

CAULMERT LIMITED

Engineering, Environmental & Planning
Consultancy Services

Rhuddlan Bach Quarry Landfill

CMP/Clive Hurt Plant Hire Ltd

2015 Annual Monitoring Review

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EXECUTIVE SUMMARY

This report has been compiled in accordance with the Environmental Permit (EP) (WP3132SX) for Rhuddlan Bach Quarry landfill site which requires that all monitoring data for the site is reviewed annually. This report compiles all data from environmental monitoring undertaken at Rhuddlan Bach from the 1st of January 2015 to the 31st of December 2015.

Monitoring data for landfill gas, surface water and groundwater has been compared to trigger levels as detailed in the EP.

Methane concentration remained below the relevant trigger levels in all perimeter boreholes. Low carbon dioxide concentrations were recorded in all perimeter boreholes, with trigger level exceedances being recorded at locations BH2, BH3B and BH4.

In-waste locations GH1 and GH2 exhibited maximum methane concentrations of 1.9 % and 0.4 % respectively. Carbon dioxide at these locations reached a maximum of 5.6 % and 10.5 % respectively. This is similar to previous periods, and is considered to be a limited feature with low migration potential. It is not considered that the gas concentrations detected represent a risk to the surrounding environment.

Groundwater levels were found to be stable during this review period, with only seasonal variation. Concentrations of ammoniacal nitrogen, manganese, iron, sulphate and total petroleum hydrocarbons (TPH) all exceeded their respective trigger levels at BH3. TPH concentrations also exceeded the trigger levels in down-gradient borehole BH4 and in cross-gradient boreholes BH5 and BH6 during the review period. Concentrations of TPH were detected in up gradient borehole BH2, potentially indicating an off-site source.

The majority of substances analysed as part of the quarterly suite were detected in highest concentrations within BH3. None of the 152 substances listed in the hazardous substances suite were detected in the groundwater.

All parameters in SW2 were detected at concentrations below their respective trigger levels detailed in the EP, with the exception of TPHs. TPH concentrations above the SW2 trigger level were also detected within upstream monitoring location SW1, indicating an offsite source. Concentrations of all other parameters remained low.

All quarterly parameters remained within acceptably low concentrations during the review period. None of the 152 substances listed in the hazardous substances suite were detected in the surface water locations.

RHUDDLAN BACH LANDFILL SITE**ENVIRONMENTAL MONITORING****ANNUAL DATA REVIEW (JANUARY - DECEMBER 2015)****TABLE OF CONTENTS**

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- Appendix 1: Drawing: 1241.EMP.01 Environmental Monitoring Plan; 2015 Topographical Survey.
Appendix 2: Landfill Gas Monitoring Data
Appendix 3: Groundwater Monitoring Data
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1.0 INTRODUCTION

1.1 Background

- 1.1.1 Caulmert Ltd (Caulmert) has been commissioned by CMP (Clive Hurt) Plant Hire Ltd to complete this 2015 Annual Data Review for Rhuddlan Bach Quarry Landfill Site, which is operated under Environmental Permit (EP) WP3132SX.
- 1.1.2 Schedule 4.2.1 of the EP requires that a report or reports on the performance of the activities over the previous year shall be submitted to the Natural Resources Wales by 31 January (or other date agreed in writing) each year. The report shall include as a minimum:
- a) a review of the results of the monitoring and assessment carried out in accordance with the Permit against the relevant assumptions, parameters and result in the risk assessments submitted with the Application;
 - b) where the operator's management system encompasses annual improvement targets, a summary report of the previous year's progress against such targets;
 - c) the annual production/treatment set out in schedule 5 table S5.2;
 - d) details of any contamination or decontamination of the Site which has occurred;
 - e) the topographical surveys required by conditions 3.6.3 other than those submitted as part of a CQA validation report;
 - f) the volumetric difference (reported in cubic metres) between the most recent topographical survey and the previous annual topographical survey i.e. the additional volume of the landfill void that is occupied by waste;
 - g) an assessment of the settlement behaviour of the landfill body based on the difference between the most recent topographical survey and the previous annual topographical survey for the areas of the landfill which did not receive wastes between the surveys;
 - h) a calculation of the remaining capacity (report in cubic metres) derived from the pre-settlement contours and the most recent topographical survey;
 - i) a summary of the WAC compliance testing undertaken in the period.
- 1.1.3 All environmental monitoring points referred to in this report are presented on the enclosed Environmental Monitoring Plan.
- 1.1.4 The Site is operated as an active limestone quarry and an inert landfill. A waste transfer station is present on the site.

1.2 Site Location and Surrounding Land-use

- 1.2.1 The site is centered at grid reference SH486807, and is on the southern flank on Rhuddlan Fawr hill. Access is gained by a small lane that stems off the B5110 near Brynteg. The site is located some 4 km south west of Benllech, and 5 km north east of Llangefni.
- 1.2.2 The site is situated in a rural area, and is surrounded by agricultural fields, some of which are used for grazing. The site is bound to the east by a stream valley and a limestone escarpment. The nearest properties to the site are at Lon Bryn Mair, a minor road to the north of the site.

The B5110 is located to the immediate western side of the site. There is also a caravan site at Nant Uchaf, approximately 1 km north of the site.

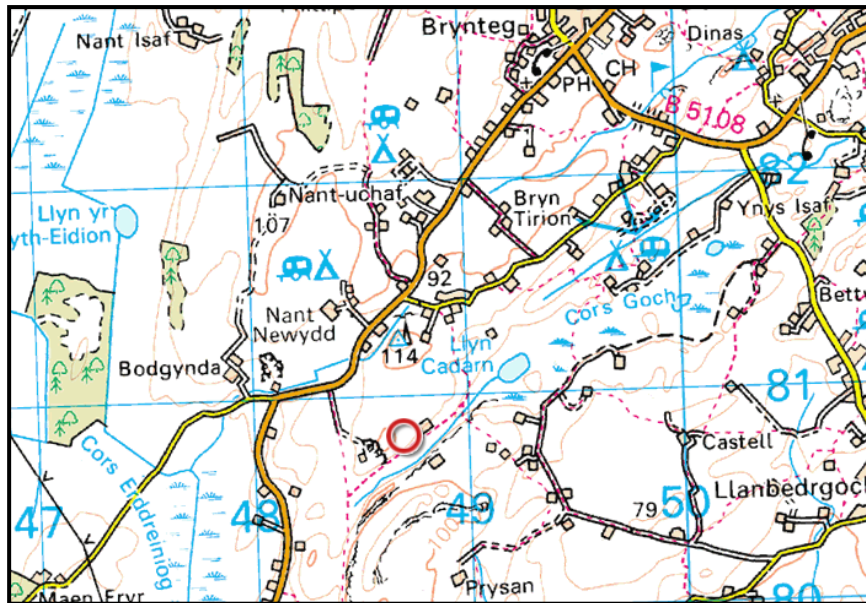


Figure 1: Site Location

- 1.2.3 The topography around the site is slightly undulating, and sloping down towards the east and north, away from the B5110 road. The ground level of the site slopes east/south-east from 99mAOD along the south western side of the site near the site entrance, to 90 mAOD near the eastern tip of the site. The deepest part of the quarry base lies at approximately 79.5 mAOD, at the quarry sump, but the current excavations are carried out to an approximate elevation of between 82 mAOD and 83 mAOD. The stream valley falls to approximately 81 mAOD in the area adjacent to the easternmost tip of the site.

1.3 Site History and Development

- 1.3.1 The current landfilling void was created by the extraction of Lower Carboniferous Limestone for building stone or aggregate. Periodic blasting is undertaken at the site as part of the on-going quarrying operations. The quarrying activities at the site are regulated by the Mineral Planning Authority (MPA).
- 1.3.2 The site occupies an area of approximately 5 hectares, with the extension area constituting approximately 3 hectares. There is a historic inert waste mass in the southern part of the site. The current EP allows the site to accept 75,000 tonnes of inert waste per annum. Actual waste volumes deposited during the review period were significantly less.
- 1.3.3 Water collects within the quarry and drains to a quarry sump, which is located in the eastern corner of the site. The water from the sump is pumped out from the site and the outflow passed through silt settlement lagoons, which are situated to the east of the quarry, towards the receiving watercourse in the stream valley.

- 1.3.4 A waste-recycling facility is located centrally on the site.

1.4 Monitoring Schedule at the Site

- 1.4.1 Caulmert undertakes the environmental monitoring at the site, in line with the requirements detailed within the EP. This comprises landfill gas, groundwater, and surface water monitoring.
- 1.4.2 Gas concentrations are monitored monthly at six perimeter monitoring points, and at two in waste monitoring points. Gas monitoring results are discussed in Section 3 and a data summary with graphs is enclosed in Appendix 2.
- 1.4.3 Groundwater levels are monitored on a monthly basis in each of the 6 perimeter monitoring installations. Groundwater samples are also collected and analysed for a variety of parameters in monthly, quarterly and annual suites to give an indication of the groundwater quality at the site. Groundwater results are discussed in Section 4 and data summaries can be found in Appendix 3.
- 1.4.4 The 2 piezometers previously located in Llyn Cadarn, a SSSI to the north east of the site have not been replaced. These were also used to monitor groundwater level.
- 1.4.5 Surface water samples are collected monthly from three points situated along the base of the stream valley. Surface water results are discussed in Section 5 and data summaries are found in Appendix 4.

2.0 ENVIRONMENTAL CONTEXT

2.1 Geology

- 2.1.1 Regionally Quaternary Glacial Till deposits of mainly boulder clay with lesser deposits of glacial gravel, and alluvium are typical of the superficial deposits of the area. Lower Carboniferous Limestone strata overlay Old Red Sandstone and metamorphic and igneous rocks of the Pre-Cambrian Mona complex¹. Devonian Old Red Sandstone exposures are seen on the edges of the Carboniferous Limestones.
- 2.1.2 Locally superficial deposits of brown, clay-rich sub soil are observed in the quarry faces. Alluvium forms a laterally extensive sub-horizontal feature in the area of Cors Goch. The solid geology in the quarry is well-bedded dense Lower Carboniferous Limestone with minor content of pyrite¹.

2.2 Hydrology

- 2.2.1 The site is enclosed by marsh and wetland to the east and north-east. The surface water running through the valley next to the site drains to the marsh and wetland, Cors Goch, situated to the north-east of the site. The main body of surface water within the wetland, Llyn Cadarn, lies approximately 300 m north-east from the site boundary. Cors Goch is a SSSI, and is part of the Anglesey Fens Special Area of Conservation (SAC). Much of the adjacent wetland is a designated National Nature Reserve (NNR) and part of a Ramsar site². As such, Cors Goch represents a particularly sensitive receptor to changes in water flows and water chemistry which could potentially result from the activities carried out on site.

2.3 Hydrogeology

- 2.3.1 Both the Lower Carboniferous Limestone and Old Red Sandstone which underlie the site have been classified as major aquifers. The permeability of the superficial deposits is considered to be relatively low, and so they have been classified as being of intermediate leaching potential in the area of the site³.
- 2.3.2 The site is not located within any groundwater source protection zones. However, as there is evidence that there is a high degree of interaction between groundwater and surface water within the area it is considered that the groundwater at the site represents a potentially sensitive receptor or could be perceived as a pathway to the sensitive surface water receptor identified to the east of the site.

¹HAFREN WATER, Hydrogeological Assessment, Final Revision 1, March 2005.

²Ramsar information sheet UK14005, Corsydd Môn a Llyn /Anglesey and Llyn Fens

³ENVIRONMENT AGENCY, Groundwater Vulnerability of Anglesey and the Llyn Peninsula, Sheet 14, 1997.

3.0 LANDFILL GAS

3.1 Introduction

- 3.1.1 Routine landfill gas monitoring is carried out on a monthly basis around the site perimeter at locations BH1-BH6 and at in-waste locations GH1 and GH2. Methane, carbon dioxide, oxygen and atmospheric pressure are recorded on each visit.
- 3.1.2 Perimeter and in-waste borehole locations are shown on Drawing: 1241.EMP.01 in Appendix 1. Methane and carbon dioxide data from all boreholes is displayed in a summary table and time-series graphs in Appendix 2. The landfill gas data obtained during the review period was compared with the trigger levels stipulated in the EP. There are no EP trigger levels for the in-waste monitoring locations.
- 3.1.3 BH1 was damaged by quarry workings in March 2013 and has not been considered further in this review. A replacement borehole is scheduled to be installed once this area has been made safe and access is restored.

3.2 In-Waste Boreholes

- 3.2.1 Concentrations of methane in GH1 fluctuated between 0.1 % and 1.9 %. Carbon dioxide concentrations in GH1 ranged from 3.6 % to 5.6 %.
- 3.2.2 Methane concentrations in GH2 were primarily negligible (0.01 %). The highest methane concentration was recorded during the October monitoring visit at 0.4 %. Carbon dioxide concentration within GH2 fluctuated over the review period with a maximum concentration of 10.5 % in August.

3.3 Perimeter Boreholes

- 3.3.1 Methane concentrations remained below the respective EP trigger levels at all locations throughout the review period. Maximum methane concentration was negligible (0.1 %), detected in all locations.
- 3.3.2 Carbon dioxide concentrations remained below the respective EP trigger levels throughout the review period at BH5 and BH6. BH2, BH3 and BH4 exhibited trigger level exceedances with maximum carbon dioxide concentrations of 3.3 %, 1.8 % and 3.4 % at these locations respectively.

4.0 GROUNDWATER

4.1 Introduction

- 4.1.1 Groundwater monitoring is carried out at five perimeter combined gas and groundwater monitoring boreholes positioned evenly around the site boundary. Two piezometers for groundwater monitoring had been installed in the area of the SSSI but have since been removed.
- 4.1.2 BH1 was damaged by quarry workings in March 2013, after which groundwater samples could not be obtained. A replacement borehole is scheduled to be installed once this area has been made safe and access is restored.
- 4.1.3 Measurements of groundwater levels were recorded, and groundwater samples were obtained on each monitoring visit. The EP requires samples to be analysed for the following parameters:

Monthly Parameters

Ammoniacal nitrogen, pH, electrical conductivity, cadmium, chromium, iron, lead, manganese, nickel, mineral oils, nitrate, phosphate, and sulphate.

Quarterly Parameters

As monthly plus:

Biological oxygen demand, chemical oxygen demand, dissolved oxygen, total dissolved solids, total oxidised nitrogen, total organic carbon, mercury, alkalinity, calcium, chloride, magnesium, potassium, zinc, copper and sodium.

Annual Parameters

As monthly and quarterly plus:

Hazardous substances screening (including PCBs, PAHs)

- 4.1.4 The groundwater monitoring boreholes are shown on Drawing 1241.EMP.01 in Appendix 1. The data gathered was tabulated and plotted on time-series graphs which are included in Appendix 3. All data has been compared against trigger levels where applicable.
- 4.1.5 Boreholes BH3B and BH4 are considered to be down-gradient of the site, with groundwater flowing in a south-easterly direction towards the marsh and wetland. BH2 is representative of upstream groundwater quality at the site, and BH5b and BH6 are representative of cross-gradient, i.e. perpendicular to the direction that groundwater flows.

4.2 Groundwater levels

- 4.2.1 Groundwater levels in the perimeter boreholes showed seasonal variation, with groundwater levels generally being lower during the summer months. Groundwater level decreased from January to September, and then increased significantly in November and December.

4.3 Groundwater quality

- 4.3.1 The ammoniacal nitrogen concentration in BH3 exceeded the trigger level (0.39 mg/l) on four occasions during the review period. Concentrations ranged between <0.01 mg/l and 1.2 mg/l. Ammoniacal nitrogen concentrations in the other down gradient borehole, BH4, remained below its trigger level throughout the review period. Ammoniacal nitrogen concentrations did not exceed the respective trigger level at BH5 or BH6 during 2015.
- 4.3.2 Iron concentrations slightly exceeded the trigger limit on three occasions at BH3 with a concentration of 0.23 mg/l in January and 0.22 mg/l in November and December. Iron concentrations remained below the respective trigger levels in all other groundwater monitoring points during this review period.
- 4.3.3 Manganese concentrations exceeded the EP trigger level in BH3 during the review period. Concentrations in BH3 exceeded the trigger level of 0.05 mg/l in the majority of monitoring occasions, ranging between 0.015 mg/l and 3.4 mg/l. Manganese concentrations at the remaining monitoring locations stayed below their respective trigger levels throughout the review period.
- 4.3.4 Concentrations of metals cadmium, chromium, lead and nickel were all below their respective trigger levels at all monitoring occasions throughout the review period.
- 4.3.5 Sulphate concentrations in excess of the 250 mg/l trigger level were recorded in BH3 for the majority of the review period with the maximum concentration recorded late in the review period (389 mg/l). Sulphate concentrations in the upgradient borehole BH2 peaked at 190 mg/l in January, indicating a potential background level.
- 4.3.6 Mineral oil (TPH) concentrations exceeded the EP trigger level of 0.01 mg/l in down gradient locations BH3 and BH4, cross-gradient locations BH5 and BH6 and upgradient location BH2 during the review period. Maximum concentrations in BH3, BH4, BH5 and BH6 were 0.03 mg/l, 0.02 mg/l, 0.11 mg/l and 2.32 mg/l respectively. The higher concentration in BH6 was recorded in November when the annual monitoring round was conducted. Maximum concentration at up gradient location BH2 was 0.04 mg/l. With the exception of the peak in BH6 described above, TPH concentrations are relatively low and similar at up gradient, down gradient and cross gradient locations, likely representing background concentrations.
- 4.3.7 Average electrical conductivity within the groundwater ranged from between 648 µS/cm in BH6 and 1666 µS/cm in BH3. These levels remained predominantly stable in BH2 and BH4. At BH3 a minimum conductivity of <100 µS/cm in November, potentially representing an

anomaly. BH5 and BH6 showed a decrease in conductivity during November, but were otherwise stable.

- 4.3.8 Average pH at all locations remained between 7.0 (BH3) and 7.6 (BH6). pH remained relatively stable throughout the review period.
- 4.3.9 Nitrate concentrations fluctuated throughout the review period but remained low at all locations. Nitrate concentrations were generally highest in up gradient location BH2.
- 4.3.10 The majority of the substances analyzed as part of the quarterly suite were detected in higher concentrations within down gradient BH3. No mercury was detected at any of the groundwater locations during the review period.
- 4.3.11 None of the 152 substances listed in the hazardous substances annual suite were detected in the groundwater.

5.0 SURFACE WATER

5.1 Introduction

- 5.1.1 There are three surface water monitoring locations at Rhuddlan Bach. The surface water locations are positioned to allow accurate monitoring of the quarry and its emissions (see Table 1).

Table 1: Surface water monitoring locations

SW1	<i>Upstream of the quarry</i>
SW2	<i>Monitors outflow from the lagoon</i>
SW3	<i>Downstream of the quarry</i>

- 5.1.2 The surface water samples are collected monthly and analysed for the following set of parameters:

Monthly Parameters

pH, ammoniacal nitrogen, cadmium, chloride, chromium, chemical oxygen demand, dissolved oxygen, total suspended solids, electrical conductivity, iron, lead, manganese, mineral oils (Total Petroleum Hydrocarbons (TPH)), nickel, nitrate, phosphate, sulphate.

Quarterly Parameters

As monthly plus:

Biological oxygen demand, alkalinity, total organic carbon, total oxidised nitrogen, zinc, copper, mercury, calcium, sodium, potassium, magnesium.

Annual Parameters

As monthly and quarterly plus:

Hazardous substances screening (including PCBs, PAHs)

- 5.1.3 The locations of the monitoring points are indicated on the site drawing 1241.EMP.01 which can be found in Appendix 1.
- 5.1.4 The surface water quality data has been graphed and compared against their respective trigger levels and is included in Appendix 4.

5.2 Surface Water Quality

- 5.2.1 All parameters in SW2 were detected at concentrations below their respective trigger levels detailed in the EP, with the exception of TPHs.
- 5.2.2 The TPH trigger level of 0.01 mg/l in SW2 was exceeded several times during the review period. The maximum concentration in SW2 was recorded in June at 0.03 mg/l. The average concentration in SW2 was 0.02 mg/l. TPH concentrations were also above 0.01 mg/l in upstream monitoring point SW1 on several occasions, potentially indicating an upstream source. A maximum concentration of 0.05 mg/l was detected in SW1 during May. TPH concentrations in SW3 reached a maximum of 0.05 mg/l in June.
- 5.2.3 Suspended solids concentration remained below the trigger level of 266 mg/l for SW2 throughout the review period. Concentrations in SW3 fluctuated significantly with a range between <5 mg/l and 157 mg/l. Water levels within these locations influence the concentration of suspended solids within the samples. When water levels are lower, more suspended solids are unavoidably collected during sampling.
- 5.2.4 Concentrations of ammoniacal nitrogen, cadmium, sulphate and pH were below their respective EP trigger levels for the duration of this review period.
- 5.2.5 Levels of electrical conductivity were generally higher downstream than upstream. Maximum levels in SW1, SW2 and SW3 were 610 µS/cm, 1120 µS/cm and 1230 µS/cm respectively.
- 5.2.6 All other parameters generally remained low during the review period. Chloride, conductivity and sulphate followed a similar fluctuating trend throughout the year.
- 5.2.7 All quarterly parameters were considered to be within acceptable concentrations throughout the review period. No mercury was detected in any of the surface water locations.
- 5.2.8 None of the 152 substances listed in the hazardous substances suite were detected in the SW during the review period.

6.0 ANNUAL PRODUCTION/TREATMENT

- 6.0.1 Annual production/treatment at Rhuddlan Bach Landfill Site during the period January to December 2015 is reported in accordance with the EP for the site. Table S5.2 in the EP has been reproduced and is presented as Table 1 below.

Table 1: Annual Production/Treatment

Annual production/treatment	
Surface water and/or groundwater:	Cubic metres/year:
Disposed of offsite:	12,250
Disposed of to any onsite effluent treatment plant:	0

7.0 CONTAMINATION/DECONTAMINATION

7.0.1 No contamination events were reported at the site during 2015.

8.0 TOPOGRAPHICAL SURVEY

8.0.1 The 2015 Topographical Survey is enclosed. There is no significant settlement to report.

8.0.2 The remaining void capacity is estimated to be 980,000 m³.

9.0 SUMMARY

9.1 Landfill Gas

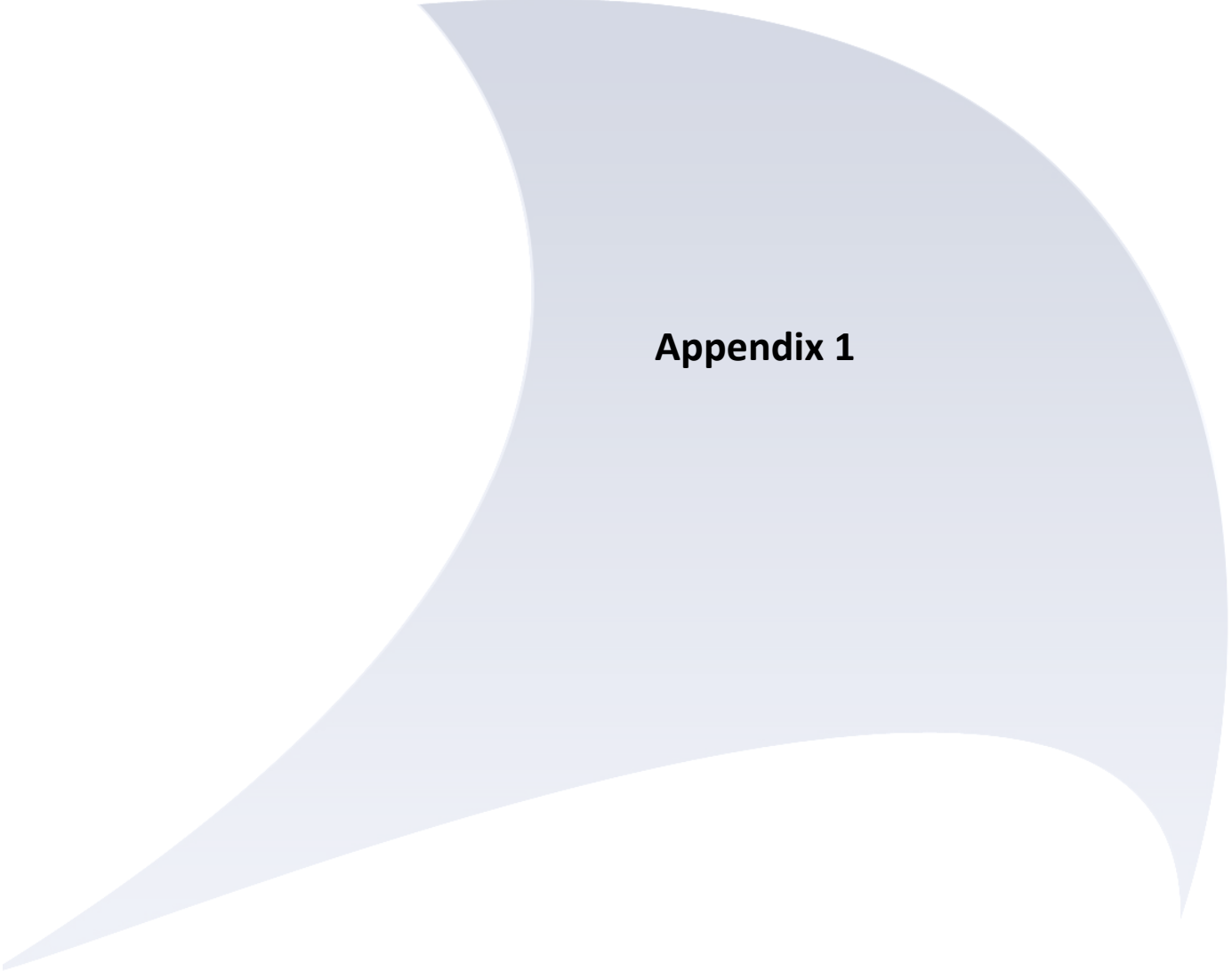
- 9.1.1 Methane concentrations remained below the respective EP trigger levels at all locations throughout the review period. No methane was detected above concentrations of 0.1 % at any of the perimeter boreholes. Carbon dioxide concentrations exceeded the respective EP trigger levels at BH2, BH3 and BH4.
- 9.1.2 At in-waste locations GH1 and GH2, methane reached maximum concentrations of 1.9 % and 0.4 % respectively. Carbon dioxide at these locations reached maximum concentrations of 5.6 % and 10.5 %.

9.2 Groundwater

- 9.2.1 Groundwater levels in the perimeter boreholes showed seasonal variation, with groundwater levels generally being lower during the summer months.
- 9.2.2 Ammoniacal nitrogen, iron, manganese, sulphate and TPH concentrations in down gradient borehole BH3 exceeded the respective trigger levels on occasion. Ammoniacal nitrogen, manganese, sulphate and TPH concentrations within BH3 are similar to those recorded in 2014. An isolated peak in TPH was detected at BH6 during November.
- 9.2.3 The majority of the substances analyzed as part of the quarterly suite were detected in higher concentrations within up down gradient BH3. No mercury was detected in any of the monitoring locations.
- 9.2.4 None of the 152 substances listed in the hazardous substances suite were detected in the groundwater.
- 9.2.5 Overall, groundwater quality is good and no impact from site operations is apparent.

9.3 Surface Water

- 9.3.1 At SW2 all parameters were recorded at concentrations below the trigger levels detailed in the EP; with the exception of TPH. TPH concentrations were also above the SW2 trigger level in upstream location SW1, indicating an offsite source.
- 9.3.2 All quarterly parameters remained within acceptably low concentrations during the review period. None of the 152 substances listed in the hazardous substances suite were detected at SW2.
- 9.3.3 Overall, surface quality is very good and no impact from site operations is apparent.



Appendix 1

NOTES

1. BASED ON MRG ENGINEERING SERVICES LTD TOPOGRAPHIC SURVEY. DRAWING NO. 783/TP/03 DATED 27/07/2007
2. UPDATE SURVEY BY (BY EGNOL CONSULTING, REF: RHUDDLAN BACH QUARRY UPDATE AS 03 12 2008.LSS)

LEGEND

- SURFACE WATER MONITORING POINT
- ⊠ COMBINED GAS AND GROUNDWATER MONITORING POINT
- ▲ IN-WASTE GAS MONITORING POINT
- WATER LEVEL MONITORING PIEZOMETERS
- PPC BOUNDARY
- UPDATE SURVEY AREA

REV	MODIFICATIONS	BY	CH	AP	DATE
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**RHUDDLAN BACH QUARRY
INERT LANDFILL SITE**

**QUARRY AND
WASTE AREA UPDATES**

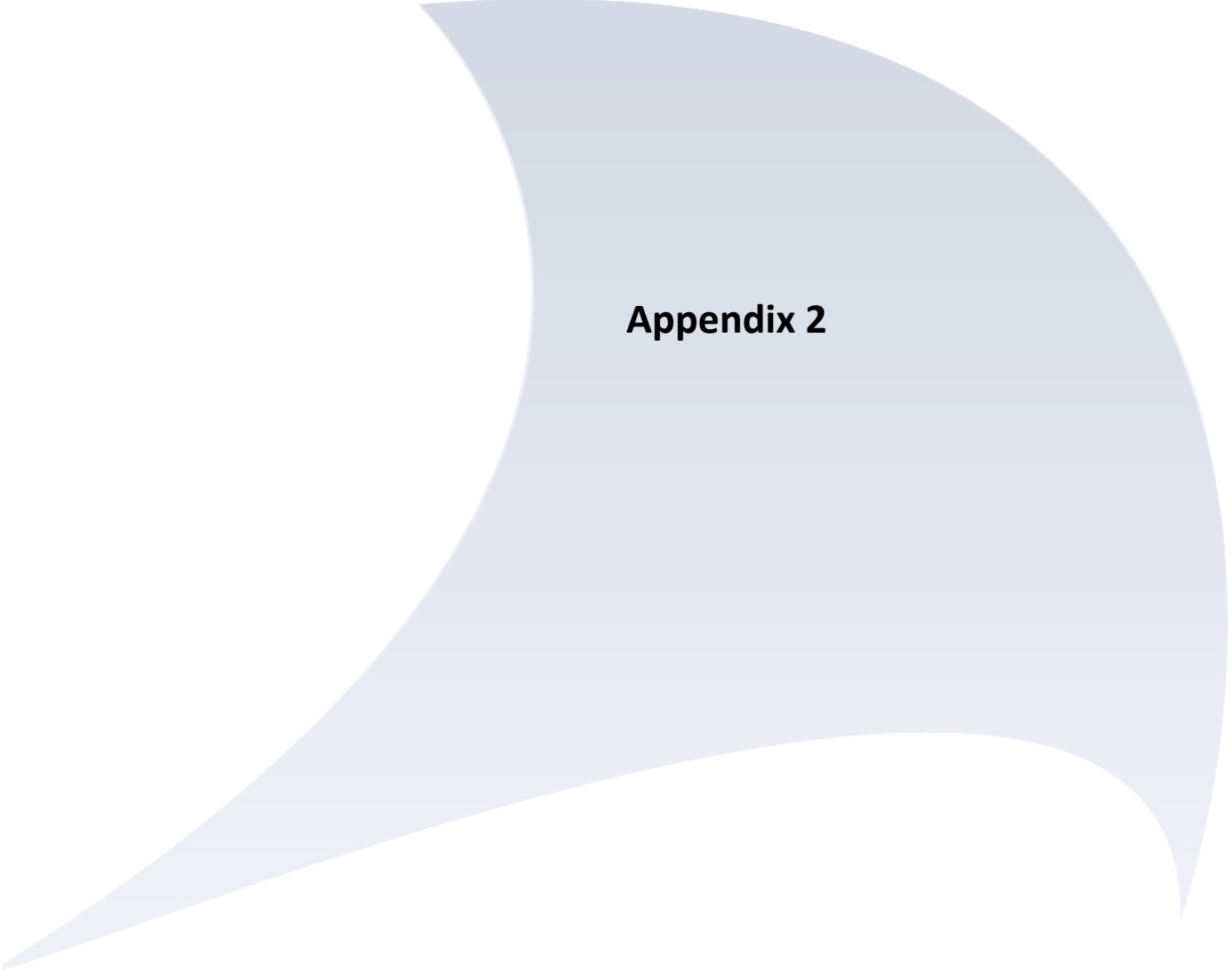
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APPROVED BY	AS	ISSUE	DR
		REVISION	-

