Revises:Andrea Viglino
Date: March 12, 2008
Signature:

Approves: Rodolfo Bernstein
Date: March 12, 2008
Signature:

CLEAN DEVELOPMENT MECHANISM

CDM MONITORING REPORT FROM

SANTA MARTA LANDFILL GAS (LFG) CAPTURE PROJECT

MONITORING PERIOD:

FROM MARCH 11, 2007 TO AUGUST 31, 2007

1ST VERIFICATION - VERSION 5

MARCH 12, 2008

CONTENTS

Annexes

Initial remark (referring to Decision 17/CP.7, Annex H, paragraph 54, 56, 58 and 60)

The monitoring plan contained in the registered project design document is to be implemented by the project participants and the monitoring report shall be written in accordance with this registered monitoring plan.

The monitoring plan shall be based on a previously approved monitoring methodology or a new methodology.

The implementation of the registered monitoring plan and its revision, as applicable, shall be a condition for verification, certification and issuance of CERs.

SECCION A General project activity information

A.1 Title of the project activity:

Santa Marta Landfill Gas (LFG) Capture Project

A.2 CDM registration number:

The Santa Marta Landfill Gas (LFG) was registred in March 11, 2007, reference number 0799

A.3 Short description of the project activity:

Santa Marta Landfill Gas (LFG) Capture Project is a project designed to exploit the landfill gas produced in Santa Marta Landfill. This landfill is located in the Province of Talagante, in the Metropolitan Region of Santiago, Chile.

The landfill started its operation in 2002 and its total surface is 296 hectares with a total area destined to the final disposal of municipal solid waste (MSW) of 77 hectares, from which 11 hectares have been already used and with an approximate medium height of 50 meters.

Approximately 58.600 ton of waste is received at the landfill per month. At the end of 2006, 3.178.884 ton of MSW had been disposed in the landfill and another 14.109.184 ton are expected to be received in the next 15 years.

A4 Real Project Implementation:

The proposed project activity envisages the installation of a highly efficient landfill gas (LFG) collection and flaring system at the Santa Marta landfill, which is an existing and operational landfill site in order to avoid the emissions of methane to the atmosphere.

The forecasted amount of Green House Gas (GHG) emission reductions from the project is 1.735.598 tCO_2 equivalents (tCO_2e) during the first seven years renewable crediting period, resulting in forecasted average annual emission reductions of 247.943 tCO_2e.

The central flaring system is located in the upper part of the landfill site. The gas runs up using two blowers under correct suction pressure and capacity, the pressure is adjusted trough frequency controlled engines. The blower operation is alternated (e.g one on and the other stand-by) with a maximum suction capacity of 3.600 m3/h.

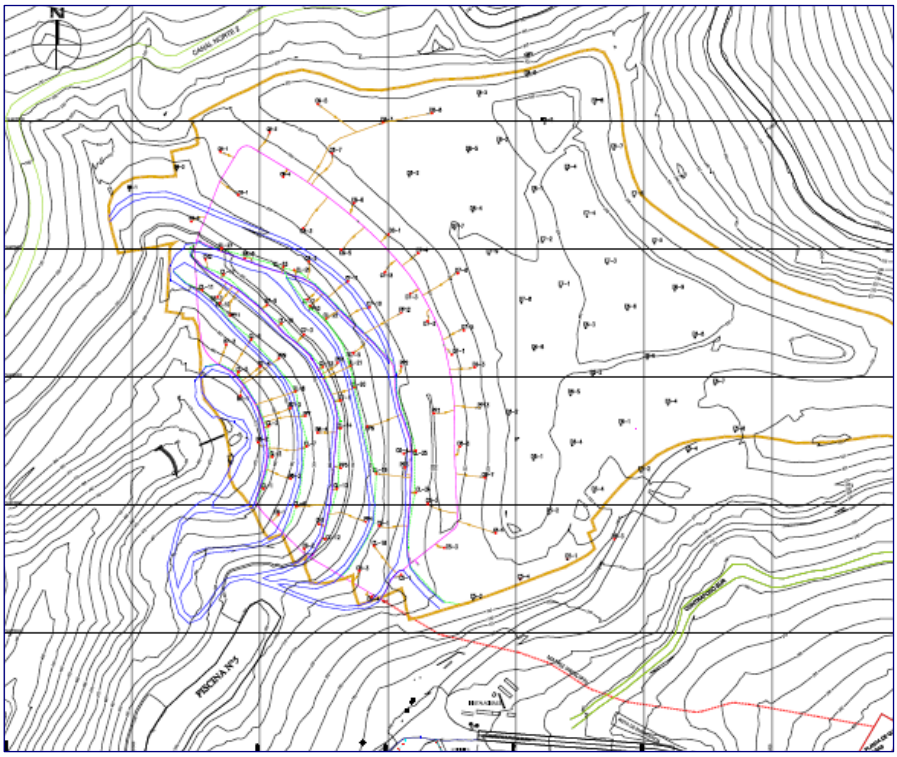


Figure 1.1 Landfill layouts, gas collection lines and central flaring location

Figure 1.2 Flaring station general view

Figure 1.3 Principal valve, flame arrester, blower

The landfill gas pass through the principal valve, flame arrester and the blower to the pressure side were the gas is analyzed by the gas measurement instruments and transmitters, located throughout the pipes. These instruments are very important for the safety, process and operation of the flaring plant.

After analyzed and monitored, the gas is transported to the flares to be burned. Each flare was made with certificated materials to ensure a correct and safety gas flaring operation. Furthermore, each flare has an independent automatic start and exhaust gas temperature is monitored by the PLC (Programmable Logical Controller) which is located in the control panel.

Figure 1.4 Landfill gas Analyzer

Figure 1.5 Flow meter, inlet gas to flare

The process is totally controlled by an electrical control system. With this system called PLC it is possible to remote control and monitor the operation of the flaring plant.

The pressure data, temperature data, flow data, electricity consumption and methane content data is measured on-line and minutely compiled and daily totalized. All data transmission and compilation is made electronically to the calculation spreadsheet. This system installed also has a computer software to control and monitor the installation.

.

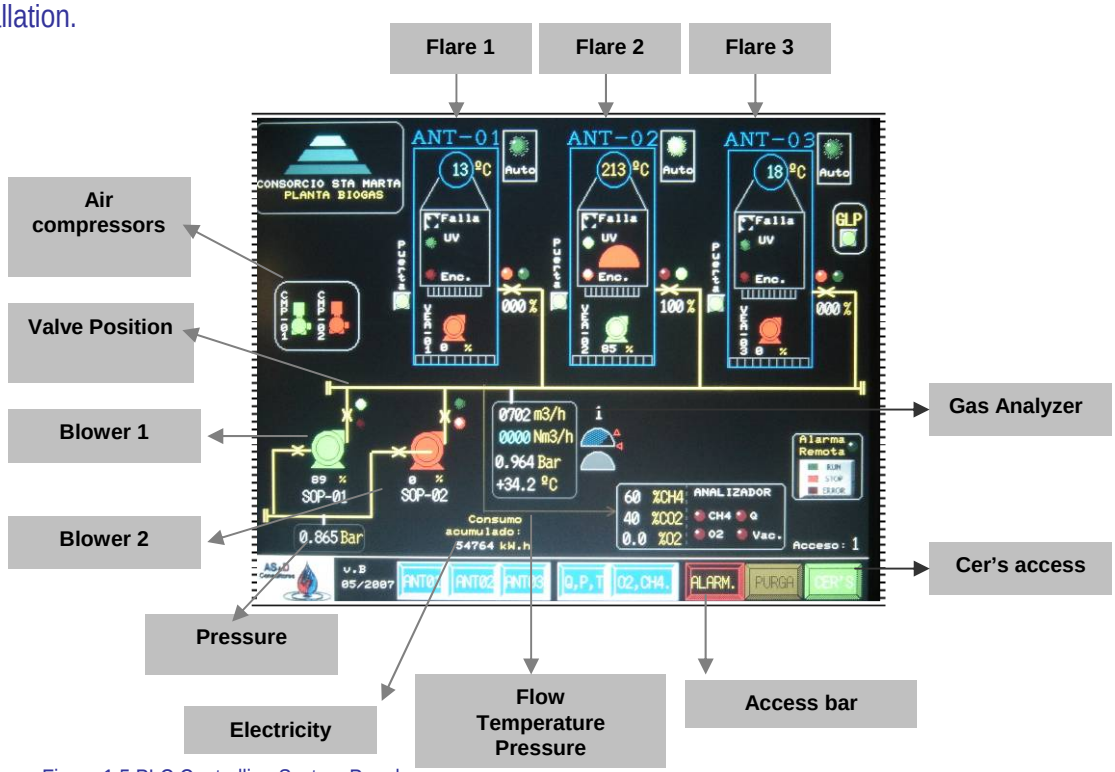


Figure 1.5 PLC Controlling System Panel

At the initial stage of the project, no electricity will be generated from the collected biogas. This is due to the high investment costs in power generation equipment and grid connection and the current low price of electricity. Today, considering the actual energy situation in Chile and with the project in continuous operation, the feasibility of electricity production is under revision.

