

SECOND ASSESSMENT OF THE PROPOSED NEW METHODOLOGY “SOIL CARBON” DEVELOPED BY THE EARTH PARTNERS



SCIENTIFIC CERTIFICATION SYSTEMS

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Summary:

This report describes the processes, findings, and outcome of the assessment of the proposed new “Soil Carbon” Methodology (hereafter referred to as the “proposed new methodology”). The proposed new methodology is used to quantify and monitor changes in the carbon accrual and emissions from the soil carbon pool and other GHG pools and sources in VCS projects. The proposed methodology has been developed for use with Agricultural Land Management project types and includes 18 separate modules that are applicable to ALM project types.

This report describes the second assessment in the methodology approval process undertaken by Scientific Certification Systems. The proposed methodology was assessed for conformance with relevant VCS Version 3 program documents, including the current version of the VCS Standard (3.2) and the AFOLU Requirements document (3.2).

The assessment was conducted through desk review of the proposed methodology and the issuance of findings (some of which required corrective action) to the methodology developer. As of this writing, all findings have been closed. Therefore, SCS concludes that the proposed revision is in conformance with all applicable VCS documents. SCS is pleased to approve the proposed new methodology entitled “Soil Carbon” developed by The Earth Partners.

Table of Contents

1 Introduction..... 6

 1.1 Objective 6

 1.2 Scope and Criteria 6

 1.3 Summary Description of the Methodology Element..... 7

2 ASSESSMENT APPROACH 8

 2.1 Method and Criteria..... 8

 2.2 Document Review 9

 2.3 Interviews 11

 2.4 Use of VCS-Approved Expert 11

 2.5 Resolution of Any Material Discrepancy 11

 2.6 Internal Quality Control 12

3 ASSESSMENT FINDINGS 12

 3.1 Applicability Conditions 12

 3.2 Project Boundary..... 13

 3.3 Procedure for Determining the Baseline Scenario..... 13

 3.4 Procedure for Demonstrating Additionality 13

 3.5 Baseline Emissions 13

 3.6 Project Emissions..... 14

 3.7 Leakage..... 15

 3.8 Quantification of Net GHG Emission Reductions and/or Removals 15

 3.9 Monitoring..... 15

 3.10 Data and Parameters 15

 3.11 Use of Tools/Modules 15

 3.12 Adherence to the Project Principles of the VCS Program 16

3.13 Relationship to Approved or Pending Methodologies 17

3.14 Stakeholder Comments..... 18

4 Resolution of corrective action requests and Clarification requests 21

5 Assessment Conclusion 21

6 Report reconciliation 21

7 Evidence of fulfilment of VVB eligibility requirements 21

8 Signature 22

1 INTRODUCTION

1.1 Objective

The purpose of the assessment activities was to provide a second assessment of the proposed new methodology entitled “Soil Carbon” (“the proposed new methodology”) in accordance with the Section 3.5 of the VCS Methodology Approval Process V3.3. The specific objectives were to:

- Assess conformance of the Proposed New Methodology to the guidance documents listed in Section 1.2 of this report.
- Evaluate the proposed new methodology based on guidance given under the VCS Program, including an assessment of applicability criteria, monitoring, data and parameters, and adherence to the project-level principles of the VCS program.
- Determine the need for clarification or requests for change to the proposed new methodology.
- Determine approval status in the second independent assessment of the double approval process.

1.2 Scope and Criteria

SCS assessed the new methodology to ensure that all requirements of the VCS standards for the methodology approval process have been addressed. SCS assessed whether or not the proposed new methodology respects the principles of the VCS standards.

The assessment scope included:

- Applicability conditions
- Project boundary;
- Procedure for determining the baseline scenario
- Procedure for demonstrating additionality
- Baseline emissions
- Project emissions
- Leakage
- Quantification of new GHG emission reductions and/or removals
- Monitoring
- Data and parameters
- Adherence to the project principles of the VCS program
- Relationship to approved or pending methodologies
- Use of tools and/or modules within the proposed new methodology

The assessment was conducted under the following VCS Version 3 criteria:

- VCS Standard v3.2
- VCS Agriculture, Forestry and Other Land Use (AFOLU) Requirements v3.2
- VCS Methodology Approval Process v3.3

- VCS Program Definitions v3.2
- VCS Program Guide v3.2

The assessment was performed using the client-supplied proposed new methodology and modules and other supporting documentation including referenced, published scientific literature, reports and existing methodologies.

1.3 Summary Description of the Methodology Element

The following text has been extracted from the proposed new methodology by The Earth Partners (“the developers”) to provide a summary description:

This document includes methods for quantifying and monitoring changes in carbon accrual in, and emissions from, soils, as well as from other GHG pools and sources which may be impacted by soil focused projects. The method is designed based on guidance provided in the IPCC 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry. This method has been designed to be applicable to conservation, ecosystem restoration, and agricultural projects as well as other projects where the management of soils directly, or management of fertility, and vegetation systems can affect changes in soils and soil carbon. The method is applicable to a range of project scenarios designed to improve soils, including changes to agricultural practices, grassland and rangeland restorations, soil carbon protection and accrual benefits from reductions in erosion, grassland protection projects, and treatments designed to improve diversity and productivity of grassland and savanna plant communities.

The intention of the developers has been to create a methodology which includes sufficient detail on methods to allow a wide range of people to use the methods during the development of soil carbon projects. However, accurately estimating and projecting the values of the various ecosystem carbon pools does require a significant level of technical ability on the part of the project proponent team. It is therefore expected that in many cases landowners and farmers may need to work with people with specific technical skills to complete the development of a soil carbon PD using this methodology.

This methodology provides methods for the quantification of soil carbon, as well as methods for quantifying changes in vegetation and litter pools which may be impacted by project activities, as compared with the baseline scenario.

This methodology does not address projects designed to enhance carbon sequestration in ancient soils (paleosols) that have been buried by more recent soil formations. While the same methods presented here are applicable to characterize the buried substrates, other methods (such as drilling rigs with a deeper boring capacity and split spoon sampling equipment) are beyond the scope of this methodology, which is focused on the extant active soil surfaces and active present day rooting zones soils.

This methodology is focused on addressing the following key variables:

- Estimating the amount of carbon in the soil, litter, and living vegetation pools at the start of the project;
- Monitoring and documenting changes in soil carbon and the other carbon pools over time under the project scenario;
- Projecting changes in soil carbon and other pools under the *baseline scenario*;
- Estimating emissions of nitrous oxides and methane from soils, and,
- Estimating project leakage.

The methodology has been designed using a modular approach. The methodology document lays out the steps required to fulfill estimation, projection and quantification requirements for projects wishing to register credits under the VCS. The methodology calls on the associated modules for specific techniques and options for estimating or projecting the GHG impacts of changes in specific pools and emissions.

The methodology requires the completion of four main tasks:

1. Assessment of applicability and project additionality, identification of project boundaries, and determination of the baseline scenario;
2. *Ex-ante* estimation and projection of carbon pools and emissions under the *baseline scenario*;
3. *Ex-ante* estimation and projection of carbon pools and emissions under the *project scenario*; and,
4. Development of a monitoring plan, and subsequent ex-post monitoring of pools and emissions under the project scenario, as well as under the baseline scenario if a monitored baseline is used including monitoring of leakage.

2 ASSESSMENT APPROACH

2.1 Method and Criteria

The proposed new methodology was assessed using a process developed by SCS to determine conformance with the VCS requirements. The following elements of the proposed new methodology were examined as part of this process:

- The VCS V3.2 Standard, including Sections 3 and 4;
- The appropriateness and adequacy of the eligibility criteria;
- The appropriateness and adequacy of the approach for determining the project baseline;
- The appropriateness and adequacy of the approach/tools for the determination of whether the project is additional;
- The appropriateness and adequacy of the approach to define the project's physical boundary and sources and types of gases included;
- The appropriateness and adequacy of the approach for calculating baseline emissions, project emissions and emission reductions;
- The appropriateness and adequacy of the approach for calculating leakage;

- The appropriateness and adequacy of monitoring;
- The appropriateness and adequacy of monitored and non-monitored data and parameters used in emissions calculations;
- Adherence to the project-level principles of the VCS Program, overall; and
- An Assessment Report with internal technical review.

The methodology review process incorporated six parts: standards review, methodology review, comparison with the findings of the first assessor and a review of the public comments, corrective action, technical review, and assessment approval, if applicable.

The assessment was performed by reviewing the conformance of the proposed new methodology with respect to the VCS guidance documents. In addition, the assessment team reviewed the proposed new methodology and associated 18 modules for adherence to the principles and practices of carbon accounting and the technical aspects related to the ALM project type. It should be noted that a technical expert in soil science, Dr. Richard D. Hammer, was also included in the assessment team to add further expertise in the review of the proposed new methodology.

As this was the second assessment of the proposed new methodology, new language in the proposed new methodology was inserted in “tracked changes” for easy review. The assessment team reviewed the developers’ responses and findings issued to the first assessor.

Lastly, the assessment team reviewed the accounting framework of the proposed new methodology to ensure that it would not likely violate the core VCS principles: Accuracy, Consistency, Completeness, Relevance, Transparency, and Conservativeness (VCS Standard V3.2, Section 2.4).

The applicable standards listed in Section 1.2 of this report were thoroughly reviewed and compared to the proposed new methodology. Upon comparison with the VCS requirements, the first assessor’s comments and the comments received during the public comment period of October 5, 2011 to November 3, 2011, findings were issued to improve the proposed new methodology and bring the proposed new methodology into conformance (Section 2.5). Finally, the proposed new methodology was independently reviewed by an internal technical reviewer prior to issuing an assessment approval.

2.2 Document Review

The following documents were reviewed during this assessment:

- The proposed new methodology, Soil Carbon, version 1.8 dated 7/23/2012
- 18 proposed new modules:
 - Stratification Version 1.8, dated 7/23/2012
 - Projection of Future Conditions Version 1.8, dated 7/23/2012
 - Project Boundaries Version 1.8, dated 7/23/2012

- Soil Carbon Version 1.8, dated 7/23/2012
 - Living Plant Biomass Version 1.8, dated 7/23/2012
 - Litter Version 1.8. dated 7/23/2012
 - Dead Wood Version 1.8. dated 7/23/2012
 - Woody Biomass Harvesting and Utilization Validation version 1.8, dated 7/23/2012
 - Long Lived Wood Products Version 1.8, dated 7/23/2012
 - Domestic Animal Populations Version 1.8, dated 7/23/2012
 - Emissions from Domestic Animals Version 1.8, dated 7/23/2012
 - Emissions of nonCO2 GHGs from Soils Version 1.8. dated 7/23/2012
 - Emissions from Power Equipment Version 1.8, dated 7/23/2012
 - Emissions from Burning Version 1.8, dated 7/23/2012
 - Displacement Leakage Version 1.8, dated 7/23/2012
 - Market Leakage Version 1.8, dated 7/23/2012
 - Monitoring Plan Version 1.8, dated 7/23/2012
 - Summation of new GHG change Version 1.8, dated 7/23/2012
- Comments from the 30-day VCS Public Comment period. Comments were received from The Nature Conservancy and Savory Institute.
 - Responses from the developers to the public comments
 - The assessment report for the proposed new methodology from the first assessor, Environmental Services, Inc.

The assessment activity included a detailed review of the proposed new Methodology and associated Modules against the criteria of the guidance documents listed in Section 1.2 of this report. In addition, the proposed new methodology elements were assessed for logical coherence, internal consistency, completeness, and consistency with current best practices for quantification of emission reduction and removals.

