

EPR Compliance Assessment Report

Report ID: GP3830BG/0184932

This form will report compliance with your permit as determined by an NRW officer

Site	Chirk Landfill Site	Permit Ref	GP3830BG
Operator/ Permit holder	FCC Waste Services (UK) Limited		
Date	26/06/2013	Time in	10:45 Out 16:20
What parts of the permit were assessed	Various		
Assessment	Audit	EPR Activity:	Installation X Waste Op Water Discharge
Recipient's name/position	Colin Shaw		
Officer's name	Stuart Ross, A. Zachary, T. Roberts & N. Herbert	Date issued	10/07/2013

Section 1 - Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations. A detailed explanation and any action you may need to take are given in the 'Detailed Assessment of Compliance' (Section 3). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our Compliance Classification Scheme (CCS). CCS scores can be consolidated or suspended, where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your local office.

Permit Conditions and Compliance Summary

		Condition(s) breached	
		A	
a) Permitted activities	1. Specified by permit	N	
	1. Engineering for prevention & control of pollution	N	
	2. Closure & decommissioning	N	
	3. Site drainage engineering (clean & foul)	N	
	4. Containment of stored materials	N	
c) General management	5. Plant and equipment	A	
	1. Staff competency/ training	N	
	2. Management system & operating procedures	C3	1.1
	3. Materials acceptance	N	
	4. Storage handling, labelling, segregation	N	
d) Incident management	1. Site security	N	
	2. Accident, emergency & incident planning	N	
	1. Air	C3	3.6.1
	2. Land & Groundwater	C3	3.1.1
	3. Surface water	N	
e) Emissions	4. Sewer	N	
	5. Waste	N	
	1. Odour	N	
	2. Noise	N	
	3. Dust/fibres/particulates	N	
f) Amenity	4. Pests, birds & scavengers	N	
	5. Deposits on road	N	
	1. Monitoring of emissions & environment	N	
	2. Records of activity, site diary, journal & events	N	
	3. Maintenance records	N	
g) Monitoring and records, maintenance and reporting	4. Reporting & notification	N	
	1. Efficient use of raw materials	N	
	2. Energy	N	
h) Resource efficiency			

KEY: C1, C2, C3, C4 = CCS breach category (* suspended scores are marked with an asterisk), A = Assessed (no evidence of non-compliance), N = Not assessed, NA = Not Applicable

Number of breaches recorded	3	Total compliance score (see section 5 for scoring scheme)	12
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If the Total No Breaches is greater than zero, then please see Section 3 for details of non-compliance and proposed enforcement response

Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- the part(s) of the permit that were assessed (e.g. maintenance, training, combustion plant, etc)
- where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- any non-compliances identified
- any non-compliances with directly applicable legislation
- details of any multiple non-compliances
- information on the compliance score accrued inc. details of suspended or consolidated scores.
- details of advice given
- any other areas of concern
- all actions requested
- any examples of good practice.
- a reference to photos taken

This report should be clear, comprehensive, unambiguous and completed within 14 days of an assessment.

This Compliance Assessment Report covers an audit of the site's landfill gas collection system, which aimed to assess how effectively landfill gas is being collected at the site with the objective of preventing fugitive & point source emissions to air.

The findings and actions arising of / from the audit have been documented in several separate reports, covering fugitive emissions survey, balancing survey and analysis of past balancing data. This report should be read in conjunction with those documents.

This report details non-compliances identified as part of the audit.

Leachate Outbreaks

During the audit two separate leachate outbreaks were identified from permanently capped areas, one at the base of the eastern flank near the gas compound forming a ponded area outside the engineered containment and one at the base of the northern flank adjacent to the wooden fence along the edge of the anchor trench. Liquid on the surface / leaking from cap was dark and indicative of leachate / partially diluted leachate and appeared to have been present for some time.

The northern outbreak appears to have originated from liquid trapped under what appears to be the HDPE capping membrane at the anchor trench tie in. There was a definite 'bounce' when walking on this section of membrane and it was within approx 200mm of the surface.

Samples of liquid were collected by FCC and laboratory analysis reportedly indicates that this liquid is leachate or partially diluted leachate.

These leachate outbreaks constitute non permitted emissions to land and are in breach of permit condition 3.1.1 attracting a CCS score of 3.

ACTION - Investigate the cause / source of the individual outbreaks and take prompt action to address the root cause(s). Report your findings and actions / proposed actions to Natural Resources Wales by 17 July 2013. CQA requirements will apply to any repairs etc of capping membranes.

The leachate outbreaks noted above should have been identified by FCC through pro-active monitoring / inspection and not require Natural Resources Wales to bring them to your attention - you need to manage the site proactively to minimise the potential for environmental harm. Failure to identify these issues is a breach of permit condition 1.1 (general management).

ACTION - Please review your EMS procedures and inform Natural Resources Wales of the actions you have taken to ensure such issues are quickly and proactively identified in future. Please do so by 17 July 2013.

Flux Box Survey / Fugitive Emissions from Capped Areas

FCC commissioned a flux box survey dated January 2013 for areas permanently capped in 2011 - the survey found significant fugitive methane emissions through the cap. Table S4.6 states that where the methane flux rate exceeds 0.001mg/m³/second, appropriate measures must be taken to reduce the rate. The flux box survey results were submitted to Natural Resources Wales 30th April 2013 as part of the 2012 Annual Monitoring Review. No commentary was provided on the high survey results detailing the cause or actions taken. This was raised with FCC on 30/05/13 and it became clear that they survey results had not been acted upon. The same area of cap was surveyed during this audit and emissions were elevated.

The lack of action to reduce emissions is a breach of permit condition 3.6.1 and attracts a CCS score of 3. An investigation into the cause of the elevated emissions has been agreed with FCC. Please also refer to associated audit documents for further information and required actions.

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Operator/ Permit	FCC Waste Services (UK) Limited	Date	26/06/2013

Section 3- Enforcement Response

Only one of the boxes below should be ticked

You must take immediate action to rectify any non-compliance and prevent repetition.

Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.

Other than the provision of advice and guidance, at present we do not intend to take further enforcement action in respect of the non-compliance identified above. This does not preclude us from taking enforcement action if further relevant information comes to light or advice isn't followed.

In respect of the above non-compliance you have been issued with a warning. At present we do not intend to take further enforcement action. This does not preclude us from taking additional enforcement action if further relevant information comes to light or offences continue.

X

We will now consider what enforcement action is appropriate and notify you, referencing this form.

Section 4- Action(s)

Where non-compliance has been detected and an enforcement response has been selected above, this section summarises the steps you need to take to return to compliance and also provides timescales for this to be done.

Criteria Ref.	CCS Category	Action Required/Advised	Due Date
See Section 1 above			
C2	C3	Leachate outbreaks - review your EMS procedures and inform Natural Resources Wales of the actions you have taken to ensure such issues are quickly and proactively identified in future.	17/07/13
E1	C3	An investigation into the cause of the elevated LFG emissions from capped areas has been agreed with FCC. Please also refer to associated audit documents for further information and required actions.	Refer to reports.
E2	C3	Investigate the cause / source of the individual outbreaks and take prompt action to address the root cause(s). Report your findings and actions / proposed actions to Natural Resources Wales by 17 July 2013.	17/07/13

Section 5 - Compliance notes for the Operator		Section 6 – General Information	
To ensure you correct actual or potential non-compliance we may ● advise on corrective actions verbally or in writing ● require you to take specific actions in writing ● issue a notice ● require you to review your procedures or management system ● change some of the conditions of your permit ● decide to undertake a full review of your permit Any breach of a permit condition is an offence and we may take legal action against you. ● We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required. ● Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and or suspension or revocation of the permit. See our Enforcement and Civil Sanctions guidance for further information This report does not relieve the site operator of the responsibility to ● ensure you comply with the conditions of the permit at all times and prevent pollution of the environment ● ensure you comply with other legislative provisions which may apply.		Data protection notice The information on this form will be processed by the Natural Resources Wales (NRW) to fulfill its regulatory and monitoring functions and to maintain the relevant public register(s). The NRW may also use and/or disclose it in connection with: ● offering/providing you with its literature/services relating to environmental matters ● consulting with the public, public bodies and other organisations (e.g. Health and Safety Executive, local authorities) on environmental issues ● carrying out statistical analysis, research and development on environmental issues ● providing public register information to enquirers ● investigating possible breaches of environmental law and taking any resulting action ● preventing breaches of environmental law ● assessing customer service satisfaction and improving its service ● Freedom of Information Act/Environmental Information Regulations request. The NRW may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.	
Non-compliance scores and categories		Disclosure of information	
CCS category	Description	The NRW will provide a copy of this report to the public register(s). However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within twenty working days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.	
C1	A non-compliance which could have a major environmental effect	60	
C2	A non-compliance which could have a significant environmental effect	31	
C3	A non-compliance which could have a minor environmental effect	4	
C4	A non-compliance which has no potential environmental effect	0.1	
Operational Risk Appraisal (Opra) - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.		Customer charter What can I do if I disagree with this compliance assessment report? If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with the officer's line managers. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 0300 065 3000 (Mon to Fri 08.00–18.00) and ask for the Customer Contact team or send an email to enquiries@naturalresourceswales.gov.uk. If you are still dissatisfied you can make a complaint to the Public Services Ombudsman for Wales. For advice on how to complain to the Ombudsman phone their helpline on 0845 607 0987.	

**Natural Resources Wales Technical Review
Of Landfill Gas Management Systems
Pen Y Bont Landfill**

FCC Environment Ltd
Pen Y Bont Landfill Site
Pentre
Wrexham
LL14 5AR

4th July 2013

Dear Colin

Permit No: GP3830BG

Pen Y Bont Landfill Gas Review and Methane Emissions Survey

Please find enclosed the Landfill Gas and Methane Emissions Survey conducted on the 26th of June 2013. I have also enclosed photographs taken during the audit and a review of balancing data.

This was a short review to provide an updated snapshot of issues post the original Landfill Gas Review. A Compliance Assessment Report form has been completed to address compliance issues - this letter should be read in conjunction with that report.

Please find a list of comments and actions below:

A. COLLECTION INFRASTRUCTURE

1. On the newly capped flank to the SW of the site, well CH0092 was disconnected due to capping works. This well was reading +5.5mb pressure. This well should be connected as soon as possible and a record of wells under positive pressure should be kept for H&S purposes.
2. Due to ongoing capping works the gas system serving this (SW) part of the site is due to be switched off over the next few days. As requested on site please provide the difference in flow (and the number of wells served) as registered at the compound when this area is switched off and then re-connected.
3. The disconnected well close to the site haul road showed excellent quality gas under pressure which after further analysis may require more infrastructure either with regards influence at depth or laterally in the near future.

4. Historically there have been some issues with the perching of water/leachate in wells and this can have a dramatic effect on the performance of the extraction system. Please submit the latest dip data for the gas wells and details of any ongoing or planned de-watering programme. Please do so by 19th July 2013.

5. Well CH1WH4 registered >500ppm H₂S (LOD on the GA 2000+). Has this reading been confirmed by previous or lab analysis as the instrument cannot confirm the exact reading as it is off scale? The well was not marked as such. This is important for Health and Safety considerations at the site. It is especially important to be aware of a combination of positive pressure and high H₂S in any particular well and inform the Natural Resources Wales and site staff of such occurrences.

6. Where wells contain H₂S >100ppm the wells should be marked as such. Natural Resources Wales should be informed and site staff should be made aware.

7. The new leachate pumping pot on the SW flank was open and causing a point source emission with release of odorous pungent gas. The pot should be sealed immediately. Pre capping, this flank benefited from a series of pin wells to aid gas extraction. Gas collection wells should now be re-installed in this area. Please inform me of your proposals by 19th July 2013.

8. Well CH0017R, showed pure air re-circulating at the top of the well due to a leaky flange. Replace rubber seal and reseal the well as a matter of priority.

9. During the emissions survey it was requested that proposals be submitted for improving gas well coverage along the Northern and North Eastern flanks of the site. These areas have shown a high fugitive emission profile through the capping membrane and urgently require extraction infrastructure. Please submit your proposals by 19th July 2013.

10. Flow at the compound was 1042m³/hr. This is significantly down on the expected flow and may reflect the elevated flux box monitoring / site walkover survey results.

However, it is recognised that some parts of the site infrastructure are disconnected due to capping works and the flows will be re-assessed once all wells are re-connected.

11. One of two gas engines was running when we entered the compound and the flare was taking the excess gas. There is a problem with the flare ignition sequence due to issues with the Allen Bradley system.

The pilot light is kept permanently lit to overcome this problem. Replacement of the Allen Bradley GUP system is imminent as discussed with Tony Roach and Andrew Leeding of Infnis. Please provide an update on the progress of this replacement programme.

12. There was no methane detected in the perimeter boreholes sampled on the SW perimeter of the site which is encouraging. The bungs in the wells do not appear fit for purpose and in some cases risk falling down the well. It is recommended that new sample points are fitted and that a clear labelling system is adopted as none was evident during the sampling exercise.

