



Saturday, 02 January 2016

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

Dear Ms Langstaff,

Data Submission November 2015

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

Compliance Advisor, North Wales



Ruabon Landfill Site

Routine Environmental Monitoring Data Submission

November 2015

Prepared by G.Forrest
28th December 2015

APPENDIX 1

Field Logs

Field log report

Ruabon

03-December-2015

Equipment 01 Calibration Due	28/04/2016
Equipment 01 Last Calibration	01/12/2015
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	15:40
Time ON	08:47
Weather	Raining

Issued By:

Signed By :

Name :

Field log report

Ruabon

11-December-2015

Equipment 01 Calibration Due	28/04/2016
Equipment 01 Last Calibration	28/10/2015
Equipment 01 Serial No.	GA11581
Equipment 01 Type	GA2000plus
Personnel 01	L Terrace
Time OFF	11:30
Time ON	08:45
Weather	Sunny / cold

Issued By:

Signed By :

Name :

Field log report

Ruabon

22-December-2015

Equipment 01 Serial No.	79281-10
Equipment 01 Type	Geotechnical Atex Dip Meter
Personnel 01	S Williams
Time OFF	15:45
Time ON	13:45
Weather	o/c, mild

Issued By:

Signed By :

Name :

Field log report

Ruabon

23-December-2015

Equipment 01 Calibration Due	28/04/2016
Equipment 01 Last Calibration	28/10/2015
Equipment 01 Serial No.	GA11581
Equipment 01 Type	GA2000plus
Personnel 01	L Terrace
Time OFF	11:30
Time ON	08:30
Weather	Sunny

Issued By:

Signed By :

Name :

Field log report

Ruabon

31-December-2015

Equipment 01 Calibration Due	28/04/2016
Equipment 01 Last Calibration	28/10/2015
Equipment 01 Serial No.	GA11581
Equipment 01 Type	GA2000plus
Personnel 01	L Terrace
Time OFF	11:25
Time ON	08:45
Weather	Overcast

Issued By:

Signed By :

Name :

APPENDIX 2

Perimeter Borehole Gas Data

Ruabon Perimeter Borehole Gas Data - November 2015



From : 05/11/2015

To : 26/11/2015

05/11/2015

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	993	0	4.4	3.32	0	5	-0.25	11.71
RUBH0007	993	3.7	7.8	4.52	0	0.4	-0.17	38.66
RUBH0008	992	0	2.7	6.44	0	16.9	-0.23	42.36
RUBH0009	992	0	0.9	5.25	0	19.9	-0.24	7.5
RUBH0010	992	0	0.6	5.57	0	20.2	-0.26	36.11
RUBH0013	990	0	0.7	2.9	0	19.7	-0.36	34.59
RUBH0014	989	0	3.3	6.06	0	14.1	0.07	10.72
RUBH0015	991	0	2.3	6.04	0	16.5	-0.28	41.58
RUBH0016	990	0	0.2	10.93	0	20.5	-0.31	47.15
RUBH001A	994	0	0.4	4.93	0	20.1	0.05	12.86
RUBH001B	993	0	0.8	5.24	0	19.5	-0.2	6.38
RUBH002A	993	0.8	4.1	5.17	0	6.5	-0.24	6.49
RUBH002B	993	0	0.1	5.2	0	20.5	1.03	11.71
RUBH003A	993	0	1.6	5.84	0	18.6	6.25	13.09
RUBH003B	993	0	0.2	5.78	0	20.5	-0.19	6.37
RUBH004A	993	0	1.9	6.39	0	18.5	1.47	9.6
RUBH004B	993	0	4.4	6.25	0	16.4	-0.28	6.32
RUBH011A	990	0	1.3	6.7	0	18.9	-0.33	12.78
RUBH011P	990	0	0.1	6.39	0	20.7	1.12	14.42
RUBH012A	990	0	2.8	4.51	0	16.9	-0.34	5.38
RUGBH001	993	0	3.1	6.05	0	18.5	-0.26	6.05
RUGBH002	993	0	4.8	4.09	0	8.7	-0.3	7
RUGBH003	993	0	0.3	4.26	0	20	-0.26	4.93
RUGBH004	993	0	0	4.24	0	20.6	-0.25	21.9
RUGBH005	993	0	9.8	4.27	0	4.9	-0.23	6.32
RUGBH006	993	0	3.5	4.08	0	18.3	-0.22	6.86
RUGBH007	989	0	0.1	1.11	0	20.6	-0.42	2.94
RUGBH008	989	0	0.3	1.49	0	20.4	-0.42	6.16
RUGBH009	990	0	1.2	1.17	0	19.9	-0.07	8.22
RUGBH010	990	0	0.5	0.77	0	20.6	-0.06	3.95
RUGBH02A	993	0	1	1.36	0	19.3	-0.3	1.4
RUGP0001	994	9.5	7		0	3.5	-0.1	
RUGP0002	994	0	5.6		0	14.9	-0.3	
RUGP0003	994	0	0.5		0	11.5	-0.22	
RUGP0004	993	0	2		0	19.1	-0.2	
RUGP0008	994	0	1.7		0	18.6	-0.12	
RUGP0009	993	0	2.9		0	16.8	-0.18	
RUGP0010	993	0	3.5		0	17.7	-0.22	
RUGP0011	993	0	2		0	18.9	-0.2	
RUGP0012	993	0	0.8		0	19.8	-0.22	
RUGP0013	993	0	0.8		0	19.8	-0.23	
RUGP0014	993	0	3.6		0	18.3	-0.28	
RUGP0015	990	0	2.8		0	16.6	1.37	
RUGP0016	989	0	1.3		0	19.4	0.01	
RUGP0018	990	0	0.2		0	19.8	13.28	
RUGP0019	989	0	0		0	20.7	2.82	
RUGP0020	989	0	0		0	20.7	0	
RUGP0021	989	0	1.2		0	18.4	-0.66	
RUGP00A1	993	0	0		0	20.3	-0.22	

Issued By:

Ruabon Perimeter Borehole Gas Data - November 2015



From : 05/11/2015

To : 26/11/2015

05/11/2015

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	Dip to Water (m)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)	TD (m)
RUGP00A2	993	0.7	4.7		0	4.5	-0.48	
RUGP00A3	993	0	0		0	20.4	-0.21	
RUGP00B1	993	0	0		0	19.1	4.76	
RUGP00B2	993	0	6.3		0	8.6	0.34	
RUGP00B3	993	0	0		0	20.6	-0.21	
RUGP00C1	993	0	0		0	20.6	-0.24	
RUGP00C2	993	0	0		0	19.6	-0.59	
RUGP00C3	993	0	0		0	20.6	-0.74	
RUGP00D1	993	0	0		0	20.3	1.95	
RUGP00D2	993	0	0		0	20.6	-0.35	
RUGP00D3	993	0	0		0	19.9	-2.09	
RUGP00E1	993	0	0.1		0	20.5	-0.29	
RUGP00E2	993	0	0		0	20.6	-0.06	
RUGP00E3	993	0	0		0	20.5	-0.28	
RUGP00F1	993	0	0		0	20.3	-0.28	
RUGP00F2	993	0	0		0	20.2	-0.31	
RUGP00F3	993	0	0		0	19.2	-2.95	
RUWB001A	993	0	0.1	3.08	0	19.1	-0.18	48.95
RUWB001B	994	0	3	4.82	0	16.5	-0.21	7.88
RUWB002A	993	0	0.1	4.99	0	20.3	-0.25	21.44
RUWB002B	993	0	1.4	6.15	0	19.2	-0.25	10.49
RUWB002C	993	0	1.9	6.36	0	18.8	-0.24	8
RUWB002D	993	0	0.2	6.32	0	20.5	-0.22	21.66
RUWB003A	989	0	0.4	9.06	0	14.6	-7.26	10.68
RUWB003B	989	0	0.4	1.62	0	9.8	-16.1	7.54
RUWB004A	990	0	0.2	3.2	0	15.7	2.68	48.8
RUWB004B	990	0	2.5	1.2	0	16.8	0.01	8.55
RUWB005A	991	0	0	3.36	0	20.3	0.55	25.33
RUWB005B	991	0	0.5	5.75	0	20.3	0.01	8.38

