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Verified Carbon Standard Methodology Assessment Report for:

The Field Museum's Revision of the Approved VCS Methodology Framework VM0007 (REDD-MF) and VMD0007 (BL-UP).

Revision after VCS review:	27 July 2011
Date 2nd Final Report (3rd Assessment) Issued:	27 June 2011
Date 2nd Draft Final Report (3rd Assessment) Issued:	22 June 2011
Date Second Report Issued:	06 June 2011
Date Draft Final Report Issued:	25 May 2011
Date Draft Report Issued:	05 March 2011
Audit dates:	15 February – 22 June 2011
Assessment team:	Adam Gibbon and Manuel Estrada
Approved by:	Jared Nunery
Assessment standard:	*Verified Carbon Standard Version 3 (March 2011)* *Verified Carbon Standard AFOLU Requirements Version 3 (March 2011)* *Verified Carbon Standard Methodology Approval Process Version 3 (March 2011)* *Verified Carbon Standard AFOLU Non-Permanence Tool Version 3 (March 2011)Relevant VCS Program Updates*

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1 INTRODUCTION

1.1 Objective

The purpose of this report is to document conformance of the Field Museum's revisions to REDD Module methodology framework VM0007 and module VMD0007 with the requirements of the Verified Carbon Standard (VCS). This assessment was requested by The Field Museum, hereafter referred to as the "Methodology Developer". The VCS required Rainforest Alliance to only assess the change made to the modules to Version 3 of the VCS standard (whereas all other modules originally approved against VCS 2007.1 will remain unaltered). Therefore this assessment does not represent an assessment of the entire modules, or the suite of modules to Version 3.

At the time of the first assessment (report dated 05 March 2011) began in February 2011, version 3 of the VCS standard had not been issued. As such an assessment was conducted against version 2007.1 of the standard. All negative findings that were found to be still relevant to version 3 of the standard. Therefore they are reported in this template below. New criteria specific to version 3 of the standard were only assessed from the second assessment (25 May 2011) onwards. As such, some criteria in this report only have findings from 25 May 2011, and some also have findings from 05 March 2011.

The report represents the third assessment of the VCS double approval process. The report presents the findings of qualified Rainforest Alliance program auditors and technical experts in methodologies for greenhouse gas emissions and removals, who have assessed the methodology under review according to the applicable standard(s) and protocols of the Verified Carbon Standard. Section 2 below provides the assessment conclusions. Rainforest Alliance carbon evaluation reports will be available to the public only upon finalization and after agreement of both the proponents and the Rainforest Alliance. Particular material in the report identified as confidential by the proponent will be excluded from any publicly available reports.

The Rainforest Alliance's SmartWood program was founded in 1989 to certify forestry practices conforming to Forest Stewardship Council (FSC) standards and now focuses on providing a variety of forest auditing services. The Rainforest Alliance SmartWood program is a member of the Climate, Community, and Biodiversity Alliance (CCBA) and approved verifier to CCB standards, an accredited verifier with the Climate Action Reserve (CAR), a verifier with the Plan Vivo (PV) standards, and an accredited verifier with the Verified Carbon Standard (VCS).

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1.2 Scope and Criteria

Scope:

The assessment of the revisions to the two modules will evaluate whether or not the revisions are consistent with the guidance provided by the VCS Program, including Section 3 (project level requirements) and Section 4 (methodologies) of the VCS Standard Version 3. Please note that the

VCS specifically requested that only the changes made were to be assessed to Version 3, unchanged elements of the modules or related modules were not assessed to Version 3.

The scope of this assessment includes, as a minimum:

1. Applicability conditions: Assessment of whether the proposed methodology's applicability conditions are appropriate, adequate and in compliance with the VCS rules.

2. Project boundary: Assessment of whether an appropriate and adequate approach is provided for the definition of the project's physical boundary and sources and types of GHGs included.

3. Procedure for determining the baseline scenario: Assessment of whether the approach for determining the baseline scenario is appropriate, adequate and in compliance with the VCS rules.

4. Procedure for demonstrating additionality: Assessment of whether the approach/tools for determining whether the project is additional are appropriate, adequate and in compliance with the VCS rules.

5. Baseline emissions: Assessment of whether the approach for calculating baseline emissions is appropriate, adequate and in compliance with the VCS rules.

6. Project emissions: Assessment of whether the approach for calculating project emissions is appropriate, adequate and in compliance with the VCS rules.

7. Leakage: Assessment of whether the approach for calculating leakage is appropriate, adequate and in compliance with the VCS rules.

8. Quantification of net GHG emission reductions and/or removals: Assessment of whether the approach for calculating the net GHG benefit of the project is appropriate, adequate and in compliance with the VCS rules.

9. Monitoring: Assessment of whether the monitoring approach is appropriate, adequate and in compliance with the VCS rules.

10. Data and parameters: Assessment of whether the specification for monitored and not monitored data and parameters is appropriate, adequate and in compliance with the VCS rules.

11. Adherence to the project principles of the VCS Program: Assessment of whether the methodology adheres to the VCS Program principles set out in the *VCS Standard*.

12. Relationship to approved or pending methodologies: Assessment of whether any existing methodology could reasonably be revised to serve the same purpose as the proposed methodology, determined in accordance with Section 5.2 of the VCS Methodology Approval process Version 3.

13. Public Review: Under the double approval process, new methodologies must be posted for public comment prior to the first assessment. Any comments made during this process will be reported here and addressed.

The methodology will be assessed against these thirteen criteria, in addition to those criteria required by the VCS Standard v3. Criteria one through twelve are outlined in the VCS Methodology Approval Process Version 3, and criterion 13 is an additional criteria required by the VCS Standard as part of the Double Approval Process. The following project level principles, based upon ISO 14064-2:2006,

from Section 2.4 of the VCS Standard Version 3, were the principles considered in evaluating the methodology against the checklist criteria:

    i.   <u>Relevance</u>: Select the GHG sources, GHG sinks, GHG reservoirs, data and methodologies appropriate to the needs of the intended user.

    ii.   <u>Completeness</u>: Include all relevant GHG emissions and removals. Include all relevant information to support criteria and procedures.

    iii.   <u>Consistency</u>: Enable meaningful comparisons in GHG-related information.

    iv.   <u>Accuracy</u>: Reduce bias and uncertainties as far as is practical.

    v.   <u>Transparency</u>: Disclose sufficient and appropriate GHG-related information to allow intended users to make decisions with reasonable confidence; and

    vi.   <u>Conservativeness</u>: Use conservative assumptions, values and procedures to ensure that GHG emission reductions or removal enhancements are not overestimated

Standard criteria:

This assessment follows in line with the guidance provided within the following standards:

- Verified Carbon Standard 2011 v3.0;
- Verified Carbon Standard Agriculture, Forestry and Other Land Use (AFOLU) Requirements 2011 v3.0;
- Verified Carbon Standard AFOLU Non-Permanence Risk Tool 2011 v3.0;
- Verified Carbon Standard Methodology Approval Process; and
- Relevant Verified Carbon Standard Program Updates

1.3   Methodology Description

The 'REDD Methodology Framework' – VM0007 is the basic structure of a modular REDD methodology. It provides the generic functionality of the methodology, which frames pre-defined modules and tools that perform a specific function. It constitutes, together with the modules and tools it calls upon, a complete REDD baseline and monitoring methodology.

The modules and tools called upon in this document are applicable to project activities that reduce emissions from planned (APD) and unplanned (AUDD) deforestation, and for activities to reduce emissions from forest degradation. Relative to the revisions made to VMD007, only minor changes were made to VM007 in order to make it consistent with the more significant revisions made in VMD0007.

The REDD Methodological Module: Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP) – VMD0007 allows for estimating carbon stock changes and GHG emissions related to unplanned deforestation in the baseline case (VCS eligible category AUDD[1]). Degradation is not considered under this module. The module is mandatory for the

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[1]   **Avoiding Unplanned Deforestation and Degradation (AUDD)** reduces net GHG emissions by stopping deforestation and/or degradation of degraded to mature forests that have been expanding historically or will expand in the future, in a frontier, mosaic or transition configuration.

unplanned deforestation category. This module was revised through the addition of a new parallel way to delimit the spatial elements of the project, determine the baseline deforestation rate and calculate uncertainty in those rates.

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a. Frontier configurations are described as any landscape in which none of the forest in the project area has current direct physical connection with areas anthropogenically deforested.
b. Mosaic configurations are described as any landscape in which no patch of forest in the project area exceeds 1000 ha and the forest patches are surrounded by anthropogenically cleared land
c. Transition configurations are any landscape that do not meet the definition of mosaic or frontier.

2 ASSESSMENT CONCLUSIONS

Update following VCSA Review (27 July 2011)
The VCSA conducted an internal assessment of the module VMD0007 v2, (rev 20 June) and VM0007, v2 (rev Jan 2011) that had been approved and requested that triggers to re-assess the baseline at any period less than ten year intervals be removed, to maintain consistency throughout the VCS program. The module developer made the changes and these do not alter our conclusion that the modules are in conformance with the standard. The revised modules that Rainforest Alliance approves are module VMD0007 v2, (June 2011) and VM0007, v2 (June 2011); with file names: 1__REDD-MF_REDD_methodology_framework_revision_The_Field_MuseumCIMA_2011_ver2 021July2011 and 8_BL-UP Unplanned baseline revision The Field Museum 2011 rev26July2011.docx.

Conclusions from third assessment report:
Small changes to the text were added in order to close CARs 03/11, 09/11, 11/11, and 14/11. CAR 04/11 required an addition of extra criteria on the exclusion and inclusion requirements for Census Units which deforestation agents from the project area may have access to. The revised elements of module VMD0007 v2, (rev 20 June) and VM0007, v2 (rev Jan 2011) were found to be in conformance with version 3 of the VCS standard.

Conclusions from second assessment report:
In the final report dated 06 June 2011, it was found that the methodology was not in conformance with the VCS v3. There are four CARs remaining open (03/11, 04/11, 09/11 and 14/11). CAR 03/11 remains open because the methodology was found to have inadequate provisions to prevent forest surrounding the project area that is vulnerable to leakage being excluded from the RRD (and hence leakage belt). CAR 04/11 remains open because the language around subsets of the spatial elements of the RRD is not consistent. CAR 09/11 remains open because the methodology does not explicitly require evidence for planned roads when they are used for projecting baseline deforestation. Finally, CAR 14/11 remains open because the constraints to deforestation are not assessed at the level of RRL_i which is necessary for projections to be realistic.

2.1 Audit Team Recommendation

Based on an evaluation of the revised modules as related to the defined assessment scope and criteria, which assessed the credibility of all data, rationale, assumptions, justifications and documentation provided by the Developer; the Rainforest Alliance's assessment team finds that the revisions made to the modules have:

Post VCSA Review Assessment dated 27 July 2011:

The revised elements of module VMD0007 v2, (June 2011) and VM0007, v2 (June 2011):

☒ Demonstrated unqualified conformance with the standard

☐ Not demonstrated unqualified conformance with the standard.

Assessment dated 22 June 2011:

The revised elements of module VMD0007 v2, (rev 20 June) and VM0007, v2 (rev Jan 2011):

☒   Demonstrated unqualified conformance with the standard

☐   Not demonstrated unqualified conformance with the standard.

Assessment dated 25 May 2011:

☐   Demonstrated unqualified conformance with the standard

☒   Not demonstrated unqualified conformance with the standard.

Assessment dated 05 March 2011:

☐   Demonstrated unqualified conformance with the standard

☒   Not demonstrated unqualified conformance with the standard.

2.2   Corrective Action Requests

Note: A non-conformance is defined in this report as a deficiency, discrepancy or misrepresentation that in all probability materially affects the methodology. CAR language uses "shall" to suggest its necessity and tries not to be prescriptive in terms of mechanisms to mitigate the CAR. Each CAR is brief and refers to a more detailed finding in the appendices.

Corrective action requests (CARs) identified during draft assessment reports must be successfully closed by the proponents before Rainforest Alliance issues a positive assessment decision. Any open CARs upon finalization of the assessment report will result in a qualified assessment statement which lists: (a) all qualifications, (b) rationale for each qualification, and (c) impact of each qualification on the methodology.

CAR 01/11	Reference Standard & Requirement: 3.1 Project Boundary
Description of Non-conformance: The conclusion of the auditors was that the definition of the RRD definition did not adequately constrain it such that its use would always lead to accurate and conservative derivations of deforestation rate.	
Corrective Action Request: The Field Museum shall constrain the use of political census units to comprise the RRD such that it is not possible to introduce bias, representativeness is ensured and also that the methodologies later calculations will receive the required input data.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The text to define the reference region has been changed to, *"When using the population driver approach for projecting rate of deforestation, the reference region is defined as the consolidated area of population census units that include only populations with access to the project area. The population census units included in the RRD must form a single contiguous area and the boundary of RRD shall be as parsimonious a shape as possible. The RRD need not cover the entire project area, nor include all populations with access to the project area."*

	This definition has changed such that there is no longer the ambiguity regarding the project area and leakage belt's inclusion in the RRD. The most significant change is that the RRD does not need to cover the whole project area, nor include all of the populations with access to it. This approach was defended by the Methodology Developers as shown in Appendix C of this report. The approach taken relies on the incentives to maximize the accuracy of the baseline aligning with achieving a suitable leakage area and selecting an appropriate RRD. It is important to note that if some of the area is not covered by the RRD, then its deforestation baseline will be zero. As per the module M-MON, the area will still be monitored, and any deforestation, will count as a net emission in the project case. The auditors were satisfied that the approach aligned incentives such that gaming was not possible and that excluding parts of the project area from the RRD would be conservative.
CAR Status:	**CLOSED**

CAR 02/11	Reference Standard & Requirement: 3.1 Project Boundary
Description of Non-conformance: There is ambiguity with respect to the definitions and overlap of the RRD, RRL, Project Area and Leakage Belt.	
Corrective Action Request: The Field Museum shall clearly define the nature of and, relationship between then RRD, RRL, Project Area and Leakage Belt.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The Methodology Developers have incorporated the additional text in the methodology to clarify the definitions of the RRD, RRL, leakage belt and project area: In the summary table (section 1.1): Leakage belt area limitations are revised as, "*None. Leakage belt is all forested area at the project start within the RRD and outside the project area (see 1.1.3 alternate)*" RRD revised to, "*Must contain populations with access to project area*" (note that with this approach the leakage belt is delineated after the RRD. RRL revised to "*The RRL boundary is equivalent to the RRD boundary.*" The RRL section (1.1.1.2) has been subdivided to specify the definition of the RRL in the context of the population driver approach (1.1.1.2 alternate), adding the following text. "*A reference region for projection of location of deforestation (RRL) is required when using the population driver approach for projecting*

	rate of deforestation. When using the population driver approach, the area/boundary of the RRL is the same as the RRD." The definition of the leakage belt has also been clarified. The module now includes Exhibit 1, an illustrative map showing the delineation of the RRD, RRL, leakage belt and project area (and incorporated in the revised module as an exhibit).
CAR Status:	**CLOSED**