A.5 Changes against the PDD

No major changes were made.

A.6 Monitoring Period:

From March 11, 2007 to August 31, 2007

A.7 Methodology applied to the project activity

A.7.1 Baseline methodology:

The baseline applied to this project activity is ACM0001 – version 4: "Consolidated baseline methodology for landfill gas project activities" of July 28, 2006.

A.7.2 Monitoring methodology:

The monitoring methodology applied to this project activity is ACM0001- version 04 "Consolidated monitoring methodology for landfill gas project activities" of July 28, 2006.

A.8 Intended deviations or revisions to the registered PDD:

No deviation to the registered PDD is request.

A.9 Changes since last verification

As it is the first verification, no changes were made.

A.10 Person(s) responsible for the preparation and submission of the monitoring report:

QAT (Quality assurance team)
Mrs. Andrea Viglino
andreav@csmarta.cl
+56 (02) 8541323

General Manager
Mr. Rodolfo Bernstein
rodolfo.bernstein@csmarta.cl
+56 (02) 8541323

SECCION B Key monitoring activities according to the monitoring plan for the monitoring period

The following equipments are used to monitor the operation of the project and to calculate the emission reduction.

B.1 Calibration procedures

According to Consorcio Santa Marta's Environmental Management, the calibration frequency is as show below:

CALIBRATIÓN PLAN OF THE LANDFILL GAS (LFG) CAPTURE PROJECT

Variable	Type equipment	Manufactured	Model	Serial number	Calibration frecuency	Certificate of calibration
Gas Flow	Flow meter	Yokogawa	DY 200-EBMBA1-2D/FS1	6423B025	48 months	EEK1120
Pressure	Pressure Transmiter	Yokogawa	EJA510A-EAS7N-07EF/D3/FU1	91FA26322	60 months	91FA26322
Pressure	Pressure Transmiter	Yokogawa	EJA510A-EAS7N-07EF/D3/FU1	91FA26323	60 months	91FA26323
Temperature	Temperature Transmiter	Yokogawa	EJA510A-EAS7N-07EF/D3/FU1	C2F7A11785	36 months	C2F7A11785
Temperature	Temperature Transmiter	Yokogawa	EJA510A-EAS7N-07EF/D3/FU1	C2F704659	36 months	C2F704659
Temperature	Temperature Transmiter	Yokogawa	EJA510A-EAS7N-07EF/D3/FU1	C2F704661	36 months	C2F704661
Temperature	Temperature Transmiter	Yokogawa	EJA510A-EAS7N-07EF/D3/FU1	C2F704660	36 months	C2F704660
Methane	Fixed Gas Analyzer	Nova	41270MN4X	7552	30 days	DB.7552
Electricy	Electricy meter (1)	Inter	PM-PAC	0609BK01071	Not applicable	07-745

(1)= The current electricity meter was installed on April 13, 2007, due to the fact that the previous presented reading problems

B.2 Involvement of Third Parties:

The plant began to operate in January, 2007, therefore it corresponds to realize monthly calibrations to the gas analyzer NOVA, procedure that develops with a Test Gas CH_4 50 % Balance CO_2, with tolerance of preparation of 3 % acquired by AGA S.A.

B.3 Data collection (accumulated data for the whole monitoring period):

List of fixed default values:

- Global Warming Potential of CH_4 ($GWPCH_4$) = 21 tCO_2e/tCH_4;
- Density of Methane, = 0,0007168 tons/m^3

- Percent of CH_4 (base line)= 50%

List of fixed values:

- FE = Flare Efficiency

List of variables:

- Q biogas flared = (m^3)
- Q biogas normalized flared = (Nm^3)
- Temperature of biogas = (°C)
- Pressure of biogas = (mbar)
- Percent of methane in the biogas = (% CH_4)
- Total amount of electricity = (KWh)
- CH_4 accumulated Tons (Ton CH_4)

B.4 Data concerning GHG emissions by sources of the project activity (referring to paragraph 53(a)):

Day	Electricity consumed KWh	Day	Electricity consumed KWh	Day	Electricity consumed KWh	Day	Electricity consumed KWh
March 11, 2007	333.40	March 25, 2007	366.98	April, 08, 2007	507.04	April, 22, 2007	507.03
March 12, 2007	336.55	March 26, 2007	363.51	April, 09, 2007	478.96	April, 23, 2007	478.95
March 13, 2007	280.63	March 27, 2007	524.84	April, 10, 2007	429.48	April, 24, 2007	429.48
March 14, 2007	434.05	March 28, 2007	498.31	April, 11, 2007	217.25	April, 25, 2007	217.25
March 15, 2007	452.24	March 29, 2007	498.31	April, 12, 2007	376.43	April, 26, 2007	376.42
March 16, 2007	569.43	March 30, 2007	548.50	April, 13, 2007	335.80	April, 27, 2007	335.80
March 17, 2007	589.89	March 31, 2007	532.01	April, 14, 2007	795.70	April, 28, 2007	795.70
March 18, 2007	461.80	April, 01, 2007	380.01	April, 15, 2007	474.50	April, 29, 2007	474.50
March 19, 2007	284.38	April, 02, 2007	276.00	April, 16, 2007	406.70	April, 30, 2007	406.70
March 20, 2007	133.48	April, 03, 2007	104.64	April, 17, 2007	467.40	May 01, 2007	467.40
March 21, 2007	371.86	April, 04, 2007	146.26	April, 18, 2007	455.30	May 02, 2007	455.30
March 22, 2007	396.32	April, 05, 2007	259.04	April, 19, 2007	633.00	May 03, 2007	633.00
March 23, 2007	555.76	April, 06, 2007	363.99	April, 20, 2007	625.00	May 04, 2007	625.00
March 24, 2007	573.65	April, 07, 2007	489.46	April, 21, 2007	646.00	May 05, 2007	646.00

Day	Electricity consumed KWh	Day	Electricity consumed KWh	Day	Electricity consumed KWh	Day	Electricity consumed KWh
May 06, 2007	651.00	Jun 05, 2007	928.00	Jul 05, 2007	1,071.0	August 04, 2007	1,149.0
May 07, 2007	642.00	Jun 06, 2007	963.00	Jul 06, 2007	1,193.0	August 05, 2007	1,286.0
May 08, 2007	640.00	Jun 07, 2007	959.00	Jul 07, 2007	1,182.0	August 06, 2007	886.0
May 09, 2007	683.00	Jun 08, 2007	926.00	Jul 08, 2007	1,105.0	August 07, 2007	895.0
May 10, 2007	758.00	Jun 09, 2007	905.00	Jul 09, 2007	1,123.0	August 08, 2007	1,050.0
May 11, 2007	760.00	Jun 10, 2007	867.00	Jul 10, 2007	1,136.0	August 09, 2007	1,375.0
May 12, 2007	500.00	Jun 11, 2007	936.0	Jul 11, 2007	1,189.0	August 10, 2007	1,372.0
May 13, 2007	433.00	Jun 12, 2007	984.0	Jul 12, 2007	1,148.0	August 11, 2007	1,338.0
May 14, 2007	582.00	Jun 13, 2007	999.0	Jul 13, 2007	1,110.0	August 12, 2007	1,391.0
May 15, 2007	670.00	Jun 14, 2007	1,025.0	Jul 14, 2007	1,177.0	August 13, 2007	1,441.0
May 16, 2007	709.00	Jun 15, 2007	1,037.0	Jul 15, 2007	1,135.0	August 14, 2007	1,423.0
May 17, 2007	776.00	Jun 16, 2007	991.0	Jul 16, 2007	1,091.0	August 15, 2007	1,405.0
May 18, 2007	774.00	Jun 17, 2007	975.0	Jul 17, 2007	985.0	August 16, 2007	1,353.0
May 19, 2007	696.00	Jun 18, 2007	994.00	Jul 18, 2007	802.0	August 17, 2007	1,385.0
May 20, 2007	679.00	Jun 19, 2007	1,038.00	Jul 19, 2007	912.0	August 18, 2007	1,409.0
May 21, 2007	673.00	Jun 20, 2007	1,123.00	Jul 20, 2007	1,168.0	August 19, 2007	1,425.0
May 22, 2007	747.00	Jun 21, 2007	897.00	Jul 21, 2007	1,253.0	August 20, 2007	1,324.0
May 23, 2007	742.00	Jun 22, 2007	1,090.00	Jul 22, 2007	1,262.0	August 21, 2007	1,366.0
May 24, 2007	766.00	Jun 23, 2007	1,093.00	Jul 23, 2007	1,207.0	August 22, 2007	1,293.0
May 25, 2007	743.00	Jun 24, 2007	1,024.00	Jul 24, 2007	1,272.0	August 23, 2007	1,298.0
May 26, 2007	818.00	Jun 25, 2007	1,069.0	Jul 25, 2007	1,399.0	August 24, 2007	1,367.0
May 27, 2007	845.00	Jun 26, 2007	1,165.0	Jul 26, 2007	1,389.0	August 25, 2007	1,393.0
May 28, 2007	786.00	Jun 27, 2007	1,238.0	Jul 27, 2007	911.0	August 26, 2007	1,378.0
May 29, 2007	784.00	Jun 28, 2007	1,277.0	Jul 28, 2007	1,232.0	August 27, 2007	1,361.0
May 30, 2007	761.00	Jun 29, 2007	1,175.0	Jul 29, 2007	1,290.0	August 28, 2007	1,282.0
May 31, 2007	531.00	Jun 30, 2007	1,517.0	Jul 30, 2007	1,257.0	August 29, 2007	1,400.0
Jun 01, 2007	879.00	Jul 01, 2007	1,099.0	Jul 31, 2007	1,340.0	August 30, 2007	1,446.0
Jun 02, 2007	851.00	Jul 02, 2007	1,051.0	August 01, 2007	1,398.0	August 31, 2007	1,435.1
Jun 03, 2007	789.00	Jul 03, 2007	987.0	August 02, 2007	1,317.0	Gross 154871.9 KW	
Jun 04, 2007	831.00	Jul 04, 2007	1,035.0	August 03, 2007	1,069.0	Gross: 154,87 MWh	

