(485		
Client Re Product:	terence:	Ground water			
	Point code:	WIL-G1D		Sampling Point name:	Levin G1D
Receptio	n Date & Time:	05/04/2023 16:27			
-		05/04/2023 16:33	3	Analysis Ending Date:	17/04/2023
Sampled	by Eurofins	No		<u></u>	
			ULTS (UNCERTAINT)	() LOQ	
	Ammonia Nitroge		(1.0.00)		
	Ammoniacal nitroger	()	(± 0.03) mg/l	0.01	
NW583	Arsenic - Soluble	•	<i>.</i>		
	Arsenic (As)	0.002	(± 0.0004) mg/l	0.001	
NW341	BOD5 - Soluble C	arbonaceous			
	BOD5	<3	mg/l	1	
NW457	Calcium - Dissolv	ed			
	Calcium (Ca)	9.06	(± 0.91) mg/l	0.01	
NW020	Chemical Oxygen	Demand			
	Chemical oxygen de	mand (COD) 16	(± 6) mg/l	15	
NW007	Chloride				
	Chloride (Cl)	31.7	(± 1.58) mg/l	0.02	
NW023	Conductivity				
	Conductivity	28.2	(± 0.6) mS/m	0.1	
NW193	Dissolved Reactiv	/e Phosphorus			
	Phosphorus (soluble	reactive) 0.019	(± 0.004) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia coli By	Membrane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
NW460	ron - Dissolved				
	Iron (Fe)	0.230	(± 0.046) mg/l	0.005	
NW098	Soluble Aluminiu	m			
	Aluminium	<0.002	(± 0.001) mg/l	0.002	
NW103	Soluble Boron				
	Boron (B)	0.04	mg/l	0.03	
NW104	Soluble Cadmium	1			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	

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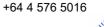


Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW108		-0.001	(, - , - , - , - , - , - , -	0.001
	Soluble Copper		(± 0.0002) mg/l	
	Copper (Cu)	<0.0005	(± 0.0002) mg/i	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001

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		RESULTS	(UNCERTAINTY)	LOQ	
NW228	SVOC (GC-MSMS)				
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001	
	Metalaxyl	<0.001	mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	<0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	<0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.0001	mg/l	0.0001	
	PCB 28	<0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	64	(± 6) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
			J.		

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		REJULIJ		LOQ	
W229	VOC (GC-MS)				
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.006	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere d	mg/l	0.001	
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-lsopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Food	&	Water	Testing
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NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Supervisor

Divina Cunanan Lagazon

Supervisor Ganesh Ilancko

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- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

Signature

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

Amitesh Kumar Supervisor

Maria Norris

Laboratory Manager, Microbiology

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



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END OF REPORT





AR-23-NW-017529-01 Page 1 of 6

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-23-NW-017529-01		REPORT DATE	17/04/2023	
Attention	Downer NZ Lt Horowhenua A P O Box 642		evin)			
	4741 Levin					
	NEW ZEALAN	١D				
Phone	(06) 367 2705				Copy to: Water and Was	
Email horowhenuaadmi		<u> </u>			(waterandwasteteam@h	orowhenua.govt.nz), Yvettef
Contact f	for your orders: :	Gabriela Landfill	a Carvalhaes		Order code:	EUNZWE-00116448
SAMPLE	ECODE	812-20	23-00047470			
Client Re	ference:	283040				
	g Point code: n Date & Time:	Ground WIL-G1 05/04/2			Sampling Point nam	e: Levin G1S
Analysis	Start Date & Time				Analysis Ending Dat	
-	Date & Time		023 10:44		Sampler(s)	Client nominated external sampler
Sampled	by Eurofins	No			//	
			RESULIS	(UNCERTAINT)	() LOQ	
	Ammonia Nitroge			(1.0.04)		
	Ammoniacal nitroger	. ,	0.03	(± 0.01) mg/l	0.01	
	Arsenic - Soluble	9		(
	Arsenic (As)		0.002	(± 0.0004) mg/l	0.001	
W341	BOD5 - Soluble C	arbonace	eous			
	BOD5		<3	mg/l	1	
	Calcium - Dissolv	ved		(
	Calcium (Ca)		8.77	(± 0.88) mg/l	0.01	
	Chemical Oxyger			<i>i</i> -> <i>n</i>		
	Chemical oxygen de	mand (CO	D) 45	(± 8) mg/l	15	
NW007						
	Chloride (Cl)		72.0	(± 3.60) mg/l	0.02	
	Conductivity					
	Conductivity		46.2	(± 0.9) mS/m	0.1	
	Dissolved Reactiv	-		(
	Phosphorus (soluble	-	0.040	(± 0.008) mg/l	0.005	
	Enumeration of E	scherich	-			
	Escherichia coli		<100	cfu/100 ml	100	
	Iron - Dissolved			(
	Iron (Fe)		2.05	(± 0.205) mg/l	0.005	
	Soluble Aluminiu	m				
	Aluminium		0.065	(± 0.007) mg/l	0.002	
	Soluble Boron					
	Boron (B)		0.03	mg/l	0.03	

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Food & Water Testing

		RESULTS	(UNCERTAINTY)	LOQ	
NW104	Soluble Cadmium				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
NW106	Soluble Chromium				
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001	
NW108	Soluble Copper	-	-		
	Copper (Cu)	0.0056	(± 0.0011) mg/l	0.0005	
		0.0050	(± 0.0011) mg/i	0.0005	
W228	SVOC (GC-MSMS)				
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001	
	Bromacil	<0.005	mg/l	0.005	
	Carbofuran	<0.001	mg/l	0.001	
	Chlordane	<0.0001	mg/l	0.0001	
	Chlordane, gamma	<0.001	mg/l	0.001	
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001	
	Chrysene	<0.0001	mg/l	0.0001	
	Cyanazine	<0.005	mg/l	0.005	
	d-BHC	<0.0001	mg/l	0.0001	
	DDD, p,p'-	<0.0001	mg/l	0.0001	
	DDE, p,p-	<0.0001	mg/l	0.0001	
	DDT, p,p'-	<0.001	mg/l	0.001	
	Diazinon	<0.0001	mg/l	0.0001	
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001	
	Dieldrin	<0.0001	mg/l	0.0001	
	Dimethoate	<0.001	mg/l	0.001	
	Diuron	<0.001	mg/l	0.001	
	Endosulfan, alpha-	<0.001	mg/l	0.001	
	Endosulfan, beta-	<0.005	mg/l	0.005	
	Endosulfan-sulfate	<0.0001	mg/l	0.0001	
	Endrin	<0.0001	mg/l	0.0001	
	Endrin ketone	NotRecovere d	mg/l	0.0001	
	Endrin-aldehyde	<0.001	mg/l	0.01	
	Fluoranthene	<0.0001	mg/l	0.0001	
	Fluorene	<0.0001	mg/l	0.0001	
	HCH, alpha-	<0.0001	mg/l	0.0001	
	HCH, beta-	<0.0001	mg/l	0.0001	
	Heptachlor	<0.0001	mg/l	0.0001	
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001	
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001	

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		RESULT	S (UNCERTAIN	Γ
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0. 0.
	Lindane (gamma-HCH)	<0.0001	mg/l	0.000
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	< 0.0001	mg/l	0.0001
	Metribuzin	< 0.0001	mg/l	0.0001
	Molinate	< 0.0001	mg/l	0.0001
	Naphthalene	< 0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.0001	mg/l	
	PCB 183	<0.001	mg/l	0.001
	PCB 28		-	0.0001
	PCB 28 PCB 7	<0.0001	mg/l	0.0001
		<0.0001	mg/l	0.0001
	Pendimethalin	< 0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity			
	Alkalinity total	92	(± 9) mg CaCO3/I	1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	< 0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	< 0.0005	mg/l	0.0005
	1,1-Dichloroethane	< 0.0005	mg/l	0.0005
	1,1-Dichloroethene	< 0.0005	mg/l	0.0005
	1,1-Dichloropropene	< 0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	-	
	1,2-Dibromo-3-chloropropane	<0.0005 <0.001	mg/l	0.0005
			mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005

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		RESULIS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001
		d		
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-lsopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

.

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabre

Amitesh Kumar Supervisor

Ganesh Ilancko Supervisor

Marylou Cabral Laboratory Manager

Supervisor

Divina Cunanan Lagazon

Leo Cleave

Senior Analyst Senior Analyst

EXPLANATORY NOTE

- Test is not accredited
- $\ensuremath{\mathfrak{O}}$ Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- [®]Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

+64 4 576 5016



Signature

Supervisor Jennifer Mont

Gordon McArthur Senior laboratory Analyst

The test result(s) in this report apply only to the sample as received.

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The tests are identified by a five-digit code, their description is available on request.

Accreditation does not apply to comments or graphical representations.

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-23-N	IW-017528-01	REPORT DATE	17/04/2023
Attention	Downer NZ Lt Horowhenua P O Box 642	. ,			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705			Copy to: Water and Was	
Email	horowhenuaadmi	0			prowhenua.govt.nz), Yvettef
Contact Contract	for your orders: ::	Gabriela Carva Landfill	lhaes	Order code:	EUNZWE-00116448
SAMPL	E CODE	812-2023-000	47467		
Client Re	eference:	283041-0			
Product:		Ground water			
	g Point code: on Date & Time:	WIL-G2 05/04/2023 16	:13	Sampling Point nam	e: Levin G2s
	Start Date & Tim			Analysis Ending Date	e: 17/04/2023
-	Date & Time	04/04/2023 10	:43	Sampler(s)	Client nominated external sampler
Sampled	l by Eurofins	No			
		RE	SULTS (UNCERTAINT)	Y) LOQ	
NW179	Ammonia Nitroge	en			
	Ammoniacal nitroge	n (N) 0.03	(± 0.010) mg/l	0.01	
NW583	Arsenic - Soluble	9			
	Arsenic (As)	<0.00)1 (± 0.0003) mg/l	0.001	
NW341	BOD5 - Soluble C	arbonaceous			
	BOD5	<3	mg/l	1	
NW457	Calcium - Dissolv	/ed			
	Calcium (Ca)	64.5	(± 6.45) mg/l	0.01	
NW020	Chemical Oxyger	n Demand			
	Chemical oxygen de	emand (COD) 27	(± 6) mg/l	15	
NW007	Chloride				
	Chloride (Cl)	342	(± 17.1) mg/l	0.02	
NW023	Conductivity				
	Conductivity	157	(± 3.1) mS/m	0.1	
NW193	Dissolved Reacti	ve Phosphorus			
	Phosphorus (soluble	e reactive) 0.012	(± 0.003) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia coli I	By Membrane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
NW460	Iron - Dissolved				
	Iron (Fe)	0.036	(± 0.007) mg/l	0.005	
NW098	Soluble Aluminiu	m			
	Aluminium	0.002	(± 0.001) mg/l	0.002	
NW103	Soluble Boron				
	Boron (B)	0.60	mg/l	0.03	
NW104	Soluble Cadmiun				

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		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW108		0.001	(, J	0.001
100	Soluble Copper	0.0000	(± 0.0006) mg/l	
	Copper (Cu)	0.0030	(± 0.0000) mg/i	0.0005
NW228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
		< 0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	~0.000 i		

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		RESULTS	6 (U	NCERTAINTY
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	
	Lindane (gamma-HCH)	<0.0001	mg/l	
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	
	Metolachlor	<0.0001	mg/l	
	Metribuzin	<0.0001	mg/l	
	Molinate	<0.0001	mg/l	
	Naphthalene	<0.0001	mg/l	
	Oxadiazon	<0.0001	mg/l	
	PCB 101	<0.0001	mg/l	
	PCB 138	<0.001	mg/l	
	PCB 183	<0.0001	mg/l	
	PCB 28	<0.0001	mg/l	
	PCB 7	<0.0001	mg/l	
	Pendimethalin	<0.002	mg/l	
	Permethrin (sum of isomers)	<0.0001	mg/l	
	Phenanthrene	<0.0001	mg/l	
	Pirimiphos-methyl	<0.0001	mg/l	
	Procymidone	<0.0001	mg/l	
	Propanil	<0.001	mg/l	
	Propazine	<0.0001	mg/l	
	Pyrene	<0.0001	mg/l	
	Pyriproxyfen	<0.0001	mg/l	
	Simazine	<0.0001	mg/l	
	Terbuthylazine	<0.0001	mg/l	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	
	Trifluralin	<0.0001	mg/l	
NW003	Total Alkalinity			
	Alkalinity total	259	(± 26 CaC	
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	
	1,1,1-Trichloroethane	<0.0005	mg/l	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	
	1,1,2-Trichloroethane	<0.0005	mg/l	
	1, 1,2-1101101000110110	<0.0005	mg/l	
	1,1-Dichloroethane	~0.0005		
		<0.0005	mg/l	
	1,1-Dichloroethane		mg/l mg/l	
	1,1-Dichloroethane 1,1-Dichloroethene	<0.0005	mg/l mg/l mg/l	
	1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene	<0.0005 <0.0005 <0.0005	mg/l mg/l	
	1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane	<0.0005 <0.0005 <0.0005 <0.0005	mg/l mg/l mg/l	
	1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4 trimethylbenzen	<0.0005 <0.0005 <0.0005 <0.0005 <0.0005	mg/l mg/l mg/l mg/l	
	1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,4 trimethylbenzen 1,2,4-Trichlorobenzene	<0.0005 <0.0005 <0.0005 <0.0005 <0.0005 <0.0005	mg/l mg/l mg/l mg/l	
	 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4 trimethylbenzen 1,2,4-Trichlorobenzene 1,2-Dibromo-3-chloropropane 	<0.0005 <0.0005 <0.0005 <0.0005 <0.0005 <0.0005 <0.001	mg/l mg/l mg/l mg/l mg/l	
	 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4 trimethylbenzen 1,2,4-Trichlorobenzene 1,2-Dibromo-3-chloropropane 1,2-Dibromoethane 	<0.0005 <0.0005 <0.0005 <0.0005 <0.0005 <0.001 <0.0002	mg/l mg/l mg/l mg/l mg/l mg/l	
	 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4 trimethylbenzen 1,2,4-Trichlorobenzene 1,2-Dibromo-3-chloropropane 	<0.0005 <0.0005 <0.0005 <0.0005 <0.0005 <0.0005 <0.001	mg/l mg/l mg/l mg/l mg/l	

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Food & Water Testing

		11000		esting
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	<0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005
	Benzene	<0.0005	mg/l	0.0005
	Bromobenzene	<0.0005	mg/l	0.0005
	Bromochloromethane	<0.0012	mg/l	0.0012
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	<0.001	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001
	Dichloromethane	d <0.005	ma/l	0.005
	Hexachlorobutadiene		mg/l	0.005
		<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	< 0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	< 0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	< 0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene Toluene	<0.0005	mg/l	0.0005
		<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	< 0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005

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.

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.

.

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabre

Supervisor

Gordon McArthur Senior laboratory Analyst

Signature

Jennifer Mont

Amitesh Kumar Supervisor

Ganesh Ilancko Supervisor

Marylou Cabral Laboratory Manager

Supervisor

Divina Cunanan Lagazon

Leo Cleave

Senior Analyst Senior Analyst

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- [®]Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



The test result(s) in this report apply only to the sample as received.

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END OF REPORT





Page 1 of 4 AR-23-NW-036156-01

Food & Water Testing

ANALYTICAL REPORT

NEFUNI	CODE	AF	R-23-NW-036	156-01	REPORT DATE	21/07/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642		vin)			
	4741 Levin					
	NEW ZEALAN	D				
Phone	(06) 367 2705				Copy to: Water and Wast	
Email	horowhenuaadmir				· · · · · ·	rowhenua.govt.nz), McMillan
Contact fo Contract:	or your orders:	Gabriela Landfill	Carvalhaes		Order code:	EUNZWE-00117909
	0005		2 00054060			
SAMPLE		283050-0	3-00051960			
Client Ref Product:	erence:	Ground v				
	Point code:	WIL-HS1			Sampling Point name	e: Levin HS1
	Date & Time:		23 17:21			
-	Start Date & Time Date & Time		23 17:23 23 12:57		Analysis Ending Date Sampler(s)	
-	By Eurofins	No	23 12.37		Sampler(S)	Client nominated external sampler
			RESULTS	(UNCERTAINT)	Ý) LOQ	
NW179 A	Ammonia Nitroge	n				
	Ammoniacal nitrogen		0.02	(± 0.006) mg/l	0.01	
	30D5 - Soluble Ca		ous		0.01	
	BOD5		<3	mg/l	1	
	Chemical Oxygen	Demand				
-	Chemical oxygen der) 18	(± 6) mg/l	15	
NW007 C			/		10	
	Chloride (Cl)		23.9	(± 1.19) mg/l	0.02	
	Conductivity				0.02	
	Conductivity		22.6	(± 0.5) mS/m	0.1	
	Dissolved Alumini	ium			0.1	
	Aluminium		0.013	(± 0.001) mg/l	0.002	
	Dissolved Arsenic			. , -	0.002	
	Arsenic (As)		0.003	(± 0.0004) mg/l	0.001	
	Dissolved Boron			. , 0	0.001	
	Boron (B)		0.07	mg/l	0.03	
	Dissolved Cadmiu	ım			0.00	
	Cadmium (Cd)		<0.0002	(± 0.0001) mg/l	0.0002	
	Dissolved Calciun	n		, 0	0.0002	
	Calcium (Ca)		11.7	(± 1.17) mg/l	0.01	
)issolved Chromi	um			0.01	
	Chromium (Cr)		<0.001	(± 0.0003) mg/l	0.001	
)issolved Copper			. , 5	0.001	
	Copper (Cu)		0.0011	(± 0.0003) mg/l	0.0005	
				. , 0	0.0000	

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	RESULI	IS (UNCERTAINTY)	LOQ
Dissolved Iron			
Iron (Fe)	0.101	(± 0.020) mg/l	0.005
	<0.0005	(± 0.0002) mg/l	0.0005
		. , -	0.0000
······································	7.96	(± 0.80) ma/l	0.01
		(0.01
	0 0178	(+ 0.0036) mg/l	0 0005
- · ·	0.0110	(± 0.0000) mg/r	0.0005
	~0.0003	mg/l	0.0005
Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005
Dissolved Potassium			
Potassium (K)	2.47	mg/l	0.01
Dissolved Reactive Phospl	norus		
Phosphorus (soluble reactive)	0.277	(± 0.055) mg/l	0.005
Dissolved Sodium			
	19.4	(± 1.94) mg/l	0.02
	0.003	(± 0.0008) mg/l	0.002
			0.002
	-		100
			100
	0.13	(± 0.02) mg/	
	0.10	(± 0.03) mg/i	0.01
•	7.0		
рН	0.1	(± 0.2)	0.1
Phenolics (Total)			
Total phenols	<0.05	mg/l	0.05
Sulphate			
Sulphate	14.9	(± 0.74) mg/l	0.02
Suspended Solids			
•	8	mg/l	3
		~	-
•	60	(± 6) mg	1
		CaCO3/I	
Total Hardness			
Hardness	62	(± 6) mg	1
		CaCO3/I	
		(107)	
-		(± 0.7) mg/l	0.1
Volatile Fatty Acids (VFA) b	-		
Acetic acid		mg/l	5
Butyric acid		mg/l	5
Heptanoic Acid C7:0		mg/l	5
Hexanoic acid	~5	mg/l	5
	Iron (Fe)Dissolved LeadLead (Pb)Dissolved MagnesiumMagnesium (Mg)Dissolved ManganeseManganese (Mn)Dissolved MercuryMercury (Hg)Dissolved NickelNickel (Ni)Dissolved PotassiumPotassium (K)Dissolved SodiumSodium (Na)Dissolved ZincZinc (Zn)Enumeration of EscherichiEscherichia coliNitrate-NpHpHpHpHSulphateSulphateSuspended SolidsSuspended Solids <t< th=""><th>Dissolved Iron0.101Iron (Fe)0.101Dissolved LeadLead (Pb)<0.0005Dissolved Magnesium7.96Magnesium (Mg)0.0178Dissolved ManganeseManganese (Mn)<0.0005Dissolved MercuryMercury (Hg)<0.0005Dissolved NickelNickel (Ni)<0.0005Dissolved PotassiumPotassium (K)2.47Dissolved Reactive Phosphorus (soluble reactive)0.277Dissolved SodiumSodium (Na)19.4Dissolved ZincZinc (Zn)0.003Escherichia coliNitrate-NNitrate-NNitrate-NSulphateSulphateSuspended Solids8Total phenolsSuspended Solids8Total AlkalinityAlkalinity total60Colal HardnessHardnessAcetic acidSutprine CarbonTotal Organic CarbonAcetic acidSutprine CarbonTotal Non-Purgeable Organic CarbonAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidA</th><th>Iron (Fe)0.1014.0.002) mg/lDissolved LeadLead (Pb)Magnesium (Mg)7.964.0.003 (mg/lDissolved MagnesseMagnaese (Mn)0.0178(d. 0.003 (mg/lDissolved Marcurymg/lMarcury (Hg)0.0005(mg/lDissolved Nickelmg/lDissolved Nickelmg/lDissolved Potassium(d. 0.002) mg/lDissolved Potassiummg/lDissolved Reactive Phospermg/l(d. 0.002) mg/lDissolved Reactive Phosper(d. 0.003) mg/lDissolved Reactive Phosper(d. 0.003) mg/lDissolved Sodium(d. 0.003) mg/lDissolved Sodium(d. 0.003) mg/lDissolved Zinc(d. 0.003) mg/lDissolved Zinc(d. 0.003) mg/lDissolved Zinc(d. 0.003) mg/lDistored Tinc(d. 0.003) mg/lDistored Tinc(d. 0.01) mg/lPh0.13(d. 0.03) mg/lPh(d. 0.74) mg/lPh0.05mg/lDistored Total)(d. 0.74) mg/lDistored Total)(d. 0.74) mg/lPh(d. 0.74) mg/lPh(d. 0.74) mg/lPh(d. 0.74) mg/lDistored Total)(d. 0.74) mg/lDistored Total)(d. 0.74) mg/lDistored Total)(d. 0.74) mg/lPh</th></t<>	Dissolved Iron0.101Iron (Fe)0.101Dissolved LeadLead (Pb)<0.0005Dissolved Magnesium7.96Magnesium (Mg)0.0178Dissolved ManganeseManganese (Mn)<0.0005Dissolved MercuryMercury (Hg)<0.0005Dissolved NickelNickel (Ni)<0.0005Dissolved PotassiumPotassium (K)2.47Dissolved Reactive Phosphorus (soluble reactive)0.277Dissolved SodiumSodium (Na)19.4Dissolved ZincZinc (Zn)0.003Escherichia coliNitrate-NNitrate-NNitrate-NSulphateSulphateSuspended Solids8Total phenolsSuspended Solids8Total AlkalinityAlkalinity total60Colal HardnessHardnessAcetic acidSutprine CarbonTotal Organic CarbonAcetic acidSutprine CarbonTotal Non-Purgeable Organic CarbonAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidAcetic acidA	Iron (Fe)0.1014.0.002) mg/lDissolved LeadLead (Pb)Magnesium (Mg)7.964.0.003 (mg/lDissolved MagnesseMagnaese (Mn)0.0178(d. 0.003 (mg/lDissolved Marcurymg/lMarcury (Hg)0.0005(mg/lDissolved Nickelmg/lDissolved Nickelmg/lDissolved Potassium(d. 0.002) mg/lDissolved Potassiummg/lDissolved Reactive Phospermg/l(d. 0.002) mg/lDissolved Reactive Phosper(d. 0.003) mg/lDissolved Reactive Phosper(d. 0.003) mg/lDissolved Sodium(d. 0.003) mg/lDissolved Sodium(d. 0.003) mg/lDissolved Zinc(d. 0.003) mg/lDissolved Zinc(d. 0.003) mg/lDissolved Zinc(d. 0.003) mg/lDistored Tinc(d. 0.003) mg/lDistored Tinc(d. 0.01) mg/lPh0.13(d. 0.03) mg/lPh(d. 0.74) mg/lPh0.05mg/lDistored Total)(d. 0.74) mg/lDistored Total)(d. 0.74) mg/lPh(d. 0.74) mg/lPh(d. 0.74) mg/lPh(d. 0.74) mg/lDistored Total)(d. 0.74) mg/lDistored Total)(d. 0.74) mg/lDistored Total)(d. 0.74) mg/lPh

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		RESULTS	(UNCERTAINTY)	LOQ		
VQ876	Volatile Fatty Acids (VFA) by	/ GC-MS				
	lso caproic acid	<5	mg/l	5		
	Isobutyric acid	<5	mg/l	5		
	Isovaleric acid	<5	mg/l	5		
	Propionic acid	<5	mg/l	5		
	Valeric acid	<5	mg/l	5		
	Volatile fatty acids as acetic acid	<5	mg/l	5		

LIST OF METHODS

Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total):
Volatile Fatty Acids (VFA) by GC-MS:	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 92221; APHA Online
	Nitrate-N: APHA Online Edition 4110 B Chemical Oxygen Demand: APHA Online Edition 5220 D Total Hardness: APHA Online Edition 2340 B Dissolved Boron: APHA Online Edition 3125 B mod. Dissolved Chromium: APHA Online Edition 3125 B mod. Dissolved Lead: APHA Online Edition 3125 B mod. Dissolved Mercury: APHA Online Edition 3125 B mod. Dissolved Potassium: APHA Online Edition 3125 B mod. Dissolved Potassium: APHA Online Edition 3125 B mod. Ammonia Nitrogen: APHA Online Edition 4500-NH3 H pH: APHA Online Edition 4500-H B Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B Dissolved Calcium: APHA Online Edition 3120 B mod. Dissolved Magnesium: APHA Online Edition 3120 B mod. Dissolved Arsenic: APHA Online Edition 3125 B mod.	Nitrate-N: APHA Online Edition 4110 BNW011Chemical Oxygen Demand: APHA Online Edition 5220 DNW023Total Hardness: APHA Online Edition 2340 BNW098Dissolved Boron: APHA Online Edition 3125 B mod.NW104Dissolved Chromium: APHA Online Edition 3125 B mod.NW108Dissolved Lead: APHA Online Edition 3125 B mod.NW113Dissolved Mercury: APHA Online Edition 3125 B mod.NW113Dissolved Potassium: APHA Online Edition 3125 B mod.NW116Dissolved Potassium: APHA Online Edition 3125 B mod.NW125Ammonia Nitrogen: APHA Online Edition 4500-NH3 HNW206Total Non-Purgeable Organic Carbon: APHA OnlineNW341Edition 5310 BDissolved Calcium: APHA Online Edition 3120 B mod.NW460Dissolved Arsenic: APHA Online Edition 3125 B mod.NW469Dissolved Arsenic: APHA Online Edition 3120 B mod.NW469

mbecabros

Marylou Cabral Laboratory Manager

Divita C. Lagozon

Divina Cunanan Supervisor Lagazon



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- Gabriela Carvalhaes
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Amitesh Kumar Supervisor

Leo Cleave

Senior Analyst Microbiology



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The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.

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Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer. Eurofins General Terms and Conditions apply.

END OF REPORT





N/A means Not Applicable
 Not Detected means not detected at or above the Limit of
 Quantification (LOQ)
 LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



AR-23-NW-015830-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPOR	TCODE	AR-2	3-NW-015	830-01	REPORT DATE	06/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642)			
	4741 Levin					
	NEW ZEALAN	1D				
Phone	(06) 367 2705				Copy to: Water and Wa	
Email	horowhenuaadmi					orowhenua.govt.nz), Yvettef
Contact	for your orders: :	Gabriela Ca Landfill	irvainaes		Order code:	EUNZWE-00108595
SAMPLE	ECODE	812-2023-	00020628			
	eference:	275092-0				
	g Point code: n Date & Time:	Ground wat WIL-HS1 17/02/2023			Sampling Point nan	ne: Levin HS1
-	Start Date & Time Date & Time	e: 17/02/2023 16/02/2023			Analysis Ending Dat Sampler(s)	e: 06/04/2023 Client nominated external sampler
Sampled	by Eurofins	No				
			RESULTS	(UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger	n (N) 0	.04	(± 0.01) mg/l	0.01	
W583	Arsenic - Soluble)				
	Arsenic (As)	<	0.001	(± 0.0003) mg/l	0.001	
NW341	BOD5 - Soluble C	arbonaceous	6			
	BOD5	<	6	(± 0.8) mg/l	1	
NW457	Calcium - Dissolv	ved				
	Calcium (Ca)	1	0.4	(± 1.04) mg/l	0.01	
NW020	Chemical Oxyger	Demand				
	Chemical oxygen de	mand (COD) 5	7	(± 10) mg/l	15	
NW007	Chloride					
	Chloride (Cl)	2	3.0	(± 1.15) mg/l	0.02	
NW023	Conductivity					
	Conductivity	2	1.1	(± 0.4) mS/m	0.1	
NW193	Dissolved Reactiv	ve Phosphor	us			
	Phosphorus (soluble	reactive) 0	.208	(± 0.042) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia c	oli By Mem	brane Filtration		
	Escherichia coli	1	000	cfu/100 ml	100	
NW460	Iron - Dissolved					
	Iron (Fe)	0	.074	(± 0.015) mg/l	0.005	
NW462	Magnesium - Diss	solved				
	Magnesium (Mg)	5	.56	(± 0.56) mg/l	0.01	
NW010	Nitrate-N					
	Nitrate-N	0	.07	(± 0.02) mg/l	0.01	
NW195	pН					

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Food & Water Testing

			(UNCERTAINTY)	LOQ
NW195		N200210		LUQ
1991 199	рН	8.6	(± 0.2)	0.4
③VQ088	pH Phenolics (Total)	8.6	(_ \)	0.1
(j) V (2000	Total phenols	<0.05	ma/l	0.05
NW469	Sodium - Dissolved	<0.05	mg/l	0.05
1444-05	Sodium (Na)	20.7	(± 2.07) mg/l	0.00
NW098	Soluble Aluminium	20.7	(,)	0.02
1111030	Aluminium	0.019	(± 0.002) mg/l	0.000
NW103		0.013	(,	0.002
	Boron (B)	0.05	mg/l	0.03
NW104		0.00	ilig/i	0.03
1404 104	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106	Soluble Chromium	<0.000Z	(0.0002
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW/108	Soluble Copper	40.00 T	(,	0.001
1444 100	Copper (Cu)	0.0008	(± 0.0002) mg/l	0.0005
NW110	Soluble Lead	0.0000	(,	0.0005
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005
NW113	Soluble Manganese	<0.0000	(,	0.0005
	Manganese (Mn)	0.0054	(± 0.0011) mg/l	0.0005
NW114	Soluble Mercury	0.0004	, , ,	0.0005
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	Soluble Nickel	0.0000		0.0000
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005
NW117	Soluble Potassium	0.0000	(, C	0.0005
	Potassium (K)	1.06	mg/l	0.01
NW125	Soluble Zinc	1.00		0.01
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002
NW011		-0.002	(, 0	0.002
	Sulphate	18.1	(± 0.91) mg/l	0.02
NW206	Suspended Solids	10.1	、 , C	0.02
	Suspended Solids	26	mg/l	3
NW003			··· · ··	0
	Alkalinity total	62	(± 6) mg	1
	-	VL	CaCO3/I	I
NW029	Total Hardness			
	Hardness	49	(± 5) mg CaCO3/I	1
NW210	Total Non-Purgeable Or	ganic Carbon	Gaulon	
	Total Organic Carbon	8.3	(± 0.8) mg/l	0.1
③VQ876	Volatile Fatty Acids (VF		· · · ·	0.1
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5 5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5

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		RESULT	S (UNCERTAINTY)	LOQ
③VQ876	Volatile Fatty Acids (VFA) by	GC-MS		
	lso caproic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
	Volatile fatty acids as acetic acid	<5	mg/l	5

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Gordon McArthur Senior laboratory Analyst

Signature

Jennifer Mont Supervisor

Ivan Imamura Laboratory Analyst

Alm

Amitesh Kumar Supervisor

Leo Cleave

Senior Analyst Senior Analyst

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EXPLANATORY NOTE





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Food & Water Testing

N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

Test is not accredited

- $\ensuremath{\mathfrak{O}}$ Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- **(6)** Test result is provided by the customer and is not accredited
- $\ensuremath{\overline{\mathcal{O}}}$ Tested at the sampling point by Eurofins and is not accredited
- (8) Tested at the sampling point by Eurofins and is accredited
- The test result(s) in this report apply only to the sample as received.
- This document can only be reproduced in full.
- The tests are identified by a five-digit code, their description is available on request.
- Accreditation does not apply to comments or graphical representations.

