SUMMARY OF COMMENTS & RESPONSES ON THE DRAFT FOREST PROJECT PROTOCOL

42 sets of comments were received during the second public comment period for the Draft Forest Project Reporting Protocol, Version 3.0. Staff from the Climate Action Reserve (Reserve) and the forest protocol workgroup worked together to respond to these comments.

In order keep this summary document to a reasonable size, some comments were edited for length. The comment letters can be viewed in their entirety on Reserve's website at www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

Comments received by:

1. American Forest & Paper Association (AFPA)
2. Andrea Tuttle (Tuttle)
3. Bill Stewart, University of California, Berkeley (Stewart)
4. Blue Source (Blue Source)
5. California Council of Land Trusts (CCLT)
6. Catherine Moore (Moore)
7. Center for Biological Diversity (CBD)
8. City of Arcata, CA (Arcata)
9. Conservation Collaboratives (CC)
10. Delta Institute (Delta)
11. East Bay Regional Park District (East Bay)
12. Ebbetts Pass Forest Watch (Ebbetts)
13. Ecotrust (Ecotrust)
14. Emilio Laca, University of California, Davis (Laca)
15. Environmental Synergy (ES)
16. Equator, LLC (Equator)
17. Forecon EcoMarket Solutions (Forecon)
18. Forest Landowners of California (FLC)
19. Forester's Co-Op (FCO)
20. ForestEthics (FE)
21. Golden State Land Conservancy (GSLC)
22. Grizzly Mountain Ranch (GMR)
23. Hurteau, Koch, North, and Hungate (Hurteau et al.)
24. Kim Iles, Forest Biometrician (Iles)
25. Land Options Group (LOG)
26. Mendocino County Farm Bureau (MCFB)
27. NAFO, OFIC, and WFPA (NAFO et al.)
28. Natural Resources Defense Council (NRDC)
29. New Forests Advisory, Inc. (New Forests)
30. Nick Kent, RPF (Kent)
31. North Coast Resource Management (NCRM)
32. Pacific Gas and Electric Company (PG&E)
33. Regional Council of Rural Counties (RCRC)
34. Sierra Business Council (SBC)
35. Terra Global Capital, LLC (TGC)
36. TerraPass (TerraPass)
37. Terry Collins (Collins)
38. The Conservation Fund (CF)
39. The Pacific Forest Trust (PFT)
40. The Wilderness Society (WS)
41. Waste Management (WM)
42. Weyerhaeuser Company (WC)

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General Comments

1. This updated protocol represents a yeoman's job as we recognize the time and effort it has taken to revise the original protocol and respond to comments from the December 2008 draft. Despite the positive improvements, however, Weyerhaeuser remains concerned that the protocol is unnecessarily impractical for the majority of landowners.

There are some specific provisions regarding permanence and leakage that remain troubling for all landowners; similarly. specific provisions regarding baseline and natural forest management requirements will be difficult to replicate and/or achieve outside of California. **(WC)**

RESPONSE: Noted. The FPP work group has made significant changes to the requirements for permanence and accounting for secondary effects with the purpose of making the FPP more practical for landowners without compromising accounting or environmental integrity. Landowners will need to evaluate the merits of each project prior to engaging in a commitment to register with the Reserve.

The use of USFS FIA Assessment Areas in the determination of baseline for Improved Forest Management projects on private lands will become more straightforward for landowners outside of California with completion of the ongoing work to identify the assessment areas for other states.

2. We maintain that this program will continue to be avoided by most private landowners, who value the choice to manage their forestland for their independent objectives. It also deliberately limits the participation of the tens of thousands of landowners who manage their forests intensively for wood products and economic returns. Most importantly, it severely limits the carbon benefits that these intensively managed forests could provide to help reduce atmospheric carbon dioxide.

Fundamentally, the protocol's philosophy of only crediting new practices (versus incremental carbon sequestered from the start of a project forward) inherently disadvantages managed forests and product carbon. Despite this inequitable premise as a starting point, the protocol's inflexible 100 year obligation under the project implementation agreement (the details of which have yet to be revealed), and its native species and natural forest management practices requirements further hinder landowner participation. EPA estimates that the amount of carbon stored annually in forest products in the U.S. is equivalent to removing more than 100 million tons of CO_2 from the atmosphere every year. As a building material, wood requires less fossil fuel energy to produce, transport, construct and maintain over time and is a better insulator than other building materials, such as concrete and steel. We appreciate that the CAR protocol takes a first step at recognizing a portion of the benefits of forest-based products, however much of this value will never be realized due to the protocol's methods for accounting for product carbon within the confines of a forestry project. We submit that revisions needed to wed carbon sequestration objectives with broader forest and forest product management objectives are possible without compromising the program's ability to produce real, verifiable, permanent, additional carbon sequestration. However, it will take a commitment to trust contracts and market forces and reduce the high command and control approach that this program currently embraces. We hope that future versions of the protocol will achieve these objectives, however, as written, the current version does not.

To that end, AF&PA appreciates the work that CAR has accomplished to date, recommends that CAR continue to refine the protocol to make it more inclusive of forests actively managed for timber and manufactured products. However, we oppose the adoption of this protocol by the California Air Resources Board for use in a regulatory based offsets program. [See American Forest and Paper Association for more information and detail.] **(AFPA)**

RESPONSE: Noted. The protocols are designed to be used by landowners who grow and harvest trees as part of ongoing management activities, provided that the management under the project increases sequestration or reduces emissions compared to the baseline scenario. As stated in Section 3.1 of the FPP, "The Reserve strives to register only projects that yield surplus GHG emission reductions and removals that are additional to what would have occurred in the absence of a carbon offset market (i.e. under "Business As Usual")." The standardized baseline reflecting "business as usual" for Improved Forest Management Projects takes into consideration management activities present on similar landscapes, project inventory in relation to common practice, legal requirements, and economic feasibility. This approach is meant to be inclusive of many landowners who manage their forestland for the sustainable production of wood products.

The work group believes that the data used to make the decision for crediting wood products is reasonable and balanced. The work group also believes that the accounting of wood products is essential for accurate and conservative accounting. Although studies indicate that wood is a favorable building material from a climate perspective, we are not able to consider substitution effects at this time due to the difficulty in quantifying project-specific effects, nor are we able to claim ownership across sector boundaries for all climate benefits realized..

The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

3. The Center for Biological Diversity acknowledges the great amount of thought and effort that went into developing the draft forest project protocol revisions, and we acknowledge that the draft revision includes potential improvements over the current forest project protocol. However, we have concerns about components of the draft forest project protocol revisions. For example, the most recent draft—revised subsequent to the public comments received in February—includes significant changes that appear to greatly reduce the ability to ensure the ecological value of forest projects. In particular, the definition of natural forest management has been weakened in a way that greatly increases the likelihood that the updated protocols will encourage business as usual with respect to destructive forest practices. These late changes appear to have come from timber industry comments to the December draft, reversing direction from previous protocols and the stated intention of ensuring that forest projects promote ecological values. In addition, the current draft continues to raise concerns about the permanence of carbon stores, wood discarded in landfills, and reporting soil carbon emissions.

We strongly recommend to the Board, in your review of the draft revisions, that you review a version that clearly identifies the modifications from the current protocols, and the specific justifications and rationales for those changes. In particular, we recommend that the Board specifically review the modifications made in the most recent draft. In addition, it is important

that the Board understand that the current draft includes many items that failed to achieve consensus. These issues were decided by majority vote, to the distinct advantage of timber industry interests who outnumbered representatives of forest conservation concerns on the working group. Although the conservation representatives were invited to submit "minority reports," it is unclear exactly which sections of the current draft achieved consensus and which did not. Furthermore, considering that the CCAR forest project protocol work group is comprised of neither elected representatives nor proportional representation of stakeholder and public interests, the value and justification of a straight majority vote on policy decisions is unclear. It would greatly improve the clarity of the draft and the process to identify those changes that did not achieve complete consensus, and to provide justification for including them without consensus. **(CBD)**

RESPONSE: Noted. There was much discussion related to the natural forest management criteria. The discussion, however, never resulted in a vote since the work group was able to achieve consensus with all elements of the section. Changes to the section on natural forest management have been made to clarify the definitions and requirements for promotion of ecological benefits such as the use of native species, sustainable forest management, and protection of biodiversity. Additionally, the description of allowable even-age management was clarified.

Prior explanations of these requirements were vague and lacked the specificity needed for future monitoring and verification. For example, in the prior version terms, like "ecologically appropriate" and "existence of internal policies" were used to demonstrate environmentally responsible long-term forest management. In the current version, more objective criteria have been put in place to ensure that ecological values are maintained and evaluated on a regular basis.

Some reasonable evidence exists concerning current landfill rates for wood products carbon, but future rates are expected to vary and projected alternative uses (biomass, composting, etc.) will have different accounting dynamics altogether. For this reason, landfill carbon will not be credited. (see Appendix C of the final protocol).

Concerns over permanence of carbon stores and reporting carbon soil emissions are not articulated adequately in this comment for a proper response at this time.

A full history of the development process for this version of the protocol, along with copies of publicly released drafts and a detailed summary of updates between the December 2008 and April 2009 drafts, is provided on the Reserve's website at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/. Although the Reserve strives for consensus from workgroup members in the development of its protocols, final decisions about protocol requirements are the sole responsibility of the Reserve, and may or may not reflect the workgroup's consensus or majority voting.

4. We are pleased to see the progress that has been made towards the workgroup's stated goal to allow broader forest landowner participation. While there has been notable progress made, it is necessary to point out that issues that were raised during the California Air Resources Board and Climate Action Reserve meeting on April 29th are of critical importance to Equator, in particular that remedies for early termination of the Project Implementation Agreement (PIA)

would significantly limit broad participation. This is the most crucial issue for Equator and other market participants. We believe that forest carbon projects are an essential offset type to mitigate carbon emissions and that the effectiveness of these projects depends on ensuring the capacity for widespread program participation. Only by promoting landowner participation, can the Reserve hope to realize the intended atmospheric benefits of forestry offsets as well as support the additional environmental advantages achieved by forest carbon projects.

The revisions that we specifically commend:

- Reinforcing the notion that the Project Implementation Agreement is between the landowner and the Reserve
- Allowing the conservation easement or deed restriction to be recorded within one year of project implementation
- Expanding the eligible natural forest management requirements
- Including the potential for the Reserve to grant approval to use regional and sites specific allometric equations

The issues that Equator believes require further consideration:

- Provide the ability for early project termination by allowing issued credits to be compensated with any CRT on a one to one ratio
- Define the precise roles of the FIA and the verifier in approving regional and/or site specific allometric equations for modeling purposes
- Develop monitoring requirements to minimize the disparity between expected project revenues and the long-term expenses of monitoring
- Establish a defined program for landowners to demonstrate sustainable long-term management requirements through public agency endorsement and supervision.
- Allow the PIA to be subordinate to any other mortgage or title against the project land base, since making it superior would hinder participation by commercial landowners who have debt on their land because refinancing and or replacing such debt is customary business for these landowners. **(Equator)**

RESPONSE: Noted. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

As indicated in Section 3.4 of the final protocol, reforestation and avoided conversion projects may terminate if CRTs are paid back at a 1:1 ratio. Improved forest management (IFM) projects must compensate at a higher ratio in earlier years. The rationale for this is that baselines for IFM projects are averaged over 100 years, and early termination could therefore result in systemic over-crediting (assuming un-averaged baseline stocks are higher in early years) if it were widely practiced.

Regional and site-specific allometric equations must be approved by a verifier and ultimately by the Reserve. This is clarified in the final protocol.

Monitoring and reporting requirements are also now detailed in the protocol (Sections 8 and 9). Projects may be issued credits in every year, as long as their annual monitoring

reports are reviewed by a verifier, and as long as site-visit verifications are conducted at least once every six years.

Section 3.9 of the final FPP details requirements for demonstrating adherence to sustainable harvesting and natural forest management practices. Demonstrating sustainable harvesting practices can be done through several mechanisms, including "[adhering] to a renewable long-term management plan that demonstrates harvest levels which can be permanently sustained over time and that is sanctioned and monitored by a state or federal agency." The FPP has also been clarified to extend eligibility to landowners of all sizes who engage in practices that maintain moderate levels of canopy closure across the project area without either forest certification or having an agency-approved long-term management plan.

The PIA has been modified to enable participation by landowners who do not wish to subordinate other contracts and agreements to the PIA. Landowners willing to subordinate other agreements to the PIA are at a lower risk profile and contribute less to the Buffer Pool.

5. Another issue vital to landowner participation is the establishment of a practical method for all project proponents to demonstrate sustainable long-term forest management. While nationally recognized certifications such as Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI) are realistic strategies for some landowners, these programs are extremely costly and are not feasible for many potential forest project developers. Commonly, these landowners do manage their forests sustainably, but do not possess the capital to obtain expensive certification. It is unreasonable to expect landowners to participate in forest projects with high-priced requirements that extend beyond their financial means. Accordingly, the Reserve would promote greater program participation by establishing a method for public agencies to confirm landowner compliance with sustainable management requirements. Federal, state and local authorities have the experience and expertise to identify sustainable management practices and could provide the Reserve with equal assurances as private certification schemes. **(Equator)**

RESPONSE: Noted. Section 3.9 of the final FPP details requirements for demonstrating adherence to sustainable harvesting and natural forest management practices. Demonstrating sustainable harvesting practices can be done through several mechanisms, including "[adhering] to a renewable long-term management plan that demonstrates harvest levels which can be permanently sustained over time and that is sanctioned and monitored by a state or federal agency." The FPP has also been clarified to extend eligibility to landowners of all sizes who engage in practices that maintain moderate levels of canopy closure across the project area without either forest certification or having an agency-approved long-term management plan.

6. The language and presentation of the updated protocol is much clearer than the draft version. The preliminary language addressing aggregation is welcome and we look forward to reviewing the aggregation methods as soon as they are available. We have also included our initial thoughts on what should be included in an aggregation methodology here. The discussion of baseline methods is dramatically improved and the risk assessment has been made considerably less onerous and arbitrary through the application of default risk values across all projects. We strongly encourage the CAR to develop project design document templates and/or standardized spreadsheets to be used by project developers in submitting projects to verifiers

and the CAR. This would ensure that the project documents would be formatted to meet the basic requirements of the protocol and avoid delays in information gathering, project submission, and project approval. **(Ecotrust)**

RESPONSE: Noted. The design of standardized spreadsheets and document templates is currently underway and is expected to be completed sometime this summer.

7. The Forest Landowners of California (FLC) has several objections to the Final Forest Protocols Version 3.0. FLC urges the Climate Action Reserve (CAR) to implement revised protocols to accommodate the small, non-industrial private forest landowner to merchandise and list voluntary carbon sequestration offsets on CAR.

The fixed costs of bring carbon credits to market and verifying them annually for 100 years are excessively high, unreasonable, and disproportionably hard of the small producer. To level the playing field, the small producer needs a modified process that allows 10 or 15-year contracts and permanence standards, American Tree Farm System forest management planning certification, simplified statistical or 100% inventories by the landowner with third party verification, discounted registration costs with CAR, and only baseline compliance with the California Forest Practice Act.

The California Air Resources Board estimates that non-industrial forest owners manage 3.2 million of the 7.4 million acres of privately owned forests in California. FLC continues to encourage CAR to engage it in the development of these forest protocols. FLC has yet to be invited as a work group member or to be represented by any forest protocol work group member during the development of CAR's forest protocols.

CAR should leave production of carbon credits to the discretion of the forest owner on the basis of best forest management practices for the unique needs of their privately owned forest rather than excessive social, environmental and native forestry constraints that cause forest and economic harm. **(FLC)**

RESPONSE: Noted. The 100 year commitment is to ensure the carbon benefits from forest projects are permanent. Without it the CRTs produced would have little value. The work group was formed in November 2007. The work group included a representative who works for landowners with small holdings. Additionally, the work group took public comment from small landowners at public comment meetings, and is committed to continuing to work with small landowners to ensure that the FPP can be broadly used.