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Ruabon Perimeter Borehole Gas Data - November 2015



From : 05/11/2015

To : 26/11/2015

13/11/2015

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	1001	0	2.4	0	6.1	-0.26
RUBH0007	1001	3.3	8.1	0	0.7	-0.43
RUBH0008	1001	0	2	0	18.7	-0.36
RUBH0009	1001	0	1.5	0	19.5	0.48
RUBH0010	1000	0	0.7	0	20.1	-0.22
RUBH0013	998	0	1.2	0	19.3	-0.23
RUBH0014	998	0	2.4	0	16.4	0.7
RUBH0015	1000	0	1.7	0	17.4	-0.2
RUBH0016	1000	0	0.2	0	20.4	-0.19
RUBH001A	1000	0	0.4	0	20.3	0.06
RUBH001B	1000	0	1.2	0	19.4	0.02
RUBH002A	1000	0	0	0	20.8	-0.01
RUBH002B	1000	0	0.1	0	20.8	-0.34
RUBH003A	1000	0	1.5	0	19.1	-0.01
RUBH003B	1000	0	0	0	20.9	-0.01
RUBH004A	1000	0	1.8	0	19.2	2.77
RUBH004B	1000	0	3.1	0	19	-0.05
RUBH011A	999	0	1.8	0	17.7	-0.49
RUBH011P	999	0	0.1	0	20.5	-4.84
RUBH012A	999	0	2.6	0	18.2	-0.18
RUGBH001	1000	0	2.2	0	19.5	-0.05
RUGBH002	1001	0	4.2	0	12.2	-0.13
RUGBH003	1001	0	0	0	21	-0.19
RUGBH004	1001	0	0.1	0	20.7	-0.15
RUGBH005	1001	0	0	0	20.8	-0.17
RUGBH006	1001	0	3.8	0	18.1	-0.17
RUGBH007	998	0	0.1	0	20.6	-0.32
RUGBH008	999	0	0.3	0	20.5	-0.18
RUGBH009	999	0	1	0	20	-0.42
RUGBH010	999	0	0.5	0	20.4	-0.16
RUGBH02A	1000	0	0.3	0	20.6	-0.1
RUGP0001	1000	0.8	0.7	0	18.6	-1.72
RUGP0002	1000	0	5.4	0	15.2	-0.05
RUGP0003	1000	0	0.9	0	9.8	0.05
RUGP0004	1000	0	1.9	0	19.4	0.06
RUGP0008	1000	0	1.3	0	19.6	-0.1
RUGP0009	1000	0	1.3	0	20.2	0.06
RUGP0010	1000	0	3.4	0	17.6	0.08
RUGP0011	1000	0	2.6	0	19.1	0.04
RUGP0012	1000	0	0.7	0	20.3	-0.02
RUGP0013	1000	0	1.1	0	20	0.02
RUGP0014	1000	0	4.4	0	16.9	-0.04
RUGP0015	1000	0	1.1	0	19.1	-0.47
RUGP0016	999	0	0.9	0	19.9	-0.21
RUGP0018	1000	0	0.2	0	19.8	-0.4
RUGP0019	999	0	0	0	20.5	-0.35
RUGP0020	999	0	0.1	0	20.4	0.05
RUGP0021	998	0	1.5	0	17.9	-0.44
RUGP00A1	1001	0	0	0	20.6	-0.15

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Ruabon Perimeter Borehole Gas Data - November 2015



From : 05/11/2015

To : 26/11/2015

13/11/2015

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	1001	1.3	4.3	0	4.4	-0.41
RUGP00A3	1001	0	0	0	20.1	0.2
RUGP00B1	1001	0	0	0	17.1	-0.02
RUGP00B2	1001	0	0.2	0	19.8	-0.02
RUGP00B3	1001	0	0	0	20.6	-1.29
RUGP00C1	1001	0	0	0	20.8	-0.13
RUGP00C2	1001	0	0	0	18	-0.43
RUGP00C3	1001	0	0	0	20.7	-0.55
RUGP00D1	1001	0	0	0	19.5	-0.23
RUGP00D2	1001	0	0	0	20.9	-0.42
RUGP00D3	1001	0	0	0	19.6	-0.17
RUGP00E1	1001	0	0	0	20.9	-0.25
RUGP00E2	1001	0	0	0	20.9	-0.09
RUGP00E3	1001	0	0	0	20.9	-0.2
RUGP00F1	1001	0	0	0	20.2	-0.35
RUGP00F2	1001	0	0	0	20.3	-0.38
RUGP00F3	1001	0	0	0	19	-2.7
RUWB001A	1000	0	0.2	0	18.6	0
RUWB001B	1000	0	3.1	0	18	0.03
RUWB002A	1000	0	0.1	0	19.2	-0.26
RUWB002B	1000	0	1.9	0	18.9	-0.08
RUWB002C	1000	0	3.3	0	17.5	0
RUWB002D	1000	0	0.2	0	20.8	2.67
RUWB003A	998	0	0.5	0	15.6	-0.14
RUWB003B	998	0	0.2	0	18	-0.15
RUWB004A	999	0	0.2	0	18	-0.57
RUWB004B	999	0	1.9	0	17.2	-0.17
RUWB005A	1001	0	0	0	20.5	-0.2
RUWB005B	1001	0	1.3	0	19.3	-0.21

Issued By:

Ruabon Perimeter Borehole Gas Data - November 2015



From : 05/11/2015

To : 26/11/2015

18/11/2015

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	989	0	3.1	0	6.8	-0.07
RUBH0007	988	4	8.1	0	0.4	0.15
RUBH0008	988	0	1.3	0	19.3	-0.14
RUBH0009	988	0	1.4	0	19.2	-0.1
RUBH0010	987	0	0.7	0	19.9	-0.11
RUBH0013	985	0	0.2	0	20.6	-0.15
RUBH0014	985	0	2.7	0	15.8	0.5
RUBH0015	986	0	1.3	0	18.7	-0.12
RUBH0016	986	0	0.1	0	20.7	-0.13
RUBH001A	990	0	0.4	0	20.2	0.22
RUBH001B	990	0	0.5	0	20	0.25
RUBH002A	990	0	3.4	0	9.8	0.15
RUBH002B	990	0	0.1	0	20.6	1.02
RUBH003A	990	0	1.4	0	19.1	0.06
RUBH003B	989	0	0	0	20.9	-0.09
RUBH004A	989	0	2	0	18.8	1.86
RUBH004B	988	0	2.3	0	19.9	-0.1
RUBH011A	986	0	1.5	0	19.8	-0.12
RUBH011P	985	0	0.1	0	20.7	-0.36
RUBH012A	986	0	1.4	0	19.5	-0.15
RUGBH001	989	0	1.8	0	19.7	-0.05
RUGBH002	989	0.3	9.2	0	2.3	0.01
RUGBH003	989	0	0.2	0	20.6	-0.07
RUGBH004	989	0	0.1	0	20.7	-0.08
RUGBH005	989	0.3	7.9	0	8	-0.07
RUGBH006	988	0	2.1	0	19.3	-0.13
RUGBH007	985	0	0.1	0	20.7	-0.18
RUGBH008	985	0	0.1	0	20.7	-0.17
RUGBH009	985	0	1.1	0	19.9	-0.38
RUGBH010	985	0	0.8	0	20.4	-0.22
RUGBH02A	988	0	0	0	20.9	-0.08
RUGP0001	990	0.4	0.4	0	19.7	0.07
RUGP0002	990	0	5.5	0	15.5	0.13
RUGP0003	990	0	0.9	0	11.4	0.11
RUGP0004	990	0	1.9	0	19	0.32
RUGP0008	990	0	1	0	19.6	0.05
RUGP0009	990	0	0.9	0	20.1	0
RUGP0010	990	0	3.3	0	18	-0.03
RUGP0011	990	0	2.9	0	19.6	0
RUGP0012	989	0	0.5	0	20.5	-0.02
RUGP0013	989	0	0.7	0	20.5	0
RUGP0014	989	0	4.7	0	16.5	-0.08
RUGP0015	986	0	0.8	0	19.7	-0.36
RUGP0016	985	0	0.6	0	20.4	-0.17
RUGP0018	986	0	0.3	0	19.8	1.98
RUGP0019	985	0	0	0	20.7	1.45
RUGP0020	985	0	0	0	20.8	-0.27
RUGP0021	985	0	1.6	0	17.3	-0.96
RUGP00A1	988	0	0	0	20.7	-0.09

