

Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

Standard Landfill Site

Flintshire County Council Waste Management Services

Annual Monitoring Review 2014

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Document Reference: 1902.14.FCC.SDB.JDM.A0

January 2015

APPROVAL RECORD

Site: Standard Landfill Site
Client: Flintshire County Council Waste Management Services
Project Title: Environmental Management
Document Title: Annual Monitoring Review 2014
Document Ref: 1902.14.FCC.SDB.JDM
Report Status: A0
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0987/1/002 - Environmental Monitoring Locations

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1.0 INTRODUCTION

1.1 Background

- 1.1.1 This report has been compiled in accordance with the Environmental Permit (previously Waste Management Licence) for Standard Landfill Site, Buckley, which requires an annual review of the monitoring data collected at the site. The data reviewed by this report was collected from the 1st of January to the 31st of December 2014.
- 1.1.2 This report records and discusses the monitoring data collected for landfill gas, groundwater, leachate, and surface water at the site.

1.2 Site Location and Surrounding Land-use

- 1.2.1 Standard Landfill Site is located approximately 1 km north-east of Buckley town centre, Flintshire, North Wales (NGR SJ 290 650). The site is accessed via the B5127 (Liverpool Road).
- 1.2.2 The site is bounded to the east by Burntwood Road where several residential properties have boundaries within 50m of the eastern extreme of the site. To the west of the site lies agricultural land, separated from the landfill boundary by a water course. The Spencer Industrial Estate, which comprises several small industrial units, is situated beyond the southern site boundary. The A55 dual carriageway runs adjacent to the northern boundary.
- 1.2.3 A Site of Special Scientific Interest (SSSI), namely The Buckley Claypits and Commons, is located close to the site. Standard Landfill is also surrounded by the Deeside and Buckley Newt Site Special Area of Conservation.

1.3 Site History and Development

- 1.3.1 Standard Landfill Site was developed in the void created by a former open cast coal mine extending to approximately 13.3 ha. The site was excavated to a depth of approximately 100 mAOD (metres Above Ordnance Datum), the site entrance being at 141 mAOD.
- 1.3.2 The site comprises six distinct cells. They were developed on the basis of containment of leachate by basal and side slope engineering with engineered clay, and subject to construction quality assurance.
- 1.3.3 Infilling at the site commenced in January 1990. Capping has been completed at site with a 1.0 mm welded flexible membrane cap. Restoration soils were installed over the plastic cap. The site restoration was completed in 2004.

2.0 ENVIRONMENTAL CONTEXT

2.1 Geology

- 2.1.1 The underlying geology of the site consists of a sequence of grey mudstone with sandstone bands, interbedded with coal. The coal bands are between 0.2 m and 1.5 m thick, while the mudstone / sandstone bands can be up to 26 m thick in places, but are more commonly found with thicknesses in the order of 10 m.
- 2.1.2 Bands of pure mudstone are also present at the site, indicating a heterogeneous nature to the mudstone/sandstone lithology. Shales are also noted as occurring in conjunction with the coal bands. In a few instances, bands of black mudstone are found at depths greater than 100 mAOD.

2.2 Hydrogeology

- 2.2.1 Groundwater flow at the site is predominantly through silt and mud bands. There is also potential groundwater flows at the site through adducts and old workings, present in the underlying coal measures.

2.3 Hydrology

- 2.3.1 The site is enclosed by streams to the west and north. There are several large bodies of surface water at the site. There is a pond situated approximately 500 m west of the site, in agricultural fields and there is also a large lake 500m south of the site.

3.0 LANDFILL GAS

3.1 Introduction

- 3.1.1 Routine landfill gas (LFG) monitoring was carried out on a weekly basis at 29 perimeter boreholes during the review period. Methane, carbon dioxide, oxygen, relative pressure and atmospheric pressure were all recorded during each monitoring visit.
- 3.1.2 Borehole locations are shown on Environmental Monitoring Locations drawing in Appendix 1.
- 3.1.3 A summary and time series graphs displaying methane and carbon dioxide concentrations and can be found in Appendix 2.

3.2 Perimeter Boreholes

Methane

- 3.2.1 Methane was only detected at four boreholes during the review period (BH9.0, BH12, BH13 and BH22).
- 3.2.2 The maximum methane concentration in BH9.0, BH12 and BH13 was 0.1 %, remaining below the agreed trigger value of 1.0 %.
- 3.2.3 As observed in previous years, the highest methane concentrations were detected at BH22 with a maximum of 2.9 %. This maximum is lower than the maximum in BH22 during 2013 of 4.9 %, and significantly lower than the concentration in 2012 - 22.6 %. The methane concentration in BH22 has also reduced slightly compared to the average in 2013, from 1.6 % in 2013 to 1.2 % in 2014.
- 3.2.4 Figure 1 below displays the trend in methane concentrations recorded within BH22 during 2014.

BH22 Methane Concentration 2014

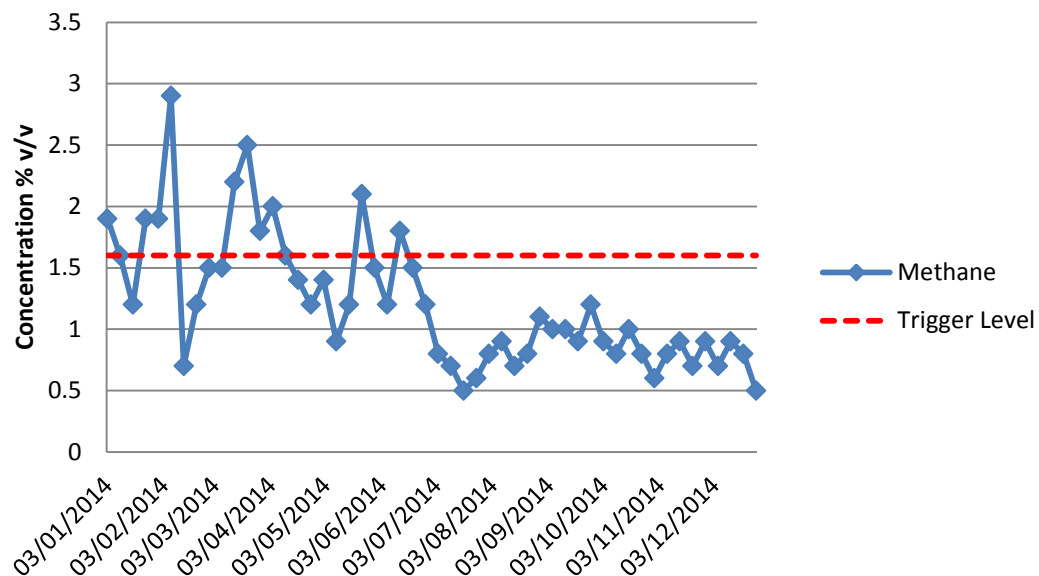


Figure 1: BH22 Methane Concentration

- 3.2.5 The methane concentration in BH22 displayed fluctuations between January and June 2014, frequently exceeding the proposed trigger value of 1.6 %. A sharp decreasing trend was observed thereafter, from 1.8 % on the 6th June 2014 to 0.5 % on the 18th July 2014. Methane concentration fluctuated for the remainder of the review period but did not exceed the agreed trigger value.

Carbon Dioxide

- 3.2.6 Carbon dioxide was detected at all locations throughout the review period, but did not exceed trigger levels during 2014. Average carbon dioxide concentrations ranged from 1.2 % in BH6.3 and 5.2 % in BH5.5.
- 3.2.7 Figure 3 below displays the trend in carbon dioxide concentrations recorded within BH22 during 2013 & 2014.

BH22 Carbon Dioxide Concentration 2013 - 2014

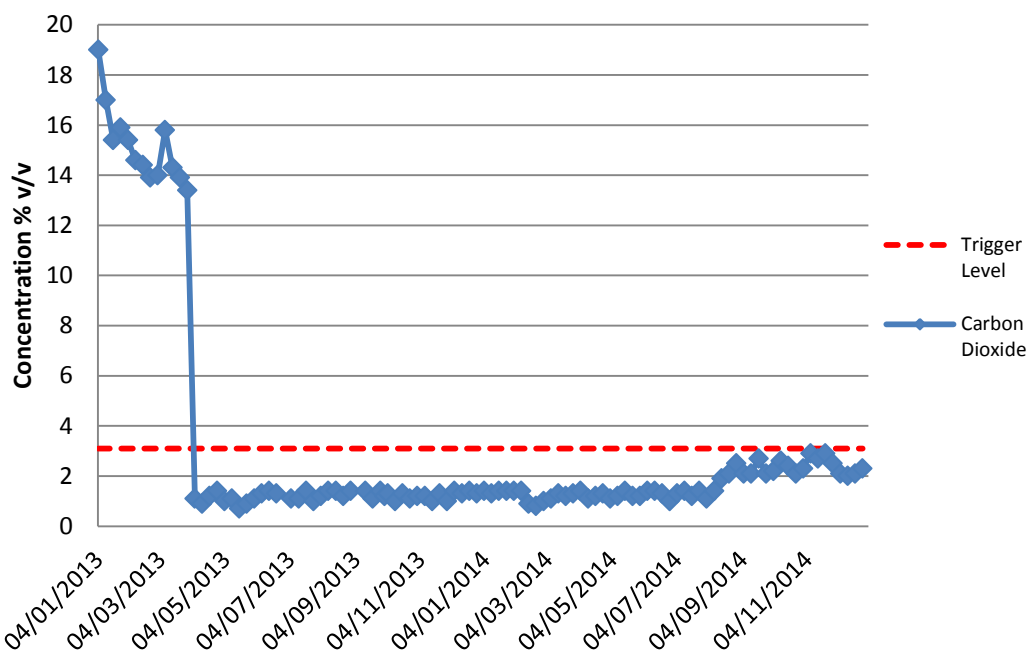


Figure 3: BH22 Carbon Dioxide Concentration

- 3.2.8 Carbon dioxide concentration within BH22 decreased significantly between the 29th of March 2013, at 13.4 %, and 1.1 % on the 5th of April 2013. Concentrations increased slightly from 1.9 % on the 15th August 2014 to a maximum of 2.9 % on the 7th November 2014. Concentrations were below the proposed trigger value of 3.1 % throughout 2014.

4.0 GROUNDWATER

4.1 Introduction

4.1.1 During the review period groundwater levels were recorded on a monthly basis at groundwater monitoring boreholes GW1, GW2, GW3, GW4R, GW5, GW6 and GW7R.

4.1.2 Groundwater quality samples were taken on a quarterly basis from boreholes GW1, GW3, GW5 and GW6 and analysed for the range of determinants listed below:

Alkalinity (as CaCO₃), ammoniacal nitrogen, biological oxygen demand (BOD), chemical oxygen demand (COD), cyanide, nitrate, nitrite, pH, total oxidised nitrogen (TON), arsenic, cadmium, calcium, copper, iron, lead, magnesium, mercury, nickel, potassium, sodium, zinc, phenols and a hazardous substances suite.

4.1.3 Samples collected in Q4 were analysed for a suite of metals and more extensive suite of hazardous substances.

4.1.4 An interim compliance limit of 6.4 mg/l has been agreed for ammoniacal nitrogen in groundwater locations.

4.2 Groundwater Levels

4.2.1 Groundwater level data was recorded on a monthly basis in metres below ground level (mBGL) and metres above Ordnance Datum (mAOD).

4.2.2 Groundwater level remained relatively stable in GW2, GW4 and GW5. GW2 was dry from May through December.

4.2.3 Groundwater levels in GW1, GW3, GW6 and GW7R showed a seasonal trend, with groundwater levels decreasing from January to September and then increasing over the remainder of the review period.

4.2.4 Time Series graphs of the groundwater levels, in metres below ground level (mBGL) and metres above Ordnance Datum (mAOD) are included in Appendix 3.

4.3 Groundwater Quality

4.3.1 In May 2013, a leachate outbreak was detected at the north west edge of the site, close to gas monitoring borehole 2.2. A faulty air pump allowed leachate to escape the site into a drainage ditch, which was overgrown. Elevated ammoniacal nitrogen, chloride, BOD, COD and heavy metal concentrations were subsequently detected within GW6. The air pump was replaced and pooled leachate within the drainage ditch was pumped back into the leachate collection system.

- 4.3.2 The ammoniacal nitrogen compliance limit of 6.4 mg/l was exceeded in GW6 throughout 2014. A summary of the groundwater quality within GW6 over the review period is displayed in Table 2 below:

Table 2: Groundwater Quality within GW6 during 2014

Parameter	Units	04-04-14	23-07-14	30-09-14	15-11-14	23-12-14
Inorganics						
Alkalinity, Total as CaCO ₃	mg/l	55	400	350	-	108
Ammoniacal Nitrogen as N	mg/l	58.1	111	111	107	82.9
Chloride	mg/l	-	627	642	671	567
BOD, unfiltered	mg/l	5.69	-	-	-	-
COD, unfiltered	mg/l	323	282	578	-	316
Cyanide, Total	mg/l	<0.05	-	-	-	<0.05
Nitrate as NO ₃	mg/l	183	-	-	-	-
Nitrite as NO ₂	mg/l	2.74	-	-	-	-
pH	-	7.12	6.76	6.86	6.35	5.86
Total Oxidised Nitrogen as N	mg/l	42.1	86.4	98.2	-	>106
Filtered (Dissolved) Metals						
Arsenic (diss.filt)	mg/l	0.00341	-	-	-	-
Cadmium (diss.filt)	mg/l	0.00295	0.0024	0.00217	-	0.00466
Calcium (diss.filt)	mg/l	-	74.2	74.3	-	72.4
Chromium (diss.filt)	mg/l	-	0.000569	0.00547	-	<0.00022
Copper (diss.filt)	mg/l	0.00694	0.0216	0.0208	-	0.0123
Iron (diss.filt)	mg/l	0.131	0.0959	0.0844	-	0.0778
Lead (diss.filt)	mg/l	0.00158	0.00044	0.000312	-	0.00121
Magnesium (diss.filt)	mg/l	25.8	45.7	42.9	-	42.2
Mercury (diss.filt)	mg/l	<0.00001	-	-	-	<0.00001
Nickel (diss.filt)	mg/l	0.114	0.101	0.0882	-	0.135
Potassium (diss.filt)	mg/l	41.9	82.9	78.3	-	60.4
Sodium (diss.filt)	mg/l	251	>400	440	-	381
Zinc (diss.filt)	mg/l	0.127	0.0629	0.042	-	0.137
TPH Criteria Working Group (TPH CWG)						
Sum of detected Xylenes	mg/l	-	<0.011	<0.011	-	<0.011
Toluene	mg/l	-	<0.004	<0.004	-	<0.004

- 4.3.3 Table 2 indicates that ammoniacal nitrogen concentration within GW6 peaked in July and September 2014, at 111 mg/l, decreasing to 82.9 mg/l by December 2014. Concentrations of chloride, COD, calcium, chromium, copper, lead, magnesium, potassium and sodium also decreased between September and December 2014.
- 4.3.4 Ammoniacal nitrogen concentrations remained below the compliance limit of 6.4 mg/l in locations GW1, GW3 and GW5. Maximum concentrations at these locations were <0.20 mg/l, 1.76 mg/l and 6.28 mg/l respectively.