2.3 Interviews

The assessment team communicated with Frederik Vroom, Carbon Analyst of Brinkman Earth Systems Ltd, during the course of the second assessment. The first call focused primarily on coordination and the historical background of the pre-assessment and first assessment of the proposed new methodology by the first assessor. This phone call was supplemented by an email from Mr. Vroom, which included a spreadsheet containing the findings from the first assessor as well as the developers' responses to these findings. A separate spreadsheet was also provided with the responses to the comments of the two stakeholders who made submissions during the 30-day mandated VCS public comment period for the proposed new methodology.

A second phone call included Mr. Vroom as well as his colleague Robert Seaton. This call focused on the responses the developers prepared for SCS' findings. Clarifications about these findings were also provided during this phone call.

SCS also contacted Carolyn Ching, the VCSA Methodology Approval Process (MAP) representative for the proposed new methodology, during the assessment to ensure conformance with the VCS requirements and the MAP.

2.4 Use of VCS-Approved Expert

The lead assessor for the second assessment was Christie Pollet-Young, SCS Senior Verification Forester and VCS-approved AFOLU expert for the Improved Forest Management (IFM) project type. While Ms. Pollet-Young is an IFM expert, the proposed new methodology and associated modules were only assessed for the ALM project types.

2.5 Resolution of Any Material Discrepancy

During the course of the assessment, SCS issued three types of findings to the developers. The following is a description of each of the finding types.

Non-Conformity Reports (NCRs) were issued in response to material discrepancies in the proposed new methodology. These material discrepancies fell into one of the following categories:

- The language, intent and/or style of the proposed new methodology was not in conformance with the VCS requirements, the principles and practices of the disciplines of the AFOLU project types, and/or the proposed new methodology departed from the underlying principle of conservativeness;
- The language of the proposed new methodology required clarification in order to avoid ambiguity;
- The requirements of the proposed new methodology were not reasonable;
- Formulae in the proposed new methodology were not consistent with mathematical convention;
or

- Application of the proposed new methodology, as written, was likely to result in biased estimates of the underlying parameters.

An adequate response for each issued NCR, including evidence of corrective action, was required before an assessment opinion could be reached.

New Information Requests (NIRs) were issued to the developers when more information was needed to determine whether a material discrepancy existed or to provide clarification. Issuance of an NIR did not necessarily signify the presence of a material discrepancy. However, an adequate response to all issued NIRs was required before an assessment opinion could be reached.

Opportunities for Improvement (OFIs) were issued to the developers when an opportunity for improvement in the proposed new methodology was identified. Such opportunities for improvement did not constitute material discrepancies. A response to issued OFIs was not required before an assessment opinion could be reached.

All issued findings have been resolved. All issued findings are described in Appendix A of this report.

2.6 Internal Quality Control

Internal quality control was maintained in accordance with SCS' quality control system. Specifically, a single workbook (the Findings Presentation Workbook) was used for the issuance, tracking, and closure of all findings issued. In addition to containing all of the information on the findings, the Findings Presentation Workbook contains the developers' responses to the findings and allows for multiple iterations of communication between the developers and the assessor. Finally, the Findings Presentation Workbook contains the assessor's comments at the closure of every finding. Therefore, the workbook provides a transparent record of the identification and resolution of material discrepancies identified throughout the assessment process.

In addition, the SCS quality system requires that the entire methodology assessment is technically reviewed by a SCS Lead Verifier. For the second assessment of the proposed new methodology, Zane Haxton, SCS Verification Forester reviewed all assessment documentation and ensured that the assessment process was in accordance with the American National Standards Institute (ANSI) approved quality system maintained by the Greenhouse Gas Verification Program of Scientific Certification Systems.

3 ASSESSMENT FINDINGS

3.1 Applicability Conditions

The proposed new methodology includes both mandatory and optional conditions. The mandatory conditions relate to the VCS rules for the three ALM project types that are approved to use this proposed new methodology such as project start date, the clearance of native ecosystems, and suitable project activities. Specific to the methodology are applicability conditions related to significant changes to termite populations and changes to surface and shallow soil moisture regimes. Optional conditions facilitate a streamlined use of the methodology and associated modules.

The module elements include language specifying that methodology developers who choose to use one of the modules included in this assessment must ensure that the methodology contain appropriate guidance on use of the module. In the case of the proposed new methodology, usage of specific modules is prescribed in a step-wise system of tasks that include specification of conditions or parameters as appropriate.

The applicability conditions are appropriate, adequate, and in compliance with the VCS rules.

3.2 Project Boundary

The methodology refers the user to the module “Project Boundary Determination” to determine project boundaries. The Project Boundary Determination module provides some specific guidance on defining spatial boundaries. With regard to specific requirements for spatial and temporal boundaries, the user is referred to the VCS Standard. With regard to carbon pools to be accounted, the user is referred to the AFOLU Requirements v3.2. We find these provisions to be appropriate, adequate, and in compliance with the VCS rules.

3.3 Procedure for Determining the Baseline Scenario

To determine the baseline scenario, the user is referred to the latest version of the “Combined tool to identify the baseline scenario and demonstrate additionality for A/R CDM project activities” (the CDM A/R tool). Noting that the CDM A/R tool is being used in the context ALM activities in a VCS Methodology, specific guidance is provided for interpreting the terms “A/R”, “forestation”, “forest”, “CDM”, and “tCERS” where they occur in the CDM A/R tool so that proper application to the VCS ALM context is clarified. The CDM A/R tool specifies that all land used within the project boundary that are currently existing or existed at some time since 31 December, 1989 be considered among the alternative land use scenarios, which conforms to the requirement in section 4.4.3 of the AFOLU Requirements to account for current and previous management activities. The guidance also explicitly requires that all VCS ALM rules be followed. The Methodology’s use of the CDM A/R tool for determination of the baseline scenario, together with the guidance provided regarding interpretation of terminology and deference to VCS ALM requirements, meets the requirements of the VCS Standard.

3.4 Procedure for Demonstrating Additionality

The Methodology specifies using either the latest version of the “Combined tool to identify the baseline scenario and demonstrate additionality for A/R CDM project activities” (CDM A/R tool) or the latest version of the VCS “Tool for Demonstration and Assessment of Additionality”. Should the CDM A/R tool be used for demonstrating additionality, the Methodology requires that the same guidance relating to use of the tool for determination of the baseline scenario be followed. These provisions meet the requirements of the VCS Standard.

3.5 Baseline Emissions

Quantification of baseline emissions is accomplished following a sequence of 20 individual subtasks under Task 2, as prescribed in Section 8.1 of the Methodology. Each of the subtasks is associated with a particular step in the quantification process for a particular pool being monitored. Included under each

subtask is information relating to requirements, goals, and methods. The sequence of tasks is designed to be followed in order.

The methodological pattern is similar for each of the 12 potential GHG pools that the methodology accounts for: Soil Carbon (required for all projects), Living Plant Biomass, Litter, Dead Wood, Harvested Woody Biomass, Long Lived Wood Products, Emissions from Domestic Animals, Emissions of nonCO₂ GHGs, Emissions from Power Equipment, Emissions from Burning, Displacement Leakage, and Market Leakage. First, the project area is stratified in a manner appropriate for the pool being monitored using the module Stratification. Next, current levels are estimated using one of the modules that focuses on the individual pool such as Soil Carbon, Litter, or Living Plant Biomass. The Soil Carbon module includes extensive guidance on planning and implementing a soil carbon inventory and provides equations for calculating total soil carbon and confidence interval. The other modules focused on a particular pool do likewise for their respective pool. Next, the module Projection of Future Conditions is applied, with the pool being monitored as the relevant variable. This module includes extensive guidance including a 10 step analytical process to identify the agents and drivers of change, the nature of the information available, such as remote sensing and/or mapping data, data obtained from sampling, and guidance on selecting and verifying the appropriateness of various modelling approaches, including procedures to estimate soil carbon loss over time, as required in section 4.5.3 of the AFOLU Requirements. Note that if soil carbon can be assumed to decrease or remain constant under the baseline scenario, projecting future change in Soil Carbon under the baseline scenario is not required. The final task under this section is to summarize net GHG changes under the baseline scenario for all pools being monitored, which follows the procedures laid out in the module Summation of Net GHG Change. Each of the modules was evaluated in the context of quantifying baseline emissions and found to be in conformance with accepted practices.

3.6 Project Emissions

The procedures laid out in the Methodology for quantifying ex-ante project emissions follow closely the procedures laid out for quantifying the baseline. The procedures are laid out as a series of subtasks; each subtask pertaining to a particular quantification step for one or more GHG pools. Information regarding the requirements, goals, and methods for each step is included. For each pool or group of pools, the subtasks begin with stratification following the module Stratification. Since current levels for all pools being monitored were estimated under quantification of the baseline, this subtask is not included under ex-ante quantification. For each pool being monitored, the module Projection of Future Conditions is used to project GHG changes under the project scenario. Finally, the module Summation of net GHG Change is used to summarize net ex-ante GHG changes.

The procedures for quantifying ex-post project emissions are prescribed using a similar approach: a sequence of subtasks is followed, each with defined requirements, goals, and methods, for each GHG pool being monitored. The ex-post estimates are based on application of the GHG pool focused modules such as Soil Carbon, Litter, and Living Plant Biomass, as were used to estimate current levels under quantification of the baseline scenario. Use of the module Projection of Future Conditions is not required for ex-post estimation. The module Summation of net GHG Change is used to summarize net ex-post GHG changes.

Each of modules was evaluated in the context of accomplishing the task as specified and found to be in conformance with the VCS rules.

3.7 Leakage

For assessment of displacement leakage, the Methodology refers the user to the module “Displacement Leakage”. The module describes two approaches to estimation of displacement leakage, a direct monitoring approach and an indirect approach based on detecting changes within a leakage zone. The module prescribes logical and acceptable methods for applying both of these approaches in a manner that conforms to VCS requirements.

The Methodology requires projects to account for market leakage where reductions in the production of wood, animals, or agricultural products within the project area are expected under the project scenario and where direct displacement of these activities is not found to be likely under tasks performed earlier in the sequence. The user is referred to the module “Market Leakage”, developed by the Proponent, to account for market leakage. The Market Leakage model provides guidance for estimation of market leakage using an analysis approach that is logical and comprehensive. It will be up to the verifier to determine whether this guidance was followed in project specific cases.

The procedures to estimate leakage are appropriate, adequate, and in conformance with the VCS rules.

3.8 Quantification of Net GHG Emission Reductions and/or Removals

The Methodology and the associated module “Summation of Net GHG Change” sets out procedures for calculating net change in carbon stocks and the net GHG benefit, which includes adjustment for leakage, and the Total GHG credits to be issued. The calculation methods are appropriate, adequate, and in compliance with the VCS rules.

3.9 Monitoring

The Methodology and associated module “Monitoring Plan” set out the requirements for monitoring plans including monitoring procedures, timing, and the data and parameters to be monitored. Methods for monitoring leakage, changes in carbon stocks, including sampling locations and techniques are provided and are based on sound principles.

Monitoring procedures are appropriate, adequate, and in compliance with the VCS rules.

3.10 Data and Parameters

Data collection and processing techniques for monitoring purposes are prescribed in the various modules associated with each attribute to be monitored. That is, data and parameters for monitoring Soil Carbon are described in the Module Soil Carbon, data and parameters for monitoring Litter are described in the Module Litter. All modules were reviewed by the audit team for conformance to scientific principles and common practice.

