

**MONITORING REPORT FORM (CDM-MR)\***  
**Version 01 - in effect as of: 28/09/2010**

**CONTENTS**

- A. General description of the project activity
  - A.1. Brief description of the project activity
  - A.2. Project participants
  - A.3. Location of the project activity
  - A.4. Technical description of the project
  - A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity
  - A.6. Registration date of the project activity
  - A.7. Crediting period of the project activity and related information
  - A.8. Name of responsible person(s)/entity(ies)
- B. Implementation of the project activity
  - B.1. Implementation status of the project activity
  - B.2. Revision of the monitoring plan
  - B.3. Request for deviation applied to this monitoring period
  - B.4. Notification or request of approval of changes
- C. Description of the monitoring system
- D. Data and parameters monitored
  - D.1. Data and parameters used to calculate baseline emissions
  - D.2. Data and parameters used to calculate project emissions
  - D.3. Data and parameters used to calculate leakage emissions
  - D.4. Other relevant data and parameters
- E. Emission reductions calculation
  - E.1. Baseline emissions calculation
  - E.2. Project emissions calculation
  - E.3. Leakage calculation
  - E.4. Emission reductions calculation
  - E.5. Comparison of actual emission reductions with estimates in the registered CDM-PDD
  - E.6. Remarks on difference from estimated value

\* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

## MONITORING REPORT

Version 1, 04/11/2010

Embralixo/Araúna - Bragança Landfill Gas Project

Nº 1179

2nd Monitoring Period, 01/11/2009-31/10/2010

### SECTION A. General description of the project activity

#### A.1. Brief description of the project activity: >>

>>

1. Purpose of the project activity and the measures taken to reduce greenhouse gas emissions; The project comprises the collection and flaring of landfill gas (LFG). The project generates Certified Emission Reductions (CERs) by flaring LFG that would otherwise be released to the atmosphere.

2. Brief description of the installed technology and equipments; The technology used in the project consists of a vertical drains system interconnected to tubing which is connected to the suction and flaring equipment.

3. Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.).

Construction completed: 01/09/2007

Equipment commissioned: 15/10/2007

Continued operation period started: 01/01/2008

4. Total emission reductions achieved in this monitoring period.  
52,702tCO<sub>2</sub>e

#### A.2. Project Participants

>>

Host Parties Brazil , involved indirectly; Authorized Participants: Araúna Participações e Investimentos Ltda ; Embralixo - Empresa Bragantina de Varrição e Coleta de Lixo Ltda  
Other parties involved United Kingdom of Great Britain and Northern Ireland , involved indirectly ; Authorized Participants: EcoSecurities Group Plc

#### A.3. Location of the project activity:

>>

Estrada Municipal do Campo Novo, without number, Campo Novo – Bragança  
Paulista - São Paulo ZIP Code 12900-000. Brazil  
Coordinates: 22°56'49.81"S - 46°34'31.83"O

