



Thursday, 28 April 2016

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

Dear Ms Langstaff,

Data Submission March 2016

Please find enclosed the monthly data submission for routine environmental monitoring undertaken at our Ruabon Landfill Site during March 2016.

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

APPENDIX 1

Field Logs

Field log report

Ruabon

02-March-2016

Equipment 01 Last Calibration	22/10/2015
Equipment 01 Serial No.	GEM2000Plus + GM10338
Personnel 01	INF00925 Alan.Parry
Time OFF	12:53
Time ON	08:47
Weather	Sleet

Issued By:

Signed By :

Name :

Field log report

Ruabon

03-March-2016

Equipment 01 Calibration Due	28/04/2016
Equipment 01 Last Calibration	01/03/2016
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	14:00
Time ON	09:10
Weather	Overcast

Issued By:

Signed By :

Name :

Field log report

Ruabon

04-March-2016

Equipment 01 Last Calibration	13/01/2016
Equipment 01 Serial No.	GA5000 + G501011
Personnel 01	INF00925 Alan.Parry
Time OFF	14:17
Time ON	08:25
Weather	Wet

Issued By:

Signed By :

Name :

Field log report

Ruabon

08-March-2016

Equipment 01 Last Calibration	13/01/2016
Equipment 01 Serial No.	GA5000 + G501011
Personnel 01	INF00925 alan.parry
Time OFF	15:36
Time ON	09:15
Weather	Wet

Issued By:

Signed By :

Name :

Field log report

Ruabon

11-March-2016

Equipment 01 Calibration Due	28/04/2016
Equipment 01 Last Calibration	28/10/2015
Equipment 01 Last Calibration	13/01/2016
Equipment 01 Serial No.	GA5000 + G501011
Equipment 01 Serial No.	GA11581
Equipment 01 Type	GA2000plus
Personnel 01	L Terrace
Personnel 01	INF00925 Alan.Parry
Time OFF	13:16
Time OFF	11:45
Time ON	09:00
Time ON	09:16
Weather	Wet
Weather	Sunny

Issued By:

Signed By :

Name :

Field log report

Ruabon

15-March-2016

Equipment 01 Last Calibration	13/01/2016
Equipment 01 Serial No.	GA5000 + G501011
Personnel 01	INF00925 alan.parry
Time OFF	15:06
Time ON	09:12
Weather	Clear

Issued By:

Signed By :

Name :

Field log report

Ruabon

18-March-2016

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	12:00
Time ON	09:05
Weather	Overcast

Issued By:

Signed By :

Name :

Field log report

Ruabon

24-March-2016

Equipment 01 Calibration Due	28/04/2016
Equipment 01 Last Calibration	28/10/2015
Equipment 01 Last Calibration	17/02/2016
Equipment 01 Serial No.	GA5000 + G500863
Equipment 01 Serial No.	79281-10
Equipment 01 Serial No.	GA11581
Equipment 01 Type	GA2000plus
Equipment 01 Type	Geotechnical Atex Dip Meter
Personnel 01	INF00925 alan.parry
Personnel 01	L Terrace
Personnel 01	S Williams
Time OFF	12:10
Time OFF	14:09
Time OFF	16:00
Time ON	08:54
Time ON	14:30
Time ON	08:45
Weather	Overcast
Weather	Clear
Weather	o/c, mild

Issued By:

Signed By :

Name :

Field log report

Ruabon

30-March-2016

Equipment 01 Last Calibration	17/02/2016
Equipment 01 Serial No.	GA5000 + G500863
Personnel 01	INF00925 alan.parry
Time OFF	14:09
Time ON	08:54
Weather	Wet

Issued By:

Signed By :

Name :

Field log report

Ruabon

31-March-2016

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	14:45
Time ON	08:50
Weather	Sunny

Issued By:

Signed By :

Name :

APPENDIX 2

Perimeter Borehole Gas Data

Ruabon Perimeter Borehole Gas & Level Data - March 2016



From : 03/03/2016

To : 31/03/2016

03/03/2016

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	991	0	1.1	1.5	0	18.5	-1.91	11.72
RUBH0007	991	0	2.7	2.9	0	5.6	0.06	38.65
RUBH0008	990	0	1	0.25	0	20.3	0	42.37
RUBH0009	990	0	0.5	1.6	0	20.4	-0.33	7.49
RUBH0010	990	0	0.4	1.89	0	20.4	-0.36	36.12
RUBH0013	988	0	0.4	0.8	0	20.4	1.5	34.5
RUBH0014	987	0	2.3	2.5	0	18.5	0.68	10.71
RUBH0015	989	0	0.5	5.68	0	18.7	-0.35	41.58
RUBH0016	989	0	0.3	10.01	0	20.5	-0.36	47.16
RUBH001A	991	0	0.3	4.84	0	20.9	-0.02	12.86
RUBH001B	990	0	0.9	4.84	0	18.9	-0.04	6.4
RUBH002A	990	2	4.6	5.03	0	3.8	0.27	6.49
RUBH002B	990	0	0	5.11	0	20.9	0.41	11.71
RUBH003A	990	0	0.5	5.54	0	19.8	-4.3	13.1
RUBH003B	990	0	0	5.16	0	20.8	-0.18	6.37
RUBH004A	990	0	0.8	5.33	0	19.8	0.94	9.59
RUBH004B	990	0	0.1	5.26	0	20.6	-0.34	6.33
RUBH011A	988	0	0.3	1.52	0	20.5	-0.36	12.78
RUBH011P	988	0	0	2.76	0	20.6	-6.17	14.42
RUBH012A				0				5.38
RUGBH001	990	0	4.8	6.05	0	15.6	-0.32	6.05
RUGBH002	991	0	0	1.85	0	20.7	-0.3	7.01
RUGBH003	991	0	0.1	2.16	0	20.7	-0.33	4.93
RUGBH004	991	0	0.4	2.39	0	20.2	-0.33	21.92
RUGBH005	991	0	0.4	2.44	0	20	-0.34	6.32
RUGBH006	991	0	2.5	0.46	0	19.3	-0.22	6.86
RUGBH007	987	0	0.1	0.5	0	20.5	-0.36	2.94
RUGBH008	987	0	0.1	0.35	0	20.5	-0.34	6.15
RUGBH009	987	0	0.1	0.67	0	20.5	-0.36	8.21
RUGBH010	987	0	0.9	0.23	0	20	0.18	3.95
RUGBH02A	990	0	0	0.83	0	20.7	-0.37	1.4
RUGP0001	991	0.8	0.1		0	20.5	0.95	
RUGP0002	991	0	0.3		0	20.9	2.37	
RUGP0003	991	0	0.4		0	19.2	0.2	
RUGP0004	991	0	2.4		0	14.2	-0.03	
RUGP0008	990	0	0.3		0	20.3	2.71	
RUGP0009	990	8.8	9.8		0	0.7	-0.07	
RUGP0010	990	0	1.2		0	19.6	-0.11	
RUGP0011	990	0	2.3		0	17.8	-0.14	
RUGP0012	990	0	0		0	20.8	-0.48	
RUGP0013	990	0	0.5		0	20.4	-0.16	
RUGP0014	990	0	3.7		0	17	-0.33	
RUGP0015	988	0	0.1		0	20.4	-0.71	
RUGP0016	987	0	3.4		0	17.5	21.8	
RUGP0018	987	0	0.1		0	20.5	0.1	
RUGP0019	987	0	0		0	20.5	-0.36	
RUGP0020	987	0	0		0	20.5	-0.32	
RUGP0021	987	0	0.4		0	20.1	-0.31	
RUGP00A1	991	0	0		0	20.6	-0.33	

Issued By:

