

Annual Environmental Report

GLENALLA LANDFILL SITE

(Waste Licence Ref. W0125-1)

By Donegal County Council For Environmental Protection Agency

Reporting Period: January to December 2010

April 2011

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1. INTRODUCTION

- 1.1 This Annual Environmental Report (AER) has been prepared to meet the requirements of Schedule E and F of Waste Licence W0125-1 for Glenalla Landfill. This report provides an environmental review of the site from the 1st of January 2010 to the 31st of December 2010.
 - 1.2 On the 4th of December 2001 the Environmental Protection Agency granted the Council a Waste Licence (registration number W0125-1) for the orderly closure, capping and restoration of the landfill facility, in accordance with the Third Schedule of the Waste Management Act, 1996. Donegal County Council ceased operational activity at Glenalla Landfill Site after the Christmas period in December 2001. Subsequently, Donegal County Council was only permitted to accept inert waste for disposal for the purposes of restoration and aftercare of the site. The quantity of inert waste to be accepted is limited to 46,000 tonnes. The Council has managed the facility to ensure that activities have not caused environmental pollution and carries out regular environmental monitoring. All monitoring data is submitted to the EPA. The site was formally restored in 2005/6.
 - 1.3 Glenalla Landfill is an unlined facility, historically operated on the dilute and disperse principle, whereby leachate generated by rainfall infiltration and the decomposition of the landfilled waste is allowed to disperse into the surrounding environment. The landfill site is situated in a low-lying hollow that has been infilled by peat deposits constituting an area of blanket bog. These deposits can represent an effective hydraulic barrier to the downward percolation of leachate. The disposal of waste was undertaken by the landraise method, whereby tipping took place directly onto the stripped ground surface raising its level to form an elevated landform flanked by low graded banks. As mentioned above the site was formally restored in 2005/6.
- 1.4 The landfill is situated in a fully rural setting, some 4km east of Milford in an area of moderate relief that forms part of the upper catchment of the Glenalla River. This watercourse dissects the southwest boundary of the landfill site. The ground surface of the closed hollow in which the landfill is based generally falls in a south to south westerly direction under a shallow gradient towards the Glenalla River. The downstream extent of the landfill is therefore represented by a small area situated on the southern site boundary. The area to the north and northeast of the site represents the principal upstream area.

2. WASTE ACTIVITIES CARRIED OUT AT THE FACILITY

2.1 Type of Waste

The licensed 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 the deposition of inert waste.
- Class 4 Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons: This activity is limited too 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. QUANTITIES AND COMPOSITION OF WASTE

3.1 Quantities of Waste for Restoration

In accordance with Condition 1 of the waste licence only inert waste may be deposited at the facility. A maximum of 46,000 tonnes shall be accepted for the purposes of restoration and aftercare. The quantity of waste received during the reporting period and each previous year at the facility are presented in Table 3.1.

3.2 Glenalla landfill site was closed in 2001 and no material was been imported or exported until restoration works commenced during 2005. The material imported during 2005 was inert and specifically for the purpose of restoring the site.

		•		•	•	•							
Waste types	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	201(
Total	550	1,565	5,722	10,093	0	0	0	34,474	0	0	0	0	0
		,	-)	-,	-	-	-	- ,	-	-	-	-	-

Table 3.1Waste quantities accepted (tonnes)

4. SUMMARY REPORT OF EMISSIONS

4.1 Groundwater

4.1.1 Introduction

Groundwater is monitored at the locations shown on drg. no. 5234.30/04. GW1 is located upstream of the landfill and GW3 and GW2 are downstream. GW2 was re-drilled during 2006. Parameters to be monitored and frequencies as required by the Waste Licence are listed in Appendix A. Since restoration the Agency has agreed to reduce monitoring frequency to biannual. All results in tabular and graphical format are contained in Appendix B. Results are compared against EC (Quality of Water Intended for Human Consumption) Regulations 1988; EC (Drinking Water) Regulations 2000 and EPA Interim Guideline Values.

Due to current national 'non-replacement of staff' policy currently in force, the scientific officer responsible for monitoring this site was off on maternity leave for the second half of the period and was not replaced. Consequently samples were not gathered during this period. This was communicated to the EPA but due to the lower amount of results compared with a normal period results from the first monitoring phase of the current period (2011) have also been reported in this AER to provide a better picture of emissions.

4.1.2 Summary of Results

The site was developed on the dilute and disperse principal, however the groundwater receives some protection against contamination from the peat underlying the landfill and the landfill is now fully restored. Results again indicate an impact on downstream groundwater from the landfill with levels similar to those recorded in the last period..

4.2 Surface Water

4.2.1 Introduction

Surface water monitoring is carried out at SW1, SW2, SW3 & SW4 as shown on Drawing No. 5234.30/04. SW1 is reflective of the quality of the surface water upstream of the landfill site. The parameters and frequencies of monitoring required by the Waste Licence are listed in Appendix A, however since restoration of the site the Agency has agreed to a frequency of biannual monitoring. The results of monitoring in tabular and graphical format are presented in Appendix B. Results are compared against EC (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations 1989.

4.2.2 Summary of Results

On the basis of the hydrogeology of the site, surface water represents the principal receptor of leachate emissions from the site. Surface water results previously did indeed indicate that leachate was being released from the facility into the surrounding environment. Following restoration, levels of emissions to surface water had been reducing. Following a rise in downstream ammonia levels at the end of 2008 however an investigation was undertaken into the cause of the increase in downstream leachate emissions. It was eventually discovered

that although the leachate pump appeared to be working, it was not delivering leachate to the lagoon. The pump was repaired and is now monitored for performance. Levels are similar this period to those recorded last period.

4.3 Leachate Composition

4.3.1 Leachate is monitored at one location at the facility, L1, as shown on Drawing No. 5234.30/04. The results are contained in Appendix B and have been compared with typical leachate quality as reported in EPA Landfill Manual – Landfill Operational Practices (see Section 5.3). All parameters are consistent with typical leachate composition and comparable with levels recorded during the last reporting period.

4.4 Landfill gas

4.4.1 Landfill gas is monitored at three locations at the facility as shown on Drawing No. 5234.30/04. LG1, LG2, and LG3 are all located in waste. Both LG1 and LG3 were replaced during restoration works. Wells were not accessible towards the end of the reporting period due to growth of vegetation. Levels detected are consistent with those detected during the previous reporting period.

4.5 Dust Monitoring

4.5.1 Dust monitoring was not undertaken in this reporting period.

5. RESULTS & INTERPRETATIONS OF MONITORING INCLUDING PLANS & UPDATES OF MONITORING LOCATIONS.

5.1 Groundwater

- 5.1.1 Locations, parameters and monitoring frequencies, as required by the Waste Licence are listed in Appendix A. Locations are shown in Drg no. 5234.30/04. Results of the monitoring programme are listed in Appendix B. These results have been compared to EC Quality of Water Intended for Human Consumption Regulations, 1988, the European communities (Drinking Water) Regulations, 2000 and the EPA Interim Report, Towards Setting Guidelines Values (IGV) for the Protection of Groundwater in Ireland. The majority of the parameters are below the recommended limits.
- 5.1.2 Upstream groundwater shows levels in excess of the MAC for Iron & Nutrients.
- 5.1.3 Downstream, levels of Ammonia, Conductivity, COD, Chloride, Iron and Nutrient levels are slightly elevated.

5.2 Surface Water

- 5.2.1 Locations, parameters and monitoring frequencies, as required by the Waste Licence are listed in Appendix A. Since restoration sampling frequency has been reduced to bi-annual with the agreement of the Agency. Locations are shown in Drg no. 5234.30/04. The results are presented graphically and in tabular format in Appendix B. These results have been compared to EC Quality of Surface Water (Intended for the Abstraction of Drinking Water) Regulations, 1989.
- 5.2.2 Upstream of the site, results showed elevated levels of COD and Nutrients.
- 5.2.3 Downstream, levels of Ammonia, COD Chloride and Nutrients are elevated.

5.3 Leachate

5.3.1 Leachate quality can vary during the lifetime of landfill site depending on the phase of decomposition of the waste. Leachate results for the reporting period are presented in Appendix B and some of the characteristic parameters of the leachate are listed in Table 5.1 below.

Table 5.1: Raw Leachate Concentrations 2010							
	Glenalla Landfill Site From 30 samples from UK/Iris waste Results in mg/I						
PARAMETER	Min.Conc	Max.Conc	Min.Conc	Max.Conc	Mean		
Ammonia (mg/N)	62	120	<0.2	1700	491		
BOD	3.7	4.14	4.5	>4800	>834		
COD	37	49	<10	33,700	3078		
Chloride (mg/l)	132	169	27	3410	1256		
Iron (mg/l)	n/a	n/a	0.4	664	54.4		
Potassium (mg/l)	n/a	n/a	2.7	1480	491		
TON (mg/l N)	<0.01	<0.01	/	/	/		
Conductivity (mS/cm)	1553	2290	503	19,200	7789		
рН	7.35	7.43	6.4	8	7.2		

5.3.2 Leachate results have been compared to "Typical Leachate Composition of 30 Samples from UK/Irish Landfills accepting mainly Domestic Waste" (Landfill Operational Practices). All parameters are consistent with typical leachate composition.

5.4 Landfill Gas

Levels this period are consistent with those recorded post restoration. Maximum and minimum levels are shown in Table 5.2 below and full results and graphs are contained in Appendix B. These wells are all located within waste.

Table 5.2 Methane and Carbon Dioxide Max & Min for Gas Wells in Was	te
---	----

	2008		20	09	2010	
Parameter	Max	Min	Max	Min	Max	Min
Methane	63.2%	12.7%	54.2%	34.8%	74.5%	4.1%
Carbon Dioxide	31.4%	1.4%	13.2%	22.4%	46.8%	2.3%

5.5 Dust

Dust monitoring was not undertaken during this period.