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Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.

If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice. The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.

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END OF REPORT







AR-23-NW-024905-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-NW	-024905-01	REPORT DATE	22/05/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	. ,			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705	n@downor.co.n7		Copy to: Water and Waste (waterandwasteteam@horo	
Email Contract (horowhenuaadmi	Gabriela Carvalha	00	Order code:	EUNZWE-00112294
Contract	for your orders: :	Landfill	65	Order code:	EUNZWE-00112294
SAMPLE	CODE	812-2023-00031	594		
	ference:	279130-0			
	g Point code: n Date & Time:	Ground water WIL-HS1 10/03/2023 17:29		Sampling Point name:	Levin HS1
Analysis	Start Date & Time	e: 10/03/2023 17:42		Analysis Ending Date:	22/05/2023
-	Date & Time by Eurofins	08/03/2023 13:08 No		Sampler(s)	Client nominated external sample
	-	RESU	JLTS (UNCERTAINT)	Y) LOQ	
VW179	Ammonia Nitroge	en			
	Ammoniacal nitroger	n (N) 0.12	(± 0.03) mg/l	0.01	
W583	Arsenic - Soluble	9			
	Arsenic (As)	0.004	(± 0.0005) mg/l	0.001	
NW341	BOD5 - Soluble C	arbonaceous			
	BOD5	<6	(± 0.8) mg/l	1	
NW457	Calcium - Dissolv	ved			
	Calcium (Ca)	12.4	(± 1.24) mg/l	0.01	
W020	Chemical Oxyger	Demand			
	Chemical oxygen de	mand (COD) 33	(± 7) mg/l	15	
W007	Chloride				
	Chloride (Cl)	23.2	(± 1.16) mg/l	0.02	
W023	Conductivity				
	Conductivity	22.1	(± 0.4) mS/m	0.1	
W193	Dissolved Reactiv	ve Phosphorus			
	Phosphorus (soluble	e reactive) 0.373	(± 0.075) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia coli By	Membrane Filtration		
	Escherichia coli	100	cfu/100 ml	100	
NW460	Iron - Dissolved				
	Iron (Fe)	0.156	(± 0.031) mg/l	0.005	
W462	Magnesium - Diss	solved			
	Magnesium (Mg)	6.66	(± 0.67) mg/l	0.01	
NW010	Nitrate-N				
	Nitrate-N	0.14	(± 0.03) mg/l	0.01	
NW195	рН				



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Food & Water Testing

RESULTS (UNCERTAINTY) LOQ						
		REGULIC				
NW195	-	7.0	(± 0.2)			
@V0000	pH	7.8	(± 0.2)	0.1		
③VQ088	Phenolics (Total)					
	Total phenols	<0.05	mg/l	0.05		
NW469	Sodium - Dissolved					
	Sodium (Na)	25.2	(± 2.52) mg/l	0.02		
NW098	Soluble Aluminium					
	Aluminium	0.011	(± 0.001) mg/l	0.002		
NW103	Soluble Boron					
	Boron (B)	0.05	mg/l	0.03		
NW104	Soluble Cadmium					
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002		
NW106	Soluble Chromium					
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001		
NW108	Soluble Copper					
	Copper (Cu)	0.0008	(± 0.0002) mg/l	0.0005		
NW110	Soluble Lead					
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005		
NW113	Soluble Manganese					
	Manganese (Mn)	0.0179	(± 0.0036) mg/l	0.0005		
NW114	Soluble Mercury					
	Mercury (Hg)	<0.0005	mg/l	0.0005		
NW116	Soluble Nickel		J.			
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005		
NW117	Soluble Potassium					
	Potassium (K)	1.86	mg/l	0.01		
NW125			3			
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002		
NW011				0.002		
	Sulphate	16.0	(± 0.80) mg/l	0.02		
NW206	Suspended Solids	10.0	. , -	0.02		
	Suspended Solids	6	mg/l	2		
NW003		0	mg/i	3		
1444003	2	50	(± 6) mg			
	Alkalinity total	59	CaCO3/I	1		
NW029	Total Hardness					
	Hardness	58	(± 6) mg	1		
			CaCO3/I			
NW210	Total Non-Purgeable Org		(± 0.7) mg/l			
	Total Organic Carbon	7.1	(± 0.7) mg/i	0.1		
③VQ 876	Volatile Fatty Acids (VFA					
	Acetic acid	<5	mg/l	5		
	Butyric acid	<5 <5	mg/l	5		
	Heptanoic Acid C7:0 Hexanoic acid	<5 <5	mg/l mg/l	5		
	I GAATUIC AUU	~ J	iiig/l	5		





		RESULT	S (UNCERTAINTY)	LOQ			
③VQ876	Volatile Fatty Acids (VFA) by GC-MS						
	lso caproic acid	<5	mg/l	5			
	Isobutyric acid	<5	mg/l	5			
	Isovaleric acid	<5	mg/l	5			
	Propionic acid	<5	mg/l	5			
	Valeric acid	<5	mg/l	5			
	Volatile fatty acids as acetic acid	<5	mg/l	5			

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 92221; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Duiha C. Lagozon

Supervisor Divina Cunanan Lagazon

EXPLANATORY NOTE

Signature

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

Phone

Amitesh Kumar Supervisor

Sunita Raju

Business Unit Manager

uhata Av







Test is not accredited

- ⁽²⁾ Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- **()** Test result is provided by the customer and is not accredited
- ${\ensuremath{\overline{\mathcal{O}}}}$ Tested at the sampling point by Eurofins and is not accredited
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- The tests are identified by a five-digit code, their description is available on request.
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END OF REPORT





N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ)

Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



AR-23-NW-036153-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-2	23-NW-036	153-01	REPORT DATE	21/07/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642	•	ו)			
	4741 Levin					
	NEW ZEALAN	ID				
Phone	(06) 367 2705				Copy to: Water and Wa	
Email	horowhenuaadmir	<u> </u>				norowhenua.govt.nz), McMillan
Contact f	for your orders: :	Gabriela Ca Landfill	arvalhaes		Order code:	EUNZWE-00117909
SAMPLE		812-2023-	00051954			
	eference:	283051-0				
Product:		Ground wa	ter			
	g Point code:	WIL-HS1A	17.10		Sampling Point nan	ne: Levin HS1A
	n Date & Time: Start Date & Time	14/04/2023			Analysis Ending Dat	te: 21/07/2023
-	Date & Time	13/04/2023			Sampler(s)	Client nominated external sampler
-	d By Eurofins	No				
			RESULTS	(UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitrogen		0.04	(± 0.01) mg/l	0.01	
	BOD5 - Soluble Ca		s			
	BOD5	<	<3	mg/l	1	
NW020	Chemical Oxygen	Demand				
	Chemical oxygen der		28	(± 7) mg/l	15	
NW007	Chloride					
	Chloride (Cl)	2	23.1	(± 1.15) mg/l	0.02	
NW023	Conductivity					
	Conductivity	2	23.2	(± 0.5) mS/m	0.1	
NW098	Dissolved Alumin	ium				
	Aluminium	C	0.025	(± 0.003) mg/l	0.002	
NW583	Dissolved Arsenic	;				
	Arsenic (As)	C	0.003	(± 0.0005) mg/l	0.001	
NW103	Dissolved Boron					
	Boron (B)	C	0.07	mg/l	0.03	
NW104	Dissolved Cadmiu	ım				
	Cadmium (Cd)	<	0.0002	(± 0.0001) mg/l	0.0002	
NW457	Dissolved Calciun	n				
	Calcium (Ca)	1	2.2	(± 1.22) mg/l	0.01	
NW106	Dissolved Chromi	ium				
	Chromium (Cr)	<	<0.001	(± 0.0003) mg/l	0.001	
NW108	Dissolved Copper					
	Copper (Cu)	C	0.0014	(± 0.0003) mg/l	0.0005	
	Dissolved Iron					

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		RESULTS	(UNCERTAINTY)	LOQ
NW460	Dissolved Iron			
	Iron (Fe)	0.119	(± 0.024) mg/l	0.005
NW110	Dissolved Lead		-	2.000
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005
NW462	Dissolved Magnesium			0.0005
111702	Magnesium (Mg)	8.30	(± 0.83) mg/l	0.04
NI\A/442			(± 0.00) mg/i	0.01
NW113	Dissolved Manganese	0.0211	(± 0.0042) mg/l	
	Manganese (Mn)	0.0211	(± 0.0042) mg/l	0.0005
NW114	Dissolved Mercury	<0.000F		
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	Dissolved Nickel			
	Nickel (Ni)	0.0006	(± 0.0003) mg/l	0.0005
NW117	Dissolved Potassium			
	Potassium (K)	2.45	mg/l	0.01
NW193	Dissolved Reactive Phosph	orus		
	Phosphorus (soluble reactive)	0.281	(± 0.056) mg/l	0.005
NW469	Dissolved Sodium			
	Sodium (Na)	20.8	(± 2.08) mg/l	0.02
NW125	Dissolved Zinc		, , <u>,</u>	0.02
1414 123		0.007	(± 0.001) mg/l	0.000
71400 4	Zinc (Zn)			0.002
ZIVIZGA	Enumeration of Escherichia	5400 5400		
	Escherichia coli	0700	cfu/100 ml	100
NW010	Nitrate-N	0.44		
	Nitrate-N	0.14	(± 0.04) mg/l	0.01
NW195	рН			
	рН	7.4	(± 0.2)	0.1
VQ088	Phenolics (Total)			
	Total phenols	<0.05	mg/l	0.05
NW011	Sulphate			
	Sulphate	14.5	(± 0.73) mg/l	0.02
NW206	Suspended Solids			
	Suspended Solids	12	mg/l	3
NW003	Total Alkalinity			5
144003	-	59	(± 6) mg	4
	Alkalinity total	~~	CaCO3/I	1
NW029	Total Hardness			
	Hardness	65	(± 6) mg	1
			CaCO3/I	•
NW210	Total Non-Purgeable Organ			
	Total Organic Carbon	6.8	(± 0.7) mg/l	0.1
VQ876	Volatile Fatty Acids (VFA) b	y GC-MS		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5

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		RESULTS	(UNCERTAINTY)	LOQ			
VQ876	Volatile Fatty Acids (VFA) by GC-MS						
	lso caproic acid	<5	mg/l	5			
	Isobutyric acid	<5	mg/l	5			
	Isovaleric acid	<5	mg/l	5			
	Propionic acid	<5	mg/l	5			
	Valeric acid	<5	mg/l	5			
	Volatile fatty acids as acetic acid	<5	mg/l	5			

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total):
VQ876	Volatile Fatty Acids (VFA) by GC-MS:	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Divita C. Lagozon

Divina Cunanan Supervisor Lagazon



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Amitesh Kumar Supervisor

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Senior Analyst Microbiology



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- ② Test is subcontracted within Eurofins group and is accredited
- ③ Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- ^⑤Test is subcontracted outside Eurofins group and is not accredited
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- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited
- The test result(s) in this report apply only to the sample as received.
- This document can only be reproduced in full.
- The tests are identified by a five-digit code, their description is available on request.
- Accreditation does not apply to comments or graphical representations.

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The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.

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Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer. Eurofins General Terms and Conditions apply.

END OF REPORT

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N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



AR-23-NW-015829-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-	NW-015829-01	REPORT DATE	06/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	. ,			
	4741 Levin				
		ND			
Phone Email	(06) 367 2705 horowhenuaadmi	n@downor.co.nz		Copy to: Water and Was	ite Team prowhenua.govt.nz), Yvettef
	for your orders:	Gabriela Carv	alhaes	Order code:	EUNZWE-00108595
Contract	-	Landfill		Order Code.	
SAMPLE	CODE	812-2023-00	020626		
	ference:	275093-0			
	g Point code: n Date & Time:	Ground water WIL-HS1A 17/02/2023 13	3:41	Sampling Point nam	e: Levin HS1A
	Start Date & Time			Analysis Ending Date	e: 06/04/2023
-	Date & Time by Eurofins	16/02/2023 0 ⁻ No	7:15	Sampler(s)	Client nominated external sample
			ESULTS (UNCERTAIN	TY) LOQ	
NW179	Ammonia Nitroge	en		· · ·	
	Ammoniacal nitroger		2 (± 0.007) mg/l	l 0.01	
W583	Arsenic - Soluble)			
	Arsenic (As)	0.00)3 (± 0.0004) mg	g/l 0.001	
W341	BOD5 - Soluble C	arbonaceous			
	BOD5	<6	(± 0.8) mg/l	1	
W457	Calcium - Dissolv	ved			
	Calcium (Ca)	10.8	(± 1.08) mg/l	0.01	
W020	Chemical Oxyger	Demand			
	Chemical oxygen de	mand (COD) 53	(± 9) mg/l	15	
W007	Chloride				
	Chloride (Cl)	22.7	y (± 1.13) mg/l	0.02	
NW023	Conductivity				
	Conductivity	20.9) (± 0.4) mS/m	0.1	
W193	Dissolved Reactiv	ve Phosphorus			
	Phosphorus (soluble	reactive) 0.20	03 (± 0.041) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia coli	By Membrane Filtration	n	
	Escherichia coli	900	cfu/100 ml	100	
NW460	Iron - Dissolved				
	Iron (Fe)	0.09	98 (± 0.020) mg/l	0.005	
\W462	Magnesium - Diss	solved			
	Magnesium (Mg)	5.90) (± 0.59) mg/l	0.01	
NW010	Nitrate-N				
	Nitrate-N	0.07	y (± 0.02) mg/l	0.01	
NW195	рН				



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RESULTS (UNCERTAINTY) LOQ						
NW195 pH						
	рН	8.6	(± 0.2)	0.1		
③VQ088	Phenolics (Total)			0.1		
0	Total phenols	<0.05	mg/l	0.05		
NW469	Sodium - Dissolved			0.00		
	Sodium (Na)	21.8	(± 2.18) mg/l	0.02		
NW098	Soluble Aluminium	2	. , -	0.02		
	Aluminium	2580	(± 260) mg/l	0.002		
NW103		2000		0.002		
	Boron (B)	0.05	mg/l	0.03		
NW104	Soluble Cadmium	0.05	mg/i	0.03		
104		<0.0002	(± 0.0001) mg/l	0.0000		
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/i	0.0002		
1999100	Soluble Chromium	-0.00 <i>1</i>	(± 0.0003) mg/l			
NN4/400	Chromium (Cr)	<0.001	(± 0.0003) mg/i	0.001		
NW108	Soluble Copper		(1.0.0002)			
	Copper (Cu)	0.0010	(± 0.0003) mg/l	0.0005		
NW110	Soluble Lead					
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005		
NW113	0					
	Manganese (Mn)	0.0098	(± 0.0020) mg/l	0.0005		
NW114	Soluble Mercury					
	Mercury (Hg)	<0.0005	mg/l	0.0005		
NW116	Soluble Nickel					
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005		
NW117	Soluble Potassium					
	Potassium (K)	1.68	mg/l	0.01		
NW125	Soluble Zinc					
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002		
NW011	Sulphate					
	Sulphate	18.1	(± 0.91) mg/l	0.02		
NW206	Suspended Solids					
	Suspended Solids	35	mg/l	3		
NW003			-	-		
-	Alkalinity total	61	(± 6) mg	1		
	·		CaCO3/I			
NW029	Total Hardness					
	Hardness	51	(± 5) mg CaCO3/l	1		
NW210	Total Non-Purgeable Or	manic Carbon				
1444210	Total Organic Carbon	8.4	(± 0.8) mg/l	0.4		
@\/ <u>0</u> 976	-		(= 0.0) mg/i	0.1		
③VQ876	Volatile Fatty Acids (VF					
	Acetic acid	<5	mg/l	5		
	Butyric acid Heptanoic Acid C7:0	<5 <5	mg/l mg/l	5		
	Hexanoic acid	<5 <5	mg/l	5 5		
				5		

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		RESULI	S (UNCERTAINTY)	LOQ			
③VQ 876	Volatile Fatty Acids (VFA) by GC-MS						
	lso caproic acid	<5	mg/l	5			
	Isobutyric acid	<5	mg/l	5			
	Isovaleric acid	<5	mg/l	5			
	Propionic acid	<5	mg/l	5			
	Valeric acid	<5	mg/l	5			
	Volatile fatty acids as acetic acid	<5	mg/l	5			

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Gordon McArthur Senior laboratory Analyst

Signature

Supervisor **Jennifer Mont**

Laboratory Analyst Ivan Imamura

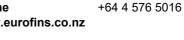
Amitesh Kumar Supervisor

Leo Cleave

Senior Analyst Senior Analyst

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EXPLANATORY NOTE





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Food & Water Testing

N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

Test is not accredited

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- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- **(6)** Test result is provided by the customer and is not accredited
- $\ensuremath{\overline{\mathcal{O}}}$ Tested at the sampling point by Eurofins and is not accredited
- (8) Tested at the sampling point by Eurofins and is accredited
- The test result(s) in this report apply only to the sample as received.
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END OF REPORT





AR-23-NW-024904-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	AR-	23-NW-024	904-01	REPORT DATE	22/05/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	•	n)			
Phone	4741 Levin NEW ZEALAN (06) 367 2705	۱D			Copy to: Water and Wast	e Team
Email	horowhenuaadmi	n@downer.co	.nz			rowhenua.govt.nz), Yvettef
Contact for Contract:	or your orders:	Gabriela C Landfill	arvalhaes		Order code:	EUNZWE-00112294
SAMPLE	CODE	812-2023	-00031588			
Client Re	ference:	279135-0				
Reception	Point code: n Date & Time:	Ground wa WIL-HS1A 10/03/2023	3 17:27		Sampling Point name	
Sampled	Start Date & Time Date & Time by Eurofins	e: 10/03/2023 08/03/2023 No			Analysis Ending Date Sampler(s)	22/05/2023 Client nominated external sample
			RESULTS	(UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger	n (N)	0.07	(± 0.02) mg/l	0.01	
NW583 /	Arsenic - Soluble)				
	Arsenic (As)		0.004	(± 0.0005) mg/l	0.001	
NW341 E	BOD5 - Soluble C	arbonaceou	IS			
1	BOD5		<6	(± 0.8) mg/l	1	
NW457 (Calcium - Dissolv	ved				
(Calcium (Ca)		12.4	(± 1.24) mg/l	0.01	
NW020 (Chemical Oxygen	Demand				
(Chemical oxygen de	mand (COD)	44	(± 8) mg/l	15	
NW007 (Chloride					
(Chloride (Cl)		23.6	(± 1.18) mg/l	0.02	
NW023 (Conductivity					
	Conductivity		21.8	(± 0.4) mS/m	0.1	
NW193 [Dissolved Reactiv	ve Phospho	rus			
ł	Phosphorus (soluble	reactive)	0.382	(± 0.076) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia	coli By Mem	brane Filtration		
,	Escherichia coli		<100	cfu/100 ml	100	
NW460 I	ron - Dissolved					
,	Iron (Fe)		0.148	(± 0.030) mg/l	0.005	
NW462	Magnesium - Diss	solved				
1	Magnesium (Mg)		6.68	(± 0.67) mg/l	0.01	
NW010	Nitrate-N					
1	Nitrate-N		0.15	(± 0.04) mg/l	0.01	
NW195 g	эΗ					



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Food & Water Testing

RESULTS (UNCERTAINTY) LOQ							
	لا						
NW195	-	7 7	(± 0.2)				
	pH	7.7	(± 0.2)	0.1			
③VQ088	Phenolics (Total)						
	Total phenols	<0.05	mg/l	0.05			
NW469	Sodium - Dissolved		(1.0.50)				
	Sodium (Na)	25.2	(± 2.52) mg/l	0.02			
NW098	Soluble Aluminium		(1.0.004)				
	Aluminium	0.011	(± 0.001) mg/l	0.002			
NW103	Soluble Boron						
	Boron (B)	0.06	mg/l	0.03			
NW104			<i>.</i>				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002			
NW106	Soluble Chromium						
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001			
NW108							
	Copper (Cu)	0.0009	(± 0.0003) mg/l	0.0005			
NW110	Soluble Lead						
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005			
NW113	Soluble Manganese						
	Manganese (Mn)	0.0154	(± 0.0031) mg/l	0.0005			
NW114	Soluble Mercury						
	Mercury (Hg)	<0.0005	mg/l	0.0005			
NW116	Soluble Nickel						
	Nickel (Ni)	0.0006	(± 0.0002) mg/l	0.0005			
NW117	Soluble Potassium						
	Potassium (K)	1.95	mg/l	0.01			
NW125	Soluble Zinc						
	Zinc (Zn)	0.006	(± 0.0009) mg/l	0.002			
NW011	Sulphate						
	Sulphate	16.4	(± 0.82) mg/l	0.02			
NW206	Suspended Solids						
	Suspended Solids	39	mg/l	3			
NW003	Total Alkalinity						
	Alkalinity total	47	(± 5) mg CaCO3/I	1			
NW029	Total Hardness		CacOS/I				
111025	Hardness	58	(± 6) mg	4			
	naiuliess	56	CaCO3/I	1			
NW210	Total Non-Purgeable Orga	nic Carbon					
	Total Organic Carbon	7.0	(± 0.7) mg/l	0.1			
3VQ876	Volatile Fatty Acids (VFA)	by GC-MS					
	Acetic acid	<5	mg/l	5			
	Butyric acid	<5	mg/l	5			
	Heptanoic Acid C7:0	<5	mg/l	5			
	Hexanoic acid	<5	mg/l	5			

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		RESULI	S (UNCERTAINTY)	LOQ			
③VQ 876	Volatile Fatty Acids (VFA) by GC-MS						
	lso caproic acid	<5	mg/l	5			
	Isobutyric acid	<5	mg/l	5			
	Isovaleric acid	<5	mg/l	5			
	Propionic acid	<5	mg/l	5			
	Valeric acid	<5	mg/l	5			
	Volatile fatty acids as acetic acid	<5	mg/l	5			

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 92221; APHA Online

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Marylou Cabral Laboratory Manager

Duiha C. Lagozon

Supervisor Divina Cunanan Lagazon

EXPLANATORY NOTE

Signature

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

Phone

Amitesh Kumar Supervisor

Sunita Raju

Business Unit Manager

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Test is not accredited

- ⁽²⁾ Test is subcontracted within Eurofins group and is accredited
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- (8) Tested at the sampling point by Eurofins and is accredited
- The test result(s) in this report apply only to the sample as received.
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END OF REPORT





N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ)

LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



AR-23-NW-036155-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	Α	R-23-NW-036	155-01	REPORT DATE	21/07/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642		evin)			
	4741 Levin					
	NEW ZEALAN	1D				
Phone	(06) 367 2705				Copy to: Water and Waster	
Email	horowhenuaadmi	<u> </u>				rowhenua.govt.nz), McMillan
Contact · Contract	for your orders: ::	Gabriela Landfill	a Carvalhaes		Order code:	EUNZWE-00117909
SAMPLE	ECODE	812-20	23-00051958			
Client Re	eference:	283052	-0			
Product:		Ground				
	g Point code: on Date & Time:	WIL-HS	2 023 17:18		Sampling Point name	: Levin HS2
	Start Date & Time:				Analysis Ending Date:	21/07/2023
-	Date & Time		023 12:56		Sampler(s)	Client nominated external sampler
Collecte	d By Eurofins	No				
			RESULTS	(UNCERTAINT)	() LOQ	
NW179	Ammonia Nitroge	n				
	Ammoniacal nitroger	n (N)	0.02	(± 0.007) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonace	eous			
	BOD5		<3	mg/l	1	
NW020	Chemical Oxygen	Demand	I			
	Chemical oxygen de	mand (COI	D) ²⁵	(± 6) mg/l	15	
NW007	Chloride					
	Chloride (CI)		23.9	(± 1.19) mg/l	0.02	
NW023	Conductivity					
	Conductivity		23.1	(± 0.5) mS/m	0.1	
NW098	Dissolved Alumin	ium				
	Aluminium		0.017	(± 0.002) mg/l	0.002	
NW583	Dissolved Arsenie	C				
	Arsenic (As)		0.003	(± 0.0004) mg/l	0.001	
NW103	Dissolved Boron					
	Boron (B)		0.08	mg/l	0.03	
NW104	Dissolved Cadmi	um				
	Cadmium (Cd)		<0.0002	(± 0.0001) mg/l	0.0002	
NW457	Dissolved Calciu	n				
	Calcium (Ca)		12.8	(± 1.28) mg/l	0.01	
NW106	Dissolved Chrom	ium				
	Chromium (Cr)		<0.001	(± 0.0003) mg/l	0.001	
NW108	Dissolved Coppe	r				
	Copper (Cu)		0.0010	(± 0.0003) mg/l	0.0005	

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		RESULT	S (UNCERTAINTY)	LOQ
NW460	Dissolved Iron			
	Iron (Fe)	0.139	(± 0.028) mg/l	0.005
NW110	Dissolved Lead			
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005
NW462	Dissolved Magnesium			
	Magnesium (Mg)	8.42	(± 0.84) mg/l	0.01
NW113	Dissolved Manganese			
	Manganese (Mn)	0.0200	(± 0.0040) mg/l	0.0005
NW114	Dissolved Mercury			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	Dissolved Nickel			
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005
NW117	Dissolved Potassium			
	Potassium (K)	2.66	mg/l	0.01
NW193	Dissolved Reactive Phosp	horus	5	
	Phosphorus (soluble reactive)	0.265	(± 0.053) mg/l	0.005
NW469	Dissolved Sodium		-	0.000
	Sodium (Na)	20.3	(± 2.03) mg/l	0.02
NW125	Dissolved Zinc			0.02
	Zinc (Zn)	0.002	(± 0.0007) mg/l	0.002
ZM2GA	Enumeration of Escherichi	a coli By Mo		0.002
	Escherichia coli	500 500	cfu/100 ml	100
NW010	Nitrate-N			100
1111010	Nitrate-N	0.20	(± 0.05) mg/l	0.04
NW195			(_ 3.33)	0.01
1444 133	рН	7.5	(± 0.2)	0.4
	pH Dhanaliaa (Tatal)		(± 0.2)	0.1
VQ088	Phenolics (Total)	<0.05		
	Total phenols	0.00	mg/l	0.05
NWU11	Sulphate	15.3	(± 0.77) mg/l	
	Sulphate	10.0	(± 0.77) mg/i	0.02
NW206	Suspended Solids	40		
	Suspended Solids	40	mg/l	3
NW003	Total Alkalinity	50		
	Alkalinity total	59	(± 6) mg CaCO3/I	1
NW029	Total Hardness			
	Hardness	67	(± 7) mg	1
			CaCO3/I	-
NW210	0 0			
	Total Organic Carbon	6.9	(± 0.7) mg/l	0.1
VQ876	Volatile Fatty Acids (VFA) k	-		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5 <5	mg/l	5
	Heptanoic Acid C7:0	<5 <5	mg/l	5
	Hexanoic acid	÷	mg/l	5

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		RESULTS	(UNCERTAINTY)	LOQ			
VQ876	Volatile Fatty Acids (VFA) by GC-MS						
	lso caproic acid	<5	mg/l	5			
	Isobutyric acid	<5	mg/l	5			
	Isovaleric acid	<5	mg/l	5			
	Propionic acid	<5	mg/l	5			
	Valeric acid	<5	mg/l	5			
	Volatile fatty acids as acetic acid	<5	mg/l	5			

LIST OF METHODS

Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total):
Volatile Fatty Acids (VFA) by GC-MS:	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 92221; APHA Online
	Nitrate-N: APHA Online Edition 4110 B Chemical Oxygen Demand: APHA Online Edition 5220 D Total Hardness: APHA Online Edition 2340 B Dissolved Boron: APHA Online Edition 3125 B mod. Dissolved Chromium: APHA Online Edition 3125 B mod. Dissolved Lead: APHA Online Edition 3125 B mod. Dissolved Mercury: APHA Online Edition 3125 B mod. Dissolved Potassium: APHA Online Edition 3125 B mod. Dissolved Potassium: APHA Online Edition 3125 B mod. Ammonia Nitrogen: APHA Online Edition 4500-NH3 H pH: APHA Online Edition 4500-H B Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B Dissolved Calcium: APHA Online Edition 3120 B mod. Dissolved Magnesium: APHA Online Edition 3120 B mod. Dissolved Arsenic: APHA Online Edition 3125 B mod.	Nitrate-N: APHA Online Edition 4110 BNW011Chemical Oxygen Demand: APHA Online Edition 5220 DNW023Total Hardness: APHA Online Edition 2340 BNW098Dissolved Boron: APHA Online Edition 3125 B mod.NW104Dissolved Chromium: APHA Online Edition 3125 B mod.NW108Dissolved Lead: APHA Online Edition 3125 B mod.NW113Dissolved Mercury: APHA Online Edition 3125 B mod.NW113Dissolved Potassium: APHA Online Edition 3125 B mod.NW116Dissolved Potassium: APHA Online Edition 3125 B mod.NW125Ammonia Nitrogen: APHA Online Edition 4500-NH3 HNW206Total Non-Purgeable Organic Carbon: APHA OnlineNW341Edition 5310 BDissolved Calcium: APHA Online Edition 3120 B mod.NW460Dissolved Arsenic: APHA Online Edition 3125 B mod.NW469Dissolved Arsenic: APHA Online Edition 3120 B mod.NW469

