

VARIABLE HEAD PERMEABILITY TEST (BOREHOLE)

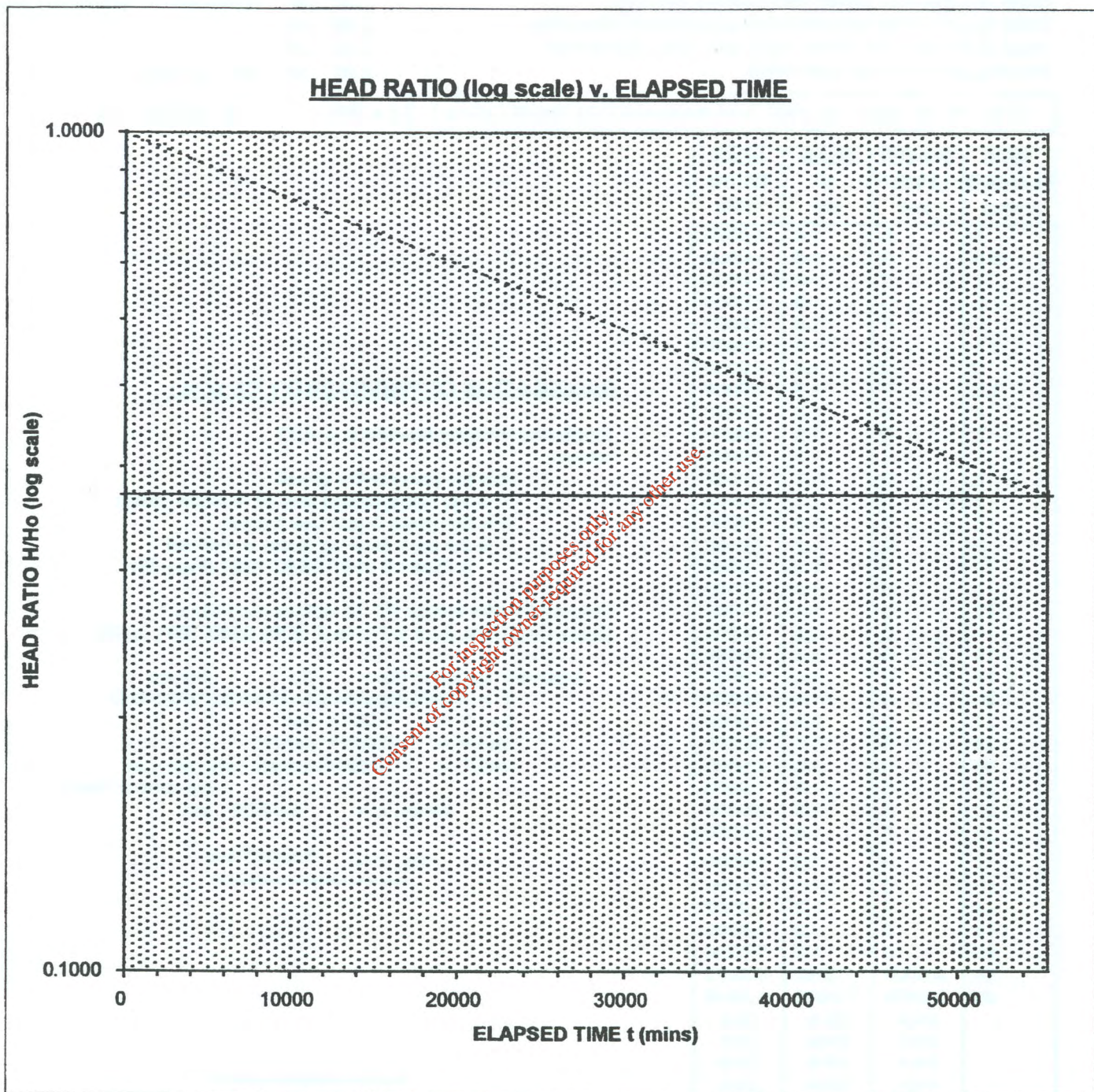
TYPE OF TEST: *FALLING HEAD*

CONTRACT: Corranure Landfill

BOREHOLE No.: GW02

TEST #: 1

DATE: 24/06/03



Basic Time Lag Factor T = 55500 mins

VARIABLE HEAD PERMEABILITY TEST (BOREHOLE)

