

Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

Standard Landfill Site

Flintshire County Council Waste Management Services

Quarterly Monitoring Review October - December 2019

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1.0 INTRODUCTION

1.1 Background

- 1.1.1 This report reviews environmental monitoring data collected during the third quarter of 2019 at Standard Landfill Site, Buckley, as required by Natural Resources Wales (NRW). Samples for quarterly analysis of leachate, groundwater and surface water were not collected until 31st of January. All remaining data reviewed by this report was collected between the 1st of October and the 31st of December 2019 in accordance with the Environmental Permit (EPR), ref. EPR/BP3390VA and the Standard Landfill Closure Plan 3031-CAU-XX-XX-RP-V-0304.A0-C3.
- 1.1.2 This report records and discusses the monitoring data collected for landfill gas, groundwater, leachate, and surface water. For details regarding the site location, surrounding land-use, site history and development and environmental context please refer to the Standard Landfill Site Annual Monitoring Review 2019, document reference 3898-CAU-XX-XX-RP-V-0312.A0-C1, submitted to Natural Resources Wales by Caulmert Ltd, on behalf of Flintshire County Council Waste Management Services alongside this report, in March 2020.

2.0 LANDFILL GAS

2.1 Introduction

- 2.1.1 Routine landfill gas (LFG) monitoring was carried out on a weekly basis at 28 perimeter boreholes during the review period. Methane, carbon dioxide, oxygen, relative pressure and atmospheric pressure were recorded at each borehole.
- 2.1.2 Borehole locations are shown on the drawing 'Environmental Monitoring Locations' 0987/1/002, enclosed. A summary table displaying methane and carbon dioxide concentrations can be found in Appendix 1.
- 2.1.3 Site improvements to replace the now redundant oversized 1MW CAT gas engine for a smaller, more efficient 235 KW unit were completed in July 2019. The new unit will utilise the lower gas yield for longer periods before the gas depletes. This will lower the requirement for flaring over long periods. This process will not significantly impact or effect the site's ability to flare if necessary.

2.2 Methane

- 2.2.1 As in the previous review periods, methane was only detected in BH22, where the maximum concentration was 0.1 % and the average concentration was 0.1 %, as in the previous review (Quarter 3 2019).
- 2.2.2 A methane compliance of 1.0 % was proposed for BH22 in EPR Compliance Assessment Report (CAR) ID 37073/0202764 issued by Natural Resources Wales (NRW) on the 27th of February 2014. The proposed compliance limit was not exceeded at BH22 during this review period.

2.3 Carbon Dioxide

- 2.3.1 Carbon dioxide compliance limits were agreed with the Environment Agency (now NRW) during Q3 of 2011 and can be found in Appendix 1 along with the monitoring data. The carbon dioxide compliance limit for boreholes BH16 and BH22, 3.0 % and 3.1 % respectively, were approved in EPR Compliance Assessment Report (CAR) ID 37073/0202764.
- 2.3.2 Average carbon dioxide concentrations ranged between 1.43 % in BH5.5 to 1.82 % in BH4.1 during the fourth quarter.
- 2.3.3 Carbon dioxide concentrations were below the compliance limits in all locations throughout the review period.

2.4 Carbon Monoxide and Hydrogen Sulphide

- 2.4.1 As in the previous review, no carbon monoxide or hydrogen sulphide was detected at any of the monitoring locations throughout the review period.

3.0 LEACHATE

3.1 Introduction

3.1.1 Leachate levels were recorded monthly at nine leachate monitoring locations, LC2 (LC2.1/LC), LC3, LC4, LC7, S1, S2, S3, SSR5 (LS5) and SSR6 (LS6). As in the previous quarter, the nearest well to LC2 was sampled (LC) as there was no access to LC2.

3.1.2 Well locations are shown on the enclosed Environmental Monitoring Location drawing.

3.2 Leachate Levels

3.2.1 Leachate levels were recorded monthly. A table of leachate levels, in metres below ground level (mBGL) and metres above Ordnance Datum (mAOD), can be found in Appendix 2.

3.2.2 Table 1 below displays minimum, maximum and average leachate head levels in metres above well base. Leachate levels remained below the compliance limit throughout the review period at all locations. Average leachate head levels ranged from 1.21 m in LS6 to 1.69 m in S2. The base levels are, however, unconfirmed and the accuracy of these leachate ‘head’ figures cannot be verified.

3.2.3 The meters above ordinance datum calculations for all locations, based on recent top of well surveys, show that all levels were comparable to those detected previously.

Table 1: Leachate Head Levels in metres above well base

Location	Leachate Head (m)		
	Min	Max	Average
LC	1.25	1.27	1.26
LC3	1.52	1.55	1.54
LC4	1.39	1.41	1.40
LC7	1.65	1.66	1.66
LS5	1.25	1.26	1.25
LS6	1.20	1.21	1.21
S1	1.30	1.32	1.31
S2	1.68	1.70	1.69
S3	1.34	1.35	1.35

3.3 Leachate Quality

3.3.1 A summary of the leachate quality is shown in Appendix 2. The quarterly parameters were sampled once during January 2020. A full hazardous substances suite was also undertaken which included mineral oils, volatile organic carbons, semi-volatile organic carbons, combined pesticides and herbicides.