6. VOLUME OF LEACHATE PRODUCED AND VOLUME OF LEACHATE DISCHARGED

- 6.1 A water balance calculation has been undertaken and is contained in Appendix C. This indicates that the estimated volume of leachate produced at the site for 2010 was approximately 1983m³.
- 6.2 Leachate is typically tankered from the collection lagoon on the site one day per week. The total volume of leachate tankered during the last reporting period was 3716m³.

7. TOPOGRAPHICAL SITE SURVEY

7.1 A topographical survey of the site was carried out in May 2006 post restoration. Copies of the survey were forwarded to the Agency in March 2007.

8. **REPORTED INCIDENTS AND COMPLAINTS SUMMARIES**

- 8.1 Donegal County Council reports on an on-going basis all occasions where either surface waters or groundwaters are found to contain in excess of 0.2mg/l ammonia, or where perimeter gas wells are found to contain greater than either 1% methane or 1.5% carbon dioxide. These are reported as incidents each six-monthly reporting period or when the results become available.
- 8.2 Apart from the on-going emissions exceedance reporting referred to above, no incidents have been reported to the Environmental Protection Agency during this reporting period.
- 8.3 No complaints where received during this reporting period.

9. **REVIEW OF NUISANCE CONTROLS**

9.1 General

As the facility is not operational, and all areas formerly used for placement of municipal waste have been fully restored, the following list of nuisances are no longer deemed likely to cause problems. Regular site inspections carried out by environmental scientists check for evidence of any of the following. Where any sign of these is detected appropriate control measures would be introduced.

- Flies and vermin;
- Dust;
- Litter;
- Birds;
- Noise;
- Odours.

9.2.1 EMS

As part of the Environmental Management System a procedure has been developed to ensure that the site is inspected for each of the above-mentioned nuisances on a quarterly basis. This will ensure that should any nuisance arise, the situation is identified and dealt with appropriately.

10. MANAGEMENT STRUCTURE OF SITE

10.1 Organisation

The management of the landfill site is illustrated in the diagram that follows.



10.2 Management Responsibility

<u>Senior Engineer</u>: Overall responsibility for the management of the site and ensuring compliance with the Waste Licence. Delegation of authority and responsibility to ensure the effective management of the facility and licence compliance.

<u>Senior Executive Engineer:</u> Responsible for the day-to-day management of the facility as directed by the Senior Engineer.

Executive Environmental Officer: Responsible for overall compliance with EPA Licence.

<u>Scientific Officer:</u> Carry out environmental monitoring of emissions and reporting in accordance with licence requirements.

11. PROGRAMME FOR PUBLIC INFORMATION

11.1 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 Environmental Headquarters at Three Rivers Centre in Lifford. Details regarding this programme are contained in Section 2 of the Environmental Management System Manual.

12. CAPPING AND RESTORATION OF THE SITE.

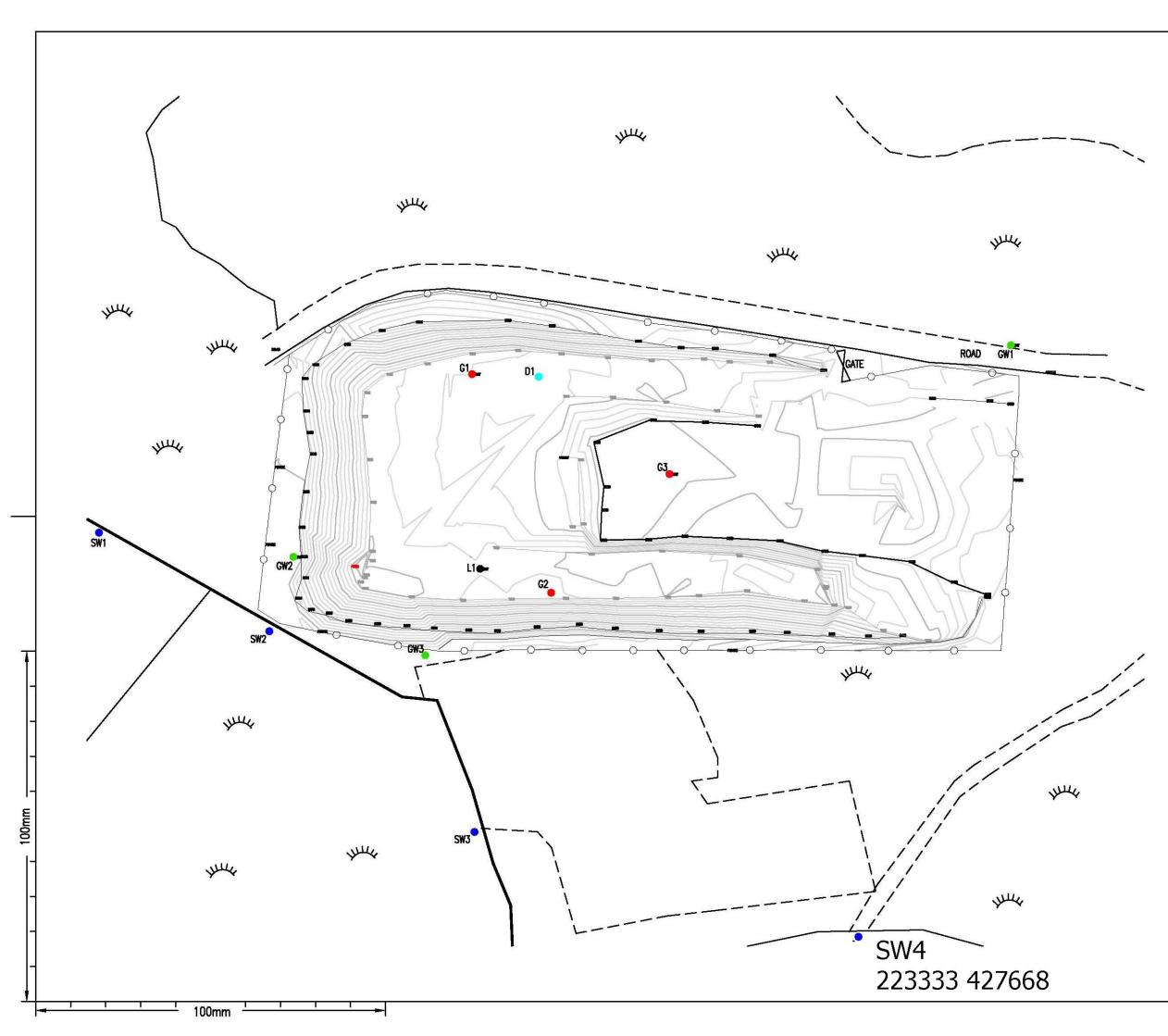
- 12.1 The site was fully restored in 2005/6 in accordance with the approved Restoration and Aftercare Plan dated May 2004.
- 12.2 It was agreed with the Agency in July 2006 that monitoring and reporting frequency would be reduced to bi-annually. It is hoped that when the benefits of restoration have been fully demonstrated that the Council can surrender the licence for this facility.
- 12.3 It was further agreed with the Agency in November 2009 that the annual run of List I & II parameters could be dispensed with on the restored sites such as Glenalla.

13. REPORT ON STAFF TRAINING

- 13.1 As the site is no longer operational, management is as per Section 10. The Scientific Officers are scheduled for the following types of training courses:
 - FAS Waste Management Training Programme;
 - FAS Waste Operatives Training;
 - Manual Handling;
 - Specific EPA training courses.

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

14.1 During the reporting period maintenance works were carried out to establish more permanent access to monitoring locations.



NOTES

KEY

L1. LEACHATE MONITORING POINT

- G10 GAS MONITORING POINT
- SW1 SURFACE WATER MONITORING POINT
- GW1 🔵 GROUNDWATER MONITORING POINT
- D1 😐 DUST MONITORING POINT

MONITORING TYPE	ref no	GRID REFERENCE
GROUNDWATER	GW1	223321 427966
	GW2	223116 427905
	GW3	223153 427877
LEACHATE	L1	223169 427902
GAS	G1	223167 427958
	G2	223190 427895
	G3	223224 427929
SURFACE WATER	SW1	223060 427912
	SW2	223109 427884
	SW3	223168 427827
DUST	D1	223186 427957

GRID COORDINATES DETERMINIED FROM SITE SURVEY

	1					
В	updated gr		JD AUG 05	AMcG AUG 05		
A	updated gr		JD JULY 05	AMcG JULY 05		
REV	D		BY Date	CHECK Date		
DRAW DATE	N BY RS JULY 03	CHECK BY KAD DATE JULY 03		APPROVED AB Date july 0.3		
plot	scale 1:1000	SCHEDULES	S	SHEET SIZE A3		
CLIEN	Т					
	DONEGA	L COUNTY C	:0	UNCIL		
PROJE	TOT					

GLENALLA LANDFILL SITE

TITLE

MONITORING LOCATIONS

RPS Kirk McClure Morton consulting engineers

TEL: 074 916 1927 Email@info.kmm.eu.com FAX:074 916 1928 THE ENTERPRISE FUND BUSINESS CENTRE BALLYRAINE LETTERKENNY CO DONEGA

ARCHITECT							DWG. STA	TUS
	_					1	 PRELIM.	
DRAWING N	lo.		52	34.	.30	/04	TENDER	
			<u> </u>	ſ	Γ	İΤ	CONST.	
REVISION	A	R					RECORD	

APPENDIX A

MONITORING LOCATIONS, FREQUENCIES AND PARAMETERS

Table A1:	Monitoring Locations
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Туре	Label	Location (Grid Ref.)
Landfill Gas	G1	223167 427958
	G2	223190 427895
	G3	223224 427989
Dust	D1	TBC
Groundwater	GW1	223391 427948
	GW2	223154 427882
	GW3	223116 427905
Leachate	L1	223169 427902
Surface Water	SW1	223060 427912
	SW2	223109 427884
	SW3	223168 427827
	SW4	223333 427668