#### A.4. Technical description of the project

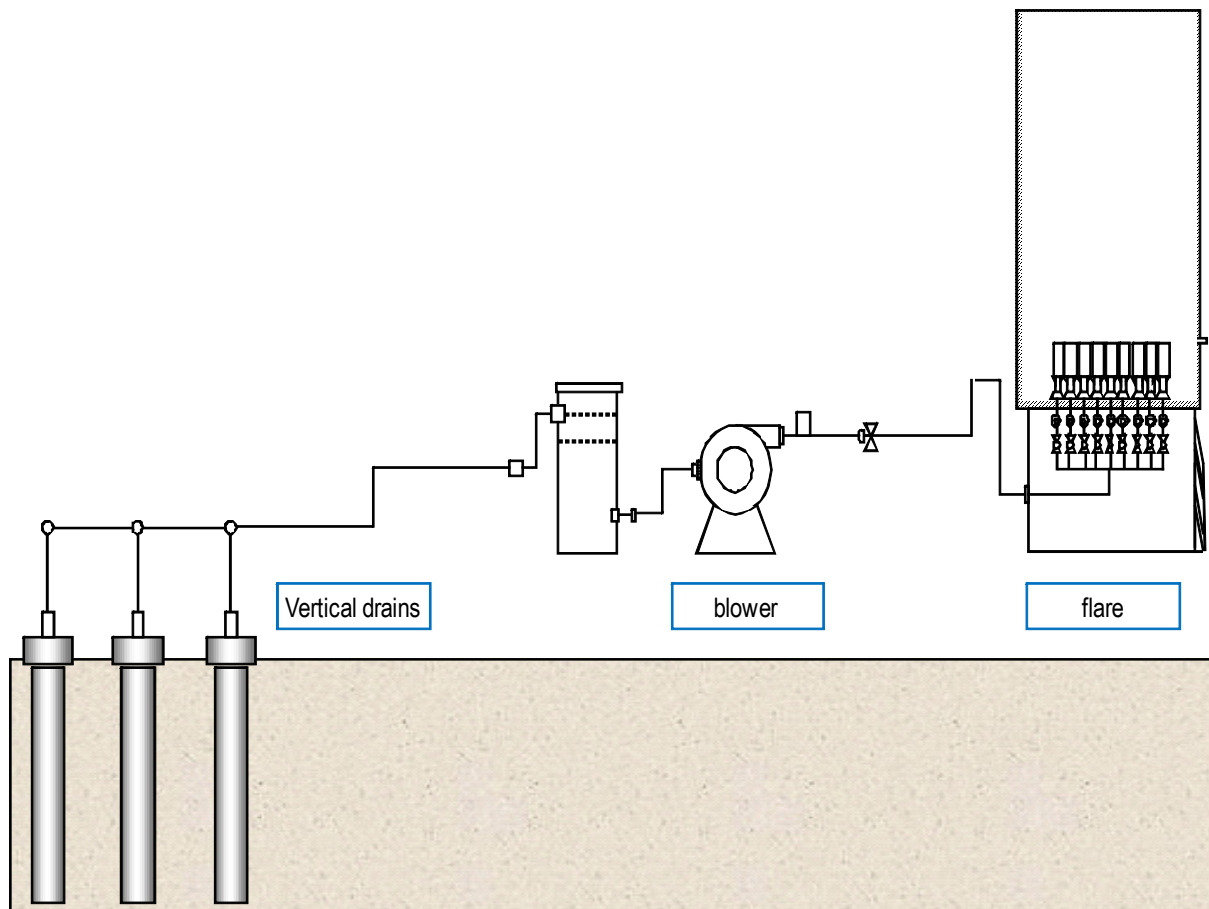
>>

The technology used in the project activity consists basically of a vertical drains system interconnected to tubing which is connected to the suction and flaring equipment.

The technology for the collected landfill gas flaring includes:

- Landfill gas flare (LFG) with a nominal efficiency of 98%;
- Continuous and automated pilot, using LFG;
- Ignition and control panel with Processing Central Logistic;
- Hydraulic seal in the base;

- Flaring monitored;
- Monitoring systems according to the monitoring plan;
- Gas filtering and drying system through decanting.



**A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:**

>>

ACM0001 version 5 - Consolidated methodology for landfill gas project activities

ACM0002 version 6 - Consolidated methodology for grid-connected electricity generation from renewable sources

**A.6. Registration date of the project activity:**

>>

15 October 2007

**A.7. Crediting period of the project activity and related information (start date and choice of crediting period):**

>>

1<sup>st</sup> January 08 – 31<sup>st</sup> December 14 (Renewable). There was no post-registration change to the start date of the crediting period.

**A.8. Name of responsible person(s)/entity(ies):**

>>

The monitoring report is compiled by EcoSecurities International Ltd.

Miss. Javiera Labbé	EcoSecurities	Project Manager	javiera.labbe@ecosecurities.com
Mr. Steve Anzarouth	EcoSecurities	Technical Reviewer	steve.anzarouth@ecosecurities.com

Address: Rua Lauro Muller, 116/4304, Rio de Janeiro, Brazil  
Telephone: +55 21 25464150  
Email: javiera.labbe@ecosecurities.com

## **SECTION B. Implementation of the project activity**

### **B.1. Implementation status of the project activity**

>>

1) Starting date of operation

01/01/2008. See also section A.1. This project consists of one site only and the implementation is not phased.

