Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

Standard Landfill Site

Flintshire County Council Waste Management Services

Quarterly Monitoring Review

October – December 2016

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Approved	Diana Brookshaw	**Date**	16/02/2017

DISCLAIMER

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1.0 INTRODUCTION

1.1 Background

1.1.1 This report reviews environmental monitoring data collected during the final quarter of 2016 at Standard Landfill Site, Buckley, as required by Natural Resources Wales (NRW). The data reviewed by this report was collected between the 1st of October and the 19th of January 2017. Data collected in January 2017 was monitoring deferred from December 2016.

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 2015, document reference 2231.12.FCC.SDB.JDM.A0, submitted to Natural Resources Wales by Caulmert Ltd, on behalf of Flintshire County Council Waste Management Services in January 2016.

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 and can be found in Appendix 1.

2.2 Methane

2.2.1 Methane was only detected in BH22, where the maximum concentration was 0.4 %. A methane trigger level 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 trigger level was not exceeded at BH22 during this review period, with a maximum concentration of 0.4 %.

2.3 Carbon Dioxide

2.3.1 Carbon dioxide trigger levels were agreed with the Environment Agency during Q3 of 2011 and can be found in Appendix 1 along with the monitoring data. The carbon dioxide trigger values 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 Carbon dioxide concentrations remained below the trigger levels in all locations throughout the review period.

3.0 GROUNDWATER

3.1 Introduction

3.1.1 During the review period groundwater levels were recorded on a monthly basis at seven groundwater monitoring boreholes, GW1, GW2R, GW3, GW4R, GW5, GW6 and GW7R. Location GW2R was installed in October 2016 to replace GW2. Samples collected at these locations were analysed for an annual suite of parameters, as well as the quarterly suite, during this quarter.

3.2 Groundwater Levels

3.2.1 Groundwater level data was recorded on a monthly basis in metres below ground level (mBGL). Where borehole cover level data was available this was used to calculate the groundwater level in metres above Ordnance Datum (mAOD).

3.2.2 Groundwater levels, in mBGL and mAOD are displayed in a summary table included in Appendix 2. Groundwater levels remained stable over the review period.

3.3 Groundwater Quality

3.3.1 A groundwater quality summary table for this review period is included in Appendix 2.

3.3.2 Ammoniacal nitrogen and chloride concentrations in GW6 have shown a generally decreasing trend since a leachate outbreak in 2013. The concentration of ammoniacal nitrogen increased slightly in this monitoring round, with a concentration of 51 mg/l, whilst the chloride concentration decreased to 195 mg/l.

3.3.3 Ammoniacal nitrogen concentrations were below the detection limit in GW1, GW3 and GW4R. Where ammoniacal nitrogen was detected (GW2R, GW5 and GW7), the concentrations were significantly lower than at GW6.

3.3.4 COD was highest in GW5, at 870 mg/l. COD concentrations were comparatively low in all other groundwater monitoring points.

3.3.5 No mercury or phenols were detected in the groundwater during this review period.

3.3.6 The pH in GW6 was 5.3, similar to that detected in the previous review (5.9).

3.3.7 Nitrite was detected at GW6 alone, with a relatively low concentration of 0.44 mg/l. Nitrate concentration at GW6 decreased from 282 mg/l in the previous review to 110 mg/l in January 2017.

3.3.8 None of the annual suite parameters were detected above their respective detection limits.

4.0 LEACHATE

4.1 Introduction

4.1.1 Leachate levels were recorded monthly at nine leachate monitoring locations, LC2.1, LC3, LC4, LC7, S1, S2, S3, SSR5 (LS5) and SSR6 (LS6). Additionally, leachate samples were analysed for the annual suite of determinants.

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

4.2 Leachate Levels

4.2.1 Leachate levels were recorded on a monthly basis. A summary table displaying leachate levels, in metres below ground level (mBGL) and in metres above Ordnance Datum (mAOD), can be found in Appendix 3.

4.2.2 Table 1 below displays minimum, maximum and average leachate head levels in metres above well base. Average levels range between 1.19 m above well base in LS6 to 1.80 m above well base in LC7.

Table 1: Leachate Head Levels in metres above well base

4.3 Leachate Quality

Location	Leachate head (m above cell base)		
	Min	Max	Average
LC2.1	1.40	1.44	1.42
LC3	1.58	1.61	1.60
LC4	1.51	1.54	1.52
LC7	1.79	1.82	1.80
LS5	1.31	1.34	1.32
LS6	1.18	1.20	1.19
S1	1.36	1.38	1.37
S2	1.61	1.63	1.62
S3	1.38	1.41	1.40

4.3.1 A summary of the leachate quality is shown in Table 3.2 in Appendix 3. Thirty four parameters were detected within the leachate as part of the annual suite.