Issued By:

Ruabon Perimeter Borehole Gas Data - November 2015



From : 05/11/2015

To : 26/11/2015

18/11/2015

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	988	1.9	4.4	0	4.2	-0.03
RUGP00A3	988	0	0	0	20	1.26
RUGP00B1	989	0	0	0	18.9	-0.01
RUGP00B2	989	0	0.1	0	20.1	-0.1
RUGP00B3	989	0	0	0	20.8	-0.17
RUGP00C1	988	0	0	0	20.8	-0.08
RUGP00C2	989	0	0	0	18.9	-0.21
RUGP00C3	989	0	0	0	20.7	-0.41
RUGP00D1	989	0	0	0	19.7	0.09
RUGP00D2	989	0	0	0	20.7	-0.05
RUGP00D3	989	0	0	0	19.4	-0.69
RUGP00E1	989	0	0	0	20.7	0.03
RUGP00E2	989	0	0	0	20.8	-0.09
RUGP00E3	989	0	0	0	20.7	-0.07
RUGP00F1	989	0	0	0	20.5	-0.08
RUGP00F2	989	0	0	0	20	0.17
RUGP00F3	989	0	0	0	18.8	-2.23
RUWB001A	990	0	0.2	0	19.5	0
RUWB001B	990	0	1.2	0	19.9	-0.04
RUWB002A	989	0	0.1	0	18.9	0.62
RUWB002B	989	0	2.9	0	18.2	-0.04
RUWB002C	989	0	4	0	17.8	-0.02
RUWB002D	989	0	0.2	0	20.8	-0.01
RUWB003A	985	0	0.4	0	15.2	-3.32
RUWB003B	985	0	0.1	0	19.9	-0.14
RUWB004A	985	0	0.2	0	17.3	-0.3
RUWB004B	985	0	1.6	0	17.7	-8.3
RUWB005A	986	0	0	0	20.7	-0.18
RUWB005B	987	0	0.8	0	20	-0.19

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Ruabon Perimeter Borehole Gas Data - November 2015



From : 05/11/2015

To : 26/11/2015

26/11/2015

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	1006	0	3.4	0	4.3	0.78
RUBH0007	1006	5.1	7.9	0	0.7	0.17
RUBH0008	1005	0	2.4	0	19	33.7
RUBH0009	1006	0	1.4	0	18.7	0.05
RUBH0010	1005	0	0.7	0	19.4	0.02
RUBH0013	1003	0	0.3	0	20.5	-0.02
RUBH0014	1003	0	2.1	0	17.5	4.85
RUBH0015	1004	0	0.6	0	19.2	0
RUBH0016	1004	0	0.2	0	20.4	0.03
RUBH001A	1005	0	0.4	0	20	0.05
RUBH001B	1005	0	0.9	0	19.3	0.1
RUBH002A	1005	0	0.5	0	18.1	0.08
RUBH002B	1005	0	0.1	0	20.5	-1.65
RUBH003A	1005	0	1.4	0	19	-2.75
RUBH003B	1005	0	0	0	20.7	0.07
RUBH004A	1006	0	1.7	0	18.9	2.53
RUBH004B	1005	0	1.9	0	19.8	0.03
RUBH011A	1004	0	2	0	19.3	6.03
RUBH011P	1004	0	0.1	0	20.4	-3.45
RUBH012A	1004	0	0	0	20.6	-0.06
RUGBH001	1005	0	3	0	18.4	0.05
RUGBH002	1006	2	8.8	0	0.6	0
RUGBH003	1006	0	0	0	20.6	-0.04
RUGBH004	1006	0	0.2	0	20.4	0.01
RUGBH005	1006	10.2	11.5	0	2.7	0.03
RUGBH006	1006	0	1.5	0	19.6	0.05
RUGBH007	1003	0	0.7	0	20.4	-0.06
RUGBH008	1003	0	0.2	0	20.5	-0.04
RUGBH009	1004	0	1.3	0	19.5	-0.18
RUGBH010	1004	0	1	0	20.1	0.14
RUGBH02A	1005	0	0	0	20.6	-0.01
RUGP0001	1005	0.6	0.6	0	18.7	3.83
RUGP0002	1005	0	5.7	0	15.1	0.05
RUGP0003	1005	0	2.5	0	1.2	-0.11
RUGP0004	1005	0	2.5	0	17.5	0.1
RUGP0008	1005	0	0.6	0	19.4	0.3
RUGP0009	1005	0	1.5	0	17.2	0.13
RUGP0010	1005	0	1.7	0	19.2	0.11
RUGP0011	1005	0	2.5	0	19.4	1.02
RUGP0012	1005	0	0.3	0	20.3	0.1
RUGP0013	1005	0	0.7	0	20	0.08
RUGP0014	1005	0	3.5	0	18.6	0.08
RUGP0015	1004	0	0.8	0	19.9	-0.35
RUGP0016	1004	0	0.5	0	20	-0.03
RUGP0018	1004	0	0.3	0	19.3	2.18
RUGP0019	1004	0	0	0	20.6	-0.04
RUGP0020	1003	0	0	0	20.6	-0.05
RUGP0021	1003	0	1.8	0	17.2	1.66
RUGP00A1	1006	0	0	0	20.3	0.13

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Ruabon Perimeter Borehole Gas Data - November 2015



From : 05/11/2015

To : 26/11/2015

26/11/2015

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	1006	3.1	4.9	0	1.3	1.79
RUGP00A3	1006	0	0	0	20	0.87
RUGP00B1	1006	0	0	0	17.6	0.15
RUGP00B2	1006	0	0.2	0	20	0.07
RUGP00B3	1006	0	0	0	20.6	0.04
RUGP00C1	1006	0	0	0	20.6	0
RUGP00C2	1006	0	0	0	18.1	0.51
RUGP00C3	1006	0	0	0	20.5	-4.63
RUGP00D1	1006	0	0	0	19.1	-0.42
RUGP00D2	1006	0	0	0	20.6	0.02
RUGP00D3	1006	0	0	0	17.6	-3.54
RUGP00E1	1006	0	0	0	20.6	-0.03
RUGP00E2	1006	0	0	0	20.6	-0.01
RUGP00E3	1006	0	0	0	20.5	0
RUGP00F1	1006	0	0	0	20.4	-3.26
RUGP00F2	1006	0	0	0	19.1	0
RUGP00F3	1006	0	0	0	17.8	-11.15
RUWB001A	1005	0	0.2	0	19.4	0.14
RUWB001B	1005	0	3.7	0	17.2	0.12
RUWB002A	1005	0	0.1	0	18.2	-2.27
RUWB002B	1005	0	1.5	0	19.6	0.06
RUWB002C	1005	0	1.9	0	19.5	0.09
RUWB002D	1005	0	0.2	0	20.6	0.01
RUWB003A	1003	0	0.5	0	14.1	-5.49
RUWB003B	1003	0	0.2	0	19.6	-0.02
RUWB004A	1004	0	0.1	0	16.4	2.26
RUWB004B	1004	0	1.1	0	16.8	10.74
RUWB005A	1005	0	0	0	20.2	-0.05
RUWB005B	1005	0	0.4	0	20.1	-0.04