B.5 Data concerning GHG emissions by sources of the baseline:

Year	Obligatory burning of LFG(m³/year), from RCA 509/2005
2007	2,959,000
2008	3,506,000
2009	4,047,000
2010	4,583,000
2011	5,114,000
2012	5,643,000
2013	6,161,000
2014	6,670,000
2015	7,170,000
2016	7,662,000
2017	8,147,000
2018	8,626,000
2019	9,099,000
2020	9,566,000
2021	10,030,000
2022	10,490,000

B.6 Data concerning leakage (referring to paragraph 53(c)):

No leakage effects need to be accounted under the methodology ACM0001 Version 04

B.7 Data concerning environmental impacts (referring to paragraph 53(d)):

The implementation of works associated to the biogas handling, has meant highly positive an environmental impact for the local community, product that with their implementation has diminished substantially the emissions of scents that mainly came from vents wells, which at the moment are connected to a main pipe of harvesting for his burns centralized. Additionally, it has been contracted and enabled local manual labor, which also has derived in a smaller positive impact.

Respect to the measures associated to the controlling and handling of biogas, it is possible to indicate that periodical activities are made, such as environmental measurements into the landfill and landfill facilities to detect biogas migrations, the results indicates that gas migrations have not been detected; over explosive limit gas concentration measurements have not found, this situation come out any risk associated; and finally methane and oxygen concentration into the gas vent wells are periodically tested to evaluate their behavior.

Is important to highlight that the operations of the Landfill are environmentaly audited by a third party. This entity is in charge of assessing the compliance to all the requirements described in the Resolution of environmental qualification, including N° 509/2005 “Biogas Management” (“Manejo de Biogas”).

B.8. Data processing and archiving (incl. software used):

Software Infilink HMI installed in PC of the PLC. This software captures and registers all the parameters defined in the plan of monitoring.
The information registered in the PLC is filed in two spread sheet files; RCC (determined constant record) and RCD (determined daily record)
With both files DAT makes a weekly report of monitoring and operation.

For the production of this weekly report, DAT exports the information to a schedule excel of way of realizing the calculations for averages or accumulated.
Likewise, DRST elaborates one monthly report with the information sent weekly by DAT.

B.9. Data regarding landfill regulatory requirements

Compliance with current regulatory requirements for Santa Marta Landfill and the flaring plant is monitored when independent environmental audits are performed and informed on audit reports. Independent Environmental Audts are performed 8 times per year and their main objective is to assess compliance with all the requirements contained on the Resolution of environmental qualification. The current audit reports are attached in the file "Report 52 RSSM May 2007.zip"

SECTION C. Quality assurance and quality control measures

Consorcio Santa Marta has ISO 14001 certification, emited on April 24, 2007, which will be renewed annually. All procedures are detailed in the management plan

C.1 Documented procedures and management plan:

- P-MB-001, version 4, “Procedure of obtaining, processing and control of the information”
- P-MB-002, version 1, “Procedure of Internal Audits”
- P-MB-003, version 1, “Procedure of not conformities, corrective and preventive Actions"
- P-MB-004, version 1, “Procedure for fault of instrumentation”
- P-MB-005, version 2, “Procedure of losses of information”
- P-MB-006, version 2, "Prodecimiento of calibration of instrumentation”
- P-MB-007, version 1, “Procedure of maintenance of instrumentation”
- P-MB-008, version 1, “Procedure of control of documents and records”
- P-MB-009, version 1, “Procedure of managing of the biogas”
- P-MB-010, version 1, “Procedure of determination of to the efficiency”
- P-MB-011, version 0, “Procedure for the preparation of monitoring reports”

C.2 Roles and responsibilities

Mr. Brunsley Elliot
DAT (Data acquisition team)
Prepares weekly monitoring reports
oscar.elliot@csmarta.cl
+56 (02) 5921060

Mr. Pedro Rivas
DRST (Data processing, reporting and storage team)
Prepares monthly monitoring reports
pedro.rivas@csmarta.cl
+56 (02) 8541323

Mrs. Andrea Viglino
QAT (Quality assurance team)
Prepares CDM monitoring report
andreav@csmarta.cl
+56 (02) 8541323

Mr. Rodolfo Bernstein
General Manager
Approves CDM monitoring report
rodolfo.berstein@csmarta.cl
+56 (02) 8541323

Mr Felipe Ortega
IT (Information and technology)
Responsible for the safety and authenticity of data
Felipe.ortega@csmarta.cl
+56 (02) 8541323

Mr. Avelino Salas
Administrator waste transfer station
Who holds the key domain for the support of the information
Avelino.salas@csmarta.cl
+56 (02) 8541323

C.3 Trainings

All staff working at the flaring plant and on the monitoring plan has received the required training to possess the technical capacity to develop their asignated activities. Attached is the file "Capacitación" and evidence of these trainings.

C.4 Involvement of Third Parties:

AS&D has one third party involved in the trained of biogas workers in aspects related to the operation of the plant, as the managing of the information.

C.5 Internal audits and control measures:

On January 09, 2007 an internal audit was performed.
QAT performs weekly and monthly reviews of the reports elaborated by DAT and DRST, with the aim of detecting possible mistakes in the calculations.

SECTION D. Calculation of GHG emission reductions (referring to Decision 17/CP.7, Annex H, paragraph 53 (f) and 59)

D.1. Table providing the formulas used:

A	LFG sent to flares	m^3
B	Methane content on LFG	% methane
C	Pressure of the LFG	mbar
D	Temperature of the LFG	C°
E= A x B x [(C/ 1013) x (273/(D+273)] x 0,0007168	Methane collected	t methane
H = E x 21	Total CO_2e destroyed	tCO_2e
Q = 99, 92% (3)	Flare efficiency	%
I = H x Q	Total CO_2e destroyed (Built efficiency)	tCO_2e
G=√ ((% Flow²)+(% methene²)+(% temperature²)+(% pressure²))	Devices error:(Flow, methane, temperature, pressure)	%
J = I - G	Total CO_2e destroyed considering devices error	tCO_2e
F = Mandatory Nm3 x 0,0007168 x 0,5 (2)	Mandatory methane to be burned (baseline)	t methane
K = F x 21	Total CO_2e for Mandatory methane to be burned (baseline)	tCO_2e
L= √ ((% Flow²)+(% temperature²)+(% pressure²))	Devices error:(Flow, temperature, pressure)	%
M = K + L	Total CO_2e for Mandatory methane to be burned considering devices error	tCO_2e
N	Total electricity imported	MWh
O = N x 1 (4)	Emissions due to the imported of electricity	tCO_2e
P=√ ((% electricity²)	Devices error: (electricity)	%
R = O + P	Total CO_2e for electricity imported considering devices error	tCO_2e
S = (J + M + R)	Total CO_2e destroyed	tCO_2e

It is important to stand out, that all the calculated values are used with two decimal and rounded down.

(2) = According to resolution of environmental qualification N° 509/2005 that indicates a 50% of methane concentration
(3) = See annexed N° 4, “Determination of Efficiency”
(4) = The emission factor of Chilean grid will be taken as 1 t CO2/MWh, as stated in section D.2.2.2 of the PDD.

