 Monitoring report form for CDM programme of activities (version 01.0)		
<i>Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form for CDM programme of activities" at the end of this form.</i>		
MONITORING REPORT		
Title of the programme of activities (PoA)	Guacamaya Small Scale Hydropower Programme of Activities	
UNFCCC reference number of the PoA	8950	
Version number(s) of the PoA-DD(s) applicable to this monitoring report	7	
Coordinating/managing entity (CME)	Anaconda Carbon S.A.	
Version number of this monitoring report	04	
Completion date of this monitoring report	22/12/2017	
Monitoring period number and dates covered by this monitoring report	Monitoring Period # 1 01/06/2015 – 30/04/2017 (including both dates)	
Monitoring report number for this monitoring period	1	
Host Party(ies)	Host Party(ies) of the PoA	Is this a host Party to a specific-case CPA covered in this monitoring report? (yes/no)
	Honduras	Yes
	Nicaragua	No
	Costa Rica	No
Sectoral scope(s)	1	
Selected methodology(ies)	AMS- I.D., version 17- Grid connected renewable electricity generation.	
Selected standardized baseline(s)	NA	
Total amount of GHG emission reductions or net GHG removals by sinks for all specific-case CPAs in the PoA covered in this monitoring report	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	NA	23,081

PART I - Programme of activities

SECTION A. Description of PoA**A.1. Brief description of the PoA**

>>

The Guacamaya Small Hydropower Programme of Activities supports the development of new small-scale hydropower projects in Honduras, Nicaragua and Costa Rica that supply electricity to the respective national grid. Each CPA under this PoA has a combined installed capacity of no more than 15 MW, the threshold for small-scale CDM projects. The PoA is a voluntary action being coordinated and managed by Anaconda Carbon S.A., which works closely with the developers of the hydropower plants and other organizations active in the hydropower sector in the host countries to facilitate the development of new power plants and their inclusion in this PoA.

A.1.1 Generic CPA(s)

Title, identification/reference number and/or version number of the generic CPA(s) of the PoA	Sectoral scope(s)	Applied methodology(ies) or combination of methodologies and/or standardized baseline(s)
Title: "CPA Design Document"	1	AMS- I.D., version 17- Grid connected renewable electricity generation.

A.1.2 Specific-case CPA(s) covered in this monitoring report

Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Title, identification/reference number and version number of the generic CPA to which the specific-case CPA applies	Crediting period dates of the specific-case CPA	Is this specific-case CPA covered in this monitoring report? (yes/no)
8950-0001	San Alejo Hydroelectric Project version 7	01/06/2015 – 31/05/2022	No
8950-0002	Zinguizapa Small – Scale Hydropower Project version 4	28/06/2016 - 27/06/2023 (Renewable)	Yes
8950-0003	Puringla Sazagua Small Scale Hydropower Project version 4	28/06/2016 - 27/06/2023 (Renewable)	Yes

A.2. Contact information of the coordinating/managing entity (CME) and/or responsible persons(s)/entity(ies)

>>

Anaconda Carbon S.A.
www.anacondacarbon.com
info@anacondacarbon.com
 +50425500387

SECTION B. Implementation of PoA**B.1. Implementation of the management system of the PoA**

>>

One monitoring report is prepared for the PoA.

The managing entity, Anaconda Carbon S.A. maintains an electronic database with the following information for each CPA subscribing to the PoA, and in line with the Operational Manual developed as per requirements of EB 70 annex 5, following features will be checked:

(a) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;

The managing entity (CME) Anaconda Carbon S.A. has managed the relevant activities related to the registration and operation of the PoA. The competency check of any proposed new CPA is conducted by the CME in order to ensure that all eligibility criteria are met for inclusion into the PoA. The CME is also in charge of preparation of relevant reports required of monitoring and inclusion of CPAs.

(b) Records of arrangements for training and capacity development for personnel;

The project operators are responsible for the day to day activities of the CPA. The CME coordinates with the project operators which are on site for data monitoring, recording and assurance.

The CME is responsible for the preparation of the CDM documentation and to support the project owners during verifications and inclusions.

(c) Procedures for technical review of inclusion of CPAs;

A technical review process is undergone by the CME of all CPAs that are to be included in the PoA. Monitoring procedures, eligibility criteria, data collection are all reviewed to ensure conformity with PoA requirements.

