

VALIDATION REPORT FOR THE EL ARRIERO AFFORESTATION ON DEGRADED GRASSLANDS UNDER EXTENSIVE GRAZING PROJECT



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Summary:

This report describes the validation audit of the EL ARRIERO AFFORESTATION ON DEGRADED GRASSLANDS UNDER EXTENSIVE GRAZING project ("the project"), an afforestation project located in Uruguay, which was conducted by SCS. The purpose of validation audit was to assess the conformance of the project with the validation criteria. The validation audit was performed through a combination of document review, interviews with relevant personnel and on-site inspections. The project complies with all of the validation criteria, and the assessment team has no restrictions or uncertainties with respect to the compliance of the project with the validation criteria.

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1 INTRODUCTION

1.1 Objective

The purpose of the validation audit activity was to conduct an independent assessment of the EL ARRIERO AFFORESTATION ON DEGRADED GRASSLANDS UNDER EXTENSIVE GRAZING project (“the project”) to determine whether the project complies with the validation criteria, as set out in the guidance documents listed in Section 1.2 of this report.

1.2 Scope and Criteria

In accordance with Section 4.3.4 of ISO 14064-3:2006, the scope was defined as follows:

- The project and its baseline scenarios;
- The physical infrastructure, activities, technologies and processes of the project;
- The GHG sources, sinks and/or reservoirs that are applicable to the project;
- The types of GHGs that are applicable to the project; and
- The project crediting period, as discussed in Section 3.1.4 of this report.

In accordance with Section 5.3.1 of the VCS Standard, the criterion for validation was the VCS Version 3, including the following documents:

- VCS Program Guide
- VCS Standard
- VCS AFOLU Requirements
- VCS AFOLU Non-Permanence Risk Tool

Unless otherwise indicated, the assessment was performed against the most recent version of the relevant VCS guidance document.

1.3 Level of assurance

In accordance with Section 5.3.1 of the VCS Standard, the level of assurance of this report is reasonable.

1.4 Summary Description of the Project

The project establishes loblolly pine (*pinus taeda*) plantations on 5,377 ha of land previously under extensive grazing by beef cattle. The objective is to produce high value, long lived timber products while sequestering carbon dioxide from the atmosphere.

The management plan calls for a 22-25 year rotation managed with pruning (to a height of 5.6 m) and two thinning operations, to obtain knot-free, high-diameter logs suitable for saw-milling. Forest practices are certified under the FSC standard. The project will result in a significant contribution to sustainable development in Uruguay.

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation was performed through a combination of document review, interviews with relevant personnel and on-site inspections, as discussed in Sections 2.2 through 2.4 of this report. At all times, the project was assessed for conformance to the criteria described in Section 1.2 of this report. As discussed in Section 2.5, findings were issued to ensure that the project was in full conformance to all requirements.

2.2 Document Review

The project description (PD) and supporting documentation were carefully reviewed for conformance to the validation criteria.

Particular attention was focused on the PD, given its central role in the description of “the project and its context” (VCS Standard, Section 3.18.1). Through review of the PD, the audit team ensured that:

- The project design, as described in the PD, is in conformance with the VCS rules and the requirements of the methodology
- The PD satisfies all applicable documentation requirements of the VCS rules and the methodology

In addition to the PD, the following written documents (e.g., reports, memos, land deeds and titles) were reviewed to ensure conformance of the project to the VCS rules and the methodology:

Document	Date Reviewed	Reason for Review by Audit Team
Notarial Forestal El Arriero.pdf	Sept 9, 2012	Verify that cadastral units identified in the PD are under ownership of project proponent.
Findings No 3. Certificado notarial Forestal El Arrioror S.A..pdf	Sept 9, 2012	Verify that Forestal El Arriero S.A. is a legal entity registered in Uruguay.
Finding No 5. Relation GFP-El Arriero.pdf	Sept 9, 2012	Verify relationship between GFP and Forestal El Arriero S.A. in terms of roles, interests, and responsibilities
Finding No 4. Doc. Notarial cambium.pdf	Sept 9, 2012	Verify that Cambium Forestal Uruguay S.A. is a legal entity in Uruguay

Numerous documents associated with DINAMA permitting	July 10-11, 2012	Corroborate other information provided by client. DINAMA is the National Directorate for the Environment.
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In addition to written documents, the audit team reviewed any documents that were critical to the quantification of the project's GHG emission reductions and removals (e.g., spreadsheets, databases and other materials). These documents were reviewed to ensure conformance to the VCS rules and the methodology. The following such documents were reviewed (where multiple iterations of a given document were reviewed, only the latest version reviewed is listed).

Document	Date Reviewed	Reason for Review by Audit Team
Finding No 15, Carbon Stock _El Arriero.xls	Sept 26, 2012	This spreadsheet documents the ex ante GHG removal calculations.
Finding No 12. INTI- wood density of different species.pdf	Sept 26, 2012	Reference for wood density value for p. Taeda; from Argentine National Institute of Industrial Technology
Finding No 11. Yield tables generation.pdf	Sept 26, 2012	Explanation of derivation of yield tables used to develop ex ante estimates

Finally, any spatial documents (e.g., maps, GIS shapefiles) provided in support of the PD were reviewed for conformance to the VCS rules and the methodology:

Document	Date Reviewed	Reason for Review by Audit Team
El Arriero.kmz	Aug 3, 2012	Required under 3.10.1 of VCS Standard v3.3

2.3 Interviews

Interviews constituted an important component of the audit process. The following personnel associated with the project proponent and/or implementing partner were interviewed. The phrase "throughout audit" under "Date Interviewed" indicates that the individual in question was interviewed on multiple occasions throughout the audit process.