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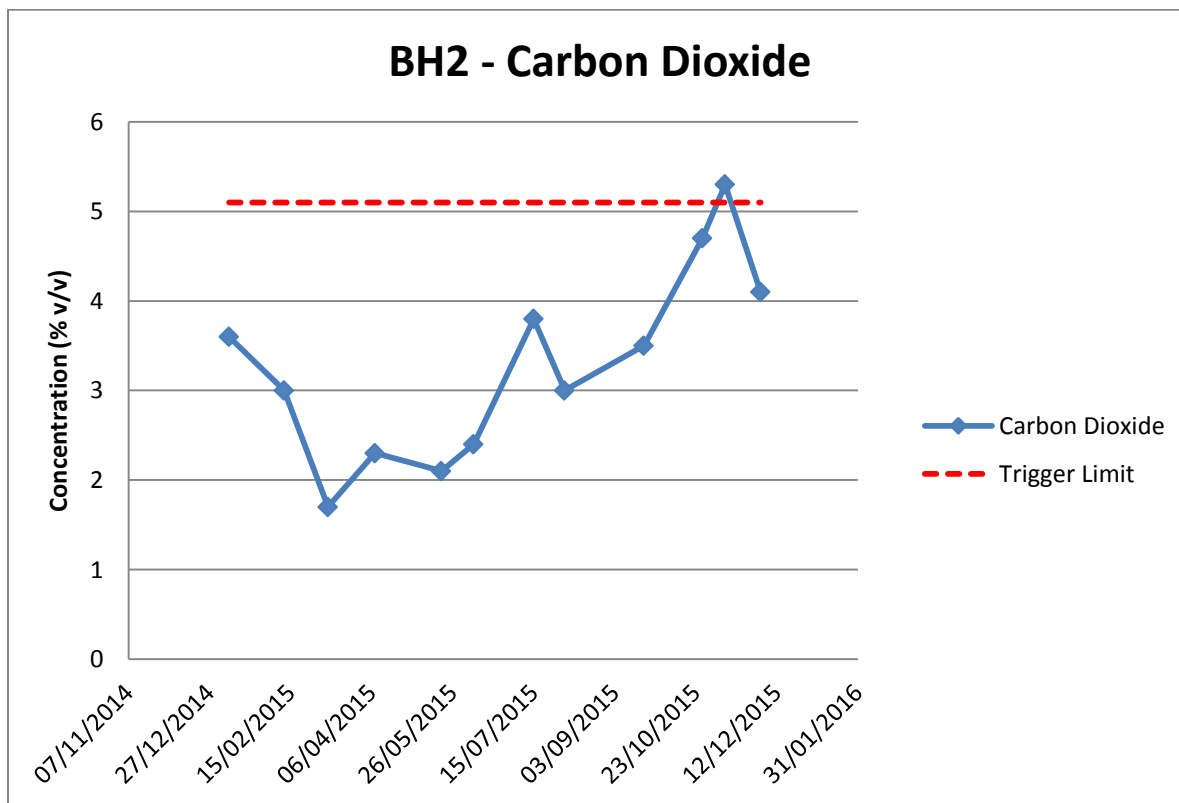
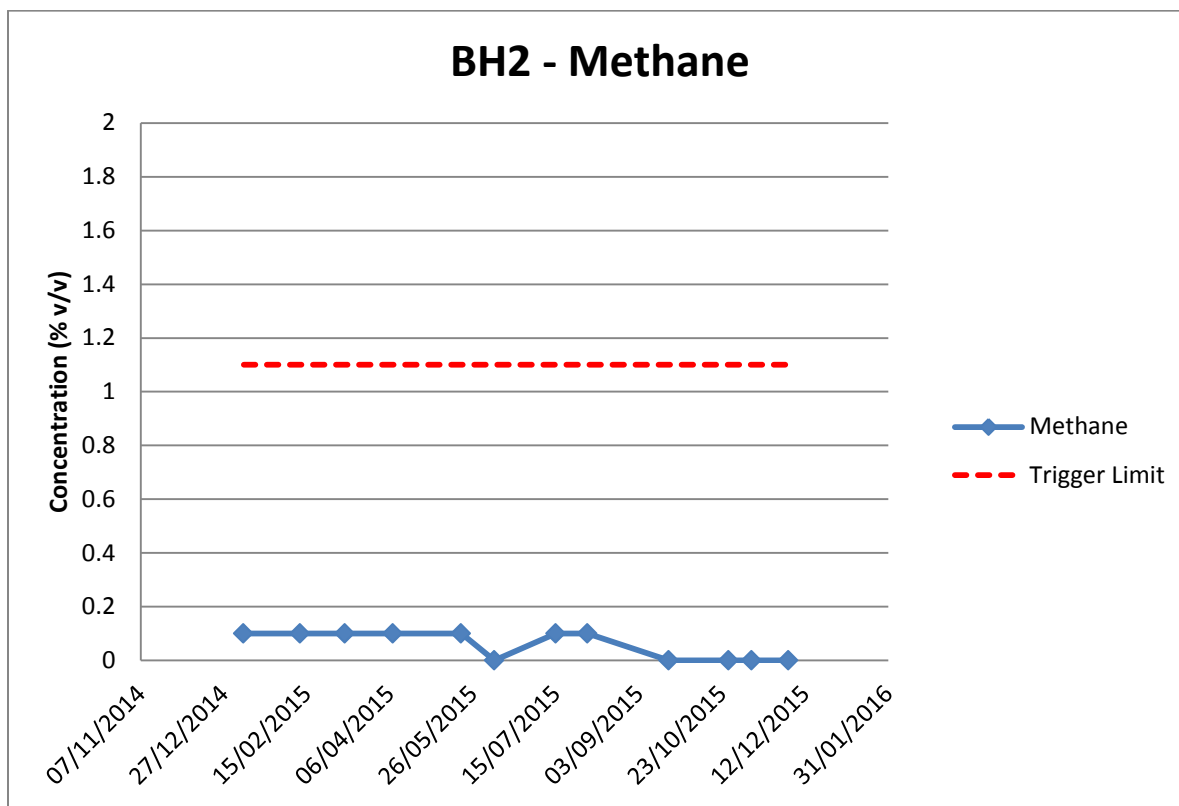
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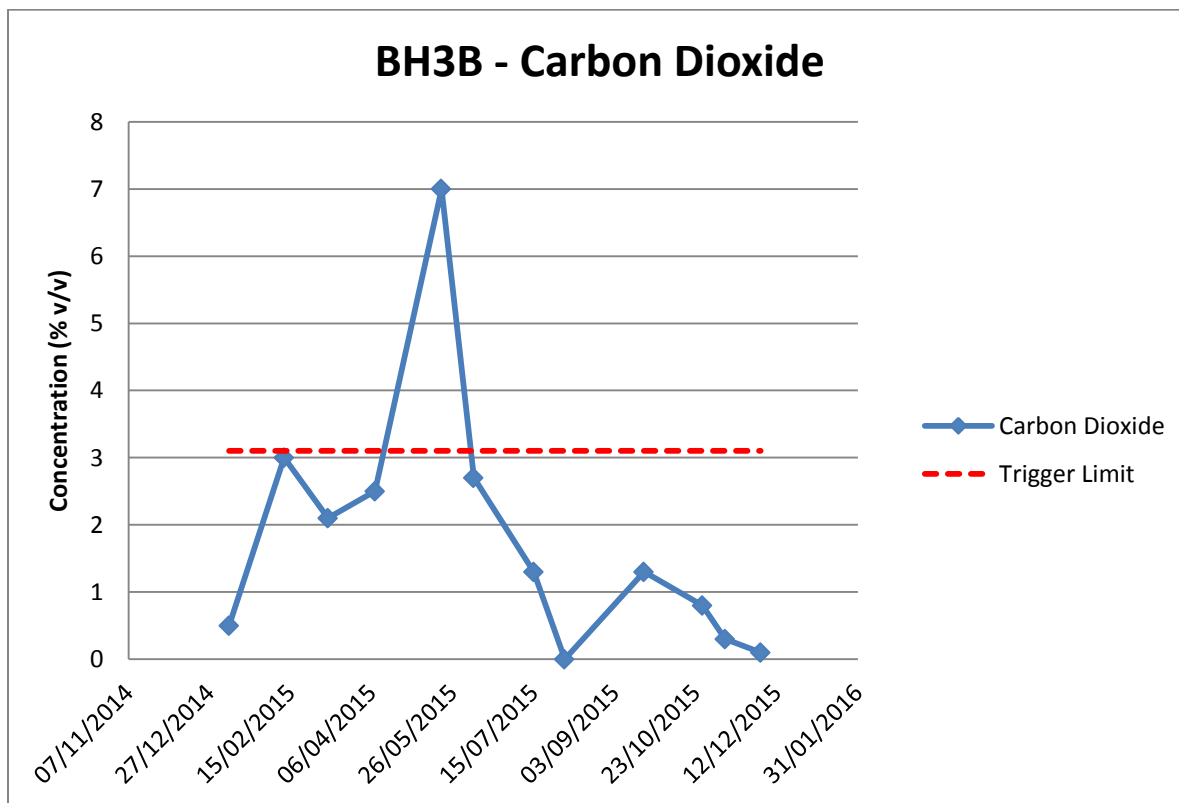
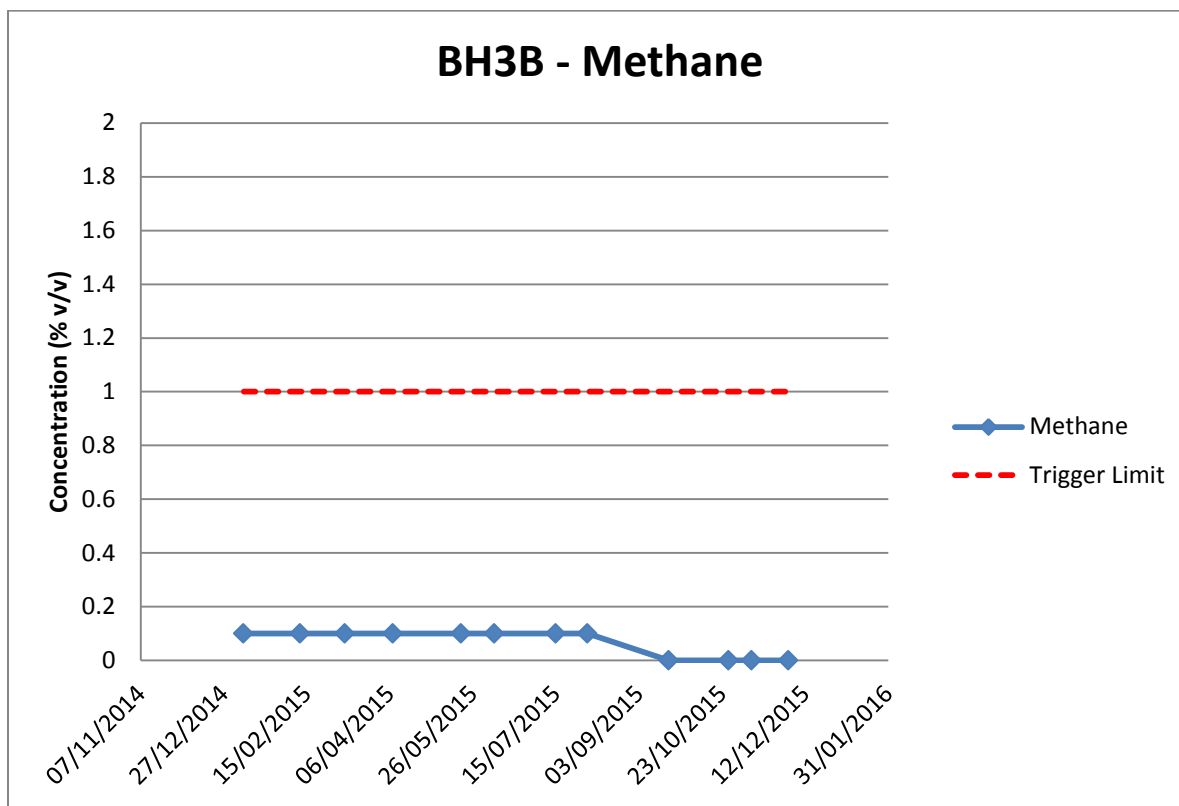
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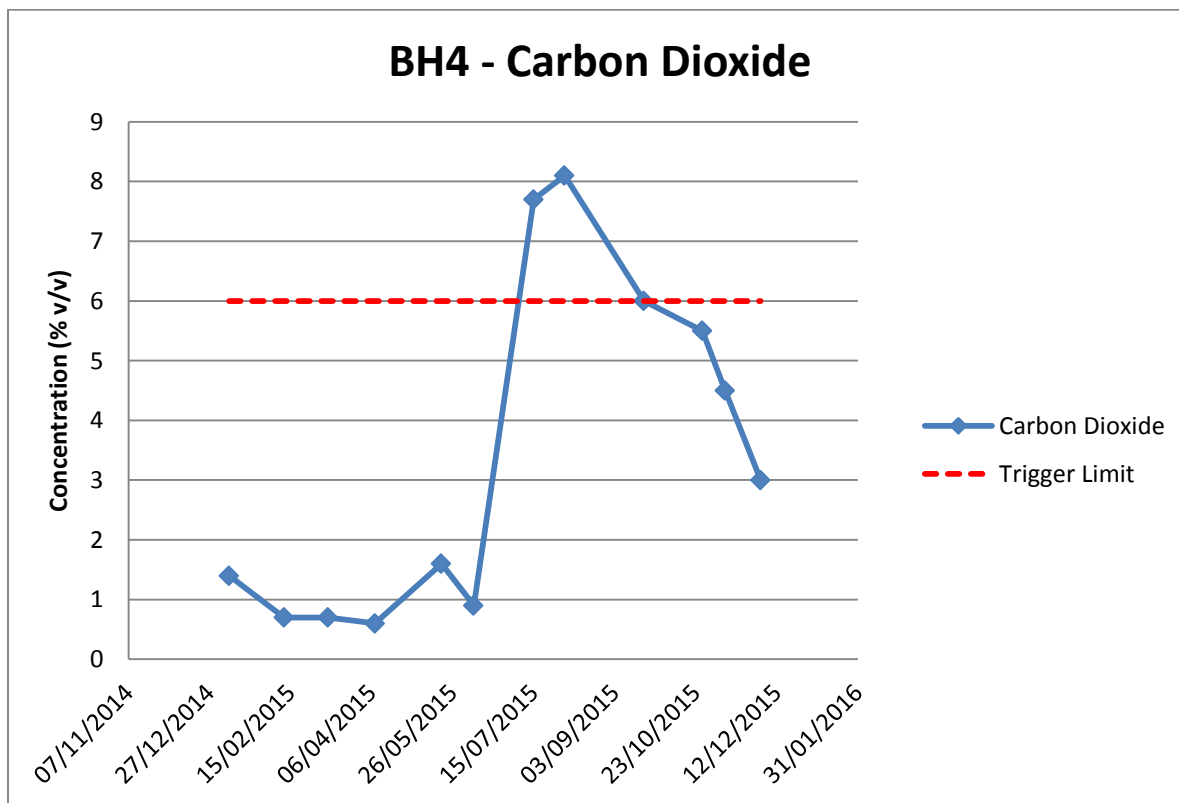
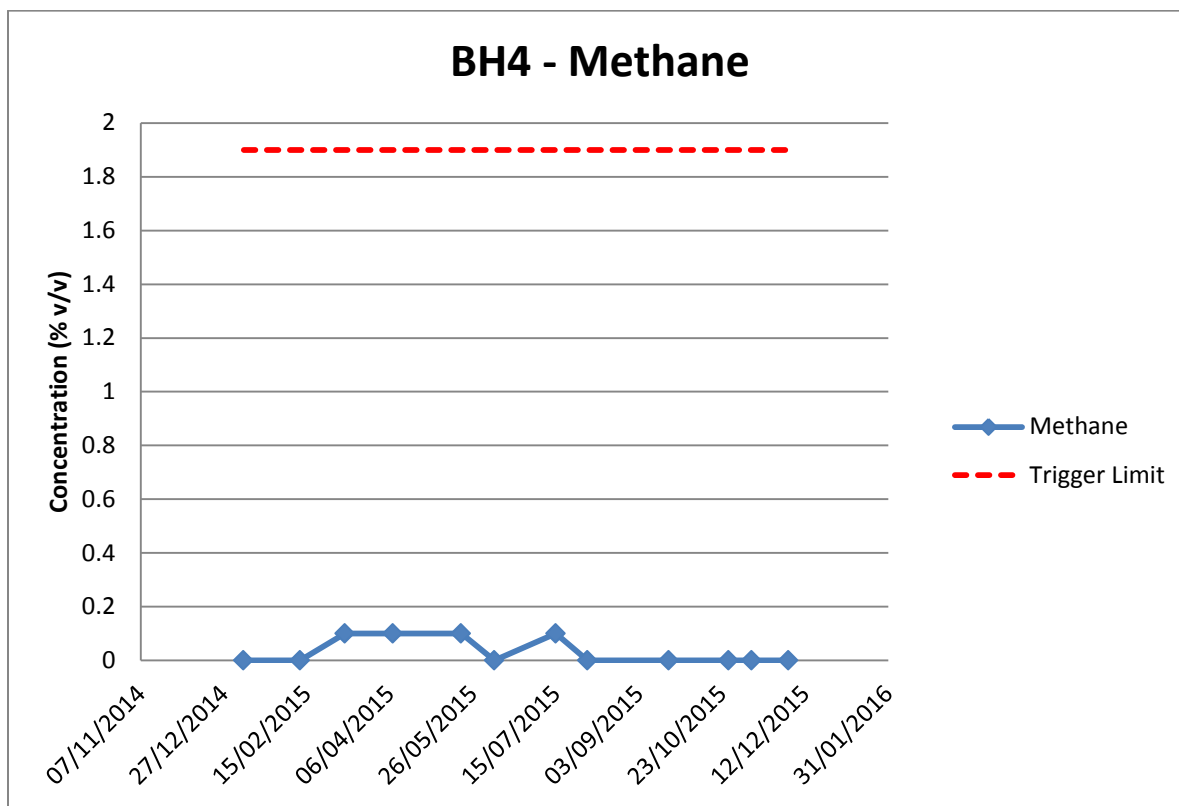
Table 1: Gas monitoring data summary

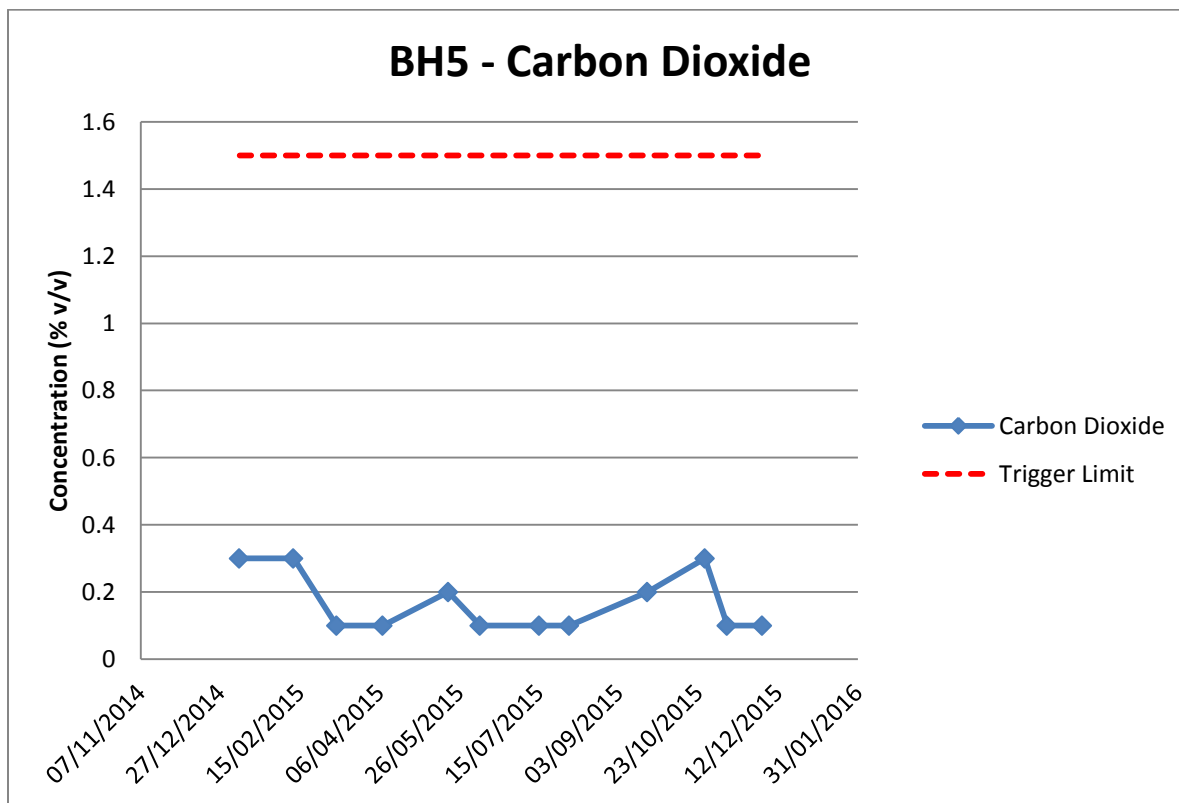
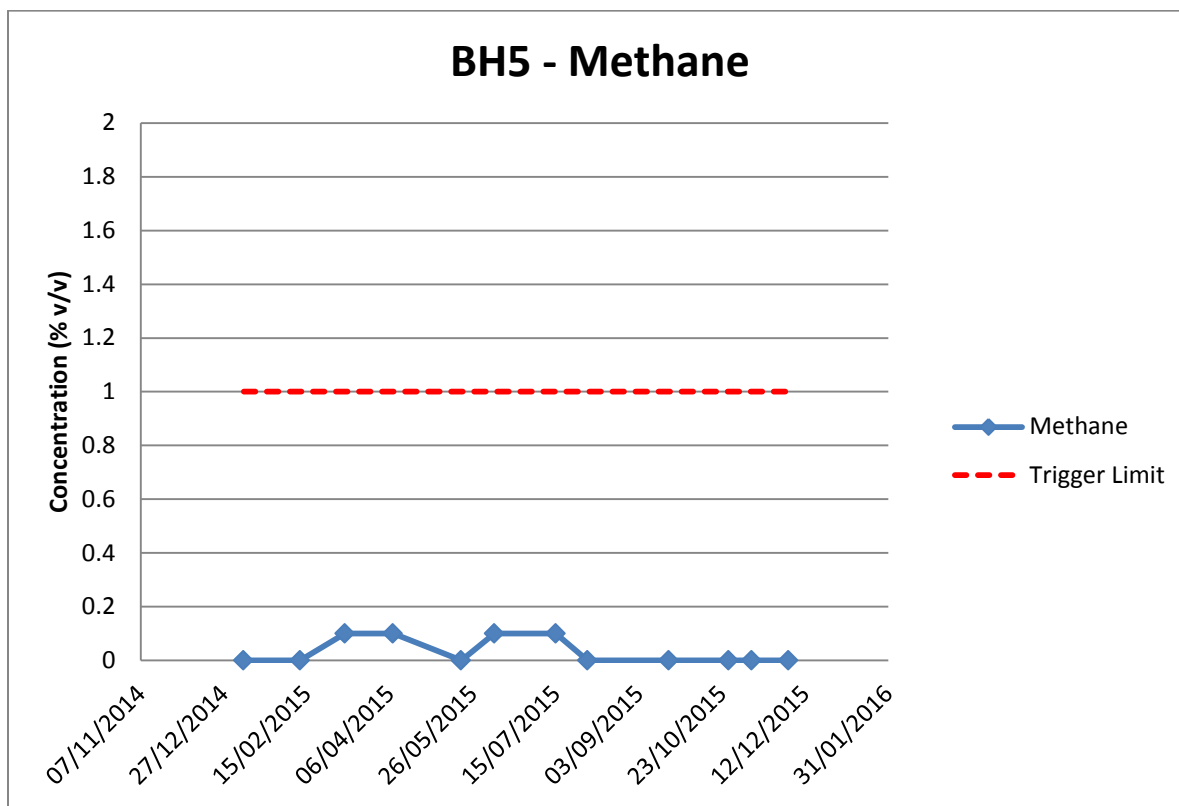
Location		Methane (% v/v)	Trigger (% v/v)	Carbon Dioxide (% v/v)	Trigger (% v/v)
BH2	Min	0.00	1.1	1.70	5.1
	Max	0.10		5.30	
	Average	0.06		3.29	
	Count	12.00		12.00	
BH3B	Min	0.00	1.0	0.00	3.1
	Max	0.10		7.00	
	Average	0.07		1.80	
	Count	12.00		12.00	
BH4	Min	0.00	1.9	0.60	6.0
	Max	0.10		8.10	
	Average	0.03		3.39	
	Count	12.00		12.00	
BH5	Min	0.00	1.0	0.10	1.5
	Max	0.10		0.30	
	Average	0.03		0.17	
	Count	12.00		12.00	
BH6	Min	0.00	1.0	0.00	1.5
	Max	0.10		1.10	
	Average	0.06		0.25	
	Count	12.00		12.00	
GH1	Min	0.10	N/A	3.60	N/A
	Max	1.90		5.60	
	Average	1.12		4.38	
	Count	12.00		12.00	
GH2	Min	0.00	N/A	0.00	N/A
	Max	0.40		10.50	
	Average	0.10		4.68	
	Count	11.00		12.00	

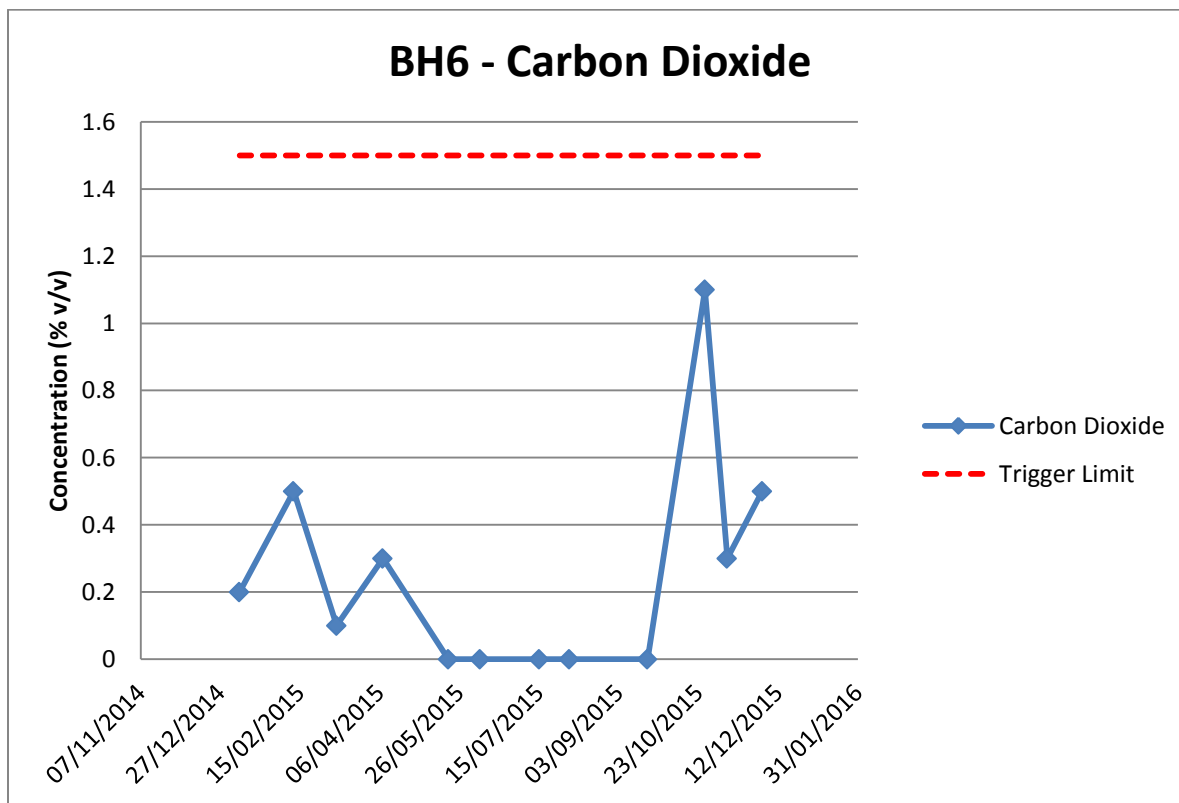
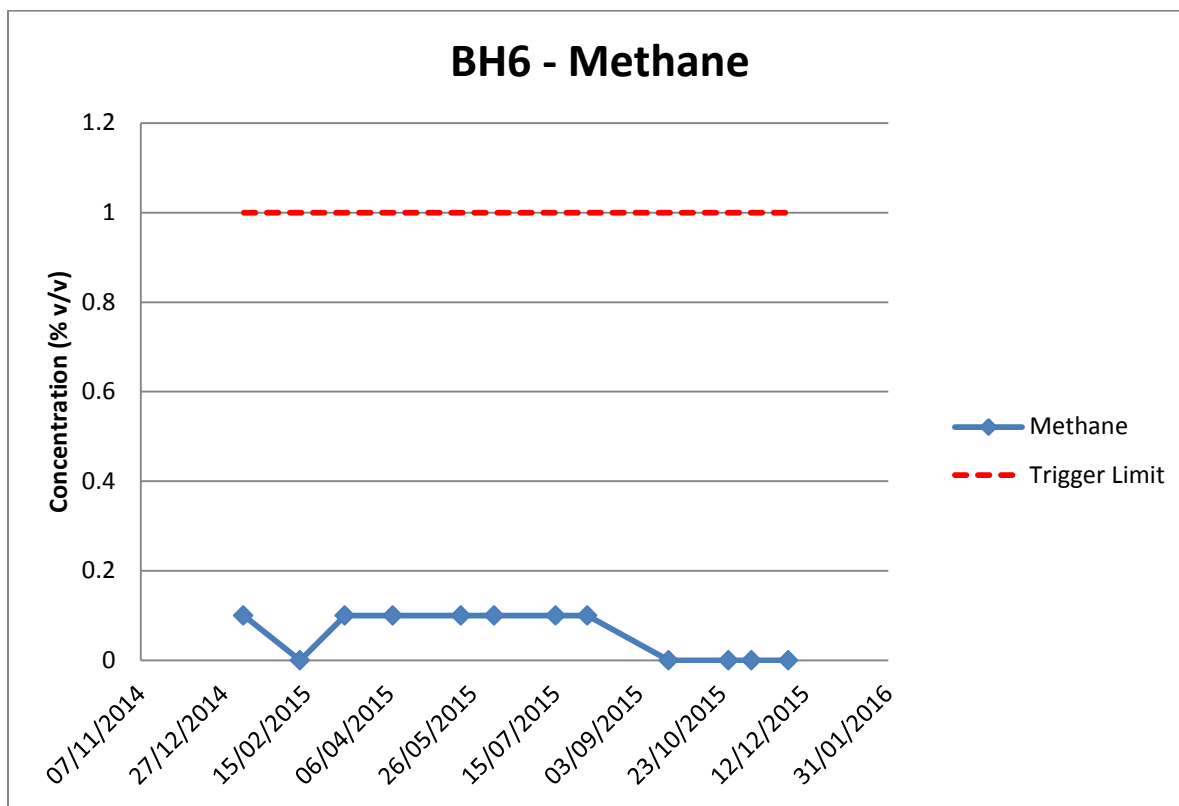
 Denotes Exceedance of EP Trigger Level

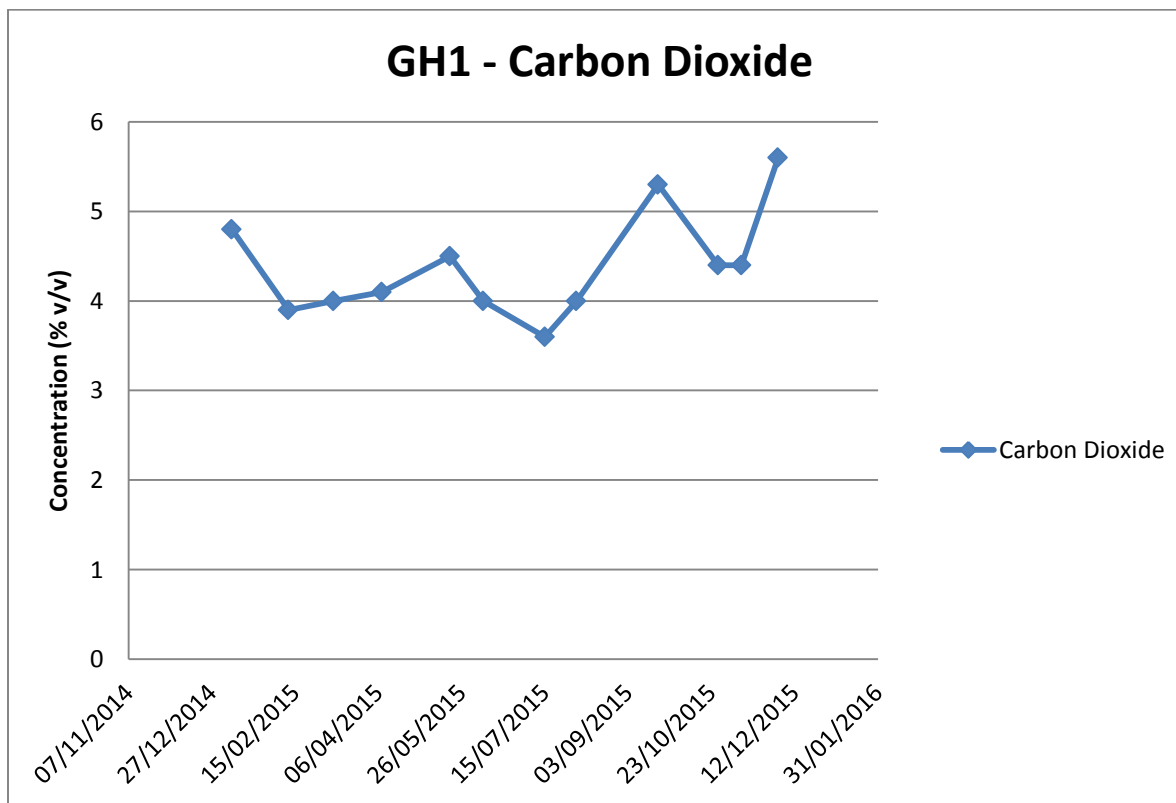
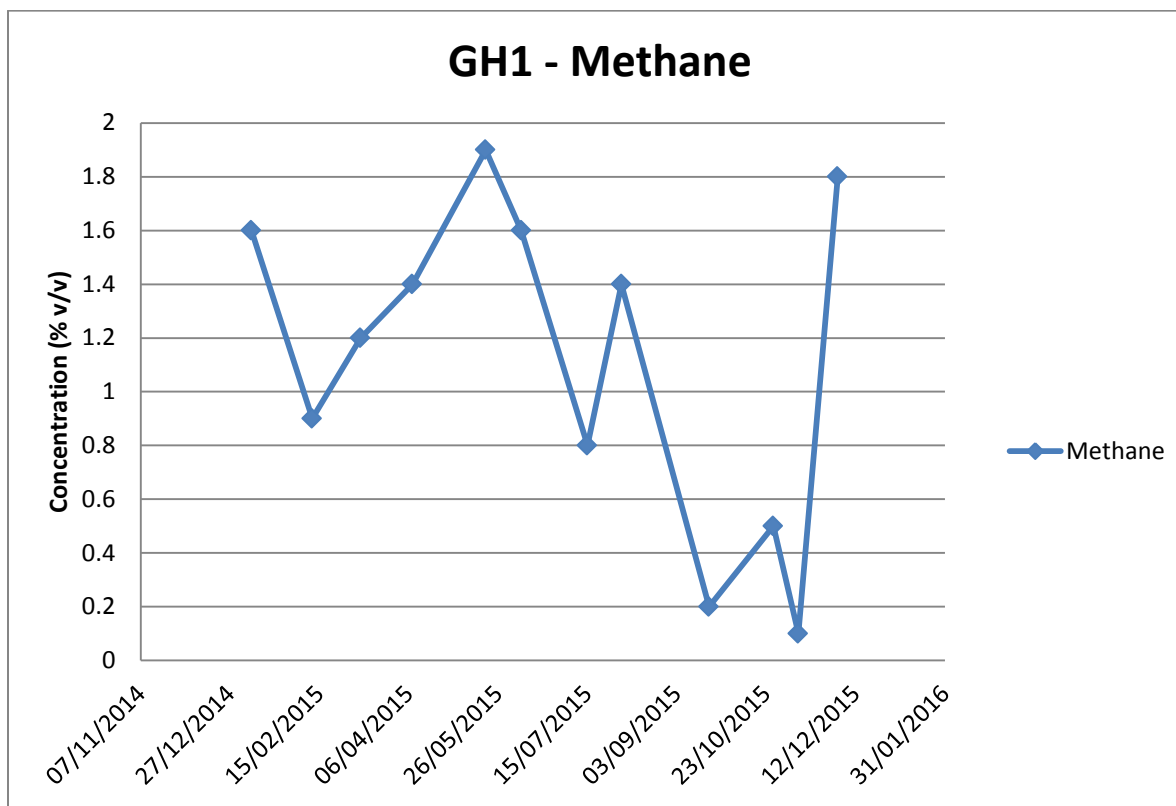


