ANNUAL ENVIRONMENTAL REPORT

For

BALBANE LANDFILL SITE
Co. Donegal

Waste Licence Reference: W0090-1

By
Donegal County Council
For
Environmental Protection Agency

Reporting Period:

January to December 2009

March 2010

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1 INTRODUCTION

1.1 This Annual Environmental Report (AER) has been prepared to meet the requirements of Condition 11.5 of Waste Licence 90-1 for Balbane Landfill Site, and includes the information listed in Schedule F of the Licence.

1.2 Balbane Landfill Site is located approximately 6.5 km north of Killybegs, in the townland of Balbane, County Donegal. The landfill covers an area of approximately 2.9 hectares. The landfill site was developed to operate on the dilute and disperse principle whereby leachate generated by rainfall was allowed to disperse into the surrounding environment.

1.3 Donegal County Council submitted an application to the Environmental Protection Agency for the continued operation of the landfill site, as required by the Waste Management (Licensing) Regulations 1997. On the 13th of November 2001 the Environmental Protection Agency granted the Council a Waste Licence (registration number 90-1) for the facility, in accordance with the Third Schedule of the Waste Management Act, 1996.

2 REPORT PERIOD

2.1 The report period for this Annual Environmental Report (AER) is from January to December 2009. The site closed in January 2004.

3 WASTE ACTIVITIES CARRIED OUT AT THE FACILITY

3.1 In accordance with Condition 1 of the waste licence only those waste types and quantities of waste listed in Schedule A shall be disposed of at the facility unless the prior agreement of the Agency has been obtained. The maximum annual tonnage of individual waste types for disposal is listed in Schedule A of the Waste Licence at 7,500 tonnes from the date of grant of licence for municipal waste and 70,000 tonnes of inert material of the purpose of restoration.

3.2 The licensed waste disposal activities in accordance with the Third Schedule of the waste Management Act, 1996 are restricted to those listed as follows:

- **Class 1:** Deposit on, in or under land (including landfill).
  This activity is limited to deposition of municipal and inert waste.
- **Class 4:** Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons. This activity is limited to leachate collection and treatment.
- **Class 13:** Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced. This activity is limited to leachate collection and storage prior to treatment.

3.3 When operational, access to site was controlled by the Site Manager. All persons availing of the site had to report to the site office at the time of entering and leaving the landfill site. Access was restricted to those times when staff were on duty and the site is now secured to prevent unauthorised entry.

4 QUANTITY AND COMPOSITION OF WASTE RECEIVED AND DISPOSED OF DURING THE REPORTING PERIOD AND EACH PREVIOUS YEAR.

4.1 A temporary computerised weighbridge was installed at the site in 2002 and this was used to record waste data figures until the facility closed in January 2004. No waste has been received at the site since closure. Annual figures for the period 1998-2009 are shown in Table 4.1.

Table 4.1 Waste Quantities Accepted (tonnes)

Waste Types	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Municipal Waste (20 03 01)	3228	3716	4721	4107	5069	2790	187	0	0	0	0	0
Street Cleanings (20 03 03)						57	3	0	0	0	0	0

5 SUMMARY REPORT ON EMISSIONS, RESULTS AND INTERPRETATION OF ENVIRONMENTAL MONITORING

5.1 ENVIRONMENTAL MONITORING REQUIREMENTS

The locations, frequencies and parameters which are required to be monitored at Balbane Landfill Site are specified in Schedule F of the Waste Licence. Details of these are shown on Drawing Nos 5234.40 /107 and 5234.40/06 and are given in Appendix A.

5.2 MONITORING RESULTS

Results of monitoring for the period for surface water, groundwater, leachate and gas are contained in tabular and graphical format in Appendix B.

5.3 GROUNDWATER

5.3.1 Results are assessed against the Maximum Admissible Concentrations (MAC's) set out in the EC Quality of Water for Human Consumption Regulations 1988, the EC Drinking Water Regulations 2000 and the EPA Interim Report, Towards Setting Guideline Values for the Protection of Groundwater in Ireland. Groundwater locally flows in a south-easterly direction and GW1 reflects baseline conditions upstream of the site. GW4 & GW2 are downstream but in waste. It should be noted that BH2 is also located within waste is considered to be a leachate well.

5.3.2 Results from this period indicate that leachate continues to be released from the waste body into the local groundwater environment. Levels are similar to those detected in the last reporting period.

5.4 SURFACE WATER

5.4.1 Surface water results are assessed against the Surface Water Quality Standards (SWQS) as laid out in the EC Quality of Surface Water Intended for the Abstraction of Drinking Water Regulations 1989. S1 is upstream of the site, whilst S4 – S7 inclusive are downstream. S2 and S3 were relocated and relabelled at the request of the EPA.

5.4.2 Upstream of the waste body results of analysis shows iron levels to be raised above the MAC. Downstream, levels of ammonia are consistently above MAC close to the landfill and reduce gradually further downstream. Other parameters indicative of leachate are also raised relative to the MAC. Downstream results would indicate that leachate continues to be released from the waste body into the local surface water environment and levels are comparable to those recorded during the last reporting period.

5.5 LEACHATE

5.5.1 Leachate quality varies during the lifetime of a landfill depending on the stage of decomposition of waste. Results from BH2, the leachate well are presented in Appendix B. Some characteristic parameters have been compared with those of 'typical' raw leachate in Table 5.1 below.

Table 5.1 Raw Leachate Concentrations 2009

	Balbane Landfill Site		**From 30 samples from UK/Irish landfills accepting domestic waste Results in mg/l**		
PARAMETER	**Min.Conc**	**Max.Conc**	**Min.Conc**	**Max.Conc**	**Mean**
Ammonia (mg/N)	13.06	15.60	<0.2	1700	491
BOD	0.5	1.5	4.5	>4800	>834
COD	25	47	<10	33,700	3078
Chloride (mg/l)	213	287	27	3410	1256
Iron (mg/l)	18.8	18.8	0.4	664	54.4
Potassium (mg/l)	9.71	9.71	2.7	1480	491
Sodium (mg/l)	118	118	12	3000	904
TON (mg/l N)	<0.01	<0.01	/	/	/
Conductivity (µS/cm)	1261	1445	503	19,200	7789
pH (pH units)	6.2	6.6	6.4	8.0	7.2

5.5.2 Table 5.1 compares raw leachate concentrations detected at Balbane with 'typical leachate composition from 30 samples from UK/Irish Landfills accepting mainly domestic waste' (taken from EPA Manual for Landfill Operational Practices). Parameters measured all compare well with typical leachate ranges shown and with the results issued last period.

5.6 PERIMETER GAS MONITORING

The gas monitoring peizometers on the site at Balbane are located within waste, and are not perimeter wells. As such results (as contained in Apendix B) are indicative of methanogenic gas processes that would be occurring under anaerobic conditions.

5.7 DUST MONITORING

As previously agreed with the Agency, monitoring of dust ceased as there are currently no operations being undertaken on the site. When any activity commences, such as restoration works for example, a dust-monitoring programme will be resumed.

5.8 METEOROLOGOCAL MONITORING

Meteorological data is contained in Appendix C.

6 VOLUME OF LEACHATE PRODUCED AND VOLUME OF LEACHATE TRANSPORTED DISCHARGED OFF SITE

6.1 A water balance calculation has been undertaken and is presented in Appendix C. It estimates that 9285m^3 of leachate will have been generated from this waste body during the period. Due to a lack of collection infrastructure there is not currently any leachate transported off site. Correspondingly it is assumed that all leachate generated disperses into the surrounding environment.

7 REPORT ON DEVELOPMENT WORK UNDERTAKEN DURING THE REPORTING PERIOD, AND A TIME SCALE FOR THOSE PROPOSED DURING THE COMING YEAR.

7.1 This landfill had been scheduled for restoration during 2009, however, due to the national economic crisis the Council has been unable to include for the funding of this project in the budget for either 2009 or 2010. The Council met with the Agency in November 2009 and discussed this issue. The Agency requested that the Council investigate the viability of carrying out some focused works to address leachate emissions, this being the significant environmental risk from the site. This investigation is in progress and when complete the Council will revert to the Agency with a viable proposal if possible.

8 REPORT ON RESTORATION OF COMPLETED CELLS / PHASES

8.1 The Restoration and Aftercare Plan was submitted to the Agency in October 2004 and approved in November 2004.

8.2 Of Donegal County Council's five closed landfill sites Balbane is now scheduled for restoration fourth and next. See also Section 7 above.

9 SITE SURVEY SHOWING EXISTING LEVELS OF THE FACILITY AT THE END OF THE REPORTING PERIOD

9.1 A topographical survey of the site was last carried out in December 2002. This was included in the 2002 AER.

10 ANNUAL WATER BALANCE CALCULATION AND INTERPRETATION

A water balance calculation has been undertaken and is presented in Appendix C. The calculation for monthly water balance is as follows

$$Lo = [ER (A) + LW + IRCA + ER (I)] - [aW]$$

Where
Lo = leachate produced (m^3)
ER = effective rainfall
A = area of cell (m^3)
LW = liquid waste
IRCA = infiltration through restored areas and capped areas (m)
a = absorptive capacity of waste (m^3/t)
W = weight of waste deposited
I = surface area of lagoons (m^2)

11 REPORTED INCIDENTS AND COMPLAINTS SUMMARIES.

11.1 Other than the reporting of on-going emissions exceedances detected in the routine monitoring programme, no incidents occurred during the monitoring period and no complaints were received.

12 REVIEW OF NUISANCE CONTROLS

12.1 As the facility is no longer operational, all areas formerly used for the placement of municipal waste have been covered by clay and topsoil. There has been a reduction in the incidence of nuisances resulting from this. However, precautionary measures are employed to ensure the detection and appropriate management of any nuisances that may arise. As part of the Environmental Management System for the site a procedure has been developed to provide for regular inspections of the site as part of the quarterly monitoring programme. Should this inspection reveal the incidence of any type of nuisance (vermin, litter, dust, birds or odours) then appropriate action is initiated.

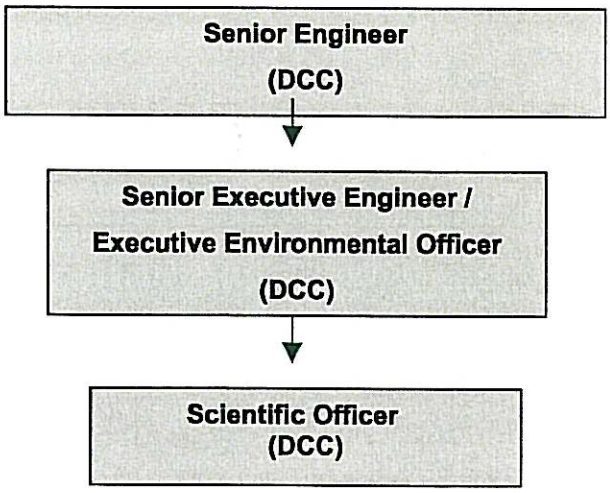
13 REPORT ON FINANCIAL PROVISIONS MADE UNDER THIS LICENSE, MANAGEMENT AND STAFFING STRUCTURE OF THE FACILITY AND A PROGRAMME FOR PUBLIC INFORMATION

13.1 Donegal County Council being a local authority is able to provide the necessary finances to ensure the proper management, development and restoration of Balbane Landfill Site.

13.2 Overall responsibility for the ongoing operations and development of the landfill site is held by the Senior Engineer. The Senior Engineer is assisted by a Senior Executive Engineer and an Executive Environmental Officer assigned to the Environment Section of Donegal County Council.

13.3 As part of the Environmental Management System (EMS) for the site, a communication programme (in accordance with Condition 2.8 of waste licence) is provided in Section 2 of the EMS to ensure that members of the public can obtain information concerning the environmental performance of the facility at all reasonable times.