-
- 3.3.2 Concentrations of ammoniacal nitrogen (as NH_4) within the leachate ranged from 19.8 mg/l in S1 up to a maximum of 1630 mg/l in LC2. Similarly, concentrations of chloride ranged between 45.1 mg/l at S1 and 1650 mg/l at LC2.
- 3.3.3 COD concentrations were also highest at LC2 with a concentration of 1780 mg/l. A minimum COD concentration of 52.9 mg/l was recorded at S1.
- 3.3.4 pH concentrations remained relatively neutral with concentrations ranging from 7.18 in S1 to 8.15 in SSR6.
- 3.3.5 The highest metal concentrations were detected within LC2 with maximum concentrations of 75.5 mg/l, 557 mg/l and 1350 mg/l for Magnesium, potassium and sodium respectively.
- 3.3.6 The total cyanide concentration within LC2 was 0.05 mg/l. All other locations remained below the detection limit. It should be noted that no free cyanide was detected within any of the locations.
- 3.3.7 No mercury or cadmium was detected in any of the leachate monitoring locations.
- 3.3.8 Mineral oils were detected within LC2 and SSR6 at 0.193 mg/l and 0.117 mg/l respectively. All other locations remained below the detection limit (<0.1 mg/l).
- 3.3.9 In total, 15 hazardous substances were detected of the 190 parameters tested for. The semi volatile organic compounds detected were 2,4-Dimethylphenol (aq) and bis(2-Ethylhexyl) phthalate (aq). Volatile organic compounds made up the majority of the hazardous substances detected with 12 in total (1,3,5-Trimethylbenzene, 1,4-Dichlorobenzene, 4-Bromofluorobenzene, 4-iso-Propyltoluene, Benzene, Chlorobenzene, Ethylbenzene, Dibromofluoromethane, m,p-Xylene, Naphthalene, o-Xylene and Toluene). Only one pesticide, p,p'-Methoxychlor, was detected within the leachate wells.
- 3.3.10 Concentrations have generally decreased across the site when compared to the last quarterly suite (Q3 2019).

4.0 GROUNDWATER

4.1 Introduction

- 4.1.1 During the review period groundwater levels were recorded on a monthly basis at eight groundwater monitoring boreholes, GW1, GW2, GW2R, GW3, GW4, GW5, GW6 and GW7R. Location GW2R was installed in October 2016 to replace GW2. Samples collected at these locations were analysed for the annual suite of chemicals.

4.2 Groundwater Levels

- 4.2.1 Groundwater level data was recorded on a monthly basis in metres below ground level (mBGL). Where borehole cover level to Ordinance Datum was available this was used to calculate the groundwater level in metres above Ordnance Datum (mAOD).
- 4.2.2 Groundwater levels, in mBGL and mAOD are displayed in a summary table included in Appendix 3. Groundwater levels increased throughout the review period with the greatest increase seen in GW 4R at 1.35 m.

4.3 Groundwater Quality

- 4.3.1 A groundwater quality summary table for this review period is included in Appendix 3. The quarterly parameters were sampled once during January 2020. A full hazardous substances suite was also undertaken which included mineral oils, volatile organic carbons, semi-volatile organic carbons, combined pesticides and herbicides and miscellaneous organics.
- 4.3.2 No quarterly groundwater suite was undertaken during the last quarter (Q3 2019). Therefore, samples have been compared to Q2 of 2019.
- 4.3.3 Concentrations of ammoniacal nitrogen (as N) ranged from below the limit of detection in GW1, GW2a and GW4R to 5.16 mg/l in GW5. Maximum concentrations have decreased since the previous quarterly suite (Q2 2019) were a maximum concentration of 6.85 mg/l was detected in GW5.
- 4.3.4 Ammoniacal nitrogen concentrations have not historically (before 2019) been detected at GW5 above the compliance limit. In accordance with the Groundwater Management Plan (1629.10.FCC.JDM.ÅKS.A0), repeat sampling will be carried out at this location to identify any trends and better inform any further actions. This location is situated up gradient, on the boundary between the landfill and neighbouring industrial estate.
- 4.3.5 Chloride concentrations decreased since quarter 2 (maxima of 79.5 mg/l) with a maximum concentration of 57.1 mg/l within GW3. Concentrations within the other locations ranged from 11.3 mg/l in GW5 to 53.7 in GW2A.

- 4.3.6 Concentrations of COD were highest in GW5 with concentrations of 290 mg/l, however this is a significant decrease compared to quarter 2 2019 (754 mg/l). Concentrations throughout the rest of the site ranged from 61 mg/l in GW3 to 224 mg/l in GW1.
- 4.3.7 Slightly acidic pH concentrations were detected within the groundwater locations with concentrations ranging from 5.65 in GW6 to 6.8 in GW5.
- 4.3.8 Arsenic was detected in both GW4B and GW5 at 0.013 mg/l and 0.355 mg/l respectively. Cadmium was detected within GW6 at 0.00193 mg/l, all other locations were below the limit of detection. Mercury was detected at the limit of detection (0.00001 mg/l) within GW7.
- 4.3.9 No Phenols or free cyanide were detected within this review period.
- 4.3.10 No Semi-volatile or volatile organic compounds were detected within the annual suite. Only one herbicide (simazine) was detected within the groundwater at GW3 (0.00002 mg/l).