(d) A procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or a CPA of other PoA

A thorough due diligence of the project owners is undergone prior to inclusion in order to make certain that the project activity has not been included in another PoA or as a CDM project.

(e) Records and documentation control process for each CPA under the PoA;

The project operators provide the CME with electrical generation data periodically, as well as other parameters that are included in the monitoring plan. Each CPA has a defined contact person with the CME which is in charge of information gathering and sharing. Activities such as meter calibration are responsibility of the project owner.

(f) Measures for continuous improvements of the PoA management system;

As CME, Anaconda Carbon is committed to review and improve the PoA management system based on experiences in inclusions, monitoring and verifications. Overall the CME is satisfied with the implementation of the management system thus far.

There have been no events with any CPAs requesting emission reductions that affect the applicability of the methodology.

B.2. Implementation of single sampling plan(s)

>>
NA

SECTION C. Post-registration changes to the PoA (including the generic CPA(s))

C.1. Corrections

>>
NA

C.2. Inclusion of a monitoring plan to the registered PoA-DD (including its generic CPA-DD(s)), if a monitoring plan was not included at the time of registration

>>
NA

C.3. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline

>>
NA

C.4. Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA

>>
NA

C.5. Types of changes specific to afforestation and reforestation activities

>>
NA

PART II - Specific-case component project activity(ies)

SECTION D. Description of specific-case CPA(s)

>>

D.1. Brief description of implemented specific-case CPA(s)

>>

8950-0002:

The CPA is a run of river hydropower plant; it involves the construction of the intake structure, the water conveyance system and the power house. The plant conforms to the NREL definition of run-of-the-river because it does not have a reservoir to store water and thus relies on the natural water flow of the river, greatly reducing the environmental impact of the site.

The turbine installed capacity would be of 3.276 MW generated from one Pelton Trubine that will produce an estimated 18,480 Mwh annually. The generator installed capacity is of 2.899MW. A transmission line connects the power house to a substation located in the community of El Volcan, in the Department of Comayagua This electricity would be supplied to ENEE (Honduran National Electricity Company) and displace electricity that is otherwise produced by coal and fossil fuels.

The construction includes: a bypass dam, conduction and pressure pipelines, a power house with a control room, and transmission line that leads to the substation which then feeds electricity to the “Sistema Interconectado Nacional” of Honduras, (National Interconnected System) which is operated by ENEE. Water discharged from the powerhouse goes through an energy dissipation system before re-entering the river. All of the electricity produced is measured on site with SCADA equipment and at the substation. The operational lifetime is expected to be of 30 years.

Below is a table with key dates for project development:

Milestone	Date
Order of the electromechanical equipment	October 27, 2011
Preliminary civil works	December 10, 2012
Financial Closure with bank	March 31, 2013

8950-0003:

The CPA is a run of river hydropower plant; it involves the construction of the intake structure, the water conveyance system and the power house. The plant conforms to the NREL definition of run-of-the-river because it does not have a reservoir to store water and thus relies on the natural water flow of the river, greatly reducing the environmental impact of the site. After the water is diverted from the Puringla and

Sazagua rivers, it goes through three vertical axis Francis turbines and is subsequently discharged to the Puringla river, which later connects to the Sazagua river.

The installed capacity consists of three Francis turbines with individual capacity of 3.383 MW and generators of 3.315 MW that are estimated to produce 46,900 MWh annually. This electricity is supplied to ENEE (Honduran National Electricity Company) and displace electricity that is otherwise produced by coal and fossil fuels. This electricity is supplied to the Honduran national grid via a 10 km long transmission line that is located near the city of Siguatepeque.

The construction includes: a bypass dam, conduction and pressure pipelines, a power house with a control room, and transmission line. The operational lifetime is expected to be of 30 years.

Below is a table with key dates for project development:

Milestone	Date
Order of the electromechanical equipment	June 18, 2013
Preliminary civil works	October 11, 2012
Financial Closure with bank	September 28, 2012

D.2. Geographical references or other means of identification of the location of the specific-case CPA(s)

>>

8950-0002:

The project is located in the Singuizapa Village near the Municipalities of Cedros and Vallecillos in the Francisco Morazán Department, Honduras, specifically in the Zinguizapa River.