B. FUGITIVE EMISSIONS SURVEY

1. The attached fugitive methane emissions survey sheet shows the result of 60 samples taken on the day. The samples are grid referenced and range from a 6ppm to high percentage methane emissions.
2. Surface fugitive and point source emissions for capping works completed 2011 are high (significantly above the recommended emissions limit of 0.001mg/m²/sec for permanently capped areas).
3. This survey supports the findings of the flux box monitoring survey commissioned by FCC and completed by Torus Environmental Ltd. The elevated flux box survey results are subject to investigation by FCC as agreed with Natural Resources Wales.
4. A hole approximately 2ft deep, 6 inches in diameter was found in the 2011 capping works possibly due to rabbits burrowing. A methane reading of 8000 – 9000ppm was obtained from the hole. This area requires particular investigation to assess the integrity of the capping membrane beneath.
5. As part of the investigation noted in point 3 above, consideration must be given to a review of water levels in existing infrastructure local to this flank, a review of air ingress remotely entering the system (wells with high balance gas and low oxygen) and the installation of new gas collection infrastructure. A report of your findings / associated remediation proposals must be submitted to Natural Resources Wales.
6. Elevated fugitive methane emissions were found at leachate side risers 1 and 2. Refer to report for details. Corrective action required to prevent emissions. Please report what action you have taken to address these issues by 10th July 2013.

C. LANDFILL GAS BALANCING DATA / WELL PERFORMANCE

Landfill gas balancing data for the period January – June 2013 has been reviewed – see attached spreadsheet.

In order to raise extraction efficiency please review the spread sheet and where data is highlighted in amber or red, investigate the condition of wells and take action where necessary to ensure effective gas collection.

D. FUTURE WORK

Due to current capping works the landfill gas collection system is not operating under 'normal conditions'. A number of gas wells were disconnected and collection pipe work temporarily laid to allow for plant movement etc.

With this in mind, it is our intention to revisit the site later in 2013 and repeat the audit exercise when the collection system is operating under normal / representative conditions.

Please respond to the actions / recommendations listed in this report. If you would like to discuss anything further please do not hesitate to contact me on 01244 894622.

Yours sincerely,



Stuart Ross
Regulatory Officer (PPC/RSR) / Swyddog Rheoliadol 1 (RhDP/RhSY)
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Monitor ID	Date Taken	Time Taken	Initial Assessment	Valve before	Valve After	CH4 %	CO2 %	O2 %	Balance Gas %	CH4 CO2	N2%	FN2%	PN2%N2	N2O2	Diff mBar	Aim mbar	CO ppm	H2S ppm	V1	V2	
CHW0081	14 January 2013	10:27	OK	ON	ON	58.3	42.0	0.2	0	1.4	-0.5	-1.3	258%	-	2	-13.35	1002	0	2	50	50
CHW0080	14 January 2013	10:29	OK	ON	ON	58.4	41.6	0.4	0	1.4	-0.4	-1.9	486%	-	1	-98.52	1002	0	1	60	60
CHW0076	14 January 2013	10:38	OK	ON	ON	58.2	41.7	0.1	0	1.4	0.0	-0.4	-414800%	-	0	-4.46	1001	2	1	20	20
CHW0077	14 January 2013	10:37	OK	ON	ON	52.0	41.7	0.2	6.1	1.2	6.1	5.3	87%	-	30	-10.61	1001	18	1	50	50
CHW0074	14 January 2013	10:40	OK	ON	ON	55.7	44.3	0.2	0	1.3	-0.2	-1.0	456%	-	1	-72.30	1001	3	1	50	50
CHW002AR	14 January 2013	10:42	OK	ON	ON	56.6	43.1	0.8	0	1.3	-0.5	-3.6	711%	-	1	-15.70	1001	68	1	10	5
CHW002AR	14 January 2013	10:44	OK	ON	ON	56.3	43.5	0.0	0.2	1.3	0.2	0.2	81%	-	20.001	-14.01	1001	77	1	5	5
CHW0037	14 January 2013	10:46	OK	ON	ON	56.1	43.2	0.6	0.1	1.3	0.1	-2.2	-2199%	-	0	-16.60	1001	1	1	10	10
CHW0069	14 January 2013	11:05	OK	ON	ON	56.7	41.8	0.1	0	1.4	-0.6	-1.0	169%	-	6	-0.30	1001	19	1	10	10
CHW0030	14 January 2013	14:18	OK	OFF	OFF	63.7	37.8	0.1	0	1.7	-1.4	-1.8	130%	-	14	-3.28	1000	2	1	0	0
CHW0025	14 January 2013	14:20	OK	ON	ON	54.6	37.0	0.6	7.8	1.5	7.8	5.5	21%	-	13	-27.97	1000	1	1	10	10
CHW0025	14 January 2013	14:20	OK	ON	ON	50.4	40.4	0.2	0	1.5	-1.0	-1.8	179%	-	5	-6.70	1000	2	1	5	5
CHW0028	14 January 2013	14:22	OK	ON	ON	56.8	33.0	0.7	4.5	1.5	4.5	1.8	41%	-	6	-13.75	999	1	1	10	10
CHW0003	14 January 2013	14:24	OK	ON	ON	63.1	37.8	0.3	0	1.7	-1.2	-2.4	197%	-	4	-5.40	1000	2	1	5	5
CHW0001	14 January 2013	14:27	OK	ON	ON	63.9	37.5	0.7	0	1.7	-2.1	-4.8	227%	-	3	-3.47	999	0	1	5	5
CHW005R	15 January 2013	14:54	OK	ON	ON	57.0	39.6	1.4	2	1.4	2.0	-3.3	-166%	-	1	-26.63	1003	4	4	20	20
CHW0012	17 January 2013	14:20	OK	ON	ON	61.4	35.0	1.8	1.8	1.8	1.8	-5.0	-279%	-	1	-11.53	1005	5	6	10	10
CHW0056	17 January 2013	14:21	OK	ON	ON	51.1	39.6	0.3	9	1.3	9.0	7.6	87%	-	30	-2.11	1005	20	15	20	20
CHW0064	17 January 2013	14:24	OK	ON	ON	61.4	38.6	0.4	9.6	1.3	9.6	8.1	84%	-	24	-2.31	1004	12	13	20	20
CHW0095	17 January 2013	14:26	OK	ON	ON	54.2	41.4	0.2	4.2	1.3	4.2	3.4	81%	-	21	-4.58	1004	14	12	10	10
CHW0044	17 January 2013	14:30	OK	ON	ON	57.8	44.9	0.5	0	1.3	-3.2	-5.1	180%	-	6	-4.06	1004	15	21	5	5
CHW0058	17 January 2013	14:33	OK	ON	ON	54.6	39.5	0.1	5.4	1.4	5.4	5.0	32%	-	54	-15.13	1005	14	15	10	10
CHW0010R	17 January 2013	14:35	OK	ON	ON	49.5	39.6	0.3	10.6	1.3	10.6	9.4	89%	-	35	-47.29	1005	25	14	10	10
CHW0033	18 January 2013	10:20	OK	ON	ON	58.5	42.7	1.3	0	1.4	-2.5	-7.4	298%	-	2	-58.25	994	23	19	20	20
CHW0075	18 January 2013	10:28	OK	ON	ON	61.1	41.8	0.8	0	1.5	-3.5	-6.6	187%	-	4	-12.24	995	13	19	70	70
CHLW06R	18 January 2013	10:30	OK	ON	ON	62.1	39.9	0.6	0	1.6	-2.6	-4.9	188%	-	4	-15.66	995	2	5	20	20
CHLW04B	18 January 2013	10:32	Air Leak	ON	OFF	1.6	2.1	20.5	76.3	0.5	76.3	0.9	1%	-	4	-74.36	994	8	3	10	0
CHLW04B	18 January 2013	10:33	Air Leak	ON	OFF	1.5	2.0	20.1	76.4	0.5	76.4	0.6	1%	-	4	-72.84	994	6	3	0	0
CHLW04R	18 January 2013	10:36	OK	ON	ON	51.3	22.2	2.6	23.7	2.3	23.7	13.1	55%	-	8	-2.81	994	13	3	10	10
CHLW05R	18 January 2013	10:37	OFF	OFF	OFF	35.6	20.0	5.8	38.6	1.8	38.6	17.7	45%	-	7	-0.30	994	1	2	0	0
CHW0071	18 January 2013	10:41	OK	ON	ON	60.4	42.0	0.8	0	1.4	-3.2	-8.3	195%	-	4	-40.26	994	11	15	70	70
CHW0072	18 January 2013	10:43	OK	ON	ON	59.9	42.7	0.6	0	1.4	-3.2	-5.5	172%	-	5	-19.88	994	17	28	70	70
CHW0073	18 January 2013	10:45	OK	ON	ON	59.7	42.9	0.5	0	1.4	-3.1	-5.0	160%	-	6	-23.21	994	6	25	70	70
CHW0067	18 January 2013	10:51	OK	ON	ON	45.3	39.4	0.8	14.5	1.3	14.5	11.4	79%	-	18	-10.38	994	39	9	10	10
CHW0048	18 January 2013	10:52	OK	ON	ON	58.4	41.8	0.7	0	1.4	-0.9	-3.6	397%	-	1	-22.67	994	17	7	10	10
CHW0041	18 January 2013	10:54	OK	ON	ON	55.7	43.2	0.5	0.6	1.3	0.6	-1.3	-250%	-	1	-17.51	994	24	11	20	20
CHW0066	18 January 2013	10:57	OK	ON	ON	44.7	36.8	1.8	16.7	1.2	16.7	9.9	59%	-	9	-19.11	994	51	7	10	10
CHW0057	18 January 2013	10:59	OK	ON	ON	56.4	41.6	0.8	1.2	1.4	1.2	-1.9	-154%	-	1	-9.75	994	7	9	10	10
CHW0040	18 January 2013	11:02	OK	ON	ON	52.7	39.4	0.3	7.6	1.3	7.6	6.4	85%	-	25	-4.29	993	0	8	20	20
CHLW01B	18 January 2013	11:08	Air Leak	OFF	OFF	20.4	12.4	14.3	52.7	1.6	52.7	-2.0	-4%	-	4	-79.36	993	6	2	0	0
CHW0036	18 January 2013	11:15	Air Leak	ON	OFF	0.8	0.3	20.1	77.3	2.7	78.0	-0.8	-1%	-	4	-32.13	993	5	2	10	0
CHW0038	18 January 2013	11:16	Air Leak	OFF	OFF	0.7	0.3	20.5	77.4	2.3	78.1	-0.7	-1%	-	4	-14.40	993	5	2	0	0
CHW0078	18 January 2013	11:21	OK	ON	ON	61.8	40.8	1.2	0	1.5	-3.6	-8.2	227%	-	3	-86.86	994	9	24	50	50
CHW0079	18 January 2013	11:23	OK	ON	ON	67.2	41.7	0.8	0.8	1.4	0.8	-2.3	-282%	-	1	-16.58	995	11	30	10	10
CHW0080	18 January 2013	11:25	OK	ON	ON	60.9	43.4	0.1	1.5	1.4	-3.9	-9.6	245%	-	3	-36.39	995	10	11	10	10
CHW0082	18 January 2013	11:27	OK	ON	ON	57.5	39.3	1.1	8.1	1.3	8.1	3.9	49%	-	7	-52.15	995	13	7	80	80
CHW0083	18 January 2013	11:30	OK	ON	ON	53.0	39.3	0.9	6.8	1.3	6.8	3.4	50%	-	8	-16.50	994	21	6	20	20
CHLW001	18 January 2013	14:49	OK	N/A	N/A	55.8	40.2	0.8	3.2	1.4	3.2	0.1	5%	-	4	-19.65	992	15	16	-	-
CHW0074	21 January 2013	10:27	OK	ON	ON	58.8	45.1	0.4	0	1.3	-5.3	-8.8	129%	-	13	-72.83	994	15	18	50	50
CHW0078	21 January 2013	10:29	OK	ON	ON	58.9	42.7	0.3	0	1.4	-1.9	-3.1	162%	-	6	-16.34	994	18	9	50	50
CHW0076	21 January 2013	10:31	OK	ON	ON	50.3	39.9	0.7	9.1	1.3	9.1	6.4	71%	-	13	-7.93	994	13	10	30	30
CHW0021	21 January 2013	10:35	OK	OFF	OFF	59.7	46.3	0.0	0	1.3	-8.0	-6.0	101%	-	599.999	-0.51	994	20	16	0	0
CHLW001	21 January 2013	10:38	OK	OFF	OFF	61.3	42.7	0.0	0	1.4	-4.0	-4.0	101%	-	399.999	-2.80	994	11	7	0	5
CHLW001	21 January 2013	10:40	OK	ON	ON	60.9	42.7	0.0	0	1.4	-3.6	-3.6	101%	-	359.999	-26.22	994	11	6	5	5
CHW0018	21 January 2013	10:48	OK	ON	ON	52.4	38.7	0.3	8.6	1.4	8.6	7.4	86%	-	29	-22.71	994	0	7	10	10
CHW0056	21 January 2013	10:51	OK	ON	ON	57.6	41.3	0.2	0.9	1.4	0.9	0.1	12%	-	4	-10.82	994	0	7	10	10
CHW0081	28 January 2013	13:12	OK	ON	ON	60.0	42.0	0.6	0	1.5	-1.6	-3.9	244%	-	3	-12.86	995	6	2	20	30
CHW0091	28 January 2013	13:14	OK	ON	ON	59.1	42.0	0.0	0	1.4	-1.1	-1.1	103%	-	109.999	-3.24	995	7	2	30	30
CHW0090	28 January 2013	13:16	OK	ON	ON	58.9	42.1	0.1	0	1.4	-1.1	-1.5	138%	-	11	-56.81	995	6	1	50	50
CHW0079	28 January 2013	13:18	OK	ON	ON	58.8	42.2	0.3	0	1.4	-1.1	-2.3	206%	-	4	-61.50	995	5	2	30	30
CHW0078	28 January 2013	13:20	OK	OFF	OFF	61.2	40.8	0.1	0	1.5	-2.1	-2.5	120%	-	21	-58.20	995	4	2	0	10
CHW0078	28 January 2013	13:22	OK	ON	ON	61.1	40.9	0.0	0	1.5	-2.0	-2.0	102%	-	199.999	-40.14	995	4	2	10	10
CHW0070	28 January 2013	13:46	OK	ON	ON	58.1	43.2	0.0	0	1.3	-1.3	-1.3	103%	-	129.999	-18.43	995	6	6	10	10
CHW0083	28 January 2013	13:54	OK	ON	ON	56.4	42.0	0.4	1.2	1.3	1.2	-0.3	-29%	-	3	-3.52	995	9	1	1	10
CHW0083	28 January 2013	13:56	OK	ON	ON	59.2	42.3	0.0	0	1.4	-1.5	-1.5	103%	-	149.999	-0.26	995	7	2	10	10
CHW0086	28 January 2013	13:58	OK	ON	ON	56.8	44.3	0.2	0	1.3	-1.3	-2.1	161%	-	6	-7.44	995	16	1	20	20
CHW0067	28 January 2013	14:03	OK	ON	ON	56.3	40.5	0.6	2.6	1.4	2.6	0.3	12%	-	4	-1.81	995	17	1	20	20
CHW0055	29 January 2013	09:51	OK	ON	ON	60.4	38.7	0.6	0.3	1.6	0.3	-2.0	-667%	-	1	-10.61	995	5	5	10	10
CHW0027	29 January 2013	11:31	OK	OFF	OFF	63.9	38.0	0.0	0												