13.4 The Management Structure at Balbane Landfill site is set out below.



14 REPORT ON STAFF TRAINING

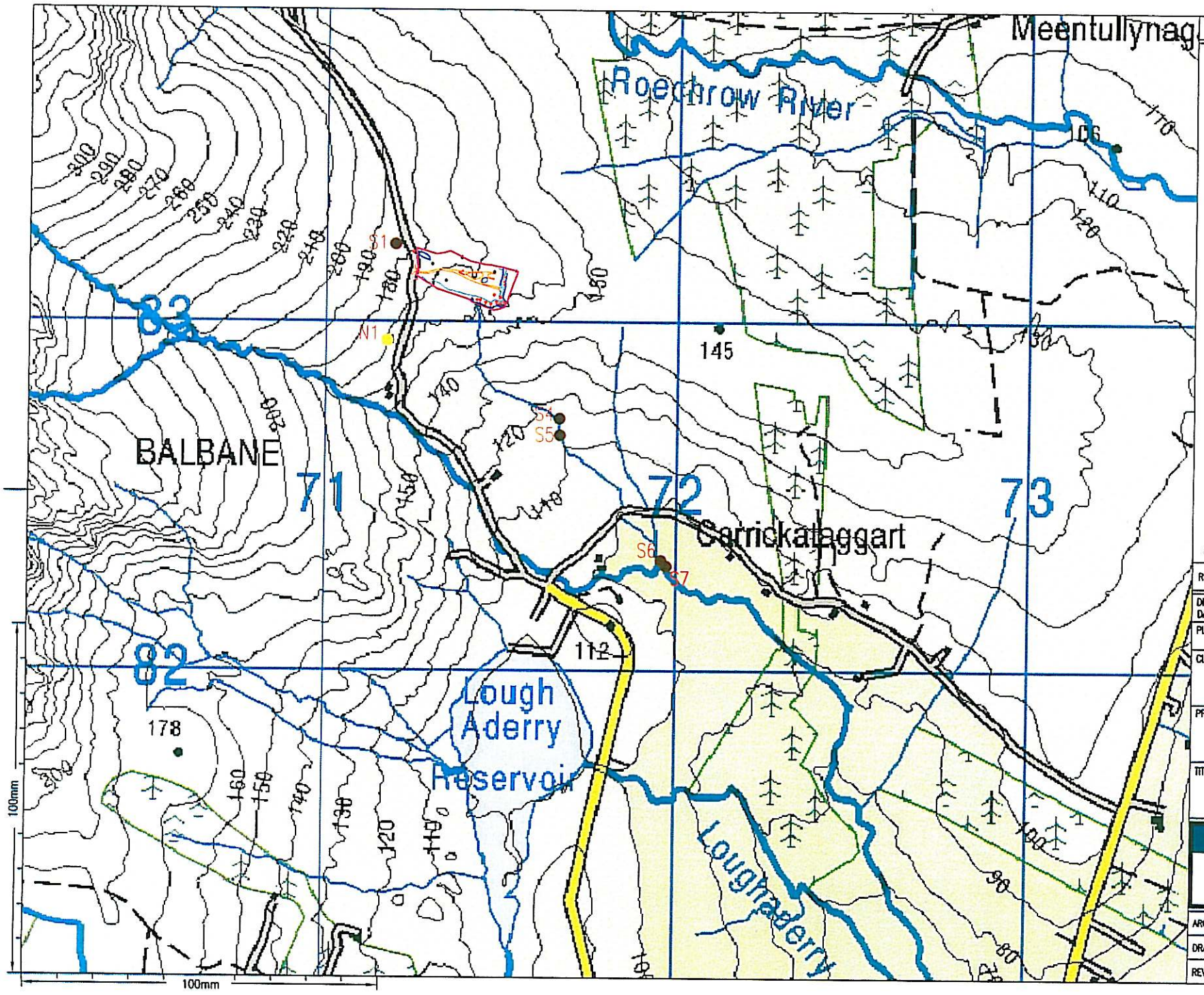
14.1 No training has been undertaken as the facility is now closed and there are no operational personnel on the site.

15 RESOURCES AND ENERGY CONSUMPTION SUMMARY

15.1 No energy was consumed on the site during the reporting period.

16 REPORT ON ENVIRONMENTAL MANAGEMENT PROGRAMME

16.1 An Environmental Management Programme (EMP) was revised in 2004 to take into consideration the closure of the site and was submitted in to the Agency in December 2004 for its agreement. A public communication programme has been initiated in accordance with Condition 2 of the Waste Licence to ensure that information concerning the environmental performance is available at reasonable times. The public may view environmental records at the Donegal County Council headquarters. Details regarding this are contained in Section 2 of the Environmental Management System Manual.



NOTES

SITE BOUNDARY

S1 ● SURFACE WATER MONITORING POINT

N1 ● NOISE MONITORING POINT

MONITORING TYPE	REF NO	GRID REFERENCE
SURFACE WATER	SW1	171187 363215
	SW4	171657 382720
	SW5	171658 382673
	SW6	171949 382314
	SW7	171965 382297
NOISE	N1	171166 382940

REV	DESCRIPTION	BY DATE	CHECK DATE
A	UPDATED GRID COORDINATES	JD JULY 05	AMcG JULY 05

DRAWN BY AMcG DATE SEPT 2004	CHECK BY AMcG DATE SEPT 2004	APPROVED DO DATE SEPT 2004
PLOT SCALE 1:10,000	SCHEDULES	SHEET SIZE A3

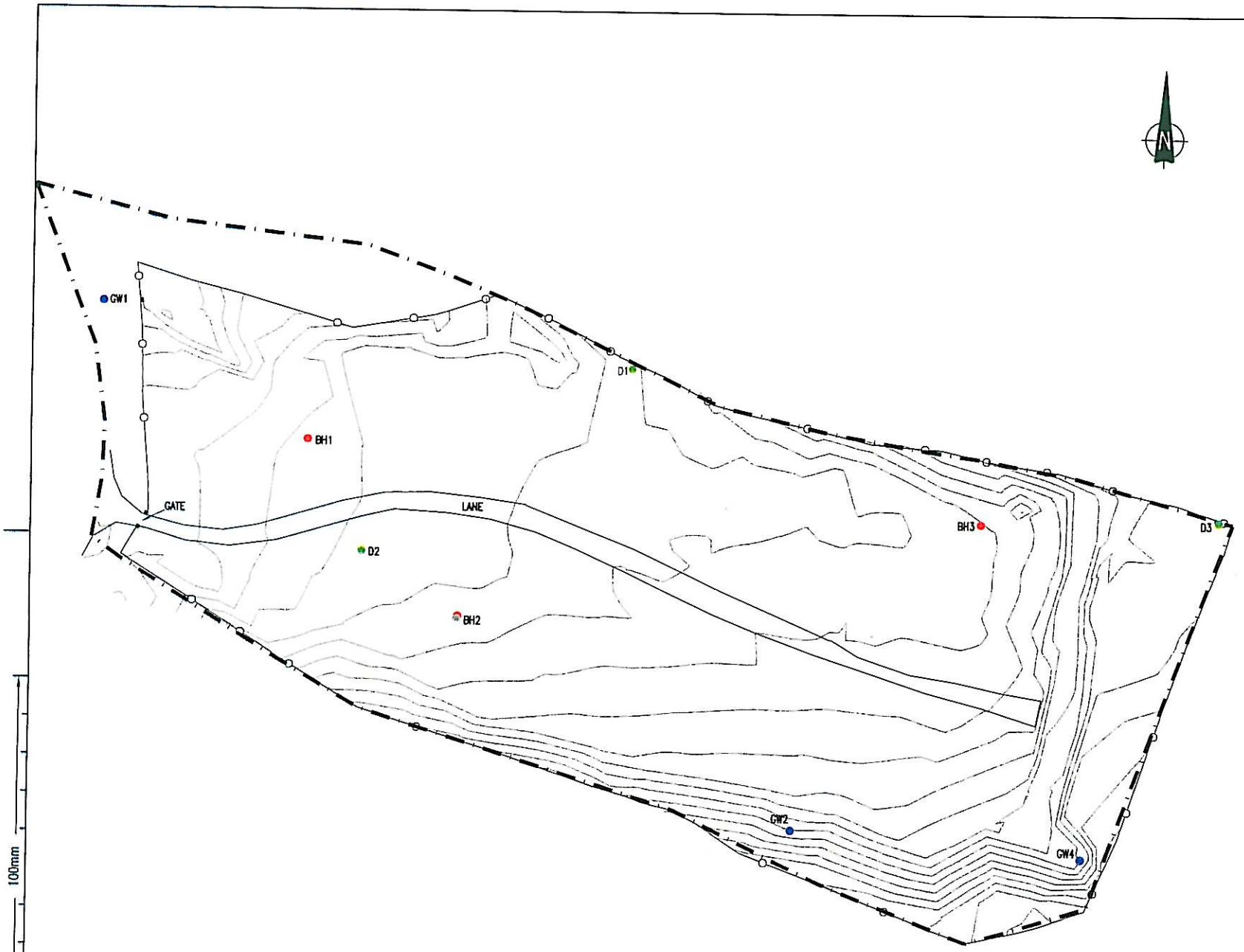
CLIENT
DONEGAL COUNTY COUNCIL

PROJECT
BALBANE LANDFILL SITE

TITLE
SURFACE WATER MANAGEMENT

RPS Kirk McClure Morton
CONSULTING ENGINEERS

ARCHITECT		DWG. STATUS
DRAWING No. 5234.40/107		PRELIM. ●
REVISION A		TENDER
		CONST.
		RECORD



100mm

100mm

NOTES

KEY

- SITE BOUNDARY
- GW GROUNDWATER MONITORING POINT
- BH LEACHATE MONITORING POINT
- D DUST MONITORING POINT
- BH LANDFILL GAS MONITORING POINT

MONITORING TYPE	REF NO	GRID REFERENCE
LEACHATE & GAS	BH1	171300 383157
	BH2	171339 383110
	BH3	171476 383136
GROUNDWATER	GW1	171246 383193
	GW2	171427 383055
	GW4	171503 383048
DUST	D1	171384 383176
	D2	171314 383128
	D3	171538 383137

GRID COORDINATES DETERMINED FROM SITE SURVEY

REV	DESCRIPTION	BY DATE	CHECK DATE
A	UPDATED GRID COORDINATES SITE BOUNDARY ADDED	JD JULY 05	AMcG JULY 05

DRAWN BY JD DATE AUG 2003	CHECK BY KAD DATE AUG 2003	APPROVED DD DATE AUG 2003
PLOT SCALE 1:1000	SCHEDULES	SHEET SIZE A3

CLIENT

DONEGAL COUNTY COUNCIL

PROJECT

BALBANE LANDFILL SITE

TITLE

MONITORING LOCATIONS

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CONSULTING ENGINEERS
TEL: 074 91 61927 Email: info@kmm.eu.com FAX: 074 91 61928
THE ENTERPRISE FUND BUSINESS CENTRE BALLYRAINE LETTERKENNY CO.DONEGAL

ARCHITECT		DWG. STATUS
DRAWING No.	5234.40/06	PRELIM. ●
REVISION	A	TENDER
		CONST.
		RECORD

APPENDIX A

MONITORING LOCATIONS, FREQUENCIES AND PARAMETERS

Table A1 Grid References of Monitoring Points

Monitoring Points	Easting	Northing
Boreholes		
GW1	171246.5649	383193.1516
GW2	171427.2239	383055.9240
GW4 Note 1	171503.0898	383048.6637
Surface Water Monitoring		
S1	171187	363215
S4	171657	382720
S5	171658	382673
S6 Note 2	171949	382314
S7 Note 2	171965	382297
Gas Piezometers		
BH1	171300.3033	383157.7656
BH2	171339.4609	383110.6149
BH3	171475.8577	383135.7863
Dust		
D1	171384.5481	383176.7779
D2	171314.6629	383128.5125
D3	171538.3837	383137.6433
Leachate		
BH2	171339.4609	383110.6149

NOTE 1 – GW3 WAS REPLACED BY GW4 WHEN THELANDFILL MASS EXTENDED PAST THE LOCATION OF GW3

NOTE 2 – SW2 AND SW3 WERE REPLACED BY SW6 AND SW7

Table A2 Groundwater Parameters and Monitoring Frequencies

Monthly	Quarterly	Annually	
Temperature	Chloride	Boron	Magnesium
Groundwater Level	Dissolved Oxygen	Cadmium	Manganese
	Sodium	Calcium	Mercury
	TON	Chromium	Orthophosphate
	TOC	Copper	Zinc
	Phenols	Cyanide	
	Ammoniacal Nitrogen	Fluoride	
	Electrical Conductivity	Lead	
	pH	List I/II substances	
	Iron	Sulphate	
	Potassium		

Table A3 Surface Water Parameters Monitoring Frequencies

Monthly	Quarterly	Annually	
Temperature	Chloride	Iron	Magnesium
pH	Dissolved Oxygen	Cadmium	Manganese
Ammoniacal Nitrogen	COD	Calcium	Mercury
BOD		Chromium	Orthophosphate
Electrical Conductivity		Copper	Zinc
TSS		Sodium	Potassium
		Fluoride	TON
		Lead	Sulphate
		List I/II substances	