	Longitude	Latitude
Diversion Dam	-87.33308459814236	14.444683200681967
Powerhouse	-87.35398115540231	14.457961837948297

Below a map of the location of the project and the host country:



Below is a more detailed map with the project location within the host country:



8950-0003:

The project activity is located in the Municipality of Santiago de Puringla at the La Paz Department Honduras. More specifically in the confluence of the Puringla and Sazagua Rivers.

	Longitude	Latitude
Diversion Dam	-87.949725	14.370969
Powerhouse	-87.954713	14.383733

Below a map of the location of the project and the host country:



SECTION E. Post-registration changes to specific-case CPA(s)**E.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

>>

NA

E.2. Corrections

>>

For CPA002:

Corrections as per Project Standard Version 09.0 (Appendix 1) :

- Information regarding installed capacity of generators has been included.

For CPA003:

Corrections as per Project Standard Version 09.0 (Appendix 1) :

- Information regarding installed capacity of generators has been included.

E.3. Changes to the start date of the crediting period of the specific-case CPA(s)

>>

NA

E.4. Inclusion of a monitoring plan into the specific-case CPA(s) that was not included at registration

>>

NA

E.5. Permanent changes to the monitoring plan as described in the registered specific-case CPA-DD(s), applied methodology or standardized baseline

>>

For CPA002:

Revision of Monitoring Plan as per Project Standard Version 09 (Appendix 1)

- Details regarding location of meters have been corrected*
- Information regarding the frequency of the calibration stipulated in the PPA has been removed.*

*Paragraph 5, section a, c and e is applicable as changes in these matters were beyond the control of the project participant and the CME.

For CPA003:

Revision of Monitoring Plan as per Project Standard Version 09 (Appendix 1)

- Details regarding location of meters have been corrected*
- Information regarding the frequency of the calibration stipulated in the PPA has been removed.*

*Paragraph 5, section a, c and e is applicable as changes in these matters were beyond the control of the project participant and the CME.

E.6. Changes to project design of the specific-case CPA(s)

>>
NA

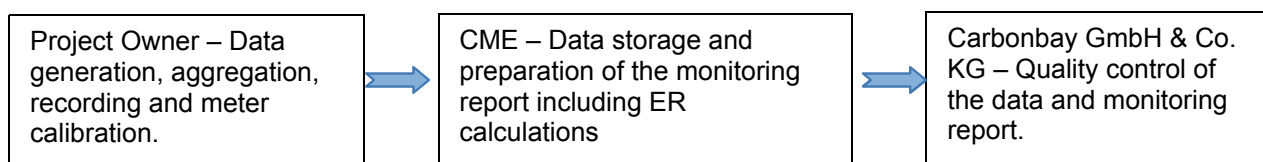
E.7. Types of changes specific to afforestation and reforestation specific-case CPA(s)**SECTION F. Description of the monitoring system of specific-case CPA(s)**

>>

Anaconda Carbon S.A. has developed a Management Plan, which is applied during verification activities to assure correctness of data management.

Monitoring consists of metering the electricity generated by the renewable technology.

Management Structure and Responsibilities Overall responsibility for daily monitoring and reporting lies with the project owner. The manager of the proposed project is responsible for the review of the monthly reported results/data and for checking the calibration certificates. The data is sent to the CME for storage and preparation of the monitoring report, the quality control and approval is performed by Carbonbay GmbH & Co. KG.

Organizational Chart:

Data Collection: The electricity supplied to the grid by the project activity is measured by calibrated electricity meters which are located at the project site, in the substation, or in the point of connection to the grid. Any electricity import is discounted to calculate the net electricity supplied to the grid. The parameter is monitored at the project site and crosschecked with the invoices of electricity sold. Data is monitored continuously, measured hourly and recorded monthly as required by the applicable methodology.

Data Recording: All data collected is recorded monthly into an electronic spreadsheet.

Data Calibration: All measurements are conducted with calibrated measurement equipment (electricity meters have a class of at least 0.15). Device calibration is carried out periodically in accordance with manufacturer specifications where available. A calibration is to take place in case one of the meters is not functioning properly, which is deemed the case if there is more than a 1% difference in readings between the project meter and the utility meter. Calibration interval will not exceed 3 years, as per CDM standards. The equipment used to monitor the electricity is described by the project owner, and evidences are provided to the CME.