The work group continues to make every effort to streamline administrative burden and costs where we can do so without compromising accounting or environmental integrity. Some of the changes to the protocols that have a bearing on costs include:

1. **Eliminating the requirement for the inventory, monitoring, and verification of forest holding outside the project area.**
2. **Elimination of the requirement to permanently monument inventory plots. Plots now have to be 'flagged' for verification.**
3. **Reducing the site verification requirement to 6-year cycles from 6-year cycles with back to back site verification every 7 years.**
4. **Recognizing the oversight of monitoring reports by a verifier in interim years between the 6-year site verification as a verification activity, thereby enabling the annual crediting of CRTs without a site visit.**

5. **Allowing the use of stand table projections to be used to update inventory data instead of requiring the use of models, which enables small landowners to update their own inventories.**

Additional changes to the FPP regarding the monitoring, contractual arrangements, permanence standards, certification requirements, inventory methodologies, registration costs and baseline compliance will continue to be reviewed and considered in future revisions of the FPP.

8. The value of carbon credits is less than the costs to bring them to market, costs of restrictive forest practices, loss in bare land value, and lost standing timber value; making merchandising of carbon offsets under CAR economically non-viable. **(FLC)**

RESPONSE: Noted. See response to Public Comment # 7. As stated in Section 3.9 of the FPP, "Forest Projects can create long-term climate benefits as well as provide other environmental benefits, including the sustaining of natural ecosystem processes." In terms of value, forest project carbon offsets generally sell at a higher price than other types of offsets, precisely because of the value of other ecosystem benefits safeguarded by restricting forest practices. Producing high quality carbon offsets requires ensuring that reductions and removals are additional, conservatively quantified, verifiable, and permanent. As the protocol is put into practice, we will continue to explore ways to minimize transaction costs for project developers while adhering to these criteria.

9. These protocols penalized produces with excessive restrictions that exceed current forest practices baselines such as: site preparation, machinery use for site preparation, even-aged management, permanent sustainability, standing dead wood retention, reforestation leakage, and accounting for secondary effects due to forest management and logging. Additional punitive provisions such natural forest management and native forest retention exceeds baselines established by CAR's enabling legislation and should be stripped out of these forest protocols. **(FLC)**

RESPONSE: Noted. See responses to Public Comments # 7 and # 8. Site preparation is not penalized. Instead, we have included methods to calculate the emissions associated with the site preparation which is critical to determining the climate benefits of the project. The accounting for leakage is a similar issue; absent estimating secondary effects associated with leakage, the climate benefits are potentially over-estimated. The work group operated under a principle of designing standards that would 'do no harm' to background 'natural' forest conditions. After significant discussion, the work group unanimously agreed to the terms under Section 3.9 (January 22, 2009 version).

10. The protocols require forest practices in excess of the forest practice act such as native species retention, natural forest management, maintenance of native trees over the project life, fertilizer ban, and mixed species reforestation. **(FLC)**

RESPONSE: Noted. See responses to Public Comments # 7 and # 8. Reforestation Projects that incorporate practices of broadcast fertilization are not eligible under the FPP at this time due the need to evaluate the emissions impacts of this practice. Other fertilization methods, such as plugs can be used.

The requirements for mixed species in reforestation are as follows: "To the extent seed is available, and/or physical site characteristic limit, reforestation projects must plant a mixture of species such that no one species can be more than the value shown under the heading 'Composition of Native Species' in the Assessment Area table in Appendix F." In California regions, the restriction for one species planting is not to exceed 80%.

The work group operated under a principle of designing standards that would 'do no harm' to background 'natural' forest conditions. After significant discussion, the work group unanimously agreed to the terms under Section 3.9 (January 22, 2009 version).

11. Including factors in the risk assessment that are beyond the control of the forest landowner such as leakage, social risk, natural disturbance risk, disposition of carbon stocks after forest product change in title. **(FLC)**

RESPONSE: Noted. The intent of the risk assessment is to quantify all the risks associated with reversals to determine the quantity of CRTs issued to a project that must be set aside in a buffer pool. This includes factors that are both within and beyond the control of the forest landowner. Ensuring permanency is critical to developing a credible forest carbon offset.

12. We appreciate the enormous effort that the working group and CAR staff have expended on developing the final draft protocol and congratulate them on completing this draft. The development and adoption of accounting protocols that will allow crediting of emission reductions from forest projects is an essential part of our overall climate change response. This draft protocol represents a significant contribution to that goal.

However, we believe that the draft protocol still needs a number of substantial changes. Many of these changes reflect the need for a thorough review of the draft to ensure that terms are used consistently, references are accurate, and the text is clear and concise. Rather than offer a line-by-line edit, we have assumed that Reserve staff will complete this task prior to presentation to the Reserve Board.

We also believe that a relatively small number of substantive changes are needed to ensure that the credited reductions under this protocol are accurate, fully additional, permanent, and do not result in unintended environmental harm. **(NRDC)**

RESPONSE: Noted. A thorough review of the text for consistency, accuracy and clarity will be completed prior to presentation to the CAR Board.

13. The Wilderness Society believes that federal lands should not participate in private carbon offset markets at this time, until a scientifically thorough and public national review can determine whether participation would be consistent with public lands mandates. **(WS)**

RESPONSE: Noted. Section 3.8 of the FPP now reads, "Forest Projects on federal lands may be eligible if and when their eligibility is approved through a federal legislative or regulatory/rulemaking process."

14. Overall, we support the Updated Forest Project Protocol. In general, the new version ably incorporates lessons learned and could form the basis for broadly accepted a national standard. As this version is finalized for consideration by the CAR and the state Air Resources Boards, we

ask that certain important refinements and corrections be made to the current draft Protocol to better ensure its accuracy, integrity and ready implementation. We also acknowledge that the framework created in this Protocol will benefit from on-going review and refinement as it is put to work not only in California but around the country. **(PFT)**

RESPONSE: Noted. A thorough review of the text for consistency, accuracy and clarity will be completed prior to presentation to the CAR Board.

15. The proposed protocols provide much more guidance for developing forest carbon projects, easing the process and opportunity for small landowners to explore the option of entering their property into the voluntary carbon market. However, the terms set forth in the protocol are still onerous, expensive, and often too cumbersome for smaller landowners in the Sierra Nevada to participate. The protocol offers the promise of the development of aggregation guidelines, which will reduce barriers to participation, although only slightly. Costs of registration, account maintenance, inventory, verification, annual monitoring, and now third□party certification of harvested wood products, for a 100 year period, will very seldom be offset by the actual income from credits at today's prices, on smaller properties. In the Sierra Nevada, it is these smaller properties which are most susceptible to conversion and deforestation as population increases.

SBC recommends that CCAR and ARB assess the financial feasibility of completing a forest project from start to finish, and determine what property sizes will actually be able to participate, under the suggested protocols. **(SBC)**

RESPONSE: Noted. Individual project costs will differ due to size and to other variation in project conditions such as pre-existing data, methodology, and documentation. The FPP currently reflects that feedback and significant efforts to streamline cost burdens without compromising accounting or environmental integrity. Producing high quality carbon offsets requires ensuring that reductions and removals are additional, conservatively quantified, verifiable, and permanent. As the protocol is put into practice, we will continue to explore ways to minimize transaction costs for project developers while adhering to these criteria. The Reserve will develop guidance for aggregation soon after completing this version of the FPP.

16. Our review of this most recent draft of the Reserve's Forest Project Protocol (Protocol) indicates that there has been no material modification that recognizes the fundamental differences between working (managed) forests and conservation forests. In this regard, we are extremely disappointed and cannot support or endorse the adoption of this update. Further, we recommend that CCAR, the California Air Resources Board (ARB), and other state and federal policymakers set this protocol aside – at least those provisions that apply to working or "managed" forests. We also recommend that CCAR and ARB commit to working with representatives of the nation's private landowners and others in the forest products industry to develop a separate and viable protocol for managed forests, be they industrial in size and scope or limited to the small scale common among the nation's 9.3 million private, non-industrial owners.

As noted in the opening section of this final draft, the update was intended to "allow greater landowner participation, particularly…industrial working forests." This objective grew out of the acknowledged recognition that the initial version of the CCAR Forest Project Protocol was

essentially designed to address sequestration in conservation forests and land that could be converted to conservation forest so as to prevent other uses of the land. While these objectives are appropriate elements of any forest offset protocol intended to complement a cap-and-trade program, they do not encompass the full spectrum of forests-based carbon offset benefits available to California, and indeed, all of the U.S. By failing to include provisions that reflect the carbon sequestration benefits of privately owned and actively managed forestland, the initial, and this subsequent draft, fail to capture a significant portion of the climate benefits that are provided by sustainably managed forests, year after year. This is disappointing from both a public policy perspective, and from a climate change mitigation perspective, especially when one considers that one third of the Nation's land is forested, and that 58% of that forested land is privately owned and managed.

We continue to believe and advocate that climate change "cap-and-trade" programs must provide a robust role for offsets, as has been advocated by the Western Climate Initiative (WCI) and many others. Further, any such program should include offsets from managed forest lands and fully recognize the annual, additional increase in carbon sequestered in long-lived wood products. As noted repeatedly in our prior comments, and in those from others in the forest products industry, there is a growing body of studies and data that show that these two sources of biological sequestration – sustainably managed forests and the annual yield of forest products – represent a substantial, additional climate and economic benefits. These benefits should be recognized in this protocol, as it has in others. This includes the inclusion of these two carbon stock pools in the U.S. National GHG inventory, and in the US DOE's 1605(b) GHG inventory rules. [See NAFO, OFIC, and WFPA public comment submission for more information and detail.] **(NAFO et al.)**

RESPONSE: Noted. There have been significant modifications that allow for greater participation, including:

- **The elimination of entity inventory requirements.**
- **The modification of eligibility requirements for reforestation that allow a project to commence following natural disturbances.**
- **The elimination of the requirement to have a conservation easement. A Project Implementation Agreement is now required. The latest version can be found on the Reserve's website.**
- **The deferral of inventory requirements for reforestation projects.**

The updated FPP does allow participation of managed forests, provided they meet criteria in the protocol designed to ensure high quality offsets and environmental integrity. Accounting for carbon in harvested wood products is included in the protocol (Appendix C).

17. Other significant deficiencies in the draft include the continued narrowness of the options by which reversals can be remedied, the absence of provisions that allow a project developer to sell offsets for short durations (requiring the buyer to be obligated to replace the offset); and the right of a project developer to "opt out" of the program, so long as all offsets that have been registered and sold, are fully replaced. The current draft also fails to reflect more current data that show that the amount of carbon stored by long-lived wood products at the end of 100 years is substantially higher than the values in the US DOE 1605(b) regulations. **(NAFO et al.)**

RESPONSE: Noted. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-

works/protocols/adopted-protocols/forest/forest-project-protocol-update/. The revised PIA does allow project developers to voluntarily opt out of projects (i.e., terminate them prior to the end of their obligations to maintain carbon stocks for 100 years). For administrative and policy reasons, it would not be feasible for the Reserve to enforce a program where buyers are required to replace credits associated with reversed GHG reductions.

For carbon in harvested wood products, the US DOE 1605(b) data were chosen as a credible and conservative estimate. The protocol's numbers for carbon stored long-term in harvested wood products are an average of the US DOE estimates over 100 years.

18. Scientifically, it is very evident that carbon sequestration is not the real goal. If it were, this entire protocol would be structured very differently. The protocol tries to address two very different, and somewhat incompatible, functions as one. Carbon dioxide extraction and carbon storage are separate functions, and to be optimally effective, they must be treated as separate, at least when considering forested land. **(Moore)**

RESPONSE: Noted. The goal of the FPP is to ensure that the net GHG reductions and removals caused by a project are accounted for in a complete, consistent, transparent, accurate, and conservative manner and may therefore be recognized as high-quality carbon offsets. Projects may either avoid the emission of carbon stored in forests, or increase the amount of carbon stored in forests (many projects will do both). Accounting for both effects is done the same way, by estimating the difference between actual and baseline carbon stocks over the course of the project.

19. The nature of the forest proposed by the protocol is not the optimal forest-based carbon extraction engine. Although I, personally, prefer to manage my land using uneven aged management, the best forest engine for carbon extraction would be a young, even-aged forest stand where all the trees are growing at their optimal rate. In an uneven-aged forest, the larger trees are inhibiting the growth of the younger trees and in an old-growth forest, the carbon extraction to release ratio is nearly balanced; these forests are essentially static. Thus, to maintain optimal extraction of carbon dioxide, these stands must be thinned regularly to release the potential of the remaining trees back to their optimal growth rates. Many species also perform better as even-aged stands, especially Douglas firs and most pines. Redwoods are tolerant of uneven aged management, but perform better as even-aged management. Nevertheless, the protocol is not encouraging vast tracts of young even-aged trees. I must therefore conclude that carbon extractions are not a major goal of this protocol. **(Moore)**

RESPONSE: Noted. The FPP reflects the standards of the Reserve which are designed to ensure that projects are real, permanent, additional, and have environmental integrity. These standards are important to instill confidence in the environmental benefit, credibility and efficiency of the U.S. carbon market. Research and experience are expected to move carbon markets towards greater optimization of the sequestration potential of forests over time.

20. A standing forest is a terrible place to store the extracted carbon. As noted above, allowing a forest to become overgrown only serves to slow carbon extraction rates. Once overgrown, the entire operation is at risk to fire, disease and insect infestations. California is already suffering

deeply from overgrown forests and brushlands that are burning each year at an ever increasing rate. Air quality has been compromised frequently throughout the state in fire season, yet this protocol encourages further overstocking so that the landowner can demonstrate "additionality". This can only be considered to be a promotion of bad management practices. **(Moore)**

RESPONSE: Noted. Wildfire risk and wildfire mitigation assessment, and related requirements for buffer pool contributions, have been incorporated in the FPP to address some of these issues and to discourage overstocking. Wildfire, particularly in California, has significant implications for forests and climate change. These implications need further study to determine how to address wildfire more completely in the protocol.

21. When I sell carbon credits, I am accepting a contract to ensure so many units of carbon remain locked out of the atmosphere for 100 years, in essence, selling my rights to that property for 100 years. If the carbon market implodes, I am still left with my contractual commitment and no legal way out to sell my product in other ways. Where is the escape clause that lets me resume using my property in more profitable ways? **(Moore)**

RESPONSE: The contract requires that the project adhere to the terms of the protocol for the duration of the project life. The rights affected are directly associated with protecting the climate benefits of the project. Other unrelated property rights are not affected by the contract.

The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

22. My primary concern is that these protocols have a secondary agenda that severely limits their use and effectiveness. They appear to be based on political concerns rather than based on science and a primary goal to reduce GHGs. This is apparent in the requirements for co-benefits, the requirement for mixed ages of trees, the restriction on using only native species, and the requirement that reforestation projects have no economic return without carbon sales. I believe these protocols are so limiting that they will not be adopted in many areas of the world that could benefit from the added incentives of carbon storage sales and may actually be self defeating. [See Nick Kent public comment submission for complete details and information.] **(Kent)**

RESPONSE: Noted. The FPP reflects the standards of the Reserve which are designed to ensure that projects are real, permanent, additional, and have environmental integrity. At this time these standards are important to instill confidence in the environmental benefit, credibility and efficiency of the U.S. carbon market. Research and experience are expected to move carbon markets towards greater optimization of the sequestration potential of forests over time. The work group operated under a principle of designing standards that would 'do no harm' to background 'natural' forest conditions. After significant discussion, the work group unanimously agreed to the terms under Section 3.9 (January 22, 2009 version).

23. The revised protocol also has a number of improvements over previous versions. The methodology is generally clearer than in version 2.1. The statistical confidence deductions also make much more sense under this new protocol as well. **(Arcata)**

RESPONSE: Noted.

24. It appears that a forest project will require an annual $500 fee to be registered by the Reserve. Over a 100-year period this amount would be $50,000 and could discourage small projects from participation. I recommend that a tiered system be in place so that small projects pay a different annual registration fee. The criteria for small project could either be by project acreage or tons of VER's registered. **(Arcata)**

RESPONSE: Noted. The Reserve will take this recommendation under consideration. Details and guidance to the fees and their application can be found in the Reserve's Operating Procedures, updated May 22, 2009 and found at: (http://www.climateactionreserve.org/wp-content/uploads/2009/03/open-an_account_reserve-operating-procedures.pdf), and the Reserve's Program Manual updated February 2009, and found at: (http://www.climateactionreserve.org/wp-content/uploads/2009/04/program-manual.pdf) These documents will allow the project developer to understand the application of fees under a variety of scenarios and how they relate to financial feasibility of a specific project. For example, an account can be deactivated if all the CRTs in that account have been transferred or permanently retired.