2) Actual operation of the project activity during this monitoring period

There were no special events during the monitoring period. Normal preventive maintenance activities were performed.

3) Events affecting the applicability of the methodology

No events occurred that affected the applicability of the methodology.

### **B.2. Revision of the monitoring plan**

>>

The monitoring plan was not revised and no revision is pending.

### **B.3. Request for deviation applied to this monitoring period**

>>

No request for deviation was applied during this monitoring period.

### **B.4. Notification or request of approval of changes**

>>

No notification or request of approval of changes has been made.

## **SECTION C. Description of the monitoring system**

>>

### ***Data collection procedures***

Data generation and aggregation: The following raw data:  $LFG_{total,y}$ ,  $W_{CH_4,y}$ ,  $t_{O_2,h}$ ,  $f_{V_{CH_4,FG,h}}$  and  $T_{flare}$  are continuously measured and automatically recorded (2 minutes frequency) in a process database on site, from where daily and monthly spreadsheets are extracted in the 'Raw Data' spreadsheets.

The raw data is then summarised hourly within these spreadsheets. An hourly set of data is only considered eligible for ERs calculations when  $T_{flare}$  is  $>500\text{ }^{\circ}\text{C}$  for more than 40 minutes in any hour.

The hourly summary data from the monthly 'Raw Data' spreadsheets is then transferred to the emission reduction calculation spreadsheets 'ER Monthly Workbook'. Only hourly aggregated data are used for calculation where  $MD_{reg}$ ,  $MD_{project}$  and ERs are calculated hourly and summarised monthly. Only measured data is used for the calculation of the flare efficiency, no default value is used during the entire monitoring period. Calculations are performed as per the methodology and 'Tool to determine project emissions from flaring gases containing methane'.

Electricity consumption of the project is measured by an electricity meter and it is recorded monthly by the plant operator.

Calculation: see Section E.

Reporting: The calculated values are included in an Excel sheet and reported in the CDM-MR.

### ***Organizational structure, roles and responsibilities***

Plant Operator (Araúna) checks operation of the plant and the daily monitored data, conducts periodic inspections and register occurrences. He sends daily monitoring data to EcoSecurities and plant manager;

Plant Manager (Araúna) supervises landfill gas flaring activities and coordinates meters calibrations.

Landfill Manager (Embralixo) monitors environmental licenses and is in charge of the maintenance management of the landfill (except capture and destruction of biogas).

Project Manager (EcoSecurities) receives daily data (electronically) from the plant operator (Araúna) to perform the emission reduction calculations and conducts internal audits.

