

PURUS PROJECT – A TROPICAL FOREST CONSERVATION PROJECT IN ACRE, BRAZIL VCS VERIFICATION REPORT



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Summary:

Environmental Services, Inc., (ESI) was contracted by CarbonCo, LLC, on 01 February 2016 to conduct the fourth monitoring period verification (01 January 2015 to 31 December 2015) of *The Purus Project: A Tropical Forest Conservation Project in Acre, Brazil* [Validated Project Description (PD) dated 28 December 2012]. The Purus Project follows the framework of Reducing Emissions from Deforestation and Degradation (REDD) and is achieving Greenhouse Gas (GHG) emission reductions as well as tropical forest protection and conservation through payments for ecosystem services.

Project activities include meeting with the local communities surrounding the project area, engaging Acre state officials working on similar strategies at a regional/state level, developing a plan which will result in lowering the pressure on land and forest resources in consultation with the local community, putting into operation the REDD project implementation plan with the help of local partners and Purus Project staff, undertaking a forest carbon inventory, and modelling regional deforestation. Activities implemented as part of the project to reduce deforestation include:

- Community outreach and education;
- Employment of local community members as project forest guards or other project staff (to replace other sources of income associated with deforestation and land use);
- Agricultural extension training which will help baseline agents to increase productivity on current lands (thus reducing the pressure to expand their farms in the adjacent forest);
- Reforestation of select non-forest areas and planting woodlots (to provide alternative sources of fuelwood); and
- Sharing a portion of carbon related revenue for communities living on the Moura & Rosa property (replacing other sources of income associated with deforestation and land use).

The verification assessed the Project’s compliance with the Verified Carbon Standard (VCS) Version 3 (and all associated updates), the selected methodology, and the validated PD. The method employed by ESI in the verification process was derived from all items in ESI’s internal verification process, which included utilizing VCS documents and ISO 14064-3 to develop and implement a Verification & Sampling Plan. This verification assessed the GHG emission removals through Agriculture, Forestry and Other Land Use (AFOLU) criteria, specifically, REDD – Avoided Unplanned Deforestation (REDD-AUD) activities.

The scope of the verification included the GHG project implementation; physical infrastructure, activities, technologies and processes of the GHG project; GHG sources, sinks and/or reservoirs; types of GHGs; and time periods covered. The geographic verification scope was defined by the project

boundary, the carbon reservoir types, management activities, growth and yield models, inventory program, and contract periods.

The verification criteria followed the guidance documents provided by VCS and included the following: VCS Program Guide (08 October 2013, v3.5), Program Definitions (08 October 2013, v3.5), AFOLU Requirements (08 October 2013, v3.4), AFOLU Non-Permanence Risk Tool (4 October 2012, v3.2), and the VCS Methodology VM0007: "REDD Methodology Modules (REDD-MF)" v1.3 (03 May 2013) and its associated modules and tools.

A summary of all findings is included in Appendix B. There are no restrictions of uncertainty.

ESI confirms all verification activities including objectives, scope and criteria, level of assurance, monitoring and project documentation adherence to VCS Version 3 and all associated updates as documented in this report are complete. ESI concludes without any qualifications or limiting conditions that the *2015 Purus Project Monitoring Report* dated 03 October 2016 (v1.0) meets the requirements of VCS Version 3 and all associated updates.

The GHG assertion provided by CarbonCo and verified by ESI has resulted in the GHG emissions reduction or removal of 104,086 tCO₂ equivalents by the project during the verification period/reporting period (01 January 2015 to 31 December 2015). This value is gross of the 11% (13,164 tCO₂ equivalents) buffer withholding based on the non-permanence risk assessment tool. This results in 90,922 tCO₂ equivalents of credits eligible for issuance as VCUs.

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1 INTRODUCTION

1.1 Objective

The verification objective included an assessment of compliance with VCS Version 3 and all associated updates, the selected methodology (VM0007, v1.3), and the validated Project Description (PD) *The Purus Project: A Tropical Forest Conservation Project in Acre, Brazil* dated 28 December 2012. ESI (herein referred to as the Validation/Verification Body – VVB) assessed the Greenhouse Gas (GHG) emission removals for the fourth monitoring period/verification period 01 January 2015 to 31 December 2015 through Agriculture, Forestry and Other Land Use (AFOLU) criteria, specifically, Reduced Emissions from Deforestation and Degradation – Avoided Unplanned Deforestation (REDD-AUD). ESI assessed whether the Project Proponent adequately addressed project emissions, unplanned reductions in carbon stocks, and any possible leakage outside of the project boundary.

1.2 Scope and Criteria

The scope of the verification included the GHG project implementation and baseline scenario; physical infrastructure, activities, technologies and processes of the GHG project; GHG sources, sinks and/or reservoirs; types of GHGs; and time periods covered. *The Purus Project: A Tropical Forest Conservation Project in Acre, Brazil* follows the REDD-AUD framework. The geographic verification scope was defined by the project boundary, the carbon reservoir types, management activities, growth and yield models, inventory program, and contract periods. The scope of the project was outlined by the Project Proponent prior to the verification and is re-defined as follows for the GHG project:

Baseline Scenario	Continued unplanned frontier deforestation - forest clearing for subsistence agriculture and cattle ranching.
Activities/Technologies/Processes	VM0007, v1.3 Avoided Unplanned Deforestation Monitoring and modelling forest resources, providing alternative sustainable economic activities for local communities, agricultural training classes.
Sources/Sinks/Reservoirs	Above-ground live tree biomass Below-ground live tree biomass Dead wood Biomass Burning - Source
GHG Type	CO ₂ – Sinks; CH ₄ and N ₂ O - Source
Time Period (state date, crediting period, verification period)	01 January 2015 – 31 December 2015
Project Boundary	The Purus Project is located in the state of Acre, Brazil, alongside the Purus River (south of Manoel Urbano, Acre) - 34,702 hectares (85,714 acres).
GHG reduction and/or removal	104,086 tCO ₂ e This value is gross of the 11% (13,164 tCO ₂ e equivalents) buffer withholding based on the non-permanence risk assessment tool

1.3 Level of Assurance

The level of assurance was used to determine the depth of detail that the Verifier placed in the Verification and Sampling Plan to determine if there are any errors, omissions, or misrepresentations (ISO 14064-3:2006). ESI assessed the project's implementation of general principles, data collection and processing, sampling descriptions, documentation, *ex post* calculations, etc., to provide reasonable assurance to meet the Project Level requirements of the VCS Program. Based on the verification findings, a final evaluation statement reasonably assures that the project GHG representations are materially accurate. The evidence used to achieve a reasonable level of assurance is specified in the following sections.

1.4 Summary Description of the Project

The Purus Project is a REDD-AUD project that is achieving Greenhouse Gas (GHG) emission reductions as well as tropical forest protection and conservation through payments for ecosystem services. The project was developed by three main Project Proponents: CarbonCo, LLC, Freitas International Group, LLC ("Freitas International Group" or "Carbon Securities"), and Moura e Rosa Empreendimentos Imobiliários, LTDA ("Moura & Rosa" or "M&R"). CarbonCo, a wholly-owned subsidiary of Carbonfund.org, is responsible for managing the verification process and for financing in the early stages of project implementation.

A forest carbon inventory, modeling of regional deforestation and land-use patterns, and mitigation of deforestation pressures have been undertaken as part of the project activities. Activities to mitigate deforestation pressures range from engaging EMBRAPA (i.e., the Brazilian Agricultural Research Corporation) and SENAR (Serviço Nacional de Aprendizagem Rural) for agricultural extension training, to the patrolling of potential deforestation sites. In addition, the project aims to eventually build better houses for the local communities to improve their livelihoods.

The Purus Project is located alongside the curves of the Purus River, approximately 60 kilometers (approximately 37 miles) from the nearest city of Manoel Urbano - this distance is about 20 kilometers (or 12 miles) "as the crow flies." The forested area of the Purus property (and thus the project boundary) encompasses 34,702 hectares (i.e., approximately 85,714 acres); it is divided amongst two contiguous parcels named Seringal Itatinga and Seringal Porto Central. The two main types of vegetation strata identified within the project boundary are open forest with palm/bamboo and open alluvial forest with palm, both of which are intact, primary forest.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification assessed the Project's compliance with the VCS Version 3 and all associated updates, the selected methodology (VM0007, v1.3), and the validated PD. The verification also assessed the GHG emission removals through AFOLU criteria, specifically, REDD-APD. According to the ISO14064-3, the verification criteria are the "policy, procedure or requirement

used as a reference against which evidence is compared.” For this project, the verification criteria followed the guidance documents provided by VCS and included the following: VCS Program Guide (08 October 2013, v3.5), Program Definitions (08 October 2013, v3.5), AFOLU Requirements (08 October 2013, v3.4), AFOLU Non-Permanence Risk Tool (4 October 2012, v3.2), and the VCS Methodology VM0007: “REDD Methodology Modules (REDD-MF)” v1.3 (03 May 2013) and its associated modules and tools.

A project specific Verification and Sampling Plan was developed to guide the verification auditing process to ensure efficiency and effectiveness. The purpose of the Verification and Sampling Plan was to present a risk assessment for determining the nature and extent of verification procedures necessary to ensure the risk of auditing error was reduced to a reasonable level. The Verification & Sampling Plan methodology was derived from all items in our verification process stated above. Specifically, the sampling plan utilized the VCS guidance documents and ISO 14064-3. Any modifications applied to the Verification and Sampling plan were made based upon the conditions observed for monitoring in order to detect the processes with highest risk of material discrepancy.

Field sampling and techniques were based on the project parameters/scope and best professional judgment of the VVB in order to meet a reasonable level of assurance as directed by the professional judgment of the Lead Verifier. Because the biomass inventory was validated and has not changed, inventory plots were not selected for detailed review/re-measurement. Rather, extensive review of all remote sensing data was undertaken of the project area and leakage belt to aid the VVB in establishing a reasonable level of assurance regarding confirming the reported areas of *ex post* disturbance (from the remote sensing analysis) for the quantification of project emissions and leakage emissions.

In addition, a risk-based approach was used for the on-the-ground field sampling effort in order to select key areas for direct observation of forest losses, leakage issues, and stated project activities. The most likely access points for anthropogenic deforestation (Purus River) within the Project Area and leakage belt were toured in order to allow the VVB to establish a reasonable level of assurance regarding the implementation of project activities, and to further confirm the reported areas of *ex post* disturbance. Please see Section 2.4 of this report for more details.

The desktop verification component included a full review of all project documentation and calculations received from the Project Proponent as described below.

2.2 Document Review

A detailed review of all project documentation was conducted to ensure consistency with, and identify any deviation from, VCS Program requirements, the methodology (VM0007, v1.3), and the validated PD. Initial review focused on the validated PD and Monitoring Report (MR) relative to the field conditions observed and interviews with project management staff. Project details, implementation status, data and parameters, and quantification of GHG emission reductions and removals were thoroughly examined. Key supporting documents were also reviewed. These included monitoring data (i.e., remote sensing/Geographic Information System (GIS) data), land ownership documentation, carbon rights contracts, financial analyses, property boundaries, maps

and aerial images, fire-specific monitoring data, biomass and carbon calculation spreadsheets, and responses to Non-conformance Requests (NCRs) and Clarification Requests (CLs).

The AFOLU Non-Permanence Risk Tool (04 October 2012, v3.2) was used by the Project Proponent to assess overall project risk. The VVB reviewed the Non-Permanence Risk Report provided with the verification supporting documentation and confirmed that the Project adheres to the requirements set out in the VCS AFOLU Non-Permanence Risk Tool (04 October 2012, v3.2). Each risk factor was thoroughly assessed for conformance. Any identified NCR and/or CL findings related to the AFOLU Non-Permanence Risk Tool/Report are presented in Appendix B. The final score was calculated to be 11%.

For a listing of all documents received from the client for this verification, please see Appendix A.