Individual	Affiliation and Role	Date Interviewed	Reason for Interview/Information Provided
Andres Normey	Carbosur, Forestry Engineer	Throughout the audit	Co-authored PD, designed analysis spreadsheets, primary contact for project-related information
Agustin Inthamoussu	Carbosur, General Manager	Throughout the audit	Co-authored PD, accompanied audit team during site visit
Daniel Ramirez Le Feuvre	Cambium, Director of Plantations	July 10 – 12, 2012	Director of on-site plantation operations including property purchase, silviculture, and operations. Provided operational details of all aspects of management of the plantations.
Alberto Voulminot	Global Forest Partners, Manager of Forest Investments	July 10, 2012	Explain relationship between GFP and El Arriero S.A. and Cambium

2.4 Site Inspections

The objectives of the on-site inspections performed were to:

- Ensure that the geographic area of the project, as reported in the PD and the accompanying KML file, is in conformance with Section 3.10.1 of the VCS Standard;
- Perform a risk-based review of the project area to ensure that the project is in conformance the eligibility requirements of the VCS rules and the applicability conditions of the methodology; and
- Perform a risk-based review of the project area to ensure that the project conforms to all other requirements of the VCS rules and the methodology.

In fulfilment of the above objectives, the audit team performed an on-site inspection of the project area on the dates July 10-13, 2012.

During field reconnaissance conducted on 11 and 12 July 2012 the audit team made observations of land cover and land use, soil erosion, indicator plant species, etc. within and adjacent to the project areas. GPS tracking was used to create a record of areas visited. GPS waypoints were collected at boundaries and other significant features including locations where photos were taken,

2.5 Resolution of Any Material Discrepancy

Any potential or actual material discrepancies identified during the assessment process were resolved through the issuance of findings. The types of findings issued by SCS were characterized as follows:

Non-Conformity Report (NCR): An NCR signified a material discrepancy with respect to a specific requirement. This type of finding could only be closed upon receipt by SCS of evidence indicating that the identified discrepancy had been corrected. Resolution of all open NCRs was a prerequisite for issuance of a validation statement.

New Information Request (NIR): An NIR signified a need for supplementary information in order to determine whether a material discrepancy existed with respect to a specific requirement. Receipt of an NIR did not necessarily indicate that the project was not in compliance with a specific requirement. However, resolution of all open NIRs was a prerequisite for issuance of a validation statement.

Opportunity for Improvement (OFI): An OFI indicated an area that should be monitored or ideally, improved upon. OFI's were considered to be an indication of something that could become a non-conformity if not given proper attention, and were sometimes issued in the case that a non-material discrepancy was identified. OFIs were considered to be closed upon issuance.

All findings issued by the audit team during the validation process have been closed. In accordance with Section 5.3.6 of the VCS Standard, all findings issued during the validation process, and the impetus for their closure, are described in Appendix A of this report.

3 VALIDATION FINDINGS

3.1 Project Design

3.1.1 *Project scope, type, technologies and measures implemented, and eligibility of the project*

The project exists under sectoral scope 14 (AFOLU). As described in Section 4.2 of the VCS AFOLU Requirements, the project falls under the category of Afforestation, Reforestation and Revegetation. The project involves establishment and management of loblolly pine plantations on degraded grazing lands. Specific eligibility issues are addressed in section 3.2.2 of this report.

3.1.2 *Project proponent*

The project proponent is El Arriero S.A. (S.A. is an abbreviation for the Spanish term Sociedad Anónima, equivalent to Inc. used to identify a corporation in the U.S.A.). The audit team examined the notarized document certifying the creation of El Arriero S.A. according to the laws of the Republic of Uruguay. El Arriero S.A. is a timber investment fund which is managed by Global Forest Partners LP (GFP). GFP has contracted with Cambium Forestal Uruguay S.A. (Cambium) to provide forest management services.

Carbosur, located in Montevideo, Uruguay, is an implementation partner responsible for the development of the carbon component of the project including writing the VCS Project Description, performing the Risk Analysis, and calculation of GHG emissions reductions.

The audit team finds that information in the PD concerning the Project Proponent is adequate and conforms to VCS requirements.

3.1.3 Project start date

The project start date, according to the PD, is 30 April, 2009, when preparations for planting were initiated. The audit team examined invoices for site preparation services dated 30 April, 2009, and numerous entries in the expense records for April 2009 that are consistent with site preparation activities. A project with start date of 30 April, 2009 is subject to the requirements under Section 3.7.3 of the VCS Standard v3.3 which requires completion of validation within 5 years of the project start date.

3.1.4 Project crediting period

The project crediting period is 100 years, beginning on the project start date, in conformance with the VCS Standard.

3.1.5 Project scale and estimated GHG emission reductions or removals

The project is considered a “project” according to the requirements of Section 3.9.1 of the VCS Standard. The project is estimated to result in GHG emission reductions and removals equivalent to 18,207 tCO₂e per year over the project crediting period.

3.1.6 Project activities

The project activities described in the Project Description are consistent with establishment and maintenance of forest cover, in conformance with AFOLU requirements for ARR projects. More specifically, project activities include:

- initial layout of planting areas consistent with requirements established by DINAMA, the Uruguayan National Directorate for the Environment, which regulates forest plantations
- site preparation, including sub-soiling when necessary
- planting of seedlings
- weed control
- pruning and thinning
- final harvest

3.1.7 Project location

The project area consists of 28 discrete plantation properties. The Project Description includes location maps at 3 different scales. The project proponent provided KML files depicting the property boundaries, in conformance with the VCS Standard. Comparison of GPS tracks and waypoints taken during the site visit with the boundaries depicted by the KML files found no discrepancies.

3.1.8 Project compliance with applicable laws, statutes and other regulatory frameworks

Timber plantations are closely regulated in Uruguay. Plantations are only allowed on Forest Priority Soils and require a permit issued by DINAMA, the National Directorate for the Environment, and site visits by government foresters. The audit team obtained the appropriate DINAMA documents for the plantations visited during the site visit and found them to be in order. In addition, FSC certification requires compliance with all applicable laws. There is little likelihood of non-compliance with regulations.

3.1.9 Ownership and other programs

3.1.9.1 Right of use

The audit team obtained as evidence of title copies of Papel Notarial de Actuación for each of the properties listed in Table 8 of the Project Description. All parcels identified by cadastral unit number are included among these documents, showing ownership by Forestal El Arriero S.A. These documents, together with the plantation permits issued by DINAMA referred to in Section 3.1.8 of this report are, in the opinion of the Uruguayan forestry expert on the audit team, sufficient to demonstrate right of use by Forestal El Arriero S.A.

