



Friday, 24 April 2015

Ms Amanda Langstaff,
Natural Resources Wales,
Chester Road,
Buckley,
Flintshire.
CH7 3AJ

Dear Ms Langstaff,

Data Submission March 2015

Please find enclosed the monthly data submission for routine environmental monitoring undertaken at our Ruabon Landfill Site during March 2015.

We trust this is satisfactory, please do not hesitate to contact us should you require further clarification.

**Yours sincerely,
for FCC ENVIRONMENT**

Geoff Forrest

Environment Manager, North Wales



Ruabon Landfill Site
Routine Environmental Monitoring Data Submission
March 2015

Prepared by G.Forrest
28th April 2015

APPENDIX 1

Field Logs

Field log report

Ruabon

03-March-2015

Equipment 01 Calibration Due	30/03/2015
Equipment 01 Last Calibration	05/02/2015
Equipment 01 Serial No.	LT1
Equipment 01 Type	Hannah Instruments HI98130
Equipment 02 Last Calibration	N/A
Equipment 02 Serial No.	30858
Equipment 02 Type	Dip Meter, In Situ Rugged Level tape 200
Personnel 01	L.Terrace
Time OFF	16:00
Time ON	09:30
Weather	Sunny, cold

Issued By:

Signed By :

Name :

Field log report

Ruabon

12-March-2015

Equipment 01 Calibration Due	30/03/2015
Equipment 01 Last Calibration	30/09/2014
Equipment 01 Serial No.	GA11581
Equipment 01 Type	GA2000+
Personnel 01	L Terrace
Time OFF	11:30
Time ON	08:45
Weather	Overcast

Issued By:

Signed By :

Name :

Field log report

Ruabon

18-March-2015

Equipment 01 Calibration Due	30/03/2015
Equipment 01 Last Calibration	30/09/2014
Equipment 01 Serial No.	GA11581
Equipment 01 Type	GA2000+
Personnel 01	L Terrace
Time OFF	12:30
Time ON	09:50
Weather	Sunny

Issued By:

Signed By :

Name :

Field log report

Ruabon

24-March-2015

Equipment 01 Calibration Due	17/04/2015
Equipment 01 Last Calibration	17/09/2014
Equipment 01 Serial No.	G501416
Equipment 01 Type	GA5000
Personnel 01	A Lowe
Time OFF	10:45
Time ON	07:00
Weather	Sunny intervals

Issued By:

Signed By :

Name :

Field log report

Ruabon

27-March-2015

Equipment 01 Serial No.	79281-10
Equipment 01 Type	Geotechnical Atex Dip Meter
Personnel 01	G Forrest
Time OFF	12:50
Time ON	12:00
Weather	o/c, cool

Issued By:

Signed By :

Name :

APPENDIX 2

Perimeter Borehole Gas Data

Ruabon Perimeter Borehole Gas Data - March 2015



From : 03/03/2015
 To : 24/03/2015

03/03/2015

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	Dip to Water (m)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)	TD (m)
RUBH0006	999	2.8	2.5	1.79	0	10	0.34	11.71
RUBH0007	999	12.7	3.6	3.09	0	1.3	-0.08	38.67
RUBH0008	998	0	0.4	0.93	0	20.4	0.02	42.38
RUBH0009	998	0	0.5	1.72	0	20.3	0.05	7.5
RUBH0010	998	0	0.2	2.39	0	20.7	0.36	36.14
RUBH0013	996	0	0.3	0.84	0	20.7	0.68	34.63
RUBH0014	996	0	2.3	2.17	0	19	2.24	10.72
RUBH0015	997	0	0	5.9	0	15	0.27	41.59
RUBH0016	997	0	0.2	10.27	0	20.8	-0.1	47.14
RUBH001A	997	0	0.2	4.81	0	19.8	0.16	12.77
RUBH001B	997	0	0.3	5.03	0	19.7	0.2	6.38
RUBH002A	997	0	0	5.08	0	20.3	0.16	6.48
RUBH002B	997	0	0.1	5.14	0	20.2	-0.18	11.71
RUBH003A	997	0	0.2	5.5	0	20.5	0.11	13.08
RUBH003B	997	0	0	5.41	0	21	0.11	6.37
RUBH004A	998	0	1.8	5.3	0	19.4	-4.35	9.58
RUBH004B	998	0	1.1	5.32	0	20.1	-0.06	6.33
RUBH011A	997	0	1	1.6	0	20.5	-13.31	12.79
RUBH011P	997	0	0	2.86	0	20.9	-0.1	14.42
RUBH012A	996	0	0.2	0.16	0	20.8	1.04	5.37
RUGBH001	998	0	4.9	6.06	0	16.2	-0.05	6.06
RUGBH002	998	0	1	2.2	0	20.2	-0.18	7
RUGBH003	999	0	1.2	2.45	0	18.3	-0.08	4.9
RUGBH004	999	0	0.1	2.61	0	20.5	-0.03	21.89
RUGBH005	999	1.1	0.7	2.77	0	18.9	-0.12	6.31
RUGBH006	999	0	1.3	0.79	0	20	1.35	6.88
RUGBH007	996	0	0.3	0.54	0	20.7	-0.18	2.94
RUGBH008	996	0	0.6	0.98	0	20.5	-0.19	6.17
RUGBH009	997	0	0.2	0.84	0	20.4	-1.82	8.23
RUGBH010	997	0	0.9	0.5	0	20.2	0.13	3.95
RUGBH02A	998	0	0	1.24	0	20.9	-0.22	1.4
RUGP0001	997	1.6	0.2		0	19.1	6.88	
RUGP0002	997	0	0.7		0	19.2	0.72	
RUGP0003	997	0	0		0	19.2	1.74	
RUGP0004	997	0	2.8		0	18.1	0.16	
RUGP0008	997	0	0.3		0	19.9	0.35	
RUGP0009	997	1	8.8		0	1.9	0.19	
RUGP0010	997	0	2		0	19.4	0.2	
RUGP0011	997	0	1.6		0	18.8	0.19	
RUGP0012	997	0	0.1		0	20.9	0.18	
RUGP0013	997	0	0.4		0	20.7	0.1	
RUGP0014	998	0	4		0	17.2	0.04	
RUGP0015	998	0	0.1		0	20.6	-0.19	
RUGP0016	997	0	1.2		0	20	-0.23	
RUGP0018	998	0	0.1		0	20.5	-0.33	
RUGP0019	997	0	0		0	20.8	-0.13	
RUGP0020	996	0	0		0	20.8	0.14	
RUGP0021	996	0	0.3		0	20.2	-0.24	
RUGP00A1	999	0	0		0	20.7	-0.05	