- 4.3.5 pH ranged between 6.1 and 7.8 at locations GW1, GW3 and GW5. pH in GW6 was slightly lower, ranging between 5.9 and 7.1, very similar to during 2013, when pH in GW6 ranged between 5.9 and 7.0.
- 4.3.6 Chloride concentrations remained below the UK DWS of 250 mg/l in GW1, GW3 and GW5, ranging between 11.2 mg/l and 49.1 mg/l. Chloride concentrations in GW6 exceeded the UK DWS, ranging between 567 mg/l and 671 mg/l.
- 4.3.7 Concentrations of metals remained below their respective UK DWS except for iron, magnesium, manganese, nickel, potassium and sodium.
- 4.3.8 Iron concentration exceeded the UK DWS of 0.2 mg/l in GW5 only, ranging between 0.5 mg/l and 60.7 mg/l.
- 4.3.9 Magnesium concentration exceeded the UK DWS of 50 mg/l on one occasion in GW5, at 67.5 mg/l in Q1.
- 4.3.10 Manganese concentrations exceeded the UK DWS of 0.05 mg/l in all locations during the review period, with maximum concentrations of 0.68 mg/l, 0.17 mg/l, 4.50 mg/l and 9.27 mg/l in GW1, GW3, GW5 and GW6 respectively.
- 4.3.11 Nickel concentrations exceeded the UK DWS of 0.02 mg/l in GW6 throughout the review period. Concentrations ranged between 0.09 mg/l and 0.14 mg/l, slightly lower than the range of 0.10 mg/l and 0.17 mg/l, detected in GW6 during 2013.
- 4.3.12 Potassium concentrations exceeded the UK DWS of 12 mg/l in GW3, GW5 and GW6 during the review period. Maximum concentrations in these locations were 16 mg/l, 150 mg/l and 83 mg/l respectively.
- 4.3.13 Sodium concentration exceeded the UK DWS of 200 mg/l in GW6 throughout the review period, ranging between 251 mg/l and 440 mg/l. Sodium concentration was also above the UK DWS in GW5 in Q1 at 356 mg/l.
- 4.3.14 No cyanide, mercury, mineral oil, xylenes, toluene, SVOCs or VOCs were detected in any of the groundwater locations. A trace concentration of the herbicide Mecoprop was detected in GW6, 0.0067 mg/l.

5.0 LEACHATE

5.1 Introduction

- 5.1.1 Leachate levels at nine leachate monitoring locations were recorded monthly. Samples from all chambers were collected and analysed quarterly.
- 5.1.2 Samples collected in Q4 were tested for a suite of metals and hazardous substances.
- 5.1.3 Well locations are shown on the Environmental Monitoring Location drawing in Appendix 1.

5.2 Leachate Levels

- 5.2.1 Leachate levels were recorded on a monthly basis. A time series graphs displaying leachate levels, in metres above cell base, can be found in Appendix 4.
- 5.2.2 All leachate levels remained relatively stable throughout the review period with no significant fluctuations, all leachate monitoring wells show leachate heads below 1.9 m.
- 5.2.3 Leachate is pumped from Standard Landfill to a holding tank. Leachate is then tankered to the leachate treatment plant at the nearby Brookhill Landfill Site.

5.3 Leachate Quality

- 5.3.1 Concentrations of ammoniacal nitrogen fluctuated throughout the review period. Generally concentrations exhibited increases during the summer months and decreased towards the end of the year. This trend was also observed in 2013. The highest concentration of ammoniacal nitrogen occurred in LC2 at 1560 mg/l.
- 5.3.2 COD concentrations fluctuated throughout the review period with no overriding trend observed, a similar result to 2013. The highest COD concentration was observed in LC2 where a concentration of 2370 mg/l was recorded in Q3.
- 5.3.3 pH remained relatively stable in all locations, ranging between 7.2 and 8.3.
- 5.3.4 Several hazardous parameters were detected within the leachate as part of the annual suite, as detailed in Table 3 below.

Table 3: Hazardous Substances detected within the Leachate

Parameter	Units	S1	S2	S3	SSR5	SSR6	LC2	LC3	LC4	LC7
Mineral Oil / Oils & Greases										
Mineral oil >C10 C40 (aq)	mg/l	<0.01	<0.01	<0.01	0.0493	0.0737	0.0284	0.129	<0.01	0.0296
Semi-Volatile Organic Compounds (SVOCs)										
bis(2-Ethylhexyl) phthalate (aq)	mg/l	<0.002	<0.002	<0.002	0.0103	<0.01	<0.01	<0.01	<0.002	<0.002
Volatile Organic Compounds (VOCs)										
1,2,4-Trimethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.0192	<0.001	<0.001	0.00665
1,3,5-Trimethylbenzene	mg/l	<0.001	<0.001	0.00207	0.0021	0.00224	0.00392	<0.001	<0.001	0.00177
4-iso-Propyltoluene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.00731	<0.001	<0.001	<0.001
Benzene	mg/l	<0.001	<0.001	0.00148	0.00148	0.00164	0.00484	<0.001	0.00251	0.00292
Chlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.0106	<0.001	<0.001	0.00418
Ethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.0195	<0.001	<0.001	0.00839
Isopropylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.00453	<0.001	<0.001	<0.001
m,p-Xylene	mg/l	0.00202	<0.001	0.00127	<0.001	<0.001	0.0361	<0.001	<0.001	0.017
Naphthalene	mg/l	<0.001	<0.001	0.00225	<0.001	<0.001	0.0161	<0.001	<0.001	0.00464
o-Xylene	mg/l	0.00259	0.00194	0.0074	0.00807	0.00895	0.0136	0.002	<0.001	0.00663
Toluene	mg/l	<0.001	<0.001	<0.001	0.00147	0.00185	0.0104	<0.001	<0.001	0.00304
Combined Pesticides / Herbicides										
Heptachlor	mg/l	<0.00001	0.000127	0.000091	0.00008	<0.00001	0.000307	<0.00001	0.00022	0.000136
Miscellaneous Organics										
Dibutyl tin	mg/l	<0.000005	<0.00003	<0.00003	<0.00003	<0.000005	<0.00015	<0.00015	<0.00003	0.000034
Subcontracted: Organics										
Mecoprop (MCP)*	mg/l	-	0.0354	0.0387	0.0831	0.0609	0.0273	0.0379	0.0276	0.0261

6.0 SURFACE WATER

6.1 Introduction

6.1.1 Surface water samples are routinely taken from four locations; SW1, SW2, SW4 and SW5 which are shown on the Environmental Monitoring Locations drawing in Appendix 1.

6.1.2 Surface water samples are analysed on a weekly basis for:

Ammoniacal nitrogen, chloride, chemical oxygen demand (COD), pH and electrical conductivity.

6.1.3 In addition, samples are tested for a more extensive quarterly suite, comprising metals and hazardous substances.

6.1.4 A results summary and time series graphs of the laboratory analysis of the surface water samples are presented in Appendix 5.

6.2 Surface Water Quality

6.2.1 Ammoniacal nitrogen concentrations in SW1, SW2, SW4 and SW5 generally remained below the UK DWS of 0.39 mg/l, with averages of 0.6 mg/l, 0.3 mg/l, 0.2 mg/l and 0.3 mg/l respectively.

6.2.2 Chloride concentrations remained below the UK DWS of 250 mg/l at all locations.

6.2.3 COD concentration generally remained low in all locations. An elevated peak in COD was detected in SW1 on the 21st of March 2014, at 2550 mg/l.

6.2.4 Electrical conductivity remained below the UK DWS of 1.5 mS/cm at all locations during the review period.

6.2.5 Average pH in the surface water ranged between 7.8 and 8.0.

6.2.6 Three hazardous substances were detected in upstream monitoring location SW1, mineral oils at a concentration of 1.52 mg/l, the SVOC bis(2-ethylhexyl)phthalate at a concentration of 0.00489 mg/l, and the herbicide Mecoprop at a concentration of 0.00003 mg/l. Mecoprop was also detected in SW4 at a concentration of 0.00015 mg/l.

7.0 CONCLUSIONS

7.1 Landfill gas

- 7.1.1 Methane was only detected in four boreholes during the review period (BH9.0, BH12, BH13 and BH22). Methane concentrations within BH9.0, BH12 and BH13 remained below the agreed trigger limits.
- 7.1.2 The methane concentration in BH22 displayed fluctuations between January and June 2014, frequently exceeding the agreed trigger value of 1.6 %. A sharp decreasing trend was observed thereafter, from 1.8 % on the 6th of June 2014 to 0.5 % on the 18th of July 2014. Methane concentration fluctuated for the remainder of the review period but did not exceed the agreed trigger value.
- 7.1.3 Carbon dioxide was detected at all locations throughout the review period but remained below trigger limits during 2014.

7.2 Groundwater

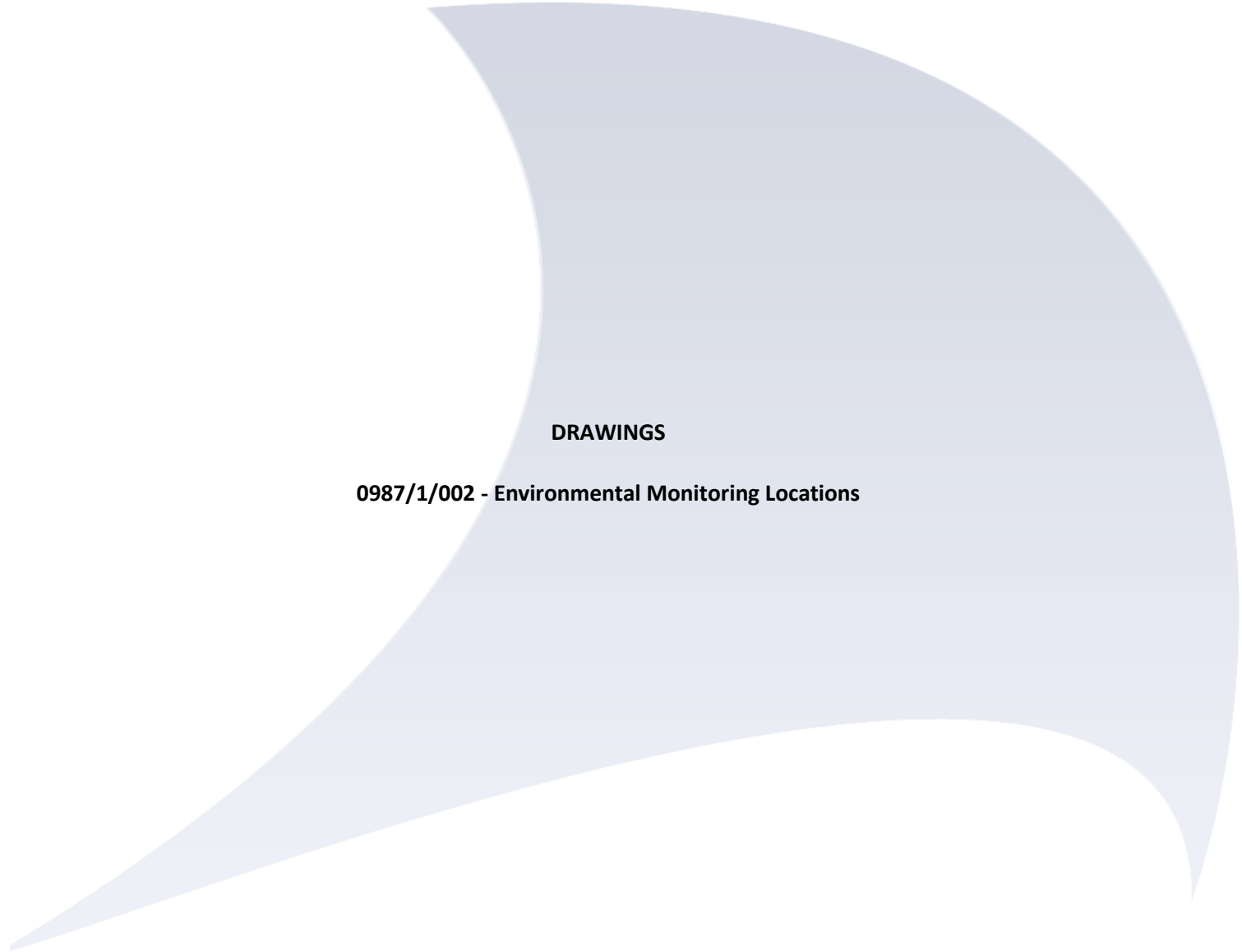
- 7.2.1 Groundwater level remained relatively stable in GW2, GW4 and GW5. GW2 was dry from May through December. GW1, GW3, GW6 and GW7R showed a seasonal trend, with groundwater levels decreasing from January to September and then increasing over the remainder of the review period.
- 7.2.2 GW6 continues 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.
- 7.2.3 In a similar result to 2013, concentrations of chloride, iron, magnesium, manganese, nickel, potassium and sodium were detected at concentrations above their respective DWS within the groundwater during this review period.
- 7.2.4 No hazardous substances were detected in GW1, GW3 or GW5. A trace concentration of the herbicide Mecoprop was detected in GW6, 0.0067 mg/l.

7.3 Leachate

- 7.3.1 Leachate levels remained low for the duration of the review period. No significant fluctuations were observed and all leachate heads remained below 1.9 m.
- 7.3.2 Concentrations of ammoniacal nitrogen and COD fluctuated throughout the review period. Generally concentrations exhibited increases during the summer months and decreased towards the end of the year. This trend was also observed in 2013. pH remained relatively stable in all locations.
- 7.3.3 Several hazardous parameters were detected within the leachate as part of the annual suite, as detailed in Table 3.