3.1.9.2 Emissions trading programs and other binding limits

As the project has not reduced GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading, this section is not applicable.

3.1.9.3 Participation under other GHG programs

As the project has not been registered under any other GHG program, this section is not applicable.

3.1.9.4 Other forms of environmental credit sought or received

As the project has not sought or received other forms of environmental credit, this section is not applicable.

3.1.9.5 Rejection by other GHG programs

As the project has not been rejected by any other GHG programs, this section is not applicable.

3.1.10 Additional information relevant to the project

3.1.10.1 Eligibility criteria for grouped projects

This section is not applicable, as the project is not a grouped project.

3.1.10.2 Leakage management for AFOLU projects

The project is not required to manage leakage. See discussion under section 3.2.6.3 of this report.

3.1.10.3 Commercially sensitive information

As no commercially sensitive information was excluded from the public project description, this section is not applicable.

3.1.10.4 Any further information

In accordance with Section 3.7.3 of the VCS AFOLU Requirements, the project's non-permanence risk report was assessed by the audit team. The non-permanence risk report upon which the risk analysis assessment was based is contained within the document "Non-permanence Risk Report El Arriero Afforestation on Degraded Grasslands under Extensive Grading", Version 01, dated 25 June, 2012 (risk report). The audit team carefully reviewed the risk report and supporting documentation, including internet links to references that were embedded in the report and several spreadsheets provided as supporting documentation. The findings and conclusion regarding the non-permanence risk analysis undertaken for the project are as follows:

Internal Risks - The audit team reviewed the Project Management factors, in particular the two factors, management team experience and adaptive management plan for which mitigation credits were sought. We found these claims to be credible and the score of -4 to be justified. The assertions made regarding Financial Viability and Opportunity Cost factors were supported by a financial analysis spreadsheet the included a break even analysis, which included accounting for recurring capital expenditures, and an IRR analysis for livestock ranching as an alternative land use. We found the analysis to be sound, and the internal risk rating of 0, after accounting for mitigation credits, to be justified.

External Risks - The audit team reviewed the assertions regarding external risks, including calculation of the governance score, and found them to be sound and the external risk rating of 0 to be justified.

Natural Risks - The four natural risk factors required by the AFOLU Non-Permanence Risk tool were addressed in the risk report.

Overall Risk Rating -

The audit team found the proponent's assertions regarding species selection and the high level of expertise of both Cambium and Carbosur to be credible, and the Total Project Management score to be justified. The project is owned by a timber investment fund set up and managed by GFP, one of the world's oldest and largest timber investment organizations, with assets over \$3 billion USD.

Initial funding for land purchase and plantation establishment were more than 80% of breakeven cash flows according to financial analysis provided by the project proponent. The audit team finds that the risk factors for financial viability meet the threshold of reasonable assurance. The audit team finds that analysis of opportunity costs, project longevity, land ownership community engagement, political risk, and natural risks, as demonstrated in the Non-permanence risk report conforms to the VCS rules.

In summary, the overall risk rating that was determined for the project, in accordance with the VCS AFOLU Non-Permanence Risk Tool, is 10%, which is the minimum risk rating allowed under Section 2.5.2 of the tool. The audit team has concluded that the above risk rating is in conformance with the VCS rules.

3.2 Application of Methodology

3.2.1 Title and Reference

The methodology applied to the project (hereafter termed “the methodology”) is a CDM methodology entitled Consolidated afforestation and reforestation baseline and monitoring methodology AR-ACM0001 “Afforestation and reforestation of degraded land”, Version 05.2.0. The methodology can be found at <http://cdm.unfccc.int/methodologies/DB/X4VOLW3Y7IJCH9WXSBC2Q0JKG9UZ>.

3.2.2 Applicability

The applicability conditions for the methodology are:

- a) The A/R CDM project activity is implemented on degraded lands, which are expected to remain degraded or to continue to degrade in the absence of the project, hence the land cannot be expected to revert to a non-degraded state without human intervention;
- b) If at least a party of the project activity is implemented on organic soils, drainage of these soils is not allowed and not more than 10% of their area may be disturbed as result of soil preparation for planting;
- c) The land does not fall into wetland I category.

Since the Project Proponent is accounting for changes in soil organic carbon, the following additional applicability conditions apply:

- a) Litter shall remain on site and not be removed in the A/R CDM project activity; and
- b) Ploughing/ripping/scarification attributable to the A/R CDM project activity, if any, is:
 - i. Done in accordance with appropriate soil conservation practices, e.g. follows the land contour; and
 - ii. Limited to the first five years from the year of initial site preparation; and
 - iii. Not repeated, if at all, within a period of 20 years.

The Project Proponent addresses each of these applicability conditions in section 2.2 of the Project Description.

With regard to the requirement that the project be implemented on degraded land, the methodology specifies that the latest version of the tool “Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities” shall be applied for demonstrating that lands are degraded or degrading. The Project Proponent provides 2 scientific studies and a report from the Uruguayan National Environment Directorate attesting to the general degradation of soils in Uruguay resulting from 370 years of livestock grazing, including a 24% decrease in net primary productivity and changes in species composition toward species such as *Cynodon dactylon* (Bermuda grass) and *Baccharis trimera*, which are indicators of overgrazing and degradation. The PD includes a map attributed

to the Ministry of Livestock, Agriculture, and Fisheries showing that much of the project area is subject to moderate to severe erosion. Observations made during the site visit confirmed instances of erosion and species indicators of degraded land on the project area and surrounding lands, and continued heavy grazing pressure indicated by large numbers of animals grazing close-cropped grasslands. The audit team finds adequate evidence to support the claim that the project is implemented on degraded land.

The project area does not include organic soils or wetlands; watercourses are excluded from planting due to regulations that require buffer zones around such areas. The project description calls for litter to be left on site. Site preparation includes deep plowing, which observations confirm is done along contours. The silvicultural plan calls for a 22 to 25 year rotation, during which time additional site preparation will not be done. The audit team therefore finds that the project meets the applicability conditions of the methodology.