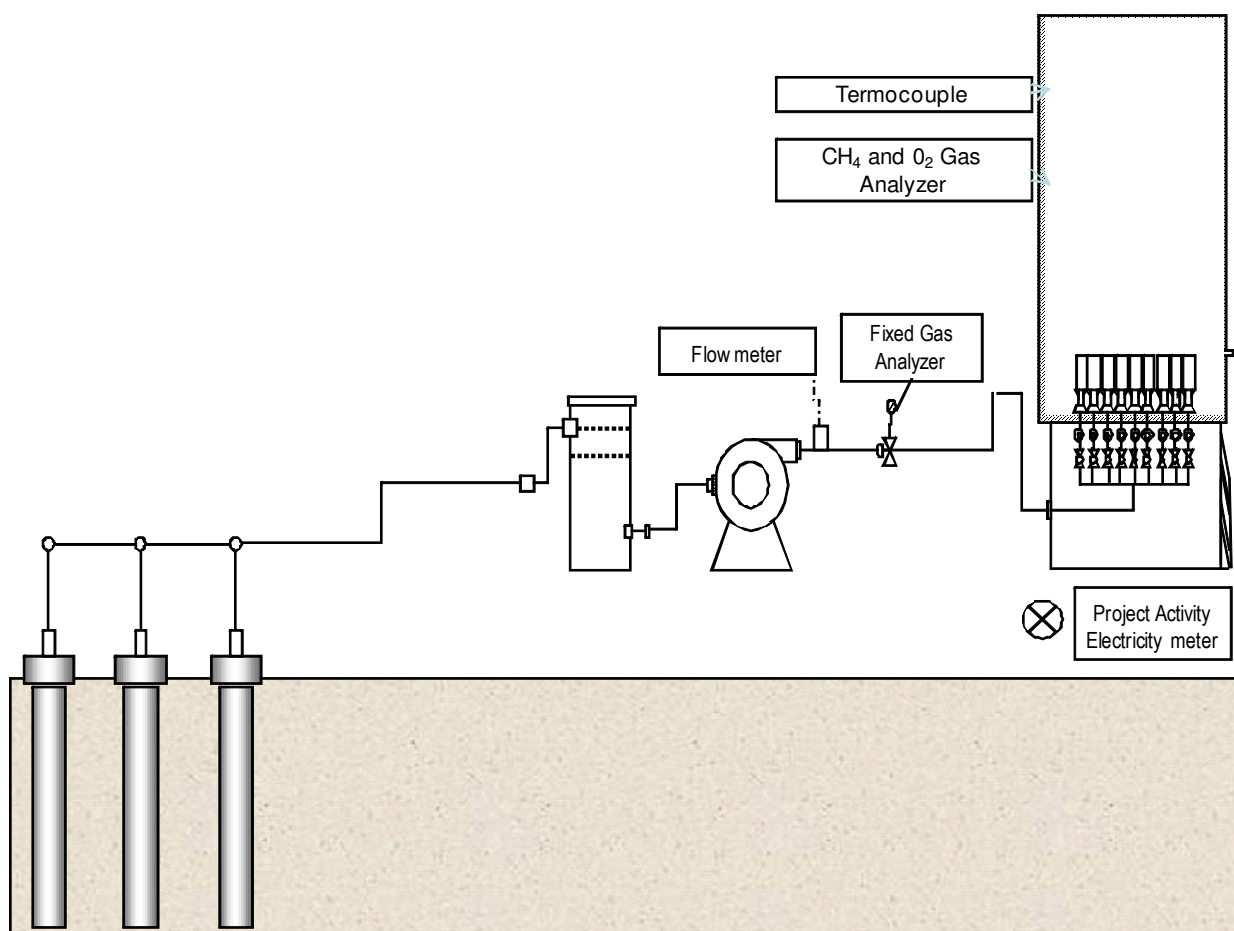
Technical Review (EcoSecurities) checks emission reduction calculations and monitoring report.

### ***Emergency procedures for the monitoring system***

The Plant Operator (Araúna) notifies Plant Manager (Araúna) in case there is doubt about the correct functioning of the meters mentioned in the monitoring plan. In that case, Plant Manager and the operator check and where necessary replace the meters. There were not emergencies cases during this monitoring period.

### ***Line diagram***

For tag numbers of meters see Section D.2



## SECTION D. Data and parameters

### D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

<b>Data / Parameter:</b>	AF
Data unit:	%
Description:	Adjustment factor to the Baseline
Source of data used:	Registered PDD page 24
Value(s) :	10
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions and Project Emissions
Additional comment:	There was no LFG burning before the project activity was implemented. The conservative value of 10% defined in the registered PDD remains fixed for all verifications until the renewal of the crediting period.

<b>Data / Parameter:</b>	CEF <sub>electricity, y</sub>
Data unit:	tCO <sub>2</sub> /MWh
Description:	CO <sub>2</sub> emission intensity of the electricity
Source of data used:	Calculated ex-ante in the registered PDD (page 26-28) according to ACM0002 v6.
Value(s) :	0.2636
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project Emissions
Additional comment:	No Comments

<b>Data / Parameter:</b>	D <sub>CH<sub>4</sub></sub>
Data unit:	KgCO <sub>2</sub> /m <sup>3</sup>
Description:	Methane density at normal condition, 101.325 kPa and 273.15°K (1atm, 0°C)
Source of data used:	PDD page 36 and Tool “Tool to determine project emissions from flaring gases containing methane” page 12
Value(s) :	0.716
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline and Project Emissions
Additional comment:	No Comments