D.2. Baseline emissions:

Year	Obligatory burning of LFG(m^3/year), from RCA 509/2005
2007	2,959,000
2008	3,506,000
2009	4,047,000
2010	4,583,000
2011	5,114,000
2012	5,643,000
2013	6,161,000
2014	6,670,000
2015	7,170,000
2016	7,662,000
2017	8,147,000
2018	8,626,000
2019	9,099,000
2020	9,566,000
2021	10,030,000
2022	10,490,000

D.3 Leakage:

No leakage effects need to be accounted under the methodology ACM0001 Version 04

D.4 Summary of the emissions reductions during the monitoring period:

Day	Nm3 CH4	Ton CH4	Ton CO2	Efficiency	Ton Net CO2 (a)	Ton CO2 Kw/day	Ton CO2 Base Line	Ton Net CO2 (b)
March 11, 2007	6494,00	4,65	97,65	90,00%	87,89	0,33	51,45	36,10
March 12, 2007	6548,00	4,69	98,57	90,00%	88,71	0,34	51,24	37,14
March 13, 2007	5460,00	3,91	82,19	90,00%	73,97	0,28	51,87	21,82
March 14, 2007	8445,00	6,05	127,13	90,00%	114,42	0,43	52,29	61,69
March 15, 2007	8799,00	6,31	132,46	90,00%	119,21	0,45	52,50	66,26
March 16, 2007	11079,00	7,94	166,78	90,00%	150,10	0,57	51,24	98,29
March 17, 2007	11477,00	8,23	172,77	90,00%	155,49	0,59	50,61	104,29
March 18, 2007	8985,00	6,44	135,26	90,00%	121,73	0,46	50,61	70,66
March 19, 2007	5533,00	3,97	83,29	90,00%	74,96	0,28	51,03	23,65
March 20, 2007	2597,00	1,86	39,09	90,00%	35,19	0,13	52,08	-17,03
March 21, 2007	7235,00	5,19	108,91	90,00%	98,02	0,37	52,08	45,57
March 22, 2007	7711,00	5,53	116,08	90,00%	104,47	0,40	52,08	52,00
March 23, 2007	10813,00	7,75	162,78	90,00%	146,50	0,56	51,66	94,28
March 24, 2007	11161,00	8,00	168,02	90,00%	151,21	0,57	51,24	99,40
March 25, 2007	7140,00	5,12	107,48	90,00%	96,74	0,37	51,45	44,92
March 26, 2007	7084,00	5,07	106,47	90,00%	95,82	0,36	52,71	42,75
March 27, 2007	10221,00	7,32	153,72	90,00%	138,35	0,52	52,92	84,90
March 28, 2007	9708,00	6,95	145,95	90,00%	131,36	0,50	52,92	77,94
March 29, 2007	9696,00	6,95	145,95	90,00%	131,36	0,50	53,97	76,89
March 30, 2007	10675,00	7,65	160,65	90,00%	144,59	0,55	52,92	91,12
March 31, 2007	10358,79	7,42	155,82	90,00%	140,24	0,53	52,08	87,63
April 1, 2007	7404,26	5,30	111,30	90,00%	100,17	0,38	51,87	47,92
April 2, 2007	5233,68	3,85	80,84	90,00%	72,75	0,28	51,66	20,82
April 3, 2007	2036,00	1,46	30,65	90,00%	27,58	0,10	49,56	-22,08

Day	Nm3 CH4	Ton CH4	Ton CO2	Efficiency	Ton Net $CO2_{(a)}$	Ton CO2 Kw/day	Ton CO2 Base Line	Ton Net CO2 (b)
April 4, 2007	2848,00	2,04	42,84	90,00%	38,56	0,15	53,55	-15,14
April 5, 2007	5040,00	3,61	75,87	90,00%	68,28	0,26	51,03	16,99
April 6, 2007	7082,00	5,08	106,61	90,00%	95,95	0,36	52,08	43,51
April 7, 2007	9523,00	6,83	143,36	90,00%	129,02	0,49	51,87	76,66
April 8, 2007	9865,00	7,07	148,51	90,00%	133,65	0,51	51,87	81,28
April 9, 2007	9319,00	6,68	140,28	90,00%	126,25	0,48	53,34	72,43
April 10, 2007	8362,00	5,99	125,79	90,00%	113,21	0,43	52,71	60,07
April 11, 2007	4227,00	3,03	63,63	90,00%	57,27	0,22	53,34	3,71
April 12, 2007	7332,00	5,25	110,25	90,00%	99,23	0,38	52,71	46,14
April 13, 2007	6423,00	4,60	96,60	90,00%	86,94	0,34	52,29	34,31
April 14, 2007	15146,00	10,85	227,85	90,00%	205,07	0,80	52,50	151,77
April 15, 2007	9044,00	6,48	136,08	90,00%	122,47	0,47	51,66	70,34
April 16, 2007	9363,00	6,71	140,91	90,00%	126,82	0,41	51,87	74,54
April 17, 2007	10811,00	7,74	162,54	90,00%	146,29	0,47	51,24	94,58
April 18, 2007	10396,00	7,45	156,45	90,00%	140,81	0,46	51,03	89,32
April 19, 2007	10322,00	7,39	155,19	90,00%	139,67	0,63	50,61	88,43
April 20, 2007	10024,00	7,18	150,78	90,00%	135,70	0,63	51,03	84,05
April 21, 2007	11044,00	7,91	166,11	90,00%	149,50	0,65	50,82	98,03
April 22, 2007	10489,00	7,51	157,71	90,00%	141,94	0,65	51,66	89,63
April 23, 2007	9448,00	6,77	142,17	90,00%	127,95	0,64	51,87	75,44
April 24, 2007	9668,00	6,93	145,53	90,00%	130,98	0,64	51,24	79,10
April 25, 2007	10766,00	7,71	161,91	90,00%	145,72	0,68	51,24	93,80
April 26, 2007	12254,00	8,78	184,38	90,00%	165,94	0,76	51,24	113,94
April 27, 2007	12719,00	9,11	191,31	90,00%	172,18	0,76	50,82	120,60
April 28, 2007	7528,00	5,39	113,19	90,00%	101,87	0,50	51,03	50,34
April 29, 2007	6680,00	4,78	100,38	90,00%	90,34	0,43	51,66	38,25

Day	Nm3 CH4	Ton CH4	Ton CO2	Efficiency	Ton Net $CO_{2\,(a)}$	Ton CO2 Kw/day	Ton CO2 Base Line	Ton Net CO2 (b)
April 30, 2007	9794,00	7,02	147,44	90,00%	132,69	0,58	51,66	80,45
May 1, 2007	11225,00	8,04	168,84	90,00%	151,96	0,67	51,24	100,05
May 2, 2007	12393,00	8,88	186,48	90,00%	167,83	0,71	51,03	116,09
May 3, 2007	13451,00	9,64	202,44	90,00%	182,20	0,78	51,66	129,76
May 4, 2007	12895,00	9,24	194,04	90,00%	174,64	0,77	51,66	122,20
May 5, 2007	13260,00	9,50	199,50	90,00%	179,55	0,70	51,45	127,40
May 6, 2007	12836,00	9,20	193,20	90,00%	173,88	0,68	51,66	121,54
May 7, 2007	12325,00	8,83	185,43	90,00%	166,89	0,67	51,87	114,34
May 8, 2007	14299,00	10,25	215,25	90,00%	193,73	0,75	51,66	141,32
May 9, 2007	14234,00	10,20	214,20	90,00%	192,78	0,74	51,66	140,38
May 10, 2007	14855,00	10,64	223,44	90,00%	201,10	0,77	51,87	148,46
May 11, 2007	15156,00	10,86	228,06	90,00%	205,25	0,74	51,66	152,85
May 12, 2007	16271,00	11,66	244,86	90,00%	220,37	0,82	51,87	167,69
May 13, 2007	17300,00	12,40	260,40	90,00%	234,36	0,85	52,29	181,23
May 14, 2007	15936,00	11,42	239,82	90,00%	215,84	0,79	52,08	162,97
May 15, 2007	16072,00	11,52	241,92	90,00%	217,73	0,78	52,71	164,23
May 16, 2007	15404,00	11,04	231,84	90,00%	208,66	0,76	52,50	155,40
May 17, 2007	10862,00	7,78	163,38	90,00%	147,04	0,53	47,67	98,84
May 18, 2007	18563,00	13,30	279,30	90,00%	251,37	0,88	52,08	198,41
May 19, 2007	18789,00	13,46	282,66	90,00%	254,39	0,85	52,29	201,25
May 20, 2007	16987,00	12,17	255,57	90,00%	230,01	0,79	52,92	176,30
May 21, 2007	17734,00	12,71	266,91	90,00%	240,22	0,83	52,92	186,47
May 22, 2007	18862,00	13,52	283,92	90,00%	255,53	0,90	52,92	201,71
May 23, 2007	17166,00	12,30	258,30	90,00%	232,47	0,91	51,87	179,69
May 24, 2007	17988,00	12,89	270,69	90,00%	243,62	0,96	51,45	191,21
May 25, 2007	13153,00	9,42	197,82	90,00%	178,04	0,69	53,13	124,22