25. First, we understand that the annual account maintenance fee differs for forestry projects because of the 100-year project timeline. Our understanding is that the account maintenance fee applies during the years where projects have to complete a full verification as opposed to completing the online annual monitoring form. **(PG&E)**

RESPONSE: The fees will depend on the specific project and how the developer manages the account. Details and guidance to the fees and their application can be found in the Reserve's Operating Procedures, updated May 22, 2009 and found at: (http://www.climateactionreserve.org/wp-content/uploads/2009/03/open-an_account_reserve-operating-procedures.pdf), and the Reserve's Program Manual updated February 2009, and found at: (http://www.climateactionreserve.org/wp-content/uploads/2009/04/program-manual.pdf) These documents will allow the project developer to understand the application of fees under a variety of scenarios and how they relate to financial feasibility of a specific project. For example, an account can be deactivated if all the CRTs in that account have been transferred or permanently retired.

26. The FPP should seek to provide maximum environmental integrity without compromising efficient, practical implementation at scale.

When Delta developed Managed Forest Carbon Protocol in 2006, our greatest challenge was balancing "research" with "real world." We sought to design a program that was accurate and defensible, yet practical to implement. The FPP, however, appears to be defining an extremely precise process that could adversely affect implementation on a national level.

We empathize with the challenge of designing a program that is robust enough to identify and deliver the highest quality credits from forest carbon sequestration, while being simple enough

for multiple entities to implement on a national scale. Like others, Delta desires an accurate, defensible program that reflects the carbon sequestration ability of the nation's forestlands. From our experience with landowners and professional foresters, the process outlined by the FPP will likely be perceived as exceedingly onerous and expensive, potentially limiting its effectiveness and contribution to the climate change discussion.

The Reserve should thus consider modifying the precision of the protocol to improve functionality and ease of implementation. Furthermore, Delta suggests the Reserve consider implementing more practical measures initially to generate interest and participation. Then, after a few years, more stringent requirements could be phased-in. **(Delta)**

RESPONSE: Noted. The work group continues to make every effort to streamline the process and costs where we can do so without compromising accounting or environmental integrity. Changes to the FPP regarding functionality and ease of implementation will continue to be reviewed and considered in future revisions of the FPP.

27. The FPP poses significant barriers, particularly the 100-year commitment period, that could prevent participation by the vast majority of non-industrial, private forest landowners.

As was noted by many previous commentators, the 100-year commitment period required by the FPP will effectively eliminate most non-industrial, private forest landowners. Delta understands the rationale behind the requirement, but feels that the requirement sets the bar too high for trying to encourage new adopters.

Delta suggests that the Reserve require a 25-year commitment period, which mirrors the mean land tenure for a non-industrial, private forest landowner. A 25-year period is still a significant barrier to entry and will effectively screen those landowners who are not committed to long-term, natural forest management. Such a duration is much more palatable to the private landowner and will eliminate uncertainty in private land management, creating additional carbon benefits.

We are concerned that a 100-year commitment period will create a disincentive for landowners who are currently managing in a sustainable manner. This could become an example of "the perfect being the enemy of the good." In the end, we fear that the FPP could have little relevance to the private forest landowners most deserving of credit, and even cause unintended consequences, e.g. landowners abandoning natural forest management practices. **(Delta)**

RESPONSE: Noted. Producing high quality carbon offsets requires ensuring that reductions and removals are additional, conservatively quantified, verifiable, and permanent. The 100-year commitment is necessary to ensure permanence. The Project Implementation Agreement has been revised to reflect feedback received over the last three months particularly the concern over the 100-year commitment period. Specifically, projects may be formally terminated prior to the end of the 100-year commitment, on the condition that the forest owner retires a number of CRTs equal to the total number of CRTs issued to the project over the preceding 100 years. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

28. A significant transaction barrier for a forest landowner to enter into a contract using the proposed Forest Project Protocol is the 100-year term. I have heard that the 100-year term is "science based" and reflects the number of years that CO2 stays in the atmosphere. However, I have also read that an amount of carbon equal to the total amount stored in the atmosphere cycles through the ocean in about eight years [(750 GT) / (92 GT per year) = 8.3 years]. What is the scientific basis for the 100-year term?

Other similar land transactions in California of which most landowners have familiarity are: a land lease with a maximum term of 33 years; and a Williamson Act Contracts of 10 years.

I would recommend that a more flexible alternative of terms, in 10-year increments, be allowed for forest carbon buyers to offer more flexible terms with Forest Project Protocol contracts. This would allow more landowners to enter into such agreements, while maintaining the Forest Protocol term to be science based. **(GSLC)**

RESPONSE: Noted. Please see response to Public Comment # 27. For any given ton of CO_2 emitted to the atmosphere, a portion will remain in the atmosphere up to several hundred years. Approximately 40% remains at the end of 100 years. The 100 year timeframe was chosen based on literature suggesting this is a conservative way to approximate a "permanent" emission reduction (see, for example, Marland, G., K. Fruit, and R. Sedjo, 2001. "Accounting for Sequestered Carbon: The Question of Permanence," *Environmental Science and Policy (*4) 2001: 259-268).

29. For the Reserve to be effective at maintaining and growing the U.S. forest carbon sink, the FPP should provide reasonable opportunities for participation by landowners in all size levels. This is particularly true for Avoided Conversion guidance, which would be most applicable for forestlands less than 50 acres. **(Delta)**

RESPONSE: Agreed. Forestland parcels of less than 50 acres are eligible to register as Avoided Conversion Projects under the FPP.

30. The Reserve should encourage the use of aggregators, who can bring forth multiple projects in a cost effective and efficient manner.

As noted in the Family Forest Owners Report, 95% of the private forest landowners in the U.S. own less than 100 acres of land. With this type of ownership pattern, the most cost efficient and effective means of reaching these landowners is through an aggregator model, similar to what is used by the Chicago Climate Exchange. The use of "pools" of smaller projects provides diversity of risk and, in Delta's program, provides a reserve account for unexpected occurrences. These are simple tools that are easily explained to landowners.

Also, Delta suggests the Reserve develop rigorous standards for vetting potential aggregators, ensuring credibility and competency. The standards should focus on fiscal responsibility, data management capabilities, and staff competency. **(Delta)**

RESPONSE: Noted. The Reserve is considering a number of measures that could encourage participation from small landowners, including aggregation. The Reserve will convene a work group of small landowners immediately to consider methods to reduce barriers to participation of small landowners. Many cost-saving measures are included

in the revised protocol. Some of these are identified in the response to Public Comment # 7.

31. The Reserve's Improved Forest Management guidance has many elements in common with the Managed Forest Carbon Protocol that Delta developed for the Chicago Climate Exchange.

Delta compared over 70 program elements from the Reserve's forestry protocols with Delta's Managed Forest Carbon Program. Not surprisingly, the programs are very much alike. With some modification (of either the Reserve's protocols or Delta's), it is our belief that our clients would meet Reserve standards. To this end, there are two program elements standing in the way of potential integration:

- Baseline establishment methodology; and
- 100-year commitment period

Delta would enjoy working with the Reserve to see how we might integrate our protocols with the Reserve, providing access for high-quality offsets, from sustainably managed forestlands in the Midwest and beyond. **(Delta)**

RESPONSE: Noted. The workgroup was tasked with developing standards for producing high quality carbon offsets, which requires ensuring that reductions and removals are additional, conservatively quantified, verifiable, and permanent. The work group consisted of a diverse set of stakeholders, including landowners, agencies, verifiers, scientists, and conservation groups. We welcome continued discussion.

32. A "Business as Usual" baseline approach is not well-suited for private landowners.

We would suggest an alternative approach to the "business as usual" test. Business as Usual is unique to individual landowners. For some landowners, BAU is to let nature take it course and perform no management. For other landowners, BAU is intensive management, with annual harvests. Furthermore, a landowner's approach to management changes over time, particularly in response to changing family condition (children, college, etc.) and economic conditions. In most cases, the only thing usual about private land management is uncertainty.

One of the goals of the Reserve should be reducing uncertainty amongst private forest landowners and ensuring that the carbon sink is maintained and improved over time. Your response to Mr. McAbee (Q#154 "…offset credits cannot be given for reductions or sequestration that would have happened 'anyway'…") assumes the proposed baseline scenario is an accurate measure of what would have happened in the absence of a market for offsets. With private landowners, the high level of uncertainty effectively makes it impossible to speculate on what would happen without offset credit.

As a rule, absent of any state or federal regulation, most forest landowners can manage their land as they see fit. Thus, landowners - who participate in the carbon market and agree to manage their land according to certain principles, such as natural forest management - provide an "additional" carbon benefit because they have eliminated the uncertainty surrounding the long-term management of land and ensured a long-term, stable, forest carbon sink. The very act of subjecting forests to the oversight and measurement for sustainable management is "additional." It also demonstrates a landowner's intent to obtain carbon offset credits, a key indicator for "additionality."

To simplify baseline establishment for Improved Forest Management, Delta believes that the

project start date should be the baseline and that a modified carbon accounting approach should be implemented. **(Delta)**

RESPONSE: Noted. The comment includes several good points. These issues were discussed in great length by the work group. We agree that it is difficult to predict what would have happened in the absence of the project on a site-by-site basis. As suggested in the original response to Mr. McAbee, however, we feel strongly that a "business as usual" baseline is an unavoidable, logical requirement for estimating emission reductions that will be used as offsets. Our approach, therefore, is to define business as usual in a standardized manner, based on regionally available data and incorporating constraints to ensure additionality. The approach acknowledges that carbon benefits are derived from forest projects that increase sequestration and/or reduce emissions relative to the standardized baseline. Additionally, the work group determined the standardized baseline approach would prevent "gaming" that could occur by drawing down inventory immediately prior to project initiation.

33. The FPP should require landowners to enroll all the lands under their name or controlling interest to better guard against internal leakage, rather than allow landowners to define the project boundaries and account for internal leakage after the fact.

As currently written, the FPP appears to allow the landowner or project developer to define the assessment area, essentially allowing the entity to "cherry-pick" the best lands for the inclusion in the program. The Reserve compensates for the user-defined assessment area by requiring project developers to "account for internal leakage by reviewing increases in harvest data for the entity." [Emphasis added] Delta does not believe that the extra step of accounting for internal leakage during annual monitoring is necessary, when the question of internal leakage can be resolved by requiring a landowner to enroll all forestlands under their name or controlling interest.

Clearly, the landowner's costs will increase by requiring an inventory for all forestlands. It is possible, however, that the additional inventory expense will be balanced by the generation of additional offset credits. We believe that it is in the best interest of the landowner and the Reserve to require that all lands, under the same titleholder or controlling interest, be subject to baseline establishment, inventory and modeling. **(Delta)**

RESPONSE: Noted. The work group determined the costs of requiring an inventory for all forestlands of an entity were too substantial to justify as a required analysis of secondary effects. In addition the work group concluded that internal and external secondary effects need to be evaluated jointly to more accurately account for the impacts of project activities. Therefore, the FPP now prescribes a calculation of leakage based on an assessment of the overall market response to a project activity's reduced harvesting. Specifically, it is assumed that 20 percent of carbon emissions avoided through reduced harvesting at the project site are shifted elsewhere, due to the increased harvesting on other lands needed to meet market demand for forest products. See Section 6 of the FPP for a complete explanation of calculating secondary effects for each type of forest project.

34. Please clarify which data elements qualified foresters are required to collect during the forest inventory.

The Improved Forest Management guidance suggests that total tree height is necessary to run the growth-and-yield model. However, the Forest Vegetation Simulator (and the Jenkins formula within FVS) can accurately calculate carbon storage by using Site Index (base age 50) as a proxy for height. In fact, FVS does not function without Site Index. By requiring qualified foresters to measure total tree height during sampling, the Reserve is adding more time to the inventory and thus greater costs to the landowner, without any appreciable gain in biomass accuracy.

Similarly, the Reserve should establish approved sampling methodologies, perhaps on a regional basis to account for different forest cover types and industry practices. As written, the inventory guidance suggests that nested, fixed radius plots are the preferred sampling methodology. Delta implements a sampling method that blends variable and fixed radius plots for accurate sampling of overstory and understory vegetation at a low cost. This method works well because it is easily understood and implemented by field foresters.

With several Michigan foresters, we have discussed the practicality of implementing nested, fixed radius plots. The response has been very negative. Field foresters believe that nested, fixed radius plots are too time consuming, even though less sample points would be needed across a property. Several foresters indicated that inventory costs would be two to four times greater than our current sampling methodology.

Delta suggests that the Reserve draft more specific inventory guidance, based on regional operating procedures. For a reference, please see Attachment B – Delta's Forest Inventory Guidance. **(Delta)**

RESPONSE: Noted. The requirements for developing a forest project carbon inventory are explained in Appendix A the FPP. Measuring tree heights is required not only to perform modeled simulations, but also for calculating project inventories over time. The requirement does not assert that all heights have to be measured. Simply put, a height needs to be determined for each tree in the inventory database. The inventory manual must explain, and have verified, the approach to estimating tree heights.

The protocol does not require nested, fixed radius plots. Rather, the protocol is flexible to encourage innovation with inventory methodologies over time. Again, the inventory methodologies stated in the manual must be verified.

35. The 12-year interval between inventories is too long, and should be shortened to 5 years.

The results from modeling are only as good as the data originally inputted. Any error inherent in the data (or its collection) is compounded over time. After 12 years, the results could be wildly inaccurate.

Adopting a 5-year inventory cycle would also correspond with the interval between complete updates to FIA data. If the Reserve plans to use FIA data as the baseline, it only makes sense for the property level inventory to match that interval. While a 5-year inventory interval increases costs to the landowner, the Reserve would be assured fresh, accurate data. **(Delta)**

RESPONSE: Noted. Forestry field data is a labor-intensive process. The requirement that field data is "no older than 12 years" is a reasonable standard as it is typical and practical for forestry field data across an entity to be collected every 10-15 years. Forest inventories have long been managed with data 'grown' in growth models to maintain a current estimate. Data are often grown for longer periods than 12 years in practice. The

FPP maintains this standard to ensure plot data remain fresh.

36. The Reserve should require "true-up" inventories after each harvest or catastrophic event.

Delta's protocols currently require qualified foresters to perform "true-up" inventories for any areas impacted by timber harvesting or catastrophic events. The true-up inventory allows Delta to continually update the carbon accounting for the property and ensure accurate estimates of carbon storage. Additionally, the true-up inventories provide a periodic field review of the property, ensuring that the landowner is following their management plan and adhering to the principles of sustainable forest management. **(Delta)**

RESPONSE: Noted. The inventory manual must include methodologies that describe how harvest and natural disturbances are managed. The management of the inventory updates must be reflected in the annual monitoring. Updating will included methods such as assigning a vegetation stratum to a stand that reflects its post harvest/disturbance condition or a re-inventory in those stands that were recently modified. In the event of a reversal, which may be caused by a catastrophic event, a landowner must provide a verified estimate of the project carbon stocks within one year. The landowner is not required to provide a complete field inventory if monitoring indicates a reversal has not occurred.

37. I generally support the use of FIA standard to calculate baseline in order for the protocol to eventually be applicable for wider use within the U.S. There area areas such as the redwood type where FIA plot data is likely insufficient. The USFS will need to densify plots in the redwood type and other areas to provide a robust enough dataset to use FIA as intended. **(Arcata)**

RESPONSE: Noted. FIA plots provide a rational and objective measurement of the mean carbon stocks in live trees across a broad area for the purposes of determining a 'business as usual' baseline. The data are adequate for this purpose. Intensification of plots would be welcomed, but has not been determined to be necessary within California.

38. Compared to Version 2.1, this protocol requires considerably more work to execute and verify a project. Though we cannot yet know the result of this change, one worrisome possibility is that the costs will make the protocol unusable for small forest landowners because the costs of data gathering and verification exceed the expected revenue. We look forward to working with the Reserve to address this concern across all the Reserve's protocols, as we are finding that some required calculation and data gathering work is of truly negligible value to the carbon calculus while driving up data management, monitoring, and verification costs. We suggest that for projects below a certain size, conservative standardized deductions or factors could be substituted for project-specific calculations to the benefit of all. We look forward to further conversations along these lines. **(TerraPass)**

RESPONSE: Noted. The data gathering requirements are no more onerous that they were under Version 2.1. The elimination of the entity reporting requirement represents a significant reduction in effort for landowners who are not contemplating registering their entire property. The final version 3.0 of the FPP has also incorporated more default data than earlier drafts which should reduce analytical time and effort. The Reserve continues to make every effort to streamline the process and costs where we can do so without compromising accounting or environmental integrity. The Reserve will continue to solicit feedback for changes to the FPP regarding functionality and ease of

implementation and these will be considered in future revisions of the FPP.