<b>Data / Parameter:</b>	GWP <sub>CH<sub>4</sub></sub>
Data unit:	tCO <sub>2</sub> /tCH <sub>4</sub>
Description:	Methane Global Warming Potential
Source of data used:	IPCC Guidelines
Value(s) :	21
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline and Project Emissions
Additional comment:	No Comments

<b>D.2. Data and parameters monitored</b>	
<b>Data / Parameter:</b>	<b>LFG<sub>total, v</sub> / FV<sub>RG, h</sub></b>
Data unit:	Nm <sup>3</sup> , Normal cubic meters, at 101.325 kPa and 273.15°K (1atm, 0°C)
Description:	Volume of landfill gas captured
Measured /Calculated /Default:	Measured
Source of data:	Flow meter
Value(s) of monitored parameter:	Total: 9,017,087.5 Hourly values are used for the CER calculations as required by the “Tool to determine project emissions from flaring gases containing methane”.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline and Project Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Mass flowmeter: KURZ, Model: 454 FT-08-MT Accuracy: 1%+[LFG Temperature-25°C]*0,025% Calibration frequency: Annual calibration  Serial number: FD 20978A. Uninstalled on 06/07/2010. Calibration certificate: 13/07/2009 valid until 12/07/2010  Serial number: FD 21298A. Installed on 06/07/2010. Calibration certificate: 31/05/2010 valid until 30/05/2011.
Measuring/ Reading/ Recording frequency:	Continuously measured. All the data are recorded every 2 minutes on an electronic database, and aggregated hourly in the CDM workbook.
Calculation method (if applicable):	Two correction factors are applied to the flow measurement according manufacturer indications: <ol style="list-style-type: none"> <li>1) Mass flow meter shows Sm<sup>3</sup> standardised at 1atm and 25°C, a correction is performed to Nm<sup>3</sup> (1atm , 0°C)</li> <li>2) Mass flow meter shows results for air flow, a correction is performed to obtain results in LFG flow.</li> </ol> No temperature and pressure correction is performed. No separate monitoring/reporting of temperature and pressure is necessary when using flow meters that express LFG volumes in normalized cubic meters according to registered monitoring plan, monitoring methodology ACM0001 v5 and AM-CLA-0023. However, temperature of LFG is continuously monitored and registered. LFG temperature has not exceeds 60°C during the monitoring period, then according to “Tool to determine project emissions from flaring gases containing methane”, no correction is needed.
QA/QC procedures applied:	The flow meter is subjected to a regular maintenance and testing regime to ensure accuracy.

<b>Data / Parameter:</b>	<b>W<sub>CH4, v</sub> / Fv<sub>ch4, h</sub></b>
Data unit:	% (Percentage) - m <sup>3</sup> CH <sub>4</sub> / m <sup>3</sup> LFG
Description:	Methane fraction in the landfill gas
Measured /Calculated /Default:	Measured
Source of data:	Gas Analyzer
Value(s) of monitored parameter:	Monthly average: 42.8 Hourly values are used for the CER calculations as required by the

	“Tool to determine project emissions from flaring gases containing methane”.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline and Project Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	<p>Landtec. Model: AEMS. Accuracy: 1% of full scale. Calibration frequency: 6 month calibration.</p> <p>Serial Number: GA08642. Calibration certificates: 13/05/2009 valid until 12/11/2009 13/11/2009 valid until 12/05/2010 13/05/2010 valid until 13/11/2010</p> <p>When the main meter was in calibration, it was replaced for the following calibrated meters (same manufacturer and same model as the main meter) Serial number: GA08897. Installed between 13/11/2009- 28.11. 2009: Calibration certificate: 1/06/2009 valid until 31/12/2009</p> <p>Serial number: GA08898. Installed between 10/4/2010 -14/05/2010: Calibration certificate: 14/12/2009 valid until 13/06/2010</p>
Measuring/ Reading/ Recording frequency:	Continuously measured. All the data are recorded every 2 minutes on an electronic database, and aggregated hourly in the CDM workbook.
Calculation method (if applicable):	Temperature of LFG is continuously monitored and registered. LFG temperature has not exceeds 60°C during the monitoring period, then according to “Tool to determine project emissions from flaring gases containing methane”, no correction is needed.
QA/QC procedures applied:	The gas analyzer is subjected to a regular maintenance and testing regime to ensure accuracy.