3.2.3 *Project Boundary*

Forestry in Uruguay is tightly regulated by DINAMA, the Uruguayan National Environment Directorate. Plantations are only allowed on designated “forest priority soils”, planting must respect buffer requirements around watercourses, roads, fences, and structures, fire risk mitigation plans are required as are planting permits, for which an environmental assessment is required. The physical project area boundaries for this project were laid out in consideration of these and other factors, primarily soil depth, i.e., avoidance of areas with shallow and or rocky soils. Borders of planting areas were initially laid by field personnel, adjusted where necessary by supervising foresters, and then GPS'd and recorded in a Geographic Information System database. Maps produced by the Project Proponent based on these GPS measurements closely followed the visible features of the landscape.

GHG pools for the project include above-ground biomass, below-ground biomass, dead wood, litter, and soil organic carbon. Emissions of CH₄ and N₂O due to burning of woody biomass for site preparation are defined as included pools in the methodology, however, as no biomass burning for site preparation will occur, these pools are not included within the project boundary.

The audit team finds that the project boundaries conform to VCS requirements.

3.2.4 *Baseline Scenario*

The methodology specifies Project Proponents “shall use the most recent version of the “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities”. Currently this is version 01, which is referenced in section 2.4 of the PD. The PD follows the procedures outlined in the tool. Two alternative land uses are identified: continuation of extensive livestock grazing and forestation without being registered as a GHG sequestration project. This concurs with observations made during the site visit and data derived from the National Agriculture Census and presented in the PD; the vast majority of the landscape in the project vicinity is dedicated to livestock grazing, with occasional woodlots managed for short rotation pulp production or local use. There was also evidence of use of land for production of sorghum crops, however observed agricultural land use was confined to areas of lower slope and deeper soils compared to the forest priority soils to which forest plantations in Uruguay are confined by DINAMA regulations.

The Project Proponent identifies a number of barriers to project implementation including lack of access to long term credit, uncertainty over future product prices, remoteness and high transportation costs, and lack of local knowledge, experience, and technology in similar production systems. In section 2.5 of the PD, the Project Proponent presents an investment analysis that shows that the estimated IRRs for afforestation without carbon credits are far below benchmark IRRs calculated for Uruguay, providing additional support to continuation of livestock grazing as the baseline scenario. The audit team examined the IRR analysis model and input parameters and found them to be credible.

In accordance with the requirements of clause 32 of the baseline and additionality tool, a common practice analysis is performed to assess the extent to which forestation activity has already diffused in the geographical area of the project. Section 2.5 of the PD includes a discussion of data obtained from the Ministry of Livestock, Agriculture, and Fisheries as well as Pike and Co, a private forestry consulting firm. According to this analysis, since the initiation of the forest promotion policy in 1987, approximately 10% of the forest priority soils in the departments of Cerro Largo and Treinta y Tres, where the project is located, have been forested. The data also show that approximately one half of this planting occurred from 1987 to 2005, during which time the Uruguayan government provided incentives in the form of direct subsidies, tax exemptions, and soft credits, which are no longer available. The PD also displays data on forest areas planted between 2006 and 2011 in the project region. These data show that 94% of forest area planted was associated with projects seeking carbon finance. The audit team finds this claim to be credible and that establishment of loblolly pine plantations on 20 to 25 year rotations for the purpose of sawlog production, i.e., the project activity, is not common practice.

In consideration of the above described evidence and application of the CDM tool, as required by the methodology, the audit team finds that continuation of livestock grazing is the most plausible baseline scenario and that the project activities are additional.

3.2.5 Additionality

See the discussion under section 3.2.4. Note that under the VCS Standard section 3.14, additionality is to be demonstrated and assessed in accordance with the requirements set out in the methodology.

3.2.6 Quantification of GHG Emission Reductions and Removals

3.2.6.1 Quantification of baseline emissions

Baseline carbon stock changes are assumed to be zero, as allowed by the methodology.

3.2.6.2 Quantification of project emissions

The procedures and equations identified in the PD for calculating net GHG removals follow the procedures and equations laid out in the methodology, including reference to specified CDM tools for individual pools.

3.2.6.3 Quantification of leakage

Activity shifting leakage is the only form of leakage that must be addressed under the methodology. The methodology refers to the CDM tool "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity" which refers to the CDM

“Guidelines on conditions under which increase in GHG emissions related to displacement of pre-project grazing activities in A/R CDM project activity is insignificant” to determine whether leakage must be estimated. Under the guidelines 4 (b) (i) if the displacement of animals is to areas of land that can be identified as degraded or degrading, leakage can be considered insignificant. As the degraded condition of the landscape has been established, as described in section 3.2.2 of this report, the audit team concludes that the Project Proponent’s assertion that leakage can be considered insignificant is justified and conforms to the VCS requirements.

3.2.6.4 Summary of GHG emission reductions or removals

The chain of equations for calculation of net GHG removals and carbon stock changes are provided in section 3.2 of the PD and are in accordance with the methodology. In addition, section 3.4 of the PD points out that the amount of carbon credits must not exceed the long term average GHG benefit of the project, and provides an estimate based on the harvest that follows the end of the crediting period, as shown in Table 15 of the PD.

The audit team finds that the summary of GHG emission reductions or removals conforms to VCS requirements.

3.2.6.5 Uncertainties associated with the calculation of emissions

As there are no GHG estimates being reported at validation, uncertainties associated with the calculation of emissions cannot be evaluated. However, section 4.3 of the PD, the monitoring plan, specifies that monitoring will aim at an estimation of carbon stocks with a precision level of 10% at 90% confidence.

The audit team finds that regarding uncertainties associated with the calculation of emissions, the PD conforms to the methodology and the VCS requirements

3.2.7 Methodology Deviations

The PD identifies no methodology deviations and none were found by the audit team.