Monitor ID	Date / Time	Time Taken	Assessment	Label	Value before	Value After	CH4 %	CO2 %	O2 %	Balance %	CH4/CO2	FMZ%	FMZHZ	H2 O2	Dil mbar	Aim mbar	CD ppm	H2S ppm	V1	V2
CHW0004	01 February 2013	10:17	OK	OK	OK	OK	58.0	40.6	0.1	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0005	01 February 2013	10:19	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0006	01 February 2013	10:20	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0007	01 February 2013	10:21	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0008	01 February 2013	10:22	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0009	01 February 2013	10:23	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0010	01 February 2013	10:24	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0011	01 February 2013	10:25	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0012	01 February 2013	10:26	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0013	01 February 2013	10:27	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0014	01 February 2013	10:28	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0015	01 February 2013	10:29	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0016	01 February 2013	10:30	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0017	01 February 2013	10:31	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0018	01 February 2013	10:32	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0019	01 February 2013	10:33	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0020	01 February 2013	10:34	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0021	01 February 2013	10:35	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0022	01 February 2013	10:36	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0023	01 February 2013	10:37	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0024	01 February 2013	10:38	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0025	01 February 2013	10:39	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0026	01 February 2013	10:40	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0027	01 February 2013	10:41	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0028	01 February 2013	10:42	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0029	01 February 2013	10:43	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0030	01 February 2013	10:44	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0031	01 February 2013	10:45	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0032	01 February 2013	10:46	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0033	01 February 2013	10:47	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0034	01 February 2013	10:48	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0035	01 February 2013	10:49	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0036	01 February 2013	10:50	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0037	01 February 2013	10:51	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0038	01 February 2013	10:52	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0039	01 February 2013	10:53	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0040	01 February 2013	10:54	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0041	01 February 2013	10:55	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0042	01 February 2013	10:56	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0043	01 February 2013	10:57	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0044	01 February 2013	10:58	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0045	01 February 2013	10:59	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0046	01 February 2013	11:00	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0047	01 February 2013	11:01	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0048	01 February 2013	11:02	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0049	01 February 2013	11:03	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0050	01 February 2013	11:04	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0051	01 February 2013	11:05	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0052	01 February 2013	11:06	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0053	01 February 2013	11:07	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0054	01 February 2013	11:08	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0055	01 February 2013	11:09	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0056	01 February 2013	11:10	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0057	01 February 2013	11:11	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0058	01 February 2013	11:12	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0059	01 February 2013	11:13	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0060	01 February 2013	11:14	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0061	01 February 2013	11:15	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0062	01 February 2013	11:16	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0063	01 February 2013	11:17	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0064	01 February 2013	11:18	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0065	01 February 2013	11:19	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0066	01 February 2013	11:20	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0067	01 February 2013	11:21	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0068	01 February 2013	11:22	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0069	01 February 2013	11:23	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0070	01 February 2013	11:24	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0071	01 February 2013	11:25	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0072	01 February 2013	11:26	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0073	01 February 2013	11:27	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0074	01 February 2013	11:28	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0	10	3
CHW0075	01 February 2013	11:29	OK	OK	OK	OK	56.0	35.0	0.0	1.3	1.4	1.3	0.9	68%	13	0.21	960	0		

Monitor ID	Date Taken	Time Taken	Initial Assessment	Value before	Value After	CH4 %	CO2 %	O2 %	Balance Gas %	CH4/CO2	N2%	FN2%	FN2/N2	N2/O2	Diff mBar	Atm mBar	CO ppm	H2S ppm	V1	V2	
CHW0090	22 February 2013	14:07	OK	ON	ON	61.5	41.3	0.1	0	1.5	-2.9	-3.3	114%	-	29	-5.63	1012	15	12	20	20
CHW0092	22 February 2013	14:22	OK	ON	ON	63.3	38.8	0.2	0	1.6	-2.3	-3.1	134%	-	11	-5.14	1013	15	9	20	20
CHW0094	22 February 2013	14:24	OK	ON	ON	59.2	41.5	0.2	0	1.4	-0.9	-1.7	188%	-	4	-4.57	1012	25	21	20	20
CHW0095	22 February 2013	14:27	OK	ON	ON	53.5	39.8	0.2	6.5	1.3	8.5	5.7	88%	-	32	-4.51	1012	20	35	20	20
CHW0091	26 February 2013	13:07	OK	ON	ON	46.2	36.5	0.4	16.9	1.3	16.9	15.4	91%	-	42	-4.86	1025	40	7	10	10
CHW0093	26 February 2013	13:09	OK	ON	ON	55.6	40.2	0.3	3.9	1.4	3.9	2.7	70%	-	13	-3.05	1025	28	7	20	20
CHW0087	26 February 2013	13:36	OK	ON	ON	56.9	41.6	0.4	1.1	1.4	1.1	-0.4	-41%	-	3	-5.87	1024	60	4	10	10
CHW0096	26 February 2013	13:38	OK	ON	ON	59.7	41.4	0.2	0	1.4	-1.3	-2.1	161%	-	6	-2.35	1025	5	5	20	20
CHW0092	26 February 2013	13:46	OK	ON	ON	61.8	39.7	0.4	0	1.6	-1.9	-3.4	181%	-	5	-2.75	1025	10	3	20	20
CHW0084	26 February 2013	13:49	OK	ON	ON	59.2	41.6	0.4	0	1.4	-1.2	-2.7	229%	-	3	-4.62	1025	31	0	20	20
CHW0085	26 February 2013	13:58	OK	ON	ON	45.9	36.6	0.4	12.1	1.3	12.1	10.6	87%	-	30	-2.35	1025	15	9	10	10
CHW0030	01 March 2013	09:59	OK	ON	ON	46.0	34.6	0.5	18.7	1.3	18.7	18.8	90%	-	37	-5.35	1022	3	31	20	20
CHW0007	01 March 2013	10:01	OK	OFF	OFF	61.1	35.0	0.8	3.1	1.7	3.1	0.0	1%	-	4	-33.53	1022	7	17	0	5
CHW0007	01 March 2013	10:02	OK	ON	ON	62.3	35.2	0.8	1.7	1.8	1.7	-1.4	-60%	-	2	-40.90	1022	2	18	5	5
CHW0029	01 March 2013	10:04	OK	ON	ON	60.8	37.3	0.3	1.6	1.6	1.6	0.4	27%	-	5	-26.72	1022	2	1	5	5
CHW0028	01 March 2013	10:06	OK	ON	ON	45.4	35.3	0.5	18.8	1.3	18.8	16.9	90%	-	38	-25.11	1022	4	0	10	10
CHW0003	01 March 2013	10:09	OK	ON	ON	57.4	34.9	1.4	6.3	1.6	6.3	1.0	16%	-	4	-25.30	1022	7	0	10	10
CHW0001	01 March 2013	10:13	OK	ON	ON	57.0	36.3	0.2	6.5	1.6	6.5	5.7	88%	-	32	-28.20	1022	5	0	10	10
CHW0056	01 March 2013	10:18	Air Leak	OFF	OFF	6.0	4.1	-3.5	70.4	1.5	70.4	-3.2	-4%	-	4	-1.77	1021	6	0	0	0
CHW0012	01 March 2013	10:21	Air Leak	OFF	OFF	4.8	3.4	-20.3	71.5	1.4	71.5	-5.1	-7%	-	4	-85.85	1021	2	0	0	0
CHW0093	01 March 2013	11:15	OK	ON	ON	58.4	40.4	0.1	1.1	1.4	1.1	0.7	62%	-	11	-16.63	1022	6	0	20	20
CHW0033	01 March 2013	11:18	OK	ON	ON	60.1	38.9	0.3	0.7	1.5	0.7	-0.5	-61%	-	2	-35.43	1022	3	3	50	50
CHW0075	01 March 2013	11:30	OK	ON	ON	61.3	38.8	0	0	1.6	-0.1	-0.1	138%	-	9.999	-53.58	1022	3	8	70	70
CHLW06R	01 March 2013	11:22	OK	ON	ON	64.6	33.6	0.5	1.3	1.9	1.3	-0.6	-46%	-	3	-0.57	1022	3	2	10	10
CHLW04B	01 March 2013	11:25	OK	OFF	OFF	11.1	12.3	-3.1	63.9	3.8	63.9	18.0	25%	-	5	-10.78	1022	29	1	0	0
CHLW04R	01 March 2013	11:27	Air Leak	OFF	OFF	1.1	2.2	-2.7	76	0.8	76.0	-2.1	-3%	-	4	-80.27	1022	0	1	10	0
CHLW04H	01 March 2013	11:28	Air Leak	OFF	OFF	1.4	1.7	-2.7	76.2	0.8	76.2	-1.9	-2%	-	4	-82.82	1022	0	1	0	0
CHLW05R	01 March 2013	11:30	Air Leak	OFF	OFF	0.3	1.0	-20.8	77.2	0.3	77.2	-1.0	-1%	-	4	-30.47	1022	0	0	0	0
CHLW05A	01 March 2013	11:34	OK	ON	ON	63.2	18.7	3.5	14.6	3.4	14.6	1.4	9%	-	4	-80.84	1022	0	1	5	5
CHW0071	01 March 2013	11:57	OK	ON	ON	60.1	40.6	1.0	0	1.5	-1.7	-5.5	324%	-	2	-78.71	1022	4	2	50	50
CHW0073	01 March 2013	12:01	OK	ON	ON	59.6	40.3	0.4	0	1.5	-0.3	-1.6	615%	-	1	-81.01	1022	4	5	50	50
CHW0072	01 March 2013	12:05	OK	ON	ON	60.2	41.0	0.5	0	1.5	-1.7	-3.6	213%	-	3	-68.68	1022	9	3	50	50
CHW0091	01 March 2013	12:07	OK	ON	ON	59.9	39.8	0.1	0.2	1.5	0.2	0.2	-107%	-	2	-6.41	1022	8	4	20	20
CHLW07B	01 March 2013	12:09	OK	ON	ON	63.8	28.9	1.6	7.7	2.4	7.7	1.6	10%	-	5	-10.55	1022	2	1	5	5
CHW0091	01 March 2013	14:02	OK	ON	ON	57.3	39.2	0.3	3.2	1.5	3.2	2.0	63%	-	11	-55.15	1022	6	1	50	50
CHW0090	01 March 2013	14:04	OK	ON	ON	59.8	40.1	0.3	0	1.5	-0.2	-1.4	684%	-	1	-18.22	1022	4	2	20	20
CHW0079	01 March 2013	14:06	OK	ON	ON	58.5	41.4	0.2	0	1.4	-0.1	-0.9	992%	-	0	-18.32	1021	0	5	30	30
CHW0078	01 March 2013	14:09	OK	ON	ON	59.6	39.5	0.1	0.5	1.5	0.5	0.1	17%	-	5	-65.15	1022	4	6	10	10
CHW0092	01 March 2013	14:11	OK	ON	ON	61.6	39.4	0.4	0	1.6	-1.4	-2.9	210%	-	3	-78.71	1021	11	1	20	20
CHW0084	01 March 2013	14:14	OK	ON	ON	57.1	40.9	0.1	1.9	1.4	1.9	1.5	78%	-	19	-72.48	1020	7	27	10	10
CHW025R	01 March 2013	14:23	Air Leak	ON	OFF	0.3	1.2	-20.8	77	0.3	77.6	-1.2	-2%	-	4	-78.78	1021	0	0	10	0
CHW025R	01 March 2013	14:24	Air Leak	OFF	OFF	0.2	0.8	-20.3	77.5	0.3	78.1	-0.7	-1%	-	4	-88.88	1021	0	0	0	0
CHW0085	01 March 2013	14:27	OK	ON	ON	41.0	34.1	0.4	24.5	1.2	24.5	23.0	84%	-	61	-14.58	1021	16	25	10	10
CHW0055	01 March 2013	14:34	OK	ON	OFF	47.5	32.6	3.9	16	1.5	16.0	1.3	8%	-	4	-82.79	1020	3	1	10	0
CHW0055	01 March 2013	14:36	Air Leak	OFF	OFF	43.8	29.0	-2.8	21.6	1.5	21.6	0.5	2%	-	4	-83.88	1020	1	2	0	0
CHW0085	01 March 2013	14:38	OK	ON	ON	54.9	38.6	0.3	5.2	1.4	5.2	4.0	78%	-	17	-5.70	1021	15	2	10	10
CHW0074	01 March 2013	14:41	OK	ON	ON	54.9	41.8	0.3	3	1.3	3.0	1.8	81%	-	10	-33.78	1021	3	13	50	50
CHW0083	01 March 2013	14:52	OK	ON	ON	57.5	38.0	0.1	4.4	1.5	4.4	4.0	91%	-	44	-26.03	1021	2	1	20	20
CHW0082	01 March 2013	14:55	OK	ON	ON	52.5	37.4	0.0	10.1	1.4	10.1	10.1	100%	-	1,010.001	-29.49	1021	3	2	30	30
CHW0068	04 March 2013	09:44	OK	ON	ON	61.4	38.4	0.3	0	1.6	-0.1	-1.3	1269%	-	0	-19.21	1006	8	0	20	20
CHW0067	04 March 2013	09:46	OK	ON	ON	45.4	36.0	0.1	18.5	1.3	18.5	18.1	96%	-	185	-13.40	1006	13	2	20	20
CHW0041	04 March 2013	09:48	OK	ON	ON	52.5	39.1	0.1	8.3	1.3	8.3	7.9	95%	-	83	-9.07	1005	13	1	30	30
CHW0066	04 March 2013	09:51	OK	ON	ON	46.5	33.0	0.9	19.6	1.4	19.6	19.2	82%	-	22	-13.00	1005	41	3	20	10
CHW0066	04 March 2013	09:52	OK	ON	ON	45.5	34.9	0.5	19.1	1.3	19.1	17.2	90%	-	36	-6.35	1005	23	2	10	10
CHW0048	04 March 2013	09:55	OK	ON	ON	58.1	40.7	0.1	1.1	1.4	1.1	0.7	62%	-	11	-15.38	1005	0	0	5	5
CHW0057	04 March 2013	09:57	OK	OFF	ON	58.9	37.0	0.8	3.3	1.8	3.3	0.2	7%	-	4	-18.21	1005	0	0	5	5
CHW0057	04 March 2013	09:59	OK	ON	ON	59.5	38.6	0.3	1.6	1.9	1.6	0.4	27%	-	5	-12.50	1005	0	0	5	5
CHW0058	04 March 2013	10:02	OK	ON	ON	54.5	41.2	0.0	4.3	1.3	4.3	4.3	99%	-	430.001	-12.44	1005	0	4	10	10
CHW0044	04 March 2013	10:05	Aerobic	ON	OFF	32.4	33.2	0.1	34.3	3.3	34.3	33.9	99%	-	343	-18.98	1005	0	1	10	0
CHW0044	04 March 2013	10:07	Aerobic	OFF	OFF	32.5	33.4	0.0	34.1	3.3	34.1	34.1	100%	-	3,410.001	-9.47	1005	2	4	0	0
CHW010R	04 March 2013	10:10	OK	ON	ON	46.4	38.7	0.3	14.6	1.2	14.6	13.4	92%	-	49	-26.93	1005	8	0	10	10
CHW0018	04 March 2013	10:13	OK	ON	ON	36.6	32.7	0.0	30.7	1.1	30.7	30.7	100%	-	3,070.001	-31.23	1004	0	0	10	5
CHW0018	04 March 2013	10:15	OK	ON	ON	36.8	33.4	0.2	29.6	1.1	29.6	28.8	97%	-	148	-34.27	1004	0	0	5	5
CHW0065	04 March 2013	10:18	OK	ON	ON	41.5	35.1	0.1	23.3	1.2	23.3	22.9	98%	-	233	-20.35	1004	1	0	20	20
CHW0064	04 March 2013	10:20	OK	ON	ON	48.0	35.3	0.1	18.6	1.3	18.6	18.2	98%	-	186	-19.72	1003	0	0	10	10
CHW017R	04 March 2013	10:26	OK	ON	ON	52.1	41.6	0.2	6.1	1.3	6.1	5.3	87%	-	30	-4.83	1004	0	0	5	5
CHW017R	04 March 2013	10:29	OK	OFF	OFF	44.4	34.3	1.2	20.1	1.3	20.1	15.5	77%	-	17	-13.02	1004	0	0	0	0
CHW0039	04 March 2013	10:32	OK	OFF	OFF	44.3	34.8	4.8	19.3	1.3	19.3	-1.1	-7%	-	4	-13.02	1004	0	0	0	0
CHW0043	04																				