CAR 03/11	Reference Standard & Requirement: 3.1 Project Boundary, 7.8 Leakage
Description of Non-conformance: Inadequate guidance was provided to define the leakage belt, and it was not clear how the new paragraph added to section 1.1.3 was intended to work with the existing text.	
Corrective Action Request: The Field Museum shall clearly define how the leakage belt must be defined for the population driver approach.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	A new section '1.1.3 alternate' which defines the leakage belt has been added to the methodology, thus addressing the part of this CAR related to how this definition fits in the document. Issues raised regarding how to assess the mobility of the population in the leakage belt are no longer relevant given that according to the new definition, the leakage belt is delineated as all forest area at project start that is within the RRD boundary and outside of the project area. "*The potential for leakage shall be identified and the project shall address (and describe in the project description) the socio-economic factors that drive deforestation and/or degradation. Leakage shall be calculated by monitoring forested areas surrounding the project and other forested areas within the country susceptible to leakage from project activities.*" (p41) The auditors have raised concerns that the flexibility available to project developers in selecting census units to comprise the RRD/RRL and hence leakage belt could allow an insufficient leakage belt to be defined. It is acknowledged that because the project area must be 100% forest and the RRD must contain areas with historical deforestation, it is unlikely a viable RRD could be created that had no leakage belt. However, if the project area border is at the edge of the census unit, then there could be no leakage belt adjacent to that part of the project area. There are scenarios whereby census units could be selected in such a manner as to create a leakage belt which is inadequate to capture leakage. For instance, in example two of

Appendix C to this report, a census unit in the northwest of the region is excluded. In the example, this could lead to leakage into the census unit not being monitored. The Methodology Developers point out that this comes at the expense of not being able to claim credits for avoided deforestation in the portion of the project area that is excluded and also in not being able to include the increases in the population centers in the baseline determination. In this example, the reduced avoided deforestation credits may well compensate for any potential missed leakage. However, there are no provisions in the VCS standard for such trading, if emissions are displaced, they must be accounted for. Another example, based on example 2 could be imagined whereby the excluded census unit did not have a significant population, but did have significant forested areas. In this case there would be little benefit to a project including it in the RRD, but this exclusion could mean that leakage is not accounted for. In other examples, the exclusion of a census unit may not lead to the reduction in project area, but may exclude areas vulnerable to leakage. There is no provision to prevent this from occurring.

In summary, the current approach does not contain provisions to ensure that forest surrounding the project area which may be vulnerable to leakage is included in the leakage belt.

Update 22 June 11

In order to address this CAR, methodology proponents modified the definition of the project area as follows (section 1.1.1.1):

"When using the population driver approach for projecting rate of deforestation, the reference region is defined as the consolidated area of population census units that include and surround part or all of the project area. The population census units included in the RRD must form a single contiguous area and the boundary of the RRD shall be as parsimonious a shape as possible to that of the project area. The RRD need not cover the entire project area, but no VCUs may be claimed for portions of the project area not included in the RRD. There is no minimum area requirement for the RRD. However, because activity shifting leakage from local deforestation agents is also tracked within the RRD (see Section 1.1.3 alternate), the RRD shall:
   a) include all significant forest areas surrounding (but not necessarily adjacent to) the project area that are accessible and attractive to local deforestation agents, and
   b) not be spatially biased in terms of distance of edge of RRD from edge of project area.

Exceptions to the above are permitted where the exclusion of any census unit from the RRD is justified on the basis of:
   a) deforestation agent mobility, with consideration of landscape and transportation, or

	b) *prevailing directionality of deforestation agents with respect to the forested landscape, including context outside the RRD, or*
	c) *other appropriate regional socioeconomic factors.*
	The above criteria can be assessed through a qualitative assessment, opinion of local experts or literature sources."
	This modification was considered an improvement by the audit team regarding the previous definition, given that it considers both the mobility and the interest of deforestation agents. As such the revised text in the methodology was found to be sufficient to close this CAR.
CAR Status:	**CLOSED**

CAR 04/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals
Description of Non-conformance: No guidance is provided on how to carry stratification of the RRD, or how it affects the estimation of RRD in practice. Any such stratification would require justification on some grounds other than good statistical fit of data points, to avoid stratification that was driven solely by the goodness of fit of data points. It is not clear whether or not this stratification is the same as the "analytical units" defined in section 2.2.1.2.2. The methodology mentions, "strata", "population census units", "political census units" and "analytical units". It is difficult to determine if these are all unique groupings or what the differences are between them. The parameter DP does not have any subscript to indicate that it could be derived for an individual strata/analytical unit etc.	
Corrective Action Request: The Field Museum shall clarify how stratification of the RRD must be done and incorporate stratification into all calculations and later descriptions in a consistent manner.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	Further guidance has been provided to avoid bias in selection of census units to produce DP. Text in Step 2.1 alternate

"*The RRD can be stratified, and strata-specific DP parameters derived, to reflect different socio-economic circumstances and/or land use practices to improve spatial accuracy.*"

has been replaced with,

"*The RRD can be divided into subsets, and separate DP parameters derived for each, to improve spatial accuracy. Subsets of the RRD for which separate DP parameters DP_j are derived must be composed of contiguous census units and must be justified on the basis of criteria independent of population level and deforested area (e.g. socio-economic circumstances and/or land use practices).*"

Also, equation 11 (now 12) and parameter table were revised to include and explain *j* subscript to DP parameter. These changes go |

	some way to clarifying how the RRD can be stratified and when. However, in step 2.1.2.2, it is stated,
	"The RRD will be sub-divided into analytical units that conform with the geographic boundaries of the population census units (usually political units, e.g. districts, provinces, departments). Thus, the minimum scale of the analysis is the smallest population census unit."
	The language used in these two paragraphs is not easy to reconcile. One states the RRD "can" be subdivided, the other states it "will" be. One talks of RRD "subsets", and the other of "analytical units".
	The language of these two paragraphs must be harmonized to avoid any confusion.
	22 June Update
	In order to address **CAR 04/11** the paragraph in step 2.1 now reads as follows:
	"*The RRD can be divided into subsets, and separate DP parameters derived for each, to improve spatial accuracy. Subsets of the RRD for which separate DP parameters DP_j are derived must be composed of contiguous census units and must be justified on the basis of criteria independent of population level and deforested area (e.g. socio-economic circumstances and/or land use practices).*"
	Likewise, the sentence in step 2.1.2.2 that contradicted the one above has been deleted by methodology proponents in order to avoid confusion. It is now clear that dividing the RRD into subsets is optional, and as such this CAR is now closed.
CAR Status:	**CLOSED**

CAR 05/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals
Description of Non-conformance: The approach to using surveys to define DP lacks minimum standards and clear explanations of the goals (e.g. to determine direct deforestation only).	
Corrective Action Request: The Field Museum shall constrain the use of surveys in a way that would lead to statistically valid results associated with a clear aim.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	Section 2.1.1 alternate has been expanded to provide more detailed requirements for the survey method. Parameter tables have been expanded to include the three new parameters defined to structure surveys.
	The survey method employed has significant conservatism inherent in its design. For example, respondents are unlikely to over-report

	the amount of unplanned (often illegal) deforestation they have conducted. In addition, the deforestation per capita is related to gross population growth, whereas the projection of population will be the net growth.
CAR Status:	**CLOSED**

CAR 06/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals
Description of Non-conformance: It is not clear that the minimum data requirements are sufficient to produce the deforestation maps required.	
Corrective Action Request: The Field Museum shall ensure that the methodologies data requirements are sufficient to conduct the analysis required.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The text in Section 1.2 Temporal boundaries has been clarified to specify "*For the population driver approach to project rate of deforestation, the historical reference period for rate shall at a minimum be defined by the years between the two census data points and for location shall at a minimum be defined by the years between three spatial data points (Steps 3.2 and 3.3) [which is sufficient to produce the spatial analysis for the RRL]*" For deriving DP via the satellite analyses, two image dates are required for dynamic (one interval) and only one for static. Using the static approach, non-forest area for a single point in time is treated as equivalent to deforested area when the applicability condition "RRD was predominately forested prior to settlement (i.e. non-forest areas were forested historically)" is met (already in the revision).
CAR Status:	**CLOSED**

CAR 07/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals
Description of Non-conformance: The module X-UNC was not found to reference how uncertainty associated with rates derived from the new population driver approach (because no updates have been made).	
Corrective Action Request: The Field Museum shall include methodological steps for calculating the uncertainty associated with both the satellite analysis and survey methods of deriving DP in X-UNC.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	In response to CAR 07/11, the Methodology Developers provided the following response; "*Using the satellite analysis approach to derive DP produces a regression, which will have uncertainty around it that varies in relation to the independent variable (population change for a given census unit). Consequently, treatment of uncertainty in DP is best applied in module BL-UP prior to summing rates across census units, rather than as a constant % uncertainty applied to the final rate (as done in X-UNC).*

	We also contend that the 95% confidence interval of a regression (for the satellite analysis approach to derive DP) is a more appropriate measure of uncertainty than the $1-r^2$ used in X-UNC, and is more comparable to the 95% confidence interval around a direct estimate of average DP (for the survey method approach to derive DP). *In consideration of the above, we propose to leave X-UNC unchanged, and incorporate the following guidance in BL-UP to factor in uncertainty around DP estimates:* *Under Step 2.1.1 alternate detailing the survey method approach* *"Final parameter DP_j employed in baseline rate projections (equation 12) is then calculated as the average $DP_{i,j}$ minus the 95% confidence interval."* *Under Step 2.1.2.2 alternate detailing the satellite analysis dynamic approach, the following text (**in italics and bold**) added:* *"If model results are statistically significant ($p \leq 0.05$) and unbiased (i.e. minimal trend in residuals), with an adjusted R-squared ≥ 0.50, the **lower 95% confidence interval of the** model will be used …"* *Under Step 2.1.2.3 alternate detailing the satellite analysis static approach, the following text (**in italics and bold**) added (note that methodology revision now further specifies that only linear regression will be used for the static approach):* *"If model results are statistically significant ($p \leq 0.05$) and unbiased (i.e. minimal trend in residuals), with an adjusted R-squared ≥ 0.50, **the mean minus the lower 95% confidence interval of the model slope parameter** will be used …""* The auditors were satisfied with the changes made. Uncertainty is now calculated in BL-UP, and thus no uncertainty calculation from the rate is required in X-UNC.
CAR Status:	**CLOSED**

CAR 08/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals
Description of Non-conformance: The approach to constrain the projection of deforestation beyond populations seen in the project areas does not take into account the relative size of the census units.	
Corrective Action Request: The Field Museum shall derive a constraint on population projections that is based on factors likely to influence DP.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The Methodology Developers presented the following defense in response to **CAR 08/11**:

	"Population density is the most likely factor to influence DP. However, it does not need to be incorporated into the derivation/application of DP. Population growth as treated in the methodology revision is not constrained by density/area of "home" census unit. In fact, these should not be considered as "home" census units, they are only used to generate projected population growth (and the deforestation it is expected to produce; equation 12) that in sum is permitted to "spill" across political/census unit boundaries on application to the RRL (though constrained by required use of RRL and rules covering consolidation of units in the RRL; see response to CAR 09/11, and also response to CAR 01/11 last paragraph). I.e., there is no expectation that a growing population will stay within its borders (and hence the particular relevance of this approach in an advancing agricultural frontier context). *Furthermore, population density would function as a constraint on population growth rate, not on DP. Population growth rates are derived at the census unit level (equation 10, originally 9), and inherently reflect interaction of population density on growth rate."* The auditors acknowledge that the provision for 'spill-over' of deforestation and the fact that population density would constrain growth rate, not DP. As such, the additional clarification provided by the Methodology Developer was found to be sufficient to close this CAR.
CAR Status:	**CLOSED**

CAR 09/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals
Description of Non-conformance: The module specifies that, "*Prior to application of projected deforestation to the RRL (3.4.2), census units may be consolidated into larger contiguous units to allow deforestation pressure to be exerted beyond the limits of a source population's home political boundaries, while still reflecting movement constraints (i.e. units should not cross significant barriers to access)."* The methods to do this consolidation were found to be inadequately described. It was found that not enough guidance is provided on how to "allow deforestation pressure to be exerted beyond the limits.". Moreover, it is not clear how this provision relates to the constraints analysis carried out in Step 3 or to the consideration of the population mobility referred to on page 10.	
Corrective Action Request: The Field Museum shall provide clear methodological steps for the consolidation of census units within the RRL.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	Guidance on the construction of the RRL has been expanded to include rules for consolidating census units. Text in Section 2.2.2 alternate changed from

	"*Prior to application of projected deforestation to the RRL (3.4.2), census units may be consolidated into larger contiguous units to allow deforestation pressure to be exerted beyond the limits of a source population's home political boundaries, while still reflecting movement constraints (i.e. units should not cross significant barriers to access). The RRL may thus be disaggregated into discrete strata to which deforestation projections are applied.*" to "*Prior to application of projected deforestation to the RRL (3.4.2), census units may be consolidated into larger subsets of the RRL, RRL_j, to allow deforestation pressure to be exerted beyond the limits of a source population's home political boundaries. Subsets of the RRL may be constructed progressively by consolidating adjoining census units that are linked by existing or planned transportation routes (e.g. roads, navigable rivers). The RRL may thus be a single unit or composed of multiple (up to the number of component census units) subsets to which deforestation projections are applied. Subsets of the RRL need not coincide with subsets of the RRD.*" The changes are an improvement, however **CAR 09/11** is not fully addressed, because the specific VCS methodological requirement to require evidence of planned roads is not referenced (please see section 5.3 of this report for more details). **22 June Update** The specific VCS methodological requirement to require evidence of planned roads are now referenced in the methodology (please see section 5.3 of this report for more details). As such this CAR is now closed.
CAR Status:	**CLOSED**

CAR 10/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals
Description of Non-conformance: In the data and parameter table, DP is described as, "*Area of unplanned deforestation in year t produced by change in population in the interval t-1 to t*" (p34). This differs from how DP is used in equation 11, where it is multiplied the by the difference in population between the current year (t) and the next year (t+1).	
Corrective Action Request: The Field Museum shall be consistent in the use of DP to derive a deforestation value for any given year.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	Equation 12 (previously 11) has been modified and is now consistent with what is stated in the data and parameters table.
CAR Status:	**CLOSED**

CAR 11/11	Reference Standard & Requirement: 11.1 Adherence to the project-level principles of the VCS Program
Description of Non-conformance: References to BL-UP in other modules were not found to align now that changes have been made to the section numbers, for example, in M-MON it is stated, "*As described in module BL-UP (Part 2, section 2.2.3) multi-date images must be used to reduce cloud cover to no more than 10% of any image.*" However BL-UP no longer contains a section 2.2.3.	
Corrective Action Request: The Field Museum shall ensure the revised modules integrate fully with the other modules.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The numbering of sections has been modified to allow for the full integration of this module with the rest of the modules. However, please see **OBS 07/11**.
CAR Status:	**CLOSED**