APPENDIX B

RESULTS OF MONITORING

Location		Balbane, Killybegs, Co. Donegal											
Sample Type		surface water											
Site No		SW1											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1300	1655	2083	2273	2944	3551	3804	4309	4748	5301	5698	6670
pH		5.8	6.1	6.0	5.9	6.1	7.1	7.3	7.4	6.4	6.8	6.3	6.7
Temp	C	11.20	10.40	8	9.00	9.2	17.5	14.50	16.5	12.8	13.6	11.6	4.0
Electrical Conductivity	uS/cm	84	51	41	88	42	134	55	43	78	67	40	66
Ammonical Nitrogen	mg/l	<0.01	0.05	0.09	0.09	0.09	0.06	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
COD	mg/l	2	0	18	9	15	---	---	26	14	---	18	---
BOD	mg/l	0.2	0.5	1.3	0.4	1.0	0.6	1.1	0.8	0.4	0.3	1.4	0.1
Dissolved Oxygen	mg/l	9.38	9.07	9.34	7.20	7.70	7.27	---	8.38	6.93	8.57	8.91	11.84
SS	mg/l	0.8	0.4	1.0	1.0	1.0	11.0	4.0	2.0	1.0	1.0	2.0	19.0
Residue on Evaporator	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	7	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	<0.22	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	5.85	---	---	---
Chloride	mg/l	25	15	---	---	16	---	---	10	14	---	15	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	<1.6	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Iron	ug/l	---	---	---	---	---	---	---	---	515	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	<0.4	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	1.16	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	1.51	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	<0.01	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	---	---	---	---	---	---	---	---	<2.34	---	---	---
Sodium	mg/l	---	---	---	---	---	---	---	---	6.64	---	---	---
Sulphate	mg/l	---	---	---	---	---	---	---	---	<3.0	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	<5.0	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Oxidised Nitrogen	mg/l	<0.01	---	---	---	---	---	---	---	---	---	<0.01	<0.01
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Phenols	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Mircrotox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	0.036	---	---	---	---	---	---	---	---	---	---	---
Nitrate	mg/l	1.68	---	---	---	---	---	---	---	---	---	---	---
Phosphate - ORTHO	mg/l	0.006	---	---	---	---	---	---	---	0.013	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Facel Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	---	---	---	---	---	---	---	---	---	---	---	---

*** Insufficient Sample / No Access
--- Not Applicable

Location		*Balbane, Killybegs, Co. Donegal*											
Sample Type		surface water											
Site No		SW4											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1301	1656	2084	2274	2945	3552	3805	4310	4749	5302	5699	6671
pH		7.0	7.0	7.8	7.9	7.6	7.8	7.6	7.6	7.8	7.4	7.1	7.8
Temp	C	11.1	9.7	8.1	9.5	9.4	17.0	14.5	16.0	13.2	13.8	11.3	4.1
Electrical Conductivity	uS/cm	571	575	308	495	212	566	253	225	617	238	98	296
Ammonical Nitrogen	mg/l	22.66	23.04	7.32	10.81	4.07	5.50	3.80	3.10	17.90	3.20	1.18	8.41
COD	mg/l	49	33	16	12	22	---	---	26	39	---	24	---
BOD	mg/l	1.6	1.0	0.8	1.6	2.9	2.5	1.4	2.6	4.2	2.2	1.5	0.2
Dissolved Oxygen	mg/l	9.8	9.6	10.6	10.3	8.4	7.2	---	9.1	8.6	8.9	9.3	11.7
SS	mg/l	142.0	137.0	3.0	3.0	2.0	2.0	1.0	1.0	2.0	1.0	2.0	2.0
Residue on Evaporator	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	51	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	<0.22	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	6.61	---	---	---
Chloride	mg/l	62	60	---	---	25	---	---	25	39	---	18	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	2.50	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Iron	ug/l	---	---	---	---	---	---	---	---	<19	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	<0.4	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	11.2	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	68.3	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	<0.01	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	---	---	---	---	---	---	---	---	12.7	---	---	---
Sodium	mg/l	---	---	---	---	---	---	---	---	37	---	---	---
Sulphate	mg/l	---	---	---	---	---	---	---	---	<3.0	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	<5.0	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Oxidised Nitrogen	mg/l	3.88	3.96	0.92	2.02	---	---	---	---	---	---	0.08	0.48
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Phenols	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Mircrotox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	0.16	0.16	<0.03	<0.03	---	---	---	---	---	---	---	---
Nitrate	mg/l	16.9	17.2	4.1	8.9	---	---	---	---	---	---	---	---
Phosphate - ORTHO	mg/l	0.06	0.06	0.059	0.06	---	---	---	---	---	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Facel Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	---	---	---	---	---	---	---	---	---	---	---	---

*** Insufficient Sampl / No Access
--- Not Applicable

Location		*Balbane, Killybegs, Co. Donegal*											
Sample Type		surface water											
Site No		SW5											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1302	1657	2085	2275	2946	3553	3806	4311	4750	5303	5700	6672
pH		7.5	7.5	7.9	7.8	7.7	7.9	7.7	7.7	7.9	7.5	7.1	7.8
Temp	C	11.1	10.4	8.1	9.5	9.4	17.0	14.5	16.0	13.2	13.8	11.0	4.1
Electrical Conductivity	uS/cm	390	391	286	461	196	550	253	218	598	254	98	265
Ammonical Nitrogen	mg/l	11.71	9.77	6.67	10.02	3.65	3.90	3.80	3.10	15.50	3.70	1.09	5.48
COD	mg/l	17	3	17	18	22	---	---	29	34	---	19	---
BOD	mg/l	0.2	0.4	0.3	1.0	0.8	3.2	1.1	2.3	4.3	2.0	1.1	0.2
Dissolved Oxygen	mg/l	9.6	10.1	10.6	10.6	8.7	7.9	---	9.5	9.0	9.1	9.5	11.8
SS	mg/l	8.0	4.0	3.0	11.0	2.0	2.0	2.0	11.0	2.0	4.0	4.0	1.0
Residue on Evaporator	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	40	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	<0.22	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	6.55	---	---	---
Chloride	mg/l	45	46	---	---	24	---	---	25	34	---	18	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	2.26	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Iron	ug/l	---	---	---	---	---	---	---	---	<19	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	<0.4	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	10.9	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	0.881	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	<0.01	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	---	---	---	---	---	---	---	---	12.3	---	---	---
Sodium	mg/l	---	---	---	---	---	---	---	---	36	---	---	---
Sulphate	mg/l	---	---	---	---	---	---	---	---	<3.0	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	<5.0	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Oxidised Nitrogen	mg/l	0.02	1.61	1.0	2.16	---	---	---	---	---	---	0.09	0.40
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Phenols	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Mircrotox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	<0.03	<0.03	<0.03	<0.03	---	---	---	---	---	---	---	---
Nitrate	mg/l	0.1	5.28	4.32	9.54	---	---	---	---	---	---	---	---
Phosphate - ORTHO	mg/l	0.06	0.06	0.059	0.06	---	---	---	---	0.05	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Facel Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	---	---	---	---	---	---	---	---	---	---	---	---

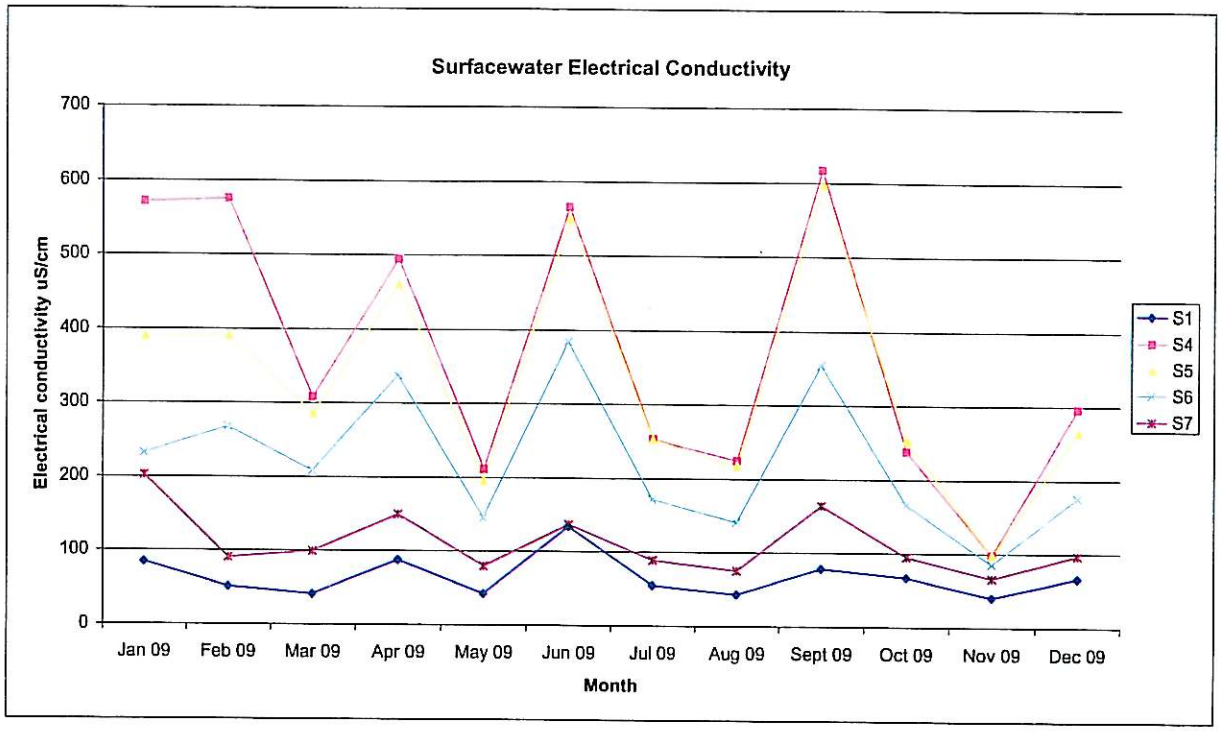
*** Insufficient Sample / No Access
--- Not Applicable