2.3 Interviews

The verification site inspection followed the VVB's prepared Verification and Sampling Plan process and was conducted on 21-24 July 2016 by the Lead Verifier and Verification Team Member/GIS Analyst. Onsite interviews and informal discussions were conducted with project staff, as well as members and leaders of the local communities. Many of the individuals interviewed in 2016 had been previously interviewed at the 3rd verification site visit.

During interviews with the local community a few commented that they didn't fully understand the project and wanted clearer information. In most instances further discussion from the VVB with the persons and/or the Project Proponent revealed that they had chosen not to attend the trainings or visit the headquarters for meetings. A few other community members indicated that they understood the project, but just did not care about the project one way or the other because they did not need the benefits. However, the VVB notes that indifference to the Project was exhibited primarily by members of the Guita family (see further discussion in this section), and other community members were more positive when questioned about the Project.

Some individuals interviewed on-site who previously were interested in gaining title for their land no longer wished to obtain title. It was suggested they did not want to deal with encumbrances such as taxes. These responses are in contrast to the results of previous community outreach by Project Proponent's where they had stated gaining land title was important to them.

During the verification site visit the VVB met and interviewed the only individual to hold title, having been awarded in June 2016 (outside the monitoring period). The VVB was shown the actual land title held by Benedito Nunes da Silva and through the translator was able to confirm authenticity. Benedito was visibly pleased to have obtained title and remained enthusiastic about the project's activities and benefits.

As in previous verification site visits, the VVB visited one family in particular (the Guita's, represented by the father, Antonio) who dispute property rights with the Project Proponents. Antonio Guita and other family members continued unabated to clear land for their cattle operations during the monitoring period. Previously this family has stated they do not plan to change their activities and the extent of their right to ownership was somewhat in question. During this on-site interview however, Antonio Guita stated that he is starting to think more

positively about the project despite the fact that negotiations continue in order for him to stop the deforestation in exchange for land title.

The Project Proponent confirmed that community members which have been living on land adjacent to the project area and who made the land productive (e.g., by growing crops or raising animals) for ten years, have the right to be titled. To resolve ongoing disputes over land, Moura & Rosa will voluntarily recognize whatever area is currently deforested and under productive use by each family living on the Seringal Porto Central and Seringal Itatinga parcels. The Guita family is being handled differently due to their disregard for engagement with Project Proponents and continued opposition of the law. The authorities have been notified and legal action is pending. The Project Proponent believes that once the details of ownership are worked through with the Guita family and more families starting receiving title, the clearing of the project lands will cease. This is something that will be confirmed in future verifications. The majority of locals indicated that the land titling aspect of the project is a desired benefit.

In addition, the VVB met with individuals with various roles in the project. This included an interview with representatives of the Chico Mendes Foundation, a beneficiary of carbon credit revenue. Also, Ayres Neylor was interviewed, an environmental lawyer commissioned by the Project Proponents to negotiate with the Guita family to stop their deforestation activities.

The following is a list of the main interviewees:

Name*	Title
Brian McFarland	Director-Carbon Projects and Origination, Carbonfund.org – CarbonCo/Project Developer
Normando Sales	Managing Director, Moura & Rosa /Landowner-Project Manager
Wanderley Cesario Rosa	Managing Director, Moura & Rosa /Landowner-Project Manager
Pedro Freitas	President, Freitas International Group, LLC. (Carbon Securities)/Project Facilitator
Elenira Mendes	Representative – Chico Mendes Foundation
Ayres Neylor	Environmental Lawyer/Acir and Sidenei Lawyer
Kidney Da Cunha Aires	On-Site Project Manager
Ale Anute Silva	Mayor – Manoel Urbano
Rosanio Silva Moura	On-Site Project Staff- manages project headquarters in Kidney

	absence
Ribamar	Local Resident/Informal Mayor
Francisca Frota ¹	Local Resident
Benedito Nunes da Silva ²	Local Resident
Raimundo Nonato De Olivera	Local Resident – outside Project Area but aware of project
Ze Antonio	Local Resident – Leakage Area Resident
Anonymous	Banana Buyer/Leakage Area Resident
Roderigo de Sausa Soarus	Environmental Lawyer/Acir and Sidiney Lawyer

*Regarding members of the local communities, some interviewees did not give their names or only gave partial names. Due to the nature of their settlement, it was decided to simply ask for “names”, and then it was recorded. This was intended to not intimidate them and hope for a more complete answer.

The following interview questions were asked of community members and individuals during the verification site visit.

1. Have you heard of the Purus project? How?
2. Do you expect to receive any benefits from the project? What kind?
3. What are your/ the communities greatest needs?
4. Do you have an interest in agricultural training?
5. Regarding the project headquarters, have you heard of the health clinic constructed? Would you use it? Do you know about the potable water system installed? Are you aware of the telephone at headquarters? Are you aware of the free boat available, have you used it and does it operate at times useful to you?
6. Do you use fuelwood or charcoal for cooking? Where do you get it from/how far do you regularly travel to get it?

¹ Husband was pursuing the process of title before his unfortunate passing in spring 2016. Titling process is currently on hold and project proponents are assisting Francisca.

² Only individual on-site to have officially received title.

7. Does your household collect timber? Where do you get it from/how far do you regularly travel to get it?
8. Do you clear land for agriculture/cattle/building materials (a listed HCV)?
9. How many hectares of land do you clear each year? Is that increasing or decreasing from previous years?
10. Do you have title to your land? Has the Purus project contacted you about helping to get land title?
11. Are more people moving to this area?
12. Do you think deforestation has been reduced because of this project?

The interview questions were sometimes adjusted to solicit more detailed responses, but the responses confirmed with reasonable assurance that no community members will be negatively affected by the project. The verification site visit interviews also confirmed that most community members are participating in project activities and feel that they are a benefit.

2.4 Site Inspections

The verification site inspection followed the VVB's prepared Verification and Sampling Plan process and was conducted on 21-24 July 2016 by the Lead Verifier and Verification Team Member/GIS Analyst. The verification site visit was a required tool to help the VVB reach reasonable assurance for verification of monitoring period reported elements. It also allowed the VVB to; understand application of the methodology on-site, confirm the implementation of project activities, and to identify possible sources of error in order to focus desktop verification efforts.

A ground inspection was made of the project area and leakage belt along the Purus River, including a series of drone flyovers to visually review inaccessible areas. The site visit ground inspection was performed to assess monitoring efforts, including but not limited to; unplanned deforestation activities, unplanned degradation, and community member feedback. To further confirm the reported areas of *ex post* deforestation resulting in carbon stock losses, an extensive review of drone imagery and independently obtained Landsat imagery (<http://landsatlook.usgs.gov/> accessed 24 August 2016) data was also undertaken at the desktop. The Project's UCEGEO³ deforestation dataset was ocularly validated by comparing against monitoring period Landsat imagery where the deforested cover class was readily distinguished in both the project area and leakage belt.

³ Central Unit of GIS and Remote Sensing within the Climate Change Institute (ICM) in Acre, Brazil

During the project site visit, the following aspects of the project were considered:

1. Boundaries - reviewed boundaries using a handheld Global Positioning System (GPS) and checked for presence of boundary demarcation.
2. Stratification - checked vegetative cover classifications by taking waypoints and notes through direct observation with handheld GPS and maps.
3. Forest protection - viewed areas of high likelihood of incursions
4. Reviewed and observed high risk areas and items:
 - Hot-spot areas of monitoring period deforestation in project area boundary and leakage belt with confirmation of data collection methods in conformance with the stated Standard Operating Procedures (SOPs) for monitoring. See details on drone use below.
 - The degradation assessment was performed during the site visit as part of CCB interviews and included targeted questions to community members on fuelwood, charcoal and illegal timber extraction:
5. Leakage
 - Considered leakage monitoring as described in the validated PD and Monitoring Report. Visited the leakage belt and inspected current land-use to ensure that affected lands owned by the Project Proponents have not materially changed as a result of project leakage.
6. Visited and interviewed communities along Purus River to assess the potential for current and future impacts to the project area.
7. Implementation of monitoring activities
8. Reported elements of the Risk Assessment

On July 23 and 24, 2016, the VVB was able to remotely observe recent deforestation within an approximately 3km radius of project headquarters using a high-definition camera-equipped drone supplied by the Project Proponents. The Project's UCEGEO deforestation dataset was successfully validated for locations visited by the drone. Use of the drone allowed the VVB to visually check inaccessible deforestation locations and enabled the VVB to achieve reasonable assurance that deforestation was mapped appropriately. The VVB noted from the drone imagery that not all deforestation is a complete removal of aboveground biomass, suggesting that project accounting methods are conservative (Cpost is set to 0). The desktop review of drone acquired imagery also indicated that deforestation patches from the 2015 monitoring efforts slightly grew in size during the first half of 2016. Deforestation within the project area during the monitoring period was primarily contained in lands settled by members of the Guita family and expansions of clearing performed during the 3rd (previous) monitoring period.

Using Landsat imagery (<http://landsatlook.usgs.gov/> accessed 24 August 2016) the VVB also observed the continuation of clearing activities within a portion of the leakage belt near ramals linked to state route BR-364. As stated in the previous monitoring period Verification Report, this clearing is primarily attributable to government sponsored/sanctioned INCRA settlements. The presence of these INCRA settlements were further confirmed by personal discussions during the verification site visit with Wanderley (one of the Project Proponents) and the geo-referenced ownership map of the project area. The VVB notes that here, the land-use decisions by agents are influenced by INCRA endorsement and not leakage in the conventional sense, despite similar outcomes of agriculture and cattle ranch development.

Although the primary deforestation during the monitoring period in the leakage belt occurred as a result of INCRA settlements, the project has appropriately monitored following VM0007 monitoring methods. Carbon stock losses due to this type of leakage (or any) are not applied to project accounting until it exceeds the baseline projected amount.

At the 3rd verification, an interview with an individual living in the INCRA settlement along ramal (highway) 16 noted that one of the greatest needs is improvements to the access road. Observations made by Project Proponents during the 4th monitoring period suggest that the ramal roads were improved as clarified during site visit interviews. The VVB also observed a similar rate of deforestation in 2015 as 2014 from the Project's UCEGEO deforestation dataset. Project accounting [parameters ADefPA,u,i,t (ha) and ADefLB,u,i,t (ha)] of deforestation was confirmed correct through an independent re-quantification using the UCEGEO deforestation dataset ArcGIS shapefile.

Field observations sufficiently satisfied the professional discretion of the VVB that the findings in the monitoring report were accurate. Please also see the Project Verification and Sampling Plan for site inspection details.

2.5 Resolution of Findings

During the verification process, there was a risk that potential errors, omissions, and misrepresentations would be found. The actions taken when errors, omissions, and misrepresentations were found included: notifying the client of the issue(s) identified, and expanding our review to the extent that satisfied the Lead Verifier's professional judgment.

The process of resolution of findings involved one formal round of assessment by the VVB. Findings were resolved during the verification by the Project Proponent implementing corrective actions such as amending the Monitoring Report and calculations, as well as and providing written responses. This resulted in project documentation that was in conformance with the requirements of the VCS Standard (v3.4) for GHG projects.

Findings were characterized in the following manner:

Non-Conformity Reports (NCRs) were issued as a response to material discrepancies in a part of the project and generally fell into one category:

- Non-conformity to a VCS guiding document listed in Section 2.1 above
- Consistency among project documentation or calculations was lacking
- Mathematical formulae were incorrect
- Additional information was required by the VVB in order to confirm reasonable assurance for compliance

Clarifications (CL) were issued when language within a project document needed extra clarification to avoid ambiguity.

Opportunities for Improvement (OFI) were issued to the Project Proponents when an opportunity for improvement was identified.

During the course of the verification, fourteen (14) essential findings were identified. Detailed summaries of each finding, including the issue raised, responses, and final conclusions, are provided in Appendix B. All NCRs/CLs were satisfactorily addressed.

2.5.1 Forward Action Requests

Three forward action requests were identified during the fourth monitoring period verification.