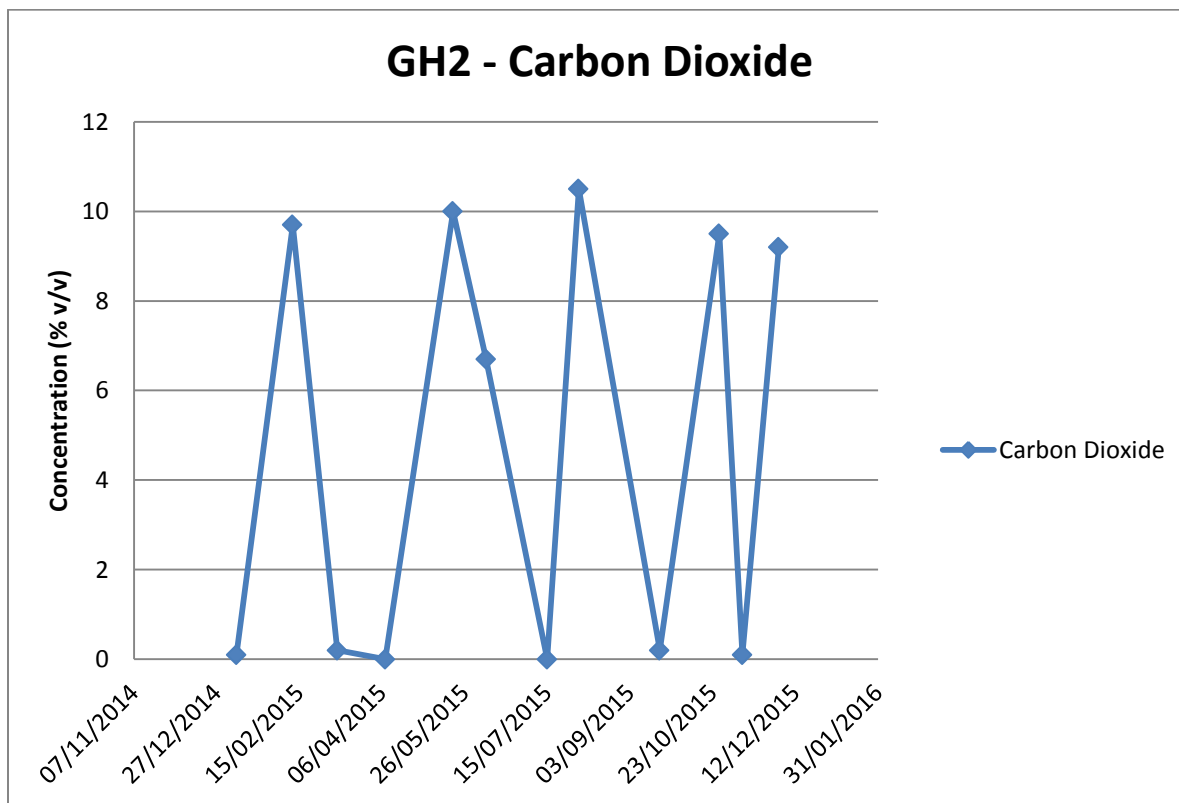
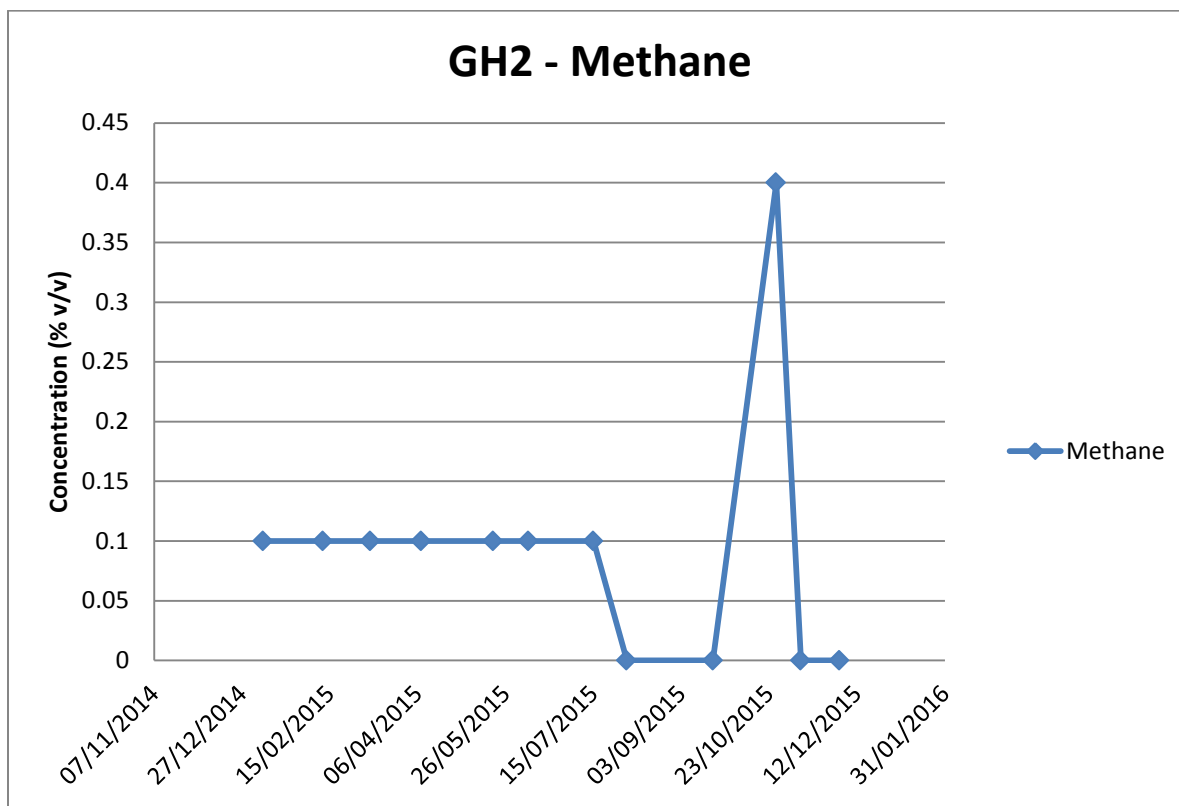


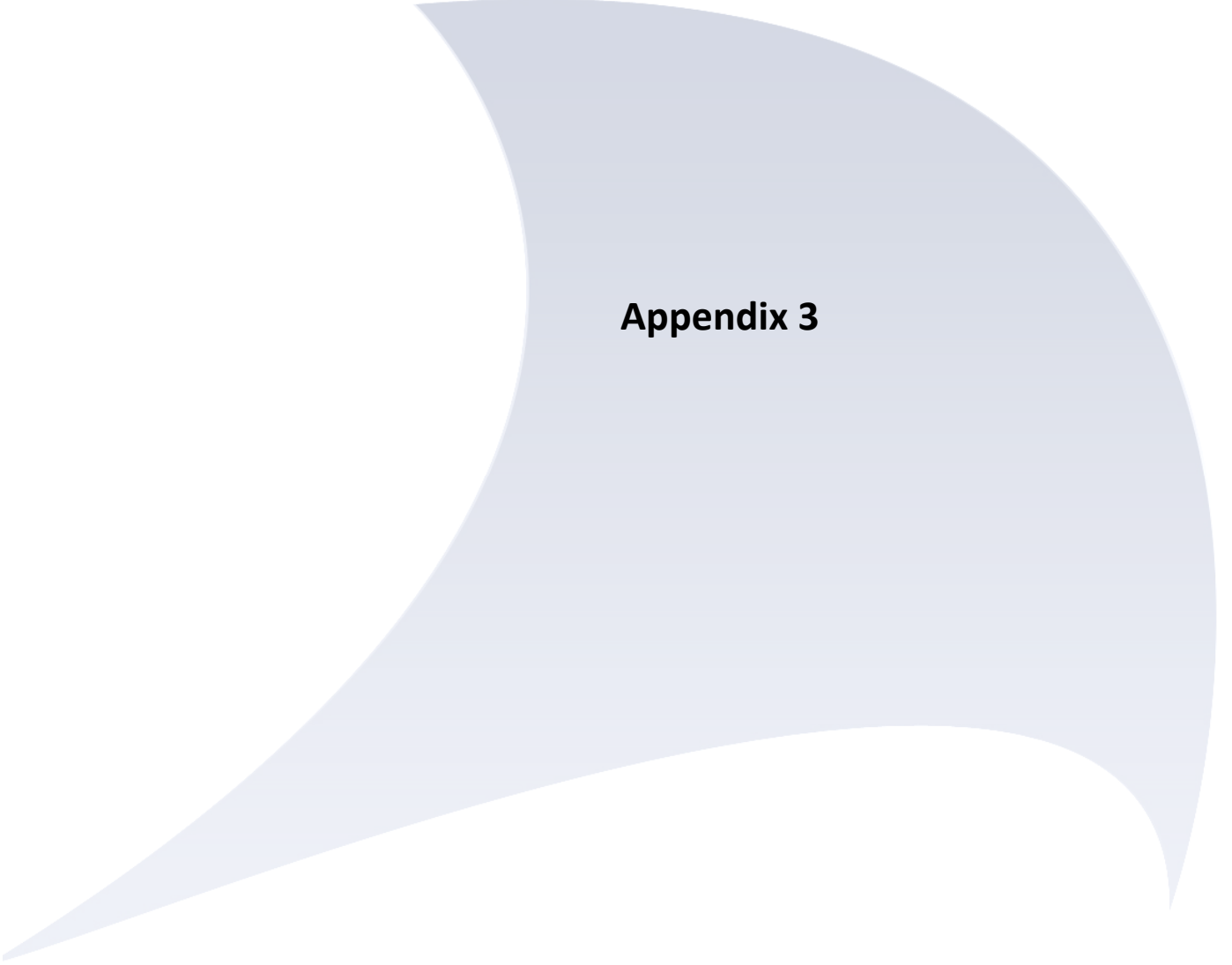












Appendix 3

APPENDIX 3**Table 1: Groundwater Level Data**

Location	Data	Dip to Groundwater (mgbl)	Groundwater Level (mAOD)
BH2	Min	6.7	82.8
	Max	9.9	86.0
	Average	8.4	84.3
	Count	12	12
BH3b	Min	4.1	82.3
	Max	5.8	84.0
	Average	5.1	83.0
	Count	12	12
BH4	Min	0.3	81.0
	Max	1.6	82.3
	Average	0.8	81.8
	Count	12	12
BH5	Min	6.0	81.5
	Max	8.1	83.7
	Average	7.0	82.6
	Count	12	12
BH6	Min	6.2	86.5
	Max	7.6	87.9
	Average	6.9	87.2
	Count	12	12

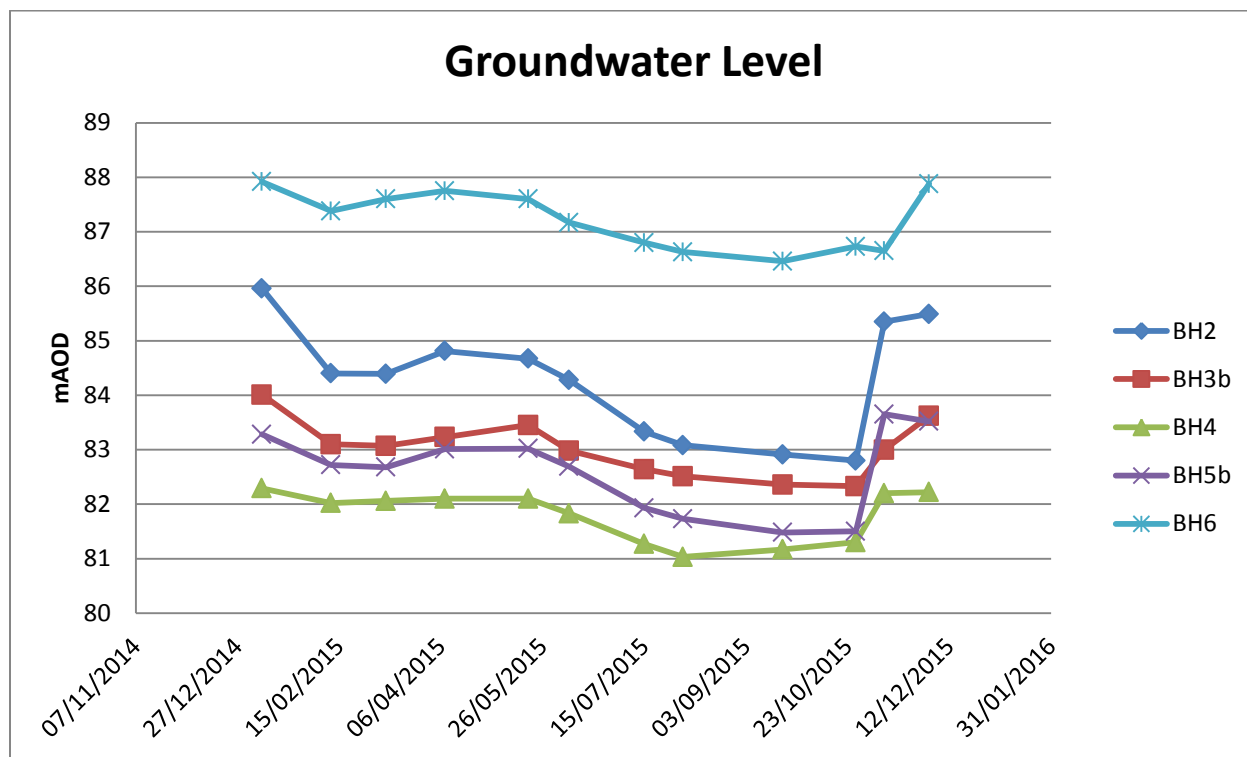
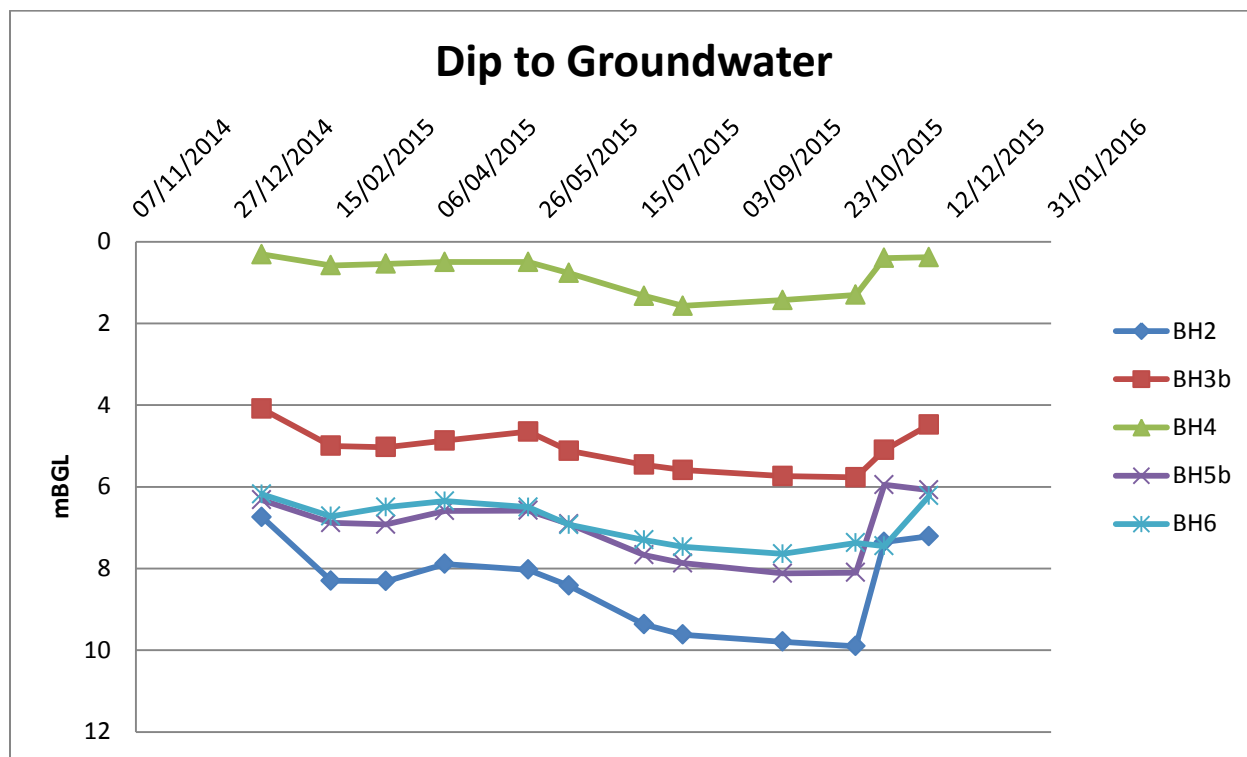
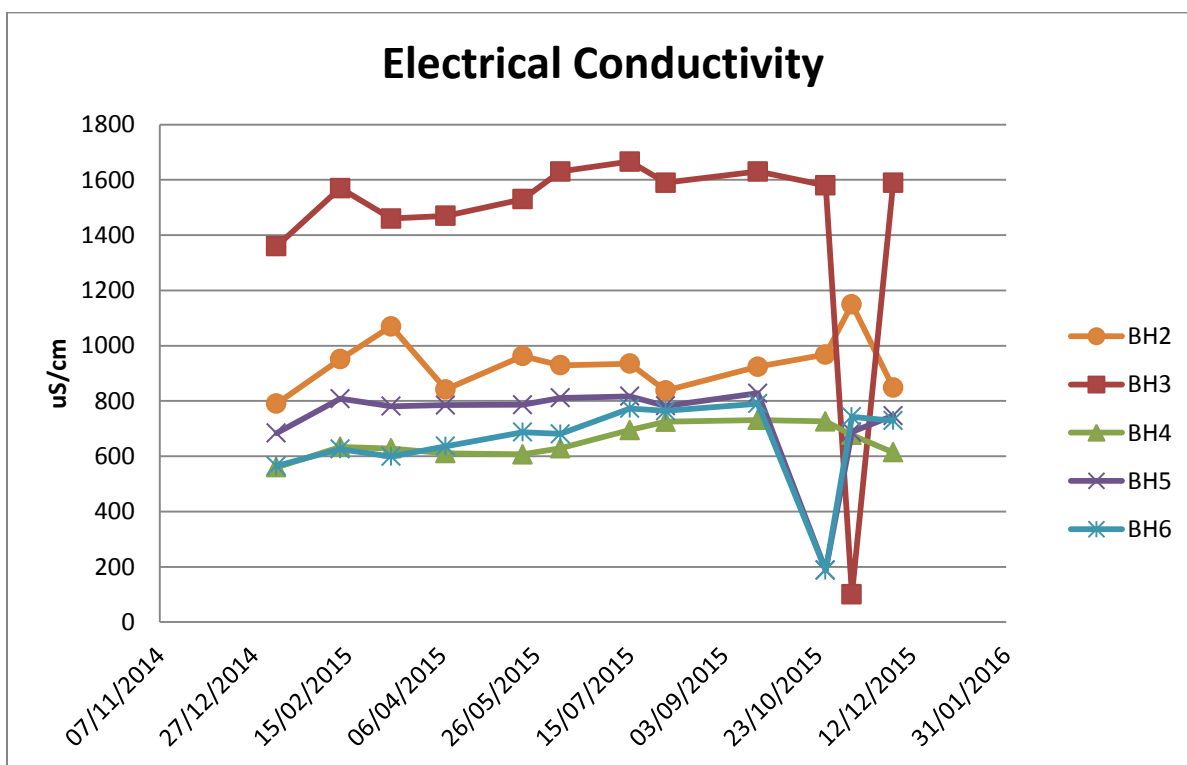
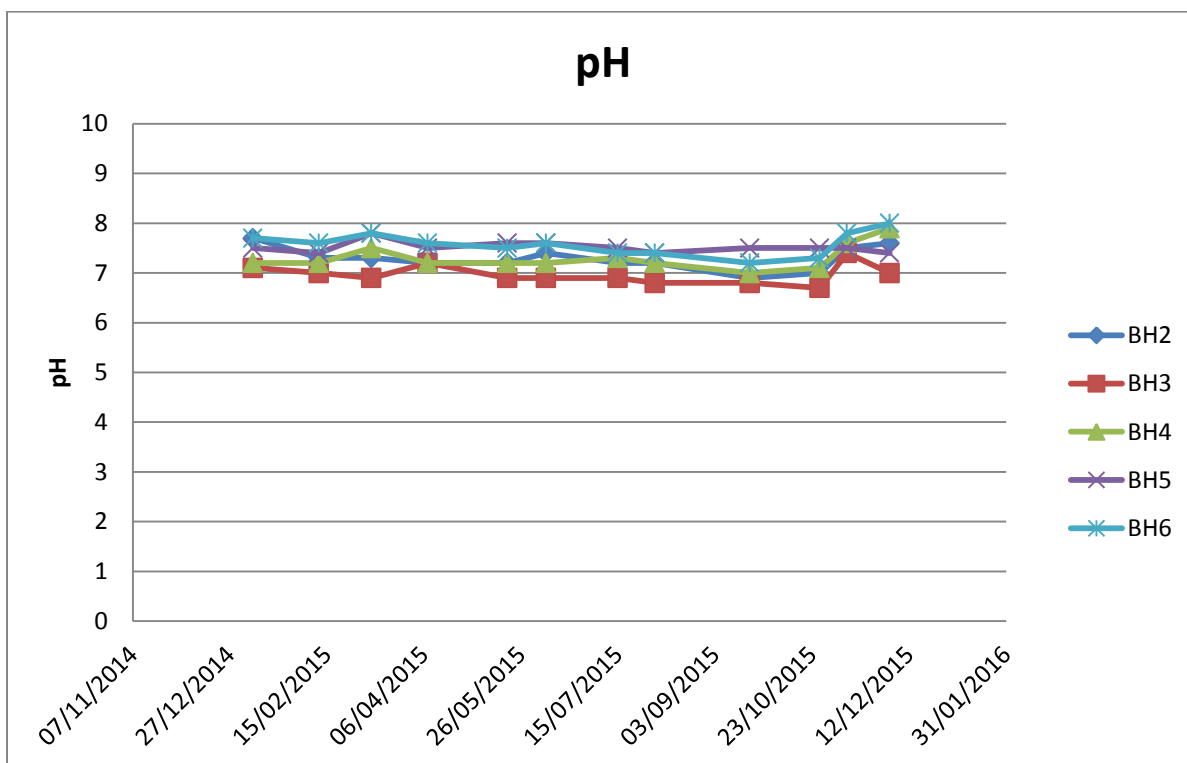
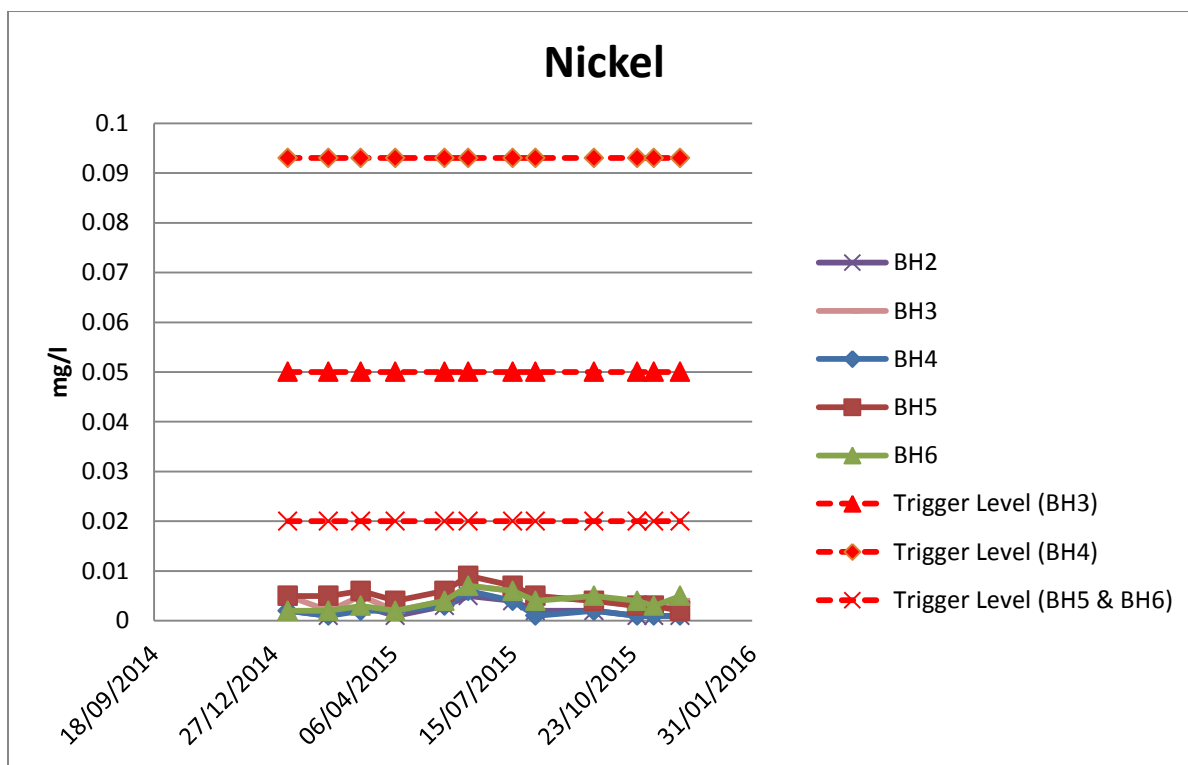
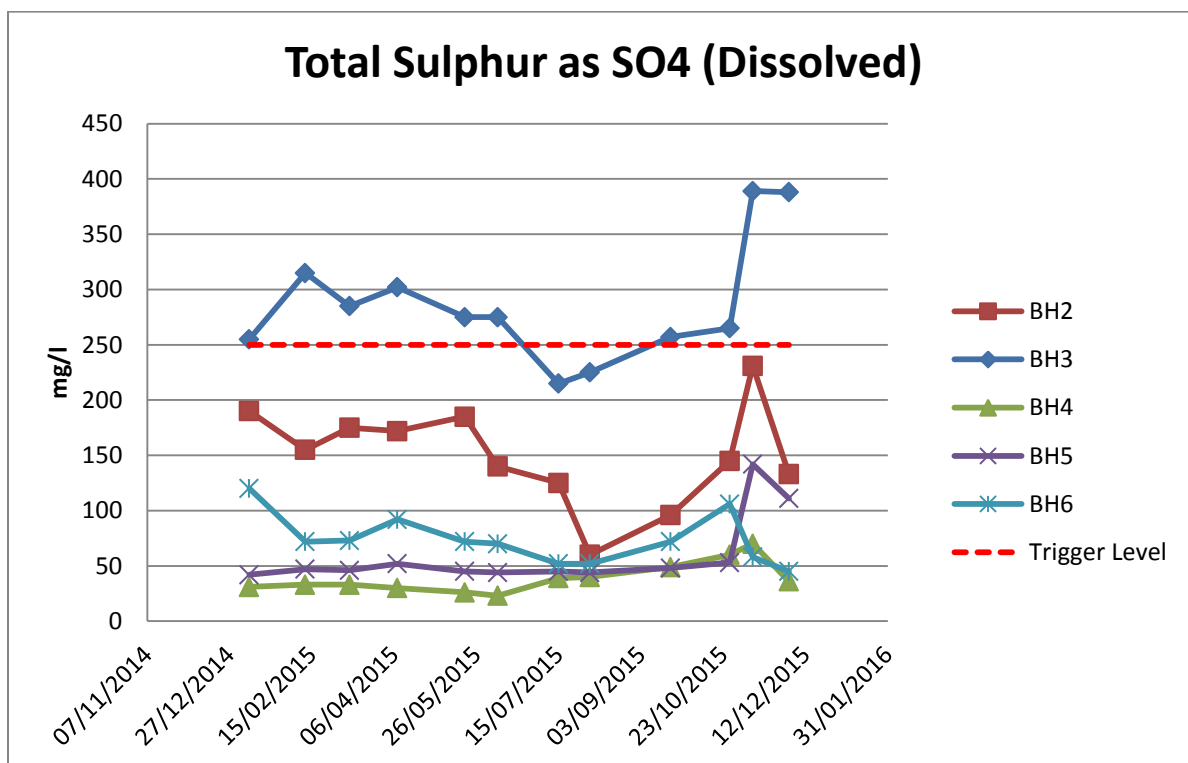