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APPENDIX 3

Landfill Gas Field Extraction and Balancing Data

RUABON LANDFILL GAS EXTRACTION & BALANCING DATA - NOVEMBER 2015

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAW0024	03/11/2015 10:11	49.4	29.8	1.1	19.7	-47.76	1000	2	0	79.2	40	40
RUAW0027	03/11/2015 10:16	62.8	35.6	0.7	0.9	-51.59	1001	2	0	98.4	20	20
RUALCM10	03/11/2015 10:19	50.2	31	0.5	18.3	-49.72	1001	2	0	81.2	30	30
RUAW025R	03/11/2015 10:22	42.1	29.8	0.1	28	-5	1002	3	0	71.9	10	10
RUAW026R	03/11/2015 10:25	22.3	23.3	0.4	54	-3.98	1001	2	0	45.6	5	5
RUAP1411	03/11/2015 10:30	0	0.9	20.9	77.7	-3.1	1001	1	0	0.9	0	0
RUAW030R	03/11/2015 10:32	33.4	27.5	0.6	38.5	-47.22	1001	2	0	60.9	5	5
RUAW031R	03/11/2015 10:37	34.2	27	1.3	37.5	-24.51	1000	2	0	61.2	10	10
RUAW034R	03/11/2015 10:42	23.4	25.2	0.2	51.2	-7.34	1001	2	0	48.6	5	5
RUAW033R	03/11/2015 10:48	65.1	29.2	0.3	5.4	-40.86	1000	2	0	94.3	10	10
RUARW042	03/11/2015 10:51	25.8	25.1	0.4	48.7	-15.48	1002	2	0	50.9	5	5
RUARW041	03/11/2015 10:53	0	1.9	20.9	76.9	-4.65	1006	1	0	1.9	0	0
RUARW040	03/11/2015 10:56	11.4	16.4	0.5	71.7	-3.52	1001	1	0	27.8	5	5
RUARW039	03/11/2015 10:58	39	25.9	0.3	34.8	-53.03	1007	1	0	64.9	10	10
RUARW038	03/11/2015 11:00	59.6	33.7	0.2	6.5	-49.9	1007	3	0	93.3	10	10
RUARW037	03/11/2015 11:02	22.2	26.1	0.1	51.6	-43.31	1006	2	0	48.3	10	10
RUAP1406	03/11/2015 11:06	0.1	3	20.2	76.7	-1.33	1000	1	0	3.1	0	0
RUAP1407	03/11/2015 11:08	0	1	20.9	77.5	-0.05	1005	1	0	1	0	0
RUAP1408	03/11/2015 11:10	0	0.7	20.9	77.7	-0.28	1006	1	0	0.7	0	0
RUAP1409	03/11/2015 11:11	0	0.6	20.9	77.7	-0.6	1006	1	0	0.6	0	0
RUAP1408	03/11/2015 11:13	0	0.6	20.9	77.8	-0.07	1005	1	0	0.6	0	0
RUAW056R	03/11/2015 11:16	23.6	9.2	15.5	51.7	-0.43	1000	3	0	32.8	5	0
RUAW056R	03/11/2015 11:17	21.5	15.6	13.2	49.7	-3.21	1000	3	0	37.1	0	0
RUAW0028	03/11/2015 11:22	25.1	26.4	10	38.5	0.4	999	7	0	51.5	0	0
RUAW029R	03/11/2015 11:24	46.8	34.3	0.6	18.3	-3.58	999	2	0	81.1	10	10
RUAW0049	03/11/2015 11:26	38.8	25.9	7	28.3	1.26	1001	3	0	64.7	0	0
RUAW0020	03/11/2015 11:29	57.3	33.3	0.2	9.2	-10.86	998	2	0	90.6	10	10

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAW0021	03/11/2015 11:31	56.7	35.2	0.2	7.9	-6.24	1003	2	0	91.9	10	10
RUAW0068	03/11/2015 11:33	45.6	27.9	5.2	21.3	-49.81	998	1	0	73.5	1	1
RUAW0022	03/11/2015 11:38	65.2	34.1	1.4	0	0.21	999	2	0	99.3	0	10
RUAW0022	03/11/2015 11:40	60.8	39.1	0.1	0	-3.91	999	2	0	99.9	10	10
RUAW0066	03/11/2015 11:43	61.4	34.6	0.4	3.6	-0.21	998	1	0	96	0	5
RUAW0066	03/11/2015 11:45	59.8	36.9	0.1	3.2	-2.59	998	2	0	96.7	5	5
RUAW0023	03/11/2015 11:49	50.3	32.1	1.6	16	-45.28	998	2	0	82.4	30	30
RUAW0001	03/11/2015 13:42	55.9	28.7	0.1	15.3	-0.17	1000	2	0	84.6	1	5
RUAW0001	03/11/2015 13:44	55.7	29.6	0	14.7	-2.57	1000	2	0	85.3	5	5
RUAW0002	03/11/2015 13:46	9	14.7	5.7	70.6	-5.74	1002	1	0	23.7	0	0
RUAMW001	03/11/2015 13:48	24.9	19.9	0.8	54.4	-0.05	1001	1	0	44.8	0	0
RUAW065R	03/11/2015 13:51	35.5	25	0	39.5	-2.17	999	1	0	60.5	5	5
RUAW011R	03/11/2015 13:54	36.4	21.5	6.6	35.5	-0.86	1003	1	0	57.9	0	0
RUAW1405	03/11/2015 13:56	43.1	26	0.1	30.8	-0.62	998	2	0	69.1	5	5
RUAMW005	03/11/2015 13:58	37.6	26.3	0	36.1	-5.05	1001	2	0	63.9	10	10
RUAW0061	03/11/2015 14:00	66.9	31.7	0	1.4	-0.81	998	2	0	98.6	1	5
RUAW0061	03/11/2015 14:02	67.1	32	0	0.9	-3.67	998	2	0	99.1	5	5
RUAMW006	03/11/2015 14:04	42.6	30.7	0.1	26.6	-9.31	1001	1	0	73.3	10	10
RUAW0051	03/11/2015 14:09	62.5	37	0	0.5	-44.71	1000	1	0	99.5	10	10
RUAW0067	03/11/2015 14:12	36.7	31.8	0.1	31.4	-12.84	1002	2	0	68.5	10	10
RUAW057R	03/11/2015 14:14	46.4	35.2	0	18.4	-25.27	1001	2	0	81.6	10	10
RUAW032R	03/11/2015 14:16	45.7	34.7	0	19.6	-7.95	999	2	2	80.4	10	10
RUAW0036	03/11/2015 14:19	35.6	29.2	0.9	34.3	-10.55	1001	2	0	64.8	1	1
RUAW0035	03/11/2015 14:22	65.5	31.6	0.5	2.4	-47.28	1001	2	0	97.1	10	10
RUAW0052	03/11/2015 14:24	60.1	25.4	1.3	13.2	-39.23	1000	2	0	85.5	1	1
RUAW1404	03/11/2015 14:29	54	27.8	0.7	17.5	-0.38	999	1	0	81.8	5	5
RUAW0024	06/11/2015 09:08	46.2	32.1	0.8	20.9	-52.98	991	0	0	78.3	40	40
RUAW0027	06/11/2015 09:11	64.3	35.7	0.2	0	-41.41	991	0	0	100	20	20
RUAW025R	06/11/2015 09:15	19.6	23.3	0.9	56.2	-8.97	992	1	0	42.9	10	10