Data Report: Data recorded (control value) and the invoices (main value) are consolidated on a monthly basis and are subject to quality control. If there is a discrepancy in the data, the source of the variation is identified, whatever is the main measured value or the control value. The data is compiled monthly in a report and verified by the Project Developer's Head Office.

Data Archives: The data recording, the data report and the invoices are archived, together with this monitoring plan. All data collected as part of monitoring is archived electronically and be kept at least for 2 years after the end of the last crediting period.

Data Quality Control: An internal procedure to ensure the correctness of data is employed. Data and reports are checked internally to ensure correctness of data. In case of mistakes, corrective actions are applied to avoid future similar mistakes. In case of erroneous measurements, the data is not taken into account for emission reduction purposes.

Training and Monitoring Personnel: All people that participate in the monitoring process are suitably qualified and trained in the operation and maintenance of the plant. They have all received instructions for the use of the monitoring plan.

Emission factor calculation: The combined margin emission factor is fixed for the first crediting period and updated when the crediting period of the PoA is renewed, using ex-ante data for OM and BM as described in the PoA-DD document.

Verification and Monitoring Results: The monitoring report is prepared by the managing entity. It contains the data report, the emission factor calculation and the results of the emissions reductions of the project for a certain period.

Leakage monitoring: No energy generating equipment is transferred from another activity to this project and there is no existing equipment to be transferred to another activity. The project activity involves electricity generation from hydro sources. The employed hydro energy generator can only convert hydro energy into electrical energy and cannot use any other input fuel for electricity generation. Thus monitoring leakage from the project activity is not required.

A single monitoring report containing all monitoring results of all CPAs included in the PoA, clearly separating the monitoring results of individual CPAs has been prepared.

SECTION G. Data and parameters

G.1. Data and parameters fixed ex ante, at registration, inclusion or renewal of crediting period

Data / Parameter	EF_{grid,CM,y}
Unit	tCO ₂ e/MWh
Description	Emission factor of the grid where the hydropower is exporting the electricity to.
Source of data	Data officially approved by the Host country DNA
Value(s) applied	0.6223
Choice of data or Measurement methods and procedures	The value is calculated with the latest data available at the start of the validation of the Guacamaya PoA.
Purpose of data	To calculate baseline emissions
Additional comment	NA

Data / Parameter	CAP_{BL}
Unit	W
Description	Installed capacity of the hydro power plant before the implementation of the project activity. For new hydro power plants, this value is zero.
Source of data	Project site
Value(s) applied	0
Choice of data or Measurement methods and procedures	Not applicable
Purpose of data	To calculate the power density
Additional comment	Only applicable when the CPA involves reservoirs

Data / Parameter	A_{BL}
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Unit	m ²
Description	Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m2). For new reservoirs, this value is zero
Source of data	Project site
Value(s) applied	0
Choice of data or Measurement methods and procedures	Not applicable
Purpose of data	To calculate the power density
Additional comment	Only applicable when the CPA involves reservoirs

G.2. Data and parameters monitored

Data/parameter	EG_y
Unit	MWh/y
Description	Quantity of net electricity supplied to the grid in year y.
Measured/calculated/default	Measured by electricity meter
Source of data	Electricity meters
Value(s) of monitored parameter	8950-0002: 14,572.35 MWh 8950-0003: 22,519.56 MWh
Monitoring equipment	<p>8950-0002: Main meter (ENEE) Schneider Electric ION 8650 Serial Number MW-1406A496-01 New Device installed on:26/11/2014 Calibration valid for: 3 years after initial calibration (25/11/2017) Class:0.1</p> <p>Backup meter (Zinguizapa HPP) Schneider Electric ION 8650 Serial Number MW-1409A770-01 New Device installed on:26/11/2014 Calibration valid for: 3 years after initial calibration (25/11/2017) Class:0.1</p> <p>8950-0003: Main meter (ENEE) Schneider Electric ION 8650 Serial Number MW-1409A771-01 New Device installed on:12/11/2014 Calibration valid for: 3 years after initial calibration (11/11/2017) Class:0.1</p> <p>Backup meter (Puringla Sazagua HPP) Schneider Electric ION 8650 Serial Number MW-1206A274-01 New Device installed on:15/11/2014 Calibration valid for: 3 years after initial calibration (14/11/2017) Class:0.1</p>
Measuring/reading/recording frequency	Measured continuously and recorded monthly