3.2.8 Monitoring Plan

3.2.8.1 Data and parameters available at validation

The PD identifies 13 data and parameter items available at validation, using the table format provided in the VCS PD template. All required data items are included. The audit team reviewed the sources of data and found that the value applied is consistent with the source material.

The PD calls for use of a variable BEF₂ factor, ranging from 1.15 to 3.4, depending on tree age. Since the methodology does not mandate a constant BEF₂ and the source table notes that higher values correspond to younger forests, the audit team finds that the Proponent’s use of a variable BEF₂, as demonstrated in the worksheet used to calculate ex ante estimates, is likely to result in better, i.e., more realistic estimates of carbon stocks than would use of a single BEF₂ for all ages of trees.

The root to shoot ratio used in biomass calculations is the default value specified in the A/R Methodological tool “estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” version 02.1.0.

The audit team finds that the discussion of data and parameters available at validation in the PD is adequate and conforms to the VCS requirements.

3.2.8.2 Data and parameters monitored

Data and parameters monitored are described in section 4.2 of the PD, following the table format in the PD template. Data items are adequately described and justified.

The audit team finds that the discussion of data and parameters monitored is adequate and conforms to the VCS requirements.

3.2.8.3 Applicability and eligibility of monitoring equipment and procedures

Monitoring methodologies and procedures are described in section 4.3 of the PD. The proposed monitoring procedures follow the requirements of the methodology and the IPCC Good Practice Guidance for LULUCF (2003) by reference. 101 permanent sample plots have been selected, dispersed among 14 strata defined by region, species and planting year. Proposed data collection and analysis methods follow commonly accepted forestry practices.

3.3 Environmental Impact

An environmental impact assessment is required as part of the permitting process for plantation establishment under DINAMA, the Uruguayan Directorate for the Environment. There are no significant environmental impacts.

3.4 Comments by stakeholders

Consultations with external stakeholders were not formally conducted as the project activities are regulated and approved under the Uruguayan Directorate for the Environment.

4 VALIDATION CONCLUSION

The project is in conformance with the validation criteria for projects, as set out in the VCS Version 3 guidance documents referenced in Section 1.2 of this report. No qualifications or limitations exist with respect to the validation opinion reached by the audit team.

The project is likely to achieve the estimated GHG emission reductions and removals that are described in the PD.

APPENDIX A: LIST OF FINDINGS

NCR .1 dated 08/08/2012

Standard Reference: NA

Document Reference: PD, Table 8

Finding: Examination of land title documents (Notarial Certificates) revealed that Cadastral Unit numbers for some units did not match the Cadastral Unit numbers printed in Table 8 of the Project Plan. Please update the list of Cadastral Unit Numbers so that they correspond to the Unit Numbers as shown in the Notarial Certificates

Client Response: Table 8 of the PD has been amended

Auditor Response: the client provided copies of "Papel Notarial De Actuacion", equivalent to property deeds, showing Forestal El Arriero as owner. All Cadastral Unit numbers in Table 8 in version 2 of the PD are accounted for in the list of property deeds.

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

NCR .2 dated 08/08/2012

Standard Reference: N/A

Document Reference: PD Sec 1.1; 00 Requerimientos Legales_v2.xls

Finding: In Section 1.11 of the PD, the Proponent includes a reference to spreadsheet containing a list of legal requirements. The audit team discovered that the spreadsheet is out of date, as regulations adopted since 2009 are not included. If a list of legal requirements is to be used to satisfy the requirements of this section, please ensure that the list of legal requirements is up to date as of the current validation. In addition, the title of the document provided in the spreadsheet "00 Requerimientos Legales_v2.xls" is not the same as the reference to the document in Section 1.11 of the PD. References to document titles in the PD should match the documents themselves. The audit team is not asserting that a listing of all laws is necessary to conform to the requirements of this section.

Client Response: Section 1.11 of the PD has been amended

Auditor Response: Version 2 of the PD, stated 11/9/2012 updates Section 1.11. The reference to the spreadsheet containing a list of legal requirements has been removed.

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

NIR .3 dated 08/08/2012

Standard Reference: N/A

Document Reference: PD Sec 1.3

Finding: Please provide documentation of formation of the entity "El Arriero S.A." and documentation establishing a Right of Use as defined in VCS Program Definitions.

Client Response: Documentation has been attached

Auditor Response: Copies of documentation of the formation of Forestal El Arriero Sociedad Anonima were provided.

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

NIR .4 dated 08/08/2012

Standard Reference: VCS PD Template v3.0, Sec 1.4

Document Reference: PD Sec 1.e

Finding: The PD identifies Cambium Forestal Uruguay S.A. as responsible for forest investments and management. Please send documentation that Cambium Forestal Uruguay S.A. is a legal entity and a copy of the contract and/or other documentation that defines the roles, interests, and relationships of Cambium Forestal Uruguay S.A.

Client Response: Documentation has been attached

Auditor Response: Notarized copies of the formation documents for Cambium Forestal Uruguay were provided by the project developer.

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

NIR .5 dated 08/08/2012

Standard Reference: VCS PD Template v3.0, Sec 1.4

Document Reference: PD Sec 1.4

Finding: Please describe the relationship between Forestal El Arriero S.A. and Global Forest Partners (GFP). If GFP has a participatory role in the project, please list them in PD Section 1.4 and describe their roles, interests, and responsibilities in relation to the project.

Client Response: Documentation has been attached

Auditor Response: The Project developer provided documentation of the relationship between GFP and Forestal El Arriero S.A.

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

NIR .6 dated 08/08/2012

Standard Reference: VCS PD Template v3.0, Sec 1.10; VCS Standard v3.2, Sec 2.1.1

Document Reference: PD Section 1.10

Finding: The instructions in the PD template call for a demonstration "that the project has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal, or destruction. Please include a demonstration to that effect.

Client Response: Section 1.10 of the PD has been amended

Auditor Response: The required demonstration has been added to the section.

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

NCR .7 dated 08/08/2012

Standard Reference: CDM Methodology ACR-ACM0001

Document Reference: PD Section 2.2.1

Finding: The Methodology, in Section I.4, requires that the "Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities" shall be applied for demonstrating that lands are degraded or degrading. The 6/22/2012 version of the PD does not demonstrate that the step-by-step procedure described in this tool was applied.