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Ruabon Perimeter Borehole Gas Data - March 2015



From : 03/03/2015
 To : 24/03/2015

03/03/2015

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	Dip to Water (m)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)	TD (m)
RUGP00A2	999	0	0		0	20.7	-0.05	
RUGP00A3	999	0	0		0	20.4	-0.05	
RUGP00B1	999	0	0		0	13.2	-0.25	
RUGP00B2	999	0	0.1		0	19.2	-1.32	
RUGP00B3	999	0	0		0	20.6	-0.02	
RUGP00C1	999	0	0		0	20.4	-0.14	
RUGP00C2	999	0	0		0	18.7	-0.04	
RUGP00C3	999	0	0		0	20.7	-2.19	
RUGP00D1	999	0	0		0	20.3	-0.06	
RUGP00D2	998	0	0		0	20.4	-0.04	
RUGP00D3	999	0	0		0	17.4	-3.23	
RUGP00E1	998	0	0		0	20.6	-0.14	
RUGP00E2	999	0	0		0	20.6	-0.13	
RUGP00E3	999	0	0		0	20.6	0.44	
RUGP00F1	998	0	0		0	20.6	-0.16	
RUGP00F2	998	0	0		0	20.4	-0.4	
RUGP00F3	999	0	0		0	20.6	-0.15	
RUWB001A	997	0	0.2	2.76	0	17.2	-1.59	48.9
RUWB001B	997	0	0	4.14	0	20.7	0.19	7.87
RUWB002A	997	0	0.1	4.86	0	20.8	0.22	21.37
RUWB002B	997	0	2.1	5.95	0	18.9	-0.77	10.46
RUWB002C	997	0	3.2	6.19	0	18.2	-0.03	8.05
RUWB002D	997	0	0.2	5.91	0	20.7	0.05	21.65
RUWB003A	996	0	0.6	8.88	0	13.5	-8.92	10.7
RUWB003B	996	0	0.1	0.33	0	14.4	5.16	7.56
RUWB004A	997	0	0.1	3.02	0	17.7	-0.13	48.83
RUWB004B	997	0	0.5	0.79	0	17	-0.7	8.54
RUWB005A	999	0	0	2.77	0	20.8	-0.09	25.31
RUWB005B	999	0	0.4	2.53	0	20.5	0.03	8.4

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Ruabon Perimeter Borehole Gas Data - March 2015



From : 03/03/2015
 To : 24/03/2015

12/03/2015

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	1007	2.6	2.1	0	10.6	0.76
RUBH0007	1007	10.4	3.4	0	3	0.23
RUBH0008	1006	0	0.4	0	20.2	1.05
RUBH0009	1006	0	0.1	0	20.3	0.17
RUBH0010	1006	0	0.5	0	19.7	0.17
RUBH0013	1004	0	0.7	0	20.2	0.31
RUBH0014	1004	0	1.9	0	18.9	1.83
RUBH0015	1005	0	0	0	16.4	0.19
RUBH0016	1005	0	0.2	0	20.2	0.17
RUBH001A	1007	0	0.3	0	19.9	0.42
RUBH001B	1007	0	0.5	0	19.4	0.03
RUBH002A	1007	0	4.6	0	1.2	0.13
RUBH002B	1007	0	0.2	0	20.2	1.16
RUBH003A	1007	0	0.4	0	19.6	2.1
RUBH003B	1007	0	0.1	0	20.2	0.08
RUBH004A	1007	0	1.4	0	18.9	0
RUBH004B	1007	0	1.1	0	19.9	0.08
RUBH011A	1005	0	1	0	19.9	-3.02
RUBH011P	1005	0	0	0	20.4	0.15
RUBH012A	1005	0	1	0	19.7	-9.47
RUGBH001	1007	0	4.4	0	16.3	0.11
RUGBH002	1007	0	2.2	0	18.8	0.05
RUGBH003	1007	0	1.7	0	17.4	0.08
RUGBH004	1007	4.3	0.8	0	18.8	0.07
RUGBH005	1007	0.6	0.2	0	19.9	0.09
RUGBH006	1007	0	1.6	0	19.5	0.13
RUGBH007	1004	0	0.1	0	20.4	0.69
RUGBH008	1004	0	0.4	0	20.3	0.15
RUGBH009	1005	0	1	0	19.5	0.4
RUGBH010	1005	0	0.8	0	20	1.35
RUGBH02A	1007	0	0.1	0	20.5	0.09
RUGP0001	1007	13.8	1.3	0	15.4	0.05
RUGP0002	1007	0	0.4	0	19.9	0.27
RUGP0003	1007	0	0	0	19.7	-7.08
RUGP0004	1007	0	2	0	18.9	0.04
RUGP0008	1007	0	0.2	0	20	0.11
RUGP0009	1007	6.4	10	0	1.7	0.11
RUGP0010	1007	0	1.2	0	19.3	0.09
RUGP0011	1007	0	1.5	0	18.9	0.04
RUGP0012	1007	0	0.1	0	20.3	0.19
RUGP0013	1007	0	0.5	0	20	0.1
RUGP0014	1007	0	4	0	15.7	0.05
RUGP0015	1005	0	0.1	0	20.2	-1.28
RUGP0016	1004	0	1.5	0	19.3	0.16
RUGP0018	1005	0	0.1	0	20.2	0.15
RUGP0019	1004	0	0	0	20.3	0.3
RUGP0020	1004	0	0	0	20.4	0.17
RUGP0021	1004	0	0.4	0	19.9	0.17
RUGP00A1	1007	0	0	0	20.3	0.92