Table A2: Groundwater Parameters & Monitoring Frequencies

Bi-annually	Annually				
Chloride	Boron	Magnesium			
Dissolved Oxygen	Cadmium	Manganese			
Sodium	Calcium	Mercury			
TON	Chromium	Orthophosphate			
TOC	Copper	Zinc			
Phenols	Cyanide	Residual on evaporation			
Ammoniacal Nitrogen	Fluoride				
Electrical Conductivity	Lead				
рН	List I/II substances				
Iron	Sulphate				
Potassium					
Temperature					
Groundwater Level					

Table A3	Surface Water Parameters & Monitoring Frequencies

Bi-Annually	Δ	nnually
Chloride	Iron	Magnesium
Dissolved Oxygen	Cadmium	Manganese
COD	Calcium	Mercury
Visual Inspection /Odour	Chromium	Orthophosphate
Ammoniacal Nitrogen	Copper	Zinc
BOD	Sodium	Potassium
Electrical Conductivity	Lead	TON
рН	List I/II substances	Sulphate
Suspended Solids		
Temperature		

APPENDIX B MONITORING RESULTS

Glenalla Landfill

Location	のないであるのである	Contraction of the second	Contraction of the local division of the loc	Statistical and a second	のの日本の日本の		G	enalla. Mi	Glenalla. Milford Co Donegal	negal		上市とおけたのないない	「「「「「「」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」	The state of the state of the state	and the second se
Sample Type	A STATE OF A							surfi	surface water	•					
Site No			The second	ALL					IWS						
Date of Sample		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	년 이역	Nav	Dec	Jan	Feb
Lab No	是 所有以主法的 建油油	1	1464	1	1	1	3207	1	1	1		1	***	1	1700a
PH	「「「「「「」」」	1	8.22	1	1	I	6.83	1	1	1	1	1	***	1	7.21
Temp	0	I	6.5	1	1	1	19.3	1	-	1	1	1	***	1	13.60
Electrical Conductivity	uS/cm	1	81		1	1	124.8	1	1	1	1	J	***	1	66
Ammonical Nitrogen	l/gm	1	<0.05	1	1	1	0.01	1	1	1	-	1	***	1	<0.05
COD	l/Bm	1	1	1	I	1	41	1	I	1	1	1	***	1	42
BOD	l/Bm	1	0.54	1	1	1	0.25		1	1	1	1	***	1	1.38
Dissolved Oxygen	Vgm	1	13.63	1		1	8.37	1	1	1	1	1	***	1	10.55
SS	l/gm	1		I	1	1	28	1	1	1	1	1	***	1	13.00
Residue on Evaporator	l/Buu	1	1	I	1	I	1			1	1	1	***	1	
Calcium	l/6n	1	-	I	1	1	1		1	1	1	1	***		
Cadmium	l/Bn	I			I	1	1	1	1	1	1	1	***		
Chromium	l/6n	1	-	1	1	1	1	1	1	1	1	1	***	1	1
Chloride	l/6m	1	1	1	1	1	24		1	1	1	1	***		18
Chlorine	ma/l	1		1		1	1		1				***	1	
Copper	VBn	1	1	1	1	1	1	1	1	1	1	1	***		
Cyanide	<u>l/bm</u>	1	1	1	1	1	1	1	1	1	1		***	1	
Dissolved Iron	In Ind	1	1		1	1	1		1	1			***		
Lead	<u>l'ou</u>	1	1	1	1	1	1	1					***		
Magnesium	ua/l	1	1	1	1	1	1		1				***		
Manganese		1	1	1	1	1	1	1	1	1			***	1	
Mercury	I/bn	1	1	1	1	1	1	1	1	1	1		***		
Nickel	mg/l	1	1	1	1	1	1	1	1	1	1	1	***		
Potassium	mg/l	1	1	1	1	1	1	1	1	1	1	1	***	1	1
Sodium	mg/l	1	I	1	1	1	1	1	1	1	1	1	***	1	
Sulphate	mg/l	I	1	I	1	1	1	1	1	1	1	1	***	1	1
Zinc	ng/l	1	1	1	1	1	1	1	1	1	1	1	***	1	1
Total Alkalinity as CaCO3	mg/l	I	I	I	1	1	1	1	1	1	1	1	***	1	1
Total Organic Carbon	mg/l	I	ł	I	I	1	1	1	1	1	1		***	1	
Total Oxidised Nitrogen	mg/l	1	I	I	1	1	0.23	I	1	1	1	1	***	1	1
Arsenic	mg/l	I	1	1	1	I	Ĩ	I		1	1	1	***	1	1
Barium	<u>l/gm</u>	I	I	I	I	I	1	I	1	1	1	1	***	1	I
Boron	l/Bn	1	I	I	1	I	1	1	1	1	1	1	***	1	
Flouride	l/Bm	1	1	1	1	1	1	1	1	1	I	1	***	I	1
I Otal Phenois	mg/l	I	1	1	1	I	I	I	1	1	1	1	***	I	
Phosphorous	mg/l	1	I	1	1	1	1	1	1	I	1	1	***	I	I
Selenium	mg/l	1	1	1	1	1	I	I	1	I	1	1	***	1	I
Silver	l/gm	1	1	1	1	1	1	1	1	1	I	1	***	1	1
Mircrotox	Toxic Units	1	1	1	1	1	1	I	1	-	I	1	***	1	1
Microtox	Toxic Units	I	1	1	1	1	1	I	1	1	1	1	***	1	1
Nitrite	mg/l	1	1	1	1	1	0.036	1	1	1	I	1	***	1	I
Nitrate	l/Bm	I	1	1	1	1	0.945	1	I		1	1	***	1	1
Phosphate - ORTHO	ma/l	1	1	1		1	0.00	1	1	1	1	1	***	I	1
Phosphate - 101AL	mg/l	1	1	1	1	1	1	1	1	1	I	1	***		I
I otal Coliforms	COLUMN THOMAS IN THE OWNER	1	1	1	1	1	1	1	1	1	I	1	***	I	I
Facel Coliforms		1	1	1	1	1	1	1	1	1	1	I	***	I	1
Depth	B	1	1	-	ĺ	-	-	1	1	1	1		***	1	
	10														

Glenalla Landfill

Location	11日 11日 11日 11日日 11日	THE FREE TO						and strengt on assessment of the second	and the second						
Sample Type	Hand Party Party							Sur	surface water						
Site No		Sout that	法を加加	「「ない」の「「「「「」」	and a summer of	かいるとないです。	AND DESCRIPTION OF THE OWNER	「日本の	SW2	A STATISTICS	the second second	and the second second	A LEAST FRANK	A STATE OF A	「日本の
Date of Sample		Jan	Feb	Mar	Apr	May	nuc	Jul	Aug	Sept	oet	Nav	Dec	Jan	Feb
Lab No	のであるというというないです。	ì	1465	1	1	1	3208	1	1	-	1	1	***		1700h
House and the second	いちになっていたのである	1	7.67	1	1	1	7.29	1	1	1	1	1	***	1	7.31
Temp	0	1	7.10	1	1	1	19	1	1	1	1	1	***		13.10
Electrical Conductivity	uS/cm	1	78	1	I	1	127.6	1	Ĩ	1	1	1	***	1	66
Ammonical Nitrogen	l/bm	1	<0.05	1	1	1	0.02	1	I	1	1	1	***	1	<0.05
COD	l ligm	1	1	1		1	112	1	I	I	1	1	***		27
BOD	mg/l	1	1.05	1			0.23	1	1	1	1	1	***		1.09
Dissolved Oxygen	ma/l		13.39	1			8.72	1			1	1	***		10.60
SS	ma/l			1	1	1	20					1	***		13.0
Residue on Evaporator	ma/l	,	1	I		1	1			1	1	1	***		
Calcium	l lipu			1	1		1	1	1	1	1	1	***		
Cadmium	l ligu	1	1	1	1	1			1		1	1	***		1
Chromium	ng/	1	1	1	1	1	1	1	1	1	1	1	***		
Chloride	l mg/l	1		1		1	25	1	1	1		1	***		19
Chlorine	mg/l	1	-	1	1	1	1	1	1		1	1	***		1
Copper	ng/	1	-	1	I	1	1		1	1	1	1	***	1	1
Cyanide	mg/l	1		1	1	1	1	1	1	1	1	1	***	1	1
Dissolved Iron	ng/l	1	1	1	1	1	1	1	1	1	1	1	***	I	1
Lead	l/Bn	1		1	1	-	1	1	1	1	1	I	***	1	1
Magnesium	ng/l	1	1	I	1	1	1	1	1	1	1	1	***	1	
Manganese	l l/bn	I	1	-	1	1	1	1		1	1	1	***	1	1
Mercury	ng/l	I	I	1	I	1	1	-	1	1	1	1	***	1	1
Nickel	mg/l	1	1	1	I	1	1	1	1	1	1	1	***	1	1
Potassium	l/Bm	l		1	1	1	1	1	1	1	1		***	1	1
Sodium	l/gm	1	1	I	1	1	1	1	1	-	1	1	***	-	I
Sulphate	l/Bm	I		1	1	1	1	1	1	-	1	1	***	1	
Zinc	VBn	1	I	1	1	1	1	1	I	I	1	Ĩ	***	1	I
Total Alkalinity as CaCO3	U8m	1		I	1	1	I	1	1	I	1	1	***	1	1
Total Organic Carbon	mg/l	1	1	1	I	1	I	1	I	1	1	I	***	1	1
Total Oxidised Nitrogen	l/Bm	1		1	1	1	0.25	1	1	1	1	Ĩ	***	1	I
Arsenic	l/6m	1	1	1	1	1	1	I	1	I	I	I	***	I	1
Barium	l/gm	1	1	1	1	1	1	1	1	1	1	1	***	I	I
Boron	ng/	1	1	1	1	1	1	1	1	I	1	1	***	I	I
Flouride	l/Bm	1	1	1	1	1	1	I	1	I	I	1	***	1	1
Iotal Phenois	mg/l	1	1	1	1	1	1	1	1	1	I	1	***	1	1
Phosphorous	l/6m	I	1	1	I	1	1	1	1	1	I	1	***	ľ	1
Selenium	//bm	1	1	1	1	1	1	1	1	1	1	1	***	1	I
Silver	l/Bm	1	1	1	1	1	1	1	1	1	1	1	***	1	I
Mircrotox	Toxic Units	1	1	1	1	1	1	1	1	1	I	1	***	1	1
Microtox	Toxic Units	1	1	1	1	1	1	1	1		1	1	***	1	1
Nitrite	l/Bm	1	1	1	1	1	0.020	1	1	1	1	1	***	1	1
Nitrate	l/Bm	1	1	1	١	1	0.057	1	1	1	1	1	***	1	1
Phosphate - ORTHO	<u>ma/l</u>	1	1	1	1	1	0.006	1	1	I	1	1	***	1	I
Phosphate - TOTAL	l/Bm		1	I	1	1		1	1	1	1	1	***	1	1
Total Coliforms	日本市民政法律, 五十二	1		I	I	1	1	1	1	1	1	-	***	1	1
Facel Coliforms	a sector sector sector sector	1	1										***		
The second secon						!	1		1	1	1	1		1	1