5.0 SURFACE WATER

5.1 Introduction

- 5.1.1 Surface water samples were collected at 2 locations in the quarterly suite, SW4 and SW5 during January 2020. The results can be found in Appendix 4.
- 5.1.2 Ammoniacal nitrogen as both N and NH₄ was below the limit of detection in both SW4 and SW5 during this quarter
- 5.1.3 As in the previous review, chloride concentrations were higher in SW4 at 181 mg/l compared to 44.7 mg/l in Q3. Concentrations within SW5 were an order of magnitude lower at 18.7 mg/l similar to that in the previous quarter.
- 5.1.4 Total oxidised nitrogen was relatively high within SW4 at 3.17 mg/l, however, a decrease on the previous reviews 5.16 mg/l. Concentrations within SW5 remained below the limit of detection, similar to that recorded in the previous quarter.
- 5.1.5 pH concentrations were slightly alkaline at both SW4 and SW5 at 8.11 and 7.93 respectively.
- 5.1.6 Iron concentrations continued to increase during quarter four with SW4 increasing from 0.0199 mg/l to 0.0215 mg/l. Concentrations within and SW5 were similar to those in the previous review at 0.0606 mg/l.

6.0 CONCLUSIONS

6.1 Landfill gas

- 6.1.1 None of the permitted trigger levels for methane or carbon dioxide were exceeded during this review period.
- 6.1.2 Methane was only detected in BH22, remaining below the compliance limit of 1.0 % throughout the review period, with an average concentration of 0.1 %.
- 6.1.3 No carbon monoxide or hydrogen sulphide was detected.
- 6.1.4 Site improvements to replace the oversized 1MW gas engine for a smaller, more efficient unit were completed in July. The new unit will utilise the lower gas yield for longer periods before the gas depletes. This will lower the requirement for flaring over long periods.

6.2 Leachate

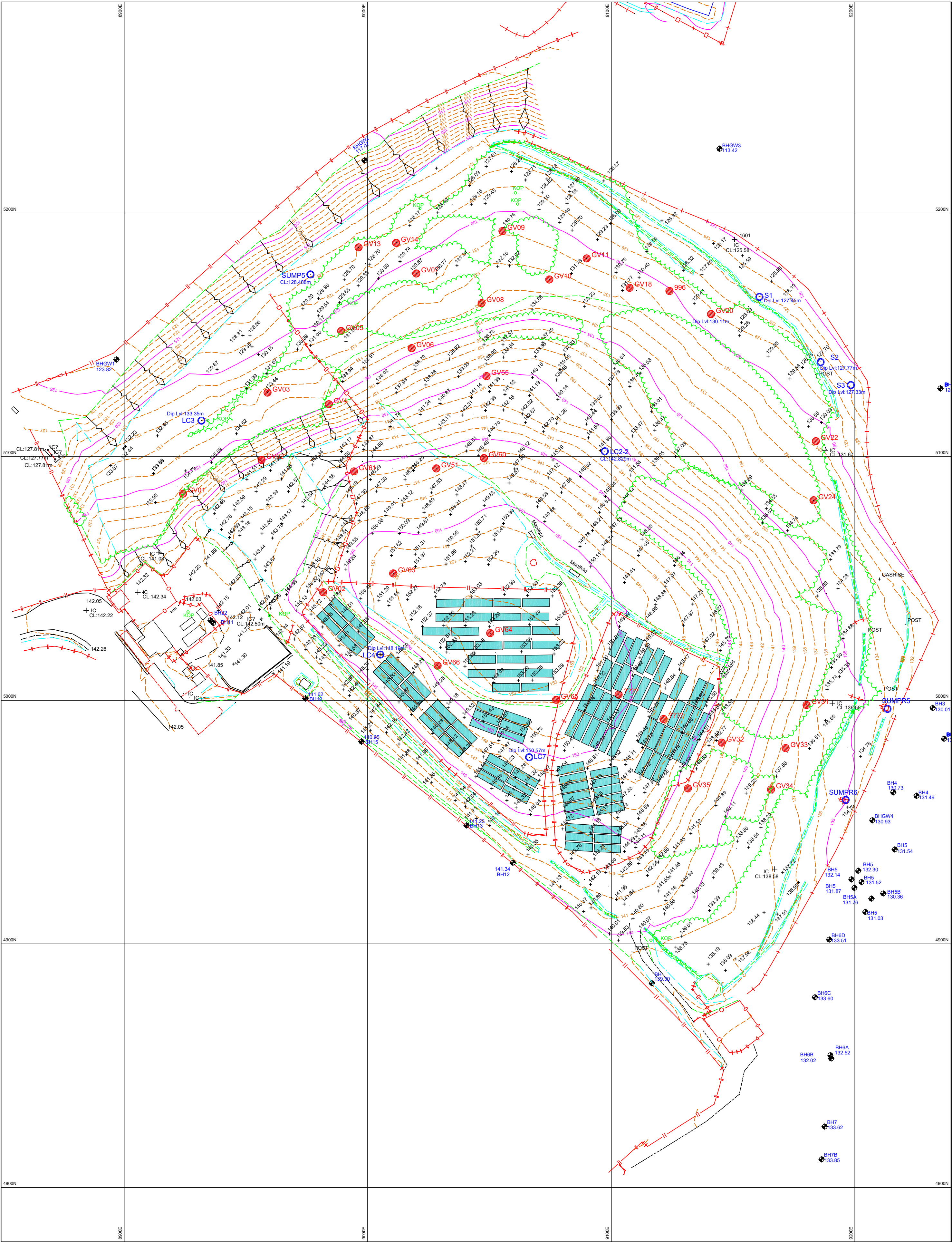
- 6.2.1 Leachate levels remained compliant for the duration of the review period. These levels, when converted to meters above ordinance datum were comparable to those detected during the previous quarter (Q3 2019).
- 6.2.2 Maximum concentrations of quarterly parameters have decreased since the previous monitoring round (Q3 2019).