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Ruabon Perimeter Borehole Gas Data - March 2015



From : 03/03/2015
 To : 24/03/2015

12/03/2015

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	1007	0	0	0	20.2	0.17
RUGP00A3	1007	0	0	0	20.2	1.86
RUGP00B1	1007	0	0	0	20	-1.08
RUGP00B2	1007	0	0.2	0	18.4	0.41
RUGP00B3	1007	0	0	0	20.3	-0.31
RUGP00C1	1007	0	0	0	20.3	0.19
RUGP00C2	1007	0	0	0	18.9	0.32
RUGP00C3	1007	0	0	0	20.3	-1.1
RUGP00D1	1007	0	0	0	20.4	0.07
RUGP00D2	1007	0	0	0	20.4	-0.71
RUGP00D3	1007	0	0	0	15.8	4.82
RUGP00E1	1007	0	0	0	20.3	0.01
RUGP00E2	1007	0	0	0	20.5	0.71
RUGP00E3	1007	0	0	0	20.5	0.07
RUGP00F1	1007	0	0	0	20.1	0.01
RUGP00F2	1007	0	0	0	19.4	0.64
RUGP00F3	1007	0	0	0	20.4	-0.06
RUWB001A	1007	0	0.2	0	16.1	-0.2
RUWB001B	1007	0	0.9	0	19.4	0.11
RUWB002A	1007	0	0.1	0	19.8	0.09
RUWB002B	1007	0	2.7	0	17.3	0.1
RUWB002C	1007	0	2.7	0	18.1	0.46
RUWB002D	1007	0	0.2	0	20.3	4.84
RUWB003A	1004	0	0.4	0	14.9	0.93
RUWB003B	1004	0	0	0	18.9	0.29
RUWB004A	1005	0	0.1	0	18.7	4.19
RUWB004B	1004	0	0.3	0	19.3	0.44
RUWB005A	1006	0	0	0	20.3	0.2
RUWB005B	1006	0	0.3	0	20.2	0.95

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Ruabon Perimeter Borehole Gas Data - March 2015



From : 03/03/2015
 To : 24/03/2015

18/03/2015

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	1020	2	2.3	0	8.7	0.5
RUBH0007	1020	13.5	3.9	0	0.2	0.19
RUBH0008	1019	0	0.6	0	20.4	0.13
RUBH0009	1019	0	0.2	0	20.5	0.14
RUBH0010	1019	0	0.3	0	20.3	0.57
RUBH0013	1017	0	0.2	0	20.5	0.09
RUBH0014	1017	0	1.9	0	18.9	0.56
RUBH0015	1018	0	0	0	14.5	0.14
RUBH0016	1018	0	0.3	0	20.4	0.16
RUBH001A	1019	0	0.3	0	19.9	0.08
RUBH001B	1019	0	0.4	0	19.4	0.03
RUBH002A	1019	0	0	0	20.2	0.07
RUBH002B	1019	0	0.3	0	20.1	-0.1
RUBH003A	1019	0	0.4	0	19.9	-4.18
RUBH003B	1019	0	0	0	20.6	-0.63
RUBH004A	1019	0	1.4	0	19.1	-2.03
RUBH004B	1019	0	1.5	0	19.3	0.06
RUBH011A	1018	0	0.4	0	20.4	-10.87
RUBH011P	1017	0	0	0	20.6	0.15
RUBH012A	1017	0	1.7	0	19.3	0.34
RUGBH001	1019	0	4.4	0	16.4	0.04
RUGBH002	1020	0	2.6	0	18.8	0.07
RUGBH003	1020	0	1.5	0	12.3	0.07
RUGBH004	1020	7.2	1	0	18	0.07
RUGBH005	1020	0	0	0	20.6	0.11
RUGBH006	1020	0	1.6	0	19.9	0.46
RUGBH007	1017	0	0.2	0	20.5	0.1
RUGBH008	1017	0	0.3	0	20.4	0.32
RUGBH009	1017	0	0.9	0	19.7	0.85
RUGBH010	1018	0	0.8	0	20.3	0.13
RUGBH02A	1019	0	0.1	0	20.7	0.07
RUGP0001	1019	19.6	1.8	0	13.3	0
RUGP0002	1019	0	0.4	0	19.8	0.45
RUGP0003	1019	0	0	0	19.7	-4.69
RUGP0004	1019	0	2.1	0	17.9	0.03
RUGP0008	1019	0	0.3	0	19.6	0.18
RUGP0009	1019	5.2	10.4	0	2.1	0.07
RUGP0010	1019	0	1.2	0	18.8	0.1
RUGP0011	1019	0	1.6	0	19	0.08
RUGP0012	1019	0	0.1	0	20.4	0.12
RUGP0013	1019	0	0.5	0	20	0.33
RUGP0014	1020	0	3.8	0	16.8	0.07
RUGP0015	1018	0	0.1	0	20.5	0.12
RUGP0016	1017	0	1.5	0	19.2	0.14
RUGP0018	1018	0	0.1	0	20.6	-0.32
RUGP0019	1017	0	0	0	20.5	0.2
RUGP0020	1017	0	0	0	20.5	0.1
RUGP0021	1017	0	0.4	0	19.7	0.19
RUGP00A1	1020	0	0	0	20.6	0.13