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Marylou Cabral Laboratory Manager

Divita C. Lagozon

Divina Cunanan Supervisor Lagazon



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Signature

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- Gabriela Carvalhaes
- Manager Food and Water **Testing Chemistry**

Phone

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Amitesh Kumar Supervisor

Leo Cleave

Senior Analyst Microbiology





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END OF REPORT





N/A means Not Applicable
 Not Detected means not detected at or above the Limit of
 Quantification (LOQ)
 LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



AR-23-NW-015827-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE		AR-23-NW-0	015827-01	REPORT DATE	06/04/2023		
Attention	Downer NZ Lt Horowhenua A P O Box 642	,					
	4741 Levin						
	NEW ZEALAN	ND					
Phone	(06) 367 2705			Copy to: Water and Waste			
Email	horowhenuaadmi	0		(waterandwasteteam@horo			
Contact f Contract	for your orders: :	Gabriela Carvalhae Landfill	S	Order code:	EUNZWE-00108595		
SAMPLE	ECODE	812-2023-000206	23				
	eference:	274951-0					
Product:		Ground water WIL-HS2		Compling Daint non	Levin HS2		
	g Point code: on Date & Time:	17/02/2023 13:41		Sampling Point name:			
Analysis	Start Date & Time	e: 17/02/2023 13:56		Analysis Ending Date:	06/04/2023		
-	Date & Time	16/02/2023 07:50		Sampler(s)	Client nominated external sampler		
Sampled	by Eurofins	No					
		RESUI	TS (UNCERTAINTY) LOQ			
VW179	Ammonia Nitroge	en					
	Ammoniacal nitroger	n (N) 1.23	(± 0.18) mg/l	0.01			
W583	Arsenic - Soluble	9					
	Arsenic (As)	0.002	(± 0.0004) mg/l	0.001			
W341	BOD5 - Soluble C	arbonaceous					
	BOD5	<6	(± 0.8) mg/l	1			
W457	Calcium - Dissolv	ved					
	Calcium (Ca)	15.4	(± 1.54) mg/l	0.01			
W020	Chemical Oxyger	Demand					
	Chemical oxygen de	mand (COD) 68	(± 11) mg/l	15			
W007	Chloride						
	Chloride (Cl)	38.6	(± 1.93) mg/l	0.02			
NW023	Conductivity						
	Conductivity	35.2	(± 0.7) mS/m	0.1			
W193	Dissolved Reactiv	ve Phosphorus					
	Phosphorus (soluble	e reactive) 0.143	(± 0.029) mg/l	0.005			
ZM2GA	Enumeration of E	scherichia coli By N	lembrane Filtration				
	Escherichia coli	1000	cfu/100 ml	100			
NW460	Iron - Dissolved						
	Iron (Fe)	0.316	(± 0.063) mg/l	0.005			
\W462	Magnesium - Dise	solved					
	Magnesium (Mg)	8.83	(± 0.88) mg/l	0.01			
NW010	Nitrate-N						
	Nitrate-N	0.19	(± 0.05) mg/l	0.01			
NW195	pН						



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Food & Water Testing

RESULTS (UNCERTAINTY) LOQ						
NW195 pH						
	рН	7.8	(± 0.2)	0.1		
③VQ088	Phenolics (Total)			0.1		
•	Total phenols	<0.05	mg/l	0.05		
NW469	Sodium - Dissolved		J.	0.00		
	Sodium (Na)	31.4	(± 3.14) mg/l	0.02		
NW098	Soluble Aluminium	•	. , -	0.02		
	Aluminium	0.023	(± 0.002) mg/l	0.002		
NW103		0.020	(, , ,	0.002		
	Boron (B)	0.14	mg/l	0.03		
NW104	Soluble Cadmium	0.14	ilig/i	0.03		
104		<0.0002	(± 0.0001) mg/l	0.0000		
	Cadmium (Cd)	<0.0002	(± 0.000 r) mg/r	0.0002		
NWIUO	Soluble Chromium	a aa ((± 0.0002) mg/l			
NN4/400	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001		
NW108	Soluble Copper		(1.0.0000)			
	Copper (Cu)	0.0009	(± 0.0002) mg/l	0.0005		
NW110	Soluble Lead					
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005		
NW113	Soluble Manganese					
	Manganese (Mn)	0.0314	(± 0.0063) mg/l	0.0005		
NW114	Soluble Mercury					
	Mercury (Hg)	<0.0005	mg/l	0.0005		
NW116	Soluble Nickel					
	Nickel (Ni)	0.0007	(± 0.0003) mg/l	0.0005		
NW117	Soluble Potassium					
	Potassium (K)	7.62	mg/l	0.01		
NW125	Soluble Zinc					
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002		
NW011						
	Sulphate	14.7	(± 0.73) mg/l	0.02		
NW206						
	Suspended Solids	36	mg/l	3		
NW003			····	0		
	Alkalinity total	94	(± 9) mg	1		
		71	CaCO3/I	I		
NW029	Total Hardness					
	Hardness	75	(± 7) mg	1		
NIMOAO	Tatal Nam Down Still C		CaCO3/I			
NW210	0	-	(+ 1 2) mc/			
0.460-5	Total Organic Carbon	12.7	(± 1.3) mg/l	0.1		
③VQ876	Volatile Fatty Acids (VF					
	Acetic acid	<5	mg/l	5		
	Butyric acid	<5	mg/l	5		
	Heptanoic Acid C7:0 Hexanoic acid	<5 <5	mg/l	5		
		N 0	mg/l	5		





		RESULT	S (UNCERTAINTY)	LOQ			
③VQ876	Volatile Fatty Acids (VFA) by GC-MS						
	lso caproic acid	<5	mg/l	5			
	Isobutyric acid	<5	mg/l	5			
	Isovaleric acid	<5	mg/l	5			
	Propionic acid	<5	mg/l	5			
	Valeric acid	<5	mg/l	5			
	Volatile fatty acids as acetic acid	<5	mg/l	5			

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Gordon McArthur Senior laboratory Analyst

Signature

Supervisor **Jennifer Mont**

Phone

Laboratory Analyst Ivan Imamura

Amitesh Kumar Supervisor

Leo Cleave

Senior Analyst Senior Analyst

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND

EXPLANATORY NOTE





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Food & Water Testing

N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

Test is not accredited

- Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited
- The test result(s) in this report apply only to the sample as received.
- This document can only be reproduced in full.
- The tests are identified by a five-digit code, their description is available on request.
- Accreditation does not apply to comments or graphical representations.

Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND. The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.

This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained

Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services

All samples become the property of Eurofins to the extent necessary for the performance of the Services.

Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.

If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice. The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.

The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.

The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services

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END OF REPORT







AR-23-NW-024903-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-2	3-NW-024	903-01	REPORT DATE	22/05/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	•)			
	4741 Levin					
	NEW ZEALAN	ND				
Phone	(06) 367 2705				Copy to: Water and Wast	
Email	horowhenuaadmi	0			(waterandwasteteam@ho	rowhenua.govt.nz), Yvettef
Contact f Contract	for your orders: ::	Gabriela Ca Landfill	arvalhaes		Order code:	EUNZWE-00112294
SAMPLE	ECODE	812-2023-	00031582			
lient Re	eference:	279054-0				
Product:		Ground wat WIL-HS2	er			
	g Point code: on Date & Time:	10/03/2023	17:23		Sampling Point name	e: Levin HS2
	Start Date & Time				Analysis Ending Date	: 22/05/2023
-	Date & Time	08/03/2023	13:08		Sampler(s)	Client nominated external sampler
Sampled	by Eurofins	No				
			RESULTS	(UNCERTAINT)	() LOQ	
W179	Ammonia Nitroge	en				
	Ammoniacal nitroger	n (N) 3	.67	(± 0.55) mg/l	0.01	
W583	Arsenic - Soluble	9				
	Arsenic (As)	0	.002	(± 0.0004) mg/l	0.001	
W341	BOD5 - Soluble C	arbonaceous	5			
	BOD5	<	6	(± 0.8) mg/l	1	
NW457	Calcium - Dissolv	ved				
	Calcium (Ca)	2	9.0	(± 2.90) mg/l	0.01	
W020	Chemical Oxyger	Demand				
	Chemical oxygen de	mand (COD) 6	0	(± 10) mg/l	15	
W007	Chloride					
	Chloride (Cl)	4	8.7	(± 2.44) mg/l	0.02	
W023	Conductivity					
	Conductivity	3	9.9	(± 0.8) mS/m	0.1	
W193	Dissolved Reactiv	ve Phosphor	us			
	Phosphorus (soluble	reactive) 0	.159	(± 0.032) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia c	oli By Mem	brane Filtration		
	Escherichia coli	1	00	cfu/100 ml	100	
W460	Iron - Dissolved					
	Iron (Fe)	0	.305	(± 0.061) mg/l	0.005	
\W462	Magnesium - Diss	solved				
	Magnesium (Mg)	1,	4.9	(± 1.49) mg/l	0.01	
NW010	Nitrate-N					
	Nitrate-N	0	.26	(± 0.06) mg/l	0.01	
NW195	рН					



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Food & Water Testing

NW198pHCESULTS (UNCERTIANTY)LOQNW198pH7.2(±0.2)0.1PH7.20(±0.2)0.1Total phends0.050.05Total phends0.050.05Solum (Na)0.920.02NV198Solube Aluminum0.02Mumon (Daino (Daino)(±0.001)mg/l0.02NV108Solube Boron0.002Boron (B)0.010(±0.0001)mg/l0.002NV108Solube Commun(±0.0001)mg/l0.002Carmiun (Cd)0.002(±0.0001)mg/l0.002NV108Solube Commun(±0.0002)mg/l0.001Commun (Cr)0.010(±0.0002)mg/l0.005Commun (Cr)0.005(±0.0002)mg/l0.005NV108Solube Comper0.0005(±0.0002)mg/lSolube Load(±0.0002)mg/l0.0005NV118Solube Load(±0.0002)mg/l0.0005NV118Solube Load(±0.0002)mg/l0.0005NV118Solube Mercury(±0.0003)mg/l0.0005NV118Solube Robert(±0.0003)mg/l0.0005NV118Solube Robert(±0.0003)mg/l0.0005NV118Solube Robert(±0.0007)mg/l0.0005NV118Solube Robert(±0.0007)mg/l0.0005NV119Solube Robert(±0.0007)mg/l0.001NV118Solube Robert(±0.0007)mg/l0.002NV119Solube Robert(±0.0007)mg/l0.001Solube Robert(±0.
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Provides Phanolics (Total) Total phenols Total phenols <0.05 mg/l 0.05 NW469 Sodium - Dissolved 0.02 NW069 Solubie Aluminium 0.02 Auminium 0 0.02 0.02 NW109 Solubie Aluminium 0.001 Boron (B) 0 0.002 0.002 NW109 Solubie Constitution 0.002 Cadmium (Cd) <0.001 (± 0.0001)mg/l 0.002 Solubie Constitution 0.0002 0.0002 NW109 Solubie Constitution 0.0002 NW109 Solubie Constitution 0.0003 NW109 Solubie Constitution 0.0005 NW110 Solubie Lead 0.0005 NW111 Solubie Manganese 0.0005 NW114 Solubie Proteution 0.0005 NW114 Solubie Solubie Nickel <
Total phends<0.05mg/l0.05SOdium - DissolvedSodium Na)Sodium Na)Soluble Aturninium0.009(± 0.001) mg/l0.002NV108Soluble BoronBoron (B)mg/l0.002Cadmium (Cd)<0.002
NYM08Solum NasovedSolum Nasoved(4.9.2) mg/l0.02NYM08Soluble Aluminum0.009(0.001) mg/l0.002NYM18Soluble Boron0.03NYM19Soluble Caromum0.0020.002Cadmim (Cd)0.0020.0020.002NYM18Soluble Chromium0.0020.002NYM18Soluble Chromium0.0020.002Soluble Chromium (Cr)<0.002
Number Solution Nation49.2(± 4.92) mg/l0.02NW08Solution Aluminium0.0000(± 0.001) mg/l0.02NW108Solution Solution0.03NW104Solution Cadmium(± 0.0001) mg/l0.03NW105Solution Cadmium(± 0.0001) mg/l0.03NW106Solution Cadmium(± 0.0001) mg/l0.01Solution Cadmium(± 0.0002)(± 0.0002) mg/l0.001NW108Solution Cadmium(± 0.0002) mg/l0.001Solution Cadmium(± 0.0002) mg/l0.0005Solution Cadmium(± 0.0002) mg/l0.0005Solution Cadmium(± 0.0002) mg/l0.0005NW108Solution Cadmium(± 0.0002) mg/l0.0005NW118Solution Cadmium(± 0.0002) mg/l0.0005NW114Solution Cadmium(± 0.0002) mg/l0.0005NW115Solution Marganese(± 0.0002) mg/l0.0005NW116Solution Marganese(± 0.0003) mg/l0.0005NW117Solution Nickel(± 0.0003) mg/l0.0005NW118Solution Solution(± 0.0003) mg/l0.001NW119Solution Solution(± 0.0007) mg/l0.002NW119Solution Solution(± 0.0007) mg/l0.001NW115Solution Solution(± 0.0007) mg/l0.002NW116Solution Solution(± 0.0007) mg/l0.002NW117Solution Solition(± 0.0007) mg/l0.002NW119Solution Solition(± 0.0007) mg/l0.02
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Boron (B) 0.15 mg/l 0.03 NW10 Soluble Cadmium
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NW105 Soluble Chromium Chromium (Cr) <0.001 (± 0.0004) mg/l 0.001 NW108 Soluble Copper Copper (Cu) 0.0006 (± 0.0002) mg/l 0.0005 NW110 Soluble Lead Lead (Pb) <0.0005
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NN108Solute CopyenAppen (CA)0.0030.003NV114Solute Lead0.003Audio (CA)0.0010.003NV115Solute Manganese0.003NV116Solute Manganese0.003NV117Solute Manganese0.003NV118Solute Manganese0.003NV119Solute Manganese0.003NV119Solute Manganese0.003NV119Solute Manganese0.003NV111Solute Manganese0.003Solute ManganeseSolute Mang
Copper (Cu) 0.0006 (± 0.0002) mg/l 0.0005 NW110 Soluble Lead
NVI10 Soluble Lead Lead (Pb) <0.005
Lead (Pb) <0.0005 (± 0.0002) mg/l 0.0005 NW113 Soluble Manganese
NW113 Solubie Manganese Manganese (Mn) 0.124 (± 0.0124) mg/l 0.0005 NW114 Solubie Mercury (± 0.005) mg/l 0.0005 NW116 Solubie Mercury (± 0.0003) (± 0.0003) NW117 Solubie Nickel (± 0.0003) (± 0.0003) NW118 Solubie Potassium (± 0.0003) (± 0.0005) NW117 Solubie Zinc (± 0.0007) mg/l (0.01 NW118 Sulphate (± 0.0007) mg/l (0.002 NW011 Sulphate (± 0.0007) mg/l (0.02 NW011 Sulphate (± 0.0017) mg/l (0.02 NW011 Sulphate (± 0.0017) mg/l (0.02 NW011 Sulphate (± 0.04) mg/l (0.02 NW011 Sulphate (± 0.02) (± 0.014) mg/l (0.02 NW020 Suspended Solids 87 mg/l 3 NW031 Total Alkalinity (± 11) mg CaCO3/l 1 NW041 Total Hardness 134 (± 13) mg CaCO3/l 1 NW210 Total Non-Purgeable Organ-Carbon 1 1
Manganese M 0.124 (± 0.0124) mg/l 0.005 NW111 Soluble Mercury Mercury (Hg) <0.005 mg/l 0.0005 NW116 Soluble Nickel Nickel (Ni) 0.0008 (± 0.0003) mg/l 0.0005 NW117 Soluble Potassium (± 0.0003) mg/l 0.0005 NW117 Soluble Potassium (± 0.0007) mg/l 0.001 NW117 Soluble Potassium (± 0.0007) mg/l 0.002 NW118 Soluble Zinc Zinc (Zn) <0.002 (± 0.0007) mg/l 0.002 NW011 Sulphate Sulphate Sulphate Sulphate Sulphate Sulphate NW003 Total Alkalinity
NW114 Soluble Mercury Mercury (Hg) <0.0005
Mercury (Hg) <0.0005 mg/l 0.0005 NW116 Soluble Nickel Nickel (Ni) 0.0008 (± 0.0003) mg/l 0.0005 NW117 Soluble Potassium Potassium (K) 11.2 mg/l 0.01 NW125 Soluble Zinc Zinc (Zn) <0.002
NW116Soluble NickelNickel (Ni)0.008(0.003) mg/l0.005NW176Solube Potassiummg/l0.013Potassium (Ni)11.2mg/l0.01NW175Solube Zincmg/l0.01NW176Solube Zinc(0.007) mg/l0.02NW177Sulphatemg/l0.02NW178Sulphate(0.037) mg/l0.02NW179Sulphatemg/l0.02NW170Sulphate(0.041)0.02NW171Sulphate(0.011)0.02NW172Sulphate(0.011)0.02NW173Sulphate(0.011)0.02NW174Sulphate(0.011)0.02NW175Sulphate(0.011)0.02NW175Sulphate(0.011)0.02NW175Sulphate(0.011)0.02NW176Sulphate(0.011)0.02NW177Sulphate(0.011)0.02NW178Sulphate(0.011)0.02NW179Sulphate(0.011)0.02NW179Sulphate(0.011)0.02NW179Sulphate(0.011)0.02NW179Sulphate(0.011)0.02NW179Sulphate(0.011)0.02NW179Sulphate(0.011)0.02NW179Sulphate(0.011)0.02NW179Sulphate(0.011)0.02NW179Sulphate(0.011)0.02NW179Sulphate<
Nickel (Ni) 0.0008 (± 0.0003) mg/l 0.0005 NW117 Soluble Potassium mg/l 0.001 Potassium (K) 11.2 mg/l 0.01 NW125 Soluble Zinc zinc (Zn) <0.002
NW117 Soluble Potassium ng/l 0.01 NW125 Soluble Zinc in (Zn) <0.002
Potassium (K) 11.2 mg/l 0.01 NW125 Soluble Zinc
NW125 Soluble Zinc Zinc (Zn) <0.002
Zinc (Zn) <0.002
NW011Sulphate9.38(± 0.94) mg/l0.02NW206Suspended Solids87mg/l3NW003Total AlkalinityAlkalinity total111(± 11) mg <bbr></bbr> CaCO3/l1NW029Total Hardness134(± 13) mg CaCO3/l1NW210Total Non-Purgeable Organiz Carbon1
NW206Sulphate9.38(± 0.94) mg/l0.02NW206Suspended SolidsrestrestSuspended Solids87mg/l3NW003Total AlkalinityrestrestAlkalinity total111(± 11) mg <bbr></bbr> CaCO3/l1NW209Total HardnessrestrestHardness134(± 13) mg CaCO3/l1NW210Total Non-Purgeable Orgative Carbon1
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Suspended Solids 87 mg/l 3 NW003 Total Alkalinity 1 Alkalinity total 111 (± 11) mg CaCO3/l 1 NW029 Total Hardness 1 Hardness 134 (± 13) mg CaCO3/l 1 NW210 Total Non-Purgeable Orget-Vertor 1
NW003 Total Alkalinity Alkalinity total 111 (± 11) mg CaCO3/l 1 NW029 Total Hardness Iadness Iadness 1 Hardness 134 (± 13) mg CaCO3/l 1 NW210 Total Non-Purgeable Orgati-Carbon 1
Alkalinity total 111 (± 11) mg CaCO3/l 1 NW029 Total Hardness Hardness 134 (± 13) mg CaCO3/l 1 NW210 Total Non-Purgeable Organiz Carbon 1
Alkalinity total 111 (± 11) mg CaCO3/l 1 NW029 Total Hardness 134 (± 13) mg CaCO3/l 1 NW210 Total Non-Purgeable Organization 134 (± 13) mg CaCO3/l 1
NW029 Total Hardness Lardness 134 (± 13) mg CaCO3/I 1 NW210 Total Non-Purgeable Organic Carbon Carbon
Hardness 134 (± 13) mg CaCO3/I 1 NW210 Total Non-Purgeable Organic Carbon 1
CaCO3/I NW210 Total Non-Purgeable Organic Carbon
NW210 Total Non-Purgeable Organic Carbon
Total Organic Carbon 14.1 (± 1.4) mg/l 0.1
VQ876 Volatile Fatty Acids (VFA) by GC-MS
Acetic acid <5 mg/l 5
Buturic acid <5 ma/l 5
Butyric acid <5 mg/l 5
Butyric acid <5 mg/l 5 Heptanoic Acid C7:0 <5





		RESULT	S (UNCERTAINTY)	LOQ				
③VQ876	Volatile Fatty Acids (VFA) by GC-MS							
	lso caproic acid	<5	mg/l	5				
	Isobutyric acid	<5	mg/l	5				
	Isovaleric acid	<5	mg/l	5				
	Propionic acid	<5	mg/l	5				
	Valeric acid	<5	mg/l	5				
	Volatile fatty acids as acetic acid	<5	mg/l	5				

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 92221; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Duiha C. Lagozon

Supervisor Divina Cunanan Lagazon

EXPLANATORY NOTE

Signature

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

Phone

Amitesh Kumar Supervisor

Sunita Raju

Business Unit Manager

uhata Av







N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

Test is not accredited

- ② Test is subcontracted within Eurofins group and is accredited
- ③Test is subcontracted within Eurofins group and is not accredited

Test is subcontracted outside Eurofins group and is accredited

- STest is subcontracted outside Eurofins group and is not accredited
- **(6)** Test result is provided by the customer and is not accredited

Tested at the sampling point by Eurofins and is not accredited

(8) Tested at the sampling point by Eurofins and is accredited

The test result(s) in this report apply only to the sample as received.

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The tests are identified by a five-digit code, their description is available on request.

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

Attention Downer NZ Ltd (EDI Levin) Horowhenua Admin P O Box 642 4741 Levin NEW ZEALAND Phone (06) 367 2705 Copy to: Water and Waste Team Email horowhenuaadmin@downer.co.nz More code: EUNZWE-00117909 Contact for your orders: Gabriela Carvalhaes Contract: Landfill SAMPLE CODE 812-2023-00051957 Client Reference: 283053-0 Product: Ground water Sampling Point code: WIL-HS3
Phone (06) 367 2705 Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan Email horowhenuaadmin@downer.co.nz Copy to: Water and Waste Team (waterandwasteteam@horowhenua.govt.nz), McMillan Contact for your orders: Gabriela Carvalhaes Landfill Order code: EUNZWE-00117909 SAMPLE CODE 812-2023-00051957 Euseptical Euseptical Client Reference: 283053-0 Ground water Ground water
Email horowhenuaadmin@downer.co.nz (waterandwasteteam@horowhenua.govt.nz), McMillan Contact for your orders: Gabriela Carvalhaes Landfill Order code: EUNZWE-00117909 SAMPLE CODE 812-2023-00051957 Client Reference: 283053-0 Ground water Functional Contract:
Contact for your orders: Contract:Gabriela Carvalhaes LandfillOrder code:EUNZWE-00117909SAMPLE CODE812-2023-00051957Client Reference: Product:283053-0 Ground water
Contract:LandfillSAMPLE CODE812-2023-00051957Client Reference:283053-0Product:Ground water
Client Reference: 283053-0 Product: Ground water
Product: Ground water
Sampling Point code: WIL-HS3 Sampling Point name: Levin HS3 Reception Date & Time: 14/04/2023 17:16
Analysis Start Date & Time: 14/04/202317:23Analysis Ending Date:21/07/2023
Sampled Date & Time 13/04/2023 12:55 Sampler(s) Client nominated external sampler Collected By Eurofins No No Sampler(s) Sampler(s)
RESULTS (UNCERTAINTY) LOQ
NW179 Ammonia Nitrogen Ammoniacal nitrogen (N) 0.04 (± 0.01) mg/l 0.01
Ammoniacal nitrogen (N) 0.04 (± 0.01) mg/l 0.01 NW341BOD5 - Soluble Carbonaceous
BODS
Chemical oxygen demand (COD) ²⁰ (± 6) ^{mg/l} 15 NW007 Chloride
Conductivity 23.3 (± 0.5) mS/m 0.1
Aluminium 0.015 (± 0.002) mg/l 0.002 NW583 Dissolved Arsenic
Arsenic (As) 0.003 (± 0.0004) mg/i 0.001 NW103 Dissolved Boron
Boron (B) 0.08 mg/l 0.03
NW104 Dissolved Cadmium
Cadmium (Cd) <0.0002 (± 0.0001) mg/l 0.0002
NW457 Dissolved Calcium
Calcium (Ca) 12.3 (± 1.23) mg/l 0.01
NW106 Dissolved Chromium
Chromium (Cr) <0.001 (± 0.0003) mg/l 0.001
NW108 Dissolved Copper
Copper (Cu) 0.0013 (± 0.0003) mg/l 0.0005
NW460 Dissolved Iron

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		RESUL	TS (UNCERTAINTY)	LOQ
NW460	Dissolved Iron			
	Iron (Fe)	0.116	(± 0.023) mg/l	0.005
NW110	Dissolved Lead			
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005
NW462	Dissolved Magnesium			
	Magnesium (Mg)	8.03	(± 0.80) mg/l	0.01
NW113	Dissolved Manganese			
	Manganese (Mn)	0.0228	(± 0.0046) mg/l	0.0005
NW114	Dissolved Mercury			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	Dissolved Nickel			
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005
NW117	Dissolved Potassium			
	Potassium (K)	2.71	mg/l	0.01
NW193	Dissolved Reactive Phosph	norus	-	
	Phosphorus (soluble reactive)	0.257	(± 0.051) mg/l	0.005
NW469	Dissolved Sodium			
	Sodium (Na)	19.6	(± 1.96) mg/l	0.02
NW125	Dissolved Zinc			
	Zinc (Zn)	0.004	(± 0.0008) mg/l	0.002
ZM2GA	Enumeration of Escherichi	a coli Bv Me	embrane Filtration	0.002
	Escherichia coli	400	cfu/100 ml	100
NW010	Nitrate-N			100
	Nitrate-N	0.22	(± 0.06) mg/l	0.01
NW195	pH			0.01
	рН	7.5	(± 0.2)	0.1
VQ088	Phenolics (Total)			0.1
	Total phenols	<0.05	mg/l	0.05
NW011	Sulphate		···ʊ''	0.00
	Sulphate	15.3	(± 0.77) mg/l	0.02
NW206	Suspended Solids		. , C	0.02
	Suspended Solids	8	mg/l	3
NW003				3
1111003	Alkalinity total	63	(± 6) mg	1
			CaCO3/I	1
NW029	Total Hardness			
	Hardness	64	(± 6) mg	1
NW210	Total Non Durgoshia Organ	ic Carbon	CaCO3/I	
IN WVZ TU	Total Non-Purgeable Organ Total Organic Carbon	7.0	(± 0.7) mg/l	
V0976	-		(_ 0.7 / mg/l	0.1
VQ876	Volatile Fatty Acids (VFA) b	oy GC-MS <5		_
	Acetic acid Butyric acid	<5	mg/l mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5 5
	Hexanoic acid	<5	mg/l	5 5
				U

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		RESULTS	(UNCERTAINTY)	LOQ			
VQ876	Volatile Fatty Acids (VFA) by GC-MS						
	lso caproic acid	<5	mg/l	5			
	Isobutyric acid	<5	mg/l	5			
	Isovaleric acid	<5	mg/l	5			
	Propionic acid	<5	mg/l	5			
	Valeric acid	<5	mg/l	5			
	Volatile fatty acids as acetic acid	<5	mg/l	5			

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
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NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total):
VQ876	Volatile Fatty Acids (VFA) by GC-MS:	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Divita C. Lagozon

Divina Cunanan Supervisor Lagazon



Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND

Signature

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

- Gabriela Carvalhaes
- Manager Food and Water **Testing Chemistry**

Phone

www.eurofins.co.nz

Amitesh Kumar Supervisor

Leo Cleave

Senior Analyst Microbiology



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EXPLANATORY NOTE

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- ②Test is subcontracted within Eurofins group and is accredited
- ③ Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- ^⑤Test is subcontracted outside Eurofins group and is not accredited
- **(6)** Test result is provided by the customer and is not accredited
- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited
- The test result(s) in this report apply only to the sample as received.
- This document can only be reproduced in full.
- The tests are identified by a five-digit code, their description is available on request.
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END OF REPORT

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N/A means Not ApplicableNot Detected means not detected at or above the Limit of Quantification (LOQ)LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



AR-23-NW-015828-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-NW	-015828-01	REPORT DATE	06/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	· /			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705			Copy to: Water and Waste	
Email	horowhenuaadmi	0		(waterandwasteteam@horo	whenua.govt.nz), Yvettef
Contact f	for your orders: ::	Gabriela Carvalha Landfill	es	Order code:	EUNZWE-00108595
SAMPLE	E CODE	812-2023-00020	624		
	eference:	274952-0			
Product:		Ground water WIL-HS3		Sompling Daint non	Levin HS3
	g Point code: on Date & Time:	17/02/2023 13:41		Sampling Point name:	LEVITTISS
Analysis	Start Date & Time	e: 17/02/2023 13:56		Analysis Ending Date:	06/04/2023
-	Date & Time	16/02/2023 08:05		Sampler(s)	Client nominated external sampler
Sampled	l by Eurofins	No			
		RESU	JLTS (UNCERTAINTY	') LOQ	
\W179	Ammonia Nitroge	en			
	Ammoniacal nitroger	n (N) 0.14	(± 0.04) mg/l	0.01	
W583	Arsenic - Soluble	9			
	Arsenic (As)	0.003	(± 0.0004) mg/l	0.001	
W341	BOD5 - Soluble C	arbonaceous			
	BOD5	<6	(± 0.8) mg/l	1	
W457	Calcium - Dissolv	ved			
	Calcium (Ca)	11.5	(± 1.15) mg/l	0.01	
VW020	Chemical Oxyger	Demand			
	Chemical oxygen de	mand (COD) 70	(± 12) mg/l	15	
NW007	Chloride				
	Chloride (Cl)	25.2	(± 1.26) mg/l	0.02	
NW023	Conductivity				
	Conductivity	22.8	(± 0.5) mS/m	0.1	
VW193	Dissolved Reactiv	ve Phosphorus			
	Phosphorus (soluble	e reactive) 0.202	(± 0.040) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia coli By	Membrane Filtration		
	Escherichia coli	1500	cfu/100 ml	100	
NW460	Iron - Dissolved				
	Iron (Fe)	0.106	(± 0.021) mg/l	0.005	
1W462	Magnesium - Dise	solved			
	Magnesium (Mg)	6.06	(± 0.61) mg/l	0.01	
NW010	Nitrate-N				
	Nitrate-N	0.16	(± 0.04) mg/l	0.01	
NW195	рН				

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Food & Water Testing

RESULTS (UNCERTAINTY) LOQ						
NW195	рН		· · · · ·			
	рН	8.3	(± 0.2)	0.1		
③VQ088	Phenolics (Total)	0.0		0.1		
0.2000	Total phenols	<0.05	mg/l	0.05		
NW469	Sodium - Dissolved	0.00	iiig/i	0.05		
111400	Sodium (Na)	21.8	(± 2.18) mg/l	0.02		
NW098	Soluble Aluminium	21.0	(0.02		
144030		0.018	(± 0.002) mg/l	0.000		
	Aluminium	0.018	(± 0.002) mg/i	0.002		
NW103	Soluble Boron					
	Boron (B)	0.06	mg/l	0.03		
NW104						
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002		
NW106	Soluble Chromium					
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001		
NW108	Soluble Copper					
	Copper (Cu)	0.0009	(± 0.0003) mg/l	0.0005		
NW110	Soluble Lead					
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005		
NW113	Soluble Manganese					
	Manganese (Mn)	0.0136	(± 0.0027) mg/l	0.0005		
NW114	Soluble Mercury			0.0000		
	Mercury (Hg)	<0.0005	mg/l	0.0005		
NW116	Soluble Nickel	0.0000		0.0000		
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005		
NW117	Soluble Potassium	-0.0000	(0.0005		
144411/		0.44	m a /l	0.04		
	Potassium (K)	2.41	mg/l	0.01		
NW125	Soluble Zinc		(+ 0 0007)"			
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002		
NW011	•		(
	Sulphate	17.9	(± 0.89) mg/l	0.02		
NW206	Suspended Solids					
	Suspended Solids	27	mg/l	3		
NW003	Total Alkalinity					
	Alkalinity total	66	(± 7) mg	1		
NIM ADD	Tatalila		CaCO3/I			
NW029	Total Hardness		(+ 5) ma			
	Hardness	54	(± 5) mg CaCO3/l	1		
NW210	Total Non-Purgeable Or	ganic Carbon				
	Total Organic Carbon	8.2	(± 0.8) mg/l	0.1		
③VQ876	Volatile Fatty Acids (VF			0.1		
	Acetic acid	<5	mg/l	E		
	Butyric acid	<5 <5	mg/l	5 5		
	Heptanoic Acid C7:0	<5	mg/l	5		
	Hexanoic acid	<5	mg/l	5		
			-	~		

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+64 4 576 5016





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		RESULTS	(UNCERTAINTY)	LOQ				
③VQ 876	Volatile Fatty Acids (VFA) by GC-MS							
	lso caproic acid	<5	mg/l	5				
	Isobutyric acid	<5	mg/l	5				
	Isovaleric acid	<5	mg/l	5				
	Propionic acid	<5	mg/l	5				
	Valeric acid	<5	mg/l	5				
	Volatile fatty acids as acetic acid	<5	mg/l	5				

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Gordon McArthur Senior laboratory Analyst

Signature

Supervisor **Jennifer Mont**

Laboratory Analyst Ivan Imamura

Amitesh Kumar Supervisor

Leo Cleave

Senior Analyst Senior Analyst

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND

EXPLANATORY NOTE





Phone www.eurofins.co.nz

Food & Water Testing

N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

Test is not accredited

- $\ensuremath{\mathfrak{O}}$ Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited

Test is subcontracted outside Eurofins group and is accredited

- S Test is subcontracted outside Eurofins group and is not accredited
- **(6)** Test result is provided by the customer and is not accredited
- ${f O}$ Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

The test result(s) in this report apply only to the sample as received.