6.3 Groundwater

- 6.3.1 An increase in the majority of parameters has been observed within GW5 since the start of 2019. Concentrations are also higher than those recorded in previous years. Repeat monitoring will be carried out monthly at this location and parameters trends will be monitored closely, with results to be forwarded to NRW.
- 6.3.2 The metals Arsenic (GW4B and GW5) and cadmium (GW6) were detected in trace amounts. No Phenols or free cyanide were detected within this review period.
- 6.3.3 No Semi-volatile or volatile organic compounds were detected within the annual suite. Only one herbicide (simazine) was detected within the groundwater at GW3.

6.4 Surface Water

- 6.4.1 Ammoniacal nitrogen as both N and NH₄ was below the limit of detection in both SW4 and SW5 during this quarter.
- 6.4.2 Total oxidised nitrogen concentrations within SW4 were significantly higher than SW5.
- 6.4.3 Iron concentrations within both SW4 and SW5 were similar to those detected within quarter three, however, remained significantly lower compared to those in quarter one (2019).



	SITE	SCALE	NOTES		 www.stafsurv.com Vernon Courtyard, Main Road, Sudbury, Derbyshire, DE6 5HS T 01283 584800 F 01284 584844 E info@stafsurv.com
	Standard Landfill	1:1000 @ A2	Site Grid Shown	Leachate Well	
	PROJECT	DATE	Solar Panel	Gas Vent Switched On	
	Site Survey	22/05/2019			
		DRAWING No.			
		10439a			

APPENDIX 1

Table 1 – Summary of Landfill Gas Concentrations

ID	Methane					Carbon Dioxide				
	Min	Max	Average	Count	Trigger	Min	Max	Average	Count	Trigger
BH 1	0	0	0	13	1.00	1.3	1.9	1.56	13	5.40
BH 1.1	0	0	0	13	1.00	1.1	1.8	1.52	13	5.40
BH 2.0	0	0	0	13	1.00	1.2	1.7	1.46	13	7.00
BH 2.1	0	0	0	13	1.00	1.4	1.9	1.62	13	7.60
BH 2.2	0	0	0	13	1.00	1.2	2	1.55	13	5.80
BH 3.0	0	0	0	13	1.00	1.1	2.1	1.72	13	6.70
BH 3.1	0	0	0	13	1.00	1.2	1.9	1.64	13	7.80
BH 4.0	0	0	0	13	10.00	1.3	1.9	1.61	13	10.60
BH 4.1	0	0	0	13	1.00	1.1	2	1.62	13	7.10
BH 4.2	0	0	0	13	1.00	1.2	2.3	1.82	13	8.60
BH 5.0	0	0	0	13	15.00	1.4	2.4	1.74	13	19.40
BH 5.1	0	0	0	13	1.00	1.4	2.1	1.68	13	5.80
BH 5.2	0	0	0	13	1.00	1.2	1.9	1.44	13	9.60
BH 5.3	0	0	0	13	1.00	1.1	1.9	1.53	13	6.00
BH 5.4	0	0	0	13	1.00	1.2	2.3	1.68	13	16.00
BH 5.5	0	0	0	13	1.00	1	2	1.43	13	17.10
BH 5.7	0	0	0	13	1.00	1.1	1.9	1.44	13	7.10
BH 6.0	0	0	0	13	1.00	1.4	2	1.58	13	5.40
BH 6.1	0	0	0	13	1.00	1.3	2.2	1.72	13	5.40
BH 6.2	0	0	0	13	1.00	1.2	2.1	1.62	13	5.40
BH 6.3	0	0	0	13	1.00	1.2	2	1.52	13	8.20
BH 7.0	0	0	0	13	1.00	1.3	1.9	1.72	13	6.20
BH 7.1	0	0	0	13	1.00	1.4	1.7	1.53	13	5.50
BH 12	0	0	0	13	10.00	1.3	1.8	1.5	13	6.50
BH 13	0	0	0	13	10.00	1.1	1.9	1.54	13	5.20
BH 15	0	0	0	13	1.00	1.2	2	1.63	13	8.30
BH 16	0	0	0	13	1.00	1.2	2.1	1.65	13	3.00
BH 22	0.1	0.1	0.1	13	1.60	1.1	2.4	1.59	13	3.10

APPENDIX 2

Table 2.1 - Leachate Levels

Monitoring Point	Date	Dip to liquid	Dip to Base	Leachate depth (meters above base)	Leachate Level mAOD
LC2.1	07/10/2019	29.75	31	1.25	111.3
	04/11/2019	29.73	31	1.27	111.32
	02/12/2019	29.73	31	1.27	111.32
LC3	07/10/2019	3.32	4.84	1.52	130.64
	04/11/2019	3.29	4.84	1.55	130.67
	02/12/2019	3.29	4.84	1.55	130.67
LC4	07/10/2019	17.59	19	1.41	131.06
	04/11/2019	17.61	19	1.39	131.04
	02/12/2019	17.61	19	1.39	131.04
LC7	07/10/2019	18.66	20.31	1.65	132.63
	04/11/2019	18.65	20.31	1.66	132.64
	02/12/2019	18.65	20.31	1.66	132.64
LS5	07/10/2019	28.85	32	1.26	104.46
	04/11/2019	28.87	32	1.25	104.44
	02/12/2019	28.87	32	1.25	104.44
LS6	07/10/2019	29.96	33	1.21	104.90
	04/11/2019	29.98	33	1.20	104.88
	02/12/2019	29.98	33	1.20	104.88
S1	07/10/2019	3.11	4.43	1.32	124.87
	04/11/2019	3.13	4.43	1.3	124.85
	02/12/2019	3.13	4.43	1.3	124.85
S2	07/10/2019	1.65	3.35	1.7	127.21
	04/11/2019	1.67	3.35	1.68	127.19
	02/12/2019	1.67	3.35	1.68	127.19
S3	07/10/2019	3.75	5.09	1.34	124.75
	04/11/2019	3.74	5.09	1.35	124.76
	02/12/2019	3.74	5.09	1.35	124.76