7.4 Surface Water

- 7.4.1 Ammoniacal nitrogen and chloride concentrations and electrical conductivity generally remained below the respective UK DWS.
- 7.4.2 Three hazardous substances were detected in upstream monitoring location SW1, mineral oils, the SVOC bis(2-ethylhexyl)phthalate, and the herbicide Mecoprop. Mecoprop was also detected at a lower concentration in SW4.



DRAWINGS

0987/1/002 - Environmental Monitoring Locations

Notes

- Groundwater Borehole
Side Slope Riser
Leachate Chamber
Surface Water Monitoring
Point

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



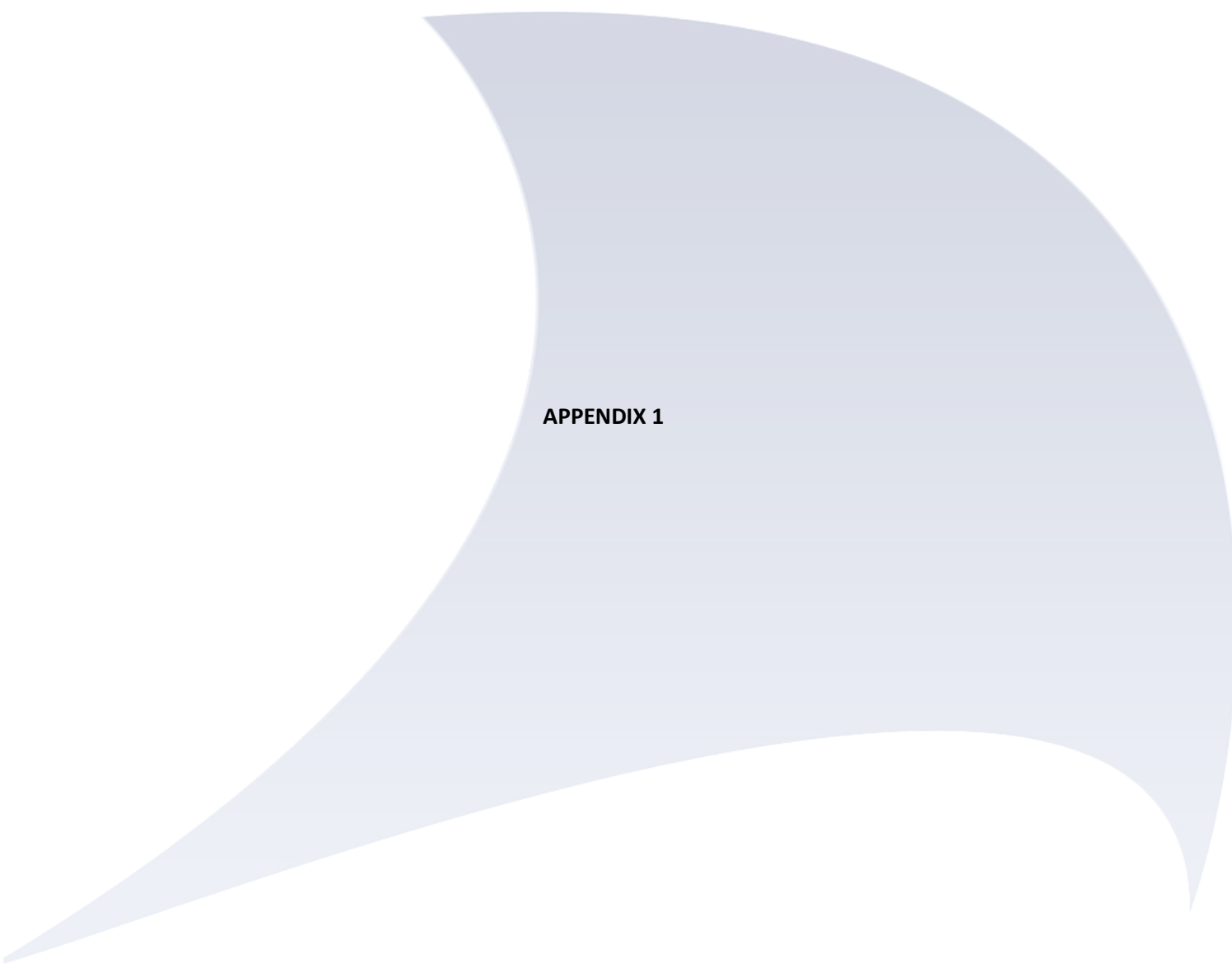
Site

Standard Landfill Buckley

Title

Environmental Monitoring Locations

Scale	1:1500		@ A2	
Drawing No.	09871/002			
Rev	Date	Description		
File	Standard Landfill\3863*-TCL Revision\001.dwg			
Date	03/09	Engineer	CB	
Drawn	SH	Checked	JB	



APPENDIX 1

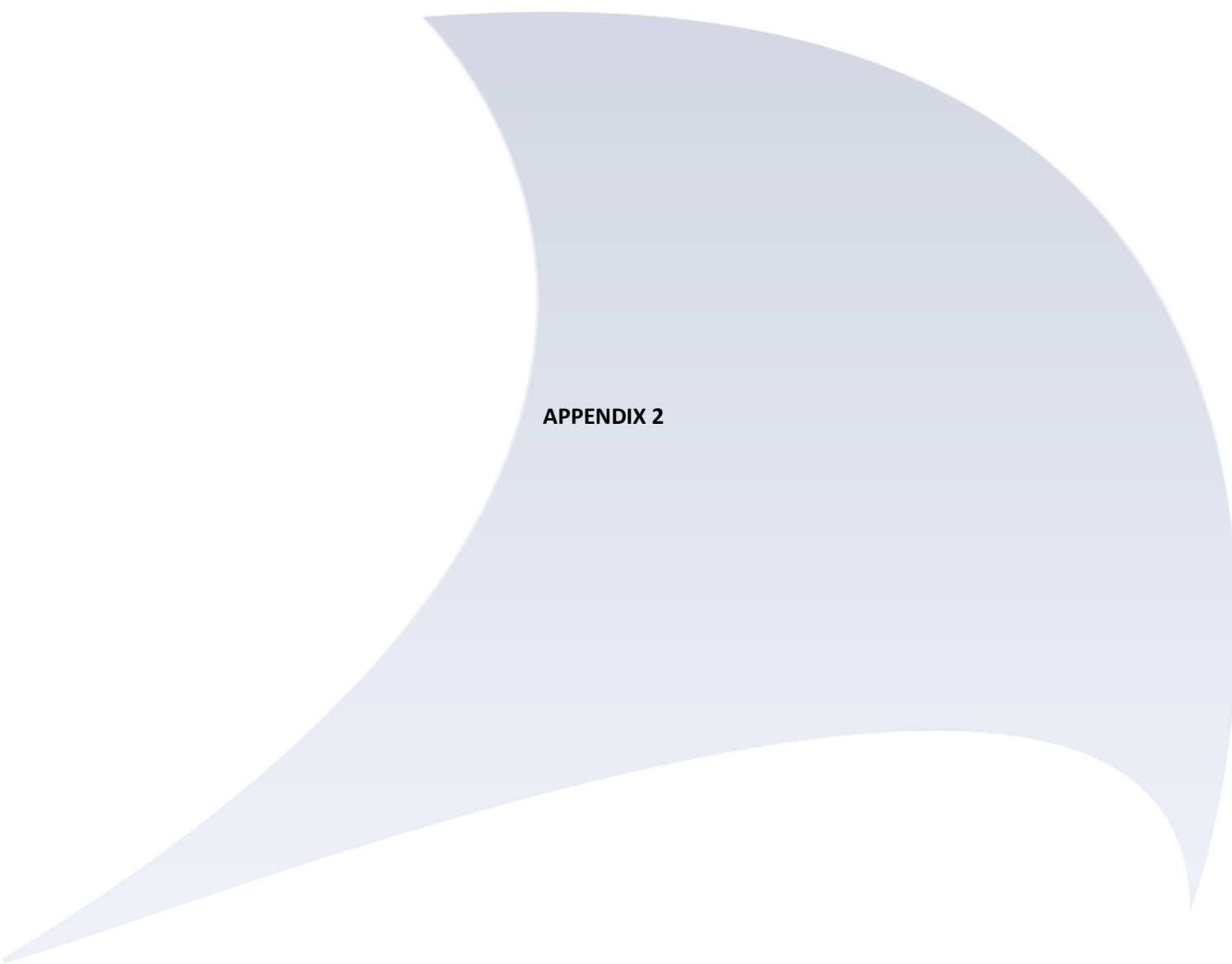
APPENDIX 1 – LANDFILL GAS

Table 1: Perimeter Landfill Gas

Location		CH4 (%v/v)	Trigger (%v/v)	CO2 (%v/v)	Trigger (%v/v)	Location		CH4 (%v/v)	Trigger (%v/v)	CO2 (%v/v)	Trigger (%v/v)
BH 1	Min	0.0	1.0	3.0	5.37	BH 4.1	Min	0.0	1.0	1.0	7.12
	Max	0.0		5.2			Max	0.0		4.1	
	Ave	0.0		4.3			Ave	0.0		2.2	
	Count	52		52			Count	52		52	
BH 1.1	Min	0.0	1.0	2.0	5.35	BH 4.2	Min	0.0	1.0	0.9	8.59
	Max	0.0		5.3			Max	0.0		4.0	
	Ave	0.0		3.4			Ave	0.0		2.4	
	Count	52		52			Count	52		52	
BH 2.0	Min	0.0	1.0	1.0	7.05	BH 5.0	Min	0.0	1.0	1.2	19.42
	Max	0.0		5.1			Max	0.0		3.6	
	Ave	0.0		3.0			Ave	0.0		2.5	
	Count	52		52			Count	52		52	
BH 2.1	Min	0.0	1.0	1.8	7.57	BH 5.1	Min	0.0	1.0	0.9	5.8
	Max	0.0		6.5			Max	0.0		2.9	
	Ave	0.0		4.3			Ave	0.0		1.7	
	Count	52		52			Count	52		52	
BH 2.2	Min	0.0	1.0	2.5	5.82	BH 5.2	Min	0.0	1.0	1.0	9.64
	Max	0.0		5.2			Max	0.0		2.9	
	Ave	0.0		3.8			Ave	0.0		1.5	
	Count	52		52			Count	52		52	
BH 3.0	Min	0.0	1.0	2.0	6.7	BH 5.3	Min	0.0	1.0	1.0	6
	Max	0.0		4.5			Max	0.0		3.5	
	Ave	0.0		3.3			Ave	0.0		2.1	
	Count	52		52			Count	52		52	
BH 3.1	Min	0.0	1.0	1.2	7.76	BH 5.4	Min	0.0	1.0	1.5	16.03
	Max	0.0		3.5			Max	0.0		7.5	
	Ave	0.0		2.4			Ave	0.0		4.8	
	Count	52		52			Count	52		52	
BH 4.0	Min	0.0	1.0	1.0	10.65	BH 5.5	Min	0.0	1.0	2.2	17.06
	Max	0.0		2.8			Max	0.0		7.5	
	Ave	0.0		1.6			Ave	0.0		5.2	
	Count	52		52			Count	52		52	

APPENDIX 1 – LANDFILL GAS

Location		CH4 (%v/v)	Trigger (%v/v)	CO2 (%v/v)	Trigger (%v/v)	Location		CH4 (%v/v)	Trigger (%v/v)	CO2 (%v/v)	Trigger (%v/v)
BH 5.7	Min	0.0	1.0	1.9	7.07	BH 12	Min	0.0	1.0	1.4	6.48
	Max	0.0		7.0			Max	0.1		5.9	
	Ave	0.0		4.7			Ave	0.0		3.6	
	Count	52		52			Count	52		52	
BH 6.0	Min	0.0	1.0	0.9	8.92	BH 13	Min	0.0	1.0	1.0	5.2
	Max	0.0		2.9			Max	0.1		4.6	
	Ave	0.0		1.7			Ave	0.0		2.7	
	Count	52		52			Count	52		52	
BH 6.1	Min	0.0	1.0	1.0	3.72	BH 15	Min	0.0	1.0	1.2	8.3
	Max	0.0		2.7			Max	0.0		4.9	
	Ave	0.0		1.6			Ave	0.0		3.2	
	Count	52		52			Count	52		52	
BH 6.2	Min	0.0	1.0	1.0	6.12	BH 16	Min	0.0	1.0	1.0	3.0
	Max	0.0		2.5			Max	0.0		2.9	
	Ave	0.0		1.7			Ave	0.0		1.5	
	Count	52		52			Count	52		52	
BH 6.3	Min	0.0	1.0	0.5	8.24	BH 22	Min	0.5	1.0	0.8	3.1
	Max	0.0		1.9			Max	2.9		2.9	
	Ave	0.0		1.2			Ave	1.2		1.7	
	Count	52		52			Count	52		52	
BH 7.0	Min	0.0	1.0	1.0	6.2						
	Max	0.0		2.3							
	Ave	0.0		1.5							
	Count	52		52							
BH 7.1	Min	0.0	1.0	1.0	5.49						
	Max	0.0		3.8							
	Ave	0.0		2.4							
	Count	52		52							
BH 9.0	Min	0.0	1.0	2.0	10.72						
	Max	0.8		6.5							
	Ave	0.3		3.8							
	Count	52		52							