The first forward action request was raised at previous verifications and again here at the fourth verification. One large family (the Guita, represented by the father – head of family, Antonio) in the project area continues to feel indifferent about the project and Guita family members living in homesteads at different locations continued deforestation activities in the 4th monitoring period. Through an on-site interview conducted with an environmental lawyer retained by the Project Proponents, the VVB learned that a legal motion has been brought against the Guita family in 2016 to stop their illegal deforestation activities. The Project Proponents indicated that coordination continues for a reasonable resolution on the lands to be titled to them, which would resolve the potential for additional deforestation in the project area. The status of this situation including the legal process initiated, any agreements in place as well as monitoring period deforestation should be reviewed again at the next verification.

The second forward action request pertains to the on-site observation of an INCRA-sanctioned settlement in the leakage belt of the project during the third verification. The VVB notes that here, the land-use decisions by agents are influenced by INCRA endorsement and not leakage in the conventional sense despite similar outcomes of agriculture and cattle ranch development. The deforestation in the leakage belt as a result of the INCRA settlement is appropriately monitored following VM0007 monitoring methods. This issue should be reviewed again in the next verification to confirm that INCRA settlement has not encroached into the project area.

The third forward action request steams from the 4th verification site visit where the mostly completed health clinic was visited (Please see related CCB findings). The VVB notes that the health clinic structure was in good order but lacked permanent staff and supplies. The VVB confirmed that the 4th monitoring period dentist visit was attended by a good number of community members. In general, community members expressed good opinions about the clinic and suggested its presence is a net positive benefit. At future verification periods it would be beneficial to interview community members to confirm the clinic continues to provide increased benefits.

2.6 Eligibility for Validation Activities

Validation activities were not undertaken as part of the fourth monitoring period verification.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The PD entitled “*The Purus Project: A Tropical Forest Conservation Project in Acre, Brazil*” dated 28 December 2012 was previously validated by another Validation and Verification Body (VVB). The validation process is described in the Validation Report, available on the VCS website. The Project Proponent has attested that none of the project area has been or will be registered under another carbon trading scheme during the VCS project lifetime, other than CCBA.

3.2 Methodology Deviations

The following methodology deviations were applied to the project and assessed during the verification.

Methodology Deviation	Verification Findings
<p>Trees in the <i>Cecropia</i> genus were not measured as part of the forest inventory. This has been proposed as a deviation as it stands in conflict with the CP-AB requirement that "all the trees above some minimum DBH in the sample plots" be measured.</p>	<p>VVB confirmed that <i>Cecropia</i> genus was conservatively omitted from analysis in both the baseline and project scenarios and this is permitted per VCS Standard Section 3.5.1, which states that deviations are permitted where they relate to data and parameters available at validation, data and parameters monitored, or the monitoring plan. <i>Cecropia</i> sp. generally does not grow in a consistent tree form to allow conventional volume estimates using allometric methods. Most species within the genus contain hollow portions within the stems making volume measurement difficult. Further, there are relatively few <i>Cecropia</i> sp. across the project area. The omission of <i>Cecropia</i> is conservative and does not negatively impact the conservativeness of the quantification of GHG emission reductions or removals.</p>
<p>While sampling lying dead wood using the line intersect method:</p> <p>Two 92-meter transect lines were used rather than two 50-meter transect lines;</p> <p>The sampling lines did not bisect each sample plot, but rather ran from one plot center to the next; and</p>	<p>VVB confirmed that Project Proponents measured lying deadwood using two 92-meter transects, and all dead wood greater than or equal to 10cm diameter was measured at the point of intersection. This measurement method differs from the requirements on module CP-D where Step 1 of Part 2: Lying Dead Wood states “Two 50-meter lines (164 ft) are established bisecting each sample plot and the diameters of the lying dead wood (≥ 10 cm</p>

<p>The sampling lines were oriented to the north and east, and no randomization in the bearing of the first line was employed.</p>	<p>diameter ≥ 3.9 inches+) intersecting the lines are measured. The first line is oriented along a random bearing, the second line is oriented perpendicular to the first.” The PP established two 92-meter transect lines, greater in length, to capture a larger and more representative sample of lying dead wood. These sample lines were permitted not to intersect a given sample plot center, but instead run from one plot to another. This method still ensures a random, but systematic sample of lying dead wood along a transect. The Project Proponent followed the same minimum diameter rule as the requirement, where lying dead wood greater than or equal to 10cm which fell on the transect line was sampled. The first sample line was not at a randomized bearing but rather the two sample lines were oriented at the north and east. The VVB believes that consistent line bearings among sample lines is still in line with good forest sampling practice as no sampling bias is introduced. Field going personnel of varying forest measurement experience are better able to replicate sample line measurements which are consistent in bearing. Further, the bearing of sample lines follows the perpendicular rule stated in CP-D.</p> <p>These deviations from the criteria and procedures related to measurement are appropriate given the good forest measurement practices employed, consistency in sampling practices, and conservativeness in larger sample sizes of lying dead wood. Further, the deviations are permissible per VCS Standard Section 3.5.1 given that the issue is a monitoring/measurement deviation and its application does not negatively impact the conservativeness of the quantification of GHG emission reductions or removals.</p>
<p>For validation of the allometric equation, commercial heights were estimated from total height measured in the field by applying a factor of 62.9%. This commercial height to total height ratio is Amazon specific and was</p>	<p>This deviation is permissible, as it does not negatively affect the conservativeness of quantification of tree volumes. The Higuchi et al. 1998 is an acceptable reference for commercial height to total higher ratio. The</p>

<p>developed by Higuchi et al. 1998 (n = 315 trees).</p>	<p>permissibility of this methodology deviation was evaluated at the previous initial validation and verification.</p>
<p>Rather than using a root to shoot ratio to estimate belowground biomass as per the CP-AB module, belowground biomass was estimated using an allometric equation developed by Cairns et al.</p>	<p>The VVB has agreed to allow this deviation as it has been demonstrated by Project Proponents that using the Cairns⁴ approach is a conservative allometric method to estimate belowground biomass. The Cairns et al. 1997 equation predicts root biomass density as a function of the aboveground biomass density, and it was chosen to replace the root to shoot parameter R.</p> <p>The Cairns et al. 1997 equation was confirmed by the validation team to be a widely referenced method during a related literature search. The Project Proponent (PP) demonstrated the conservativeness of the root to shoot parameter (R) substitution in a separate analysis where the default root to shoot ratios were compared to the Cairns root to shoot ratio. The Cairns et al. method employs an average root to shoot ratio of 0.2286 versus the value of 0.24 (Table 4.4 IPCC GL AFOLU Tropical Forest >125 t.ha-1). This alternative method for determining below ground biomass is acceptable as it is more conservative and accurate. Further, this method for determining below-ground biomass is a parameter available at validation and therefore a justifiable deviation.</p>
<p>The forest inventory has deviated from the criteria for selection (i.e., the equation is based on a datasets comprising at least 30 trees, with an r2 that is ≥ 0.8) and validation of the allometric equation related to palm biomass. However, the equation used is likely to result in a conservative estimate of palm biomass for the following reasons:</p>	<p>The VVB has agreed to allow this deviation as it has been demonstrated by Project Proponents that using a paraboloid is a conservative alternative to applying a traditional allometric to represent palm trees. Further, this method for determining above-ground biomass is a parameter available at validation and therefore a justifiable deviation.</p>

⁴ Cairns, M. A., S. Brown, E. H. Helmer, and G. A. Baumgardner. 1997. Root biomass allocation in the world's upland forests. *Oecologia* 111, 1-11.

<p>Volume is calculated as the volume a paraboloid rather than the volume of a cylinder;</p> <p>Only stem biomass is estimated, thus conservatively excluding other aboveground biomass; and</p> <p>A conservative measure of basal diameter (i.e., dbh) was used.</p>	
<p>A calibration factor of 0.985 was applied to the Brown (1997) equation to ensure use of this equation results in conservative estimates of live aboveground biomass.</p>	<p>This deviation is permissible as it does not negatively affect the conservativeness of quantification of live aboveground biomass. The calibration factor applied to Brown 1997 is an acceptable approach. The permissibility of this methodology deviation was evaluated at the previous initial validation and verification.</p>
<p>In the with-project case, C(post) can conservatively be assumed to be zero, not only for natural disturbance (CP,Dist,q,i , as stated in Section 5.2.3 of the M-MON module) but also for deforestation (CP,post,u,i). This deviation is conservative because subtracting zero from the baseline stocks, leads to the conclusion that $\Delta C_{pools,Def,u,i,t}$ is equal to C(BSL,i), which leads to the maximum emission in the with-project case, which is conservative.</p>	<p>This methodology deviation is permissible as it does not negatively affect the conservativeness of project emissions. Setting parameter Cpost to zero ensures that the most conservative estimate of emissions is achieved. This deviation was reviewed at the previous verification and found to be permissible.</p>
<p>AVFOR will be stratified using information and data derived from official (government) publications, peer-reviewed published sources, or other verifiable sources. Stratification is not limited to the delineation of different strata where contiguous areas of at least 100 ha differ in stocks by $\geq 20\%$.⁵</p>	<p>The VVB found that AVFOR was stratified by Amazon biomes, source: FAO publication Global Forest Resources Assessment 2010, Brazil Country Report. The requirement in LK-ASU states (Step 4, Definition of the Leakage Belt Boundary), "AVFOR shall be separated into different strata where contiguous areas of at least 100 ha differ in stocks by $\geq 20\%$." The project was stratified into contiguous natural forest biomes according to the FAO data that are larger than 100 ha and differ in in stocks by $\geq 20\%$. Thus it meets the above quoted</p>

⁵ The Purus Project: A Tropical Forest Conservation Project in Acre, Brazil – Project Description, v02, dated 28 December 2012.

	<p>mandatory requirement. No divergences from the FAO document were identified during validation. Since the AVFOR parameter is directly related to the TOTFOR parameter, which contains a permissible methodology deviation, the validation team agreed with the PP it be mentioned along with the TOTFOR as a methodology deviation. However, the VVB concludes that the actual measurement method for AVFOR does not constitute a methodology deviation because this measurement was performed correctly.</p>
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The verification process confirmed that the above methodology deviations are reasonable and in compliance with the VCS Standard, Section 3.5 and have been appropriately justified. The listed deviations represent a deviation from the criteria and procedures relating to monitoring and/or measurement of GHG emission reductions or removals set out in the selected methodologies. Moreover, the deviations do not negatively impact the conservativeness of the quantification of GHG emissions reductions or removals (where degradation is deemed significant following the steps in T-SIG, it will be accounted for).

3.3 Project Description Deviations

A Project Description Deviation related to using temporary sample plots covering 1% of the potential degradation area (ADegW,i) was listed at this verification (see also Section 3.2 above). ESI confirms that the deviation from assessing the significance of degradation using temporary sample plots to the use of quantitative survey data and conservative assumptions is justified. This represents an acceptable approach for assessing if emissions due to degradation should be included in the quantification of net GHG emission reductions and if plot level monitoring of degradation is warranted.

The VVB interviewed individuals and traversed the Project Area during verification site visits over the course of three verification periods (2013-2015 – conducted in summers 2014, 2015 and 2016) to assess degradation activities. Community members were surveyed on the main required elements of the degradation PRA in M-MON and consistently responses indicated low (de-minimis) levels of timber and fuelwood extraction. The results of the VVB's series of informal degradation surveys were generally in line with the Project Proponent, suggesting that survey data for the Project is sufficient to measure degradation.

The project remains in compliance with the VCS Standard, Section 3.6.1 where Project Description Deviations are permissible at verification as long as the deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology.

The project remains in compliance with VM0007 V1.3 (where degradation is determined to be significant per the T-SIG tool, it will be accounted for) and the PD deviation is described and appropriately justified in Section 2.2.2 of the Monitoring Report.

CarbonCo's assessment of degradation ("2015_PurusDegradation 2016.06.13.xlsx") was reviewed and found to contain the appropriate data and conservative calculations. Emissions due to degradation were justified as insignificant following the proper steps of the T-SIG tool and plot level monitoring of degradation is not warranted at this time. This item was assessed in full at this verification in addition to the full assessment performed at the previous verification and will be re-assessed at future verifications.