CAR 12/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals
Description of Non-conformance: The approach of using linear or exponential growth was found to be acceptable, given that it would need to be revised every 10 years. Auditors of projects will still have to determine if there are any causes for concern about the conservativeness of such projections. However, the auditors concluded that there was a lack of consideration of factors that could influence the likelihood and conservativeness of a projection (for example, absence of; demographic altering war, disease, policy changes).	
Corrective Action Request: The Field Museum shall ensure that population projections made are as accurate and conservative as possible through consideration of known factors that could affect the future trajectory population relative to the past trajectory.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	This CAR has been addressed by the inclusion in section 2.2.1 alternate of the following text: *"Prior to calculating population growth rate (below), the absence of any factors that could significantly reduce population growth in the RRD over the term of projection relative to the historic period (e.g. policy changes, war, disease, famine) should be confirmed through a qualitative assessment, opinion of local experts or literature sources. In the event that presence of significant factors is confirmed, census units within which those factors are operating will be identified and assumed to have zero population growth during the projection period."*
CAR Status:	**CLOSED**

CAR 13/11	Reference Standard & Requirement: 13.1 Public Review
Description of Non-conformance: At the time of assessment, the public comment period had not ended.	
Corrective Action Request: The Field Museum shall address any comments that emerge in the	

public comment period.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	At the time of the second assessment the public comment period had ended. One comment was received and was determined to be not significant to the scope of the changes made to the methodology.
CAR Status:	**CLOSED**

CAR 14/11	Reference Standard & Requirement: 11.1 Adherence to the project-level principles of the VCS Program
Description of Non-conformance: In section 2.4.2 deforestation is not constrained at the RRL_j level when this is a necessary requirement, having defined RRL_j.	
Corrective Action Request: The Field Museum shall consider the constraints to deforestation at the level of RRL_j.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	CAR 14/11 has been addressed by the inclusion of the following text in section 2.4.2: *"Using the constraints identified in Step 2.4.1, map the forest land that is suitable for the further expansion of non-forest land in the project area and estimate its area ($A_{e.d.RRL}$), or for each subset of the RRL ($A_{e.d.RRLj}$), if the RRL has been subdivided using the population driver approach."* With this, deforestation is now constrained at the RRL_j level.
CAR Status:	**CLOSED**

2.2.1 Observations

Note: Observations are issued for areas that the auditor sees the potential for improvement in implementing standard requirements or in the quality system; observations may lead to direct non-conformances if not addressed. Unlike CARs, observations are not formally closed. Findings related to observations are discussed in Appendix B below.

OBS 01/11	Reference Standard & Requirement: 3.1 Project boundary
Description of findings leading to observation: Module BL-UP contains a table on page 4 that specifies the key features of each of the spatial features for which boundaries shall be defined. This table indicates that it is not mandatory to establish a leakage belt, whilst the text on page 3 mandates that a leakage belt (as well as other spatial features) "must be defined". This contradiction could lead to confusion	
Observation: The Field Museum should clarify which spatial features are mandatory.	

OBS 02/11	Reference Standard & Requirement: Baseline Approach 3.2

Description of findings leading to observation: The module refers to "local forest area" on page 17. After discussion with the Methodology Developers it was clear that this meant "forest area", and the word local was redundant, and possibly confusing

Observation: The Field Museum should not refer to "local forest area".

OBS 03/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals

Description of findings leading to observation: Section 2.2.1.2.3 contains a number of applicability conditions that must be met in order to apply the static analysis to derive DP, amongst them the following; "*Typically, new settlers clear land within 5 years from arrival (to permit employing the simplifying assumption that deforestation occurs simultaneously with population growth)."* It is not clear how this is reflected in practice when estimating the DP and developing the baseline estimations.

Observation: The Field Museum should explain how the 5 year clearance criteria for the static approach works in practice.

OBS 04/11	Reference Standard & Requirement: 8.1 Quantification of GHG emission reductions and removals

Description of findings leading to observation: There does not appear to be any criteria related to the static approach that the historic period must predate settlement.

Observation: The Field Museum should expand the explanation related to the static approach if it is intended that the start of the historic reference period should predate settlement of the area,

OBS 05/11	Reference Standard & Requirement: 11.1 Adherence to the project-level principles of the VCS Program

Description of findings leading to observation: Table 1.1 has an empty cell that causes ambiguity. The parameter "t" is not defined beneath equation 9 or 10. There is no reminder at step 3.0 that when the population driver is used (even in mosaic situations) that a location analysis is required.

Observation: The Field Museum should present the methodology with complete tables, parameter lists and adequate references to use of location analysis.

OBS 06/11	Reference Standard & Requirement: : 11.1 Adherence to the project-level principles of the VCS Program

Description of findings leading to observation: In the comments for DP it is stated that;

"*It is important that this parameter is updated to permit eventual transition to more efficient baseline land use (e.g. agricultural intensification), and/or urban/settled population with less reliance on local land resources, to accurately represent transitions in local development*"(p34)

This sentence was found to be potentially confusing because, when discussed with the Methodology Developers it became clear that the Methodology Developer's intention was that upon release of new population projections the baseline must be update based only these new population numbers, but DP only needed to be updated every 10 years.

Observation: The Field Museum should clarify when updates to DP must occur.

OBS 07/11	Reference Standard & Requirement: 3.1 Project Boundary
Description of findings leading to observation: Where there were new 'alternate' sections inserted into the methodology, there is not always clear guidance navigating the reader towards the steps which must be executed when the population driver approach is used. For example, there is no introduction to warn users that section 1.1.1.1 Alternate follows section 1.1.1.1.	
Observation: The Field Museum should include extra text to help navigate readers through the module and find the sections that are required for the population driver approach.	

OBS 08/11	Reference Standard & Requirement: 11.1 Adherence to the project-level principles of the VCS Program
Description of findings leading to observation: In section 2.2.2, the sentence "*The projected unplanned baseline deforestation in RRLj is estimated as follows*:" contains a subscript 'j'. This is incorrect, because the estimate is for RRL (without the subscript). In addition, in section 2.2.2 alternate, the module refers to "'*a source population's political boundaries*". Following discussion with the Methodology Developer it was understood that this means the same as "*census unit*". It is preferable for terms to be used consistently to avoid any ambiguity. Likewise the terms "*analytical units*" and "*subsets*" are used in the module when they appear to mean the same thing.	
Observation: The Field Museum should use module specific terms consistently and clearly.	

OBS 09/11	Reference Standard & Requirement: 2.1 Eligible AFOLU Project Categories
Description of findings leading to observation: Section 1.2.7 of the VCS AFOLU Requirements defines unplanned and planned deforestation and degradation. The module is for unplanned deforestation only. In section '2.1.1 alternative' it was found that the survey method was not clear enough that only information on unplanned deforestation within the census unit must be recorded.	
Observation: The Field Museum should clarify section 2.1.1 to emphasize that only unplanned deforestation within the census unit should be counted.	

OBS 10/11	Reference Standard & Requirement: 3.1 Project Boundary
Description of findings leading to observation: The auditors noted that the way the methodology works, there was no reason for requiring CUs to have populations with access to the project area. This added constraint would not affect the conservativeness of the methodology, however, it may lead to difficulties in understanding the methodology if this is perceived to the reader to be important (the access of populations have to the project area is important at the step when CUs are joined to form RRL_j's)	
Observation: The Field Museum should remove the requirement for census units that comprise the RRD to contain populations with access to the project area.	

2.3 Actions Taken by Organization Prior to Report Finalization

In response to the second assessment report dated 06 June 11, the Methodology Developers produced a revised version of the module (Version 2.0 June 2011) as well as provided written explanations for the revisions in response to identified nonconformances in the second assessment report.

In response to the draft audit report dated 05 March 2011, the Methodology Developers produced a revised version of the methodology (v2) as well as providing written explanations for the changes. The

audit team held several calls with the Methodology Developers to understand the changes made and to discuss the remaining issues.

3 AUDIT METHODOLOGY

3.1 Assessment Team

Assessor(s)	Qualifications
Adam Gibbon, MSci. Rainforest Alliance Technical Specialist, Climate Program AFOLU REDD Expert Involved in assessments of 05 March 2011 25 May 2011 22 June 2011	Adam has led the technical climate change related side of nine CCBA validations that are either completed or currently underway. He has also led three methodology reviews, one VCS validation and been involved in one CCX verification. Adam has trained over 60 people in Spain, Bali and Vietnam in AFOLU project auditing and project development. Recipients of the training included Rainforest Alliance auditors, government officials, private consultants and NGO representatives. Adam was lead author of recent Rainforest Alliance publication entitled, "Guidance on coffee carbon project development using the (CDM) simplified agroforestry methodology" as well as two scientific articles currently in press. Before joining Rainforest Alliance Adam worked at Oxford University as a researcher. His research emphasized the potential of carbon markets to finance sustainable management of forest resources. He led a team conducting a landscape scale assessment of carbon stocks in the Peruvian Andes' cloud forests and montane grasslands. Adam earned a distinction on the Environmental Change and Management MSc. Program at Oxford University, winning prizes for his dissertation and overall performance. He was awarded the Sir Walter Raleigh Scholarship at Oriel College, Oxford. He graduated with a first class degree from Durham University, with a BSc in Natural Sciences, specializing in Geology, Chemistry & Geography.
Manuel Estrada, Independent Climate Change consultant Involved in Assessments of: 05 March 2011 25 May 2011	Manuel Estrada started working on climate change issues in 1996, when he was involved in the definition and establishment of an ad-hoc process for approving projects under the AIJ pilot phase, and provided technical guidance for the Mexican Delegation during the Kyoto Protocol negotiations. As Climate Change Director of the International Affairs Unit of the Ministry of Environment of Mexico, he was the lead CDM and LULUCF negotiator from COP7 (Marrakesh) to COP10 (Buenos Aires). After COP10, he continued involved in the international climate change negotiations as Advisor to the Mexican Government until COP13 (Bali) on, amongst other, CDM and Avoided Deforestation issues. He also advised the Paraguayan Delegation on REDD in 2008. He is a co-author of the "nested

	approach" to REDD, which is one of the mechanisms currently being discussed in the UNFCCC negotiations on this issue.
	As an independent consultant, he has collaborated with several regional organizations in Latin America, including CATIE, UN-ECLAC, UNEP, the North American Commission for Environmental Cooperation and the IDB, and has been involved in projects in a number of areas (going from climate policy, low carbon economies and the Gleneagles Dialogue to REDD and forestry CDM) with Energeias, DEFRA, the Organisation Nationale des Forests (ONFi), Climate Focus, CIFOR, Climate Decisions, Cambridge University, WWF and Silvestrum.
	He has also acted as consultant of TerraCarbon in many projects in the land use, land use change and forestry sector, including activities related to REDD, AR CDM, baseline methodologies in peatlands and carbon market analysis.
	He participated in the expert groups on Afforestation, Reforestation and Revegetation and REDD of the Voluntary Carbon Standard, currently considered one of the most reliable and innovative carbon standards in the voluntary market.
Jared Nunery, MSci. Rainforest Alliance Carbon Technical Specialist Senior Internal Reviewer 25 May 2011 22 June 2011	Jared has participated in over 30 forest carbon project and methodology assessments, spanning four continents. In addition he has led the technical review and approval of the first IFM LtPF Methodology under the VCS, and participate in the evaluation of over a half dozen other AFOLU methodologies against the VCS. Before joining the Rainforest Alliance, Jared worked as a member of the Carbon Dynamics Lab at the University of Vermont, where he conducted research on the effects of forest management on carbon sequestration. Jared has published multiple scientific articles on forest carbon dynamics as well as general forest ecological processes. Jared has presented research and guest lectured on the topic of forest management and forest carbon dynamics at over a dozen scientific conferences and universities both within the USA and abroad. Jared has a B.S. in Environmental Sciences from the University of Vermont and earned his M.Sc. in Forestry from the University of Vermont. Jared has extensive experience in forest stand dynamics, forest carbon dynamics, forest mensuration, GHG quantification, forest growth and yield modeling, and wildlife habitat conservation. In addition Jared is a certified lead auditor with the Climate Action Reserve for Forest and Urban Forest projects, and ISO 14001.

3.2 Methodology Assessment Process

The methodology assessment was conducted from Rainforest Alliance offices and those of the contracted consultants. There was desk evaluation, along with phone calls and correspondence with the proponents and Methodology Developers.

3.3 Document Review

Document Date	Title, Author(s), Version
Used for Assessment date 05 March 2011	
January 2011	Approved VCS Methodology VM0007 Version 2.0, REDD Methodology Module REDD Methodology Framework (REDD-MF), Sectoral Scope 14, Revision January 2011, The Field Museum and CIMA Prepared by TerraCarbon, (1.__REDD-MF_REDD_methodology_framework_revision_The_Field_MuseumCIMA_2011_ver1.0trackedchanges)
January 2011	Approved VCS Module VMD0007 Version 2.0 REDD Methodological Module: Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP) Sectoral Scope 14, Revision January 2011 The Field Museum and CIMA Prepared by TerraCarbon (8___BL-UP_Unplanned_baseline_revision_The_Field_MuseumCIMA_2011_ver1.0trackchanges)
Used for Assessment date 25 May 2011	
March 2011	Approved VCS Module VMD0007 Version 2.0 REDD Methodological Module: Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP) Sectoral Scope 14, Revision January 2011 The Field Museum and CIMA Prepared by TerraCarbon (8 BL-UP Unplanned baseline revision The Field Museum 2011 rev23Mar2011)
March 2011	TFMResponses, The Field Museum, No version.
May 2011	sample_DP_static_analysis.xlsx, The Field Museum, No version.
Used for Assessment date 22 June 2011	
June 2011	TFM Responses to Rainforest Alliance methodology assessment finding (second round), No version
June 2011	SQS Validation Report No. 322245/P30918.33
June 2011	Approved VCS Module VMD0007 Version 2.0 REDD Methodological Module: Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP) Sectoral Scope 14, Revision June 2011 The Field Museum and CIMA Prepared by TerraCarbon (8 BL-UP Unplanned baseline revision The Field Museum 2011 rev20Jun2011)
June 2011	Approved VCS Module VMD0007 Version 2.0 REDD Methodological Module: Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP) Sectoral Scope 14, Revision June 2011 The Field Museum and CIMA Prepared by TerraCarbon (8 BL-UP Unplanned baseline revision The Field Museum 2011 rev20Jun2011clean)

Appendix A: PROPONENT CONTACT AND DETAILS

1   Contacts

Methodology name:	VCS Methodology VM0007, Version 2.0 REDD Methodology Framework (REDD-MF) and VCS Module VMD0007, Version 2.0 Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP)
Methodology developer:	The Field Museum
Type of organization:	NGO
Contact person, Title:	Christina M. Magerkurth,
Address:	The Field Museum 1400 S. Lake Shore Dr Chicago, IL 60605-2496 United States
Tel/Fax/Email:	cmagerkurth@fieldmuseum.org p: 630-947-9563 f: 312-665-7433
Billing contact:	Same as above

Appendix B: DETAILED ASSESSMENT FINDINGS TO THE STANDARDS

1. General Requirements

The methodology shall contain eligibility criteria which are appropriate and adequate.