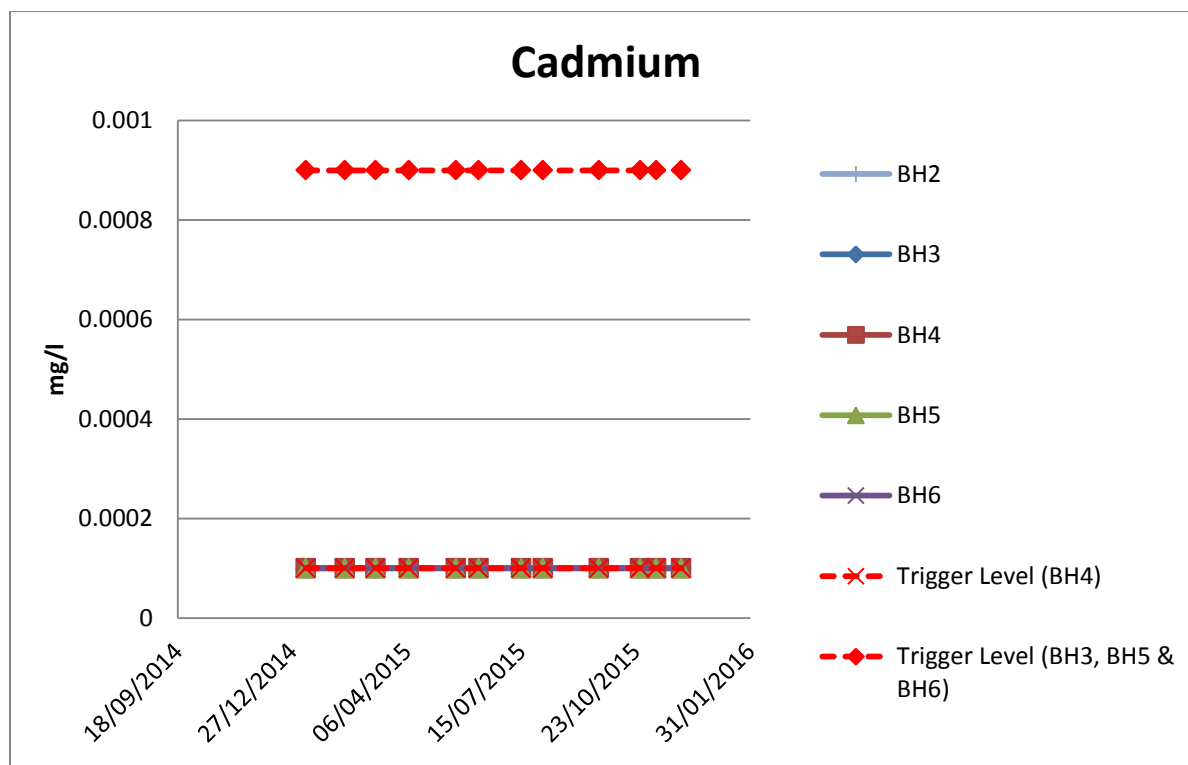
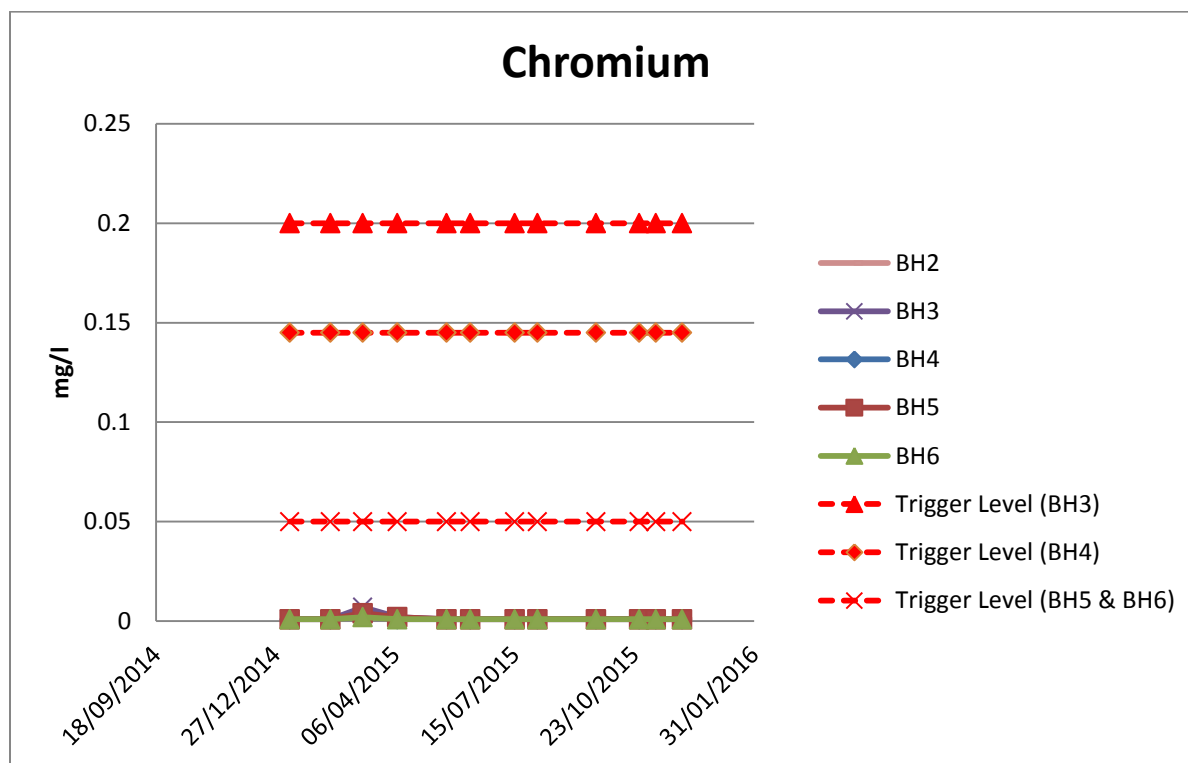
Table 2: Monthly monitoring data summary

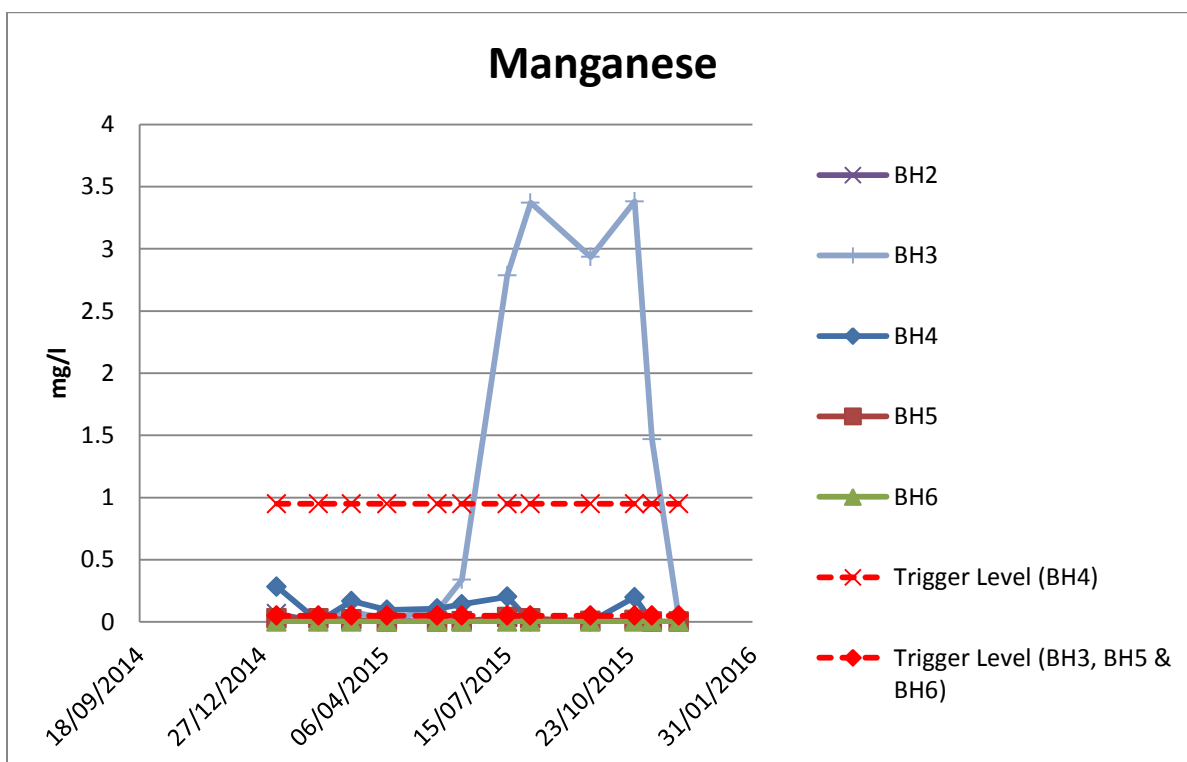
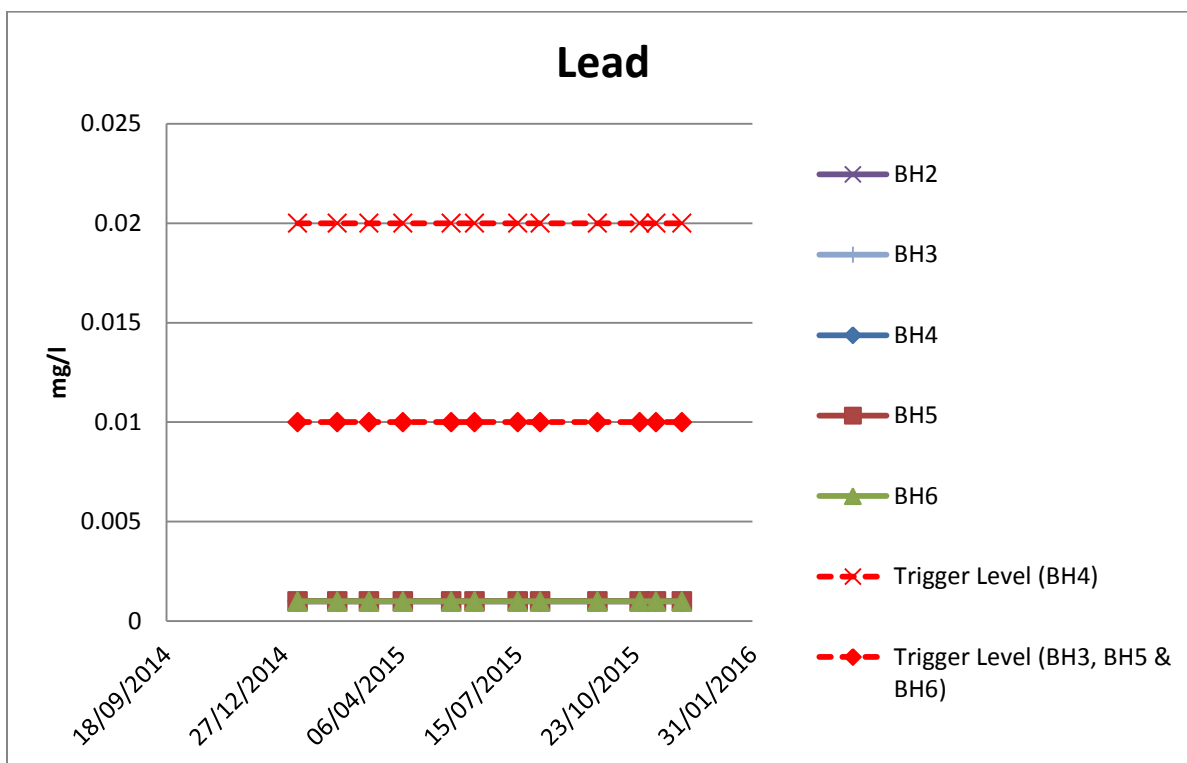
Location		Ammoniacal N	Cadmium	Chromium	Conductivity	Dissolved Oxygen	Iron	Lead
		mg/l	mg/l	mg/l	uS/cm	mg/l	mg/l	mg/l
BH2	Min	<0.01	<0.0001	<0.001	790	6	0.120	<0.001
	Max	0.08	<0.0001	0.004	1150	10	0.190	<0.001
	Average	0.02	<0.0001	0.001	934	8	0.143	<0.001
BH3	Trigger	0.39	0.0001	0.20	n/a	n/a	0.2	0.010
	Min	<0.01	<0.0001	<0.001	<100	3	0.130	<0.001
	Max	1.20	<0.0001	0.007	1666	9	0.230	<0.001
	Average	0.29	<0.0001	0.002	1431	6	0.179	<0.001
BH4	Trigger	5.4	0.0009	0.145	n/a	n/a	0.617	0.020
	Min	<0.01	<0.0001	<0.001	560	4	0.100	<0.001
	Max	0.12	<0.0001	0.003	731	9	0.180	<0.001
	Average	0.04	<0.0001	0.001	653	5	0.127	<0.001
BH5	Trigger	0.39	0.0001	0.05	n/a	n/a	0.2	0.010
	Min	0.01	<0.0001	<0.001	188	4	0.080	<0.001
	Max	0.11	<0.0001	0.004	828	9	0.140	<0.001
	Average	0.06	<0.0001	0.001	725	6	0.103	<0.001
BH6	Trigger	0.39	0.0001	0.05	n/a	n/a	0.2	0.010
	Min	<0.01	<0.0001	<0.001	187	4	0.090	<0.001
	Max	0.06	<0.0001	0.002	790	9	0.140	<0.001
	Average	0.03	<0.0001	0.001	648	7	0.114	<0.001

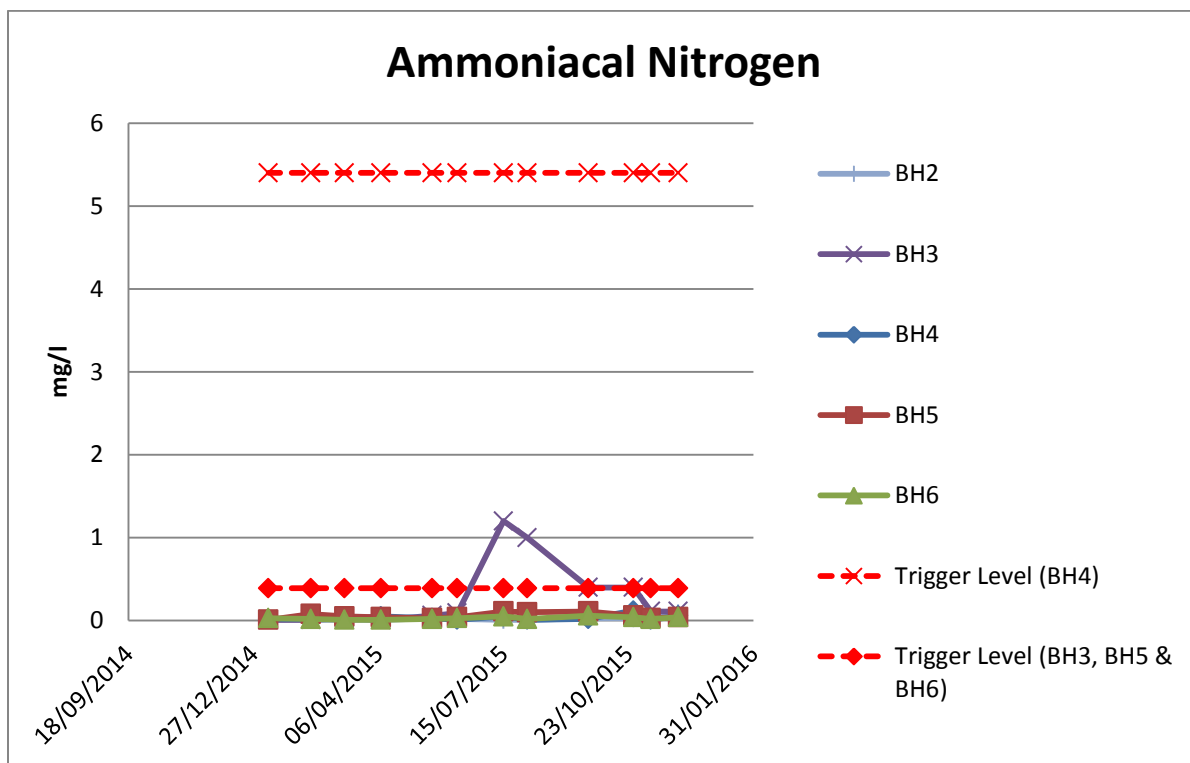
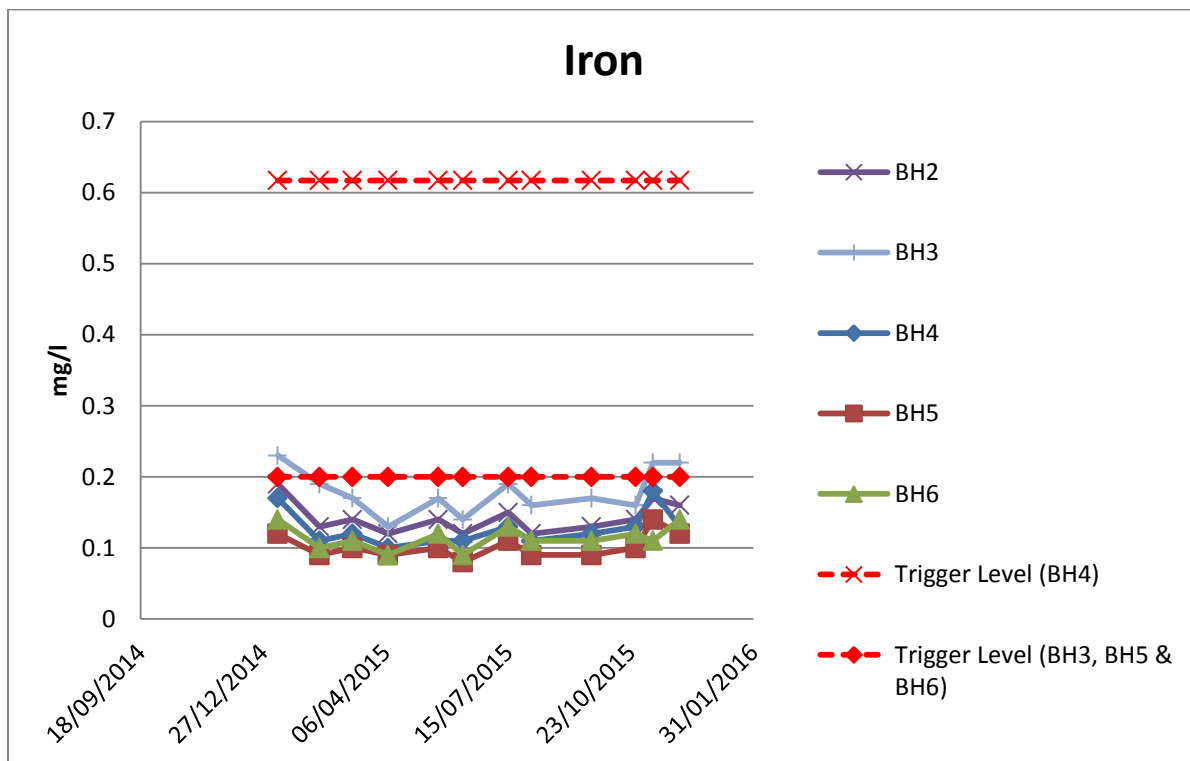
Location		Manganese	Nickel	Nitrate	pH	Phosphate	Sulphate	TPH
		mg/l	mg/l	mg/l	pH units	mg/l	mg/l	mg/l
BH2	Min	<0.002	<0.001	0.7	6.9	<0.01	60	<0.01
	Max	0.066	0.005	3.4	7.7	0.01	231	0.04
	Average	0.008	0.002	2.2	7.3	0.01	151	0.02
BH3	Trigger	0.05	0.050	n/a	n/a	n/a	250	0.01
	Min	0.015	0.002	<0.2	6.7	<0.01	215	<0.01
	Max	3.381	0.007	2.8	7.4	<0.01	389	0.03
	Average	1.212	0.004	0.6	7.0	<0.01	287	0.02
BH4	Trigger	0.95	0.09302	n/a	n/a	n/a	250	0.01
	Min	<0.002	<0.001	<0.2	7.0	<0.01	23	<0.01
	Max	0.283	0.006	1.9	7.9	<0.01	70	0.02
	Average	0.101	0.002	0.6	7.3	<0.01	39	0.01
BH5	Trigger	0.05	0.02	n/a	n/a	n/a	250	0.01
	Min	<0.002	0.002	<0.2	7.4	<0.01	42	<0.01
	Max	0.037	0.009	1.4	7.8	<0.01	142	0.11
	Average	0.014	0.005	0.4	7.5	<0.01	60	0.06
BH6	Trigger	0.05	0.02	n/a	n/a	n/a	250	0.01
	Min	<0.002	0.002	<0.2	7.2	<0.01	45	<0.01
	Max	0.004	0.007	2.30	8.0	0.040	120	2.32
	Average	0.002	0.004	1.04	7.6	0.013	74	0.23

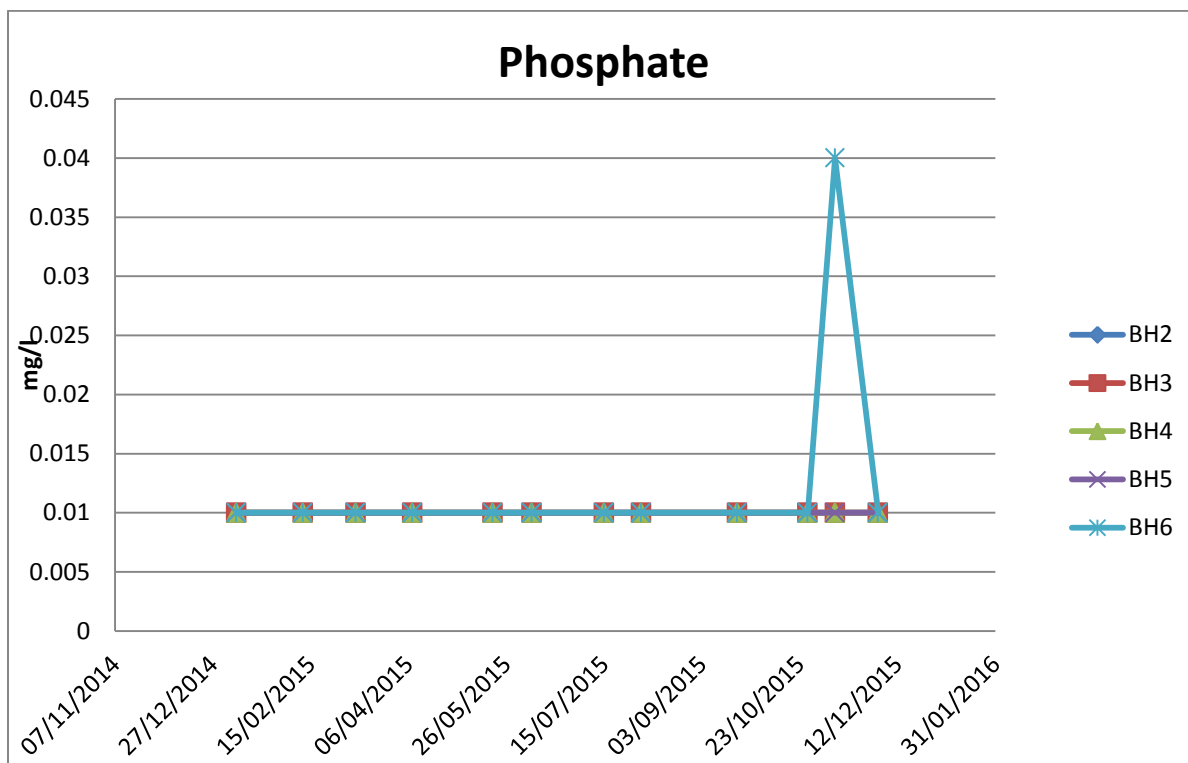
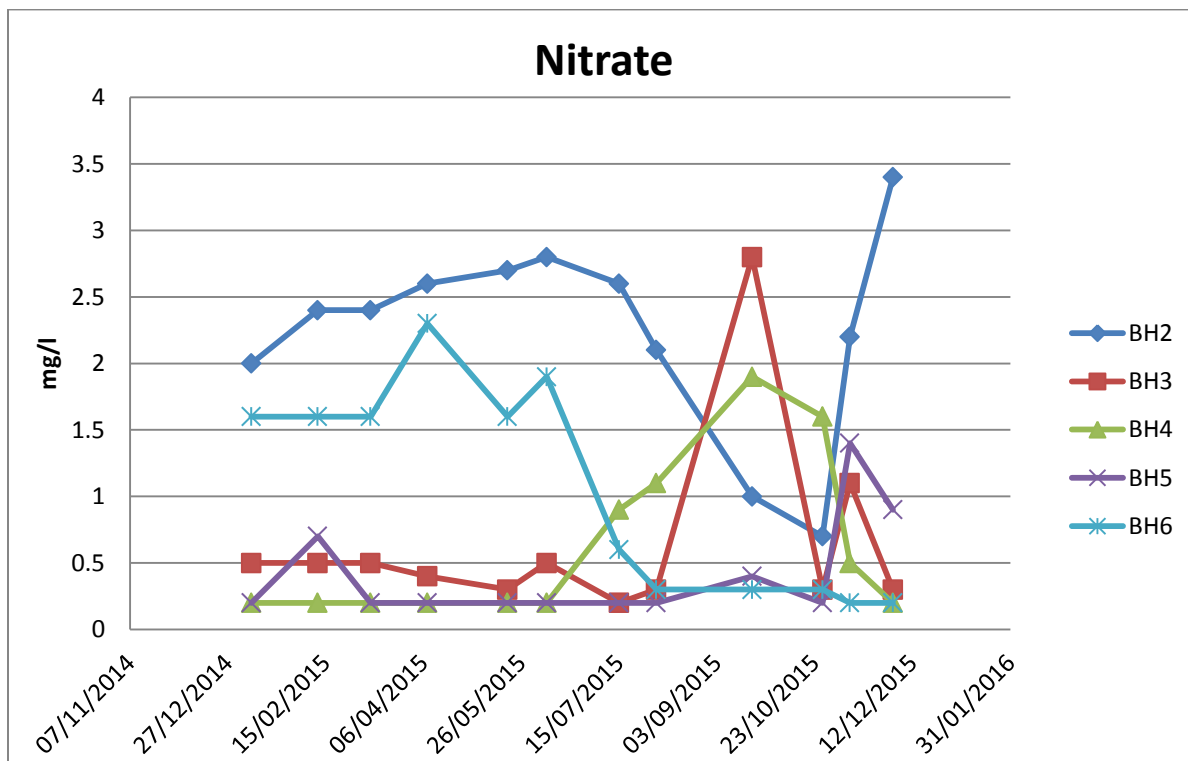












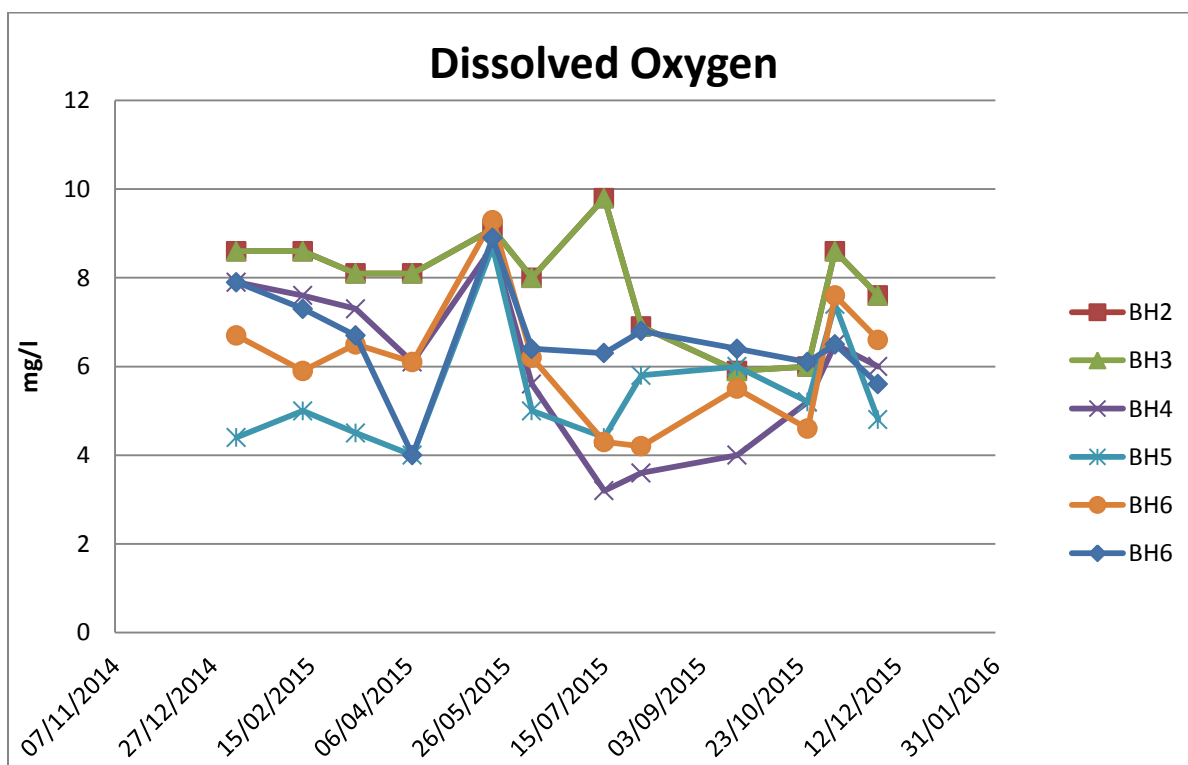
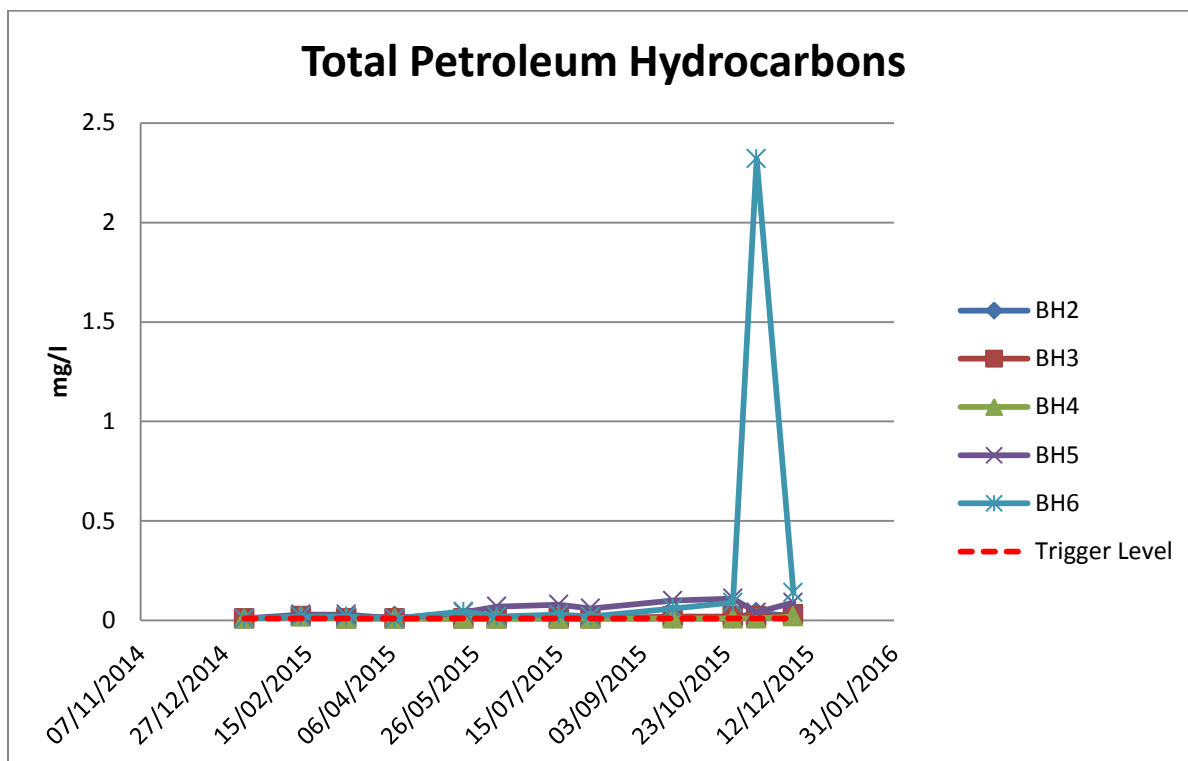
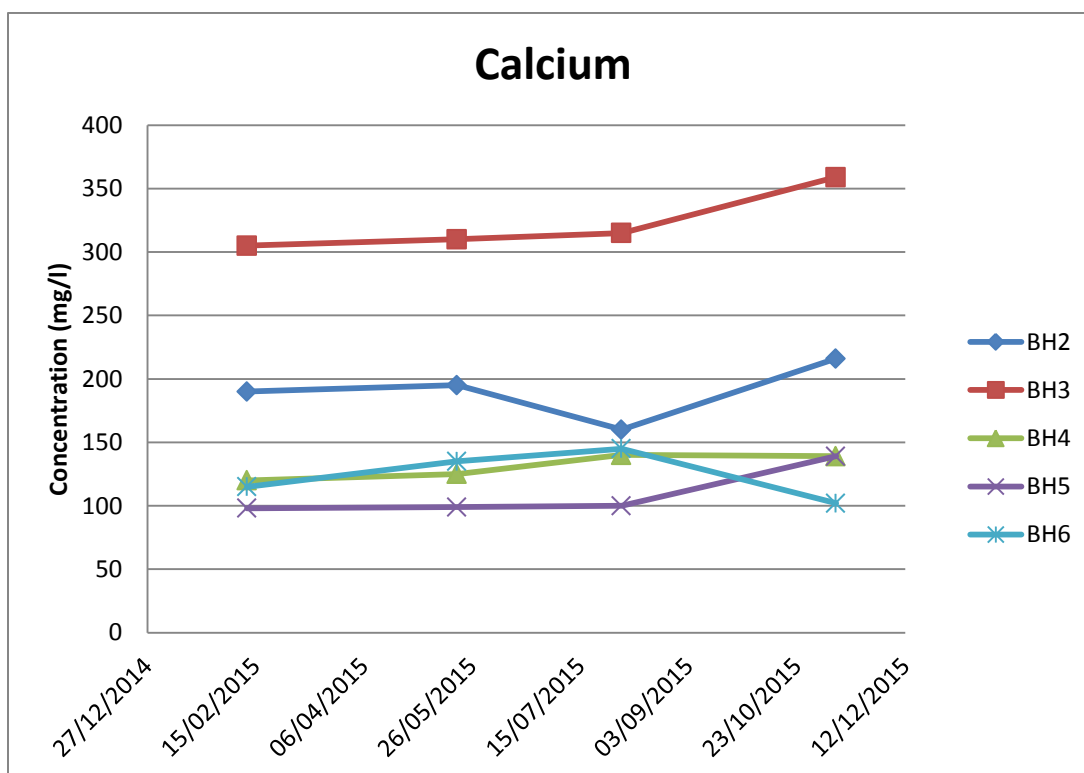
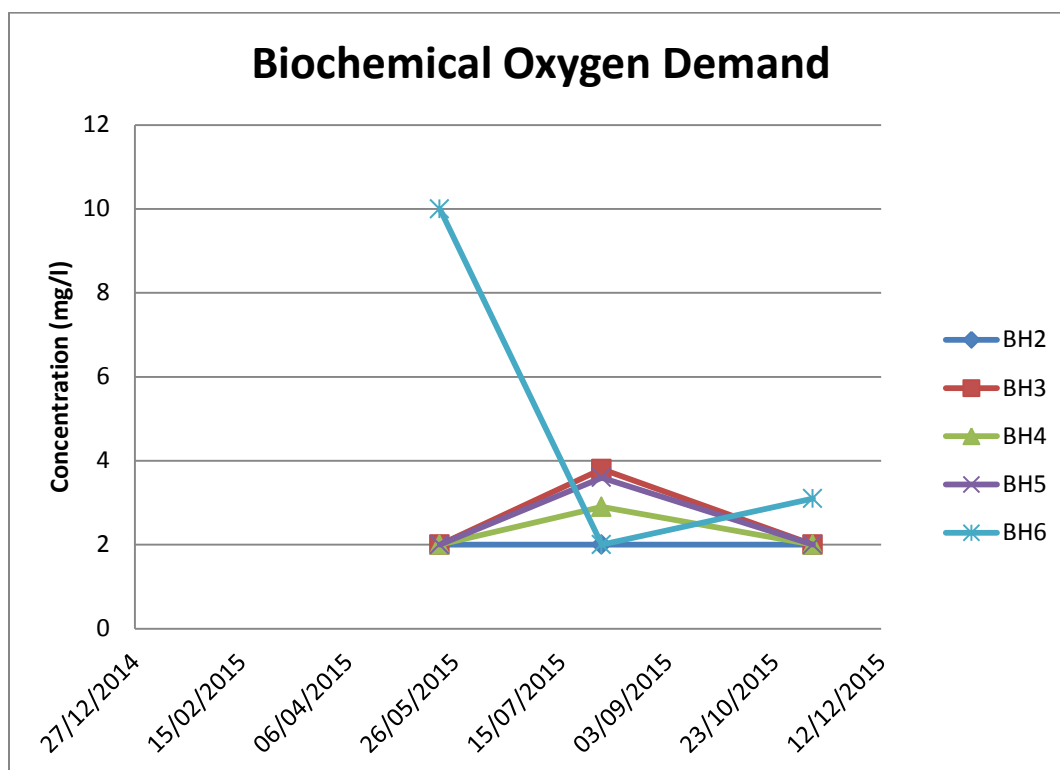
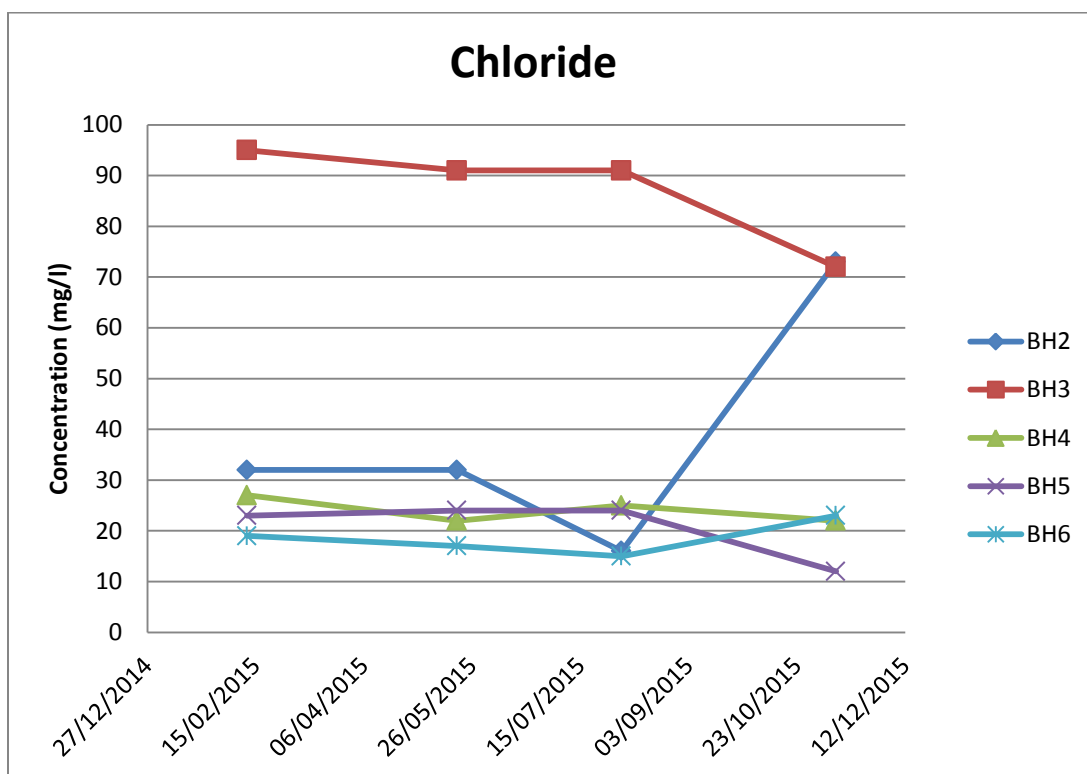
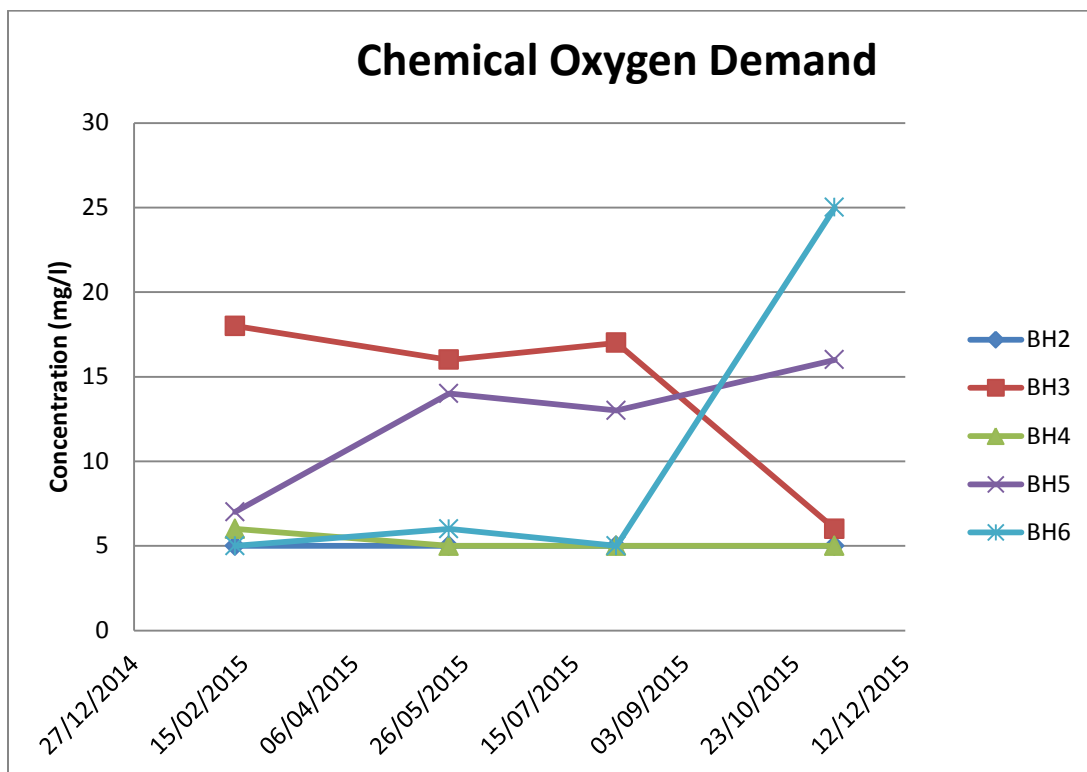