39. It seems that the verification of CRTs could be handled differently based on the level of management activity that had occurred since the last field verification. In cases where there has been no harvesting, natural disturbance, nor disease since the last field verification, and the carbon inventory is within the age requirements of the protocol, it should be sufficient to issue CRTs based on the short term growth predictions of the project modeling with field verification every 6 to 10 years, or once a new carbon inventory has been provided. If the verifier conducts a field verification the first year that the project is submitted to the Reserve, and no harvesting or other reversal occurs the next year, and the cruise is up to date, what would the verifier be field checking in the second year? Sufficient time would not have passed to measure with sufficient accuracy whether the project timber stands have grown per the modeling, and the level of field checking included in any field verification does not allow for the collection of sufficient data with which to draw any conclusions about whether or not the modeling is accurate. **(NCRM)**

RESPONSE: Noted. Verification issues are currently under discussion and will be incorporated into the updated verification protocol to be developed upon completion of the updated FPP. FPP's monitoring and verification requirements are based on reasonable and practical application of inventory methodologies that balance reporting efficiency and costs with the need for credibility in the GHG data reported on the Reserve.

1 Introduction

40. Projects registered under the current and previous protocol versions may continue to be verified under the protocol version under which they registered. To ensure that all market participants understand the status of projects registered under prior protocols and the Climate Reserve Tonnes (CRTs) created from these projects, PG&E requests that the following language be added to Section 1 of the final Forest Project Protocol, Version 3.0.

Information regarding the current forest protocols:
• CAR continues to fully support projects registered under the current and previous versions of the forest protocol and strongly believes that the emission reductions associated with such projects (known as Climate Reserve Tonnes or CRTs) will continue to meet the highest standards today and into the future.
• The Reserve's forest protocols represent a rigorous approach to quantifying the benefits of voluntary forestry projects.
• Voluntary projects that are registered under the current protocols will continue to be verified under the protocol in place at the time the project was registered for the life of the project for the purposes of generating voluntary credits for the voluntary market.
• Projects will be accepted for registration under the current protocols for a period of up to three months after an updated protocol is adopted by the Reserve's Board of Directors.

For complete clarity and to reassure market participants, we request that the language be included in the actual protocol and not just on the CCAR/CAR website. **(PG&E)**

RESPONSE: Noted. Language to this effect is now included in Section 1.2 of the protocol.

2 Forest-Based GHG Projects

2.1 Eligible Forest Project Types and Definitions

41. The protocol describes three types of forest projects: Reforestation, Improved Forest Management, and Avoided Conversion. Would it be possible to combine more than one project type into a combined Forest-Based GHG project? Or would each project type need to be separately registered with the Reserve? If each project type needed to be individually listed, costs would be greatly increased. **(NCRM)**

RESPONSE: Forest owners must decide what type of project they are implementing prior to registration, based on the appropriate eligibility criteria. It is not possible to combine project types, as the baseline methodologies for each project type have very different specifications.

2.1.1 Reforestation

42. This project type definition requires that "there is no consideration of saw timber harvest within the first 30 years". Typically, reforestation activities following "recent significant disturbance" such as wildfire or insect attack are associated with site preparation, salvage logging, or other silvicultural activities designed to capture ongoing mortality, or to enhance the growth rates of surviving trees. In fact, losses of growth or mortality are often not readily apparent, or they continue to become apparent for many years following the damaging event.

In the case of forests damaged by an event that "removed at least 20% of the above ground live biomass" there is also remaining live forest that will require ongoing maintenance and management to capture ongoing mortality or to enhance stand growing conditions. In a stand where 20% of the above-ground live biomass has been reduced by disturbance, but significant saw timber sized trees remain, it seems impractical to limit the harvest of saw timber. It could be possible to remove 20% of the biomass in a project area, but still retain full stocking, and thus no need to provide reforestation.

Recommendation: It seems to us that the notion of a reforestation project following a 20% reduction in biomass needs further clarification and guidance in the protocol. When does a reforestation project become an Improved Forest Management project? If a reforestation project naturally becomes an Improved Forest Management projects once commercial harvest occurs (not necessarily saw timber), then the 3D-year limitation seems arbitrary. If an area is commercially viable in advance of the imposed 3D-year limitation on harvest, then it seems that the project would transition to an Improved Forest Management project and be subject to all of the requirements of the protocol.

Recommendation: We recommend that the phrase "no consideration of saw timber harvest" be deleted. The limitation should be in reference to commercial harvest, and not saw timber harvest. It seems reasonable to include a limitation on commercial harvesting as long as the project is deemed a reforestation project; however, once the project area reaches commercial viability, the project has accomplished the reforestation aspect of the forest's development. **(NCRM)**

RESPONSE: Noted. The harvesting activities following a significant disturbance described in the comment are events that occur prior to the initiation of a reforestation project. Once a reforestation project is initiated, no harvesting for commercial purposes can occur for 30 years. This condition distinguishes reforestation projects from improved forest management projects, where harvesting might occur under the project within the first 30 years. Once registered as a reforestation project, a project cannot "switch" to become an improved forest management project. However, a project may register upfront as either a reforestation project or an improved forest management project if it meets the eligibility requirements.

43. The concept of a "recent significant disturbance" remains vague. A description of how "recent", in years, is defined should be included. **(TGC)**

RESPONSE: Noted. The word *recent* has been removed from the language. The work group determined that defining the term is unnecessary since climate benefits are realized whenever stocking is increased from the act of reforesting, regardless of when the disturbance happened. Additional language has been added to ensure that the reforestation does not follow recent (10 years) non-disturbance related commercial harvest.

44. If a potential project area has been out of forest cover for less than 10 years, and the reason for this forest cover loss was the result of a previous-owner's negligent land use, is the current owner required to wait until the 10 year period is up before a project can be implemented? **(TGC)**

RESPONSE: This is correct if the reason for forest cover loss was the result of a previous owner's negligent land use instead of a significant natural disturbance such as fire, wind, disease, insects, ice, flood, or landslides. The project must have been "…previously forested but have had less than 10% tree canopy cover for a minimum time of ten years." The history of the land takes precedence over the history of ownership in determining eligibility.

45. A description of the appropriate methods that a project developer should use to determine historical forest cover (such as satellite imagery, aerial photography, etc.) for a reforestation project should be included in the FPP. Specifically, it should be clarified which methods are acceptable and which, if any, are not. **(TGC)**

RESPONSE: Noted. Depending on availability for a specific site, a variety of methods can be appropriately used to indicate the project was previously under forest cover. These include satellite imagery, aerial photography, existing land use records, archival information from key informants, soils data, and other biogeographical techniques. The requirements or acceptability of methodology for a specific project will be determined by the availability and appropriateness of evidence for a specific site, and as such are not written into the protocol.

46. Harvest restrictions within the first 30 years of a reforestation project or baseline shuts down all other income streams for the owner. **(FLC)**

RESPONSE: Noted. The 30-year harvest restriction is used to differentiate Reforestation

Projects from Improved Forest Management Projects and applying the appropriate baseline analysis. Additionality in Reforestation Projects is derived principally from the action of planting trees, whereas additionality in Improved Forest Management Projects is derived principally from changes in management where trees are of commercial size and can be harvested.

2.1.2 Improved Forest Management

47. The first sentence of this section talks about forest management practices for the Project in relation to established 'common practice'. Common Practice is a defined term in the protocol. We assume that this general reference to 'common practice' is in regards to the calculation of the project baseline which may be calculated in reference to other controls, and not just the Common Practice control.

Recommendation: We recommend that the wording of this section be revised to more generally describe the notion of the project baseline, without specific reference to Common Practice. **(NCRM)**

RESPONSE: Noted. Section 6.2 has been revised to provide greater clarity with reference to Common Practice in preparing a baseline for Improved Forest Management Projects.

48. This section will, by definition, preclude most if not all managed forest operations – except those that wish to stop being a commercial, economically viable managed forest – from being able to participate. The definitions and terms continue to reflect conditions that are more appropriate for conservation forestry, not commercial forestry. **(NAFO et al.)**

RESPONSE: Noted. Fungible forest carbon credits must meet additionality standards. As stated in Section 3.1 of the FPP, "The Reserve strives to register only projects that yield surplus GHG emission reductions and removals that are additional to what would have occurred in the absence of a carbon offset market (i.e. under "Business As Usual")." The standardized baseline reflecting "business as usual" for Improved Forest Management Projects takes into consideration management activities present on similar landscapes, project inventory in relation to common practice, legal requirements, and economic feasibility. This approach is meant to be inclusive of many landowners who manage their forestland for the sustainable production of wood products.

49. We appreciate the removal of the reference to timber harvest as a necessary component of improved forest management projects. **(WS)**

RESPONSE: Noted.

50. The term "project life" is used in this paragraph and throughout the following pages. It would be helpful to refer to the glossary definition of the term when it is first used, to clarify that this represents the entire monitoring period, and not just the period during which a project actively earns credits. **(WS)**

RESPONSE: Agreed. This edit has been made in the final version of the document.

2.1.3 Avoided Conversion

51. [pg.4] The sentence should read: "…is the act of removing a significant **threat of conversion of a forest to non-forest use**…" It should be made clear that an Avoided Conversion project must take place in a project area that currently meets the definition of a forest at the start of the project. **(TGC)**

RESPONSE: Agreed. This FPP now states that "[a]n Avoided Conversion Project involves preventing the conversion of forestland to a non-forest land use." Forestland is defined in the glossary as "[l]and that supports, or can support, at least 10 percent tree canopy cover and that allows for management of one or more forest resources, including timber, fish and wildlife, biodiversity, water quality, recreation, aesthetics and other public benefits."

52. The project description for avoided conversion projects needs clarification on whether or not such projects qualify on public lands. **(SBC)**

RESPONSE: Agreed. The language has been clarified to state that avoided conversion projects are eligible only on lands that are privately owned prior to project initiation.

2.2 Project Developers

53. Please clarify your response to Question #53 in the Summary of Comments & Responses, where you state that "Carbon rights are not currently recognized as a legal right."

Landowners maintain both explicit and implicit rights associated with property ownership. It is an established rule of law that landowners hold the rights to multiple values on their property, including ecosystem values, unless they give up those rights in some way.

The Reserve must clearly articulate their position on the issue of carbon rights. The most likely participants in the FPP (as currently written) are land conservation organizations that hold conservation easements on private land. It is likely that some land trusts will include language within an easement, claiming the carbon rights to the property, as a way to fund stewardship and long-term monitoring of the property. The Reserve should craft additional guidance for situations where one party is selling the carbon rights on land they do not own. **(Delta)**

RESPONSE: Noted. Full exploration of the issues of carbon rights is beyond the scope of the current protocol.

54. The rules for project aggregation should be clearly defined in the FPP. **(TGC)**

RESPONSE: Noted. The Reserve is considering a number of measures that could encourage participation from small landowners, including aggregation. The Reserve will convene a work group of small landowners immediately to consider how barriers to the participation of small landowners might be reduced. Please see the response to Public Comment #7.

55. Mendocino County Farm Bureau (MCFB) is writing out of concern, however, that the forest project protocol as currently drafted would leave small forest landholdings without an opportunity to take advantage of the emerging carbon market. Landowners with less than 5,000 acres of forest, the majority of landowners in Mendocino County, will be unable to participate in the protocol as currently designed.

MCFB would like to suggest the development of rules that enable small landowners to aggregate together into a single, larger carbon project. This suggestion is supported in section 2.2 of the draft protocol when it is stated that, "Multiple entities can aggregate projects to reach an economy of scale and one representative may do the aggregation and report, so long as all the entities' names and information are also listed. The Reserve will develop guidance for aggregation after completing this version of the FPP."

MCFB is concerned that the necessary guidance will not become a part ofthe new forest project protocol and that the forest verification protocol will also fail to consider aggregated projects. There are various group certification processes that have already been developed by others such as those adopted by the Forest Stewardship Council. Therefore, the forest verification protocol could use the models implemented by such entities as the Forest Stewardship Council to develop certification guidelines for group aggregated projects.

The pressure of meeting a deadline or the simple convenience of approving the current forest project protocol should not be an excuse for locking smaller family forests out of the carbon market. MCFB urges you to include placeholder text in the forest project protocol on aggregation rules, with a timeline of three months for adoption. MCFB also urges you to ensure that the verification protocol includes explicit language enabling group certification. **(MCFB)**

RESPONSE: Noted. The Reserve is considering a number of measures that could encourage participation from small landowners, including aggregation. The Reserve will convene a work group of small landowners immediately to consider how barriers to the participation of small landowners might be reduced. Please see the response to Public Comment #7.

56. The development of an aggregation protocol will have a significant effect on the level of landowner participation and will be a welcome addition to the protocol. We are hopeful that any new aggregation protocol will address the following issues:

1. Details on the legal arrangement between landowners and aggregator that would clarify requirements for carbon ownership and whether these rights need to be signed over to a single entity
2. Draft contract to be signed between an aggregator and multiple landowners
3. Definition of project start dates for multiple properties that reach certain carbon sequestration levels at different times
4. Clear definitions of how reversal on a single property would affect other landowners in the aggregation agreement
5. Consideration of whether more landowners could be added to an aggregation project at a later date, and how this would need to be reflected in project design documents
6. Decision on whether a single landowner could leave an aggregated project if other landowner partners or entities would supply the credits the original landowner will not be providing **(Ecotrust)**

RESPONSE: Noted. These suggestions concerning aggregation have merit and will be considered by the Reserve in developing a document that provides guidance for aggregation. This is expected to be completed within six months after completing this version of the FPP.

3 Forest Project Eligibility Criteria

57. Section 3 describes the criteria that must be met for a forest project to be eligible for reporting and verification in the Reserve. The most recent draft dramatically includes new definitions that would expand the definition of natural forest management to include a much broader range of management activities and harvest scenarios, potentially including clearcut logging. Also, this draft eliminated criteria previously intended to ensure the ecological value of the forest projects. [See Ebbetts Pass Forest Watch public comment submission for further information.] **(EPFW)**

RESPONSE: Noted. Changes to the section on sustainable harvesting and natural forest management (Section 3.9) have been made to clarify the definitions and requirements for promotion of ecological benefits such as the use of native species, sustainable forest management, and protection of biodiversity. Prior explanations of these requirements were vague and lacked the specificity needed for future monitoring and verification. For example, in the prior version terms, like "ecologically appropriate" and "existence of internal policies" were used to demonstrate environmentally responsible long-term forest management. In the current version, more objective criteria have been put in place to ensure that ecological values are maintained and evaluated on a regular basis.

58. The provisions in this section could inadvertently reward "business as usual" in California's forests by supporting the notion that plantations are "natural forests" and that the clearcutting and related methods are "good" for wildlife and forest health. We are concerned that the language in this draft could be used to endorse continued widespread clearcutting and conversion of forests to plantations as natural and "environmentally responsible." [See Ebbetts Pass Forest Watch public comment submission for further information.] **(EPFW)**

RESPONSE: Noted. Language has been revised to further clarify interpretation of the intent of requirements for sustainable harvesting practices and natural forest management (now Section 3.9). The protocol specifies the conditions under which even-aged management is allowed, and includes requirements to ensure that projects have a diversity of species and age classes and set a minimum limit to the rotation age of forests.

59. The definition of natural forest management has been broadened to the point of eliminating its value for ensuring the ecological value of forest projects.

Section 3 describes the criteria that must be met for a forest project to be eligible for reporting and verification in the Reserve. The most recent draft dramatically includes new definitions that would expand the definition of natural forest management to include a broad range of management activities and harvest scenarios, potentially including clearcut logging. Also, this draft eliminated criteria previously intended to ensure the ecological value of the forest projects.