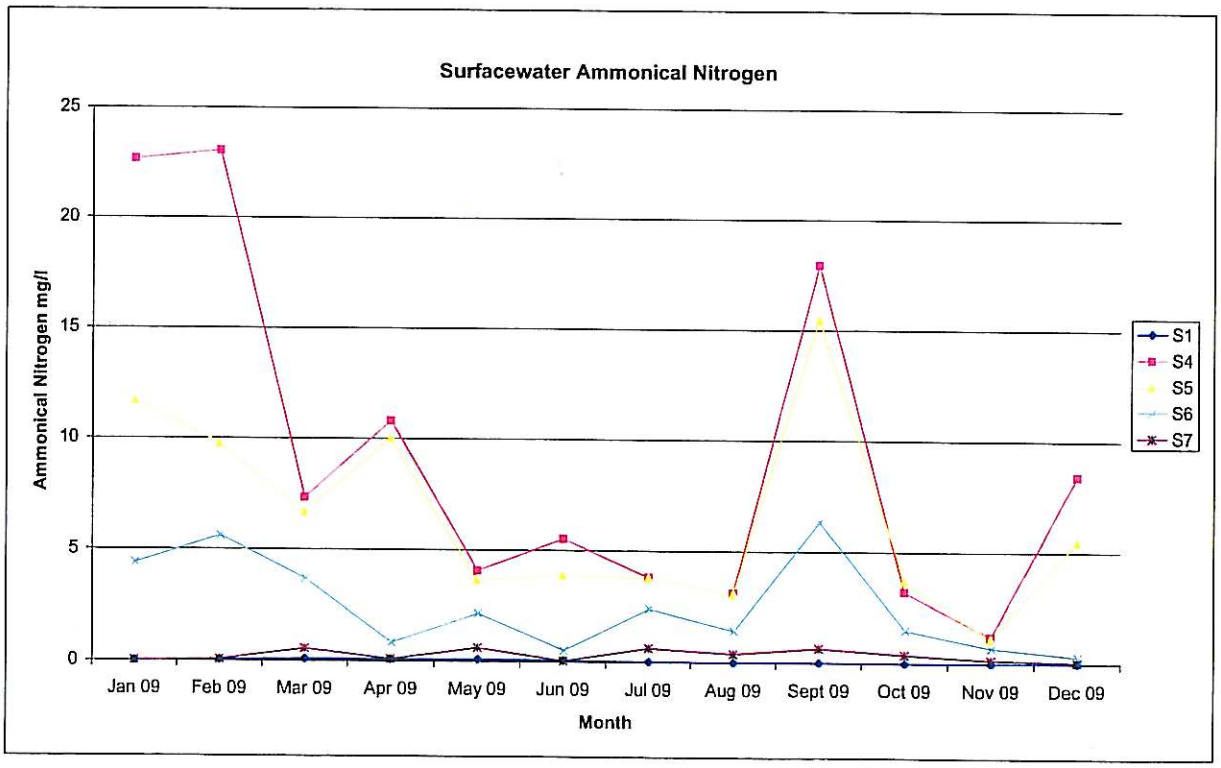
Location		*Balbane, Killybegs, Co. Donegal*											
Sample Type		surface water											
Site No		SW6											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1303	1658	2086	2276	2947	3554	3807	4312	4751	5304	5701	6673
pH		7.20	7.30	7.60	7.53	7.37	7.63	7.59	7.50	7.38	6.96	7.05	7.51
Temp	C	10.70	9.90	8.10	9.50	9.5	17.0	14.5	16.00	13.10	14.00	11.3	4.1
Electrical Conductivity	uS/cm	232	267	208	337	145	384	172	141	354	166	85	175
Ammonical Nitrogen	mg/l	4.39	5.61	3.67	0.83	2.15	0.50	2.4	1.41	6.30	1.49	0.68	0.3
COD	mg/l	14	10	19	17	23	—	---	39	34	—	18	—
BOD	mg/l	0.21	1.01	0.48	0.65	1.47	0.87	0.85	1.56	1.86	1.25	1.00	0.09
Dissolved Oxygen	mg/l	9.36	9.60	10.34	10.07	8.6	7.71	---	9.22	8.60	8.66	9.25	11.41
SS	mg/l	1.8	0.6	2.0	1.00	6.0	2.0	1.0	2	3.0	1.00	1.0	1.0
Residue on Evaporator	mg/l	—	---	---	—	---	—	---	---	—	---	—	---
Calcium	ug/l	---	—	---	---	—	---	—	---	28	---	—	---
Cadmium	ug/l	---	---	—	---	---	—	---	—	<0.22	—	---	---
Chromium	ug/l	—	---	---	—	---	---	---	---	5.89	---	---	---
Chloride	mg/l	35	34	---	---	22	---	—	15	34	---	18	---
Chlorine	mg/l	---	---	—	---	---	—	---	—	---	—	---	---
Copper	ug/l	—	—	---	—	---	---	—	---	2.04	---	—	—
Cyanide	mg/l	---	—	---	---	—	---	—	---	—	---	—	---
Iron	ug/l	—	---	—	—	---	—	---	—	328	—	---	---
Lead	ug/l	—	—	---	---	—	---	---	---	<0.4	---	—	---
Magnesium	ug/l	—	---	—	---	---	—	---	—	6.4	---	---	---
Manganese	ug/l	—	---	---	—	---	—	---	---	166	—	---	—
Mercury	ug/l	---	---	—	---	—	---	---	---	<0.01	---	—	---
Nickel	mg/l	---	---	—	---	---	—	---	—	---	—	---	---
Potassium	mg/l	—	—	---	—	---	---	—	---	6.75	---	---	—
Sodium	mg/l	—	---	---	—	---	---	---	---	23	---	—	---
Sulphate	mg/l	---	—	---	---	—	---	—	---	<3.0	---	—	---
Zinc	ug/l	—	—	---	—	---	---	—	---	<5.0	---	—	---
Total Alkalinity as CaCO3	mg/l	---	—	---	---	—	---	—	---	—	---	—	---
Total Organic Carbon	mg/l	---	---	—	---	—	—	—	---	---	—	—	---
Total Oxidised Nitrogen	mg/l	1.33	2.75	0.67	0.33	—	---	—	—	—	---	0.06	0.29
Arsenic	mg/l	—	---	---	---	---	—	---	—	---	—	---	---
Barium	mg/l	—	---	---	—	---	---	---	—	---	—	---	—
Boron	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Phenols	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Phosphorous	mg/l	---	---	—	---	---	—	---	—	---	—	---	—
Selenium	mg/l	---	—	---	---	---	---	—	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Mircrotox	Toxic Units	—	---	---	—	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	—	---	---	—	---	---	---	---	---	---	---
Nitrite	mg/l	<0.03	0.09	<0.03	<0.03	---	---	---	---	---	---	---	---
Nitrate	mg/l	5.9	12.02	3.0	1	---	—	---	---	---	—	---	---
Phosphate - ORTHO	mg/l	0.06	0.06	0.06	0.06	—	---	—	---	0.05	---	—	—
Phosphate - TOTAL	mg/l	—	---	---	—	---	---	---	---	---	—	---	---
Total Coliforms		---	—	---	---	---	---	---	---	—	---	—	—
Facel Coliforms		—	---	---	—	---	—	---	—	---	—	---	---
Depth	m	—	—	---	---	—	---	—	---	—	---	—	—

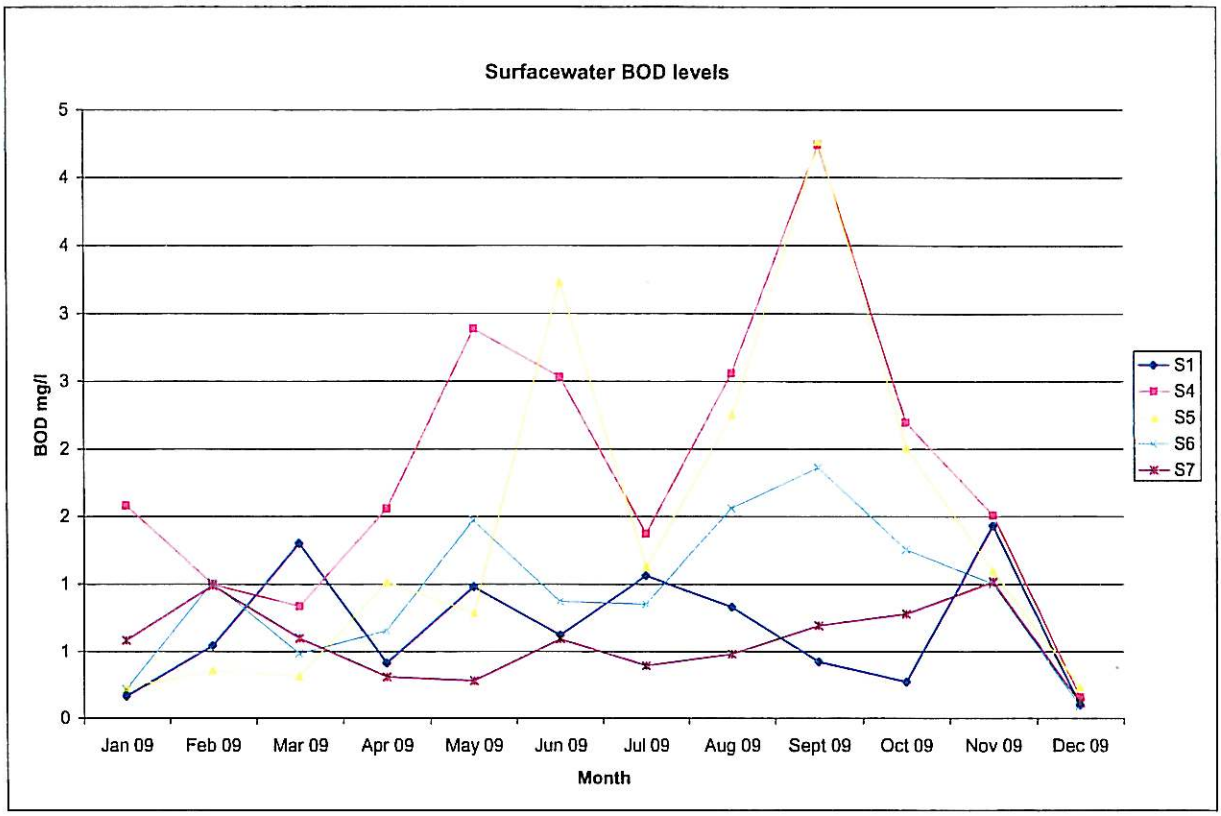
*** Insufficient Sample / No Access
--- Not Applicable

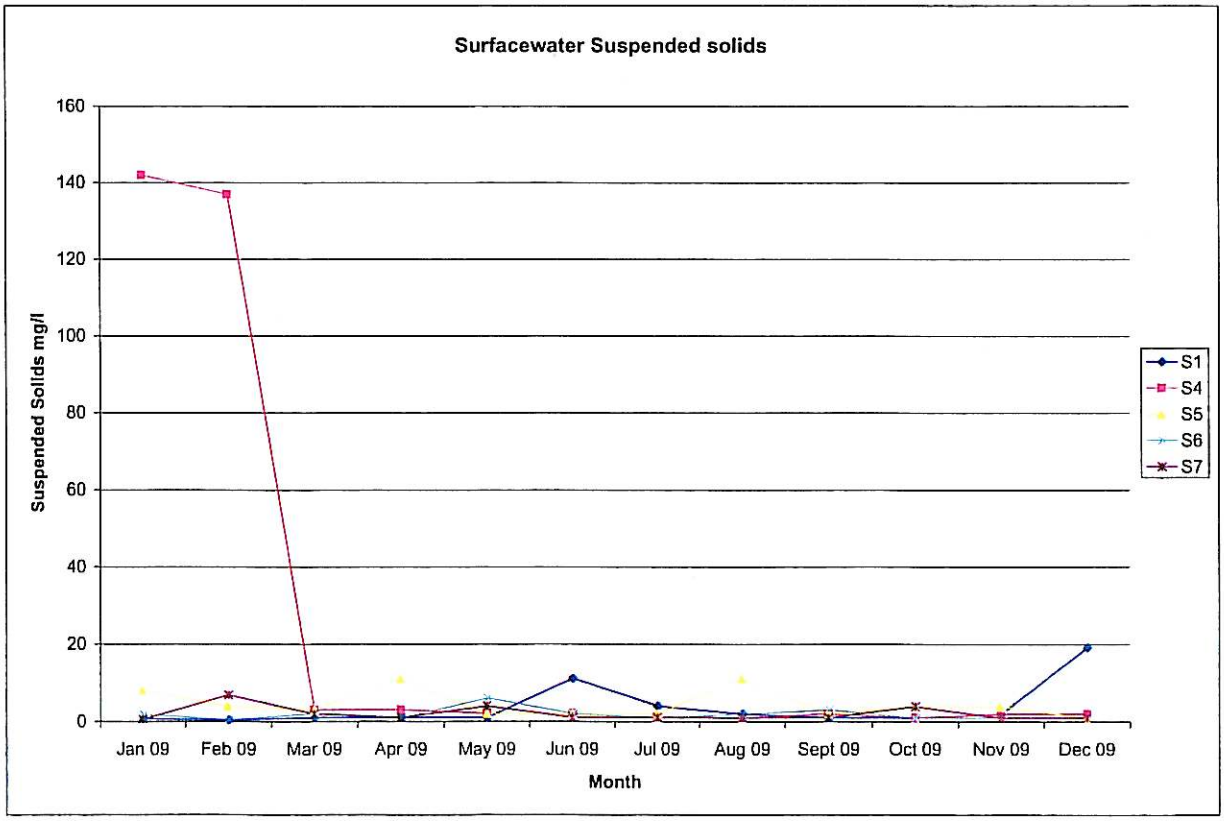
Location		Balbane, Killybegs, Co. Donegal											
Sample Type		surface water											
Site No		SW7											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1304	1659	2087	2277	2948	3555	3808	4313	4752	5305	5702	6674
pH		7.19	7.5	7.4	7.1	7.5	7.5	7.7	7.5	7.3	7	6.8	7.3
Temp	C	10.8	10.2	8.1	9.5	9.5	16	14	15.5	13.0	14.0	11.0	4.0
Electrical Conductivity	uS/cm	202	91	100	150	80	137	89	75	164	95	66	97
Ammonical Nitrogen	mg/l	vaiting Res	0.06	0.56	0.100	0.61	0.03	1	0.4	0.6	0.38	0.14	0.06
COD	mg/l	14	5	12	1	15	---	---	33	16	---	21	---
BOD	mg/l	0.58	0.99	0.60	0.31	0.28	0.59	0.4	0.48	0.69	0.78	1.02	0.1
Dissolved Oxygen	mg/l	9.20	10.43	10.66	10.58	8.92	7.88	---	9.25	8.82	8.81	9.39	11.79
SS	mg/l	0.6	6.8	2.0	1.0	4.0	1.0	1.0	1.0	1.0	4.0	1.0	1.0
Residue on Evaporator	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	14	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	<0.77	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	6.19	---	---	---
Chloride	mg/l	27	21	---	---	18	---	---	12	16	---	16	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	1.67	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Iron	ug/l	---	---	---	---	---	---	---	---	171	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	<0.4	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	3.15	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	0.958	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	<0.01	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	---	---	---	---	---	---	---	---	<2.34	---	---	---
Sodium	mg/l	---	---	---	---	---	---	---	---	11.3	---	---	---
Sulphate	mg/l	---	---	---	---	---	---	---	---	<3.0	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	<5.0	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	1.5907	---	---	---	---	---	---	---	---	---	---	---
Total Oxidised Nitrogen	mg/l	---	0.20	0.15	---	---	---	---	---	---	---	0.07	0.06
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	---	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Phenols	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Mircrotox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	---	0.056	<0.03	---	---	---	---	---	---	---	---	---
Nitrate	mg/l	---	0.80	0.6	---	---	---	---	---	---	---	---	---
Phosphate - ORTHO	mg/l	---	0.02	0.059	---	---	---	---	---	<0.01	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Facel Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	---	---	---	---	---	---	---	---	---	---	---	---