Specification of data and parameters is appropriate, adequate, and in compliance with the VCS rules.

3.11 Use of Tools/Modules

The associated modules are integrated into the Methodology. Use of specific modules to perform specific tasks is clearly prescribed in the Methodology.

The following tools or modules approved under the VCS or an approved GHG program are used within the proposed new methodology or one or more of the associated modules

- The latest version of the CDM: "Combined tool to identify the baseline scenario and demonstrate additionality for A/R CDM project activities" is used within the Methodology in Sections 6 and 7 in conjunction with determining the baseline scenario and demonstrating additionality, respectively.
- The latest version of the VCS "Tool for Demonstration and Assessment of Additionality" can be used in the Methodology in Section 7 Procedure for Demonstrating Additionality as an option to using the above noted CDM tool.
- The CDM A/R Methodological Tool "Calculation of the number of sample plots for measurements within A/R CDM project activities" (AR-AM Tool 03 Version 02 or later version) can be used within the module Soil Carbon and Living Plant Biomass to calculate the number of sample plots required to achieve a specified level of statistical precision.
- The latest approved version of the VCS Non-Permanence Risk Tool is used to calculate the Buffer Percentage

Use of Tools and Modules is appropriate, adequate, and in compliance with the VCS rules.

3.12 Adherence to the Project Principles of the VCS Program

The proposed new methodology adheres to the VCS Program principles as set out in Section 2.4 of the VCS Standard. The proposed methodology will support quantification of ex post GHG emissions reductions and/or removals in a way that is in conformance with said principles, as is discussed below.

- The proposed new methodology and associated modules adhere to the principle of Relevance by specifying applicability conditions for the Methodology and providing criteria and guidance for selection of GHG pools that are in conformance with the VCS rules.
- The proposed new methodology and associated modules adhere to the principle of Completeness by requiring accounting for all GHG pools that may significantly affect net GHG removals or reductions, and all factors that may significantly affect changes in those pools over time.
- The proposed new methodology and associated modules adhere to the principle of Consistency by providing definitions of terms that are consistent between modules and in conformance with VCS requirements and good practice, and by providing detailed sampling and quantification methodologies which include requirements to document the reasoning behind choices made with regard to the parameters and procedures used.
- The proposed new methodology and associated modules adhere to the principle of Accuracy by providing detailed guidance on sampling and quantification methods.
- The proposed new methodology and associated modules adhere to the principle of Transparency by requiring documentation of the reasoning and assumptions behind methodological choices.

- The proposed new methodology adheres to the principle of conservativeness by ensuring that conservative default values are used and that, where quantified GHG emissions reductions and/or removals are derived from field sampling, sampling-based uncertainty is appropriately quantified using the procedures within each module so that credits issued are conservatively discounted.

3.13 Relationship to Approved or Pending Methodologies

As of the date of release of this report to the client in accordance with Section 3.4.3 of the VCS Methodology Approval Process, one VCS approved methodology, VM0017 - *Adoption of Sustainable Agricultural Land Management, v1.0*, is available for soil carbon focused projects of the ALM project type. However, this methodology focuses on a specific set of management practices.

In addition, three related methodologies are currently under development:

- *“ALM Adoption of Sustainable Grassland Management through Adjustment of Fire and Grazing”* - This methodology is limited to activities on uncultivated grasslands where fire is a potential occurrence.
- *“Agricultural Land Management – Improved Grassland Management”* – This methodology is dependent on the existence of applicable, tested soil models for determining soil carbon.
- *“Methodology for Sustainable Grassland Management (SGM)”* – This methodology is specific to sustainable grassland management projects where ongoing degradation is occurring and is expected to continue
- *Proposed VCS Methodology: Calculating Emission Reductions in Rice Management Systems* – This methodology is specific to reducing emissions from rice cultivation.

All of these existing proposed methodologies focus on specific elements of the ALM continuum. The use of soil carbon prediction models such as Century and DNDC are widely applied in these methodologies. This methodology is much more general, and is designed to be applicable to projects where a wide variety of activities are or may occur under the baseline or project scenario, such as timber harvesting, fertilization, etc. Soil carbon is measured in both baseline and project scenario and the DNDC model is used only for quantifying the methane and nitrous oxide emissions.

In summary, no existing or pending methodology could reasonably be revised to serve the same purpose as the proposed new methodology.

3.14 Stakeholder Comments

The audit team reviewed 2 documents on the VCS website containing public review comments; VCS_TEP Comments.pdf submitted by Adrea Malmberg of The Savory Institute, and Public Comments for TEP Methodology TNC.pdf submitted by Marissa Ahlering and Joe Fargione. The team determined that all significant issues raised by the commenters were addressed by the developer, as detailed below.

Comment By:	Comment	Response from Developer	2nd Assessment Body Comments
Andrea Malmberg / Savory Institute	...one cannot compare the same number of ruminants in a feedlot to those grazing highly nutritious native grasslands. We find it critically important that we first distinguish between those impacts that are due to livestock themselves, and those that are in fact due to how human beings decide to manage livestock.	We agree. To te extent that there is well accepted data available to distinguish these differences, we think that the method addresses these issues, and thus we do not feel that changes are necessary. However, it is clear that a lot more could be done to improve the data, and that in future methods may be able to improve the specificity of dealing with these issues.	The current version of Module 11 Domestic Animal Populations evaluates both the numbers of animals and the manure management system. The Commenter’s concerns are addressed by the methodology element.
Andrea Malmberg / Savory Institute	Properly managed livestock (planning for the appropriate timing, duration, intensity and frequency of grazing and allowing for adequate recovery periods)is a key in sequestering carbon while at the same time enhancing the viability of pastoralists’ livelihoods.	Because the method is sampling based, it will allow these effects to be measured and credited.	Commenter’s comment is more a general declarative statement than an expression of concern on a specific issue in the Methodology or Modules. Developer's response, indicating that, because the Methodology is based on sampling, the issues of concern are being addressed, is adequate.
Andrea Malmberg / Savory Institute	We contend and think that your methodologies should expose that properly managed livestock may be considered a zero emitter of CH4 since what the bacteria in the rumen emits, microbial activity in healthy soils are able to use up.	Using the combination of the soil emissions and livestock emissions modules will allow this to be accounted.	Developer's response addresses the commenter’s concern.

<p>Marissa Ahlering / TNC</p>	<p>Project Description developers should also be allowed to use VCS’s “Tool for Demonstration and Assessment of Additionality.”</p>	<p>We have added this option. If this option is used, we have requested that project developers continue to use the baseline determination section of the CDM tool</p>	<p>Developer's response addresses the commenter’s concerns by incorporating her suggestion.</p>
<p>Marissa Ahlering / TNC</p>	<p>Task 2.6 under this section deals with projecting future biomass under the baseline scenario, but the goal statement only refers to woody biomass. This seems inconsistent with a more general approach to project total future biomass including non-woody vegetation. The language around biomass is somewhat inconsistent throughout the documents/modules about whether they include non-woody biomass or not. The language in the modules themselves seems more general.</p>	<p>This correction has already been made</p>	<p>Developer's response addresses the commenter’s concerns by incorporating their suggestion.</p>
<p>Marissa Ahlering / TNC</p>	<p>Tasks 2.12 through 2.14 deal with estimating current animal populations, future animal populations and projecting emissions under the baseline scenario, but there is no task for projecting animal emissions under the project scenario. This seems like a necessary task to include given that animals are likely to still be present in some project scenarios.</p>	<p>Not true. Tasks 3.8 and 3.9 deal with this issue ex-ante, and 4.8 and 4.9 deal with it ex-post.</p>	<p>Developer's response addresses the commenter’s concerns by pointing out that the premise is incorrect.</p>

Marissa Ahlering / TNC	As written, Project Developers are not required to account for the loss of fertilizer applications from a baseline scenario. This seems like a major omission.	It's not entirely clear what is meant by this comment. However, I believe that tasks 2.15, 2.16, 3.10 and 4.12 deal with the issue of soil emissions changes due to changes in fertilizer, and tasks 2.6, 3.4 and 4.4 would deal with changes in biomass production.	Developer's response is adequate
Marissa Ahlering / TNC	Task 3.16 refers to displacement of agricultural production but only lists domestic animals as the relevant variable in the Methods section of this task. It seems agricultural production has been forgotten from the text of the goal and methods sections.	Good point. Changes made to task 3.16	Developer's response addresses the commenter's concerns by incorporating their suggestion.
Marissa Ahlering / TNC	Suggest allowing people to choose to use VCS's "Tool for Market Leakage" (under development).	Text added to allow this option if the market leakage tool is finished	During review, VCS requested that language alluding to the to-be-developed market leakage tool be stricken. The developer deleted such language.
Marissa Ahlering / TNC	The same issues arise under the both the ex-ante and ex-post estimation since the same methods and tools are used for both.	Partly true, but I would prefer to keep them as separate sections since the ex-post involves monitoring which is not undertaken for the ex-ante.	Developer's response is adequate.
Marissa Ahlering / TNC	Even though the applicability criteria in the overview document clearly outline only ALM projects, the applicability criteria for many of the modules is listed as all AFOLU projects. More consistency is needed.	This was deliberate, since we want to maintain as wide an applicability for the modules, as versus the method, as we can, to allow these modules to be used for other methods. Otherwise the use of the modular approach is pointless.	The language regarding Applicability Conditions within the Modules was revised by the developer during the 2nd Assessment as described in Finding NIR 4. The commenter's concern was addressed by the developer.

<p>Marissa Ahlering / TNC</p>	<p>Numerous editing errors were present throughout all the documents that need to be corrected, but they became way too numerous to detail here. The writing and language needs to be improved.</p>	<p>Without specific examples it is impossible to know if she is pointing to things other than those that have already been corrected.</p>	<p>Without specific examples, it is not feasible to evaluate whether corrective action has been taken. Numerous typographical and formatting errors were found and addressed by the developer during the 2nd Assessment. The commenter’s concerns have been addressed.</p>
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4 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Please see Appendix A. List of Findings

5 ASSESSMENT CONCLUSION

The assessment team concludes that the proposed new methodology is appropriate, adequate and in compliance with VCS rules. It will provide a major contribution to projects containing soil carbon in the Agriculture Land Management (ALM) project type and potentially in other AFOLU project types through the various modules associated with the methodology. The assessment team recommends that the VCSA approve the proposed new methodology and associated modules.

6 REPORT RECONCILIATION

First assessor – State whether the revisions made to the methodology element during second assessment are approved, and state the version and issuance date of the methodology element that is receiving this approval (ie, the version of the methodology that was produced during second assessment). This section shall be left blank in the draft first assessment report.

No revisions to this report were required of the Second Assessment Body to reconcile with the first assessment report.

7 EVIDENCE OF FULFILMENT OF VVB ELIGIBILITY REQUIREMENTS

The following evidence of fulfilment of SCS’ eligibility requirements is presented in accordance with Section 4.2 of the VCS Methodology Approval Process.