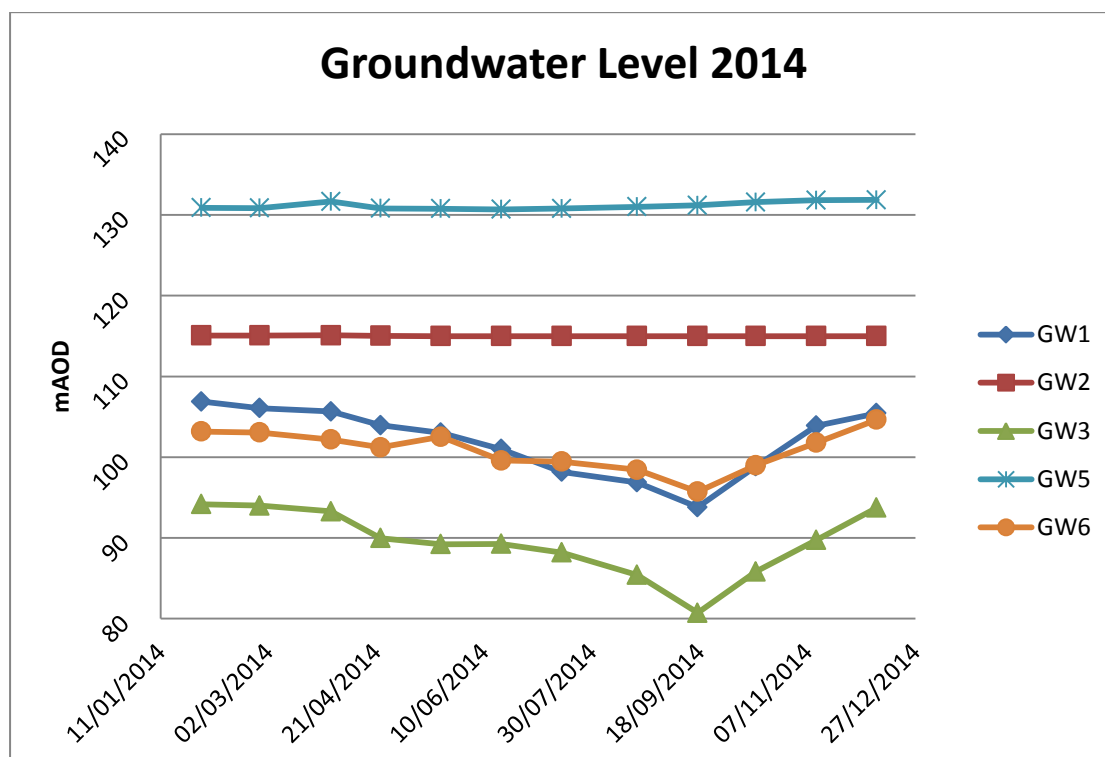
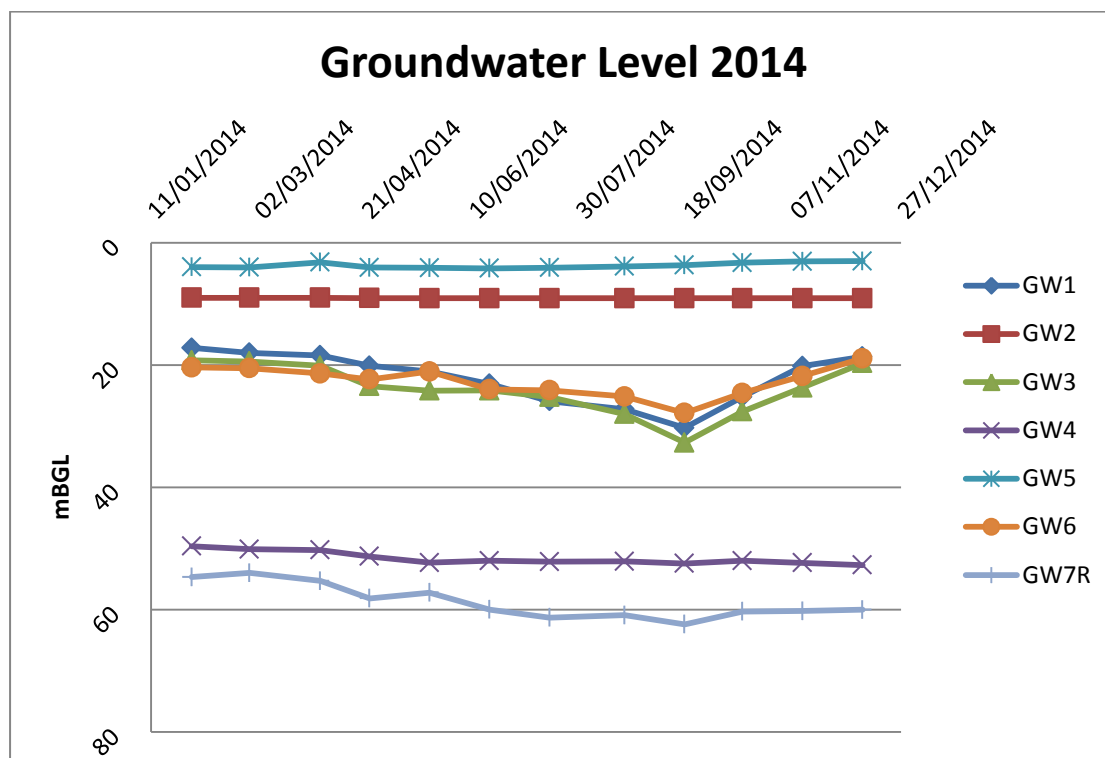


APPENDIX 2

APPENDIX 2 - GROUNDWATER**Table 1: Groundwater Levels**

Location	Data	Dip Level (mBGL)	GW Level (mAOD)
GW 1	Minimum	17.21	93.80
	Maximum	30.28	106.87
	Average	22.12	101.96
GW 2	Minimum	9.00	114.98
	Maximum	9.10	115.08
	Average	9.07	115.01
GW 3	Minimum	19.25	80.73
	Maximum	32.69	94.17
	Average	23.96	89.46
GW 4R	Minimum	49.61	-
	Maximum	52.69	-
	Average	51.61	-
GW 5	Minimum	3.01	130.67
	Maximum	4.19	131.85
	Average	3.72	131.14
GW 6	Minimum	18.93	95.73
	Maximum	27.84	104.64
	Average	22.68	100.90
GW 7R	Minimum	53.98	-
	Maximum	62.39	-
	Average	58.69	-

APPENDIX 2 - GROUNDWATER



APPENDIX 2 - GROUNDWATER**Table 2 – Quarterly monitoring data, Q1**

Parameter	Units	GW1	GW3	GW5	GW6
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	85	295	370	55
Ammoniacal Nitrogen as N	mg/l	<0.2	1.07	3.24	58.1
BOD, unfiltered	mg/l	3.75	<1	8.61	5.69
COD, unfiltered	mg/l	148	28.5	83.4	323
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05
Nitrate as NO ₃	mg/l	2.23	3.43	0.0453	183
Nitrite as NO ₂	mg/l	<0.03	1.14	0.136	2.74
pH	pH	6.4	8.12	7.72	7.12
Total Oxidised Nitrogen as N	mg/l	0.503	1.12	0.0516	42.1
Filtered (Dissolved) Metals					
Arsenic (diss.filt)	mg/l	0.00037	0.000312	0.000579	0.00341
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	<0.0001	0.00295
Copper (diss.filt)	mg/l	<0.00085	0.00104	<0.00085	0.00694
Iron (diss.filt)	mg/l	<0.019	<0.019	0.458	0.131
Lead (diss.filt)	mg/l	0.000049	0.000029	<0.00002	0.00158
Magnesium (diss.filt)	mg/l	26.7	33	67.5	25.8
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.0016	0.00188	0.00409	0.114
Potassium (diss.filt)	mg/l	9.84	11.3	150	41.9
Sodium (diss.filt)	mg/l	28	63.7	356	251
Zinc (diss.filt)	mg/l	0.0165	0.00536	0.0073	0.127
Phenols					
Phenols, Total Detected 5 speciated	mg/l	<0.025	<0.025	<0.025	<0.025

APPENDIX 2 - GROUNDWATER

Parameter	Units	GW1	GW3	GW5	GW6
Combined Pesticides / Herbicides					
Aldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.001	<0.001	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Diazinon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Disulfoton	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor epoxide	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Methyl parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Propetamphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Quintozone (PCNB)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.001	<0.001	<0.001	<0.001
Tecnazene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001

APPENDIX 2 - GROUNDWATER**Table 3 - Quarterly monitoring data, Q2**

Parameter	Units	GW1	GW3	GW5	GW6
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	60	315	375	400
Ammoniacal Nitrogen as N	mg/l	<0.2	1.36	5.45	111
Chloride	mg/l	45.7	43.3	11.2	627
COD, unfiltered	mg/l	65	16.2	139	282
Conductivity @ 20 deg.C	mS/cm	0.615	0.871	0.552	3.62
pH	pH	6.05	7.34	6.74	6.76
Total Oxidised Nitrogen as N	mg/l	0.57	0.139	0.0189	86.4
Filtered (Dissolved) Metals					
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	<0.0001	0.0024
Calcium (diss.filt)	mg/l	52.9	88	91.7	74.2
Chromium (diss.filt)	mg/l	0.000331	<0.00022	<0.00022	0.000569
Copper (diss.filt)	mg/l	0.00116	0.00135	<0.00085	0.0216
Iron (diss.filt)	mg/l	<0.019	<0.019	15.3	0.0959
Lead (diss.filt)	mg/l	<0.00002	0.000026	<0.00002	0.00044
Magnesium (diss.filt)	mg/l	25.8	32.3	13	45.7
Manganese (diss.filt)	mg/l	0.454	0.165	4.53	6
Nickel (diss.filt)	mg/l	0.00156	0.00224	0.00219	0.101
Potassium (diss.filt)	mg/l	9.69	14.4	10.1	82.9
Sodium (diss.filt)	mg/l	28.6	68.1	17.9	>400
Zinc (diss.filt)	mg/l	0.013	0.00696	0.00227	0.0629
TPH Criteria Working Group (TPH CWG)					
Sum of detected Xylenes	mg/l	<0.011	<0.011	<0.011	<0.011
Toluene	mg/l	<0.004	<0.004	<0.004	<0.004

APPENDIX 2 - GROUNDWATER**Table 4 - Quarterly monitoring data, Q3**

Parameter	Units	GW1	GW3	GW5	GW6
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	55	225	400	350
Ammoniacal Nitrogen as N	mg/l	<0.2	1.47	6.28	111
Chloride	mg/l	48	36.1	15.2	642
COD, unfiltered	mg/l	114	39.1	269	578
Conductivity @ 20 deg.C	mS/cm	0.611	0.744	0.65	3.61
pH	pH	6.68	7.79	7.25	6.86
Total Oxidised Nitrogen as N	mg/l	0.596	0.0585	0.0164	98.2
Filtered (Dissolved) Metals					
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	<0.0001	0.00217
Calcium (diss.filt)	mg/l	52.5	82.2	102	74.3
Chromium (diss.filt)	mg/l	0.000847	0.00138	0.000444	0.00547
Copper (diss.filt)	mg/l	0.00122	0.000997	<0.00085	0.0208
Iron (diss.filt)	mg/l	<0.019	<0.019	60.7	0.0844
Lead (diss.filt)	mg/l	<0.00002	<0.00002	0.000062	0.000312
Magnesium (diss.filt)	mg/l	25.4	31.9	15.3	42.9
Manganese (diss.filt)	mg/l	0.335	0.13	4.14	6.86
Nickel (diss.filt)	mg/l	0.00208	0.0026	0.00448	0.0882
Potassium (diss.filt)	mg/l	9.94	13.4	10.5	78.3
Sodium (diss.filt)	mg/l	27.7	24.6	20.2	440
Zinc (diss.filt)	mg/l	0.0132	0.00365	0.00734	0.042
TPH Criteria Working Group (TPH CWG)					
Sum of detected Xylenes	mg/l	<0.011	<0.011	<0.011	<0.011
Toluene	mg/l	<0.004	<0.004	<0.004	<0.004

APPENDIX 2 - GROUNDWATER**Table 5 – Annual monitoring data, Q4**

Parameter	Units	GW1	GW3	GW5	GW6
Carbon					
Organic Carbon, Total	mg/l	24.5	<3	48.7	60.7
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	50.6	238	386	108
Ammoniacal Nitrogen as N	mg/l	<0.2	1.76	4.98	82.9
Chloride	mg/l	49.1	28.6	14.8	567
COD, unfiltered	mg/l	19.9	14.4	218	316
Conductivity @ 20 deg.C	mS/cm	0.596	0.743	0.663	3.23
Cyanide, Free	mg/l	<0.05	<0.05	<0.05	<0.05
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05
Oxygen, dissolved	mg/l	5.31	5.29	0.37	4.55
pH	-	6.39	7.52	6.7	5.86
Sulphate	mg/l	224	166	40.1	374
Total Oxidised Nitrogen as N	mg/l	0.62	0.0469	0.0124	>106
Filtered (Dissolved) Metals					
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	<0.0001	0.00466
Calcium (diss.filt)	mg/l	53.5	88.6	86.7	72.4
Chromium (diss.filt)	mg/l	0.0012	<0.00022	<0.00022	<0.00022
Copper (diss.filt)	mg/l	<0.00085	0.00267	0.00108	0.0123
Iron (diss.filt)	mg/l	<0.019	<0.019	28.9	0.0778
Lead (diss.filt)	mg/l	<0.00002	0.000059	<0.00002	0.00121
Magnesium (diss.filt)	mg/l	25.9	32.2	13.3	42.2
Manganese (diss.filt)	mg/l	0.682	0.154	4.41	9.27
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.00175	0.00174	0.00556	0.135
Potassium (diss.filt)	mg/l	9.85	16	8.54	60.4
Sodium (diss.filt)	mg/l	27.4	23.5	18.4	381
Zinc (diss.filt)	mg/l	0.00856	0.00445	0.000881	0.137
Mineral Oil / Oils & Greases					
Mineral oil >C10 C40 (aq)	mg/l	<0.01	<0.01	<0.01	-
TPH Criteria Working Group (TPH CWG)					
Sum of detected Xylenes	mg/l	<0.011	<0.011	<0.011	<0.011
Toluene	mg/l	<0.004	<0.004	<0.004	<0.004
Semi-Volatile Organic Compounds (SVOCs)					
1,2,4-Trichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4,5-Trichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4,6-Trichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4-Dichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4-Dimethylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4-Dinitrotoluene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,6-Dinitrotoluene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Chloronaphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001

APPENDIX 2 - GROUNDWATER

2-Chlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Methylnaphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Nitrophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
3-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Bromophenylphenylether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Chloro-3-methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Chloroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Chlorophenylphenylether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Nitrophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Acenaphthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Acenaphthylene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Anthracene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Azobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(a)pyrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(b)fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(k)fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
bis(2-Chloroethoxy)methane (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
bis(2-Chloroethyl)ether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
bis(2-Ethylhexyl) phthalate (aq)	mg/l	<0.002	<0.002	<0.002	<0.002
Butylbenzyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Carbazole (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Chrysene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Dibenzofuran (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Diethyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Dimethyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Fluorene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachlorocyclopentadiene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachloroethane (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-cd)pyrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Isophorone (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Naphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
n-Dibutyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
n-Dioctyl phthalate (aq)	mg/l	<0.005	<0.005	<0.005	<0.005
Nitrobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
n-Nitroso-n-dipropylamine (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Pentachlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Phenanthrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001