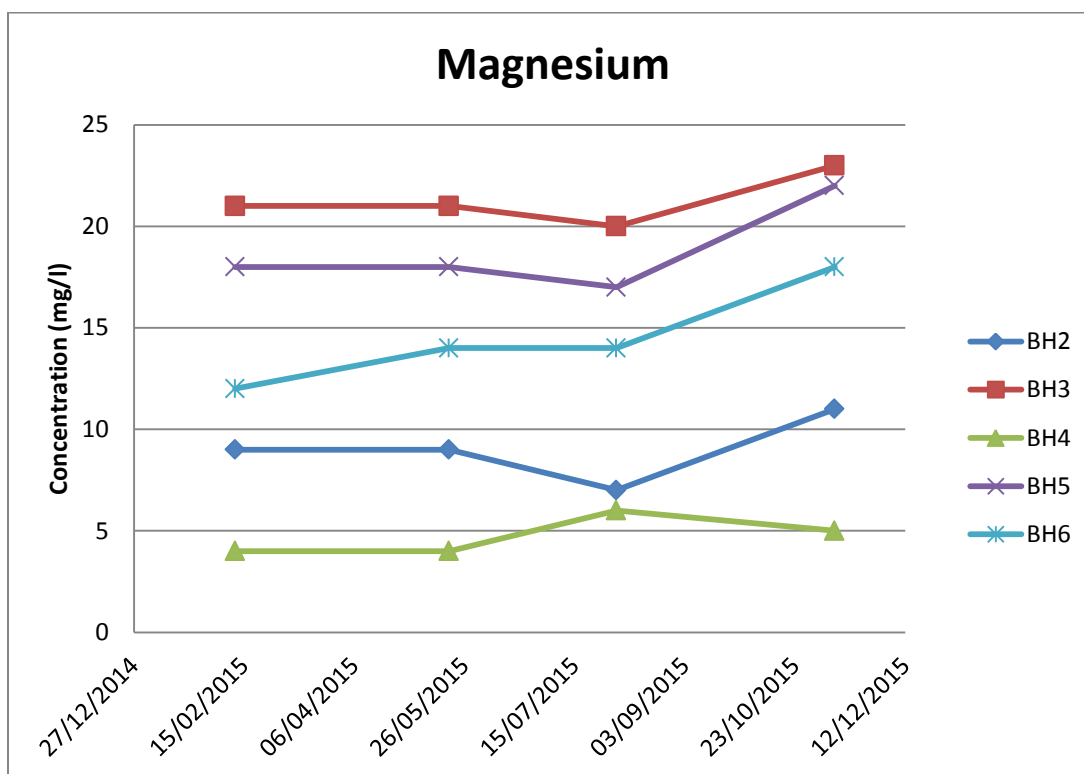
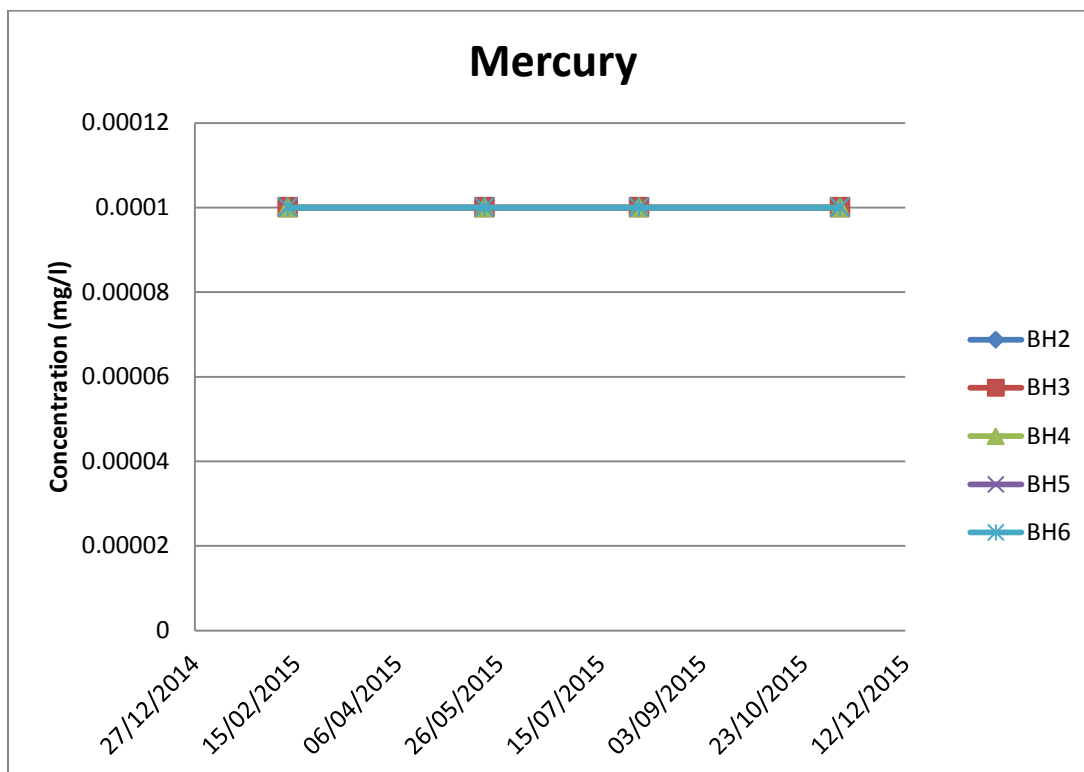
Table 3: Quarterly monitoring data

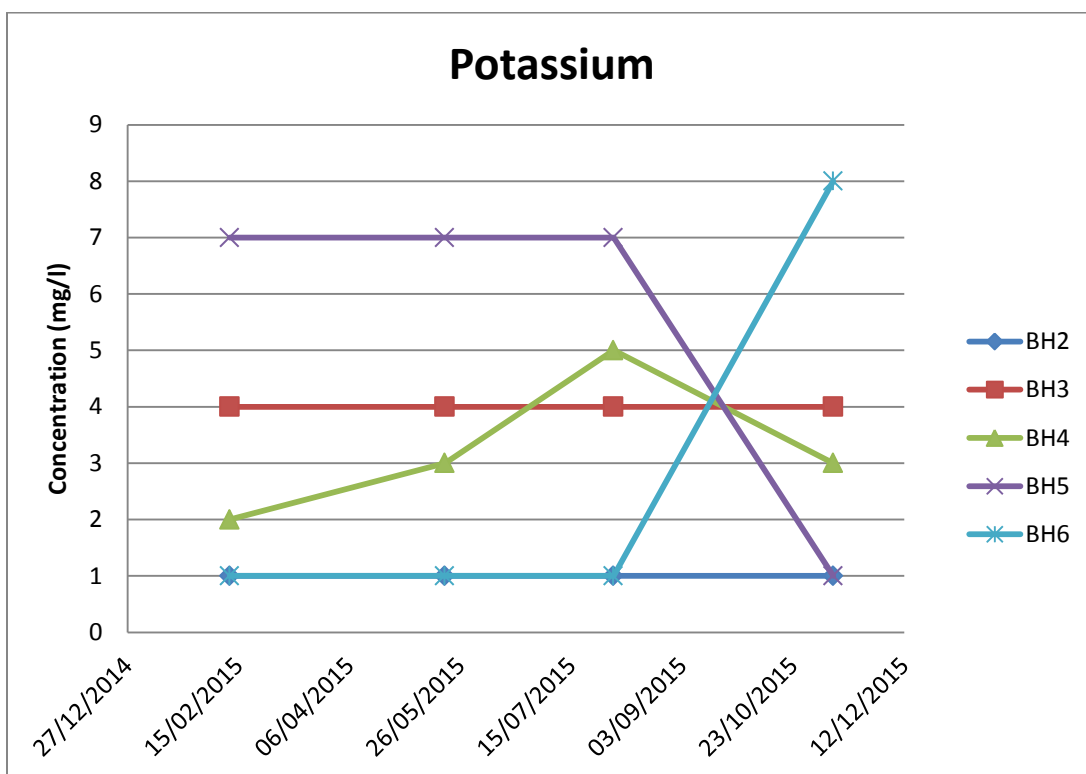
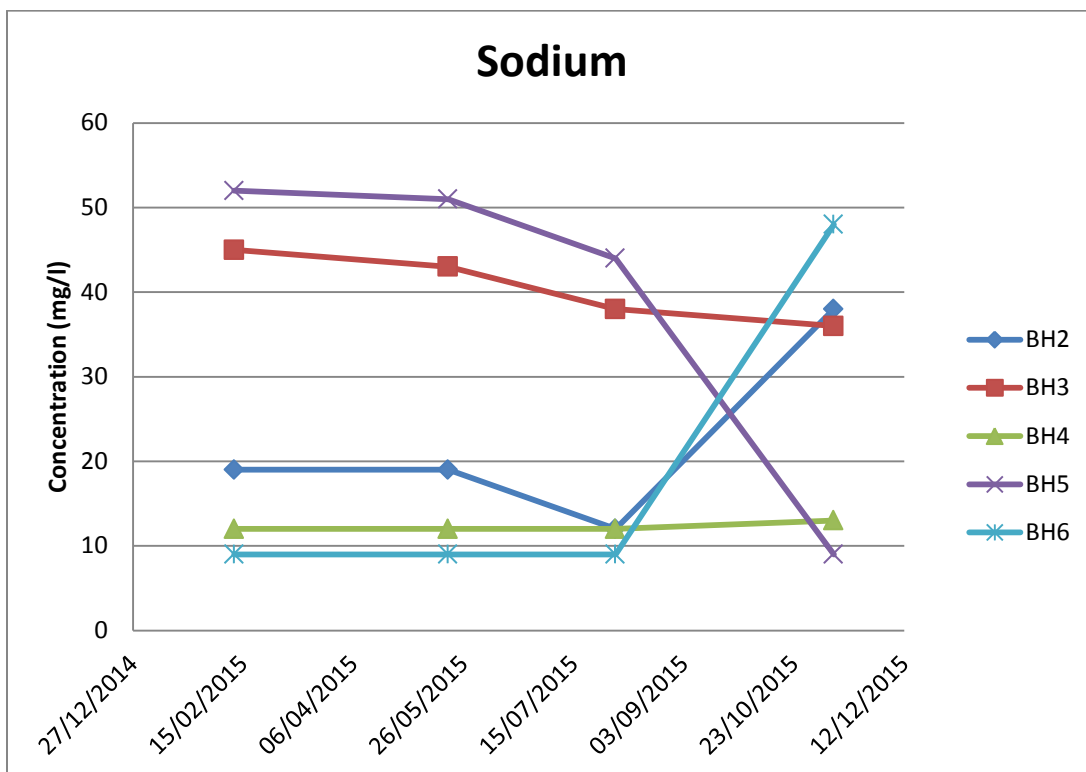
Location		Biochemical Oxygen Demand	Calcium as Ca (Dissolved)	Chemical Oxygen Demand (Settled)	Chloride as Cl	Magnesium as Mg (Dissolved)	Mercury as Hg (Dissolved)	Potassium as K (Dissolved)
		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
BH2	Min	<2	160	<5	16	7	<0.0001	<1
	Max	2.0	216	5	73	11	<0.0001	1.0
	Average	2.0	190	5	38	9	<0.0001	1.0
BH3	Min	<2	305	6	72	20	<0.0001	4.0
	Max	3.8	359	18	95	23	<0.0001	4.0
	Average	2.6	322	14	87	21	<0.0001	4.0
BH4	Min	<2	120	<5	22	4	<0.0001	2.0
	Max	2.9	140	6	27	6	<0.0001	5.0
	Average	2.3	131	5	24	5	<0.0001	3.3
BH5	Min	<2	98	7	12	17	<0.0001	1.0
	Max	3.6	139	16	24	22	<0.0001	7.0
	Average	2.5	109	13	21	19	<0.0001	5.5
BH6	Min	<2	102	<5	15	12	<0.0001	1.0
	Max	10.0	145	25	23	18	<0.0001	8.0
	Average	5.0	124	10	19	15	<0.0001	2.8

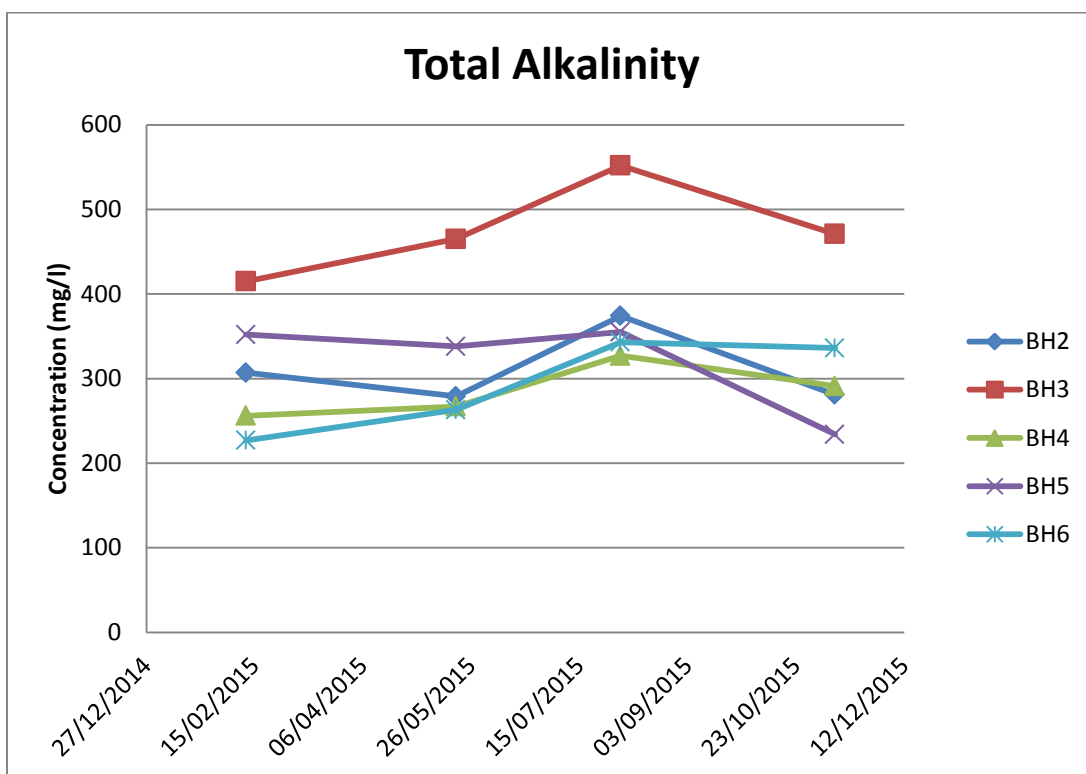
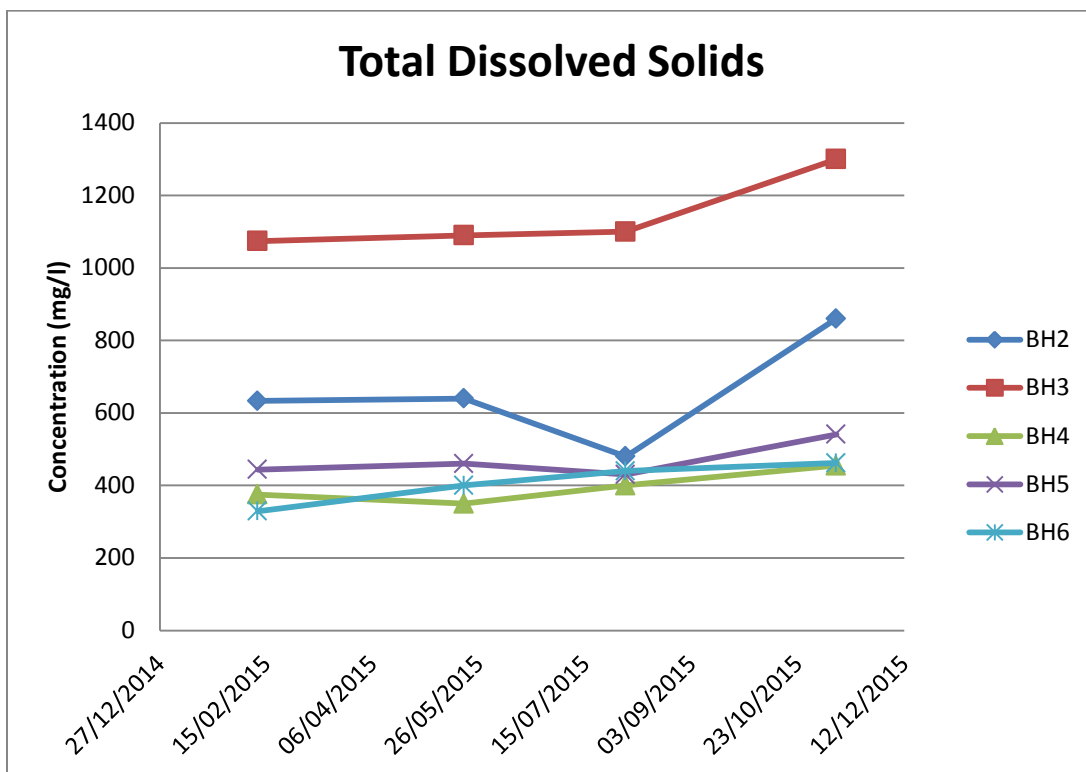
Location		Sodium as Na (Dissolved)	Total Acidity as CaCO ₃ w	Total Alkalinity as CaCO ₃	Total Dissolved Solids	Total Organic Carbon	Total Oxidised Nitrogen as N	Zinc as Zn (Dissolved)
		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
BH2	Min	12.0	Nil	279.0	480	1.1	2.1	0.002
	Max	38.0	Nil	374.0	860	2.8	2.7	0.005
	Average	22.0	Nil	310.3	653	1.7	2.4	0.003
BH3	Min	36.0	Nil	415.0	1074	4.9	0.3	<0.002
	Max	45.0	Nil	552.0	1300	8.6	1.2	0.004
	Average	40.5	Nil	475.8	1141	6.5	0.6	0.003
BH4	Min	12.0	Nil	256.0	350	1.4	<0.2	0.002
	Max	13.0	Nil	327.0	455	3.5	1.1	<0.002
	Average	12.3	Nil	285.3	395	2.7	0.5	<0.002
BH5	Min	9.0	Nil	234.0	430	0.5	<0.2	<0.002
	Max	52.0	Nil	355.0	541	1.5	1.4	0.003
	Average	39.0	Nil	319.8	469	1.2	0.6	0.002
BH6	Min	9.0	Nil	227.0	329	0.6	<0.2	<0.002
	Max	48.0	Nil	343.0	462	1.4	1.6	<0.002
	Average	18.8	Nil	292.3	408	1.1	0.9	0.002

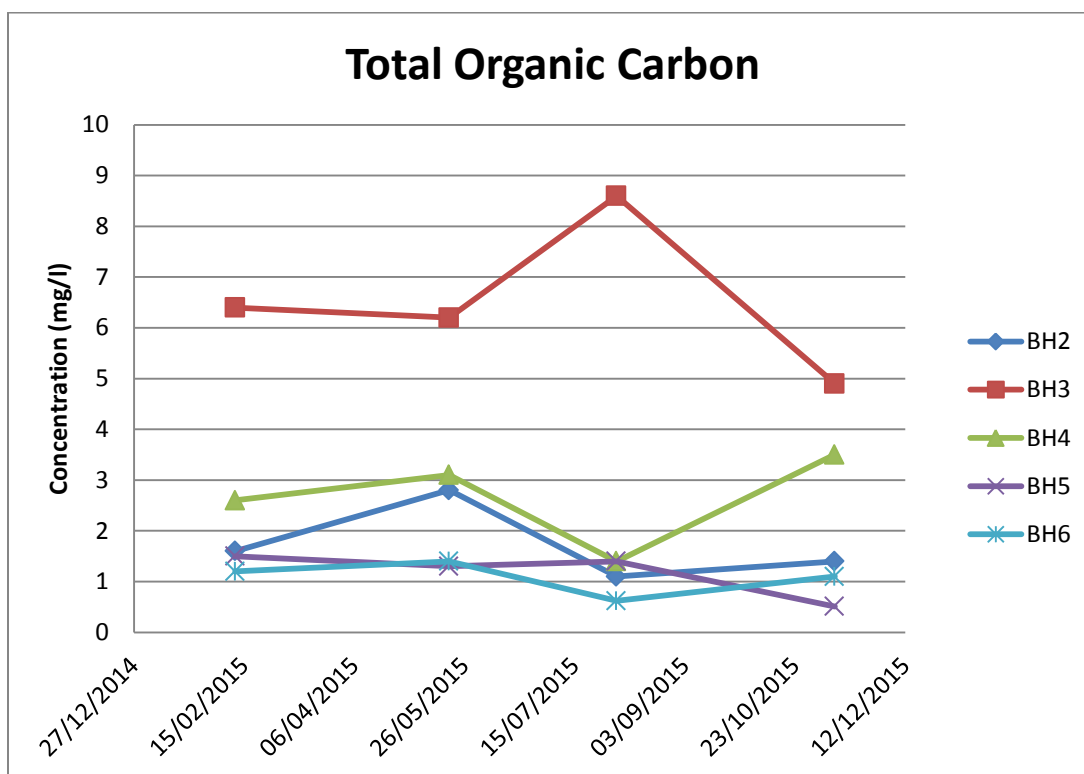
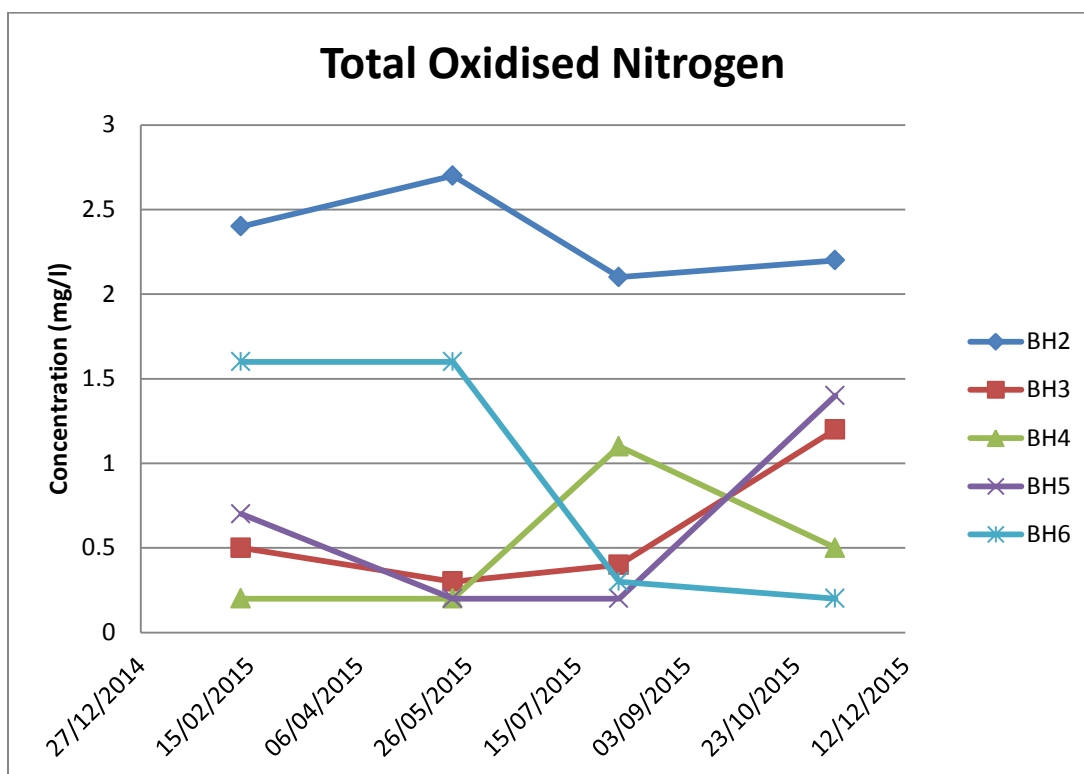