Monitor ID	Date (MM/DD)	Time (HH:MM)	Assessment	Value	Value before	Value after	CH4 %	CO2 %	O2 %	Balance %	CH4/CO2	FMZM2	FMZM3	FMZM4	FMZM5	FMZM6	FMZM7	FMZM8	FMZM9	FMZM10	FMZM11	FMZM12	FMZM13	FMZM14	FMZM15	FMZM16	FMZM17	FMZM18	FMZM19	FMZM20	FMZM21	FMZM22	FMZM23	FMZM24	FMZM25	FMZM26	FMZM27	FMZM28	FMZM29	FMZM30	FMZM31	FMZM32	FMZM33	FMZM34	FMZM35	FMZM36	FMZM37	FMZM38	FMZM39	FMZM40	FMZM41	FMZM42	FMZM43	FMZM44	FMZM45	FMZM46	FMZM47	FMZM48	FMZM49	FMZM50	FMZM51	FMZM52	FMZM53	FMZM54	FMZM55	FMZM56	FMZM57	FMZM58	FMZM59	FMZM60	FMZM61	FMZM62	FMZM63	FMZM64	FMZM65	FMZM66	FMZM67	FMZM68	FMZM69	FMZM70	FMZM71	FMZM72	FMZM73	FMZM74	FMZM75	FMZM76	FMZM77	FMZM78	FMZM79	FMZM80	FMZM81	FMZM82	FMZM83	FMZM84	FMZM85	FMZM86	FMZM87	FMZM88	FMZM89	FMZM90	FMZM91	FMZM92	FMZM93	FMZM94	FMZM95	FMZM96	FMZM97	FMZM98	FMZM99	FMZM100	FMZM101	FMZM102	FMZM103	FMZM104	FMZM105	FMZM106	FMZM107	FMZM108	FMZM109	FMZM110	FMZM111	FMZM112	FMZM113	FMZM114	FMZM115	FMZM116	FMZM117	FMZM118	FMZM119	FMZM120	FMZM121	FMZM122	FMZM123	FMZM124	FMZM125	FMZM126	FMZM127	FMZM128	FMZM129	FMZM130	FMZM131	FMZM132	FMZM133	FMZM134	FMZM135	FMZM136	FMZM137	FMZM138	FMZM139	FMZM140	FMZM141	FMZM142	FMZM143	FMZM144	FMZM145	FMZM146	FMZM147	FMZM148	FMZM149	FMZM150	FMZM151	FMZM152	FMZM153	FMZM154	FMZM155	FMZM156	FMZM157	FMZM158	FMZM159	FMZM160	FMZM161	FMZM162	FMZM163	FMZM164	FMZM165	FMZM166	FMZM167	FMZM168	FMZM169	FMZM170	FMZM171	FMZM172	FMZM173	FMZM174	FMZM175	FMZM176	FMZM177	FMZM178	FMZM179	FMZM180	FMZM181	FMZM182	FMZM183	FMZM184	FMZM185	FMZM186	FMZM187	FMZM188	FMZM189	FMZM190	FMZM191	FMZM192	FMZM193	FMZM194	FMZM195	FMZM196	FMZM197	FMZM198	FMZM199	FMZM200	FMZM201	FMZM202	FMZM203	FMZM204	FMZM205	FMZM206	FMZM207	FMZM208	FMZM209	FMZM210	FMZM211	FMZM212	FMZM213	FMZM214	FMZM215	FMZM216	FMZM217	FMZM218	FMZM219	FMZM220	FMZM221	FMZM222	FMZM223	FMZM224	FMZM225	FMZM226	FMZM227	FMZM228	FMZM229	FMZM230	FMZM231	FMZM232	FMZM233	FMZM234	FMZM235	FMZM236	FMZM237	FMZM238	FMZM239	FMZM240	FMZM241	FMZM242	FMZM243	FMZM244	FMZM245	FMZM246	FMZM247	FMZM248	FMZM249	FMZM250	FMZM251	FMZM252	FMZM253	FMZM254	FMZM255	FMZM256	FMZM257	FMZM258	FMZM259	FMZM260	FMZM261	FMZM262	FMZM263	FMZM264	FMZM265	FMZM266	FMZM267	FMZM268	FMZM269	FMZM270	FMZM271	FMZM272	FMZM273	FMZM274	FMZM275	FMZM276	FMZM277	FMZM278	FMZM279	FMZM280	FMZM281	FMZM282	FMZM283	FMZM284	FMZM285	FMZM286	FMZM287	FMZM288	FMZM289	FMZM290	FMZM291	FMZM292	FMZM293	FMZM294	FMZM295	FMZM296	FMZM297	FMZM298	FMZM299	FMZM300	FMZM301	FMZM302	FMZM303	FMZM304	FMZM305	FMZM306	FMZM307	FMZM308	FMZM309	FMZM310	FMZM311	FMZM312	FMZM313	FMZM314	FMZM315	FMZM316	FMZM317	FMZM318	FMZM319	FMZM320	FMZM321	FMZM322	FMZM323	FMZM324	FMZM325	FMZM326	FMZM327	FMZM328	FMZM329	FMZM330	FMZM331	FMZM332	FMZM333	FMZM334	FMZM335	FMZM336	FMZM337	FMZM338	FMZM339	FMZM340	FMZM341	FMZM342	FMZM343	FMZM344	FMZM345	FMZM346	FMZM347	FMZM348	FMZM349	FMZM350	FMZM351	FMZM352	FMZM353	FMZM354	FMZM355	FMZM356	FMZM357	FMZM358	FMZM359	FMZM360	FMZM361	FMZM362	FMZM363	FMZM364	FMZM365	FMZM366	FMZM367	FMZM368	FMZM369	FMZM370	FMZM371	FMZM372	FMZM373	FMZM374	FMZM375	FMZM376	FMZM377	FMZM378	FMZM379	FMZM380	FMZM381	FMZM382	FMZM383	FMZM384	FMZM385	FMZM386	FMZM387	FMZM388	FMZM389	FMZM390	FMZM391	FMZM392	FMZM393	FMZM394	FMZM395	FMZM396	FMZM397	FMZM398	FMZM399	FMZM400	FMZM401	FMZM402	FMZM403	FMZM404	FMZM405	FMZM406	FMZM407	FMZM408	FMZM409	FMZM410	FMZM411	FMZM412	FMZM413	FMZM414	FMZM415	FMZM416	FMZM417	FMZM418	FMZM419	FMZM420	FMZM421	FMZM422	FMZM423	FMZM424	FMZM425	FMZM426	FMZM427	FMZM428	FMZM429	FMZM430	FMZM431	FMZM432	FMZM433	FMZM434	FMZM435	FMZM436	FMZM437	FMZM438	FMZM439	FMZM440	FMZM441	FMZM442	FMZM443	FMZM444	FMZM445	FMZM446	FMZM447	FMZM448	FMZM449	FMZM450	FMZM451	FMZM452	FMZM453	FMZM454	FMZM455	FMZM456	FMZM457	FMZM458	FMZM459	FMZM460	FMZM461	FMZM462	FMZM463	FMZM464	FMZM465	FMZM466	FMZM467	FMZM468	FMZM469	FMZM470	FMZM471	FMZM472	FMZM473	FMZM474	FMZM475	FMZM476	FMZM477	FMZM478	FMZM479	FMZM480	FMZM481	FMZM482	FMZM483	FMZM484	FMZM485	FMZM486	FMZM487	FMZM488	FMZM489	FMZM490	FMZM491	FMZM492	FMZM493	FMZM494	FMZM495	FMZM496	FMZM497	FMZM498	FMZM499	FMZM500	FMZM501	FMZM502	FMZM503	FMZM504	FMZM505	FMZM506	FMZM507	FMZM508	FMZM509	FMZM510	FMZM511	FMZM512	FMZM513	FMZM514	FMZM515	FMZM516	FMZM517	FMZM518	FMZM519	FMZM520	FMZM521	FMZM522	FMZM523	FMZM524	FMZM525	FMZM526	FMZM527	FMZM528	FMZM529	FMZM530	FMZM531	FMZM532	FMZM533	FMZM534	FMZM535	FMZM536	FMZM537	FMZM538	FMZM539	FMZM540	FMZM541	FMZM542	FMZM543	FMZM544	FMZM545	FMZM546	FMZM547	FMZM548	FMZM549	FMZM550	FMZM551	FMZM552	FMZM553	FMZM554	FMZM555	FMZM556	FMZM557	FMZM558	FMZM559	FMZM560	FMZM561	FMZM562	FMZM563	FMZM564	FMZM565	FMZM566	FMZM567	FMZM568	FMZM569	FMZM570	FMZM571	FMZM572	FMZM573	FMZM574	FMZM575	FMZM576	FMZM577	FMZM578	FMZM579	FMZM580	FMZM581	FMZM582	FMZM583	FMZM584	FMZM585	FMZM586	FMZM587	FMZM588	FMZM589	FMZM590	FMZM591	FMZM592	FMZM593	FMZM594	FMZM595	FMZM596	FMZM597	FMZM598	FMZM599	FMZM600	FMZM601	FMZM602	FMZM603	FMZM604	FMZM605	FMZM606	FMZM607	FMZM608	FMZM609	FMZM610	FMZM611	FMZM612	FMZM613	FMZM614	FMZM615	FMZM616	FMZM617	FMZM618	FMZM619	FMZM620	FMZM621	FMZM622	FMZM623	FMZM624	FMZM625	FMZM626	FMZM627	FMZM628	FMZM629	FMZM630	FMZM631	FMZM632	FMZM633	FMZM634	FMZM635	FMZM636	FMZM637	FMZM638	FMZM639	FMZM640	FMZM641	FMZM642	FMZM643	FMZM644	FMZM645	FMZM646	FMZM647	FMZM648	FMZM649	FMZM650	FMZM651	FMZM652	FMZM653	FMZM654	FMZM655	FMZM656	FMZM657	FMZM658	FMZM659	FMZM660	FMZM661	FMZM662	FMZM663	FMZM664	FMZM665	FMZM666	FMZM667	FMZM668	FMZM669	FMZM670	FMZM671	FMZM672	FMZM673	FMZM674	FMZM675	FMZM676	FMZM677	FMZM678	FMZM679	FMZM680	FMZM681	FMZM682	FMZM683	FMZM684	FMZM685	FMZM686	FMZM687	FMZM688	FMZM689	FMZM690	FMZM691	FMZM692	FMZM693	FMZM694	FMZM695	FMZM696	FMZM697	FMZM698	FMZM699	FMZM700	FMZM701	FMZM702	FMZM703	FMZM704	FMZM705	FMZM706	FMZM707	FMZM708	FMZM709	FMZM710	FMZM711	FMZM712	FMZM713	FMZM714	FMZM715	FMZM716	FMZM717	FMZM718	FMZM719	FMZM720	FMZM721	FMZM722	FMZM723	FMZM724	FMZM725	FMZM726	FMZM727	FMZM728	FMZM729	FMZM730	FMZM731	FMZM732	FMZM733	FMZM734	FMZM735	FMZM736	FMZM737	FMZM738	FMZM739	FMZM740	FMZM741	FMZM742	FMZM743	FMZM744	FMZM745	FMZM746	FMZM747	FMZM748	FMZM749	FMZM750	FMZM751	FMZM752	FMZM753	FMZM754	FMZM755	FMZM756	FMZM757	FMZM758	FMZM759	FMZM760	FMZM761	FMZM762	FMZM763	FMZM764	FMZM765	FMZM766	FMZM767	FMZM768	FMZM769	FMZM770	FMZM771	FMZM772	FMZM773	FMZM774	FMZM775	FMZM776	FMZM777	FMZM778	FMZM779	FMZM780	FMZM781	FMZM782	FMZM783	FMZM784	FMZM785	FMZM786	FMZM787	FMZM788	FMZM789	FMZM790	FMZM791	FMZM792	FMZM793	FMZM794	FMZM795	FMZM796	FMZM797	FMZM798	FMZM799	FMZM800	FMZM801	FMZM802	FMZM803	FMZM804	FMZM805	FMZM806	FMZM807	FMZM808	FMZM809	FMZM810	FMZM811	FMZM812	FMZM813	FMZM814	FMZM815	FMZM816	FMZM817	FMZM818	FMZM819	FMZM820	FMZM821	FMZM822	FMZM823	FMZM824	FMZM825	FMZM826	FMZM827	FMZM828	FMZM829	FMZM830	FMZM831	FMZM832	FMZM833	FMZM834	FMZM835	FMZM836	FMZM837	FMZM838	FMZM839	FMZM840	FMZM841	FMZM842	FMZM843	FMZM844	FMZM845	FMZM846	FMZM847	FMZM848	FMZM849	FMZM850	FMZM851	FMZM852	FMZM853	FMZM854	FMZM855	FMZM856	FMZM857	FMZM858	FMZM859	FMZM860	FMZM861	FMZM862	FMZM863	FMZM864	FMZM865	FMZM866	FMZM867	FMZM868	FMZM869	FMZM870	FMZM871	FMZM872	FMZM873	FMZM874	FMZM875	FMZM876	FMZM877	FMZM878	FMZM879	FMZM880	FMZM881	FMZM882	FMZM883	FMZM884	FMZM885	FMZM886	FMZM887	FMZM888	FMZM889	FMZM890	FMZM891	FMZM892	FMZM893	FMZM894	FMZM895	FMZM896	FMZM897	FMZM898	FMZM899	FMZM900	FMZM901	FMZM902	FMZM903	FMZM904	FMZM905	FMZM906	FMZM907	FMZM908	FMZM909	FMZM910	FMZM911	FMZM912	FMZM913	FMZM914	FMZM915	FMZM916	FMZM917	FMZM918	FMZM919	FMZM920	FMZM921	FMZM922	FMZM923	FMZM924	FMZM925	FMZM926	FMZM927	FMZM928	FMZM929	FMZM930	FMZM931	FMZM932	FMZM933	FMZM934	FMZM935	FMZM936	FMZM937	FMZM938	FMZM939	FMZM940	FMZM941	FMZM942	FMZM943	FMZM944	FMZM945	FMZM946	FMZM947	FMZM948	FMZM949	FMZM950	FMZM951	FMZM952	FMZM953	FMZM954	FMZM955	FMZM956	FMZM957	FMZM958	FMZM959	FMZM960	FMZM961	FMZM962	FMZM963	FMZM964	FMZM965	FMZM966	FMZM967	FMZM968	FMZM969	FMZM970	FMZM971	FMZM972	FMZM973	FMZM974	FMZM975	FMZM976	FMZM977	FMZM978	FMZM979	FMZM980	FMZM981	FMZM982	FMZM983	FMZM984	FMZM985	FMZM986	FMZM987	FMZM988	FMZM989	FMZM990	FMZM991	FMZM992	FMZM993	FMZM994	FMZM995	FMZM996	FMZM997	FMZM998	FMZM999	FMZM1000