1.1. Methodologies may employ a modular approach in which a framework document provides the structure of the methodology and separate modules and/or tools are used to perform specific methodological tasks. Such methodologies shall use the *VCS Methodology Template* for the framework document and the *VCS Module Template* for the modules and tools. The framework document shall clearly state how the modules and/or tools are to be used within the context of the methodology. (VCS Standard 4.1)

Findings from Assessment on 25 May 2011			
The module does not use the VCS Module Template, however Rainforest Alliance are only assessing the changes against V3 of the standard.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

1.2. New methodologies shall not be developed where an existing methodology could reasonably be revised (developed as a methodology revision) to meet the objective of the proposed methodology, as set out in VCS document *Methodology Approval Process*. (VCS Standard 4.1)

Findings from Assessment on 25 May 2011			
The module is a revision to an existing module (VMD00007)			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

1.3. Methodology revisions are appropriate where a project activity is broadly similar to the project activities eligible under an existing methodology and such project activity can be included through reasonable changes to that methodology. Methodology revisions are also appropriate where an existing methodology can be materially improved. Materially improving a methodology involves comparing the existing and proposed methodologies so as to show that the changes will deliver material improvements that will result in greater accuracy of measurement of GHG emissions reductions or removals, improved conservatism and/or reduced transaction costs.

Methodology revisions shall be prepared using the VCS Methodology Template and shall be managed via the methodology approval process. They may be prepared and submitted to the methodology approval process by the developer of the original methodology or any other entity. (VCS Standard 4.1)

(The VCS Program distinguishes between revisions to VCS methodologies and revisions to approved GHG program methodologies. The requirements for the development and assessment of each are set out in VCS document Methodology Approval Process.)

Findings from Assessment on 25 May 2011
This assessment is of a revision to an approved VCS module. The revision is to add a new method of deriving a baseline deforestation rate based on population as a driver. The revision was not prepared

using a VCS module template, but the scope of this audit was only to assess the changes to V3.			
Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CARs or OBS raised.		

1.4. As set out in the *VCS Standard*, standards and factors used to derive GHG emissions data as well as any supporting data for baseline scenarios and additionality shall be publicly available and come from a reputable and recognized source, such as *IPCC 2006 Guidelines for National GHG Inventories or the IPCC 2003 Good Practice Guidelines for Land Use, Land-Use Change and Forestry*. (VCS AFOLU Requirements 4.1.2)

Findings from Assessment on 25 May 2011			
No new standards or factors have been added for the population driver approach.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	No CARs or OBS raised.		

1.5. Where a methodology combines AFOLU project categories, the methodology shall adhere to all sets of requirements pertaining to each and every project category covered, either separating activities, or where activities cannot be separated, taking a conservative approach to each requirement. (VCS AFOLU Requirements 4.1.2)

Findings from Assessment on 25 May 2011			
The module does not combine AFOLU project categories.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

1.6. The methodology shall identify the project activities to which it applies and shall establish criteria that describe the conditions under which the methodology can (and cannot, if appropriate) be applied. Any applicability conditions set out in tools or modules used by the methodology shall also apply (VCS Standard 4.3)

Findings from Assessment on 25 May 2011			
The population driver approach, as one option with the module does have specific applicability criteria (nested within wider applicability criteria that applies to the suite of modules as a whole, and applicability criteria that apply to the module). These criteria are listed in Part 2, and were found to be appropriate in constraining the use of the option to projects for which it is relevant.			
Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CARs or OBS raised.		

2.   **Eligible AFOLU Project Categories**

There are currently five AFOLU project categories under the VCS Program, as further described below. Proposed methodologies shall fall within one or more of these AFOLU project categories.

2.1. The methodology shall provide a methodological procedure for developing an AFOLU project type accepted VCS AFOLU as defined in section 4.2 of the VCS AFOLU Requirements Version 3.

   i. Afforestation, Reforestation and Revegetation (ARR – Section 4.2.1)

    ii.   Agricultural Land Management (ALM – Section 4.2.2)

    iii.   Improved Forest Management (IFM – Sections 4.2.3 and 4.2.4)

    iv.   Reduced Emissions from Deforestation and Degradation (REDD – Sections 4.2.5 – 4.2.9)

    v.   Peatland Rewetting and Conservation (PRC Sections 4.2.10 – 4.2.13)

Findings from Assessment on 25 May 2011			

Sections 4.2.5-9 apply to this module as it REDD project
   1.2.5   Is about the definition of deforestation, degradation and forest that must be used and is covered in the framework module, and thus outside of the scope of this assessment.
   1.2.6   Is a description of how interventions can reduce emissions, but there are no specific requirements for the audit team to audit against.
   1.2.7   Defines unplanned and planned deforestation and degradation. The module is for unplanned deforestation only. In section '2.1.1 alternative' it was found that the survey method was not clear enough that only information on unplanned deforestation within the census unit must be recorded. (**OBS 09/11**)
   1.2.8   Further defines the difference between REDD and IFM projects. This module only concerns activities that prevent unplanned deforestation, thus there is no overlap with IFM redefinition.
   1.2.9 Further defines Avoided Unplanned Deforestation and/or Degradation as a project type. The module conforms with the definition, and the population driver approach does not affect this.			

Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	**OBS 09/11** The Field Museum should clarify section 2.1.1 to emphasize that only unplanned deforestation within the census unit should be counted.		

3.   **Project Boundary**

 3.1.   The methodology shall establish criteria and procedures for describing the project boundary. (*Use this section for recording findings relevant to the procedures for defining spatial boundaries*) (VCS Standard 4.4)

Findings from Assessment on 05 March 2011
Module BL-UP: **1.1 Definition of the spatial boundaries of the analytical domain** Module BL-UP contains a table on page 4 that specifies the key features of each of the spatial features for which boundaries shall be defined. This table indicates that it is not mandatory to establish a leakage belt, whilst the text on page 3 mandates that a leakage belt (as well as other spatial features) "must be defined". This contradiction could lead to confusion. (**OBS 01/11**) **1.1.1.1.2 Reference region for projecting rate of deforestation (RRD) based on population driver** The text defines the RRD as follows,

"*When using the population driver approach for projecting rate of deforestation, the reference region is defined as the consolidated area of political census units within the project area and leakage belt, that include only populations with access to the project area. Because the reference region is part of the project area and leakage belt, this approach derives rates from the same region to which they will be applied, and therefore representativeness of the reference region need not be demonstrated*". (p7)

The conclusion of the auditors was that this definition did not adequately constrain the RRD such that its use would always lead to accurate and conservative derivations of deforestation rate.

Firstly, with regard to the specific wording used, if the RRD is *within* the project area and leakage belt, and *part* of the project area and leakage belt, it is not clear how the deforestation rate may be derived if no deforestation can have happened in the project area in the historical reference period considering that a project start the project area and the leakage belt shall contain only forest.

Secondly, there is no indication of how many political census units must be used, to what extent they must overlap with the project area, what the minimum or maximum coverage must be, and to what extent selection (or not) of units must be conducted based on their relative location to the project area. For example, as written, a project could use 1 political census unit that covers the project area, leakage belt and beyond. However, later in the methodology the project would not be able to derive DP with only 1 unit's worth of data. To provide another example, units could be selected from in and around the project area to derive a favorable rate for the project. (**CAR 01/11**)

1.1.1.2 Reference region for projecting location of deforestation

In section 2.2.2.2 it is mentioned that the RRL may be disaggregated. This is not mentioned in section 1.1.1.2 when the RRL is defined. (**CAR 02/11**)

1.1.3 Leakage Belt

The text in this section states that,

 "*When using the population driver approach to project baseline rate of deforestation, the leakage belt must extend beyond the RRD to permit, on application of the projected deforestation rate to the RRL (step 3.4.2), that deforestation produced by the RRD population can advance in all directions (i.e. also away from the project area)*" (page 10).

This leads to confusion, given that on page 7 it is mentioned that,

 "*the reference region (RDD) is defined as the consolidated area of political census units within the project area and leakage belt*" and that "*Because the reference region is part of the project area and leakage belt*".

Following these definitions, the leakage belt could not be extended beyond the RRD. (**CAR 02/11**)

Moreover, it is not clear how the baseline deforestation in the leakage belt could be known, if it extends beyond the RDD (i.e. no baseline deforestation rate has been defined for areas outside the RRD).

It is also not clear how the RRL relates to the RRD. For example, can the RRL cover parts of the project area not covered by the RRD? (**CAR 02/11**)

In section 1.1.3 where the leakage belt is defined, it is not clear if the new paragraph related to the

population driver approach is to be taken in addition to, or as a separate option to the other criteria in the section. This is because it appears at the end of the section in isolation. In addition, within this new paragraph it is stated,

"*The distance of expansion [of the leakage belt] beyond the RRD should correspond to reasonable access bounds, i.e. should be accessible and reachable by the RRD population with consideration of mobility.*"

However, it is not clear how the mobility of the population (or the different classes within it) is assessed, since the module does not contain provisions on this aspect. Please note that any changes made to address this must be compatible with LK-ASU which handles leakage related to BL-UP.**(CAR 03/11)**

Conformance	Yes ☐	No ☒	N/A ☐
NCR/OBS	**CAR 01/11**, **CAR 02/11, CAR 03/11, OBS 01/11.**		

Findings from Assessment on 25 May 2011

In response to the findings, OBS and CARs of the 05 March 2011 draft report the Methodology Developers have made significant changes to how the spatial elements of the project are defined. Please note that in response to **CAR 11/11** the numbering of sections has changed.

1.1 Definition of the spatial boundaries of the analytical domain

The table summarizing the characteristics of the spatial elements has been updated such that it is consistent with the rest of the module, thus **OBS 01/11** was addressed. Further clarification was provided by the addition of exhibit 1 (a figure showing the relationship between the spatial areas) at the end of the module.

The revised approach has the RRD defined as the selected census units in and around the project area. The RRL is equal to the RRD. The Leakage Belt is the forest area outside of the project area but within the RRD/RRL. The project area is the forested area within the RRD/RRL in which project activities are taking place. The auditors noted one limitation of this revised approach. Since the project area is a part of the RRD, reductions in deforestation rates in the project area during the project will have the impact of reducing the deforestation baseline as calculated when the baseline is re-assessed after 10 years (or upon the publication of a new population projection). The larger the project area is in relation to the RRD, the stronger this effect will be. The Methodology Developers were aware of this impact of the design. The auditors were satisfied that the impact of this is that conservative baseline deforestation rates for subsequent baseline periods will be calculated.

1.1.1.1 alternate. Reference region for projecting rate of deforestation (RRD) based on population driver

The text to define the reference region has been changed to,

"When using the population driver approach for projecting rate of deforestation, the reference region is defined as the consolidated area of population census units that include only populations with access to the project area. The population census units included in the RRD must form a single contiguous area and the boundary of RRD shall be as parsimonious a shape as possible. The RRD need not cover the entire project area, nor include all populations with access to the project area."

This definition has changed such that there is no longer the ambiguity regarding the project area and

leakage belt's inclusion in the RRD. The most significant change is that the RRD does now not need to cover the whole project area, nor include all of the populations with access to it. This approach was defended by the Methodology Developers as shown in Appendix C of this report. The approach taken relies on the incentives to maximize the accuracy of the baseline aligning with achieving a suitable leakage area and selecting an appropriate RRD. It is important to note that if some of the area is not covered by the RRD, then its deforestation baseline will be zero. As per the module M-MON, the area will still be monitored, and any deforestation, will count as a net emission in the project case.

The auditors were satisfied that the approach aligned incentives such that gaming was not possible and that excluding parts of the project area from the RRD would be conservative.

The auditors noted that the way the methodology works, there was no reason for requiring CUs to have populations with access to the project area. This added constraint would not affect the conservativeness of the methodology, however, it may lead to difficulties in understanding the methodology if this is perceived to the reader to be important (the access of populations have to the project area is important at the step when CUs are joined to form RRL_j's) (**OBS 10/11**)

1.1.1.2 alternate. Reference region for projecting location of deforestation (RRL) using population driver approach

It is now simply stated that the RRL is equal to the RRD. It is still not mentioned here that the RRL can later be sub-divided, but the auditors found it to be sufficiently clear elsewhere as not to require stating here as well. This addresses this aspect of **CAR 02/11**.

1.1.3 alternate. Leakage Belt using population driver approach

The leakage belt section now simply states,

"When using the population driver approach to project baseline rate of deforestation, the leakage belt is delineated as all forest area at project start that is within the RRD boundary and outside of the project area."

This definition no longer conflicts with the RRD/RRL definitions and that the leakage belt as defined for the population driver approach is separate from the method used for the simple historic. This addresses this aspect of **CAR 02/11**. All issues have now been addressed and **CAR 02/11** is closed.

Mobility is no longer a component of the leakage belt definition, so the issues that originally led to **CAR 03/11** being raised against this criterion no longer apply. However, the new approach to leakage belt definition has caused further issues which are documented in section 7.8 of this report, where is it explained that **CAR 03/11** remains open.

Conformance	Yes ⊠	No ☐	N/A ☐
NCR/OBS	**OBS 07/11** The Field Museum should include extra text to help navigate readers through the module and find the sections that are required for the population driver approach.		
	OBS 10/11 The Field Museum should remove the requirement for census units that comprise the RRD to contain populations with access to the project area.		

3.2. In identifying GHG sources, sinks and reservoirs relevant to the project, the methodology shall set out criteria and procedures for identifying and assessing GHG sources, sinks and reservoirs that are controlled by the project proponent, related to the project or affected by the project (i.e., leakage).