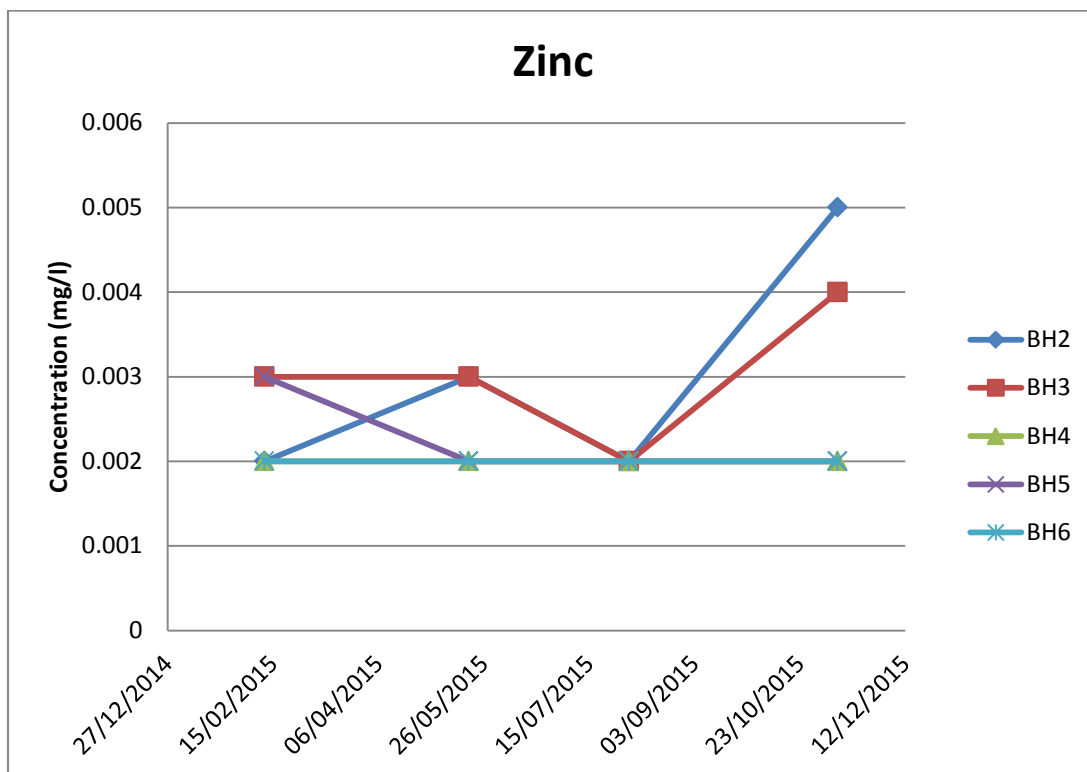


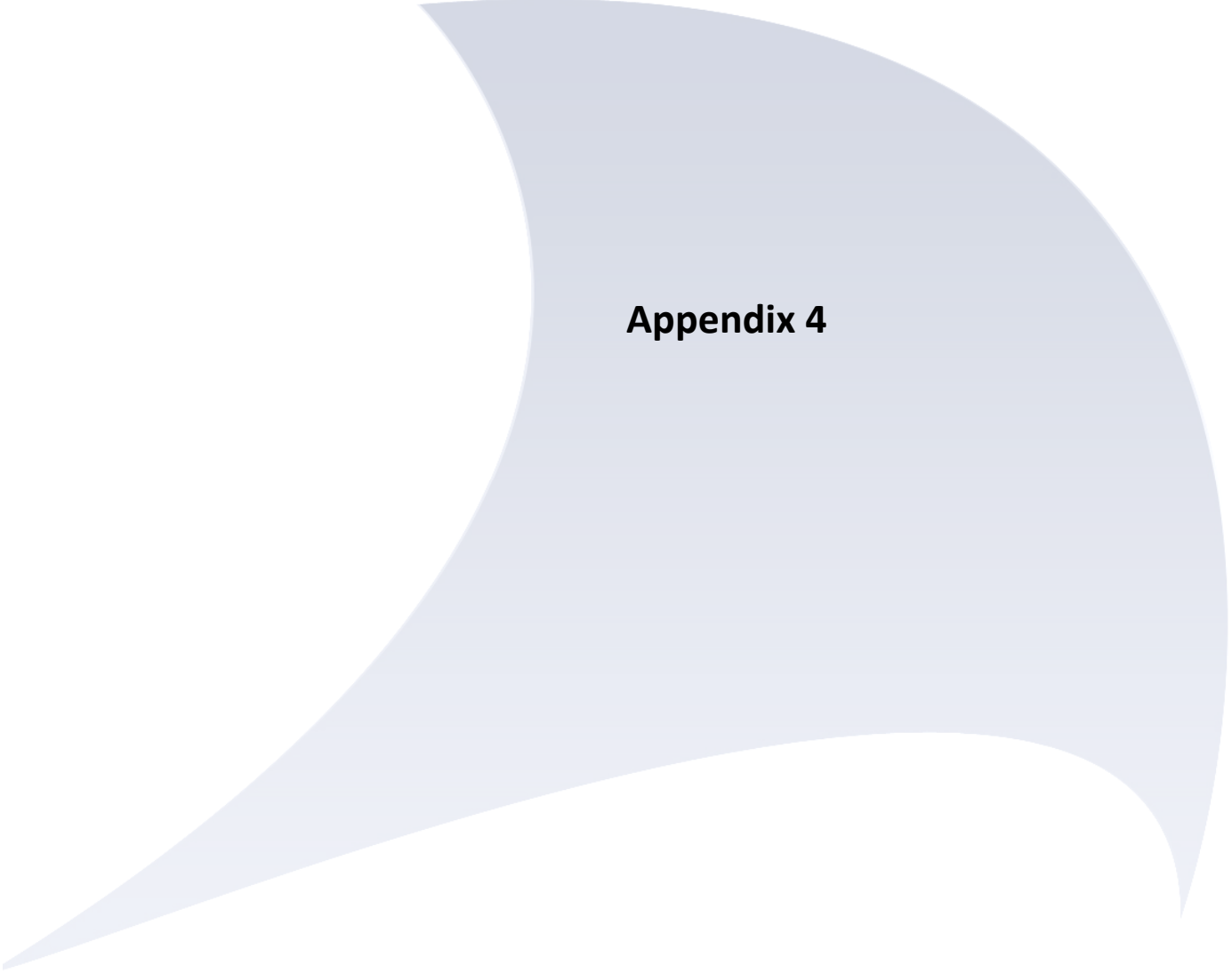
Table 4: Annual monitoring data

Parameter	Units	Groundwater Monitoring Points				
		BH2	BH3	BH4	BH5	BH6
1,1,1,2-Tetrachloroethane	ug/l	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	ug/l	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/l	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/l	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/l	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/l	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/l	<1	<1	<1	<1	<1
1,2,3,4-Tetrachlorobenzene	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
1,2,3-Trichlorobenzene	ug/l	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
1,2,3-Trichloropropane	ug/l	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/l	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	ug/l	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/l	<5	<5	<5	<5	<5
1,2-Dibromoethane	ug/l	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/l	<5	<5	<5	<5	<5
1,2-Dichloroethane	ug/l	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/l	<1	<1	<1	<1	<1
1,3,5-Trichlorobenzene	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
1,3,5-Trimethylbenzene	ug/l	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/l	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/l	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/l	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/l	<1	<1	<1	<1	<1
2,3,6-TBA	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
2,4,5-T	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
2,4-D	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
2,4-D Methyl Ester	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
2,4-DB	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
2,6-Dichlorobenzonitrile	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
2-Chlorotoluene	ug/l	<1	<1	<1	<1	<1
4-Chlorotoluene	ug/l	<1	<1	<1	<1	<1
Aldrin	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Alpha-HCH	ug/l	<0.10	<0.10	<0.10	<0.10	<1.00
Azinphos-Ethyl	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Azinphos-Methyl	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Benazolin	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Bentazon	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Benzene	ug/l	<1	<1	<1	<1	<1
Beta-HCH		<0.02	<0.02	<0.02	<0.02	<0.20

Parameter	Units	Groundwater Monitoring Points				
		BH2	BH3	BH4	BH5	BH6
Bromobenzene	ug/l	<1	<1	<1	<1	<1
Bromochloromethane	ug/l	<1	<1	<1	<1	<1
Bromodichloromethane	ug/l	<1	<1	<1	<1	<1
Bromoform	ug/l	<1	<1	<1	<1	<1
Bromomethane	ug/l	<5	<5	<5	<5	<5
Bromoxynil	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Carbofenthion	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Carbon Tetrachloride	ug/l	<1	<1	<1	<1	<1
Chlorobenzene	ug/l	<1	<1	<1	<1	<1
Chloroethane	ug/l	<5	<5	<5	<5	<5
Chloroform	ug/l	<1	<1	<1	<1	<1
Chloromethane	ug/l	<1	<1	<1	<1	<1
Chlorpyrifos	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Chlorpyriphos-Methyl	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Chlorthalonil	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
cis 1,2-Dichloroethene	ug/l	<1	<1	<1	<1	<1
cis 1,3-Dichloropropene	ug/l	<1	<1	<1	<1	<1
Cis-Chlordane	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Cis-Permethrin	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Clopyralid	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Clorfenvinfos	ug/l	<0.03	<0.03	<0.03	<0.03	<0.30
Delta-HCH	mg/l	<0.01	<0.01	<0.01	<0.01	<0.10
Diazinon	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Dibromochloromethane	ug/l	<1	<1	<1	<1	<1
Dibromomethane	ug/l	<1	<1	<1	<1	<1
Dibutyl Tin as Sn	ug/l	<20	<20	<20	<20	<20
Dicamba	ng/l	<0.02	<0.02	<0.02	<0.20	<0.02
Dichlorodifluoromethane	ug/l	<1	<1	<1	<1	<1
Dichlorprop	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Dichlorvos	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Dieldrin	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Dimethoate	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Endosulfan I	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Endosulfan II	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Endosulfan Sulfate	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Endrin	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Endrin Ketone	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Ethion	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Ethylbenzene	ug/l	<1	<1	<1	<1	<1
Etrimphos	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10

Parameter	Units	Groundwater Monitoring Points				
		BH2	BH3	BH4	BH5	BH6
Fenitrothion	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Fenthion	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Fluroxypyr	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Gamma-HCH	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Heptachlor	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Heptachlorepoide	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Hexachlorobenzene	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Hexachlorobutadiene	ug/l	<5	<5	<5	<5	<5
Ioxynil	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Isodrin	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
iso-Propylbenzene	ug/l	<1	<1	<1	<1	<1
m and p-Xylene	ug/l	<1	<1	<1	<1	<1
Malathion	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
MCPA	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
MCPB	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
MCPP	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Methacrifos	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Methoxychlor	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Mevinphos	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Naphthalene	ug/l	<5	<5	<5	<5	<5
n-Butylbenzene	ug/l	<1	<1	<1	<1	<1
O,P'-DDD	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
O,P'-DDE	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
O,P'-DDT	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
o-Xylene	ug/l	<1	<1	<1	<1	<1
P,P'-DDD	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
P,P'-DDE	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
P,P'-DDT	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Parathion	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Parathion-Methyl	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
PCB101	ug/l	<0.05	<0.05	<0.05	<0.05	<1
PCB118	ug/l	<0.05	<0.05	<0.05	<0.05	<1
PCB138	ug/l	<0.05	<0.05	<0.05	<0.05	<1
PCB153	ug/l	<0.05	<0.05	<0.05	<0.05	<1
PCB180	ug/l	<0.05	<0.05	<0.05	<0.05	<1
PCB28	ug/l	<0.05	<0.05	<0.05	<0.05	<1
PCB52	ug/l	<0.05	<0.05	<0.05	<0.05	<1
Pendimethalin	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Pentachlorobenzene	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Pentachlorophenol	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02

Parameter	Units	Groundwater Monitoring Points				
		BH2	BH3	BH4	BH5	BH6
Phosalone	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Phosphamidon	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Picloram	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Pirimiphos-Ethyl	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Pirimiphos-Methyl	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
p-Isopropyltoluene	ug/l	<1	<1	<1	<1	<1
Propetamphos	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Propylbenzene	ug/l	<1	<1	<1	<1	<1
Propyzamide	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
sec-Butylbenzene	mg/l	<1	<1	<1	<1	<1
Silvex	ug/l	<0.02	<0.02	<0.02	<0.20	<0.02
Styrene	ug/l	<1	<1	<1	<1	<1
Tecnazene	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
tert-Butylbenzene	ug/l	<1	<1	<1	<1	<1
Tetrachloroethene	ug/l	<5	<5	<5	<5	<5
Toluene	ug/l	<1	<1	<1	<1	<1
trans 1,2-Dichloroethene	ug/l	<1	<1	<1	<1	<1
trans 1,3-Dichloropropene	ug/l	<1	<1	<1	<1	<1
Trans-Chlordane	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Trans-Permethrin	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Triadimefon	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Triallate	ng/l	<0.02	<0.02	<0.02	<0.02	<0.20
Triazophos	ug/l	<0.01	<0.01	<0.01	<0.01	<0.10
Tributyl Tin as Sn	ug/l	<20	<20	<20	<20	<20
Trichloroethene	ug/l	<5	<5	<5	<5	<5
Trichlorofluoromethane	ug/l	<1	<1	<1	<1	<1
Triclopyr	ng/l	<0.02	<0.02	<0.02	<0.20	<0.02
Trifluralin	ug/l	<0.02	<0.02	<0.02	<0.02	<0.20
Triphenyl Tin as Sn	ng/l	<50	<50	<50	<50	<50
Vinyl Chloride	ug/l	<1	<1	<1	<1	<1



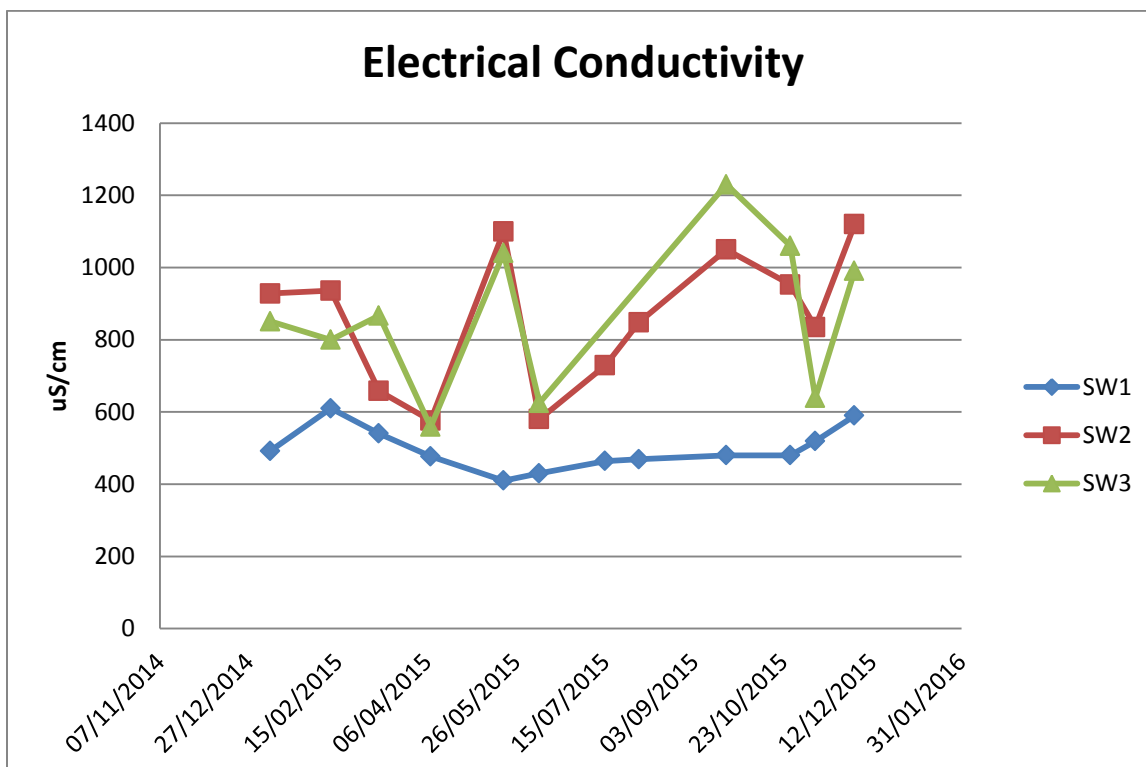
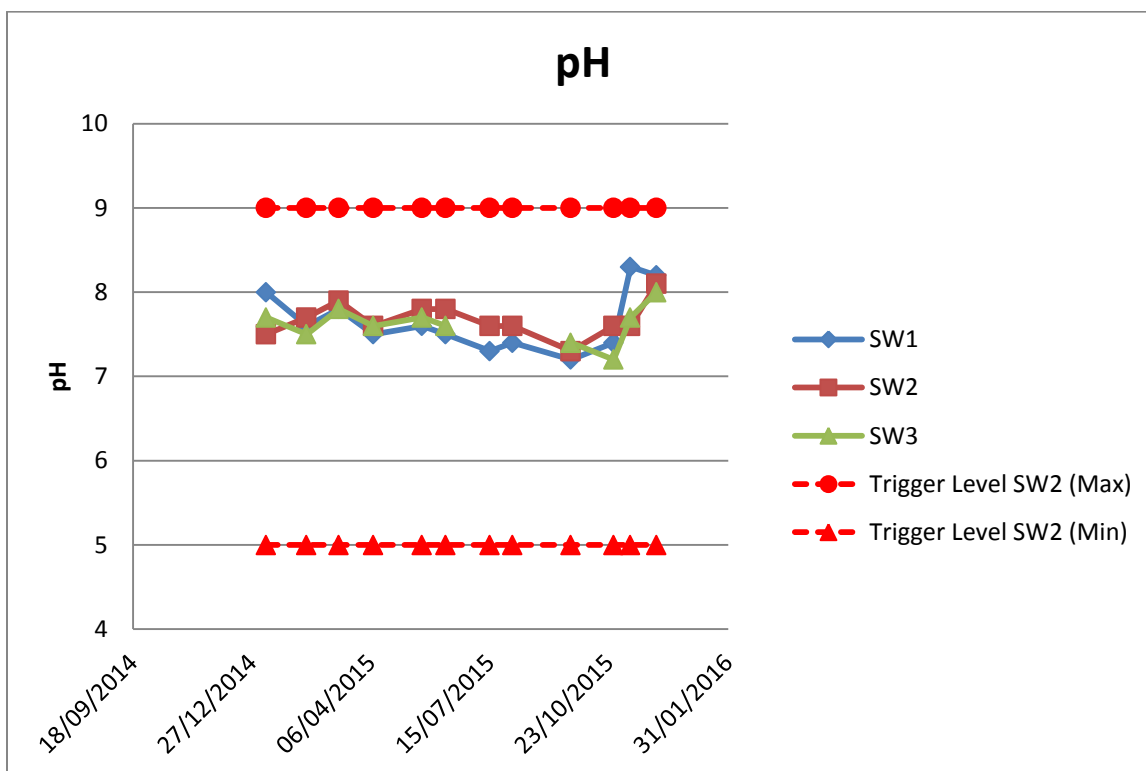
Appendix 4

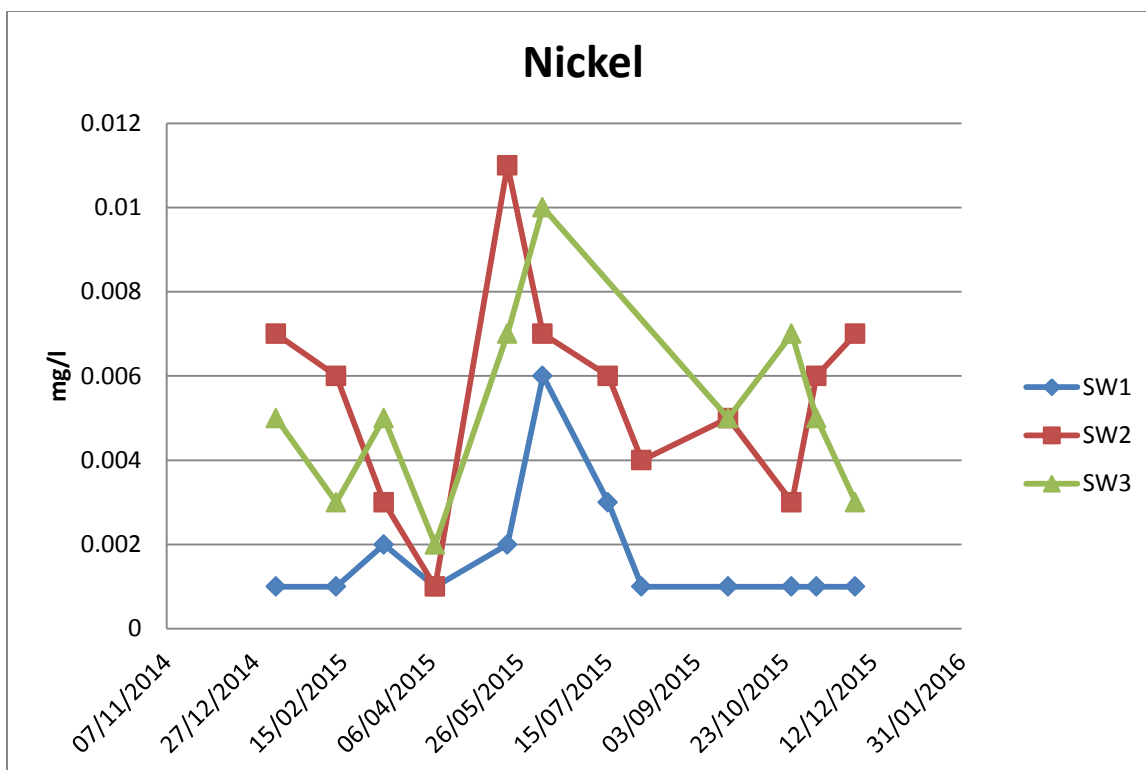
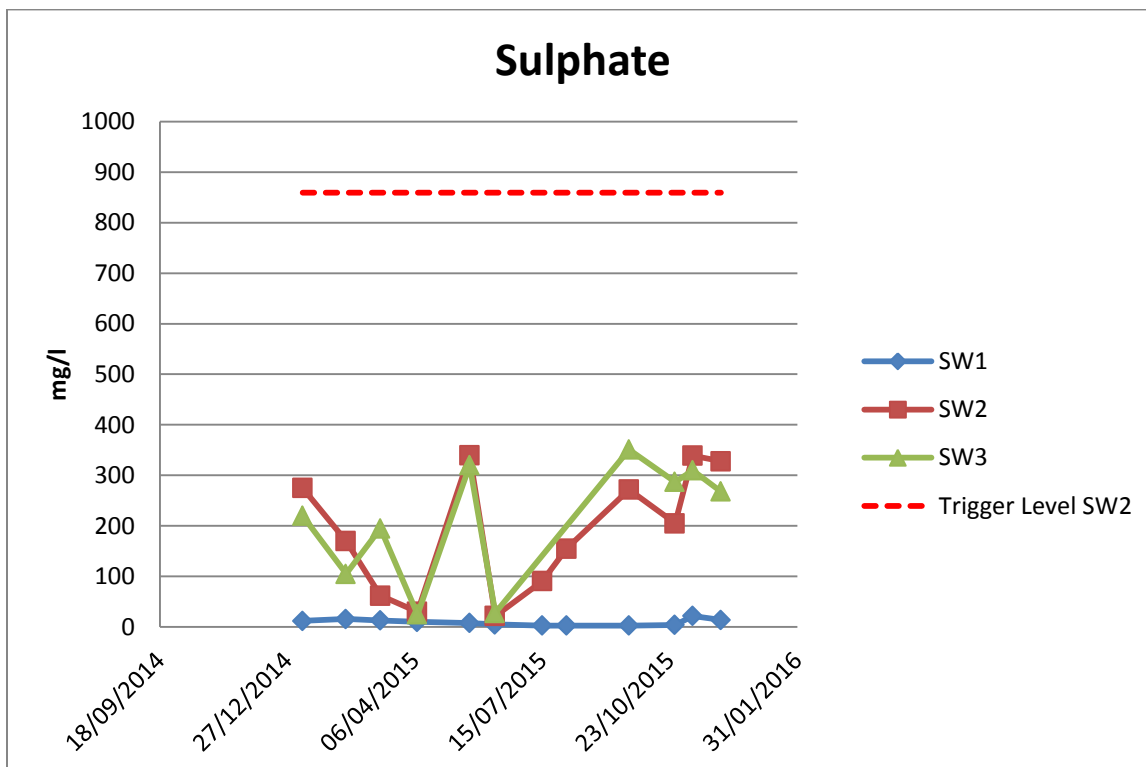
APPENDIX 4

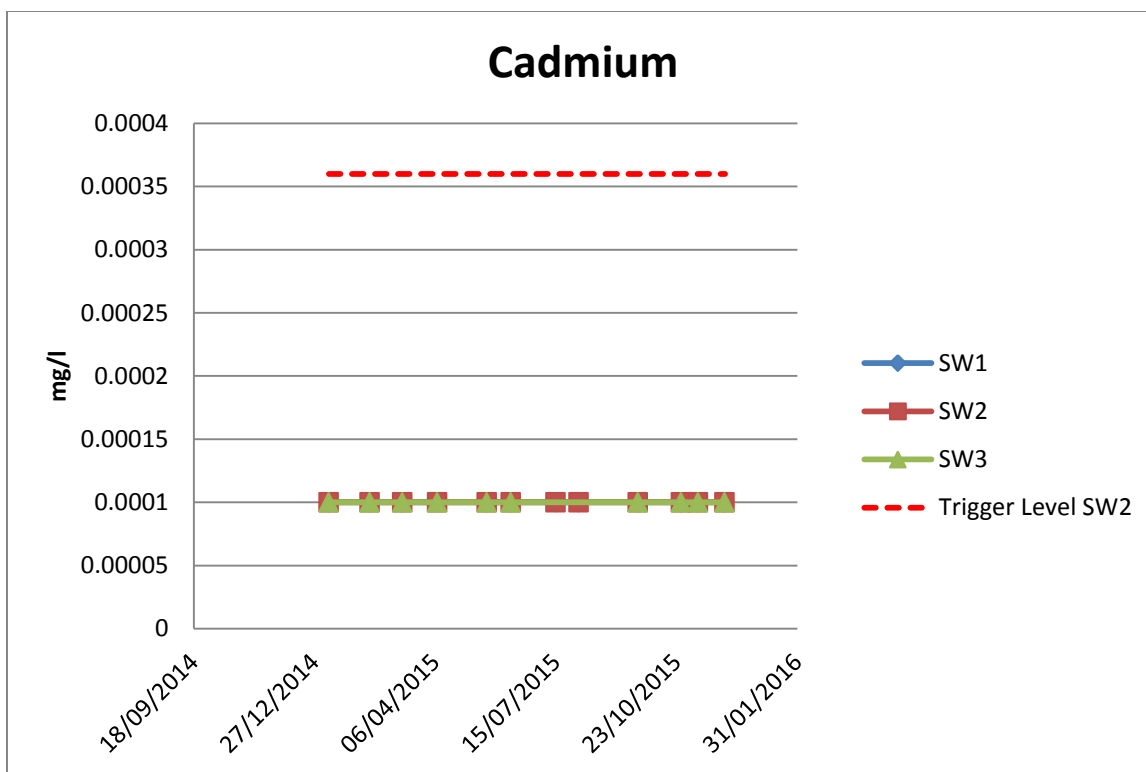
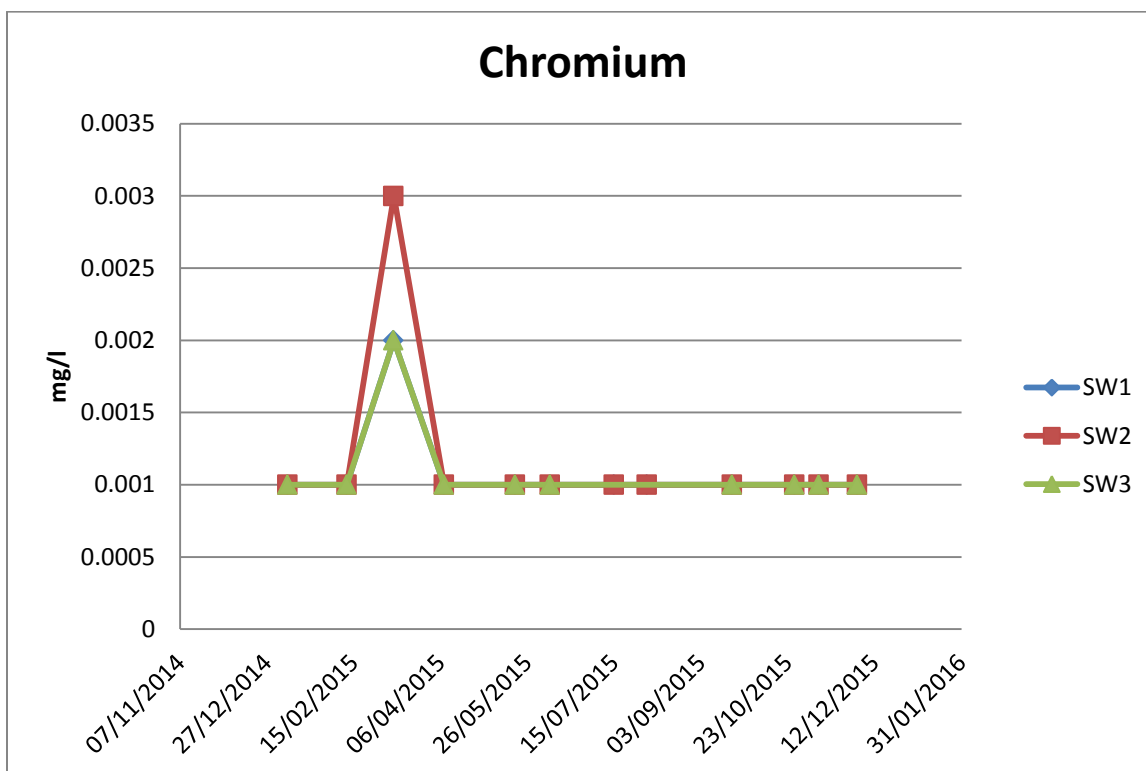
Table 1: Monthly monitoring data summary

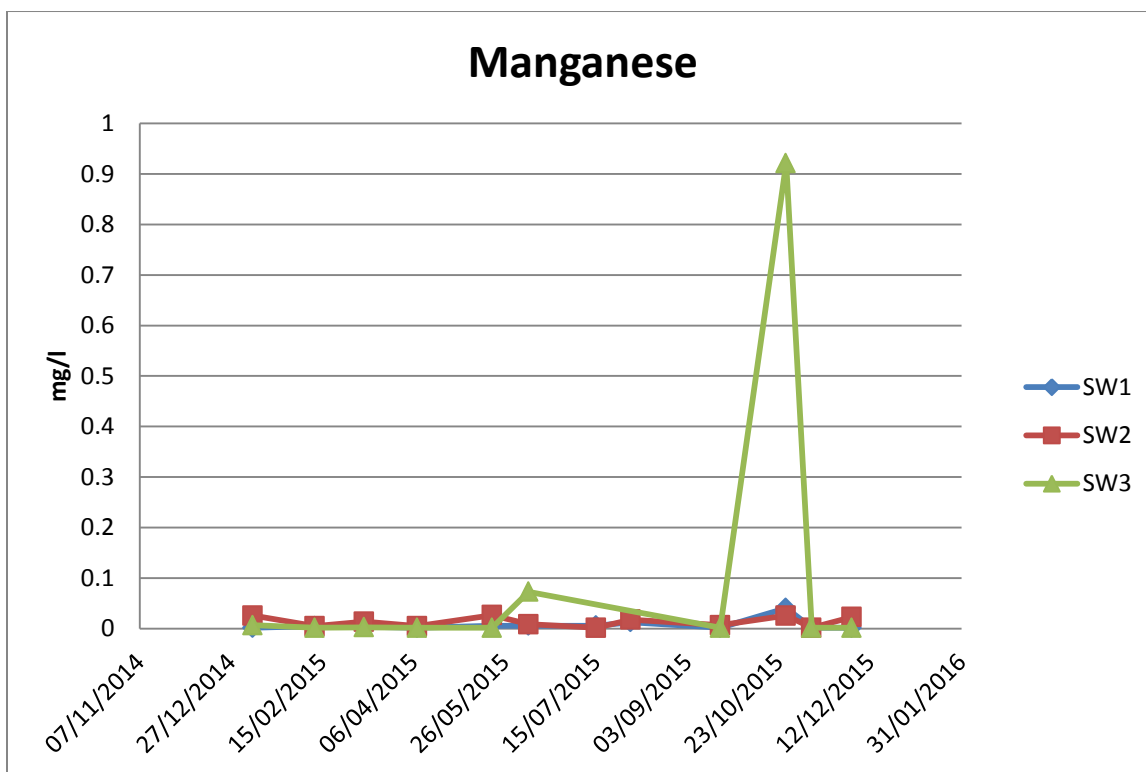
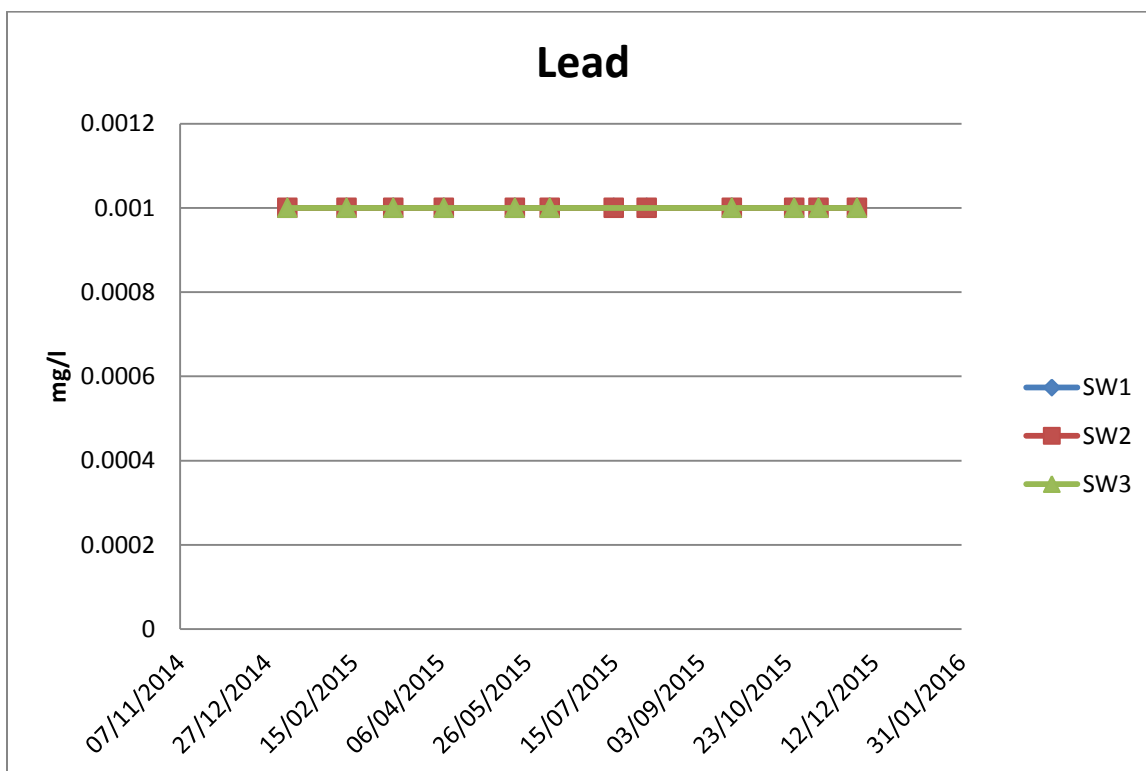
Location		Ammoniacal Nitrogen	Cadmium	Chemical Oxygen Demand	Chloride	Chromium	Conductivity	Dissolved Oxygen	Iron	Lead
		mg/l	mg/l	mg/l	mg/l	mg/l	uS/cm	mg/l	mg/l	mg/l
SW1	Min	0.03	<0.0001	5	16	<0.001	410	3.7	0.11	<0.001
	Max	0.40	<0.0001	31	24	0.002	610	9.6	0.42	<0.001
	Average	0.10	<0.0001	20	20	0.001	497	7.2	0.22	<0.001
SW2	Trigger	7.4	0.00036	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Min	0.02	<0.0001	6	24	<0.001	576	7.3	0.1	<0.001
	Max	0.14	<0.0001	21	49	0.003	1120	10.7	0.2	<0.001
	Average	0.08	<0.0001	12	34	0.001	859	8.7	0.15	<0.001
SW3	Min	<0.01	<0.0001	6	24	<0.001	559	4.2	0.09	<0.001
	Max	0.12	<0.0001	21	52	0.002	1230	10.1	0.19	<0.001
	Average	0.04	<0.0001	12	35	0.001	866	7.9	0.14	<0.001