Table 2.2 - Leachate Quality Data Summary

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Inorganics										
Alkalinity, Total as CaCO ₃	mg/l	6310	740	4300	2960	515	530	3970	4160	4400
Ammoniacal Nitrogen as NH ₄	mg/l	1630	53.6	869	734	19.8	26.2	931	1010	1060
BOD, unfiltered	mg/l	64.4				2.32	3.49	60.2	79.7	
Chloride	mg/l	1650	84.1	1270	778	45.1	65.5	1140	1200	1270
Chlorine, Total (Residual)	mg/l	1.2	0.02	1	0.8	0.02	0.04	1	0.4	0.8
COD, unfiltered	mg/l	1780	83.9	1320	978	52.9	56.2	1000	1100	1160
Conductivity @ 20 deg.C	mS/cm	13.3	1.55	10.1	6.83	1.29	1.74	9.23	9.66	10
pH	pH Units	7.73	7.22	7.63	7.44	7.18	7.51	7.89	7.94	8.15
Total Oxidised Nitrogen as N	mg/l	0.282	<0.1	<0.5	<0.2	0.188	0.11	0.202	0.771	0.683
Filtered (Dissolved) Metals										
Magnesium (diss.filt)	mg/l	75.5	46.3	67.9	62	34	52.9	70.4	74.2	70.6
Potassium (diss.filt)	mg/l	557	27.5	416	278	14.1	21	375	425	437
Sodium (diss.filt)	mg/l	1350	65.9	1060	687	35.7	61.4	851	962	981

Table 2.3 - Leachate Annual Quality Data Summary

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Inorganics										
Cyanide, Free	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide, Total	mg/l	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Filtered (Dissolved) Metals										
Cadmium (diss.filt)	mg/l	<0.0008	<0.00008	<0.0008	<0.0008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Mineral Oil / Oils & Greases										
Mineral oil >C10 C40 (aq)	mg/l	0.193	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.117
Semi-Volatile Organic Compounds (SVOCs)										
1,2,4-Trichlorobenzene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
1,2-Dichlorobenzene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
1,3-Dichlorobenzene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
1,4-Dichlorobenzene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2,4,5-Trichlorophenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2,4,6-Trichlorophenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2,4-Dichlorophenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2,4-Dimethylphenol (aq)	mg/l	0.0125	<0.002	0.0183	0.00654	<0.001	<0.001	<0.002	<0.008	<0.004
2,4-Dinitrotoluene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2,6-Dinitrotoluene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2-Chloronaphthalene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2-Chlorophenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2-Methylnaphthalene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2-Methylphenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2-Nitroaniline (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
2-Nitrophenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
3-Nitroaniline (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
4-Bromophenylphenylether (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
4-Chloro-3-methylphenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
4-Chloroaniline (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
4-Chlorophenylphenylether (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
4-Methylphenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
4-Nitroaniline (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
4-Nitrophenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Acenaphthene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Acenaphthylene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Anthracene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Azobenzene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Benzo(a)anthracene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Benzo(a)pyrene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Benzo(b)fluoranthene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Benzo(g,h,i)perylene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Benzo(k)fluoranthene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
bis(2-Chloroethoxy)methane (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
bis(2-Chloroethyl)ether (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
bis(2-Ethylhexyl) phthalate (aq)	mg/l	0.0211	<0.004	<0.02	<0.008	<0.002	<0.002	<0.004	<0.016	<0.008
Butylbenzyl phthalate (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Carbazole (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Chrysene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Dibenzo(a,h)anthracene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Dibenzofuran (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Diethyl phthalate (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Dimethyl phthalate (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Fluoranthene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Fluorene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Hexachlorobenzene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Hexachlorobutadiene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Hexachlorocyclopentadiene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Hexachloroethane (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Indeno(1,2,3-cd)pyrene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Isophorone (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Naphthalene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
n-Dibutyl phthalate (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
n-Dioctyl phthalate (aq)	mg/l	<0.04	<0.01	<0.05	<0.02	<0.005	<0.005	<0.01	<0.04	<0.02
Nitrobenzene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
n-Nitroso-n-dipropylamine (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Pentachlorophenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Phenanthrene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Phenol (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Pyrene (aq)	mg/l	<0.008	<0.002	<0.01	<0.004	<0.001	<0.001	<0.002	<0.008	<0.004
Volatile Organic Compounds (VOCs)										
1,1,1,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trimethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dibromo-3-chloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dibromoethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	mg/l	0.00135	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.00106	0.00121
1,3-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	mg/l	0.00167	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.00182	0.0015
2,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Bromofluorobenzene**	%	97	98.5	95	96	97.4	97.2	98.4	96.3	96.3
4-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-iso-Propyltoluene	mg/l	0.00178	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	mg/l	0.00171	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.00135	<0.001
Bromobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromoform	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromomethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbon disulphide	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbontetrachloride	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Chlorobenzene	mg/l	0.00277	0.00112	<0.001	<0.001	<0.001	<0.001	<0.001	0.00183	<0.001
Chloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloroform	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromofluoromethane**	%	107	114	106	110	109	108	109	109	105
Dibromomethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dichlorodifluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dichloromethane	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Ethylbenzene	mg/l	0.00245	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Isopropylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
m,p-Xylene	mg/l	0.0031	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Methyl tertiary butyl ether (MTBE)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Naphthalene	mg/l	0.00843	<0.001	0.00135	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
o-Xylene	mg/l	0.00506	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0053	0.00392
Propylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
sec-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Styrene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-Amyl methyl ether (TAME)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrachloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	mg/l	0.00257	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	<0.001
Toluene-d8**	%	97	97.9	96.4	96.7	97.2	98.2	99	98.6	98.3
trans-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
trans-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trichlorofluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Pesticides / Herbicides										
Aldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
alpha-HCH	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Azinphos ethyl	mg/l	<0.00004	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Azinphos methyl	mg/l	<0.00004	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006
beta-HCH	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00002	<0.00001	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00002
Chlorpyriphos	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyriphos-methyl	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Diazinon	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Disulfoton	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Endosulphan Sulphate	mg/l	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Endrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.00002	<0.00001	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00002
Fenitrothion	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
gamma-HCH (Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor epoxide	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Methyl Parathion	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p'-DDD (TDE)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p'-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p'-DDT	mg/l	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
p,p'-DDD (TDE)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
p,p'-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
p,p'-DDT	mg/l	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
p,p'-Methoxychlor	mg/l	0.00027	<0.00002	<0.00001	<0.00002	<0.00002	<0.00002	0.000023	0.000216	0.000117
Parathion	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Propetamphos	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Quintozene (PCNB)	mg/l	<0.00002	<0.00001	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00002
Simazine	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Tecnazene	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.00002	<0.00001	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00002
trans-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Miscellaneous Organics										
Dibutyl tin	mg/l	<0.00005	<0.000005	<0.00005	<0.00005	<0.000005	<0.000005	<0.000015	<0.00005	<0.00005
Surrogate	%	54.9	69.2	58.6	55.4	85.5	56.5	52.7	57.6	52.2
Tetrabutyl tin	mg/l	<0.00002	<0.000002	<0.00002	<0.00002	<0.000002	<0.000002	<0.000006	<0.00002	<0.00002
Tributyl tin	mg/l	<0.00001	<0.000001	<0.00001	<0.00001	<0.000001	<0.000001	<0.000003	<0.00001	<0.00001
Triphenyl tin	mg/l	<0.00001	<0.000001	<0.00001	<0.00001	<0.000001	<0.000001	<0.000003	<0.00001	<0.00001