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAW026R	06/11/2015 09:18	15.4	22.9	0.3	61.4	-8.46	992	0	0	38.3	5	5
RUAP1411	06/11/2015 09:23	0.1	0.9	20.7	78.3	-1.98	992	0	0	1	0	0
RUAW030R	06/11/2015 09:25	76.4	24.2	0	0	-53.38	992	0	0	100.6	10	10
RUAW031R	06/11/2015 09:30	37.4	30.6	0.1	31.9	-10.83	991	0	0	68	10	10
RUAW034R	06/11/2015 09:34	29.4	26.6	0.1	43.9	-7.3	991	0	0	56	5	5
RUAW033R	06/11/2015 09:38	59.4	29.5	0.2	10.9	-47.73	992	0	0	88.9	10	10
RUARW042	06/11/2015 09:42	32.9	26.2	0.1	40.8	-7.21	992	0	0	59.1	5	5
RUARW041	06/11/2015 09:43	0	1.9	20.7	77.4	-2.21	992	0	0	1.9	0	0
RUARW040	06/11/2015 09:45	0.1	1.7	20.3	77.9	-1.86	992	0	0	1.8	1	1
RUARW039	06/11/2015 09:47	40.2	24.8	0.4	34.6	-38.42	992	0	0	65	10	10
RUARW038	06/11/2015 09:49	61.7	33.9	0.1	4.3	-44.23	992	0	0	95.6	20	30
RUARW038	06/11/2015 09:55	61.4	34.2	0	4.4	-54.09	992	0	0	95.6	20	20
RUARW037	06/11/2015 09:56	23.6	25.6	0.2	50.6	-44.01	992	0	0	49.2	20	20
RUAP1410	06/11/2015 10:00	0.1	1.4	20.7	77.8	-0.35	991	0	0	1.5	0	0
RUAP1409	06/11/2015 10:02	0	0.8	20.9	78.2	-2.45	991	0	0	0.8	0	0
RUAP1408	06/11/2015 10:03	0	0.6	20.9	78.4	-3.64	991	0	0	0.6	0	0
RUAP1407	06/11/2015 10:05	0	0.4	20.9	78.5	-1.15	991	0	0	0.4	0	0
RUAP1406	06/11/2015 10:08	0	0.3	20.9	78.6	-3	991	0	0	0.3	0	0
RUAW0024	09/11/2015 11:43	51	30.9	0.6	17.5	-47.09	997	0	0	81.9	40	40
RUAW0027	09/11/2015 11:47	64.1	35.2	0.6	0.1	-48.31	997	0	0	99.3	20	20
RUAW025R	09/11/2015 11:51	22.2	21.8	1.1	54.9	-24.09	997	3	0	44	10	10
RUAW026R	09/11/2015 11:53	16.3	22.5	0.3	60.9	-17.66	997	1	0	38.8	5	5
RUAP1411	09/11/2015 11:57	0.7	1.1	20.6	77.6	-5.3	998	0	0	1.8	0	0
RUAW030R	09/11/2015 11:59	77.1	23.1	0.2	0	-44.47	997	0	0	100.2	10	10
RUAW031R	09/11/2015 12:03	49.7	33.3	0.3	16.7	-10.88	996	0	0	83	5	10
RUAW031R	09/11/2015 12:04	42.6	32.5	0	24.9	-19.17	996	0	0	75.1	10	10
RUAW034R	09/11/2015 12:08	39.1	27.6	0.6	32.7	-14.1	997	0	0	66.7	10	10
RUAW033R	09/11/2015 12:12	63.8	29.5	0.2	6.5	-35.12	998	0	0	93.3	20	20
RUARW042	09/11/2015 12:17	39.9	26.6	0.5	33	-7.47	998	0	0	66.5	10	10

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUARW041	09/11/2015 12:19	0.4	2.6	20.4	76.6	-3.97	998	0	0	3	0	0
RUARW040	09/11/2015 12:22	0.4	0.7	20.9	77.7	-1.12	998	0	0	1.1	5	5
RUARW039	09/11/2015 12:24	40.2	25	0.2	34.6	-47.36	998	0	0	65.2	10	10
RUARW038	09/11/2015 12:26	61.1	33.5	0.2	5.2	-48.8	998	0	0	94.6	50	50
RUARW037	09/11/2015 12:28	29.2	26.9	0.1	43.8	-42.92	998	0	0	56.1	20	20
RUAP1410	09/11/2015 12:33	0.3	1.5	20.8	77.4	-0.33	997	0	0	1.8	0	0
RUAP1409	09/11/2015 12:36	0.2	0.5	20.9	78	-6.38	997	0	0	0.7	0	0
RUAP1408	09/11/2015 12:37	0.2	0.4	20.9	78.1	-9.54	998	0	0	0.6	0	0
RUAP1407	09/11/2015 12:38	0.2	0.3	20.9	78.2	-6.01	997	0	0	0.5	0	0
RUAP1406	09/11/2015 12:40	0.2	0.3	20.9	78.2	-6.13	997	0	0	0.5	0	0
RUAW0055	09/11/2015 13:26	10.7	17.4	0.9	71	-1.58	996	0	0	28.1	1	1
RUAW0008	09/11/2015 13:27	0.3	12.4	7	80.3	-0.88	996	0	0	12.7	1	1
RUAW0063	09/11/2015 13:29	0.6	18.5	0.2	80.7	-0.49	996	0	0	19.1	0	0
RUAW0007	09/11/2015 13:31	41.9	20.3	0	37.8	-0.61	996	0	0	62.2	0	5
RUAW0007	09/11/2015 13:32	41.8	20.4	0	37.8	-1.46	996	0	0	62.2	10	10
RUAW0062	09/11/2015 13:34	3.3	12.9	8.3	75.5	-0.89	995	0	0	16.2	0	0
RUAMW07R	09/11/2015 13:36	34	26.6	1.2	38.2	-2.05	996	0	0	60.6	0	0
RUAMW004	09/11/2015 13:38	19.2	21.7	0.1	59	-1.32	996	0	0	40.9	0	0
RUALMP4a	09/11/2015 13:40	5.8	7.1	13	74.1	-47.98	996	1	0	12.9	0	0
RUAW0044	09/11/2015 13:41	41.4	29.1	0.1	29.4	-6.33	996	0	0	70.5	5	5
RUAW0043	09/11/2015 13:43	31.9	24.3	0.3	43.5	-10.86	996	0	0	56.2	5	5
RUAW0013	09/11/2015 13:44	18.3	14.4	9.3	58	-1.86	996	0	0	32.7	1	1
RUAW0014	09/11/2015 13:46	63.8	31.2	0.7	4.3	-33.45	996	0	0	95	10	10
RUAW0015	09/11/2015 13:48	32.3	28.4	0.4	38.9	-6.35	996	0	0	60.7	10	10
RUAW0045	09/11/2015 13:50	14.7	22.1	0	63.2	-13.97	995	0	0	36.8	10	0
RUAW0045	09/11/2015 13:51	14.7	22.1	0	63.2	-1.97	995	0	0	36.8	0	0
RUAMW08R	09/11/2015 13:53	31.7	23.8	0.4	44.1	-1.61	995	0	0	55.5	0	0
RUAW0046	09/11/2015 13:55	34	26.4	0.1	39.5	-0.13	995	0	0	60.4	0	0
RUAW0016	09/11/2015 13:57	27.1	24.1	0	48.8	-0.14	995	0	0	51.2	0	0

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAW0017	09/11/2015 14:00	32	30.4	0.1	37.5	-0.42	995	0	0	62.4	5	0
RUAW0017	09/11/2015 14:01	31.6	30.9	0	37.5	-0.88	995	0	0	62.5	0	0
RUAW0064	09/11/2015 14:02	36	29.1	0.1	34.8	-3.16	994	0	0	65.1	10	10
RUAW0047	09/11/2015 14:04	46.4	30	3	20.6	4.05	994	0	0	76.4	0	1
RUAW0047	09/11/2015 14:05	45.4	30	3.2	21.4	-45.17	994	0	0	75.4	1	1
RUAW0018	09/11/2015 14:07	46	31.3	0.1	22.6	-18.28	994	0	0	77.3	10	10
RUAW0019	09/11/2015 14:09	45.9	31.4	0.2	22.5	-0.74	994	0	0	77.3	1	1
RUAW0005	09/11/2015 15:06	1.5	6	19.2	73.3	-0.51	996	0	0	7.5	0	0
RUAW0004	09/11/2015 15:07	9	17.5	0.6	72.9	-0.36	996	0	0	26.5	0	0
RUAW0054	09/11/2015 15:10	0	6.2	14.1	79.7	-0.2	996	0	0	6.2	0	0
RUAW0024	13/11/2015 09:01	47.4	31.3	1.1	20.2	-54.29	995	0	0	78.7	40	40
RUAW0027	13/11/2015 09:04	60.8	34.7	1.2	3.3	-60.49	995	0	0	95.5	20	20
RUAW025R	13/11/2015 09:07	29.8	26.6	0.7	42.9	-29.21	996	4	0	56.4	10	10
RUAW026R	13/11/2015 09:11	14.8	22.8	0.2	62.2	-98.65	996	0	0	37.6	5	5
RUAP1411	13/11/2015 09:14	0	1.4	20.5	78.1	-8.32	996	0	0	1.4	0	0
RUAW030R	13/11/2015 09:16	35.7	27.9	2.5	33.9	-60.83	996	0	0	63.6	5	5
RUAW031R	13/11/2015 09:20	31.9	28	0.6	39.5	-27.59	995	0	0	59.9	10	10
RUAW034R	13/11/2015 09:23	35.1	28.2	2.6	34.1	-26.57	996	0	0	63.3	0	10
RUAW033R	13/11/2015 09:28	64.5	29.6	0.3	5.6	-60.38	996	0	0	94.1	20	20
RUARW042	13/11/2015 09:31	29.9	26.4	0.1	43.6	-15.58	997	0	0	56.3	5	5
RUARW041	13/11/2015 09:33	0.1	1.3	20.4	78.2	-7.67	997	0	0	1.4	0	0
RUARW040	13/11/2015 09:34	0.1	0.8	20.7	78.4	-2.76	997	0	0	0.9	1	1
RUARW039	13/11/2015 09:36	41.8	25.4	0.5	32.3	-57.34	997	0	0	67.2	10	10
RUARW038	13/11/2015 09:39	60.3	34.2	0	5.5	-55.27	997	0	0	94.5	50	60
RUARW037	13/11/2015 09:42	32.6	27.6	0.2	39.6	-41.57	997	0	0	60.2	30	30
RUAP1410	13/11/2015 09:46	0	1.8	19.9	78.3	-0.57	997	0	0	1.8	0	0
RUAP1409	13/11/2015 09:47	0	1	20.9	77.7	-8.58	997	0	0	1	0	0
RUAP1408	13/11/2015 09:49	0.2	0.7	20.9	77.7	-10.94	997	0	0	0.9	0	0
RUAP1407	13/11/2015 09:50	0.2	0.6	20.9	77.9	-10.24	997	0	0	0.8	0	0