4.3.2 Concentrations of ammoniacal nitrogen within the leachate ranged between 10.4 mg/l in S1 and a maximum concentration of 1980 mg/l in LC2. Chloride concentrations ranged from 35 mg/l in S3 to 2250 mg/l in LC2. COD concentrations ranged from 40 mg/l in S3 to 3050 mg/l in LC3.

5.0 SURFACE WATER

5.1 Introduction

5.1.1 Surface water samples were collected at three locations; SW2, SW4 and SW5 which are shown on the enclosed Environmental Monitoring Locations drawing.

5.1.2 Surface water samples were analysed for the quarterly suite of parameters. Summary tables displaying the surface water analysis results are presented in Appendix 4.

5.2 Surface Water Quality

5.2.1 Ammoniacal nitrogen was not detected in any of the surface water locations during this period.

5.2.2 Chemical oxygen demand concentrations decreased at SW4 and SW5 compared to the previous review period. Concentrations increased at SW1 from 58.6 mg/l to 273 mg/l and at SW2 from 21.6 mg/l to 32.1 mg/l.

5.2.3 Metal concentrations were low across the surface water locations.

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 trigger level of 1.0 % throughout the review period, with an average concentration of 0.3 %.

6.2 Groundwater

6.2.1 GW6 continued to display the highest concentrations of most parameters potentially due to the residual impact of the leachate outbreak close to this borehole which was detected in May 2013. The concentrations of key leachate indicator parameters have decreased considerably since the outbreak, however, ammoniacal nitrogen and COD increased in the current quarter.