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Ruabon Perimeter Borehole Gas Data - March 2015



From : 03/03/2015
 To : 24/03/2015

18/03/2015

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	1020	0	0	0	20.5	0.45
RUGP00A3	1020	0	0	0	20.6	-2.79
RUGP00B1	1020	0	0	0	20.2	0.45
RUGP00B2	1020	0	0.1	0	18.4	0.47
RUGP00B3	1020	0	0	0	20.6	0.13
RUGP00C1	1020	0	0	0	20.5	-0.01
RUGP00C2	1020	0	0	0	18.9	0.11
RUGP00C3	1020	0	0.1	0	20.6	0.36
RUGP00D1	1020	0	0	0	20.6	0.3
RUGP00D2	1020	0	0	0	20.6	0.21
RUGP00D3	1020	0	0	0	16.4	-2.28
RUGP00E1	1020	0	0	0	20.7	0.02
RUGP00E2	1020	0	0	0	20.7	0.05
RUGP00E3	1020	0	0	0	20.6	0.26
RUGP00F1	1020	0	0	0	20.6	0.09
RUGP00F2	1020	0	0	0	20.1	-0.08
RUGP00F3	1020	0	0	0	20.7	0.05
RUWB001A	1019	0	0.2	0	15.6	-6.08
RUWB001B	1019	0	1	0	19.2	0.1
RUWB002A	1019	0	0.1	0	19.9	0.08
RUWB002B	1019	0	0.5	0	20.3	0.08
RUWB002C	1019	0	0.4	0	20.3	0.07
RUWB002D	1019	0	0.2	0	20.3	3.75
RUWB003A	1017	0	0.5	0	14.3	-6.77
RUWB003B	1017	0	0	0	18.8	-0.09
RUWB004A	1017	0	0.1	0	19	-1.73
RUWB004B	1017	0	0.4	0	18.5	0.78
RUWB005A	1019	0	0	0	20.6	0.43
RUWB005B	1019	0	0.5	0	20.1	0.82

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Ruabon Perimeter Borehole Gas Data - March 2015



From : 03/03/2015
 To : 24/03/2015

24/03/2015

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0005	1000	0.1	0.2	0	21	-0.03
RUBH0006	999	0	1.8	0	20.3	0.03
RUBH0007	999	13.6	3.8	0	1.2	0.07
RUBH0008	998	0	0.7	0	20.8	0.09
RUBH0009	998	0	0.4	0	20.9	0
RUBH0010	998	0	0.6	0	20.5	0.09
RUBH0013	997	0	0.6	0	20.6	-0.07
RUBH0014	997	0	2.2	0	19.2	8.28
RUBH0015	997	0	0.1	0	15.7	0.02
RUBH0016	996	0	0.4	0	20.6	-0.02
RUBH001A	999	0	0.4	0	20.3	0.21
RUBH001B	999	0	1	0	19.3	0.19
RUBH002A	999	3.7	4.3	0	3.3	0.09
RUBH002B	999	0	0.4	0	20.5	0.62
RUBH003A	998	0	0.5	0	20	0.14
RUBH003B	999	0	0.1	0	21	0.14
RUBH004A	997	0	1.5	0	19.4	0.05
RUBH004B	999	0	1.7	0	19.3	0.05
RUBH011A	997	0	1.2	0	20.2	1.24
RUBH011P	997	0	0.1	0	20.8	-0.05
RUBH012A	996	0	0.4	0	20.7	-0.03
RUGBH001	1000	0	4.3	0	16.5	0.05
RUGBH002	997	0	2.1	0	18.5	-0.02
RUGBH003	999	0	1.9	0	13.7	0.09
RUGBH004	999	11.8	2.4	0	17.4	0.07
RUGBH006	998	2.5	2.7	0	6.7	-0.03
RUGBH007	997	0	0.5	0	20.7	-0.17
RUGBH008	995	0	0.6	0	20.7	-0.12
RUGBH009	997	0	1.1	0	20.1	-0.03
RUGBH010	997	0	1	0	20.5	-0.26
RUGBH02A	1000	0	0.2	0	21	0.09
RUGP0001	998	1.5	0.2	0	20.2	0.17
RUGP0002	997	0	0.4	0	20.7	0.31
RUGP0003	999	0	0.1	0	20.1	0.46
RUGP0004	999	0	2.5	0	17.1	0.17
RUGP0008	1000	0	0.4	0	20.5	0.12
RUGP0009	997	3.5	8.5	0	4	0.02
RUGP0010	999	0	1.8	0	18.7	0.02
RUGP0011	999	0	1.7	0	19.2	0.05
RUGP0012	998	0	0.2	0	20.8	0.14
RUGP0013	998	0	0.6	0	20.4	0.03
RUGP0014	999	0	3.7	0	17.2	-0.05
RUGP0015	1000	0	0.3	0	20.6	-0.17
RUGP0016	997	0	2	0	19.1	-0.07
RUGP0018	998	0	0.2	0	21	-0.07
RUGP0019	997	0	0.1	0	21.2	-0.19
RUGP0020	997	0	0.1	0	20.9	-0.05
RUGP0021	996	0	1.3	0	19.6	-0.24
RUGP00A1	1000	0	0.1	0	20.9	0.1