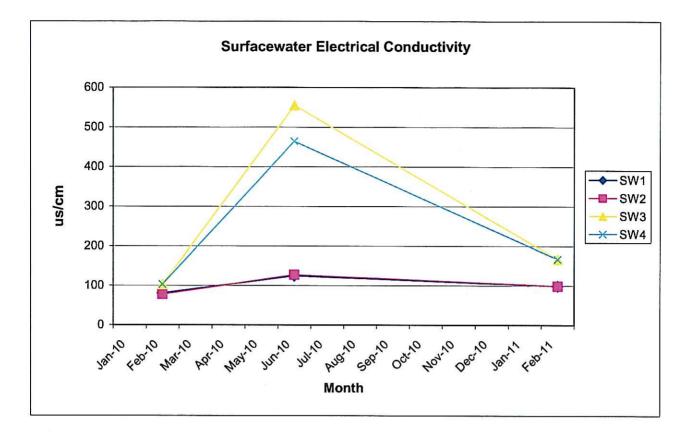
Glenalla Landfill

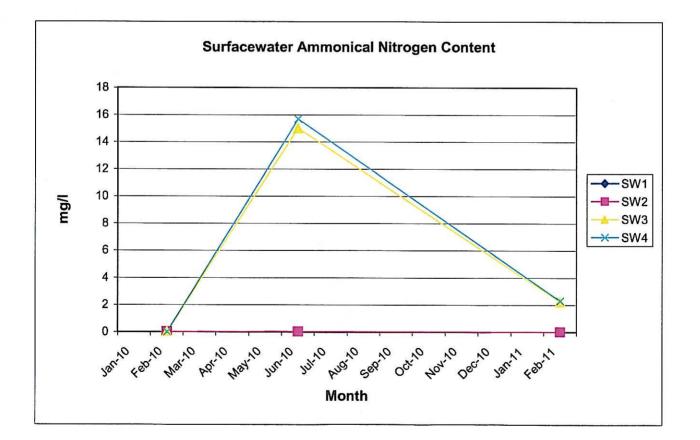
	Eah	1701	7.34	12.90	166.80	2.23	33	0.44	10.62		1	1	1	1	29	1	1	1	1	1	1	1	1	1	1	1	1	I	1	1	1	1	Ι	1	1	1	I	I	1	1	1	<0.03	<0.04	1	1	1	1	1
	lan.		1	1	1	I	1	I	1	1	1	1	1	1	1	1	1	1	1	1	1	I	1	1	1	1	1	1	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1		1	1	1	I
	Dec	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
	Nov		1	1	I	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1		1	I	1	1	1	1	1	1	I	1	1	1	1	1	1	t	1	I	I	1	1
	đ	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	ſ	1	1	1	1	1	1	1	I	1	1	1		1	1	1	1		-			I
onegal	Sent		1	1	I	1	I	1	1	1	1	1	1	1	1	1	1	I	1	1	1	1	1	1	I	1	1	I	1	1	1	1	1	1	1	1	1	1	1	1	I	I	1	1	I	I	-	1
Glenalia, Mifford Co Donegal surface water	Alid	P	1	1	1	I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1]	1	1	1	1	1	1	-	1	1	1		1	I	1	-	I
lenalla, Mi surfi	lul.	1	1	1	1	1	1	1	1	1	1	1		-	1	1	1	1	1	1	1	1	1	I	1	1	1	1	1		1	1	1	1	1	1	1	1	1	I	1	I	1	I	I	1		1
G	Jun	3209	7.16	19.3	555	15.01	42	0.25	7.98	4	1	-	1	1	43	1	1	I	1	1	I	1	I	l		1	1	1	1	-	0.02	1	1	1	I	I	1	1	1	1	1	0.262	<0.04	0.063	1	1	1	1
	Mav		1	1		1	1	1	1	1	1]	1		-	1	1	1	1	1	1	1	I	-	1	1	1		1		1	1	1	1	1	1	1	1	1	1	I	I		I	1	I	1	1
	Apr	i	1	I	1	1	1	1	1	1	1	-	1	-	1	1	1	1	1	1	1	I	1		1	1	1	-	1	1	I	1	1	1	1	1	1	1	1	1		I	I	1	1	1	1	1
	Mar		I	1	1	1	1	1	1	1	1	I	-	I	1	1	1	1	1	1	I	1			I	I	1	1	1	1	1	1	1	1	1	1	1	I	1	I	1	1	1	1	1	1	1	1
	Feb	1466	8.64	7.13	103	1.464	1	0.95	13.48	1	1	1	1	1		1	Ī	I	I	1	I	I	l	1	1	Ĩ	1	1	I	1	1	1	1	1	1	1	1	1	1	1	1	I	1	1	1	1	1	1
	Jan		1	1	1	1	1		-	1	-	1	1	1		1	1	1	1	1	1	1	I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	I	1	I	I		1	1	1	1	1
	A STATE AND A STAT		「「「「「「「「」」」」」」」」」」」」」」」」」」」」」」」」」」」」」	5	uS/cm	l l/gm	mg/l	mg/l	mg/l	mg/l	mg/l	l/Bn	ng/	ng/l	mg/l	l ligm	l Vgu	<u>mg/i</u>	<u>∥</u> ßn	ng/l	l ligu	ng/l	ng/l	mg/l	l/gm	mg/l	mg/l	ug/l	mg/l	mg/l	mg/l	l/Bm	<u>l/6m</u>	/Bn	l/gm	l/gm	mg/l	l/Bm	l/Bu	Toxic Units	Toxic Units	l/Bm	mg/l	mg/l	mg/l		A STATE OF A	m
Location Sample Type	Date of Sample	Lab No	PH PH PH	Temp	Electrical Conductivity	Ammonical Nitrogen	COD	BOD	Dissolved Oxygen	SS STATES	Residue on Evaporator	Calcium	Cadmium	Chromium	Chloride	Chlorine	Copper	Cyanide	Dissolved Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Sodium	Sulphate	Zinc	Total Alkalinity as CaCO3	Total Organic Carbon	Total Oxidised Nitrogen	Arsenic	Barium	Boron	Flouride	Total Phenois	Phosphorous	Selenium	Silver	Mircrotox	Microtox	Nitrite	Nitrate	Phosphate - ORTHO	Phosphate - TOTAL	Total Coliforms	Facel Coliforms	Depth

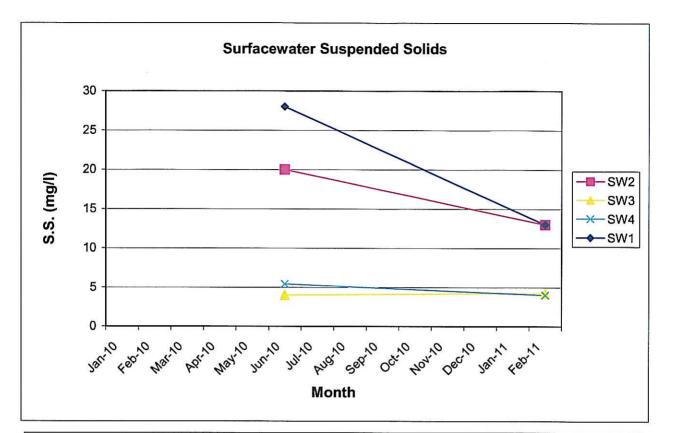
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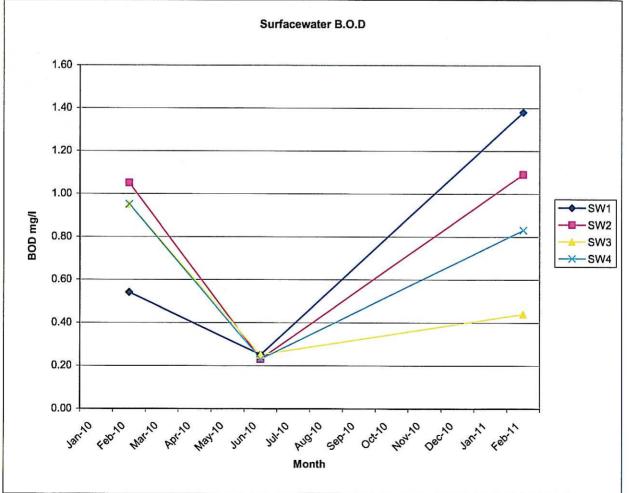
Glenalla Landfill