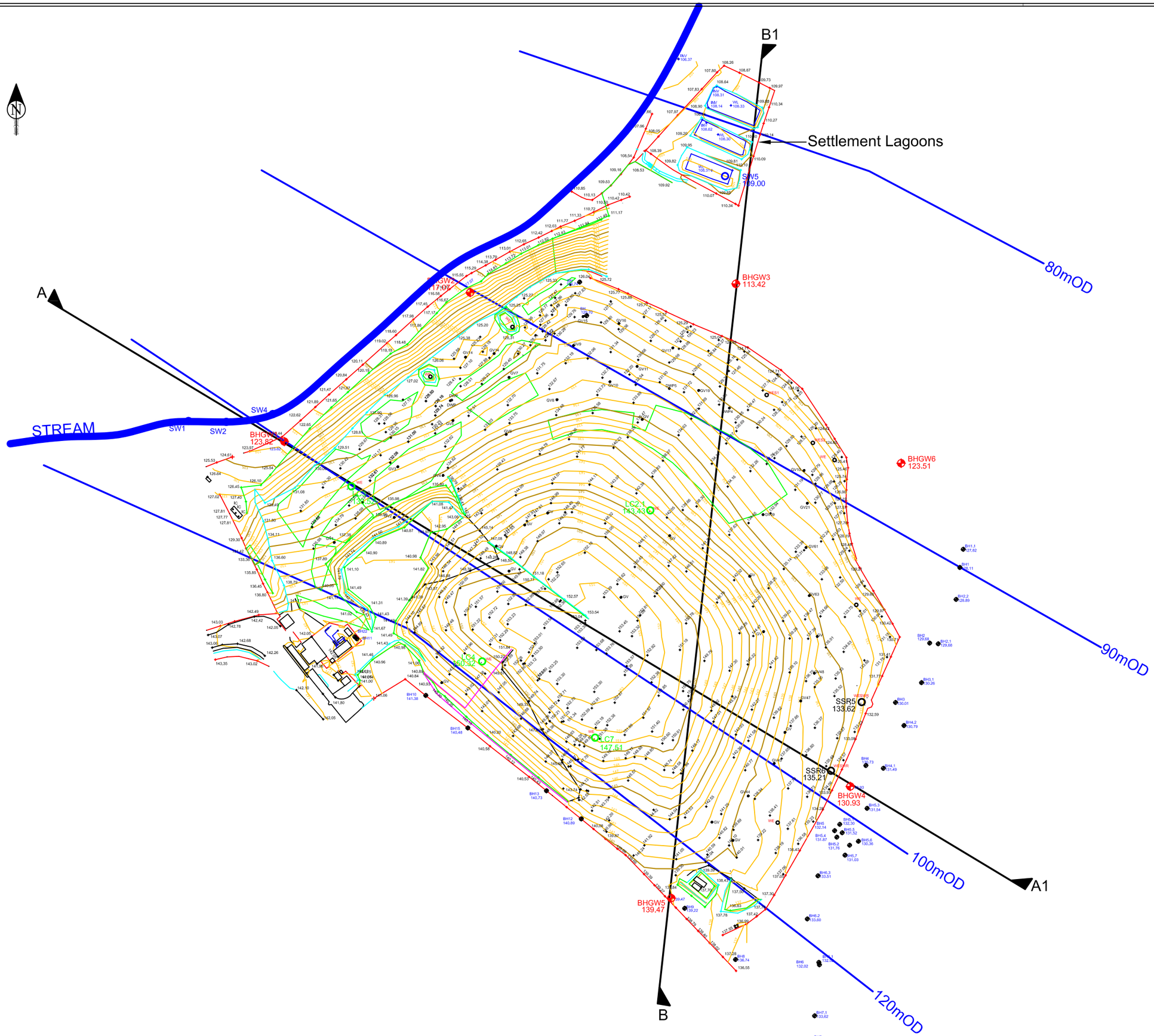
6.3 Leachate

6.3.1 Leachate levels remained low for the duration of the review period.

6.3.2 Leachate quality results indicate that a medium to strong leachate is present. This is to be expected given the age of the waste mass and the closed and capped nature of the site.

6.4 Surface Water

6.4.1 Surface water was generally of good quality across the sampled locations.



Notes

- BHGW4 — Groundwater Borehole
- SSR6 — Side Slope Riser
- LC7 — Leachate Chamber
- SW1 — Surface Water Monitoring Point
- Cross Section
- Ground Water Contours

Notes

Monitoring Point Height (mOD) Given Below Identity Number

Ground Water Contour Based on 2005 Levels

TerraConsult

Bold Business Centre, Bold Lane, Sutton, St Helens WA9 4TX

Client: A D Waste Limited

Site

Standard Landfill Buckley

Title

Environmental Monitoring Locations

Scale	1:1500	@ A2	
Drawing No.	0987/1/002		
Rev	Date	Description	
File	Standard Landfill3863a-TCL Revision001.dwg		
Date	03/09	Engineer	CB
Drawn	SH	Checked	JB

APPENDIX 1

APPENDIX 1

Table 1 – Summary of Landfill Gas Concentrations

Location	Methane (%v/v)					Carbon Dioxide (%v/v)				
	Min	Max	Ave	Count	Limit	Min	Max	Ave	Count	Limit
BH 1	0.0	0.0	0.0	13	**1.0**	1.3	1.9	1.6	13	**5.4**
BH 1.1	0.0	0.0	0.0	13	**1.0**	1.8	2.6	2.2	13	**5.4**
BH 2.0	0.0	0.0	0.0	13	**1.0**	1.2	1.9	1.6	13	**7.1**