In identifying GHG sources, sinks and reservoirs relevant to the baseline scenario, the methodology shall:
  I. Set out criteria and procedures used for identifying the GHG sources, sinks and reservoirs relevant for the project.
  II. Where necessary, explain and apply additional criteria for identifying relevant baseline GHG sources, sinks and reservoirs.
  III. Compare the GHG sources, sinks and reservoirs identified for the project with those identified in the baseline scenario, to ensure equivalency and consistency. (VCS Standard 4.4)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps to define the project's sources sinks and reservoirs. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

3.3. The relevant carbon pools for AFOLU project categories are aboveground tree biomass (or aboveground woody biomass in ARR and ALM projects), aboveground non-tree biomass (aboveground non-woody biomass in ARR and ALM projects), belowground biomass, litter, dead wood, soil (including peat) and wood products. Methodologies shall include the relevant carbon pools set out in Table 2 of section 4.3.1 of the VCS AFOLU Requirements Version 3. (VCS AFOLU Requirements 4.3.1)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps to define the project's carbon pools. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

3.4. Specific carbon pools and GHG sources, including carbon pools and GHG sources that cause project and leakage emissions, may be deemed *de minimis* and do not have to be accounted for if together the omitted decrease in carbon stocks (in carbon pools) or increase in GHG emissions (from GHG sources) amounts to less than five percent of the total GHG benefit generated by the project. The methodology shall establish the criteria and procedures by which a pool or GHG source may be determined to be *de minimis*. For example, peer reviewed literature or the CDM A/R methodological tool *Tool for testing significance of GHG emissions in A/R CDM project activities* may be used to

determine whether decreases in carbon pools and increases in GHG emissions are *de minimis*. the project description, including identified GHG sources, sinks and reservoirs;

Further, the following GHG sources may be deemed *de minimis* and need not be accounted for:

I.   ARR, IFM and REDD: N2O emissions from project activities that apply nitrogen containing soil amendments and N2O emissions caused by microbial decomposition of plant materials that fix nitrogen. ALM projects that apply nitrogen fertilizer and/or manure or plant nitrogen fixing species shall account for N_2O emissions;

II. ARR, IFM, REDD and PRC: GHG emissions from the removal or burning of herbaceous vegetation and collection of non-renewable wood sources for fencing of the project area; and,

III. ARR, IFM, REDD and PRC: Fossil fuel combustion from transport and machinery use in project activities. Where machinery use for selective harvesting activities may be significant in IFM project activities as compared to the baseline, emissions shall be accounted for if above *de minimis.*.(VCS AFOLU Requirements 4.3.3)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps to define what is a significant emission to be included in the project. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

3.5. Specific carbon pools and GHG sources do not have to be accounted for if their exclusion leads to conservative estimates of the total GHG emission reductions or removals generated. The methodology shall establish criteria and procedures by which a project proponent may determine a carbon pool or GHG source to be conservatively excluded. Such conservative exclusion may be determined by using tools from an approved GHG program, such as the CDM A/R methodological tool *Procedure to determine when accounting of the soil organic carbon pool may be conservatively neglected in CDM A/R project activities*, or by using peer-reviewed literature. (VCS AFOLU Requirements 4.3.4)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps to define what is a significant emission to be included in the project. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

3.6. Reductions of N_2O and/or CH_4 emissions are eligible for crediting if in the baseline scenario the project area would have been subject to livestock grazing, rice cultivation, burning and/or nitrogen fertilization (VCS AFOLU Requirements 4.3.5)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding the inclusion of non-CO_2 GHG emissions. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

3.7. Reductions of CH_4 emissions are eligible for crediting if fire would have been used to clear the land in the baseline scenario. (VCS AFOLU Requirements 4.3.6)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding the inclusion of non-CO_2 GHG emissions. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

3.8. Project type specific guidance within the VCS AFOLU Requirements regarding the calculation of SSRs must be met.

    I. ARR projects must meet additional criteria outlined in section 4.3.7 of the VCS AFOLU Requirements Version 3;
    II. IFM projects must meet additional criteria outlined in sections 4.3.12 – 4.3.15 of the VCS AFOLU Requirements Version 3;
    III. REDD projects must meet additional criteria outlined in sections 4.3.16 and 4.3.17 of the VCS AFOLU Requirements Version 3.

Findings from Assessment on 25 May 2011			
Sections 4.3.16 and 4.3.17 in the VCS AFOLU Requirements are regarding the inclusion of the wood products pool and the soil carbon pool. The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding the inclusion of carbon pools. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

4. **Additionality**

4.1. The methodology shall establish a procedure for the demonstration and assessment of additionality based upon the requirements set out in the VCS Standard Version 3 section 4.6. Note that such requirements are for methodology development, and projects shall demonstrate and assess additionality in accordance with the requirements set out in the applied methodology. (VCS Standard 4.6)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding additionality. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

5. **Baseline Scenario:**

5.1. The methodology shall establish criteria and procedures for identifying alternative baseline scenarios and determining the most plausible scenario, taking into account the following:

     I.   The identified GHG sources, sinks and reservoirs.
    II.   Existing and alternative project types, activities and technologies providing equivalent type and level of activity of products or services to the project.
   III.   Data availability, reliability and limitations.
   IV.   Other relevant information concerning present or future conditions, such as legislative, technical, economic, socio-cultural, environmental, geographic, site-specific and temporal assumptions or projections. (VCS Standard 4.5)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding identifying alternative baseline scenarios. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

5.2. The determination and establishment of a baseline scenario shall follow an internationally accepted GHG inventory protocol, such as the *IPCC 2006 Guidelines for National GHG Inventories.* (VCS AFOLU Requirements 4.4.1)

Findings from Assessment on 25 May 2011			
The revised methodology does not contain any features that would be covered by the IPCC guidelines, and therefore it was concluded that the revised portions were in conformance with the standard.			
Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CAR or OBS raised.		

5.3. The methodology follow must all project type specific requirements detailed in section 4.4 of the VCS AFOLU Requirements Version 3. Specifically,

     I.   ARR projects have no specific baseline scenario requirements;

II. ALM projects must meet additional criteria outlined in sections 4.4.3 and 4.4.4 of the VCS AFOLU Requirements Version 3;
III. IFM projects must meet additional criteria outlined in section 4.4.5 of the VCS AFOLU Requirements Version 3;
IV. REDD projects must meet additional criteria outlined in sections 4.4.6 and 4.4.7 and additional relevant sub-project type requirements outlined in 4.4.8 of the VCS AFOLU Requirements Version 3.
V. PRC projects must meet additional criteria outlined in sections 4.4.9 – 4.4.12 of the VCS AFOLU Requirements Version 3.

Findings from Assessment on 25 May 2011

4.4.6 Of the VCS AFOLU Requirements is addressed by the new population driver approach because it maintains the Landuse/landuse change component and carbon stock change component (the new approach being an additional way of deriving the LU/LUC values.

4.4.7 Of the VCS AFOLU Requirements is beyond the scope of this audit because it relates to non CO_2 GHGs which are not affected by the additions.

4.4.8 .2a Of the VCS AFOLU Requirements is addressed because the population driver approach uses spatial analysis, based on historical factors over a period of at least 10 years.

4.4.8.2b Of the VCS AFOLU Requirements requires that if a frontier pattern is projected that any assumptions based on future road routes are supported by evidence. This methodology allows for the use of planned roads in grouping census units into RRL subset-sets. However, the methodology does not explicitly require the evidence as requested by this part of the VCS AFOLU Requirements (which is specific to methodologies). (**CAR 09/11**)

4.4.8.2c Of the VCS AFOLU Requirements states the following,

"*The criteria and procedures for identifying alternative baseline scenarios in the frontier and mosaic configurations shall take into account such factors as historical deforestation and/or degradation rates and require the project proponent to develop a baseline by determining and analyzing a reference area (which need not be contiguous to the project area), that shall be similar to the project area in terms of drivers and agents of deforestation and/or degradation, landscape configuration, and socio-economic and cultural conditions, noting the following.*

i)   Where, in the mosaic configuration, no patch of forest in project areas exceeds 1000 ha and the forest patches are surrounded by anthropogenically cleared land, or where it can be demonstrated that 25 percent or more of the perimeter of the project area is within 120 meters of land that has been anthropogenically deforested within the 10 years prior to the project start date, spatial projections to determine where in the project area deforestation is likely to occur are not required. Though not required, such spatial projections may be applied, in accordance with the methodology. Analysis of historical deforestation rates that explain past deforestation in the reference area is required and shall be applied conservatively to the project area." (p30-31)

The methodology's approach to defining the reference region involves the selection of census units in and around the project area according to the following criteria,

"When using the population driver approach for projecting rate of deforestation, the reference region is

defined as the consolidated area of population census units that include only populations with access to the project area. The population census units included in the RRD must form a single contiguous area and the boundary of RRD shall be as parsimonious a shape as possible. The RRD need not cover the entire project area, nor include all populations with access to the project area." (Section 1.1.1.1 alternate).

There are no specific requirements for the selected census units to have any similarities with the conditions found within the project area. They will, according to the criteria above by physically close to the project area, and gaming would not be permitted due to the requirement of a parsimonious boundary. The Methodology Developers argue that no similarity criteria are required because:
1. To get a statistically allowable DP value, the census units would need to have similar deforestation/population relationships.
2. Census units with higher rates will draw the deforestation towards themselves when the spatial allocation of deforestation is done, and hence the project area would not be affected by any distortion in rates.

Please see Appendix C to this report for a detailed defense of the census unit selection process.

With regard to point 4.4.8.2c.i of the VCS AFOLU Requirements, this requirement was not affected by the addition of the new population driver approach and is hence outside the scope of this assessment.

Conformance	Yes ☐	No ☒	N/A ☐
NCR/OBS	**CAR 09/11**		

Findings from Assessment on 22 June 2011
CAR 09/11 has been addressed by the inclusion of the following footnote in step 2.2.2 alternate:

"Note that in conformance with VCS AFOLU Guidance Section 4.4.8, where RRL subsets are justified on the basis of "…infrastructure (eg, roads) that does not yet exist", clear evidence shall be provided to demonstrate that such infrastructure would have been developed in the baseline scenario. Evidence may include permits, maps showing construction plans, construction contracts or open tenders, an approved budget and/or evidence that construction has started.""

Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CAR or OBS raised.		

6. Baseline and Project Emissions/Removals:

6.1. Methodologies shall establish procedures to quantify the GHG emissions or removals for the project and baseline scenario. *The IPCC 2006 Guidelines for National GHG Inventories* or the *IPCC 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry* shall be used as guidance for quantifying increases or decreases in carbon stocks and GHG emissions. The IPCC Guidelines shall also be followed in terms of quality assurance/quality control (QA/QC) and uncertainty analysis. (VCS AFOLU Requirements 4.5.1)

Findings from Assessment on 25 May 2011
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology

Modules, which contain steps regarding procedures to quantify the GHG emissions or removals for the project and baseline scenario. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

6.2. The *IPCC 2006 Guidelines for National GHG Inventories* may be referenced to establish procedures for quantifying GHG emissions/removals associated with the following carbon pools including:

  I.   Litter;
  II. Dead wood;
  III. Soil (methodologies may follow the IPCC guidelines for the inclusion of soil carbon, including the guidelines that are in sections not related to forest lands); and
  IV. Belowground biomass (estimated using species-dependent root-to-shoot ratios, the Mokany et al.[2] ratios and equations, or the Cairns equations). (VCS AFOLU Requirements 4.5.2)
  V.

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures to quantify the GHG emissions or removals for the project and baseline scenario. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

6.3. Where ARR or IFM projects include harvesting, the loss of carbon due to harvesting shall be included in the quantification of project emissions. The maximum number of GHG credits available to projects shall not exceed the long-term average GHG benefit. The GHG benefit of a project is the difference between the project scenario and the baseline scenario of carbon stocks stored in the selected carbon pools and adjusted for any project emissions of N2O, CH4 and fossil-derived CO2, and leakage emissions. The long-term average GHG benefit shall be calculated using the procedure outlined in section 4.5.3 of the VCS AFOLU Requirements Version 3. (VCS AFOLU Requirements 4.5.3)

Findings from Assessment on 25 May 2011			
Not applicable to REDD projects.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

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[2] Mokany, K., Raison, R. J., and Prokushkin, A. S. 2006. *Critical analysis of root:shoot ratios in terrestrial biomes.* Global Change Biology 12: 84-96

6.4. IFM projects only: Procedures for quantifying GHG emissions/removals in selected carbon pools may reference the *IPCC 2006 Guidelines for National GHG Inventories* section on *forests remaining as forests*. (VCS AFOLU Requirements 4.5.9)

Findings from Assessment on 25 May 2011			
Not applicable to REDD projects.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

6.5. IFM projects only: Procedures for quantifying GHG emissions/removals in wood products may reference Skog et al. 20047 or other sources published in scientific peer-reviewed literature. (VCS AFOLU Requirements 4.5.10)

Findings from Assessment on 25 May 2011			
Not applicable to REDD projects.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

6.6. IFM projects only: Where biomass is burned as part of the slash removal after harvesting, or nitrogen fertilizer is used, methodologies may reference *IPCC 2006 Guidelines for National GHG Inventories* for the quantification of such GHG emissions. (VCS AFOLU Requirements 4.5.11)

Findings from Assessment on 25 May 2011			
Not applicable to REDD projects.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

6.7. IFM projects only: Where IFM projects include harvesting, the loss of carbon due to harvesting shall be included in the quantification of project emissions. The maximum number of GHG credits available to projects shall not exceed the long-term average GHG benefit, as set out in Section 4.5.3. (VCS AFOLU Requirements 4.5.12)

Findings from Assessment on 25 May 2011			
Not applicable to REDD projects.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

6.8. **REDD projects only:** Procedures for quantifying GHG emissions/removals in all selected carbon pools may reference *IPCC 2006 Guidelines for National GHG Inventories* sections on *conversion of forest to non-forest* (for deforestation) and *forests remaining as forest* (for degradation). (VCS AFOLU Requirements 4.5.13)

Findings from Assessment on 25 May 2011
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for quantifying GHG emissions/removals in all selected carbon pools. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.

Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

6.9. **REDD projects only:** Procedures for quantifying GHG emissions/removals in long-lived wood products (e.g., wood products lasting longer than five years) may reference published scientific peer-reviewed literature (such as Skog et al. 2004). (VCS AFOLU Requirements 4.5.14)

Findings from Assessment on 25 May 2011
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for quantifying GHG emissions/removals in long-lived wood products. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.

Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

7. <u>Leakage</u>

The methodology shall contain an approach for calculating leakage that is appropriate and adequate.

7.1. Methodologies shall establish procedures to quantify all significant sources of leakage. Leakage is defined as any increase in GHG emissions that occurs outside the project boundary (but within the same country), and is measurable and attributable to the project activities. All leakage shall be accounted for, in accordance with this Section 4.6. The three types of leakage are:

    I.   Market leakage occurs when projects significantly reduce the production of a commodity causing a change in the supply and market demand equilibrium that results in a shift of production elsewhere to make up for the lost supply.

    II.   Activity shifting leakage occurs when the actual agent of deforestation and/or degradation moves to an area outside of the project boundary and continues their deforesting activities elsewhere.

    III.   Ecological leakage occurs in PRC projects where a project activity causes changes in GHG emissions or fluxes of GHG emissions from ecosystems that are hydrologically connected to the project area. (VCS AFOLU Requirements 4.6.1)

Findings from Assessment on 25 May 2011
I.   Market leakage is addressed in module VMD0011 and is not affected by the changes made to VMD0007.
II.   The revised version of VMD0007 changes the requirements for the leakage belt for avoided unplanned deforestation. Please see section 7.8 of this report for the findings related to this new approach and **CAR 03/11.**
III.   Ecological leakage is not relevant to this REDD module.

Conformance	Yes ☐	No ☒	N/A ☐
NCR/OBS	**CAR 03/11**		

Findings from Assessment on 22June 2011			
Please see section 7.8 of this report for the findings related to this new approach and **CAR 03/11**			
Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CAR or OBS raised.		