CONTRACT: Corranure Landfill BOREHOLE No.: GW02 TEST No.: 1
DATE: 24/06/03

TYPE OF TEST: **FALLING HEAD**

Diameter of casing (D): 150 (mm)
Height of TOP of casing above ground level: 0.65 (m)
Depth to bottom of casing below ground level (m): 2.20 (m) (Withdrawn to impervious layer)
Depth to bottom of borehole below ground level before test: 2.50 (m)
Depth to bottom of borehole below ground level after test: 2.50 (m)
Standing ground water level (mbgl): 0.65 (m) on 24/06/03

DATUM: All depths to water level measured from top of casing. i.e. SWL 1.30 m below datum.

TIME ELAPSED (mins)	WATER LEVEL* (m)	HEAD H (m)	HEAD RATIO H/Ho
0	0	1.3	1.0000
0.5	0	1.3	1.0000
1	0	1.3	1.0000
1.5	0	1.3	1.0000
2	0	1.3	1.0000
2.5	0	1.3	1.0000
3	0	1.3	1.0000
3.5	0	1.3	1.0000
4	0	1.3	1.0000
4.5	0	1.3	1.0000
5	0	1.3	1.0000
6	0	1.3	1.0000
7	0	1.3	1.0000
8	0	1.3	1.0000
9	0	1.3	1.0000
10	0	1.3	1.0000
11	0	1.3	1.0000
12	0	1.3	1.0000
14	0	1.3	1.0000
16	0	1.3	1.0000
18	0	1.3	1.0000
20	0	1.3	1.0000
22	0	1.3	1.0000
24	0	1.3	1.0000
26	0	1.3	1.0000
28	0	1.3	1.0000
30	0	1.3	1.0000
32	0	1.3	1.0000
36	0	1.3	1.0000
40	0	1.3	1.0000
44	0	1.3	1.0000
48	0	1.3	1.0000
52	0	1.3	1.0000
56	0.0005	1.2995	0.9996
60	0.0005	1.2995	0.9996
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A
	#N/A	#N/A	#N/A

CALCULATION OF PERMEABILITY OF SOIL:

Employing Hvorslev formula: $k = A/FT$
where:

- k is the permeability of soil
- A is the cross-section area of borehole casing
- F is the intake factor (see below)
- T is the basic time lag factor as defined in Figure 9 of BS 5930:1981 (Page 38)

Values of intake factors (F) for various conditions, Case (a)-(f), are given in Figure 7 of BS 5930:1981 (p 36):

Assumed condition: Case **C**, hence:

$$F = 2 * \pi * L / \log_e \{ (2L/D) + \{ 1 + ((2L)^2/D) \}^{0.5} \}$$

i.e. $F = 1.0677$ (m)

and $A = 0.0177$ (m²)

and $T = 55500$ (mins); (see graph of

log H/Ho v Time.)

hence, $k = 5.0E-09$ m/s

i.e., $k = 5.0 \times 10^{-9}$ m/s

Notes:

**A
P
P
E
N
D
I
X

C**

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**Cavan County Council – Corranure Landfill Waste Licence 77-1
Quarterly Analysis January – March 2002**

The following results pertain to the first Quarterly Analysis (January – March 2002) for the Corranure Landfill site in County Cavan.

As shown in the results (see attached sheets), the following samples were collected and monitored:

- Surface Water
- Groundwater
- Surface Water Run-off (SW1)
- Sewer Sample (P6/V6)

In addition to the listed quarterly analysis, List 1/11 Organic Substances were also determined on the Surface Waters and Surface Water discharge sample.

With regards the Groundwater samples – PW7 and PW8, these were not collected as there was no one home on the day of analysis nor was there an outside tap. Further, there was no Landfill Gas analysed for this quarter.

The samples were initially collected by Mr. John O' Hare from the EPA and were then subsequently analysed by the EPA, in County Monaghan and by the Environmental Consultancy, TMS Environmental Ltd. in Dublin.