*** Insufficient Sample / No Access
--- Not Applicable


Surfacewater Electrical Conductivity
Electrical conductivity uS/cm
700
600
500
400
300
200
100
0
Jan 09
Feb 09
Mar 09
Apr 09
May 09
Jun 09
Jul 09
Aug 09
Sept 09
Oct 09
Nov 09
Dec 09
Month
S1
S4
S5
S6
S7


Surfacewater Ammonical Nitrogen
Ammonical Nitrogen mg/l
25
20
15
10
5
0
Jan 09
Feb 09
Mar 09
Apr 09
May 09
Jun 09
Jul 09
Aug 09
Sept 09
Oct 09
Nov 09
Dec 09
Month
S1
S4
S5
S6
S7


Surfacewater BOD levels
BOD mg/l
0
1
1
2
2
3
3
4
4
5
Jan 09
Feb 09
Mar 09
Apr 09
May 09
Jun 09
Jul 09
Aug 09
Sept 09
Oct 09
Nov 09
Dec 09
Month
S1
S4
S5
S6
S7


Surfacewater Suspended solids
Suspended Solids mg/l
0
20
40
60
80
100
120
140
160
Jan 09
Feb 09
Mar 09
Apr 09
May 09
Jun 09
Jul 09
Aug 09
Sept 09
Oct 09
Nov 09
Dec 09
Month
S1
S4
S5
S6
S7

Location		*Balbane, Killybegs, Co. Donegal*											
Sample Type		groundwater											
Site No		GW1											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1651	1663	2088	---	2949	---	---	4314	4599	---	---	---
pH		6.71	6.79	---	---	6.75	---	---	6.82	6.83	---	---	---
Temp	C	11.4	10.8	---	---	8.0	---	---	15.5	14.1	---	---	---
Electrical Conductivity	uS/cm	601	588	---	---	548	---	---	558	440	---	---	---
Ammonical Nitrogen	mg/l	---	0.09	---	---	0.06	---	---	0.07	0.06	---	---	---
COD	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
BOD	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Dissolved Oxygen	mg/l	2.84	4.08	---	---	3.52	---	---	3.27	4.06	---	---	---
SS	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Residue on Evaporator	mg/l	---	---	---	---	---	---	---	---	316	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	69.3	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	<0.22	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	6	---	---	---
Chloride	mg/l	15	20	---	---	13	---	---	25	26	---	---	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	<1.6	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	<0.05	---	---	---
Iron	ug/l	340	320	---	---	<19	---	---	---	<19	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	<0.4	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	4.89	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	6000	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	<0.01	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	2.6	2.9	---	---	2.97	---	---	---	<2.34	---	---	---
Sodium	mg/l	42	48	---	---	34	---	---	---	23.7	---	---	---
Sulphate	mg/l	---	---	---	---	---	---	---	---	11.1	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	<5.0	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	9	9.1	---	---	10.1	---	---	---	9	---	---	---
Total Oxidised Nitrogen	mg/l	---	---	---	---	0.11	---	---	0.07	---	---	---	---
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	<18	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	<0.5	---	---	---
Total Phenols	mg/l	0.01	<0.01	---	---	<0.025	---	---	---	<0.015	---	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Mircrotox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	---	<0.03	---	---	0.01	---	---	---	---	---	---	---
Nitrate	mg/l	---	0.3	---	---	0.09	---	---	---	---	---	---	---
Phosphate - ORTHO	mg/l	---	0.003	---	---	---	---	---	---	---	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Facel Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	0.4	0.5	0.5	0.6	0.8	0.9	1.1	0.6	0.6	0.4	0.5	0.5

*** Insufficient Sample / No Access
--- Not Applicable

VOLATILE ORGANIC COMPOUNDS		*Balbane Landfill Site Killybegs, Co.Donegal*	
Month:			
Location:	GW1		
Lab No:			
PARAMETERS	UNITS	PARAMETERS	UNITS
Dichlorodifluoromethane	<1.3	1,2-Dibromoethane	<2.3
Chloromethane	<1.7	Tetrachloroethene	<1.5
Vinyl Chloride	<1.2	1,1,1,2-Tetrachloroethane	<1.3
Bromomethane	<2.0	Chlorobenzene	<3.5
Chloroethane	<2.5	Ethylbenzene	<2.5
Trichlorofluoromethane	<1.3	p/m-Xylene	<2.5
trans-1,2-Dichloroethene	<1.9	Bromoform	<3.0
Dichloromethane	<3.7	Styrene	<1.2
Carbon disulphide	<1.3	1,1,2,2-Tetrachloroethane	<5.2
1,1-Dichloroethene	<1.2	o-Xylene	<1.7
1,1-Dichloroethane	<1.2	1,2,3-Trichloropropane	<7.8
tert-butyl methyl ether	<1.6	Isopropylbenzene	<1.4
cis-1,2-Dichloroethene	<2.3	Bromobenzene	<2.0
Bromochloromethane	<1.9	2-Chlorotoluene	<1.9
Chloroform	<1.8	Propylbenzene	<2.6
2,2-Dichloropropane	<3.8	4-Chlorotoluene	<1.9
1,2-Dichloroethane	<3.3	1,2,4-Trimethylbenzene	<1.8
1,1,1-Trichloroethane	<1.3	4-Isopropyltoluene	<2.6
1,1-Dichloropropene	<1.3	1,3,5-Trimethylbenzene	<10.0
Benzene	<1.3	1,3-Dichlorobenzene	<2.2
Carbontetrachloride	<1.4	1,4-Dichlorobenzene	<2.7
Dibromomethane	<2.7	sec-Butylbenzene	<1.7
1,2-Dichloropropane	<3.0	tert-Butylbenzene	<2.0
Bromodichloromethane	<0.9	1,2-Dichlorobenzene	<3.7
Trichloroethene	<2.5	n-Butylbenzene	<2.0
cis-1,3-Dichloropropene	<1.9	1,2-Dibromo-3-chloropropane	<9.8
trans-1,3-Dichloropropene	<3.5	1,2,4-Trichlorobenzene	<2.3
1,1,2-Trichloroethane	<2.2	Naphthalene	<1.0
Toluene	<1.4	1,2,3-Trichlorobenzene	<3.5
1,3-Dichloropropane	<2.2	Hexachlorobutadiene	<2.5
Dibromochloromethane	<1.7		

SEMIVOLATILE ORGANIC COMPOUNDS		*Balbane Landfill Site Killybegs, Co.Donegal*	
Month:			
Location:	GW1		
Lab No:			
PARAMETERS	UNITS	PARAMETERS	UNITS
Phenol	<1.0	Benzo(k)fluoranthrene	<1.0
2-Chlorophenol	<1.0	Benzo(a)pyrene	<1.0
2-Methylphenol	<1.0	Indeno(1,2,3-cd)pyrene	<1.0
4-Methylphenol	<1.0	Dibenzo(a,h)anthracene	<1.0
2-Nitrophenol	<1.0	Benzo(ghi)perylene	<1.0
4-Nitrophenol	<1.0	2-Chloronaphthalene	<1.0
2,4-Dichlorophenol	<1.0	2-Methylnaphthalene	<1.0
2,4-Dimethylphenol	<1.0	Carbazole	<1.0
4-Chloro-3-methylphenol	<1.0	Isophorone	<1.0
2,4,6-Trichlorophenol	<1.0	Dibenzofuran	<1.0
2,4,5-Trichlorophenol	<1.0	Dimethyl phthalate	<1.0
Pentachlorophenol	<1.0	Diethyl phthalate	<1.0
1,3-Dichlorobenzene	<1.0	Di-n-butylphthalate	<1.0
1,4-Dichlorobenzene	<1.0	Di-n-octylphthalate	<5.0
1,2-Dichlorobenzene	<1.0	Bis(2-ethylhexyl)phthalate	<2.0
1,2,4-Trichlorobenzene	<1.0	Butylbenzylphthalate	<1.0
Nitrobenzene	<1.0	4-Chloroaniline	<1.0
Azobenzene	<1.0	2-Nitroanaline	<1.0
Hexachlorobenzene	<1.0	3-Nitroaniline	<1.0
Naphthalene	<1.0	4-Nitroaniline	<1.0
Acenaphthylene	<1.0	2,4-Dinitrotoluene	<1.0
Acenaphthene	<1.0	2,6-Dinitrotoluene	<1.0
Fluorene	<1.0	Bis(2-chloroethyl)ether	<1.0
Phenanthrene	<1.0	4-Bromophenylphenylether	<1.0
Anthracene	<1.0	4-Chlorophenylphenylether	<1.0
Fluoranthrene	<1.0	Hexachloroethane	<1.0
Pyrene	<1.0	Hexachlorobutadiene	<1.0
Benzo(a)anthracene	<1.0	Hexchlorocyclopentadiene	<2.0
Chrysene	<1.0	Bis(2-chloroethoxy)methane	<1.0
Benzo(b)fluoranthrene	<1.0	N-nitrosodi-n-propylamine	<1.0

Location		Balbane, Killybegs, Co. Donegal											
Sample Type		groundwater											
Site No		GW2											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1652	1664	2089	---	2950	---	---	4315	4600	---	---	---
pH		6.51	6.50	---	---	6.45	---	---	7.33	6.87	---	---	---
Temp	C	12.1	12.0	---	---	8.2	---	---	15.7	14.5	---	---	---
Electrical Conductivity	uS/cm	100	98	---	---	95	---	---	86	85	---	---	---
Ammonical Nitrogen	mg/l	<0.01	0.02	---	---	<0.01	---	---	0.01	1.32	---	---	---
COD	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
BOD	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Dissolved Oxygen	mg/l	6.05	4.82	---	---	3.74	---	---	6.57	5.7	---	---	---
SS	mg/l	---		---	---	---	---	---	---	---	---	---	---
Residue on Evaporator	mg/l	---	---	---	---	---	---	---	---	49	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	9.78	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	<0.22	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	6.12	---	---	---
Chloride	mg/l	16.99	18.99	---	---	19	---	---	30	26	---	---	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	1.64	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	<0.05	---	---	---
Iron	ug/l	2100	390	---	---	<19	---	---	---	<19	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	<0.4	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	<0.036	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	<0.6	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	<0.01	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	1.5	1.1	---	---	<2.34	---	---	---	<2.34	---	---	---
Sodium	mg/l	9.8	11.0	---	---	10.6	---	---	---	6.2	---	---	---
Sulphate	mg/l	---	---	---	---	---	---	---	---	<3.0	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	9.45	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	---	1.0933	---	---	<3	---	---	---	<3.0	---	---	---
Total Oxidised Nitrogen	mg/l	0.0474	<0.01	---	---	<0.01	---	---	0.05	1.32	---	---	---
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	<18	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	<0.5	---	---	---
Total Phenols	mg/l	0.09	0.03	---	---	<0.025	---	---	---	<0.015	---	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Mircrotox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	<0.03	<0.03	---	---	<0.01	---	---	---	<0.01	---	---	---
Nitrate	mg/l	0.2210	<0.04	---	---	<0.01	---	---	---	<0.01	---	---	---
Phosphate - ORTHO	mg/l	0.0578	0.0606	---	---	---	---	---	---	0.07	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Facel Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	4.8	4.9	5.1	5.2	4.4	4.5	4.6	3.7	3	3.7	4.8	4.9