7.2. Leakage that is determined, in accordance with Section 4.3.3 of the VCS AFOLU Requirements Version 3, to be below *de minimis* (i.e., insignificant) does not need to be included in the GHG emissions accounting. The significance of leakage may also be determined using the CDM A/R methodological *Tool for testing significance of GHG Emissions in A/R CDM Project Activities*. (VCS AFOLU Requirements 4.6.2)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for determining the significance of emissions sources and sinks. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

7.3. GHG emissions from leakage may be determined either directly from monitoring, or indirectly when leakage is difficult to monitor directly but where scientific knowledge provides credible estimates of likely impacts. The GHG credit calculation table provided in Section 4.7 of the VCS AFOLU Requirements Version 3 includes an example of indirect leakage accounting. (VCS AFOLU Requirements 4.6.3)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for determining leakage monitoring. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

7.4. Projects shall account for market leakage where the production of a commodity (eg, timber) is significantly affected by the project. The significance of timber production is determined as set out in Section 4.3.3 of the VCS AFOLU Requirements Version 3 or as set out in Section 4.6.15 of the VCS AFOLU Requirements Version 3. (VCS AFOLU Requirements 4.6.4)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for determining market leakage. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

7.5. Leakage occurring outside the host country (international leakage) does not need to be quantified. (VCS AFOLU Requirements 4.6.5)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for determining leakage calculations. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

7.6. Where leakage mitigation measures include tree planting, agricultural intensification, fertilization, fodder production, and/or other measures to enhance cropland and/or grazing land areas, then any significant increase in GHG emissions associated with these activities shall be accounted for, unless deemed *de minimis* (as set out in Section 4.3.3) or conservatively excluded (as set out in Section 4.3.4). (VCS AFOLU Requirements 4.6.6)

Findings from Assessment on 25 May 2011			
The population driver approach does not contain leakage mitigation measures, thus the assessment of this criteria is outside the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

7.7. Projects shall not account for positive leakage (i.e., where GHG emissions decrease or removals increase outside the project area due to project activities). (VCS AFOLU Requirements 4.6.7)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for determining leakage calculations. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

7.8. Additional project type specific requirements relevant to leakage calculations must be met.

      I.   ARR projects must meet requirements outlined in sections 4.6.8 and 4.6.9 of the VCS AFOLU Requirements Version 3.
    II.   IFM Projects must meet requirements outlined in sections 4.6.13 and 4.6.14.
   III.   REDD projects must meet requirements outlined in sections 4.6.15 and 4.6.16.

Findings from Assessment on 25 May 2011
VCS AFOLU requirement 4.6.15.1 is regarding avoided planned deforestation and is thus not relevant to the module.

VCS AFOLU requirement 4.6.16.2 states,

"*The potential for leakage shall be identified and the project shall address (and describe in the project description) the socio-economic factors that drive deforestation and/or degradation. Leakage shall be calculated by monitoring forested areas surrounding the project and other forested areas within the country susceptible to leakage from project activities.*" (p41)

The auditors have raised concerns that the flexibility available to project developers in selecting census units to comprise the RRD/RRL and hence leakage belt could allow an insufficient leakage belt to be defined.

It is acknowledged that because the project area must be 100% forest and the RRD must contain areas with historical deforestation, it is unlikely a viable RRD could be created that had no leakage belt.

However, if the project area border is at the edge of the census unit, then there could be no leakage belt adjacent to that part of the project area. There are scenarios whereby census units could be selected in such a manner as to create a leakage belt which is inadequate to capture leakage. For example, in example two of Appendix C to this report, a census unit in the northwest of the region is excluded. In the example, this could lead to leakage into the census unit not being monitored. The Methodology Developers point out that this comes at the expense of not being able to claim credits for avoided deforestation in the portion of the project area that is excluded and also in not being able to include the increases in the population centers in the baseline determination. In this example, the reduced avoided deforestation credits may well compensate for any potential missed leakage. However, there are no provisions in the VCS standard for such trading, if emissions are displaced, they must be accounted for. Another example, based on example 2 could be imagined whereby the excluded census unit did not have a significant population, but did have significant forested areas. In this case there would be little benefit to a project including it in the RRD, but this exclusion could mean that leakage is not accounted for. In other examples, the exclusion of a census unit may not lead to the reduction in project area, but may exclude areas vulnerable to leakage. There is no provision to prevent this from occurring.

In summary, the current approach does not contain provisions to ensure that forest surrounding the project area which may be vulnerable to leakage is included in the leakage belt.

CAR 03/11 remains open.

Conformance	Yes ☐	No ☒	N/A ☐
NCR/OBS	**CAR 03/11**		

Findings from Assessment on 22 June 2011
In order to address this CAR, methodology proponents modified the definition of the project area as follows (section 1.1.1.1):

"When using the population driver approach for projecting rate of deforestation, the reference region is defined as the consolidated area of population census units that include and surround part or all of the project area. The population census units included in the RRD must form a single contiguous area and the boundary of the RRD shall be as parsimonious a shape as possible to that of the project area. The RRD need not cover the entire project area, but no VCUs may be claimed for portions of the project

area not included in the RRD. There is no minimum area requirement for the RRD. However, because activity shifting leakage from local deforestation agents is also tracked within the RRD (see Section 1.1.3 alternate), the RRD shall:
  c) *include all significant forest areas surrounding (but not necessarily adjacent to) the project area that are accessible and attractive to local deforestation agents, and*
  d) *not be spatially biased in terms of distance of edge of RRD from edge of project area.*

Exceptions to the above are permitted where the exclusion of any census unit from the RRD is justified on the basis of:
  d) *deforestation agent mobility, with consideration of landscape and transportation, or*
  e) *prevailing directionality of deforestation agents with respect to the forested landscape, including context outside the RRD, or*
  f) *other appropriate regional socioeconomic factors.*

The above criteria can be assessed through a qualitative assessment, opinion of local experts or literature sources."

This modification was considered an improvement by the audit team regarding the previous definition, given that it considers both the mobility and the interest of deforestation agents. **CAR 03/11** is now closed.

Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CAR or OBS raised.		

8.   Quantification of GHG emission reductions and removals

8.1.   The methodology shall establish criteria and procedures for quantifying GHG emissions and/or removals for the selected GHG sources, sinks and/or reservoirs, for the baseline scenario (this must be done separately from the project scenario – see 8.2 below). (VCS Standard 4.7)

Findings from Assessment on 05 March 2011
PART 2. ESTIMATION OF ANNUAL AREAS OF UNPLANNED DEFORESTATION Within part 2, section 2.2 has been added to document the population driver approach. **STEP 2.2.1 Analysis of historical deforestation and correlation to population** The module refers to "local forest area" on page 17. After discussion with the Methodology Developers it was clear that this meant "forest area", and the word, "local" was redundant, and possibly confusing. (**OBS 02/11**) The module states, "*The RRD can be stratified, and strata-specific DP parameters derived, to reflect different socio-economic circumstances and/or land use practices to improve spatial accuracy*". (page 17) However, no guidance is provided on how to carry out this stratification, or how it affects the estimation of RRD in practice. Any such stratification would require justification on some grounds other than good

statistical fit of data points, to avoid stratification that was driven solely by the goodness of fit of data points. It is not clear whether or not this stratification is the same as the "analytical units" defined in section 2.2.1.2.2. The methodology mentions, "strata", "population census units", "political census units" and "analytical units". It is difficult to determine if these are all unique groups or what the differences are between them. The parameter DP does not have any subscript to indicate that it could be derived for an individual strata/analytical unit etc. (**CAR 04/11**)

The module contains two approaches to deriving DP (the amount of deforestation attributable to an increase of population by 1), one through surveys (2.2.1.1) and the other via satellite image analysis (2.2.1.2). These are discussed below.

2.2.1.1 Estimation of parameter *DP* through Participatory Rural Appraisal or other survey methods

This section establishes that,

"*Parameter DP can be directly estimated through representative surveys of the RRD population, including both rural and urban dwellers in proportion to their representation in the RRD, using Participatory Rural Appraisal or other methods. Surveys must use the same population censused (from which population will be projected over the baseline period (step 2.2.2)), as the population from which survey samples (individuals or households) are selected.*"

In discussions with the Methodology Developers it was clear that they envisaged rigorous, statistically valid sampling to be conducted and that only direct deforestation would be considered (for example, deforestation that results from a person purchasing a product is excluded). However, the lack of minimum sampling standards specified in the methodology and the lack of guidance anywhere that only direct deforestation was being considered could lead to in appropriate use of the approach. (**CAR 05/11**)

2.2.1.2 Estimation of parameter *DP* through analysis of imagery and population census data

Overall, the approach taken was found to be acceptable, however, some issues related to how the approach is documented are discussed below.

2.2.1.2.1   Collection and processing of appropriate data sources

The text states that,

"*Maps of deforested areas in the RRD will be produced for 2 or more points in time in a period no more than 20 years prior to project start (or prior to subsequent date when baseline is revised)*".

However, in order to create two maps of deforested areas at least LU images from 3 points in time would be needed, whilst in section 2.2.1.2 it is stated that "*DP may be indirectly estimated through analysis pairing historic imagery and population census data for 2 or more points in time in the period 20 years prior to project start*".

It is not clear that the minimum data requirements are sufficient to produce the deforestation maps required. (**CAR 06/11**)

The Methodology Developers presented a literature review to defend the low r^2 threshold of >0.5. This

was found to be acceptable. It was noted by the auditors that there remains an incentive to get a higher r^2 value because the module X-UNC requires a reduction relative to the r^2 values associated with regressions used to defined the deforestation rate. However, the module X-UNC was not found to reference how uncertainty associated with rates derived from the new population driver approach (because no updates have been made). (**CAR 07/11**)

Step 2.2.1.2.2 Dynamic analysis of correlation between population and deforestation

See discussion related to **CAR 04/11** above.

Step 2.2.1.2.3 Static analysis of correlation between population and deforestation

This section contains a number of applicability conditions that must be met in order to apply the static analysis to derive DP, amongst them the following; "*Typically, new settlers clear land within 5 years from arrival (to permit employing the simplifying assumption that deforestation occurs simultaneously with population growth)."* It is not clear how this is reflected in practice when estimating the DP and developing the baseline estimations. (**OBS 03/11**)

There does not appear to be any criteria related to the static approach that the historic period must predate settlement. This means that whilst all the population will be counted, not all the deforestation will be captured. This would appear to be conservative, because only a portion of the deforestation that actually occurred would be divided by the population.

In discussions with the Methodology Developers, they stated that,

"*When you are looking at the static model, you are looking at "accumulated" population and "accumulated" deforestation – these are levels observed at a single point in time that reflect cumulative changes from the beginning of colonization of the forested landscape, hence, effectively, the static model has a potentially longer historic period, and this is why it is necessary to show that land-use practices (which affect DP) are similar throughout that period as are expected in the project implementation timeframe.*"

However, the section does not reference the, "beginning of colonization". (**OBS 04/11**)

Step 2.2.2.1 Project population in the RRD

The approach of using linear or exponential growth was found to be acceptable, given that it would need to be revised every 10 years. Auditors of projects will still have to determine if there are any causes for concern about the conservativeness of such projections. However, the auditors concluded that there was a lack of consideration of factors that could influence the likelihood and conservativeness of a projection (for example, absence of; demographic altering war, disease, policy changes). (**CAR 12/11**)

Step 2.2.2.2 Project deforestation in the RRL and project area as a function of population

Some provision to prevent the extrapolation of projections beyond the data range used to derive the DP relationship is necessary and conservative. Such a provision is included on page 22, where it is stated that,

"*If the term Pop$_{t+1}$ in Equation 11 exceeds the highest population value from the dataset from which DP was derived using the static model, the value of A$_{BSL,i,unplanned,t}$ is assigned as zero*".

However, it was found that this approach did not adequately consider the factors that would make the DP relationship likely to break down. For example, in cases where the highest population figure came from a relatively large political census unit, this provision would not stop population densities beyond any previously seen being projected. This is because the relative sizes of the census units are not accounted for in this approach. (**CAR 08/11**)

Moreover, in the same section the module specifies that,

"*Prior to application of projected deforestation to the RRL (3.4.2), census units may be consolidated into larger contiguous units to allow deforestation pressure to be exerted beyond the limits of a source population's home political boundaries, while still reflecting movement constraints (i.e. units should not cross significant barriers to access)."*

The methods to do this consolidation were found to be inadequately described. It was found that not enough guidance is provided on how to "allow deforestation pressure to be exerted beyond the limits." Moreover, it is not clear how this provision relates to the constraints analysis carried out in Step 3 or to the consideration of the population mobility referred to on page 10. (**CAR 09/11**)

In the data and parameter table, DP is described as, "*Area of unplanned deforestation in year t produced by change in population in the interval t-1 to t"* (p34). This differs from how DP is used in equation 11, where it is multiplied the by the difference in population between the current year (t) and the next year (t+1). (**CAR 10/11**)

Conformance	Yes ☐	No ☒	N/A ☐
NCR/OBS	**CAR 04/11**, **CAR 05/11**, **CAR 06/11**, **CAR 07/11**, **CAR 08/11**, **CAR 09/11**, **CAR 10/11**, **CAR 12/11**. **OBS 02/11**, **OBS 03/11**, **OBS 04/11**.		

Findings from Assessment on 25 May 2011
The substeps of step 2 related to the population driver approach are now labeled with 'alternate'.

PART 2. ESTIMATION OF ANNUAL AREAS OF UNPLANNED DEFORESTATION

STEP 2.1 alternate. Analysis of historical deforestation and correlation to population

The word 'local' has been removed from this section, therefore no ambiguity around the meaning exists. This addresses **OBS 02/11**.

Further guidance has been provided to avoid bias in selection of census units to produce DP. Text in Step 2.1 alternate

"*The RRD can be stratified, and strata-specific DP parameters derived, to reflect different socio-economic circumstances and/or land use practices to improve spatial accuracy.*"

has been replaced with

"*The RRD can be divided into subsets, and separate DP parameters derived for each, to improve spatial accuracy. Subsets of the RRD for which separate DP parameters DP_i are derived must be composed of contiguous census units and must be justified on the basis of criteria independent of population level and deforested area (e.g. socio-economic circumstances and/or land use practices).*"

Also, equation 11 (now 12) and parameter table revised to include and explain *j* subscript to DP parameter. These changes go some way to clarifying how the RRD can be stratified and when. However, in step 2.1.2.2, it is stated,

"*The RRD will be sub-divided into analytical units that conform with the geographic boundaries of the population census units (usually political units, e.g. districts, provinces, departments). Thus, the minimum scale of the analysis is the smallest population census unit.*"

The language used in these two paragraphs is not easy to reconcile. One states the RRD "can" be subdivided, the other states it "will" be. One talks of RRD "subsets", and the other of "analytical units".

The language of these two paragraphs must be harmonized to avoid any confusion. Thus, **CAR 04/11** remains open.

2.1.1 alternate. Estimation of parameter *DP* through Participatory Rural Appraisal or other survey methods

Section 2.1.1 alternate has been expanded to provide more detailed requirements for the survey method. Parameter tables have been expanded to include the three new parameters defined to structure surveys.