Location					Strates Strates		0	Glenalla, Milford Co Donegal	lford Co D	onegal	A CONTRACTOR OF				語になるのないないである
Sample Type Site No								Burf	surface water SWA						
Date of Sample	A state of the second second	Jan	Feb	Mar	Apr	May	Jun	lut	Aug	Sept	Oct	Nav	Dec	Jan	Feb
Lab No	AND DESCRIPTION OF A	1	1467	1	1	1	3210	1	1	1		1	***		1702
Hd	S NUMBER OF STREET, STREET, ST	1	7.41	1	1		7.51	1	1	1	1	1	***	1	7.30
Temp	C	I	7.24	I	1	1	19.8	1	1	1	1	1	***	1	12.70
Electrical Conductivity	uS/cm	I	103	1	I		464	1	1	1	1	1	***	1	167.40
Ammonical Nitrogen	mg/l	1	1.708	1	1		15.69	1	1	1	1	1	***	1	2.29
GO	mg/l	1	1	1	I		30	1		1	1	1	***	1	37
BOD	mg/l	1	0.95	1	I		0.23	1	1	1	1	1	***	1	0.83
Dissolved Oxygen	l/gm	1	13.07	1	1	1	8.24	1	1	Î	1	1	***		10.52
SS	mg/l	1	1	1	1	1	5.4	1	1	I	1	1	***	1	4.00
Residue on Evaporator	mg/l	1	1	1	1	-	1	1	1	1	1	1	***	1	l
Calcium	ng/l	1	1	1	1	I	1		ł	I	1	Ī	***	1	1
Cadmium	/bn	1	1	1	1	I	1	1	1	1	1		***	1	1
Chromlum	l/Bn	1	1	1	1	1	I	1	1	1			***	1	1
Chloride	mg/l	1	-	-	1	1	39	1	1	1		1	***	1	32
Chlorine	mg/l	1		1	1	1	1	I	1	1	1	l	***	1	
Copper	l l/bn	1	1	1	1	1	1	1	1	1	1	1	***		
Cyanide	l/6m	1	1	1	1	1	1	1	1	1		1	***	1	
Dissolved Iron	l/6n	1	1	1	1	1		1	1	1	1	1	***		
Lead	l/bn	1	1	1	1	1	1	1	1	1	1	1	***	1	
Magnesium	//gn	I	1	-	1	1	1	1	1	1	1	1	***	1	1
Manganese	ug/l	I	1	I	1	1	1	1	1	1	1	1	***	1	
Mercury	l/Bn	I	I	1	1	1	1	1	1	1	1	1	***	1	1
Nickel	NgM	I	J	I		I	1	1	1	1	1	1	***	1	1
Potassium	//Buu	1	I	I	1	I	1	1	1	1	1	1	***	1	1
Sodium	//bm	I	1	I	I	I	I	1	1	1	1	1	***	1	1
Sulphate	l/gm	1	I	ľ	1	1	1	I	1	Ĩ	1	I	***	1	1
Zinc	l/Bn	I	1	1	1	1	1	I	1	1	1	1	***	1	1
Total Alkalinity as CaCO3	l/bm	1	I	1	1	1	1	I	1	I	1	1	***	1	1
Total Organic Carbon	mg/l	1	1	1	1	1	1	1	-	1	I	1	***	1	1
Total Oxidised Nitrogen	mg/l	1	1	1	I	1	0.23	I			1	1	***	1	
Arsenic	mg/l	1	1	1	1	I	1	1	1	1	I	1	***	1	1
Barium	mg/l	1	1	1	1	1	1	1	1	1	1	1	***	I	1
Boron	1/8n	1	1	1	I	1	1	1	1	I	1	1	***	I	1
	I/BW	1	1	1	1	1	1	1	1	1	1	1	***	1	1
	1/6W	1	1	1	1	1	1	1	1	1	1	1	***	I	I
Priosphorous	1/6W	1	1	1	1	1	1	1	1	1	1	1	***	1	I
	1/BM	I	1	1	1	1	1	1	1	1	I	I		I	I
Silver	1/6m -	1	I	1	1	1	1	1	1	1	1	I	***	I	1
MITCTOLOX	I OXIC UNITS	1	1	1	1	1	1	1	1	1	1	1	***	1	I
Microtox	Toxic Units	I	I	1	I	1	1	1	I	1	Ι	1	***	I	I
Nitrite	mg/l	I	1	1	I	1	0.260	1	1	1	Ì	1	***	1	<0.03
Nitrate	/bm	1	1	-	1	1	0.6851	1	1	1	1	1	***	1	<0.04
Phosphate - ORTHO	l/Bm	1	I	1	1	1	0.063	1	1	1	1	1	***	1	1
Phosphate - IOIAL	l/Bm	I		1	I	I	1	I	1	1	1	1	***	1	1
I otal Coliforms		I	1	1	1	I	1	Ĭ	1	1	1	1	***	I	1
Facel Coliforms		I	1	1	1	I	1	I	Ĩ	1	1	1	***	1	Î
Depth	E		I	I		1		-	1	-	-	1	***	1	1









Glenalla Landfill

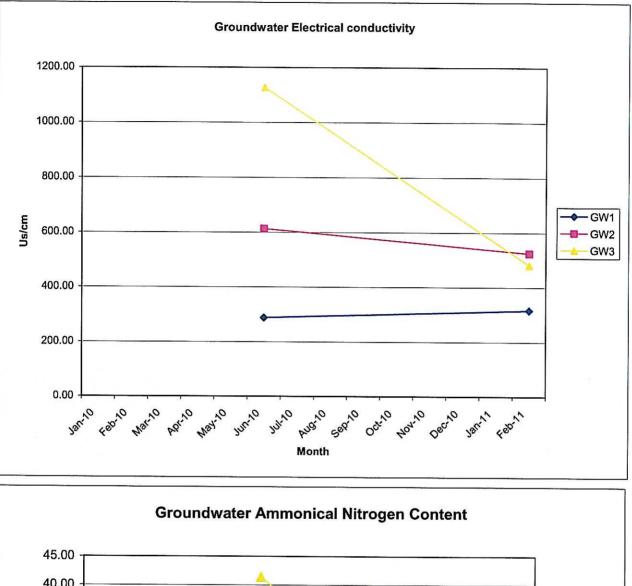
Location							9	enalla, Mil.	Glenalla, Milford Co Donegal	negal					
Sample Type Site No								Brot	groundwater GW1						
Date of Sample		Jan	Feb	Mar	Apr	May	Jun	jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Lab No	「「「「「「「「」」」」」」」	1	1	1	1	1	3211	1	1		1		***	1	1740
PH	the state of the state of the	I	1	I	1	1	6.89	1	1	1	1	1	***	1	6.88
Temp	0	I	I	I	1	1	15.9	1	1	1	1	1	***	1	13.30
Electrical Conductivity	uS/cm	I	1	1	1	1	288	1	1	1	1	1	***		316.00
Ammonical Nitrogen	//bm	I		1	1	1	<0.05	1	1	1	1	1	***	1	0.03
COD	mg/l	I	1	1	1	1	10	I	1	I	1	1	***	1	11
BOD	//bm	I	1	1	I	1	I	I	-	I		1	***	1	1
Dissolved Oxygen	mg/l	1	1	1	1	I	3.22	1	1		1	1	***	1	2.01
SS	mg/l	1	1	1	I	1	I	1	1	1		1	***	1	
Residue on Evaporator	mg/l	1	1	1	I		1	I	1	1	1	1	***	1	
Calcium	l/gu	1	I	1	1	1	I	1	1	1	I	1	***	1	1
Cadmium	l/8n	1	1	1	1	1	1	1	1		1	1	***	1	1
Chromium	l/6n	1	1	1	1	1	1	1	1	1	1	1	***	1	
Chloride	l/Bm	1	1	1	1	1	28	1	1	1	1	1	***	1	28
Chlorine	mg/l	1	1	1	1	1	1	1	1	1	1	1	***	I	1
Copper	n light	1	1	1	1	1	1	1	1	1	1	1	***	1	I
Cyanide	mg/l	1	1		1	1	1	1	1	1	1	1	***	1	1
Dissolved Iron	l ligu	1	I	1	1	1	1730	1	1	1	1	1	***	1	1
Lead	light light	I	1	1	1	1	1	1	1	1	1	1	***	I	
Magnesium	l/Bn	1	1	1	1	1	1	1	1	1	1	1	***	1	1
Manganese	l/gu	1	1	1	1	1	-	1	1	1	1	1	***	1	1
Mercury	l/gu	1	1	1	1	1	1	1	-	1	1	1	***	1	1
Nickel	<u>l/gm</u>	1	1	1	1	1	1	1	-	-	1		***	1	1
Potassium	mg/l		1	I	1	1	3.1	1	1	-	1	-	***	1	1
Sodium	l/gm	1	I			I	15.6	1	1	1	1	1	***		1
Sulphate	ma/l	1	1	I	1	1	1	1	1	1	j.	-	***		
Zinc	ng/j	I	1	1	1	1	1	I	1	1	1	1	***	-	1
Total Alkalinity as CaCO3	l/gm	1	I	I	I	1	1	1	1	1	1	1	***		
Total Organic Carbon	<u>ng/l</u>	I	I	1	1	1	I	I	1	1	1	1	***	1	1
Total Oxidised Nitrogen	mg/l	1	I	1	1	I	<0.01	1	I	1	I	1	***	1	1
Arsenic	mg/l	1	1	I	1	1	I	1	1	1	I	1	***	1	1
Barium	mg/l	I	1	1	I	1	1	1	1	1	Ī	1	***	1	1
Boron	1/6n	1	I	1	1	I	I	l	I	1	1	I	***	1	I
Flouride	1/8m	1	1	1	!	1	1	I	1	I	I	1	***	1	1
I OTAL PRENDIS	1/BM		1	1	1	1	1	I	1	1	Î	1	***	1	1
Phosphorous	1/BEL	1	I	1	1	1	1	1	1	1	1	I	***	1	1
Selenium	l/gm	1	I	1	1	1	1	1	1	1	1	1	***	1	I
Silver	l/Bm	I	1	1	1	1	1	1	1	1	I	-	***	I	I
Mircrotox	Toxic Units	1	I	1	1	1	1	1	1	I	I	-	***	1	1
Microtox	Toxic Units	1	1	1	1	1	I	1	1	1	1	1	***	1	1
Nitrite	mg/l	1	1	1	1	1	<0.03	1	1	1	1	-	***	I	<0.03
Nitrate	mg/l	1	1	1	1	1	<0.04	1	1	1	1	1	***	1	<0.04
Phosphate - ORTHO	l/Bm	1	1	1	1	1	0.180	1	1	1	1	1	***	1	1
Phosphate - TOTAL	mg/l	1	1	1	1	1	1	1	1	1	1	1	***	1	I
Total Coliforms	and the second second	1	1	1	1	1	1	1	1	1	1	1	***	1	1
Facel Coliforms	The state of the s	!	1	I	1	1	1	1	1	1	1	1	***	1	1
Depth	E	1	1	I	1	1	0.75	1	I	1	1		***	-	0.70