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Ruabon Perimeter Borehole Gas Data - March 2015



From : 03/03/2015
 To : 24/03/2015

24/03/2015

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	999	0	0.1	0	20.9	-0.17
RUGP00A3	999	0	0.1	0	20.9	-0.02
RUGP00B1	998	0	0.1	0	20.8	-0.03
RUGP00B2	999	0	0.2	0	18.9	-0.07
RUGP00B3	1000	0	0.1	0	21	0.1
RUGP00C1	1000	0	0.1	0	21	-0.07
RUGP00C2	998	0	0.1	0	19.4	0.12
RUGP00C3	1000	0	0.1	0	21	-0.88
RUGP00D1	1000	0	0.1	0	21	0.05
RUGP00D2	999	0	0.1	0	21	-0.02
RUGP00D3	992	0	0.1	0	16.6	0.07
RUGP00E1	1000	0	0.1	0	20.9	0.12
RUGP00E2	998	0	0.1	0	21	-0.1
RUGP00E3	998	0	0.1	0	21	0.09
RUGP00F1	997	0	0.1	0	20.9	0.07
RUGP00F2	998	0	0.1	0	20.6	-0.02
RUGP00F3	998	0	0.1	0	21	-0.09
RUWB001A	999	0	0.3	0	15.8	0.17
RUWB001B	999	0	0.4	0	20.6	0.15
RUWB002A	999	0	0.2	0	20.3	0.02
RUWB002B	998	0	1.3	0	19.8	0.05
RUWB002C	1000	0	2.4	0	18.7	-0.02
RUWB002D	999	0	0.3	0	20.5	0
RUWB003A	997	0	0.6	0	14.3	-0.24
RUWB003B	997	0	0.2	0	17.6	-0.07
RUWB004A	997	0	0.2	0	18.8	-0.03
RUWB004B	998	0	0.4	0	19.8	-0.14
RUWB005A	997	0	0.1	0	20.8	-0.26
RUWB005B	998	0	0.6	0	20.3	-0.12

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APPENDIX 3

Landfill Gas Field Extraction and Balancing Data

Ruabon Landfill Gas Extraction and Balancing Data - March 2015

Well ID	Date & Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mb)	CO (ppm)	H2S (ppm)	Original Valve (%)	Depart Valve (%)
RUAW0001	04/03/2015 09:17	31.2	22.9	0.8	45.1	-6.46	1012	0	0	5	5
RUAW0002	04/03/2015 09:20	12.3	17.4	0.1	70.2	-7.3	1013	0	0	0	0
RUAMW001	04/03/2015 09:22	15.2	9.9	11.8	63.1	-7.3	1013	0	0	0	0
RUAW0003	04/03/2015 09:25	7.8	17.4	0	74.8	-8.61	1012	0	0	5	0
RUAW0003	04/03/2015 09:27	7.8	17.5	0	74.7	-8.09	1012	0	0	0	0
RUAW0053	04/03/2015 09:29	0.8	11.2	5.3	82.7	-8.19	1013	0	0	0	0
RUAMW002	04/03/2015 09:34	36.3	21.2	0	42.5	-11.16	1014	0	0	1	1
RUAW065R	04/03/2015 09:36	35.2	24.8	0	40	-13.19	1012	0	0	10	10
RUAW011R	04/03/2015 09:39	39.2	26.4	1.5	32.9	-12.86	1012	0	0	10	10
RUAMW005	04/03/2015 09:41	34.2	25.6	0	40.2	-18.61	1012	0	0	20	20
RUAW0061	04/03/2015 09:43	41.2	28.7	0	30.1	-10.97	1012	0	0	10	10
RUAMW006	04/03/2015 09:46	52.4	31.8	0	15.8	-18.04	1012	0	0	10	10
RUAMW09R	04/03/2015 09:48	46	31.5	0	22.5	-10.76	1012	0	0	10	10
RUAW0060	04/03/2015 09:51	56.8	30.3	1.9	11	-0.12	1012	0	0	0	5
RUAW0060	04/03/2015 09:52	61.5	31.1	0.3	7.1	-7.45	1012	0	0	5	5
RUAW0048	04/03/2015 09:55	26.1	24.3	9.5	40.1	-0.31	1011	0	0	0	0
RUAW050R	04/03/2015 09:57	42.2	34	0.1	23.7	-3.03	1011	0	0	5	5
RUAW0067	04/03/2015 09:59	63.1	33.7	0	3.2	-7.33	1013	0	0	10	10
RUAW0051	04/03/2015 10:00	3.5	14.5	16	66	0	1012	7	0	0	0
RUAW057R	04/03/2015 10:03	39.4	25.2	5.1	30.3	-28.68	1013	0	0	5	0
RUAW057R	04/03/2015 10:05	38.8	24.8	5.8	30.6	-27.51	1013	0	0	0	0
RUAW032R	04/03/2015 10:07	60.3	35.9	0	3.8	-48.5	1013	0	0	20	20
RUAW031R	04/03/2015 10:09	44.2	31.7	0.7	23.4	-38.92	1013	0	0	10	10
RUAW034R	04/03/2015 10:11	53.9	30.6	2.1	13.4	-47.32	1013	0	0	15	15
RUAW0036	04/03/2015 10:14	59.3	32.2	1.6	6.9	-51.22	1013	0	0	5	5
RUAW0059	04/03/2015 10:16	67.3	34.2	0	0	2.62	1013	0	0	0	0
RUAMW003	04/03/2015 10:19	44.6	25.5	1.3	28.6	-43.38	1014	0	0	1	1