BH 2.1	0.0	0.0	0.0	13	**1.0**	1.4	2.9	2.4	13	**7.6**
BH 2.2	0.0	0.0	0.0	13	**1.0**	2.0	2.9	2.2	13	**5.8**
BH 3.0	0.0	0.0	0.0	13	**1.0**	1.1	1.9	1.6	13	**6.7**
BH 3.1	0.0	0.0	0.0	13	**1.0**	1.9	2.9	2.4	13	**7.8**
BH 4.0	0.0	0.0	0.0	13	**1.0**	1.0	3.6	2.4	13	**10.7**
BH 4.1	0.0	0.0	0.0	13	**1.0**	1.1	2.5	1.9	13	**7.1**
BH 4.2	0.0	0.0	0.0	13	**1.0**	1.4	1.9	1.6	13	**8.6**
BH 5.0	0.0	0.0	0.0	13	**1.0**	2.0	2.9	2.4	13	**19.4**
BH 5.1	0.0	0.0	0.0	13	**1.0**	1.4	2.8	1.9	13	**5.8**
BH 5.2	0.0	0.0	0.0	13	**1.0**	1.4	2.6	1.9	13	**9.6**
BH 5.3	0.0	0.0	0.0	13	**1.0**	1.4	2.6	2.0	13	**6.0**
BH 5.4	0.0	0.0	0.0	13	**1.0**	1.4	2.9	2.2	13	**16.0**
BH 5.5	0.0	0.0	0.0	13	**1.0**	1.6	2.9	2.2	13	**17.1**
BH 5.7	0.0	0.0	0.0	13	**1.0**	2.1	2.8	2.4	13	**7.1**
BH 6.0	0.0	0.0	0.0	13	**1.0**	2.0	2.6	2.2	13	**8.9**
BH 6.1	0.0	0.0	0.0	13	**1.0**	1.1	1.9	1.5	13	**3.7**
BH 6.2	0.0	0.0	0.0	13	**1.0**	2.0	2.5	2.2	13	**6.1**
BH 6.3	0.0	0.0	0.0	13	**1.0**	1.4	2.6	1.9	13	**8.2**
BH 7.0	0.0	0.0	0.0	13	**1.0**	1.4	2.9	2.0	13	**6.2**
BH 7.1	0.0	0.0	0.0	13	**1.0**	1.2	1.9	1.6	13	**5.5**
BH 12	0.0	0.0	0.0	13	**1.0**	2.0	2.7	2.3	13	**6.5**
BH 13	0.0	0.0	0.0	13	**1.0**	1.4	2.9	2.0	13	**5.2**
BH 15	0.0	0.0	0.0	13	**1.0**	1.8	3.6	2.4	13	**8.3**
BH 16	0.0	0.0	0.0	13	**1.0**	1.2	1.9	1.5	13	**3.0**
BH 22	0.2	0.4	0.3	13	**1.0**	2.0	2.9	2.2	13	**3.1**