SCS has completed ten project validations under sectoral scope 14 (AFOLU). A summary of the first ten project validations performed by SCS is as follows:

Project and Project ID	Date validation report issued	Date project registered	Name of GHG program under which project registered
INFAPRO Rehabilitation of logged-over dipterocarp forest in Sabah, Malaysia (672)	8/31/2011	9/2/2011	Verified Carbon Standard
Natural High Forest Rehabilitation Project on degraded land of Kibale National Park (673)	9/6/2011	9/6/2011	Verified Carbon Standard
Protection of a Tasmanian Native Forest (Project 3: Peter Downie) (587)	3/18/2011	4/7/2011	Verified Carbon Standard
Redd Forests Grouped Project: Protection of Tasmanian Native Forest (641)	5/13/2011	7/1/2011	Verified Carbon Standard
Protection of a Tasmanian native forest – Project 1 – REDD Forests Pilot (605)	3/18/2011	5/3/2011	Verified Carbon Standard
Boden Creek Ecological Preserve Forest Carbon Project (647)	6/24/2011	7/18/2011	Verified Carbon Standard
Peri-urban bamboo planting around South African townships (Project ID confidential)	8/8/2011	12/8/2011	Verified Carbon Standard
Tree planting in South African townships (Project ID confidential)	9/2/2011	12/8/2011	Verified Carbon Standard
Rimba Raya Biodiversity Reserve Project (674)	8/31/2011	9/7/2011	Verified Carbon Standard
Reforestation Across the Lower Mississippi Valley (774)	4/20/2011	2/14/2012	Verified Carbon Standard

Note that the above is not necessarily an exhaustive list of all validations performed by SCS.

8 SIGNATURE

Signed for and on behalf of:

Name of entity: Scientific Certification Systems

Signature:



Name of signatory: Todd Frank

Date: July 23, 2012



Certification for a Sustainable World™

ASSESSMENT UNDER THE VERIFIED CARBON STANDARD (VCS)

List of Findings

**Reporter/Member:
The Earth Partners**

**Project:
Soil Carbon Methodology and Modules**

**Reporting Period:
N/A**

NCR 2011.1 dated 12/23/2011

Standard Reference: VCS Program Definitions, version 3.1

Document Reference: Soil Carbon Methodology and various Modules

Finding: The VCS Program Definitions Requirements Document states that this document "provides the definitions for terms used in the VCS Program documents. In addition, the definitions set out in ISO 14064-2:2006, ISO 14064-3:2006 and ISO 14065:2007 shall apply to the VCS Program." A review of the TEP Soil Carbon Methodology and associated modules include glossaries with inconsistent definitions. Examples include the terms "baseline scenario," "litter" and "significant."

It should also be noted that the definition of terms between modules is not always consistent (e.g. stratification).

Proponent Response: Definitions have been made conform VCS and ISO standards and consistent among modules and methods

Auditor Response: Definitions are now consistent between methodology and all modules.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.2 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 4, Module 6, Module 7 and Module 8

Finding: While the Statistical Calculations sections of these modules addresses the need to re-calculate confidence intervals when re-stratification is undertaken, these modules fail to account for post-stratification.

Proponent Response: Module 4: New version does not require post stratification addition; Module 6: Step 5 added b: If post-stratification is undertaken, confidence interval variances should be re-calculated Module 7: Statistical calculations: b: If post-stratification is undertaken, confidence interval variances should be re-calculated: Module 8: step 4: added If post-stratification is undertaken, confidence interval variances should be re-calculated.

Auditor Response: Modules were modified per Proponent's response

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.3 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 6, Equation 6.1 and other equations throughout the modules such as

Module 5: Equations 5.1, 5.2, 5.6

Module 6: Equations 6.1, 6.9, 6.13

Module 7: Equations 7.1,7.2,7.3, 7.4, 7.5, 7.6

Module 8: Equations 8.1, 8.2,8.3,8.4, 8.5, 8.6

Module 12: Equations 12.2, 12.4, 12.5

Module 13: Equation 13.1

Module 15: Equation 15.6, 15.7

Module 19: Equation 19.2

Finding: The summation and subscripting notation used in several of the modules does not follow standard mathematical convention. As such, the equations are unclear to the reader. For example, in Module 6 “Living Plant Biomass”, Equation 6.1 is an equation where it is unclear to which "1-y" and "1-x" refer. The top of the Sigma conventionally refers to the upper bound of the indexing variable.

In addition, there is inconsistency throughout the modules about the subscripting for strata-level attributes. Both "s" and "i" are used as a subscript to indicate strata.

Proponent Response: The sigma notations have been redrafted to address this problem, and the symbol for strata has been standardized to "s"

Auditor Response: The notation of Equation 7.5 makes it unclear that the summation should begin with the 2nd sample from center and end at the outer sample; the terms Y and Z are undefined; and the area of the at ground surface needs to be subtracted from the area representing the inner measurement.

Proponent Response 2: Corrections made.

Auditor Response 2: The correction for stem area has been made, but as of 3/27/2012 the summation notation is still wrong.

As of the 4/10/2012 version of Module 7, equation 7.5 including both the addition of the term corresponding to the area of the tree at the ground surface, and the correction to the summation notation.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.4 dated 12/23/2011

Standard Reference: VCS Standard, v. 3.1, Section 4.3

Document Reference: All Modules

Finding: Section 4.3.4 of the VCS Standard states the following:

"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."

Please include more specific applicability conditions for each module. Presently, the majority state "Applicable to all AFOLU Projects." Please state under what conditions the module is required and when it is optional.

Proponent Response: As requested in 4.3.4, the methodology includes guidance on applicability, and required conditions for the application (Section 4 of the methodology). Conditions under which modules are required or optional are given in section 8 of the methodology. Applicability conditions for the Modules have been changed to reflect the requirement to conform with VCS guidance.

Auditor Response: In response to the finding, the following language was inserted into the Applicability Conditions section of the modules:

Where methodology developers choose to use this module as part of a methodology, they must ensure that the methodology contains appropriate supplementary guidance on the use of this module, including where necessary modifications to methods and procedures detailed in this module, to ensure that application, methods and procedures are in compliance with VCS standards as set out in the most current version of the AFOLU Requirements, and other relevant VCS documentation

This language does not meet the requirements of the VCS Standard to 1) specify (i.e. list) the project activities and 2) describe the conditions under which it can be applied, which must be included in the Applicability Conditions section of the VCS Module itself.

Clause 7.1.1 of the VCS Methodology Approval Process specifies that "new modules and tools shall be assessed against the aspects of the assessment scope for new methodologies ... that are relevant to the specific module or tool." Clause 5.1.2 of the same document includes Applicability Conditions within the assessment scope for new methodologies. And clause 4.3.1 of the VCS Standard requires that Applicability Conditions "specify 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." Therefore, in the section on Applicability Conditions for each module, please specify the project activities to which it applies and establish criteria that describe the conditions under which the module can be applied.

For example, the VCS module VMD0009 (written under a prior version of Module Template), specifies in the Applicability section that the module is applicable to lands that are legally authorized and documented to be converted to non-forest land (specification of project activities) and it describes the conditions under which it is mandatory. Please include similar such applicability conditions in each module. Simply stating "this module is applicable to all ALM activities" is not sufficient. The exact activities and conditions for those activities must be included.

Proponent Response 2: In Clause 4.3.1 in the VCS standard it explicitly says "methodology". We believe that this allows the restrictive applicability conditions to be contained in the method, where they properly belong, and not in the modules, which should be widely applicable to other methodologies. Clause 5.1.2 and 7.1.1 do refer to the same required validation criteria for modules and methods. We believe that by explicitly requiring any method within which our modules are used to address these issues, as we do, we have met the spirit of the requirements of 5.1.2 and 7.1.1 while still allowing the modules to be efficiently re-used by others, which is the main goal of a modular approach. Over the last few months this topic has been discussed several times with both ESI, VCS and SCS, and we believed that we had achieved an understanding as regards our approach to this issue. We understand that it is within the goals of the VCS methodology process to see modules developed and validated which can be efficiently re-used.

Auditor Response 2: Sent a note to Frederik Vroom requesting written documentation of VCS' agreement that the approach is acceptable. This topic was explored in an email exchange between Frederik Vroom of TEP, Carolyn Chang of VCS, and Larry Wilson of SCS, from 3/28/2012 to 3/30/2012. The final message from VCS is below:

The intent of section 4.3.1 is to ensure that either a methodology sets out the conditions under which it may be applied. Included in a methodology are all the criteria, procedures, steps, methods set out for quantifying the net GHG emission reductions. It is possible that a methodology will refer to a separate module for any particular procedure, method or step. Similarly, a module shall set out the conditions under which it may be applied. And correct, it is not necessary to narrowly define the scope of a module or methodology for the sake of having applicability conditions.

I hope this clarifies.

We interpret the 2nd to last sentence as VCS' indication that the scope of a module may be broadly defined, as is the case with the clause inserted by TEP indicated in Auditor Response 1. As a practical matter, if a methodology developer clearly defines the conditions under which the module may be used, then the absence of that information in the module itself is not necessarily a problem, since inappropriate use will not occur. Evaluation of appropriate use in specific project instances falls within the scope of verification.

Closing Remarks: Finding is closed

NCR 2011.5 dated 12/23/2011

Standard Reference: VCS Standard, v. 3.1, Section 4.8.2

Document Reference: Various modules

Finding: The VCS Standard requires "monitoring frequency and measurement procedures" to be defined. While measurement procedures are defined in the modules, monitoring frequency is generally omitted.

Proponent Response: Monitoring frequency table added for each module main outcome

Auditor Response: The included table is sufficient.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.6 dated 12/23/2011

Standard Reference: VCS Standard, v. 3.1, Section 4.1

Document Reference: N/A

Finding: Section 4.1 of the VCS standard states, "[Methodology elements] shall clearly state the assumptions, parameters and procedures that have significant uncertainty, and describe how such uncertainty shall be addressed."

While various modules include a requirement for the statistical calculation of uncertainty, the modules do not address how uncertainty is to be calculated for the project's total carbon stock estimate across all included carbon pools.

Proponent Response: Uncertainty calculation has been added to module 19- This module now summarizes all pools and sets out uncertainty calculation.

Auditor Response: The added Module addresses the calculation of Uncertainty at the project level.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.7 dated 12/29/2011

Standard Reference: N/A

Document Reference: Soil Methodology, Section 3, p 8

Finding: Please clarify the term "root to shoot rations."

Proponent Response: This was a typo - has been changed to "root to shoot ratio"

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

OFI 2011.8 dated 12/30/2011

Standard Reference: N/A

Document Reference: Soil Methodology, Section 4, p 10

Finding: The term "soil moisture regime" is used. Strictly speaking, soil moisture can be wetness from a variety of liquids, and it would be more precise to refer to soil water rather than soil moisture. Additionally, since soil carbon concentrations often are a consequence of soil wetness, reference to "water regimes" or "drainage classes" would seem to have useful relevance to the methodology and associated modules.

Proponent Response: Text changed to read `soil water regime`. Text added to Module 5, section 5, page 4, dealing with stratification includes drainage and water regime as a stratification criteria.

Auditor Response:

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.9 dated 12/23/2011

Standard Reference: N/A

Document Reference: Soil Methodology, Section 4b

Finding: The methodology is specified for use for ALM projects which occur on croplands and grasslands. Please explain how forestlands can be included in the project area of the ALM project type.

Proponent Response: A prime example of this is grazing lands in the western US, which contain sufficient tree crown closure to qualify them as forest, but where changes in grazing practices, including potentially removal of invasive woody species (ALM) can have significant soil carbon benefits. No change made to the methodology or modules,

Auditor Response: The Program Definitions define Cropland as "arable and tillage land and agro-forestry systems where vegetation falls below the threshold used for the forest land category" and Grassland as "areas dominated by grasses with a density of trees too low to meet an internationally accepted definition of forest ...". The AFOLU Requirements, clause 4.2.2 is clear in that "eligible ALM activities are those that reduce net GHG emissions on croplands and grasslands". The proposed activity, modification of grazing practices on forest land is not an allowed ALM activity under the current standards and definitions.