*** Insufficient Sample / No Access
--- Not Applicable

VOLATILE ORGANIC COMPOUNDS		*Balbane Landfill Site Killybegs, Co.Donegal*	
Month:			
Location:	GW2		
Lab No:			
PARAMETERS	UNITS	PARAMETERS	UNITS
Dichlorodifluoromethane	<1.3	1,2-Dibromoethane	<2.3
Chloromethane	<1.7	Tetrachloroethene	<1.5
Vinyl Chloride	<1.2	1,1,1,2-Tetrachloroethane	<1.3
Bromomethane	<2.0	Chlorobenzene	<3.5
Chloroethane	<2.5	Ethylbenzene	<2.5
Trichlorofluoromethane	<1.3	p/m-Xylene	<2.5
trans-1,2-Dichloroethene	<1.9	Bromoform	<3.0
Dichloromethane	<3.7	Styrene	<1.2
Carbon disulphide	<1.3	1,1,2,2-Tetrachloroethane	<5.2
1,1-Dichloroethene	<1.2	o-Xylene	<1.7
1,1-Dichloroethane	<1.2	1,2,3-Trichloropropane	<7.8
tert-butyl methyl ether	<1.6	Isopropylbenzene	<1.4
cis-1,2-Dichloroethene	<2.3	Bromobenzene	<2.0
Bromochloromethane	<1.9	2-Chlorotoluene	<1.9
Chloroform	<1.8	Propylbenzene	<2.6
2,2-Dichloropropane	<3.8	4-Chlorotoluene	<1.9
1,2-Dichloroethane	<3.3	1,2,4-Trimethylbenzene	<1.8
1,1,1-Trichloroethane	<1.3	4-Isopropyltoluene	<2.6
1,1-Dichloropropene	<1.3	1,3,5-Trimethylbenzene	<10.0
Benzene	<1.3	1,3-Dichlorobenzene	<2.2
Carbontetrachloride	<1.4	1,4-Dichlorobenzene	<2.7
Dibromomethane	<2.7	sec-Butylbenzene	<1.7
1,2-Dichloropropane	<3.0	tert-Butylbenzene	<2.0
Bromodichloromethane	<0.9	1,2-Dichlorobenzene	<3.7
Trichloroethene	<2.5	n-Butylbenzene	<2.0
cis-1,3-Dichloropropene	<1.9	1,2-Dibromo-3-chloropropane	<9.8
trans-1,3-Dichloropropene	<3.5	1,2,4-Trichlorobenzene	<2.3
1,1,2-Trichloroethane	<2.2	Naphthalene	<1.0
Toluene	<1.4	1,2,3-Trichlorobenzene	<3.5
1,3-Dichloropropane	<2.2	Hexachlorobutadiene	<2.5
Dibromochloromethane	<1.7		

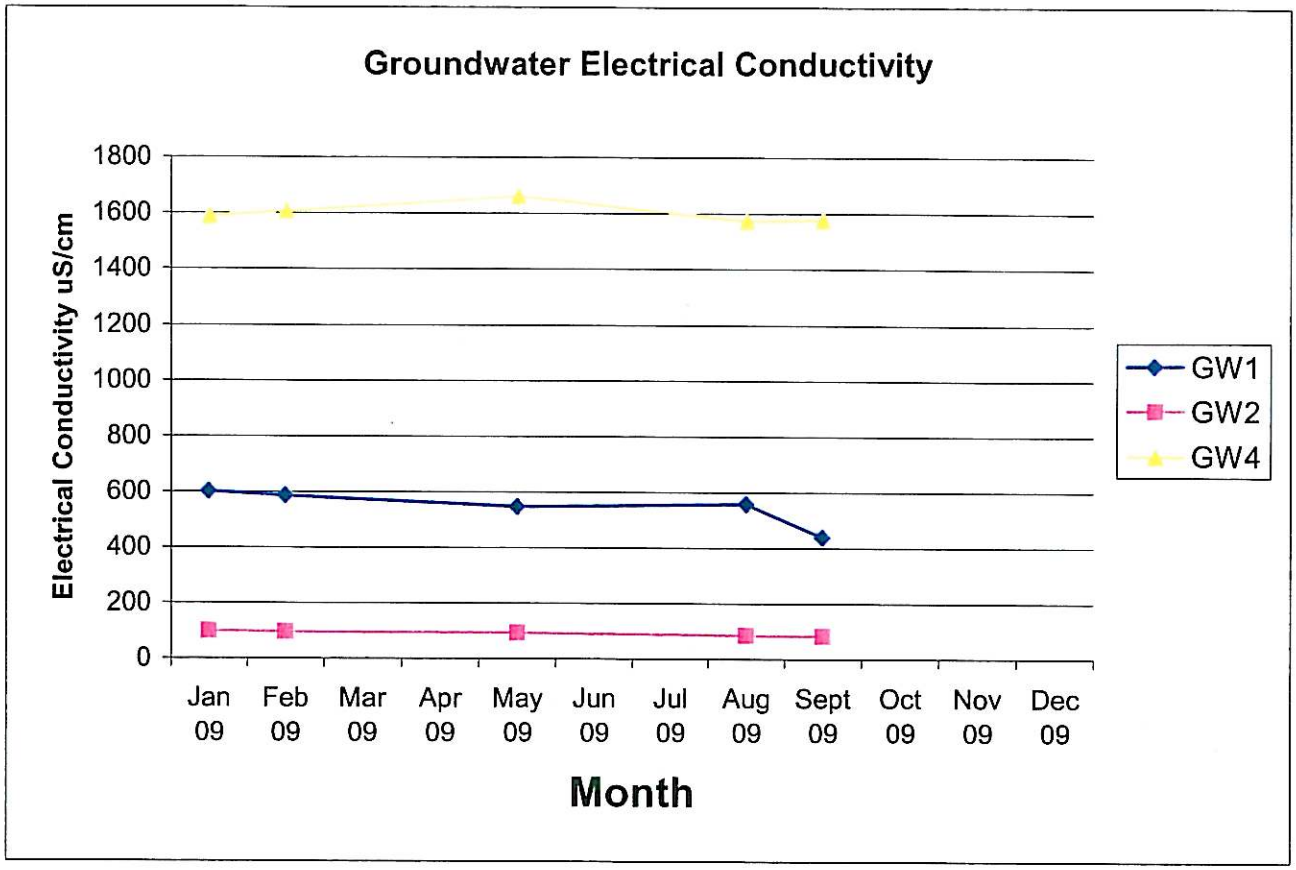
SEMIVOLATILE ORGANIC COMPOUNDS		*Balbane Landfill Site Killybegs, Co.Donegal*	
Month:			
Location:	GW2		
Lab No:			
PARAMETERS	UNITS	PARAMETERS	UNITS
Phenol	<1.0	Benzo(k)fluoranthrene	<1.0
2-Chlorophenol	<1.0	Benzo(a)pyrene	<1.0
2-Methylphenol	<1.0	Indeno(1,2,3-cd)pyrene	<1.0
4-Methylphenol	<1.0	Dibenzo(a,h)anthracene	<1.0
2-Nitrophenol	<1.0	Benzo(ghi)perylene	<1.0
4-Nitrophenol	<1.0	2-Chloronaphthalene	<1.0
2,4-Dichlorophenol	<1.0	2-Methylnaphthalene	<1.0
2,4-Dimethylphenol	<1.0	Carbazole	<1.0
4-Chloro-3-methylphenol	<1.0	Isophorone	<1.0
2,4,6-Trichlorophenol	<1.0	Dibenzofuran	<1.0
2,4,5-Trichlorophenol	<1.0	Dimethyl phthalate	<1.0
Pentachlorophenol	<1.0	Diethyl phthalate	<1.0
1,3-Dichlorobenzene	<1.0	Di-n-butylphthalate	<1.0
1,4-Dichlorobenzene	<1.0	Di-n-octylphthalate	<5.0
1,2-Dichlorobenzene	<1.0	Bis(2-ethylhexyl)phthalate	<2.0
1,2,4-Trichlorobenzene	<1.0	Butylbenzylphthalate	<1.0
Nitrobenzene	<1.0	4-Chloroaniline	<1.0
Azobenzene	<1.0	2-Nitroanaline	<1.0
Hexachlorobenzene	<1.0	3-Nitroaniline	<1.0
Naphthalene	<1.0	4-Nitroaniline	<1.0
Acenaphthylene	<1.0	2,4-Dinitrotoluene	<1.0
Acenaphthene	<1.0	2,6-Dinitrotoluene	<1.0
Fluorene	<1.0	Bis(2-chloroethyl)ether	<1.0
Phenanthrene	<1.0	4-Bromophenylphenylether	<1.0
Anthracene	<1.0	4-Chlorophenylphenylether	<1.0
Fluoranthrene	<1.0	Hexachloroethane	<1.0
Pyrene	<1.0	Hexachlorobutadiene	<1.0
Benzo(a)anthracene	<1.0	Hexchlorocyclopentadiene	<2.0
Chrysene	<1.0	Bis(2-chloroethoxy)methane	<1.0
Benzo(b)fluoranthrene	<1.0	N-nitrosodi-n-propylamine	<1.0

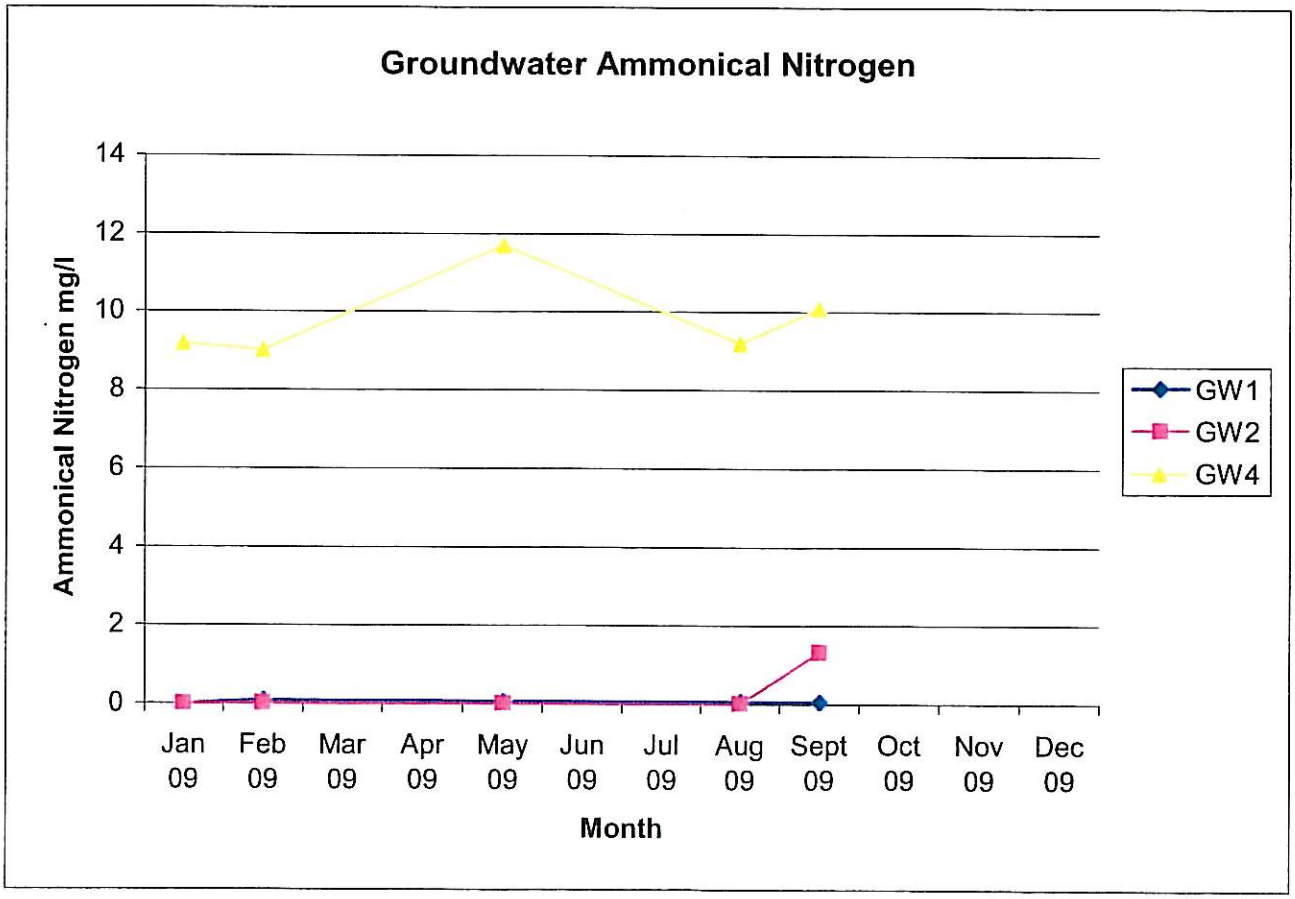
Location		Balbane, Killybegs, Co. Donegal											
Sample Type		groundwater											
Site No		GW4											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1653	1665	2090	---	2951	---	---	4316	4601	---	---	---
pH		7.42	7.13	---	---	7.00	---	---	7.05	7.16	---	---	---
Temp	C	12.1	11.1	---	---	8.2	---	---	15.7	16.1	---	---	---
Electrical Conductivity	uS/cm	1589	1606	---	---	1662	---	---	1574	1578	---	---	---
Ammonical Nitrogen	mg/l	9.20	9.02	---	---	11.71	---	---	9.20	10.10	---	---	---
COD	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
BOD	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Dissolved Oxygen	mg/l	7.33	2.46	---	---	1.83	---	---	3.58	2.5	---	---	---
SS	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Residue on Evaporator	mg/l	---	---	---	---	---	---	---	---	987	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	186	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	<0.22	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	6.04	---	---	---
Chloride	mg/l	219	210	---	---	238	---	---	248	248	---	---	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	3.59	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	<0.05	---	---	---
Iron	ug/l	270	74	---	---	<19	---	---	---	13100	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	0.425	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	21.9	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	3260	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	<0.01	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	12.0	1.30	---	---	13.3	---	---	---	13.1	---	---	---
Sodium	mg/l	140	120	---	---	106	---	---	---	101	---	---	---
Sulphate	mg/l	---	---	---	---	---	---	---	---	<3.0	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	5.75	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	14	12.6	---	---	17.6	---	---	---	13	---	---	---
Total Oxidised Nitrogen	mg/l	<0.01	0.03	---	---	0.04	---	---	0.11	0.11	---	---	---
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	44.9	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	<0.5	---	---	---
Total Phenols	mg/l	<0.01	<0.01	---	---	<0.025	---	---	---	<0.015	0.00	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Mircrotox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	<0.03	<0.03	---	---	<0.01	---	---	---	---	---	---	---
Nitrate	mg/l	<0.04	0	---	---	0.04	---	---	---	---	---	---	---
Phosphate - ORTHO	mg/l	0.061	0.06	---	---	---	---	---	---	0.05	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Facel Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	4.2	4.5	4.4	4.7	4.1	4.2	4.3	3.0	2.9	4.1	3.0	2.9