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The tests are identified by a five-digit code, their description is available on request.

Accreditation does not apply to comments or graphical representations.

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All samples become the property of Eurofins to the extent necessary for the performance of the Services.

Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.

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AR-23-NW-024907-01 Page 1 of 4

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-NW	-024907-01	REPORT DATE	22/05/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	· ,			
	4741 Levin				
	NEW ZEALAN	ND			
Phone Email	(06) 367 2705 horowhenuaadmi	n@downor.co.nz		Copy to: Water and Waste (waterandwasteteam@horo	
	for your orders:	Gabriela Carvalha		Order code:	EUNZWE-00112294
Contract	-	Landfill		Order code.	
SAMPLE	ECODE	812-2023-00031	600		
	ference:	279055-0			
	g Point code: n Date & Time:	Ground water WIL-HS3 10/03/2023 17:33	4	Sampling Point name:	Levin HS3
		e:10/03/2023 17:42		Analysis Ending Date:	22/05/2023
-	Date & Time by Eurofins	08/03/2023 13:08 No	}	Sampler(s)	Client nominated external sampler
		RES	JLTS (UNCERTAINT)	r) loq	
NW179	Ammonia Nitroge	en			
	Ammoniacal nitroger		(± 0.05) mg/l	0.01	
W583	Arsenic - Soluble)			
	Arsenic (As)	0.004	(± 0.0005) mg/l	0.001	
NW341	BOD5 - Soluble C	arbonaceous			
	BOD5	<6	(± 0.8) mg/l	1	
VW457	Calcium - Dissolv	ved			
	Calcium (Ca)	14.3	(± 1.43) mg/l	0.01	
W020	Chemical Oxyger	Demand			
	Chemical oxygen de	mand (COD) 33	(± 7) mg/l	15	
W007	Chloride				
	Chloride (Cl)	25.9	(± 1.29) mg/l	0.02	
W023	Conductivity				
	Conductivity	24.4	(± 0.5) mS/m	0.1	
NW193	Dissolved Reactiv	ve Phosphorus			
	Phosphorus (soluble	e reactive) 0.321	(± 0.064) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia coli By	Membrane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
NW460	Iron - Dissolved				
	Iron (Fe)	0.150	(± 0.030) mg/l	0.005	
NW462	Magnesium - Diss	solved			
	Magnesium (Mg)	7.34	(± 0.73) mg/l	0.01	
NW010	Nitrate-N				
	Nitrate-N	0.25	(± 0.06) mg/l	0.01	
NW195	рН				



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Food & Water Testing

			(UNCERTAINTY)	LOQ	
		REGOLIC		LOQ	
NW195	-		(± 0.2)		
	pH	7.5	(± 0.2)	0.1	
3VQ088	Phenolics (Total)				
	Total phenols	<0.05	mg/l	0.05	
NW469	Sodium - Dissolved		(
	Sodium (Na)	26.9	(± 2.69) mg/l	0.02	
NW098	Soluble Aluminium				
	Aluminium	0.008	(± 0.001) mg/l	0.002	
NW103	Soluble Boron				
	Boron (B)	0.06	mg/l	0.03	
NW104	Soluble Cadmium				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
NW106	Soluble Chromium				
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001	
NW108	Soluble Copper				
	Copper (Cu)	0.0008	(± 0.0002) mg/l	0.0005	
NW110	Soluble Lead				
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW113	Soluble Manganese				
	Manganese (Mn)	0.0300	(± 0.0060) mg/l	0.0005	
NW114	Soluble Mercury				
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Soluble Nickel		J.		
	Nickel (Ni)	0.0020	(± 0.0006) mg/l	0.0005	
NW117	Soluble Potassium				
	Potassium (K)	2.33	mg/l	0.01	
NW125	Soluble Zinc				
	Zinc (Zn)	0.002	(± 0.0007) mg/l	0.002	
NW011		0.002	. , -	0.002	
	Sulphate	15.7	(± 0.78) mg/l	0.02	
NW206	Suspended Solids	10.7		0.02	
	Suspended Solids	21	mg/l	2	
NW003		21	ilig/i	3	
1444005		64	(± 6) mg		
	Alkalinity total	64	CaCO3/I	1	
NW029	Total Hardness				
	Hardness	66	(± 7) mg	1	
			CaCO3/I		
NW210	0 0	-	(+0.7) mc/		
	Total Organic Carbon	6.8	(± 0.7) mg/l	0.1	
VQ876	Volatile Fatty Acids (VFA		_		
	Acetic acid	<5	mg/l	5	
	Butyric acid	<5	mg/l	5	
	Heptanoic Acid C7:0 Hexanoic acid	<5 <5	mg/l	5	
		~0	mg/l	5	

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		RESULI	S (UNCERTAINTY)	LOQ			
③VQ 876	Volatile Fatty Acids (VFA) by GC-MS						
	lso caproic acid	<5	mg/l	5			
	Isobutyric acid	<5	mg/l	5			
	Isovaleric acid	<5	mg/l	5			
	Propionic acid	<5	mg/l	5			
	Valeric acid	<5	mg/l	5			
	Volatile fatty acids as acetic acid	<5	mg/l	5			

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 92221; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Duiha C. Lagozon

Supervisor Divina Cunanan Lagazon

EXPLANATORY NOTE

Signature

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

Phone

Amitesh Kumar Supervisor

Sunita Raju

Business Unit Manager





Food & Water Testing

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Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

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Food & Water Testing

ANALYTICAL REPORT

REPOR	I CODE	AR-23-N	N-031967-01	REPORT DATE	29/06/2023
Attention	Downer NZ Lte Horowhenua A P O Box 642	. ,			
	4741 Levin				
	NEW ZEALAN	1D			
Phone	(06) 367 2705			Copy to: Water and Waste T (waterandwasteteam@horow	
Email Controt f	horowhenuaadmii	Gabriela Carvalł		Order code:	EUNZWE-00117021
Contract:	or your orders:	Landfill	Ides	Order code:	EUN2WE-00117021
SAMPLE	CODE	812-2023-0004	19225		
Client Re	ference:	283049-0			
Product:		Ground water			
	Point code:	WIL-LP 08/04/2023 15:0	13	Sampling Point name:	Levin Leachate Pond
	n Date & Time: Start Date & Time			Analysis Ending Date:	26/04/2023
	Date & Time	06/04/2023 09:4		Sampler(s)	Client nominated external sampler
Sampled	by Eurofins	No			
		RE	BULTS (UNCERTAINT	Y) LOQ	
NW179	Ammonia Nitroge	n			
	Ammoniacal nitroger	n (N) 33.6	(± 3.36) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaceous			
	BOD5	<6	mg/l	1	
NW020	Chemical Oxygen	Demand			
	Chemical oxygen de	mand (COD) ³⁸⁹	(± 39) mg/l	15	
NW007	Chloride				
	Chloride (Cl)	165	(± 8.26) mg/l	0.02	
NW023	Conductivity				
	Conductivity	130	(± 2.6) mS/m	0.1	
NW098	Dissolved Alumin	ium			
	Aluminium	0.054	(± 0.005) mg/l	0.002	
NW583	Dissolved Arsenio	C			
	Arsenic (As)	0.041	(± 0.004) mg/l	0.001	
NW103	Dissolved Boron				
	Boron (B)	0.99	mg/l	0.03	
NW104	Dissolved Cadmiu				
	Cadmium (Cd)	<0.000	2 (± 0.0001) mg/	0.0002	
NW457	Dissolved Calciur	n			
	Calcium (Ca)	16.3	(± 1.63) mg/l	0.01	
NW106	Dissolved Chrom				
	Chromium (Cr)	0.065	(± 0.006) mg/l	0.001	
NW108	Dissolved Copper				
	Copper (Cu)	<0.000	5 (± 0.0002) mg/	0.0005	
NW460	Dissolved Iron				

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		RESULTS	(UNCERTAINT	Ύ) L	OQ
NW460	Dissolved Iron				
	Iron (Fe)	0.286	(± 0.057) mg/l	0	0.005
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	(± 0.0002) mg/	/ 0.	0005
NW462	Dissolved Magnesium				
	Magnesium (Mg)	7.56	(± 0.76) mg/l	(0.01
NW113	Dissolved Manganese				
	Manganese (Mn)	0.199	(± 0.0199) mg/	/I 0.	0005
NW114	Dissolved Mercury				
	Mercury (Hg)	<0.0005	mg/l	0.	0005
NW116	Dissolved Nickel				
	Nickel (Ni)	0.0089	(± 0.0027) mg/	/I 0.	0005
NW117	Dissolved Potassium				
	Potassium (K)	92.0	mg/l	(0.01
NW193	Dissolved Reactive Phospl	horus			
	Phosphorus (soluble reactive)	0.393	(± 0.079) mg/l	0	0.005
NW469	Dissolved Sodium				
	Sodium (Na)	140	(± 14.0) mg/l	(0.02
NW125	Dissolved Zinc				
	Zinc (Zn)	0.002	(± 0.0007) mg/	/1 0	0.002
ZM2GA	Enumeration of Escherichi	a coli By Men	brane Filtration	l	
	Escherichia coli	400	cfu/100 ml		100
NW010	Nitrate-N				
	Nitrate-N	0.01	(± 0.005) mg/l	(0.01
)NW195	рН				
	pH	7.7	(± 0.2)		0.1
NW011	Sulphate				
	Sulphate	8.76	(± 0.88) mg/l	(0.02
NW206	Suspended Solids				
	Suspended Solids	124	mg/l		3
NW003	Total Alkalinity		-		
	Alkalinity total	377	(± 38) mg CaCO3/I		1
NW029	Total Hardness				
	Hardness	72	(± 7) mg CaCO3/I		1
NW210	Total Non-Purgeable Orgar	nic Carbon			
	Total Organic Carbon	79.4	(± 7.9) mg/l		0.1
LIST OF	METHODS				
NW003	Total Alkalinity: APHA Online E	dition 2320 B	Ν	W007	Chloride: APHA Online Edition 4110 B
	Nitrate-N: APHA Online Edition				Sulphate: APHA Online Edition 4110 B
	Chemical Oxygen Demand: AP				Conductivity: APHA Online Edition 2510 B
NW/020				111020	

NW098 Dissolved Aluminium: APHA Online Edition 3125 B mod. NW103 Dissolved Boron: APHA Online Edition 3125 B mod.

Phone

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NW029 Total Hardness: APHA Online Edition 2340 B

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NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.	NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.	NW110	Dissolved Lead: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.	NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.	NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW195	pH: APHA Online Edition 4500-H B
NW206	Suspended Solids: APHA Online Edition 2540 D	NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B	NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.	NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.	NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.
7M2GA	Escherichia coli E (Water) [N7] <100 >6 000 000 /100 ml		

ZM2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Signature

mbecabr

Marylou Cabral Laboratory Manager

Jennifer Mont Supervisor

Amitesh Kumar Supervisor

VIAL

Duiha C. Lagozon

Gordon McArthur Senior laboratory Analyst

Sunita Raju

Business Unit Manager

Supervisor Divina Cunanan Lagazon

Ivan Imamura

Laboratory Analyst

EXPLANATORY NOTE

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VG LABOR

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Page 1 of 4 AR-23-NW-036152-01

Food & Water Testing

ANALYTICAL REPORT

REPOF	RT CODE	AR-23-NW-036	6152-01	REPORT DATE	21/07/2023
Attentior	Downer NZ Lt Horowhenua / P O Box 642	· ·			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705	n@downor.co.n .		Copy to: Water and Waste (waterandwasteteam@horov	
Email	horowhenuaadmi	Gabriela Carvalhaes		Order code:	EUNZWE-00117021
Contrac	t for your orders: ht:	Landfill		Order code.	EUN2WE-00117021
SAMPL	E CODE	812-2023-00049227			
	leference:	283048-0			
-	t: ıg Point code: on Date & Time:	Ground water WIL-TD1 08/04/2023 15:09		Sampling Point name:	Levin TD1
Analysis Sample	s Start Date & Time d Date & Time	e:08/04/2023 15:19 06/04/2023 09:44		Analysis Ending Date: Sampler(s)	21/07/2023 Client nominated external sampler
Collecte	ed By Eurofins	No			
		RESULTS	(UNCERTAINT)	Y) LOQ	
NW179	Ammonia Nitroge	en			
	Ammoniacal nitroger	n (N) 7.77	(± 1.17) mg/l	0.01	
NW341	BOD5 - Soluble C	arbonaceous			
	BOD5	<6	mg/l	1	
NW020	Chemical Oxyger				
	Chemical oxygen de	mand (COD) ⁸³	(± 13) mg/l	15	
NW007	Chloride				
	Chloride (Cl)	68.5	(± 3.43) mg/l	0.02	
NW023	Conductivity				
	Conductivity	65.9	(± 1.3) mS/m	0.1	
NW098	Dissolved Alumin				
	Aluminium	0.015	(± 0.002) mg/l	0.002	
NW583	Dissolved Arseni				
	Arsenic (As)	<0.001	(± 0.0004) mg/l	0.001	
NW103	Dissolved Boron				
	Boron (B)	0.31	mg/l	0.03	
NW104	Dissolved Cadmi				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
NW457	Dissolved Calcium				
	Calcium (Ca)	26.3	(± 2.63) mg/l	0.01	
NW106	Dissolved Chrom				
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001	
NW108	Dissolved Coppe				
	Copper (Cu)	0.0007	(± 0.0002) mg/l	0.0005	
NW460	Dissolved Iron				

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Phone





		RESULT	S (UNCERTAINTY)	LOQ
NW460	Dissolved Iron			
	Iron (Fe)	0.460	(± 0.092) mg/l	0.005
NW110	Dissolved Lead			
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005
NW462	Dissolved Magnesium			
	Magnesium (Mg)	18.0	(± 1.80) mg/l	0.01
NW113	Dissolved Manganese			
	Manganese (Mn)	0.0862	(± 0.0173) mg/l	0.0005
NW114	Dissolved Mercury			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	Dissolved Nickel		Ũ	
	Nickel (Ni)	0.0014	(± 0.0005) mg/l	0.0005
NW117	Dissolved Potassium			
	Potassium (K)	21.1	mg/l	0.01
NW193	Dissolved Reactive Phospl	norus	5	
	Phosphorus (soluble reactive)	0.018	(± 0.004) mg/l	0.005
NW469	Dissolved Sodium		-	0.000
	Sodium (Na)	62.4	(± 6.24) mg/l	0.02
NW125	Dissolved Zinc			0.02
	Zinc (Zn)	0.006	(± 0.0009) mg/l	0.002
ZM2GA	Enumeration of Escherichi	a coli By Mo		0.002
0A	Escherichia coli	<100 <100	cfu/100 ml	100
NW010	Nitrate-N			100
	Nitrate-N	0.25	(± 0.06) mg/l	0.01
①NW195	pH		(· · · ·) ····3··	0.01
	рн pH	8.0	(± 0.2)	0.1
③VQ088	Pn Phenolics (Total)		(/	0.1
	Total phenols	<0.05	ma/l	0.05
NW011	Sulphate		mg/l	0.05
	Sulphate	2.36	(± 0.24) mg/l	0.00
NW206			(<u> </u>	0.02
1111200	•	23	ma/I	c.
	Suspended Solids		mg/l	3
NW003	Total Alkalinity	212	(± 21) mg	
	Alkalinity total	L 1 L	CaCO3/I	1
NW029	Total Hardness			
	Hardness	140	(± 14) mg	1
	.		CaCO3/I	
NW210	Total Non-Purgeable Organ	nic Carbon 15.9	(1.1.0)	
	Total Organic Carbon		(± 1.6) mg/l	0.1
③VQ876	Volatile Fatty Acids (VFA) b	-		
	Acetic acid	<5 <5	mg/l	5
	Butyric acid	<5 <5	mg/l	5
	Heptanoic Acid C7:0 Hexanoic acid	<5	mg/l mg/l	5
			119/1	5





		RESULTS	(UNCERTAINTY)	LOQ	
③VQ 876	Volatile Fatty Acids (VFA) by	GC-MS			
	lso caproic acid	<5	mg/l	5	
	Isobutyric acid	<5	mg/l	5	
	Isovaleric acid	<5	mg/l	5	
	Propionic acid	<5	mg/l	5	
	Valeric acid	<5	mg/l	5	
	Volatile fatty acids as acetic acid	<5	mg/l	5	

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total):
VQ876	Volatile Fatty Acids (VFA) by GC-MS:	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

GK m

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EXPLANATORY NOTE

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- Tested at the sampling point by Eurofins and is accredited
- The test result(s) in this report apply only to the sample as received.
- This document can only be reproduced in full.
- The tests are identified by a five-digit code, their description is available on request.
- Accreditation does not apply to comments or graphical representations.

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N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

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Food & Water Testing

ANALYTICAL REPORT

REPURI	CODE	AR	-23-NW-015	826-01	REPORT DATE	06/04/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642		in)			
	4741 Levin					
Phone	NEW ZEALAN (06) 367 2705	ID			Copy to: Water and Wast	a Toam
Email	horowhenuaadmir	n@downer.co	o.nz			rowhenua.govt.nz), Yvettef
Contact fo	or your orders:	Gabriela	Carvalhaes		Order code:	EUNZWE-00108595
Contract:		Landfill				
SAMPLE	CODE	812-202	3-00020622			
Client Ref	erence:	274950-0				
Product:	Point and a	Ground w WIL-TD1	ater		Sampling Doint news	e Levin TD1
	Point code: Date & Time:	17/02/202	3 13:41		Sampling Point name	
Analysis S	Start Date & Time	: 17/02/202	3 13:56		Analysis Ending Date	: 06/04/2023
-	Date & Time	16/02/202	3 07:58		Sampler(s)	Client nominated external sample
Sampled	by Eurofins	No			0	
			RESULTS	(UNCERTAINT)	() LOQ	
	mmonia Nitroge			(
	Ammoniacal nitroger		6.37	(± 0.96) mg/l	0.01	
	rsenic - Soluble)		(+ 0 0004)		
	Arsenic (As)		0.001	(± 0.0004) mg/l	0.001	
	SOD5 - Soluble C	arbonaceo		(
	30D5		<6	(± 0.8) mg/l	1	
	alcium - Dissolv	ed		(
	Calcium (Ca)		33.9	(± 3.39) mg/l	0.01	
	hemical Oxygen			((0) "		
	Chemical oxygen de	mand (COD)	106	(± 12) mg/l	15	
NW007 C						
	Chloride (CI)		103	(± 5.17) mg/l	0.02	
	Conductivity					
	Conductivity		81.5	(± 1.6) mS/m	0.1	
	issolved Reactiv	-		(+ 0.005)		
	Phosphorus (soluble		0.026	(± 0.005) mg/l	0.005	
	numeration of E	scherichia	-			
	Escherichia coli		9000	cfu/100 ml	100	
	ron - Dissolved			(± 0.104) m c "		
	ron (Fe)		1.04	(± 0.104) mg/l	0.005	
	lagnesium - Diss	solved	00.0	(+ 2 20) ~~ ~ //		
	/lagnesium (Mg)		22.0	(± 2.20) mg/l	0.01	
NW010 N			0.57	(+ 0 14)		
	Nitrate-N		0.57	(± 0.14) mg/l	0.01	



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		RESULTS	G (UNCERTAINTY)	LOQ
NW195	nH			
	рН	7.7	(± 0.2)	0.1
③VQ088	Phenolics (Total)	7.7		0.1
	Total phenols	<0.05	mall	0.05
NW469		<0.05	mg/l	0.05
1100405	Sodium - Dissolved	70.4	(± 7.94) mg/l	
	Sodium (Na)	79.4	(± 7.34) mg/i	0.02
NW098	Soluble Aluminium		(1.0.002) mg/	
	Aluminium	0.020	(± 0.002) mg/l	0.002
NW103				
	Boron (B)	0.56	mg/l	0.03
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
NW106	Soluble Chromium			
	Chromium (Cr)	0.001	(± 0.0004) mg/l	0.001
NW108	Soluble Copper			
	Copper (Cu)	0.0008	(± 0.0002) mg/l	0.0005
NW110	Soluble Lead			
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005
NW113	Soluble Manganese			
	Manganese (Mn)	0.266	(± 0.0266) mg/l	0.0005
NW114		0.200	. , .	0.0000
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW116	Soluble Nickel	<0.0003	ing/i	0.0005
		0.0000	(± 0.0007) mg/l	
	Nickel (Ni)	0.0022	(± 0.0007) mg/i	0.0005
NW117	Soluble Potassium			_ • •
	Potassium (K)	33.1	mg/l	0.01
NW125	Soluble Zinc		(
	Zinc (Zn)	0.004	(± 0.0008) mg/l	0.002
NW011	Sulphate			
	Sulphate	4.88	(± 0.49) mg/l	0.02
NW206	Suspended Solids			
	Suspended Solids	25	mg/l	3
NW003	Total Alkalinity			
	Alkalinity total	237	(± 24) mg	1
	- /		CaCO3/I	
NW029	Total Hardness		(1.10)	
	Hardness	175	(± 18) mg CaCO3/I	1
NW210	Total Non-Purgeable Or	ganic Carbon		
-	Total Organic Carbon	29.0	(± 2.9) mg/l	0.1
③VQ876	Volatile Fatty Acids (VFA		. , 5	0.1
	Acetic acid	<) by GC-INS <5	ma/l	E
	Acelic acid Butyric acid	<5 <5	mg/l mg/l	5
	Heptanoic Acid C7:0	<5 <5	mg/l	5 5
	Hexanoic acid	<5	mg/l	5
		-	Ŭ	č





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		RESULTS	(UNCERTAINTY)	LOQ	
③VQ876	Volatile Fatty Acids (VFA) by				
	lso caproic acid	<5	mg/l	5	
	Isobutyric acid	<5	mg/l	5	
	Isovaleric acid	<5	mg/l	5	
	Propionic acid	<5	mg/l	5	
	Valeric acid	<5	mg/l	5	
	Volatile fatty acids as acetic acid	<5	mg/l	5	

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Gordon McArthur Senior laboratory Analyst

Signature

Supervisor **Jennifer Mont**

Phone

Laboratory Analyst Ivan Imamura

Amitesh Kumar Supervisor

Leo Cleave

Senior Analyst Senior Analyst

Eurofins ELS Limited 85 Port Road Seaview Lower Hutt Wellington 5010 NEW ZEALAND

EXPLANATORY NOTE





Food & Water Testing

N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

Test is not accredited

- ⁽²⁾ Test is subcontracted within Eurofins group and is accredited
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- $\ensuremath{\overline{\mathcal{O}}}$ Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited
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Food & Water Testing

ANALYTICAL REPORT

REPOR	TCODE	AR-23-NW	-024906-01	REPORT DATE	22/05/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	· ,			
	4741 Levin				
	NEW ZEALAN	ND			
Phone	(06) 367 2705			Copy to: Water and Waste	
Email	horowhenuaadmi	-		(waterandwasteteam@hore	
Contact f	for your orders: :	Gabriela Carvalha Landfill	es	Order code:	EUNZWE-00112294
SAMPLE	ECODE	812-2023-00031	599		
	eference:	279053-0			
	g Point code: on Date & Time:	Ground water WIL-TD1 10/03/2023 17:32	1	Sampling Point name	: Levin TD1
Analysis Sampled	Start Date & Time	e:10/03/2023 17:42 08/03/2023 13:10		Analysis Ending Date: Sampler(s)	22/05/2023 Client nominated external sampler
Sampled	by Eurofins	No			
			JLTS (UNCERTAINT	Y) LOQ	
	Ammonia Nitroge		<i>(, , ,</i> , , , , , , , , , , , , , , , ,		
	Ammoniacal nitroger		(± 1.17) mg/l	0.01	
W583	Arsenic - Soluble	9	(
	Arsenic (As)	<0.001	(± 0.0004) mg/l	0.001	
W341	BOD5 - Soluble C	arbonaceous			
	BOD5	<6	(± 0.8) mg/l	1	
NW457	Calcium - Dissolv	ved			
	Calcium (Ca)	52.2	(± 5.22) mg/l	0.01	
W020	Chemical Oxyger	n Demand			
	Chemical oxygen de	mand (COD) 132	(± 14) mg/l	15	
NW007	Chloride				
	Chloride (Cl)	87.5	(± 4.38) mg/l	0.02	
NW023	Conductivity				
	Conductivity	95.2	(± 1.9) mS/m	0.1	
VW193	Dissolved Reactiv	ve Phosphorus			
	Phosphorus (soluble	e reactive) 0.034	(± 0.007) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia coli By	Membrane Filtration		
	Escherichia coli	5500	cfu/100 ml	100	
NW460	Iron - Dissolved				
	Iron (Fe)	0.254	(± 0.051) mg/l	0.005	
NW462	Magnesium - Dise	solved			
	Magnesium (Mg)	23.1	(± 2.31) mg/l	0.01	
NW010	Nitrate-N				
	Nitrate-N	0.70	(± 0.17) mg/l	0.01	
NW195	nH				



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Food & Water Testing

			G (UNCERTAINTY)	LOQ	
NW195	рН				
1444 133	рп рН	7.5	(± 0.2)	0.1	
③VQ088	Phenolics (Total)	7.5	(_ 0)	0.1	
9 4 6000	Total phenols	<0.05	ma/l	0.05	
NW469	Sodium - Dissolved	<0.05	mg/l	0.05	
111405	Sodium (Na)	69.2	(± 6.92) mg/l	0.00	
NW098	Soluble Aluminium	09.2	(_ 0.0_)g,:	0.02	
144050	Aluminium	0.008	(± 0.001) mg/l	0.000	
NW103	Soluble Boron	0.008	(± 0.001) mg/i	0.002	
1444105		0.05	~~~ <i>"</i>	0.00	
NW104	Boron (B)	0.25	mg/l	0.03	
1104		<0.0002	(± 0.0001) mg/l	0.0000	
NIW/106	Cadmium (Cd) Soluble Chromium	<0.0002	(± 0.0001) mg/r	0.0002	
		0.001	(± 0.0004) mg/l	0.004	
	Chromium (Cr)	0.001	(± 0.000+) mg/i	0.001	
IN WY I UO	Soluble Copper	0 0007	(± 0.0002) mg/l	0.0005	
NIM/440	Copper (Cu)	0.0007	(± 0.0002) mg/i	0.0005	
NW110	Soluble Lead		(± 0.0002) mg/l		
	Lead (Pb)	<0.0005	(± 0.0002) mg/i	0.0005	
NW113	Soluble Manganese	0.504	(± 0.0584) mg/l		
	Manganese (Mn)	0.584	(± 0.0504) mg/i	0.0005	
NW114	Soluble Mercury				
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Soluble Nickel		(1.0.000E) mg/l		
	Nickel (Ni)	0.0014	(± 0.0005) mg/l	0.0005	
NW117	Soluble Potassium				
	Potassium (K)	21.5	mg/l	0.01	
NW125	Soluble Zinc		(1.0.0000)		
	Zinc (Zn)	0.005	(± 0.0008) mg/l	0.002	
NW011	•				
	Sulphate	1.45	(± 0.15) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	136	mg/l	3	
NW003	Total Alkalinity		(+ 00)		
	Alkalinity total	326	(± 33) mg CaCO3/I	1	
NW029	Total Hardness				
	Hardness	225	(± 23) mg	1	
			CaCO3/I		
NW210	Total Non-Purgeable Org				
	Total Organic Carbon	23.6	(± 2.4) mg/l	0.1	
③VQ876	Volatile Fatty Acids (VFA)) by GC-MS			
	Acetic acid	<5	mg/l	5	
	Butyric acid	<5	mg/l	5	
	Heptanoic Acid C7:0	<5	mg/l	5	
	Hexanoic acid	<5	mg/l	5	