Day	Nm3 CH4	Ton CH4	Ton CO2	Efficiency	Ton Net $CO_{2\,(a)}$	Ton CO2 Kw/day	Ton CO2 Base Line	Ton Net CO2 (b)
May 26, 2007	18485,00	13,25	278,25	90,00%	250,43	0,87	53,13	196,43
May 27, 2007	17598,00	12,61	264,81	90,00%	238,33	0,80	53,13	184,40
May 28, 2007	18429,00	13,21	277,41	90,00%	249,67	0,91	52,50	196,26
May 29, 2007	16098,00	11,53	242,13	90,00%	217,92	0,91	52,92	164,09
May 30, 2007	9050,00	6,48	136,08	90,00%	122,47	0,77	53,97	67,73
May 31, 2007	17176,00	12,31	258,51	90,00%	232,66	0,84	52,71	179,11
June 1, 2007	12915,00	9,25	194,25	90,00%	174,83	0,66	49,35	124,81
June 2, 2007	19592,00	14,04	294,84	90,00%	265,36	0,96	52,50	211,90
June 3, 2007	19459,00	13,94	292,74	90,00%	263,47	0,89	52,08	210,49
June 4, 2007	18157,00	13,01	273,21	90,00%	245,89	0,91	52,08	192,90
June 5, 2007	16425,00	11,77	247,17	90,00%	222,45	0,93	52,29	169,24
June 6, 2007	18192,00	13,04	273,84	90,00%	246,46	0,96	51,87	193,62
June 7, 2007	19383,00	13,89	291,69	90,00%	262,52	0,96	52,29	209,27
June 8, 2007	18123,00	12,99	272,79	90,00%	245,51	0,93	52,29	192,30
June 9, 2007	17219,00	12,34	259,14	90,00%	233,23	0,91	52,29	180,03
June 10, 2007	15440,00	11,06	232,26	90,00%	209,03	0,87	52,50	155,67
June 11, 2007	15310,00	10,97	230,37	90,00%	207,33	0,94	52,29	154,11
June 12, 2007	17424,00	12,49	262,29	90,00%	236,06	0,98	52,29	182,79
June 13, 2007	19748,00	14,15	297,15	90,00%	267,44	1,00	52,29	214,15
June 14, 2007	20974,00	15,03	315,63	90,00%	284,07	1,03	52,71	230,33
June 15, 2007	21413,00	15,34	322,14	90,00%	289,93	1,04	52,50	236,39
June 16, 2007	20534,00	14,71	308,91	90,00%	278,02	0,99	52,50	224,53
June 17, 2007	19975,00	14,31	300,51	90,00%	270,46	0,98	51,87	217,61
June 18, 2007	20406,00	14,62	307,02	90,00%	276,32	0,99	51,87	223,45
June 19, 2007	21350,00	15,30	321,30	90,00%	289,17	1,04	52,08	236,05
June 20, 2007	22451,00	16,09	337,89	90,00%	304,10	1,12	52,92	250,06

Day	Nm3 CH4	Ton CH4	Ton CO2	Efficiency	Ton Net $CO_{2\,(a)}$	Ton CO2 Kw/day	Ton CO2 Base Line	Ton Net CO2 (b)
June 21, 2007	16467,00	11,80	247,80	90,00%	223,02	0,90	52,71	169,41
June 22, 2007	22397,00	16,05	337,05	99,92%	336,78	1,09	53,55	282,14
June 23, 2007	24317,00	17,43	366,03	99,92%	365,74	1,09	53,34	311,30
June 24, 2007	22252,00	15,95	334,95	99,92%	334,68	1,02	52,08	281,58
June 25, 2007	22653,00	16,23	340,83	99,92%	340,56	1,07	52,08	287,41
June 26, 2007	24594,00	17,63	370,23	99,92%	369,93	1,17	52,50	316,27
June 27, 2007	26225,00	18,79	394,59	99,92%	394,27	1,24	51,66	341,38
June 28, 2007	25966,00	18,61	390,81	99,92%	390,50	1,28	51,45	337,77
June 29, 2007	24783,00	17,76	372,96	99,92%	372,66	1,18	51,03	320,46
June 30, 2007	23163,00	16,60	348,60	99,92%	348,32	1,52	52,50	294,30
July 1, 2007	22914,00	16,60	348,60	99,92%	348,32	1,10	52,08	295,14
July 2, 2007	22914,00	16,42	344,82	99,92%	344,54	1,05	52,29	291,20
July 3, 2007	21645,00	15,51	325,71	99,92%	325,45	0,99	52,08	272,38
July 4, 2007	22607,00	16,20	340,20	99,92%	339,93	1,04	51,45	287,44
July 5, 2007	22765,00	16,31	342,51	99,92%	342,24	1,07	51,87	289,29
July 6, 2007	24633,00	17,65	370,65	99,92%	370,35	1,19	52,29	316,87
July 7, 2007	23958,00	17,17	360,57	99,92%	360,28	1,18	52,50	306,60
July 8, 2007	23219,00	16,64	349,44	99,92%	349,16	1,11	52,71	295,35
July 9, 2007	23099,00	16,55	347,55	99,92%	347,27	1,12	52,92	293,23
July 10, 2007	22886,00	16,40	344,40	99,92%	344,12	1,14	52,71	290,28
July 11, 2007	23998,00	17,20	361,20	99,92%	360,91	1,19	52,29	307,43
July 12, 2007	23159,00	16,60	348,60	99,92%	348,32	1,15	52,92	294,25
July 13, 2007	23360,00	16,74	351,54	99,92%	351,26	1,11	53,34	296,81
July 14, 2007	23902,00	17,13	359,73	99,92%	359,44	1,18	52,71	305,56
July 15, 2007	23106,00	16,56	347,76	99,92%	347,48	1,14	52,08	294,27
July 16, 2007	22819,00	16,35	343,35	99,92%	343,08	1,09	52,29	289,69

Day	Nm3 CH4	Ton CH4	Ton CO2	Efficiency	Ton Net $CO_{2\,(a)}$	Ton CO2 Kw/day	Ton CO2 Base Line	Ton Net CO2 (b)
July 17, 2007	18112,00	12,98	272,58	99,92%	272,36	0,99	52,08	219,30
July 18, 2007	11392,00	8,16	171,36	99,92%	171,22	0,80	54,18	116,24
July 19, 2007	20922,00	14,99	314,79	99,92%	314,54	0,91	53,55	260,08
July 20, 2007	23574,00	16,89	354,69	99,92%	354,41	1,17	52,92	300,32
July 21, 2007	25866,00	18,54	389,34	99,92%	389,03	1,25	53,55	334,23
July 22, 2007	26708,00	19,14	401,94	99,92%	401,62	1,26	52,92	347,44
July 23, 2007	26081,00	18,69	392,49	99,92%	392,18	1,21	53,55	337,42
July 24, 2007	27299,00	19,56	410,76	99,92%	410,43	1,27	53,55	355,61
July 25, 2007	28332,00	20,30	426,30	99,92%	425,96	1,40	53,34	371,22
July 26, 2007	28611,00	20,50	430,50	99,92%	430,16	1,39	52,50	376,27
July 27, 2007	19803,00	14,19	297,99	99,92%	297,75	0,91	51,03	245,81
July 28, 2007	25735,00	18,44	387,24	99,92%	386,93	1,23	52,29	333,41
July 29, 2007	24510,00	17,56	368,76	99,92%	368,46	1,29	53,34	313,83
July 30, 2007	25663,00	18,39	386,19	99,92%	385,88	1,26	53,34	331,28
July 31, 2007	27988,00	20,06	421,26	99,92%	420,92	1,34	53,13	366,45
August 1, 2007	27666,00	19,83	416,43	99,92%	416,10	1,40	53,76	360,94
August 2, 2007	26484,00	18,98	398,58	99,92%	398,26	1,32	53,55	343,39
August 3, 2007	21290,00	15,26	320,46	99,92%	320,20	1,07	54,18	264,95
August 4, 2007	25583,00	18,33	384,93	99,92%	384,62	1,15	54,39	329,08
August 5, 2007	27638,00	19,81	416,01	99,92%	415,68	1,29	54,18	360,21
August 6, 2007	12273,00	8,79	184,59	99,92%	184,44	0,89	54,39	129,17
August 7, 2007	17535,00	12,57	263,97	99,92%	263,76	0,90	52,29	210,57
August 8, 2007	23278,00	16,68	350,28	99,92%	350,00	1,05	55,02	293,93
August 9, 2007	29710,00	21,29	447,09	99,92%	446,73	1,38	54,60	390,76
August 10, 2007	30349,00	21,75	456,75	99,92%	456,38	1,37	53,97	401,04
August 11, 2007	30209,00	21,65	454,65	99,92%	454,29	1,34	52,71	400,24