Client Response: Section 2.2.1 of the PD has been amended

Auditor Response: Section 2.2.1 of the PD had been amended. The demonstration of degraded land is based on scientific studies attesting to the degradation and deterioration of grasslands in Uruguay due to grazing.

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

NCR .8 dated 08/08/2012

Standard Reference: Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities

Document Reference: PD Section 2.4

Finding: The tool requires that for projects with a starting date after 31 December, 1999, but before the date of registration, the Project Proponent provide evidence that the incentive from the planned sale of CERs was seriously considered in the decision to proceed with the project activity. Please include tangible evidence to that effect in the PD, and supplemental information to the verifier, as appropriate.

Client Response:

Auditor Response: Subsequent to issuance of this finding, the project proponent sought guidance from VCS. A VCS Program Officer confirmed that prior consideration, as defined in the tool, is not required for VCS projects. The finding is therefore withdrawn.

Closing Remarks:

NCR .9 dated 08/08/2012

Standard Reference: Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities

Document Reference: PD Section 2.4

Finding: The tool requires that the list of alternative land uses include "Forestation of the land within the project boundary without being registered as the A/R CDM project activity". In Sub-step 2c, this alternative is referred to as "forestation without being registered as an A/R CDM project activity". Section 2.4 of the PD refers to this alternative only as "Afforestation". To improve clarity regarding the alternative land use under consideration, please include a qualifier regarding registration as A/R CDM project activity in the description of the land use scenario, as specified in the tool.

Client Response: Section 2.4 of the PD has been amended

Auditor Response: Section 2.4 of the PD has been amended; the description of land use scenario Alternative 2 is consistent with the tool.

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

NIR .10 dated 08/08/2012

Standard Reference: Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities

Document Reference: PD Section 2.5

Finding: The instructions in paragraph 33 of the tool, regarding common practice analysis, call for "an analysis to which extent similar forestation activities ... have been implemented or are currently underway" and point out that the definition of similar includes "with respect to the regulatory framework" and that documented evidence and quantitative information be provided. Section 2.5 of the PD includes Table 12 showing area planted to forest from 2006-2011, however it does not provide a basis for comparison of actual planted area to potentially planted area, given the regulatory framework in which afforestation is restricted to certain soil types. Please provide demonstration of the extent to which forestation activity similar to the project activity has occurred and/or is planned, compared to total lands available for forestation within the geographical area of the project, according to the instructions in paragraphs 33 and 34 of the tool. Please include documentation of data sources.

Client Response: Section 2.5 of the PD has been amended

Auditor Response: Section 2.5 of the PD has been amended to include quantification of forestation activities within the geographical area relevant to the project based on a reference to "Pike and Co." The lead auditor notified the PP via email that the source of information should be included. PP modified the PD 9/27/2012, identifying the Ministry of Livestock, Agriculture, and Fisheries as the source of the data. The audit team checked the Ministry's website and verified that a sample of the data provided by the client match.

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

NIR .11 dated 08/08/2012

Standard Reference: N/A

Document Reference: Stock de Carbono_El Arriero.xls

Finding: The spreadsheet contains 2 volume yield tables, used at different ages. Please provide the audit team with an explanation of the source of these tables

Client Response: Documentation has been attached

Auditor Response: The project proponent provided the document 'Finding No11. Yield tables generation.pdf' explaining the origin of the yield tables used. The MAI values are on the low end of range of MAI values for pine plantations in Table 3A.1.7 for the IPCC Good Practice Guidance.

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

NIR .12 dated 08/08/2012

Standard Reference: IPCC GHG LULUCF (2003)

Document Reference: PD, Table 13

Finding: The table shows Wood basic density for P. taeda = .44 and references IPCC GPG for LULUCF (2003) Table 3A.1.9-1, however this table does not contain an entry for p. taeda. Please provide an explanation for the value shown in Table 13.

Client Response: It was assumed that P. taeda density is similar to P. pinaster wood density, due to the lack of local information in IPCC guidance. According to INTI (Instituto Nacional de Tecnología Industrial-Argentinian government) P. taeda wood density is 0.46 kgDM/m³ (http://www.inti.gov.ar/maderaymuebles/pdf/densidad_cientifico.pdf). Taking this into account we have selected a conservative approach.

Auditor Response: The value of .44 kg/m³ is mid range in values for loblolly pine wood density published by Oregon state: <http://www.cof.orst.edu/cof/teach/for111/Brown%20lectures/Basic%20Wood%20Properties.pdf>. The audit team finds that proponent's assumption regarding average wood density is acceptable.

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

NIR .13 dated 08/08/2012

Standard Reference: IPCC GHG LULUCF (2003)

Document Reference: PD, Table 13

Finding: Table 13 shows the symbol for biomass expansion factor as BEF with subscript 1j. However, according to the GPG, BEF1 is used with increment data. The usage in this project for BEF is with merchantable volume. Please follow the GPG standard for identifying which type of BEF is being used.

Client Response: Table 13 of the PD has been amended

Auditor Response: The symbol for BEF has been modified to use the subscript 2 which is consistent with IPCC GPG LULUCF.

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

NIR .14 dated 08/08/2012

Standard Reference: N/A

Document Reference: Stock de Carbono_El Arriero.xls

Finding: The calculation spreadsheet applies a range of BEF values on age in the calculation of tree biomass. Please justify the choice of different BEF factors by age class.

Client Response: There is no specific guidance in GPG with regard to the evolution of BEF along the growth of merchantable volume. Thus, the factor was reasonably applied throughout the different stages of the forest. That means, starting with a highest BEF and decreasing the factor while the plantation gets older.

Auditor Response: The range of BEF2 values used in the spreadsheet corresponds to the values in Table 3A.1.10 of IPCC GPG LULUCF and decreases as the stand ages, in conformance with the guidance provided. The audit team finds proponent's justification of these practices to be acceptable.