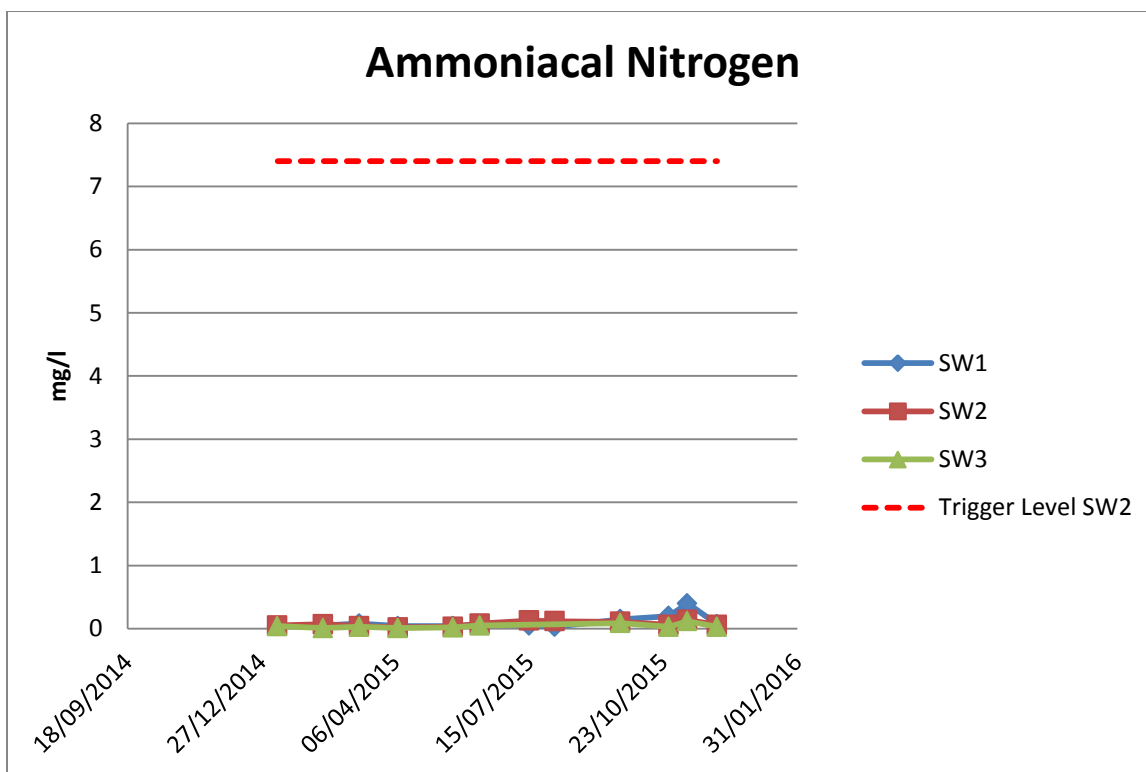
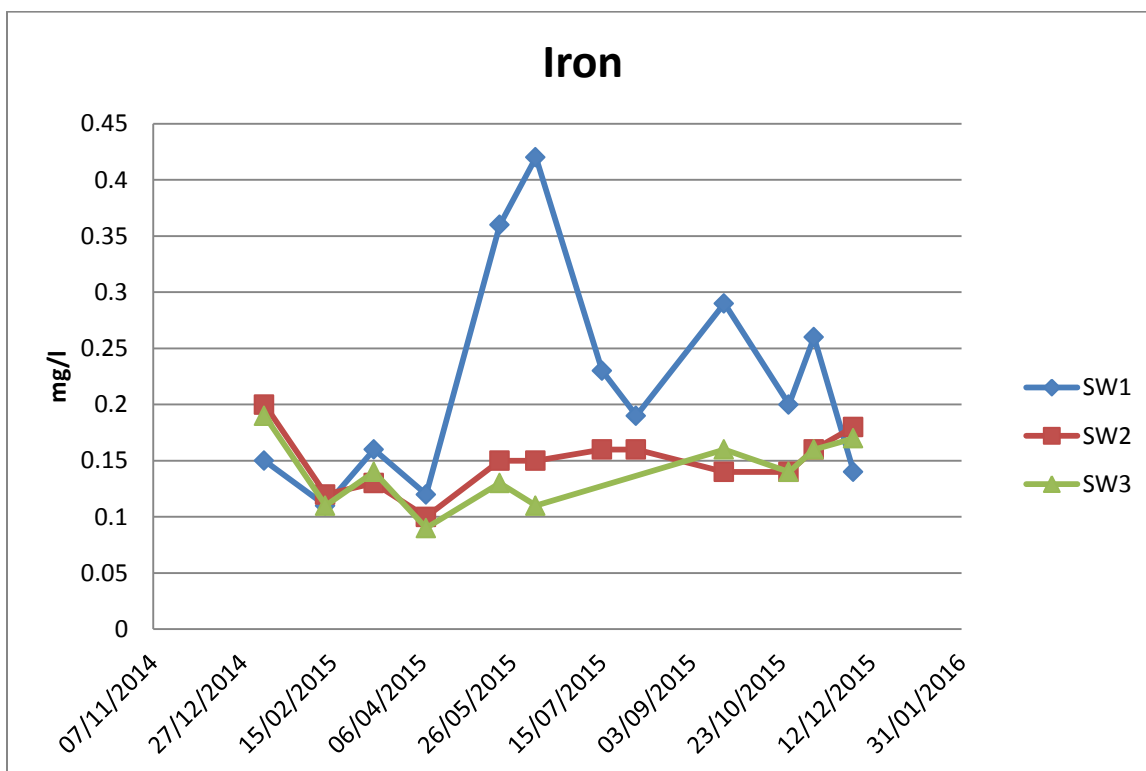
Location		Manganese	Nickel	Nitrate	pH	Phosphate	Suspended Solids	Sulphate	TPH
		mg/l	mg/l	mg/l	pH units	mg/l	mg/l	mg/l	mg/l
SW1	Min	<0.002	<0.001	<0.2	7.2	<0.01	5	<3	<0.01
	Max	0.041	0.006	7.2	8.3	<0.01	31	22	0.05
	Average	0.008	0.002	1.8	7.7	<0.01	14	9	0.03
SW2	Trigger	n/a	n/a	n/a	<5 & >9	n/a	266	859	0.01
	Min	0.002	0.001	<0.2	7.3	<0.01	<5	22	<0.01
	Max	0.027	0.011	2.5	8.1	<0.01	157	340	0.03
	Average	0.014	0.006	1.1	7.7	<0.01	25	191	0.02
SW3	Min	<0.002	0.002	<0.2	7.2	<0.01	27	25	<0.01
	Max	0.921	0.01	3.2	8.0	<0.01	1147	351	0.05
	Average	0.102	0.005	1.5	7.6	<0.01	376	211	0.03

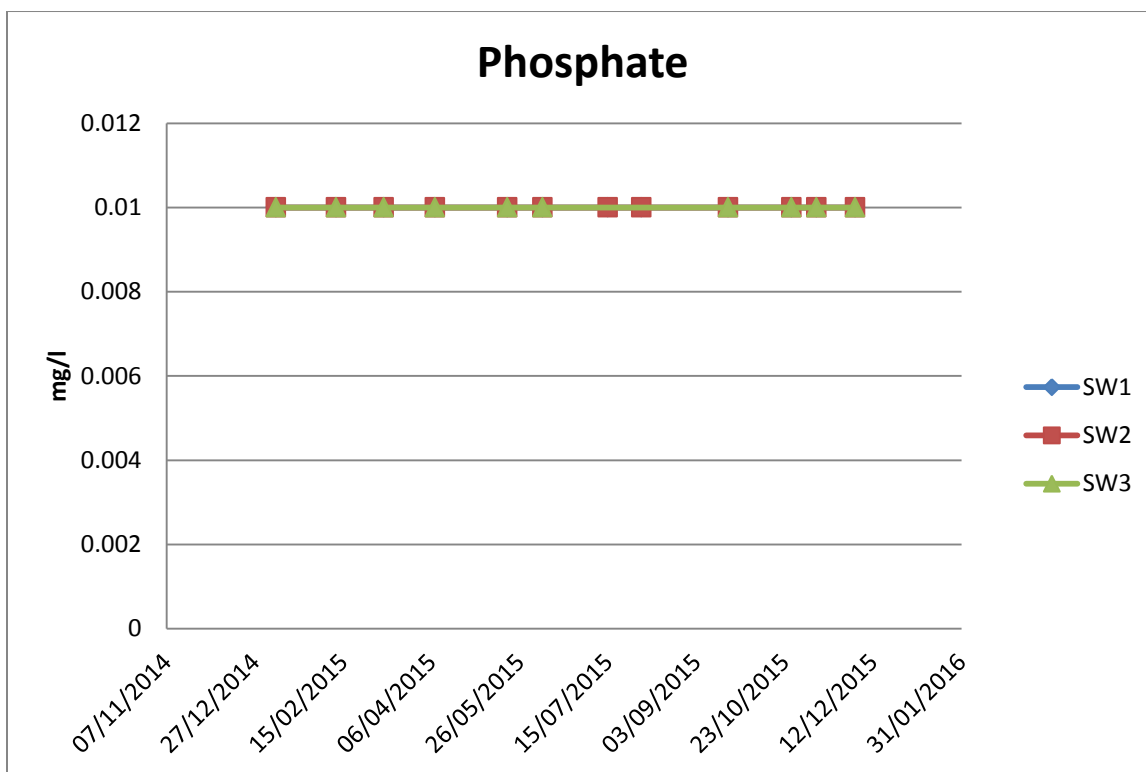
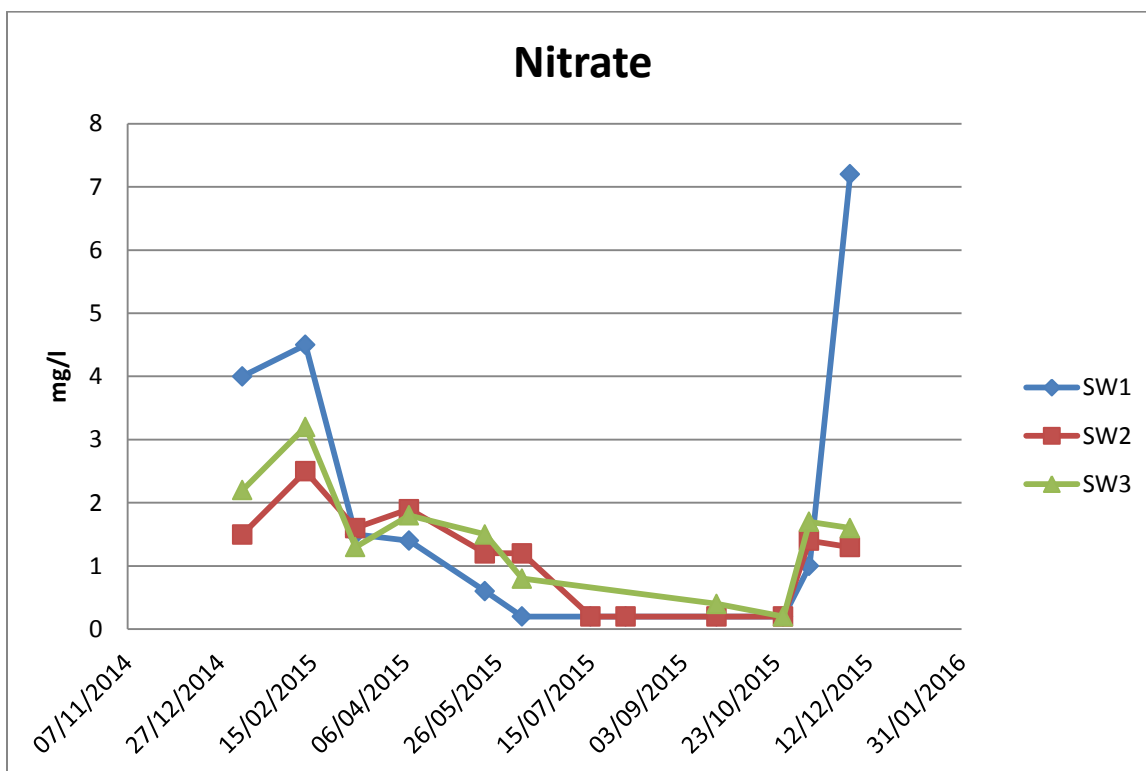


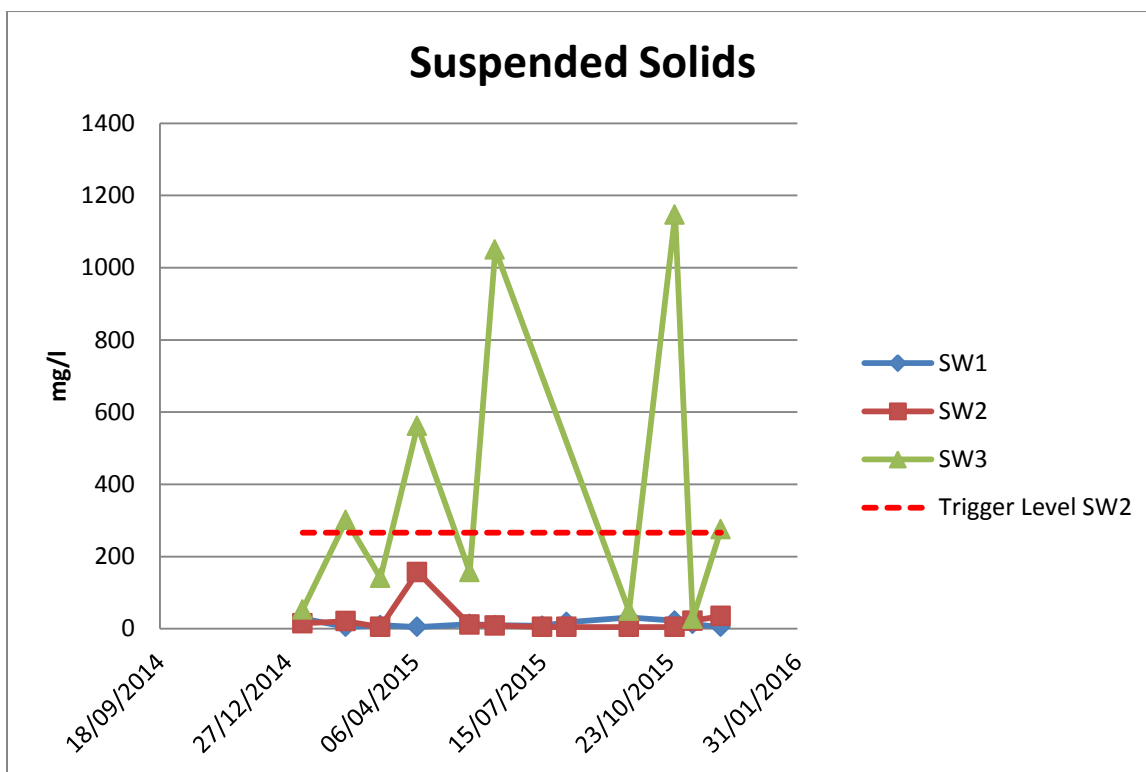
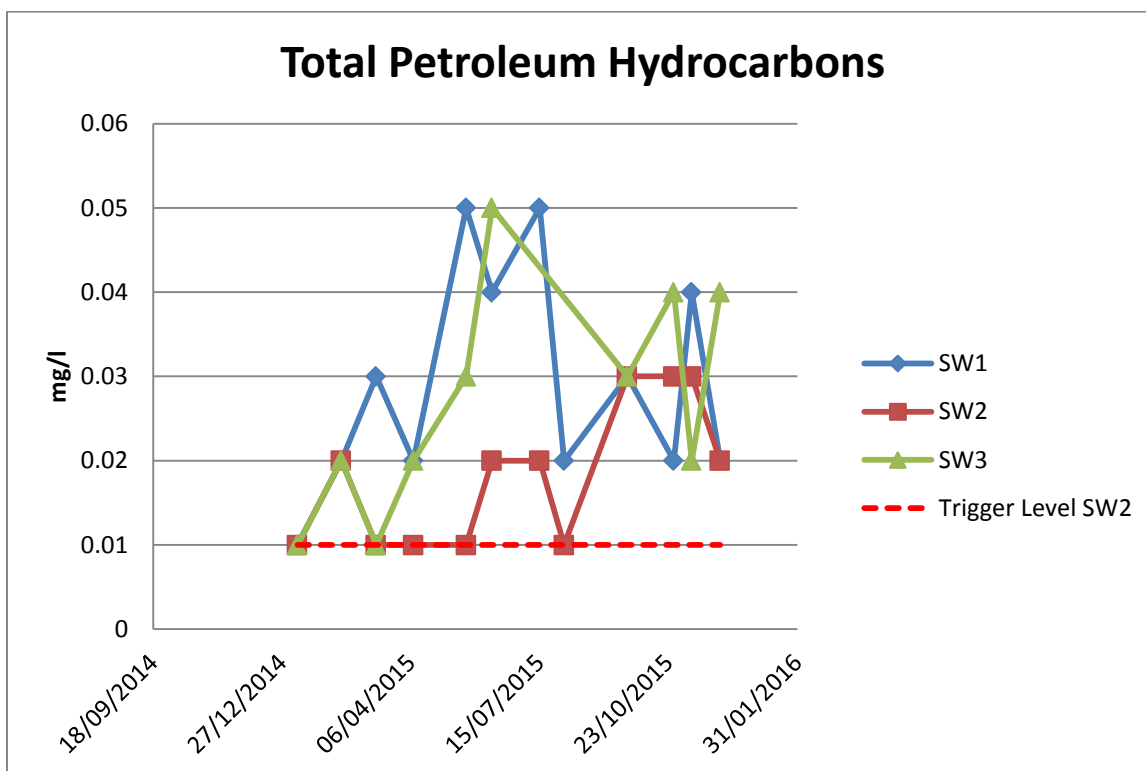


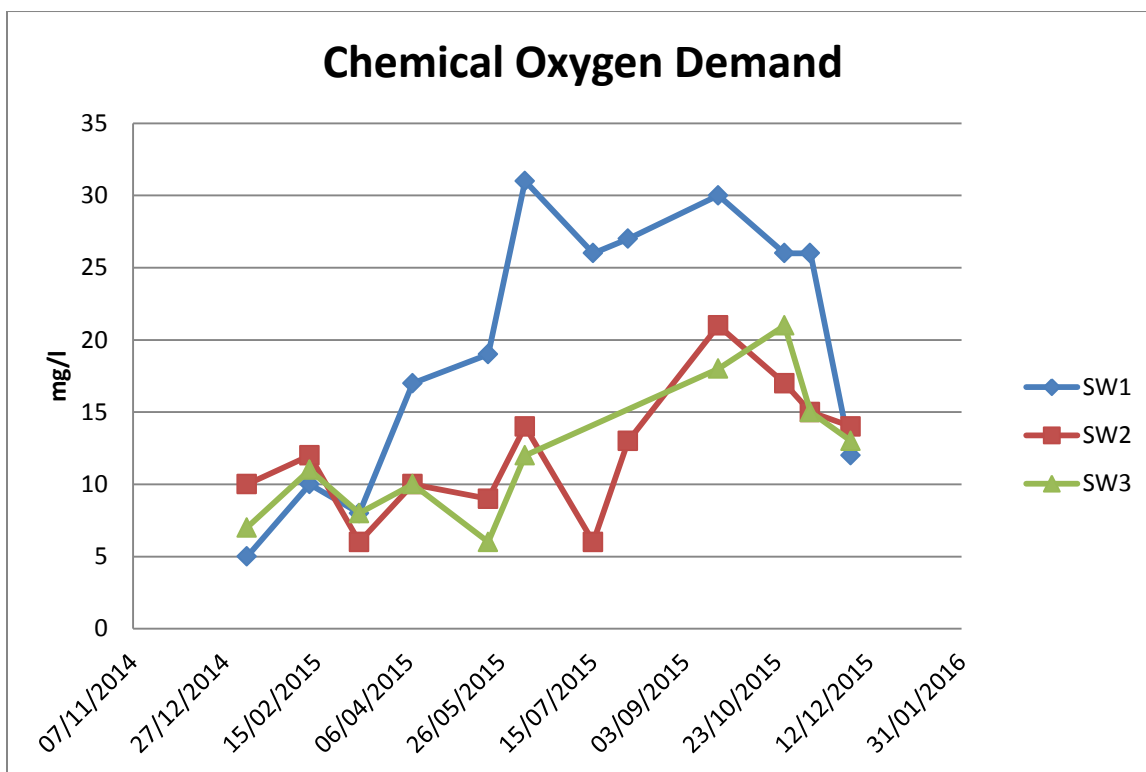
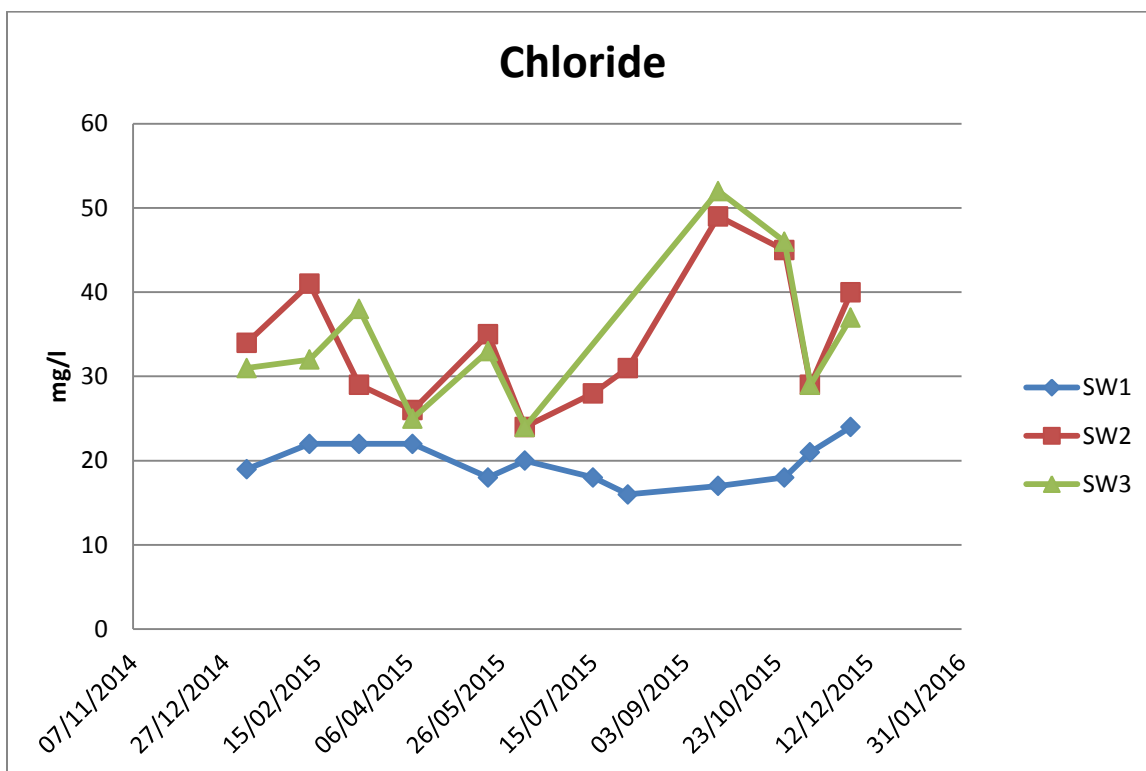












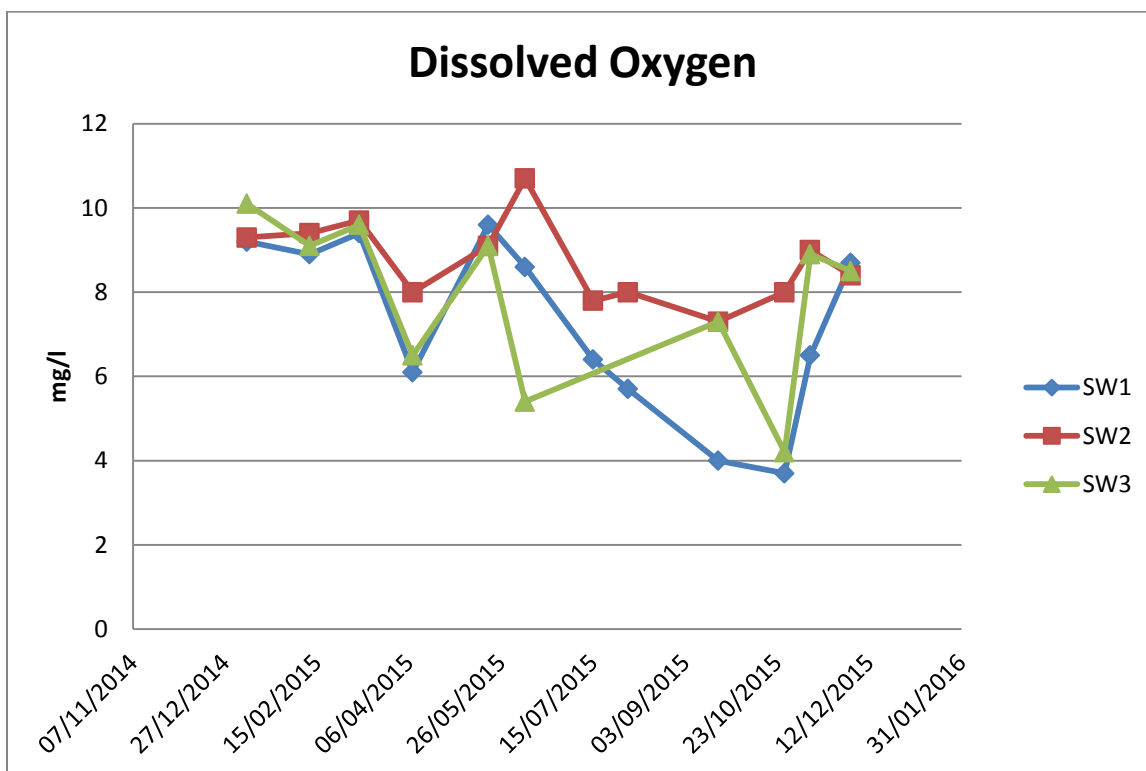
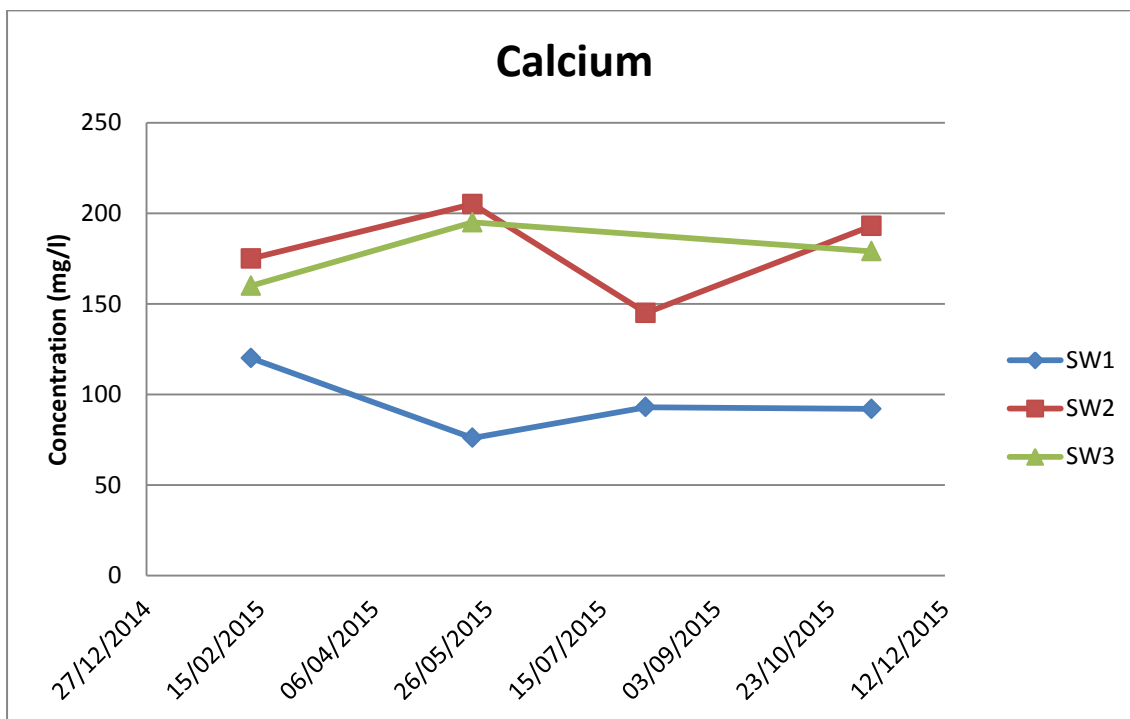
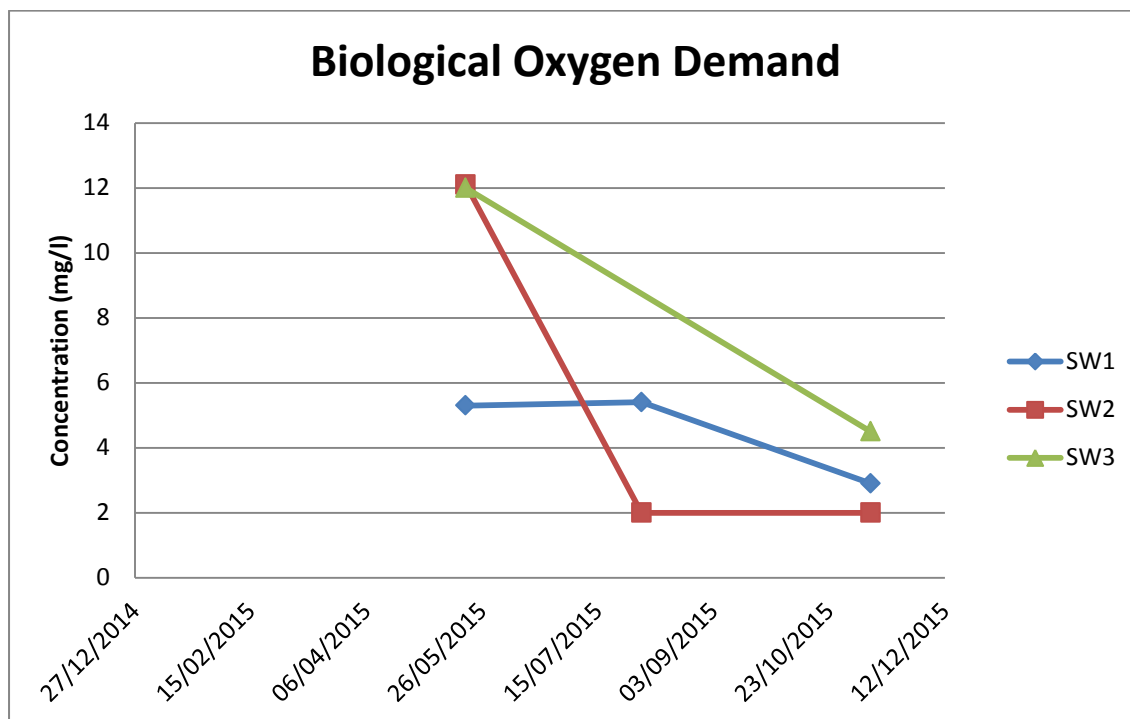
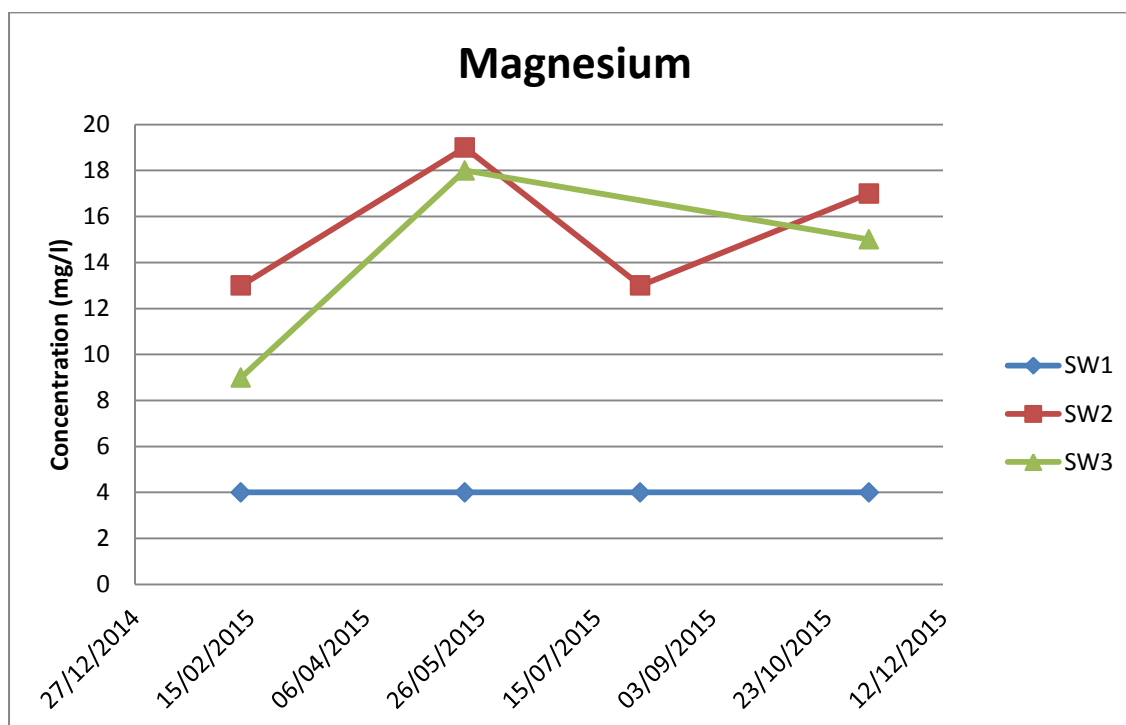
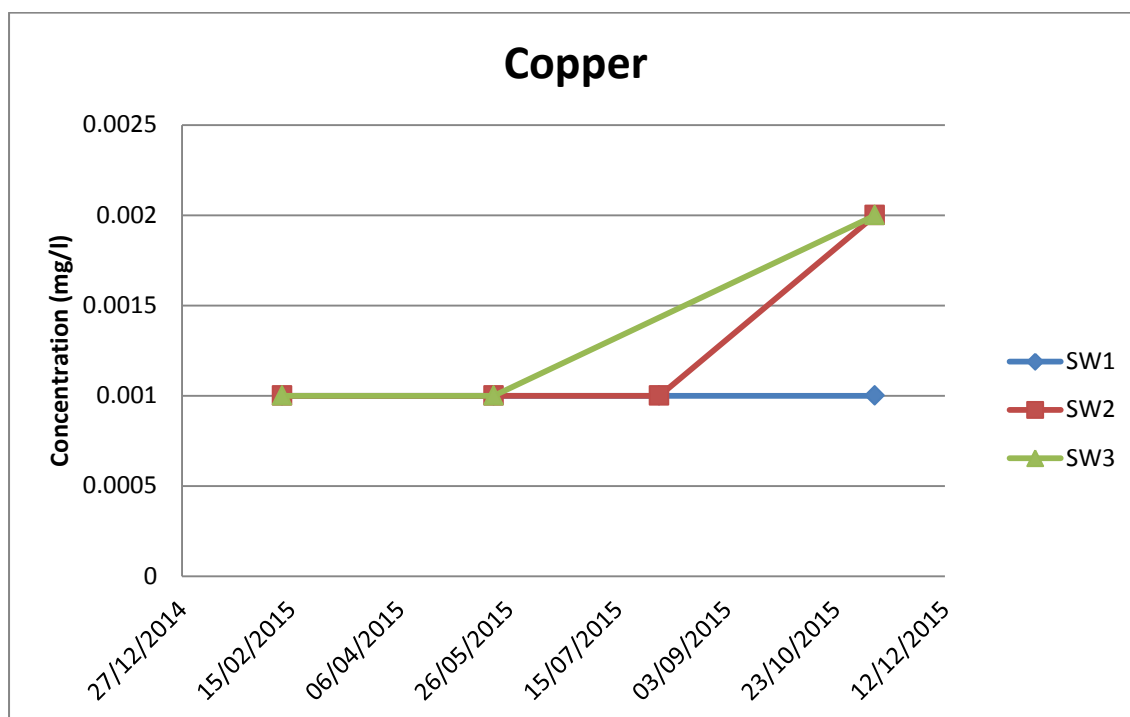