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Monitor ID	Date Taken	Time Taken	Initial Assessment	Valve before	Valve After	CH4 %	CO2 %	O2 %	Balance Gas %	CH4/CO2	N2%	PN2%	PN2%/N2	N2/O2	Diff mbar	Atm mbar	CO ppm	H2S ppm	V1	V2
CHW0005	10 April 2013	09:40		ON	ON	20.7	17.3	19.2	50.7	1.2	50.2	8.1	16%	4	-7.71	994	4	0	10	10
CHW0044	10 April 2013	09:48		OFF	OFF	54.2	47.5	0.1	0	-1.1	-1.8	-3.2	123%	18	-7.56	994	10	6	0	0
CHW0016	10 April 2013	09:50		ON	ON	42.6	38.0	0.4	19	1.1	19.0	17.5	92%	47	-28.22	995	2	2	10	10
CHW010R	10 April 2013	10:08		ON	ON	36.9	36.8	0.2	24.1	1.1	24.1	23.3	97%	120	-49.26	994	17	2	10	10
CHW0058	10 April 2013	10:12	OK	ON	ON	50.5	40.0	0.0	9.5	1.3	9.5	9.5	100%	950.001	-14.23	994	3	3	10	10
CHW0057	10 April 2013	10:15	OK	ON	ON	56.1	43.0	0.0	0.9	1.3	0.9	0.9	96%	90.001	-11.51	994	13	2	10	10
CHW0048	10 April 2013	10:19	OK	ON	ON	60.5	42.6	0.0	0	1.4	-3.1	-3.1	101%	309.999	-26.63	995	11	1	10	10
CHW0066	10 April 2013	10:34	OK	ON	ON	59.5	44.4	0.0	0	1.3	-3.9	-3.9	101%	369.999	-39.75	995	14	2	20	20
CHW0067	10 April 2013	10:38	OK	ON	ON	50.6	39.0	0.0	10.4	1.3	10.4	10.4	100%	1,040.001	-9.72	994	10	6	10	10
CHW0041	10 April 2013	10:42	OK	ON	ON	56.0	42.0	0.2	1.9	1.3	1.6	1.0	96%	9	-33.47	994	19	2	20	20
CHW0095	10 April 2013	10:47		OFF	OFF	32.7	22.2	2.6	31.5	1.0	31.5	21.7	69%	12	-5.55	994	22	1	0	0
CHW0083	10 April 2013	10:56	OK	ON	ON	59.8	40.9	0.0	0	1.5	-0.5	-0.5	108%	49.999	-20.31	995	11	0	20	20
CHW0082	10 April 2013	11:00	OK	ON	ON	53.9	39.5	0.0	6.6	1.4	6.6	6.6	99%	660.001	-42.81	995	8	0	50	50
CHW0043	10 April 2013	11:28	OK	ON	ON	61.7	42.1	0.1	0	1.5	-3.9	-4.3	111%	39	-21.50	994	5	9	10	10
CHW017R	10 April 2013	11:36	OK	ON	ON	49.1	40.2	0.1	10.6	1.2	10.6	10.2	96%	106	-23.20	994	12	1	10	10
CHLCO1B	10 April 2013	11:42	OK	ON	ON	61.0	33.5	1.6	3.9	1.8	3.9	-2.2	-56%	2	-13.90	993	7	1	10	10
CHW0036	10 April 2013	11:46	OK	ON	ON	55.9	41.4	0.0	2.7	1.4	2.7	2.7	99%	270.001	-36.87	993	11	11	20	20
CHW0074	10 April 2013	12:04	OK	ON	ON	59.6	43.6	0.2	0	1.4	-3.6	-4.4	122%	18	-20.25	993	7	1	90	90
CHW0071	11 April 2013	11:02	OK	ON	ON	59.1	38.5	0.8	1.6	1.5	1.6	-1.5	-91%	2	-31.12	990	5	0	70	70
CHW0072	11 April 2013	11:04	OK	ON	ON	56.7	40.7	0.2	0.4	1.4	0.4	-0.4	-96%	2	-33.96	989	3	0	50	50
CHW0073	11 April 2013	11:09	OK	ON	ON	57.5	41.6	0.2	0.7	1.4	0.7	-0.1	-12%	3	-10.95	990	1	0	50	50
CHW0070	11 April 2013	11:19	OK	ON	ON	61.3	37.1	0.3	1.3	1.3	1.3	0.1	10%	4	-3.90	1013	2	0	70	70
CHW0076	11 April 2013	11:30		ON	ON	44.5	38.0	0.1	19.4	1.2	19.4	19.0	98%	194	-29.34	993	3	0	20	20
CHW0077	11 April 2013	11:32	OK	ON	ON	52.9	41.2	0.1	5.5	1.3	5.8	5.4	93%	56	-26.28	993	13	0	20	20
CHW0072	11 April 2013	11:33	OK	ON	ON	48.2	38.6	0.9	12.3	1.2	12.3	8.9	72%	14	-19.01	989	4	0	20	20
CHW0074	11 April 2013	11:38	OK	ON	ON	55.9	44.0	0.1	0	1.3	0.0	-0.4	-1146900%	0	-30.03	989	0	0	70	70
CHW0084	11 April 2013	11:42	OK	ON	ON	59.9	40.7	0.3	0	1.5	-0.9	-2.1	230%	3	-6.20	989	6	1	20	20
CHW025R	11 April 2013	11:53	Air Leak	OFF	OFF	0.6	2.9	20.9	75.4	2.2	75.6	-3.2	-4%	4	-0.15	988	0	0	0	0
CHW0085	11 April 2013	11:57		ON	ON	42.5	33.2	0.9	23.4	1.3	23.4	20.0	85%	26	-4.35	989	19	2	20	20
CHW0093	11 April 2013	12:07	OK	ON	ON	59.5	40.7	0.2	0	1.5	-0.4	-1.2	258%	2	-0.42	988	1	0	10	10
CHW0071	19 April 2013	13:16	OK	ON	ON	58.6	38.0	0.8	2.6	1.5	2.6	-0.5	-17%	3	-29.00	1016	7	2	70	70
CHW0091	19 April 2013	13:30	OK	N/A	ON	59.5	39.7	0.2	0.6	1.6	0.6	-0.2	-32%	3	-3.49	1016	6	3	70	70
CHW0073	19 April 2013	13:32	OK	ON	ON	57.7	41.3	0.1	0.9	1.4	0.9	0.5	54%	9	-10.95	1016	3	4	0	0
CHW0074	19 April 2013	13:35	OK	ON	ON	54.6	43.3	0.3	1.8	1.3	1.8	0.6	35%	6	-6.55	1019	4	1	80	80
CHW0077	19 April 2013	13:38		ON	ON	43.1	36.2	1.0	19.7	1.2	19.7	15.9	81%	20	-12.19	1018	9	1	30	30
CHW02AR	19 April 2013	13:42	OK	ON	ON	57.0	42.3	0.0	0.7	1.3	0.7	0.7	95%	70.001	-12.90	1019	10	5	5	5
CHW017R	19 April 2013	13:47	OK	ON	ON	47.6	39.3	0.2	12.9	1.2	12.9	12.1	94%	64	-26.28	1019	0	1	5	5
CHW0001	19 April 2013	14:01	OK	ON	ON	56.5	36.0	0.1	7.4	1.6	7.4	7.0	94%	74	-23.24	1019	0	0	10	10
CHW0026	19 April 2013	14:03		ON	OFF	36.6	31.0	0.6	31.6	1.2	31.6	29.3	93%	53	-25.72	1019	0	0	10	0
CHW0026	19 April 2013	14:04		OFF	OFF	36.0	31.4	1.0	31.6	1.1	31.6	27.8	88%	32	-24.67	1019	2	0	0	0
CHW0003	19 April 2013	14:07	OK	ON	ON	49.8	32.4	2.5	15.3	1.5	15.3	5.8	36%	6	-25.05	1020	3	0	5	5
CHW0029	19 April 2013	14:09	OK	ON	ON	54.9	36.6	0.0	8.3	1.5	8.3	8.3	100%	830.001	-37.84	1020	2	0	5	5
CHW0007	19 April 2013	14:12	OK	ON	ON	50.8	32.7	0.4	16.1	1.8	16.1	14.6	90%	40	-26.39	1020	2	0	10	10
CHW0030	19 April 2013	14:14		ON	ON	43.5	33.3	0.0	23.2	1.3	23.2	20.2	100%	2,320.001	-25.07	1020	2	0	20	20
CHW0052	22 April 2013	13:17	Air Leak	OFF	OFF	62.8	63.6	0.8	63.6	1.6	63.6	0.2	0%	4	-63.65	1003	2	0	0	0
CHW0052	22 April 2013	13:21	Air Leak	OFF	OFF	10.9	8.0	-17.0	64.1	1.4	64.1	0.0	0%	4	-64.15	1003	2	0	0	0
CHW0077	01 May 2013	09:43		ON	ON	39.2	33.9	1.6	25.3	1.2	25.3	19.2	76%	16	-12.12	1016	10	2	20	20
CHW0074	01 May 2013	09:45	OK	ON	ON	55.3	42.9	0.1	1.7	1.3	1.7	1.3	76%	17	-26.74	1016	5	1	50	50
CHW0086	01 May 2013	09:48	OK	ON	ON	46.2	37.2	0.1	16.5	1.2	16.5	18.1	97%	165	-14.79	1016	7	1	20	20
CHW02AR	01 May 2013	09:50	OK	ON	ON	56.2	42.0	0.1	1.7	1.3	1.7	1.3	76%	17	-12.92	1016	14	3	5	5
CHW0037	01 May 2013	09:51	OK	ON	ON	56.1	40.7	0.1	3.1	1.4	3.1	2.7	87%	31	-16.59	1016	5	1	10	10
CHW0087	01 May 2013	09:57	N/A	ON	ON	39.9	35.4	0.1	24.6	1.1	24.6	24.2	98%	246	-6.57	1015	10	2	-	10
CHW0087	01 May 2013	09:59		ON	ON	40.6	36.1	0.0	23.3	1.1	23.3	23.3	100%	2,330.001	-4.67	1015	12	2	10	10
CHW0076	01 May 2013	10:01		ON	ON	37.3	33.5	0.2	29	1.1	29.0	28.2	97%	145	-8.33	1015	3	0	20	10
CHW0076	01 May 2013	10:02		ON	ON	38.3	34.1	0.2	27.4	1.1	27.4	26.6	97%	137	-3.20	1015	6	0	10	10
CHW0021	01 May 2013	10:10	OK	ON	ON	54.0	42.9	0.2	2.9	1.3	2.9	2.1	73%	14	-4.35	1015	7	0	5	5
CHW0038	01 May 2013	10:14		ON	ON	48.2	36.7	0.1	15	1.2	15.0	14.6	97%	150	-38.27	1015	0	0	10	10
CHW017R	01 May 2013	10:20	OFF	OFF	OFF	37.2	33.5	1.9	27.4	1.1	27.4	20.2	74%	14	-10.12	1015	2	0	0	0
CHW017R	01 May 2013	10:22		ON	ON	40.1	38.1	0.0	21.8	1.1	21.8	21.8	100%	2,180.001	-11.62	1015	5	0	5	5
CHW0039	01 May 2013	10:23		OFF	OFF	32.6	25.0	1.2	34.7	1.3	34.7	5.6	16%	5	-37.87	1015	4	0	0	0
CHW0043	01 May 2013	10:26	OK	ON	ON	54.9	39.4	0.0	5.7	1.4	5.7	5.7	99%	570.001	-36.71	1015	7	0	10	10
CHW0055	01 May 2013	10:28		OFF	OFF	45.8	30.9	4.0	19.3	1.5	19.3	4.2	22%	5	-53.95	1015	4	0	0	0
CHW0092	01 May 2013	10:31	OK	ON	ON	59.4	38.4	0.0	2.2	1.5	2.2	2.2	98%	220.001	-0.92	1015	7	0	5	10
CHW0092	01 May 2013	10:32	OK	ON	ON	59.2	38.6	0.0	2	1.5	2.0	2.0	98%	200.001	-4.97	1015	6	0	10	10
CHW0078	01 May 2013	10:34	OK	ON	ON	57.9	39.6	0.0	2.5	1.5	2.5	2.5	98%	250.001	-15.46	1016	6	0	10	10
CHW0079	01 May 2013	10:37	OK	ON	ON	56.5	40.4	0.1	3	1.4	3.0	2.8	86%	30	-26.18	1016	6	0	20	20
CHW0080	01 May 2013	10:39	OK	ON	ON	55.8	40.6	0.1	3.5	1.4	3.5	3.1	88%	35	-48.49	1016	7	0	50	50
CHW0081	01 May 2013	10:41	OK	ON	ON	57.2	38.7	0.4	3.7	1.5	3.7	2.2	56%	9	-16.88	1016	6	0	20	20
CHW0093	02 May 2013	11:41	OK	OFF	ON	57.7	41.0	0.0	1.3	1.4	1.3	1.3	97%	130.001	0.03	1016	0	1	0	10
CHW0093	02 May 2013	11:42	OK	ON	ON	57.5	41.3	0.0	1.2	1.4	1.2	1.2	97%	120.001	0.03					