APPENDIX 2

APPENDIX 2

Table 2.1 - Groundwater Levels

Location	Date	Dip Level (mBGL)	Groundwater Level (m AOD)
GW 1	24/10/2016	23.21	100.87
	14/11/2016	24.26	99.82
	18/01/2017	27.24	96.84
GW 2	24/10/2016	9.10	108.11
	14/11/2016	9.10	108.11
	18/01/2017	9.10	108.11
GW 2R	24/10/2016	-	-
	14/11/2016	46.95	-
	18/01/2017	47.58	-
GW 3	24/10/2016	35.62	77.80
	14/11/2016	36.28	77.14
	18/01/2017	37.99	75.43
GW 4R	24/10/2016	44.89	86.11
	14/11/2016	41.89	89.11
	18/01/2017	45.97	85.03
GW 5	24/10/2016	0.71	134.15
	14/11/2016	0.71	134.15
	18/01/2017	1.79	133.07
GW 6	24/10/2016	30.21	93.36
	14/11/2016	25.98	97.59
	18/01/2017	23.71	99.86
GW 7R	24/10/2016	58.26	83.74
	14/11/2016	57.88	84.12
	18/01/2017	59.60	82.40

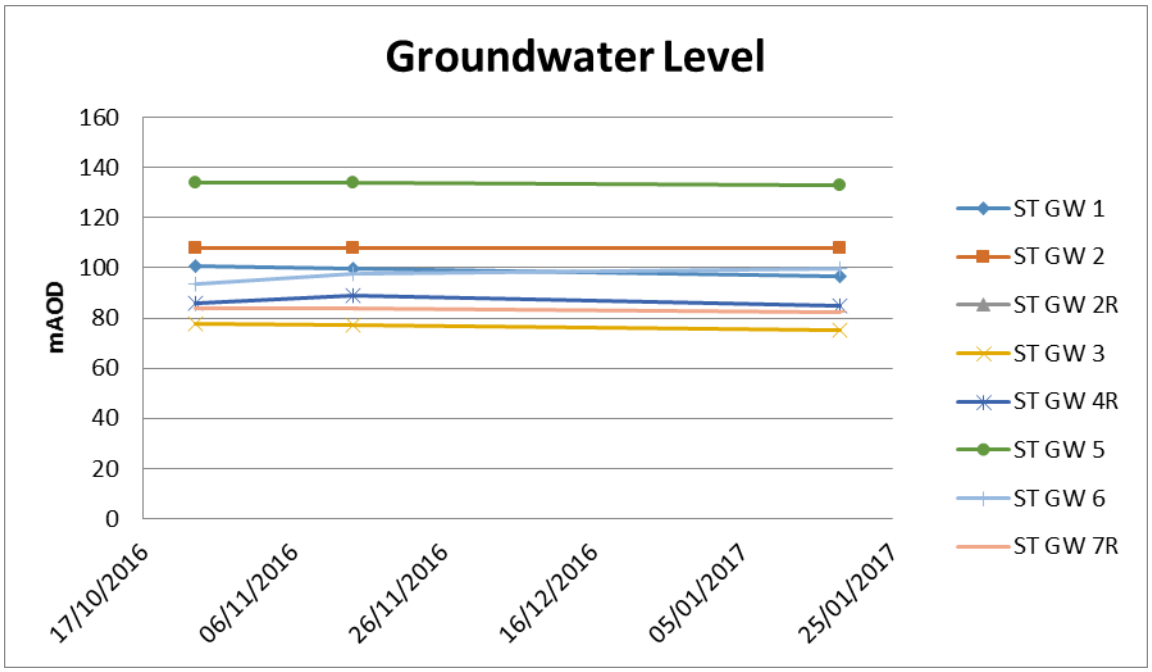

Groundwater Level
mAOD
160
140
120
100
80
60
40
20
0
17/10/2016
06/11/2016
26/11/2016
16/12/2016
05/01/2017
25/01/2017
ST GW 1
ST GW 2
ST GW 2R
ST GW 3
ST GW 4R
ST GW 5
ST GW 6
ST GW 7R

Table 2.2 - Groundwater Quality Data Summary

Parameter		GW1	GW2R	GW3	GW4R	GW5	GW6	GW7
Carbon								
Organic Carbon, Total	mg/l	3.35	5.59	4.69	3.9	3.52	15.2	<3
Inorganics								
Alkalinity, Total as CaCO3	mg/l	50	115	115	100	140	24	325
Ammoniacal Nitrogen as NH4	mg/l	<0.3	0.487	<0.3	<0.3	2.71	51	1.5
BOD, unfiltered	mg/l	<1	<1.25	<1	<1	<5	2.32	<1
Chloride	mg/l	77.6	80.6	147	56.3	8.6	195	47.1
Chlorine, Total (Residual)	mg/l	0.03	<0.01	0.04	<0.01	0.18	<0.01	0.1
COD, unfiltered	mg/l	143	99.6	32	58.5	632	112	870
Cyanide, Free	mg/l	<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
Nitrate as N	mg/l	6.37	1.51	11.7	0.509	<0.0677	110	<0.0677
Nitrite as N	mg/l	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	0.438	<0.0152
pH	pH	6.17	6.31	6.37	6.56	6.57	5.33	7
Sulphate	mg/l	216	203	180	346	12.4	356	148
Total Oxidised Nitrogen as N	mg/l	6.37	1.52	11.8	0.515	<0.1	110	<0.1
Filtered (Dissolved) Metals								
Arsenic (diss.filt)	mg/l	<0.00051	<0.00051	0.000701	0.00077	0.00366	0.000943	0.0186
Cadmium (diss.filt)	mg/l	<0.00008	0.000221	<0.00008	0.000227	<0.00008	0.0029	<0.00008
Calcium (diss.filt)	mg/l	63.8	70.7	96.6	113	41.3	80.5	72.3
Copper (diss.filt)	mg/l	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	0.00377	<0.00085
Iron (diss.filt)	mg/l	0.0523	0.102	<0.019	<0.019	5.39	0.0288	2.91
Lead (diss.filt)	mg/l	<0.0001	0.000152	<0.0001	<0.0001	0.000101	0.000375	0.000313
Magnesium (diss.filt)	mg/l	27.8	31.6	33.7	38	5.54	38.6	29.9
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.00175	0.0385	0.00799	0.0441	0.00305	0.0995	0.0192
Potassium (diss.filt)	mg/l	9.73	9.4	12	9.47	4.45	45	12.6
Sodium (diss.filt)	mg/l	29.9	36.5	61.7	34.7	5.58	226	76.3
Zinc (diss.filt)	mg/l	0.0194	0.0295	0.0174	0.0591	0.00877	0.121	0.00975
Phenols								
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
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

Parameter		GW1	GW2R	GW3	GW4R	GW5	GW6	GW7
Mineral Oil / Oils & Greases								
Mineral oil >C10 C40 (aq)	mg/l	<0.01	<0.01	<0.01	<0.01	0.0331	<0.01	0.0661
Semi-Volatile Organic Compounds (SVOCs)								
1,2,4-Trichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,4,5-Trichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,4,6-Trichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,4-Dichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,4-Dimethylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,4-Dinitrotoluene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,6-Dinitrotoluene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Chloronaphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Chlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Methylnaphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Nitrophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
3-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Bromophenylphenylether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Chloro-3-methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Chloroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Chlorophenylphenylether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Nitrophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Azobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(k)fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
bis(2-Chloroethoxy)methane (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
bis(2-Chloroethyl)ether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
bis(2-Ethylhexyl) phthalate (aq)	mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Butylbenzyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbazole (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dibenzofuran (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Diethyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dimethyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorocyclopentadiene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachloroethane (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Isophorone (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Dibutyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Dioctyl phthalate (aq)	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Nitroso-n-dipropylamine (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Pentachlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total SVOC TIC	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Parameter		GW1	GW2R	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-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
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
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