The survey method employed has significant conservatism inherent in its design. For example, respondents are unlikely to over-report the amount of unplanned (often illegal) deforestation they have conducted. In addition, the deforestation per capita is related to gross population growth, whereas the projection of population will be the net growth.

This closes **CAR 05/11**. The auditors still have concerns that the results will be overly conservative but the decision on whether or not to use this approach given the limitations is one that the project will have to consider.

2.1.2 alternate Estimation of parameter *DP* through analysis of imagery and population census data

2.1.2.1   alternate Collection and processing of appropriate data sources

The text in Section 1.2 Temporal boundaries has been clarified to specify "*For the population driver approach to project rate of deforestation, the historical reference period for rate shall at a minimum be defined by the years between the two census data points and for location shall at a minimum be defined by the years between three spatial data points (Steps 3.2 and 3.3) [which is sufficient to produce the spatial analysis for the RRL]*"

For deriving DP via the satellite analyses, two image dates are required for dynamic (one interval) and only one for static. Using the static approach, non-forest area for a single point in time is treated as

equivalent to deforested area when the applicability condition "*RRD was predominately forested prior to settlement (i.e. non-forest areas were forested historically)*" is met (already in the revision).

This closes **CAR 06/11**.

In response to CAR 07/11, the Methodology Developers provided the following response;

"*Using the satellite analysis approach to derive DP produces a regression, which will have uncertainty around it that varies in relation to the independent variable (population change for a given census unit). Consequently, treatment of uncertainty in DP is best applied in module BL-UP prior to summing rates across census units, rather than as a constant % uncertainty applied to the final rate (as done in X-UNC).*

We also contend that the 95% confidence interval of a regression (for the satellite analysis approach to derive DP) is a more appropriate measure of uncertainty than the $1\text{-}r^2$ used in X-UNC, and is more comparable to the 95% confidence interval around a direct estimate of average DP (for the survey method approach to derive DP).

In consideration of the above, we propose to leave X-UNC unchanged, and incorporate the following guidance in BL-UP to factor in uncertainty around DP estimates:

Under Step 2.1.1 alternate detailing the survey method approach

"Final parameter DP_i employed in baseline rate projections (equation 12) is then calculated as the average $DP_{i,i}$ minus the 95% confidence interval."

*Under Step 2.1.2.2 alternate detailing the satellite analysis dynamic approach, the following text (**in italics and bold**) added:*

*"If model results are statistically significant ($p \leq 0.05$) and unbiased (i.e. minimal trend in residuals), with an adjusted R-squared ≥ 0.50, the **lower 95% confidence interval of the** model will be used …"*

*Under Step 2.1.2.3 alternate detailing the satellite analysis static approach, the following text (**in italics and bold**) added (note that methodology revision now further specifies that only linear regression will be used for the static approach):*

*"If model results are statistically significant ($p \leq 0.05$) and unbiased (i.e. minimal trend in residuals), with an adjusted R-squared ≥ 0.50, **the mean minus the lower 95% confidence interval of the model slope parameter** will be used …"*"

The auditors were satisfied with the changes made. Uncertainty is now calculated in BL-UP, and thus no uncertainty calculation from the rate is required in X-UNC. This closes **CAR 07/11**.

Step 2.1.2.2 alternate Dynamic analysis of correlation between population and deforestation

See discussion related to **CAR 04/11** above.

Step 2.1.2.3 alternate Static analysis of correlation between population and deforestation

No changes have been made to this section, other than the addition of an uncertainty deduction related to **CAR 07/11**.

Step 2.2.1   alternate Project population in the RRD

In order to address **CAR 12/11** the Text below was added to Section 2.2.1 alternate:

"*Prior to calculating population growth rate (below), the absence of any factors that could significantly reduce population growth in the RRD over the term of projection relative to the historic period (e.g. policy changes, war, disease, famine) should be confirmed through a qualitative assessment, opinion of local experts or literature sources. In the event that presence of significant factors is confirmed, census units within which those factors are operating will be identified and assumed to have zero population growth during the projection period."]*

This closes **CAR 12/11**.

The auditors also note that Equation 11 has been revised (simplified) in response to SQS CL4.

Step 2.2.2   alternate Project deforestation in the RRL and project area as a function of population

The Methodology Developers presented the following defense in response to **CAR 08/11**:

"Population density is the most likely factor to influence DP. However, it does not need to be incorporated into the derivation/application of DP. Population growth as treated in the methodology revision is not constrained by density/area of "home" census unit. In fact, these should not be considered as "home" census units, they are only used to generate projected population growth (and the deforestation it is expected to produce; equation 12) that in sum is permitted to "spill" across political/census unit boundaries on application to the RRL (though constrained by required use of RRL and rules covering consolidation of units in the RRL; see response to CAR 09/11, and also response to CAR 01/11 last paragraph). I.e., there is no expectation that a growing population will stay within its borders (and hence the particular relevance of this approach in an advancing agricultural frontier context).

Furthermore, population density would function as a constraint on population growth rate, not on DP. Population growth rates are derived at the census unit level (equation 10, originally 9), and inherently reflect interaction of population density on growth rate."

The auditors acknowledge that the provision for 'spill-over' of deforestation and the fact that population density would constrain growth rate, not DP. Therefore **CAR 08/11** is closed.

Guidance on the construction of the RRL has been expanded to include rules for consolidating census units. Text in Section 2.2.2 alternate changed from

"*Prior to application of projected deforestation to the RRL (3.4.2), census units may be consolidated into larger contiguous units to allow deforestation pressure to be exerted beyond the limits of a source population's home political boundaries, while still reflecting movement constraints (i.e. units should not cross significant barriers to access). The RRL may thus be disaggregated into discrete strata to which deforestation projections are applied.*"

to

"*Prior to application of projected deforestation to the RRL (3.4.2), census units may be consolidated into larger subsets of the RRL, RRL$_i$, to allow deforestation pressure to be exerted beyond the limits of a source population's home political boundaries. Subsets of the RRL may be constructed progressively by consolidating adjoining census units that are linked by existing or planned transportation routes (e.g. roads, navigable rivers). The RRL may thus be a single unit or composed of multiple (up to the number of component census units) subsets to which deforestation projections are applied. Subsets of the RRL need not coincide with subsets of the RRD.*"

The changes are an improvement, however **CAR 09/11** is not fully addressed, because the specific VCS methodological requirement to require evidence of planned roads is not referenced (please see section 5.3 of this report for more details).

Equation 12 (previously 11) has been modified and is now consistent with what is stated in the data and parameters table. This closes **CAR 10/11**.

Conformance	Yes ☐	No ☒	N/A ☐
NCR/OBS	**CAR 04/11, CAR 09/11**		

Findings from Assessment on 22 June 2011
In order to address **CAR 04/11** the paragraph in step 2.1 now reads as follows: "*The RRD can be divided into subsets, and separate DP parameters derived for each, to improve spatial accuracy. Subsets of the RRD for which separate DP parameters DP$_i$ are derived must be composed of contiguous census units and must be justified on the basis of criteria independent of population level and deforested area (e.g. socio-economic circumstances and/or land use practices).*" Likewise, the sentence in step 2.1.2.2 that contradicted the one above has been deleted by methodology proponents in order to avoid confusion. It is now clear that dividing the RRD into subsets is optional. Regarding **CAR 09/11**, the specific VCS methodological requirement to require evidence of planned roads are now referenced in the methodology (please see section 5.3 of this report for more details).

Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CAR or OBS raised.		

8.2. The methodology shall establish criteria and procedures for quantifying GHG emissions and/or removals for the selected GHG sources, sinks and/or reservoirs, for the project (including leakage) scenario (this must be done separately from the baseline scenario – See 8.1 above). (VCS Standard 4.7)

Findings from Assessment on 25 May 2011
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for determining ex-ante project emissions (they are in the framework document VM007, but are unaffected by the changes made). These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.

Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

8.3. Methodologies shall establish procedures for quantifying net GHG emission reductions and removals (the net GHG benefit), which shall be quantified as the difference between the GHG emissions and/or removals from GHG sources, sinks and carbon pools in the baseline scenario and the project scenario. The GHG emissions and/or removals in the project scenario shall be adjusted for emissions resulting from project activities and leakage. Methodologies shall also establish procedures for quantifying the net change in carbon stocks, so that the number of buffer credits withheld in the AFOLU pooled buffer account and market leakage emissions may be quantified for the project. (VCS AFOLU Requirements 4.7.1)

Findings from Assessment on 25 May 2011
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for calculating the net benefit of the project. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.

Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

8.4. The number of GHG credits issued to projects is determined by subtracting out the buffer credits from the net GHG emission reductions or removals (including leakage) associated with the project. The buffer credits are calculated by multiplying the non-permanence risk rating (as determined by the *AFOLU Non-Permanence Risk Tool*) times the change in carbon stocks only. The full rules and procedures with respect to assignment of buffer credits are set out in the VCS document *Registration and Issuance Process*. This calculation process is illustrated in the example in section 4.7.2 of the VCS AFOLU Requirements Version 3. (VCS AFOLU Requirements 4.7.2)

Findings from Assessment on 25 May 2011
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures for calculating the VCUs that should be issued. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.

Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

9. Monitoring

9.1. The methodology shall establish criteria and procedures for monitoring, and specify the data and parameters to be monitored, as set out in the VCS Standard. At a minimum the methodology shall establish criteria and procedures for monitoring which shall cover the following (as required by section 4.8.2 of the VCS Standard Version 3):

    I.   Purpose of monitoring.
    II.   Monitoring procedures, including estimation, modeling, measurement or calculation approaches.

III.   Procedures for managing data quality.
IV.   Monitoring frequency and measurement procedures. (VCS Standard 4.8.2)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding monitoring. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

9.2.   Leakage shall be monitored as set out in Section 4.6 of the VCS AFOLU Requirements Version 3. (VCS AFOLU Requirements 4.8.2)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding monitoring. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

Note: The monitoring methodology and results will determine the ex-post emissions estimation for the baseline, project emissions and leakage which are assessed in the sections above.

10.   Data and parameters

10.1.   The methodology shall describe the data and parameters to be reported, including sources of data and units of measurement.

Standards and factors used to derive GHG emission data shall meet the following requirements (as outlined in section 4.8.1 of the VCS Standard Version 3):

I.   Be publically available from a reputable and recognized source (e.g., IPCC, published government data, etc.)
II.   Be reviewed as part of its publication by recognized competent organization.
III.   Be appropriate for the GHG source or sink concerned.
IV.   Be current at the time of quantification. (VCS Standard 4.8.1)

Findings from Assessment on 25 May 2011			
The methodology does include new data and parameters to be recorded. These are related to the population growth model and the deforestation caused per unit population increase. These are recorded in section III of the methodology. There are no new standards and factors used to derive GHG emissions data.			
Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CAR or OBS raised.		

10.2.   When highly uncertain data and information are relied upon, conservative values shall be selected that ensure that the quantification does not lead to an overestimation of net GHG emission reductions or removals. (VCS Standard 4.8.1)

Findings from Assessment on 25 May 2011
The approach to using a survey to derive DP could produce results with high uncertainty. The most

likely scenario is that participants do not report the full extent of any illegal clearing. This would result in a conservative baseline. In addition, the value of DP used is taken as the average $DP_{i,i}$ minus the 95% confidence interval (see section 2.1.1 alternate).

Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CARs or OBS raised.		

10.3. Metric tonnes shall be used as the unit of measure and the quantity of each type of GHG shall be converted to tonnes of CO_2e. Consistent with UNFCCC accounting, the six Kyoto Protocol greenhouse gases shall be converted using 100 year global warming potentials derived from the IPCC's Second Assessment Report (which are also available and reprinted in the Fourth Assessment Report). Ozone-depleting substances shall be converted using 100 year global warming potentials from the Fourth Assessment Report, which provides a full set of factors relevant to ODS methodologies and projects. (VCS Standard 4.8.1)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding the use of metric tonnes and GWPs. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

10.4. The methodology shall present equations in a clear, consistent, mathematically correct format which allows data to be traced through them. (Relevant to the VCS principles of transparency and accuracy)

Findings from Assessment on 25 May 2011			
The additional equations are presented in a clear consistent and mathematically correct format.			
Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CAR or OBS raised.		

10.5. Quality management procedures to manage data and information shall be applied and established. Where applicable, procedures to account for uncertainty in data and parameters shall be applied in accordance with the requirements set out in the methodology (as outlined in section 3.17.1 of the VCS Standard Version 3).

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding procedures to manage data and information. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

10.6. Methodologies shall clearly state the assumptions, parameters and procedures that have significant uncertainty, and describe how such uncertainty shall be addressed. Where

applicable, methodology elements shall provide a means to estimate a 95 percent confidence interval. Where the width of the confidence interval exceeds 30% of the estimated value, an appropriate confidence deduction shall be applied. Methods used for estimating uncertainty shall be based on recognized statistical approaches such as those described in the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. Confidence deductions shall be applied using conservative factors such as those specified in the CDM Meth Panel guidance on addressing uncertainty in its Thirty Second Meeting Report, Annex 14. (VCS standard 4.1)

Findings from Assessment on 25 May 2011			
The modules undergoing assessment in this report are part of the VM0007 suite of REDD Methodology Modules, which contain steps regarding uncertainty relevant to the whole GHG emissions calculations. These were not changed by the additions relevant to the population driver approach and are therefore out of the scope of this assessment. However, the new way of deriving a baseline rate and location of deforestation introduced new areas for uncertainty to be calculated and accounted for. Section 1.1.1 alternate requires the DP to be derived as the average $DP_{i,i}$ minus the 95% confidence interval. Section and 2.1.2.2 alternate (dynamic analysis) requires the lower 95% CI to be taken from the modelled DP, whilst section 2.1.2.3 alternate (static analysis) requires the mean minus the lower 95% confidence interval of the model slope parameter will be used as parameter DP. This use of the confidence limit was found to be appropriate.			
Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CAR or OBS raised.		

11.   Adherence to the project-level principles of the VCS Program:

The methodology shall adhere to the project-level principles of the VCS Program (VCS Standard Version 3; Section 2.4), for a list of the full principals see section 1.2 of this report.

11.1.   The methodology shall be compatible with the VCS project level principles, as explained in more detail in section 1.3 of this report. These principles are relevancy, completeness, consistency, accuracy, transparency and conservativeness.

Findings from Assessment on 05 March 2011
The revised modules were found to comply with the VCS principles with the exception of the following instances: **Completeness:** Table 1.1 has an empty cell that causes ambiguity. The parameter "t" is not defined beneath equation 9 or 10. There is no reminder at step 3.0 that when the population driver is used (even in mosaic situations) that a location analysis is required.(**OBS 05/11**) **Consistency:** In the comments for DP it is stated that; "*It is important that this parameter is updated to permit eventual transition to more efficient baseline land use (e.g. agricultural intensification), and/or urban/settled population with less reliance on local land resources, to accurately represent transitions in local development*"(p34)

This sentence was found to be potentially confusing because, when discussed with the Methodology Developers it became clear that the methodologies intention was that upon release of new population projections the baseline must be update based only these new population numbers, but DP only needed to be updated every 10 years. (**OBS 06/11**)

References to BL-UP in other modules were not found to align now that changes have been made to the section numbers, for example, in M-MON it is stated,

"*As described in module BL-UP (Part 2, section 2.2.3) multi-date images must be used to reduce cloud cover to no more than 10% of any image."*

However BL-UP no longer contains a section 2.2.3. (**CAR 11/11**)

Conformance	Yes ☐	No ☒	N/A ☐
NCR/OBS	**CAR 11/11**. **OBS 05/11**, **OBS 06/11**.		