APPENDIX 3

Table 3.1 - Groundwater Levels

Monitoring	Date	Dip-Lev (mBGL)	Dip Level (mAOD)
GW 1	31/10/2019	29.99	94.09
GW 1	11/11/2019	29.57	94.51
GW 1	09/12/2019	29.17	94.91
GW 2R	31/10/2019	29.55	87.66
GW 2R	11/11/2019	29.03	88.18
GW 2R	09/12/2019	28.74	88.47
GW 3	31/10/2019	30.29	83.13
GW 3	11/11/2019	29.88	83.54
GW 3	09/12/2019	29.23	84.19
GW 4R	31/10/2019	32.17	98.83
GW 4R	11/11/2019	31.79	99.21
GW 4R	09/12/2019	30.82	100.18
GW 5	31/10/2019	2.98	131.88
GW 5	11/11/2019	2.91	131.95
GW 5	09/12/2019	2.86	132
GW 6	31/10/2019	28.57	95
GW 6	11/11/2019	28.32	95.25
GW 6	09/12/2019	28.10	95.47
GW 7R	31/10/2019	45.26	96.74
GW 7R	11/11/2019	44.82	97.18
GW 7R	09/12/2019	43.98	98.02

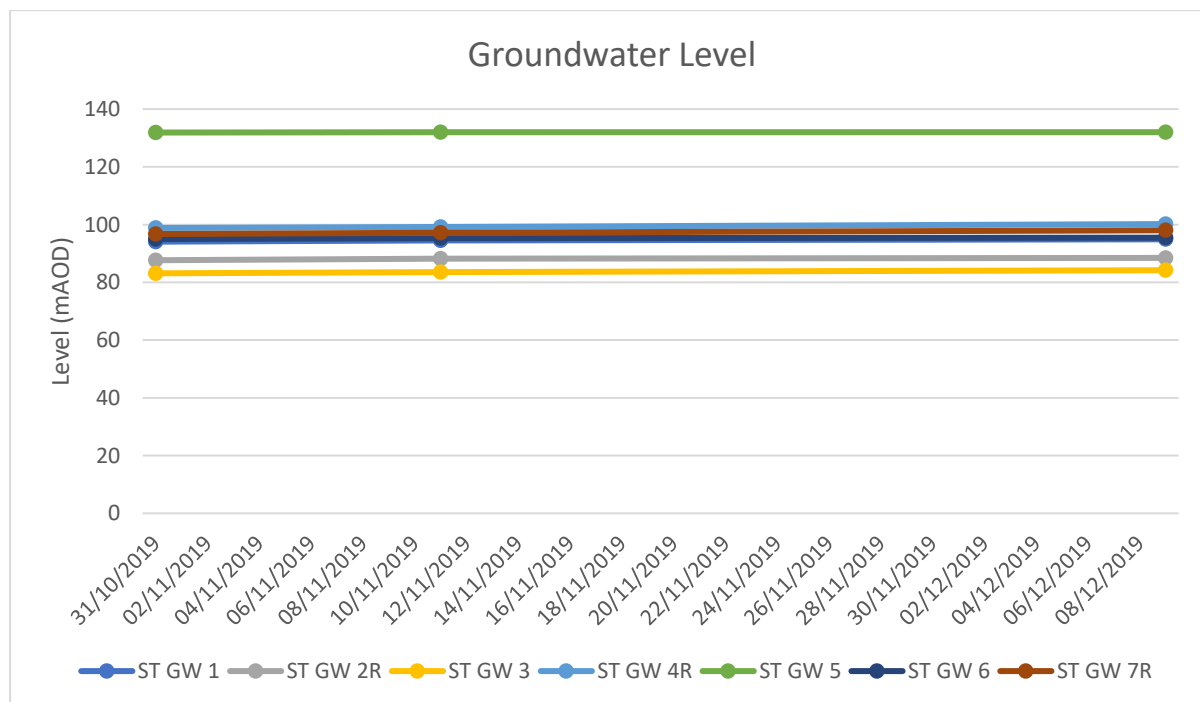


Table 3.2 - Groundwater Quality Data Summary

Parameter		GW1	GW2A	GW3	GW4R	GW5	GW6	GW7
Carbon								
Organic Carbon, Total	mg/l	56.7	42.8	6.24	29.6	47.6	10.9	72.1
Inorganics								
Alkalinity, Total as CaCO ₃	mg/l	92.2	93	200	226	278	32.5	169
Ammoniacal Nitrogen as N	mg/l	<0.2	<0.2	0.431	<0.2	5.16	3.1	<0.2
Ammoniacal Nitrogen as NH ₄	mg/l	<0.3	<0.3	0.554	<0.3	6.63	3.99	<0.3
BOD, unfiltered	mg/l	3.68	3	<1	2.82	1.91	<1	12.5
Chloride	mg/l	51.1	53.7	57.1	26.2	11.3	45.1	53.3
Chlorine, Total (Residual)	mg/l	<0.01	<0.01	<0.01	0.01	0.4	<0.01	<0.01
COD, unfiltered	mg/l	224	214	61	165	290	71.5	221
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrate as N	mg/l	0.759	0.772	0.479	0.225	<0.0677	10.6	0.778
Nitrite as N	mg/l	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152
pH	pH	6.19	6.15	6.44	6.73	6.8	5.65	6.35
Sulphate	mg/l	0.021	0.0213	0.0225	0.0229	0.00658	0.0349	0.0215
Total Nitrogen	mg/l	<1	<1	<1	<1	4.92	13.8	<1
Total Organic Nitrogen	mg/l	<1	<1	<1	<1	<1	<1	<1
Nitrogen, Kjeldahl	mg/l	<1	<1	<1	<1	4.92	3.12	<1
Filtered (Dissolved) Metals								
Iron (diss.filt)	mg/l	0.0958	0.118	<0.019	0.0324	1	<0.019	0.0993
Magnesium (diss.filt)	mg/l	26.5	27.2	39.4	33.1	10.6	33.5	26.6
Potassium (diss.filt)	mg/l	10.5	10.4	8.45	8.6	7.92	19.3	10.3
Sodium (diss.filt)	mg/l	28.3	28.8	46.9	21.8	16	52.5	28.2
Unfiltered (Total) Metals								
Arsenic (tot.unfilt)	µg/l	<0.012	<0.012	<0.002	0.013	0.355	<0.002	<0.012
Cadmium (tot.unfilt)	µg/l	<0.003	<0.003	<0.0005	0.00847	<0.003	0.00214	<0.003
Calcium (tot.unfilt)	mg/l	67.3	61.8	80.9	123	106	83.1	72.2
Copper (tot.unfilt)	µg/l	0.0206	0.0192	0.00678	0.0637	0.0698	0.0078	0.0497
Lead (tot.unfilt)	µg/l	<0.006	<0.006	0.00418	0.0936	0.102	0.00612	0.0104
Mercury (tot.unfilt)	µg/l	0.000344	0.000807	0.000071	0.000048	0.000031	<0.00002	0.0572
Nickel (tot.unfilt)	µg/l	0.0111	0.00876	0.00617	0.516	0.0438	0.0674	0.0221
Zinc (tot.unfilt)	µg/l	0.335	0.247	0.0889	0.617	0.238	0.11	0.526

Parameter		GW1	GW2A	GW3	GW4R	GW5	GW6	GW7
Phenols								