3.4 Grouped Project

Not applicable, as this is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The Project Activities and Monitoring Plan, as described in the validated PD, have been initiated. There are no remaining issues from the validation. At this fourth monitoring period verification, many activities are still being implemented, but the VVB observed considerable progress during the verification site visit activities.

The VVB requested to visit examples of all activities during the various site visit activities and subsequently confirmed the initial implementation of all items, as discussed in Section 2.1 of the Purus Project's fourth verification MR.

A Participatory Rural Appraisal (PRA) to evaluate degradation from extraction of trees for timber, fuelwood and charcoal was performed in 2015 by project Proponents for this verification in line with M-MON requirements every two years. Degradation was found *de minimis* through use of the T-SIG tool, and the illegal wood extraction component was also allowably set to 0 since no selective logging occurs in the with-project or baseline cases. The degradation PRA survey contained a sample size 4, which is small but allowable per the methodology. One or 2 of the community members interviewed by Project Proponents were also interviewed by the VVB during the verification site visit in July 2016 and the validity of those responses confirmed. The responses reflect a low impact of degradation through fuelwood, charcoal and timber, which was also reflected in surveys performed by the VVB.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

The VVB conducted an intensive review of all input data, parameters, formulas, calculations, conversions, statistics and resulting uncertainties and output data to ensure consistency with the VCS standard, the validated project PD and the methodologies. Further, the VVB reproduced select calculations and checked all formulae application for parameters that are derivative to net emission reduction values. Conversion factors, formulas, and calculations were provided by the Project Proponent in Excel worksheet format to ensure all formulae were accessible for review.

The VVB recalculated subsets of the analyses to confirm correctness. The Project Proponent also provided a step-by-step overview as needed of calculations to ensure the VVB understood the approach and could confirm its consistency with the methodologies and PD.

An overview of the data and parameters monitored, along with VVB findings, are included in the table below:

Data Parameter	VVB Findings
$\Delta C_{P,Def,i,t}$	This data/parameter was appropriately chosen because it pertains to net carbon stock change as a result of deforestation in the project case in the project area in stratum <i>i</i> at time <i>t</i> . This value was found to be calculated correctly for the 2015 monitoring worksheet according to the correct formula for the monitoring period.
$\Delta C_{P,DefLB,i,t}$	This data/parameter was appropriately chosen because it pertains to net carbon stock change as a result of deforestation in the project case in the leakage belt in stratum <i>i</i> at time <i>t</i> . This value was found to have been calculated correctly in 2015 monitoring worksheet according to the correct formula for the monitoring period.
$\Delta C_{P,DistPA,i,t}$	This data/parameter was appropriately chosen because it pertains to net carbon stock change as a result of natural disturbance in the project case in the project area in stratum <i>i</i> at time <i>t</i> . The value applied was 0. This was appropriate as there were no areas of natural disturbance reported by on-the ground forest monitors/local land managers and confirmed under parameter $A_{DistPA,q,i,t}$.
$A_{DefPA,u,i,t}$	This data/parameter was appropriately chosen because it pertains to the area of recorded deforestation in the project area stratum <i>i</i> converted to land use <i>u</i> at time <i>t</i> . This value was found to be computed correctly from remote sensing/GIS data as confirmed by an independent workup by the VVB. Hectares deforested during the monitoring period in the project area were also confirmed to have been transcribed and collated properly in the 2015 monitoring worksheet according to the correct formula. The VVB also confirmed the Project's accuracy assessment for landcover classification by randomly selecting 25 of the points and reviewing them in monitoring period dated Google Earth high-resolution imagery. Further, the VVB confirmed all misclassifications using the same Google Earth imagery.
$A_{DefLB,u,i,t}$	This data/parameter was appropriately chosen because it pertains to the area of recorded deforestation in the leakage belt stratum <i>i</i> converted to land use <i>u</i> at time <i>t</i> . This value was found to be computed correctly from remote sensing/GIS data as confirmed by

	<p>an independent workup by the VVB. Hectares deforested during the monitoring period in the leakage belt were also confirmed to have been transcribed and collated properly in the 2015 monitoring worksheet according to the correct formula. The VVB also confirmed the Project's accuracy assessment for landcover classification by randomly selecting 25 of the points and reviewing them in monitoring period dated Google Earth high-resolution imagery. Further, the VVB confirmed all misclassifications using the same Google Earth imagery.</p>
$A_{DistPA,q,i,t}$	<p>This data/parameter was appropriately chosen because it pertains to area impacted by natural disturbance in post-natural disturbance stratum q in stratum i, at time t. The value applied was 0. This was appropriate as there were no areas of natural disturbance reported by on-the ground forest monitors/local land managers. The VVB was unable to distinguish natural disturbance from anthropogenic deforestation with remote sensing analyses of monitoring period dated Landsat data (http://landsatlook.usgs.gov/ accessed 24 August 2016). The VVB further confirmed the value of 0 was appropriate through ground review during the verification site visit.</p>
$C_{BSL,i}$	<p>This data/parameter was appropriately chosen because it pertains to the carbon stock in all pools in the baseline case in stratum i. This value was calculated and assessed <i>ex ante</i> (at validation). The previously-validated <i>ex ante</i> estimates were found to have been implemented correctly in quantification of net GHG emission reductions.</p>
$\Delta C_{pools,Def,u,i,t}$	<p>This data/parameter was appropriately chosen because it pertains to the carbon stock in all pools in post-deforestation land use u in stratum i. This value was found to have been calculated correctly by strata in the 2015 monitoring period worksheet according to the correct formula for the two-year monitoring period.</p>
$A_{DegW,i,t}$	<p>This data/parameter was appropriately chosen because it pertains to the area potentially impacted by degradation processes in stratum i. The value applied was 0. This was appropriate as CarbonCo's assessment of degradation ("2015_PurusDegradation 2016.06.13.xlsx") indicated that emissions due to degradation (for this monitoring period) are insignificant as per T-SIG.</p>
$C_{DegW,i,t}$	<p>This data/parameter was appropriately chosen because it pertains to the biomass carbon of trees cut and removed through degradation process from plots measured in stratum i at time t. The value applied was 0. This was appropriate as the Project Proponent's assessment of degradation ("2015_PurusDegradation 2016.06.13.xlsx") indicated that emissions due to degradation (for</p>

	<p>this monitoring period) were de-minimis per T-SIG. The VVB further confirmed absence of significant degradation during the monitoring period by interviewing community members during the verification site visit. The results of the interviews suggested that degradation as classified under M-MON is very minimal in the project area.</p>
AP_i	<p>This data/parameter was appropriately chosen because it pertains to the total area of degradation sample plots in stratum i. This parameter was not used during this monitoring period. Please see parameter $C_{DegW,i,t}$ justification.</p>
$\Delta C_{P,DegW,i,t}$	<p>This data/parameter was appropriately chosen because it pertains to the net carbon stock changes as a result of degradation in stratum i in the project area at time t. This parameter was not used during this monitoring period. Please see parameter $C_{DegW,i,t}$ justification.</p>
$PROP_{IMM}$	<p>This data/parameter was appropriately chosen because it estimates proportion of baseline deforestation caused by immigrating population. This value was found to have been applied correctly from validation for the monitoring period.</p>
$PROP_{RES}$	<p>This data/parameter was appropriately chosen because it estimates the proportion of baseline deforestation caused by population that has been resident for ≥ 5 years. This value was found to have been applied correctly from validation for the monitoring period.</p>
TOTFOR	<p>This data/parameter was appropriately chosen because it gives the total available national forest area. This value was found to be obtained accurately from verifiable sources and implemented appropriately.</p>
PROTFOR	<p>This data/parameter was appropriately chosen because it gives the total area of fully protected forests nationally. The value applied was 0 from validation.</p>
MANFOR	<p>This data/parameter was appropriately chosen because it gives the total area of forests under active management nationally. The value applied was 0 from validation.</p>
$ARRL_{forest,t}$	<p>This data/parameter was appropriately chosen because it gives the remaining area of forest in RRL at time t. This value was found to have been calculated correctly by the VVB through an independent workup and reported correctly in the Monitoring Report.</p>
$Aburn_{q,i,t}$	<p>This data/parameter was appropriately chosen because it pertains to the area burnt in post-natural disturbance stratum q in stratum i,</p>

	at time t . It was conservatively assumed that the total area burnt during the deforestation process is equal to the area deforested, $A_{DefPA,u,i,t}$.
dbh	This data/parameter was appropriately chosen because it gives the tree diameter at breast height. DBH values were measured and assessed <i>ex ante</i> (at validation). The appropriate <i>ex ante</i> estimates were found to be implemented appropriately in the quantification of net GHG emission reductions.
dbasal	This data/parameter was appropriately chosen because it gives the basal diameter. Basal diameter values were measured and assessed <i>ex ante</i> (at validation). The appropriate <i>ex ante</i> estimates were found to be implemented appropriately in the quantification of net GHG emission reductions.
H	This data/parameter was appropriately chosen because it gives the height of a tree. Tree heights were measured and assessed <i>ex ante</i> (at validation). The appropriate <i>ex ante</i> estimates were found to be implemented appropriately in the quantification of net GHG emission reductions.
Dn	This data/parameter was appropriately chosen because it gives diameter of piece n of dead wood along a transect. Lying Dead Wood diameters were measured and assessed <i>ex ante</i> (at validation). The appropriate <i>ex ante</i> estimates were found to be implemented appropriately in the quantification of net GHG emission reductions.
N	This data/parameter was appropriately chosen because it gives the total number of wood pieces intersecting a transect. The numbers of Lying Dead Wood pieces were tallied and assessed <i>ex ante</i> (at validation). The appropriate <i>ex ante</i> estimates were found to be implemented appropriately in the quantification of net GHG emission reductions.
L	This data/parameter was appropriately chosen because it gives the length of a transect. Transects were installed, measured, and assessed <i>ex ante</i> (at validation). The appropriate <i>ex ante</i> estimates were found to be implemented appropriately in the quantification of net GHG emission reductions.
Cpost	This data/parameter was appropriately chosen because it pertains to the average carbon stocks remaining after deforestation. This value was found to be calculated accurately using the correct formula for the monitoring period.

Bi,t	This data/parameter was appropriately chosen because it pertains to the average aboveground biomass stock before burning stratum <i>i</i> , time <i>t</i> . This value was found to be calculated accurately using forest inventory data and implemented appropriately in the quantification of net GHG emission reductions.
EBSL SS,i, pool#	This data/parameter was appropriately chosen because it pertains to the carbon stock or GHG sources (e.g., trees, dead wood, soil organic carbon, emission from fertilizer addition, emission from biomass burning etc.) in the baseline case. This value was calculated and assessed <i>ex ante</i> (at validation). The appropriate <i>ex ante</i> estimates were found to be implemented appropriately in the quantification of net GHG emission reductions.
UBSL,SS,i,pool#	This data/parameter was appropriately chosen because it pertains to the percentage uncertainty (expressed as 95% confidence interval as a percentage of the mean where appropriate) for carbon stocks and greenhouse gas sources in the baseline case (1,2...n represent different carbon pools and/or GHG sources). The appropriate <i>ex ante</i> estimates were found to be implemented appropriately in the quantification of net GHG emission reductions.

The VVB also reviewed data collection and storage procedures to ensure all opportunities for error in transposition of data between data were minimized.

Uncertainty was assessed by confirming that previously approved sampling error at validation was applied at this verification and confirmation that no confidence deduction was required.

Field data collection utilized appropriate principles of forestry data collection, including appropriate tools and methods. Collected data was handled appropriately, including a structured process for QA/QC. Analysis of collected data used appropriate formulas, conversions, and parameters, supported by scientific literature. Where ranges of parameters exist, or other types of formulaic uncertainty, appropriately conservative values were used in data analysis.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

During ESI's verification, the evidence provided by the Project Proponent was more than sufficient in both quantity and quality to support the determination of GHG emission removals reported by the project. Throughout the verification, the Project Proponent demonstrated a commitment toward conservativeness and took all measures appropriate to ensure the reliability of evidence provided.