From examining the results, it was noted that the parameters analysed for in the Surface Waters were well below the expected limits, in particular for BOD and Ammonia. For example, K2 the immediate downstream sample of the Landfill, had a BOD of 7.3mg/L (lower than the upstream sample – K1) and an Ammonia level of 1.11mg/L.

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Quarterly Analysis January – March 2002**

Moreover, the levels obtained for the Organic Substances on the Surface Waters and Surface Water discharge Sample were below the limit values.

With regards, the Groundwater samples phenol levels on this round were all much lower than on the previous date of sampling (see results dated – 10/01/02). Also levels obtained for Faecal Coliforms were lower, compared to the aforementioned date, with 20cfu/100ml being the highest result obtained for PW13 – a County Council well, not used for drinking water consumption. Finally, Ammonia levels for all Groundwater samples were below the limit value - .5mg/L (Drinking Water Directive [98/83/EC]).

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**Cavan County Council – Corranure Landfill Waste Licence 77-1
Quarterly Analysis April – June 2002**

The following results pertain to the Second phase of Quarterly Analysis (April–June 2002) for the Corranure Landfill site in County Cavan.

As shown in the results (see attached sheets), the following samples were collected and monitored:

- Surface Water
- Groundwater
- Sewer Sample (P6/V6)
- Landfill Gas

Further to, an enquiry made by a local resident (500m from the Landfill) regarding the association between drinking tap water in such close proximity to the landfill site and miscarriages, some preliminary examination of this subject was carried out. Some studies have indicated a link with THMS, consequently, Trihalomethanes were also determined on all drinking water samples.

With the exception of landfill gas, Surface waters, Groundwaters and the Sewer sample were initially collected by Mr. John O' Hare from the EPA and were then subsequently analysed by the EPA, in County Monaghan.

From examining the results, it was noted that for the parameters analysed for in the Surface Waters, the BOD levels were well below the expected limits. For example, K2 the sample immediately downstream of the Landfill had a BOD of 1.0mg/L (lower than the upstream sample – K1) this was also a noticeable improvement on the previous round of sampling.

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Quarterly Analysis April – June 2002**

With regards, the Groundwater samples, Trihalomethanes levels were all below the expected limit of 100ug/L (Drinking Water Directive [98/83/EC]). As on the 01/05/02, the results obtained for Faecal Coliforms were low, with 45cfu/100ml being the highest result obtained for PW13 – a spring well, not used for drinking water consumption. Also, Ammonia levels for all Groundwater samples were below the limit value - .5mg/L (Drinking Water Directive [98/83/EC]).

Finally, gas monitoring took place at the boreholes installed at the site by means of an Infra-Red Gas Analyser (GA 94A). As shown in the results the quantities and constituents of the Landfill gas being generated on site at present are not having a significant impact on the environment, as neither levels of CH₄ nor CO₂ were recorded.

Signed: Sandra Smith
Environmental Technician

Date: 08-07-02

**Cavan County Council – Corranure Landfill Waste Licence 77-1
Quarterly Analysis July - Sept 2002**

The following results pertain to the third phase of analysis (July - Sept 2002) for the Corranure Landfill site in County Cavan.

As shown in the results (see attached sheets), the following samples were collected and monitored:

- Surface Water
- Groundwater
- Sewer Sample (P6/V6)
- Landfill Gas

It should be noted that surface waters – K1 and K2 were not lifted on this occasion due to dry weather conditions.

With the exception of landfill gas, Surface waters, Groundwaters and the Sewer sample were initially collected by Mr. Gerry Crawley from the EPA and were then subsequently analysed by the EPA, in County Monaghan.

From examining the results, it was noted that for the parameters analysed for in the Surface Waters, the BOD levels were well below the expected limits.

As for the Groundwater samples ammonia levels for all Groundwater samples were below the limit value - .5mg/L (Drinking Water Directive [98/83/EC]). However as the numbers of Total and Faecal Coliforms obtained in the majority of Groundwater samples were high as compared with the previous rounds of sampling, these samples were once again analysed by the EPA in Monaghan on the 06.10.02. The results of which shall be forwarded as soon as is possible.