Well ID	Date & Time	CH4 (%)	CO2		Balance Gas		Vacuum (mbar)	Atm Press (mb)	CO		Original Valve (%)	Depart Valve (%)
			(%)	O2 (%)	(%)	(%)			(ppm)	H2S (ppm)		
RUAW0052	04/03/2015 10:21	40.4	17.8	7.9	33.9	-51.2	1014	0	0	0	0	
RUAW0035	04/03/2015 10:27	49.9	32.2	0	17.9	-2.89	1014	0	0	5	5	
RUAW033R	04/03/2015 10:31	68.5	30.4	0.2	0.9	-51.49	1014	0	0	100	100	
RUAW030R	04/03/2015 10:33	48.8	32.1	1.9	17.2	-51.47	1015	0	0	100	100	
RUARW042	04/03/2015 10:38	70.8	29.5	0	0	-51.35	1016	0	0	10	10	
RUARW041	04/03/2015 10:40	6.3	3.9	19.6	70.2	-51.22	1016	0	0	10	0	
RUARW041	04/03/2015 10:42	6	2.9	20	71.1	-47.79	1016	0	0	0	0	
RUARW040	04/03/2015 10:45	77.4	23	0	0	-24.33	1015	0	0	10	10	
RUARW039	04/03/2015 10:47	69.7	26.9	0.8	2.6	-51.35	1017	0	0	10	10	
RUARW038	04/03/2015 10:49	69.6	30.7	0	0	-51.65	1017	0	0	10	10	
RUARW037	04/03/2015 10:51	67.9	31.8	0	0.3	-51.37	1017	0	0	100	100	
RUAW025R	04/03/2015 11:05	14.2	22.3	0.3	63.2	-25.55	1016	69	0	50	1	
RUAW025R	04/03/2015 11:07	14.1	22.5	0.3	63.1	-15.36	1016	68	0	1	1	
RUAW026R	04/03/2015 11:10	16.4	19.1	1.6	62.9	-23.71	1015	132	0	20	0	
RUAW026R	04/03/2015 11:12	17	19	1.6	62.4	-23.88	1015	177	1	0	0	
RUAW0027	04/03/2015 11:15	24.1	12.6	12.6	50.7	-50.25	1015	0	0	10	0	
RUAW0027	04/03/2015 11:17	24.7	13.1	12.3	49.9	-55.64	1015	0	0	0	0	
RUAW056R	04/03/2015 11:19	44.6	31.7	4.2	19.5	-15.73	1014	0	0	0	0	
RUAW0028	04/03/2015 11:23	20.5	30.6	7.3	41.6	-10.52	1013	3	0	0	0	
RUAW0024	04/03/2015 11:25	61.9	36	0	2.1	-54.21	1014	0	0	50	40	
RUAW0024	04/03/2015 11:27	61.6	36.1	0	2.3	-47.86	1014	0	0	40	40	
RUAW0023	04/03/2015 11:30	59.4	34.7	0	5.9	-46.88	1015	0	0	20	20	
RUAW0066	04/03/2015 11:32	53.8	34.6	0	11.6	-26.12	1014	0	0	10	10	
RUAW0022	04/03/2015 11:34	51.3	33.8	0	14.9	-29.85	1014	0	0	40	40	
RUAW0021	04/03/2015 11:38	56.6	32.7	0	10.7	-19.64	1013	0	0	20	20	
RUAW0020	04/03/2015 11:41	36.3	26.4	0.2	37.1	-7.4	1015	0	0	10	10	
RUAW0048	10/03/2015 14:53	62.6	30.5	2.4	4.5	-0.28	1013	0	0	0	0	
RUAW0048	10/03/2015 14:58	56.9	31.5	2	9.6	-4.44	1013	0	0	5	5	
RUAW0019	10/03/2015 15:01	35	28.5	0.2	36.3	-5.06	1015	0	0	10	10	