Monitor ID	Date Taken	Time Taken	Assessment	Value	Value Added	CH %	CO2 %	O2 %	Balance	Gas Balance	CH2CO2	N2O	FPM10	FPM2.5	NH3.02	Air mbar	CO ppm	H2S ppm	V1	V2
CHW0015H	03 May 2013	10:30	OK	OK	OK	47.4	40.1	0.3	0.3	1.4	1.4	1.4	1.0	0.2	-1.9	3	0.79	7	0	5
CHW0015H	03 May 2013	10:32	OK	OK	OK	47.4	40.1	0.3	1.9	1.4	1.4	1.4	1.0	0.2	-1.9	6	0.79	7	0	5
CHW0015H	03 May 2013	10:35	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	10	0.79	7	0	5
CHW0015H	03 May 2013	10:38	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	14	0.79	7	0	5
CHW0015H	03 May 2013	10:40	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	18	0.79	7	0	5
CHW0015H	03 May 2013	10:43	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	22	0.79	7	0	5
CHW0015H	03 May 2013	10:46	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	26	0.79	7	0	5
CHW0015H	03 May 2013	10:49	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	30	0.79	7	0	5
CHW0015H	03 May 2013	10:52	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	34	0.79	7	0	5
CHW0015H	03 May 2013	10:55	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	38	0.79	7	0	5
CHW0015H	03 May 2013	10:58	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	42	0.79	7	0	5
CHW0015H	03 May 2013	11:01	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	46	0.79	7	0	5
CHW0015H	03 May 2013	11:04	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	50	0.79	7	0	5
CHW0015H	03 May 2013	11:07	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	54	0.79	7	0	5
CHW0015H	03 May 2013	11:10	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	58	0.79	7	0	5
CHW0015H	03 May 2013	11:13	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	62	0.79	7	0	5
CHW0015H	03 May 2013	11:16	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	66	0.79	7	0	5
CHW0015H	03 May 2013	11:19	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	70	0.79	7	0	5
CHW0015H	03 May 2013	11:22	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	74	0.79	7	0	5
CHW0015H	03 May 2013	11:25	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	78	0.79	7	0	5
CHW0015H	03 May 2013	11:28	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	82	0.79	7	0	5
CHW0015H	03 May 2013	11:31	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	86	0.79	7	0	5
CHW0015H	03 May 2013	11:34	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	90	0.79	7	0	5
CHW0015H	03 May 2013	11:37	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	94	0.79	7	0	5
CHW0015H	03 May 2013	11:40	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	98	0.79	7	0	5
CHW0015H	03 May 2013	11:43	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	102	0.79	7	0	5
CHW0015H	03 May 2013	11:46	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	106	0.79	7	0	5
CHW0015H	03 May 2013	11:49	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	110	0.79	7	0	5
CHW0015H	03 May 2013	11:52	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	114	0.79	7	0	5
CHW0015H	03 May 2013	11:55	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	118	0.79	7	0	5
CHW0015H	03 May 2013	11:58	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	122	0.79	7	0	5
CHW0015H	03 May 2013	12:01	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	126	0.79	7	0	5
CHW0015H	03 May 2013	12:04	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	130	0.79	7	0	5
CHW0015H	03 May 2013	12:07	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	134	0.79	7	0	5
CHW0015H	03 May 2013	12:10	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	138	0.79	7	0	5
CHW0015H	03 May 2013	12:13	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	142	0.79	7	0	5
CHW0015H	03 May 2013	12:16	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	146	0.79	7	0	5
CHW0015H	03 May 2013	12:19	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	150	0.79	7	0	5
CHW0015H	03 May 2013	12:22	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	154	0.79	7	0	5
CHW0015H	03 May 2013	12:25	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	158	0.79	7	0	5
CHW0015H	03 May 2013	12:28	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	162	0.79	7	0	5
CHW0015H	03 May 2013	12:31	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	166	0.79	7	0	5
CHW0015H	03 May 2013	12:34	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	170	0.79	7	0	5
CHW0015H	03 May 2013	12:37	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	174	0.79	7	0	5
CHW0015H	03 May 2013	12:40	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	178	0.79	7	0	5
CHW0015H	03 May 2013	12:43	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	182	0.79	7	0	5
CHW0015H	03 May 2013	12:46	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	186	0.79	7	0	5
CHW0015H	03 May 2013	12:49	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	190	0.79	7	0	5
CHW0015H	03 May 2013	12:52	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	194	0.79	7	0	5
CHW0015H	03 May 2013	12:55	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	198	0.79	7	0	5
CHW0015H	03 May 2013	12:58	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	202	0.79	7	0	5
CHW0015H	03 May 2013	13:01	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	206	0.79	7	0	5
CHW0015H	03 May 2013	13:04	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	210	0.79	7	0	5
CHW0015H	03 May 2013	13:07	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	214	0.79	7	0	5
CHW0015H	03 May 2013	13:10	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	218	0.79	7	0	5
CHW0015H	03 May 2013	13:13	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	222	0.79	7	0	5
CHW0015H	03 May 2013	13:16	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	226	0.79	7	0	5
CHW0015H	03 May 2013	13:19	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	230	0.79	7	0	5
CHW0015H	03 May 2013	13:22	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	234	0.79	7	0	5
CHW0015H	03 May 2013	13:25	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	238	0.79	7	0	5
CHW0015H	03 May 2013	13:28	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	242	0.79	7	0	5
CHW0015H	03 May 2013	13:31	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	246	0.79	7	0	5
CHW0015H	03 May 2013	13:34	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	250	0.79	7	0	5
CHW0015H	03 May 2013	13:37	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	254	0.79	7	0	5
CHW0015H	03 May 2013	13:40	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	258	0.79	7	0	5
CHW0015H	03 May 2013	13:43	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	262	0.79	7	0	5
CHW0015H	03 May 2013	13:46	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	266	0.79	7	0	5
CHW0015H	03 May 2013	13:49	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	270	0.79	7	0	5
CHW0015H	03 May 2013	13:52	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	274	0.79	7	0	5
CHW0015H	03 May 2013	13:55	OK	OK	OK	47.4	40.1	0.3	0.0	1.4	1.4	1.4	1.0	0.2	-1.9	278	0.79	7	0	5
CHW0015H	03 May 2013	13:58	OK	OK	OK	47.4	40.1													