Ruabon Perimeter Borehole Gas & Level Data - March 2016



From : 03/03/2016

To : 31/03/2016

03/03/2016

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	Dip to Water (m)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)	TD (m)
RUGP00A2	991	0	0.3		0	17.3	-5.04	
RUGP00A3	991	0	0		0	20.1	0.78	
RUGP00B1	991	0	0		0	20.1	-0.19	
RUGP00B2	991	0	0		0	20.4	-4.43	
RUGP00B3	991	0	0		0	20.6	1.34	
RUGP00C1	991	0	0		0	20.6	-0.44	
RUGP00C2	991	0	0		0	19.4	-0.76	
RUGP00C3	991	0	0		0	20.3	-2.29	
RUGP00D1	991	0	0		0	20.4	0.11	
RUGP00D2	991	0	0		0	20.6	-0.34	
RUGP00D3	991	0	0		0	20.6	-0.63	
RUGP00E1	991	0	0		0	20.7	-0.36	
RUGP00E2	991	0	0		0	20.6	-0.37	
RUGP00E3	991	0	0		0	20.7	-1.19	
RUGP00F1	991	0	0		0	20.3	-1.62	
RUGP00F2	991	0	0		0	18.8	-0.27	
RUGP00F3	991	0	0		0	20.4	-1.4	
RUWB001A	990	0	0.1	2.83	0	19.1	-0.05	48.96
RUWB001B	990	0	0.2	3.93	0	20.8	-0.1	7.87
RUWB002A	990	0	0.1	4.48	0	17.7	-6.58	21.48
RUWB002B	990	0	1.6	5.93	0	19.4	-0.27	10.48
RUWB002C	990	0	2.1	6.12	0	19	-0.23	8
RUWB002D	990	0	0.2	5.78	0	20.6	-0.18	21.65
RUWB003A	987	0	0.4	9.03	0	13.1	-4.11	10.69
RUWB003B	987	0	0.2	0.15	0	12.7	-4.17	7.55
RUWB004A	987	0	0.1	2.9	0	18.3	1.9	48.81
RUWB004B	987	0	0.3	0.85	0	17.7	2.6	8.55
RUWB005A	988	0	0	2.7	0	20.4	-0.01	25.33
RUWB005B	988	0	0.4	2.34	0	20.2	-0.35	8.38

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Ruabon Perimeter Borehole Gas & Level Data - March 2016



From : 03/03/2016

To : 31/03/2016

11/03/2016

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	1013	0	1	0	18.6	0.37
RUBH0007	1013	0	2.9	0	2.6	0.09
RUBH0008	1012	0	1.1	0	20.3	0.29
RUBH0009	1012	0	1.1	0	20.3	-2.63
RUBH0010	1012	0	0.3	0	20.5	0.16
RUBH0013	1010	0	0.1	0	20.5	0.17
RUBH0014	1010	0	1.9	0	18.7	0.23
RUBH0015	1011	0	0.6	0	17.7	0.18
RUBH0016	1011	0	0.3	0	20.5	0.16
RUBH001A	1012	0	0.3	0	19.9	0.13
RUBH001B	1012	0	0.6	0	19	0.54
RUBH002A	1012	2.4	4.9	0	2.4	0.16
RUBH002B	1012	0	0.1	0	20.1	0.14
RUBH003A	1013	0	0.4	0	19.6	-5.93
RUBH003B	1012	0	0	0	20.5	0.18
RUBH004A	1013	0	1	0	19.6	0.18
RUBH004B	1012	0	1.4	0	19.6	0.16
RUBH011A	1011	0	0.4	0	20.5	-6.66
RUBH011P	1011	0	0	0	20.6	0.18
RUGBH001	1013	0	4.7	0	16.2	0.17
RUGBH002	1013	0	0.1	0	20.7	0.15
RUGBH003	1013	0	0.5	0	20.4	0.16
RUGBH004	1013	0	0.2	0	20.4	0.19
RUGBH005	1013	0	0.4	0	20.4	0.17
RUGBH006	1013	0	1.9	0	19.5	-0.3
RUGBH007	1010	0	0.1	0	20.5	0.19
RUGBH008	1010	0	0.1	0	20.4	0.18
RUGBH009	1011	0	0.5	0	20.1	0.18
RUGBH010	1011	0	0.5	0	20.3	-0.05
RUGBH02A	1012	0	0	0	20.7	0.16
RUGP0001	1013	0.4	0.1	0	19.8	-0.56
RUGP0002	1013	0	0.3	0	20	1.28
RUGP0003	1012	0	0.3	0	19.4	-10.27
RUGP0004	1012	0	2.7	0	13.1	0.1
RUGP0008	1012	0	0.2	0	19.9	0.24
RUGP0009	1012	9.3	10	0	1.9	0.15
RUGP0010	1013	0	0.9	0	19.3	0.47
RUGP0011	1013	0	2.4	0	17.5	0.18
RUGP0012	1012	0	0.1	0	20.4	0.16
RUGP0013	1012	0	0.3	0	20.3	-0.09
RUGP0014	1013	0	3.3	0	17.3	0.17
RUGP0015	1011	0	0.1	0	20.5	-0.09
RUGP0016	1010	0	2.2	0	18.8	0.21
RUGP0018	1011	0	0	0	20.5	1.14
RUGP0019	1010	0	0	0	20.4	0.19
RUGP0020	1010	0	0	0	20.5	0.05
RUGP0021	1010	0	0.2	0	20.2	0.17
RUGP00A1	1013	0	0	0	20.6	0.18
RUGP00A2	1013	0	0.4	0	16	0

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Ruabon Perimeter Borehole Gas & Level Data - March 2016



From : 03/03/2016

To : 31/03/2016

11/03/2016

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A3	1013	0	0	0	20.6	-0.2
RUGP00B1	1013	0	0	0	20.1	0.17
RUGP00B2	1013	0	0	0	20.2	0.19
RUGP00B3	1013	0	0	0	20.6	0.18
RUGP00C1	1013	0	0	0	20.7	0.03
RUGP00C2	1013	0	0	0	19.6	0.05
RUGP00C3	1013	0	0	0	20.6	-0.33
RUGP00D1	1013	0	0	0	20.3	0.19
RUGP00D2	1013	0	0	0	20.6	0.18
RUGP00D3	1013	0	0	0	20.7	0.17
RUGP00E1	1013	0	0	0	20.6	0.15
RUGP00E2	1013	0	0	0	20.6	0.16
RUGP00E3	1013	0	0	0	20.6	0.16
RUGP00F1	1013	0	0	0	20	0.15
RUGP00F2	1013	0	0	0	19.4	0.24
RUGP00F3	1013	0	0	0	20.5	0.14
RUWB001A	1012	0	0.1	0	18.3	0.18
RUWB001B	1013	0	0.2	0	20	0.17
RUWB002A	1012	0	0.1	0	18.1	0.17
RUWB002B	1013	0	0.5	0	20.3	0.17
RUWB002C	1012	0	3	0	18.2	0.18
RUWB002D	1013	0	0.1	0	20.4	0.19
RUWB003A	1010	0	0.4	0	14.5	0.25
RUWB003B	1010	0	0.1	0	16.5	-10.55
RUWB004A	1011	0	0	0	19.1	4.81
RUWB004B	1010	0	0.3	0	17.9	0.38
RUWB005A	1012	0	0	0	20.5	0.04
RUWB005B	1012	0	0.2	0	20.4	0.21

Issued By:

Ruabon Perimeter Borehole Gas & Level Data - March 2016



From : 03/03/2016

To : 31/03/2016

18/03/2016

Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	1013	0	0.6	0	19.6	0.06
RUBH0007	1013	0	2.6	0	3.7	-0.08
RUBH0008	1013	0	0.8	0	20.3	-0.08
RUBH0009	1013	0	1.6	0	20	-10.54
RUBH0010	1012	0	0.4	0	20.3	-0.06
RUBH0013	1011	0	0.5	0	20.5	-0.1
RUBH0014	1010	0	2	0	19	-0.1
RUBH0015	1012	0	1.1	0	16.9	-0.06
RUBH0016	1012	0	0.3	0	20.5	-0.06
RUBH001A	1013	0	0.3	0	20.3	-0.28
RUBH001B	1013	0	0.7	0	19.2	-0.22
RUBH002A	1013	1.9	4.2	0	5.4	-0.27
RUBH002B	1013	0	0.1	0	20.7	-0.2
RUBH003A	1013	0	0.5	0	19.9	-0.15
RUBH003B	1013	0	0	0	20.9	-0.22
RUBH004A	1013	0	0.9	0	20	0.94
RUBH004B	1013	0	1.8	0	18.9	-0.02
RUBH011A	1011	0	0.5	0	20.5	-12.85
RUBH011P	1011	0	0	0	20.7	-0.07
RUBH012A	1011	0	1.5	0	19.1	-0.06
RUGBH001	1013	0	4.8	0	16.3	-0.3
RUGBH002	1013	0	0.5	0	20.6	-0.04
RUGBH003	1013	0	0.3	0	20.5	-0.11
RUGBH004	1013	0	0.4	0	20.2	-0.04
RUGBH005	1013	0	0.4	0	20	-0.04
RUGBH006	1012	0	1.8	0	19.5	-0.12
RUGBH007	1010	0	0.2	0	20.6	-0.11
RUGBH008	1010	0	0.1	0	20.7	-0.11
RUGBH009	1011	0	1.1	0	19.9	-0.36
RUGBH010	1011	0	1.2	0	19.8	0.12
RUGBH02A	1013	0	0.1	0	20.8	0
RUGP0001	1013	0.7	0.2	0	19.7	2.46
RUGP0002	1013	0	0	0	20.5	-0.34
RUGP0003	1013	0	0.1	0	20.1	-0.08
RUGP0004	1013	0	2.8	0	13.8	-0.23
RUGP0008	1013	0	0.1	0	20.5	-0.17
RUGP0009	1013	8.7	10.1	0	2.3	-0.17
RUGP0010	1013	0	1.5	0	19.3	-0.04
RUGP0011	1013	0	2	0	19.4	-0.21
RUGP0012	1013	0	0.1	0	20.8	-0.35
RUGP0013	1013	0	0.4	0	20.6	-0.23
RUGP0014	1013	0	3	0	17.6	-0.28
RUGP0015	1012	0	0.1	0	20.6	-0.32
RUGP0016	1011	0	1.6	0	19.6	-0.1
RUGP0018	1012	0	0.1	0	20.6	-0.13
RUGP0019	1011	0	0	0	20.6	-0.18
RUGP0020	1011	0	0	0	20.7	-0.22
RUGP0021	1010	0	0.3	0	20.3	-0.9
RUGP00A1	1013	0	0	0	20.6	-0.04