Well ID	Date & Time	CH4 (%)	CO2		Balance Gas (%)	Vacuum (mbar)	Atm Press (mb)	CO		Original Valve (%)	Depart Valve (%)
			(%)	O2 (%)				(ppm)	H2S (ppm)		
RUAW0018	10/03/2015 15:04	37.8	24.1	3.7	34.4	-50.1	1013	0	0	5	5
RUAW0017	10/03/2015 15:07	22.1	24.4	0.4	53.1	-0.79	1014	0	0	0	0
RUAW0055	18/03/2015 10:18	6.2	14.3	1.7	77.8	-0.83	1017	0	0	0	0
RUAW0008	18/03/2015 10:19	1.7	13.4	3.3	81.6	-0.77	1019	0	0	1	1
RUAW0008	18/03/2015 10:19	1.7	13.4	3.3	81.6	-0.77	1019	0	0	1	1
RUAW0063	18/03/2015 10:21	0	13	3.3	83.7	-2.55	1018	0	0	0	0
RUAW0007	18/03/2015 10:24	18.5	21.1	0	60.4	-3.31	1017	0	0	0	0
RUAW0062	18/03/2015 10:26	28.1	23.7	0	48.2	-5.11	1017	0	0	0	0
RUAMW07R	18/03/2015 10:28	31.5	25.4	0.4	42.7	-6.85	1018	0	0	5	5
RUAMW004	18/03/2015 10:30	14.1	22.7	0	63.2	-3.86	1017	0	0	0	0
RUAMW004	18/03/2015 10:30	14.1	22.7	0	63.2	-3.86	1017	0	0	0	0
RUAW0044	18/03/2015 10:32	14.3	16.3	7.4	62	-23.4	1018	0	0	5	5
RUAW0043	18/03/2015 10:35	28.4	23.2	0	48.4	-60.86	1019	0	0	5	5
RUAW0013	18/03/2015 10:37	19.6	16.2	9.6	54.6	-15.51	1019	0	0	1	1
RUAW0014	18/03/2015 10:40	76.3	23.7	0	0	-29.97	1018	0	0	10	10
RUAW0015	18/03/2015 10:42	50.2	28	0.2	21.6	-13.31	1019	0	0	10	10
RUAW0015	18/03/2015 10:42	50.2	28	0.2	21.6	-13.31	1019	0	0	10	10
RUAW0045	18/03/2015 10:45	76.3	25	0	0	-8.33	1018	0	0	5	5
RUAMW08R	18/03/2015 10:48	29.6	24	0.1	46.3	-4.98	1019	0	0	5	5
RUAMW08R	18/03/2015 10:48	29.6	24	0.1	46.3	-4.98	1019	0	0	5	5
RUAW0046	18/03/2015 10:51	35	25	0.3	39.7	-0.43	1017	0	0	1	1
RUAW0016	18/03/2015 10:54	1.9	5.5	15.5	77.1	-0.26	1017	0	0	0	0
RUAW0017	18/03/2015 10:56	25.9	23.3	0	50.8	-0.67	1017	0	0	0	0
RUAW0064	18/03/2015 10:58	63	33	0	4	-0.9	1016	0	0	5	10
RUAW0064	18/03/2015 11:00	62.6	33.5	0	3.9	-1.48	1016	0	0	10	10
RUAW0047	18/03/2015 11:02	0.1	6.4	19.5	74	-50.66	1017	0	0	10	0
RUAW0047	18/03/2015 11:04	0	1.9	20.9	77	-59.12	1017	0	0	0	0
RUAW0018	18/03/2015 11:06	51.8	21.8	0.5	25.9	-3.34	1017	0	0	10	10
RUAW0018	18/03/2015 11:06	51.8	21.8	0.5	25.9	-3.34	1017	0	0	10	10

Well ID	Date & Time	CH4 (%)	CO2		Balance Gas		Vacuum (mbar)	Atm Press (mb)	CO		Original Valve (%)	Depart Valve (%)
			(%)	O2 (%)	(%)	(%)			(ppm)	H2S (ppm)		
RUAW0019	18/03/2015 11:09	40.1	27.3	0	32.6	-5.13	1018	0	0	10	10	
RUAW0019	18/03/2015 11:09	40.1	27.3	0	32.6	-5.13	1018	0	0	10	10	
RUAW0020	18/03/2015 11:13	62.5	28.5	0	9	-5.56	1018	0	0	10	15	
RUAW0020	18/03/2015 11:16	61.2	27.3	0	11.5	-6.78	1018	0	0	15	15	
RUAW0021	18/03/2015 11:19	64.4	35.5	0	0.1	-3.05	1017	0	0	10	10	
RUAW0068	18/03/2015 11:23	62.9	34	0.4	2.7	-5.73	1017	0	0	10	10	
RUAW0022	18/03/2015 11:26	62.9	37.5	0	0	-3.13	1018	0	0	10	10	
RUAW0066	18/03/2015 11:28	60.7	34.3	0	5	-7.78	1017	0	0	10	10	
RUAW0023	18/03/2015 11:30	64.5	33.5	0.5	1.5	-46.64	1018	0	0	20	20	
RUAW0049	18/03/2015 11:33	0.6	9.5	18.5	71.4	-36.07	1017	0	0	0	0	
RUAW029R	18/03/2015 11:35	59.3	33.8	0.1	6.8	-7.68	1018	0	0	10	10	
RUAW0028	18/03/2015 11:37	21.6	29.5	7.4	41.5	-0.79	1018	0	0	0	0	
RUAW056R	18/03/2015 11:39	54	37.6	1.5	6.9	-5.8	1018	0	0	5	5	
RUAW0027	18/03/2015 11:41	52	18.5	0	29.5	8.39	1019	0	0	0	10	
RUAW0027	18/03/2015 11:44	52.4	18	0	29.6	-20	1019	0	0	10	10	
RUAW0024	18/03/2015 11:46	67.2	33.1	0.2	0	-5.1	1018	0	0	10	10	
RUAW025R	18/03/2015 11:50	26.5	21.8	0.7	51	-0.9	1018	1	0	0	0	
RUAW026R	18/03/2015 11:54	79.3	21	0	0	0.02	1020	0	0	0	0	
RUAW0012	18/03/2015 13:48	0	4.8	20	75.2	-15.1	1021	0	0	5	3	
RUAW0012	18/03/2015 13:50	0	1.2	20.9	77.7	-51.73	1021	0	0	0	0	
RUAW0054	18/03/2015 13:55	0	4.1	11.4	84.5	-0.77	1019	0	0	0	0	
RUAW0004	18/03/2015 13:57	35.4	19.8	0	44.8	-1.1	1018	0	0	1	1	
RUAW0005	18/03/2015 13:59	15.3	11.4	12.4	60.9	-50.91	1021	0	0	5	0	
RUAW0005	18/03/2015 14:01	15.6	13.4	12	59	-48.06	1021	0	0	0	0	
RUAW026R	26/03/2015 14:17	81.9	17.9	0.2	0	3.36	993	1	0	0	0	
RUAW025R	26/03/2015 14:20	44.4	26.2	0	29.4	0.72	994	2	0	0	0	