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Quarterly Analysis July - Sept 2002**

Finally, gas monitoring took place at the boreholes installed at the site by means of an Infra-Red Gas Analyser (GA 94A). As shown in the results the quantities and constituents of the Landfill gas being generated on site over the past three months are not having a significant impact on the environment.

Signed: *John McKee*
Landfill Manager

Date: 07.10.02

Sandra Smith
Environmental Technician

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Analysis July - Sept 2002**

The following results pertain to the groundwater samples lifted on the 06.11.02, as a result of high concentrations of Total and Faecal coliforms originally obtained in the previous round of sampling.

It should be noted that the groundwater labeled PW12 was not lifted on this occasion due to poor ground conditions however PW5 (after treatment) was lifted instead.

From examining the results, it was noted that on average the numbers of total and faecal coliforms recorded on this occasion were much lower when compared with the samples taken on the 23.09.02. A possible explanation to this is when the previous round of sampling had taken place, there had been a month and a half of dry warm weather thus providing perfect conditions for bacteria to thrive and concentrate. The results obtained on this occasion however are similar to those obtained in previous analysis performed through this year.

Signed: Etwa Markey

Date: 27.11.02

Landfill Manager

Sandra Miller

Environmental Technician

**Cavan County Council – Corranure Landfill Waste Licence 77-1
Quarterly Analysis Oct-Dec 2002**

The following results pertain to final phase of analysis (October - November 2002) for the Corranure Landfill site in County Cavan.

As shown in the results (see attached sheets), the following samples were collected and monitored:

- Surface Water
- Groundwater
- Sewer Sample (P6/V6)
- Landfill Gas

It should be noted that Groundwaters – PW7 and PW13 were not lifted on this occasion.

All samples were initially collected by Cavan County Council and were then subsequently analysed by the EPA, in County Monaghan.

With the exception of K2 (located directly below the Landfill site) BOD levels in the Surface water samples were well below the expected limits. As for the 11 Groundwaters tested, ammonia levels for all samples were below the limit value - .5mg/L (Drinking Water Directive [98/83/EC]) with the numbers of Total and Faecal Coliforms recorded, similar to the previous rounds of sampling. Finally, Landfill gas was analysed by means of an Infra-Red Gas Analyser (GA 94A). As shown in the results the quantities and constituents of the Landfill gas being generated on site over the past three months are not having a significant impact on the environment.

Signed: Cathal Markey
Landfill Manager

Sandra Smith
Environmental Technician

Date: 30.01.03

**Cavan County Council – Corranure Landfill Waste Licence 77-1
January – March 2003**

The following results pertain to first quarterly monitoring period for the Corranure Landfill site in County Cavan.

As shown in the results (see attached sheets), the following samples were collected and monitored:

- Surface Water
- Groundwater
- Sewer Sample (P6/V6)
- Landfill Gas

It should be noted that the Groundwater - PW13 was not lifted on this occasion.

All samples were initially collected by Cavan County Council and were then subsequently analysed by the EPA, in County Monaghan.

With the exception of K2 (located directly below the Landfill site) BOD and Ammonia levels in the Surface water samples were well below the expected limits. As a result, on the 23.04.03, K2 was re-sampled for the following parameters – BOD, COD and Ammonia. The results of which are also included in this report and as shown ammonia levels are still above the limit value. However it should be noted that on the initial day of sampling, 04.03.03 and on the 23.04.03, this water course was dry and samples were retrieved from what could be called stagnant pools of water located along the stream bed. This has been the case at this monitoring location since late February due to dry weather conditions. See attached photographs, taken on the 23.04.03, numbered 1 (upstream of K2) to number 8 (the point at which the sample was lifted). Further, it is noted that the fields adjoining K2 are used to graze sheep and cattle, which may be a source of the organic pollution.

As for the 11 Groundwaters tested, ammonia levels for all samples were below the limit value - .5mg/L (Drinking Water Directive [98/83/EC]) with the numbers of Total and Faecal Coliforms recorded, similar to the previous rounds of sampling. Finally, Landfill

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January – March 2003**

gas was analysed by means of an Infra-Red Gas Analyser (GA 94A). As shown in the results the quantities and constituents of the Landfill gas being generated on site over the past three months are not having a significant impact on the environment. Results are only being forwarded now, due to a delay on behalf of the EPA Laboratory in Monaghan.