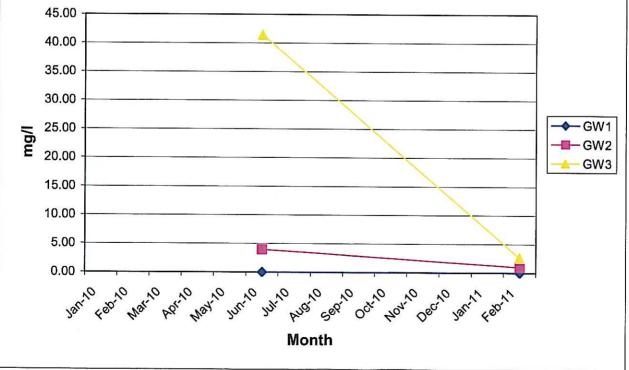
Glenalla Landfill

Location Commite Time							9	Glenalla, Milford Co Donegal	Iford Co D	onegal					ないたいのです。
Site No								olg	groundwater GWZ		A CARACTER				
Date of Sample		Jan	Feb	Mar	Apr	May	unp	lut	BnB	Sept	otto	Nov	Dec	Jan	Feb
Lab No	Contraction of the state of the	1	1		1	1	3212	1	1		1	1	***	I	1741
		1	1	1	1		7.03	1	1		1	1	***		6.98
Temp	0	1	1	1	-	1	17.1	1	1	1		1	***		12.50
Electrical Conductivity	uS/cm	I	1	1	1	1	613	1	1	1	1		***	1	1.02
Ammonical Nitrogen	mg/l	1	1	1	1	1	3.95	1	1	1	1	1	***	1	17.00
COD	l/gm	I	1	1	1	1	14	1	1	1	1	1	***	1	17
BOD	mg/l	I	I	1	1	1	1	1	1	1	1	1	***	I	1
Dissolved Oxygen	mg/i	1	1	1	I	1	1.3	1	I	1	1	1	***		0.81
SS	mg/l	I	1	I	I	1	1	1	1	1	1	1	***	1	1
Residue on Evaporator	l/gm	1	1	I	1	I	1	1	1	1	1	1	***	1	1
Calcium	ng/l	1	I	I	1	I	1	1	1	1	1	1	***	1	1
Cadmium	l/8n	1		1	I	1	1	1	1	1	1	1	***	1	1
Chromium	l/gn	1	I	1	1	1	1	1	1	1	1	1	***	1	1
Chloride	l/gm	1	1	I	1	1	39	1	1	1	1	1	***		30
Chlorine	l/gm	1	1	1	I	I	I	1	1	1	1	1	***	1	
Copper	l/Bn	1	1	1	1	I	1	1	1	1	1	1		1	1
Cyanide	Ngm	1	1	1	1	1	1	1	1	1	1	1	***	1	1
Dissolved Iron	l/Bn	1	1	1	1	1	25260	1	1	1	1	1	***		1
Lead	l/Bn	1	1	1	1	1	1	1		1	1	1	***	1	1
Magnesium	l/Bn	1	1	1	1	1	1	1	1	1	1	1	***	1	
Manganese	/Bn	1	1	1	1	I	1	1	1	1	-	I	***	1	1
Mercury	1/Bn	1	Î	1	1	1	1	1	1	1	1	I	***	1	1
NICKel	mg/l	۱	1	1	1	1	1	1	1	1	-		***	1	1
Potassium	mg/l	I	1	1	1		5.2	1	1	1	1	1	***	1	1
Sodium	mg/l	1	1	1	1	1	25.8	1	1	1	1	1	***	1	1
Sulphate	1/6m	1	1	1	1	1	1	1	1	1	1	1	***	I	I
	1/6n	1	1	1	1	I	1	I	1	I	1	1	***	1	1
	1/6m	1	1	1	1	1	I	1	I	1	1	1	***	I	1
T (I Organic Carbon	1/6m	I	1	I	1	I	1	1	1	I	1	1	***	1	1
I otal Uxidised Nitrogen	1/Bm	1	1	1	I	1	<0.01	1	1	1	1	1	***	1	I
Arsenic	1/6m	1	I	1	1		I	1	I	1	1	1	***	1	1
Barrum	1/8U	1	1		1	1	1	1	1	I	1	1		1	1
Boron Eleverade	1/8n	!	1	I	1		1	1	1	1	1	I	***	1	1
	1/6m		1	1	1	I	1	1	1	1	1	1	***	1	I
I Otal Phenois	1/BW		1		1		0.023	1	1	1	1	1	***	1	I
Frosprorous	1/Bu	1			1		1	I	1	1	1	1	***	1	I
Selenium	1/BU	1	1	I	1	1	1	1	1	1	1	1	***	-	1
	1/6m	1	1	1	1	1	1	ſ			1	1	***	1	1
MILCLOIOX	I OXIC UNITS	1	1	1	1	1	1	ļ	1	1	1		***	-	I
MIGrotox	I OXIC Units	1	1	1	1	1	1	I	1	1	1	1	***	1	1
NICTICE	I/BUI	I	1	1	1	1	<0.03	1	1	ł	1	I	***	1	<0.03
	1/6m	1	1	1	1	1	<0.04	1	1	I	1	1	***	1	<0.04
Phosphate - OKIHO	mg/l	1	1	1	1	1	0.062	1	1	I	1	1	***	1	1
Prosphate - 101AL	l/gm	1	1	1	1	1	1	1	I	1	1	I	***	I	1
		1	1	1	1	1	1	1	1	1	I	1	***	I	1
Facel Collforms			1	1	1	1	1	1	1	I	1	1	***	I	I
Depth	E	1	1	1	I	1	0.4	1	1	1	1	1	***	1	0.3

Glenalla Landfill

Location	STREET, STREET		A THE REAL				19	enalia, Mil.	ford Co Da	negal		Calification of the second		State of the state	THE REAL PROPERTY OF
Site No								groundwater GW3	SW3						のなるなどのないである
Date of Sample		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	이야	Nov	Dec	Jan	Feb
Lab No	Statut Language	1	1	1	1		3213		1	- 1	1	1			1742
Hd	State of the state of the	1	1	1	1		6.66	1		1	1	1	***	1	6.64
Temp	C	1	1	1	1	1	17.2	1	1	1		1	:	1	11.90
Electrical Conductivity	uS/cm	1	1	1	1	I	1127		1	1		1	***	1	482.00
Ammonical Nitrogen	mg/l	1	1	1	1	1	41.40		I	-	I	1	***	1	2.65
COD	mg/l	1	1	1	1	1	39	1	1	1	1		***	1	46
BOD	mg/l	1	1	1	1	1	1	1	1	1		1	***	1	
Dissolved Oxygen	mg/l	1	1	1	1		1.52	1	1	1			***	1	2.11
SS	mg/l	1	1	1	1	1	1	1	1	1	-		***	1	
Residue on Evaporator	mg/l	1	1	1	1	1	1	1	1	1	-	1	***	1	
Calcium	//Bn	I	1	1	1	1	1	1	1	1	1	1	***	1	
Cadmium	ne/l	1	1	1	1	1	1	1	1	1	1	1	***	1	1
Chromium	l/Bn	1	1	1	I	1	1	1	1	1	1	1	***	1	1
Chloride	mg/l	1	1	1	1	1	78]		1	1	1	***	1	57
Chlorine	mg/l	1	1	1	1	1	1		1	1	1	1	***		
Copper	ng/l	I	1	1	1	1	1	1	1	1	1	1	:	1	1
Cyanide	l/gm	١	I	1	1	1	1	1	1	-	1	1		1	1
Dissolved Iron	<u>l/Bn</u>	1	1	1	1	1	688	I		1		1	***	1	1
Lead	l/Bn	1	1	1	1	1	1	1	1	-	I	1	***	1	1
Magnesium	l/Bn	1	1		1	1	1	I	1	I		1	***	1	1
Manganese	l/Bn	1	1		1	1	1	I		1	1	1	***	1	1
Mercury	l/Bn	1	I	I	1	1	1	1	1	1	1	-	***	1	1
Nickel	mg/l	1	1	1	1	1	1	I	1	1	1	1	***	1	1
Potassium	mg/l	1	1	1	1	1	35.8	I		1	1	1	***	1	
Sodium	mg/l	1	1	1	1	1	62.5	I	1	1	1	I	***	1	1
Sulphate	mg/l	1	1	1	1	1	1	I	I	1	1	1	***	1	1
	ı/bn	1	1		1	I	1	1	1	1	1	Ĩ	***	I	1
I OTAL AIKAIINITY AS CACO3	1/6m	1	1	1	1	1	1	1	I	1	I	1	***	1	1
I otal Organic Carbon	1/6m	1	1	1]	1	1	I	1	1	1	I	***	1	1
I OTAI UXIQISEQ NITrogen	1/BM	1	1	1	1	1	<0.01	I	1	I	1	1	:	I	1
Arsenic	UBU UPU	1	1	1	1	1	1	1	I	1	I	Î	***	I	1
Berni	1/6m	1	1	1	1	1	1	1		1	1	1		I	I
Flouride	1/000								1	1		1	:	I	I
Total Phenols	mo/l			1			0.017						***	1	1
Phosphorous	mg/l	1	1	1		1		1		1	1	1			
Selenium	mg/l	I	1	1	1	1	-	1		1	-		***	1	1
Silver	mg/l	I	1	1	1	1	1		1	1		1	***	1	
Mircrotox	Toxic Units	I	1	1	1	1	1		1	-	1	1	***		
Microtox	Toxic Units	1	1	1	1	1	1		1	1	1	1	***	1	
Nitrite	l/Bm	I	I	1	1	1	0.262	1	1	-	-	-	***	1	<0.03
Nitrate	<u>"ma/i</u>	1	ł	1	1	1	<0.04	1	1	1	1	1	***	1	<0.04
Phosphate - ORTHO	1/BM	1	1	1	I	1	0.063	ī	1	1	1	1	***		1
Phosphate - TOTAL	l/Bm	1	I	1	1	1	1	I	1	1	1	1	**	1	1
I otal Coliforms	A PART OF A PARTY AND A PARTY	1	1	1	1	-	1	1	1	I	1	1	:	1	1
Facel Coliforms	Star and a star and	1	I		1	I	1	1	1	1	I	1	#	1	1
Leptn	E	1	1	1	1	1	0.3		1	1		-		1	0.25