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAP1406	13/11/2015 09:52	0	0.5	20.9	78.2	-16.35	997	0	0	0.5	0	0
RUAW0024	16/11/2015 09:22	47.2	33	0.6	19.2	-51.1	991	4	0	80.2	40	40
RUAW0027	16/11/2015 09:27	57.9	31.4	1.7	9	-52.65	997	3	0	89.3	30	30
RUAW025R	16/11/2015 09:32	38.5	27.5	0.3	33.7	-27.56	995	6	0	66	10	10
RUAW026R	16/11/2015 09:36	14	22.9	0.2	62.9	-20.2	993	4	0	36.9	10	10
RUAP1411	16/11/2015 09:40	0	1.3	20.9	77.6	-7.6	993	3	0	1.3	0	0
RUAW030R	16/11/2015 09:43	37.4	31.9	0.3	30.4	-50.57	993	3	0	69.3	10	10
RUAW031R	16/11/2015 09:48	33.3	29.7	0.5	36.5	-26.18	992	3	0	63	10	10
RUAW034R	16/11/2015 09:53	36.3	29.6	0.4	33.7	-22.8	992	2	0	65.9	10	10
RUAW033R	16/11/2015 09:57	59.9	30.3	0.5	9.3	-32.73	992	2	0	90.2	20	30
RUAW033R	16/11/2015 09:59	59.2	31.5	0.3	9	-51.65	992	3	0	90.7	30	30
RUARW042	16/11/2015 10:03	31.9	24.6	1	42.5	-16.06	993	2	0	56.5	10	10
RUARW041	16/11/2015 10:05	0	5.3	11.3	83.4	-9.84	998	2	0	5.3	0	0
RUARW040	16/11/2015 10:08	0	1.3	20.9	77.6	-1.9	993	1	0	1.3	1	1
RUARW039	16/11/2015 10:10	42	23.9	0.3	33.8	-52.4	998	2	0	65.9	20	20
RUARW038	16/11/2015 10:12	61.4	33	0.4	5.2	-53.33	998	3	0	94.4	60	60
RUARW037	16/11/2015 10:14	37.8	27.8	0.3	34.1	-50.91	998	3	0	65.6	60	60
RUAP1410	16/11/2015 10:19	0	0.8	20.9	77.8	-0.03	999	1	0	0.8	0	0
RUAP1409	16/11/2015 10:23	0	0.6	20.9	77.9	-7.41	998	1	0	0.6	0	0
RUAP1408	16/11/2015 10:24	0	0.5	20.9	77.9	-10.65	996	2	0	0.5	0	0
RUAP1407	16/11/2015 10:27	0	0.4	20.9	77.9	-11.7	998	2	0	0.4	0	0
RUAP1406	16/11/2015 10:28	0	0.3	20.9	78	-12.69	997	1	0	0.3	0	0
RUAW0048	16/11/2015 10:51	62.6	32.6	0.6	4.2	-41.67	992	2	0	95.2	1	1
RUAW050R	16/11/2015 10:54	30.5	30.2	0.2	39.1	-0.19	996	2	0	60.7	0	0
RUAW057R	16/11/2015 10:58	46.7	34.5	0.2	18.6	-25.25	994	2	0	81.2	10	15
RUAW057R	16/11/2015 10:59	45.4	35.1	0	19.5	-28.49	994	3	0	80.5	15	15
RUAW032R	16/11/2015 11:01	57.2	38	0.1	4.7	-16.93	993	3	1	95.2	5	10
RUAW032R	16/11/2015 11:03	54.6	38.1	0	7.3	-21.22	993	2	0	92.7	10	10
RUAW0059	16/11/2015 11:05	67	34.1	0	0	-13.77	993	2	0	101.1	10	10

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAMW003	16/11/2015 11:10	64.4	7.2	0	28.4	-2.46	990	2	0	71.6	1	1
RUAW1403	16/11/2015 11:12	35.3	29.1	0.1	35.5	-5.6	994	4	0	64.4	1	1
RUALMP2a	16/11/2015 11:16	51.9	20.3	0.1	27.7	-0.05	993	5	0	72.2	0	1
RUALMP2a	16/11/2015 11:19	51.5	20.2	0.2	28.1	-30.32	993	4	0	71.7	1	1
RUAMW002	16/11/2015 11:21	39.1	22.4	0	38.5	-3.24	994	2	0	61.5	1	1
RUAW0002	16/11/2015 11:21	39.1	22.4	0	38.5	-3.24	994	2	0	61.5	1	1
RUAW0053	16/11/2015 11:23	4.5	19	0	76.5	-0.84	993	1	0	23.5	0	0
RUAW0053	16/11/2015 11:24	4.5	19	0	76.5	-0.05	993	1	0	23.5	0	0
RUAW0003	16/11/2015 11:26	20.2	20.9	0	58.9	-0.79	993	2	0	41.1	5	0
RUAW0003	16/11/2015 11:28	20.2	21	0	58.8	-0.4	993	1	0	41.2	0	0
RUAW1402	16/11/2015 11:34	58.5	35	0.7	5.8	-0.67	991	2	0	93.5	0	1
RUAW1402	16/11/2015 11:35	58.1	35.4	0.7	5.8	-1.57	991	2	0	93.5	1	1
RUAMW09R	16/11/2015 11:37	28.7	26.9	0.2	44.2	-1.78	995	2	0	55.6	1	1
RUAW0060	16/11/2015 11:39	20.1	21.7	3.2	55	0.55	996	1	0	41.8	0	0
RUAW1401	16/11/2015 11:42	43.1	29.9	0	27	-0.12	996	2	0	73	1	1
RUAW1401	16/11/2015 11:43	41.4	29.9	0	28.7	-2.52	996	3	0	71.3	5	5
RUAW0012	16/11/2015 11:48	66.3	32.5	0	1.2	-26.9	995	2	0	98.8	1	1
RUAW0024	20/11/2015 08:52	1.9	3.3	19.3	75.5	-49.95	993	3	0	5.2	40	1
RUAW0024	20/11/2015 08:53	13.3	6.6	13.8	66.3	-27.04	993	14	0	19.9	1	1
RUAW0027	20/11/2015 08:58	47.8	29	3	20.2	-54.34	996	2	0	76.8	20	20
RUAW025R	20/11/2015 10:08	46.8	30.5	0.1	22.6	-23.42	993	2	0	77.3	20	20
RUAW026R	20/11/2015 10:13	19.8	23	0.2	57	-21.68	992	3	0	42.8	5	5
RUAP1411	20/11/2015 10:16	0	2	20.6	77.4	-4.81	993	1	0	2	0	0
RUAW030R	20/11/2015 10:18	47	27.1	1.7	24.2	-54.43	992	2	0	74.1	5	5
RUAW031R	20/11/2015 10:23	33.6	30	0.4	36	-26.39	997	2	0	63.6	10	10
RUAW034R	20/11/2015 10:27	32.9	27.8	0.7	38.6	-28.27	995	2	0	60.7	10	10
RUAW033R	20/11/2015 10:31	66.5	29.9	0.1	3.5	-55	992	2	0	96.4	40	40
RUARW042	20/11/2015 10:35	35.7	25.8	2.1	36.4	-13.77	993	2	0	61.5	10	10
RUARW041	20/11/2015 10:36	0	2.7	19.8	77.5	-7.64	998	1	0	2.7	0	0