Signed: Jan Dery
Senior Executive Engineer
Sandra Smith
Environmental Technician

Date: 30.04.03

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SURFACE WATER QUALITY		04/03/03			
Parameter	A2	K1	K2	K3	K4
pH	7.6	7.7	7.5	7.8	7.2
Temperature (°C)	10	12	10	9	11
Electrical Conductivity EC (µS/cm)	261	123	135	504	343
Ammonia (mg/l N)	0.07	<0.03	45.21	4.25	0.18
Chemical Oxygen Demand (mg/l O2)	21	<20	210	43	36
Biochemical Oxygen Demand (mg/l O2)	1.3	<1.0	85.9	8.1	1.8
Dissolved Oxygen DO (% Saturation)	nm	nm	nm	nm	nm
Chloride (mg/l Cl)	13	13	87	47	18
Total suspended solids (mg/l)	12	<5	20	23	28

SURFACE WATER QUALITY		23/04/03	
Parameter	K2	Sampling Point	
pH			
Temperature (°C)			
Electrical Conductivity EC (µS/cm)			
Ammonia (mg/l N)	8.650		
Chemical Oxygen Demand (mg/l O2)	29		
Biochemical Oxygen Demand (mg/l O2)	21.2		
Dissolved Oxygen DO (% Saturation)			
Chloride (mg/l Cl)			
Total suspended solids (mg/l)			

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GROUNDWATER QUALITY		Sampling Point											
Parameter	SA1	PW2	PW5B1	PW5A1	PW6	PW8	PW9	PW10	PW11	PW12			
pH	7.4	7.6	7.6	7.6	6.2	7.5	7.3	7.3	7.3	7.3			
Temperature	12	12	11	10	11	12	9	11	11	12			
Electrical Conductivity EC (µS/cm)	568	224	564	564	357	496		465	464	163			
Ammonia (mg/l N)	0.05	<0.03	0.04	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			
Dissolved Oxygen (% Saturation)	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm			
Cadmium (mg/l)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Chloride Cl (mg/l)	18	5	12	12	67	12	16	20	12	16			
Cyanide (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Iron (mg/l)	0.2702	0.477	0.6282	0.3222	0.0657	0.0595	0.3242	0.2292	0.0522	0.0976			
Phenol (µg/l)	75	59	86	9	83	74	97	7	41	49			
Potassium (mg/l)	4.94	2.03	0.99	0.99	3	0.78	1.38	0.82	0.76	6.05			
Sodium (mg/l)	9.24	5.99	23.81	24.01	23.61	14.31	12.63	12.22	17.01	8.64			
Faecal coliforms (No/100 ml)	387	14	0	0	0	0	0	0	0	0			
Total coliforms (No/100 ml)	24192	1669	31	1553	1553	0	59	0	0	0			
Depth (m)	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm			
Total organic carbon (mg/l C)	9.3	8.1	1.4	0.3	2.7	2.1	2.9	2.6	0.6	6.4			
Total oxidised nitrogen (mg/l N)	0.54	0.07	<0.04	<0.04	0.46	0.16	<0.04	0.05	0.07	0.8			

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GROUNDWATER QUALITY		Sampling Point	
Parameter	PW15		
pH	7.4		
Temperature	11		
Electrical Conductivity EC (µS/cm)	576		
Ammonia (mg/l N)	<0.03		
Dissolved Oxygen (% Saturation)	nm		
Cadmium (mg/l)	0.0002		
Chloride Cl (mg/l)	12		
Cyanide (mg/l)	<0.01		
Iron (mg/l)	2.2029		
Phenol (µg/l)	82		
Potassium (mg/l)	1.04		
Sodium (mg/l)	24.5		
Faecal coliforms (No/100 ml)	0		
Total coliforms (No/100 ml)	0		
Total organic carbon (mg/l C)	0.5		
Total oxidised nitrogen (mg/l N)	<0.04		