Proponent Response 2: Unfortunately significant areas of the western US meet the technical criteria for being forest, while still being used primarily for grazing. Under the current set of definitions, improvements in range management practices on these lands resulting in increased carbon pools cannot be included, which is a significant hole in the VCS program. However, we recognize that under the current definitions forest lands are excluded, and have revised The Methodology, Section 4, applicability condition b, to read: " As of the project start date all of the project area consists of grasslands, or croplands. Crops may include woody species grown for food products, fuel products, or timber, providing that the densities of these crops do not meet the requirements for definition of these lands as forest lands. The project area may not consist of a forest land, wetlands, peat lands or mangrove ecosystems, as defined by the VCS. "

Auditor Response 2: the section in the methodology has been revised per Proponent's response.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.10 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 3

Finding: The writing style of this module is such that the requirements for proper use of the module is unclear. In various sections, the module reads as a manual for procedures that could be undertaken to achieve module objectives. Please clarify the requirements of the module as well as any hierarchal order in which the user should conduct procedures so that the verifier can assess conformance and the hierarchy of data quality.

Proponent Response: I have made two changes to this module to address these concerns: 1) I have added maps for the overall process, and for the process in step 7, to show the flow of activities. 2) For each step, I have added a section at the beginning which defines the basic goal and expected outputs of the step.

Auditor Response: The methodology map inserted into page 5 of the Soil Carbon Methodology provides guidance to the process flow. This makes the requirements for proper use of the module much easier to understand.

In addition, the Proponent has added a section at the beginning of each Task which defines the basic goal and expected output of each step. The methodology map and inclusion of the goal and output of each of the several tasks makes clear which modules are to be used and under what conditions.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.11 dated 12/23/2011

Standard Reference: AFOLU Requirement, Section 4.5

Document Reference: Module 3 and various other modules

Finding: The Baseline and Project Emissions/Removals section of the AFOLU Requirements document includes guidance for each AFOLU Project type. Since the modules are applicable to all AFOLU project types, please demonstrate that all VCS guidance in this section is included in the Projection of Future Conditions Module or another module, where appropriate.

For example, the AFOLU Requirement document states that the IFM, ARR and REDD project types require the quantification of project emissions from harvesting. However, the applicability conditions of Module 9, Woody Biomass Harvesting and Utilization, only require the use of this module "where [sic] the harvest of significant amounts of woody biomass currently takes place within the project area, or is expected to take place in the future under the baseline scenario, and some or all of that woody biomass is used for the production of long lived wood products." [emphasis added].

Module 9 is not in conformance with the AFOLU Requirements for the IFM, ARR, and REDD project types.

Proponent Response: We have rewritten the applicability conditions for most modules to read: "Where methodology developers choose to use this module as part of a methodology, they must ensure that the methodology contains appropriate supplementary guidance on the use of this module, including where necessary modifications to methods and procedures detailed in this module, to ensure that application, methods and procedures are in compliance with VCS standards as set out in the most current version of the AFOLU Requirements, and other relevant VCS documentation." In addition, other applicability conditions have been added for specific modules where there are specific project categories or types for which the module cannot be used.

Auditor Response: Based on the Methodology Developers' conversation with the VCSA, the 19 modules associated with the "Soil Carbon" methodology will be reviewed at this time for the ALM project types only. Future inclusion of the modules in other AFOLU project types will be under distinct methodology double approval processes. Inclusion of specific language on Applicability Conditions per NIR number 4 should be sufficient to allow this finding to be closed.

VCS provided clarification that broadly defined applicability conditions, which the Proponent is proposing, are acceptable.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.12 dated 01/03/2012

Standard Reference: VCS AFOLU Requirements, v. 3.1, Table 2

Document Reference: Module 4, Table 1

Finding: Table 1 of Module 4 lists the carbon pools that must be included in the project. All of the carbon pools are defined as TBD, based on whether significant reductions or removals in the carbon pool will occur under the project scenario as compared with the baseline scenario.

Table 2 of the AFOLU Requirements document contains specific guidance about the carbon pools to be included for each project type and Module 4 does not conform to those requirements.

Please note the guidance in Section 4.3.4 regarding de minimis relates only to carbon pools indicated with a "S" or significant requirement.

Proponent Response: Agreed. This section of the module should reference the VCS requirements as set out in the AFOLU Requirements document . We do not, however, wish to embed a specific version of the VCS guidance in the module, as we anticipate changes in that guidance in the future. Table 1 and the notes pertaining to that table have been removed. Section 1.3 now reads: "Selection of carbon pools to be accounted must conform with guidance for the project type given in the most current version of the VCS document 'Agriculture, Forestry and Other Land Use (AFOLU) Requirements'. Where pools are indicated as optional in the VCS document, further guidance on the selection of carbon pools can be found in the GOF-C-GOLD sourcebook (Brown et al., 2007) ."

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.13 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 5, Section 3, Definitions

Finding: Please clarify the term "soil type." This term is used in several contexts in the module and the definition of this term should be precise and consistent to accommodate the expected level of precision in sampling, measurement, and analysis.

Proponent Response: (Or Soil series) The lowest category of U.S. system of soil taxonomy; a conceptualized class of soil bodies (polypedons) that have limits and ranges more restrictive than all higher taxa. Each soil type has soil horizons with similar Soil color, texture, structure, pH consistence as well as mineral and chemical composition. Standardized soil type/series classification systems should be used.

Auditor Response: Proponent's response clarifier the term "soil type"

Closing Remarks: The Proponent's response adequately addresses the finding.

OFI 2011.14 dated 01/05/2012

Standard Reference: N/A

Document Reference: Module 5, Section 5, Procedure

Finding: While "other factors that influence stratification" are included in the list of variables to consider for stratification, this list may also want to include surface shape (concavity/convexity) since this is an important determinant of water infiltration and the runoff of sediment erosion and deposition.

Proponent Response: Agreed - added to the geomorphology bullet, as shown in line 17 below.

Auditor Response: No response to an Opportunity for Improvement is required by the Methodology Developers.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.15 dated 01/06/2012

Standard Reference: N/A

Document Reference: Module 5, Section 5, Procedure

Finding: Please provide more specific information about the following stratification criteria that the module user must consider. Specifically, include the measurable or observable traits that should be considered for the following variables:

- Geomorphic position and related soil processes
- Ecology, plant community, and related soil processes

Proponent Response: Section amended to read: • Geomorphic position and related soil processes, including

o surface shape (concavity/convexity),

o slope position,

o rates of erosion and deposition,

o drainage and moisture retention, etc.

- Ecology, plant community, and related soil processes, including

o Factors which may influence nutrient cycling and inputs, such as nitrogen fixation, rooting intensity and depth, biomass turnover, etc.

o Factors which may influence rates of plant mortality and forms of carbon input, such as differences in fire intensity/frequency associated with differences in ecology or plant community, etc.

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.16 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 5, Section 5, Procedure

Finding: In the Section "Conditions under which inorganic carbon must, or may, be accounted," it is stated "1. Inorganic carbon must be accounted where project activities are likely to lead to changes in soil chemistry or processes (for instance, increased acidity in the soil), which may be expected to lead to the breakdown of carbonates and the release of atmospheric carbon."

Please clarify what is intended by the last clause of this statement because it is unclear.

Proponent Response: Changed to read: "1. Inorganic carbon must be accounted where project activities are likely to lead to changes in soil chemistry or processes (for instance, increased acidity in the soil), which may be expected to lead to the breakdown of carbonates and the release of atmospheric carbon compounds to the atmosphere. For instance, under some management regimes ammonium sulfate fertilizer may be added to high ph. soils with the goal of reducing ph to a 6.5 to 7.5 range. This ph change will tend to result in the breakdown of inorganic soil carbon and the release of carbon compounds to the atmosphere."

Auditor Response: The revised language clarifies the statement.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.17 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 5, Sampling Depth

Finding: Please provide definitions for "soil layers," "soil horizons," and "soil stratigraphy" in the definitions section of the module. These definitions would provide greater context to the module user as these terms have been used without definition and the first two terms interchangeably.

Proponent Response: We changed the term soil horizons (1 case) in soil layers as we think it is interchangeable. Definition: Soil Layers= Layers parallel to the soil surface, whose physical characteristics differ from the layers above and beneath; Soil Stratigraphy= The sequence of layers which exist in the soil

Auditor Response: The terms "soil layers" and "soil horizons" are not interchangeable. To use them as such is incorrect and confusing to the methodology/module user.

Regarding the requirement to record "soil stratigraphy," in Step 14 of Module 5, the term is incorrect for the procedure that is described.

Proponent Response 2: Correct the term Soil stratigraphy has been used wrongly. The section in the method step 4.3e was included to record the soil layers. In order to clarify and reduce confusion of the user the text has been changed in Step 4.3e Recording of soil layers (soil stratigraphy): At each sampling location use either a sampling probe (a 1 to 8 cm diameter stainless steel probe with a functional length equal to or greater than the sampling depth) or a shovel to extract or expose soil (stratigraphy) layers samples for observations, recording the depth of each soil layer (duff, "A", "B", depth to "C" and any interbedded layers, hydrological indicators, etc.. For each soil layer record the texture, colours (using a Munsel standard colour book), hydrological indicators (e.g. mottles, reduction indicators), and the thickness. The sequence of soil (stratigraphy) layers must be determined down to the sampling depth.

Auditor Response 2: The term Soil stratigraphy remains undefined. While the terms 'soil layers' and 'soil horizons' are often used interchangeably, 'soil horizons' always implies pedogenesis whereas 'soil layers' does not necessarily; alluvial deposition being one example where a layer of soil may exist over a well developed sequence of soil horizons. Please include definitions of 'soil stratigraphy' and 'soil layers' as used in this module to remove any uncertainty regarding the precise definition. Note that the definition of the term 'Soil Types' relies on the term 'soil horizons'.

Proponent Response 3: Changed Soil horizons in definition of soil types to soil layer. Definition for soil stratigraphy and soil layer will be included,

Auditor Response 3: The definition of soil layer in the 4/10/2012 version of Module 5 corresponds closely to the definition of soil horizon in the Soil Taxonomy document on the NRCS website. The Soil Taxonomy document also includes the phrases "a soil horizon is a layer that is commonly

parallel to the soil surface" and "there are no operational procedures that can always distinguish between horizons and layers that have similar properties". The document also cites cases where horizons can include layers, for example, a horizon can include a saturated layer and an unsaturated layer. In consideration of the above, the Proponent's definition of soil layer is acceptable. Inconsistencies in usage of the terms soil layer and soil horizon do not, in and of themselves, prevent meaningful comparison of the GHG-related information.

Proponent's Response 3 indicates a definition of soil stratigraphy will be included, however the 4/10/2012 version contains no such definition. However, the point is rendered moot since the term 'stratigraphy' does not appear in the 4/10/2012 version of the Module.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.18 dated 01/09/2012

Standard Reference: N/A

Document Reference: Module 5, Step 4.3b2

Finding: Please clarify the term "slaught."

Proponent Response: Typo - fixed

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.19 dated 01/10/2012

Standard Reference: N/A

Document Reference: Module 5, Step 6.5, d,1 and 2

Finding: Please define the term represented by a box in the two equations in Step 6.5.