Findings from Assessment on 25 May 2011

Changes were made to address **OBS 05/11**.

With regard to **OBS 06/11**, the referenced text deleted to avoid confusion. Frequency of monitoring restricted to unambiguous "Must be updated at least every 10 years". This addresses **OBS 06/11**.

In addition the numbering of sections has been changed to address **CAR 11/11**. The changes made to address **CAR 11/11** were sufficient to close the CAR, however the labeling of the new population driver sections was not as clear as it could be. **OBS 07/11**.

Completeness: In section 2.1.1 alternate it was not found to be sufficiently clear that the survey should only aim to gather data on 'unplanned' deforestation as defined by the VCS.

In section 2.1.2.3 within the following sentence a reference to 'alternate' is missing, "*Deforested land area (in hectares) (as per procedures described in Sections 2.1.2 and 2.1.3) = dependent variable".* The same issue was found for the heading of section 3.4.2. (**OBS 07/11**)

In section 2.2.2, the sentence "The projected unplanned baseline deforestation in RRLj is estimated as follows:" contains a subscript 'j'. This is incorrect, because the estimate is for RRL (without the subscript). (**OBS 08/11**)

In section 2.4.2 deforestation is not constrained at the RRL_i level when this is a necessary requirement, having defined RRL_j. (**CAR 14/11**)

Consistency: In section 2.2.2 alternate, the module refers to "'a source population's political boundaries". Following discussion with the Methodology Developer it was understood that this means the same as "census unit". It is preferable for terms to be used consistently to avoid any ambiguity. Likewise the terms "analytical units" and "subsets" are used in the module when they appear to mean the same thing. (**OBS 08/11**)

Conformance	Yes ☐	No ☒	N/A ☐
NCR/OBS	**CAR 14/11**		

	OBS 07/11
	OBS 08/11

Findings from Assessment on 22 June 2011			
CAR 14/11 has been addressed by the inclusion of the following text in section 2.4.2: *"Using the constraints identified in Step 2.4.1, map the forest land that is suitable for the further expansion of non-forest land in the project area and estimate its area ($A_{e.d.RRL}$), or for each subset of the RRL ($A_{e.d.RRLi}$), if the RRL has been subdivided using the population driver approach."* With this, deforestation is now constrained at the RRL$_i$ level.			
Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CAR or OBS raised.		

12. Relationship to approved or pending methodologies

12.1. The methodology developer shall list all approved or pending methodologies, under the VCS or an approved GHG program, that fall under the same sectoral scope or same AFOLU project category 4 or combination of sectoral scopes or AFOLU project categories, as applicable. The list shall include, at a minimum, all such methodologies that are available sixty days before the proposed methodology is submitted to the VCSA for public consultation. Such list of methodologies ("listed methodologies") shall contain the methodology name and reference number, and the GHG program under which it is approved or pending. (VCS Methodology Approval 5.2.1.1)

Findings from Assessment on 25 May 2011			
The scope of this audit is only to assess the changes to v3, not the whole module/methodology. Hence this criterion was deemed out of scope.			
Conformance	Yes ☐	No ☐	N/A ☒
NCR/OBS	N/A		

12.2. The methodology developer shall state whether, and explain how, the proposed methodology uses, includes, refers to or relies upon all or part of any of the listed methodologies. Where it does, the methodology developer shall demonstrate that none of the identified methodologies ("similar methodologies") could have been reasonably revised (ie, developed as a methodology revision) to meet the objective of the proposed methodology. The onus is upon the methodology developer to demonstrate that a methodology revision would not have been more appropriate, failing which the proposed methodology shall not receive a positive assessment from the validation/verification body. Examples are provided in the VCS Methodology Approval Process document. (VCS Methodology Approval 5.2.1.2)

Findings from Assessment on 25 May 2011			
The modules submitted were revised from approved modules. The changes were highlighted as tracked changes.			
Conformance	Yes ☒	No ☐	N/A ☐

NCR/OBS	No CARs or OBS raised.

12.3. The methodology developer shall document the above in the relevant section of the methodology document, such document being subject to public consultation and independent assessment by two validation/verification bodies. Where either of the validation/verification bodies is unable to conclude that any approved or pending methodology under the VCS Program or an approved program could not have been reasonably revised to meet the objective of the proposed methodology, in accordance with the procedure set out above, it shall not grant the methodology element a positive assessment. (VCS Methodology Approval 5.2.1.2)

Findings from Assessment on 25 May 2011			
The modules submitted were revised from approved modules. The changes were highlighted as tracked changes.			
Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CARs or OBS raised.		

13. Public Review

13.1. The Methodology shall be posted for public comment in accordance with VCS guidelines. The developer shall take due account of such comments, which means it will need to either update the methodology or demonstrate the insignificance of the comment. It shall demonstrate to each of the validation/verification bodies what action it has taken

Findings from Assessment on 05 March 2011			
At the time of this assessment the public comment period had not expired. The assessment cannot be finalized until the public comment period ends and any comments are addressed.			
Conformance	Yes ☐	No ☒	N/A ☐
NCR/OBS	**CAR 13/11**		

Findings from Assessment on 25 May 2011
A public comment period was held for the revised changes in accordance with the VCS rules.
The public comment period was 10 February 2011 – 11 March 2011. One comment was received. Details can be found here: http://www.v-c-s.org/methodology_ebcsc.html
The following public comment was received:
17 February 2011 *Submitted By: Theron Morgan-Brown* *Organization: MJUMITA* *Country: Australia* *This comment was received via email by the VCS Association.* *This is a public comment regarding the Field Museums's Revision to VMD0007 Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP).*

Section 2.1.1.4 (Map accuracy assessment) requires a 90% forest/non-forest classification map accuracy for the reference region. While this is obtainable in environments where land covers fall into large blocks, this is not obtainable in more fragmented landscapes that include a mix of forests and non-forest woody land covers, especially when they occur in seasonal and or mountainous environments. The approved VM0006 methodology allows for accuracies as low as 70% with discounts for uncertainty and sets the threshold for no discount at 85%. This seems like a more reasonably approach that will greatly increase the applicability of the VM0007 methodology.			

According to the review documents associated with the original VM0007, the Rainforest Alliance reviewers justified moving from an 80% to a 90% map accuracy requirement by arguing that less than 90% would result in too great of uncertainty in areas with low rates of deforestation. VM0006 allows for lower map accuracy, but specifies that the methodology is only applicable in regions experiencing a deforestation rate of 0.5% per annum or greater. Therefore, perhaps a reasonable way to address all concerns would be to adjust the accuracy assessment section of VMD0007 to reflect the requirements and discounts specified in VM0006, but add an additional requirement that areas with deforestation rates below 0.5% per annum must achieve 90% map accuracy.

The Methodology Developers responded via email on 22 March 2011 as follows;

"*This comment does not reference our methodology revision and is therefore not considered further.*"

This response was found to be acceptable. This closes **CAR 13/11**.

Conformance	Yes ☒	No ☐	N/A ☐
NCR/OBS	No CARs or OBS raised.		

Appendix C – Methodology Developer Defense of RRD, Project Area and Leakage Belt criteria – submitted to Rainforest Alliance on 05 May 2011

We use three different examples to attempt to illustrate how we envision the approach being implemented in actual projects. We feel that the constraints contained in the approach allow for it to work conservatively in all cases.

For simplicity, all project areas and political unit areas are regular shapes. In each example, the project area is in blue and the political units comprising the RRD/RRL are in red. Political units in black were considered but not included. A discussion follows each example.

Example 1:
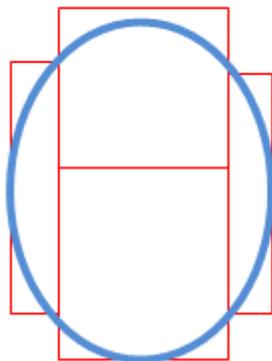
In this example, four political units are used which cover the project area but include little additional area outside of the project area. The project area is 100% forest per the methodology. This means that DP must be calculated from the tiny area outside of the project area and that the population used to assume future deforestation must also be included in this area. Even if we assume that there is massive deforestation in the area while none is inside the project area (not realistic), the limited inclusion of population will not allow for much deforestation to be projected moving forward. This will result in a project with a very small baseline that likely does not truly reflect the drivers of frontier deforestation largely well outside the project area. The project will choose to add additional political units to include additional populations, thereby expanding the leakage belt as well.

Example 2:
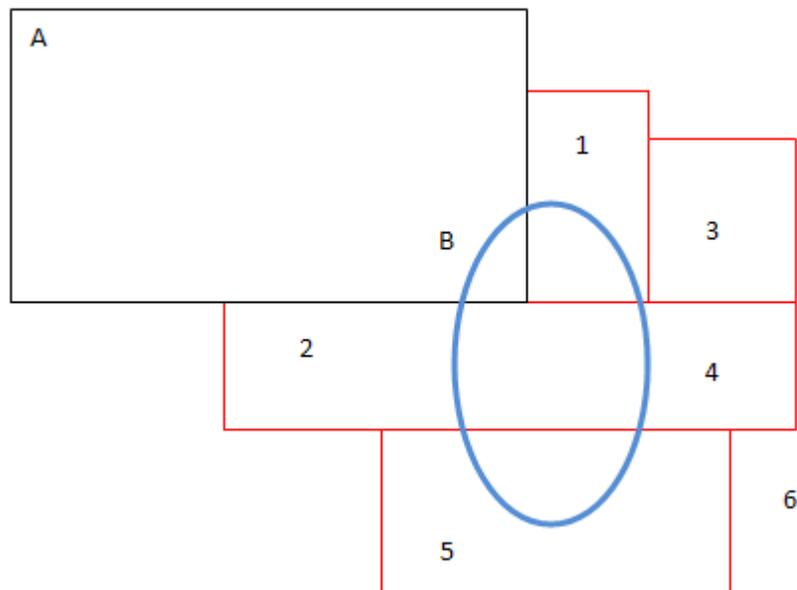
In this example, the project proponent considered 5 political units and felt that only four should be used to comprise the RRD/RRL. The fifth political unit has population A in the northwest corner that is a long distance from the project area and is completely different than the rest of the region (could result in either higher DP or lower). There is a population (B) in that district that may affect the project area but because the entire political unit must be used, there is no way to separate the two populations.

When applying the methodology, the project must assume there will never be deforestation in the portion of the project area not included in the RRD/RRL. This causes the project baseline to be conservative and lose the opportunity to credit project activities in this area because it cannot demonstrate avoided deforestation in that area. Prevented deforestation in this area is thus not credited, nor should leakage be determined and deducted from displacement of the deforestation activities that are unaccounted in the baseline and project accounting. Leakage cannot be considered in isolation, and it is impossible to have leakage from an area that will never be credited and is not part of the baseline. In the same way that a conservation project that is not a carbon project requires no accounting of leakage – displacement happens, but its accounting only has meaning in relation to the positive net effects in the conservation area.

In this example, there is a possibility for deforestation resulting from leakage to not be captured. This is a hazard in any approach attempting to define a leakage belt regardless of the means used. However, there are numerous constraints in place that ensure that the project is sufficiently conservative to prevent this from adversely affecting the overall results. It is very likely that the deforestation from Population B that migrates into the project area or the neighboring political units will balance the deforestation that occurs from populations 1 and 2 migrating into the excluded political unit. Similarly, leakage from populations 3, 4 and 5 are balanced by the populations just outside the political units like population 6 that may cause deforestation inside the RRD/RRL.

A project that "chooses" to exclude the census unit with population B from projected deforestation lowers the amount of total avoided deforestation the project can ever claim in the baseline. In addition, results will be further conservative because M-MON requires monitoring of the entire project area and the project would need to subtract additional credits if deforestation ever occurs in that portion of the project area. We believe these constraints and the fact that populations will migrate in multiple directions serve to ensure the project is not over estimating the true avoided deforestation.

A low population, largely forested area that is attractive to receiving leakage could happen at any point along the perimeter of the RRD/RRL, not just the area marked with a B. This is a fundamental challenge of defining leakage belts using any approach and is not unique to ours. What is unique in our approach in

the example above is that the project is required to assume no baseline deforestation in a portion of the project area and is therefore foregoing project credits as part of defining the RRD/RRL. There may be some leakage unaccounted for, but we would expect the loss of project credits to offset this. No other approved methodology has this type of conservative constraint included. If you are concerned about immigrant leakage, this would be addressed using the approved immigrant leakage process in the leakage module.

Example 3:
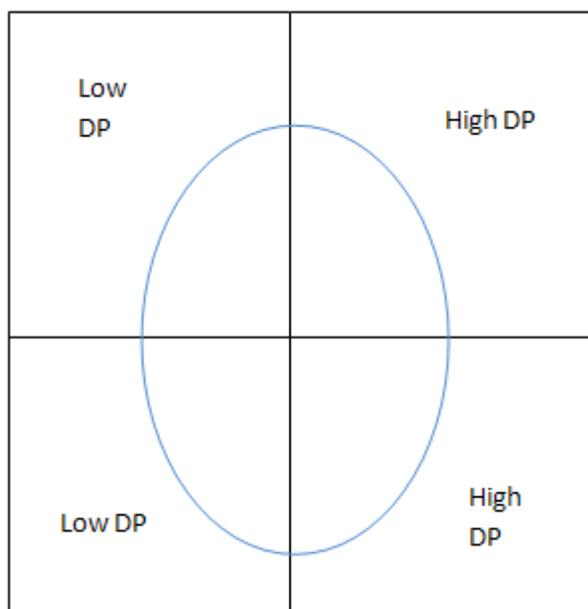
In this example, there are a couple of options that the project proponent can choose which are acceptable using this approach.

Option 1: The regression requirements will prohibit the project from trying to include all four political units in one DP analysis (R^2 would be too high). However, the project could create two subsets to determine DP – one on the west for the low DP and one on the east for the high DP. The resulting full RDD/RRL covers a large area for leakage. The project would likely want to do this to be able to include the entire project area and all of the populations that could access the project area. The baseline would still reflect the different rates across the landscape.

Option 2: The project could select to use either the west or the east side political units to determine the DP and exclude the other two. The constraints discussed in the previous example will make this a conservative approach as well. In this option, the project would be forgoing half of the project area while still being responsible for deforestation that occurs within it. Populations that may be driving deforestation in the excluded political units will not be included in the baseline, reducing the total projected deforestation. Populations will migrate in multiple directions which will increase the amount of leakage observed, but not projected in the political units included in the baseline, reducing the project's avoided emissions. As before, leakage cannot happen from the portions of the project area not included in the baseline.