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		RESUL	IS (UNCERTAINTY)	LOQ	1
③VQ876	Volatile Fatty Acids (VFA) by	y GC-MS			
	lso caproic acid	<5	mg/l	5	
	Isobutyric acid	<5	mg/l	5	
	Isovaleric acid	<5	mg/l	5	
	Propionic acid	<5	mg/l	5	
	Valeric acid	<5	mg/l	5	
	Volatile fatty acids as acetic acid	<5	mg/l	5	

LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW010	Nitrate-N: APHA Online Edition 4110 B	NW011	Sulphate: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW103	Soluble Boron: APHA Online Edition 3125 B mod.	NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.	NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW110	Soluble Lead: APHA Online Edition 3125 B mod.	NW113	Soluble Manganese: APHA Online Edition 3125 B mod.
NW114	Soluble Mercury: APHA Online Edition 3125 B mod.	NW116	Soluble Nickel: APHA Online Edition 3125 B mod.
NW117	Soluble Potassium: APHA Online Edition 3125 B mod.	NW125	Soluble Zinc: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: APHA Online Edition 2540 D
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW462	Magnesium - Dissolved: APHA Online Edition 3120 B mod.	NW469	Sodium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APHA 5530
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 92221; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Duiha C. Lagozon

Supervisor Divina Cunanan Lagazon

EXPLANATORY NOTE

Signature

Jennifer Mont Supervisor

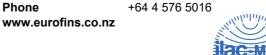
Gordon McArthur Senior laboratory Analyst

Phone

Amitesh Kumar Supervisor

Sunita Raju

Business Unit Manager







N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

Test is not accredited

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- S Test is subcontracted outside Eurofins group and is not accredited
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Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	A	R-23-NW-018	818-01	REPORT DATE	24/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642	•	evin)			
	4741 Levin					
	NEW ZEALAN	1D				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmi	-			·	orowhenua.govt.nz), McMillan
	or your orders:	Gabriela Landfill	a Carvalhaes		Order code:	EUNZWE-00117021
Contract:						
SAMPLE		283026-	23-00049226			
Client Ref Product:	erence:	Ground				
	Point code:	WIL-Xd1			Sampling Point nam	e: Levin Xd1
	n Date & Time:		023 15:08			
-	Start Date & Time by Eurofins	e:08/04/20 No	023 15:19		Analysis Ending Dat	e: 24/04/2023
Sampleu	by Euronns	NO	DECINTO		() 100	
			RESULIS	(UNCERTAINT)	() LOQ	
	Ammonia Nitroge			(+ 0.11) mg/l		
	Ammoniacal nitroger	· /	0.35	(± 0.11) mg/l	0.01	
	Arsenic - Soluble)		(1.0.0004)		
	Arsenic (As)		<0.001	(± 0.0004) mg/l	0.001	
	3OD5 - Soluble C	arbonace	ous			
E	BOD5		<3	mg/l	1	
NW457 C	Calcium - Dissolv	ed				
(Calcium (Ca)		40.0	(± 4.00) mg/l	0.01	
NW020 C	Chemical Oxygen	Demand				
	Chemical oxygen de	mand (COE	0) 22	(± 6) mg/l	15	
NW007 C	Chloride					
(Chloride (Cl)		57.6	(± 2.88) mg/l	0.02	
NW023 C	Conductivity					
(Conductivity		53.8	(± 1.1) mS/m	0.1	
NW193 [Dissolved Reactiv	ve Phospl	horus			
F	Phosphorus (soluble	reactive)	0.109	(± 0.022) mg/l	0.005	
ZM2GA E	Enumeration of E	scherichi	a coli By Mem	brane Filtration		
E	Escherichia coli		<100	cfu/100 ml	100	
NW460 li	ron - Dissolved					
l	ron (Fe)		0.635	(± 0.127) mg/l	0.005	
NW098 S	Soluble Aluminiu	m				
ŀ	Aluminium		0.004	(± 0.001) mg/l	0.002	
NW103 S	Soluble Boron					
E	Boron (B)		0.64	mg/l	0.03	
NW104 S	Soluble Cadmium	ı				
	Cadmium (Cd)		<0.0002	(± 0.0001) mg/l	0.0002	

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Food & Water Testing

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		RESULTS	(UNCERTAINTY)	LOQ
NW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
NW108				
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005
NW228	SVOC (GC-MSMS)	0.0000	(, C	0.0003
1111220		-0.0004		
	Acenaphthene	< 0.0001	mg/l	0.0001
	Acenaphthylene	< 0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	< 0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001

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			S (UNCERTAINTY)	LOQ	
NW228	SVOC (GC-MSMS)		- (LOQ	
1111220		<0.0001	mall	0.0001	
	Lindane (gamma-HCH) Metalaxyl	<0.0001	mg/l	0.0001	
			mg/l	0.001	
	Methoxychlor	<0.0001	mg/l	0.0001	
	Metolachlor	<0.0001	mg/l	0.0001	
	Metribuzin	<0.0001	mg/l	0.0001	
	Molinate	<0.0001	mg/l	0.0001	
	Naphthalene	< 0.0001	mg/l	0.0001	
	Oxadiazon	<0.0001	mg/l	0.0001	
	PCB 101	<0.0001	mg/l	0.0001	
	PCB 138	<0.001	mg/l	0.001	
	PCB 183	<0.0001	mg/l	0.0001	
	PCB 28	<0.0001	mg/l	0.0001	
	PCB 7	<0.0001	mg/l	0.0001	
	Pendimethalin	<0.002	mg/l	0.002	
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001	
	Phenanthrene	<0.0001	mg/l	0.0001	
	Pirimiphos-methyl	<0.0001	mg/l	0.0001	
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
	Alkalinity total	203	(± 20) mg CaCO3/I	1	
NW229	VOC (GC-MS)				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethane	<0.0005	mg/l	0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	< 0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	< 0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0002	mg/l	0.0002	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
	1,3,5-Trichlorobenzene	<0.0005	mg/l		
	1,3,5-Trimethylbenzene	<0.0005	-	0.0005	
		-0.0000	mg/l	0.0005	

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		REJULIJ		LOQ	
NW229	VOC (GC-MS)				
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.001	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere d	mg/l	0.001	
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-lsopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	
	,		5		

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B

NW007 Chloride: APHA Online Edition 4110 B

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Food	&	Water Testir	ıg
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NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Im

Jennifer Mont

Supervisor

Gordon McArthur Senior laboratory Analyst

Leo Cleave Senior Analyst Senior Analyst

EXPLANATORY NOTE

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Amitesh Kumar Supervisor

Supervisor Ganesh Ilancko

Gabriela Carvalhaes

Manager Food and Water **Testing Chemistry**

LOQ means Limit of Quantification and the unit of LOQ is the same as







N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) the result unit

ha C. Lagoron

Supervisor Divina Cunanan Lagazon

Ivan Imamura

Laboratory Analyst

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If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice. The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.

The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.

The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.

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Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer. Eurofins General Terms and Conditions apply.





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Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-NW-03	2722-01	REPORT DATE	04/07/2023
Attention	Horowhenua A P O Box 642 4741 Levin	dmin			
	NEW ZEALAN	D			
Phone	(06) 367 2705			Copy to: Water and Waste Te (waterandwasteteam@horowh	
Email	horowhenuaadmin	Gabriela Carvalhaes		·	EUNZWE-00128113
Contact	for your orders: ::	Landfill		Order code:	EUNZWE-00126113
SAMPL		812-2023-00081953	3		
	eference:	301312-0 Ground water			
	g Point code: on Date & Time:	WIL-Xd1 16/06/2023 15:52		Sampling Point name:	Levin Xd1
Analysis		16/06/2023 15:53 15/06/2023 11:37		Analysis Ending Date: Sampler(s)	04/07/2023 Client nominated external sampler
Sampled	l by Eurofins	No			
		RESULT	S (UNCERTAINT	Y) LOQ	
NW179	Ammonia Nitroger	n			
	Ammoniacal nitrogen	(N) 0.41	(± 0.12) mg/l	0.01	
NW341	BOD5 - Soluble Ca	arbonaceous			
	BOD5	<1	mg/l	1	
NW020	Chemical Oxygen	Demand			
	Chemical oxygen der	mand (COD) ²²	(± 6) mg/l	15	
NW007	Chloride				
	Chloride (Cl)	57.3	(± 2.86) mg/l	0.02	
NW023	Conductivity				
	Conductivity	53.6	(± 1.1) mS/m	0.1	
NW098	Dissolved Alumini	ium			
	Aluminium	<0.002	(± 0.001) mg/l	0.002	
NW583	Dissolved Arsenic	;			
	Arsenic (As)	<0.001	(± 0.0003) mg/l	0.001	
NW103	Dissolved Boron				
	Boron (B)	0.07	mg/l	0.03	
NW104	Dissolved Cadmiu				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
NW457	Dissolved Calciun	n			
	Calcium (Ca)	38.1	(± 3.81) mg/l	0.01	
NW106	Dissolved Chromi				
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001	
NW108	Dissolved Copper				
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005	
NW460	Dissolved Iron				

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		RESULT	S (UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	0.076	(± 0.015) mg/l	0.005	
NW110	Dissolved Lead			0.000	
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW462	Dissolved Magnesium			0.0005	
	Magnesium (Mg)	17.7	(± 1.77) mg/l	0.04	
NW113			(_ ··· / ···g/)	0.01	
1444113	Dissolved Manganese	0.579	(± 0.0579) mg/l		
	Manganese (Mn)	0.070	(± 0.0379) mg/l	0.0005	
NW114	Dissolved Mercury	<0.0005			
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel	-0.000-			
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005	
NW117	Dissolved Potassium				
	Potassium (K)	6.31	mg/l	0.01	
NW193	Dissolved Reactive Phosph	norus			
	Phosphorus (soluble reactive)	0.103	(± 0.021) mg/l	0.005	
NW469	Dissolved Sodium				
	Sodium (Na)	44.2	(± 4.42) mg/l	0.02	
NW125	Dissolved Zinc				
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002	
ZMF1E	Enumeration of Escherichi	a coli Bv Me	mbrane Filtration		
	Escherichia coli	<1	cfu/100 ml	1	
NW010	Nitrate-N		0.07100111		
	Nitrate-N	<0.01	(± 0.003) mg/l	0.04	
①NW195			(_ 2.000) (119)	0.01	
(JIMM 199	рН	7.7	(+ 0 2)	~ .	
0.V0.000	pH		(± 0.2)	0.1	
3VQ088	Phenolics (Total)	<0.05			
	Total phenols	<0.05	mg/l	0.05	
NW011	Sulphate				
	Sulphate	<0.02	(± 0.01) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	16	mg/l	3	
NW228	SVOC (GC-MSMS)				
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001	

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			Vater lesti	ng
		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	<0.0001	mg/l	0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001

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				LO
NIW/ววo	SVOC (CC MEME)			
INVVZZO	SVOC (GC-MSMS)	<0.0001		
	Procymidone	<0.001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001 <0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen		mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity			
	Alkalinity total	188	(± 19) mg CaCO3/I	1
NW029	Total Hardness			
	Hardness	168	(± 17) mg	1
	าสเนาธรร		CaCO3/I	I
NW210	Total Non-Purgeable Organ	nic Carbon		
	Total Organic Carbon	4.4	(± 0.4) mg/l	0.1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	
		<0.001	•	0.0005
	1,2-Dibromo-3-chloropropane	<0.0002	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,3,5-Trimethylbenzene		mg/l	0.0005
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005
	1,3-Dichloropropane	<0.0005	mg/l	0.0005
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005
	2,2-Dichloropropane	< 0.0005	mg/l	0.0005
	2-Chlorotoluene	<0.0005	mg/l	0.0005
	3-chloropropene	<0.0005	mg/l	0.0005
	4-Chlorotoluene	<0.0005	mg/l	0.0005
	4-01101010101010	~ ~ ~ ~ =	"	0 0005
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005
		<0.0005	mg/l mg/l	0.0005
	4-methyl-2-pentanone		•	

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TESTING LABORATO

Food & Water Testing

			ater restri	ing in the second se
		RESULTS (UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	NotRecovered	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0010	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	<0.0005	mg/l	0.0005
	Trichlorofluoromethane	<0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
VQ876	Volatile Fatty Acids (VFA) b	y GC-MS		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	lso caproic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5

LIST OF METHODS

Wellington 5010

NEW ZEALAND

NW003 Total Alkalinity: APHA Online Edition 2320 B		A Online Edition 4110 B A Online Edition 4110 B	
Eurofins ELS Limited	Phone	+64 4 576 5016	CREDIN
85 Port Road Seaview	www.eurofins.co.n		PCCITED
Lower Hutt		lac-MRA	



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Food & Water Testing

NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Con
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Diss
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Diss
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Diss
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Diss
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Diss
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Diss
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Diss 4500
NW195	pH: APHA Online Edition 4500-H B	NW206	Sus
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	svo
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Diss
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Diss
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phe
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZMF1E	Escl Aga

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZMF1E	Escherichia coli E (Water) [NZ] <1 >80 /100 ml (0) Ml Agar-F: SMEWW 9222K; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Signature

m

Jennifer Mont

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

Supervisor

Ganesh Ilancko Supervisor

Divita C. Lagopon

Divina Cunanan Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst







- Test is not accredited
- ②Test is subcontracted within Eurofins group and is accredited
- 3 Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- **(6)** Test result is provided by the customer and is not accredited
- ${f O}$ Tested at the sampling point by Eurofins and is not accredited
- (8) Tested at the sampling point by Eurofins and is accredited
- The test result(s) in this report apply only to the sample as received.
- This document can only be reproduced in full.
- The tests are identified by a five-digit code, their description is available on request.
- Accreditation does not apply to comments or graphical representations.

Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND. The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.

N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.

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The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.

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Food & Water Testing

ANALYTICAL REPORT

REPORT	CODE	A	R-23-NW-017	885-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lt Horowhenua A P O Box 642		evin)			
	4741 Levin					
	NEW ZEALAN	١D				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmi				·	orowhenua.govt.nz), McMillan
Contact f Contract:	or your orders:	Gabriela Landfill	Carvalhaes		Order code:	EUNZWE-00117021
SAMPLE	CODE	812-202	23-00049229			
Client Re	ference:	283046-				
	l Point code: n Date & Time:	Ground v WIL-Xs1 08/04/20			Sampling Point nam	ne: Levin Xs1
Analysis	Start Date & Time				Analysis Ending Dat	
-	Date & Time		023 09:43		Sampler(s)	Client nominated external sampler
sampled	by Eurofins	No	BEO!!! F	(111055551)	0 100	
			RESULTS	(UNCERTAINT)	r) loq	
	Ammonia Nitroge			(
	Ammoniacal nitroger	· · /	10.9	(± 1.09) mg/l	0.01	
	Arsenic - Soluble	9		(
	Arsenic (As)		<0.001	(± 0.0004) mg/l	0.001	
NW341 E	BOD5 - Soluble C	arbonace	ous			
I	BOD5		<3	mg/l	1	
NW457 (Calcium - Dissolv	ved				
	Calcium (Ca)		85.4	(± 8.54) mg/l	0.01	
NW020 (Chemical Oxyger	n Demand				
	Chemical oxygen de	mand (COE) 87	(± 14) mg/l	15	
NW007 (
	Chloride (Cl)		114	(± 5.68) mg/l	0.02	
NW023 (Conductivity					
	Conductivity		142	(± 2.8) mS/m	0.1	
W193 [Dissolved Reactiv	ve Phosph	norus			
	Phosphorus (soluble	-	0.011	(± 0.003) mg/l	0.005	
	Enumeration of E	scherichi	a coli By Mem	brane Filtration		
I	Escherichia coli		<4	cfu/100 ml	100	
	ron - Dissolved					
I	Iron (Fe)		1.10	(± 0.110) mg/l	0.005	
NW098 (Soluble Aluminiu	m				
1	Aluminium		0.005	(± 0.001) mg/l	0.002	
NW103 \$	Soluble Boron					
,	Boron (B)		0.61	mg/l	0.03	
NW104 g	Soluble Cadmium	า				

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	Soluble Cadmium Cadmium (Cd)			
NW106	Cadmium (Cd)			
NW106	· · · ·	<0.0002	(± 0.0001) mg/l	0.0002
	Soluble Chromium			5.000L
	Chromium (Cr)	0.001	(± 0.0004) mg/l	0.001
		0.001	(± 0.000 l) mg/l	0.001
W108	Soluble Copper		(
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005
W228	SVOC (GC-MSMS)			
	Acenaphthene	<0.0001	mg/l	0.0001
	Acenaphthylene	<0.001	mg/l	0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001

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		RESULTS	G (UNCERTAINT	
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	0.0
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	0.001
	Methoxychlor	< 0.0001	mg/l	0.0001
	Metolachlor	< 0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	< 0.0001	mg/l	0.0001
	Naphthalene	< 0.0001	mg/l	0.0001
	Oxadiazon	< 0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.0001	mg/l	
	PCB 183	<0.001	-	0.001
	PCB 28	<0.0001	mg/l mg/l	0.0001
	PCB 28 PCB 7		-	0.0001
		<0.0001	mg/l	0.0001
	Pendimethalin	< 0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	< 0.0001	mg/l	0.0001
	Procymidone	< 0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003	Total Alkalinity			
	Alkalinity total	590	(± 59) mg CaCO3/I	1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	< 0.0005	mg/l	0.0005
	1,1,2,2-tetrachloroethane	< 0.0005	mg/l	0.0005
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	-	
			mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	< 0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005
	1,2-Dichloropropane	<0.0005	mg/l	0.0005

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		RESULIS	(UNCERTAINTY)	LOQ	
NW229	VOC (GC-MS)				
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.001	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001	
		d			
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-lsopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	
	- · · /		-		

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LIST OF METHODS

NW003	Total Alkalinity: APHA Online Edition 2320 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW229	VOC (GC-MS): Internal Method, HS-GC-MS
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.

NW007	Chloride: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
7M2GA	Escherichia coli E (Water) [N7] <100 >6 000 000 /100 ml

M2GA Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Jennifer Mont Supervisor

Gordon McArthur Senior laboratory Analyst

Leo Cleave

Senior Analyst Senior Analyst

EXPLANATORY NOTE

- ①Test is not accredited
- ^②Test is subcontracted within Eurofins group and is accredited
- ③ Test is subcontracted within Eurofins group and is not accredited
- Test is subcontracted outside Eurofins group and is accredited
- S Test is subcontracted outside Eurofins group and is not accredited
- **(6)** Test result is provided by the customer and is not accredited
- ⑦Tested at the sampling point by Eurofins and is not accredited
- (8) Tested at the sampling point by Eurofins and is accredited

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Signature

Amitesh Kumar Supervisor

Ganesh Ilancko Supervisor

Lagopon

Divina Cunanan Supervisor Lagazon

Ivan Imamura

Laboratory Analyst

N/A means Not Applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

5016



The test result(s) in this report apply only to the sample as received.

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END OF REPORT





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Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-NW-03	2716-01	REPORT DATE	04/07/2023
Attention	Downer NZ Lto Horowhenua A P O Box 642 4741 Levin NEW ZEALAN	dmin			
Phone	(06) 367 2705			Copy to: Water and Waste Tea	am
Email	horowhenuaadmin	@downer.co.nz		(waterandwasteteam@horowh	enua.govt.nz), McMillan
Contact f	for your orders: :	Gabriela Carvalhaes Landfill		Order code:	EUNZWE-00127741
SAMPLE	ECODE	812-2023-00081008	8		
Client Re		301313-0			
Receptio	g Point code: n Date & Time:	Ground water WIL-Xs1 15/06/2023 15:00 :15/06/2023 15:03		Sampling Point name: Analysis Ending Date:	Levin Xs1 04/07/2023
•	Date & Time	13/06/2023 13:03		Sampler(s)	Client nominated external sampler
-	by Eurofins	No		• • • •	
		RESULT	S (UNCERTAINT	r) loq	
NW179	Ammonia Nitrogei	n			
	Ammoniacal nitrogen	(N) 12.5	(± 1.25) mg/l	0.01	
NW341	BOD5 - Soluble Ca	arbonaceous			
	BOD5	1	mg/l	1	
NW020	Chemical Oxygen	Demand			
	Chemical oxygen den	nand (COD) ⁷⁸	(± 13) mg/l	15	
NW007	Chloride				
	Chloride (CI)	56.1	(± 2.80) mg/l	0.02	
NW023	Conductivity				
	Conductivity	92.1	(± 1.8) mS/m	0.1	
NW098	Dissolved Alumini	ium			
	Aluminium	0.005	(± 0.001) mg/l	0.002	
NW583	Dissolved Arsenic				
	Arsenic (As)	<0.001	(± 0.0004) mg/l	0.001	
NW103	Dissolved Boron				
	Boron (B)	0.22	mg/l	0.03	
NW104	Dissolved Cadmiu				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
	Dissolved Calcium				
	Calcium (Ca)	73.1	(± 7.31) mg/l	0.01	
NW106	Dissolved Chromi				
	Chromium (Cr)	<0.001	(± 0.0004) mg/l	0.001	
	Dissolved Copper				
	Copper (Cu)	<0.0005	(± 0.0002) mg/l	0.0005	
NW460	Dissolved Iron				

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		RESULTS	(UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	6.42	(± 0.642) mg/l	0.005	
NW110	Dissolved Lead				
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NW462	Dissolved Magnesium				
	Magnesium (Mg)	26.6	(± 2.66) mg/l	0.01	
NW113	Dissolved Manganese				
	Manganese (Mn)	1.61	(± 0.161) mg/l	0.0005	
NW114	Dissolved Mercury			0.0000	
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel		ilig/i	0.0005	
	Nickel (Ni)	0.0008	(± 0.0003) mg/l	0.0005	
NI\A/447			(± 0.0000) mg/r	0.0005	
NW117	Dissolved Potassium	12.6			
	Potassium (K)		mg/l	0.01	
NW193	Dissolved Reactive Phosph		(1.0.000)		
	Phosphorus (soluble reactive)	0.029	(± 0.006) mg/l	0.005	
NW469	Dissolved Sodium				
	Sodium (Na)	52.3	(± 5.23) mg/l	0.02	
NW125	Dissolved Zinc				
	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.002	
ZM2GA	Enumeration of Escherichia	a coli By Mem	brane Filtration		
	Escherichia coli	<100	cfu/100 ml	100	
NW010	Nitrate-N				
	Nitrate-N	<0.01	(± 0.003) mg/l	0.01	
①NW195	рH				
	pH	6.7	(± 0.2)	0.1	
③VQ088	Phenolics (Total)				
•	Total phenols	<0.05	mg/l	0.05	
NW011				0.00	
	Sulphate	6.04	(± 0.60) mg/l	0.02	
NW206	•		()	0.02	
1444200		35	mall		
	Suspended Solids		mg/l	3	
NW228	SVOC (GC-MSMS)	<0.0001			
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)		mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
	Anthracene	<0.001	mg/l	0.001	
	Atrazine	<0.0001	mg/l	0.0001	
	Benz(a)anthracene	<0.0001	mg/l	0.0001	
	Benzo(a)pyrene	<0.0001	mg/l	0.0001	
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001	

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		RESULTS	(UNCERTAINTY)	LOQ
NW228	SVOC (GC-MSMS)			
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.003
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.0001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005		
	d-BHC	<0.0001	mg/l	0.005
		<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin		mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	<0.0001	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	<0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001
	Hexazinone	<0.001	mg/l	0.0001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.001	mg/l	
	Methoxychlor	<0.0001	mg/l	0.001
	-	<0.0001		0.0001
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001	mg/l	0.0001
	Naphthalene	<0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101		mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)		mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	

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	[valer restri	iy	
		RESULTS	G (UNCERTAINTY)	LOQ	
NW228	SVOC (GC-MSMS)				
	Procymidone	<0.0001	mg/l	0.0001	
	Propanil	<0.001	mg/l	0.001	
	Propazine	<0.0001	mg/l	0.0001	
	Pyrene	<0.0001	mg/l	0.0001	
	Pyriproxyfen	<0.0001	mg/l	0.0001	
	Simazine	<0.0001	mg/l	0.0001	
	Terbuthylazine	<0.0001	mg/l	0.0001	
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001	
	Trifluralin	<0.0001	mg/l	0.0001	
NW003	Total Alkalinity				
·	Alkalinity total	373	(± 37) mg CaCO3/I	1	
NW029	Total Hardness				
	Hardness	292	(± 29) mg CaCO3/I	1	
NW210	Total Non-Purgeable Orga	nic Carbon			
	Total Organic Carbon	31.6	(± 3.2) mg/l	0.1	
NW229	-				
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005	
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005	
	1,1,2-Trichloroethane	<0.0005			
	1,1-Dichloroethane	<0.0005	mg/l mg/l	0.0005 0.0005	
	1,1-Dichloroethene	<0.0005	mg/l	0.0005	
	1,1-Dichloropropene	<0.0005	mg/l	0.0005	
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005	
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005	
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002	
	1,2-Dibromoethane	<0.0002	mg/l	0.0002	
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005	
	1,2-Dichloroethane	<0.0005	mg/l	0.0005	
	1,2-Dichloropropane	<0.0005	mg/l	0.0005	
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	<0.0005	mg/l	0.0005	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0010	mg/l	0.0005	
		<0.0005	mall	0.0005	
	Benzene		mg/l	0.0005	
	Benzene Bromobenzene	<0.0005 <0.0005 <0.0012	mg/l	0.0005	

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FSTING LABORATO

Food & Water Testing

			ater restin	19
		RESULTS	(UNCERTAINTY)	LOQ
NW229	VOC (GC-MS)			
	Bromodichloromethane	<0.0005	mg/l	0.0005
	Bromoform	<0.0005	mg/l	0.0005
	Bromomethane (zone 2)	<0.001	mg/l	0.001
	Carbon tetrachloride	<0.0005	mg/l	0.0005
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005
	Chlorobenzene	<0.0005	mg/l	0.0005
	Chloroethane	NotRecovered	mg/l	0.001
	Chloroform	<0.0005	mg/l	0.0005
	Chloromethane	<0.006	mg/l	0.006
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Dibromochloromethane	<0.0005	mg/l	0.0005
	Dibromomethane	<0.0005	mg/l	0.0005
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001
	Dichloromethane	<0.005	mg/l	0.005
	Hexachlorobutadiene	<0.0002	mg/l	0.0002
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015
	Naphthalene	<0.0005	mg/l	0.0005
	n-Butylbenzene	<0.0005	mg/l	0.0005
	n-Propylbenzene	<0.0005	mg/l	0.0005
	p-Isopropyltoluene	<0.0005	mg/l	0.0005
	sec-Butylbenzene	<0.0005	mg/l	0.0005
	Styrene	<0.0005	mg/l	0.0005
	tert-Butylbenzene	<0.0005	mg/l	0.0005
	Tetrachloroethene	<0.0005	mg/l	0.0005
	Toluene	<0.0005	mg/l	0.0005
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005
	Trichloroethene	< 0.0005	mg/l	0.0005
	Trichlorofluoromethane	< 0.0005	mg/l	0.0005
	Vinyl chloride	<0.0005	mg/l	0.0003
	Xylene (ortho-)	<0.0005	mg/l	0.0005
VQ876	Volatile Fatty Acids (VFA) b	y GC-MS		
	Acetic acid	<5	mg/l	5
	Butyric acid	<5	mg/l	5
	Heptanoic Acid C7:0	<5	mg/l	5
	Hexanoic acid	<5	mg/l	5
	lso caproic acid	<5	mg/l	5
	Isobutyric acid	<5	mg/l	5
	Isovaleric acid	<5	mg/l	5
	Propionic acid	<5	mg/l	5
	Valeric acid	<5	mg/l	5
		<5	0	0

LIST OF METHODS

NW003 Total Alkalinity: APHA Online Edition 2320 B		HA Online Edition 4110 B PHA Online Edition 4110 B	
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85 Port Road Seaview	www.eurofins.co	.nz	PCCIEDITED
Lower Hutt		lac-MRA	

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Food & Water Testing

NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA C
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium:
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: AF
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APH
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive P 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: Al
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): In
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbo B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: Al
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): API
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (W (0-3) m-FC Agar-F: SN