Monitor ID	Date Taken	Time Taken	Initial Assessment	Valve before	Valve After	CH4 %	CO2 %	O2 %	Balance Gas %	CH4/CO2	N2%	PN2%	PN2/N2	N2/O2	Diff mBar	Atm mbar	CO ppm	H2S ppm	V1	V2
CHW0090	20 May 2013	15:59		ON	ON	43.4	38.5	0.0	16.1	1.1	18.1	18.1	100%	1,810,001	-33.85	1006	9	1	20	20
CHW0089	20 May 2013	16:00	OK	ON	ON	58.9	41.0	0.4	0	1.5	-1.3	-2.8	219%	3	-24.86	1006	8	5	30	30
CHW0088	20 May 2013	16:01		ON	ON	39.0	36.7	0.1	24.2	1.1	24.2	23.8	98%	242	-29.80	1006	10	0	20	20
CHW0087	20 May 2013	16:03	OK	ON	ON	46.9	36.1	0.4	16.6	1.3	16.6	15.1	91%	41	-24.80	1006	3	0	20	20
CHW0086	22 May 2013	14:02	OK	ON	ON	57.8	37.3	1.1	3.6	1.5	3.6	-0.4	-10%	3	-8.97	1012	2	0	10	10
CHW0085	22 May 2013	14:05	OK	ON	ON	50.4	38.9	0.1	10.6	1.3	10.6	10.2	96%	106	-10.27	1012	8	0	20	30
CHW0084	22 May 2013	14:07	OK	ON	ON	50.4	39.7	0.0	9.9	1.3	9.9	9.9	100%	990,001	-11.32	1012	11	4	30	30
CHW0083	22 May 2013	14:11	OK	ON	ON	53.2	40.0	0.0	6.8	1.3	6.8	6.8	99%	680,001	-17.61	1011	3	0	10	10
CHW0082	22 May 2013	14:14	OK	OFF	OFF	45.6	34.7	2.7	16.5	1.3	16.5	6.6	39%	6	-20.54	1012	2	0	0	0
CHW0081	22 May 2013	14:16		ON	OFF	36.8	30.1	4.9	28.2	1.2	28.2	9.7	34%	6	-4.66	1011	7	0	5	0
CHW0080	22 May 2013	14:18		OFF	OFF	36.6	30.4	4.9	28.2	1.2	28.2	10.1	38%	6	-4.13	1011	7	0	0	0
CHW0079	22 May 2013	14:23	OK	ON	ON	58.9	40.8	0.1	2.2	1.4	2.2	1.8	81%	22	-21.61	1011	8	3	10	10
CHW0078	22 May 2013	14:27	OK	ON	ON	56.0	42.9	0.0	1.1	1.3	1.1	1.1	97%	110,001	-17.43	1011	13	5	5	5
CHW0077	22 May 2013	14:29	OK	ON	ON	51.1	39.3	0.1	9.5	1.3	9.5	9.1	96%	95	-19.68	1012	3	5	30	30
CHW0076	22 May 2013	14:31	OK	ON	ON	54.6	43.2	0.5	1.7	1.3	1.7	-0.2	-13%	3	-16.76	1012	2	0	70	7
CHW0075	03 June 2013	11:13	OK	ON	ON	55.8	37.4	0.3	6.5	1.5	6.5	5.3	82%	22	-1.87	1025	7	1	20	20
CHW0074	03 June 2013	11:15	OK	ON	ON	58.3	41.9	0.1	0	1.4	-0.3	-0.7	239%	3	-34.37	1025	8	7	70	70
CHW0073	03 June 2013	11:16	OK	ON	ON	58.3	41.2	0.2	0.3	1.4	0.3	-0.5	-164%	1	-82.25	1024	12	3	70	70
CHW0072	03 June 2013	11:18	OK	ON	ON	57.3	41.8	0.2	0.7	1.4	0.7	-0.1	-13%	3	-84.47	1024	13	1	80	80
CHW0071	03 June 2013	11:19		ON	ON	44.2	37.2	0.3	18.3	3.2	18.3	17.1	94%	61	-23.78	1025	8	0	20	20
CHW0070	03 June 2013	11:21	OK	ON	ON	56.9	42.0	0.1	1	1.4	1.0	0.6	52%	10	-16.80	1024	10	2	70	70
CHW0069	03 June 2013	11:23	OK	ON	ON	48.3	35.9	0.1	12.7	1.2	12.7	12.3	97%	127	-20.27	1024	8	48	30	30
CHW0068	03 June 2013	11:33		ON	ON	61.0	22.1	3.0	13.9	2.8	13.9	2.6	18%	5	-20.54	1024	3	1	20	20
CHW0067	03 June 2013	11:34	OFF	OFF	OFF	9.8	4.7	92.2	69.3	2.1	69.3	8.2	12%	4	-0.08	1024	3	0	0	0
CHW0066	03 June 2013	11:37	OK	ON	ON	45.6	36.9	1.7	15.8	1.2	15.8	9.4	56%	9	-16.76	1024	30	1	70	70
CHW0065	03 June 2013	11:41	OK	ON	ON	59.2	40.4	0.3	0.1	1.5	0.1	-1.1	-1089%	0	-1.24	1024	5	0	20	20
CHW0064	03 June 2013	11:43		ON	ON	46.5	40.4	0.1	1.3	1.2	13.0	12.6	97%	130	-1.86	1024	9	0	20	20
CHW0063	03 June 2013	11:45		ON	ON	51.6	43.4	0.1	4.9	1.2	4.9	4.5	92%	49	-39.40	1024	23	2	1	10
CHW0062	03 June 2013	11:47	OK	ON	ON	55.9	40.6	0.1	3.4	1.4	3.4	3.0	88%	34	-2.91	1024	14	1	10	10
CHW0061	03 June 2013	12:09	OK	ON	ON	58.9	39.0	0.3	1.6	1.5	1.6	0.6	35%	6	-7.03	1023	35	2	5	5
CHW0060	03 June 2013	12:12	OK	ON	ON	45.8	34.4	0.7	16.1	1.4	16.1	13.4	83%	23	-16.99	1023	4	0	10	10
CHW0059	03 June 2013	12:15	OK	ON	ON	55.9	37.8	0.3	6.2	1.5	6.2	5.0	81%	21	-25.51	1024	15	1	10	10
CHW0058	03 June 2013	12:17	OK	ON	ON	53.1	37.0	0.1	10.8	1.5	10.8	10.4	96%	108	-3.10	1023	6	1	10	10
CHW0057	03 June 2013	13:57	OK	ON	ON	57.2	40.3	0.7	1.8	1.4	1.8	-0.9	-49%	3	-28.81	1023	8	15	20	20
CHW0056	03 June 2013	13:59	OK	ON	ON	55.3	40.8	0.2	3.7	1.4	3.7	2.9	75%	16	-3.11	1023	28	10	20	20
CHW0055	03 June 2013	14:02	Air Leak	OFF	OFF	29.3	17.0	20.8	43.1	1.7	43.1	3.1	7%	4	-32.24	1023	0	0	0	0
CHW0054	03 June 2013	14:06	OK	OFF	OFF	54.9	41.3	0.9	2.9	1.3	2.9	-0.5	-18%	3	-0.39	1023	9	1	0	10
CHW0053	03 June 2013	14:08	OK	ON	ON	57.1	43.3	0.1	0	1.3	-0.5	-0.9	183%	5	-2.03	1023	8	3	10	10
CHW0052	03 June 2013	14:10	OK	ON	ON	59.9	39.8	0.1	0.2	1.5	0.2	-0.2	-107%	2	-5.92	1023	5	1	10	10
CHW0051	03 June 2013	14:13	Air Leak	OFF	OFF	3.6	2.7	96.3	75.1	1.3	75.1	4.9	7%	4	-30.83	1023	2	0	0	0
CHW0050	03 June 2013	14:25		ON	ON	34.7	31.9	0.6	32.8	1.1	32.8	30.5	93%	55	-4.52	1023	11	1	20	5
CHW0049	03 June 2013	14:27		ON	ON	36.3	33.6	0.4	29.7	1.1	29.7	28.2	95%	74	-3.12	1023	10	1	5	5
CHW0048	03 June 2013	14:28	OK	ON	ON	56.8	43.8	0.1	0.3	1.3	0.3	-0.1	-36%	3	-10.64	1023	10	1	10	10
CHW0047	03 June 2013	14:31	Aerobic	OFF	OFF	9.5	16.7	2.8	69.6	8.8	69.6	53.7	77%	17	-1.38	1023	9	0	0	0
CHW0046	03 June 2013	14:33		ON	ON	38.3	35.7	0.3	25.8	1.1	25.8	24.8	96%	86	-27.39	1023	20	2	20	20
CHW0045	03 June 2013	14:36		ON	ON	39.3	34.7	1.8	24.2	1.1	24.2	17.4	72%	13	-18.08	1023	1	1	20	20
CHW0044	03 June 2013	14:37	OK	ON	ON	53.7	44.1	0.4	1.8	1.2	1.8	0.3	14%	4	-16.96	1023	7	3	50	50
CHW0043	03 June 2013	14:39	OK	ON	ON	50.5	38.3	0.1	11.1	1.3	11.1	10.7	96%	111	-17.33	1023	11	11	50	50
CHW0042	03 June 2013	14:41	OK	ON	ON	52.0	38.9	0.1	9	1.3	9.0	8.6	95%	90	-16.92	1023	12	1	10	10
CHW0041	03 June 2013	14:43	OK	ON	ON	54.3	41.8	0.0	3.9	1.3	3.9	3.9	99%	390,001	-17.65	1023	28	5	5	5
CHW0040	03 June 2013	14:48	OK	ON	ON	53.7	40.4	0.0	5.9	1.3	5.9	5.9	99%	590,001	-23.25	1023	13	10	10	10
CHW0039	03 June 2013	15:12		OFF	ON	44.8	33.2	0.2	21.8	1.3	21.8	21.0	96%	109	-1.83	1024	8	0	0	10
CHW0038	03 June 2013	15:20	OK	ON	ON	45.2	34.3	0.1	20.4	1.3	20.4	20.0	98%	204	-2.15	1024	8	0	10	10
CHW0037	03 June 2013	15:22	OK	OFF	ON	53.2	37.1	0.0	9.7	1.4	9.7	9.7	100%	970,001	3.08	1024	7	0	0	20
CHW0036	03 June 2013	15:24	OK	ON	ON	53.2	37.3	0.0	8.5	1.4	8.5	8.5	100%	850,001	-13.56	1024	7	0	20	20
CHW0035	04 June 2013	13:37		ON	ON	44.7	32.6	0.4	22.3	1.4	22.3	20.8	93%	58	-18.68	1020	5	40	20	20
CHW0034	04 June 2013	13:40	OK	ON	ON	54.5	36.6	0.1	8.8	1.5	8.8	8.4	95%	88	-17.99	1020	5	1	20	30
CHW0033	04 June 2013	13:41	OK	ON	ON	53.6	37.1	0.0	9.3	1.4	9.3	9.3	100%	930,001	-30.34	1020	5	1	30	30
CHW0032	04 June 2013	13:44	OK	ON	ON	57.1	40.7	0.1	2.1	1.4	2.1	1.7	80%	21	-16.26	1020	9	1	70	70
CHW0031	04 June 2013	13:50		ON	ON	42.6	37.2	0.1	20.1	1.3	20.1	19.7	98%	201	-15.09	1019	19	4	50	50
CHW0030	10 June 2013	08:44	OK	ON	ON	57.6	35.5	0.2	6.7	1.6	6.7	5.9	88%	33	-15.42	1008	0	0	10	10
CHW0029	10 June 2013	09:48	OK	ON	ON	58.6	34.5	0.0	6.9	1.7	6.9	6.9	99%	690,001	-9.64	1008	1	0	10	10
CHW0028	10 June 2013	09:48	OK	ON	ON	60.9	36.0	0.5	2.6	1.7	2.6	0.7	26%	5	-17.27	1008	1	0	10	10
CHW0027	10 June 2013	09:51	OK	ON	ON	60.3	35.3	2.2	12.2	1.4	12.2	3.9	32%	6	-4.26	1007	1	0	10	10
CHW0026	10 June 2013	09:53	OK	ON	ON	61.6	35.5	0.8	2.3	1.7	2.3	0.0	0%	4	-3.60	1008	3	0	10	10
CHW0025	10 June 2013	09:58	OK	ON	ON	62.6	37.2	0.0	0.2	1.7	0.2	0.2	81%	20,001	-0.21	1007	2	0	5	5
CHW0024	10 June 2013	10:02	OK	ON	ON	56.9	36.4	0.4	6.3	1.6	6.3	4.8	75%	16	-9.83	1007	4	0	5	5
CHW0023	10 June 2013	15:19	OK	ON	ON	52.5	37.1	0.4	9.4	1.4	9.4	7.9	84%	23	-33.43	1006	6	0	10	10
CHW0022	10 June 2013	15:22	OK	OFF	OFF	48.9	34.3	2.4	14.4	1.4	14.4	5.3	37%	6	-16.38	1005	1	0	0	0
CHW0021	10 June 2013	15:25		OFF	OFF	38.6	26.5	3.9	29	1.5	29.0	6.7	23%	5	-2.64					