APPENDIX 2 - GROUNDWATER

Phenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Pyrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Volatile Organic Compounds (VOCs)					
1,1,1,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1,1-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1,2,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1,2-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
1,1-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,4-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,4-Trimethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dibromo-3-chloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dibromoethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,3,5-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,3-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
2,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
2-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001
4-Bromofluorobenzene**	%	99.2	98.7	99.6	95.9
4-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001
4-iso-Propyltoluene	mg/l	<0.001	<0.001	<0.001	<0.001
Benzene	mg/l	<0.001	<0.001	<0.001	<0.001
Bromobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Bromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Bromoform	mg/l	<0.001	<0.001	<0.001	<0.001
Bromomethane	mg/l	<0.001	<0.001	<0.001	<0.001
Carbon disulphide	mg/l	<0.001	<0.001	<0.001	<0.001
Carbontetrachloride	mg/l	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Chloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
Chloroform	mg/l	<0.001	<0.001	<0.001	<0.001
Chloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
cis-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001
Dibromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Dibromofluoromethane**	%	111	109	108	107
Dibromomethane	mg/l	<0.001	<0.001	<0.001	<0.001
Dichlorodifluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001

APPENDIX 2 - GROUNDWATER

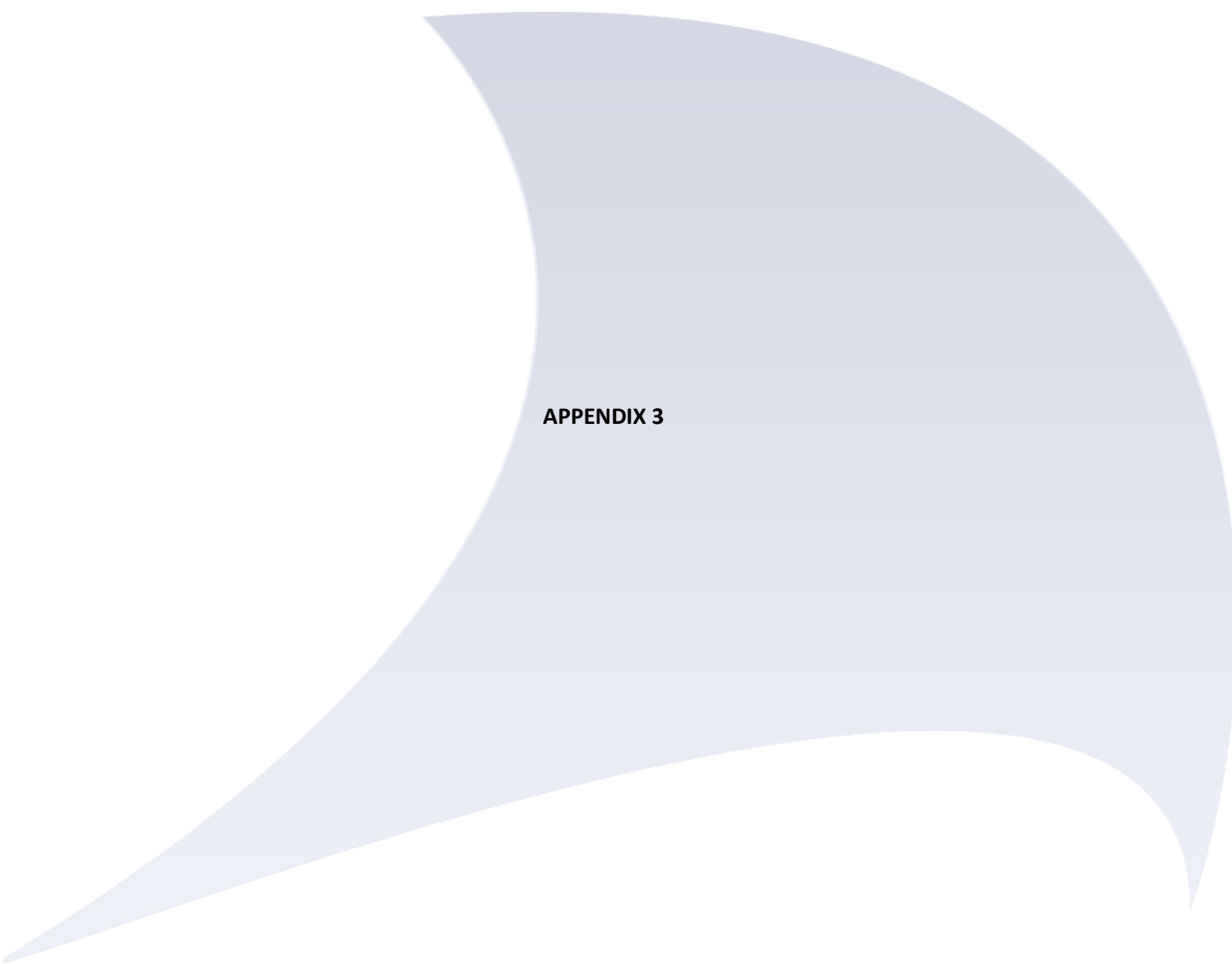
Dichloromethane	mg/l	<0.003	<0.003	<0.003	<0.003
Ethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene	mg/l	<0.001	<0.001	<0.001	<0.001
Isopropylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
m,p-Xylene	mg/l	<0.001	<0.001	<0.001	<0.001
Methyl tertiary butyl ether (MTBE)	mg/l	<0.001	<0.001	<0.001	<0.001
Naphthalene	mg/l	<0.001	<0.001	<0.001	<0.001
n-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
o-Xylene	mg/l	<0.001	<0.001	<0.001	<0.001
Propylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
sec-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Styrene	mg/l	<0.001	<0.001	<0.001	<0.001
tert-Amyl methyl ether (TAME)	mg/l	<0.001	<0.001	<0.001	<0.001
tert-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Tetrachloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
Toluene	mg/l	<0.001	<0.001	<0.001	<0.001
Toluene-d8**	%	99.8	98.9	99.7	99.7
trans-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
trans-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001
Trichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
Trichlorofluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	mg/l	<0.001	<0.001	<0.001	<0.001
Combined Pesticides / Herbicides					
Aldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH /	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.001	<0.001	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH /	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Chlorpyrifos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Diazinon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001

APPENDIX 2 - GROUNDWATER

gamma-Hexachlorocyclohexane (HCH /	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor epoxide	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Methyl parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Propetamphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Quintozone (PCNB)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.001	<0.001	<0.001	<0.001
Tecnazene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Miscellaneous Organics					
Dibutyl tin	mg/l	<0.00001	<0.000005	<0.000015	<0.00001
Surrogate	%	94.8	63	73.7	77.9
Tetrabutyl tin	mg/l	<0.000004	<0.000002	<0.000006	<0.000004
Tributyl tin	mg/l	<0.000002	<0.000001	<0.000003	<0.000002
Triphenyl tin	mg/l	<0.000002	<0.000001	<0.000003	<0.000002
Subcontracted: Organics					
2,3,6-Trichlorobenzoic acid (2,3,6-TBA)*	mg/l	-	-	<0.00002	<0.00002
2,4,5-Trichlorophenol (2,4,5-T)*	mg/l	-	-	<0.00002	<0.00002
2,4-Dichlorophenoxy acetic acid (2,4-D)*	mg/l	-	-	<0.00002	<0.00002
2-Methyl-4-chlorophenoxyacetic acid	mg/l	-	-	<0.00002	<0.00002
4-(2,4-Dichlorophenoxy) butyric acid (2,4-	mg/l	-	-	<0.00002	<0.00002
4-(4-Chloro-o-tolyloxy) butyric acid	mg/l	-	-	<0.00002	<0.00002
4-Chlorophenoxyacetic acid (4-CPA)*	mg/l	-	-	<0.00002	<0.00002
Benazolin*	mg/l	-	-	<0.00002	<0.00002

APPENDIX 2 - GROUNDWATER

Bentazone*	mg/l	-	-	<0.00002	<0.00002
Bromoxynil*	mg/l	-	-	<0.00002	<0.00002
Dicamba*	mg/l	-	-	<0.00002	<0.00002
Dichlorprop (2,4-DP)*	mg/l	-	-	<0.00002	<0.00002
Diclofop*	mg/l	-	-	<0.00002	<0.00002
Fenoprop*	mg/l	-	-	<0.00002	<0.00002
Flamprop*	mg/l	-	-	<0.00002	<0.00002
Flamprop-isopropyl*	mg/l	-	-	<0.00002	<0.00002
Ioxynil*	mg/l	-	-	<0.00002	<0.00002
Mecoprop (MCP)*	mg/l	-	-	<0.00002	0.0067
Pentachlorophenol*	mg/l	-	-	<0.00002	<0.00002
Picloram	mg/l	-	-	<0.00002	<0.00002
Triclopyr*	mg/l	-	-	<0.00002	<0.00002



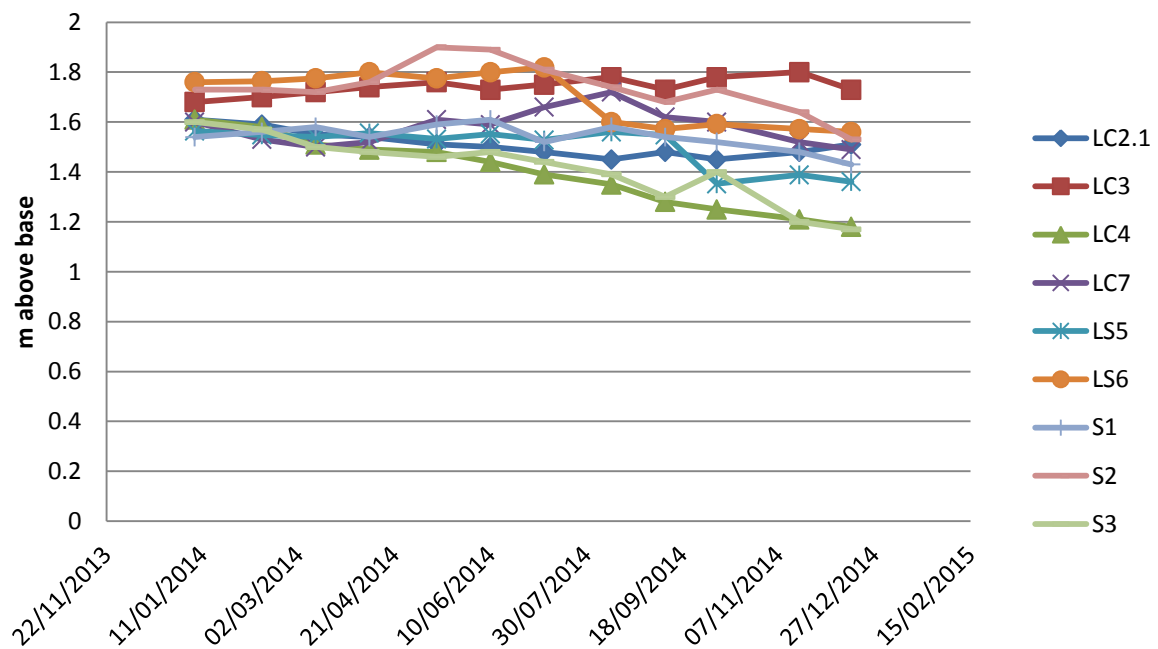
APPENDIX 3

APPENDIX 3 - LEACHATE

Table 1: Leachate Levels

Location	Leachate head (m above cell base)		
	Min	Max	Average
LC2.1	1.45	1.61	1.51
LC3	1.68	1.80	1.74
LC4	1.18	1.61	1.40
LC7	1.49	1.72	1.58
LS5	1.35	1.56	1.50
LS6	1.56	1.82	1.70
S1	1.43	1.61	1.54
S2	1.53	1.90	1.74
S3	1.17	1.60	1.42

Leachate Level 2014



APPENDIX 3 - LEACHATE

Table 2 –Leachate monitoring Data, Quarter 1

Parameter	Units	LC2	LC3	LC4	LC7
Carbon					
Organic Carbon, Total	mg/l	632	125	239	400
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	7180	3260	3800	5240
Ammoniacal Nitrogen as N	mg/l	1420	925	632	900
BOD, unfiltered	mg/l	187	155	39.1	90.6
Chloride	mg/l	1800	832	1160	1320
COD, unfiltered	mg/l	2160	1420	690	1250
pH	pH Units	8.26	8.27	8.27	7.64
Sulphate	mg/l	24.7	121	2.57	<1
Total Oxidised Nitrogen as N	mg/l	0.0334	0.0332	0.215	<0.01
Filtered (Dissolved) Metals					
Calcium (diss.filt)	mg/l	139	131	99.8	33.3
Magnesium (diss.filt)	mg/l	132	77.2	79.9	40.3
Potassium (diss.filt)	mg/l	1020	266	273	198
Sodium (diss.filt)	mg/l	2540	>400	>400	>400

Parameter	Units	S1	S2	S3
Inorganics				
Alkalinity, Total as CaCO ₃	mg/l	3760	1960	1940
Ammoniacal Nitrogen as N	mg/l	6.67	279	272
BOD, unfiltered	mg/l	122	47.9	14.6
COD, unfiltered	mg/l	1610	432	341
Cyanide, Total	mg/l	<0.05	<0.05	<0.05
Nitrate as NO ₃	mg/l	<0.2	2.94	<0.2
Nitrite as NO ₂	mg/l	<0.15	2.93	<0.15
pH	pH Units	8.2	8.03	7.93
Total Oxidised Nitrogen as N	mg/l	<0.01	1.56	0.0145
Filtered (Dissolved) Metals				
Arsenic (diss.filt)	mg/l	0.0102	0.0091	0.0129
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	<0.0001
Copper (diss.filt)	mg/l	0.00234	0.0201	0.00411
Iron (diss.filt)	mg/l	3.2	1.43	0.336
Lead (diss.filt)	mg/l	0.000632	0.00007	<0.00002
Magnesium (diss.filt)	mg/l	54	27.6	71.4
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.0551	0.0617	0.0588
Potassium (diss.filt)	mg/l	304	5.5	139
Sodium (diss.filt)	mg/l	818	47.7	368
Zinc (diss.filt)	mg/l	0.0147	0.0362	0.0352
Phenols				
Phenols, Total Detected 5 speciated	mg/l	<0.025	0.03	<0.025
Combined Pesticides / Herbicides				
Aldrin	mg/l	<0.00001	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.001	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.00001	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00001	<0.00001	<0.00001
Chlorpyrifos	mg/l	<0.00001	<0.00001	<0.00001
Chlorpyrifos methyl	mg/l	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001	<0.00001