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabros

Marylou Cabral Laboratory Manager

Signature

Jennifer Mont

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

Supervisor

Ganesh Ilancko Supervisor

iha C. Lagopon

Divina Cunanan Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst

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N/A means Not Applicable

Quantification (LOQ)

the result unit

Not Detected means not detected at or above the Limit of

LOQ means Limit of Quantification and the unit of LOQ is the same as

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END OF REPORT







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Food & Water Testing

ANALYTICAL REPORT

REPORT	I CODE	AF	R-23-NW-017	884-01	REPORT DATE	18/04/2023
Attention	Downer NZ Lt Horowhenua P O Box 642	•	vin)			
	4741 Levin					
	NEW ZEALAN	ND				
Phone	(06) 367 2705				Copy to: Water and Was	
Email	horowhenuaadmi	0				orowhenua.govt.nz), McMillan
Contact f Contract:	or your orders:	Gabriela Landfill	Carvalhaes		Order code:	EUNZWE-00117021
SAMPLE	CODE	812-202	3-00049228			
	ference:	283047-0				
	J Point code:	Ground v WIL-Xs2			Sampling Point nam	e: Levin Xs2
	n Date & Time:		23 15:09		Analysis Ending Dat	18/04/2022
-	Start Date & Time		23 15:19 23 09:43		Analysis Ending Data Sampler(s)	e: 18/04/2023 Client nominated external sample
-	by Eurofins	No				
			RESULTS	(UNCERTAINT)	() LOQ	
W179	Ammonia Nitroge	en				
	Ammoniacal nitroge		0.03	(± 0.009) mg/l	0.01	
IW583 ,	Arsenic - Soluble	e				
	Arsenic (As)		<0.001	(± 0.0003) mg/l	0.001	
W341 I	BOD5 - Soluble C	arbonace	ous			
	BOD5		<3	mg/l	1	
1W457 (Calcium - Dissolv	ved				
	Calcium (Ca)		10.9	(± 1.09) mg/l	0.01	
W020 (Chemical Oxyger	n Demand				
	Chemical oxygen de	mand (COD) <15	(± 5) mg/l	15	
W007 (Chloride					
	Chloride (Cl)		18.9	(± 0.95) mg/l	0.02	
NW023 (Conductivity					
	Conductivity		19.9	(± 0.4) mS/m	0.1	
W193	Dissolved Reacti	ve Phosph	orus			
	Phosphorus (soluble	e reactive)	0.011	(± 0.003) mg/l	0.005	
ZM2GA	Enumeration of E	scherichia	a coli By Mem	brane Filtration		
	Escherichia coli		<4	cfu/100 ml	100	
W460	Iron - Dissolved					
	Iron (Fe)		0.132	(± 0.026) mg/l	0.005	
VW098	Soluble Aluminiu	m				
	Aluminium		0.007	(± 0.001) mg/l	0.002	
VW103	Soluble Boron					
	Boron (B)		0.06	mg/l	0.03	
NW104 9	Soluble Cadmiun	า				

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		RESULTS	(UNCERTAINTY)	LOQ
NW104	Soluble Cadmium			
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002
IW106	Soluble Chromium			
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001
W108	Soluble Copper			
	Copper (Cu)	0.0014	(± 0.0003) mg/l	0.0005
W228	SVOC (GC-MSMS)	0.0011	(, j	0.0000
11220	Acenaphthene	<0.0001	mall	0.0004
	Acenaphthylene	<0.001	mg/l mg/l	0.0001 0.001
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0010	mg/l	0.0001
	Alachlor	<0.0001	mg/l	0.0001
	Aldicarb	<0.1	mg/l	0.1
	Aldrin	<0.001	mg/l	0.001
	Anthracene	<0.001	mg/l	0.001
	Atrazine	<0.0001	mg/l	0.0001
	Benz(a)anthracene	<0.0001	mg/l	0.0001
	Benzo(a)pyrene	<0.0001	mg/l	0.0001
	Benzo(g,h,i)perylene	<0.001	mg/l	0.001
	Bromacil	<0.005	mg/l	0.005
	Carbofuran	<0.001	mg/l	0.001
	Chlordane	<0.0001	mg/l	0.0001
	Chlordane, gamma	<0.001	mg/l	0.001
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001
	Chrysene	<0.0001	mg/l	0.0001
	Cyanazine	<0.005	mg/l	0.005
	d-BHC	<0.0001	mg/l	0.0001
	DDD, p,p'-	<0.0001	mg/l	0.0001
	DDE, p,p-	<0.0001	mg/l	0.0001
	DDT, p,p'-	<0.001	mg/l	0.001
	Diazinon	<0.0001	mg/l	0.0001
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001
	Dieldrin	<0.0001	mg/l	0.0001
	Dimethoate	<0.001	mg/l	0.001
	Diuron	<0.001	mg/l	0.001
	Endosulfan, alpha-	<0.001	mg/l	0.001
	Endosulfan, beta-	<0.005	mg/l	0.005
	Endosulfan-sulfate	<0.0001	mg/l	0.0001
	Endrin	<0.0001	mg/l	0.0001
	Endrin ketone	NotRecovere d	mg/l	0.0001
	Endrin-aldehyde	<0.001	mg/l	0.01
	Fluoranthene	<0.0001	mg/l	0.0001
	Fluorene	<0.0001	mg/l	0.0001
	HCH, alpha-	<0.0001	mg/l	0.0001
	HCH, beta-	<0.0001	mg/l	0.0001
	Heptachlor	< 0.0001	mg/l	0.0001
	Heptachlor epoxide, cis-	< 0.0001	mg/l	0.0001
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001

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		RESULTS	G (UNCERTAINTY	′) L
NW228	SVOC (GC-MSMS)			
	Hexazinone	<0.001	mg/l	0.001
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001
	Metalaxyl	<0.0001	mg/l	0.0001
	Methoxychlor	<0.001	mg/l	
	Metolachlor	<0.0001	mg/l	0.0001
	Metribuzin	<0.0001	mg/l	0.0001
	Molinate	<0.0001		0.0001
			mg/l	0.0001
	Naphthalene	< 0.0001	mg/l	0.0001
	Oxadiazon	<0.0001	mg/l	0.0001
	PCB 101	<0.0001	mg/l	0.0001
	PCB 138	<0.001	mg/l	0.001
	PCB 183	<0.0001	mg/l	0.0001
	PCB 28	<0.0001	mg/l	0.0001
	PCB 7	<0.0001	mg/l	0.0001
	Pendimethalin	<0.002	mg/l	0.002
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001
	Phenanthrene	<0.0001	mg/l	0.0001
	Pirimiphos-methyl	<0.0001	mg/l	0.0001
	Procymidone	<0.0001	mg/l	0.0001
	Propanil	<0.001	mg/l	0.001
	Propazine	<0.0001	mg/l	0.0001
	Pyrene	<0.0001	mg/l	0.0001
	Pyriproxyfen	<0.0001	mg/l	0.0001
	Simazine	<0.0001	mg/l	0.0001
	Terbuthylazine	<0.0001	mg/l	0.0001
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001
	Trifluralin	<0.0001	mg/l	0.0001
NW003		0.0001		0.0001
1111003	•	10	(+ 5) ma	
	Alkalinity total	48	(± 5) mg CaCO3/I	1
NW229	VOC (GC-MS)			
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005
	1,1,1-Trichloroethane	<0.0005	mg/l	
		<0.0005	-	0.0005
	1,1,2,2-tetrachloroethane		mg/l	0.0005
	1,1,2-Trichloroethane	< 0.0005	mg/l	0.0005
	1,1-Dichloroethane	<0.0005	mg/l	0.0005
	1,1-Dichloroethene	<0.0005	mg/l	0.0005
	1,1-Dichloropropene	<0.0005	mg/l	0.0005
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.002
	1,2-Dibromoethane	<0.0002	mg/l	0.0002
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0005
	1,2-Dichloroethane	<0.0005	mg/l	0.0005

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Food & Water Testing

				LOQ	
11/1/220			<u>,</u> ,		
**223	VOC (GC-MS)	-0.0005			
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005	
	1,3,5-Trimethylbenzene	< 0.0005	mg/l	0.0005	
	1,3-Dichlorobenzene	<0.0005	mg/l	0.0005	
	1,3-Dichloropropane	<0.0005	mg/l	0.0005	
	1,4-dichlorobenzene	<0.0005	mg/l	0.0005	
	2,2-Dichloropropane	<0.0005	mg/l	0.0005	
	2-Chlorotoluene	<0.0005	mg/l	0.0005	
	3-chloropropene	<0.0005	mg/l	0.0005	
	4-Chlorotoluene	<0.0005	mg/l	0.0005	
	4-methyl-2-pentanone	<0.0050	mg/l	0.0005	
	Benzene	<0.0005	mg/l	0.0005	
	Bromobenzene	<0.0005	mg/l	0.0005	
	Bromochloromethane	<0.0012	mg/l	0.0012	
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	<0.001	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.001	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovere	mg/l	0.001	
		d			
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	Isopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-lsopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	
	- · · /		-		

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NW003	Total Alkalinity: APHA Online Edition 2320 B	NW007	Chloride: APHA Online Edition 4110 B
NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA Online Edition 2510 B
NW098	Soluble Aluminium: APHA Online Edition 3125 B mod.	NW103	Soluble Boron: APHA Online Edition 3125 B mod.
NW104	Soluble Cadmium: APHA Online Edition 3125 B mod.	NW106	Soluble Chromium: APHA Online Edition 3125 B mod.
NW108	Soluble Copper: APHA Online Edition 3125 B mod.	NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G	NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW457	Calcium - Dissolved: APHA Online Edition 3120 B mod.	NW460	Iron - Dissolved: APHA Online Edition 3120 B mod.
NW583	Arsenic - Soluble: APHA Online Edition 3125 B mod.	ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml

(0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

Amitesh Kumar Supervisor



Ganesh Ilancko Supervisor

EXPLANATORY NOTE

Test is not accredited

- ②Test is subcontracted within Eurofins group and is accredited
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- Tested at the sampling point by Eurofins and is not accredited
- Tested at the sampling point by Eurofins and is accredited

Signature

Supervisor Divina Cunanan Lagazon

Ivan Imamura

Laboratory Analyst

Phone

K~

Gordon McArthur Senior laboratory Analyst

Leo Cleave

Senior Analyst Senior Analyst

N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit



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The test result(s) in this report apply only to the sample as received.

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END OF REPORT





AR-23-NW-032721-01 Page 1 of 7

Food & Water Testing

ANALYTICAL REPORT

REPOR	T CODE	AR-23-NW-032	2721-01	REPORT DATE	04/07/2023
Attention	Downer NZ Ltc Horowhenua A P O Box 642 4741 Levin	dmin			
Phone	NEW ZEALAN (06) 367 2705	D		Copy to: Water and Waste Te	am.
Email	horowhenuaadmin	@downer.co.nz		(waterandwasteteam@horowh	
Contact f	for your orders:	Gabriela Carvalhaes Landfill		Order code:	EUNZWE-00128113
SAMPLE	ECODE	812-2023-00081948	3		
Client Re	eference:	301314-0			
Receptio	g Point code: n Date & Time:	Ground water WIL-Xs2 16/06/2023 15:40		Sampling Point name:	Levin Xs2
-	Start Date & Time Date & Time	:16/06/2023 15:43 13/06/2023 13:04		Analysis Ending Date: Sampler(s)	04/07/2023 Client nominated external sampler
-	by Eurofins	No		Sampler(S)	Cherit nominated external sampler
•	,	RESULTS	G (UNCERTAINT	Ý) LOQ	
NW179	Ammonia Nitroger				
	Ammoniacal nitrogen	0.00	(± 0.006) mg/l	0.01	
	BOD5 - Soluble Ca				
	BOD5	<1	mg/l	1	
NW020	Chemical Oxygen	Demand	-		
	Chemical oxygen den		(± 5) mg/l	15	
NW007					
	Chloride (Cl)	14.9	(± 0.75) mg/l	0.02	
NW023	Conductivity				
	Conductivity	20.2	(± 0.4) mS/m	0.1	
NW098	Dissolved Alumini	um			
	Aluminium	0.013	(± 0.001) mg/l	0.002	
NW583	Dissolved Arsenic	:			
	Arsenic (As)	<0.001	(± 0.0003) mg/l	0.001	
NW103	Dissolved Boron				
	Boron (B)	0.04	mg/l	0.03	
NW104	Dissolved Cadmiu				
	Cadmium (Cd)	<0.0002	(± 0.0001) mg/l	0.0002	
NW457	Dissolved Calcium				
	Calcium (Ca)	13.1	(± 1.31) mg/l	0.01	
NW106	Dissolved Chromi				
	Chromium (Cr)	<0.001	(± 0.0003) mg/l	0.001	
NW108	Dissolved Copper				
	Copper (Cu)	0.0008	(± 0.0002) mg/l	0.0005	
NW460	Dissolved Iron				

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		RESULTS	(UNCERTAINTY)	LOQ	
NW460	Dissolved Iron				
	Iron (Fe)	0.041	(± 0.008) mg/l	0.005	
NW110	Dissolved Lead			0.000	
	Lead (Pb)	<0.0005	(± 0.0002) mg/l	0.0005	
NMAGO			(= 0.0002) mg/i	0.0005	
NW462		6.74	(± 0.67) mg/l		
	Magnesium (Mg)	0.74	(± 0.07) mg/i	0.01	
NW113	···· J· ···	0.0444	(
	Manganese (Mn)	0.0414	(± 0.0083) mg/l	0.0005	
NW114	Dissolved Mercury				
	Mercury (Hg)	<0.0005	mg/l	0.0005	
NW116	Dissolved Nickel				
	Nickel (Ni)	<0.0005	(± 0.0002) mg/l	0.0005	
NW117	Dissolved Potassium				
	Potassium (K)	4.80	mg/l	0.01	
NW193	Dissolved Reactive Phosph	norus			
	Phosphorus (soluble reactive)	0.016	(± 0.004) mg/l	0.005	
NW469	Dissolved Sodium				
	Sodium (Na)	14.1	(± 1.41) mg/l	0.02	
NW125			(, C	0.02	
1111120	Zinc (Zn)	<0.002	(± 0.0007) mg/l	0.000	
7M2CA				0.002	
ZIVIZGA	Enumeration of Escherichi	а соп ву метр <100			
	Escherichia coli	100	cfu/100 ml	100	
NW010		0.92	(
	Nitrate-N	0.82	(± 0.21) mg/l	0.01	
DNW195	рН				
	рН	6.7	(± 0.2)	0.1	
3)VQ088	Phenolics (Total)				
	Total phenols	<0.05	mg/l	0.05	
NW011	Sulphate				
	Sulphate	11.9	(± 0.60) mg/l	0.02	
NW206	Suspended Solids				
	Suspended Solids	21	mg/l	3	
NW228	SVOC (GC-MSMS)		-		
	Acenaphthene	<0.0001	mg/l	0.0001	
	Acenaphthylene	<0.001	mg/l	0.001	
	Adipatic acid, bis-2-ethylhexyl ester (DEHA)	<0.0001	mg/l	0.0001	
	Alachlor	<0.0001	mg/l	0.0001	
	Aldicarb	<0.1	mg/l	0.1	
	Aldrin	<0.001	mg/l	0.001	
		<0.001	mg/l	0.001	
	Anthracene	0.001	ing/i		
	Anthracene Atrazine	<0.0001	mg/l	0.0001	
		<0.0001 <0.0001		0.0001 0.0001	
	Atrazine	<0.0001	mg/l		

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			vater lesti	ng		
		RESULTS	(UNCERTAINTY)	LOQ		
W228	SVOC (GC-MSMS)					
	Bromacil	<0.005	mg/l	0.005		
	Carbofuran	<0.001	mg/l	0.001		
	Chlordane	<0.0001	mg/l	0.0001		
	Chlordane, gamma	<0.001	mg/l	0.001		
	Chlorpyrifos (-ethyl)	<0.0001	mg/l	0.0001		
	Chrysene	<0.0001	mg/l	0.0001		
	Cyanazine	<0.005	mg/l	0.005		
	d-BHC	<0.0001	mg/l	0.0001		
	DDD, p,p'-	<0.0001	mg/l	0.0001		
	DDE, p,p-	<0.0001	mg/l	0.0001		
	DDT, p,p'-	<0.001	mg/l	0.001		
	Diazinon	<0.0001	mg/l	0.0001		
	Dibenz(a,h)anthracene	<0.0001	mg/l	0.0001		
	Dieldrin	<0.0001	mg/l	0.0001		
	Dimethoate	<0.001	mg/l	0.001		
	Diuron	<0.001	mg/l	0.001		
	Endosulfan, alpha-	<0.001	mg/l	0.001		
	Endosulfan, beta-	<0.005	mg/l	0.005		
	Endosulfan-sulfate	<0.0001	mg/l	0.0001		
	Endrin	<0.0001	mg/l	0.0001		
	Endrin ketone	<0.0001	mg/l	0.0001		
	Endrin-aldehyde	<0.001	mg/l	0.01		
	Fluoranthene	<0.0001	mg/l	0.0001		
	Fluorene	<0.0001	mg/l	0.0001		
	HCH, alpha-	<0.0001	mg/l	0.0001		
	HCH, beta-	<0.0001	mg/l	0.0001		
	Heptachlor	<0.0001	mg/l	0.0001		
	Heptachlor epoxide, cis-	<0.0001	mg/l	0.0001		
	Hexachlorobenzene (HCB)	<0.0001	mg/l	0.0001		
	Hexazinone	<0.001	mg/l	0.001		
	Indeno(1,2,3-cd)pyrene	<0.0001	mg/l	0.0001		
	Lindane (gamma-HCH)	<0.0001	mg/l	0.0001		
	Metalaxyl	<0.001	mg/l	0.001		
	Methoxychlor	<0.0001	mg/l	0.0001		
	Metolachlor	<0.0001	mg/l	0.0001		
	Metribuzin	<0.0001	mg/l	0.0001		
	Molinate	<0.0001	mg/l	0.0001		
	Naphthalene	<0.0001	mg/l	0.0001		
	Oxadiazon	<0.0001	mg/l	0.0001		
	PCB 101	<0.0001	mg/l	0.0001		
	PCB 138	<0.001	mg/l	0.001		
	PCB 183	<0.0001	mg/l	0.0001		
	PCB 28	<0.0001	mg/l	0.0001		
	PCB 7	<0.0001	mg/l	0.0001		
	Pendimethalin	<0.002	mg/l	0.002		
	Permethrin (sum of isomers)	<0.0001	mg/l	0.0001		
	Phenanthrene	<0.0001	mg/l	0.0001		
	Pirimiphos-methyl	<0.0001	mg/l	0.0001		

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	Food & Water Testing					
		RESULTS	6 (UNCERTAINTY)	LOQ		
NW228	SVOC (GC-MSMS)					
	Procymidone	<0.0001	mg/l	0.0001		
	Propanil	<0.001	mg/l	0.001		
	Propazine	<0.0001	mg/l	0.0001		
	Pyrene	<0.0001	mg/l	0.0001		
	Pyriproxyfen	<0.0001	mg/l	0.0001		
	Simazine	<0.0001	mg/l	0.0001		
	Terbuthylazine	<0.0001	mg/l	0.0001		
	Total Benzo(b) and Benzo(k) fluoranthene	<0.001	mg/l	0.001		
	Trifluralin	<0.0001	mg/l	0.0001		
NW003	Total Alkalinity					
	Alkalinity total	60	(± 6) mg CaCO3/I	1		
NW029	Total Hardness					
	Hardness	61	(± 6) mg CaCO3/l	1		
NW210	Total Non-Purgeable Orgar	nic Carbon	040001			
	Total Organic Carbon	1.8	(± 0.2) mg/l	0.1		
NW229	VOC (GC-MS)					
	1,1,1,2-Tetrachloroethane	<0.0005	mg/l	0.0005		
	1,1,1-Trichloroethane	<0.0005	mg/l	0.0005		
	1,1,2,2-tetrachloroethane	<0.0005	mg/l	0.0005		
	1,1,2-Trichloroethane	<0.0005	mg/l	0.0005		
	1,1-Dichloroethane	<0.0005	mg/l	0.0005		
	1,1-Dichloroethene	<0.0005	mg/l	0.0005		
	1,1-Dichloropropene	<0.0005	mg/l	0.0005		
	1,2,3-Trichlorobenzene	<0.0005	mg/l	0.0005		
	1,2,3-Trichloropropane	<0.0005	mg/l	0.0005		
	1,2,4 trimethylbenzen	<0.0005	mg/l	0.0005		
	1,2,4-Trichlorobenzene	<0.0005	mg/l	0.0005		
	1,2-Dibromo-3-chloropropane	<0.001	mg/l	0.0003		
	1,2-Dibromoethane	<0.0002	mg/l	0.0002		
	1,2-Dichlorobenzene (2)	<0.0005	mg/l	0.0002		
	1,2-Dichloroethane	<0.0005	mg/l	0.0005		
	1,2-Dichloropropane	<0.0005	mg/l	0.0005		
	1,3,5-Trichlorobenzene	<0.0005	mg/l	0.0005		
	1,3,5-Trimethylbenzene	< 0.0005				
	-	< 0.0005	mg/l	0.0005		
	1,3-Dichlorobenzene	< 0.0005	mg/l	0.0005		
	1,3-Dichloropropane	< 0.0005	mg/l	0.0005		
	1,4-dichlorobenzene	< 0.0005	mg/l	0.0005		
	2,2-Dichloropropane	< 0.0005	mg/l	0.0005		
	2-Chlorotoluene	< 0.0005	mg/l	0.0005		
	3-chloropropene	< 0.0005	mg/l	0.0005		
	4-Chlorotoluene	<0.0005	mg/l	0.0005		
	4-methyl-2-pentanone	<0.0005	mg/l	0.0005		
	Benzene	<0.0005	mg/l	0.0005		
	Bromobenzene	<0.0003	mg/l	0.0005		
	Bromochloromethane	-0.0012	mg/l	0.0012		

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Food & Water Testing

	1		aler res		
		RESULTS	(UNCERTAINTY	LOQ	
NW229	VOC (GC-MS)				
	Bromodichloromethane	<0.0005	mg/l	0.0005	
	Bromoform	<0.0005	mg/l	0.0005	
	Bromomethane (zone 2)	<0.001	mg/l	0.001	
	Carbon tetrachloride	<0.0005	mg/l	0.0005	
	Carbondisulphide (CS2)	<0.0005	mg/l	0.0005	
	Chlorobenzene	<0.0005	mg/l	0.0005	
	Chloroethane	NotRecovered	mg/l	0.001	
	Chloroform	<0.0005	mg/l	0.0005	
	Chloromethane	<0.006	mg/l	0.006	
	cis-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	cis-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Dibromochloromethane	<0.0005	mg/l	0.0005	
	Dibromomethane	<0.0005	mg/l	0.0005	
	Dichlorodifluoromethane	NotRecovered	mg/l	0.001	
	Dichloromethane	<0.005	mg/l	0.005	
	Hexachlorobutadiene	<0.0002	mg/l	0.0002	
	lsopropylbenzene (Cumene)	<0.0005	mg/l	0.0005	
	m,p-Xylene, Ethylbenzene	<0.0015	mg/l	0.0015	
	Naphthalene	<0.0005	mg/l	0.0005	
	n-Butylbenzene	<0.0005	mg/l	0.0005	
	n-Propylbenzene	<0.0005	mg/l	0.0005	
	p-Isopropyltoluene	<0.0005	mg/l	0.0005	
	sec-Butylbenzene	<0.0010	mg/l	0.0005	
	Styrene	<0.0005	mg/l	0.0005	
	tert-Butylbenzene	<0.0005	mg/l	0.0005	
	Tetrachloroethene	<0.0005	mg/l	0.0005	
	Toluene	<0.0005	mg/l	0.0005	
	trans-1,2-Dichloroethene	<0.0005	mg/l	0.0005	
	trans-1,3-Dichloropropene	<0.0005	mg/l	0.0005	
	Trichloroethene	<0.0005	mg/l	0.0005	
	Trichlorofluoromethane	<0.0005	mg/l	0.0005	
	Vinyl chloride	<0.0005	mg/l	0.0003	
	Xylene (ortho-)	<0.0005	mg/l	0.0005	
VQ876	Volatile Fatty Acids (VFA) by	GC-MS			
	Acetic acid	<5	mg/l	5	
	Butyric acid	<5	mg/l	5	
	Heptanoic Acid C7:0	<5	mg/l	5	
	Hexanoic acid	<5	mg/l	5	
	lso caproic acid	<5	mg/l	5	
	Isobutyric acid	<5	mg/l	5	
	Isovaleric acid	<5	mg/l	5	
	Propionic acid	<5	mg/l	5	
	Valeric acid	<5	mg/l	5	
	Volatile fatty acids as acetic acid	<5	mg/l	5	

LIST OF METHODS

Wellington 5010

NEW ZEALAND

NW003 Total Alkalinity: APHA Online Edition 2320 B		IA Online Edition 4110 B IA Online Edition 4110 B	
Eurofins ELS Limited	Phone	+64 4 576 5016	
85 Port Road	www.eurofins.co.r	IZ ALL ALL ALL ALL ALL ALL ALL ALL ALL AL	PCCREDITED
Seaview			
Lower Hutt		Hac-MRA	





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Food & Water Testing

NW020	Chemical Oxygen Demand: APHA Online Edition 5220 D	NW023	Conductivity: APHA O
NW029	Total Hardness: APHA Online Edition 2340 B	NW098	Dissolved Aluminium:
NW103	Dissolved Boron: APHA Online Edition 3125 B mod.	NW104	Dissolved Cadmium:
NW106	Dissolved Chromium: APHA Online Edition 3125 B mod.	NW108	Dissolved Copper: AP
NW110	Dissolved Lead: APHA Online Edition 3125 B mod.	NW113	Dissolved Manganese
NW114	Dissolved Mercury: APHA Online Edition 3125 B mod.	NW116	Dissolved Nickel: APH
NW117	Dissolved Potassium: APHA Online Edition 3125 B mod.	NW125	Dissolved Zinc: APHA
NW179	Ammonia Nitrogen: APHA Online Edition 4500-NH3 H	NW193	Dissolved Reactive Pr 4500-P G
NW195	pH: APHA Online Edition 4500-H B	NW206	Suspended Solids: AF
NW210	Total Non-Purgeable Organic Carbon: APHA Online Edition 5310 B	NW228	SVOC (GC-MSMS): Int
NW229	VOC (GC-MS): Internal Method, HS-GC-MS	NW341	BOD5 - Soluble Carbo B
NW457	Dissolved Calcium: APHA Online Edition 3120 B mod.	NW460	Dissolved Iron: APHA
NW462	Dissolved Magnesium: APHA Online Edition 3120 B mod.	NW469	Dissolved Sodium: AF
NW583	Dissolved Arsenic: APHA Online Edition 3125 B mod.	VQ088	Phenolics (Total): APH
VQ876	Volatile Fatty Acids (VFA) by GC-MS: APHA 5560-D	ZM2GA	Escherichia coli E (Wa (0-3) m-FC Agar-F: SM

NW011	Sulphate: APHA Online Edition 4110 B
NW023	Conductivity: APHA Online Edition 2510 B
NW098	Dissolved Aluminium: APHA Online Edition 3125 B mod.
NW104	Dissolved Cadmium: APHA Online Edition 3125 B mod.
NW108	Dissolved Copper: APHA Online Edition 3125 B mod.
NW113	Dissolved Manganese: APHA Online Edition 3125 B mod.
NW116	Dissolved Nickel: APHA Online Edition 3125 B mod.
NW125	Dissolved Zinc: APHA Online Edition 3125 B mod.
NW193	Dissolved Reactive Phosphorus: APHA Online Edition 4500-P G
NW206	Suspended Solids: APHA Online Edition 2540 D
NW228	SVOC (GC-MSMS): Internal Method, GC-MS/MS
NW341	BOD5 - Soluble Carbonaceous: APHA Online Edition 5210 B
NW460	Dissolved Iron: APHA Online Edition 3120 B mod.
NW469	Dissolved Sodium: APHA Online Edition 3120 B mod.
VQ088	Phenolics (Total): APHA 5530
ZM2GA	Escherichia coli E (Water) [NZ] <100 >6 000 000 /100 ml (0-3) m-FC Agar-F: SMEWW 9222I; APHA Online

mbecabro

Marylou Cabral Laboratory Manager

Signature

mA

Jennifer Mont

Gordon McArthur Senior laboratory Analyst



Gabriela Carvalhaes

Manager Food and Water Testing Chemistry

EXPLANATORY NOTE

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Ganesh Ilancko Supervisor

Duiha C. Lagozon

Divina Cunanan Supervisor Lagazon

Leo Cleave

Senior Analyst Senior Analyst







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- ${f O}$ Tested at the sampling point by Eurofins and is not accredited
- (8) Tested at the sampling point by Eurofins and is accredited
- The test result(s) in this report apply only to the sample as received.
- This document can only be reproduced in full.
- The tests are identified by a five-digit code, their description is available on request.
- Accreditation does not apply to comments or graphical representations.

Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND. The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.

This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.

Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.

All samples become the property of Eurofins to the extent necessary for the performance of the Services.

Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.

If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice. The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.

The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.

The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.

This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.