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

NCR .15 dated 08/08/2012

Standard Reference: N/A

Document Reference: PD, Table 13; Stock de Carbono_El Arriero.xls

Finding: There is an error in calculation of root-shoot ratio in column N of the Pinus worksheet. According to the description of the R parameter in the tool, the argument to the LN function should be above ground biomass. The term volume * stem density in the spreadsheet formula, column D * column L, does not calculate above ground tree biomass according to equation 1 of the tool, as required when using the BEF method.

Client Response: Pinus worksheet has been amended. In consequence, table 1 and 15 of the PD have been amended

Auditor Response: The error has been corrected and documents updated as described in proponent's response.

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

NIR .16 dated 08/08/2012

Standard Reference: VCS PD Template v3.0, Sec 3.2

Document Reference: PD Section 3.2

Finding: The PD Template includes the instruction: "Describe the procedure for quantification of the project emissions and/or removals. Include all relevant equations". The PD includes some of this information, but does not provide equations for calculating delta C p (sum of changes in C stocks in all pools). The PD includes description and equations for calculating changes in Soil Organic Carbon, but not for biomass carbon pools, dead wood, or litter. Please include the required information.

Client Response: Section 3.2 of the PD has been amended

Auditor Response: Section 3.2 has been amended to include the relevant equations.

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

NCR .17 dated 10/18/2012

Standard Reference: VCS Project Description Template v3.1, VCS

Document Reference: Project Description Version 2, Sept 11, 2012

Finding: VCSA released an updated Project Description Template on Oct 4, 2012. Under VCS rules, updates to the standards, including document templates, become effective immediately. Please update the Project Description to conform to the Project Description Template v3.1

Client Response: Section 1.7 and 1.12.1 of the PD were updated

Auditor Response: The audit team was informed by VCSA on 25 Oct 2012 of a "regrettable oversight" with regard to the 6 month grace period for adoption of changes to certain templates following the 4 Oct 2012 updates. The client was notified on 25 Oct 2012 of the 6 month grace period referred to in Client Response 2, and sent email notification of closure of the finding on 25 Oct 2012; 5:33 PM PST.

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

NCR .18 dated 10/18/2012

Standard Reference: VCS Non-Permanence Risk Report Template, v3.1

Document Reference: Non-Permanence Risk report 'El Arriero' Afforestation on Degraded Grasslands Under Extensive Grazing, Version 01 Dated June 25, 2012

Finding: VCSA released an updated Project Description Template on Oct 4, 2012. Under VCS rules, updates to the standards, including document templates, become effective immediately. Please update the Risk Report to conform to the Risk Report Template v3.1.

Client Response: The Non permanence risk report was updated to the latest version; version 3.1 issued 4 October 2012. Minor changes were done in the Report: clarified the timing of when risk factors are analysed (100 years) and clarified that the cash flow is calculated cumulatively for the life of the project, both in section "Internal risks".

Auditor Response: Version 3.1 of the Risk Report conforms to the 4 Oct 2012 version of the Non-Permanence Risk Report Template. The other edits disclosed in Client Response 2 are acceptable.

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

NIR .19 dated 10/18/2012

Standard Reference: VCS Non-Permanence Risk Tool v3.2 (Oct 4, 2012), Section 2.1.1

Document Reference: Non-Permanence Risk report 'El Arriero' Afforestation on Degraded Grasslands Under Extensive Grazing, Version 01 Dated June 25, 2012; Natural Risk (Fire)

Finding: The updated version of the VCS Non-Permanence Risk Tool makes it clear that assessment of risk must be based on information available at the time of the risk analysis. There is knowledge of a fire occurring in a p. taeda plantation in the vicinity of project area in 2011; however, it is not clear whether this information informed the determination of significance level for fire. Noting that 2.4.2 (2) of the Risk Tool states that significance "shall be estimated by the damage that the project would sustain if the event occurred, expressed as an estimated percentage of average carbon stocks in the project area that would be lost in a single event", please explain and justify the Significance and Likelihood values for fire reported in the Risk Report. Also note that section 2.4.1 of the Risk Tool requires use of conservative estimates where uncertainties exist.

Client Response: The Non permanence risk report was amended in section "Natural risks". The values were estimated using a conservative approach given the uncertainty in estimating the carbon loss. The forest fire occurred in Manolete (owned by Forestal Tekoayhu, another company) in January 2012 was considered for the estimation of the likelihood and significance and resulted in a modification of the previous value reported (a report of the incident is presented to the validator: "Cronología Incendio Manolete.pdf"). Despite Manolete is owned by Forestal Tekoayhu, the incident took place in an area close to El Arriero where more than 100.000 ha of plantations have been implemented., the forest fire resulted in carbon losses which could have been classified as "insignificant" or "transient" (full recovery of lost carbon stocks expected within 10 years of the event) but we decided to score as "Minor" (5% to less than 25% loss of carbon stocks) for conservative reasons.

Auditor Response: Version 3.1 of the Risk Report includes a modified assessment of fire risk and claims a fire risk LS score of 5. In support of the claimed risk, the Proponent provides a workbook , Fire statistics EMP For 2005-2009-2012 Direccion nacional de Bomberos.xls, containing fire frequency analysis that has been extended to include the 2012 fire on the Manolete property owned by Forestal Tekoayhu. The data from 2005 - 2009 are from the Uruguayan national agency for fire fighting and were processed by Pike & Co., a forestry consulting firm. The analysis shows that the average annual percentage of forested lands burned is approximately 0.58%. The proponent also points out that. According to the tool, risk can be considered insignificant if recovery of carbon stocks can be expected within 10 years, which is true during 40% of the planned 25 year rotation. The Risk Tool does not include specific guidance on assignment of Significance and Likelihood factors for forest plantations on a rotation where carbon stocks vary over time and the potential loss is insignificant during a portion of the rotation. However, given the low historical fire rate of less than 1% and the fact that for 40% of the time, potential loss can be considered as insignificant, the audit team concludes that a combined LS score of 5 for this project is appropriate and conservative.