Extraction Wells GA2000+ Readings and Comments Pen-y-Bont Landfill

[illegible]

KEY FOR GAS WELL ANALYSIS (APPENDIX B)

Column	Derivation	Format applied	Reason
O2	As measured	Concentration >3%<5% highlighted in amber. Concentration >5% highlighted in red	Elevated O2 levels indicate air being drawn into system with danger of explosive atmosphere being created
CH4:CO2	The ratio of methane to carbon dioxide	Ratio > 1.2 highlighted in green Ratio <1.2 but >1.0 highlighted in amber. Ratio <1.0 highlighted in red.	Typical ratio is 60:40 or 1.5:1. Increasing CO2 relative to methane may indicate air being drawn into system and onset of aerobic activity. Ratios less than 1:1 are a strong indicator of aerobic activity.
N2	Balance gas (mainly nitrogen) calculated as 100% – (CH4% + CO2% + O2%)	Concentration >20% highlighted in amber	Elevated levels of nitrogen may indicate air ingress even if no oxygen present (oxygen may have been depleted by aerobic activity). May also indicate young waste from which residual air has not yet been purged.
FN2	"Free Nitrogen". Nitrogen that has no O2 associated with it. Calculated as N2-(3.77xO2). 3.77 is the ratio of other atmospheric gases to oxygen.	Concentration >20% highlighted in amber	As for N2
CO	As measured	Concentrations >50ppm but <100ppm highlighted in amber Concentrations >100ppm highlighted in red	Carbon monoxide is a product of combustion and a strong indicator of sub-surface fires. However, field measurements are prone to error and must be treated with caution hence levels <100ppm only indicate a potential problem Levels >100ppm are less likely to be spurious readings. CO levels should be confirmed by laboratory analysis.
H2S	As measured	Concentration >25 but <100 highlighted in amber Concentration >100 but <500 highlighted in dark amber Concentration >500 highlighted in red	High H2S levels present a significant health risk to site operatives and Agency staff. Colour coding denotes increasing risk to health. Exposure H2S levels >500ppm could result in death.
Wells Switched Off	As measured	No suction	High levels of proximal or distal air, broken seals etc.
Wells Having Total or Partial Perched Leachate Blockage	As measured	Mains suction or pulsing	Differential pressure approaching mains pressure



Cyfoeth Naturiol
Naturiol Resources
Cymru Wales

Methane Emissions Survey Sheet – Pen y Bont (Chirk) Landfill

Site	Pen y Bont Landfill: Permit No: GP3830BG	Date	26 th June 2013	Time	in: out:	
Instrument	Gazomat Inspectra TDL (Serial No.: 1470311)					
		Background reading	2.6ppm	Time		
Weather conditions:	Dry, Mixed Sun/Cloud, Gentle to Moderate Breeze					
Survey Undertaken by:	A Zachary and S Ross					
Atm. Press.						mb

General comments / observations

This Technical Review follow up is being carried out as a key part of Natural Resources Wales' strategy to reduce methane emissions from landfill sites in Wales. The objectives of the site review include Being operated and maintained so as to maximise gas collection efficiency and minimise fugitive landfill gas emissions. Treating the gas in a manner that minimises point source emissions.

An ATEX certified, Gazomat Inspectra Laser Methane Analyser was used to perform emissions testing at the site. Surface capping (including flanks capped in the last 12 months) seams and structures on the site were randomly tested in order to establish potential sources of methane egress. Grid references were taken (using a Garmin satellite positioning system) at selected points where raised levels of methane were detected.

Officers were accompanied by Colin Shaw (Site Manager) and representatives of Infinis.

Survey Results (only readings > 10 ppm recorded)				
Point ref.	Time	Methane Reading	Feature and / or Grid Reference	Description / Comment
1.	11:24	60ppm	SJ2322441630	2011 Capping works. Close to upper anchor trench linking with 2013 capping programme.
2.	11:27	20-30ppm	SJ2923141638	2011 Capping works
3.	11:29	10-15 ppm	SJ2924941634	Close to base anchor trench of the 2011 capping works.
4.	11:30	15ppm rising to 1500ppm	SJ29226241637	As above next to possible leachate breakout. Bubbles of gas noted which were sampled with the Gazomat. See pictures.
5.	11:33	10ppm	SJ2927341643	Close to base anchor trench of the 2011 capping works.
6.	11:35	6ppm	SJ2926941654	Reading taken on 2011 capping works
7.	11:36	300ppm	SJ2928841658	2011 capping works adjacent to GW81. The well was off due to capping.

8.	11:37	20000ppm	SJ2929741674	Strong odour around GW81. Localised odour around well. Reading taken close to boot detail.
9.	11:40	20-30ppm	SJ2933741678	Anchor trench from 2011 capping works close to gas compound downwind of GW81
10.	11:44	25PPM	SJ2932941698	Reading taken on 2011 capping works.
11.	11:45	150ppm-5000ppm	SJ2933341706	2011 Capping works downwind of well 82 which was disconnected. A further reading was taken at the base of the well to 5000ppm
12.	11:46	30ppm	SJ2933541718	Reading taken on 2011 Capping works
13.	11:47	60ppm	SJ2934641722	2011/13 Capping works
14.	11:48	10PPM	SJ2935741741	2011/13 Cap tie in Reading taken on interface of
15.	11:52	8ppm	SJ2936441752	Reading taken on 2011 Capping works
16.	11:54	8000 ppm to 9000 ppm	SJ2937141760	Rabbit Hole approximately 2ft deep reading taken in and on top of the hole. North eastern flank of 2011 capping works. See pictures.
17.	11:59	6ppm	SJ2938541763	Reading taken on 2011 Capping works
18.	12:00	4ppm	SJ 2938141774	Reading taken on 2011 Capping works
19.	12:02	3.5 ppm	SJ2936041769	Reading taken on 2011 Capping works
20.	12:04	20ppm	SJ 2934741778	Reading taken on 2011 Capping works
21.	12:05	120ppm	SJ2934041791	Reading taken on 2011 Capping works possibly influenced by LM7. Not connected to the extraction system.
22.	12:07	3.5ppm	SJ2935241801	Reading taken on 2011 Capping works in patchy vegetation.
23.	12:09	300-400ppm	SJ2936941818	Reading taken on 2011 Capping works close to the anchor trench (approx.)
24.	12:10	100-150ppm	SJ2935441826	Reading taken on 2011 Capping works close to the anchor trench
25.	12:12	25-30ppm	SJ2931841845	Reading taken on the North / North East flank VERY BOGGY. Liner bouncing. Possible leachate under cap. Weeping down slope. Fly infested. See



				picture.
26.	12:19	41%	SJ2929541851	Leachate side riser 1. Strong odour- cracked open after reading. Reading taken close to boot detail. See photograph.
27.	12:20	12ppm	SJ2927641853	Reading taken on 2011 Capping works
28.	12:23	200-8000ppm	SJ2926041860	Side riser 2. Pneumatic exhaust 8000ppm at head of riser, possibly due to redundant leaking pneumatic exhaust. See photograph.
29.	12:26	30ppm	SJ2924441868	Edge of 2011 capping works base anchor trench at interface of 2010 tie in.
30.	12:30	2ppm	SJ2922941836	Background reading at well 48 boot detail. - not connected to collection system used as- condensate drain.
31.	12:31	6ppm	SJ 2923841825	Reading taken at top of 2011 cap/waste interface
32.	12:34	5%	SJ2927741812	Edge of new capping works.
33.	12:36	30-50ppm	SJ2930341310	Reading varied with wind speed
34.	12:41	100ppm	SJ2933941763	2011-2013 capping tie in at restoration soils cutaway on Northern area of site .
35.	12:46	50 to 70 ppm	SJ2931241739	Tipped Bench covered in frag waste. North eastern operational area.
36.	12:49	200-300 ppm	SJ2930341714	Reading taken for the base of gas well 89
37.	12:50	3% 30,0000ppm	SJ2928441697	Reading taken for the base of gas well 9
38.	12:53	70ppm	SJ2927941710	Tipped Bench partially covered waste. North eastern operational area.
39.	12:54	3.60%	SJ 2928141718	Reading taken at GW71 at base NAF.
40.	12:58	20ppm	SJ2926041703	Reading taken at tipped bench on South Eastern part of the operational area.
41.	12:59	20	SJ2922241681	Reading taken at tipped bench on South Eastern part of the operational area. Variation with wind.
42.	13:44	900	SJ2917041579	Area to left of access ramp at the anchor trench at the foot of the area to be capped.

43.	13:45	10%		SJ 2913841804	Leachate drawn in area noted above
44.	13:49	50 to 100ppm		SJ2913241612	Area above - Soils meet sidewall
45.	13:55	500 to 1000 max		SJ2915041627	Top of capping membrane at area to left of access road (anchor)
46.	13:59	18%		SJ2914041648	Top of capping membrane at area to left of access road (anchor)
47.	14:00	480ppm		SJ2914241657	GW85 well base. Marginal flow, well slightly cracked open.
48.	14:07	47ppm		SJ2912641692	GW12. Well Base. Some flow. Well Just cracked open
49.	14:10	27ppm		SJ2915841624	Reading taken close to the ground adjacent to gas well 84
50.	14:12	15ppm		SJ2916641604	Reading taken from the corner of Southern Flank
51.	14:14	14ppm		SJ2917941677	South West - 14m from GW43
52.	14:16	25PPM		SJ2917141690	Base GW 43
53.	14:17	33ppm		SJ2916741712	Base of GW 38
54.	14:18	9ppm		SJ2915041756	In between GW9 and LCOL taken from close to the ground
55.	14:20	1300ppm		SJ2914841794	Base GW58
56.	14:22	140ppm		SJ2917541820	Reading taken off the ground adjacent to GW57
57.	14:25	7%		SJ2918941779	Base GW 21. 295 ppm close to the ground 1m away from the gas well
58.	14:27	34ppm		SJ2924441746	10m from LC5
59.	14:30	2500ppm		SJ2925641748	Base LM4AR (Extraction turned off)
60.	14:32	250ppm		SJ2925741749	Off the ground 1m from LM4AR



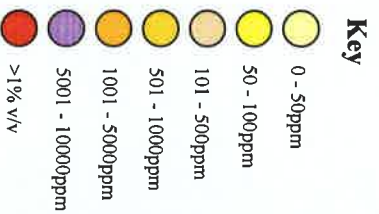
61.	14:35	1100ppm	SJ2925841749	1.5m away from LM4AR
62.	14:37	800ppm	SJ2925141757	Base of LM4B
63.	14:39	20.7%	SJ2926041772	15m from LM6
64.	14:41	84ppm	SJ2927141774	Base GW75
65.	14:42	6300ppm	SJ 2927141771	Surface near LW06R
66.	14:42	22%		CHIW06R
67.	14:45	4800ppm	SJ29225841724	Surface near CHILW5BR (LN5)
68.	14:47	16.70%		Leachate Chamber LM5R

Findings/Recommendations

Findings / Actions were discussed with the Site Manager on the day of the survey to remedy any issues where identified.

Pen y Bont Landfill Site

Surface Emissions Survey 26/06/2013



Photographs

1. Leachate Outbreak – South Eastern Flank



2. Rabbit Hole? High methane emissions (9000ppm). 2011 Capping works



3. Leachate under capping membrane / leachate outbreak – NNE Flank anchor trench



4. Leachate Side Riser 1 – Odour noted downwind of well and elevated methane emissions noted from boot detail.



5. Leachate side riser 2. 8000ppm at head of riser, possibly due to redundant leaking pneumatic pump exhaust.