The evidence provided to determine emission reductions reported in the monitoring report included values, notations, units and sources. This evidence has been cross checked with supplied emission reduction calculation spreadsheets and a comprehensive GIS dataset. The procedure for data recording, transfer and final transposition was also verified and found to be in

compliance with the monitoring plan outlined in the PD. The VVB was able to confirm through cross checks that adequate monitoring mechanisms are in place where the required parameters need to be monitored.

Interviews conducted (oral evidence) are outlined in Section 2.3 above, and the final documents received from the Project Proponent supporting the determination of GHG removals can be viewed in Appendix A.

4.4 Non-Permanence Risk Analysis

The AFOLU Non-Permanence Risk Tool (04 October 2012, v3.2) was used by the Project Proponent to assess overall project risk. The VVB reviewed the Non-Permanence Risk Report provided with the verification supporting documentation and confirmed that the Project adheres to the requirements set out in the VCS AFOLU Non-Permanence Risk Tool (04 October 2012, v3.2). Each risk factor was thoroughly assessed for conformance. Any identified NCR and/or CL findings related to the AFOLU Non-Permanence Risk Tool/Report are presented in Appendix B. The final score was calculated to be 11%. A brief review of each factor is found in the table below:

Factor	Rationale & Quality	Conclusion
Internal Risks		
Project Management	Ongoing enforcement is required to prevent encroachment by outside actors. The Purus Project employs forest patrols to prevent encroachment by outside actors into the project area = 2. Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities = 2. Local management partners are based in Rio Branco less than a day's travel from the project activity. There is a project manager living on the property and a project headquarters is being established on the property. Site visit confirmed this situation. Issue is scored appropriately = 0. Project Proponents have developed other forest carbon projects and have been working in the forest carbon arena for over 5 years. Brian McFarland of CarbonCo has developed the "Tensas River National Wildlife Refuge Afforestation Project" under the VCS and the CCBS including managing the project design, implementation, and financing. The Project Proponents work alongside and have access to experts in carbon accounting and reporting (i.e., TerraCarbon) who have significant experience in all aspects of	A risk rating of 2 is appropriate given the rationale provided.

	<p>AFOLU project design and implementation, carbon accounting and reporting under the VCS Program. TerraCarbon has successfully validated and verified numerous projects under the VCS, including validation and verification of the VCS ARR project "Reforestation Across the Lower Mississippi Valley."</p> <p>The explanation is acceptable given that verifiers have worked with several members of the management team and are familiar with their experience enough to agree with this mitigation credit = -2</p>	
<p>Financial Viability</p>	<p>The verifier has reviewed the support documentation provided by the Project Proponent. Confirmation of funds from the CFO, a bank statement of the company and a emission reduction purchase agreement between CarbonCo and a buyer, all provide evidence to provide reasonable assurance that the break-even point is less than 4 years = 0. Project has secured 100% of funding needed to cover the total cash out before the project reaches breakeven. Details are provided in a cash flow analysis which can be found in the project database = 0. The verifier has reviewed the support documentation provided by the PP. The letter from the CFO provides confirmation that the funds are non-restricted and that there is accessibility to funds. Based on that documentation, and the reviewed bank statement, the verifier has obtained reasonable assurance that the project has the ability to access funding as needed = -2.</p>	<p>A risk rating of 0 is appropriate given the rationale provided.</p>
<p>Opportunity Cost</p>	<p>As the majority of baseline activities over the length of the project crediting period are subsistence-driven and that the Project Proponent has selected the highest risk score, an NPV analysis is not required. This risk category will be revised downward, once net positive community impacts can be clearly demonstrated, such as through certification against the Climate, Community & Biodiversity Standards or results of a participatory assessment of the project activities on the local communities which demonstrates net positive</p>	<p>A risk rating of 6 is appropriate given community benefits not demonstrated yet.</p>

	<p>community benefits.</p> <p>Verifiers agree that the majority of the baseline activities are subsistence driven as evidenced by verifier's observations and discussions with community members in the project area. = 8. There is a legal contractual agreement to maintain the project area as forest for at least a 60 year period (i.e. greater than the length of the crediting period) from the project start date = -2.</p>	
Project Longevity	<p>There is a legal contractual agreement to maintain the project activities and maintain the project area as forest for at least a 60 year period from the project start date (30-(60/2)) = 0.</p>	<p>A risk rating of 0 is appropriate given the rationale provided.</p>
Total Internal Risks		8
External Risks		
Land Tenure and Resource Access Impacts	<p>The land tenure score for disputes was appropriately revised to a risk rating of 5 to account for the on-going dispute with the Guita family. The characteristics of the dispute are outlined sufficiently in the Risk Report.</p> <p>The proponent is implementing a mitigation credit for resolving the land tenure dispute. Per the VCS Risk tool requirement, "documented evidence is provided that projects have implemented activities to resolve the disputes," additional documentation was provided to substantiate dispute resolution activities performed by the project. Signed agreements were supplied which illustrate the agreement between three local families and the landowners for exclusive use of the land they reside on. This represents a documentary effort by the landowners and the project to resolve the land dispute with the Guita's. The VVB further recognizes the project has made efforts to resolve the land tenure dispute, as evidenced during interviews on-site with the project manager Kidney, representatives of the Guita family, and other project staff. There is a strong motivation by the Project Proponents to</p>	<p>A risk rating of 1 is appropriate given the rationale provided and mitigation deduction applied.</p>

	<p>resolve this conflict and granting title is the best resolution.</p> <p>The provided documents were translated to the best of the verifier's ability and reviewed. These provided reasonable assurance that Moura and Rosa have full ownership and right of use for the properties at the time of verification. Itatinga - Contrato de Compra e Venda do Seringal.pdf is a purchase and sales document that shows transfer of the Seringal Itantanga property to Moura & ROSA HOLDINGS LTD in 2009. M&R - Certid_o Itatinga - MemorialDescritivo - Manoel urbano - 13.03.12.pdf is a certification of rights to the property. It indicates the property was acquired by the previous landowners in February 2009. The rights were relinquished to Mora & Rosa in December 2009. M&R - Certid_oNegativaAç_es - Matricula-nº 1920 - PortoCentral - 14.03.12.pdf and M&R - Cetid_o Matricúla-nº1920-PortoCentral - 14.03.12.pdf indicate that Normando Sales Rodrigues has full ownership rights to the Seringal Porto Central Property. The certification documents are dated March 2012. = 0. It is understood that no communities live within the project area, rather they live within the boundaries of the land ownership, but they are excluded from project area. Thus, the land is owned by the Project Proponents. The Project Proponents have been adequately conducting activities to resolve the on-going dispute with the Guita family as noted above = -2. There is a legal contractual agreement to maintain the project area as forest for at least a 60 year period (i.e., greater than the length of the crediting period) from the project start date = -2.</p>	
Community Engagement	Given that 100% of the local communities have been consulted and are involved in the project neither A nor B is applicable, and thus the default risk value of zero is applicable.	A risk rating of 0 is appropriate given the rationale provided.
Political Risk	Independent calculation of the governance score for Brazil is .057, which includes 2012 and is eligible for a score of 2. Acre, Brazil is	A risk rating of 0 is appropriate given the rating for

	<p>participating in the Governors' Climate and Forest Taskforce. Further, Brazil has an established Designated National Authority under the CDM and has at least one registered CDM Afforestation/Reforestation project.</p> <p>"The jurisdiction in which the project is located is participating in the Governors' Climate and Forest Taskforce (GCF)."</p> <p>Independent web search reveals that the statement made by the Project Proponent is true = -2</p>	<p>governance and participation in beneficial projects.</p>
Total External Risks		0
Natural Risks		
<p>Fire, pests and disease, extreme weather, geologic risk,</p>	<p>Fire - justification for the 10-25 year return interval is sound. Given that the area of Acre has historically exhibited low fire incidence as described in (Aragao and Shimbukuro, 2010), a low amount of forest edge, and a fire suppression program in the region that inherently would inhibit the positive feedback loop associated with fire incidence, the verifier believes that the associated risk for fire is reasonable = 2. Pest and Disease - The forests of the project area have a high diversity of tree species, with over 150 tree species >10 cm dbh, and like other diverse tropical forests, are not known to be subject to catastrophic disturbance by insect pests or forest diseases.</p> <p>Forest pests and diseases as a source of risk are more relevant in temperate forests or plantations, with low species diversity and consequently susceptible to extensive damage due to pest and disease outbreaks, which tend to be concentrated on single host species.</p> <p>Further, there is no history of catastrophic forest disturbance due to forest pests or diseases in the region.</p>	<p>A risk rating of 2 is appropriate given the rationale provided for the greatest natural risk of fire.</p>

	<p>Verifiers independently searched the internet for any relevant forest pest or disease issues and could not locate any information that would lead verifiers to think that this item was scored incorrectly. Several references indicate that there are numerous endemic diseases and pests in the Amazon Forest, however none appear to be of epidemic proportions, nor is there much history of such occurrences. The diversity of the forested landscape appears to help to mitigate any widespread issues. Observations on the site visit and in flyovers in the region during previous travels have not ever revealed any widespread disease or pest outbreaks. Clearly climate change could play a greater role in this area in the future, however at this time, this element appears to be scored correctly = 0. Extreme Weather - While extreme weather events in the region include drought, flooding, and disturbance by wind, this analysis is limited to disturbance by wind as this is the only disturbance which has a direct effect on carbon stocks. As flooding within the project region is common, high water levels in the forest do not lead to a reduction in the forest carbon stocks. Drought does not have a direct effect on existing forest carbon stocks, but instead can increase the severity of forest fires and hence is covered above in the section on fire risk.</p> <p>In relation to disturbance by wind, the recurrence intervals for large blow down disturbances in the western Amazon have been estimated at 27,000 years.</p> <p>Verifiers independently searched the internet for any relevant weather related issues and could not locate any information that would lead verifiers to think that this item was scored incorrectly. Observations on the site visit and in flyovers in the region during previous travels have not ever revealed any widespread disease or pest outbreaks. Clearly</p>	
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	<p>climate change could play a greater role in this area in the future, however at this time; this element appears to be scored correctly = 0. Geologic Risk - Neither volcanoes nor active tectonic fault lines are present within the project area. Landslides are not likely to occur within the project area because the project area is relatively level (less than 5% slope) terrain.</p> <p>Verifiers agree with this evaluation. This item is scored appropriately = 0</p>	
Total Natural Risks		2
Overall Risk Rating = 11		

5 VERIFICATION CONCLUSION

After review of all project information, procedures, calculations, supporting documentation and site visits, ESI confirms that the monitoring conducted by the Project Proponent, along with the supporting Monitoring Report, are accurate and consistent with all aforementioned VCS criteria, the validated PD, and the selected methodology (VM0007, v1.3). ESI confirms that the *2015 Purus Project Monitoring Report* (v01.0 dated 03 October 2016) has been implemented in accordance with the validated PD.

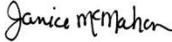
ESI confirms all verification activities, including objectives, scope and criteria, level of assurance, monitoring and project documentation adherence to VCS Version 3 (and all associated updates), as documented in this report are complete. ESI concludes without any qualifications or limiting conditions that *The Purus Project: A Tropical Forest Conservation Project in Acre, Brazil*, meets the requirements of VCS Version 3 and all associated updates for the fourth monitoring period.

The GHG assertion provided by CarbonCo and verified by ESI has resulted in the GHG emissions reduction or removal of 104,086 tCO₂ equivalents by the project during the verification period/reporting period (1 January 2015 to 31 December 2015). This value is gross of the 11% (13,164 tCO₂ equivalents) buffer withholding based on the non-permanence risk assessment tool. This results in 90,922 tCO₂ equivalents of credits eligible for issuance as VCUs.