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Ruabon Perimeter Borehole Gas & Level Data - March 2016



From : 03/03/2016

To : 31/03/2016

18/03/2016

	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	1013	0	0.2	0	18.6	-0.13
RUGP00A3	1013	0	0	0	20.6	-0.03
RUGP00B1	1013	0	0	0	20.2	-0.12
RUGP00B2	1013	0	0	0	20.2	-0.07
RUGP00B3	1013	0	0	0	20.6	0
RUGP00C1	1013	0	0	0	20.6	-0.07
RUGP00C2	1013	0	0	0	19.5	-0.16
RUGP00C3	1013	0	0	0	20.6	-1.28
RUGP00D1	1013	0	0	0	20.6	-0.1
RUGP00D2	1013	0	0	0	20.6	-0.96
RUGP00D3	1013	0	0	0	20.6	-0.07
RUGP00E1	1013	0	0	0	20.5	-0.21
RUGP00E2	1013	0	0	0	20.5	-0.12
RUGP00E3	1013	0	0	0	20.4	-0.32
RUGP00F1	1013	0	0	0	20.1	-0.15
RUGP00F2	1013	0	0	0	19.2	-0.32
RUGP00F3	1013	0	0	0	20.5	-0.12
RUWB001A	1013	0	0.1	0	19.2	-0.19
RUWB001B	1013	0	1.2	0	18.6	-0.19
RUWB002A	1013	0	0.1	0	18.3	-0.26
RUWB002B	1013	0	0.3	0	20.9	-0.27
RUWB002C	1013	0	3	0	18.8	-0.26
RUWB002D	1013	0	0.2	0	20.7	-0.22
RUWB003A	1010	0	0.4	0	14.8	-0.09
RUWB003B	1010	0	0	0	20.7	-1.53
RUWB004A	1011	0	0.1	0	19.1	0.02
RUWB004B	1011	0	0.3	0	19.2	-0.07
RUWB005A	1012	0	0	0	20.7	-0.13
RUWB005B	1013	0	0.5	0	20.4	-0.14

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Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	994	0	0.3	0	20.7	-0.05
RUBH0007	994	0	2.8	0	2.1	0.16
RUBH0008	993	0	2.3	0	19.2	-0.06
RUBH0009	993	0	1.3	0	20.2	1.08
RUBH0010	992	0	0.4	0	20.5	0
RUBH0013	990	0	0.4	0	20.6	0
RUBH0014	990	0	1.9	0	19	0.06
RUBH0015	992	0	1.4	0	17.6	0.02
RUBH0016	992	0	0.3	0	20.6	0
RUBH001A	994	0	0.3	0	20.4	0.02
RUBH001B	994	0	0.7	0	19.1	0.05
RUBH002A	994	1.8	4	0	6.1	0.3
RUBH002B	994	0	0	0	20.7	0.09
RUBH003A	994	0	0.4	0	19.9	0.09
RUBH003B	994	0	0	0	20.9	0
RUBH004A	994	0	1	0	19.8	0.25
RUBH004B	994	0	1.6	0	18.8	0.04
RUBH011A	991	0	0.4	0	20.6	-11.43
RUBH011P	991	0	0	0	20.8	-0.01
RUBH012A	991	0	2.5	0	16.6	0.03
RUGBH001	994	0	4.7	0	16.3	0.03
RUGBH002	994	0	0.4	0	20.5	0.03
RUGBH003	994	0	0.2	0	20.8	0.02
RUGBH004	994	0	0.4	0	20.4	0.03
RUGBH005	994	0	2.1	0	15.3	0.03
RUGBH006	993	0	2	0	19.5	0.08
RUGBH007	990	0	0.1	0	20.7	-0.09
RUGBH008	990	0	0.1	0	20.8	-0.03
RUGBH009	991	0	1	0	20	-0.23
RUGBH010	991	0	0.9	0	20.3	-0.01
RUGBH02A	994	0	0	0	20.9	0.02
RUGP0001	994	0.5	0.1	0	20.2	5.34
RUGP0002	994	0	0.1	0	20.6	-0.03
RUGP0003	994	0	0.2	0	20.2	0.2
RUGP0006	994	0	0	0	20.5	0.11
RUGP0008	994	0	0.1	0	20.6	0.12
RUGP0009	994	0	0	0	20.8	0.09
RUGP0010	994	0	3.8	0	16.7	0.09
RUGP0011	994	0	1.8	0	19.1	0.06
RUGP0012	994	0	0	0	20.8	0.04
RUGP0013	994	0	0.3	0	20.6	0.07
RUGP0014	994	0	3.1	0	17.4	0.02
RUGP0015	992	0	0.2	0	20.5	-0.35
RUGP0016	991	0	1.8	0	18.9	-0.04
RUGP0018	991	0	0	0	20.9	-0.01
RUGP0019	991	0	0	0	20.7	-0.45
RUGP0020	991	0	0	0	20.8	-0.06
RUGP0021	990	0	0.4	0	20.3	-0.08
RUGP00A1	994	0	0	0	20.8	0.03

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	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	994	0	0.2	0	19	0.11
RUGP00A3	994	0	0	0	20.8	0.05
RUGP00B1	994	0	0	0	20.5	0.01
RUGP00B2	994	0	0	0	20.8	0.02
RUGP00B3	994	0	0	0	20.8	0
RUGP00C1	994	0	0	0	20.9	0.03
RUGP00C2	994	0	0	0	19.4	-0.08
RUGP00C3	994	0	0	0	20.8	-0.22
RUGP00D1	994	0	0	0	20.8	0.02
RUGP00D2	994	0	0	0	20.8	0.01
RUGP00D3	994	0	0	0	20.9	0.02
RUGP00E1	994	0	0	0	20.9	0.01
RUGP00E2	994	0	0	0	20.8	0
RUGP00E3	994	0	0	0	20.8	-0.33
RUGP00F1	994	0	0	0	20.7	0.01
RUGP00F2	994	0	0	0	19.1	0.11
RUGP00F3	994	0	0	0	20.8	0.02
RUWB001A	994	0	0.1	0	19.7	0.1
RUWB001B	994	0	0.2	0	20.5	0.1
RUWB002A	994	0	0.1	0	18.4	0.1
RUWB002B	994	0	2.2	0	19	0.05
RUWB002C	994	0	1.7	0	19.6	0.03
RUWB002D	994	0	0.2	0	20.7	0.09
RUWB003A	990	0	0.4	0	14.8	0.58
RUWB003B	990	0	0	0	20.4	-0.13
RUWB004A	991	0	0	0	20	-0.02
RUWB004B	991	0	0.3	0	19.9	0.04
RUWB005A	992	0	0	0	20.8	-0.03
RUWB005B	993	0	0.3	0	20.7	-0.02