Section 3 includes the following new definition of natural forest management: "Forest projects, and their associated forest entity, must demonstrate environmentally responsible long-term

forest management under one of the following options: 1. If and when commercial harvesting occurs in the project area, certification under a nationally-recognized third-party forest management certification program in which the certification standards require adherence to and verification of harvest levels which can be permanently sustained over time. If and when commercial harvesting occurs, operating under a renewable long-term management plan that demonstrates harvest levels which can be permanently sustained over time and that is sanctioned and monitored by a state or federal agency. 2. For entities of 1000 acres or less, operating with uneven aged silvicultural practices and canopy retention averaging ≥ 40% across the forest."

This definition can apply to almost any method of harvest under almost any management scenario. Any timber operator with a long-term management plan and operating under a certification system would therefore qualify as natural forest management. This potentially includes clearcut logging, the application of chemical herbicides, conversion of forests to plantations, and harvest rotations as short as 50 years. Presumably, the additional requirements elsewhere in the protocols provide additional safeguards for ecological values, but this definition of natural forest management accomplishes very little, if anything. **(CBD)**

RESPONSE: Noted. See responses to public comments #57 and #58. The definition has been further revised to require the nationally-recognized third-party forest management certification programs to be either the Forest Stewardship Council or the Sustainable Forestry Initiative, which includes the Tree Farm System.

3.1 Additionality

60. [As well as Section 6, Baselines] This section, as expanded on by later sections and the appendices, continues to discriminate against working forests by arbitrarily excluding harvested annual growth from being additional, while allowing that same growth to be counted if it is not harvested. To require working forests to cease in the production of wood products and convert to being a commercial carbon sink, and claim that this creates a greater opportunity for managed forest owners to participate in the offset program is disingenuous at best, and illustrates a complete disregard of the economics of working forests. By only allowing additional annual growth that is not harvested, and precluding additional annual growth that is harvested, the protocol automatically precludes recognition of the positive benefits of a working forest to be recognized by essentially forcing managed forest owners to either convert to conservation or non-economic operational practices, or simply not be involved. We note that the new financial additionality requirements, addressed in more detail below in item #5, add to these biases, by restricting eligibility to those forests that require carbon credit income to be economically viable. **(NAFO et al.)**

RESPONSE: Noted. A renewable supply of harvested material is additional to the extent that it exceeds baseline carbon and meets the complete set of rules in the protocols.

61. "Additionality" is only a term designed to further limit how much of a property's carbon is marketable. The property owner is already extracting carbon, unlike lands of other usages like shopping malls. The "additionality" of a forest, farm or pasture is worlds above that of a shopping mall or factory. I recommend CAR discard the concept of "additionality" and let the property owner offer what he has in its totality. If he can make a real living at his management of carbon sequestration and can get credit for all of it, he won't be very inclined to find another use for that property. [See Catherine Moore public comment submission for further information and detail.] **(Moore)**

RESPONSE: Noted. The goal of the Reserve is to establish regulatory-quality standards for the development, quantification and verification of GHG emissions reduction projects in North America. These standards must ensure that emissions reductions associated with projects are real, permanent and additional. Fungible forest carbon offsets must meet the additionality standards. For more information on carbon markets, standards, and the rationale for additionality requirements the commentator is directed to the Pew Center on Climate Change at http://www.pewclimate.org/ and the Offset Quality Initiative (http://www.offsetqualityinitiative.org/).

3.2 Project Start Date

62. The Protocol states that, "*Until 12 months after the adoption of the updated protocol, a Project Developer may list a project that has a project start date as early as 2001 if all the necessary information can be provided to meet the requirements of this protocol. Project baseline data for each consecutive year following the project start date must be reported to the Reserve and verified*."

This clause references "adoption" of the updated protocol, but does not specify whether adoption is to be by CAR or CARB.

Once established, this baseline establishes the control point from which "additionality" is measured over as many years as that have passed since the project state date. It is not described in the Protocol how the GHG reduction credits derived from the "look back" period will be issued. We believe that since the difference between existing conditions and the baseline determines cumulative additionality; that it is reasonable that the look back credits all be treated as a one-time, current year event. That is, all the credits should be issued with the current vintage, and not issued as yearly vintages reflecting each year's accumulation during the look back period.

Recommendation: Clarify by whom "adoption" is to be made. The protocol should specify that GHG reduction credits issued for Project Start Dates that occur more than six months before the start date be treated as a "one time" event, with credits issued in the year of verification. **(NCRM)**

RESPONSE: Noted. The provision for post-dating projects to 2001 has been modified so that it is linked to the publication by the Reserve of FIA data for different assessment areas throughout the country: "For a period of 12 months following the posting on the Reserve's website of Assessment Area data for a particular state or region (see Appendix F), the Reserve will list projects in that state or region with start dates as early as January 1, 2001. After the 12 month period, projects must be listed on the Reserve within 6 months of their project start date." When credits are issued for pre-existing projects, their vintage will correspond to the year in which GHG reductions/removals were achieved.

63. "Site prep" is a very diverse term. It can mean anything from mastication to exposing of bare mineral soil. This also can be done many years before any planting takes place. The protocol should be changed to have a time limit between site prep and planting, or just have the start date be the time which the trees were planted. **(TGC)**

RESPONSE: Noted. Site preparation activities are important to consider in Reforestation Projects due to the required calculation of secondary effects. The Project Developer will need to provide a reasonable time frame and rationale for determining site preparation associated with a Reforestation Project and the appropriate Project Start Date. The final version of the protocol provides improved clarity and guidance related to site preparation.

64. The guidance for the project start date on AC projects is vague "The action is the act of committing the project area to continued forest management…" This can be interpreted as the date the conservation easement in put in place, or when the project proponent purchases the property from the developer, or when the proponent actually begins forest management practices. More guidance is requested. **(SBC)**

RESPONSE: Agreed. The language has been clarified to indicate that "the action is committing the Project Area to continued forest management and protection through recording a conservation easement or transferring the Project Area to public ownership."

65. Limiting the amount of time to request a historic project start date on improved forest management projects may encourage early action, but places a burden on projects that cannot afford to register a project right away. Current voluntary carbon market prices are low, and property owners who have been responsibly managing their property since acquisition but cannot afford to enter the market with such variable outcomes will be penalized for not acting early. We would like to request the option for landowners to use a historic start date after 12 months, if they can sufficiently document their financial situation at the time of early compliance. **(SBC)**

RESPONSE: Noted. The current 12-month limitation for the use of historic start dates is designed as a benchmark to allow registration of only those project activities that have been undertaken expressly for the purposes of climate change mitigation and participation in the carbon offset market. Historically active projects that do not capitalize on the opportunity to register within the 12-month period are assumed to be non-additional. While historical financial assessments might in theory provide a more accurate screen for such projects, such assessments are in practice time-consuming and quite difficult to objectively conduct.

66. Allowing projects to claim a start date of 2001 exceeds what is reasonable in order to claim additionality. **(NRDC)**

RESPONSE: Noted. The creation of CCAR in 2001 sent a signal to potential project developers that they could reasonably expect future regulation of GHG emissions, and that such regulation would likely place a monetary value on activities that sequester carbon.

67. Allowing projects to be initiated following termination creates an incentive to ignore the risk of reversal (or even to promote it). **(NRDC)**

RESPONSE: Noted. Projects may only be initiated on land where a previous project was terminated if the termination was due to an "unavoidable" reversal. See Section 3.4 of the final protocol. Further clarification of this policy may be provided in future updates to the

protocol, and in the Reserve's Program Manual.

68. Finally, we have concerns about how the accounting for project termination and then the initiation of a new project on the same site will be handled. Absent clearly elucidated rules, there is the serious potential of gaming. In addition to providing clarifying language, an example would be useful. **(PFT)**

RESPONSE: Noted. See response to Public Comment #67.

69. We would like to voice our very strong support for placing a substantial premium on replacement tons required of project developers who choose to terminate a project before 100 years as a disincentive to volitional termination. Further, we recommend that the premium remain robust throughout the project as the risk of termination actually grows over the project term. Absent a serious penalty for voluntary termination, the Protocol's requirement of maintaining reductions for 100 years is not meaningful. Please see the separate letter signed by PFT and a group of leading attorneys and conservation organizations in which we voice our additional concerns and recommendations regarding the potential use of ordinary deed restrictions as a means to reduce risks to permanence, including the illogical equation of the value of such deed restrictions with the enforceable provisions of conservation easements. **(PFT)**

RESPONSE: Noted. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

70. Six months is too short a time between Project Initiation and CAR listing: Each project developed under Version 3.0 will require a considerable investment of time and money by the forest entity in preparation for listing, often with the assistance of a limited pool of expert consultants. In addition, projects will often be sited in remote areas and/or areas that may not have access year round. Together, these create constraints on the time in which a project can be developed, even with the intent of doing so quickly. To facilitate participation, and not disadvantage family forest owners, PFT recommends a 12 month maximum period between the initiation of a project and its listing, instead of the proposed 6-month limit. **(PFT)**

RESPONSE: Noted. Listing a project on the Reserve requires only preliminary documentation that the project will meet eligibility requirements. Projects have 30 months after the time of listing in which to complete an inventory and compile documentation required for full registration. Please see the Reserve's Program Manual for further discussion of these policies (http://www.climateactionreserve.org/how-it-works/program/program-manual/).

71. The project start date for avoided conversion projects should be the earliest projected date on which conversion could plausibly have occurred in the absence of the project commitment. **(NRDC)**

RESPONSE: Noted. To have an objective marker for project initiation, the protocol specifies that the start date be coincident with the recording of a conservation easement, or the transfer of the project area to public ownership (see response to Public Comment

#64). Subsequent to registration, GHG reductions can only be quantified and credited to the extent that the baseline indicates that conversion would have occurred (Section 6.3).

72. We request further language providing guidance regarding the timing of the project inventory in relation to the Project Start date. **(PFT)**

RESPONSE: Noted. Broad guidance has been provided in Section 6 of the final protocol. More guidance may be provided in future updates to the protocol based on actual experience with different project types.

73. To avoid confusion that increases the risks of project implementation for landowners and leads to added verification expenses, please provide further guidance for how to apply the Project Start Date criteria described for Improved Forest Management Projects that better addresses the situation of avoided depletion projects. **(PFT)**

RESPONSE: The project start date has been further clarified.

74. *Clarify Project Start Date Requirements*: The protocol states that "[u]ntil 12 months after the adoption of the updated protocol, a Project Developer may list a project that has a project start date as early as 2001 if all the necessary information can be provided to meet the requirements of this protocol." Projects are initiated when a Project Developer "begins an action that over the project life increases the sequestration or decreases the emissions relative to the baseline activity." Identifying a clear action initiating a project is simple for Reforestation and Avoided Conversion projects but substantially more difficult for Improved Forest Management projects – for example, the fact that a landowner has not harvested in the past eight years does not necessarily indicate an intention to increase the length of a rotation.

We suggest that the Protocol either clearly state: a) that the protocol will accept a statement from the project developer that the IFM project was in fact started prior to 2009; or b) what specific documents or actions are required to prove the start date of an IFM project prior to 2009 (e.g. inventory and management plans developed by a registered professional forester dating from the start date). **(New Forests)**

RESPONSE: Noted. The Forest Owner will need to provide all the necessary information to meet the requirements of this protocol and project baseline data for each consecutive year following the project start date. At the time of submittal, the Forest Owner must provide a rationale for the chosen project start date.

75. This section also includes new language on the 12-month window for receiving credits for project initiated as early as 2001 in areas inside and outside of California. The language for the 12-month window needs to be rewritten to clarify that the Project Developer has 12 months to list a project starting from the date where all necessary the CAR information is available (i.e., the assessment area/common practice info provided by the CAR as well as specific project information). The way it is currently written (see below), a project developer may have less than 12 months to list a project even if their own data is complete, because the "necessary information" to be provided by the CAR (assessment area, etc.) may not be available.

In order to support the registration of projects outside of California, it is important that such projects be allowed the 12-month window to submit projects beginning as early as 2001 starting from the time when they are capable of doing so. Until the CAR issues the new assessment

areas and corresponding landscape carbon averages for other states, projects outside of California cannot be submitted. More specifically, projects in any state should have 12 months following the issuance of all relevant assessment areas and landscape averages for that state to backdate projects as early as 2001. **(Ecotrust)**

RESPONSE: Noted. Please see response to Public Comment #62.

76. The language provided for the determination of project start dates is well-intended, but the wording for Improved Forest Management (IFM) start date is unclear and confusing. For IFM, the project start date is defined by an action that "is the point at which forest management activities are initiated that increase sequestration and/or decrease emissions relative to the baseline." For landowners who have already adopted improved management practices, such as those required under an internationally accepted forest certification like the Forest Stewardship Council (FSC), the use of the word "initiated" is particularly confusing.

The implication in the draft protocol is that project initiation "requires" a change in management that would increase carbon storage. Under current draft protocol language, it would seem to be impossible for the projects that were certified earlier than 2001 to participate in the CAR forest project protocol, since this change in management was not "initiated" after 2001. We assume that the goal is to prevent credits from being issued for carbon sequestered prior to 2001 rather than disqualifying these projects from participating. If that is the case, there should be explicit language in the document stating that the project start date only refers to the eligible crediting period and not towards a determination of project eligibility or ineligibility.

There is also a question as to whether lands that have been certified under an internationally recognized certification system would have to take further action beyond their certified management regime to receive credits for carbon sequestration. We believe that the intent here is to allow crediting for good management practices adopted over the past eight years.

The final point regarding the "project initiation" relates to those landowners who have not intensively managed their lands for timber since they purchased the land. For example, if a landowner acquired forest land in 1985 and never intensively managed it, it is likely that the carbon storage on their land would be above the baseline. The way the start date criteria are currently worded, there is no guidance on how far back such a landowner would be allowed to claim credits. **(Ecotrust)**

RESPONSE: Noted. Limiting eligible projects to those started after 2001 is in part linked to establishing additionality. The rationale for the 2001 start date is that the creation of CCAR in 2001 sent a signal to potential project developers that they could reasonably expect future regulation of GHG emissions, and that such regulation would likely place a monetary value on activities that sequester carbon. Projects that were started prior to 2001, and that have not participated to date in the carbon market, may generally be considered non-additional. The purpose of the protocol is to establish regulatory-quality standards to register and track fungible carbon assets rather than to accommodate all scenarios of forest management that may or may not have been conceived with climate benefits in mind. For a general discussion of the Reserve's approach to determining additionality, see the Reserve's Program Manual (available at http://www.climateactionreserve.org/how-it-works/program/program-manual/).

3.3 Project Implementation Agreement

77. The Protocol states, "*the conservation easement/deed restriction must be recorded no sooner than a year before the project start date as a demonstration that any limits to forest management defined in the conservation easement/deed restriction are intended to support the project activity. If the conservation easement was recorded more than one year prior to the start date, the limits described in the conservation easement must be considered as a legal restriction in the baseline analysis*."

The language in this paragraph is difficult to understand and needs to be clarified. First, the clauses, "no sooner than a year before the project start date" and "more than one year prior to the start date" appear to reference the same reference point - but the terminology is confusing. It is also not clear what this clause is requiring - is it stating that conservation easements recorded less than one year before the project start date need not be considered when developing the Financial and Legal Reference?

It also is unclear from Section 3.3 when a Project Implementation Agreement is to be executed. In the case of recognized project start dates as early as 2001 a project implementation agreement could not have been executed prior to project initiation. Thus, project implementation agreements must be coincident with registration and verification, and not with project start date.

Recommendation: Clarify language in this Section with regard to timing of the Conservation Easement, and the timeframe for the execution of the Project Implementation Agreement. **(NCRM)**

RESPONSE: Agreed. The language referring to conservation easements has been revised to read: "Conservation easements and deed restrictions must be recorded no earlier than one year before a project's start date. If a conservation easement or deed restriction was recorded more than one year prior to the start date, the limits imposed by the easement or deed restriction on forest management activities must be considered as a legal mandate for the purpose of satisfying the "legal requirement" test for additionality (Section 3.1.1) and in determining the project's baseline (Section 6)."

The language referring to the Project Implementation Agreement has been revised to be coincident with registration rather than the Project Start Date.

78. This section sets forth a general description of the Reserve's and the Landowner's obligations, and thereby establishes the PIA as a material aspect to understanding the overall project protocol's requirements. However, there is insufficient information on which to assess the reasonableness and fairness of the terms that a landowner would be required to meet.