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END OF REPORT



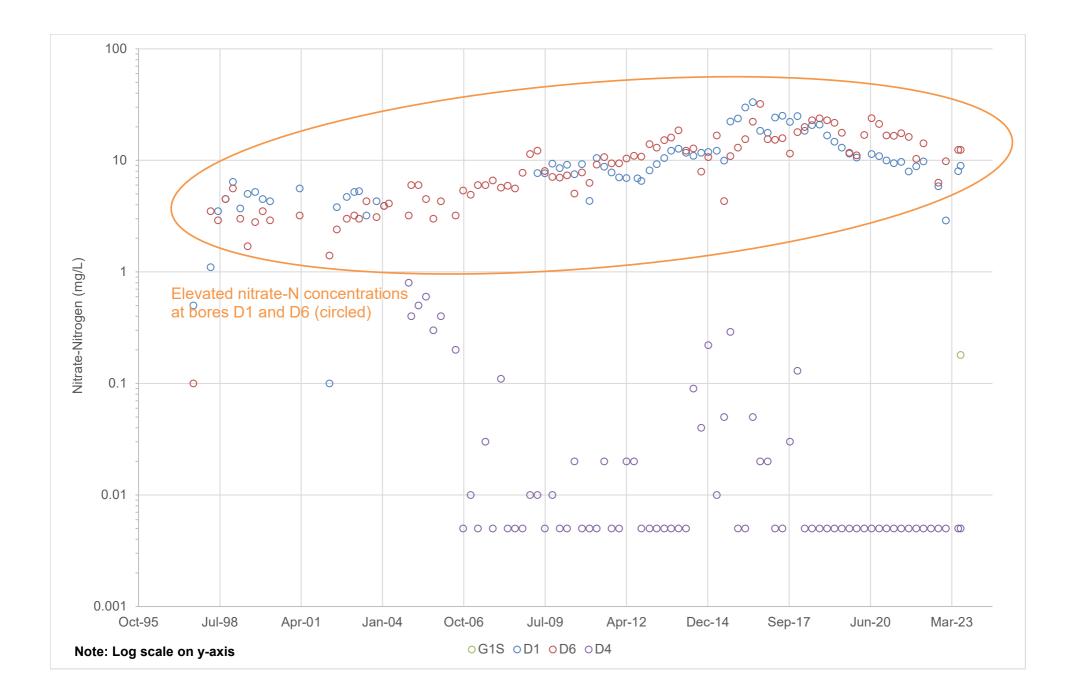


N/A means Not Applicable Not Detected means not detected at or above the Limit of Quantification (LOQ)

Quantification (LOQ) LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

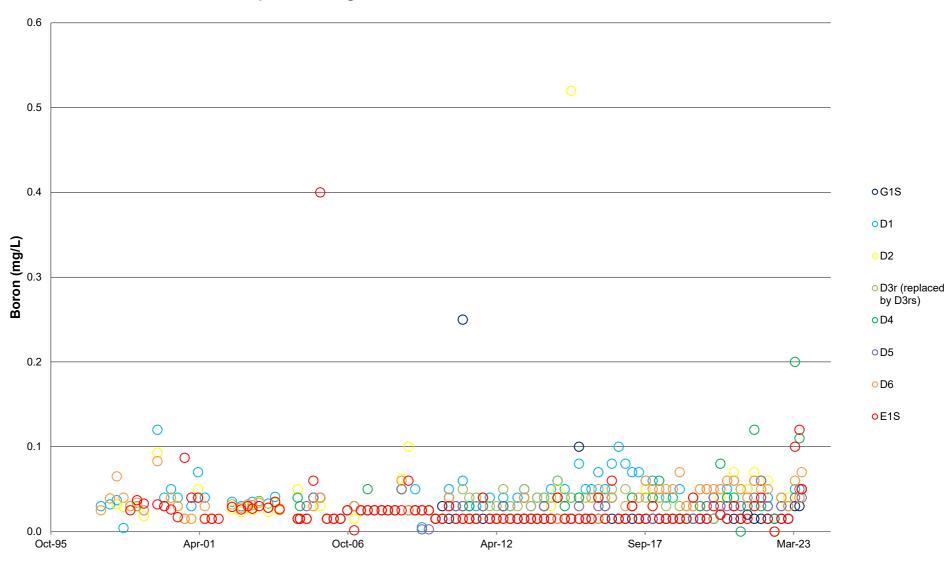
Appendix D Historical Results Graphs

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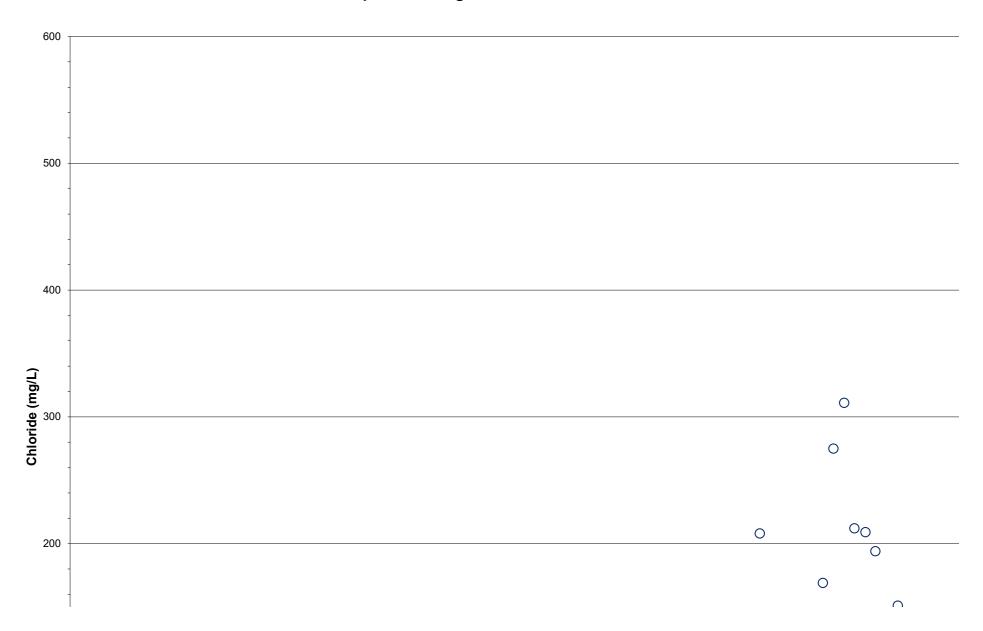




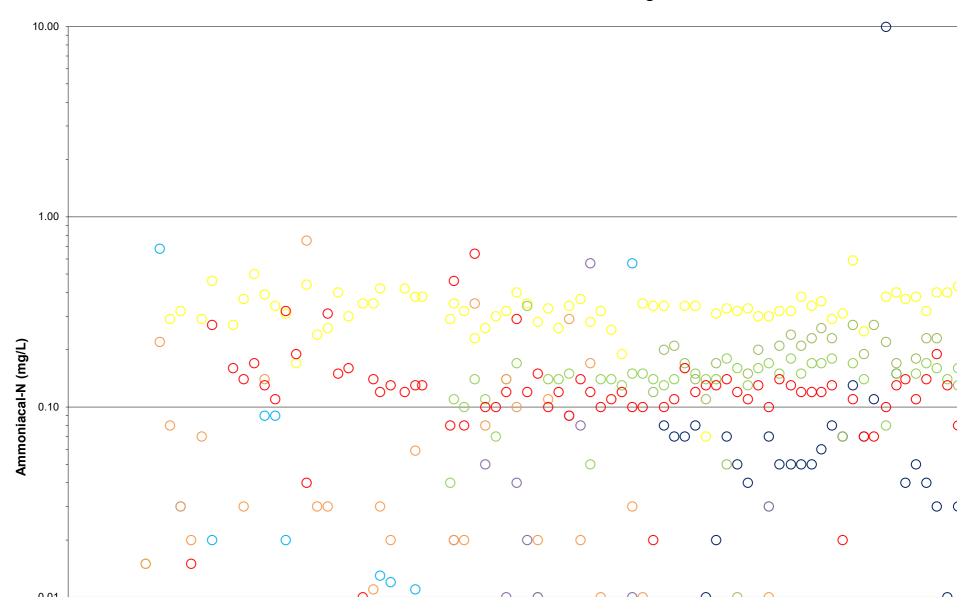
Sand Aquifer Down Gradient Ammoniacal-Nitrogen Concentrations



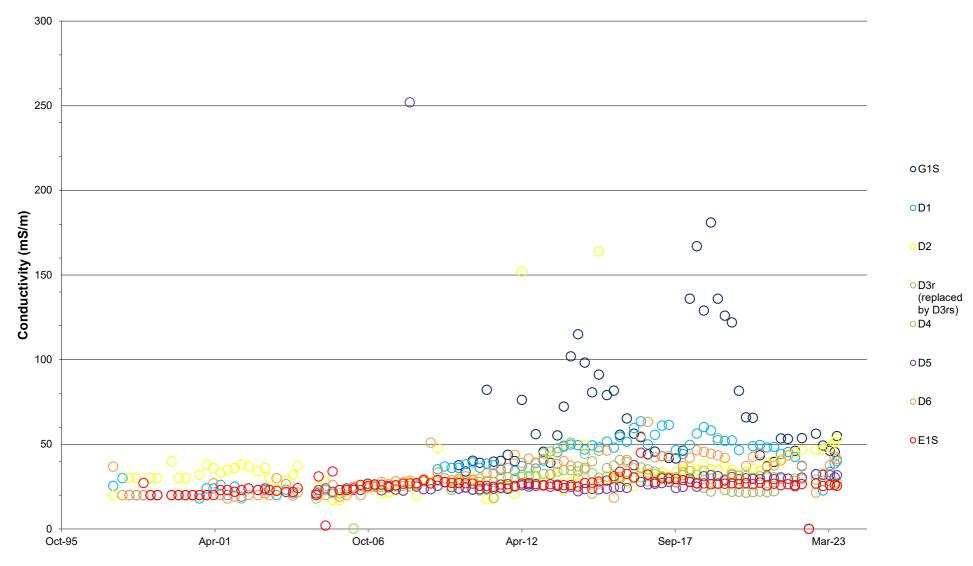
Sand Aquifer Downgradient of New Landfill - Boron Concentrations



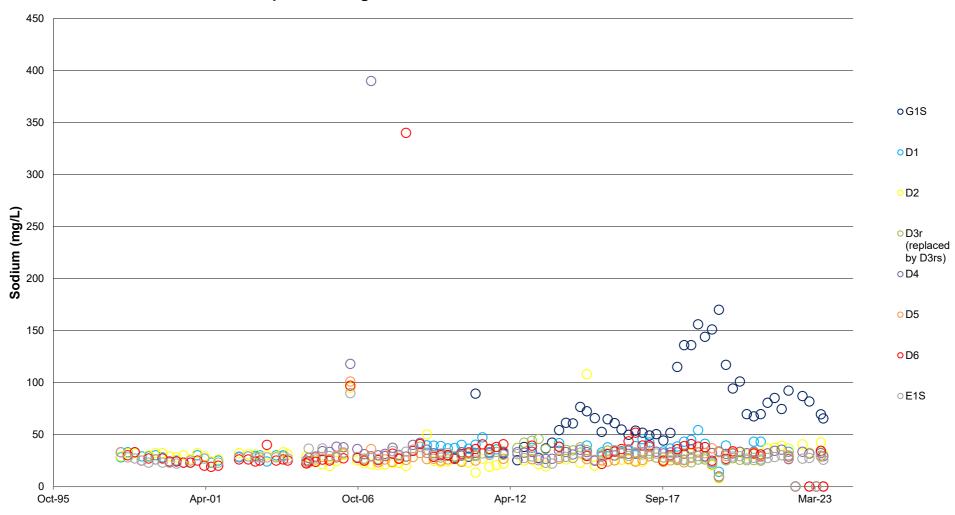
Sand Aquifer Downgradient of New Landfill - Chloride Concentrations



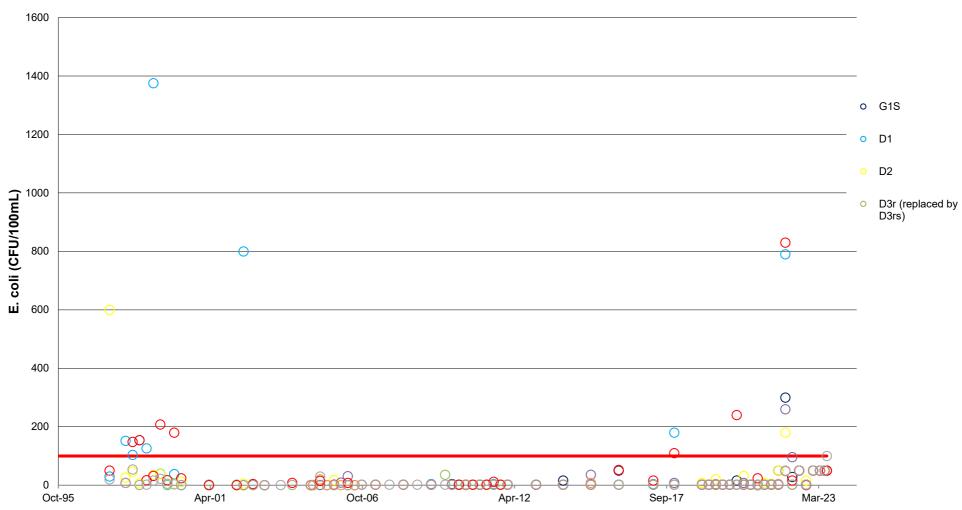
Sand Aquifer Downgradient of New Landfill - Ammoniacal-Nitrogen Concentrations Note: Y-axis scale is Logarithmic



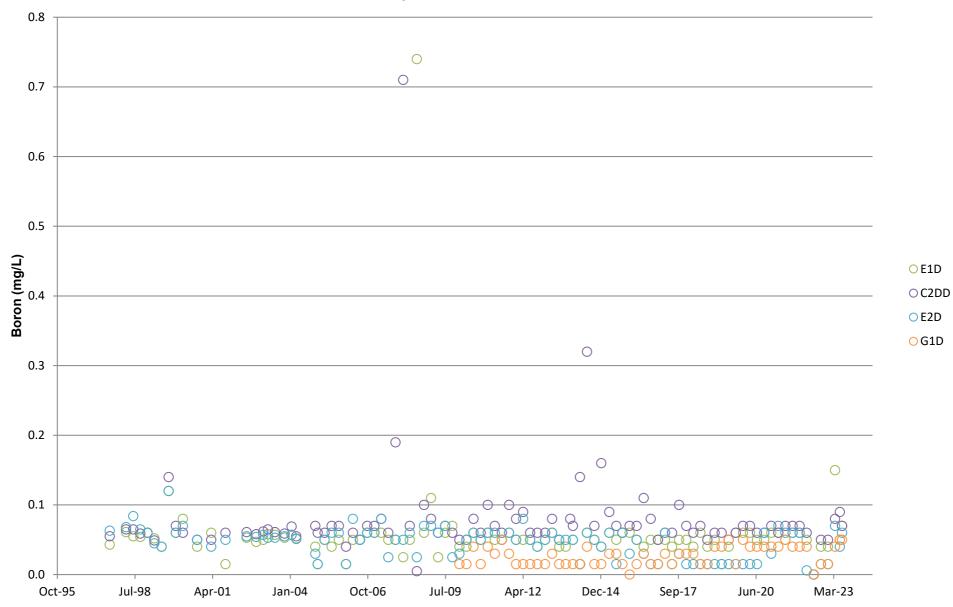
Sand Aquifer Downgradient of New Landfill - Conductivity Levels



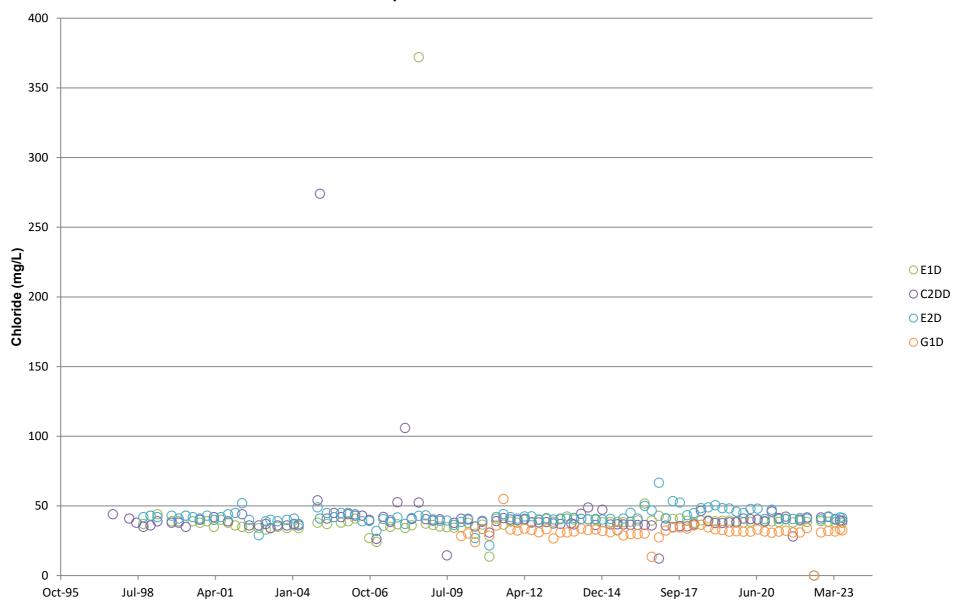
Sand Aquifer Downgradient of New Landfill - Sodium Concentrations



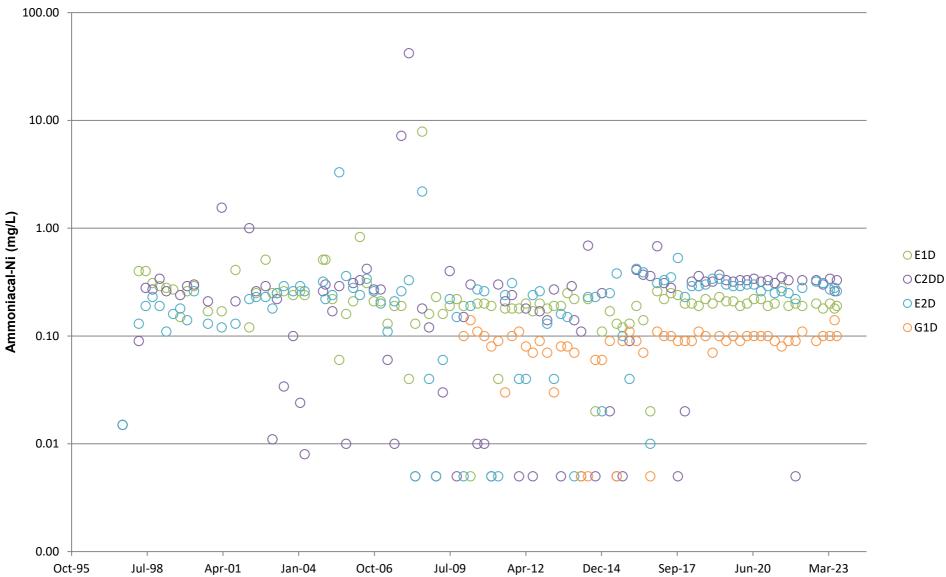
Sand Aquifer Downgradient of New Landfill - E. coli



Gravel Aquifer - Boron Concentrations

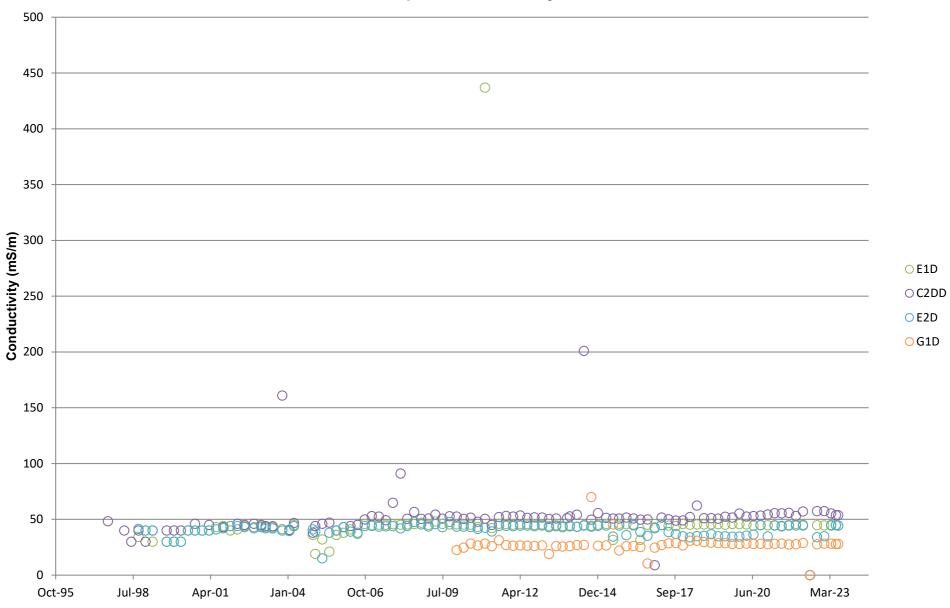


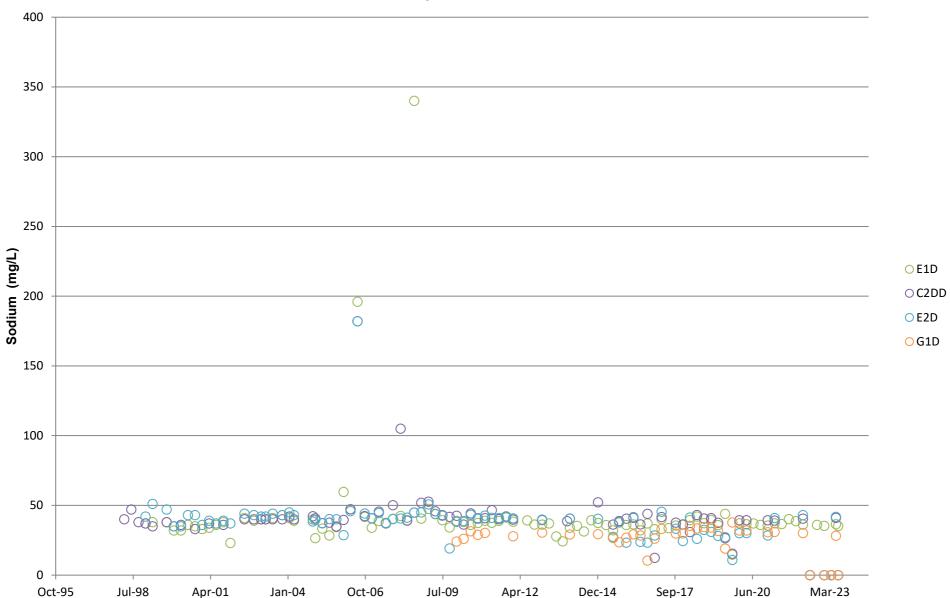
Gravel Aquifer - Chloride Concentrations



Gravel Aquifer - Ammoniacal-Nitrogen Concentrations Note: Y-axis scale is Logarithmic

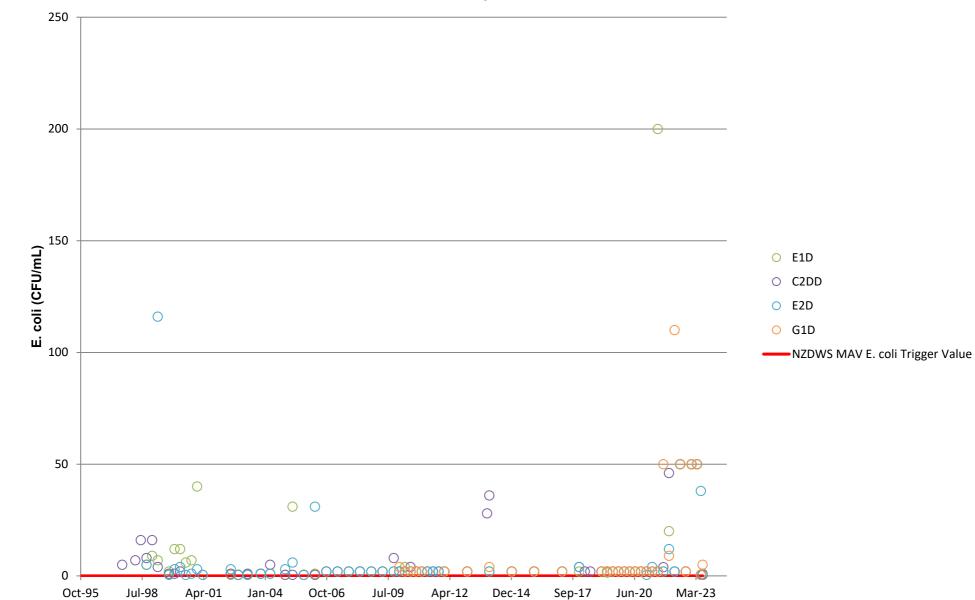
Gravel Aquifer - Conductivity Levels

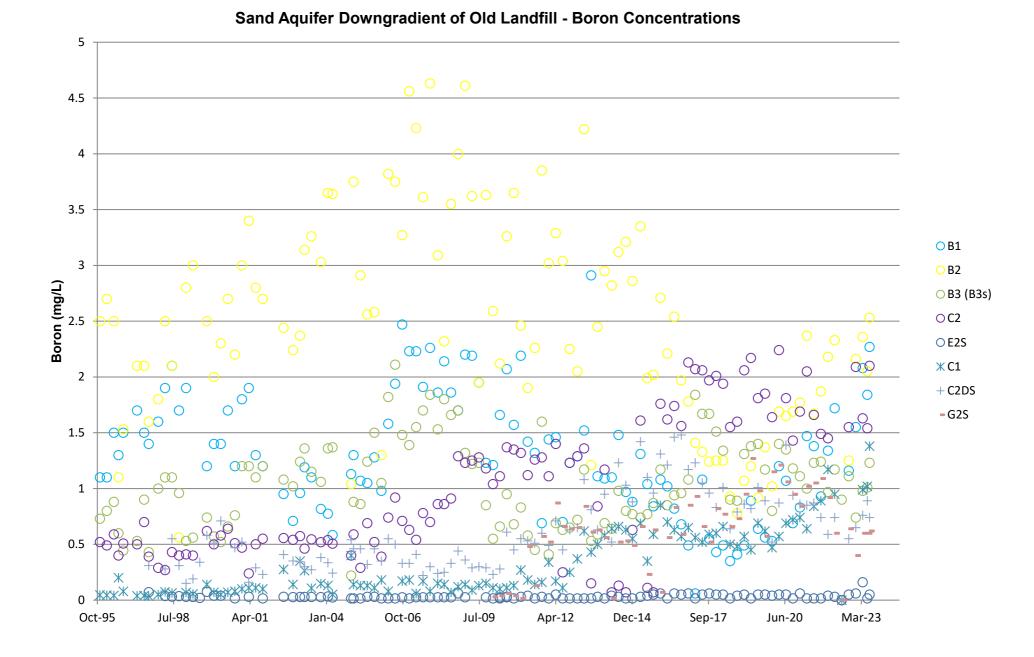


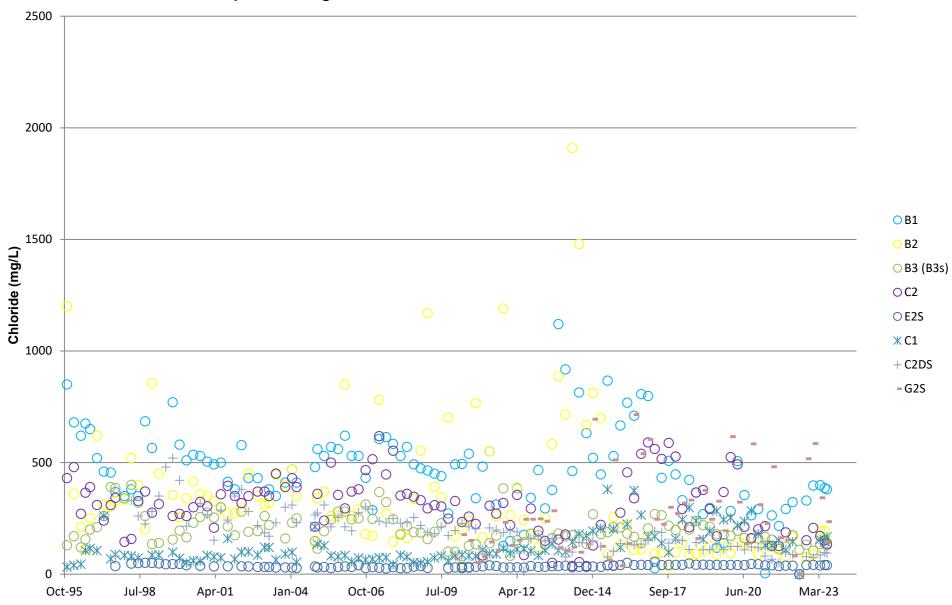


Gravel Aquifer - Sodium Levels

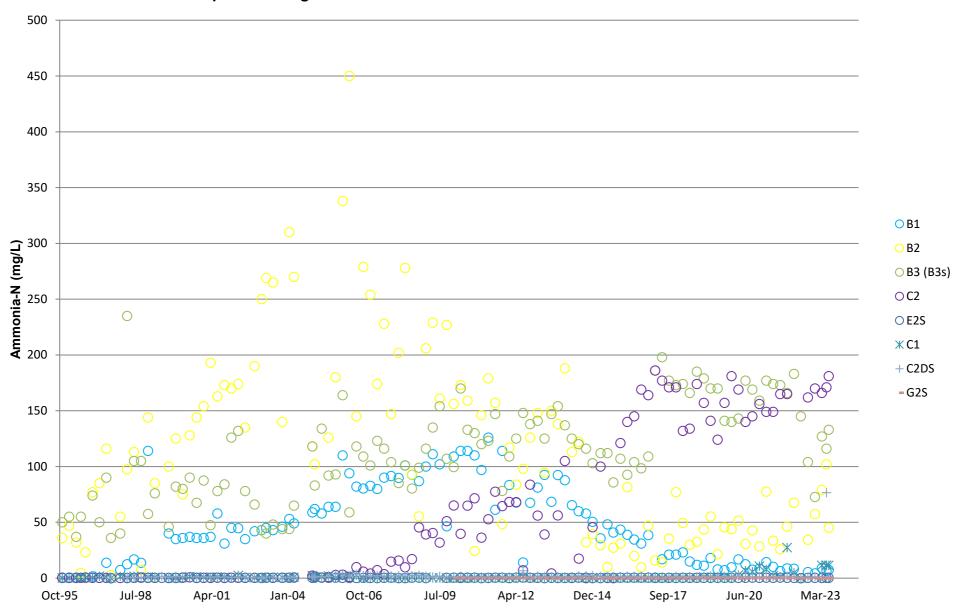




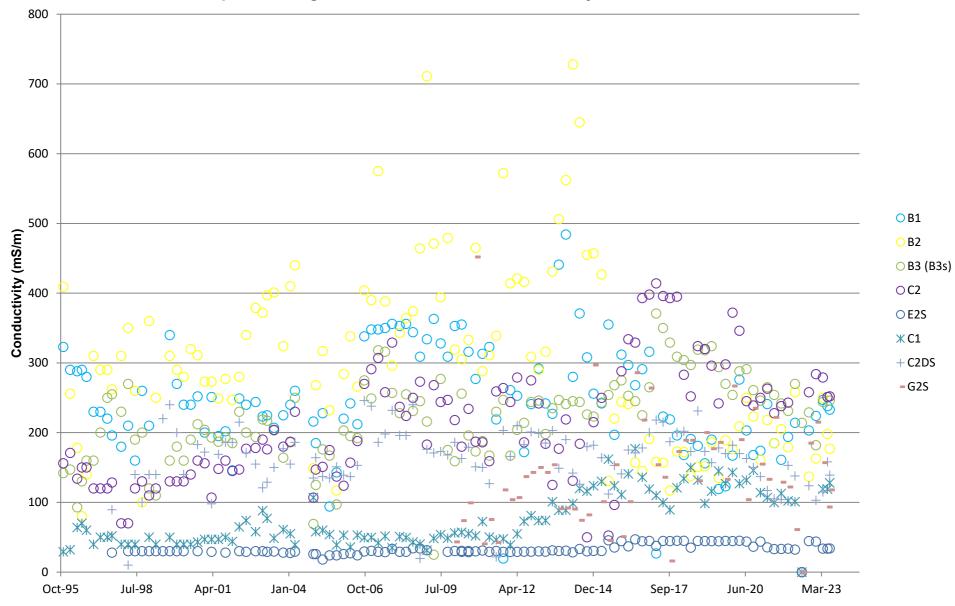




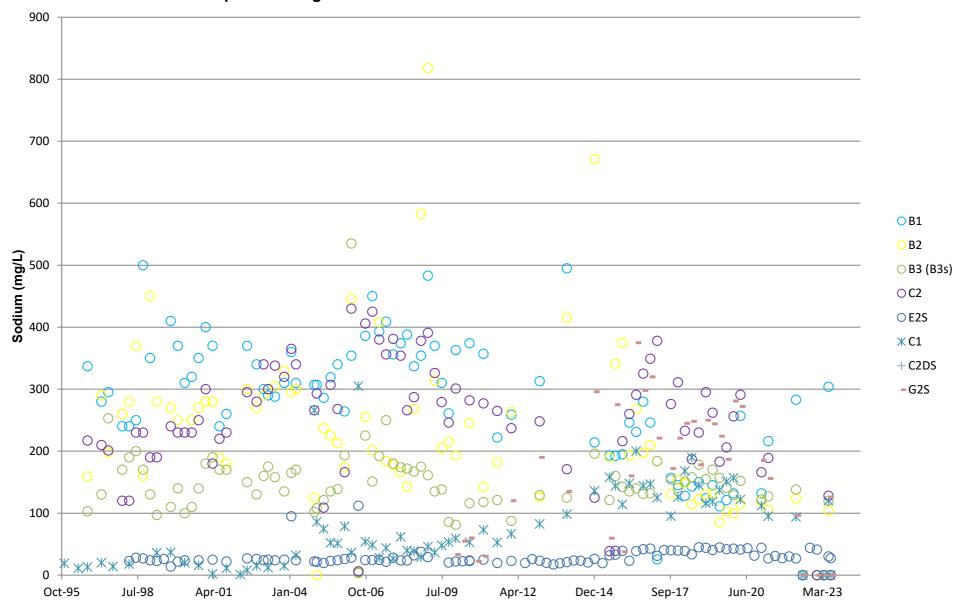
Sand Aquifer Downgradient of Old Landfill - Chloride Concentrations