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Sample Point	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUBH0006	1002	0	0.6	0	20.4	0.03
RUBH0007	1002	0	3	0	1.9	-0.13
RUBH0008	1001	0	0.7	0	20.6	-0.17
RUBH0009	1001	0	2.1	0	17.1	-0.28
RUBH0010	1001	0	0.3	0	20.6	-0.18
RUBH0013	999	0	0.1	0	20.7	-0.22
RUBH0014	999	0	1.7	0	19.1	-0.34
RUBH0015	1000	0	1.2	0	17.8	-0.16
RUBH0016	1000	0	0.3	0	20.6	-0.28
RUBH001A	1001	0	0.3	0	20.2	0.11
RUBH001B	1001	0	0.4	0	19.6	0.1
RUBH002A	1001	2.4	4.6	0	3	0
RUBH002B	1001	0	0	0	20.4	0.25
RUBH003A	1001	0	0.4	0	19.8	-9.63
RUBH003B	1001	0	0	0	20.8	0.3
RUBH004A	1001	0	0.9	0	19.9	0.02
RUBH004B	1001	0	1.5	0	19.5	-0.06
RUBH011A	1000	0	0.4	0	20.5	4.02
RUBH011P	1000	0	0	0	20.8	-0.19
RUBH012A	999	0	1.1	0	19.4	0.49
RUGBH001	1001	0	4.7	0	16.1	-0.03
RUGBH002	1002	0	1.3	0	19.5	-0.19
RUGBH003	1002	0	0.7	0	19.2	-0.17
RUGBH004	1002	0	0.4	0	20.4	-0.18
RUGBH005	1002	0	0	0	20.9	-0.18
RUGBH006	1002	0	1.7	0	19.8	-0.23
RUGBH007	999	0	0.1	0	20.7	-0.2
RUGBH008	999	0	0	0	20.8	-0.23
RUGBH009	1000	0	0.7	0	19.9	-0.2
RUGBH010	1000	0	0.5	0	20.5	0.51
RUGBH02A	1001	0	0	0	20.8	-0.2
RUGP0001	1001	0.7	0.2	0	19.6	-2.25
RUGP0002	1001	0	0.2	0	20.4	0.38
RUGP0003	1001	0	0.2	0	20.2	0.31
RUGP0004	1001	0	2.7	0	18.4	0.13
RUGP0008	1001	0	0.1	0	20.2	0.28
RUGP0009	1001	1.2	1.2	0	17.5	-2.01
RUGP0010	1001	0	1	0	19.7	0.32
RUGP0011	1001	0	2.1	0	18.2	0.33
RUGP0012	1001	0	0	0	20.8	0.29
RUGP0013	1001	0	0.3	0	20.5	0.33
RUGP0014	1001	0	3.4	0	16.5	-0.04
RUGP0015	1000	0	0.1	0	20.5	-0.3
RUGP0016	999	0	0.7	0	20.3	-1.74
RUGP0018	1000	0	0	0	20.7	-0.43
RUGP0019	999	0	0	0	20.6	-0.23
RUGP0020	999	0	0	0	20.7	-0.37
RUGP0021	999	0	0.3	0	20.5	-0.25
RUGP00A1	1002	0	0	0	20.8	-0.18

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	AtPress (mBar)	CH4 (%v/v) (%)	CO2 (%v/v) (%)	H2S (ppm)	O2 (%v/v)	Rel Press (mBar)
RUGP00A2	1002	0	0.6	0	17.6	-0.18
RUGP00A3	1002	0	0	0	20.8	-0.16
RUGP00B1	1002	0	0	0	20.3	-0.16
RUGP00B2	1002	0	0	0	20.9	-0.18
RUGP00B3	1002	0	0	0	20.9	-0.17
RUGP00C1	1002	0	0	0	20.9	-0.17
RUGP00C2	1002	0	0	0	19.5	-0.19
RUGP00C3	1002	0	0	0	20.8	-0.64
RUGP00D1	1002	0	0	0	20.7	-0.19
RUGP00D2	1002	0	0	0	20.6	-0.18
RUGP00D3	1002	0	0	0	20.9	-0.16
RUGP00E1	1002	0	0	0	20.8	-0.21
RUGP00E2	1002	0	0	0	20.8	-0.19
RUGP00E3	1002	0	0	0	20.7	-0.17
RUGP00F1	1002	0	0	0	20.5	0
RUGP00F2	1002	0	0	0	16.3	0.84
RUGP00F3	1002	0	0	0	20.8	-0.18
RUWB001A	1002	0	0.1	0	20	-36.9
RUWB001B	1002	0	0	0	20.6	0.38
RUWB002A	1001	0	0.1	0	18.6	0
RUWB002B	1001	0	0.6	0	20.5	-0.03
RUWB002C	1001	0	2.3	0	18.9	-0.09
RUWB002D	1001	0	0.2	0	20.6	0
RUWB003A	999	0	0.4	0	14.7	0.47
RUWB003B	999	0	0.1	0	18.9	3.65
RUWB004A	1000	0	0	0	19.5	-0.26
RUWB004B	999	0	0.3	0	19.4	-0.29
RUWB005A	1001	0	0	0	20.4	0.01
RUWB005B	1001	0	0.4	0	20.1	0

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APPENDIX 3

Landfill Gas Field Extraction and Balancing Data

RUABON IN-WASTE LANDFILL GAS EXTRACTION & BALANCING DATA - March 2016

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	02/03/2016 09:35	40.9	12.8	0.3	46	-85.22	973	0	0	53.7	45	45
RUAW0027	02/03/2016 09:39	11.9	5.8	13.6	68.7	-49.93	973	0	0	17.7	10	0
RUAW0027	02/03/2016 09:41	18.8	8	13.2	60	-50.64	973	0	0	26.8	5	5
RUAW025R	02/03/2016 09:48	58.4	36.8	0.1	4.7	-36.14	974	0	0	95.2	5	10
RUAW025R	02/03/2016 09:49	51.3	34.6	0	14.1	-48.22	974	0	0	85.9	10	10
RUAW026R	02/03/2016 09:53	19.7	17.6	2.2	60.5	-33.77	975	0	0	37.3	5	5
RUAP1411	02/03/2016 09:57	0	1.2	20.9	77.4	-18.58	975	0	0	1.2	0	0
RUAW030R	02/03/2016 09:59	29.1	25.1	1.8	44	-51.95	975	0	0	54.2	5	5
RUAW031R	02/03/2016 10:05	40.3	36.6	0	23.1	-26.93	974	0	0	76.9	10	10
RUAW034R	02/03/2016 10:09	21.7	22.2	1.3	54.8	-37.81	973	0	0	43.9	10	5
RUAW034R	02/03/2016 10:11	39.8	31.5	0.6	28.1	-42.51	973	0	0	71.3	5	5
RUAW033R	02/03/2016 10:16	9.5	6.9	16.3	67.3	-54.36	974	0	0	16.4	5	5
RUARW042	02/03/2016 10:25	44	26.7	2.1	27.2	-44.28	975	0	0	70.7	10	10
RUARW041	02/03/2016 10:27	0	1.7	20.9	77.4	-31.59	975	0	0	1.7	0	0
RUARW040	02/03/2016 10:30	23.1	21.9	3	52	-55.29	975	0	0	45	20	20
RUARW039	02/03/2016 10:32	73.7	34.5	0	0	-56.18	976	0	0	108.2	60	60
RUARW038	02/03/2016 10:35	11.1	6.9	16.8	65.2	-54.39	975	0	0	18	10	10
RUARW037	02/03/2016 10:37	40.1	26.2	3.1	30.6	-55.66	975	0	0	66.3	100	100
RUAP1409	02/03/2016 10:42	0.6	1.6	20.6	77.2	-15.95	975	0	0	2.2	0	0
RUAP1408	02/03/2016 10:44	0	4.6	20.3	75.1	-19.68	975	0	0	4.6	0	0
RUAP1407	02/03/2016 10:46	0.6	1.8	19.3	78.3	-22.35	975	0	0	2.4	0	0
RUAP1406	02/03/2016 10:47	10.9	10.5	7.9	70.7	-17.4	975	29	0	21.4	0	0
RUAW056R	02/03/2016 10:51	18	11.7	13.5	56.8	-7.25	974	7	0	29.7	0	0
RUAW0028	02/03/2016 10:52	0.8	3.9	19.2	76.1	-19.74	973	0	0	4.7	5	0
RUAW0028	02/03/2016 10:53	0.4	2.1	20.5	77	-21.07	973	0	0	2.5	0	0
RUAW029R	02/03/2016 10:55	42.1	32.9	1.5	23.5	-21.42	973	0	0	75	10	10
RUAW0049	02/03/2016 10:58	57.2	38.1	1.4	3.3	-0.73	973	0	0	95.3	5	5