Cresols	mg/l	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Phenol	mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phenols, Total Detected 5 Speciated	mg/l	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Xylenols	mg/l	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
2,3,5-Trimethylphenol	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
2-Isopropylphenol	mg/l	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006

Table 3.3 – Groundwater Annual Quality Data Summary

Parameter		GW1	GW2A	GW3	GW4R	GW5	GW6	GW7
Inorganics								
Cyanide, Free		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Oxidised Nitrogen as N		0.762	0.773	0.484	0.23	<0.1	10.6	0.775
Filtered (Dissolved) Metals								
Cadmium (diss.filt)	mg/l	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00193	<0.00008
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001
Mineral Oil / Oils & Greases								
Mineral oil >C10 C40 (aq)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1
Semi-Volatile Organic Compounds (SVOCs)								
1,2,4-Trichlorobenzene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
1,2-Dichlorobenzene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
1,3-Dichlorobenzene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
1,4-Dichlorobenzene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2,4,5-Trichlorophenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2,4,6-Trichlorophenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2,4-Dichlorophenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2,4-Dimethylphenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2,4-Dinitrotoluene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2,6-Dinitrotoluene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2-Chloronaphthalene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2-Chlorophenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2-Methylnaphthalene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2-Methylphenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2-Nitroaniline (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
2-Nitrophenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
3-Nitroaniline (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
4-Bromophenylphenylether (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
4-Chloro-3-methylphenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
4-Chloroaniline (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
4-Chlorophenylphenylether (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
4-Methylphenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
4-Nitroaniline (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
4-Nitrophenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01