Verified GHG emission reductions and removals in the above verification period (01 January 2015 – 31 December 2015):

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Deductions for AFOLU pooled buffer account (tCO ₂ e)	GHG credits eligible for issuance as VCUs (tCO ₂ e)
2015	202,300	82,626	15,588	13,164	90,922

Submittal Information

Report Submitted to:	<p>Verified Carbon Standard Association 1730 Rhode Island Ave. NW, Suite 803, Washington, D.C. 20036</p> <p>CarbonCo, LLC 853 Main Street East Aurora, New York 14052 USA 001-240-247-0630</p>
Report Submitted by:	<p>Environmental Services, Inc. - Corporate Office 7220 Financial Way, Suite 100 Jacksonville, Florida 32256</p>
ESI Lead Verifier Name and Signature	 <p>Shawn McMahon Lead Verifier</p>
ESI Division Regional Technical Manager Name and Signature	 <p>Janice McMahon Sr. Vice President/Technical Director Forestry, Carbon and GHG Services Division</p>
Date:	17 October 2016

SPM/JPM/nh/VO13022.03 VCS Verification Report-final.doc
K pf 10/17/2016f

APPENDIX A – DOCUMENTS RECEIVED/REVIEWED

Documents received 14 June 2016

- Purus Project Summary Document (Final Draft, Portuguese) 6-14-16.pdf
- Purus Project 2015 Implementation Report, Final Draft (6-14-16).pdf
- Purus Project 2015 Implementation Report, Portuguese Final Draft (6-14-16).pdf
- Purus Project Summary Document (Final Draft, English) 6-14-16.pdf

Documents received 15 June 2016

- 2015_PurusMonitoring 2016.06.13.xls
- 2015_PurusDegradation 2016.06.13.xlsx
- 2015_PurusMonitoring 2016.06.13.pdf

Documents received 16 June 2016

- Gis
 - Project Boundaries
 - RRL_Boundary.shp
 - RRL_Boundary.shp.xml
 - RRL_Boundary.shx
 - LBStrata3.dbf
 - LBStrata3.prj
 - LBStrata3.sbn
 - LBStrata3.sbx
 - LBStrata3.shp
 - LBStrata3.shp.xml
 - LBStrata3.shx
 - PurusLB2012.09.24.kmz
 - PurusLeakageBelt2012.09.19.dbf
 - PurusLeakageBelt2012.09.19.prj
 - PurusLeakageBelt2012.09.19.sbn
 - PurusLeakageBelt2012.09.19.sbx
 - PurusLeakageBelt2012.09.19.shp
 - PurusLeakageBelt2012.09.19.shp.xml
 - PurusLeakageBelt2012.09.19.shx
 - PurusPA2012.9.24.kmz
 - PurusProjectArea2012.09.19.dbf
 - PurusProjectArea2012.09.19.prj
 - PurusProjectArea2012.09.19.sbn
 - PurusProjectArea2012.09.19.sbx
 - PurusProjectArea2012.09.19.shp
 - PurusProjectArea2012.09.19.shp.xml
 - PurusProjectArea2012.09.19.shx
 - PurusStrata.dbf
 - PurusStrata.prj
 - PurusStrata.sbn
 - PurusStrata.sbx
 - PurusStrata.shp
 - PurusStrata.shp.xml
 - PurusStrata.shx
 - RRL_Boundary.dbf
 - RRL_Boundary.prj
 - RRL_Boundary.sbn
 - RRL_Boundary.sbx

- 2015 monitoring
 - 2015 Deforestation Layer
 - Desmate_TC_1988_2015.shx
 - Desmate_TC_1988_2015.dbf
 - Desmate_TC_1988_2015.prj
 - Desmate_TC_1988_2015.sbn
 - Desmate_TC_1988_2015.sbx
 - Desmate_TC_1988_2015.shp
 - Desmate_TC_1988_2015.shp.xml
 - Deforestation1988_2015_PurusRRL.dbf
 - Deforestation1988_2015_PurusRRL.prj
 - Deforestation1988_2015_PurusRRL.sbn
 - Deforestation1988_2015_PurusRRL.sbx
 - Deforestation1988_2015_PurusRRL.shp
 - Deforestation1988_2015_PurusRRL.shp.xml
 - Deforestation1988_2015_PurusRRL.shx
 - Deforestation2015_PurusLB_strata.dbf
 - Deforestation2015_PurusLB_strata.prj
 - Deforestation2015_PurusLB_strata.sbn
 - Deforestation2015_PurusLB_strata.sbx
 - Deforestation2015_PurusLB_strata.shp
 - Deforestation2015_PurusLB_strata.shp.xml
 - Deforestation2015_PurusLB_strata.shx
 - Deforestation2015_PurusPA_strata.dbf
 - Deforestation2015_PurusPA_strata.prj
 - Deforestation2015_PurusPA_strata.sbn
 - Deforestation2015_PurusPA_strata.sbx
 - Deforestation2015_PurusPA_strata.shp
 - Deforestation2015_PurusPA_strata.shp.xml
 - Deforestation2015_PurusPA_strata.shx
 - Deforestation2015_PurusRRL.dbf
 - Deforestation2015_PurusRRL.prj
 - Deforestation2015_PurusRRL.sbn
 - Deforestation2015_PurusRRL.sbx
 - Deforestation2015_PurusRRL.shp
 - Deforestation2015_PurusRRL.shp.xml
 - Deforestation2015_PurusRRL.shx
- Submission 2016.06.15
 - 2015_PurusMonitoring 2016.06.13.xls
 - 2015_PurusDegradation 2016.06.13.xlsx
 - 2015_PurusMonitoring 2016.06.13.docx
 - 2015_PurusMonitoring 2016.06.13.pdf
- supporting material
 - AccuracyAssessment2015
 - AApoints2015
 - AA_2015_points.xlsx
 - 2015_acre_all.kml
 - AA_2015_points.dbf
 - AA_2015_points.prj
 - AA_2015_points.sbn
 - AA_2015_points.sbx
 - AA_2015_points.shp
 - AA_2015_points.shx

Documents received 22 June 2016

- CarbonCo Exemption Request.pdf
- Purus Project 2015 Implementation Report, Final Draft (6-22-16).pdf
- Purus Project 2015 Implementation Report, Portuguese Final Draft (6-22-16).pdf
- Purus Project Summary Document (Final Draft, Portuguese) 6-22-16.pdf
- Purus Project Summary Document (Final Draft, English) 6-22-16.pdf

Documents received 13 July 2016

- Draft Copy of July 2016 Brazil Trip (7-12-16).doc

Documents received 11 August 2016

- Photos and movies from the site visit
- Updated Pro Forma for Purus Project Verification (7-11-16).xls

Documents received 22 September 2016

- 2015_PurusMonitoring 2016.09.22 (Tracked Changes).docx
- Carbonfund.org's Form 8868 IRS Extension Request until 11-15-16.pdf
- FAO Global Forest Resource Assessment 2015.pdf
- Purus Project 2015 Implementation Report, English Tracked Changes (9-22-16).pdf
- Updated Pro Forma for Purus Project Verification (8-30-16).xls
- 022_03 - VCS NCR Round1_Purus_FINAL_09-22-16.xlsx
- World Bank Indicators 2011-2014.xlsx
- 022_03_CCBchecklist_final, Brian's Responses.docx
- Accuracy Assessment
 - Accuracy Assessment\Acre2015AA_responsetoFinding8.docx
 - Accuracy Assessment\2015_acre_aa_updated0916.kml
 - Accuracy Assessment\AA_2015_points_updated.xlsx
- Monitoring Reports – For CCB
 - Monitoring Report Template for Purus Project (Translated for 11-30-2015).pdf
 - Monitoramento 03-09-2015 .pdf
 - Monitoramento 20-10-2015 .pdf
 - Monitoramento 28-04-2015 .pdf
 - Monitoramento 28-12-2015 .pdf
 - Monitoramento 30-11-2015 .pdf

Documents received 03 October 2016

- Purus Project Summary Document Final, (English, 10-03-16).pdf
- 2015_PurusMonitoring 2016.10.03.pdf
- 2015_PurusNonPermanenceRiskReport 2016.10.03.pdf
- Purus Project 2015 Implementation Report, Final (English, 10-03-16).pdf
 - Reports in Portuguese
 - Purus Project Summary Document, Final (Portuguese, 10-03-16).pdf
 - Purus Project 2015 Implementation Report, Final (Portuguese, 10-03-16).pdf

APPENDIX B – NCRS/CL/OFIS

Item Number	1
Approved VCS Methodology VM0007 Version 1.3, 20 November 2012 REDD Methodology Module REDD Methodology Framework (REDD-MF) Sectoral Scope 14	a. Technical description of the monitoring task.
Evidence Used to Assess (Location in PD, MR or Supporting Documents)	MR Section 3.3
Validation or Verification or Both	Verification
ESI Findings Round 1 (26 August 2016)	The VVB noted the following quoted statement in MR Section 3.3 would be more appropriately placed in another section as the monitoring plan is generally set at validation, "For this monitoring period no ancillary data was required and all information on deforestation was acquired from the UCGeo classification."
Round 1 NCR/CL/OFI	CL: Please address the findings and move the quoted sentence to the appropriate section of the MR. Please identify the location of revisions in the MR in response to this finding.
Round 1 Response from Project Proponent (22 September 2016)	The following sentence was move to section 5.0 of the monitoring report. "For this monitoring period no ancillary data was required and all information on deforestation was acquired from the UCGeo classification."
ESI Final Findings (27 September 2016)	The VVB confirmed that the sentence from the finding was moved to the correct location. The item is addressed.

Item Number	2
Approved VCS Module VMD0010 Version 1.0 REDD Methodological Module: Estimation of emissions from activity shifting for avoided unplanned deforestation (LK-	(2) Implementation of leakage prevention measures to maintain or increase the agents' livelihoods, such as, but not limited to, the creation of alternative sources of fuelwood, improved crop or animal production systems, and employment ¹ .

ASU) Sectoral Scope 14	
Evidence Used to Assess (Location in PD, MR or Supporting Documents	PD Sections 1.8 and 1.13; MR Sections 1.1 and 2.1
Validation or Verification or Both	Verification
ESI Findings - Round 1 (26 August 2016)	<p>Per the PD, the leakage prevention activities include:</p> <ul style="list-style-type: none"> •Community outreach and education; • Potential employment as project forest guard or other project staff (replacing other sources of income associated with deforestation and land use); • Agricultural extension training will help baseline agents to increase productivity on current lands, (thus reducing the pressure to expand their farms in the adjacent forest); and • Reforestation of select non-forest areas. <p>These activities are also reported in the MR Section 1.1 - Implementation Status, but referring to the region in general and not specifically leakage prevention measures. Section 2.1 of the MR mentions leakage mitigation activities for the current project period (may 2011 - December 2015) as being leakage belt monitoring and extension of project activities to the leakage belt.</p> <p>Additional detail of the project's leakage prevention activities is needed in the MR. LK-ASU states, "The risk of displacing activities of local agent groups must be addressed in the design of the REDD project activity..." The VVB notes that the effectiveness of leakage prevention measures may be constrained by the existence of an INCRA settlement within the leakage belt and abutting the project area northeast boundary.</p>
Round 1 NCR/CL/OFI	CL: Please address the findings and include additional detail in the MR of the project's leakage prevention/management measures as described in the PD.
Round 1 Response from Project Proponent (22 September 2016)	The section, "How Leakage and Non-Permanence Risk Factors are Being Monitored and Managed," was revised to include previous language from original Project Description.
ESI Final Findings (27 September 2016)	The VVB reviewed the revisions to the MR for leakage mitigation measures. Leakage management activities as reported in the validated PD are now mentioned in the MR where they were implemented as part of project activities. Leakage monitoring activities outside of the reporting period but performed prior to start of verification were also appropriately reported. Though not mentioned in the Round 1 finding, the VVB confirmed implementation of leakage mitigation activities through the site visit and associated interviews with project proponents and project participants. The item is addressed.