Given the importance of this instrument, we recommend that the Reserve make the PIA document available for public comment. The PIA should be an instrument that incorporates the requirements of the Protocol, with respect to both parties, into an enforceable legal contract. In this regard, we also recommend that the PIA address the following fundamental elements common to contracts: Contract Termination, Material Breaches, Force Majeure Events, and Dispute Resolution Process. [See NAFO, OFIC, and WFPA public comment submission for details on these contract elements.] **(NAFO et al., TGC, CF, Ecotrust, New Forests)**

RESPONSE: Noted. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

79. What happens if there is a change to the FPP that a landowner is not comfortable with? The rights and remedies of a project developer in the case of changes to the FPP should be outlined in the PIA. **(TGC)**

RESPONSE: Noted. The landowner is responsible for managing the project per the terms of the version of the FPP under which the project is registered. The version of the FPP will be referenced in the Project Implementation Agreement. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

80. We feel that Public lands should not be exempt for submission of the Project Implementation Agreement. While it may be true that the process or changing relevant rules and regulations is more open and transparent, agencies managing public land should still be required to provide the same commitments as private land. **(TGC)**

RESPONSE: Noted. Projects on public lands are not exempt from submission of a Project Implementation Agreement.

81. Avoided conversion projects should not be subject to the requirement of a conservation easement but should instead utilize the FIA as a means of ensuring project permanence. Avoided conversion projects should be held to the same permanence requirements as improved forest management and reforestation projects. Requiring a conservation easement is overly burdensome and presents an additional hurdle for small-scale projects to come to market. The PIA should be written strongly enough that no conservation easement is necessary. **(TGC)**

RESPONSE: Noted. Avoided Conversion projects are, by definition, projects that are at a high risk of conversion. For this reason a conservation easement, or transfer to public ownership, is currently required for Avoided Conversion projects. For other project types that happen to face a high risk of conversion, projects without a deed restriction or conservation easement that reduces the risk of conversion are subject to a higher risk rating in Appendix D.

82. The Project Implementation Agreement section does not provide adequate guidance on conservation easement requirements for an avoided conversion project. We feel that this section needs to outline more specific time requirements. When does the easement need to be in place? Within a year of the project start date? Implementation of the project, time of registration, or completion of verification? If the requirement is still one year within project start, SBC would like to reiterate that this is not enough time. Placing a conservation easement on a property typically takes 18 months or longer, and this relies on how prepared a landowner is, turnaround time when dealing with a conservation team, and complexity of the project. **(SBC)**

RESPONSE: Agreed. The start date for avoided conversion projects is now defined as the date on which a conservation easement is recorded, or on which the project area is

transferred to public ownership.

83. The paragraph describing Project Implementation Agreement seems to be missing the term "legal." As it is written it may be confusing to landowners. There should be clear evidence that the PIA is a legal contract, and cannot be broken/altered. It should be changed to, "To be eligible, each project is required to enter into a legal Project Implementation Agreement (PIA) with the Reserve." **(TGC)**

RESPONSE: Noted. The Reserve does not agree that the word 'legal' will provide this clarification; rather the content of the PIA itself will provide the clear evidence of a legal contract.

84. Weyerhaeuser has a number of reservations with the description of the Project Implementation Agreement and cannot support its inclusion without seeing a template. In specific, what are the "rights and remedies of the Reserve in the event of any failure of landowner to comply with those obligations"? It seems that method for compensating for reversals, outlined in section 7.2.2 covers the obligations of landowners (and the obligation of its successors and assigns). **(WC)**

RESPONSE: Noted. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

85. Any formula for the determination of remedies due to early project termination must be formulated on the fair and equal valuation of all offset project types registered with the Reserve. If a CRT penalty is to be assessed the terminated project must be allowed to replace future lost CRT from the entire Reserve offset pool. Not doing so would fundamentally corrupt the Reserves rigorous process for registering all offset project types. **(FCO)**

RESPONSE: Noted. The Reserve is committed to ensuring that CRTs issued for all project types meet the same high standards for carbon offset integrity. At the same time, forest project CRTs have a unique role – and higher value – in the voluntary carbon market due to the substantial environmental co-benefits associated with forest projects. The requirement to compensate for termination and reversals using only forest project CRTs is necessary to uphold the premium value that buyers place on these co-benefits. Without this requirement, buyers of forest project CRTs would have no long-term assurance of their contribution to other environmental values, and would discount what they are willing to pay for these CRTs accordingly. The requirement is not a reflection or consequence of any difference in the value of using these CRTs to offset emissions, nor is it likely to be perceived as such by offset buyers.

86. PG&E requests that the Reserve clarify the legal structure around the Project Implementation Agreement (PIA) and post this form on the Reserve website as soon as possible. Developers are unwilling to develop and buyers are hesitant to contract for CRTs until this language is clarified and reviewed.

There is also a need to clarify some of the details around the PIA. Section 3.3 states that the PIA is with the landowner, and Section 7.2.2 implies that the PIA is with the Project Developer. In our experience, these are often two different parties. Please clarify all of the counterparties of the PIA. Please also address the Reserve's approach about how the PIA obligations transferred

if the land is sold. **(PG&E)**

RESPONSE: Noted. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/. The clarifications requested have been made in the final protocol – see Sections 2.2 and 3.5.

87. RCRC appreciates the Reserve's willingness to work with interested stakeholders to revisit how permanence is achieved for projects on industrial forest lands. We feel that the concept of the Project Implementation Agreement (PIA) is a good compromise, allowing private industrial forests to participate without requiring that those lands be placed into a conservation easement, while giving them the option of buying out their credits in the event of a land-use change in the future. **(RCRC)**

RESPONSE: Noted.

88. It is critically important that the PIA be identical for all projects, for several reasons. First, all project developers need to know that they will be treated equally with respect to the substantive provisions of the PIA. Leaving open the possibility that CCAR could negotiate different terms with different landowners presents the possibility of creating competitive disadvantages among projects. Second, landowners should know what will be required of them under the PIA before they begin the process of developing a project. Otherwise, they could spend considerable time and money only to reach an impasse over the terms and conditions of the PIA. Finally, significant variation of contract terms will hinder the eventual development of an insurance product that many see as an important, perhaps even a preferred, permanence mechanism in the future. [Repeated from The Conservation Fund public comment submission, January 2009.] **(CF)**

RESPONSE: Noted. The PIA will be a standard contract required for all forest projects.

89. In sum, a conservation easement will unquestionably run with the land, whereas other kinds of deed restrictions will not so long as they fail to benefit a specific property or properties. Because it would be enforceable against future landowners, a conservation easement would provide far better protection for the permanence of emissions reductions achieved in a Climate Action Reserve carbon project. Therefore, we urge CAR to eliminate reference to other deed restrictions in the Forest Project Protocol sections noted above. [See CCLT original comment letter for entire comment.] **(CCLT)**

RESPONSE: Noted. The reference has been clarified to include *qualified* deed restrictions and conservation easements. To qulalify, these instruments must be constructed to run with the land, protect credited carbon stocks by referencing the Project Implementation Agreement, and to endure challenges to permanency as defined in the protocol. Deed restrictions will qualify for a reduced contribution to the buffer pool only if they can demonstrate that they meet these criteria..

90. We are in favor of the perpetual easements to ensure permanence. We are in support of the Pacific Forest Trust's assessment that "deed restriction, in general, will do little to mitigate the risk of reversals to carbon stocks from changes in management, ownership or land use; and that a deed restriction cannot be equated with a conservation easement in this regard." What is

not clear in the Updated Forest Project Protocol is how the liability of on-going monitoring and verification is transferred as land changes hands. [See an example scenario in Conservation Collaboratives' public comment submission.]

The big issue is that this requirement of on-going monitoring and verification may preclude non-industrial forests from participating in the CAR. Wouldn't a conservation easement, which prescribes certain management and prohibits development, be sufficient in ensuring permanence? Especially, if a requirement of the easement was strict monitoring protocol. **(CC)**

RESPONSE: Noted. Qualified Conservation easements and deed restrictions reduce certain risks related to the permanence of stored carbon, but conservation easements do not address all such risks (e.g., wildfires) nor do they ensure the monitoring, accounting, and remedies for reversal specified as part of a project and assured through the Project Implementation Agreement. The Reserve will require the signing of a Project Implementation Agreement to enforce a forest owner's responsibilities and obligations in the case of reversals. Please see response to Public Comment #89.

91. Although Equator believes it is not likely that a provision for early termination will be highly utilized due to disincentives such as losses in transactional fees associated with this option, the Reserve should provide project developers with the ability for early project termination by allowing issued credits to be compensated on a one to one ratio. This strategy not only ensures the atmospheric integrity of forest carbon projects by guaranteeing that any sequestered carbon that is reemitted would be balanced by a compensated offset, but also allows for the probable circumstance where the atmosphere experiences additional benefits from providing replacement credits for sequestered carbon that is not reemitted upon early project termination. In other words, some landowners would opt for early termination in order to remove any future encumbrance from their land, but would not necessarily reemit the existing sequestered carbon by converting the land or applying a more aggressive harvest regime.

The conditions for early termination outlined in the April 29th workshop presentation unnecessarily restricts flexibility for forest carbon project proponents and would severely inhibit and limit landowner participation due to the de-facto punishment of forestry offsets described by the requirement for offset replacement beyond the amount potentially reversed by early termination. Additionally, participating landowners are further punished by the stipulation for "like ton" replacement of forestry offsets as all issued forestry offsets represent emissions reductions equal to issued offsets from any other project type. Promoting landowner participation with reconsideration of these early termination provisions will not only support the overall ability of the forest sector to effectively contribute to carbon regulation, but it will also promote the vital co-benefits associated with forest carbon projects such as water quality and habitat protection.

- April 29th ARB/Climate Action Reserve Workshop Slide Presentation Slide 24 – The proposal for proportionally based compensation for early termination of the 100-year agreement would create an overly complicated crediting process and place an unwarranted perception of questionable environmental integrity on forest carbon offsets. Project developers should be allowed to compensate the Reserve with any issued offset type in a one to one ratio. This ability would not only assure the permanence of credited emissions reductions, but would also likely result in increased atmospheric benefits by compensating for verified reductions which are actually not reemitted and providing complete replacement for the full permanency lifetime of issued offsets despite the

atmospheric benefit already realized by sequestering the carbon for the period of time prior to early termination.

- April 29th ARB/Climate Action Reserve Workshop Slide Presentation Slide 24 – The early termination requirement to compensate the Reserve with like tons (i.e. forest offsets) unfairly delineates forest carbon offset projects from all other carbon offset project types. The increased burdens placed on forest carbon projects would discourage landowners from participating and further, could bias market participants against forest carbon offsets and wrongly place forest project developers at a strong competitive disadvantage. By allowing the Reserve to be compensated in a one to one ratio with any issued tons from any offset type, it would reinforce that forestry CRTs are equivalent to all other CRTs. Explicit confirmation of the equivalency of forestry CRTs is necessary to promote the Reserve's goal of increasing landowner participation and to achieve the atmospheric and other environmental benefits associated with these projects. **(Equator)**

RESPONSE: Noted. An option for early termination has been built into the final protocol and Project Implementation Agreement. Please see responses to Public Comments #4 and #85.

92. Removing the requirement to record the agreement in the county where the project is located reinforces the notion that this agreement is between the Reserve and the landowner while maintaining the intended compliance obligation requirements. Also, allowing the establishment of a conservation easement or deed restriction to be optional, rather than mandated, acknowledges the low risk of conversion or land transfers and recognizes the public nature of these processes without placing undue burden on the landowner. In addition, including the ability for early termination of the agreement provides landowners increased flexibility and assurance to realize the full future value of their asset while preserving the environmental integrity of the system through the replacement requirement. Increasing landowner participation in forest carbon projects will not only help realize the full potential for forests to mitigate the effects of climate change, but will also as well as support the crucial co-benefits associated with these projects. **(Equator)**

RESPONSE: Noted. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/. Please also see responses to Public Comments #81 and 91.

93. Requiring the PIA to subordinate any other mortgage or title against the project land base would eliminate landowner's ability to participate in forest carbon projects by preventing the refinancing or replacement of existing debt. **(Equator)**

RESPONSE: Noted. Please see response to Public Comment #4.

94. Allowing the conservation easement or deed restriction to be recorded within one year of project implementation reduces unnecessary delays and encourages immediate landowner participation. **(Equator)**

RESPONSE: Noted.

95. The Project Implementation Agreement may be the tool that would provide the third party aggregator the ability to create a single project with multiple landowners. If so, it should be drafted with all the necessary language to allow for a single project aggregator and multiple landowners. Examples of this document should be provided as soon as possible since it is critical for initiating project discussions with landowners. **(Ecotrust)**

RESPONSE: Noted. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement and a position paper on compensation related to early termination can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/. The Reserve is considering possible models for project aggregation and will revisit the terms of the PIA once a model has been decided.

96. Requiring excessively precise and costly inventory standards while comparing them to general PIA baselines and assumptive constants factors for root, branch, leaf, and soil biomass inventory. **(FLC)**

RESPONSE: Noted. Fungible forest carbon offsets must meet accuracy standards, which is the rationale behind the inventory, accounting, and baseline requirements.

97. Conservation easements for conversion projects when the life of carbon sequestered is by CAR's own definition only 100 years. **(FLC)**

RESPONSE: Noted. Avoided Conversion projects are, by definition, projects that are at a high risk of conversion. For this reason a conservation easement, or transfer to public ownership, is currently required for Avoided Conversion projects.

98. We strongly recommend that the protocol and the PIA be structured so as to enable landowners to "buy-out" their carbon permanence liability. A forest carbon protocol must balance the market demand for permanent, fully-fungible carbon credits with the reasonable landowner demand for land-use flexibility. A buy-out provision would accomplish this balance in an environmentally responsible fashion. Other proposed cap and trade systems that incorporate forest carbon, such as Australia, also enable landowners to exit their carbon liability if they "make the system whole".

The buy-out provision should allow a landowner to exit the carbon project if they wish by purchasing and retiring an amount of tons CO_2e equivalent to the amount sold by that project to date, adjusted according to the latest science on residence time in the atmosphere of an emitted ton of fossil carbon CO_2 (e.g. if 80% of the CO_2 emitted in year 0 remains in the atmosphere at year X, and the project developer who sold CRTs in year 0 wishes to exit the project, the project developer should only be required to purchase and retire 80% of the tons sold in year 0).

To prevent gaming, we suggest that the PIA require developers to purchase and retire allowances issued under the compliance cap and trade system (rather than offsets) if they wish to voluntarily exit their permanence liability. **(New Forests)**

RESPONSE: Noted. Please see response to Public Comment #91.

99. Forestland registered as part of a forestry project should be dedicated permanently to forest use through the use of a perpetual conservation easement. In contrast to earlier versions of the forest project protocol and the previous adherence to SB 812, the draft revision fails to require that forestland registered as part of a forestry project must be dedicated permanently to forest use through the use of a perpetual conservation easement. Instead, the draft revision requires a project implementation agreement to be filed with the Climate Action Reserve. The previous draft (on page 4) required that implementation agreements extend to 100 years: "the landowner's obligation (and the obligation of its successors and assigns) to comply with the forest project protocol established by the Reserve for a term of 100 years." However, the current draft appears to have eliminated even this requirement.

In addition, the current draft appears to undermine the requirement that the implementation agreement will extend 100 years past the date of the last reduction verified for the project area. Instead, the draft states, "The Reserve requires all forest projects to ensure the project's CRTs are sustained for 100 years from the year in which the reduction is first measured and reported" (Page 37). The carbon should be sequestered at least for 100 years beyond the year in which the reduction is last (not first) claimed or credited.

Of course, even a term of 100 years falls far short of permanence. Forests could be cleared at the end of 100 years—well within the range of harvest rotation age for many forest types—which would provide little, if any, permanent greenhouse gas reductions. The draft should adhere to the intention of the earlier protocols and continue to require perpetual conservation easements. **(CBD)**

RESPONSE: Noted. Permanence has been defined as keeping the carbon associated with an offset credit out of the atmosphere for 100 years. The protocol and the Project Implementation Agreement reflect the requirement that a reduction or removal achieved at any time during the project is kept out of the atmosphere for 100 years. Although conservation easements are an effective tool in mitigating the risk of conversion, they do not address other forms of reversals (such as wildfires) and do not necessarily ensure carbon storage

3.4 Project Location

100. The "Common Practice" requirements and data provided are specific to California. By using a limited assessment area and geographic range, the protocol is not providing much guidance for national usage. If CCAR wants to provide national protocols, they need to provide national data. Otherwise, project proponents outside of California are more likely to use a less onerous standard, such as CCX. **(SBC)**

RESPONSE: Noted. The identification of additional assessment areas outside of California is work that is currently underway at the Reserve.