Parameter		GW1	GW2R	GW3	GW4R	GW5	GW6	GW7
Volatile Organic Compounds (VOCs)								
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
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

Parameter		GW1	GW2R	GW3	GW4R	GW5	GW6	GW7
Combined Pesticides / Herbicides								
Aldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Azinphos-ethyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000232	<0.00001
Azinphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH / Lindane)	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	<0.00005	<0.00005	<0.00001	<0.00005	<0.00001
Chlorpyriphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyriphos 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	<0.00001	<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	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
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	<0.00001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (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	<0.00001	<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-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	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	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
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

Parameter		GW1	GW2R	GW3	GW4R	GW5	GW6	GW7
Combined Pesticides / Herbicides								
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	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
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
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	<0.00001	<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
Miscellaneous Organics								
Dibutyl tin	mg/l	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
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 3

APPENDIX 3

Table 3.1 - Leachate Levels

Location	Date	Dip Level (mBGL)	Leachate Level (mAOD)	Leachate Level Head (m)
LC2.1	04/10/2016	29.58	111.47	1.42
	08/11/2016	29.56	111.49	1.44
	06/12/2016	29.6	111.45	1.40
LC3	04/10/2016	3.24	130.72	1.60
	08/11/2016	3.23	130.73	1.61
	06/12/2016	3.26	130.7	1.58
LC4	04/10/2016	17.49	131.16	1.51
	08/11/2016	17.46	131.19	1.54
	06/12/2016	17.48	131.17	1.52
LC7	04/10/2016	18.49	132.8	1.82
	08/11/2016	18.51	132.78	1.80
	06/12/2016	18.52	132.77	1.79
LS5	04/10/2016	28.71	104.6	1.31
	08/11/2016	28.68	104.63	1.32
	06/12/2016	28.65	104.66	1.34
LS6	04/10/2016	30.04	104.82	1.18
	08/11/2016	30	104.86	1.20
	06/12/2016	30.05	104.81	1.18
S1	04/10/2016	3.06	124.92	1.37
	08/11/2016	3.07	124.91	1.36
	06/12/2016	3.05	124.93	1.38
S2	04/10/2016	1.74	127.12	1.61
	08/11/2016	1.72	127.14	1.63
	06/12/2016	1.74	127.12	1.61
S3	04/10/2016	3.71	124.79	1.38
	08/11/2016	3.68	124.82	1.41
	06/12/2016	3.69	124.81	1.40

Table 3.2 - Leachate Quality Data Summary

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Carbon										
Organic Carbon, Total	mg/l	-	304	265	272	-	-	-	587	578
Inorganics										
Alkalinity, Total as CaCO3	**mg/l**	7880	2870	4180	4330	1720	405	320	6620	6800
Ammoniacal Nitrogen as N	**mg/l**	1980	917	665	585	-	-	-	1240	1230
Ammoniacal Nitrogen as NH4	**mg/l**	-	-	-	-	10.4	13.5	12.6	1590	1580
BOD, unfiltered	**mg/l**	148	361	68.7	67.2	<1	<1	<1	<50	<50
Chloride	**mg/l**	2250	679	1120	1130	442	86.2	35	1630	1630
Chlorine, Total (Residual)	**mg/l**	1.58	0.14	0.78	1.18	0.58	0.05	0.06	1.58	1.98
COD, unfiltered	**mg/l**	2300	3050	985	820	47.2	47.7	40.4	1810	1780
Conductivity @ 20 deg.C	**mS/cm**	-	-	-	-	4.91	2.09	1.47	-	-
Cyanide, Free	**mg/l**	17	<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
pH	**pH Units**	<0.05	7.93	7.65	7.95	7.68	7.66	7.39	7.95	7.96
Sulphate	**mg/l**	7.77	385	16.5	228	-	-	-	42.1	43.3
Total Oxidised Nitrogen as N	**mg/l**	<0.5	<0.2	0.288	<0.2	0.237	0.569	4.8	0.205	<0.2
Filtered (Dissolved) Metals										
Cadmium (diss.filt)	**mg/l**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00016	<0.00008	<0.00008	<0.00008
Calcium (diss.filt)	**mg/l**	-	215	177	169	-	-	-	104	89.6
Magnesium (diss.filt)	**mg/l**	77.9	61.5	164	82.4	55.8	71.9	42.3	109	95.7
Mercury (diss.filt)	**mg/l**	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Potassium (diss.filt)	**mg/l**	627	257	569	401	148	23.5	26.6	800	698
Sodium (diss.filt)	**mg/l**	1550	561	1470	1080	397	69.2	36.6	2050	1760
Mineral Oil / Oils & Greases										
Mineral oil >C10 C40 (aq)	mg/l	0.0422	<0.01	0.845	<0.01	<0.01	<0.01	<0.01	<0.01	-