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Parameter	GROUNDWATER QUALITY 12/01/2000								Sampling Point								Interim Guideline Values*
	W1	W2	W3	W7	W8	PW2	PW3	PW4	W1	W2	W3	W7	W8	PW2	PW3	PW4	
pH	7.80	7.70	7.70	7.90	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.90	7.80	7.80	7.20	6.60	6.5-9.5
Temperature	9.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	8.00	10.00	25°C
Electrical Conductivity EC (µS/cm)	542.00	765.00	403.00	392.00	855.00	232.00	262.00	248.00	232.00	262.00	248.00	392.00	855.00	232.00	262.00	248.00	1000
Ammonia (mg/l N)	0.02	0.84	1.83	0.01	0.45	0.01	0.01	<0.01	0.01	0.45	0.01	0.01	0.45	0.01	0.01	<0.01	0.15
Dissolved Oxygen (% Saturation)	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	
Chloride (mg/l Cl)	11.00	14.00	9.00	10.00	11.00	10.00	10.00	10.00	10.00	11.00	10.00	10.00	11.00	10.00	16.00	31.00	30
Residue on evaporation (mg/l)	329.00	489.00	455.00	360.00	2916.00	210.00	169.00	126.00	210.00	2916.00	169.00	360.00	2916.00	210.00	169.00	126.00	
Cyanide (mg/l)	<0.20	<0.20	0.65	<0.20	0.60	<0.20	<0.20	<0.20	<0.20	0.60	<0.20	<0.20	0.60	<0.20	<0.20	<0.20	0.01
Phenols (µg/l)	148	78	363	20	25	302	294	259	302	25	294	20	25	302	294	259	0.5
Flouride (mg/l)	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	1
Cadmium Cd (mg/l)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.005
Zinc (mg/l)	0.0705	0.0275	0.0334	0.0373	0.0205	0.0211	0.0141	0.1879	0.0211	0.0205	0.0141	0.0373	0.0205	0.0211	0.0141	0.1879	0.1
Iron (mg/l)	0.1811	0.2952	2.1	0.477	0.0625	0.3045	<0.1	<0.1	0.3045	0.0625	<0.1	0.477	0.0625	0.3045	<0.1	<0.1	0.2
Calcium (mg/l)	62.1	106.1	50.6	62.8	123.4	29.8	31.7	16.8	29.8	123.4	31.7	62.8	123.4	29.8	31.7	16.8	200
Manganese (mg/l)	0.1264	4.2002	0.1425	0.0733	1.0966	0.019	0.0069	<0.005	0.019	1.0966	0.0069	0.0733	1.0966	0.019	0.0069	<0.005	0.05
Chromium (mg/l)	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.03
Copper (mg/l)	0.006	0.005	0.0131	0.0123	0.005	0.0122	0.005	0.1503	0.0122	0.005	0.005	0.0123	0.005	0.0122	0.005	0.1503	0.03
Potassium (mg/l)	1.1	1.7	20.9	6.6	2.4	2.4	1.7	2.3	2.4	2.4	1.7	6.6	2.4	2.4	1.7	2.3	5
Sodium (mg/l)	20.9	38.2	10.8	9.8	34.1	6.5	9.7	14.6	6.5	34.1	9.7	9.8	34.1	6.5	9.7	14.6	150
Lead (mg/l)	<0.005	0.0268	0.0111	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.01
Sulphate (mg/l SO4)	1	0	0	16	137	2	11	20	2	137	2	16	137	2	11	20	200
Magnesium (mg/l)	18.8	19.7	2.8	6.1	16	2.8	5.9	6.2	19.7	16	5.9	6.1	16	2.8	5.9	6.2	50
Total oxidised nitrogen (mg/l N)	0.01	0.11	0.121	0.2	0.12	1.29	0.87	1.89	0.11	0.12	0.87	0.2	0.12	1.29	0.87	1.89	No abnormal change
Nickel (mg/l)	0.006	0.0053	0.0189	0.022	0.0054	<0.005	<0.005	<0.005	0.0053	0.0054	<0.005	0.022	0.0054	<0.005	<0.005	<0.005	0.02
Mercury (mg/l)	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Alkalinity (mg/l CaCO3)	276	424	200	180	360	95	98	56	424	360	98	180	360	95	98	56	200
Arsenic (mg/l)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.001
Faecal coliforms (No/100 ml)	12.00					110.00		0						110.00			0
Total coliforms (No/100 ml)	17					120		0						120			0
Selenium (mg/l)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0