APPENDIX 3 - LEACHATE

Parameter	Units	S1	S2	S3
Diazinon	mg/l	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.00001	<0.00001	<0.00001
Disulfoton	mg/l	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.00001	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	0.000112	0.000086	<0.00001
Heptachlor epoxide	mg/l	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.00001	<0.00001	<0.00001
Methyl parathion	mg/l	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<0.00001	<0.00001	<0.00001
o,p-DDE	mg/l	<0.00001	<0.00001	<0.00001
o,p-DDT	mg/l	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001
p,p-DDE	mg/l	<0.00001	<0.00001	<0.00001
p,p-DDT	mg/l	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00001	<0.00001	<0.00001
Propetamphos	mg/l	<0.00001	<0.00001	<0.00001
Quintozone (PCNB)	mg/l	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.001	<0.001	<0.001
Tecnazene	mg/l	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.00001	<0.00001	<0.00001

APPENDIX 3 - LEACHATE

Table 3 – Leachate monitoring data, Quarter 2

Parameter	Units	LC2	LC3	LC4	LC7
Carbon					
Organic Carbon, Total	mg/l	792	687	266	423
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	6960	5100	3860	5180
Ammoniacal Nitrogen as N	mg/l	1560	1220	632	852
BOD, unfiltered	mg/l	139	138	41.3	103
Chloride	mg/l	1740	1310	1040	1250
COD, unfiltered	mg/l	2300	1830	722	1220
pH	pH Units	7.65	7.67	7.22	7.71
Total Oxidised Nitrogen as N	mg/l	<0.01	<0.01	<0.01	<0.01
Filtered (Dissolved) Metals					
Calcium (diss.filt)	mg/l	80.4	107	113	59.8
Magnesium (diss.filt)	mg/l	91.1	88.6	79.7	80.9
Potassium (diss.filt)	mg/l	647	488	309	404
Sodium (diss.filt)	mg/l	1510	1090	821	1100

Parameter	Units	S1	S2	S3	SSR5	SSR6
Inorganics						
Alkalinity, Total as CaCO ₃	mg/l	3920	4140	2570	7100	7040
Ammoniacal Nitrogen as N	mg/l	144	683	352	1300	1330
BOD, unfiltered	mg/l	19.7	110	37	141	141
COD, unfiltered	mg/l	226	1050	598	1940	1950
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrate as NO ₃	mg/l	<0.04	<0.2	0.335	<0.4	<0.2
Nitrite as NO ₂	mg/l	7.19	<0.15	1.87	<0.3	<0.15
pH	pH	7.8	7.81	7.77	8.06	8.33
Total Oxidised Nitrogen as N	mg/l	2.19	<0.01	0.645	<0.01	<0.01
Filtered (Dissolved) Metals						
Arsenic (diss.filt)	mg/l	0.00858	0.009	0.0101	0.0311	0.00257
Cadmium (diss.filt)	mg/l	0.0012	0.00155	0.00156	<0.001	0.000309
Copper (diss.filt)	mg/l	0.0039	0.061	0.00505	0.019	0.00131
Iron (diss.filt)	mg/l	1.51	0.953	0.42	3.46	3.38
Lead (diss.filt)	mg/l	0.000103	0.000076	0.000052	0.0111	0.000778
Magnesium (diss.filt)	mg/l	62.3	89.4	82.9	70.9	71
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.0514	0.071	0.07	0.307	0.0253
Potassium (diss.filt)	mg/l	315	380	236	615	630
Sodium (diss.filt)	mg/l	784	895	523	1520	1510
Zinc (diss.filt)	mg/l	0.01	0.0284	0.0158	0.0281	0.00222
Phenols						
Phenols, Total Detected 5 speciated	mg/l	<0.025	0.07	<0.025	0.17	0.18
Combined Pesticides / Herbicides						
Aldrin	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
alpha-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Atrazine	mg/l	<0.001	<0.002	<0.001	<0.002	<0.002
Azinphos-ethyl	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Azinphos-methyl	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
beta-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Carbophenothion	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Chlorfenvinphos	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Chlorothalonil	mg/l	<0.00002	<0.00004	<0.00002	<0.00002	<0.00004
Chlorpyrifos	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Chlorpyrifos methyl	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
cis-Chlordane	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002

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Parameter	Units	S1	S2	S3	SSR5	SSR6
Diazinon	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Dichlorvos	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Dieldrin	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Dimethoate	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Disulfoton	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Endosulphan I	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Endosulphan II	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Endosulphan sulphate	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Endrin	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Ethion	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Etrimphos	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Fenitrothion	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Fenthion	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
gamma-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Heptachlor	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Heptachlor epoxide	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Hexachlorobenzene	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Isodrin	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Malathion	mg/l	<0.00001	<0.00002	0.000015	<0.00002	<0.00002
Methyl parathion	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Mevinphos	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
o,p-DDE	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
o,p-DDT	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
o,p-Methoxychlor	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
o,p-TDE (DDD)	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
p,p-DDE	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
p,p-DDT	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
p,p-Methoxychlor	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
p,p-TDE (DDD)	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Parathion	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Pendimethalin	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Permethrin I	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Permethrin II	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Phosalone	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Pirimiphos-methyl	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Propetamphos	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Quintozone (PCNB)	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Simazine	mg/l	<0.001	<0.002	<0.001	<0.002	<0.002
Tecnazene	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Telodrin	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Trans-chlordane	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Triadimefon	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Triallate	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Triazophos	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002
Trifluralin	mg/l	<0.00001	<0.00002	<0.00001	<0.00002	<0.00002

APPENDIX 3 - LEACHATE

Table 4 – Leachate monitoring data, Quarter 3

Parameter	Units	LC2	LC3	LC4	LC7
Carbon					
Organic Carbon, Total	mg/l	813	247	267	407
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	7860	4370	3970	4740
Ammoniacal Nitrogen as N	mg/l	1540	562	651	816
BOD, unfiltered	mg/l	158	50.7	31.8	73.8
Chloride	mg/l	2090	1200	1080	1250
COD, unfiltered	mg/l	2370	730	745	1100
pH	pH Units	7.91	7.93	8.19	7.93
Total Oxidised Nitrogen as N	mg/l	<0.01	<0.01	<0.01	<0.01
Filtered (Dissolved) Metals					
Calcium (diss.filt)	mg/l	53.7	98.7	91.7	38.8
Magnesium (diss.filt)	mg/l	90.8	76.8	67.7	52
Potassium (diss.filt)	mg/l	735	338	270	285
Sodium (diss.filt)	mg/l	1860	960	898	1120

APPENDIX 3 - LEACHATE**Table 5 – Leachate monitoring data, Quarter 4**

Parameter	Units	LC2	LC3	LC4	LC7
Carbon					
Organic Carbon, Total	mg/l	685	569	258	313
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	8140	5200	4120	4640
Ammoniacal Nitrogen as N	mg/l	1560	1040	716	740
BOD, unfiltered	mg/l	128	131	32.7	79.1
Chloride	mg/l	2170	1340	1140	1070
COD, unfiltered	mg/l	2250	1750	760	944
Cyanide, Free	mg/l	<0.05	<0.05	<0.05	<0.05
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05
pH	pH	7.75	8.18	7.84	7.75
Sulphate	mg/l	<2	64	1.29	1.6
Total Oxidised Nitrogen as N	mg/l	<0.01	0.248	0.467	<0.01
Filtered (Dissolved) Metals					
Cadmium (diss.filt)	mg/l	<0.001	<0.001	<0.001	<0.001
Calcium (diss.filt)	mg/l	55.1	106	101	78.9
Chromium (diss.filt)	mg/l	0.0488	0.0359	0.0154	0.0243
Copper (diss.filt)	mg/l	<0.0085	0.00914	<0.0085	0.0103
Iron (diss.filt)	mg/l	5.86	4.16	1.17	3.59
Lead (diss.filt)	mg/l	0.00433	0.00302	<0.0002	0.00296
Magnesium (diss.filt)	mg/l	94.2	80.9	78.1	96.7
Manganese (diss.filt)	mg/l	0.2	0.246	0.232	0.246
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.486	0.252	0.142	0.21
Potassium (diss.filt)	mg/l	738	526	352	433
Sodium (diss.filt)	mg/l	1910	1180	966	1100
Zinc (diss.filt)	mg/l	<0.0041	<0.0041	<0.0041	<0.0041
Mineral Oil / Oils & Greases					
Mineral oil >C10 C40 (aq)	mg/l	0.0284	0.129	<0.01	0.0296
Semi-Volatile Organic Compounds (SVOCs)					
1,2,4-Trichlorobenzene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
1,2-Dichlorobenzene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
1,3-Dichlorobenzene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
1,4-Dichlorobenzene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2,4,5-Trichlorophenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2,4,6-Trichlorophenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2,4-Dichlorophenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2,4-Dimethylphenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2,4-Dinitrotoluene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2,6-Dinitrotoluene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2-Chloronaphthalene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2-Chlorophenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2-Methylnaphthalene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2-Methylphenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
2-Nitroaniline (aq)	mg/l	<0.005	<0.005	<0.001	<0.001

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2-Nitrophenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
3-Nitroaniline (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
4-Bromophenylphenylether (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
4-Chloro-3-methylphenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
4-Chloroaniline (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
4-Chlorophenylphenylether (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
4-Methylphenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
4-Nitroaniline (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
4-Nitrophenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Acenaphthene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Acenaphthylene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Anthracene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Azobenzene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Benzo(a)anthracene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Benzo(a)pyrene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Benzo(b)fluoranthene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Benzo(g,h,i)perylene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Benzo(k)fluoranthene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
bis(2-Chloroethoxy)methane (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
bis(2-Chloroethyl)ether (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
bis(2-Ethylhexyl) phthalate (aq)	mg/l	<0.01	<0.01	<0.002	<0.002
Butylbenzyl phthalate (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Carbazole (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Chrysene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Dibenzo(a,h)anthracene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Dibenzofuran (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Diethyl phthalate (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Dimethyl phthalate (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Fluoranthene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Fluorene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Hexachlorobenzene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Hexachlorobutadiene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Hexachlorocyclopentadiene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Hexachloroethane (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Indeno(1,2,3-cd)pyrene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Isophorone (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Naphthalene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
n-Dibutyl phthalate (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
n-Dioctyl phthalate (aq)	mg/l	<0.025	<0.025	<0.005	<0.005
Nitrobenzene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
n-Nitroso-n-dipropylamine (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Pentachlorophenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Phenanthrene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Phenol (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Pyrene (aq)	mg/l	<0.005	<0.005	<0.001	<0.001
Volatile Organic Compounds (VOCs)					
1,1,1,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1,1-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001

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1,1,2,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1,2-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
1,1-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,4-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,4-Trimethylbenzene	mg/l	0.0192	<0.001	<0.001	0.00665
1,2-Dibromo-3-chloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dibromoethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,3,5-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	mg/l	0.00392	<0.001	<0.001	0.00177
1,3-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,3-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
2,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
2-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001
4-Bromofluorobenzene**	%	99.1	96.1	97	98.4
4-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001
4-iso-Propyltoluene	mg/l	0.00731	<0.001	<0.001	<0.001
Benzene	mg/l	0.00484	<0.001	0.00251	0.00292
Bromobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Bromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Bromoform	mg/l	<0.001	<0.001	<0.001	<0.001
Bromomethane	mg/l	<0.001	<0.001	<0.001	<0.001
Carbon disulphide	mg/l	<0.001	<0.001	<0.001	<0.001
Carbontetrachloride	mg/l	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	mg/l	0.0106	<0.001	<0.001	0.00418
Chloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
Chloroform	mg/l	<0.001	<0.001	<0.001	<0.001
Chloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
cis-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001
Dibromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Dibromofluoromethane**	%	106	106	107	101
Dibromomethane	mg/l	<0.001	<0.001	<0.001	<0.001
Dichlorodifluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Dichloromethane	mg/l	<0.003	<0.003	<0.003	<0.003
Ethylbenzene	mg/l	0.0195	<0.001	<0.001	0.00839
Hexachlorobutadiene	mg/l	<0.001	<0.001	<0.001	<0.001
Isopropylbenzene	mg/l	0.00453	<0.001	<0.001	<0.001
m,p-Xylene	mg/l	0.0361	<0.001	<0.001	0.017
Methyl tertiary butyl ether (MTBE)	mg/l	<0.001	<0.001	<0.001	<0.001

APPENDIX 3 - LEACHATE

Naphthalene	mg/l	0.0161	<0.001	<0.001	0.00464
n-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
o-Xylene	mg/l	0.0136	0.002	<0.001	0.00663
Propylbenzene	mg/l	0.00155	<0.001	<0.001	<0.001
sec-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Styrene	mg/l	<0.001	<0.001	<0.001	<0.001
tert-Amyl methyl ether (TAME)	mg/l	<0.001	<0.001	<0.001	<0.001
tert-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Tetrachloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
Toluene	mg/l	0.0104	<0.001	<0.001	0.00304
Toluene-d8**	%	99.4	99	99.9	100
trans-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
trans-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001
Trichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
Trichlorofluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	mg/l	<0.001	<0.001	<0.001	<0.001
Combined Pesticides / Herbicides					
Aldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH /	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.001	<0.001	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH /	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00005	<0.00005	<0.00005	<0.00005
Chlorpyrifos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Diazinon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (HCH	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	0.000307	<0.00001	0.00022	0.000136
Heptachlor epoxide	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Methyl parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001

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Mevinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00001	0.00018	<0.00001	<0.00001
Propetamphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Quintozene (PCNB)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.001	<0.001	<0.001	<0.001
Tecnazene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Miscellaneous Organics					
Dibutyl tin	mg/l	<0.00015	<0.00015	<0.00003	0.000034
Surrogate	%	85.7	83	76.4	75.9
Tetrabutyl tin	mg/l	<0.00006	<0.00006	<0.000012	<0.000012
Tributyl tin	mg/l	<0.00003	<0.00003	<0.000006	<0.000006
Triphenyl tin	mg/l	<0.00003	<0.00003	<0.000006	<0.000006
Subcontracted: Organics					
2,3,6-Trichlorobenzoic acid (2,3,6-	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
2,4,5-Trichlorophenol (2,4,5-T)*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
2,4-Dichlorophenoxy acetic acid (2,4-	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
2-Methyl-4-chlorophenoxyacetic acid	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
4-(2,4-Dichlorophenoxy) butyric acid	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
4-(4-Chloro-o-tolyloxy) butyric acid	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
4-Chlorophenoxyacetic acid (4-CPA)*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Benazolin*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Bentazone*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Bromoxynil*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Dicamba*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Dichlorprop (2,4-DP)*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Diclofop*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Fenoprop*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Flamprop*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Flamprop-isopropyl*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002