Item Number	3
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<p>Approved VCS Module VMD0010 Version 1.0 REDD Methodological Module: Estimation of emissions from activity shifting for avoided unplanned deforestation (LK-ASU) Sectoral Scope 14</p>	<p>b. Immigrant deforestation agents expected to encroach into the project area in future periods. This will be the main agent group in most cases of frontier deforestation. This group will also be present in some cases of mosaic deforestation. Influencing the land-use decisions of this deforestation agent groups will not be possible in most cases, particularly if the agents are coming from distant locations and are driven by economic reasons. Leakage prevention measures may not be sufficient to avoid some level of activity displacement from happening.</p>
<p>Evidence Used to Assess (Location in PD, MR or Supporting Documents</p>	<p>Site Visit, PD, 3rd reporting period MR, 4th reporting period MR</p>
<p>Validation or Verification or Both</p>	<p>Verification</p>
<p>ESI Findings Round 1 (26 August 2016)</p>	<p>During the 3rd verification, the project proponents confirmed that INCRA settlements adjacent to the eastern portion of the leakage belt are outside the project area. As stated in the MR Section 4.3, and discussed in person between the VVB and project proponents, the INCRA settlement will likely account for a large portion of the project's future estimated leakage emissions. The VVB notes that the increased amounts of deforestation in the leakage belt adjacent to ramals were appropriately monitored to the reporting period following VM0007 monitoring methods and stock losses due to leakage are not applied to project accounting until it exceeds the baseline amount. Also at the 3rd verification the project proponents included language in the MR which described monitoring efforts for INCRA settlement encroachment on the project area. This language is no longer included in the MR and was appropriate to include for project area deforestation mitigation.</p> <p>During the 4th verification site visit, the VVB did not travel down any ramals from BR-364 to assess deforestation and interview individuals. Instead the VVB opted to remotely view current deforestation in the project area using a drone supplied by the project proponents.</p>
<p>Round 1 NCR/CL/OFI</p>	<p>CL: Please address the findings and include language from the 3rd reporting period Monitoring Report regarding monitoring efforts at the project boundary to mitigate INCRA settlement encroachment, else justify excluding.</p>
<p>Round 1 Response from Project Proponent (22 September 2016)</p>	<p>The section, "How Leakage and Non-Permanence Risk Factors are Being Monitored and Managed," was revised to include previous language from the 3rd Monitoring Report.</p>
<p>ESI Final Findings (27 September 2016)</p>	<p>This section was appropriately updated to include previous MR language as requested in the finding. Further, the project has proposed measures (motorcycle travel to end of ramals) to monitor deforestation from the INCRA settlement encroaching on the project area boundary. The item is addressed.</p>

Item Number	4
Approved VCS Module VMD0010 Version 1.0 REDD Methodological Module: Estimation of emissions from activity shifting for avoided unplanned deforestation (LK-ASU) Sectoral Scope 14	a. Define the total available national forest area (TOTFOR). This can be assessed with a coarse-scale imagery (e.g. using MODIS imagery or similar), or with official government statistics on forest area. The total national forest area should be reduced to just the area of forest within 5km of a road or river that is suitable for conversion to agriculture or raising livestock. If boundaries are available then area of protected forests (PROTFOR) and the area of managed forests (MANFOR) may be excluded from the total forest area calculated in this step. Refer to page 5 for the equation for total forest for unplanned deforestation
Evidence Used to Assess (Location in PD, MR or Supporting Documents)	MR: Section 3.3
Validation or Verification or Both	Verification
ESI Findings - Round 1 (26 August 2016)	<p>The TOTFOR parameter value applied for Equation 2 was 519,522,377 ha - which is reflective of "FAO Global Forest Resources Assessment 2010". However, in 2015 a new FAO Report was published which contains a new Brazil value for TOTFOR (AVFOR). Although the national forest change was small, this change affects quantification of leakage emissions. The monitoring frequency for parameter TOTFOR specifies monitoring at every verification event.</p> <p>VVB noted this is the most recent Assessment report - "http://www.fao.org/3/a-i4808e.pdf," source and methods were approved during validation.</p> <p>PROTFOR and MANFOR approved during validation to be conservatively set to zero.</p>
Round 1 NCR/CL/OFI	CL: Please address the findings and update the TOTFOR value to be reflective of the new FAO report. Please ensure derivative quantification for leakage emissions estimates are also reflective and update reporting documentation as needed.
Round 1 Response from Project Proponent (22 September 2016)	The value for TOTFOR has been updated to 533,073,000 ha in Section 3.3 of the monitoring report. This value was derived from the sum of Brazil "Forest" and "Other Wooded Land" classes as found on page 3, Table 1 of the FAO published Global Forest Resources Assessment 2015. This updated values does not affect any derivative quantification as it is only used in ex-ante calculations.
ESI Final Findings (27 September 2016)	The VVB confirmed that the TOTFOR value has been appropriately updated to reflect the 2015 FAO Global Forest Resources Assessment. The proponent is correct in stating this value only applies to ex-ante case. The item is addressed.
Item Number	5

<p>Approved VCS Module VMD0015, Version 2.1 (20 November 2012), REDD Methodological Module: Methods for monitoring of greenhouse gas emissions and removals (M-MON), Sectoral Scope 14</p>	<p>This module provides methods for monitoring ex post emissions and removals of GHGs due to deforestation, forest degradation, and carbon stock enhancement that has been induced as a result of project implementation within the project area and leakage belt and as a result of natural disturbances. Hereafter in this module, “planned deforestation” refers to both planned deforestation and planned degradation.</p>
<p>Evidence Used to Assess (Location in PD, MR or Supporting Documents</p>	<p>MR Section 2.1</p>
<p>Validation or Verification or Both</p>	<p>Verification</p>
<p>ESI Findings - Round 1 (26 August 2016)</p>	<p>Section 2.1 "Initiate Patrols/Monitors of Deforestation" of the MR describes deforestation monitoring efforts by the project to supplement remote sensing methods prescribed by M-MON. To further provide reasonable assurance that monitoring efforts were carried out as reported the following clarifications are requested:</p> <p>-On page 24, it was stated "A total of six official monitoring templates were completed between January 1, 2015 and December 31, 2015." -This statement, based on the 4th verification site visit may not be accurate, "Moura & Rosa also purchased a fast boat in June 2012 which provides transportation for the Project Proponents and allows for deforestation monitoring by the Purus River."</p> <p>Please also ensure any revisions to the MR which correspond to the PIR are reflected there.</p>
<p>Round 1 NCR/CL/OFI</p>	<p>CL: Please provide the monitoring templates from the 4th monitoring period, a single document translation from Portuguese to English is sufficient. Please also remove the quoted statement about the fast boat, if appropriate.</p>
<p>Round 1 Response from Project Proponent (22 September 2016)</p>	<p>The fast boat was purchased in June 2012 and is used by the local project manager Kidney da Cunha Aires, in part, for monitoring deforestation. This said, the statement was left in the Monitoring Report. In addition, the monitoring templates, along with one translated template, were provided to ESI.</p>
<p>ESI Final Findings (27 September 2016)</p>	<p>Monitoring templates were provided in response to this finding and reviewed by the VVB. They are sufficient to confirm the statement quoted from Section 2.1 and that deforestation monitoring efforts are performed during the monitoring period. The item is addressed.</p>

<p>Item Number</p>	<p>6</p>
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<p>Approved VCS Module VMD0015, Version 2.1 (20 November 2012), REDD Methodological Module: Methods for monitoring of greenhouse gas emissions and removals (M-MON), Sectoral Scope 14</p>	<p>If remotely sensed data have become available from new and higher resolution sources (e.g. from a different sensor system) during this period then it is possible to change the source of the remotely sensed data.</p>
<p>Evidence Used to Assess (Location in PD, MR or Supporting Documents</p>	<p>MR, Section 3.3</p>
<p>Validation or Verification or Both</p>	<p>Verification</p>
<p>ESI Findings - Round 1 (26 August 2016)</p>	<p>The MR states "In the case where this dataset ceases to be available, or if newer and/or higher quality data becomes available, ex-post deforestation will be determined by classification of remotely sensed imagery and land use change detection procedures."</p> <p>The VVB was given the novel opportunity to pilot a drone during the 4th verification site visit to view recent deforestation and visually review inaccessible areas. However, no mention could be found in project documentation (MR or PIR) of the Project's present drone use for monitoring deforestation and disturbance. It was not clear from project documentation whether the drone was acquired prior to the end of the 4th monitoring period or whether it will be used moving forward as a tool for Project monitoring.</p>
<p>Round 1 NCR/CL/OFI</p>	<p>CL: Please clarify whether the drone was acquired prior to the end of the 4th monitoring period and whether/how it will be a component of Project monitoring efforts. If warranted please update project documentation to report the Project's intended uses of the drone as a monitoring tool.</p>
<p>Round 1 Response from Project Proponent (22 September 2016)</p>	<p>The drone was acquired in 2016 and is now permanently incorporated into the monitoring of the Purus Project. The drone is safer, less expensive to operate, and more versatile since the drone can take off from areas with only 15 meters in diameter and automatically return to the starting point with precision of only two or three meters apart. In addition, the drone can fly up to 500 meters in altitude, can fly approximately 4,000 meters away, and takes both high-resolution pictures and video. This information will be added to the next monitoring report.</p>
<p>ESI Final Findings (27 September 2016)</p>	<p>No action is needed by the project proponent on this finding. The drone will be an important monitoring tool for the project and reporting in the next monitoring period. The item is addressed.</p>

Item Number	7
Approved VCS Module VMD0015, Version 2.1 (20 November 2012), REDD Methodological Module: Methods for monitoring of greenhouse gas emissions and removals (M-MON), Sectoral Scope 14	The first step in addressing forest degradation is to complete a participatory rural appraisal (PRA) of the communities inside and surrounding the project area to determine if there is the potential for illegal extraction of trees to occur.
Evidence Used to Assess (Location in PD, MR or Supporting Documents	MR Section 4.2
Validation or Verification or Both	Verification
ESI Findings - Round 1 (26 August 2016)	<p>A PRA to evaluate degradation was performed in 2015 for this verification since monitoring requires a degradation PRA every <= two years. Degradation was found de minimis through use of T-SIG, the illegal wood extraction component was also allowably set to 0. A sufficient discussion was included in the MR and the de minimis analysis provided. The degradation PRA survey contained a sample size 4, which is small but allowable per the methodology. 1 or 2 of the community members interviewed by Project Proponents were also interviewed by the VVB during the verification site visit in July 2016 and the validity of those responses confirmed. The responses reflect a low impact of degradation through fuelwood, charcoal and timber, which was reflected in surveys performed by the VVB.</p> <p>The degradation PRA performed as part of implementation of the project however was not reported in the MR Section 2.1.</p>
Round 1 NCR/CL/OFI	CL: Please address the findings and include mention of the degradation PRA In Section 2.1 of the MR "Implementation Status" timeline.
Round 1 Response from Project Proponent (22 September 2016)	The following text was added to Section 2.1 of the monitoring report: "June and August, 2015 - Degradation surveys were conducted by CarbonCo and Carbon Securities, with assistance from Moura & Rosa."
ESI Final Findings (27 September 2016)	Appropriate text was confirmed to have been added to the MR per this request. The item is addressed.