APPENDIX 4

Leachate Level Data

Ruabon Leachate Level Data - March 2015



From : 27/03/2015
To : 27/03/2015

27/03/2015

Sample Point	Depth of Liq (m)	Dip to Water (m)	TD (m)	Water Level (mAOD)
LMP006R	1.10	18.82	19.03	112.50
LMP007R	1.14	17.65	18.98	111.94
LMP008R	1.31	21.16	21.94	111.31
LMP009R	1.42	21.56	21.67	111.72
RUGW00M1	1.65	12.52	14.62	112.10
RUGW00M3	1.42	11.47	11.84	113.67
RUGW00M5	0.70	20.62	21.07	111.20
RUGW0M10	1.73	26.88	27.59	97.73
RUGWM4r	1.24	16.59	17.55	111.32
RULMP2r	0.77	15.44	15.93	110.77

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APPENDIX 5

Groundwater Quality Data

Ruabon Groundwater Quality & Level Data - March 2015



From : 03/03/2015
To : 03/03/2015

03/03/2015

Sample Point	Alk (CaCO3:m g/l)	Amm-N (N:mg/l)	BOD (mg/l)	Ca(D) (mg/l)	Cd(D) (mg/l)	Chloride (mg/l)	COD (mg/l)	Cond (uS / cm)	Cond(Fld) (uS / cm)	Cr(D) (mg/l)
RUBH0013	300	3.3	<2.0	135	<0.0001	8	8	659	720	<0.001
RUWB002A	249	5.3	3.2	115	<0.0001	399	14	1620	1820	<0.001
RUWB002B	307	3.9	<2.0	88	<0.0001	164	13	1020	1160	<0.001
RUWB002C	925	7	<2.0	195	<0.0001	349	26	2500	2720	<0.001
RUWB002D	271	0.8	<2.0	16	<0.0001	26	8	618	670	<0.001
RUWB003A	354	1.9	4	8	<0.0001	24	10	668	730	<0.001
RUWB004A	502	0.8	<2.0	3	<0.0001	20	19	952	1030	<0.001
RUWB005A	337	1	7.2	2	<0.0001	38	12	1100	1180	<0.001
RUWB005B	155	1.9	3.5	83	<0.0001	57	13	594	630	<0.001

Sample Point	Cu(D) (mg/l)	Dip to Water (m)	Fe(D) (mg/l)	K(D) (mg/l)	Mg(D) (mg/l)	Mn(D) (mg/l)	Ni(D) (mg/l)	Pb(D) (mg/l)	pH (Lab)	pH(Fld)
RUBH0013	<0.001	0.84	0.12	4	11	0.422	0.001	<0.001	7.2	7.09
RUWB002A	0.044	4.86	0.16	31	52	0.28	0.005	<0.001	7.3	7.49
RUWB002B	<0.001	5.95	0.11	12	17	0.12	0.014	<0.001	7.6	7.66
RUWB002C	<0.001	6.19	0.14	17	20	2.841	0.035	<0.001	6.9	6.9
RUWB002D	<0.001	5.91	0.03	8	4	0.028	<0.001	<0.001	7.8	7.66
RUWB003A	<0.001	8.88	0.02	15	14	0.25	<0.001	<0.001	7.8	7.69
RUWB004A	<0.001	3.02	0.43	11	<1	0.006	<0.001	<0.001	9	9.19
RUWB005A	<0.001	2.77	0.21	5	<1	0.005	<0.001	<0.001	10	10.1
RUWB005B	<0.001	2.53	0.13	13	16	0.071	<0.001	<0.001	8.1	8.1

Sample Point	Na(D) (mg/l)	S.Solids (mg/l)	TD (m)	TOC (mg/l)	TON (mg/l)	Total S(D) SO4:mg/l	WtrTemp (Deg C)	Zn(D) (mg/l)
RUBH0013	22	352	34.63	5.1	<0.2	64	8.2	<0.002
RUWB002A	145	331	21.37	2.6	<0.2	8	9.2	<0.002
RUWB002B	120	77	10.46	3.2	<0.2	4	9.6	<0.002
RUWB002C	453	7995	8.05	6.8	<0.2	40	9.2	0.004
RUWB002D	130	29	21.65	1.9	0.4	37	9	0.005
RUWB003A	135	173	10.7	1.6	<0.2	<3	9.2	0.007
RUWB004A	250	58	48.83	1.6	<0.2	11	8	<0.002
RUWB005A	265	75	25.31	0.48	<0.2	230	8.6	<0.002
RUWB005B	17	52	8.4	3.5	<0.2	59	8.2	<0.002

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APPENDIX 6

Surface Water Quality Data

Ruabon Surface Water Quality Data - March 2015



From : 03/03/2015
 To : 03/03/2015

03/03/2015

Sample Point	Amm-N (N:mg/l)	BOD (mg/l)	Chloride (mg/l)	COD (mg/l)	Cond (uS / cm)	Cond(Fld) (uS / cm)	DO(Lab) (mg/l)
RUWP004A	1.9	3.7	46	25	734	820	9.7

Sample Point	pH (Lab)	pH(Fld)	S.Solids (mg/l)	WtrTemp (Deg C)
RUWP004A	7.7	7.13	15	5.3

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