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUARW040	20/11/2015 10:38	1.3	7.3	9	82.4	-6.02	998	1	0	8.6	1	1
RUARW039	20/11/2015 10:40	41.2	23.8	0.4	34.6	-54.6	997	2	0	65	20	20
RUARW038	20/11/2015 10:47	58.8	32.2	1.1	7.9	-53.72	997	2	0	91	60	60
RUARW039	20/11/2015 10:49	43.9	29.6	0.7	25.8	-55.29	997	2	0	73.5	60	60
RUAP1410	20/11/2015 10:52	0	1.2	20.9	77.6	-0.19	994	2	0	1.2	0	0
RUAP1409	20/11/2015 10:54	0	0.9	20.9	77.7	-5	996	2	0	0.9	0	0
RUAP1408	20/11/2015 10:55	0	0.8	20.9	77.8	-6.67	996	1	0	0.8	0	0
RUAP1407	20/11/2015 10:57	0	0.7	20.9	77.9	-7.7	996	1	0	0.7	0	0
RUAP1406	20/11/2015 10:59	0	0.6	20.9	77.9	-7.05	996	1	0	0.6	0	0
RUAW0024	23/11/2015 09:36	60.3	34.7	1.1	3.9	-5.43	1006	3	0	95	20	40
RUAW0024	23/11/2015 09:38	60.4	35.5	0.5	3.6	-49.98	1006	4	0	95.9	40	40
RUAW0027	23/11/2015 09:43	47	31	1.9	20.1	-55.5	1006	2	0	78	20	20
RUAW025R	23/11/2015 09:48	48.1	30.5	0.7	20.7	-31.26	1007	3	0	78.6	20	20
RUAW026R	23/11/2015 09:51	20.7	23	0.6	55.7	-26.06	1008	3	0	43.7	5	5
RUAP1411	23/11/2015 09:55	0	2.1	20.1	77.8	-8.77	1009	2	0	2.1	0	0
RUAW030R	23/11/2015 09:57	36.9	23.5	4.5	35.1	-53.84	1008	2	0	60.4	5	5
RUAW031R	23/11/2015 10:03	31.7	30	0.4	37.9	-31.61	1006	3	0	61.7	10	10
RUAW034R	23/11/2015 10:09	31.5	27.7	0.7	40.1	-27.08	1007	2	0	59.2	10	10
RUAW033R	23/11/2015 10:14	62.5	29.3	0.9	7.3	-55.72	1008	3	0	91.8	20	20
RUARW042	23/11/2015 10:19	41.5	28.1	0.5	29.9	-12.17	1009	2	0	69.6	10	10
RUARW041	23/11/2015 10:22	0	1.4	20.9	77.4	-11.12	1013	1	0	1.4	0	0
RUARW040	23/11/2015 10:27	0.3	2.6	19.8	77.3	-10.62	1008	1	0	2.9	5	5
RUARW039	23/11/2015 10:29	38.7	24.9	0.2	36.2	-55.84	1013	2	0	63.6	20	20
RUARW038	23/11/2015 10:32	57.6	35.1	0.2	7.1	-56.15	1012	3	0	92.7	60	80
RUARW038	23/11/2015 10:33	57.2	35.3	0.1	7.4	-56.1	1012	2	0	92.5	80	80
RUARW037	23/11/2015 10:35	47.7	31.3	0.7	20.3	-54.55	1013	3	0	79	60	60
RUAP1410	23/11/2015 10:40	0.1	2.2	20.6	77.1	-0.31	1008	1	0	2.3	0	0
RUAP1409	23/11/2015 10:41	0	1.2	20.9	77.2	-8.2	1011	1	0	1.2	0	0
RUAP1408	23/11/2015 10:43	0	0.8	20.9	77.4	-12.13	1012	1	0	0.8	0	0

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAP1407	23/11/2015 10:45	0	0.7	20.9	77.5	-11.72	1012	1	0	0.7	0	0
RUAP1406	23/11/2015 10:46	0	0.6	20.9	77.6	-13.01	1011	1	0	0.6	0	0
RUAW0024	26/11/2015 09:00	49	28.1	0.9	22	-53.46	1004	2	0	77.1	40	40
RUAW0027	26/11/2015 09:04	52.4	26.1	1.8	19.7	-54.31	1003	3	0	78.5	20	20
RUAW025R	26/11/2015 09:08	51.8	30.4	0.2	17.6	-33.78	1003	2	0	82.2	20	20
RUAW026R	26/11/2015 09:12	21.5	23.4	0.1	55	-28.52	1004	3	0	44.9	0	5
RUAP1411	26/11/2015 09:16	0	3.4	20.4	76.2	-12.55	1004	2	0	3.4	0	0
RUAW030R	26/11/2015 09:18	40.2	25.5	0.9	33.4	-54.31	1004	1	0	65.7	10	10
RUAW031R	26/11/2015 09:23	37.1	29.3	0.7	32.9	-23.06	1003	2	0	66.4	10	10
RUAW034R	26/11/2015 09:27	37.4	26.5	0.5	35.6	-25.44	1004	2	0	63.9	10	10
RUAW033R	26/11/2015 09:32	63.1	28.2	0.9	7.8	-49.6	1004	2	0	91.3	20	20
RUARW042	26/11/2015 09:37	44.7	25.4	0.5	29.4	-22.85	1005	2	0	70.1	10	10
RUARW041	26/11/2015 09:39	0.1	4.6	20.3	75	-16.17	1009	1	0	4.7	0	0
RUARW040	26/11/2015 09:41	1.5	8	6.4	84.1	-15.24	1000	1	0	9.5	1	1
RUARW039	26/11/2015 09:43	43	19.5	0.9	36.6	-51.5	1008	1	0	62.5	50	50
RUARW038	26/11/2015 09:46	59.6	35	0.1	5.3	-50.59	1008	2	0	94.6	80	80
RUARW037	26/11/2015 09:49	49.8	31.8	0.1	18.3	-49.15	1008	2	0	81.6	60	60
RUAP1410	26/11/2015 09:54	0	1.9	20.9	77	-9.01	1005	1	0	1.9	0	0
RUAP1409	26/11/2015 09:56	0	0.9	20.9	77.8	-10.46	1008	1	0	0.9	0	0
RUAP1408	26/11/2015 09:58	0	0.8	20.9	77.7	-15.53	1007	1	0	0.8	0	0
RUAP1407	26/11/2015 10:00	0	0.6	20.9	77.9	-16.25	1008	1	0	0.6	0	0
RUAP1406	26/11/2015 10:01	0	0.5	20.9	78	-16.87	1008	1	0	0.5	0	0
RUAW0024	30/11/2015 09:23	46.8	28.4	1.4	23.4	-62.29	992	1	0	75.2	40	40
RUAW0027	30/11/2015 09:29	42.4	21.6	5.1	30.9	-64.36	992	1	0	64	20	20
RUALCM10	30/11/2015 09:32	61.9	28	2.1	8	-63.27	992	1	0	89.9	20	20
RUAW025R	30/11/2015 09:34	50.1	33.2	0	16.7	-40.69	992	1	0	83.3	10	20
RUAW025R	30/11/2015 09:36	49.9	33.3	0	16.8	-42.07	992	2	0	83.2	20	20
RUAW025R	30/11/2015 09:40	21.9	24	0	54.1	-30.97	992	2	0	45.9	5	5
RUAP1411	30/11/2015 09:44	0	3.3	20.4	76.3	-15.84	993	1	0	3.3	0	0