Day	Nm3 CH4	Ton CH4	Ton CO2	Efficiency	Ton Net $CO2_{(a)}$	Ton CO2 Kw/day	Ton CO2 Base Line	Ton Net CO2 (b)
August 12, 2007	29263,00	20,97	440,37	99,92%	440,02	1,39	53,97	384,66
August 13, 2007	30503,00	21,86	459,06	99,92%	458,69	1,44	52,92	404,33
August 14, 2007	31139,00	22,32	468,72	99,92%	468,35	1,42	53,55	413,37
August 15, 2007	30515,00	21,87	459,27	99,92%	458,90	1,41	54,60	402,90
August 16, 2007	29324,00	21,02	441,42	99,92%	441,07	1,35	54,39	385,32
August 17, 2007	31082,00	22,28	467,88	99,92%	467,51	1,39	53,97	412,15
August 18, 2007	32387,00	23,21	487,41	99,92%	487,02	1,41	53,55	432,06
August 19, 2007	32269,00	23,13	485,73	99,92%	485,34	1,43	53,13	430,79
August 20, 2007	30277,00	21,70	455,70	99,92%	455,34	1,32	52,71	401,30
August 21, 2007	31491,00	22,57	473,97	99,92%	473,59	1,37	53,55	418,67
August 22, 2007	31954,00	22,90	480,90	99,92%	480,52	1,29	53,76	425,46
August 23, 2007	32767,00	23,48	493,08	99,92%	492,69	1,30	54,18	437,21
August 24, 2007	32767,00	23,48	493,08	99,92%	492,69	1,37	55,02	436,30
August 25, 2007	32767,00	23,48	493,08	99,92%	492,69	1,39	54,39	436,90
August 26, 2007	32767,00	23,48	493,08	99,92%	492,69	1,38	54,18	437,13
August 27, 2007	32767,00	23,48	493,08	99,92%	492,69	1,36	53,55	437,77
August 28, 2007	32131,00	23,03	483,63	99,92%	483,24	1,28	53,55	428,41
August 29, 2007	32767,00	23,48	493,08	99,92%	492,69	1,40	53,13	438,16
August 30, 2007	32003,00	22,94	481,74	99,92%	481,35	1,45	52,29	427,62
August 31, 2007	31959,00	22,90	480,90	99,92%	480,52	1,44	51,87	427,21
Total	**3.156.063,73**	**2.261,88**	**47.499,66**		**45.516,17**	**154,87**	**9.121,35**	**36.239,94**

Data from backup of Hakko panel

Data calculated under “Procedure losses of information” (P-MB-005, Version 2)

Percentage used before making the measurement of efficiency with an external laboratory

(a) Ton Net CO_2 without discount

(b) Ton Net CO_2 with discount

D.5 Emission reductions of the monitoring period considering devices error

	Ton CH4	Efficincy	Ton CO2	Ton CO2 electricity/day	Ton CO2 Baseline	Ton Net CO2
Total	2,261.88	99.92%	45.516,17	154.87	9121,35	
% Error			**1,54%**	**1,00%**	**1,17%**	
Total Net			**44.815**	**157**	**9229**	**35.429**

D.6 GHG emission reductions:

Years	Annual estimation of emission reductions in tonnes of CO_2 e	Real emission reductions in tonnes of CO_2 e
2007	152,042	35,429 (5)
2008	185,390	
2009	218,082	
2010	249,726	
2011	280,446	
2112	310,338	
2013	339,574	
Total estimated reductions (tonnes of CO_2 e)	1,735,598	
Total number of crediting years	7 (renewable)	
Annual average over the crediting period of estimated reductions (tonnes of CO_2 e)	247,943	

(5)= tons corresponding to the period between March 11, 2007 and August 31, 2007.