Item Number	8
Approved VCS Module VMD0015, Version 2.1 (20 November 2012), REDD Methodological Module: Methods for monitoring of greenhouse gas emissions and removals (M-MON), Sectoral Scope 14	c. Classification accuracy assessment: Accuracy assessment technique used; coordinates and description of the ground-truth data collected for classification accuracy assessment; and final classification accuracy assessment.
Evidence Used to Assess (Location in PD, MR or Supporting Documents	MR, Section 3.3 and 5, AA_2015_points.xlsx, 2015_acre_all.kml, AA_2015_points.shp, UCEGEO deforestation dataset
Validation or Verification or Both	Verification
ESI Findings Round 1 (26 August 2016)	<p>An accuracy assessment was included in section 5 of the MR which adequately describes the comparison between the landcover classification and ground reference points. Spatial dispersion of reference points is reasonable and a sample of points were confirmed to be dated with imagery inside of the monitoring period.</p> <p>In review of reference points in Google Earth and the UCEGEO deforestation dataset, the VVB noted that 6 points are listed more than once (for instance NF14 has 4 separate points) and all are included in the error matrix. The VVB also noted that a total of 13 reference points were omitted (for instance F: 143-145 and NF: 140-145) from the error matrix. Also noted that point NF47 is missing. Finally, the VVB disagrees with the proponent's calls for points F13 and F77.</p> <p>Overall accuracy was computed correctly but is subject to change slightly.</p>
Round 1 NCR/CL/OFI	CL: Please address the findings and fix the minor discrepancies in the accuracy assessment. Please justify assumptions as needed and update project reporting.
Round 1 Response from Project Proponent (22 September 2016)	<p>All duplicate points were removed from the datasets and error matrix. The points that were omitted were outside of the classification area. The Google Earth Acre boundary is not the same as the UCGEO boundary data. The UCGEO data follows the current Acre boundary, which is slightly south of the GE boundary. These points were indicated by an asterisk in the columns H/P before, but the spreadsheet has been updated to more clearly indicate that these points were omitted due to this error. Point NF47 is now correctly recorded in the Google Earth layer, the shapefile and the excel spreadsheet.</p> <p>Points F13 and F77 were inspected. F13 was changed from correct to incorrect. Point 77 was left in its current class, and screen shots were included, in response to this finding, showing that it does align with the correct class in the UCGEO dataset. The error matrix was updated to reflect these changes.</p>

ESI Final Findings (27 September 2016)	The VVB reviewed the revised accuracy assessment materials submitted in response to this finding. Duplicate points were confirmed to have been removed. VVB agrees that Point F77 remains as forest upon a closer inspection in Google Earth. The error matrix table in the MR was appropriately updated to reflect the revisions. The item is addressed.
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Item Number	9
Approved VCS Module VMD0015, Version 2.1 (20 November 2012), REDD Methodological Module: Methods for monitoring of greenhouse gas emissions and removals (M-MON), Sectoral Scope 14	If $\geq 10\%$ of those interviewed/surveyed believe that degradation may be occurring within the project boundary then the limited on-the-ground degradation survey shall be triggered
Evidence Used to Assess (Location in PD, MR or Supporting Documents)	2015_PurusDegradation 2016.06.13.xlsx; MR Section 4.2
Validation or Verification or Both	Verification
ESI Findings - Round 1 (26 August 2016)	The VVB reviewed MR Section 4.2 - Degradation as well as the degradation PRA survey results and was unable to find mention specifically whether $\geq 10\%$ of survey respondents believe degradation is occurring within the project boundary. A previously validated PD deviation allows project developers to assess degradation significance (T-SIG) using the computations based upon the degradation surveys. However, clarification is requested for details on how the project was able to assess this PRA survey result.
Round 1 NCR/CL/OFI	CL: Please address the findings and clarify how the project was able to determine $\geq 10\%$ of those interviewed/surveyed believe that degradation may be occurring within the project boundary. Please report additional details as needed in the MR.
Round 1 Response from Project Proponent (22 September 2016)	Two of the four survey respondents collect wood, for charcoal production, within the project boundary. Hence the actions of the survey respondents were used to determine that degradation may be occurring. As such, the T-SIG tool was implemented. The following text was added to the monitoring report in Section 4.2. "As greater than 10% of these survey respondents collect wood for charcoal within the project boundary, degradation was assessed using the T-SIG tool. "
ESI Final Findings (27 September 2016)	The response to this finding and additional language inserted in Section 4.2 of the MR is sufficient to close this finding. The item is addressed.

Item Number	10
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	Project cash flow breakeven point between 4 and up to 7 years from the current risk assessment
Evidence Used to Assess (Location in PD, MR or Supporting Documents)	MR, Appendix A. VCS NON-PERMANENCE RISK REPORT
Validation or Verification or Both	Verification
ESI Findings - Round 1 (26 August 2016)	The OPO has selected this risk score, however the pro forma provided indicates that project has already achieved breakeven.
Round 1 NCR/CL/OFI	CL: Please clarify if this score was intentionally selected as it does not appear consistent with the pro forma.
Round 1 Response from Project Proponent (22 September 2016)	The Purus Project has now surpassed the Project's cash flow breakeven point. The risk score has now been adjusted to 0.
ESI Final Findings (27 September 2016)	The risk score has been confirmed to be appropriately adjusted. Issue addressed.

Item Number	11
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated
Evidence Used to Assess (Location in PD, MR or Supporting Documents)	MR, Appendix A. VCS NON-PERMANENCE RISK REPORT and site visit observations and interviews
Validation or Verification or Both	Verification

<p>ESI Findings Round (26 August 2016) - 1</p>	<p>The Purus Project has a net positive impact on the social and economic well-being of the local communities. One family being granted official land title, and the health clinic has been built and though it is not staffed or supplied at this point, dental services were confirmed to be provided to the community at the clinic building. . A few local employment opportunities have been generated (e.g., local project manager, staff to build the clinic, etc.). These net positive impacts on social and economic well-being of the local communities were also assessed via the Project's verification to the Climate, Community and Biodiversity Standard.</p> <p>While the NPV analysis is not required based on the score selected, it was provided by the client and appears to have a substantial error in the calculations. The formula for NPV in the pro forma is:</p> $=NPV(5,+D\$47+E\$47+F\$47+G\$47+H\$47+I\$47+J\$47+K\$47+L\$47+M\$47)$ <p>The value used for the rate (5) should instead be 0.05 to represent 5%.</p> <p>Additionally the use of + in the formula appears to have an additive effect. To our understanding commas should be used instead to separate the values.</p>
<p>Round 1 NCR/CL/OFI 1</p>	<p>NCR: Please address the issues in the pro forma with the NPV formula as identified in the finding.</p>
<p>Round 1 Response from Project Proponent (22 September 2016)</p>	<p>The NPV calculations were updated on August 30, 2016 and the revised pro forma was provided to ESI.</p>
<p>ESI Final Findings (27 September 2016)</p>	<p>The risk score has been confirmed to be appropriately adjusted. Issue addressed.</p>

<p>Item Number</p>	<p>12</p>
<p>VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012</p>	<p>There exist disputes over access/use rights (or overlapping rights)</p>
<p>Evidence Used to Assess (Location in PD, MR or Supporting Documents)</p>	<p>MR, Appendix A. VCS NON-PERMANENCE RISK REPORT</p>
<p>Validation or Verification or Both</p>	<p>Verification</p>

<p>ESI Findings Round (26 August 2016) - 1</p>	<p>The risk report states "The landowners, whom are also project proponents (Moura & Rosa), own the project area outright (see PD Section 1.12) and have full resource access/use rights, who are not shared with anyone. The property was geo-referenced and officially registered in the cadaster (Cadastro Ambiental Rural), a process which involved on the ground assessment of all property boundaries and consultations with neighboring landowners and resolution of any existing boundary disputes.</p> <p>Community members that have been living on land adjacent to the project area and who made the land productive (e.g., by growing crops or raising animals) for ten years, have the right to be titled. To resolve ongoing disputes over land, Moura & Rosa will voluntarily recognize whatever area is currently deforested and under productive use by each family living on the Seringal Porto Central and Seringal Itatinga parcels.</p> <p>One family continues to disregard Moura & Rosa's engagement and clear ownership and insists on taking liberties in their access/use of the project property and its resources. As such, this infringement on the Moura & Rosa property has resulted in a dispute over access/use rights on a small part of the project property."</p> <p>Site visit observations and discussions with community members were again similar to the last verification for this criteria. The communities who live within the project area (in some cases clearing project forested hectares) do not own the land they are living on. The individuals living on the property (interviewed during the site visit) all knew they were not the owners and that their deforestation activities were not necessarily welcome.</p> <p>Some community members within the project boundary have a strong desire to secure rightful ownership. However, during the site visit, it was revealed that other community members (e.g. Guita family) do not currently wish to pursue obtaining title and are in the process of negotiating more favorable terms (e.g. claiming additional land). The majority of monitoring period deforestation occurred in the south of Purus river parcel of the PA and the project proponents have retained an environmental lawyer to stop the on-going illegal deforestation. The VVB interviewed this lawyer who explained the legal process for stopping illegal deforestation. The lawyer was retained because deforestation continues unabated and previous attempts at establishing title for the Guita lands did not work out. Project documentation is currently lacking details on legal actions taken for deforestation and also potential negative community implications during the 4th monitoring period.</p> <p>It is the VVBs understanding that this legal process was started in summer 2015, during the monitoring period.</p>
<p>Round 1 NCR/CL/OFI 1</p>	<p>CL: Please address the findings and briefly describe the proposed legal process for stopping deforestation where title negotiations haven't been successful. As needed, please update project documentation with relevant details of legal steps taken by project proponents during the 4th monitoring period. Please further discuss any negative impacts that these actions could have on the community in project documentation.</p>
<p>Round 1 Response from Project Proponent (22 September 2016)</p>	<p>The Monitoring Report was updated with details of legal steps taken in 2015 by the Project Proponents, as well as a short discussion with the potential negative impacts of these actions.</p>

ESI Final Findings (27 September 2016)	<p>The VVB noted that a synopsis of the current legal situation for halting the continued illegal deforestation by members of one family has been included in the Risk Report section of the MR. This represents a snapshot of legal steps taken in 2016 (outside of the reporting period). The legal steps taken in 2016 as described in the MR corroborate with interviews by the VVB on-site with the environmental lawyer Ayres Naylor. Issue addressed.</p> <p>A brief narrative was added to the monitoring report. The potential for negative impacts on communities was further highlighted in the CCB review and PIR. Issue addressed.</p>
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Item Number	13
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	Fire
Evidence Used to Assess (Location in PD, MR or Supporting Documents)	MR, Appendix A. VCS NON-PERMANENCE RISK REPORT
Validation or Verification or Both	Verification

<p>ESI Findings Round 1 (26 August 2016)</p>	<p>The project proponent stated that frequency is tied to anthropogenic sources and forest edge, that severity is likely to be limited due to incomplete combustion of live aboveground biomass and that drought is key to both frequency and intensity. The justification for the 10-25 year return interval seems reasonable given that the area of Acre has historically exhibited low fire incidence as described in (Aragao and Shimbukuro, 2010), a low amount of forest edge, and a fire suppression program in the region that inherently would inhibit the positive feedback loop associated with fire incidence.</p> <p>While it is agreed that proportionally there is limited forest edge, the droughts of 2005 and 2010 were some of the worst on record for the region and literature (e.g.. "The Incidence of Fire in Amazonian Forests with Implications for REDD", Luiz E. O. C. Aragão, Yosio E. Shimabukuro) appears to support an increased frequency of fires and drought. Further, the project proponent states that "Despite fire induced tree mortality, tree mortality itself is unlikely to result in the loss of substantial biomass due to incomplete combustion of live aboveground biomass. Biomass is merely transferred from the live biomass to dead biomass pool, which is also accounted for in this project." however if drought conditions occur in subsequent years, subsequent fires will likely occur which would result in reductions.</p> <p>Given this context, several news reports report a substantial drought in Acre in 2015 and 2016, Accordingly further discussion on the impacts of drought on fire may be needed.</p>
<p>Round 1 NCR/CL/OFI</p>	<p>CL: Please discuss if and how the recent droughts in Acre state and nearby portions of Amazonas state were considered in the risk rating for fire.</p>
<p>Round 1 Response from Project Proponent (22 September 2016)</p>	<p>As noted in the discussion of fire risk, the fire return interval is conservatively set to 10 to 15 years. While there are forest fires in Acre state every year, most of these fires are intentionally started to clear vegetation are quick burning and lead to little biomass loss, other than dead biomass lost on the land being cleared. While fires in the state have been noted in recent years, the fire return interval can only really be calculated by looking look at the occurrence of fire in a specified area over a set time frame. The current fire risk rating of 2 takes into account the historic trends, which presumable include drought encouraged fires. While the recent drought may lead to increased occurrences of fire, only a continued drought is likely to lead to a decrease in the fire return interval. Further, fires and drought in 2016 are outside the time frame of this monitoring period.</p>
<p>ESI Final Findings (27 September 2016)</p>	<p>The narrative provided sufficiently discusses the potential for impact by the droughts in the region. Further the proponent is correct that the fire return interval is based on occurrence of fires in the region which would take into account fired by drought. Issue addressed.</p>