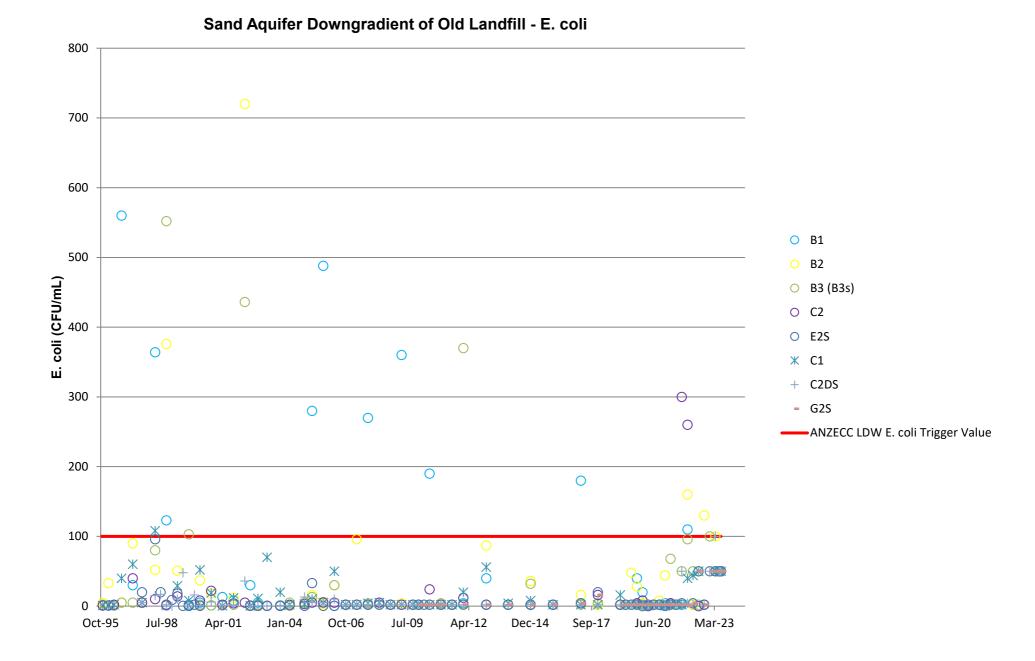
Sand Aquifer Downgradient of Old Landfill - Ammonia-N Concentrations

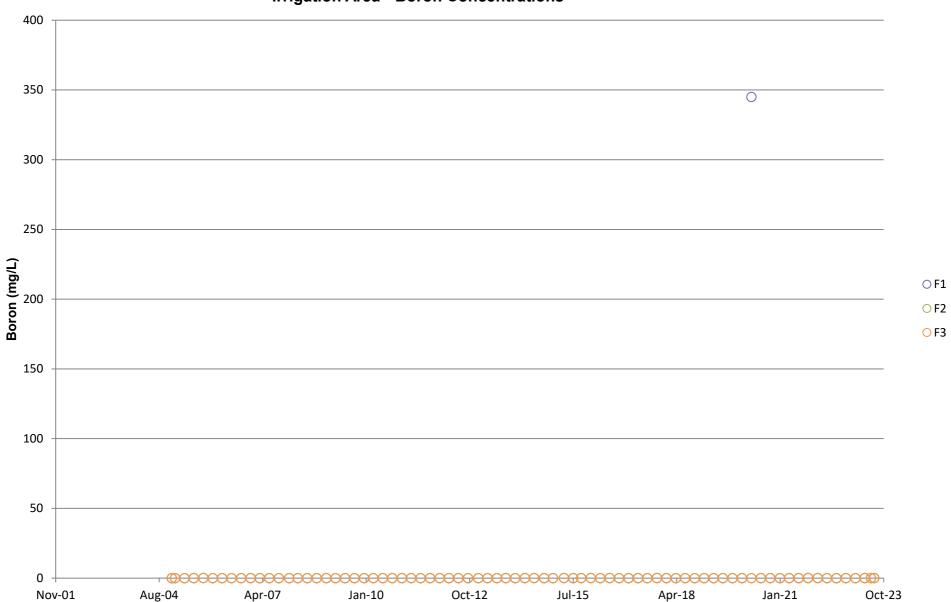


Sand Aquifer Downgradient of Old Landfill - Conductivity Levels

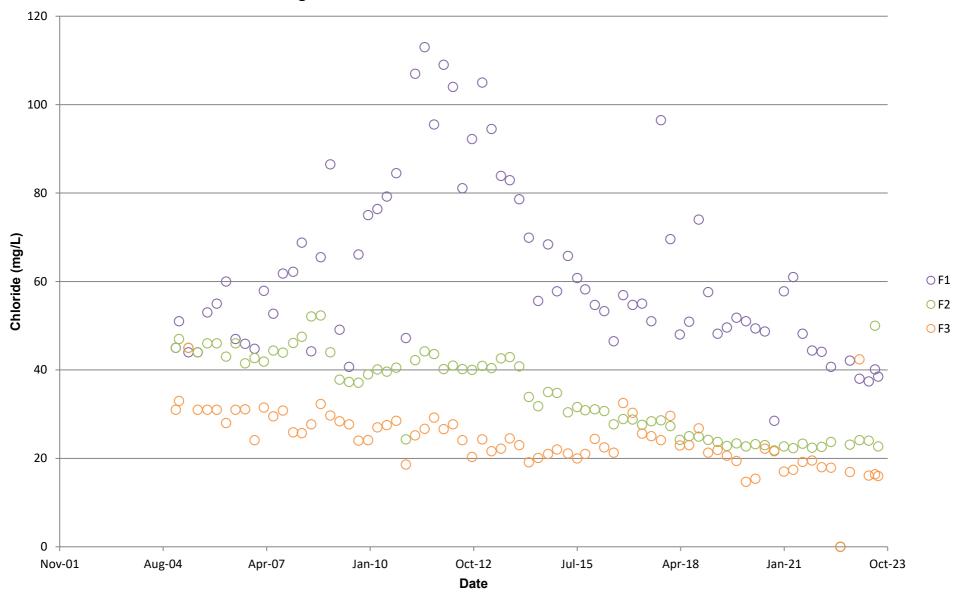


Sand Aquifer Downgradient of Old Landfill - Sodium Concentrations

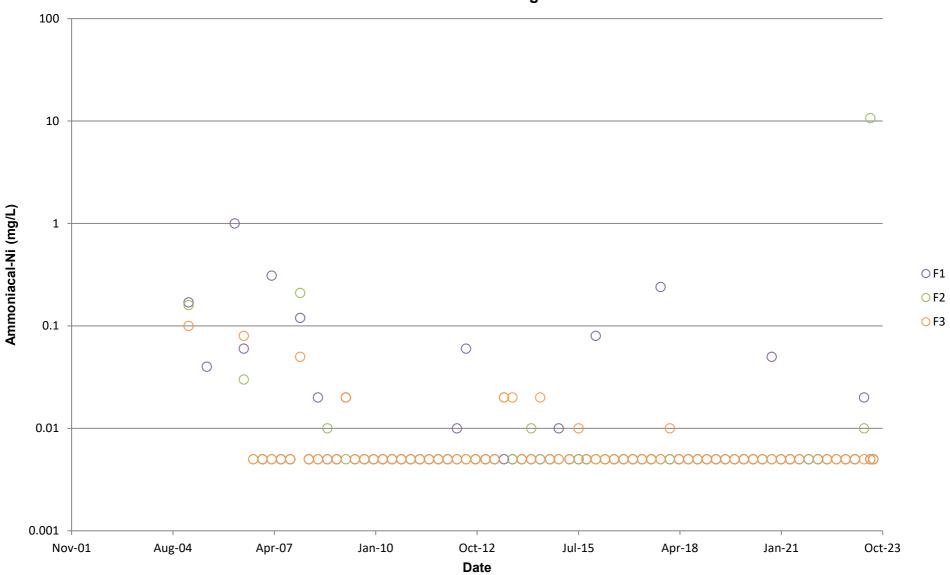




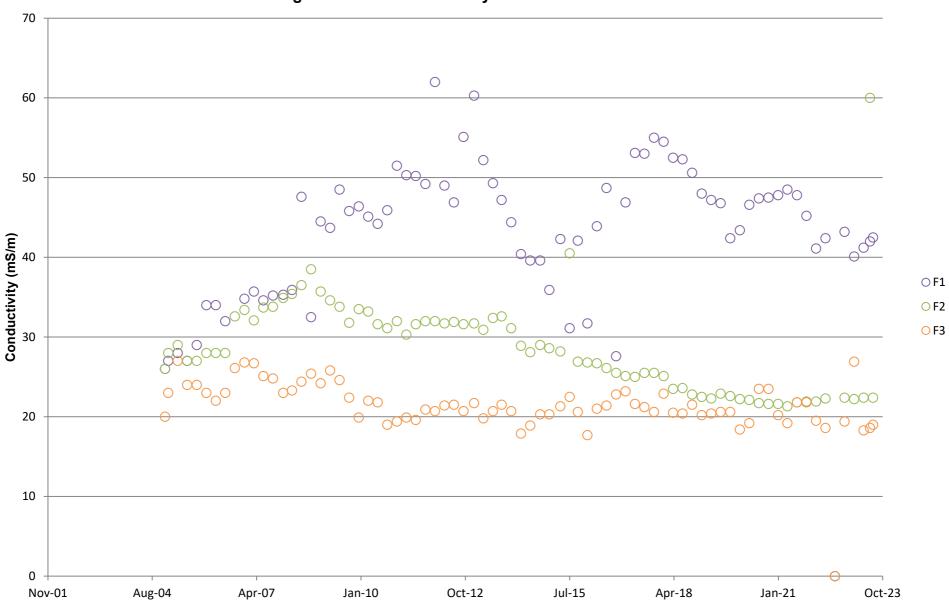
Irrigation Area - Boron Concentrations



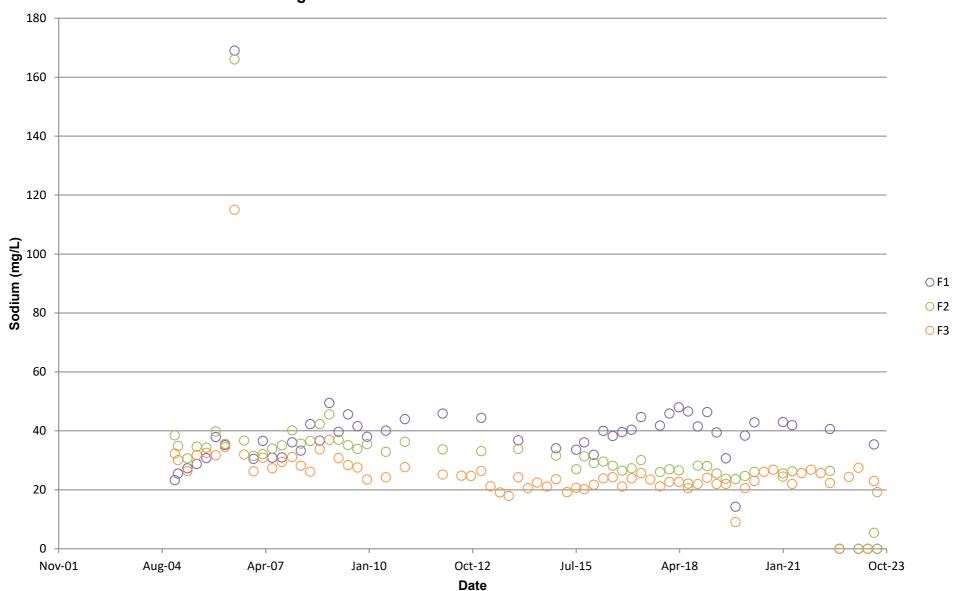
Irrigation Area - Chloride Concentrations



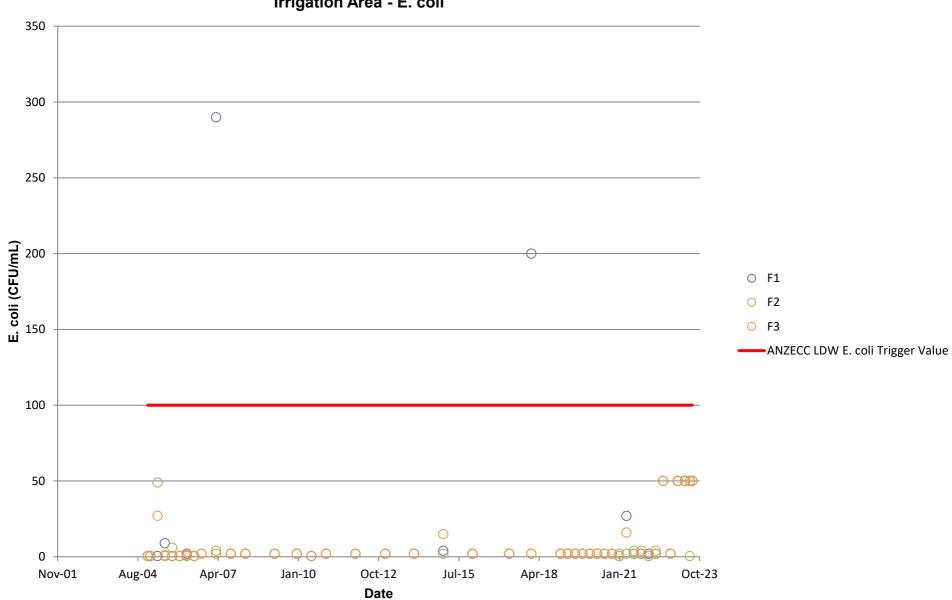
Irrigation Area - Ammoniacal-Nitrogen Concentrations Note: Y-axis scale is Logarithmic



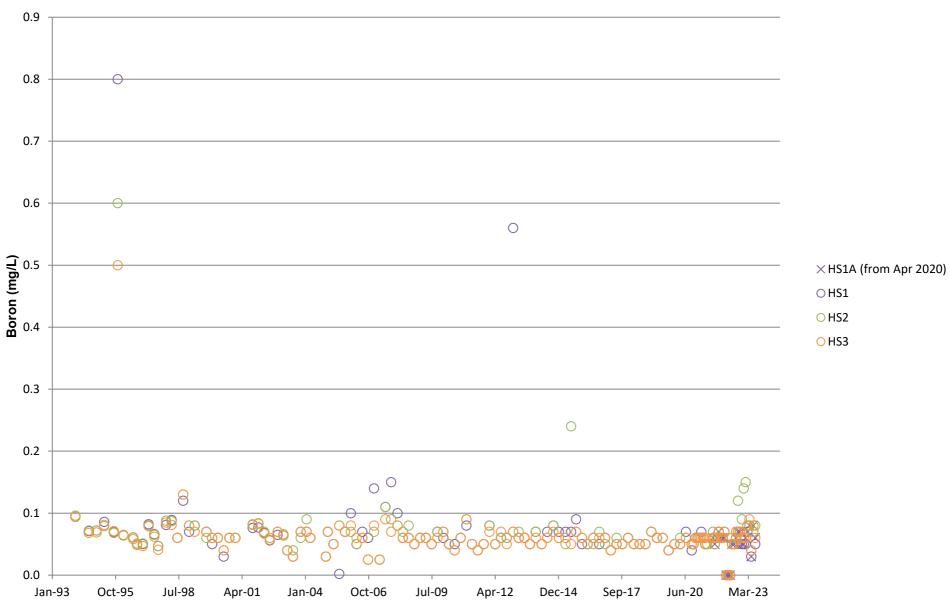
Irrigation Area - Conductivity Levels



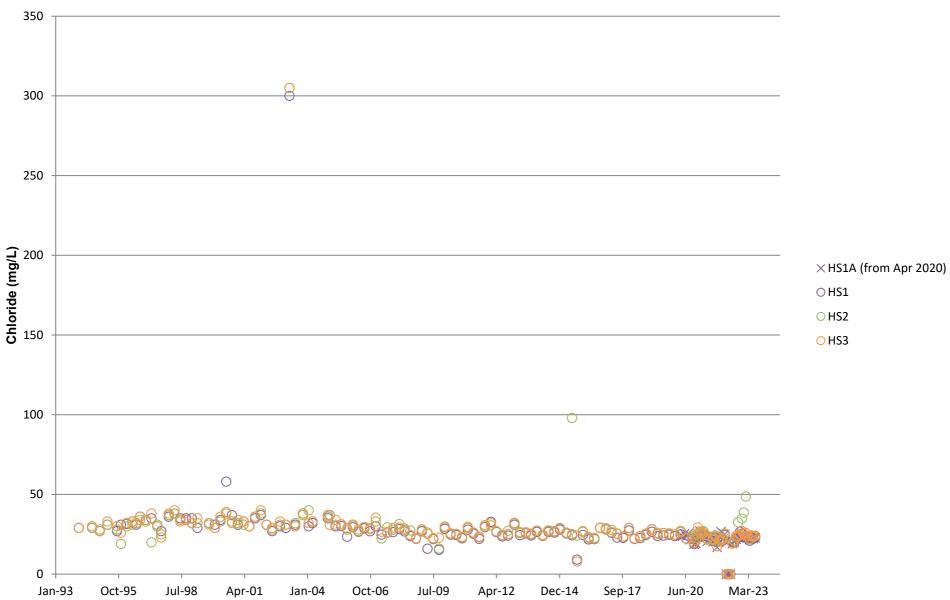
Irrigation Area - Sodium Concentrations



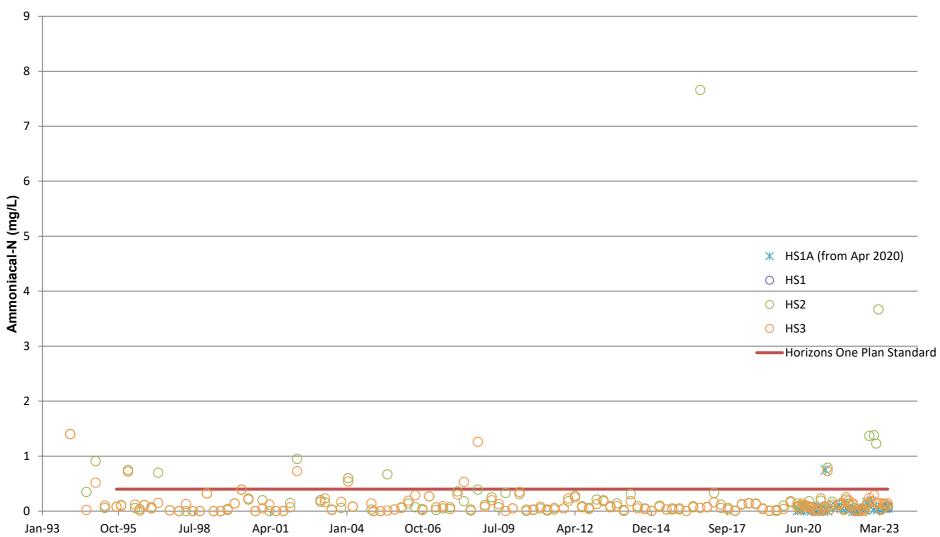
Irrigation Area - E. coli



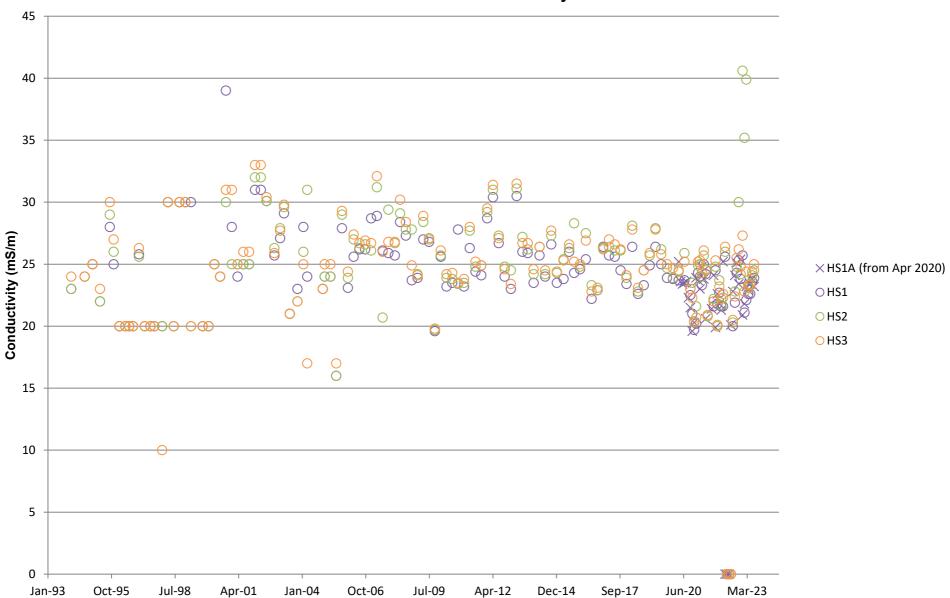
Hokio Stream - Boron Concentrations



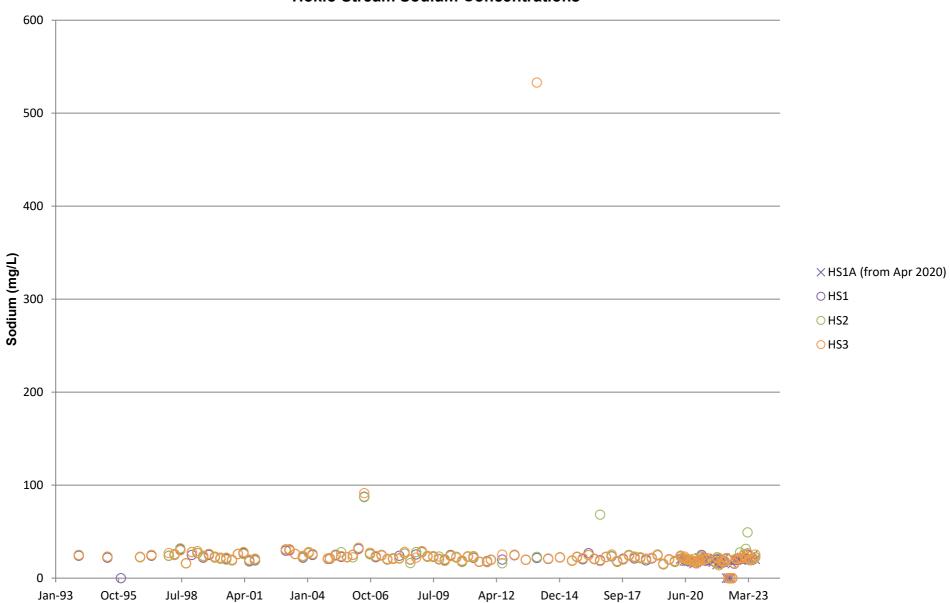
Hokio Stream - Chloride Concentrations



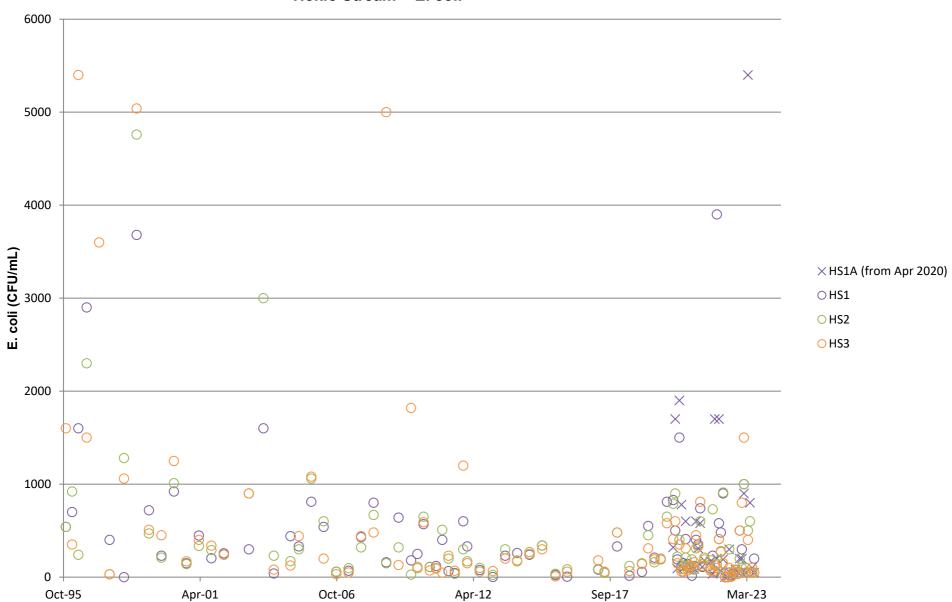
Hokio Stream - Ammoniacal-N Concentrations



Hokio Stream - Conductivity



Hokio Stream Sodium Concentrations



Hokio Stream - E. coli

Appendix E Landfill Gas Monitoring Results at GW Bores for April/June 2023

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Date	Borehole	Methane (% CH ₄)	Carbon Dioxide (% CO ₂)	Hydrogen Sulphide (ppm H ₂ S)	Oxygen (% O ₂)
3/04/2023	Levin Landfill: Levin B1	0.02	0.18	0	20.8
	Levin Landfill: Levin B2	0	1.48	0	19.6
	Levin Landfill: Levin B3s	0	0.12	0	20.8
	Levin Landfill: Levin C1	0	0.11	0	21
3/04/2023	Levin Landfill: Levin C2	0.08	0.19	0	20.8
3/04/2023	Levin Landfill: Levin C2dd	0	0.2	0	20.8
3/04/2023	Levin Landfill: Levin C2ds	0.03	0.14	0	20.7
	Levin Landfill: Levin D1	0.09	0.07	0	20.9
3/04/2023	Levin Landfill: Levin D2	0	0.09	0	20.8
3/04/2023	Levin Landfill: Levin D3rd	0	0.05	0	21.2
	Levin Landfill: Levin D3rs	0	0.1	0	21
3/04/2023	Levin Landfill: Levin D4	0.06	0.05	0	20.8
	Levin Landfill: Levin D5	0	0.09	0	21.1
3/04/2023	Levin Landfill: Levin D6	0.12	0.05	0	20.5
	Levin Landfill: Levin E1d	0	0.04	0	20.5
3/04/2023	Levin Landfill: Levin E1s	0	0.04	0	20.6
3/04/2023	Levin Landfill: Levin E2d	0	0.07	0	21
3/04/2023	Levin Landfill: Levin E2s	0	0.08	0	21
3/04/2023	Levin Landfill: Levin F1	0.01	0.05	0	20.8
3/04/2023	Levin Landfill: Levin F2	0	0.06	0	21.2
3/04/2023	Levin Landfill: Levin F3	0	0.07	0	21.2
3/04/2023	Levin Landfill: Levin G1d	0.03	0.04	0	20.6
3/04/2023	Levin Landfill: Levin G1s	0.03	0.03	1	20.6
3/04/2023	Levin Landfill: Levin G2s	0.03	0.44	0	20.7
3/04/2023	Levin Landfill: Levin Xd1	0	0.05	0	20.9
3/04/2023	Levin Landfill: Levin Xs1	0	0.22	0	20.37
3/04/2023	Levin Landfill: Levin Xs2	0.03	0.52	0	20.7
9/06/2023	Levin Landfill: Levin B1	0.01	0.49	0	20.8
9/06/2023	Levin Landfill: Levin B2	0.01	1.09	0	18.6
9/06/2023	Levin Landfill: Levin B3s	0	0.13	0	21.1
8/06/2023	Levin Landfill: Levin C1	0.01	20.2	0	20.2
9/06/2023	Levin Landfill: Levin C2	0	0.18	0	21.1
9/06/2023	Levin Landfill: Levin C2dd	0	0.17	0	21.1
9/06/2023	Levin Landfill: Levin C2ds	0	0.15	0	21.2
8/06/2023	Levin Landfill: Levin D1	0	0.32	0	20.3
9/06/2023	Levin Landfill: Levin D2	0	0.29	0	20.6
9/06/2023	Levin Landfill: Levin D3rd	0	0.08	0	21.3
8/06/2023	Levin Landfill: Levin D3rs	0	0.09	0	21.2
8/06/2023	Levin Landfill: Levin D4	0	0.14	0	21.4
8/06/2023	Levin Landfill: Levin D5	0	0.1	0	21.5
8/06/2023	Levin Landfill: Levin D6	0.12	0.6	0	19.8
9/06/2023	Levin Landfill: Levin E1d	0	0.09	0	21.4
8/06/2023	Levin Landfill: Levin E1s	0	0.08	0	21.5
	Levin Landfill: Levin E2d	0	0.17	0	21.1
	Levin Landfill: Levin E2s	0	0.11	0	21
	Levin Landfill: Levin F1	0.03	0.2	0	20.9
	Levin Landfill: Levin F2	0	0.11	0	20.07

9/06/2023	Levin Landfill: Levin F3	0	0.07	0	20.6
9/06/2023	Levin Landfill: Levin G1d	0	0.06	0	20.1
9/06/2023	Levin Landfill: Levin G1s	0.02	0.15	0	20.3
8/06/2023	Levin Landfill: Levin G2s	0.01	1.5	0	19.1
9/06/2023	Levin Landfill: Levin Xd1	0	0.1	0	20.5
9/06/2023	Levin Landfill: Levin Xs1	0	0.2	0	20.6
8/06/2023	Levin Landfill: Levin Xs2	0	0.54	0	20.7
8/06/2023		0.01	1.5	0	

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