Well ID	Date/Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAW030R	30/11/2015 09:48	34.6	26.5	0.8	38.1	-65.01	994	1	0	61.1	10	10
RUAW031R	30/11/2015 09:54	31.1	26.7	0.5	41.7	-40.07	991	1	0	57.8	10	10
RUAW034R	30/11/2015 10:00	34.9	27.5	0.3	37.3	-44.69	991	2	0	62.4	1	10
RUAW033R	30/11/2015 10:04	36.8	25.2	1.7	36.3	-66.75	992	1	0	62	20	20
RUARW042	30/11/2015 10:21	47.4	25.1	0.4	27.1	-32.28	992	1	0	72.5	10	10
RUARW041	30/11/2015 10:23	0	3.6	20.6	75.8	-24.08	996	1	0	3.6	0	0
RUARW040	30/11/2015 10:26	11.3	7.3	11.6	69.8	-36.25	992	0	0	18.6	0	0
RUARW039	30/11/2015 10:28	46.6	20.5	0.6	32.3	-65.72	996	1	0	67.1	40	40
RUARW038	30/11/2015 10:30	60.4	31.8	0.3	7.5	-65.84	995	1	0	92.2	80	80
RUARW037	30/11/2015 10:32	50.6	27.8	1.4	20.2	-65.77	995	1	0	78.4	80	80
RUAP1410	30/11/2015 10:36	0.3	4.8	19.3	75.6	-11.1	992	0	0	5.1	0	0
RUAP1409	30/11/2015 10:37	0	2.2	20.9	76.8	-15.03	994	1	0	2.2	0	0
RUAP1408	30/11/2015 10:40	0	1	20.9	77.7	-17.91	994	1	0	1	0	0
RUAP1407	30/11/2015 10:41	0	0.8	20.9	77.8	-17.75	995	1	0	0.8	0	0
RUAP1406	30/11/2015 10:43	0	0.6	20.9	78	-17.8	994	0	0	0.6	0	0
RUARW041	30/11/2015 13:06	0	0.9	20.3	78.8	-23.92	996	1	0	0.9	0	0
RUARW039	30/11/2015 13:13	46.1	21	0.8	32.1	-66.63	995	2	0	67.1	40	40

APPENDIX 4

Leachate Level Data

Ruabon Leachate Level Data - November 2015



From : 27/11/2015

To : 27/11/2015

27/11/2015

Sample Point	Depth of Liq (m)	Dip to Water (m)	TD (m)	Water Level (mAOD)
LMP006R	1.09	18.83	19.03	112.49
LMP007R	0.75	18.04	18.98	111.55
LMP008R	1.51	20.96	21.94	111.51
LMP009R	1.61	21.37	21.67	111.91
RUGW00M1	1.00	13.17	14.62	111.45
RUGW00M3	1.45	11.44	11.84	113.70
RUGW00M5	0.81	20.51	21.07	111.31
RUGW00M10	1.83	25.67	26.48	97.83
RUGWM4r	0.96	16.87	17.55	111.04
RULMP2r	1.23	14.98	15.93	111.23

Issued By:

APPENDIX 5

Groundwater Quality Data

Ruabon Groundwater Quality & Level Data - November 2015



From : 05/11/2015

To : 05/11/2015

05/11/2015

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	333	<0.01	<2.0	139	<0.0001	13	<5	644	730	<0.001
RUWB002A	124	1.7	<2.0	67	<0.0001	456	<5	1810	1750	<0.001
RUWB002B	289	0.7	<2.0	73	<0.0001	134	<5	965	1010	<0.001
RUWB002C	962	2.1	<2.0	180	<0.0001	356	15	2470	2730	0.006
RUWB002D	393	0.3	<2.0	11	<0.0001	30	<5	892	870	<0.001
RUWB003A	364	1.2	2.8	7	<0.0001	25	<5	752	730	<0.001
RUWB004A	532	0.4	<2.0	2	<0.0001	22	14	1090	1080	<0.001
RUWB005A	410	0.8	5.1	2	<0.0001	38	<5	1170	1140	<0.001
RUWB005B	116	1.4	<2.0	93	<0.0001	173	<5	832	840	<0.001

Sample Point	Cu(D) (mg/l)	Fe(D) (mg/l)	K(D) (mg/l)	Mg(D) (mg/l)	Mn(D) (mg/l)	Na(D) (mg/l)	Ni(D) (mg/l)	Pb(D) (mg/l)	pH (Lab)	pH(Fld)
RUBH0013	<0.001	0.1	3	10	0.01	21	<0.001	<0.001	7.6	6.88
RUWB002A	<0.001	0.07	23	39	0.257	162	0.005	<0.001	7.7	7.16
RUWB002B	<0.001	0.08	9	14	0.111	97	0.009	<0.001	8	7.19
RUWB002C	0.002	0.62	15	19	2.485	393	0.038	<0.001	7.5	6.55
RUWB002D	<0.001	0.03	7	3	0.049	188	<0.001	<0.001	8.6	7.34
RUWB003A	<0.001	0.01	13	13	0.246	128	<0.001	<0.001	8.4	7.52
RUWB004A	<0.001	0.52	7	<1	0.005	247	<0.001	<0.001	9.2	9.32
RUWB005A	<0.001	0.16	4	<1	0.004	254	<0.001	<0.001	9.6	9.59
RUWB005B	<0.001	0.09	11	13	0.455	27	<0.001	<0.001	7.8	7.8

Sample Point	S.Solids (mg/l)	TOC (mg/l)	TON (mg/l)	Total S(D) SO4:mg/l	WtrTemp (Deg C)	Zn(D) (mg/l)
RUBH0013	340	1.9	<0.2	47	11.8	<0.002
RUWB002A	458	3.3	<0.2	<3	11.8	<0.002
RUWB002B	74	2.7	<0.2	<3	11.9	<0.002
RUWB002C	6840	7.1	0.3	41	12.7	0.024
RUWB002D	28	1.7	0.2	37	12.5	<0.002
RUWB003A	107	2.2	0.3	<3	11.3	0.003
RUWB004A	92	1.8	<0.2	16	11.6	<0.002
RUWB005A	64	0.61	<0.2	159	11.6	<0.002
RUWB005B	43	2.7	0.2	<3	11.9	<0.002

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APPENDIX 6

Surface Water Quality Data

Ruabon Surface Water Quality Data - November 2015



From : 05/11/2015

To : 05/11/2015

05/11/2015

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	0.03	<2.0	64	32	777	760	8.7

Sample Point	pH (Lab)	pH(Fld)	S.Solids (mg/l)	WtrTemp (Deg C)
RUWP004A	8.2	6.72	<5	11.1

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APPENDIX 7

Leachate Quality Data

Ruabon Leachate Quality Data - November 2015



From : 05/11/2015
To : 05/11/2015

05/11/2015

Sample Point	Alk (CaCO ₃ :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)
RULT0001	8620	1070	180	74	<0.001	2850	3170	22900	>20000	0.15

Sample Point	Cu(D) (mg/l)	Fe(D) (mg/l)	IonicBal (%)	Mg(D) (mg/l)	Mn(D) (mg/l)	Ni(D) (mg/l)	Nitrate (N:mg/l)	Pb(D) (mg/l)	pH (Lab)	pH(Fld)
RULT0001	0.06	7.59	-8.2	99	0.158	0.213	1.8	<0.01	8	7.66

Sample Point	K(D) (mg/l)	Na(D) (mg/l)	T.Anions (meq/l)	T.Cations (meq/l)	TOC (mg/l)	TON (mg/l)	Total S(D) SO ₄ :mg/l	WtrTemp (Deg C)	Zn(D) (mg/l)
RULT0001	866	2440	255	217	970	1.6	123	15.4	0.072

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