ERRATA & CLARIFICATION

1 April 2019

VM0032 Methodology for the Adoption of Sustainable Grasslands through Adjustment of Fire and Grazing, v1.0

Errata and Clarifications

This document provides errata and clarifications applicable to *VM0032 Methodology for the Adoption of Sustainable Grasslands through Adjustment of Fire and Grazing, v1.0*. Such errata and clarifications are effective on their issuance date. Project proponents and validation/verification bodies (VVBs) shall apply and interpret *VM0032 Methodology for the Adoption of Sustainable Grasslands through Adjustment of Fire and Grazing, v1.0* consistent with the errata and clarifications set out in this document.

These errata and clarifications will be incorporated into the next issued version of *VM0032*.

List of Errata and Clarifications (ordered by issuance date)

1 ERRATUM: Section 4, Item 5, Typo in definition of *de minimis* (1 April 2019)

Background:

One of the methodology's applicability conditions defines *de minimis* in a manner inconsistent with the VCS *AFOLU Requirements, v3.6.*

Erratum:

Applicability condition 5 shall be read as follows (revised text shown in red and deleted text shown with strikethrough):

> Baseline emissions derived from livelihood-driven human impacts on aboveground woody biomass (e.g., cutting for fuel wood, charcoal or timber sales) must be deemed *de minimis* (i.e., ~~not included in the cumulative 95 percent of total baseline emissions~~ less than five percent of the total GHG benefit generated by the project) and project activities cannot significantly alter such livelihood-driven activities.

2 ERRATUM: Numerous sections, Conflicting stratification requirements (1 April 2019)

Background:

Several sections of the methodology include conflicting statements regarding the appropriate method for testing a soil carbon dynamic model, which is intended to predict soil organic carbon (SOC) under a modeled approach. A measured approach requires stratification to account for differences in soil type, management history, precipitation and other factors that might affect a soil organic carbon (SOC) measurement. The purpose of stratification is to reduce the error in estimates of SOC within strata so that overall estimates of SOC for all sampling stations in the project area do not include error associated with those different factors. In a modeled approach, stratification is not explicitly required, but the methodology does not state that. Stratification is not required because the model will predict SOC changes across the project area that are already corrected for local factors characteristic of that sampling station that enter as parameters into the model, such as precipitation, soil texture, vegetation type, fire frequency, temperature, grazing intensity, etc. The below sections have been revised to correct the erroneous conflicting statements.

Erratum:

1) Paragraph 5 of Section 2.3 shall be read as follows (revised text shown in red and deleted text shown with strikethrough):

> If a modeled approach is used… This predicted carbon stock is compared to current, measured carbon stocks and the accuracy and precision of the predictions must be demonstrated ~~within~~ across subareas (strata) of the project area that differ strongly in past conditions or in management activities. The details of the model test are presented in section 8.1.3.3…

2) Paragraph 2, Item 6 of Section 6 shall be read as follows (revised text shown in red and deleted text shown with strikethrough):

> Where the modeled approach is used… Correlations between predicted and observed stocks must have R2 > 0.80 ~~within~~ across strata and an uncertainty based on a 95

percent confidence interval of < 20 percent for predicted values applicable to the project area...

3) Paragraph 5 of Section 8.1.3.3 shall be read as follows (new text shown in red and deleted text shown with strikethrough):

One or more of these or other candidate models must be assessed for accuracy independently, (i.e., with data other than that used to construct the model), and also tested to demonstrate it is appropriate for use in the project area by showing its ability to predict initial carbon stocks in different ~~subareas (strata)~~ locations within the project area (see below). This analysis assumes that past practices have been in place long enough for SOC to approach equilibrium. Thus the soil carbon model must be able to predict this equilibrium ~~for~~ across strata in the project that have experienced similar management activities for 20 years or more...

4) Corrections to Paragraph 2, Item 6 of Section 6 are included in Erratum 4 below to ensure a single, corrected requirement.

3 ERRATUM: Section 6, Erroneous omission (1 April 2019)

Background:

Text within item 3 of Section 6 was erroneously omitted and is being updated to mirror the language included in item 2 related to appropriate time intervals for demonstrating vegetation change during the baseline period.

Erratum:

Paragraph 2, item 3 of Section 6 shall be read as follows (revised text shown in red and deleted text shown with strikethrough):

Baseline methane emissions require as detailed as possible livestock grazing animal censuses through any combination of professional aerial surveys, ground counts with appropriate spatial extrapolation to the project area, or household surveys of livestock held by each household ~~over~~ from a minimum of four intervals across the previous 10 years, with at least one image from 8-10 years prior to the project start date. Censuses must categorize, to the extent possible, the species, sex, and age of each animal, and an average body weight for each category.

4 ERRATUM: Section 6, Conflicting modeling requirements (1 April 2019)

Background:

The methodology has conflicting requirements that dictate whether local calibration of model predictions is allowed. The requirements set out in Section 6 must be revised to align with the requirements set out in Section 8.1.3.3. Additionally, the conflicting stratum requirements set out in Erratum 2 above is also applicable to this section, and has been included here to have a single, updated requirement.

Erratum:

Paragraph 2, item 6 of Section 6 shall be read as follows (revised text shown in red and deleted text shown with strikethrough):

Where the modeled approach is used, predictions of soil carbon stocks or stock changes from the chosen model of soil carbon dynamics… must be tested to demonstrate it is appropriate for use in the project area with measured soil carbon stocks or stock changes from the project area. Correlations between predicted and observed stocks must have R2 > 0.80 ~~within~~ across strata and an uncertainty based on a 95 percent confidence interval of < 20 percent for predicted values applicable to the project area. The use of less accurate model predictions imply larger confidence limits in estimated carbon stocks or stock change after 10 years and thus larger uncertainty deductions in claimed emission reductions. If a model cannot be found to provide sufficient accuracy, a local recalibration of the best model is allowed by adjusting parameter inputs or coefficients in the model's functions in a reasonable way (justified by peer-reviewed scientific literature). If local calibration does not yield a sufficiently accurate and precise model, the measured approach must be used…

5   ERRATUM: Section 8.1.3.1, Error in equation (1 April 2019)

Background:

Section 8.1.3.1 presents the temporal requirements for estimating baseline methane emissions. Equation 2 is intended to calculate the harmonic mean of animal numbers over multiple census points during the previous ten years of the baseline scenario. The erratum sets out the correct equation for determining the harmonic mean.

Erratum:

Equation 2 in Section 8.1.3.1 shall read as follows (revised text in red and deleted text is struck-through):

The harmonic mean BN_c for n censuses[27] of $N_{c,i}$ animals in each category c during census i is given by:

$$BN_c = \left(\frac{\cancel{1}}{\cancel{n}} n \right) \times \left(\frac{1}{\sum_{i=1}^{n} \frac{1}{N_{c,i}}} \right)$$

(2)

Where:

BNc	= Baseline number of animals of category c (head)
N	= Number of counts
$N_{c,i}$	= Animals in category c during count i (head)