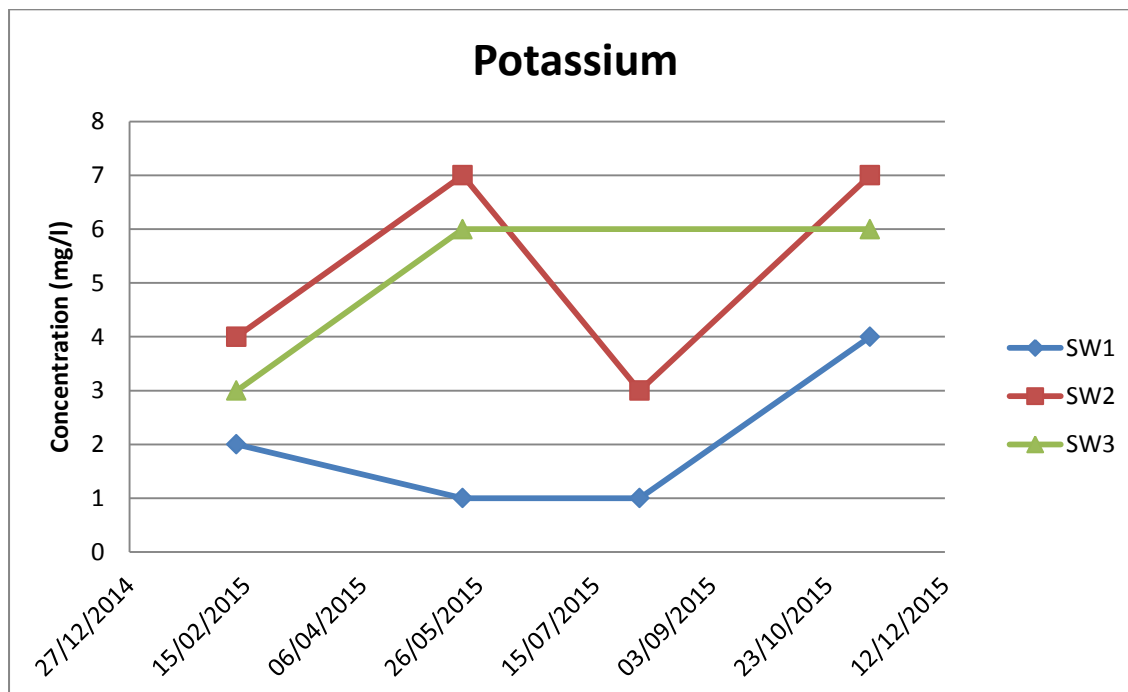
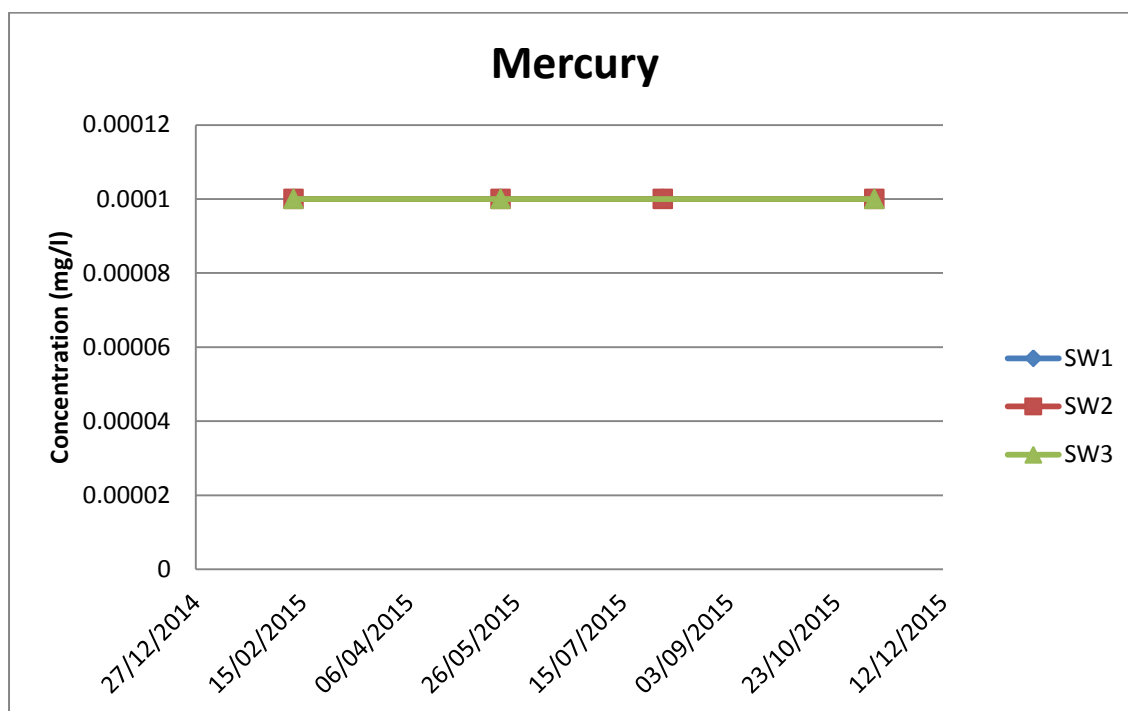
Table 2: Quarterly Data

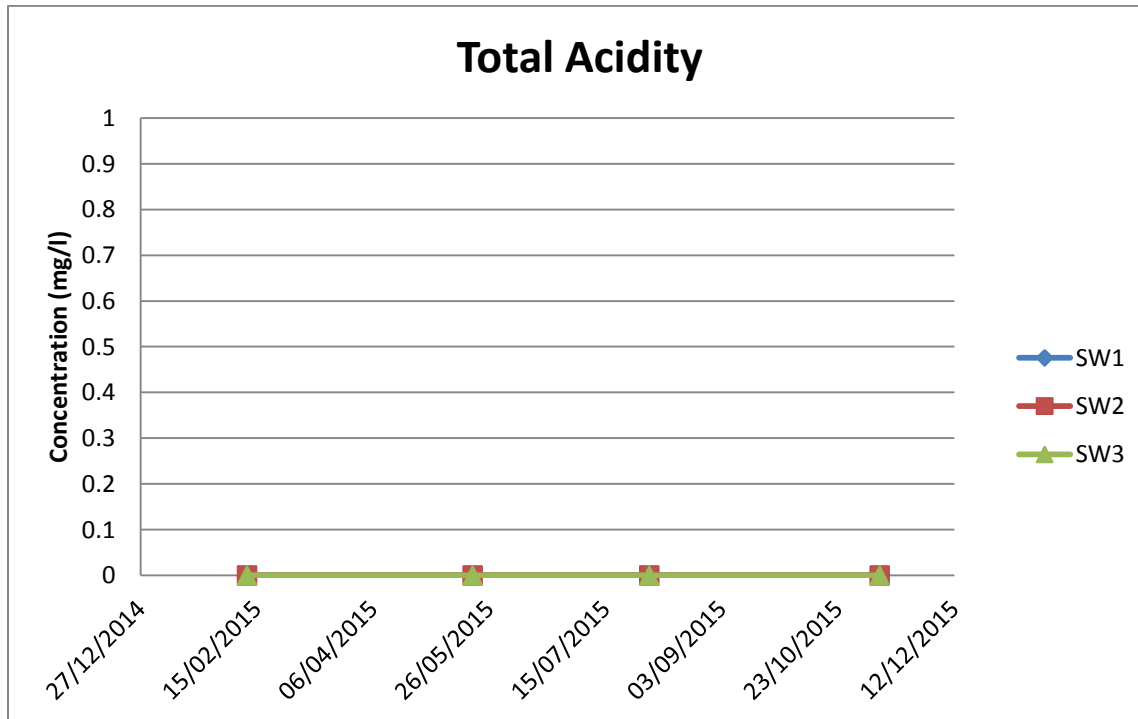
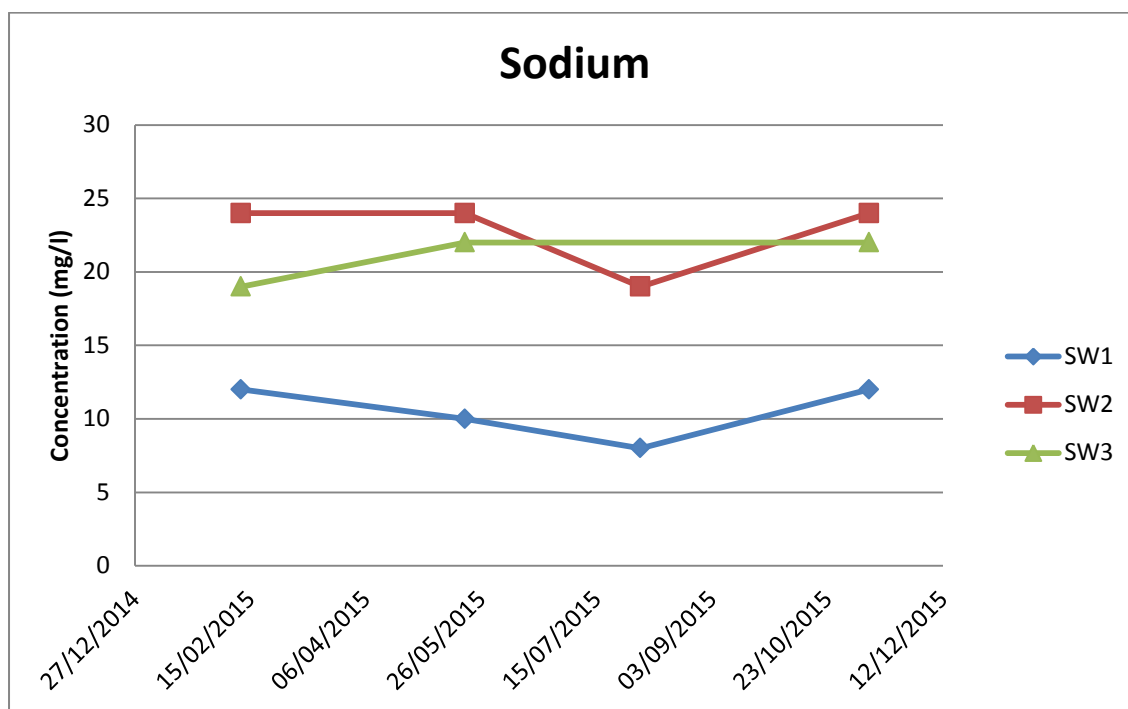
Location		Biochemical Oxygen Demand	Calcium as Ca (Dissolved)	Copper as Cu (Dissolved)	Magnesium as Mg (Dissolved)	Mercury as Hg (Dissolved)	Potassium as K (Dissolved)
		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
SW1	Min	2.9	76	<0.001	4.0	<0.0001	<1
	Max	5.4	120	<0.001	4.0	<0.0001	4
	Average	4.5	95	<0.001	4.0	<0.0001	2
SW2	Min	<2	145	<0.001	13.0	<0.0001	3
	Max	12.1	205	0.002	19.0	<0.0001	7
	Average	5.4	180	0.001	15.5	<0.0001	5
SW3	Min	4.5	160	<0.001	9.0	<0.0001	3
	Max	12.0	195	0.002	18.0	<0.0001	6
	Average	7.3	178	0.001	14.4	<0.0001	5

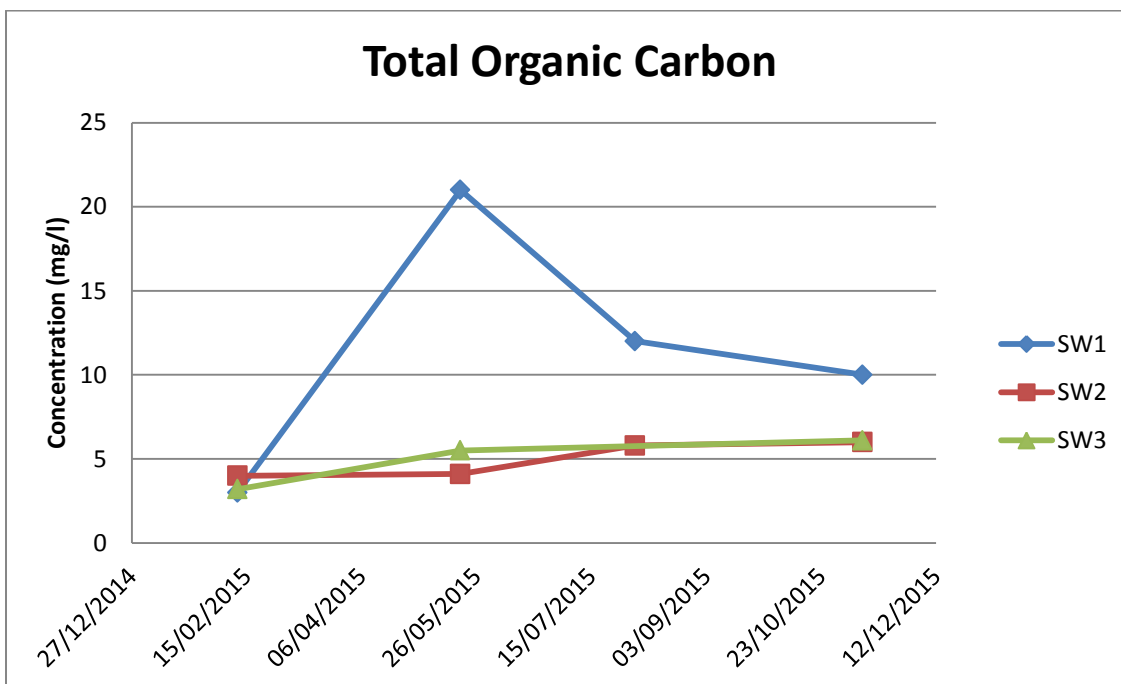
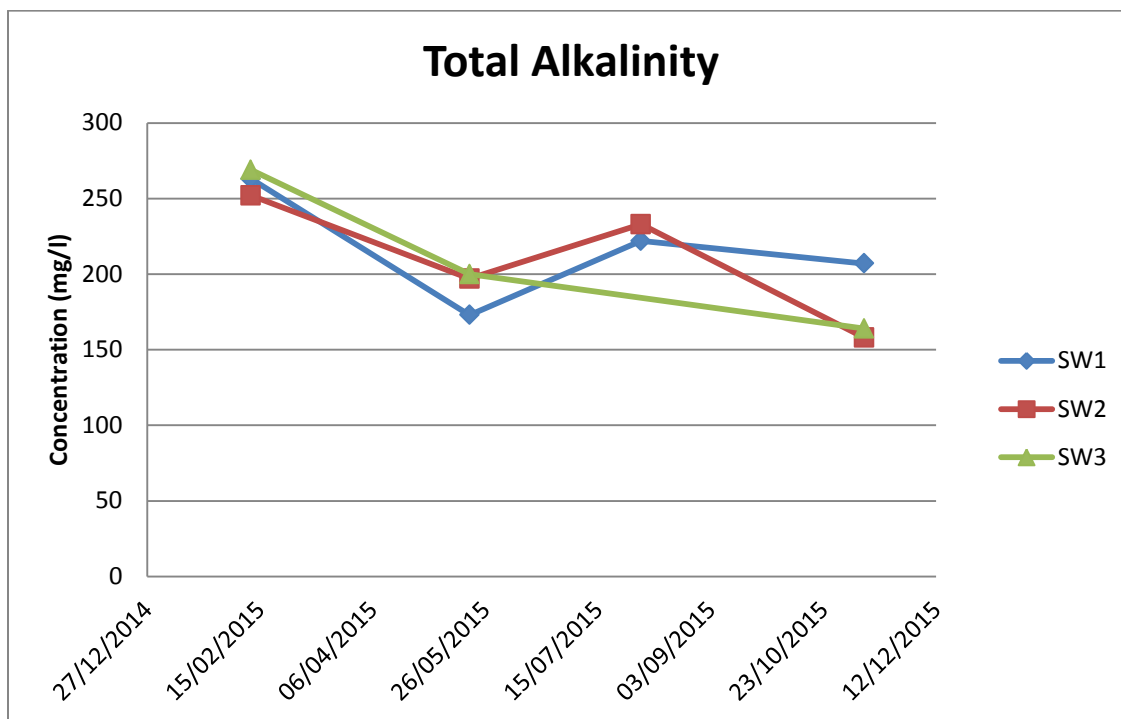
Location		Sodium as Na (Dissolved)	Total Acidity as CaCO ₃	Total Alkalinity as CaCO ₃	Total Organic Carbon	Total Oxidised Nitrogen as N	Zinc as Zn (Dissolved)
		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
SW1	Min	8	Nil	173	3.0	<0.2	<0.002
	Max	12	Nil	263	21.0	4.5	0.003
	Average	11	Nil	216	11.5	1.6	0.002
SW2	Min	19	Nil	158	4.0	<0.2	<0.002
	Max	24	Nil	252	6.0	2.5	<0.002
	Average	23	Nil	210	5.0	1.4	<0.002
SW3	Min	19	Nil	164	3.2	1.4	<0.002
	Max	23	Nil	269	6.1	3.2	0.002
	Average	21	Nil	211	4.9	2.0	0.002











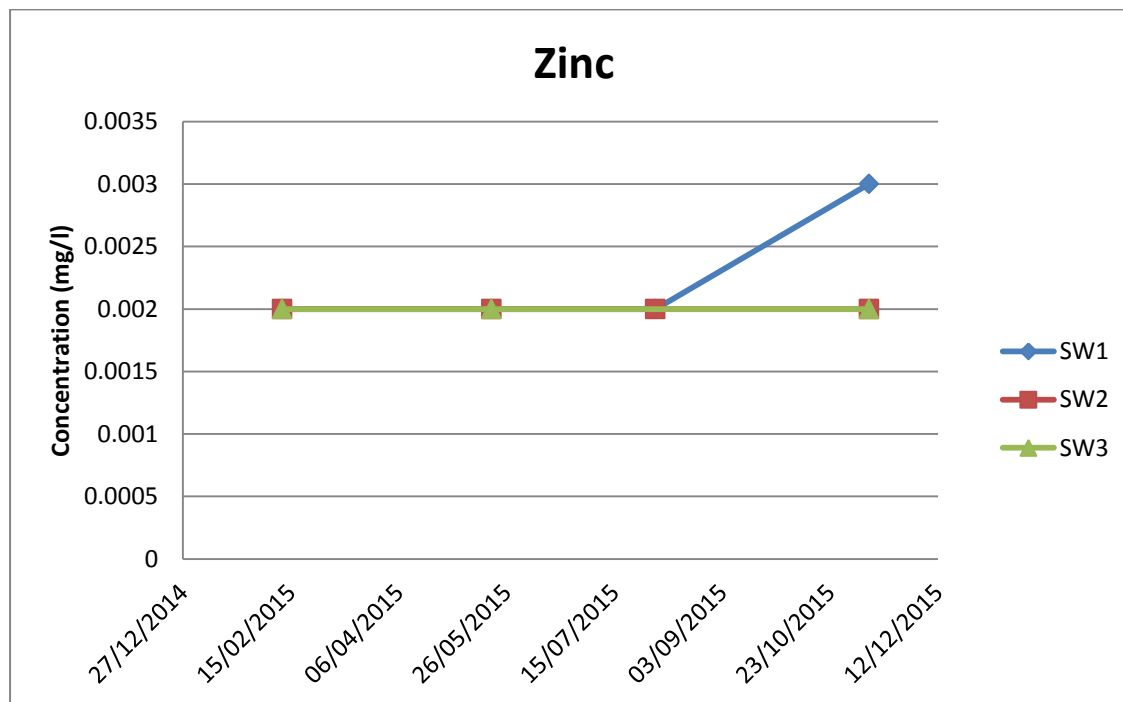
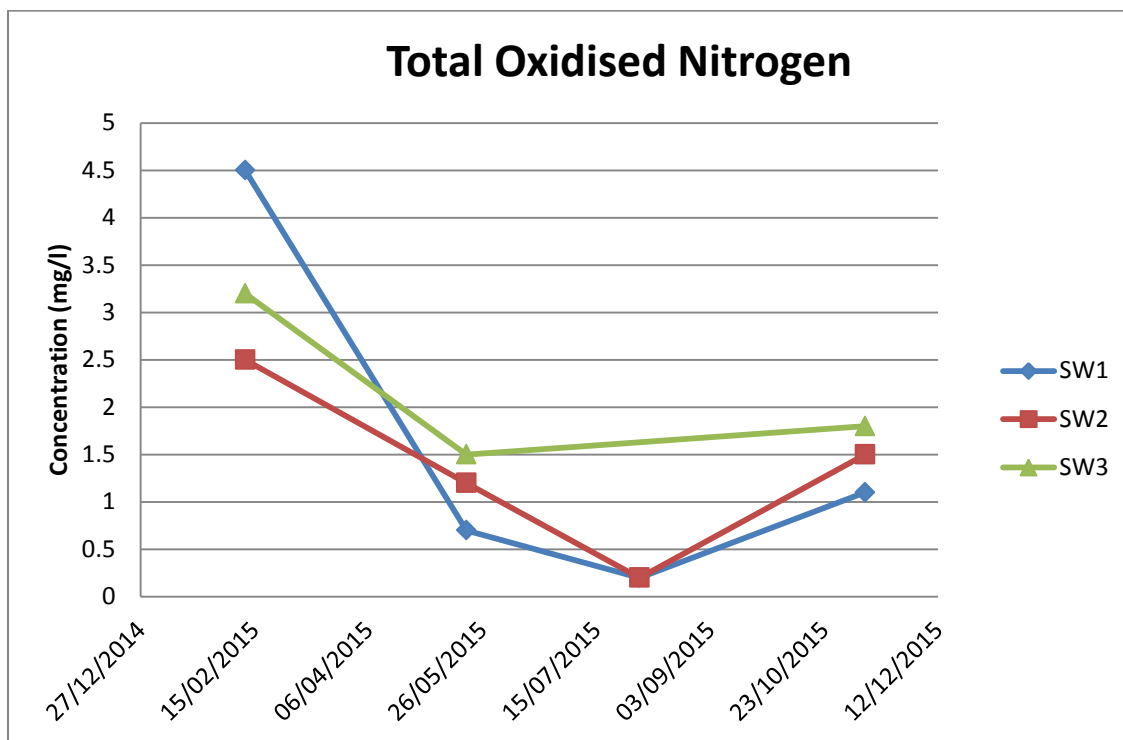


Table 3: Annual Data

Parameter	Units	Surface Water Monitoring Point
		SW2
1,1,1,2-Tetrachloroethane	ug/l	<1
1,1,1-Trichloroethane	ug/l	<1
1,1,2,2-Tetrachloroethane	ug/l	<1
1,1,2-Trichloroethane	ug/l	<1
1,1-Dichloroethane	ug/l	<1
1,1-Dichloroethene	ug/l	<1
1,1-Dichloropropene	ug/l	<1
1,2,3,4-Tetrachlorobenzene	ug/l	<0.02
1,2,3-Trichlorobenzene	ug/l	<5
1,2,3-Trichlorobenzene	ug/l	<0.01
1,2,3-Trichloropropane	ug/l	<1
1,2,4-Trichlorobenzene	ug/l	<5
1,2,4-Trimethylbenzene	ug/l	<1
1,2-Dibromo-3-chloropropane	ug/l	<5
1,2-Dibromoethane	ug/l	<1
1,2-Dichlorobenzene	ug/l	<5
1,2-Dichloroethane	ug/l	<1
1,2-Dichloropropane	ug/l	<1
1,3,5-Trichlorobenzene	ug/l	<0.02
1,3,5-Trimethylbenzene	ug/l	<1
1,3-Dichlorobenzene	ug/l	<1
1,3-Dichloropropane	ug/l	<1
1,4-Dichlorobenzene	ug/l	<1
2,2-Dichloropropane	ug/l	<1
2,3,6-TBA	ug/l	<0.02
2,4,5-T	ug/l	<0.02
2,4-D	ug/l	<0.02
2,4-D Methyl Ester	ug/l	<0.02
2,4-DB	ug/l	<0.02
2,6-Dichlorobenzonitrile	ug/l	<0.02
2-Chlorotoluene	ug/l	<1
4-Chlorotoluene	ug/l	<1
Aldrin	ug/l	<0.02
Alpha-HCH	ug/l	<0.10
Azinphos-Ethyl	ug/l	<0.01
Azinphos-Methyl	ug/l	<0.01
Benazolin	ug/l	<0.02
Bentazon	ug/l	<0.02
Benzene	ug/l	<1
Beta-HCH	ug/l	<0.02

Parameter	Units	Surface Water Monitoring Point
		SW2
Bromobenzene	ug/l	<1
Bromochloromethane	ug/l	<1
Bromodichloromethane	ug/l	<1
Bromoform	ug/l	<1
Bromomethane	ug/l	<5
Bromoxynil	ug/l	<0.02
Carbofenthion	ug/l	<0.01
Carbon Tetrachloride	ug/l	<1
Chlorobenzene	ug/l	<1
Chloroethane	ug/l	<5
Chloroform	ug/l	<1
Chloromethane	ug/l	<1
Chlorpyrifos	ug/l	<0.02
Chlorpyrifos-Methyl	ug/l	<0.01
Chlorthalonil	ug/l	<0.01
cis 1,2-Dichloroethene	ug/l	<1
cis 1,3-Dichloropropene	ug/l	<1
Cis-Chlordane	ug/l	<0.02
Cis-Permethrin	ug/l	<0.01
Clpyralid	ug/l	<0.02
Clorfenvinfos	ug/l	<0.03
Delta-HCH	mg/l	<0.01
Diazinon	ug/l	<0.01
Dibromochloromethane	ug/l	<1
Dibromomethane	ug/l	<1
Dibutyl Tin as Sn	ug/l	<20
Dicamba	ng/l	<0.02
Dichlorodifluoromethane	ug/l	<1
Dichlorprop	ug/l	<0.02
Dichlorvos	ug/l	<0.01
Dieldrin	ug/l	<0.01
Dimethoate	ug/l	<0.02
Endosulfan I	ug/l	<0.01
Endosulfan II	ug/l	<0.01
Endosulfan Sulfate	ug/l	<0.01
Endrin	ug/l	<0.01
Endrin Ketone	ug/l	<0.02
Ethion	ug/l	<0.01
Ethylbenzene	ug/l	<1
Etrimphos	ug/l	<0.01

Parameter	Units	Surface Water Monitoring Point
		SW2
Fenitrothion	ug/l	<0.02
Fenthion	ug/l	<0.02
Fluroxypyr	ug/l	<0.02
Gamma-HCH	ug/l	<0.02
Heptachlor	ug/l	<0.01
Heptachlorepoide	ug/l	<0.02
Hexachlorobenzene	ug/l	<0.02
Hexachlorobutadiene	ug/l	<5
Ioxynil	ug/l	<0.02
Isodrin	ug/l	<0.02
iso-Propylbenzene	ug/l	<1
m and p-Xylene	ug/l	<1
Malathion	ug/l	<0.02
MCPA	ug/l	<0.02
MCPB	ug/l	<0.02
MCPB	ug/l	<0.02
MCPB	ug/l	<0.02
Methacrifos	ug/l	<0.01
Methoxychlor	ug/l	<0.01
Mevinphos	ug/l	<0.02
Naphthalene	ug/l	<5
n-Butylbenzene	ug/l	<1
O,P'-DDD	ug/l	<0.01
O,P'-DDE	ug/l	<0.02
O,P'-DDT	ug/l	<0.01
o-Xylene	ug/l	<1
P,P'-DDD	ug/l	<0.01
P,P'-DDE	ug/l	<0.01
P,P'-DDT	ug/l	<0.02
Parathion	ug/l	<0.01
Parathion-Methyl	ug/l	<0.02
PCB101	ug/l	-
PCB118	ug/l	-
PCB138	ug/l	-
PCB153	ug/l	-
PCB180	ug/l	-
PCB28	ug/l	-
PCB52	ug/l	-
Pendimethalin	ug/l	<0.02
Pentachlorobenzene	ug/l	<0.02
Pentachlorophenol	ug/l	<0.02

Parameter	Units	Surface Water Monitoring Point
		SW2
Phosalone	ug/l	<0.01
Phosphamidon	ug/l	<0.02
Picloram	ug/l	<0.02
Pirimiphos-Ethyl	ug/l	<0.02
Pirimiphos-Methyl	ug/l	<0.02
p-Isopropyltoluene	ug/l	<1
Propetamphos	ug/l	<0.02
Propylbenzene	ug/l	<1
Propyzamide	ug/l	<0.02
sec-Butylbenzene	mg/l	<1
Silvex	ug/l	<0.02
Styrene	ug/l	<1
Tecnazene	ug/l	<0.01
tert-Butylbenzene	ug/l	<1
Tetrachloroethene	ug/l	<5
Toluene	ug/l	<1
trans 1,2-Dichloroethene	ug/l	<1
trans 1,3-Dichloropropene	ug/l	<1
Trans-Chlordane	ug/l	<0.01
Trans-Permethrin	ug/l	<0.01
Triadimefon	ug/l	<0.02
Triallate	ng/l	<0.02
Triazophos	ug/l	<0.01
Tributyl Tin as Sn	ug/l	<20
Trichloroethene	ug/l	<5
Trichlorofluoromethane	ug/l	<1
Triclopyr	ng/l	<0.02
Trifluralin	ug/l	<0.02
Triphenyl Tin as Sn	ng/l	<50
Vinyl Chloride	ug/l	<1



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