Well ID	Date & Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAW0020	02/03/2016 11:00	48.1	24.9	0.4	26.6	-19.41	973	0	0	73	5	5
RUAW0021	02/03/2016 11:02	24.8	22.3	1.2	51.7	-28.06	973	0	0	47.1	10	5
RUAW0021	02/03/2016 11:03	34.6	22.8	0	42.6	-10.11	973	0	0	57.4	10	10
RUAW0068	02/03/2016 11:08	54.5	31.8	1.5	12.2	-43.88	974	0	0	86.3	10	10
RUAW0022	02/03/2016 11:10	41.8	18.4	1.5	38.3	-26.94	974	0	0	60.2	20	20
RUAW0066	02/03/2016 11:12	21.9	33	0.1	45	-18.4	974	0	0	54.9	0	0
RUAW0023	02/03/2016 11:14	36.7	34.9	0.4	28	-53.07	974	0	0	71.6	20	20
RUAW0036	02/03/2016 14:07	33.6	27	0.3	39.1	-54.24	984	1	0	60.6	5	1
RUAW0036	02/03/2016 14:08	34.4	28	0	37.6	-53.74	984	0	0	62.4	1	1
RUAW0059	02/03/2016 14:11	56.2	31.5	2.2	10.1	-55.72	986	1	0	87.7	10	10
RUAW032R	02/03/2016 14:13	29	23	4.5	43.5	-37.9	986	1	0	52	10	0
RUAW032R	02/03/2016 14:14	29.4	24.8	4.1	41.7	-39.45	986	1	0	54.2	0	0
RUAW057R	02/03/2016 14:17	37.2	32	0	30.8	-47.74	984	0	0	69.2	10	10
RUAW0051	02/03/2016 14:19	58.1	39.5	0.1	2.3	-12.65	983	1	0	97.6	10	10
RUAW0067	02/03/2016 14:22	29.6	28.8	0	41.6	-23.53	985	0	0	58.4	5	0
RUAW0067	02/03/2016 14:23	30.4	29.3	0	40.3	-23.11	985	0	0	59.7	0	0
RUAW050R	02/03/2016 14:26	37.8	31.2	0.4	30.6	-4.62	982	1	0	69	1	1
RUAW1401	02/03/2016 14:29	31.2	29.5	0	39.3	-5.03	983	0	0	60.7	10	10
RUAW1402	02/03/2016 14:31	59.3	33	0	7.7	-4.65	983	1	0	92.3	1	10
RUAW1402	02/03/2016 14:33	51.1	33.3	0	15.6	-5.65	983	1	0	84.4	10	10
RUAMW09R	02/03/2016 14:35	47.2	30.3	0.7	21.8	-4.86	984	0	0	77.5	5	5
RUAMW006	02/03/2016 14:38	34.3	27.4	0	38.3	-37.11	984	0	0	61.7	10	10
RUAMW005	02/03/2016 14:42	32.2	24.8	0	43	-7.79	984	0	0	57	10	10
RUAW1405	02/03/2016 14:44	36.9	27.3	0	35.8	-6.51	983	0	0	64.2	10	10
RUAW065R	02/03/2016 14:47	47.2	23.4	0	29.4	-6.95	984	0	0	70.6	5	5
RUAW0024	04/03/2016 13:22	52.8	33	0	14.2	-49.28	975	1	0	85.8	45	45
RUAW0027	04/03/2016 13:27	31.8	11.5	9.6	47.1	-21.3	976	1	0	43.3	5	5
RUAW025R	04/03/2016 13:31	52.6	30.4	0.2	16.8	-37.3	976	1	0	83	5	5
RUAW026R	04/03/2016 13:35	25.1	24.4	0	50.5	-29.61	977	2	0	49.5	5	5

Well ID	Date & Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAP1411	04/03/2016 13:38	0.2	1.5	20.9	76.6	-18.29	978	0	0	1.7	0	0
RUAW030R	04/03/2016 13:40	37.7	26.8	1.7	33.8	-49.48	977	0	0	64.5	5	5
RUAW031R	04/03/2016 13:45	39	28.6	0.4	32	-31.45	975	0	0	67.6	10	10
RUAW034R	04/03/2016 13:50	37.3	27.4	0.1	35.2	-27.09	976	1	0	64.7	10	10
RUAW033R	04/03/2016 13:56	71	29.1	0.3	0	-47.47	975	0	0	100.1	10	10
RUARW042	04/03/2016 14:00	49.7	27.7	0	22.6	-48.12	976	1	0	77.4	10	10
RUARW041	04/03/2016 14:02	0.2	2.1	20.9	75.8	-24.63	980	0	0	2.3	0	0
RUARW040	04/03/2016 14:04	21.7	21.6	0	56.7	-49.21	979	0	0	43.3	20	20
RUARW039	04/03/2016 14:06	70.9	30.5	0	0	-50.03	980	1	0	101.4	50	50
RUARW038	04/03/2016 14:08	12.6	7.9	17.7	61.8	-48.33	979	0	0	20.5	10	10
RUARW037	04/03/2016 14:10	40.7	24.8	5.1	29.4	-49.38	980	0	0	65.5	100	100
RUAP1410	04/03/2016 14:12	41.7	23.8	4.6	29.9	1.03	976	0	0	65.5	0	0
RUAP1409	04/03/2016 14:13	0.2	3.2	20.9	75.3	-11.01	978	0	0	3.4	0	0
RUAP1408	04/03/2016 14:14	0.2	1.6	20.9	76.2	-18.86	979	0	0	1.8	0	0
RUAP1407	04/03/2016 14:16	0.2	1	20.9	76.7	-18.96	979	0	0	1.2	0	0
RUAP1406	04/03/2016 14:17	0.2	0.8	20.9	76.8	-19.42	978	0	0	1	0	0
RUAW0024	08/03/2016 10:06	48.3	32.5	0	19.2	-51.45	997	2	0	80.8	45	45
RUAW0027	08/03/2016 10:11	12.6	5.7	15.5	66.2	-51.84	997	1	0	18.3	5	5
RUAW025R	08/03/2016 10:15	47	32.2	0	20.8	-42.97	997	2	0	79.2	10	10
RUAW026R	08/03/2016 10:21	17.5	24.4	0	58.1	-34.26	997	3	0	41.9	5	5
RUAP1411	08/03/2016 10:25	0.2	2.1	20	77.7	-22.91	997	1	0	2.3	0	0
RUAW030R	08/03/2016 10:27	0.7	1.6	20.1	77.6	-53.71	997	1	0	2.3	10	1
RUAW030R	08/03/2016 10:29	1.1	1.2	20.2	77.5	-54.14	997	0	0	2.3	1	1
RUAW031R	08/03/2016 10:35	35	30.4	0	34.6	-38.8	996	2	0	65.4	10	10
RUAW034R	08/03/2016 10:41	31.8	27.2	0.3	40.7	-41.67	998	1	0	59	10	10
RUAW033R	08/03/2016 10:46	67.5	29.3	0	3.2	-53.53	997	2	0	96.8	10	10
RUARW042	08/03/2016 10:58	52.7	28.5	0	18.8	-51.55	998	1	0	81.2	10	10
RUARW041	08/03/2016 11:06	0.3	4.8	18.8	76.1	-28.78	998	1	0	5.1	0	0
RUARW040	08/03/2016 11:09	22.4	21.3	0	56.3	-53.14	998	2	0	43.7	20	20

Well ID	Date & Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUARW039	08/03/2016 11:11	69.2	30.4	0	0.4	-52.19	1002	2	0	99.6	60	100
RUARW038	08/03/2016 11:14	7.2	5.3	17.7	69.8	-52.69	1002	0	0	12.5	10	10
RUARW037	08/03/2016 11:16	49.6	32.4	0	18	-53.41	1001	2	0	82	100	100
RUAW0055	08/03/2016 13:09	0.4	14.1	1.8	83.7	-0.74	996	1	1	14.5	1	1
RUAW0008	08/03/2016 13:12	0.3	7.3	12.7	79.7	-1.81	997	1	0	7.6	1	1
RUAW0063	08/03/2016 13:15	0.3	8.9	10.8	80	-2.4	997	0	0	9.2	0	0
RUAW0007	08/03/2016 13:17	24.5	17.8	0	57.7	-2.86	997	1	0	42.3	0	0
RUAW0044	08/03/2016 13:29	10.6	10.6	11.5	67.3	-38.62	998	2	0	21.2	1	1
RUAW0043	08/03/2016 13:31	32.9	16.6	10.2	40.3	-48.76	1000	1	0	49.5	1	1
RUAW0013	08/03/2016 13:33	7.4	14.5	3.8	74.3	0.71	1000	1	0	21.9	0	0
RUAW0015	08/03/2016 13:39	40.1	17.6	8.1	34.2	-46.98	999	1	0	57.7	10	0
RUAW0015	08/03/2016 13:41	39.7	17.5	8.2	34.6	-35.61	999	0	0	57.2	0	0
RUAW0045	08/03/2016 13:43	0.6	3.5	19.2	76.7	-0.55	996	0	0	4.1	0	0
RUAMW08R	08/03/2016 13:46	26.7	23.1	0	50.2	-3.88	999	1	0	49.8	5	0
RUAW0016	08/03/2016 13:54	0.5	1.3	20.9	77.2	-0.14	1000	1	0	1.8	0	0
RUAW0017	08/03/2016 13:56	24.4	20.1	0.1	55.4	-0.52	996	1	0	44.5	0	0
RUAW0064	08/03/2016 13:58	37.3	28.4	0	34.3	-0.19	999	1	0	65.7	0	5
RUAW0047	08/03/2016 14:01	42.1	26.6	3.8	27.5	14.17	995	5	0	68.7	0	5
RUAW0047	08/03/2016 14:03	42	26.5	3.9	27.6	-48.83	995	5	0	68.5	5	5
RUAW0018	08/03/2016 14:05	40.7	23.6	2.7	33	-50.45	999	1	0	64.3	10	10
RUAW0020	08/03/2016 14:43	4.7	6.1	16.1	73.1	-7.77	998	11	0	10.8	10	0
RUAW0020	08/03/2016 14:45	5.4	7.7	14.9	72	-4.34	998	12	0	13.1	0	0
RUAMW09R	08/03/2016 15:10	37.3	29.4	0	33.3	-1.57	996	1	0	66.7	5	5
RUAW1402	08/03/2016 15:11	17.4	22.1	1.7	58.8	-4.31	995	1	0	39.5	5	0
RUAW1402	08/03/2016 15:13	14.3	20.6	2.1	63	-4.36	995	1	0	34.9	0	0
RUAW0024	11/03/2016 09:31	48	31.7	0.4	19.9	-47.67	1013	1	0	79.7	45	45
RUAW0027	11/03/2016 09:35	13.5	7.3	14.9	64.3	-47.52	1015	1	0	20.8	5	5
RUAW025R	11/03/2016 09:39	44.6	31.3	0.1	24	-36.16	1015	2	0	75.9	10	10
RUAW026R	11/03/2016 09:45	16.3	23.6	0	60.1	-31.59	1015	3	0	39.9	5	5