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Semi-Volatile Organic Compounds (SVOCs)										
1,2,4-Trichlorobenzene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
1,2-Dichlorobenzene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
1,3-Dichlorobenzene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
1,4-Dichlorobenzene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2,4,5-Trichlorophenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2,4,6-Trichlorophenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2,4-Dichlorophenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2,4-Dimethylphenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2,4-Dinitrotoluene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2,6-Dinitrotoluene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2-Chloronaphthalene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2-Chlorophenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2-Methylnaphthalene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2-Methylphenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2-Nitroaniline (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
2-Nitrophenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
3-Nitroaniline (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
4-Bromophenylphenylether (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
4-Chloro-3-methylphenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
4-Chloroaniline (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
4-Chlorophenylphenylether (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
4-Methylphenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
4-Nitroaniline (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
4-Nitrophenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Azobenzene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Benzo(k)fluoranthene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
bis(2-Chloroethoxy)methane (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
bis(2-Chloroethyl)ether (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
bis(2-Ethylhexyl) phthalate (aq)	mg/l	<0.008	<0.008	0.0107	<0.008	<0.002	<0.002	<0.002	<0.008	<0.008
Butylbenzyl phthalate (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Carbazole (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Dibenzofuran (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Diethyl phthalate (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Dimethyl phthalate (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Hexachlorobenzene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Hexachlorobutadiene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Hexachlorocyclopentadiene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Hexachloroethane (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Isophorone (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
n-Dibutyl phthalate (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
n-Dioctyl phthalate (aq)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.005	<0.005	<0.005	<0.02	<0.02
Nitrobenzene (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
n-Nitroso-n-dipropylamine (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Pentachlorophenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Phenol (aq)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	<0.004	<0.004
Total SVOC TIC	mg/l	23.5	4.55	3.59	3.38	<0.01	<0.01	<0.01	10.8	11.6
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	0.00397	0.00101	0.00151	0.00118	<0.001	<0.001	<0.001	0.00236	0.00217
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	0.00294	<0.001	0.00432	0.00159	<0.001	<0.001	<0.001	0.002	0.00187
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**	%	101	95.6	97.4	97.6	98.6	102	99.5	97.3	96.9
4-Chlorotoluene	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
4-iso-Propyltoluene	mg/l	0.00659	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	mg/l	0.00325	<0.001	0.00189	<0.001	<0.001	<0.001	<0.001	0.00285	0.00253
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
Chlorobenzene	mg/l	0.00218	<0.001	0.00172	<0.001	<0.001	<0.001	<0.001	0.0027	0.00249
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
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	<0.001	<0.001	0.00107	<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	0.00436	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.00242	0.00225
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	0.00954	<0.001	0.00306	<0.001	<0.001	<0.001	<0.001	0.00215	0.00171
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	0.0122	0.00259	0.00546	0.00334	<0.001	<0.001	<0.001	0.00919	0.00776
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	0.00277	0.00106	0.00118	<0.001	<0.001	<0.001	<0.001	0.00127	0.00114
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