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Ioxynil*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Mecoprop (MCP)*	mg/l	0.0273	0.0379	0.0276	0.0261
Pentachlorophenol*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Picloram	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Triclopyr*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002

Parameter	Units	S1	S2	S3	SSR5	SSR6
Carbon						
Organic Carbon, Total	mg/l	18.9	221	286	474	480
Inorganics						
Alkalinity, Total as CaCO3	mg/l	1460	3460	3500	5820	5860
Ammoniacal Nitrogen as N	mg/l	85.1	403	748	1050	1040
BOD, unfiltered	mg/l	14.8	60.3	66	94.2	111
Chloride	mg/l	347	893	908	1420	1440
COD, unfiltered	mg/l	66.3	587	850	1450	1530
Cyanide, Free	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05
pH	pH	8.03	7.72	7.54	7.86	7.91
Sulphate	mg/l	575	361	138	162	162
Total Oxidised Nitrogen as N	mg/l	0.0437	<0.01	<0.01	<0.01	0.105
Filtered (Dissolved) Metals						
Cadmium (diss.filt)	mg/l	<0.0001	<0.001	<0.001	<0.001	<0.001
Calcium (diss.filt)	mg/l	232	195	128	105	114
Chromium (diss.filt)	mg/l	0.032	0.0204	0.0166	0.0454	0.0419
Copper (diss.filt)	mg/l	0.00645	0.0274	<0.0085	0.00936	0.0107
Iron (diss.filt)	mg/l	0.478	1.64	1.01	2.84	3.07
Lead (diss.filt)	mg/l	0.000299	0.00105	<0.0002	0.00855	0.00877
Magnesium (diss.filt)	mg/l	47.2	69.5	72.7	73.3	78.9
Manganese (diss.filt)	mg/l	0.313	0.285	0.84	0.231	0.206
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.0603	0.191	0.18	0.313	0.29
Potassium (diss.filt)	mg/l	107	309	277	549	596
Sodium (diss.filt)	mg/l	267	846	774	1330	1440
Zinc (diss.filt)	mg/l	0.0243	<0.0041	<0.0041	<0.0041	<0.0041
Mineral Oil / Oils & Greases						
Mineral oil >C10 C40 (aq)	mg/l	<0.01	<0.01	<0.01	0.0493	0.0737
Semi-Volatile Organic Compounds (SVOCs)						
1,2,4-Trichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
1,2-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
1,3-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
1,4-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2,4,5-Trichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2,4,6-Trichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2,4-Dichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2,4-Dimethylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2,4-Dinitrotoluene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2,6-Dinitrotoluene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2-Chloronaphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005

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2-Chlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2-Methylnaphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2-Methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
2-Nitrophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
3-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
4-Bromophenylphenylether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
4-Chloro-3-methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
4-Chloroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
4-Chlorophenylphenylether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
4-Methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
4-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
4-Nitrophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Acenaphthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Acenaphthylene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Anthracene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Azobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Benzo(a)anthracene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Benzo(a)pyrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Benzo(b)fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Benzo(g,h,i)perylene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Benzo(k)fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
bis(2-Chloroethoxy)methane (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
bis(2-Chloroethyl)ether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
bis(2-Ethylhexyl) phthalate (aq)	mg/l	<0.002	<0.002	<0.002	0.0103	<0.01
Butylbenzyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Carbazole (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Chrysene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Dibenzo(a,h)anthracene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Dibenzofuran (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Diethyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Dimethyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Fluorene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Hexachlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Hexachlorobutadiene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Hexachlorocyclopentadiene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Hexachloroethane (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Indeno(1,2,3-cd)pyrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Isophorone (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Naphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
n-Dibutyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
n-Dioctyl phthalate (aq)	mg/l	<0.005	<0.005	<0.005	<0.005	<0.025
Nitrobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
n-Nitroso-n-dipropylamine (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Pentachlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Phenanthrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Phenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005

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Pyrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.005
Volatile Organic Compounds (VOCs)						
1,1,1,2-Tetrachloroethane	mg/l	<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
1,1,2,2-Tetrachloroethane	mg/l	<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
1,1-Dichloroethane	mg/l	<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
1,1-Dichloropropene	mg/l	<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
1,2,3-Trichloropropane	mg/l	<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
1,2,4-Trimethylbenzene	mg/l	<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
1,2-Dibromoethane	mg/l	<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
1,2-Dichloroethane	mg/l	<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
1,3,5-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	mg/l	<0.001	<0.001	0.00207	0.0021	0.00224
1,3-Dichlorobenzene	mg/l	<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
1,4-Dichlorobenzene	mg/l	<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
2-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
4-Bromofluorobenzene**	%	99.6	98.4	97.3	97.4	97.7
4-Chlorotoluene	mg/l	<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
Benzene	mg/l	<0.001	<0.001	0.00148	0.00148	0.00164
Bromobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Bromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Bromoform	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Bromomethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Carbon disulphide	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Carbontetrachloride	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Chloroethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Chloroform	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Chloromethane	mg/l	<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
cis-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromofluoromethane**	%	107	108	107	118	109
Dibromomethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Dichlorodifluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Dichloromethane	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003
Ethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001

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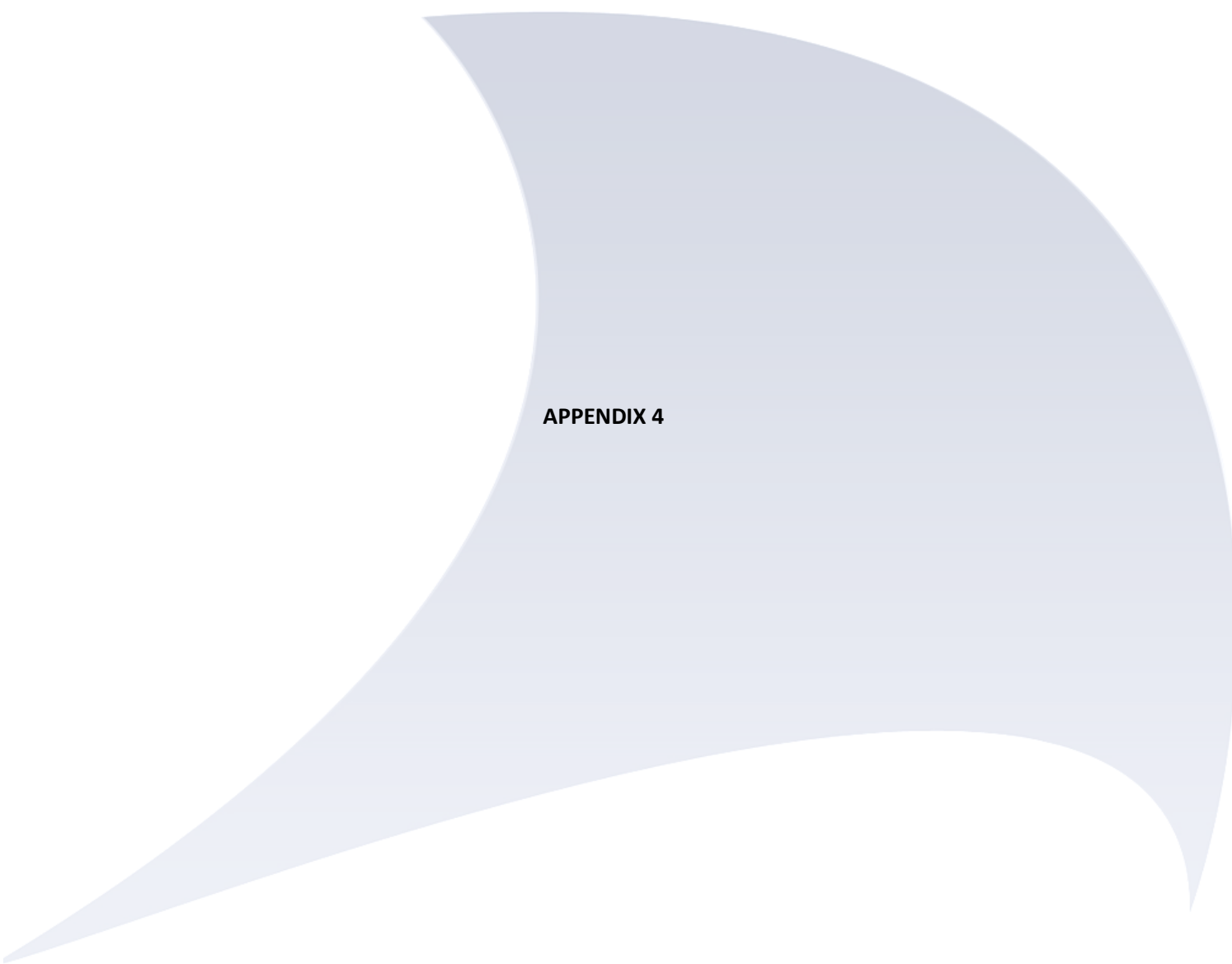
Hexachlorobutadiene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Isopropylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
m,p-Xylene	mg/l	0.00202	<0.001	0.00127	<0.001	<0.001
Methyl tertiary butyl ether (MTBE)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Naphthalene	mg/l	<0.001	<0.001	0.00225	<0.001	<0.001
n-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
o-Xylene	mg/l	0.00259	0.00194	0.0074	0.00807	0.00895
Propylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
sec-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Styrene	mg/l	<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
tert-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrachloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	mg/l	<0.001	<0.001	<0.001	0.00147	0.00185
Toluene-d8**	%	101	101	99.5	99.9	100
trans-1,2-Dichloroethene	mg/l	<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
Trichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Trichlorofluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	mg/l	<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
alpha-Hexachlorocyclohexane (HCH /	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH /	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00005	<0.00005	<0.00001	<0.00005	<0.00001
Chlorpyrifos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Diazinon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (HCH	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	<0.00001	0.000127	0.000091	0.00008	<0.00001
Heptachlor epoxide	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001

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Hexachlorobenzene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Methyl parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<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
o,p-DDT	mg/l	<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
o,p-TDE (DDD)	mg/l	<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
p,p-DDT	mg/l	<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
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Propetamphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Quintozone (PCNB)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Tecnazene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Miscellaneous Organics						
Dibutyl tin	mg/l	<0.000005	<0.00003	<0.00003	<0.00003	<0.000005
Surrogate	%	74.6	87.4	82.6	76.8	75.1
Tetrabutyl tin	mg/l	<0.000002	<0.000012	<0.000012	<0.000012	<0.000002
Tributyl tin	mg/l	<0.000001	<0.000006	<0.000006	<0.000006	<0.000001
Triphenyl tin	mg/l	<0.000001	<0.000006	<0.000006	<0.000006	<0.000001
Subcontracted: Organics						
2,3,6-Trichlorobenzoic acid (2,3,6-	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
2,4,5-Trichlorophenol (2,4,5-T)*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
2,4-Dichlorophenoxy acetic acid (2,4-	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
2-Methyl-4-chlorophenoxyacetic acid	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
4-(2,4-Dichlorophenoxy) butyric acid	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
4-(4-Chloro-o-tolyloxy) butyric acid	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
4-Chlorophenoxyacetic acid (4-CPA)*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Benazolin*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Bentazone*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Bromoxynil*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Dicamba*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Dichlorprop (2,4-DP)*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002

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Diclofop*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Fenoprop*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Flamprop*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Flamprop-isopropyl*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Ioxynil*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Mecoprop (MCP)*	mg/l	-	0.0354	0.0387	0.0831	0.0609
Pentachlorophenol*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Picloram	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002
Triclopyr*	mg/l	-	<0.00002	<0.00002	<0.00002	<0.00002



APPENDIX 4

APPENDIX 4 – SURFACE WATER

Table 1: Weekly Surface Water Quality

Location	Data	Ammoniacal Nitrogen (mg/l)	Chloride (mg/l)	COD (mg/l)	Conductivity (mS/cm)	pH (pH Units)
SW1	Min	<0.2	13	13	0.5	7.2
	Max	2.2	112	2550	0.9	8.4
	Average	0.6	47	525	0.7	7.8
	Count	25	23	25	22	25
SW2	Min	<0.2	29	12	0.5	7.4
	Max	0.6	147	126	1.0	8.3
	Average	0.3	69	46	0.7	7.9
	Count	25	23	25	22	25
SW4	Min	<0.2	29	10	0.4	7.7
	Max	0.3	141	69	1.1	8.3
	Average	0.2	67	27	0.7	8.0
	Count	25	23	25	22	25
SW5	Min	<0.2	29	19	0.4	7.0
	Max	0.7	79	319	0.7	8.4
	Average	0.3	50	51	0.6	7.8
	Count	25	23	25	22	25

APPENDIX 4 – SURFACE WATER

Table 2 – Quarterly monitoring data, Q1

Parameter	Units	SW1	SW2	SW4	SW5
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	260	195	175	150
Ammoniacal Nitrogen as N	mg/l	<0.2	<0.2	<0.2	<0.2
BOD, unfiltered	mg/l	17.8	3.47	3.32	8.7
COD, unfiltered	mg/l	498	24.2	29.5	36.7
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05
Nitrate as NO ₃	mg/l	8.74	0.566	8.14	23.1
Nitrite as NO ₂	mg/l	<0.03	<0.03	0.201	1.22
pH	pH Units	7.99	8.21	8.07	8.04
Total Oxidised Nitrogen as N	mg/l	1.97	0.128	1.9	5.59
Filtered (Dissolved) Metals					
Arsenic (diss.filt)	mg/l	0.00105	0.000606	0.00106	0.00122
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	<0.0001	<0.0001
Copper (diss.filt)	mg/l	0.00175	0.00189	0.00312	0.00252
Iron (diss.filt)	mg/l	0.0197	0.0317	0.0373	0.0329
Lead (diss.filt)	mg/l	0.000248	0.000112	0.00026	0.000169
Magnesium (diss.filt)	mg/l	18.8	15.2	15.4	23.5
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.00464	0.0052	0.00484	0.00567
Potassium (diss.filt)	mg/l	8.87	8.23	10.4	12.5
Sodium (diss.filt)	mg/l	39.4	68.4	61.5	50.7
Zinc (diss.filt)	mg/l	0.00277	0.00188	0.0111	0.0135
Phenols					
Phenols, Total Detected 5 speciated	mg/l	<0.025	<0.025	<0.025	<0.025
Combined Pesticides / Herbicides					
Aldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.001	<0.001	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001