*** Insufficient Sample / No Access
--- Not Applicable

VOLATILE ORGANIC COMPOUNDS		*Balbane Landfill Site Killybegs, Co.Donegal*	
Month:			
Location:	GW4		
Lab No:			
PARAMETERS	UNITS	PARAMETERS	UNITS
Dichlorodifluoromethane	<1.3	1,2-Dibromoethane	<2.3
Chloromethane	<1.7	Tetrachloroethene	<1.5
Vinyl Chloride	<1.2	1,1,1,2-Tetrachloroethane	<1.3
Bromomethane	<2.0	Chlorobenzene	<3.5
Chloroethane	<2.5	Ethylbenzene	<2.5
Trichlorofluoromethane	<1.3	p/m-Xylene	<2.5
trans-1,2-Dichloroethene	<1.9	Bromoform	<3.0
Dichloromethane	<3.7	Styrene	<1.2
Carbon disulphide	<1.3	1,1,2,2-Tetrachloroethane	<5.2
1,1-Dichloroethene	<1.2	o-Xylene	<1.7
1,1-Dichloroethane	<1.2	1,2,3-Trichloropropane	<7.8
tert-butyl methyl ether	<1.6	Isopropylbenzene	<1.4
cis-1,2-Dichloroethene	<2.3	Bromobenzene	<2.0
Bromochloromethane	<1.9	2-Chlorotoluene	<1.9
Chloroform	<1.8	Propylbenzene	<2.6
2,2-Dichloropropane	<3.8	4-Chlorotoluene	<1.9
1,2-Dichloroethane	<3.3	1,2,4-Trimethylbenzene	<1.8
1,1,1-Trichloroethane	<1.3	4-Isopropyltoluene	<2.6
1,1-Dichloropropene	<1.3	1,3,5-Trimethylbenzene	<10.0
Benzene	<1.3	1,3-Dichlorobenzene	<2.2
Carbontetrachloride	<1.4	1,4-Dichlorobenzene	<2.7
Dibromomethane	<2.7	sec-Butylbenzene	<1.7
1,2-Dichloropropane	<3.0	tert-Butylbenzene	<2.0
Bromodichloromethane	<0.9	1,2-Dichlorobenzene	<3.7
Trichloroethene	<2.5	n-Butylbenzene	<2.0
cis-1,3-Dichloropropene	<1.9	1,2-Dibromo-3-chloropropane	<9.8
trans-1,3-Dichloropropene	<3.5	1,2,4-Trichlorobenzene	<2.3
1,1,2-Trichloroethane	<2.2	Naphthalene	<1.0
Toluene	<1.4	1,2,3-Trichlorobenzene	<3.5
1,3-Dichloropropane	<2.2	Hexachlorobutadiene	<2.5
Dibromochloromethane	<1.7		

SEMIVOLATILE ORGANIC COMPOUNDS		*Balbane Landfill Site Killybegs, Co.Donegal*	
Month:			
Location:	**GW4**		
Lab No:			
PARAMETERS	**UNITS**	**PARAMETERS**	**UNITS**
Phenol	<1.0	**Benzo(k)fluoranthrene**	<1.0
2-Chlorophenol	<1.0	**Benzo(a)pyrene**	<1.0
2-Methylphenol	<1.0	**Indeno(1,2,3-cd)pyrene**	<1.0
4-Methylphenol	<1.0	**Dibenzo(a,h)anthracene**	<1.0
2-Nitrophenol	<1.0	**Benzo(ghi)perylene**	<1.0
4-Nitrophenol	<1.0	**2-Chloronaphthalene**	<1.0
2,4-Dichlorophenol	<1.0	**2-Methylnaphthalene**	<1.0
2,4-Dimethylphenol	<1.0	**Carbazole**	<1.0
4-Chloro-3-methylphenol	<1.0	**Isophorone**	<1.0
2,4,6-Trichlorophenol	<1.0	**Dibenzofuran**	<1.0
2,4,5-Trichlorophenol	<1.0	**Dimethyl phthalate**	<1.0
Pentachlorophenol	<1.0	**Diethyl phthalate**	<1.0
1,3-Dichlorobenzene	<1.0	**Di-n-butylphthalate**	<1.0
1,4-Dichlorobenzene	<1.0	**Di-n-octylphthalate**	<5.0
1,2-Dichlorobenzene	<1.0	**Bis(2-ethylhexyl)phthalate**	<2.0
1,2,4-Trichlorobenzene	<1.0	**Butylbenzylphthalate**	<1.0
Nitrobenzene	<1.0	**4-Chloroaniline**	<1.0
Azobenzene	<1.0	**2-Nitroanaline**	<1.0
Hexachlorobenzene	<1.0	**3-Nitroaniline**	<1.0
Naphthalene	<1.0	**4-Nitroaniline**	<1.0
Acenaphthylene	<1.0	**2,4-Dinitrotoluene**	<1.0
Acenaphthene	<1.0	**2,6-Dinitrotoluene**	<1.0
Fluorene	<1.0	**Bis(2-chloroethyl)ether**	<1.0
Phenanthrene	<1.0	**4-Bromophenylphenylether**	<1.0
Anthracene	<1.0	**4-Chlorophenylphenylether**	<1.0
Fluoranthrene	<1.0	**Hexachloroethane**	<1.0
Pyrene	<1.0	**Hexachlorobutadiene**	<1.0
Benzo(a)anthracene	<1.0	**Hexchlorocyclopentadiene**	<2.0
Chrysene	<1.0	**Bis(2-chloroethoxy)methane**	<1.0
Benzo(b)fluoranthrene	<1.0	**N-nitrosodi-n-propylamine**	<1.0


Groundwater Electrical Conductivity
Electrical Conductivity uS/cm
1800
1600
1400
1200
1000
800
600
400
200
0
Jan 09
Feb 09
Mar 09
Apr 09
May 09
Jun 09
Jul 09
Aug 09
Sept 09
Oct 09
Nov 09
Dec 09
Month
GW1
GW2
GW4


Groundwater Ammonical Nitrogen
Ammonical Nitrogen mg/l
14
12
10
8
6
4
2
0
Jan 09
Feb 09
Mar 09
Apr 09
May 09
Jun 09
Jul 09
Aug 09
Sept 09
Oct 09
Nov 09
Dec 09
Month
GW1
GW2
GW4

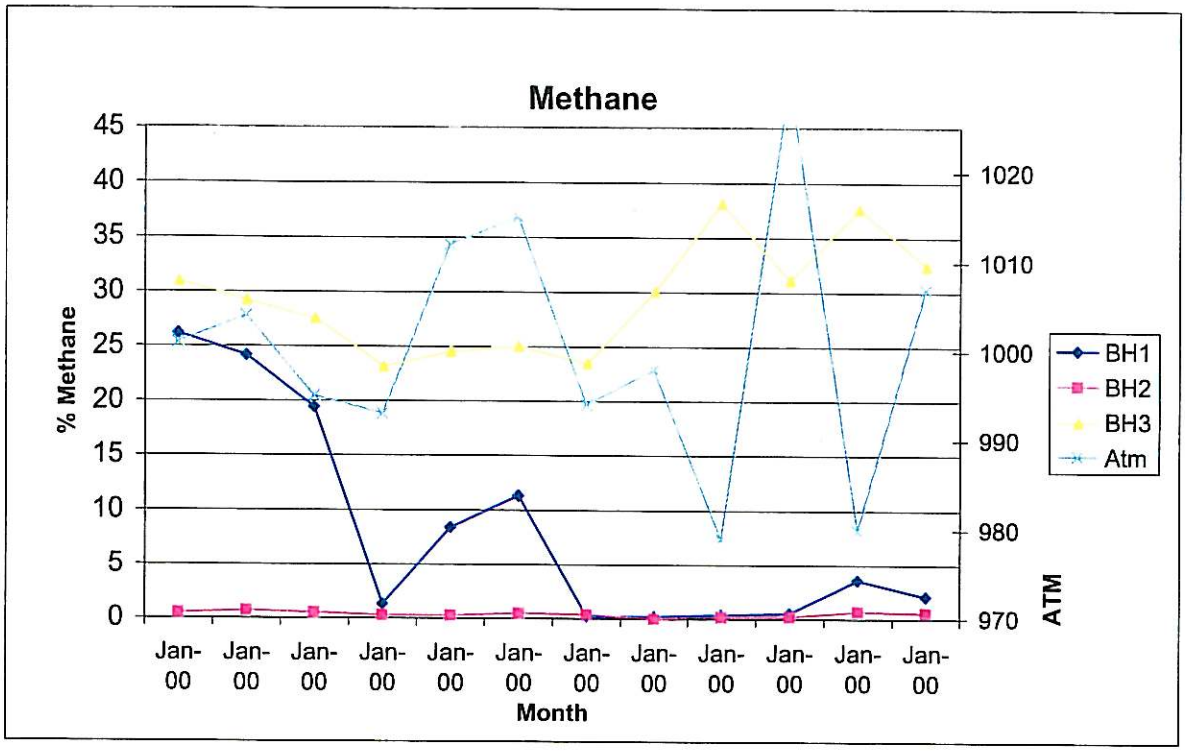
Location		Balbane, Killybegs, Co. Donegal											
Sample Type		leachate											
Site No		BH2											
Date of Sample		Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
Lab No		1654	1666	2091	---	2952	---	---	4317	4602	---	---	---
pH		6.3	6.4	---	---	6.2	---	---	6.4	6.6	---	---	---
Temp	C	11.00	11.30	---	---	8.20	---	---	15.80	14.50	---	---	---
Electrical Conductivity	uS/cm	1279	1261	---	---	1445	---	---	1387	1311	---	---	---
Ammonical Nitrogen	mg/l	14.27	14.50	---	---	13.06	---	---	15.60	13.90	---	---	---
COD	mg/l	47	34	---	---	25	---	---	30	27	---	---	---
BOD	mg/l	1	0.5	---	---	1.1	---	---	1.2	1.5	---	---	---
Dissolved Oxygen	mg/l	1.86	1.92	---	---	2.53	---	---	2.72	2.77	---	---	---
SS	mg/l	59.6	51.6	---	---	---	---	---	---	---	---	---	---
Residue on Evaporator	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Calcium	ug/l	---	---	---	---	---	---	---	---	69	---	---	---
Cadmium	ug/l	---	---	---	---	---	---	---	---	<0.22	---	---	---
Chromium	ug/l	---	---	---	---	---	---	---	---	5.14	---	---	---
Chloride	mg/l	213	214	---	---	287	---	---	258	243	---	---	---
Chlorine	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/l	---	---	---	---	---	---	---	---	1.85	---	---	---
Cyanide	mg/l	---	---	---	---	---	---	---	---	<0.05	---	---	---
Iron	ug/l	---	---	---	---	---	---	---	---	18800	---	---	---
Lead	ug/l	---	---	---	---	---	---	---	---	<0.4	---	---	---
Magnesium	ug/l	---	---	---	---	---	---	---	---	33.1	---	---	---
Manganese	ug/l	---	---	---	---	---	---	---	---	8270	---	---	---
Mercury	ug/l	---	---	---	---	---	---	---	---	<0.01	---	---	---
Nickel	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	mg/l	---	---	---	---	---	---	---	---	9.71	---	---	---
Sodium	mg/l	---	---	---	---	---	---	---	---	118	---	---	---
Sulphate	mg/l	---	---	---	---	---	---	---	---	<3.0	---	---	---
Zinc	ug/l	---	---	---	---	---	---	---	---	<5.0	---	---	---
Total Alkalinity as CaCO3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Oxidised Nitrogen	mg/l	<0.01	<0.01	---	---	<0.01	---	---	<0.01	<0.01	---	---	---
Arsenic	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Barium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Boron	ug/l	---	---	---	---	---	---	---	---	262	---	---	---
Flouride	mg/l	---	---	---	---	---	---	---	---	<0.5	---	---	---
Total Phenols	mg/l	---	---	---	---	---	---	---	---	<0.015	---	---	---
Phosphorous	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Silver	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Mircrotox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Microtox	Toxic Units	---	---	---	---	---	---	---	---	---	---	---	---
Nitrite	mg/l	<0.03	<0.03	---	---	<0.01	---	---	---	<0.01	---	---	---
Nitrate	mg/l	<0.04	<0.04	---	---	<0.01	---	---	---	<0.01	---	---	---
Phosphate - ORTHO	mg/l	0.06	0.06	---	---	---	---	---	---	0.05	---	---	---
Phosphate - TOTAL	mg/l	---	---	---	---	---	---	---	---	---	---	---	---
Total Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Facel Coliforms		---	---	---	---	---	---	---	---	---	---	---	---
Depth	m	4.9	5.1	5.1	5.3	3.9	4.2	4.4	4.2	3.2	4.4	4.2	4.4