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

NIR .20 dated 10/18/2012

Standard Reference: VCS Program Definitions v3.4 (Oct 4, 2012), VCS Standard v3.3 (Oct 4, 2012) Sections 3.1.4, 4.1.6 (2) - (6)

Document Reference: Project Description Verion 2 (Sept 11, 2012) Section 3.2

Finding: The VCS Program Definitions v3.4 released on Oct 4, 2012 defines model as "a formula or set of formulae that uses parameters and input values to establish the value of one or more output variables". The VCS Standard v3.3 includes new requirements for use of models, such as tree volume equations including the requirement in section 3.1.4 that "it shall be demonstrated at validation that the model is appropriate to the project circumstances ...". Section 3.2 of the PD defines V subscript TREE as "Stem volume of tree species estimated by using the tree dimensions as entry data into a volume table". Table 13 defines the parameter Mean Annual Increment and identifies the Source as "Project design assumption". While the Project Proponent provided the audit team with an explanation of the derivation of the 2 volume yield tables used in the spreadsheet for calculating ex ante tree GHG removals in response to NIR 11, the information provided does not describe the taper function and how it is used for volume calculation in a manner that conforms with section 4.1.6 (2) - (6) of the VCS Standard. The audit team recognizes that a taper function and volume calculation method are not the type of "complex model" to which these requirements are targeted; however, we do believe that the updated VCS Standard requires that additional information be provided to demonstrate the appropriateness of the taper function/volume method to the project circumstances. In addition to the demonstration of appropriateness for validation purposes, the audit team requests that additional information be added to the PD regarding the volume calculation methodology, in respect of the principle of Transparency as defined by the VCS Standard, including its application in the ex post quantification of carbon stocks.

Client Response: The answer to this NIR is provided in a separate document: "Response to NIR 20.docx"

Auditor Response: The document referred to in Client Response 2 includes additional information describing the SISPINUS and INSIGNE growth models and an English translation of the original document (written in Spanish by Infora Estudios) describing the development and testing of the tree taper model used to calculate tree volume inside bark. The study evaluated 4 model forms fit to data from 859 pinus taeda trees collected from plantations in Uruguay, finding the Kilkki form to result in the best fit with the least amount of bias. The taper model used for the ex ante estimate was developed by fitting the p. taeda data from Uruguay to the Kilkki model form. The audit team finds that the appropriateness of the taper model to the project circumstances has been adequately demonstrated.

The finding asked for additional information on calculation methodologies to be applied to the ex-post quantification; however this information was not provided. The audit team asked for additional information regarding quantification methods via an email on 2 Jan 2012.

Client Response 2: [Client responded 4 Jan 2012 with updated Response to NIR 20, saved as Response to NIR 20_201301014.docx]

Auditor Response 2: Client's response includes a document, Response to NIR 20_20130104.docx, and several supporting excel workbooks referenced by the document. These documents contain additional

explanation of the methodology used to develop the ex ante estimates. The methodology and rationale for combining outputs from the SISPINUS and INSIGNE models are discussed, and calculation steps are shown in the accompanying spreadsheets. In terms of volume calculation, the tree heights projected by the INSIGNE model are greater than heights projected by SISPINUS. The project proponents apply a ratio adjustment to heights generated by INSIGNE to force them to correspond to the SISPINUS heights, which are considered more accurate. This adjustment is conservative in that predicted volume at age 25 using this method is about 77% of the volume without this adjustment. The method is equivalent to a species specific site index adjustment, which is a common practice in forest growth and yield modelling. The audit team finds that the methods used to develop the ex ante projections of carbon stocks are appropriate and result in estimates that are likely to be more accurate than use of the SISPINUS model alone and are conservative in comparison to the INSIGNE model. However, the finding remains open because the client has not addressed the request that additional information on quantification methods be added to the PD. The audit team notified the client via email on 4 Jan 2013 requesting changes to be made to the PD to improve the description of quantification methods. Specific items for improvement included: description of V tree in section 3.2 of the PD, explanation how MAI as identified in Table 13 relates to the ex ante estimates, and clarification of the parameter Vtree in Section 4.1.

Client Response 3: [Client responded 7 Jan 2013 with an updated version of the PD in the file with filename "PD_El Arriero Final.pdf"]

Auditor Response 3: The updated PD provides additional information regarding quantification procedures including the 3 items specifically requested.

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

OFI .21 dated 01/07/2012

Standard Reference: VCS Standard 3.1.4

Document Reference: NA

Finding: In NIR 20 the audit team requested information regarding the taper functions used to estimate volume from tree diameter and height data. The client responded by sending 5 documents in an email dated 4 Jan 2013 with information relating to the derivation of the taper function used, and workbooks and other documents demonstrating the calculation of the ex ante estimates. The text of the 4 Jan 2013 email stated the project proponent's reluctance to disclose the coefficients of the taper equations in consideration of "risks". The audit team determined that disclosure of the taper model coefficients was not strictly required by the VCS standards within the scope of validation which requires that it must be demonstrated that a given model is appropriate to project circumstances. The audit team notes that under verification, the application of the model to the monitored data and the entire quantification sequence beginning with that data are subject to review. This will require full disclosure of the taper model coefficients and the detailed volume calculation methodology used in estimation of carbon stocks.

Client Response:

Auditor Response:

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

NIR .22 dated 01/11/2013

Standard Reference: A/R Methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities" Version 01

Document Reference: Cash flow benchmark analysis workbook: Cash flow_REAL TERMS_100yr.xls.

Finding: The cash flow analysis shows costs incurred as early as 2007, yet the project start date is 2009. Please explain. [sent via email 11 January 2013]

Client Response: [Mr Agustin Inthamoussu responded via email 14 January 2013, stating that the financial analysis was performed based on the year when the first field on each region was purchased, that that the analysis was performed to address the concept of additionality, therefore the financial analysis was done before project implementation.]

Auditor Response: Clause 25 of the tool indicates that the financial indicator should be calculated for the proposed project activity. Since the analysis was based on proposed and not actual project activity, the initial costs for the cash flow analysis are not necessarily related to the initiation of actual project activities and the project start date.

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