Well ID	Date & Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAP1411	11/03/2016 09:48	0.2	1.5	20.6	77.7	-24.01	1015	0	0	1.7	0	0
RUAW030R	11/03/2016 09:51	69.5	28.4	0.2	1.9	-45.55	1015	1	0	97.9	5	5
RUAW031R	11/03/2016 09:58	33.7	30	0.1	36.2	-39.73	1018	1	0	63.7	10	10
RUAW034R	11/03/2016 10:02	33.5	25	1.3	40.2	-38.19	1018	1	0	58.5	10	10
RUAW033R	11/03/2016 10:08	61.5	28.3	0.9	9.3	-48.69	1014	2	0	89.8	10	10
RUARW037	11/03/2016 12:58	45.8	32.5	0	21.7	-50.46	1015	3	0	78.3	100	100
RUARW038	11/03/2016 12:59	5.1	4.9	18.5	71.5	-50.03	1018	2	0	10	10	10
RUARW039	11/03/2016 13:01	54.9	26.9	0.7	17.5	-50.95	1018	4	0	81.8	100	100
RUARW040	11/03/2016 13:03	27.7	23.5	0.8	48	-49.84	1018	3	0	51.2	10	10
RUARW039	11/03/2016 13:05	0.2	2	20.6	77.2	-27.25	1019	1	0	2.2	0	0
RUARW038	11/03/2016 13:07	52.1	26.5	0	21.4	-51.48	1018	2	0	78.6	10	10
RUAP1410	11/03/2016 13:10	0.7	8.9	16.6	73.8	0.62	1017	2	0	9.6	0	0
RUAP1409	11/03/2016 13:11	0.3	2.3	20.5	76.9	-7.43	1015	1	0	2.6	0	0
RUAP1408	11/03/2016 13:13	0.2	1.2	20.8	77.8	-14.05	1017	2	0	1.4	0	0
RUAP1407	11/03/2016 13:14	0.2	1	20.8	78	-17.77	1017	2	0	1.2	0	0
RUAP1406	11/03/2016 13:16	0.2	0.8	20.9	78.1	-18.39	1017	1	0	1	0	0
RUAW0019	15/03/2016 10:02	46.2	30.8	0.2	22.8	-5.89	1017	1	0	77	10	10
RUAW1401	15/03/2016 10:06	25.8	25.9	0	48.3	-6.74	1017	0	0	51.7	5	0
RUAW1401	15/03/2016 10:08	26.3	26.1	0	47.6	-6.89	1017	0	0	52.4	0	0
RUAW0060	15/03/2016 10:10	6	14.9	7.3	71.8	-1.15	1017	0	0	20.9	0	0
RUAW0067	15/03/2016 10:12	36.6	28.9	0.2	34.3	-11.29	1019	0	0	65.5	10	10
RUAW0051	15/03/2016 10:15	11.3	9.6	16	63.1	-45.43	1018	0	0	20.9	0	0
RUAW057R	15/03/2016 10:18	38.7	30.7	0.2	30.4	-43.81	1021	1	0	69.4	10	10
RUAW032R	15/03/2016 10:21	37.5	29.4	3	30.1	-17.56	1020	1	0	66.9	10	10
RUAW0059	15/03/2016 10:24	54	31.4	2.6	12	-48.64	1020	1	0	85.4	10	10
RUAW0036	15/03/2016 10:26	27.2	26.6	0	46.2	-41.92	1020	1	0	53.8	5	0
RUAW0036	15/03/2016 10:28	27.3	26.8	0	45.9	-43.86	1020	1	0	54.1	0	0
RUAW1403	15/03/2016 10:30	12.3	21.2	0	66.5	-0.47	1018	1	0	33.5	0	0
RUAW011R	15/03/2016 10:33	32.7	20.1	5.1	42.1	-9.96	1018	1	0	52.8	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 (%)
RUAW1405	15/03/2016 10:37	33.8	23.7	0.1	42.4	-7.64	1021	1	0	57.5	1	1
RUAMW002	15/03/2016 10:41	25.8	20.5	0	53.7	-7.53	1018	1	0	46.3	0	0
RUAMW001	15/03/2016 10:50	18	19.8	1.7	60.5	-3.76	1019	0	0	37.8	0	0
RUAW0001	15/03/2016 10:55	27.3	22.8	0.3	49.6	-2.59	1021	1	0	50.1	1	1
RUAW0002	15/03/2016 10:58	0.2	1.8	20.8	77.2	-2.07	1021	0	0	2	0	0
RUAW0003	15/03/2016 11:01	0.2	1.1	20.9	77.7	-0.1	1021	0	0	1.3	0	0
RUAW0053	15/03/2016 11:03	0.2	15.2	2	82.6	-3.91	1019	1	0	15.4	0	0
RUAW0054	15/03/2016 11:06	0.2	5.9	16	77.9	-2.24	1019	0	0	6.1	0	0
RUAW0004	15/03/2016 11:11	14.4	18.8	0	66.8	-4.83	1019	1	0	33.2	0	0
RUAW0005	15/03/2016 11:13	0.3	2.1	20.3	77.3	-12.05	1023	1	0	2.4	5	0
RUAW0005	15/03/2016 11:15	0.3	1.3	20.5	77.9	-9.36	1023	0	0	1.6	0	0
RUAW1404	15/03/2016 11:18	61.5	27.4	0.6	10.5	-8.03	1019	1	0	88.9	10	15
RUAW1404	15/03/2016 11:20	51.3	26.7	0	22	-11.15	1019	2	0	78	15	15
RUAW0052	15/03/2016 11:25	19.9	8.1	14.4	57.6	-47.55	1022	0	0	28	0	0
RUAW0035	15/03/2016 11:27	25.8	28.2	0.4	45.6	-8.93	1019	1	0	54	0	0
RUAW0024	15/03/2016 13:37	53.5	32.1	0.8	13.6	-44.47	1018	1	0	85.6	45	45
RUAW025R	15/03/2016 13:42	0.3	1.4	20.9	77.2	-14.46	1019	0	0	1.7	10	5
RUAW025R	15/03/2016 13:43	0.3	0.9	20.9	77.5	-14.41	1019	0	0	1.2	5	5
RUAW026R	15/03/2016 13:47	16.2	21	0.3	62.5	-22.2	1019	2	0	37.2	5	5
RUAW030R	15/03/2016 13:52	68.4	27.3	0.9	3.4	-44.6	1019	1	0	95.7	10	10
RUAW031R	15/03/2016 13:56	36	28.6	0.5	34.9	-29.51	1018	1	1	64.6	10	10
RUAW034R	15/03/2016 14:01	29.8	23.1	2.5	44.6	-34.95	1019	1	0	52.9	10	10
RUAW033R	15/03/2016 14:06	62	28.8	0.8	8.4	-44.47	1019	1	0	90.8	10	10
RUARW042	15/03/2016 14:10	36.3	21.1	3	39.6	-44.23	1019	1	0	57.4	10	10
RUARW041	15/03/2016 14:14	0.5	1	20.9	76.3	-20.41	1023	0	0	1.5	0	0
RUARW040	15/03/2016 14:17	19.8	20.9	0.8	58.5	-45.07	1019	1	0	40.7	20	20
RUARW039	15/03/2016 14:19	69.1	28.6	0.4	1.9	-46.12	1023	1	0	97.7	100	100
RUARW038	15/03/2016 14:21	64.8	29.1	0.8	5.3	-20.98	1023	2	0	93.9	10	30
RUARW038	15/03/2016 14:23	61.5	33.2	0	5.3	-39.64	1023	1	0	94.7	30	30