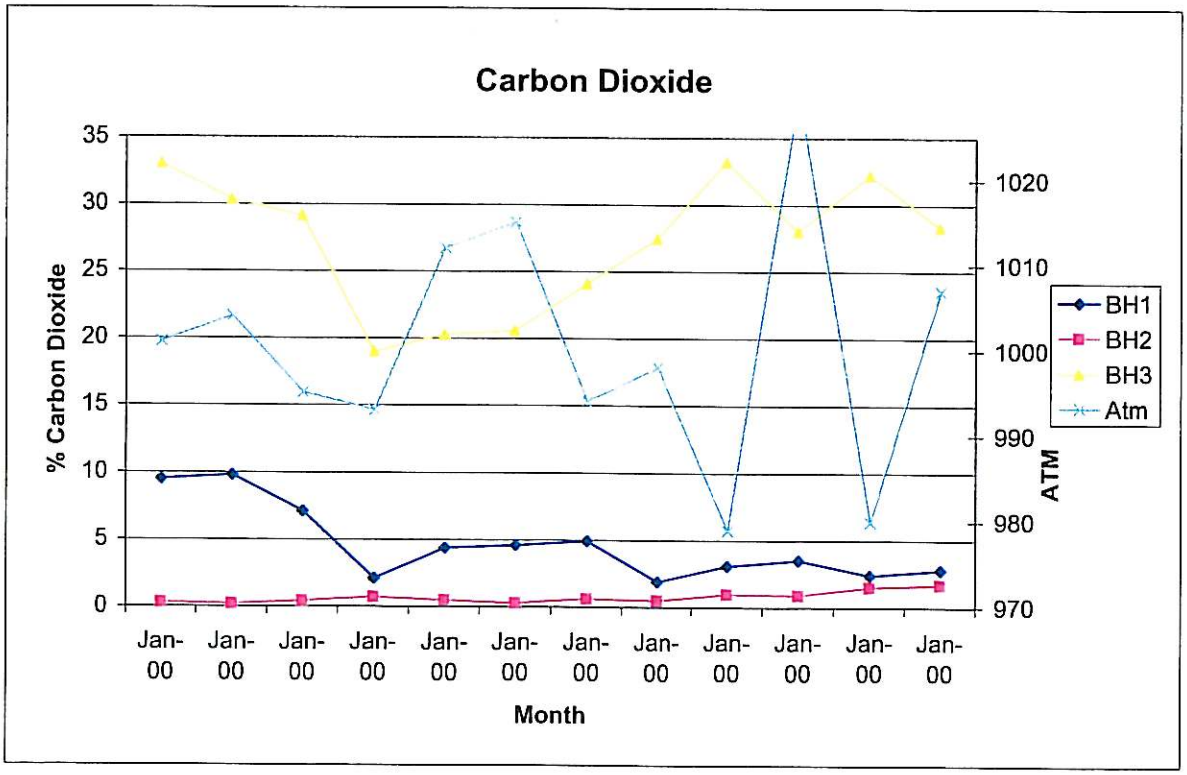
*** Insufficient Sample / No Access
--- Not Applicable

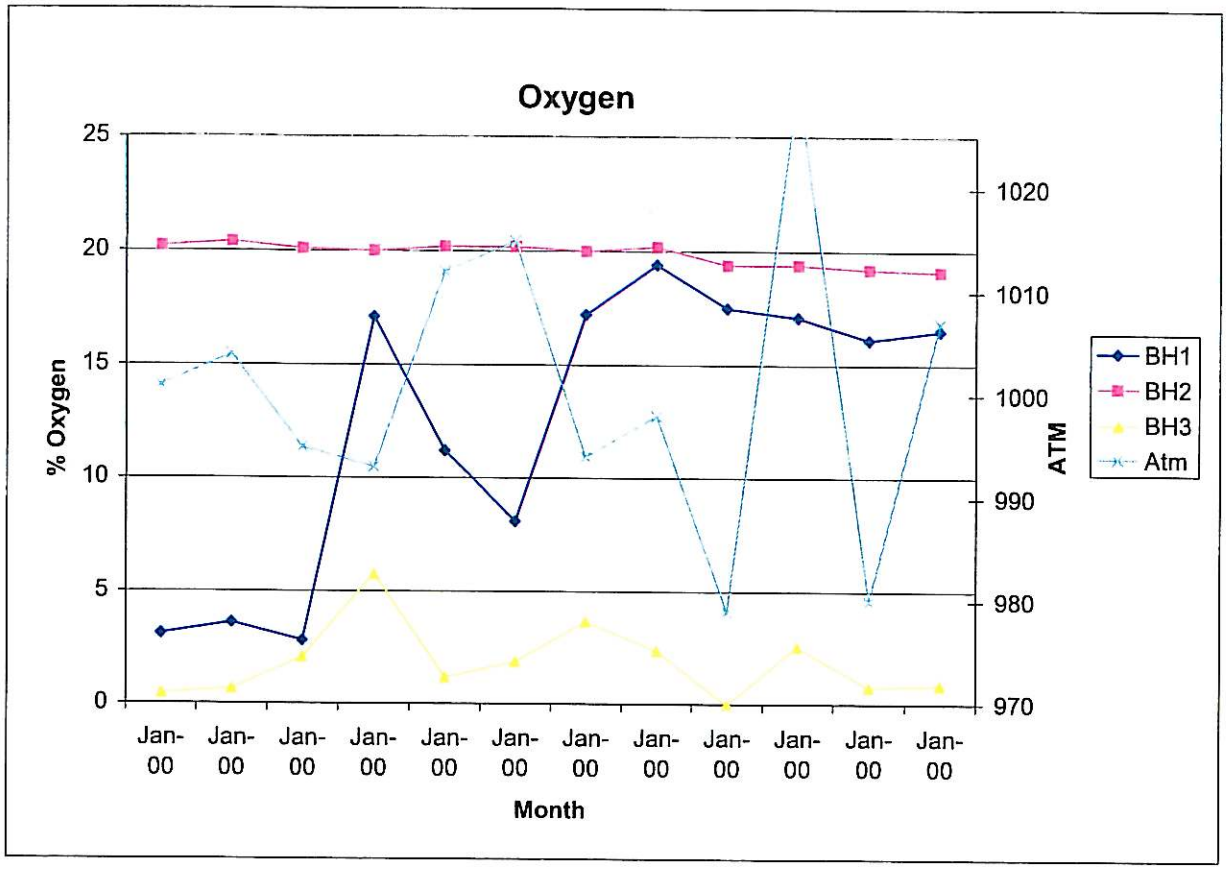
		Balbane Landfill Site, Killybegs, Co Donegal											
		Gas Levels											
		BH1											
PARAMETERS	**UNITS**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**
		JAN 09	FEB 09	MAR 09	APR 09	MAY 09	JUN 09	JUL 09	AUG 09	SEPT 09	OCT 09	NOV 09	DEC 09
Methane	%	26.2	24.2	19.4	1.3	8.4	11.3	0.2	0.2	0.4	0.5	3.6	2.1
Carbon Dioxide	%	9.5	9.8	7.1	2.1	4.4	4.6	4.9	1.9	3.1	3.5	2.4	2.8
Oxygen	%	3.1	3.6	2.8	17.1	11.2	8.1	17.2	19.4	17.5	17.1	16.1	16.5
Atm. Pressure	mBar	1001	1004	995	993	1012	1015	994	998	979	1030	980	1007

		Balbane Landfill Site, Killybegs, Co Donegal											
		Gas Levels											
		BH2											
PARAMETERS	**UNITS**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**
		JAN 09	FEB 09	MAR 09	APR 09	MAY 09	JUN 09	JUL 09	AUG 09	SEPT 09	OCT 09	NOV 09	DEC 09
Methane	%	0.5	0.7	0.5	0.3	0.3	0.5	0.4	0	0.2	0.2	0.7	0.6
Carbon Dioxide	%	0.3	0.2	0.4	0.7	0.5	0.3	0.6	0.5	1.0	0.9	1.5	1.7
Oxygen	%	20.2	20.4	20.1	20	20.2	20.2	20	20.2	19.4	19.4	19.2	19.1
Atm. Pressure	mBar	1001	1004	995	993	1012	1015	994	998	979	1030	980	1007

		Balbane Landfill Site, Killybegs, Co Donegal											
		Gas Levels											
		BH3											
PARAMETERS	**UNITS**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**
		JAN 09	FEB 09	MAR 09	APR 09	MAY 09	JUN 09	JUL 09	AUG 09	SEPT 09	OCT 09	NOV 09	DEC 09
Methane	**%**	31	29.3	27.6	23.2	24.6	25.1	23.5	30.1	38.2	31.2	37.7	32.5
Carbon Dioxide	**%**	33.1	30.4	29.2	19	20.3	20.6	24.1	27.5	33.3	28.1	32.3	28.4
Oxygen	**%**	0.5	0.7	2.1	5.8	1.2	1.9	3.7	2.4	0.0	2.6	0.8	0.9
Atm. Pressure	**mBar**	1001	1004	995	993	1012	1015	994	998	979	1030	980	1007


Methane
% Methane
45
40
35
30
25
20
15
10
5
0
1020
1010
1000
990
980
970
ATM
BH1
BH2
BH3
Atm
Jan-00
Month


Carbon Dioxide
% Carbon Dioxide
35
30
25
20
15
10
5
0
1020
1010
1000
990
980
970
ATM
BH1
BH2
BH3
Atm
Jan-00
Month


Oxygen
% Oxygen
ATM
Month
25
20
15
10
5
0
1020
1010
1000
990
980
970
Jan-00
BH1
BH2
BH3
Atm

APPENDIX C

WATER BALANCE CALCULATION AND METEOROLOGICAL DATA

BALBANE WATER BALANCE CALCULATION

Year	Active Area A(m^2)	Active Phase	Waste Input t/month	Rainfall (mm)	Active Area Infiltration R(A)(m^3)	Liquid Waste LW(m3)	Restored area	Temp Restored area RCA(m^2)	Temp Restored area Infiltration IRCA(m3)	Total Water	Cumulative Water	Absorptive Capacity aW(m3)	Cumulative Absorptive Capacity	Cumulative Leachate	Leachate produced Lo(m3)
2009	Closed			1259				29500	9285	9285	9285			9285	9285
Total															9285

Assumptions

IRCA=	Temp restored area infiltration of rainfall estimated % (25-30% of annual rainfall,EPA Manual)	30%	%
Temporary restored area	Area of landfill site temporary restored, site closed in Jan 2004	29,500	m2
Rainfall Data	Data taken from Ballynacarrick Weather Station. Evaporation losses have not been included	1,259	mm

APPENDIX D

E-PRTR Return

(AER Electronic Reporting System)

At the time of reporting the EPA database for 2009 is as yet unavailable to submit the PRTR return. When the database is available the return will be made and a hard copy will be forwarded to the Agency under separate cover.