*EPA Interim Report Towards Setting Guideline Values for The Protection of Groundwater in Ireland

Parameter	GROUNDWATER QUALITY 12/01/2000								Interim Guideline Values*
	W1	W2	W3	W7	W8	PW2	PW3	PW4	
Molybdenum (mg/l)	<0.005	<0.005	<0.005	<0.005	0.0075	<0.005	<0.005	<0.005	<0.005
Ortho-Phosphate (mg/l P)	0.02	0.01	0.11	0.02	0.01	0.05	0.02	0.01	0.03
Barium (mg/l)	0.1291	0.155	0.1	0.1	0.141	0.1	0.1	0.1	0.1
Cobalt (mg/l)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aluminium (mg/l)	0.1	0.1	0.1	0.1	0.0332	0.1236	0.1	0.1	0.2
Boron (mg/l)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1

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Parameter	28/06/2000		Sampling Location			Interim Guideline Values*	
	W1	W2	W7	W8	W7	W8	
pH	7.7	7.5	7.6	7.5			6.5-9.5
Temperature	nm	nm	nm	nm			25°C
Electrical Conductivity EC (µS/cm)	561	794	263	930			1000
Depth (m)	nm	5	10	12			
Ammonia (mg/l N)	0.02	1.09	0.02	0.24			0.15
Disolved Oxygen (% Saturation)	nm	nm	nm	nm			No abnormal change
Chloride (mg/l Cl)	15	13	4	9			30
Residue on evaporation (mg/l)	332	555	172	775			0
Cyanide (mg/l)	<0.20	<0.20	<0.20	<0.20			0.01
Phenol (µg/l)	19	4	6	7			0.5
Flouride (mg/l)	<0.300	<0.300	<0.300	<0.300			1
Cadmium (mg/l)	0.0001	0.0001	0.0001	0.0002			0.005
Zinc (mg/l)	0.0388	0.0116	0.0113	0.018			0.1
Iron (mg/l)	0.3385	7.6765	1.4647	2.4027			0.2
Calcium (mg/l)	62.38	97.59	36	134.24			200
Manganese (mg/l)	0.1361	1.403	0.2538	0.6967			0.05
Aluminium (mg/l)	<0.05	<0.05	0.111	0.4035			0.2
Chromium (mg/l)	0.001	0.001	0.001	0.0026			0.03
Copper (mg/l)	0.0223	0.0017	0.0057	0.0067			0.03
Potassium (mg/l)	<1	<1	7.03	2			5
Sodium (mg/l)	21.85	36.79	<5	16.16			150
Lead (mg/l)	0.0018	0.1677	0.013	0.021			0.01
Sulphate (mg/l SO4)	4	1	10	113			200
Magnesium (mg/l)	8.66	8.69	2.79	8.44			50
Total oxidised nitrogen (mg/l N)	0.18	<0.01	0.26	0.06			No abnormal change
Total organic carbon mg/l C	2.9	6.6	10.3	13.5			No abnormal change
Nickel (mg/l)	0.001	0.0577	0.0091	0.0145			0.02
Mercury (mg/l)	0.0001	0.0001	0.0001	0.0001			0.001
Alkalinity (mg/l CaCO3)	273	340	108	386			200
Arsenic (mg/l)	0.001	0.00215	0.001	0.001			0.01

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GROUNDWATER QUALITY		28/06/2000		Sampling Location				Interim Guideline Values*	
Parameter		W1	W2	W7	W8				
Silver (mg/l)		<0.05	<0.05	<0.05	<0.05				
Molybdenum (mg/l)		0.001	0.001	0.002	0.001				
Ortho-Phosphate (mg/l P)		<0.01	<0.01	0.05	0.01			0.03	
Barium (mg/l)		0.09999	0.1798	0.0568	0.1144			0.1	
Cobalt (mg/l)		0.001	0.0054	0.001	0.0038				
Faecal coliforms (No/100 ml)		0						0	
Total coliforms (No/100 ml)		0						0	
Selenium (mg/l)		<1	<1	<1	<1				
Boron (mg/l)		<50	<50	<50	76.7			1	

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