Well ID	Date & Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUARW037	15/03/2016 14:24	44	30.9	0.2	24.9	-45.48	1024	1	0	74.9	100	100
RUAW0012	15/03/2016 14:32	67.5	27.1	1	4.4	-31.63	1022	1	0	94.6	10	10
RUAW0024	24/03/2016 09:11	57.6	33.1	1.1	8.2	-49.05	993	2	0	90.7	45	45
RUAW0027	24/03/2016 09:15	44.6	23.9	1	30.5	-36.15	994	3	0	68.5	5	5
RUAW025R	24/03/2016 09:19	0.2	2.5	19.6	77.7	-7.86	994	1	0	2.7	1	1
RUAW026R	24/03/2016 09:23	14.9	22.6	0.4	62.1	-17.17	994	3	0	37.5	1	1
RUAP1411	24/03/2016 09:28	0.1	0.9	20.9	77.9	-11.2	995	1	0	1	0	0
RUAW030R	24/03/2016 09:31	48.9	20.2	6.4	24.5	-49.01	995	3	0	69.1	5	5
RUAW031R	24/03/2016 09:36	32.3	28.5	1.1	38.1	-36.12	994	3	0	60.8	10	10
RUAW034R	24/03/2016 09:41	32.2	27.9	0.3	39.6	-45.81	998	3	0	60.1	10	10
RUAW033R	24/03/2016 09:47	5.7	4.3	19.1	70.9	-66.21	995	3	0	10	1	1
RUARW042	24/03/2016 09:52	41.7	25.2	0.9	32.2	-49.55	995	3	0	66.9	10	10
RUARW041	24/03/2016 09:55	0.1	0.9	20.9	77.7	-18.67	999	2	0	1	0	0
RUARW040	24/03/2016 09:58	17.1	20.3	1.1	61.5	-46.55	995	3	0	37.4	20	20
RUARW040	24/03/2016 09:58	17.1	20.3	1.1	61.5	-46.55	995	3	0	37.4	20	20
RUARW039	24/03/2016 10:02	25.9	13.3	12.7	48.1	-50.43	998	3	0	39.2	80	80
RUARW038	24/03/2016 10:04	11.7	6.8	17.2	64.3	-23.55	999	3	0	18.5	10	10
RUARW037	24/03/2016 10:06	32.9	27.3	2.5	37.3	-49.91	998	4	0	60.2	100	100
RUAP1410	24/03/2016 10:12	0.1	1	20.9	77.8	-8.83	994	2	0	1.1	0	0
RUAP1409	24/03/2016 10:14	0.1	0.8	20.9	77.9	-2.87	998	2	0	0.9	0	0
RUAP1408	24/03/2016 10:16	0.1	0.5	20.9	78	-5.43	998	2	0	0.6	0	0
RUAP1408	24/03/2016 10:16	0.1	0.5	20.9	78	-5.43	998	2	0	0.6	0	0
RUAP1407	24/03/2016 10:18	0.1	0.5	20.9	78.1	-8.26	998	2	0	0.6	0	0
RUAP1406	24/03/2016 10:21	0.5	2.1	19.5	77.9	-8.43	998	2	0	2.6	0	0
RUAW0062	24/03/2016 11:53	19.1	19.2	0.5	61.2	-15.73	993	3	0	38.3	5	0
RUAW0062	24/03/2016 11:55	18.8	21.5	0.1	59.6	-11.27	993	3	0	40.3	0	0
RUAMW07R	24/03/2016 11:57	32.9	26.3	0.3	40.5	-7.39	993	5	0	59.2	5	5
RUAMW004	24/03/2016 11:59	18.7	20.7	0.4	60.2	-4.97	994	3	0	39.4	0	0
RUAW0014	24/03/2016 12:03	73.8	26.5	0	0	-46.88	994	3	0	100.3	5	5

Well ID	Date & Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUAW0046	24/03/2016 12:07	29.3	24	0.2	46.5	-0.28	997	4	0	53.3	0	0
RUAW0019	24/03/2016 12:10	34.3	29.4	0	36.3	-3.43	992	4	0	63.7	5	5
RUAW0019	24/03/2016 12:10	34.3	29.4	0	36.3	-3.43	992	4	0	63.7	5	5
RUAW0048	24/03/2016 12:13	40.6	34.2	2.3	22.9	18.22	995	9	1	74.8	0	5
RUAW0048	24/03/2016 12:13	40.6	34.2	2.3	22.9	18.22	995	9	1	74.8	0	5
RUAW0048	24/03/2016 12:15	40.2	35	2.1	22.7	-44.56	995	8	2	75.2	5	5
RUAW0061	24/03/2016 12:21	10.7	21.3	0.2	67.8	-5.23	996	4	0	32	0	0
RUAMW003	24/03/2016 12:25	38.6	21.1	3.1	37.2	-2.49	997	4	0	59.7	0	0
RUAW0052	24/03/2016 12:27	33	13.8	10.4	42.8	-48.98	994	4	0	46.8	0	0
RUAW1404	24/03/2016 12:29	19.4	21.4	0.1	59.1	-8.95	994	4	0	40.8	10	0
RUAW1404	24/03/2016 12:30	19.3	21.7	0	59	-7.75	994	5	0	41	0	0
RUAW057R	24/03/2016 12:40	37.8	30.9	0	31.3	-46.47	993	4	0	68.7	10	10
RUAW0067	24/03/2016 12:50	30.5	28.6	0.2	40.7	-20.16	996	5	0	59.1	10	10
RUAW0059	24/03/2016 12:53	58.6	32.8	1.6	7	-48.23	992	6	0	91.4	20	20
RUAW065R	24/03/2016 12:56	30.3	23.2	0	46.5	-6.3	994	5	0	53.5	5	5
RUAW0053	24/03/2016 13:01	0.1	16.9	1.4	81.6	-2.15	993	4	0	17	0	0
RUAW0024	30/03/2016 09:29	57.7	30.7	0.8	10.8	-62.48	989	2	0	88.4	45	45
RUAW0027	30/03/2016 09:34	25.1	16	10.5	48.4	-62.39	990	2	0	41.1	10	10
RUAW025R	30/03/2016 09:39	0	2.4	19.8	77.8	-21.58	990	1	0	2.4	5	5
RUAW026R	30/03/2016 09:44	20.5	23	0.2	56.3	-35.81	990	4	0	43.5	5	5
RUAP1411	30/03/2016 09:50	1.2	3.9	13.4	81.5	-30.7	991	2	0	5.1	0	0
RUAW030R	30/03/2016 09:53	0.4	1.4	20	78.2	-59.33	991	2	0	1.8	5	5
RUAW031R	30/03/2016 09:59	44.5	31.6	0.3	23.6	-43.42	990	4	0	76.1	10	10
RUAW033R	30/03/2016 10:05	34.9	27.1	0.9	37.1	-54.48	990	4	0	62	10	10
RUAW033R	30/03/2016 10:16	63.4	29.1	1.2	6.3	-13.55	991	5	0	92.5	10	10
RUARW042	30/03/2016 10:22	57.6	27.9	0.6	13.9	-65	994	4	0	85.5	10	10
RUARW041	30/03/2016 10:25	0	1.6	20.2	78.2	-26.67	996	3	0	1.6	0	0
RUARW040	30/03/2016 10:28	22.1	19	1.2	57.7	-60.43	993	4	0	41.1	20	20
RUARW039	30/03/2016 10:31	18.4	9.6	14.1	57.9	-63.74	995	3	0	28	80	50