Parameter		GW1	GW2A	GW3	GW4R	GW5	GW6	GW7
Acenaphthene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Acenaphthylene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Anthracene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Azobenzene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Benzo(a)anthracene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Benzo(a)pyrene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Benzo(b)fluoranthene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Benzo(g,h,i)perylene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Benzo(k)fluoranthene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
bis(2-Chloroethoxy)methane (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
bis(2-Chloroethyl)ether (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
bis(2-Ethylhexyl) phthalate (aq)	mg/l	<0.02	<0.016	<0.008	<0.008	<0.016	<0.004	<0.02
Butylbenzyl phthalate (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Carbazole (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Chrysene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Dibenzo(a,h)anthracene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Dibenzofuran (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Diethyl phthalate (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Dimethyl phthalate (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Fluoranthene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Fluorene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Hexachlorobenzene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Hexachlorobutadiene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Hexachlorocyclopentadiene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Hexachloroethane (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Indeno(1,2,3-cd)pyrene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Isophorone (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Naphthalene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
n-Dibutyl phthalate (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
n-Dioctyl phthalate (aq)	mg/l	<0.05	<0.04	<0.02	<0.02	<0.04	<0.01	<0.05
Nitrobenzene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
n-Nitroso-n-dipropylamine (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Pentachlorophenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Phenanthrene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Phenol (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01
Pyrene (aq)	mg/l	<0.01	<0.008	<0.004	<0.004	<0.008	<0.002	<0.01

Parameter		GW1	GW2A	GW3	GW4R	GW5	GW6	GW7
Volatile Organic Compounds (VOCs)								
1,1,1,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trimethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dibromo-3-chloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dibromoethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Bromofluorobenzene**	%	93.9	96.2	98.5	99.9	97.5	98.7	99.4
4-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-iso-Propyltoluene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromoform	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromomethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbon disulphide	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbontetrachloride	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Parameter		GW1	GW2A	GW3	GW4R	GW5	GW6	GW7
Chloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloroform	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromofluoromethane**	%	115	112	113	108	110	107	111
Dibromomethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dichlorodifluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dichloromethane	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Ethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Isopropylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
m,p-Xylene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Methyl tertiary butyl ether (MTBE)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Naphthalene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
o-Xylene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Propylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
sec-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Styrene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-Amyl methyl ether (TAME)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrachloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene-d8**	%	98.3	97.6	98	99.2	98.6	98.7	98.9
trans-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
trans-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trichlorofluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combined Pesticides / Herbicides								
Aldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
alpha-HCH	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Azinphos ethyl	mg/l	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004

Parameter		GW1	GW2A	GW3	GW4R	GW5	GW6	GW7
Azinphos methyl	mg/l	<0.00006	<0.00006	<0.00006	<0.00012	<0.00006	<0.00006	<0.00006
beta-HCH	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Diazinon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.00001	<0.00001	<0.00001	<0.00002	<0.00001	<0.00001	<0.00001
Disulfoton	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Endosulphan Sulphate	mg/l	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Endrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00002	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
gamma-HCH (Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor epoxide	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Methyl Parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00002	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p'-DDD (TDE)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p'-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p'-DDT	mg/l	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
p,p'-DDD (TDE)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
p,p'-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
p,p'-DDT	mg/l	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
p,p'-Methoxychlor	mg/l	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002

Parameter		GW1	GW2A	GW3	GW4R	GW5	GW6	GW7
Parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.00002	<0.00002	<0.00002	<0.00003	<0.00002	<0.00002	<0.00002
Pirimiphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Propetamphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Quintozene (PCNB)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.00001	<0.00001	0.00002	<0.00001	<0.00001	<0.00001	<0.00001
Tecnazene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
trans-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.00002	<0.00002	<0.00002	<0.00001	<0.00002	<0.00002	<0.00002
Trifluralin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Miscellaneous Organics								
Dibutyl tin	mg/l	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Surrogate	%	102	115	105	83.4	73.8	99.5	117
Tetrabutyl tin	mg/l	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Tributyl tin	mg/l	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001
Triphenyl tin	mg/l	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001

APPENDIX 4

Table 4 –Surface Water Quality

Parameter	Units	SW4	SW5
Inorganics			
Alkalinity, Total as CaCO ₃	mg/l	245	180
Ammoniacal Nitrogen as N	mg/l	<0.2	<0.2
Ammoniacal Nitrogen as NH ₄	mg/l	<0.3	<0.3
BOD, unfiltered	mg/l	<1	<1
Chloride	mg/l	181	18.7
Chlorine, Total (Residual)	mg/l	0.01	0.01
COD, unfiltered	mg/l	13.8	24.6
Conductivity @ 20 deg.C	mS/cm	1.13	0.613
Nitrate as NO ₃	mg/l	14	<0.3
pH	pH Units	8.11	7.93
Sulphate	mg/l	138	138
Total Oxidised Nitrogen as N	mg/l	3.17	<0.1
Filtered (Dissolved) Metals			
Iron (diss.filt)	mg/l	0.0215	0.0606
Magnesium (diss.filt)	mg/l	17.3	30
Potassium (diss.filt)	mg/l	9.66	8.97
Sodium (diss.filt)	mg/l	108	19.3
Unfiltered (Total) Metals			
Calcium (tot.unfilt)	mg/l	129	74.7



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