Proponent Response: Accidentally included will be removed

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.20 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 6, Equation 6.14

Finding: Please define the term B_i .

Proponent Response: B_i = Total biomass in stratum i , t accidentally called B_s in original

Auditor Response: If the term should be B_i instead of B_s , please clarify the use of the term B_s in equation 19.1 of Module 19.

Proponent Response 2: Designation for strata has been changed to s , to be consistent with the other modules. Therefore variable is now B_s . This correction has been made where-ever the use of i for strata occurred.

Auditor Response 2: The subscript used to indicate strata is now consistent amongst modules.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.21 dated 01/12/2012

Standard Reference: N/A

Document Reference: Module 7, Equation 7.1

Finding: For tree-centered point sampling of litter, this equation overestimates litter in the first measurement. This measurement includes the area of the tree stem (at ground surface), which does not include litter.

Proponent Response: Good point. I have changed section 3.3.iii to read: "iii. Measure the litter depth. Litter depth should be measured at a series of preselected distances from the center. The first distance from the center will always be the radius of the stem of the point source. Within this radius the litter depth will be zero. Beyond that point distances should be systematic and predetermined (measurements taken every 30 cm, for example). Measured litter depths should not include any layer of litter from other sources which may lie on top of the litter from the source in question, but will include such litter embedded within the litter layer." With this guidance changes to the equation are not required.

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.22 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 8, Equation 8.2

Finding: WMs is described as dry mass, but the unit g/cm³ denotes density. Please clarify the definition of the term and the associated units.

Proponent Response: Wms= Density of the wood of the species and soundness class

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented. In the version of the Module dated 3/15/2012 the definition of Wms is corrected.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.23 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 8, Equation 8.3

Finding: Please clarify the terms and units for this equation. The dimensional analysis for the computation of Bdwd does not yield a result in tonnes.

Proponent Response: The total mass of the wood for an area of 1 cm and a 100m long per unit of length for the 100m line segment, g/10.000cm

Auditor Response: As of the 4/10/2012 version of Module 8, the terms of the equation and their definitions are acceptable.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.24 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 8, Procedures

Finding: Please provide the rationale for the statement, "All standing dead trees will be assumed to be sound, and will be calculated using a carbon fraction of 0.5." When this module is used to estimate carbon stocks in the baseline, this assumption is conservative. Conversely, this assumption is not conservative when used to estimate carbon stocks in the project scenario.

Proponent Response: This statement has been removed. It was actually unnecessary given the procedures used, and was an artifact from earlier approaches.

Auditor Response: The statement was removed.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.25 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 8, Method A, Step 1

Finding: As written, the establishment of lines for deadwood sampling has the potential to be biased. Please define a methodology for the establishment of sampling line that would not be statistically biased.

Proponent Response: I don't see the opportunity for bias - discuss.

Auditor Response: Discussed during 1/6/12. Phone call. Methodology Developers' response pending

Proponent Response 2: As discussed, an example of a procedure using random starting point and random direction for lines has been added, with a caveat that proponents must still ensure that resulting sampling is not biased.

Auditor Response 2: With skillful application, the procedure for laying out dead wood transects can result in unbiased estimates. It is left to the verifier to assess whether the procedure is applied in such as way as to avoid bias.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.26 dated 01/17/2012

Standard Reference: N/A

Document Reference: Module 10, Equation 10.1

Finding: It is stated that the D_j , wood density, is synonymous with specific gravity. This is not scientifically correct.

Proponent Response: US defines Wood density different than rest of the science community. Will define Wood density in module Wood density = over dried weight in t of m³ of wood.

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.27 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 13, Procedures

Finding: Please define when this module should be used. The Soil Carbon Methodology states that it should be used as a part of Task 4, the Ex-Post Accounting of GHG Pools and Emissions. However, the procedures section provides guidance for the use of this module for the projection of baseline emissions. Please clarify.

Proponent Response: It is used in three places in the methodology: step 2.15 - current emissions, step 3.10 - projection of future emissions, and step 4.12. monitoring and estimation of actual emissions

Auditor Response: While it is stated under which scenarios to use this module (baseline, project, and monitoring), please clarify the use of this module within the module as well. The current procedures section does not elucidate various temporal uses of this modules.

Proponent Response 2: We have added the following text to the beginning of the second paragraph after table 1; "This module can be used in conjunction with the module Projection of Future Conditions to project soil GHG emissions under the baseline and project scenarios, and can also be used during the monitoring phase to estimate soil GHG emissions."

Auditor Response 2: The proper place to describe the project activities and conditions under which the module can be used is the Applicability Conditions section of the module.

Proponent Response 3: These statements do not take the form of applicability conditions, which are specific restrictions on the range of application of a methodology. These statements give guidance and options for project developers and give project developers some information on how they could use the module. In some methodologies this type of information has ended up in the applicability conditions section, but it does not properly belong there.

Auditor Response 3: Per Auditor Response 2 to NIR 4, the lack of narrowly defined applicability conditions in a module does not necessarily indicate non-conformity to the standards.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.28 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 14, Definitions

Finding: Please define the term "power equipment." Additionally, please clarify whether this includes vehicles.

Proponent Response: Power equipment= Emissions from combustion powered equipment used for project activities including vehicles

Auditor Response: This response does not appear to be completed. Please explicitly state whether vehicles are included.

Proponent Response 2: Added definition: Power equipment: Equipment or tool powered by a combustion engine running on fossil fuels including vehicles

Auditor Response 2:

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.29 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 14, Parameters

Finding: Since the module allows for estimation of fuel use, please clarify the "source of data" section for the parameters which permit estimation.

Proponent Response: Correct. Now reads "Inventory of diesel consumption (ex-post), or estimation of diesel consumption using the Module "Projection of Future Conditions" (ex-ante).", and equivalent for gasoline

Auditor Response: The language indicated in the Proponent Response has been incorporated into the Module. The appropriate source of data to be used for estimation of fuel use is now clear.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.30 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 15, Equation 15

Finding: The methodology requires the use of both Module 6 and Module 15 to calculate the amount of living biomass after a fire and may subsequently be used to determine the net change in atmospheric GHG resulting from project activities (Module 19). Reviewing both Modules 6 and 15, it was determined that the modules have been developed with different assumptions and different inputs. As such, the two modules are not consistent and will lead to imprecise carbon accounting. For example, depending on the value of B_{burn} and the relationship between crown radius and height, it is possible for WB_{burn} (the total woody biomass consumed) in Module 15 to exceed the sum of B_s (living biomass in stratum s) for the project area calculated in Module 6 due to the inconsistent accounting assumptions.

Proponent Response: Although it is exceedingly unlikely (really, it's impossible unless the fire consumed most of the woody living biomass... which I've never seen) that WB_{burn} would exceed B_s , it is true that there is a possible source of inconsistency here. The problem is that the procedures in module 6 do not allow a fine enough discrimination of fuel size classes to be used in module 15. Furthermore, we don't want to use the module 15 procedures in Module 6, since that would be exceedingly onerous. The only solution that I can see is that we add a criteria that WB_{burn} cannot be greater than B_s , plus maybe a qualitative judgement about the percentage of B_s represented by WB_{burn} . We should discuss.

Auditor Response: The fundamental concern that is raised by this finding is that it is difficult to calculate an accurate difference between the project area's initial carbon stocks and the carbon stocks after the burn. Without sufficient data from t_0 , the module user will not be able to calculate how much carbon was lost in t_x after the fire occurred. The scenario raised about more woody biomass being consumed by the fire than actually existed is merely one indication that it would be difficult to compute an accurate difference. Specifically, the two differing data inputs (e.g. sampling one way in Module 6 and then another way in Module 15 in a manner that does not yield comparable data) can lead to an inaccurate conclusion. It should also be noted that the validation team does not agree with the assessment that the Module 15 procedures would need to be replicated in Module 6 to lead to accurate results.

Proponent Response 2: I have added two more steps to the live woody biomass consumption in this module: 1) a step to determine the amount of live woody aboveground biomass that was in the burned area prior to the fire, and 2) a step to compare this amount with the amount of live woody biomass consumed by the fire as calculated in the module, plus the live woody biomass left after the fire, to confirm that they are reasonably equal (within the margin of error for the original calculation of biomass in strata containing the burned area)

Auditor Response 2: Resolution is on hold pending corrections to equations in module Non-CO2

emissions from burning.

Proponent Response 3: Corrected the formulas

Auditor Response 3: Equations for calculation of canopy surface area and woody biomass consumed have been corrected.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.31 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 15, Section 1d

Finding: Please explain how coarse woody debris consumption should be calculated using Module: Dead Wood. This module does not contain equations for the calculation of the dry weight of coarse woody debris before or after the fire (CWBpre and CWDpost, respectively).

Please also clarify the term "course woody debris" throughout the module.

Proponent Response: I have standardized the terms to refer to dead wood, rather than course woody debris, in both modules, and have added a definition for dead wood to both modules. However, I believe that using the guidance given in Module 15, section 1d, combined with the guidance in module 8, the calculations of dry weight of pre and post combustion dead wood are correctly given. Discuss

Auditor Response: This finding represents the universal need throughout the modules to provide a consistent definition of data parameters as well as a clear manner in which the data parameters can be used as inputs in the equations of other modules. In this example, the data parameters CWBpre and CWDpost cited in the Dead Wood module do not exist.

Proponent Response 2: Data parameters have been changed, and discrepancies in data parameters between modules have been examined, and fixed where problems were found

Auditor Response 2: Proponent's response is corroborated based on subsample. Can close the finding but will re-open if additional discrepancies in data parameter terms are found.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.32 dated 01/23/2012

Standard Reference: N/A

Document Reference: Module 15, Step 1a

Finding: Step 1a: Litter states that accounting for litter may be undertaken using the methods contained in Module: Dead Wood. Please explain how the information from the Litter module should be incorporated in this step.

Proponent Response: Correct. This should read Module : Litter, not Module : Dead Wood. Changed.

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.33 dated 01/24/2012

Standard Reference: N/A

Document Reference: Module 15, Step 1d

Finding: Please explain how "similar" fuel accumulations for coarse woody debris in unburned areas should be determined. Define the criteria for the selection of these proxy sites.

Proponent Response: The following text was added : "Proxy areas should be selected based on similarity to the conditions found in the burn area before the fire in terms of amount of dead wood and dead wood piece size distribution. Since using the proxy area implies that no good quantitative inventory of dead wood within the burn area existed prior to the fire, similarity should be judged based on qualitative factors, including:

- Evidence found in existing photos which give some evidence of the amount and size distribution of dead wood before the fire
- Similarity of ecosystem, and disturbance and management history
- Local knowledge

If the burn area does not completely cover a pre-existing ecosystem, disturbance and management history stratum, residual non-burnt areas of the stratum may be the best candidate for use as a proxy areas, providing that there is no reason to suspect that the boundary of the burn area was determined by differences in dead wood density, piece size, or distribution."

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.34 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 15, Equation 15.9

Finding: Osm is defined as the mass of organic soil but the units are defined as kg/m³. Please clarify the units and definition of this variable.

Proponent Response: Osm: the bulk density or mass per m³ in kg of the organic soil.

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.35 dated 01/26/2012

Standard Reference: N/A

Document Reference: Module 16, Introduction

Finding: Please clarify the phrase "market leakage resulting in non-locatable changes in economic activities due to changes in market conditions caused by implementation of the project." This phrase is unclear because it provides a cause and effect relationship between project activities and changes that are "non-locatable." Please define the term "non-locatable."