<b>Data / Parameter:</b>	<b>EL<sub>IMP</sub></b>
Data unit:	MWh
Description:	Total amount of electricity imported to meet project requirement.
Measured /Calculated /Default:	Measured
Source of data:	Electricity meter
Value(s) of monitored parameter:	44.6
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	<p>Itron-Actaris MY202A Electromechanical meter Accuracy class 2% Meter serial number 1321986 Calibration frequency: 8 year calibration Inmetro Seal: 062/06 Installed 2007</p>
Measuring/ Reading/ Recording frequency:	A power meter is continuously measuring the electricity consumption of the project activity. This is monthly recorded by the project developer.
Calculation method (if applicable):	Not Applicable.

QA/QC procedures applied:	Calibration and maintenance of this meter followed manufacturer's recommendations.
---------------------------	--

<b>Data / Parameter:</b>	<b>CEF<sub>electricity, v</sub></b>
Data unit:	tCO <sub>2</sub> e/MWh
Description:	CO <sub>2</sub> emission intensity of the electricity.
Measured /Calculated /Default:	Calculated
Source of data:	This parameter was calculated ex-ante in the registered PDD using data available at the time of the PDD submission, according to ACM 0002 v6. Value remains fixed throughout the first crediting period, and data will be re assessed at renewal of the credit period.
Value(s) of monitored parameter:	0.2636
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Not Applicable
Measuring/ Reading/ Recording frequency:	Once in the crediting period.
Calculation method (if applicable):	As per ACM 0002 v6 for ex-ante fixed value. PDD page 26-28.
QA/QC procedures applied:	Not Applicable.

<b>Data / Parameter:</b>	<b>Regulatory requirements relating to landfill gas projects</b>
Data unit:	Test
Description:	Regulatory requirements relating to landfill gas projects
Measured /Calculated /Default:	Indicated
Source of data:	Federal and regional Brazilian Laws
Value(s) of monitored parameter:	There are no new legal requirements relating to landfill gas projects that could affect the adjustment factor (AF). There is no legislation in Brazil /São Paulo / Bragança obliging landfills to collect and flare landfill gas.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emissions.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Not Applicable.
Measuring/ Reading/ Recording frequency:	Revision of current legal requirements for landfills.
Calculation method (if applicable):	Not Applicable
QA/QC procedures applied:	Not Applicable

<b>Data / Parameter:</b>	$t_{O_2,h}$
Data unit:	%v/v
Description:	Volumetric fraction of O <sub>2</sub> in the exhaust gas of the flare in the hour h
Measured /Calculated /Default:	Measured
Source of data:	Continuous exhaust gas analyzer
Value(s) of monitored parameter:	Monthly average: 16.4 Hourly values are used for the CER calculations as required by the “Tool to determine project emissions from flaring gases containing methane”.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Flare emission analyzer: Landtec Model: MGA3000 Serial number 4303 Annual calibration frequency Accuracy for O <sub>2</sub> : 0,1%+ 1% of the reading Calibration certificates: 23/09/2009 valid until 22/09/2010 23/09/2010 valid until 22/09/2011 Calibration performed on site.
Measuring/ Reading/ Recording frequency:	Continuously measured. All the data are recorded every 2 minutes on an electronic database, and aggregated hourly in the CDM workbook.
Calculation method (if applicable):	Not Applicable
QA/QC procedures applied:	Analyzer is periodically calibrated according to the manufacturer’s recommendation. A zero check and a typical value check are performed by comparison with a standard gas.