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
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-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Azinphos-ethyl	mg/l	0.00028	0.00055	0.00112	0.00103	<0.00001	<0.00001	<0.00001	0.00061	0.00064
Azinphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<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	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00005	<0.00001	<0.00001	<0.00001	<0.00005	<0.00005	<0.00005	<0.00001	<0.00001
Chlorpyriphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyriphos methyl	mg/l	<0.00001	<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	<0.00001	<0.00001	<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	<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	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Disulfoton	mg/l	<0.00001	<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	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001	<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	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (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	<0.00001	<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	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Methyl parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<0.00001	<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
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	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	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	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	0.00122	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.00001	<0.00001	<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	<0.00001	<0.00001
Permethrin I	mg/l	0.00097	<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	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00001	<0.00001	<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	<0.00001	<0.00001
Quintozene (PCNB)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<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	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001	<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	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001	<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	<0.00001	<0.00001
Triazophos	mg/l	<0.00001	<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	0.000036	<0.000015	<0.000005	<0.00001	<0.000005	<0.000005	<0.000005	<0.00003	<0.000005
Tetrabutyl tin	mg/l	<0.000012	<0.000006	<0.000002	<0.000004	<0.000002	<0.000002	<0.000002	<0.000012	<0.000002
Tributyl tin	mg/l	<0.000006	<0.000003	<0.000001	<0.000002	<0.000001	<0.000001	<0.000001	<0.000006	<0.000001
Triphenyl tin	mg/l	<0.000006	<0.000003	<0.000001	<0.000002	<0.000001	<0.000001	<0.000001	<0.000006	<0.000001
TICS										
Benzothiazolone	mg/l	0.164	0.0566	0.106	0.0521	-	-	-	0.0907	0.0926
Bicyclohexadecanone	mg/l	-	0.0622	-	-	-	-	-	-	-
Butylbenzenesulfonamide	mg/l	-	-	0.101	-	-	-	-	0.0942	0.099
Dimethylbenzoic acid	mg/l	1.9	0.0446	-	-	-	-	-	0.13	0.132
Ditertbutylhydroxyphenylpropionic acid	mg/l	1.19	0.921	1.21	0.792	-	-	-	2	1.98
Ethylmethylbenzenesulfonamide	mg/l	0.0579	-	0.0478	-	-	-	-	0.0589	0.057
Hexadecanoic acid	mg/l	-	0.0819	0.121	0.093	-	-	-	-	-
Hexadecenoic acid	mg/l	-	-	-	0.0777	-	-	-	-	-

Parameter	Unit	LC2	LC3	LC4	LC7	S1	S2	S3	SSR5	SSR6
Methyl(methylpropyl)Benzeneacetic acid	mg/l	0.254	-	-	-	-	-	-	0.0844	0.0943
Methyl[butyl]phenylpropanoic acid	mg/l	0.0829	-	-	-	-	-	-	0.0807	0.0897
mixed hydrocarbons	mg/l	13.1	2.51	0.856	1.32	-	-	-	4.51	5.47
Octadecanoic acid	mg/l	-	-	0.0917	-	-	-	-	-	-
Tertbutylphenol	mg/l	-	-	0.0412	-	-	-	-	-	-
Triisopropylphosphate	mg/l	-	-	0.0647	-	-	-	-	-	-
Phenol(methylethylidene)bis	mg/l	0.111	-	-	-	-	-	-	-	-
trimethylhexanoic acid	mg/l	6.35	0.878	0.952	1.04	-	-	-	-	-
trimethylhexanoic acid	mg/l	-	-	-	-	-	-	-	3.72	3.5
Trimethylbenzoic acid	mg/l	-	-	-	-	-	-	-	0.0743	0.0765

APPENDIX 4

APPENDIX 4

Table 4 –Surface Water Quality

Parameter	Units	SW1	SW2	SW4	SW5
Inorganics					
Alkalinity, Total as CaCO3	mg/l	50	135	135	150
Ammoniacal Nitrogen as NH4	mg/l	<0.3	<0.3	<0.3	<0.3
BOD, unfiltered	mg/l	11.5	11.7	8.92	2.16
Chloride	mg/l	21.5	61.7	84.6	77.9
Chlorine, Total (Residual)	mg/l	0.04	0.05	0.02	0.02
COD, unfiltered	mg/l	273	32.1	23.9	33.7
Conductivity @ 20 deg.C	mS/cm	0.231	0.732	0.714	0.656
Nitrate as NO3	mg/l	6.11	5.14	0.424	10
pH	pH Units	7.15	7.34	7.77	7.7
Sulphate	mg/l	50.2	220	149	126
Total Oxidised Nitrogen as N	mg/l	1.39	1.17	0.102	2.28
Filtered (Dissolved) Metals					
Iron (diss.filt)	mg/l	0.0509	0.0207	<0.019	0.0196
Magnesium (diss.filt)	mg/l	5.96	23.3	16.5	13.3
Potassium (diss.filt)	mg/l	3.98	7.14	7.75	9.81
Sodium (diss.filt)	mg/l	14.1	38.8	50.5	46.5

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