APPENDIX 4 – SURFACE WATER

Parameter	Units	SW1	SW2	SW4	SW5
Diazinon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Disulfoton	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor epoxide	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Methyl parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Propetamphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Quintozone (PCNB)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.001	<0.001	<0.001	<0.001
Tecnazene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001

APPENDIX 4 – SURFACE WATER**Table 3 - Quarterly monitoring data, Q2**

Parameter	Units	SW1	SW2	SW4	SW5
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	330	220	130	235
Ammoniacal Nitrogen as N	mg/l	1.01	0.585	0.222	0.293
BOD, unfiltered	mg/l	10.1	2.38	2.73	2.05
COD, unfiltered	mg/l	406	44.2	46.4	50.4
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05
Nitrate as NO ₃	mg/l	7.13	0.832	5.25	0.104
Nitrite as NO ₂	mg/l	<0.03	0.525	<0.03	0.209
pH	pH Units	8.03	7.85	7.87	7.95
Total Oxidised Nitrogen as N	mg/l	1.61	0.347	1.19	0.0872
Filtered (Dissolved) Metals					
Arsenic (diss.filt)	mg/l	0.00215	0.00123	0.00157	0.00272
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	0.000106	<0.0001
Copper (diss.filt)	mg/l	0.00368	0.00101	0.00236	0.000938
Iron (diss.filt)	mg/l	<0.019	0.066	0.0405	0.169
Lead (diss.filt)	mg/l	0.000092	<0.00002	0.00014	0.000285
Magnesium (diss.filt)	mg/l	18.6	12.3	7.45	19.8
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.00846	0.00485	0.00341	0.00417
Potassium (diss.filt)	mg/l	9.28	7.55	6.52	8.88
Sodium (diss.filt)	mg/l	29.1	26.7	26.4	33
Zinc (diss.filt)	mg/l	0.00253	0.00326	0.0114	0.00324
Phenols					
Phenols, Total Detected 5 speciated	mg/l	<0.025	<0.025	<0.025	<0.025
Combined Pesticides / Herbicides					
Aldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.001	<0.001	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Chlorpyrifos methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001

APPENDIX 4 – SURFACE WATER

Parameter	Units	SW1	SW2	SW4	SW5
Diazinon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Disulfoton	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenitrothion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Heptachlor epoxide	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Methyl parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDE	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-DDT	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Propetamphos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Quintozone (PCNB)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.001	<0.001	<0.001	<0.001
Tecnazene	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.00001	<0.00001	<0.00001	<0.00001

APPENDIX 4 – SURFACE WATER**Table 4 - Quarterly monitoring data, Q3**

Parameter	Units	SW1	SW2	SW4	SW5
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	295	255	60	215
Ammoniacal Nitrogen as N	mg/l	0.726	0.302	0.239	0.57
BOD, unfiltered	mg/l	12.2	7.08	2.12	2.82
COD, unfiltered	mg/l	384	126	29.6	51
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05
Nitrate as NO ₃	mg/l	4.94	0.0793	3.98	0.1
Nitrite as NO ₂	mg/l	<0.03	0.0829	0.58	0.0852
pH	pH Units	7.94	7.94	7.71	8.12
Total Oxidised Nitrogen as N	mg/l	1.12	0.0431	1.08	0.0486
Filtered (Dissolved) Metals					
Arsenic (diss.filt)	mg/l	0.00162	0.00195	0.00157	0.0024
Cadmium (diss.filt)	mg/l	<0.0001	0.000139	0.000218	<0.0001
Copper (diss.filt)	mg/l	0.00144	0.00142	0.0125	<0.00085
Iron (diss.filt)	mg/l	0.0396	0.0478	0.0315	0.224
Lead (diss.filt)	mg/l	0.000112	0.000242	0.000174	0.000384
Magnesium (diss.filt)	mg/l	21.3	17.2	3.97	17.5
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.00601	0.00484	0.0316	0.004
Potassium (diss.filt)	mg/l	12.1	11.2	5.25	8.94
Sodium (diss.filt)	mg/l	35.1	36.7	20.6	30.5
Zinc (diss.filt)	mg/l	0.00131	0.0014	0.0287	0.0015
Phenols					
Phenols, Total Detected 5 speciated	mg/l	<0.025	<0.025	<0.025	<0.025
Combined Pesticides / Herbicides					
Aldrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.01	<0.001	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Chlorpyrifos	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
Chlorpyrifos methyl	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
cis-Chlordane	mg/l	<0.0001	<0.00001	<0.00001	<0.00001

APPENDIX 4 – SURFACE WATER

Parameter	Units	SW1	SW2	SW4	SW5
Diazinon	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
Dichlorvos	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
Dieldrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
Disulfoton	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
Endosulphan I	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
Fenitrothion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
gamma-Hexachlorocyclohexane (HCH / Lindane)	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Heptachlor epoxide	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Isodrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
Methyl parathion	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
Mevinphos	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
o,p-DDE	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
o,p-DDT	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
p,p-DDE	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
p,p-DDT	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	>0.0002	<0.00001	<0.00002	<0.00001
Propetamphos	mg/l	<0.0002	<0.00001	<0.00002	<0.00001
Quintozone (PCNB)	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.01	<0.001	<0.001	<0.001
Tecnazene	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001

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Table 5 - Annual monitoring data, Q4

Parameter	Units	SW1	SW2	SW4	SW5
Carbon					
Organic Carbon, Total	mg/l	22.8	6.67	6.65	14
Inorganics					
Alkalinity, Total as CaCO ₃	mg/l	295	210	175	120
Ammoniacal Nitrogen as N	mg/l	1.92	0.247	0.218	<0.2
BOD, unfiltered	mg/l	63	3.04	<1	2.29
Chloride	mg/l	112	103	84.7	57.5
COD, unfiltered	mg/l	1030	52	14	80.2
Cyanide, Free	mg/l	<0.05	<0.05	<0.05	<0.05
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05
pH	pH Units	7.2	7.42	7.85	7.49
Sulphate	mg/l	97.2	181	155	84.9
Total Oxidised Nitrogen as N	mg/l	0.198	1.66	1.55	0.613
Filtered (Dissolved) Metals					
Cadmium (diss.filt)	mg/l	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (diss.filt)	mg/l	71.6	112	97.3	47.9
Chromium (diss.filt)	mg/l	0.00361	<0.00022	<0.00022	<0.00022
Copper (diss.filt)	mg/l	<0.00085	0.00459	0.00519	0.00589
Iron (diss.filt)	mg/l	0.0497	<0.019	0.0367	0.122
Lead (diss.filt)	mg/l	<0.00002	0.000109	0.000121	0.000296
Magnesium (diss.filt)	mg/l	23.6	17.2	14	14.1
Manganese (diss.filt)	mg/l	0.363	0.0657	0.0135	0.0108
Mercury (diss.filt)	mg/l	<0.00001	<0.00001	<0.00001	<0.00001
Nickel (diss.filt)	mg/l	0.00301	0.00601	0.00591	0.00457
Potassium (diss.filt)	mg/l	7.05	9.2	8.44	7.91
Sodium (diss.filt)	mg/l	64.3	59	49	32.6
Zinc (diss.filt)	mg/l	<0.00041	0.00211	0.00517	0.00107
Mineral Oil / Oils & Greases					
Mineral oil >C10 C40 (aq)	mg/l	1.52	<0.01	<0.01	<0.01
Semi-Volatile Organic Compounds (SVOCs)					
1,2,4-Trichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4,5-Trichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4,6-Trichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4-Dichlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4-Dimethylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,4-Dinitrotoluene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2,6-Dinitrotoluene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Chloronaphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Chlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Methylnaphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
2-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001

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2-Nitrophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
3-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Bromophenylphenylether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Chloro-3-methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Chloroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Chlorophenylphenylether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Methylphenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Nitroaniline (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
4-Nitrophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Acenaphthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Acenaphthylene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Anthracene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Azobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(a)pyrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(b)fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Benzo(k)fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
bis(2-Chloroethoxy)methane (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
bis(2-Chloroethyl)ether (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
bis(2-Ethylhexyl) phthalate (aq)	mg/l	0.00489	<0.002	<0.002	<0.002
Butylbenzyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Carbazole (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Chrysene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Dibenzofuran (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Diethyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Dimethyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Fluoranthene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Fluorene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachlorobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachlorocyclopentadiene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachloroethane (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-cd)pyrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Isophorone (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Naphthalene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
n-Dibutyl phthalate (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
n-Dioctyl phthalate (aq)	mg/l	<0.005	<0.005	<0.005	<0.005
Nitrobenzene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
n-Nitroso-n-dipropylamine (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Pentachlorophenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Phenanthrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Phenol (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Pyrene (aq)	mg/l	<0.001	<0.001	<0.001	<0.001
Volatile Organic Compounds (VOCs)					
1,1,1,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001

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1,1,1-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1,2,2-Tetrachloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1,2-Trichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
1,1-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,4-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2,4-Trimethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dibromo-3-chloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dibromoethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
1,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,3,5-Trichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
1,3-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
2,2-Dichloropropane	mg/l	<0.001	<0.001	<0.001	<0.001
2-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001
4-Bromofluorobenzene**	%	95.9	96.8	96.8	97.6
4-Chlorotoluene	mg/l	<0.001	<0.001	<0.001	<0.001
4-iso-Propyltoluene	mg/l	<0.001	<0.001	<0.001	<0.001
Benzene	mg/l	<0.001	<0.001	<0.001	<0.001
Bromobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Bromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Bromoform	mg/l	<0.001	<0.001	<0.001	<0.001
Bromomethane	mg/l	<0.001	<0.001	<0.001	<0.001
Carbon disulphide	mg/l	<0.001	<0.001	<0.001	<0.001
Carbontetrachloride	mg/l	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Chloroethane	mg/l	<0.001	<0.001	<0.001	<0.001
Chloroform	mg/l	<0.001	<0.001	<0.001	<0.001
Chloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
cis-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001
Dibromochloromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Dibromofluoromethane**	%	112	114	112	112
Dibromomethane	mg/l	<0.001	<0.001	<0.001	<0.001
Dichlorodifluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Dichloromethane	mg/l	<0.003	<0.003	<0.003	<0.003
Ethylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene	mg/l	<0.001	<0.001	<0.001	<0.001
Isopropylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001

APPENDIX 4 – SURFACE WATER

m,p-Xylene	mg/l	<0.001	<0.001	<0.001	<0.001
Methyl tertiary butyl ether (MTBE)	mg/l	<0.001	<0.001	<0.001	<0.001
Naphthalene	mg/l	<0.001	<0.001	<0.001	<0.001
n-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
o-Xylene	mg/l	<0.001	<0.001	<0.001	<0.001
Propylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
sec-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Styrene	mg/l	<0.001	<0.001	<0.001	<0.001
tert-Amyl methyl ether (TAME)	mg/l	<0.001	<0.001	<0.001	<0.001
tert-Butylbenzene	mg/l	<0.001	<0.001	<0.001	<0.001
Tetrachloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
Toluene	mg/l	<0.001	<0.001	<0.001	<0.001
Toluene-d8**	%	99.7	100	101	99.9
trans-1,2-Dichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
trans-1,3-Dichloropropene	mg/l	<0.001	<0.001	<0.001	<0.001
Trichloroethene	mg/l	<0.001	<0.001	<0.001	<0.001
Trichlorofluoromethane	mg/l	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	mg/l	<0.001	<0.001	<0.001	<0.001
Combined Pesticides / Herbicides					
Aldrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
alpha-Hexachlorocyclohexane (HCH /	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Atrazine	mg/l	<0.01	<0.001	<0.001	<0.001
Azinphos-ethyl	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Azinphos-methyl	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
beta-Hexachlorocyclohexane (HCH /	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Carbophenothion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Chlorfenvinphos	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Chlorothalonil	mg/l	<0.0001	<0.00005	<0.00001	<0.00001
Chlorpyrifos	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Chlorpyrifos methyl	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
cis-Chlordane	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Diazinon	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Dichlorvos	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Dieldrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Dimethoate	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Endosulphan I	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Endosulphan II	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Endosulphan sulphate	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Endrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Ethion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Etrimphos	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Fenitrothion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Fenthion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
gamma-Hexachlorocyclohexane (HCH /	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Heptachlor	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Heptachlor epoxide	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Hexachlorobenzene	mg/l	<0.0001	<0.00001	<0.00001	<0.00001

APPENDIX 4 – SURFACE WATER

Isodrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Malathion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Methyl parathion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Mevinphos	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
o,p-DDE	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
o,p-DDT	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
o,p-Methoxychlor	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
o,p-TDE (DDD)	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
p,p-DDE	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
p,p-DDT	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
p,p-Methoxychlor	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
p,p-TDE (DDD)	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Parathion	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Pendimethalin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Permethrin I	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Permethrin II	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Phosalone	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Pirimiphos-methyl	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Propetamphos	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Quintozone (PCNB)	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Simazine	mg/l	<0.01	<0.001	<0.001	<0.001
Tecnazene	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Telodrin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Trans-chlordane	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Triadimefon	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Triallate	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Triazophos	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Trifluralin	mg/l	<0.0001	<0.00001	<0.00001	<0.00001
Miscellaneous Organics					
Dibutyl tin	mg/l	<0.00003	<0.000005	<0.000005	<0.000005
Surrogate	%	76.8	74.5	81.9	78.1
Tetrabutyl tin	mg/l	<0.000012	<0.000002	<0.000002	<0.000002
Tributyl tin	mg/l	<0.000006	<0.000001	<0.000001	<0.000001
Triphenyl tin	mg/l	<0.000006	<0.000001	<0.000001	<0.000001
Subcontracted: Organics					
2,3,6-Trichlorobenzoic acid (2,3,6-TBA)*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
2,4,5-Trichlorophenol (2,4,5-T)*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
2,4-Dichlorophenoxy acetic acid (2,4-D)*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
2-Methyl-4-chlorophenoxyacetic acid	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
4-(2,4-Dichlorophenoxy) butyric acid (2,4-	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
4-Chlorophenoxyacetic acid (4-CPA)*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Benazolin*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Bentazone*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Bromoxynil*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Dicamba*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Dichlorprop (2,4-DP)*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002

APPENDIX 4 – SURFACE WATER

Diclofop*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Fenoprop*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Flamprop*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Flamprop-isopropyl*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Ioxynil*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Mecoprop (MCP)*	mg/l	0.00003	<0.00002	0.00015	<0.00002
Pentachlorophenol*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Picloram	mg/l	<0.00002	<0.00002	<0.00002	<0.00002
Triclopyr*	mg/l	<0.00002	<0.00002	<0.00002	<0.00002



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