Proponent Response: Sentence has been rewritten to read : "Thus, for instance, market leakage, where emissions may result from changes in price or other market signals caused by implementation of the project, but where the physical location of the emissions cannot be identified, is not estimated using this module."

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.36 dated 01/27/2012

Standard Reference: N/A

Document Reference: Module 16, Step A.3

Finding: Please provide guidance for the module user in the event that a large proportion of sampled agents become "unidentifiable agents."

Proponent Response: The method as given is a CDM approved displacement leakage method, and this issue has never come up... but it's a good question! I have added the following paragraph : "In the case that all of the agents who formerly undertook a particular activity within the project boundary prior to project commencement (for instance, cattle grazing) are not identifiable, leakage attributable to those agents must conservatively be calculated based on the assumption that all of the agents continued to undertake the same amount of the activity outside of the project area. Emissions from this displaced activity must be calculated based on the method most likely to be used by people with the economic capacity and skill set of the displaced agents. For example, if smallholders undertaking swidden (slash and burn) agriculture were displaced, the assumption must be that they will continue to undertake swidden agriculture, and the amount of GHGs released by these activities must reflect the soil and vegetation conditions most likely to be found in land which would be available to them." I considered other options, such as deeming these activities formerly undertaken by not identifiable agents market leakage, but this was not necessarily conservative.

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.37 dated 01/28/2012

Standard Reference: N/A

Document Reference: Module 17, Step 1

Finding: Step 1 of the Procedures section asks the module user to "Identify all commodities or services whose supply may be reduced on a local, regional, national or international scale due to implementation of the project activity." Please provide additional guidance about how this task should be undertaken. As written, it is difficult of the verifier to assess whether "all commodities or services" have been identified and that the module user is in conformance with this step.

Proponent Response: The following has been added to the end of the first paragraph in step 1: "These commodities and services will include any commodity or service which meets the following criteria:

- Prior to project commencement the commodity or service was produced within the project area, and;
- The commodity or service was not produced solely for the producer`s use, but was sold or bartered to others (it was a market commodity or service)."

Auditor Response: The Methodology Developers' response is sufficient to close the finding. The cited document reference will be reviewed to ensure that that developers' response has been implemented.

Closing Remarks: The Proponent`s response adequately addresses the finding.

NIR 2011.38 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 17, Step 1

Finding: Please state examples of acceptable sources of data for the identification of current markets in Step 1 and for data requested in the subsequent steps of the Procedures section. If applicable, state the criteria that the verifier can use to assess the quality of these data.

Proponent Response: I have added sections on appropriate sources of data for each section where it is appropriate. Quality criteria are much more difficult, since the range of sources and types of data (quantitative, qualitative, etc.) are wide, and the nature of the data available from place to place will vary widely. At the end of the day, the verifier is probably going to have to go on a judgement of effort and completeness, rather than any predetermined criteria.

Auditor Response: Examples of appropriate sources of data for the identification of current markets in Step 1 and subsequent steps of the Procedures section were added.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.39 dated 12/23/2011

Standard Reference: AFOLU Requirement, Sections 4.6.14, 4.6.15, 4.6.17, 4.6.18, 4.6.22

Document Reference: Modules 16 and 17, Applicability Conditions

Finding: The applicability conditions of Module 17 states "applicable to all AFOLU projects." However, Sections 4.6.14, 4.6.15, 4.6.17, 4.6.18, 4.6.22 of the AFOLU Requirements document identifies methods for the quantification of leakage for various AFOLU project types which are not consistent with Module 17 and/or Module 16. These modules must be in conformance with the AFOLU Requirements document.

Proponent Response: I don't believe that anything in Module 16 is not in conformance with the AFOLU Requirements. However, Module 17 is not in conformance in that it does not offer the default factor option. The method as given is in conformance with the methods suggested in the peer reviewed papers - see for instance "Estimating Leakage from Forest Carbon Sequestration Programs."... but it has been restated to be reflective of real world limitations on precision and knowledge. We should discuss.

Auditor Response: In light of the recent discussion with VCS to only approve the modules associated with the "Soil Carbon" methodology for the ALM project type, the finding has been closed and new findings have been issued.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.40 dated 12/23/2011

Standard Reference: N/A

Document Reference: Module 17, Step 7

Finding: Please provide a methodology about how the module user shall "estimate the expected price of the commodity of service required to allow increased production within the market area." Please note that this methodology should be replicable and verifiable.

Proponent Response: I have added the following text to this bullet: " This estimation should be based on an analysis of the least cost route to increased production. For instance, increased production of cattle might be achieved through production intensification, using more grain feeding to increase the number of cattle per unit area, or it might be achieved by increasing the amount of area used for cattle. Each of these options will have a cost associated with it – either the cost of increased feed purchases, or the cost of adding pasture. This method assumes that the cattle rancher will increase the production of cattle using whichever method adds the least costs per animal produced.

Once the least cost route to increased production is determined, the expected price of the commodity or service required to allow this production will be the new cost of production, plus the typical profit margin for this commodity or service."

Auditor Response: Please provide guidance about how the "typical profit margin for a commodity or service" should be determined.

Proponent Response 2: The following text has been added at the end of the inserted text: "...which is usually best determined through interviews with local producers of the commodity."

Auditor Response 2: The text providing guidance has been added as described.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.41 dated 01/09/2012

Standard Reference: AFOLU Requirements, Section 4.3.10

Document Reference: Methodology, Task 3.11

Finding: For the ALM project type, Section 4.3.10 of the AFOLU Requirements document states the following:

"Where land-use conversion requires intensive energy inputs or infrastructure development, such as the establishment of irrigation or drainage systems, the methodology shall include the GHG emissions associated with the conversion process in the project boundary."

However, Task 3.11 states the following:

"[This task is] required for all projects where emissions from power equipment directly attributable to activities within the project area are expected to be significantly greater under the project scenario as compared with the baseline scenario. Not allowed in all other circumstances."

The required use of this task is not in conformance with the cited AFOLU requirement.

Proponent Response: Added Also in 4.12

Auditor Response: The task conditions have been modified so as to conform with the AFOLU requirement

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.42 dated 01/09/2012

Standard Reference: AFOLU Requirements, Section 4.3.11

Document Reference: Methodology, Task 3.10

Finding: For the ALM project type, Section 4.3.11 of the AFOLU Requirements document states the following:

"Where activities convert drained, farmed organic soils to perennial non-woody vegetation and reduce or eliminate drainage to reduce CO₂ and N₂O emissions from organic soils, such activities may increase CH₄ emissions. Methodologies applicable to such activities shall include CH₄ emissions in the project boundary."

However, Task 3.11 states the following:

"[This task is] required where significant increases in the emissions of N₂O or CH₄ from the soils within the project area are expected under the project scenario as compared with the baseline scenario. Optional under all other circumstances. "

The required use of this task is not in conformance with the cited AFOLU requirement.

Proponent Response: Added Also in 4.10

Auditor Response: The task conditions have been modified so as to conform with the AFOLU Requirements

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.43 dated 01/09/2012

Standard Reference: AFOLU Requirements, Section 4.5.4

Document Reference: Methodology

Finding: For the ALM project type, Section 4.3.10 of the AFOLU Requirements document states the following:

"[Methodologies] targeting N2O emission reductions shall establish the criteria and procedures by which the changes in soil carbon stocks may be deemed de minimis (as set out in Section 4.3.4) or conservatively excluded (as set out in Section 4.3.5)."

Please demonstrate where the criteria and procedures for determining changes in soil carbon stocks from N2O emissions reductions as de minimus are found in the methodology and/or module(s).

Proponent Response: We have conservatively chosen to require all projects to account for changes in soil carbon pools, and therefore exceed the intent of the language quoted. No changes made.

Auditor Response: The Methodology explicitly requires accounting for changes in soil carbon pools therefore criteria to determine whether they are de minimus are not required.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.44 dated 01/09/2012

Standard Reference: AFOLU Requirements, Section 4.6.4

Document Reference: Methodology, Task 3.18 and 4.17, Module 17

Finding: Please demonstrate how the Market Leakage Module is in conformance with the following VCS requirement:

"Projects shall account for market leakage where the production of a commodity (e.g., timber) is significantly affected by the project."

While Tasks 3.18 and 4.17 of the methodology provides guidance for the use of the module, it is unclear how this AFOLU requirement is fulfilled when reviewing the applicability conditions of the module.

Proponent Response: This AFOLU requirement is not met in the applicability conditions of the module. However, it is met in the requirement section of task 4.17, and in the redrafted step 1 of the Market Leakage Module, where the proponent determines whether or not the production of any commodity is significantly affected by the project

Auditor Response: Requirements regarding statement of Applicability Conditions are addressed in NIR 4. Satisfaction of NIR 4 should address the lack of clarity when reviewing the applicability conditions of the module. The finding can be closed subject to successful resolution of NIR 4 pertaining to Module 17 Market Leakage.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.45 dated 01/09/2012

Standard Reference: AFOLU Requirements, Section 4.6.12

Document Reference: N/A

Finding: For the ALM project type, Section 4.3.12 of the AFOLU Requirements document states the following:

"Where livestock are displaced to outside the project area, such activity shifting leakage shall be quantified to capture potential reductions in carbon stocks and potential increases in livestock-derived CH₄ and N₂O emissions from outside the project area."

Please demonstrate where the methodology requires users to quantify potential increases in livestock-derived CH₄ and N₂O emissions from outside the project area.

Proponent Response: See task 3.16 in section 8.3 of the Methodology, which addresses this.

Auditor Response: Please respond by providing a step-by-step example that results in the requirement for users to quantify livestock emissions in the case where livestock are displaced outside the project area, beginning at Task 4.15 (ex post). Assume that any prediction models are already calibrated, and use invented, but reasonable values, and you can consolidate steps if no vital information is lost. (It is not necessary to include the example in the Module.)

Proponent Response 2: Please see the document "Response to line 56"

Auditor Response 2: The referenced document provides the information requested.

Closing Remarks: The Proponent's response adequately addresses the finding.

OFI 2011.46 dated 01/09/2012

Standard Reference: N/A

Document Reference: Methodology and Several Modules

Finding: During the review of the Soil Carbon methodology and associated modules, it was determined that the parameters (the data unit and description) between modules were not always consistent. To increase consistency and ensure that the inputs/outputs of equations are the same, the methodology could benefit from a unified document with all of the data parameters utilized by the methodology and modules. This document could include all of the basic information about the data parameter (e.g. data unit, description, source of data, etc.) but this information could also be supplemented with the number of the module(s) where it is used. This unified document would likely ensure consistency between the parameters within each of the stand-alone modules.

Proponent Response: The parameter have been unified throughout the method. The methodology developer has together with the VCS and the first validator discussed how to include parameter tables in the methodology. Because the framework method consists almost no variables and all requirements have been described in the separate modules it is easier to read for the methodology user to find the description of the parameter in each distinct module. A list of all parameter in the method would triple the amount of pages of the method document without real value for clarity

Auditor Response: The audit team accepts the explanation provided

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.47 dated 01/09/2012

Standard Reference: VCS Methodology Template, v. 3.0

Document Reference: Methodology, Section 8.4 and 9.1

Finding: The calculation of GHG emission reductions and/or removals in Section 8.4 of the Soil Carbon methodology is defined by equation 8.4.1. The parameters cited in the equation and in Section 9.1 of the methodology are not found in any of the associated modules, including Module 19.