<b>Data / Parameter:</b>	$f_{VCH_4,FG,h}$
Data unit:	mg/m <sup>3</sup>
Description:	Concentration of methane in the exhaust gas of the flare in the hour h.
Measured /Calculated /Default:	Measured
Source of data:	Continuous exhaust gas analyzer
Value(s) of monitored parameter:	Monthly average: 3.5 Hourly values are used for the CER calculations as required by the “Tool to determine project emissions from flaring gases containing methane”.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Flare emission analyzer: Landtec Model: MGA3000, Serial number 4303 Annual calibration frequency Accuracy for CH <sub>4</sub> : 1ppm+ 1% of the reading Calibration certificates: 23/09/2009 valid until 22/09/2010

	23/09/2010 valid until 22/09/2011 Calibration performed on site.
Measuring/ Reading/ Recording frequency:	Continuously measured. All the data are recorded every 2 minutes on an electronic database, and aggregated hourly in the CDM workbook.
Calculation method (if applicable):	Measurement instrument reads ppm. To convert from ppm to mg/m <sup>3</sup> simply multiply by 0.716 (density of methane according Section D.1).
QA/QC procedures applied:	Analyzer is periodically calibrated according to manufacturer's recommendation. A zero check and a typical value check are performed by comparison with a standard gas.

<b>Data / Parameter:</b>	<b>T<sub>flare</sub></b>
Data unit:	°C
Description:	Temperature on the exhaust gas of the flare
Measured /Calculated /Default:	Measured
Source of data:	Continuously measured by thermocouple.
Value(s) of monitored parameter:	Monthly average: 618.7 Hourly values are used for the CER calculations as required by the "Tool to determine project emissions from flaring gases containing methane".
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Termocouple WÄRME. Model MRT4300. Termocouple WÄRME. Model MRT 0407. Accuracy: 0,15% full scale. Annual calibration frequency.  Serial Number: 5162 (MRT 4300). Installed until 06/04/2010 Calibration certificate: 24/04/2009 valid until 23/04/2010 Serial Number: 48419 (MRT 0407). Installed between 06/04/2010-05/07/2010. Calibration certificate: 10/07/2009 valid until 09/07/2010 Serial Number 5162 (MRT 4300). Installed on 05/07/2010 Calibration certificate: 26/05/2010 valid until 25/05/2011
Measuring/ Reading/ Recording frequency:	Continuously measured. All the data are recorded every 2 minutes on an electronic database, and aggregated hourly in the CDM workbook.
Calculation method (if applicable):	Not Applicable
QA/QC procedures applied:	Thermocouples were replaced or calibrated every year

<b>Data / Parameter:</b>	<b>PE<sub>flare,y</sub></b>
Data unit:	tCO <sub>2e</sub>
Description:	Project emissions from flaring of the residual gas stream in year y
Measured /Calculated /Default:	Calculated
Source of data:	Hourly calculated from continuously measured data: LFG <sub>total, y</sub> , W <sub>CH<sub>4</sub>,y</sub> , t <sub>O<sub>2</sub>,h</sub> , f <sub>VCH<sub>4</sub>,FG,h</sub> , T <sub>flare</sub>
Value(s) of monitored parameter:	60.0
Indicate what the data are used for (Baseline/ Project/	Project Emissions

Leakage emission calculations)	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	See parameters: $LFG_{total, y}$ , $W_{CH_4, y}$ , $t_{O_2, h}$ , $f_{VCH_4, FG, h}$ , $T_{flare}$
Measuring/ Reading/ Recording frequency:	Hourly calculated from continuously measured data.
Calculation method (if applicable):	<p>Determined according to “Tool to determine project emissions from flaring gases containing Methane”. Refer “ERs Workbooks” spreadsheets for calculations.</p> <p>Only monitored data are used for Flare Efficiency determination. No default value is used during the entire monitoring period.</p> <p>To calculate hourly results, only values within the range of operating conditions according to the manufacturer’s specifications are considered:</p> <ul style="list-style-type: none"> <li>- <math>T_{flare} &gt; 500^{\circ}C</math></li> <li>- <math>CH_4</math> in the LFG <math>&gt; 20\%</math></li> <li>- and flame detector information</li> </ul>
QA/QC procedures applied:	See parameters: $LFG_{total, y}$ , $W_{CH_4, y}$ , $t_{O_2, h}$ , $f_{VCH_4, FG, h}$ , $T_{flare}$

## SECTION E. Emission reductions calculation

### E.1. Baseline emissions calculation

>>

Baseline emissions calculations are not applicable for ACM0001 version 5 - Consolidated methodology for landfill gas project activities. See calculations in section E.4

### E.2. Project emissions calculation

>>

Project Emission calculation are not applicable according to ACM0001 version 5 - Consolidated methodology for landfill gas project activities. See calculations in section E.4

### E.3. Leakage calculation

>>

Not applicable according to ACM0001 version 5 - Consolidated methodology for landfill gas project activities.