101. Due to the lack of FIA provided in this Protocol (which on page 18 states "Maps of the assessment areas and the FIA means are provided on the Reserve's website"). As of May 11, 2009 this information is not the website. After calling CAR's office we were informed that state-

by-state FIA would not be available until sometime later in 2009. If a Project is to be submitted under the 3.0 Forest Project Protocol that is located out of the state of California, and it is submitted before the FIA data is available, would that project's baseline be defaulted back to 2.1 Protocol (which does not include out of California Projects)? **(FCO)**

RESPONSE: Version 2.1 of the FPP applies only to projects located in California. In any case, the Reserve will not "default" projects back to earlier protocol versions. However, please see response to Public Comment #62.

102. The draft revision proposes to expand the protocols to include forest projects on Federal lands. However, the draft fails to address the many serious legal and political issues that this would raise, as well as serious concerns regarding the permanence and enforceability of the emissions reductions. In addition, the inclusion of federal lands carries an implication of tradable carbon offsets, which could be greatly undermined or complicated by changes in federal regulation and management. **(CBD)**

RESPONSE: Please see response to Public Comment #13.

3.5 Use of Native Species and Natural Forest Management Practices

103. There appears to be a missing bullet point: The first bullet point requires 1) certification under a nationally recognized, third party forest management certification program and 2) operation under a renewable long-term management plan that demonstrates harvest levels which may be permanently sustained over time, and that is sanctioned and monitored by a state of federal agency. We believe that these two points should be separated into two bullet points - as either will provide for "environmentally responsible long term forest management". The wording or the first bullet point could be interpreted as requiring both a third-party certification, as well as a long-term management plan sanctioned and monitored by a state or federal agency. Creating three bullet points would be consistent with how the same information is presented in table 3.1.

Additionally, the protocol does not specify what sorts of long-term management plans are acceptable as meeting this requirement: for California these should include an SYP, Option "A", NTMP, SYP, or a CFIP management plan.

Recommendation #1: Create a new bullet point for item (2) above, thereby allowing conformity with the protocol rules through either option (1) or option (2).

Recommendation #2: Create an appendix that clearly states which types of certifications, and which types of long-range management plans are acceptable for both State and Federal "sanction". **(NCRM)**

RESPONSE: Agreed. The edit has been made to separate the bullet points in Section 3.5 (now Section 3.9). In addition, the definition has been further revised to require the nationally-recognized third-party forest management certification programs to be either the Forest Stewardship Council or the Sustainable Forestry Initiative, which includes the Tree Farm System. A variety of long-term management plans are eligible as long as they are approved by a state or federal agency and address issues related to long term sustainability of the live trees in the forest.

104. [pg.7] A list of approved third-party management schemes should be included in an Appendix to the FPP. **(TGC)**

RESPONSE: Agreed. The definition has been further revised to require the nationally-recognized third-party forest management certification programs to be either the Forest Stewardship Council or the Sustainable Forestry Initiative, which includes the Tree Farm System. Whatever certification effort is used, the certification must address long-term sustainability of the live trees as clarified in the final protocol.

105. The following should be broken into two separate options. As it reads it is just one option instead of two. This will also keep consistent with Table 3.3, Page 9.

- "If and when commercial harvesting occurs in the project area, certification under a nationally-recognized third-party forest management certification program in which the certification standards require adherence to and verification of harvest levels which can be permanently sustained over time.
- If and when commercial harvesting occurs, operating under a renewable long term management plan that demonstrates harvest levels which can be permanently sustained over time and that is sanctioned and monitored by a state or federal agency."

The second option is unreasonable as there is no federal renewable long-term management plan, and some states do not have forestry laws. **(TGC)**

RESPONSE: Agreed. The edit has been made to separate the bullet points in Section 3.5 (now Section 3.9).

106. The protocol requires that the natural forest management requirement must be met for every 10,000 acres; however, if the project entity is relying on a long-term management plan that is sanctioned and monitored by a state agency (such as an Option A document), the plan will be demonstrating compliance at most likely a larger scale than 10,000 acres. The 10,000 acre requirement would seemingly require the entity to prepare several such long-term management plans, significantly increasing costs.

Recommendation: Allow natural forest management to be assessed at the project scale, by removing the 10,000 acre limitation. **(NCRM)**

RESPONSE: Noted. The issue has been clarified in the final protocol. Part of the clarification includes more explicit language describing the allowable parameters of even-age management. A watershed scale (up to 10,000 acres in size) was determined by the work group to be an appropriate resolution to meet the terms of multiple age classes. These criteria will not require a separate long-term management plan unless that is the only way the landowner determines the requirement can be met.

107. Limiting the use of non-native species that can potentially sequester much more carbon than a native species on lands that were formerly marginal grazing lands makes no sense, and is highly imperialistic. It may make sense in California, but it makes no sense in third world countries that could benefit greatly from forest plantations for social economic and environmental reasons. Plantations of high quality non-native trees are shut out of this protocol. There are a number of reforestation projects occurring in other parts of the world on lands that were marginal grazing lands and the species being planted are not native species, as native

species may be not only be slow growing, they may also not have a commercial market, or may not store much carbon. A simple means of ensuring that these projects are sustainable, as has been the argument against non-native plantations by environmental groups involved in creating these protocols is to require third party certification for sustainability using FSC or other comparable certification systems that take into account social, economic, and environmental sustainability. The co-benefits agenda seems to be usurping the goal to store more carbon in forests as the natural, mixed age restriction appears to be of greater importance than the goal of reducing GHGs.

A solution to this problem is to have a two tiered system similar to organic and sustainable foods. Organic forest carbon could come from the mixed age, natural forests and could command a market from those who support these more expensive restrictions and those willing to pay a higher cost for their organic forest carbon. The alternative would be sustainable forest carbon which comes from any forest that is third party certified sustainable including non-native, evenage, fast growing plantations on former marginal grazing or marginal crop lands. I believe more carbon will be stored with this more flexible two tiered approach. **(Kent)**

RESPONSE: Noted. To clarify, the FPP applies only to projects within the United States. Plantations of exotic species are generally conducted on short rotations with an existing business model based on the wood products these plantations provide. There are many examples where plantations provide significant carbon benefits, but frequently they are not additional to business as usual. Reforestation projects must meet and criteria for additionality and environmental integrity as described in the protocol.

108. The requirement for unevenage management for small landowners does not take into consideration that natural forest development may not have historically been unevenage. Forcing landowners to manage species that do not regenerate well in unevenage silvicultural systems is not beneficial to those landowners, and will result in lower growth rates, and less carbon sequestered and more costs for timber harvesting. The unevenage requirement is an arbitrary condition, and assumes such forest management is superior for wildlife, and fisheries than an even age forest. Unevenage management works well in slower growing forests that can be selectively harvested with ground equipment, or with species that release well to thinnings.

Logging costs for cable yarding steep slopes using unevenage management is much higher than with evenage management, and the repeated entries cause more emissions from harvesting equipment. The effect on wildlife of repeated entries, additional road disturbance and ground disturbance, and additional energy use of equipment needed for short period re-entries vs. the much longer re-entries required by evenage management should be factored into the total carbon emissions of the unevanage management requirement.

Also the 40 acre maximum evenage unit is very limiting in areas where average unit size is larger, and again reduces efficiencies of scale thereby increasing costs of management and increasing emissions for additional vehicle trips to these smaller units. **(Kent)**

RESPONSE: Noted. The FPP does not exclude the use of even-age management. The restrictions on the size of even-age management units resulted from lengthy discussions by the FPP workgroup. The requirements under Section 3.5 (now Section 3.9) reflect standards that are important to instill confidence in the environmental benefit, credibility and efficiency of the U.S. carbon market. Research and experience will continue to inform the evolution of the guidelines over time.

109. How win the extensive southern pine plantations be handled? These protocols seem to create a serious bias against those forests, many of which have been planted on degraded farmlands. If loblolly pine is not native to an area and it is being planted on marginal or eroded farmlands as a plantation, why would this not be allowed in these protocols. The co-benefits assume unevenage management and native species are the best solution for a forest, but what if they do not make economic or ecological sense. Also, with evenage plantations it would be easy to standardized carbon measurements based on regional averages using species, age site class and stocking, and thereby greatly reduce the verification costs. **(Kent)**

RESPONSE: Noted. The work group agreed on a set of environmental standards that will generate broad support for the use of forests in carbon offset programs. Additionally, plantation management of forests raises questions of additionality because unless the management represents a change from standard rotation length and retention following harvest, the management would likely be considered as business as usual. See response to Public Comment #108.

110. We would suggest removing the term "natural" and "environmentally responsible" altogether from the criteria. Instead, since the criteria seems to more or less include most timber operators in North America, call it "standard forest management," or if CCAR wants to limit it to California's standards, state that as well. Given this is really about whether the forests are storing carbon or not (though clearly more natural forests, particularly old-growth, are the best carbon sequesters we have), the terms "natural" and "environmentally responsible" are both unnecessary and inconsistently used in the proposed standards. [See original comment letter for justification] **(FE)**

RESPONSE: Noted. The term "environmentally responsible" has been removed from the protocol. The use of the term "natural" is still used to assist some forest landowners understand the context of the requirements of the protocol. . The work group invested significant research and time in the development of the guidelines and requirements under Section 3.5 (now Section 3.9). There will certainly be some landowners who will need to modify their practices in order to be eligible under these criteria. The workgroup agreed on the environmental standards to ensure broad support of forests as an offset mechanism.

111. The requirement that projects must comply with a certification program and/or management plan that requires long-term sustainable harvest levels provides little to no assurance of environmental protection. **(NRDC)**

RESPONSE: Noted. Third party oversight of harvest sustainability is an important component of criteria that address environmental integrity. Section 3.5 (now Section 3.9) provides many other criteria that projects will need to demonstrate in order to be eligible. The requirement for sustainable harvest (if harvesting is part of the project) is only one of the criteria. The final version of the protocol includes additional provisions for maintaining and recruiting structural elements (such as standing and lying dead wood). Other requirements exist to ensure that projects consist of a diversity of native trees in multiple ages. The FPP workgroup unanimously agreed that, taken together, the criteria in this section provide assurances of environmental integrity that will help foster broad support for the use of forestry projects as carbon offsets.

112. The uneven aged management and canopy retention requirements should apply to entities larger than 1,000 acres, rather than less than 1,000 acres. Larger entities can have larger projects where the issues of forest structure are more important. And the maximum size project

for a small entity is only 1,000 acres so the risk of very large scale habitat impacts is lower. **(NRDC)**

RESPONSE: Noted. The language has been modified to allow all projects to use this option, regardless of size.

113. The protocol needs to identify how the requirement that all projects must "manage the distribution of habitat/age classes and structural elements to support functional habitat for endemic plant and wildlife species" will be assessed. **(NRDC)**

RESPONSE: Noted. Requirements for meeting natural forest management criteria are detailed in Table 3.2, Section 3.9 of the protocol.

Requiring sustainability certification will help limit gaming of the system by unsustainable practices. However, given the cost barriers that can prevent small landowners from participating in a nationally recognized certification system, we support the alternative requirement that small landowners (<1000 acres) maintain at least 40% canopy retention on average across the property and practice uneven-aged silviculture. However, guidance is needed concerning how a violation of this requirement would be treated. This could be addressed in the PIA or through some additional aggregation document. **(Ecotrust)**

RESPONSE: Noted. The consequences of not passing the criteria are listed in table 3.2 and are as follows: "All of the project's Reserve account activity will be suspended until the criterion is met."

114. The prohibition of active management to remove snags will help maintain some wildlife benefits. **(Ecotrust)**

RESPONSE: Noted.

115. The consideration of carbon as a product of sound management provides an opportunity to impact the quality of sustainable practices on forest lands. This opportunity has been addressed by the Working Group in item 3.5. It is however, concerning to see that the policy makers have chosen to dictate the use of only "uneven aged practices" as "environmentally responsible". The Working Group should recognize that frequently, even aged practices are necessary and vital to the proliferation and maintenance of natural forest ecotypes and natural habitats in many regions of the U.S. Restricting landowners to uneven aged techniques appears to over step the objective of encouraging environmentally responsible and sustainable practices. **(Forecon)**

RESPONSE: Evenage management is not disallowed under the FPP. There are limits to the use of evenage management for meeting the definition of natural forest management. Projects that meet management criteria that ensure 40% canopy cover with defined spatial resolution meet the criteria for long term harvest sustainability. These projects are eligible to participate without other third party certification or approvals.

116. Also of concern is the Working Group's requirement that these management programs must be "sanctioned and or monitored by a state or federal agency." It is entirely possible to operate responsibly without the oversight and monitoring of a public entity. In fact, the third party verification of sustainable forestry standards by private interests is common practice in this

country in a variety of programs including; FSC, SFI, ISO 14001, American Tree Farm, and others. The Working Group should not limit the oversight of a responsible management program strictly to a public entity. Not only does this requirement discourage landowners from participating, this infrastructure does not exist uniformly across the country, and is therefore especially onerous. **(Forecon)**

RESPONSE: Agreed. The paragraph has been corrected to separate the bullet points in paragraph at the beginning of Section 3.5 (now Section 3.9.1). This correction clarifies the intent of the requirement that a landowner can demonstrate sustainable long-term harvesting practices with either third-party certification or oversight of a public agency. Additionally, projects that meet management criteria that ensure 40% canopy cover with defined spatial resolution meet the criteria for long term harvest sustainability. These projects are eligible to participate without other third party certification or approvals.

117. There is a typo in the first bullet, which should be two bullets, not one. The second bullet would begin, "If and when commercial harvesting occurs . . ." **(PFT)**

RESPONSE: Agreed. The typo has been corrected.

3.5.1 Promotion and Maintenance of Native Species

118. Third-party sustainable forest management certification (American Tree Farm System, Forest Stewardship Council, and Sustainable Forestry Initiative) should be a base program requirement, replacing the evaluation criteria of Table 3.1 of the FPP.

Delta agrees with the comments from several respondents (AF&PA, Weyerhaeuser, Jim Cathcart, and NAFO/OFIC/WFPA) that ATFS/FSC/SFI standards should be recognized. Furthermore, Delta believes that compliance with such third-party schemes should be mandatory. Requiring third-party certification is another check on the system, ensuring that participating landowners are committed to long-term, sustainable forest management. Plus, third-party certification systems provide periodic monitoring of the property, providing a proactive view of upcoming management practices and encouraging update to individual management plans. Delta recommends that the Reserve recognize SFI, FSC and ATFS as eligible certification programs. All three programs have been certified by the Programme for the Endorsement of Forestry Certification. A large majority of Delta's current projects belong to ATFS Independently Managed Groups, and Delta proposes that Individual or basic certification should only be recognized where annual monitoring takes place. Delta also suggests that certain state tax programs, such as Wisconsin's Managed Forest Law Program or Indiana's Classified Forest and Wildlands Program, be recognized as an eligible certification program, so long as the state tax program requires annual monitoring. **(Delta)**

RESPONSE: Noted. The requirements for a landowner to demonstrate sustainable long-term harvesting practices have been further revised to require the nationally-recognized third-party forest management certification programs to be either the Forest Stewardship Council or the Sustainable Forests Initiative. Since the Wisconsin program mentioned in the comment addresses issues of sustainability and since landowners who engage in forest practices under the program must receive approval from the qualifying agency, a project operating under this method would meet the requirement in the FPP. Annual monitoring is required under the FPP regardless of the option used to demonstrate long

term sustainability.

119. Table 3.1 provides a means of evaluating if a project meets the criteria of natural forest management. Shouldn't the verifier be able to determine if the Forest project is meeting the natural forest management criteria at the time of verification, and most certainly after a series of field verifications? How is a long-term forest management plan administered by a third-party or state or federal agency going to provide any assurance that the standards of the Forest Project Protocol have been adhered to? If the protocol creates a standard, it should be the verifier's job to determine if the standard has been met. If the standards are so complex that they cannot be verified without third-party, state, or federal oversight, then I think that the revised protocol has not met its goal of improving the "efficiency and cost-effectiveness" of the protocol. Provisions such as these incorporate hidden costs into the protocol, which may reduce fees paid to CAR verifiers, but result in significant additional costs elsewhere.