Proponent Response: Section 8.1 refers to the Net atmospheric GHG benefit calculation as set out in module : Summation of Net Change in Atmospheric GHGs Resulting from Project Activities. The calculation has been called Task 4.18.

Auditor Response: The Parameter notation in the methodology and Module 19 are consistent.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.48 dated 03/09/2012

Standard Reference: AFOLU Requirements v3.2, 4.2.2

Document Reference: Module 12 - Emissions from Domestic Animals

Finding: Module 12 includes methods for quantifying GHG reductions resulting from improved manure management, per Chapter 10 of the 2006 IPCC Guidelines. However, VCS AFOLU requirements state "Project activities relating to manure management are eligible under sectoral scope 15 (livestock, enteric fermentation, and manure management), not sectoral scope 14 (AFOLU)". The proposed activity is outside the scope of ALM project activities.

Proponent Response: The Methodology, applicability condition 1, states that projects must meet the VCS requirements for one of the ALM activities. Thus the project activities cannot fall into sectoral scope 15 - they cannot be aimed at changes in emissions from manure management etc.. However, project activities within ALM may result in secondary effects causing changes in emissions from manure management and related activities (either greater or lesser emissions of GHGs), and these must be accounted. Otherwise calculations of GHG impacts of the project activity might not be conservative. It is impossible to entirely segregate these two effects where livestock are part of the baseline or project scenario... and in fact all sector scope 15 activities should include the possible accounting of soil carbon... but that is another discussion.

Auditor Response: Projects under the proposed new methodology must meet the requirements for ALM projects targeting changes in Soil Carbon. Projects falling under sectoral scope 15 are outside the scope of the proposed new methodology. The Finding is Withdrawn.

Closing Remarks: The Proponent's response adequately addresses the finding.

OFI 2011.49 dated 03/09/2012

Standard Reference: N/A

Document Reference: Module 8 - Dead wood

Finding: In many sampling protocols used for forest sampling, sampling procedures for different attributes, such as live trees and lying down wood, are integrated so that sampling for both attributes is conducted at each plot, resulting in sampling efficiencies. The dead wood module does not allow for integrating the location of dead wood transects with the location of sample points for other attributes. A more flexible specification for layout of dead wood transects may promote more efficient sampling systems for users of the module.

Proponent Response: We understand your concern but are of the opinion it is up to the project proponent to integrate the various sampling procedures and ensure the sampling techniques

Auditor Response: No response required

Closing Remarks:

NIR 2011.50 dated 03/09/2012

Standard Reference: N/A

Document Reference: Module 15 - Non-CO2 emissions from burning

Finding: The term 'canopy area' normally refers to the sum of the vertical projection of tree crowns (and sometimes lesser vegetation) upon a horizontal surface and, when divided by the size of the reference area (acres or hectares), converts to the commonly used term 'percent canopy cover'. In this module, the term 'canopy area' is used to refer to the surface area of the vegetation canopy. For the sake of clarity, please add a definition of a term other than 'canopy area' to refer to the canopy surface area as used in the module, and replace all references to 'canopy area' with the term used to refer to canopy surface area.

Proponent Response: Replaced canopy Area with Canopy surface. And defined it as: "Canopy surface: surface area of the 3 dimensional canopy shape of the tree."

Auditor Response: The modifications were performed as described. The term "Canopy surface area" is defined without ambiguity.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.51 dated 03/09/2012

Standard Reference: N/A

Document Reference: Module 16 - Displacement Leakage; Module 6 - Project Boundaries

Finding: While neither the VCS Program Definitions nor Standard explicitly defines Project Boundary or Project Area, Section 4.4 of the VCS Standard makes it clear that project boundary within VCS is a composite concept that includes the GHG pools relevant to the project. The outputs of Module 6 - Project Boundaries includes spatial boundaries, temporal boundaries, and relevant GHG pools, which is consistent with the concept of Project Boundary as a composite attribute. However, within Module 6, in the Definitions section, Project Boundary is defined as the boundary delimiting the Project Area which is defined as the area of land on which the project proponent will undertake project activities.

In Module 16, it appears that the terms project boundary and project area are being used interchangeably; see for example Step A 3-c .

Please adopt a consistent definition of the project area to distinguish it from the term, Project Boundary which has a different meaning as used in the VCS guidelines. Also please include a definition of the term in the Definitions section of Module 6 and other Modules where it is used, and make sure usage is consistent in the Methodology and related Modules.

Proponent Response: Module 6: removed project boundary from the module and replaced with project area. Definition for project area: The area of land on which the project proponent will undertake project activities. Module 16: Replaced project boundary with project area. Def.: The area of land on which the project proponent will undertake project activities. Italicized project area in modules. Module 3 redefined project boundary :The boundary or boundaries delineating the project including spatial, temporal and relevant GHG pools. Checked the various modules and replaced Project boundary, where strictly spatial boundary was meant, with project area.

Auditor Response: The modifications were performed as described. The terms "Project Boundary" and "Project Area" are now explicitly defined.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.52 dated 03/09/2012

Standard Reference: VCS Program Definitions

Document Reference: Module 16 - Displacement Leakage

Finding: In Step A. 3d, it is stated:

Note that an increase in emissions from mobile sources moved from within the project area to outside of the project area do not necessarily represent leakage. For instance, increases in emissions due to enteric fermentation outside of the project area, caused by the transfer of cattle from within the project area to outside of the project area would not in itself constitute a source of leakage.

The Program Definitions define leakage as "net changes of anthropogenic emissions by GHG sources that occur outside the project boundary, but are measurable and attributable to the project."

We concur that a transfer such as the above would not result in an overall increase in GHG emissions to the atmosphere. However, if the Proponent were to reduce the calculated project emissions in proportion to the reduction in emissions cattle from cattle, then it seems that the transfer would represent leakage. In this case, the change in emissions is the increase that occurs outside the project boundaries due to the transferred cattle, which is attributable to project activities. Please explain the accounting of emissions that result in no leakage in this case and if warranted, modify the statement in Step A.3d, explaining the conditions under which said transfer is and is not leakage.

Proponent Response: Please see the document "Response to comment on line 56.doc", section A, for the actions taken in response to this CAR. We believe that the changes detailed there ensure that no opportunities exist for there to be unaccounted increases in emissions, considering animals both within the project area, and outside of the project area due to displacement.

Auditor Response: The following language has been added to the Procedures section of Module 12:

Estimation of emissions of non-CO2 GHGs from domestic animals will be required where project activities result in one of three conditions:

- a) Increases in the total population of a species of domestic animal, including both animals within the project area, and animals outside the project area as a result of leakage.
- b) A change in the feed mix used for the domestic animals, resulting in increased CH₄ or N₂O emissions.
- c) A change in the manure management systems used for managing manure from domestic

animals, resulting in increased CH₄ or N₂O emissions.

The referenced document "response to comment on line 56.doc" also includes examples demonstrating calculation of Displacement Leakage. The new information provided by the Proponent satisfies the audit team that the risk of unaccounted displacement leakage resulting from cattle transfer is insignificant.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.53 dated 04/09/2012

Standard Reference: AFOLU Requirements, Section 4.7

Document Reference: Soil Carbon Methodology, Module Summation of Net GHG Change

Finding: Neither Equation 8.4.1 in the Soil Carbon Methodology nor Equation 19.6 in the Module Summation of Net GHG change includes a reduction for buffer credits in the calculation of net GHG changes. The AFOLU Requirements section 4.7 include explicit requirements for calculation of net GHG change and provide an example in Table 4 in AFOLU Requirements section 4.7.2, demonstrating the correct calculation methodology. Please revise the Methodology and the Module to conform to AFOLU Requirements.

(Auditor's note: this finding was delivered to the client via email from audit team member Larry Wilson to Frederik Vroom, The Earth Partners, 4/9/2012 12:12 PM)

Proponent Response: [Proponent's response was revised versions of the Methodology and Module dated 4/26/2012 in which net change in carbon stocks, net GHG benefit, buffer credits, and GHG credits issued are calculated in conformance with AFOLU Requirements]

Auditor Response: The revised calculation methodology conforms with the VCS requirements.

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.54 dated 05/09/2012

Standard Reference: N/A

Document Reference: Module 15 Emissions from Burning

Finding: Please provide a reference for the use of equation 15.7 and the related equation 15.8.

(Auditor's note: this finding was delivered to the client via email from audit team member Larry Wilson to Frederik Vroom, The Earth Partners, 5/9/2012 3:31 pm)

Proponent Response: [Proponent explained that the equations calculate the surface area of a cylinder with a hemispheric top.]

Auditor Response: Representation of shrubs and small trees as geometrical objects for the purpose of calculating canopy characteristics is an accepted practice in natural resources biometrics, used by the US Forest Service.

Closing Remarks: The Proponent's response adequately addresses the finding.

NCR 2011.55 dated 06/04/2012

Standard Reference: N/A

Document Reference: Soil Carbon Methodology, Task 3.18

Finding: The methodology specifies that users may use the latest version of the VCS "Tool for Market Leakage". However, there is no VCS tool by that name. All tools referenced by the methodology must be properly identified.

Proponent Response: The VCS website mentions that a VCS market leakage tool is under development. We would like to allow or as much flexibility as possible. We understand that there is an issue with trying to cite a tool that does not exist yet and therefore we would like to refer to this tool more generic through the following sentence: Use the module "Market Leakage". Alternatively, where an applicable VCS approved version of Market leakage tool exist it may be used (instead of: Alternatively, the latest approved version of the VCS' "Tool for Market Leakage" may be used.)

Auditor Response: The modified text no longer refers to a non-existent tool, but allows for use of such a tool should one be approved by VCS. [Note: During review, VCS requested that the language referring to a VCS Market Leakage tool under development be stricken. The language was deleted in the 6/15/2012 release of the Soil Carbon Methodology version 1.8]

Closing Remarks: The Proponent's response adequately addresses the finding.

NIR 2011.56 dated 06/04/2012

Standard Reference: Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (Version 01); AFOLU Requirements Section 4.4.3

Document Reference: Soil Carbon Methodology, Section 6, Procedure for Determining the Baseline Scenario

Finding: The intended use of the "combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities", as specified by the applicability conditions, is with afforestation and reforestation activities. There are many references within the tool to afforestation or reforestation and A/R CDM project activity that are not applicable to the ALM project activities that are within the scope of the proposed new methodology. If this tool is to be used to identify the baseline scenario, please provide within the methodology guidance on use of this tool for the full range of ALM project activities that are within the scope of the proposed new methodology. Please include clear guidance requiring the project proponent to account for current and previous management activities in identifying alternative baseline scenarios, as required by AFOLU Requirements section 4.4.3. As an alternative, the developer may revise Section 6 in its entirety so long as it is in accordance with VCS requirements.

Proponent Response: Added guidance to the section. See version 1.8

Auditor Response: The Project Proponent added language to the Methodology, Section 6 providing guidance with respect to use of the CDM A/R tool in the context of ALM project activities. The guidance includes direction regarding interpretation of the terms "A/R", "forest", "CDM", and "tCERS" for use with the proposed new Methodology, and specifies deference to VCS ALM rules and requirements in cases where the rules and requirements of the CDM tool differ from VCS ALM rules and requirements. With this added guidance, the potential for errors arising from use of the CDM A/R tool in the context of ALM project activities is minimal.

Closing Remarks: The Proponent's response adequately addresses the finding.