Well ID	Date & Time	CH4 (%)	CO2 (%)	O2 (%)	Balance Gas (%)	Vacuum (mbar)	Atm Press (mbar)	CO (ppm)	H2S (ppm)	CH4 + CO2 (%)	Original Valve (%)	Depart Valve (%)
RUARW039	30/03/2016 10:33	21.7	11.6	12.8	53.9	-64.12	995	3	0	33.3	50	50
RUARW038	30/03/2016 10:35	15	8.4	15.6	61	-43.89	996	3	0	23.4	20	20
RUARW037	30/03/2016 10:38	42.5	29	1.8	26.7	-62.7	996	5	0	71.5	100	100
RUAW065R	30/03/2016 12:26	31.9	21.5	0.1	46.5	-14.24	992	3	0	53.4	5	5
RUAW011R	30/03/2016 12:28	14.9	7.2	15.1	62.8	-14.97	998	3	0	22.1	0	0
RUAMW005	30/03/2016 12:30	26.5	22.7	0.1	50.7	-18.02	995	3	0	49.2	10	0
RUAMW005	30/03/2016 12:32	26.4	23.4	0	50.2	-15.51	995	4	0	49.8	0	0
RUAMW006	30/03/2016 12:36	33.5	25.9	0.1	40.5	-42.09	994	4	0	59.4	10	5
RUAMW006	30/03/2016 12:37	33.3	25.7	0.2	40.8	-34.09	994	5	0	59	5	5
RUAMW09R	30/03/2016 12:40	40.3	28.6	0	31.1	-10.09	993	5	0	68.9	10	10
RUAW1402	30/03/2016 12:42	60.7	33.2	0	6.1	-9.57	993	5	0	93.9	5	5
RUAW1401	30/03/2016 12:45	49.1	31.5	0	19.4	-8.71	994	5	0	80.6	5	5
RUAW0048	30/03/2016 12:47	30.8	26	6.8	36.4	-69.61	993	5	0	56.8	5	0
RUAW0048	30/03/2016 12:48	32.1	27.5	6.1	34.3	-72.13	993	6	0	59.6	0	0
RUAW050R	30/03/2016 12:50	7	14.3	7.9	70.8	-3.32	993	5	0	21.3	0	0
RUAW0067	30/03/2016 12:52	36	28.4	0.1	35.5	-26.37	993	4	0	64.4	10	10
RUAW057R	30/03/2016 12:56	36.5	29.2	0	34.3	-69.38	996	5	0	65.7	10	10
RUAW032R	30/03/2016 12:58	24.5	20.4	5	50.1	-57.84	997	6	0	44.9	10	0
RUAW032R	30/03/2016 13:00	24.1	20.9	5	50	-52.16	997	6	0	45	0	0
RUAW0059	30/03/2016 13:02	62.3	29.2	1.4	7.1	-74.49	989	5	0	91.5	20	10
RUAW0059	30/03/2016 13:04	61.8	29.8	1.2	7.2	-74.59	989	5	0	91.6	10	10
RUAW1404	30/03/2016 13:31	60.6	28	0	11.4	-12.36	994	5	0	88.6	5	10
RUAW1404	30/03/2016 13:33	49.8	26.3	0	23.9	-13.26	994	5	0	76.1	5	5
RUAW0023	30/03/2016 13:43	52.6	33.3	0.1	14	-74.82	992	5	0	85.9	30	20
RUAW0023	30/03/2016 13:44	52.6	33.4	0.1	13.9	-75.13	992	5	0	86	20	20
RUAW029R	30/03/2016 13:47	35.7	30.2	0.1	34	-31.29	992	4	0	65.9	10	10
RUAW0022	30/03/2016 13:50	44.5	31.2	0	24.3	-43.85	993	5	0	75.7	30	40
RUAW0022	30/03/2016 13:52	44.6	31.2	0	24.2	-45.79	993	4	0	75.8	40	40
RUAW0068	30/03/2016 13:54	46.9	24.9	5.3	22.9	-76.6	993	3	0	71.8	10	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 (%)
RUAW0068	30/03/2016 13:57	45.6	24.6	5.7	24.1	-68.08	993	4	0	70.2	0	0
RUAW0021	30/03/2016 13:59	61.7	37.4	0	0.9	-9.22	993	4	0	99.1	5	10
RUAW0021	30/03/2016 14:01	61.5	37.7	0	0.8	-10.8	993	4	0	99.2	10	10
RUAW0020	30/03/2016 14:03	16.1	20.3	0.1	63.5	-9.29	996	5	0	36.4	10	0
RUAW0020	30/03/2016 14:04	16	21.3	0	62.7	-9.17	996	5	0	37.3	0	0
RUAW0019	30/03/2016 14:06	35.8	29.1	0	35.1	-9.74	992	4	0	64.9	5	5
RUAMW08R	30/03/2016 14:09	48.2	26	0.1	25.7	-10.76	994	4	0	74.2	10	10

APPENDIX 4

Leachate Level Data

Ruabon Leachate Level Data - March 2016



From : 24/03/2016

To : 24/03/2016

24/03/2016

Sample Point	Depth of Liq (m)	Dip to Water (m)	TD (m)	Water Level (mAOD)
LMP006R	1.62	18.3	19.03	113.02
LMP007R	1.32	17.47	18.98	112.12
LMP008R	1.88	20.59	21.94	111.88
LMP009R	1.77	21.21	21.67	112.07
RUGW00M1	0.88	13.29	14.62	111.33
RUGW00M3	1.45	11.44	11.84	113.70
RUGW00M5	1.26	20.06	21.07	111.76
RUGW00M10	1.80	25.7	26.48	97.80
RUGWM4r	0.70	17.13	17.55	110.78
RULMP2r	0.94	15.27	15.93	110.94

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APPENDIX 5

Groundwater Quality Data

Ruabon Groundwater Quality & Level Data - March 2016



From : 03/03/2016

To : 03/03/2016

03/03/2016

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)
RUBH0013	324	0.04	<2.0	114	<0.0001	9	12	722	710	<0.001
RUWB002A	118	1.6	4.5	60	<0.0001	445	6	1830	1720	<0.001
RUWB002B	289	0.4	<2.0	68	<0.0001	126	6	921	1000	<0.001
RUWB002C	984	1.1	<2.0	185	<0.0001	337	17	2750	2710	<0.001
RUWB002D	257	<0.01	<2.0	16	<0.0001	27	6	634	620	<0.001
RUWB003A	370	0.9	4	7	<0.0001	22	8	763	720	<0.001
RUWB004A	540	0.16	<2.0	2	<0.0001	20	<5	1030	1060	<0.001
RUWB005A	369	0.6	5.6	1	<0.0001	30	8	1210	1170	<0.001
RUWB005B	231	0.03	<2.0	98	<0.0001	48	<5	715	740	<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	0.002	0.8	0.14	4	10	0.363	0.001	<0.001	7.3	6.94
RUWB002A	<0.001	4.48	0.1	24	40	0.247	0.005	<0.001	7.4	7.48
RUWB002B	<0.001	5.93	0.12	9	14	0.114	0.009	<0.001	7.8	7.64
RUWB002C	<0.001	6.12	0.19	14	19	2.571	0.033	<0.001	7.2	6.82
RUWB002D	<0.001	5.78	0.04	7	4	0.021	<0.001	<0.001	8.1	7.44
RUWB003A	<0.001	9.03	0.1	15	13	0.131	<0.001	<0.001	8	7.52
RUWB004A	<0.001	2.9	1.51	8	<1	0.016	0.002	<0.001	9.3	9.21
RUWB005A	<0.001	2.7	0.18	4	<1	0.004	<0.001	<0.001	9.8	9.92
RUWB005B	<0.001	2.34	0.19	13	19	0.041	<0.001	<0.001	7.9	8.25

Sample Point	Na(D) (mg/l)	S.Solids (mg/l)	TD (m)	TOC (mg/l)	TON (mg/l)	Total S(D) SO ₄ :mg/l	WtrTemp (Deg C)	Zn(D) (mg/l)
RUBH0013	23	522	34.5	5	0.2	53	10	<0.002
RUWB002A	182	221	21.48	3.4	<0.2	<3	10.3	<0.002
RUWB002B	95	103	10.48	2.6	0.2	<3	10.2	<0.002
RUWB002C	399	1071	8	7	1.4	42	10.4	0.006
RUWB002D	116	28	21.65	2.2	0.8	33	9.9	0.01
RUWB003A	135	66	10.69	2.4	0.4	<3	10.1	0.005
RUWB004A	254	59	48.81	1.9	0.4	9	9.5	<0.002
RUWB005A	268	96	25.33	0.47	<0.2	272	10.3	<0.002
RUWB005B	20	61	8.38	4.2	<0.2	85	9.7	<0.002

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APPENDIX 6

Surface Water Quality Data

Ruabon Surface Water Quality Data - March 2016



From : 03/03/2016

To : 03/03/2016

03/03/2016

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	0.2	2.5	36	22	644	660	10.5

Sample Point	pH (Lab)	pH(Fld)	S.Solids (mg/l)	WtrTemp (Deg C)
RUWP004A	7.8	6.75	16	5.4

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APPENDIX 7

Leachate Quality Data