Glenalla Landfill

							J	ilenalla, Mi I	Glenalla, Milford Co Donegal lechate L1	onegal					
Date of Sample		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb
AND REPAIR	ALC PROPERTY OF	1	1	1	1	1	3214	1	1	1	1	J		1	1743
		1	1	1	1	1	7.43	1	1	1	1	1		1	7.35
Electrical Conductivity	uS/cm						1553								00.000
ALL DE LE DE	ma/l	1	1	1	1	1	62.00	1	1	1	1	1	***	1	120.00
Posteria dista	mg/l		1	1	1	1	49	1		1	1	1	***	1	37
States States In	mg/l		Î	1		1	4.14	1	1	1	1	1	***	1	3.70
anishing angelong	mg/l		1	1	1	1	2.92	1	1	Ĩ	1	ł	***	1	1.19
	mg/l		1	1	I	1		-	1		1	-	***	I	I
Residue on Evaporator I r	mg/l	-		I	I	1	I	I	I		1	-	***	1	1
STATE SHORE	ng/l			I	1	I	I	I	I	I	I		***	-	I
ないである	ng/l	1	-	I	1	1	I	1	I	I	1	I	***	I	l
Statements manages	ng/l	1	1	I	I	I	I	1	I	1	1	1	***	1	1
STATES INTERNET	l/Bm	1	ī	1	1	1	169	1	1	I	1	1	***	1	132
Solution Balling	mg/l	1	1	1	1	1	1	I		I	1	1	***	1	I
States and states	uq/I	1	1	1	1	1	1	1	1	1	1	1	***	1	1
「大学」の日本の	ma/l	1	1	1	1	1	1	1	1	1	1	1	***	1	1
Dissolved Iron	uq/I	1	1	1	1	1		1	1	1	1	1	***	1	
STATE STATES	ua/l	1	1	1	1	1	1	1	1	1	1	1	***	1	1
Statistic Statistics	l/bn	1	1	1	1	1	1	1	1	1	I	1	***	1	1
BARRIE AND DESCRIPTION	ng/l		1	1	1	1	1	1	1	1	1	1	***	1	I
States of the states of the state	ug/l	-	1	1	1	1	1	1	1	1	1	1	***	1	1
「「「「「「「「「「」」」」	mg/l	-	1	1	1	1	1	1	1	1	-	1	***	-	1
State of the state	<u>I/Bm</u>	-		1	1	1	1	1	1	1	1	1	***	1	1
STATES OF STATES	mg/l	-	1	1	1	1	1	1	1	1	1	1	***	1	1
「日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	mg/l	1	1	1	1	1	1	I	1	1	1	1	***	1	
STATE OF STATE	ng/l	1	1	1	1	1	1	1	1	1	Ι	1	***	-	1
3	mg/l	1	1	I	1	1	1	I	I	I	I	1	***	I	I
「日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	mg/l	1	1	Ī	1	1	1	I	1	I	1	1	***	1	I
Safe Man	mg/l	1	1	1	I	1	<0.01	1	1	1	1	1	***	I	I
「日本」 「日本」	mg/l	I	1	I	1	1	1	1	1	1	I	1	***	1	1
	ШB/I	1	1	1	1	1	1	1	1	1	I	1	***	I	1
「「「「「「「」」」」」	ng/l	I	1	1	I	1	I	١	1	1	I	1	***	I	1
THE PARTY OF THE P	mg/l	1	1	1	1	1	1	1	1	I	I	1	***	1	1
BAR STREET	mg/l		1	I	I	1	I	1	1	1	1	1	***	1	1
Phosphorous r	I/Bm	1	1	I	I	1	I	1	1	1	I	I	***	I	-
Tatistic Statistics	mg/l	1	1	1	1	1	I	1	1	1		1	***	I	
and the second second I	mg/l	1	1	1	1	1	1	1	1	I		1	***	I	I
ToxI	Toxic Units	1	1	1	I	1	1	1	1	1		1	***	1	1
ToxI	Toxic Units	1	1	1	1	1		1	1	1	1	1	***	I	1
The second secon	l lign		1	1	1	1	0.260	1	1	ł	1	1	***	1	<0.03
ALL	l/Buu			1		1	<0.04	1	1	1	1	1	***	1	<0.04
DEFICIE SUE	mg/l	-	1		1	1	0.180]	1	1	1	1	***	1	1
Level and the second	mg/l	1	1	1	1	1	1	1	1	1	1	1	***	1	1
Total Coliforms	のないというの		1	1		1	I	1	1	1	1	1	***	1	1
Facel Coliforms	State of the second	1	1	1	1	1	1	1	1	1	1	1	***	1	I
THE REAL PROPERTY OF	E		1	1	1	1	4.70	1	1	1	1	1	***	1	4.50

Glenalla Landfill

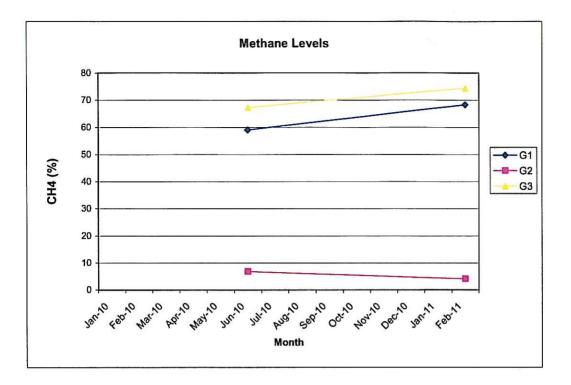
Location	State State State	NAME OF STREET	A STATE OF A	の語の時間のない	State of the state	「「「「「「「「」」」」	YS	enalls, Milfo.	Gienalia, Milford Co Donegal	P	A THE A PARTY OF A PAR				「日本のない」
Sample Type		「「「「「「		States and a				Landfill G	Landfill Gas levels				Statistical Providence		
Sita No	and the second second							5			ないないないない	The second second	の記録の記録		
Date of Sample	le						State of the state								
Parameters	Units	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
「王子」の一次		Jan	Feb	Mar	Apr	Мау	June	luc	August	Sep	Oct	Nov	Dec	Jan	Feb
Methane	%						59								68.3
Carbon Dloxide	%						45.6								3.4
Oxygen	*						0								0.6
Atmos. Pressure	mBar						998								1020

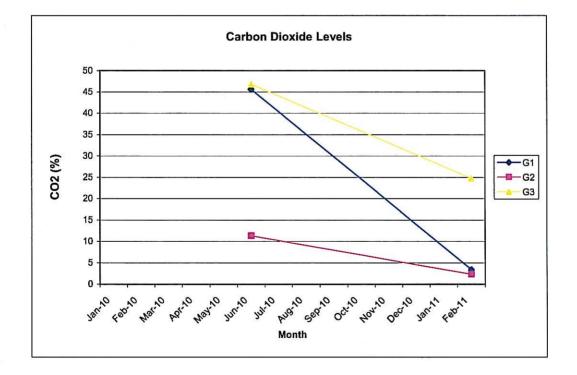
Glenalla Landfill

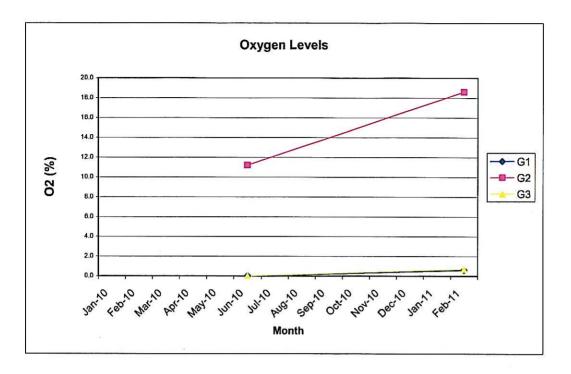
Location		時時間には		No. of Concession, Name		and the second second	ND Ch	enalla, Milfi	Glenalla, Milford Co Donegal	Tal				いですが必要	
Sample Type	8						A COLORAD AND A COLORAD	Landfill	Landfill Gas levels					利義になっていた。	
Site No	「日本の日本	同語語語語は							G2	and the second se	A STATE OF A	A STATE OF A			and the second second
Date of Sample	ile	学校をおいてい			States and the second						No. No. of Concession, State				
Parameters	Units	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
A STATE OF A	States and	Jan	Feb	Mar	Apr	May	June	Jul	August	Sep	Oct	Nov	Dec	Jan	Feb
Methane	%						6.8								4.1
Carbon Dioxide	%						11.3								2.3
Oxygen	%						11.2								18.6
Atmos. Pressure	mBar						666								1019