### E.4. Emission reductions calculation / table

>>

Emission reduction calculations as per ACM0001 v5 are as follow:

Eq 4 ACM 0001 v5

$$MD_{flared, y} = (LFG_{flare, y} * W_{CH_4, y} * D_{CH_4}) - (PE_{flare, y} / GWP_{CH_4})$$

Where:

$MD_{flared, y}$  the quantity of methane destroyed by flaring ( $tCH_4$ ),

$LFG_{flare,y}$  the quantity of landfill gas fed to the flare during the year measured in ( $m^3$ ),  
 $w_{CH_4,y}$  the average methane fraction of the landfill gas as measured ( $m^3CH_4/m^3LFG$ ),  
 $D_{CH_4}$  the methane density expressed in ( $tCH_4/m^3CH_4$ ) and  
 $PE_{flare,y}$  the project emissions from flaring of the residual gas stream in year y ( $tCO_{2e}$ )  
determined following the procedure described in the “*Tool to determine project emissions from flaring gases containing Methane*”.

Eq 3 ACM 0001 v5: Simplified because the LFG is not used for power or heat generation.

$$MD_{project,y} = MD_{flared,y}$$

Eq 2 ACM 0001 v5

$$MD_{reg,y} = MD_{project,y} * AF$$

$MD_{project,y}$  the amount of methane destroyed/combusted during the year ( $tCH_4$ )  
 $MD_{reg,y}$  the amount of methane that would have been destroyed/combusted during the year in the absence of the project ( $tCH_4$ )  
 $AF$  Adjustment factor (%)

Eq 1 of ACM 0001 v5 Simplified because the LFG is not used for power or heat generation.

$$ER_y = (MD_{project,y} - MD_{reg,y}) * GWP_{CH_4} - PEEC_y$$

$ER_y$  Emission reduction ( $tCO_2$ )  
 $PEEC_y$  Project emission due to electricity consumption ( $tCO_2$ )

Calculation of emission reductions	Symbol	Amount	Unit	Remarks
Methane destroyed in project scenario	$MD_{project}$	2,789	$tCH_4$	1
Methane destroyed in baseline scenario	$MD_{reg}$	279	$tCH_4$	2
Project emissions from electricity consumption	PE EC	11.7	$tCO_{2e}$	3
Total emission reductions	ERs	52,702	$tCO_{2e}$	4

#### Remarks

- $MD_{project} = (LFG_{flare,y} * w_{CH_4,y} * D_{CH_4}) - (PE_{flare,y} / GWP_{CH_4})$
- $MD_{reg} = MD_{project} * AF$
- $PEEC = EL_{IMP} * CEF_{electricity}$
- $ERs = (MD_{project,y} - MD_{reg,y}) * GWP_{CH_4} - PEEC$

**E.5. Comparison of actual emission reductions with estimates in the CDM-PDD**

&gt;&gt;

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO <sub>2</sub> e)	2009: 66,047 2010: 66,145	52,702 tCO <sub>2</sub>

**E.6. Remarks on difference from estimated value in the PDD**

&gt;&gt;

Please provide an explanation of the cause of any **increase** in the actual emission reductions achieved during the current monitoring period:

When the estimated value from the PDD and the value reached during this monitoring period are proportionally reported to a daily value, the two values compare as presented in the table below:

Item	Ex-ante value from registered CDM-PDD	Actual values reached during the monitoring period
Period considered (number of days)	365	365
Daily average emission reductions (tCO <sub>2</sub> e)	2009: 181.0 2010: 181.2	144.4

This table shows that there is **no increase** from the ex-ante calculation of the registered CDM-PDD during this monitoring period.

-----

**History of the document**

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
<b>Decision Class:</b> Regulatory <b>Document Type:</b> Guideline, Form <b>Business Function:</b> Issuance		