Annex 1

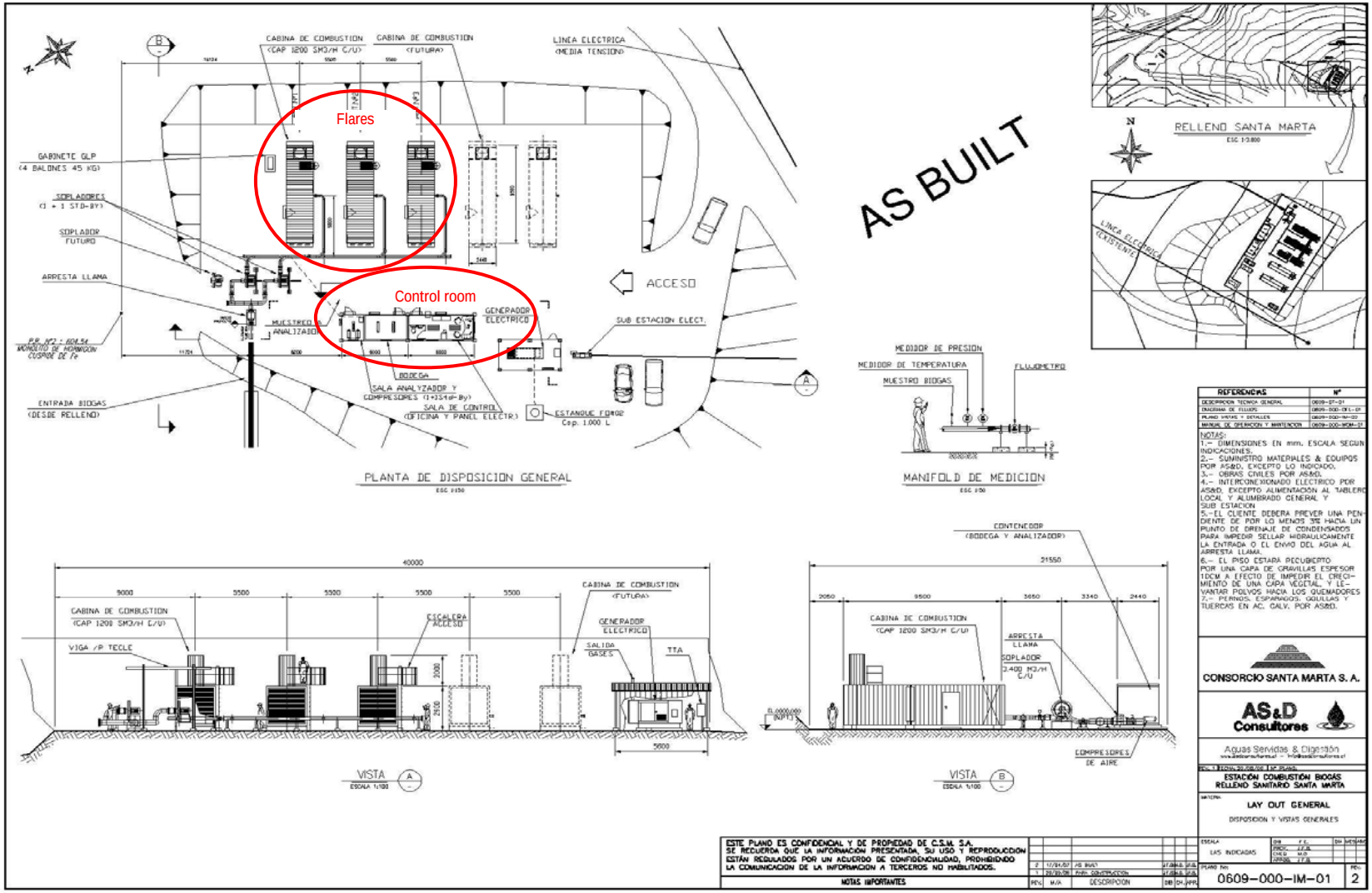
Definitions and acronyms

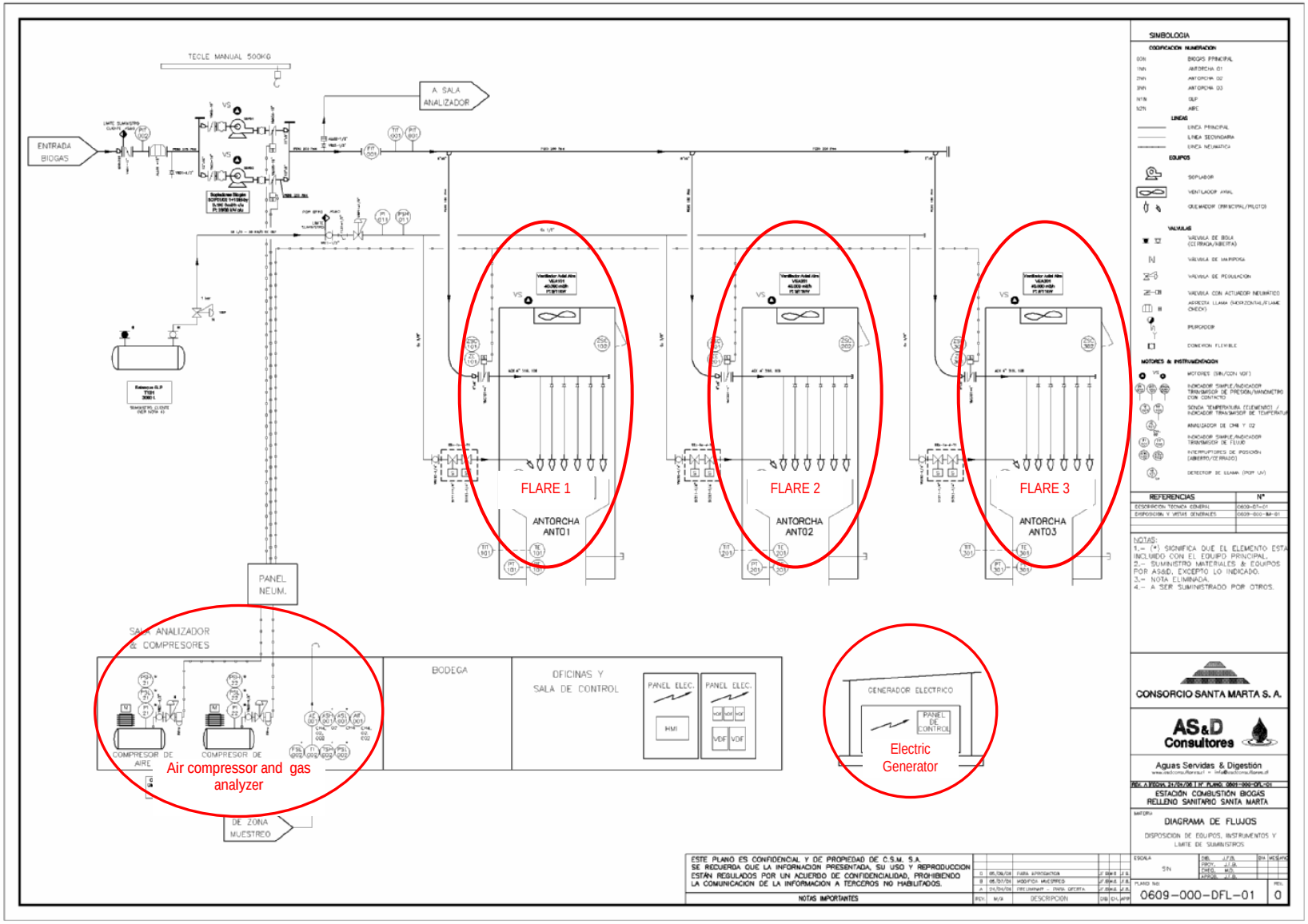
ACM	Approved consolidate methodology
°C	Celsius Degrees
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CF	Conversion Factor
CH_4	Methane
CO2	Carbon dioxide
DAT	Data acquisition team
DRST	Data processing, reporting and storage team
ER	Emission Reduction
FE	Flare Efficiency
GHG	Green House Gas
GWP	Global Warming Potential
HMI	Human machine interface
LFG	Landfill Gas
Mbar	milibar
MD5	Message digest algorithm 5
MSW	municipal solid waste
Nm^3	Normal cubic meters
O_2	Oxygen
P	pressure
PC	Personal computer
PDD	Project Design Document
PLC	Programmable logical controller
QAT	Quality assurance team
RCA	Resolution of environmental qualification
RCC	Determined constant record
RCD	Determined daily record

TCO_2e Tonne of Carbon Dioxide Equivalent

Annex 2

Technical drawing

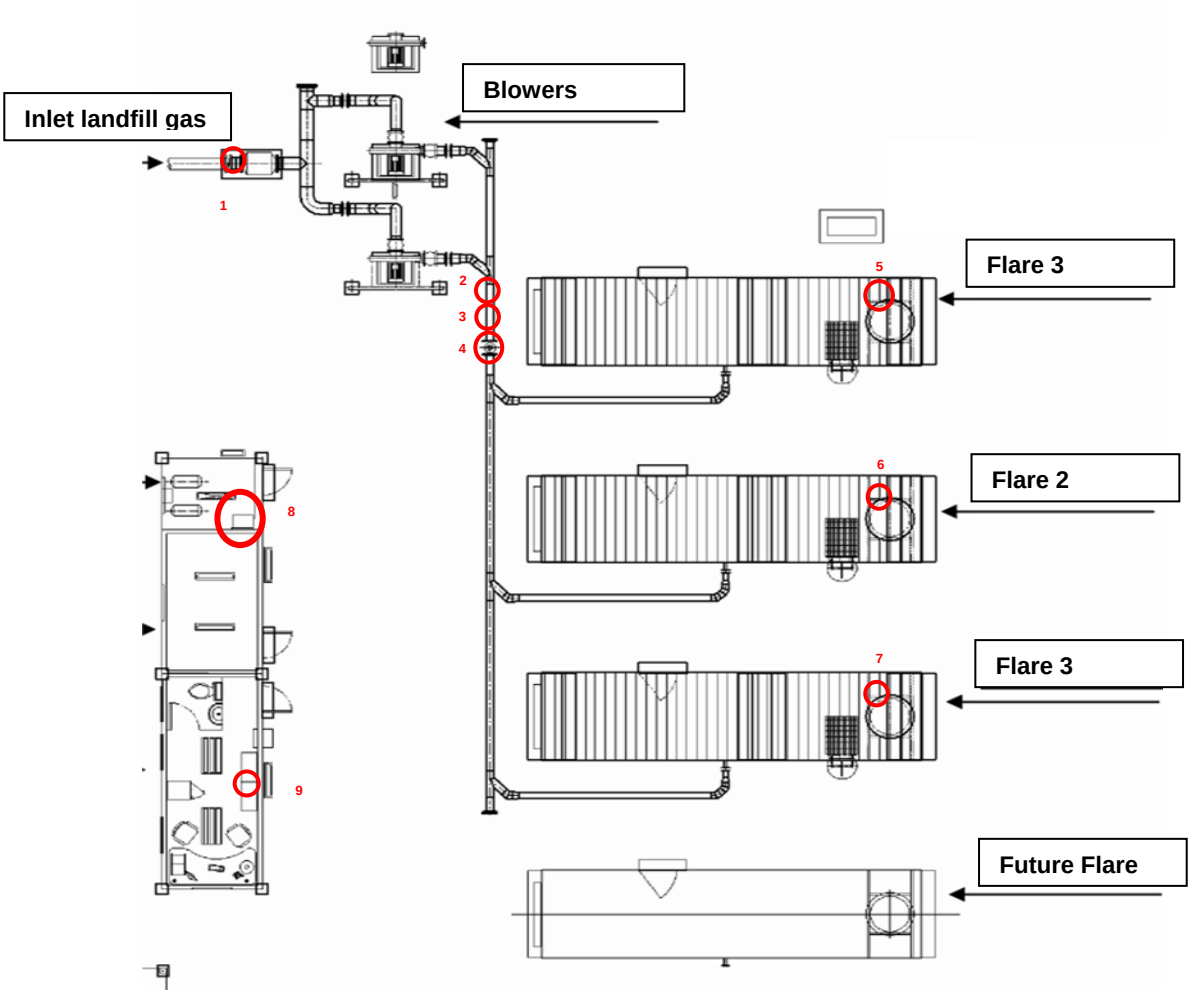



TECLE MANUAL 500KG
A SALA ANALIZADOR
ENTRADA BIOGAS
FLARE 1
ANTORCHA ANT01
FLARE 2
ANTORCHA ANT02
FLARE 3
ANTORCHA ANT03
PANEL NEUM.
SALA ANALIZADOR & COMPRESORES
COMPRESOR DE AIRE
COMPRESOR DE
Air compressor and gas analyzer
BODEGA
OFICINAS Y SALA DE CONTROL
PANEL ELEC.
HMI
PANEL ELEC.
GENERADOR ELECTRICO
PANEL DE CONTROL
Electric Generator
SIMBOLOGIA
REFERENCIAS
NOTAS:
CONSORCIO SANTA MARTA S. A.
AS&D Consultores
Aguas Servidas & Digestión
ESTACIÓN COMBUSTIÓN BIOGAS RELLENO SANITARIO SANTA MARTA
DIAGRAMA DE FLUJOS
DISPOSICION DE EQUIPOS, INSTRUMENTOS Y LIMITE DE SUMINISTROS
ESCALA S/N
PLANO NO 0609-000-DFL-01
0
ESTE PLANO ES CONFIDENCIAL Y DE PROPIEDAD DE C.S.M. S.A.
NOTAS IMPORTANTES
DESCRIPCION

Annex 3

Energy and material flowchart including metering positions

Location of monitoring equipment:



1 Pressure Meter	4 Flow Meter	
2 Pressure Meter	5, 6 & 7 Temperature meters	9 Electricity meter
3 Temperature Meter	8 Gas Analyzer	

Annex 4

Determination Efficiency

CONSORCIO SANTA MARTA	DETERMINATION OF EFFICIENCY	version	2
		Date:	12 july, 2007

	Units	Flare 1			Flare 2			Flare		
Condition		down	median	high	down	median	high	down	median	high
Balance CH4 Entry										
m3/hLFG	m3/h	670,00	746,00	753,00	743,00	853,00	889,00	695,00	789,00	793,00
P	mbar	964,00	965,00	961,00	968,00	969,00	968,00	969,00	966,00	965,00
T	°C	26,00	31,00	33,00	26,10	26,00	22,00	21,00	30,00	33,00
WCH4	%	58%	58%	58%	59%	59%	58%	59%	60%	59%
MCH4/h (entry)	kg/h	242,02	265,32	264,96	274,06	315,07	326,84	261,07	291,55	285,02
Balance CH4 exit										
m3/hBG (5)	m3/h	49.973,79	65.801,83	74.881,80	53.338,98	66.068,66	80.623,02	55.188,26	60.385,19	78.181,24
P (5)	mbar	960,00	960,00	960,00	960,00	960,00	960,00	960,00	960,00	960,00
T (5)	°C	346,00	583,90	405,00	342,70	479,70	484,50	371,00	399,00	450,60
Nm3/hBG (5)	Nm3/h	20.887,00	19.867,00	28.574,00	22.413,00	22.709,00	27.536,00	22.171,00	23.248,00	27.953,00
WCH4 (6)	ppm	10	10	10	10	10	10	10	10	10
WCH4 (6)	vol/vol	0,00001	0,00001	0,00001	0,00001	0,00001	0,00001	0,00001	0,00001	0,00001
MCH4/h (exit)	kg/h	0,15	0,14	0,20	0,16	0,16	0,20	0,16	0,17	0,20
Balance CH4 entry/exit										
MCH4/h (entry)	kg/h	242,02	265,32	264,96	274,06	315,07	326,84	261,07	291,55	285,02
MCH4/h (exit)	kg/h	0,15	0,14	0,20	0,16	0,16	0,20	0,16	0,17	0,20
FE(%)	%	99,94%	99,95%	99,92%	99,94%	99,95%	99,94%	99,94%	99,94%	99,93%

(5) = Information obtained of technical report OT-155-2007 for the determination of wealth and speed, realized by laboratory "AAir Environmental"

(6) = Information obtained of technical report N°263 for the determination of methane, realized by laboratory "Gas Valpo "

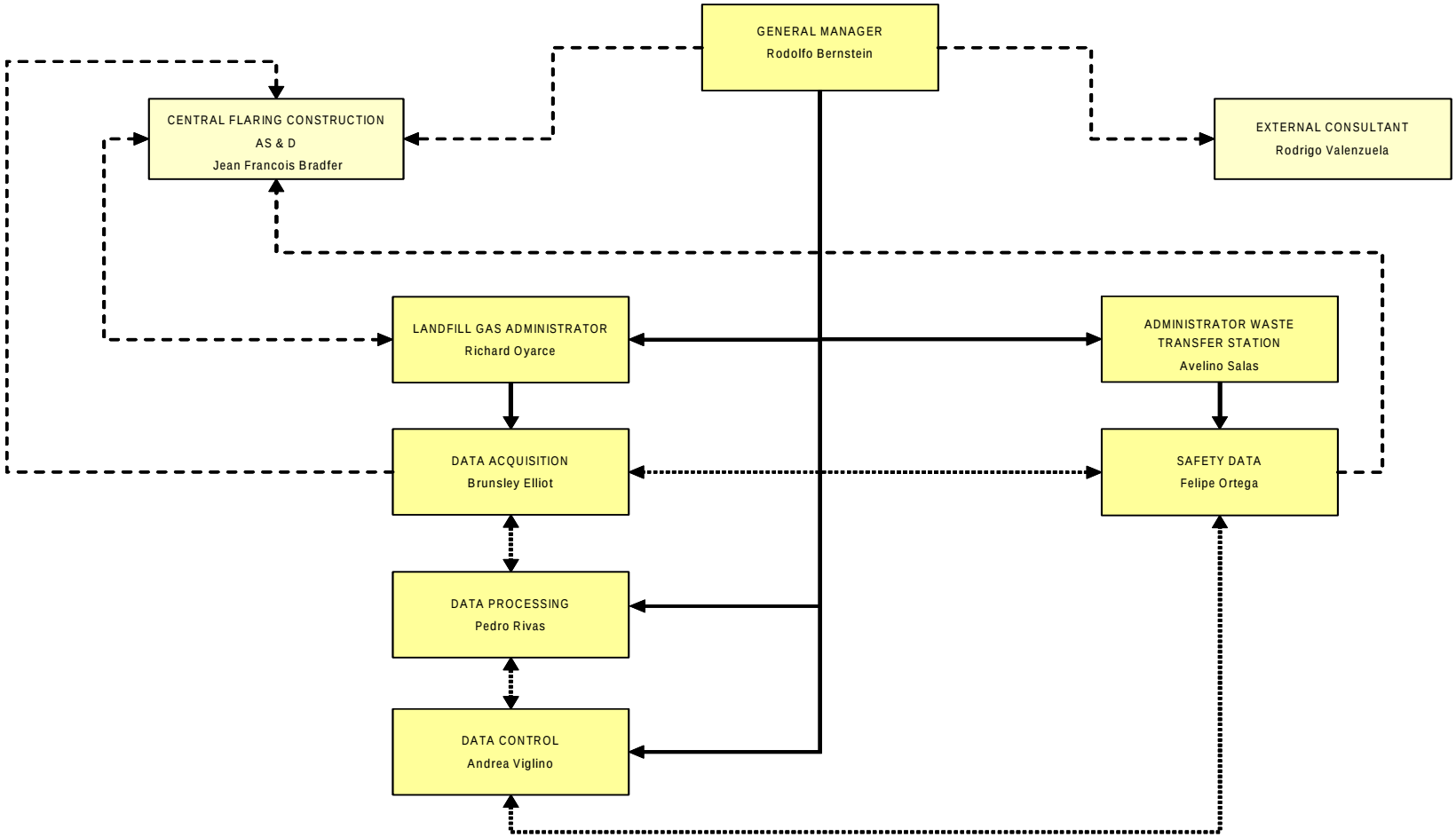
Between March 11 and June 21 was used 90% efficiency-defined methodology ACM0001 - version 4. After the measurement of external laboratory, using 99.92%.

The analysis to determine methane content in the exhaust gas, were performed by Gas Valpo and the analysis for exhaust gas flow and speed were carried out by laboratory "AAir Environmental". The reports from both laboratories are attached in the file "efficiency"

Annex 5

Organizational chart and description charges and functions for the monitoring plan

ORGANIZATIONAL CHART MONITORING PLAN
CONSORCIO SANTA MARTA



Job Description and Functions for The Monitoring Plan

General Manager
Mr. Rodolfo Bernstein
Responsible for "Monitoring Report" approval.

Landfill Administrator
Mr. Richard Oyarce
Responsible for managing Santa Marta landfill operations and related activities. Ensure the efficient operation of the system regarding waste disposal and associated activities, including within these, the operation of the BiogasFlaring Plant.

Data Acquisition (DAT)
Mr. Brunsley Elliot
Responsible for the data acquisition for the monitoring plan. DAT is the one responsible to verificate the authenticity of the data recording files (RCC and RCD) and development of weekly and monthly reports. For this calculated values or cumulative averages in a spreadsheet identified as necessary to implement the monitoring plan.

Data Processing (DRST)
Mr. Pedro Rivas
Responsible for processing the data to obtain the emission reductions in a monthly and annual basis. It is also responsible for calculating the baseline and project emissions.

Data Control (QAT)
Mrs. Andrea Viglino
Responsible for ensuring the quality of the data being recorded, as well as the reports that are produced with it. Responsible for conducting audits to ensure proper handling and storage of data.

Waste Transfer Station Administrator
Mr. Avelino Salas
Is the person in charge of the information and computation system and the one who create the keys to access the database.

Data Safety
Mr. Felipe Ortega
Responsible for supporting and retrieve data from the monitoring plan. It is also responsible for implementing all measures to maintain the authenticity of the data source (RCC and RCD). A person who handles the keys to access the database.

External Consultan (Deuman)
Mr. Rodrigo Valenzuela
Responsible for advising and guiding Consortium Santa Marta throughout the CDM project cycle.

Central Flaring Construction (AS&D)
Jean Francois Bradfer
Responsible for advising Santa Marta Consortium in aspects regarding the operation and function of the Biogas Flaring plant and the installed equipment in order to obtain the necessary parameters for emission reduction registration.