Glenalla Landfill

Location				And the second s			Gle	nalla, Milfo	Glenalla, Milford Co Donegal	Jal		and the second second	「「「「「「「「「「」」」		
Sample Type				Party and			North Contraction of	Landfill (Landfill Gas levels						
Site No						のないであるのであるの	State of the state of the	3	G3					日本日にいったた	
Date of Sample	le .		The second second		And the state of the				State of the state						
Parameters	Units	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
		Jan	Feb	Mar	Apr	May	June	յոլ	August	Sep	Oct	Nov	Dec	Jan	Feb
Methane	%						67.2								74.5
Carbon Dioxide	%						46.8								24.8
Oxygen	%						0								0.7
Atmos. Pressure	mBar						666								1020







APPENDIX C WATER BALANCE CALCULATION

Year	Status	Rainfall (mm)	Temp Restored area	Temp Restored area	Restored area	Restored area	Total Water	Leachate
			Area	infiltration IRCA(m3)	Area	infiltration IRCA(m3)		produced Lo(m3)
2010	Closed	967.5	0		20500	1983	1983	1983
Total		968						1983

Assumptions			
IRCA=	Fully Capped/Restored area infiltration of rainfall estimated (2-10% of ER), EPA Manual	10%	%
Restored area	Area capped is 20,500.	20,500	m²
Rainfall Data	Data taken from Met Eireann Station Malin Head, Total Rainfall used.	967.5	mm

APPENDIX D

E-PRTR Regulations (AER Electronic Reporting System)

At the time of reporting the EPA's web-based database is not available to download. The Council awaits the availability of this system to allow the PRTR return to be a made. When this occurs a hard copy of the return will be forwarded to the Agency under separate cover.

4.2 RELEASES TO WATERS

Link to previous years emissions data

| PRTR# : W0125 | Facility Name : Glenalla Landfill Site | Filename : W0125_2010.xls | Return Year : 2010 |

20/09/2011 15:28

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	SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS			Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR Reporting as this only concerns Releases from your facility						
RELEASES TO WATERS		Please enter all quantities in this section in KGs								
		POLLUTANT				QUANTITY				
					Method Used					
	No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	
				•	•	0.0	0.0		0.0	

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS P			Please enter all quantities in this section in KGs					
	POLLUTANT						QUANTITY	
				Method Used		(
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			EN ISO					
79	Chlorides (as CI)	М	15682:2001	DCC SOP	335.0	335.0	0.0	0.0
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

	RELEASES TO WATERS			Please enter all quantities in this section in KGs							
	POLLUTANT						QUANTITY				
				Method Used							
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year			
238	Ammonia (as N)	М	CRM	DCC SOP	178.47	178.47	0.0	0.0			
303	BOD	M	CRM	DCC SOP	7.77	7.77	0.0	0.0			
306	COD	M	CRM	DCC SOP	85.27	85.27	0.0	0.0			
327	Nitrate (as N)	M	CRM	DCC SOP	0.079	0.079	0.0	0.0			
332	Ortho-phosphate (as PO4)	M	CRM	DCC SOP	0.36	0.36	0.0	0.0			
					0.0	0.0	0.0	0.0			
					0.0	0.0	0.0	0.0			

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

4.1 RELEASES TO AIR

Link to previous years emissions data

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SECTION A : SECTOR SPECIFIC PRTR POL	LUTANTS				_			
	RELEASES TO AIR	Please enter all quantities in this section in KGs						
	POLLUTANT		METHOD			QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E Method C	ode Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	
				0.0) 0.	.0 0.0) 0.0	
				0.0	0.	.0 0.0) 0.0	
				0.0	0.	.0 0.0	0.0	

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

	RELEASES TO AIR				Please enter all quantities in this section in KGs					
	POLLUTANT			METHOD	QUANTITY					
				Method Used						
No. Annex II	Name	M/C/		Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year		
62	Benzene	C	PER	Landgem v302	0.9432	0.9432	0.0	0.0		
56	1,1,2,2-tetrachloroethane	C	PER	Landgem v302	1.17	1.17	0.0	0.0		
34	1,2-dichloroethane (EDC)	C	PER	Landgem v302	0.2579	0.2579	0.0	0.0		
35	Dichloromethane (DCM)	C	PER	Landgem v302	7.557	7.557	0.0	0.0		
65	Ethyl benzene	C	PER	Landgem v302	3.1	3.1	0.0	0.0		
73	Toluene	C	PER	Landgem v302	22.83	22.83	0.0	0.0		
60	Vinyl chloride	C	PER	Landgem v302	2.9	2.9	0.0	0.0		
78	Xylenes	C	PER	Landgem v302	8.096	8.096	0.0	0.0		
57	Trichloroethylene	C	PER	Landgem v302	2.338	2.338	0.0	0.0		
55	1,1,1-trichloroethane	С	PER	Landgem v302	0.407	0.407	0.0	0.0		
)3	Carbon dioxide (CO2)	C	PER	Landgem v302	139800.0	139800.0	0.0	0.0		
)2	Carbon monoxide (CO)	C	PER	Landgem v302	24.92	24.92	0.0	0.0		
01	Methane (CH4)	С	PER	Landgem v302	50970.0	50970.0	0.0	0.0		
17	Non-methane volatile organic compounds (NMVOC)	С	PER	Landgem v302	328.6	328.6	0.0	0.0		
1	Mercury and compounds (as Hg)	С	PER	Landgem v302	0.000369	0.000369	0.0	0.0		
	* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete	button								

Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

RELEASES TO AIR				Please enter all quantities in this section in KGs				
POLLUTANT				METHOD	QUANTITY			
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0)	0.0 0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

Additional Data Requested from Lan	Iditional Data Requested from Landfill operators							
flared or utilised on their facilities to accompany the fig	he purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Nethane) d or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission e environment under T(total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:							
Landfill:	Glenalla Landfill Site				_			
Please enter summary data on the								
quantities of methane flared and / or								
utilised			Met	hod Used				
				Designation or	Facility Total Capacity			
	T (Total) kg/Year	M/C/E	Method Code	Description	m3 per hour			
Total estimated methane generation (as per								
site model)		С	PER	Landgem v302	N/A			
Methane flared					0.0	(Total Flaring Capacity)		
Methane utilised in engine/s					0.0	(Total Utilising Capacity)		
Net methane emission (as reported in Section								
A above)	50970.0	С	PER	Landgem v302	N/A			
1								

COD COD Environmental Protection Agency | PRTR# : W0125 | Facility Name : Glenalla Landfill Site | Filename : W0125_2010.xls | Return Year : 2010 |

20/09/2011 15:27

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.12

REFERENCE YEAR 2010

1. FACILITY IDENTIFICATION						
Parent Company Name	Donegal County Council					
Facility Name	Glenalla Landfill Site					
PRTR Identification Number	W0125					
Licence Number	W0125-01					

Waste or IPPC Classes of Activity	
No.	class_name
3.1	The initial melting or production of iron and steel
	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.
3.4	
Address 1	Glenalla
Address 2	Milford
Address 3	Co Donegal
Address 4	
Country	
Coordinates of Location	
River Basin District	
NACE Code	3821
	Treatment and disposal of non-hazardous waste
AER Returns Contact Name	
AER Returns Contact Email Address	5
AER Returns Contact Position	
AER Returns Contact Telephone Number	
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	
Production Volume	***
Production Volume Units	
Number of Installations	
Number of Operating Hours in Year	
Number of Employees	
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
50.1	General
50.1	General

3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	
Have you been granted an exemption ?	
If applicable which activity class applies (as per	
Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being	
used ?	

5. ONSITE TREATM	5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE PRTR#: W0125 Facility Name : Glenalla Landfill Site Filename : W0125_2010.xls Return Year: 2010 20/09/2011 15:28 Please enter all quantities on this sheet in Tonnes 5												
	European Waste		Quantity (Tonnes per Year)		Waste Treatment		Method Used	Location of	Haz Waste : Name and Licence/Permit No of Next Destination Facility <u>Non</u> <u>Haz Waste</u> : Name and Licence/Permit No of Recover/Disposer	<u>Haz Waste</u> : Address of Next Destination Facility <u>Non Haz Waste: Address of</u> Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)	
Transfer Destination	Code	Hazardous		Description of Waste	Operation	M/C/E	Method Used	Treatment					
Within the Country	19 07 03	No		landfill leachate other than those mentioned in 19 07 02	D8	М	Weighed	Onsite in Ireland	Donegal County Council WWTP,D0009-01	Letterkenny WWTP,Magheranan,Letterk enny ,Co. Donegal,Ireland			

* Select a row by double-clicking the Description of Waste then click the delete button

Link to previous years waste data Link to previous years waste summary data & percentage change