Calculation method (if applicable)	The net electricity generated is measured by a calibrated meter owned and operated by the project owner. This data is cross-checked with the meter owned by the Honduran utility (ENEE).
QA/QC procedures	Device calibration is carried out periodically in accordance with manufacturer specifications where available. A calibration is to take place in case one of the meters is not functioning properly, which is deemed the case if there is more than a 1% difference in readings between the project meter and the utility meter. Calibration interval will not exceed 3 years, as per CDM standards.
Purpose of data	Calculate the baseline emissions
Additional comments	The meter readings are cross-checked with available internal and/or external information such as electricity invoices.

G.3. Implementation of specific-case CPA level sampling plan

>>
NA

SECTION H. Calculation of GHG emission reductions or net GHG removals by sinks

H.1. Calculation of baseline emissions or baseline net GHG removals by sinks

>>

Baseline emissions at CPA level are calculated as Metodolgooy AMS-I.D, Version 17, which multiplies electrical energy baseline $EG_{BL,y}$ (expressed in MWh of electricity produced by the CPA) by the grid emission factor.

$$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$$

Where:

BE_y Baseline Emission in year y (tCO2)

$EG_{BL,y}$ Quantity of net electricity supplied to the grid as a result of the implementation of the Project Activity(ies) under the CPA in year y (MWh)

$EF_{CO2,grid,y}$ CO2 emission factor of the grid in year y (tCO2/MWh)

The calculation of the grid emission factor is based on official data available at the time of the PoA Registration. The value of the grid emission factor is 0.6223 tCO2/MWh , which is fixed ex-ante for the entire crediting period of the CPAs. The detailed grid emission factor calculation based on data available prior to publication of the PoA DD, is provided in section E.6.1 of the PoA DD . Hence, annual baseline emissions are calculated by multiplication of the annual quantity of net electricity supplied to the grid (as calculated above) with the grid emission factor. T

8950-0002:

$$\begin{aligned} BE_y &= EG_{BL,y} * EF_{CO2,grid,y} \\ &= 14,572.35 \text{ MWh/y} * 0.6223 \text{ tCO2e/MWh} \\ &= 9,068 \text{ tCO}_2\text{e} \end{aligned}$$

8950-0003:

$$\begin{aligned} BE_y &= EG_{BL,y} * EF_{CO2,grid,y} \\ &= 22,519.56 \text{ MWh/y} * 0.6223 \text{ tCO2e/MWh} \\ &= 14,013 \text{ tCO}_2\text{e} \end{aligned}$$

H.2. Calculation of project emissions or actual net GHG removals by sinks

>>

No project emissions apply for the project activity as per the methodology

H.3. Calculation of leakage

>>

No leakage is accounted for as per the methodology

H.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Specific-case CPA reference number	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
8950-0002	9,068	0	0	0	9,068	9,068
8950-0003	14,013	0	0	0	14,013	14,013
Total	23,081	0	0	0	23,081	23,081

H.5. Comparison of GHG emission reductions or net GHG removals by sinks with estimates in the included CPA-DD(s)

Specific-case CPA reference number	Value estimated in ex ante calculation in the included CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
8950-0002	9,578	9,068
8950-0003	24,307	14,013
Total	33,885	23,081

H.6. Remarks on difference from the estimated value in the included CPA-DD(s)

>>

NA – Values are below estimates calculated ex-ante in CPA DDs.

Appendix 1. Contact information of coordinating/managing entity and/or responsible persons/entities

Coordinating/managing entity and/or responsible person/entity	<input checked="" type="checkbox"/> Coordinating/managing entity <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	Anaconda Carbon S.A.
Street/P.O. Box	Via Espana y Calle Elvira Mendez Piso 14
Building	Edificio Torre Delta
City	Panama
State/Region	
Postcode	
Country	Republic of Panama
Telephone	+50425500387
Fax	+50425502063
E-mail	info@anacondacarbon.com
Website	www.anacondacarbon.com
Contact person	
Title	
Salutation	Mr
Last name	Giles
Middle name	
First name	Christian
Department	Management
Mobile	
Direct fax	
Direct tel.	+50425500387
Personal e-mail	christian.giles@anacondacarbon.com

Document information

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