Recommendation: Remove the requirement that third-party, state, or federal oversight of long term forest management plans be required. **(NCRM)**

RESPONSE: Noted. There can be many and conflicting definitions of natural forest management or sustainability depending on specific site characteristics of a forest. The use of third-party certification or public agency oversight alleviates the need to provide prescriptive level details for different forest conditions and allows the protocol to be more applicable across regions outside of California.

120. The first bullet point on page 8 states "Maintain the stocking of live native trees", but does not specify the unit of measure (Biomass, board feet, basal area?).

Recommendation: Clarify the stocking reference in this bullet point. **(NCRM)**

RESPONSE: Noted. This requirement has been removed from the protocol.

121. Table 3.1 under the heading of "Distribution of Age Classes/Sustainable Management" requires that the entire forest entity ownership including lands outside of the project must prove sustainability through a third-party program, or state or federal program. This requirement seems out of place. GHG reductions, additionality, business as usual, common practice etc. are all measured on the basis of the forest project, and not the entire holdings of the entity. Why should the natural forest management requirements be expanded to the entire entity ownership when the entity is only contracted with the Reserve for the project area? How will the verifier test this?

Recommendation: Remove the requirement that the entire ownership must be under a long term forest management plan, if the entire property is not contained within the Project. **(NCRM)**

RESPONSE: Noted. The requirements for the forest "…including entity lands outside project area," to be third-party certified or under a plan with public agency oversight is to ensure that the net climate impact of the project is positive. These criteria, referencing entity lands outside of the project area, replace the analysis of internal activity shifting leakage which is no longer required. These revisions will result in a more comprehensive and reasonable approach to evaluation of both sustainability and leakage. In addition, this approach is expected to result in lower costs for the landowner.

122. This requirement continues to be overly narrow and restrictive, and will preclude most working forests in the other 49 states from participating. **(NAFO et al.)**

RESPONSE: Noted. It is expected that the requirements for sustainable harvesting practices and natural forest management will be revised with the addition of further research and experience.

123. It is repetitive to mention less then forty acres to 10,000 acres. Change to "Conformance with this requirement can be evaluated on as small a project as a harvest unit, or a project encompassing a watershed spatial scale up to a maximum of 10,000 acres." **(TGC)**

RESPONSE: Agreed. The descriptions in Section 3.5 (now Section 3.9) have been revised to clarify the issues raised in this comment.

124. Section 3.5.1 includes the new requirement: "Conformance with this [natural forest management] requirement can be evaluated on as small a project as a harvest unit, of less than 40 acres, or a project encompassing a watershed spatial scale up to a maximum of 10,000 acres.

If a project encompasses several or many watersheds, then the natural forest management requirement must be met for every 10,000 acres." It is not clear from this new definition whether conformance with the natural forest management requirement at the watershed (10,000 acre) scale allows a project to not conform with the natural forest management standards at the site level. Such an interpretation would potentially allow rotational clearcut logging management at the landscape scale to qualify as natural forest management.

Section 3.5.1 excludes the requirement, present in the previous draft: "Maintain hydrologic patterns and functions to support functional habitat for endemic plant and wildlife species." **(CBD)**

RESPONSE: Agreed. The descriptions in Section 3.5 (now Section 3.9) have been revised to clarify the issues defining watershed scale raised in this comment. A watershed scale (up to 10,000 acres in size) is an appropriate resolution to meet the terms of multiple age classes. The use of evenage management is allowed under the FPP, provided the project conforms with the entire suite of environmental standards that have been developed to define environmental integrity.

The sentence, "Maintain hydrologic patterns and functions to support functional habitat for endemic plant and wildlife species" was removed from the previous draft due to feedback that pointed to the difficulty of monitoring and verifying criteria associated with this benefit.

125. This section only cites California specific information; both Appendix D. and Appendix F. are limited to California. To have this protocol relevant to the United States Appendix D and F need to be broadly elaborated on or removed all together. If available, every state should reforest in accordance to tree seed zoning provided by state forestry agencies. **(TGC)**

RESPONSE: Agreed. The references to native forest resources and assessment areas will need to be expanded to include information relevant to all regions of the United States. The elaboration of references and identification of additional assessment areas

outside of California is work that is currently underway at the Reserve.

126. The language and table 3.1 describing “Composition of Native Species” are vague, too generalized and difficult to understand. A more specific look-up table in the Appendix for each forest type and its respective species mix would incorporate existing research on natural forest types in California and provide a metric that can be applied by a Verifier. Similarly detailed tables will be needed as forest projects are proposed from other states. **(Tuttle)**

RESPONSE: Noted. The elaboration of references and resources to incorporate natural forest types and species mixes is work that is currently underway at the Reserve.

127. Dead, downed wood on the forest floor provides habitat complexity and is a key component of many natural forest ecosystems. The evaluation form should add down dead wood, as well as standing dead wood. **(Tuttle)**

RESPONSE: Agreed. Downed dead wood has been added back to the criteria in the table for evaluating native species and natural forest management.

128. The references CCAR has provided for defining native forests in an area may be overly general. Requiring the hire of a professional expert to determine information which is easily assessable is placing even more costs on an already expensive process. If the developer can present scientifically peer-reviewed literature about historic native species in an area, this should suffice. Protocols should not require the use of an expert for information as accessible as this. **(SBC)**

RESPONSE: Agreed. The FPP only requires use of an expert to define “native forest” if a state/regional reference is unavailable or inadequate. Scientific peer-reviewed literature about historic native species relative to the project area will qualify as a reference for the FPP. The language in this section has been revised for clarification on this issue.

129. We applaud the use of mechanisms other than "tests" to meet certain criteria, such as third party certification, but there are a few troubling requirements that still remain.

Requirement for Uneven-age management for small projects:

"For entities of 1000 acres or less, restricted to uneven aged silvicultural practices and canopy retention averaging >40% across the forest."

This requirement is unnecessarily restrictive and shows a very narrow understanding of how forestry is implemented across the country. In many ecosystems, even-aged management is the most appropriate and efficient forestry method; it mimics the natural ecosystem in that area; and its use will increase carbon storage. It is true that there will be large carbon fluctuations on a small project area over time with even-aged management; these fluctuations are temporal and an average contribution of the project can be accounted for within the baseline and project projection methodology. We recommend removing this requirement.

Structural elements:

"Project carbon in standing dead wood will not be actively reduced"

This requirement is also unnecessarily restrictive. There may be instances where it is in the best

interest of the stand to remove excess downed wood (e.g. to reduce fire risk). Weyerhaeuser recommends the alternative of requiring accounting for any dead wood removed from the project. **(WC)**

RESPONSE: Noted. Please see response to Public Comment #112.

The requirements for retention of dead wood are intended to address environmental integrity in terms of ensuring ecosystem functions, without creating undue wildfire, disease, insect, safety, or other risks.

130. [Table 3.1, The preamble states "The forest, including entity lands outside project area, is currently under one of the following"]

Having the criteria apply to lands that are outside the project area poses a problem for me, and I am sure, the USFS, BLM and State. Let me explain. The Grizzly Mountain ranch has an NTMP signed in 2001 and a Conservation Easement, dated 12/30/2008, and is therefore qualified to enter into a Project Implementation Agreement. However the additional ranch that I acquired last year, does not meet the Criteria YET, and thus disqualifies the entire combined ranch.

Another potentially disqualifying event occurred during the construction of a single parcel for the Conservation Easement. The original eight parcels were resized via lot line adjustments resulting in one large 1,131 acre CE parcel, 6 Residential parcels and a Hydro Parcel. A strict interpretation of the Criteria for (Entity Lands outside the project area) would seem to disqualify the C E property, so long as all parcels remain in common ownership. **(GMR)**

RESPONSE: Noted. Language has been added to Section 3.5 (now Section 3.9) stating that "Forest Owners who acquire new forest landholdings have up to 5 years to incorporate such acquisitions under their certification or management plan, whether or not such land is contiguous with the Project Area."

131. Section 3.5.1 removes the requirement that "Projects that do not initially meet the natural forest management requirement must do so prior to being able to verify reductions, (bold added)" and replaces it with "Projects that do not meet the natural forest management criteria but demonstrate that management will make progress towards and meet these criteria during the project's life are eligible to register credits on the Reserve." **(CBD)**

RESPONSE: Noted. Revisions to this section are the result of feedback received from the earlier draft.

132. Section 3.5.1 eliminates the requirement, present in the previous draft: "All projects must use the evaluation criteria for Improved Forest Management whenever commercial harvested is incorporated into the project management. Projects that do not promote and maintain native trees or do not practice Natural Forest Management are not eligible for registration with the Reserve." **(CBD)**

RESPONSE: Noted. Revisions to this section are the result of feedback received from the earlier draft.

133. Table 3.1 eliminates evaluation criteria for "functional habitat elements for endemic plants and wildlife," and "sensitive areas on forests," present in the previous draft. In addition, specific

134. All forest projects should account for emissions from machinery and vehicles used in the harvest and transportation of wood products. The greenhouse emissions associated with the fuel combustion of machinery and vehicles used in maintenance activities and the transportation of wood products are optional for forest management projects. The exclusion of these combustion emissions fails to encourage less fuel-intensive forest management. This is especially important because the emissions from maintenance activities and transportation of wood products may be concentrated at the front end of a project, long before the greenhouse gas benefits of a project will be realized. **(CBD)**

RESPONSE: Noted. The accounting for emissions from machinery and vehicles used in the harvest and transportation of wood products is not required because of the high cost of obtaining actual emissions data, and because excluding these emissions is likely to be conservative. In most cases, mobile combustion emissions will remain roughly unchanged between the project and baseline scenarios. This is because increases or decreases in harvested wood production will result in compensating decreases or increases in the production of wood product substitutes, such as steel and cement, which also result in production and transportation emissions. Accounting for mobile combustion emissions from site preparation for reforestation projects is required, as these are likely to be significantly higher than in the baseline.

135. Expanding the eligible natural forest management requirements to include demonstrated progress towards these criteria allows landowners to immediately develop projects and encourages environmentally responsible long-term forest management behavior. Also, allowing the planting of native species outside their current distribution where supported by scientific peer-reviewed research further increases the pool of potential projects. **(Equator)**

RESPONSE: Noted.

136. Table 3.1:

- The requirement that a project must demonstrate achievement of a particular goal over a 100-year project life would require no action for decades. The timeframe for achieving each goal should be changed to e.g. 20 years.

- Similarly, the required demonstration for some goals that "the project is making progress toward this goal" should be changed to require achieving each goal in no more than e.g. 20 years.
- The native species composition requirement should be revised to require species composition reflecting a particular native forest type rather than a fixed requirement of 80% of any single species for all forest types.
- The exemption "to the extent seed is available" should be deleted from the composition of native species requirement for reforestation.
- The structural elements criterion is very clear. But the result of not passing this criteria and the associated footnote are anything but. Projects that don't pass this criterion should be ineligible. **(NRDC)**

RESPONSE: Noted. Timelines have been added to the final protocol specifying the requirements for achieving the standards. The native species composition requirements are no longer fixed but variable by assessment area according to a look-up table which specifies a "Composition of Native Species Threshold" in Appendix F. Seed availability is a growing issue for tree nurseries across the country and is a reasonable qualifier for the composition of native species requirement. The consequences for not meeting the structural elements criterion have been clarified as follows: "All Reserve account activity will be suspended, unless it is demonstrated that management will provide for this structural element, or processes that produce these structural elements, over the project life."

137. Criteria for natural forest management include maintaining starting stocks of standing dead wood, but exclude requirements to maintain down dead wood. This element of forest structure was incorporated in the natural forest management definition in the December draft. Large woody material plays an important role in maintaining forest biodiversity, and as for standing dead wood financial incentives under commercial management may favor reduction or elimination of this material. We would like to see down dead wood or large woody debris returned to the definition of natural forest management. **(WS)**

RESPONSE: Agreed. Downed dead wood has been added back to the criteria in the table for evaluating native species and natural forest management.

138. There are some omissions that need addressing. For instance, a major goal is to assure that there is a natural distribution of species native to a particular forest type, but the guidance as to what that means and how to measure it is unclear. In addition, we should remember and explicitly note that some forest types are naturally dominated by a single species. The Protocol should not seek changes in composition that are unnecessary. **(PFT)**

RESPONSE: Noted. The native species composition requirements are no longer fixed but variable by assessment area according to a look-up table which specifies a "Composition of Native Species Threshold" in Appendix F. The assessment will be made through the use of the project's inventory data.

139. We are concerned how "progress over time" will be demonstrated: What is an acceptable minimum rate of progress over 100 years? Progress should be measured at least each decade.

Clear metrics are essential the potential of gaming and the potential for lengthy and expensive verification disputes. Neither result will build confidence and participation in CAR projects. **(PFT)**

RESPONSE: Noted. Timelines have been added to the final version of the FPP to describe the temporal limits for achieving the specified criteria.

140. The section on Composition of Native Species in Table 3.1 is not written well and, if we understand it, we don't see how this metric helps assure a natural distribution of species. We recommend adding a new appendix that lists each forest type and its respective species mix with the general natural range of distribution within it, allowing for ready look up. **(PFT)**

RESPONSE: Noted. The elaboration of references and resources to incorporate natural forest types and species mixes is work that is currently underway at the Reserve. The final version includes further elaboration on the species distribution that will be required.

141. In addition to assuring the desired species and age class distributions, a key indicator for forest "natural-ness" is the establishment and maintenance of dead, dying and structurally complex trees. Many commercial forests around U.S. are characterized by lack these features, which are key habitat elements. The evaluation form is insufficient in relation to dead wood and other key habitat structures and we urge CAR to strengthen this requirement. The evaluation only addresses the maintenance of standing dead wood (and is silent on down wood) and does not promote the increase in these structural components even if the starting values are insufficient to provide some minimum level of habitat value. **(PFT)**

RESPONSE: Downed dead wood has been added back to the criteria in the table for evaluating native species and natural forest management.

142. While California regulations may be sufficient to address the maintenance and restoration of these habitat structures over time, for owners in jurisdictions where there is no oversight of these structural elements, perhaps sufficiency in this regard can be verified through existing sustainable forestry certification programs that specifically address this area. In addition, we recommend that CAR incorporate the use of structural classification systems such as the Wildlife Habitat Relationship database in the structural assessment. Regardless, the current standard proposed in the evaluation form is too vague and minimal. **(PFT)**

RESPONSE: Noted. The verification of the reporting of the specified elements is the responsibility of the verifier. The Wildlife Habitat Relationship database is limited to California and has not proven itself to be superior in terms of verifiability on the ground.

3.5.2 Promotion of On-Site Standing Live Forest Carbon Stocks

143. The term "environmentally responsible management plan" is used in sub-section 2. The term environmentally responsible management plan is not provided in the glossary. The term is very subjective and who makes the decision as to what is environmentally responsible is also not defined? We believe that an NTMP, SYP, Option "A", or CFIP management plan should apply as environmentally responsible documents in California?

Recommendation: Clarify, define or eliminate the term "environmentally responsible

management plan." **(NCRM)**

RESPONSE: Agreed. The term "environmentally responsible" has been eliminated from the definition of criteria in Section 3.5 (now Section 3.9).

144. It is unclear what this restriction is intended to do and this section needs to be clarified to make workable for most landowners.

The requirement is valid if it means that a project with a dip in total sequestration during a specific year cannot register any credits during that year. However, if this requirement eliminates the ability to register credits where the NET addition (sum of all pools) for one year is positive yet the standing pool is negative. that is arbitrarily and unscientifically restrictive. The reality of ALL forest activities is that there are fluctuations in live carbon stocks over time. A landowner should have every right to time harvest activities to capitalize on market prices as long as the overall trend is increasing. If the sum of all carbon still represents an increase, the increased carbon should be registered. **(WC)**

RESPONSE: Noted. The intent of the restriction described in the Section entitled "Promotion of On-Site Standing Live Forest Carbon Stocks" is to ensure that, regardless of the overall trend in the sum of the total carbon pools, the standing live (live-tree) portion of a project's carbon stocks is maintained and/or increased during the project life. The policy has been revised to apply to monitoring over any 10-year consecutive period instead of where annual monitoring results show a decrease in the standing live pool.

145. Promotion of On-Site Standing Live Forest Carbon Stocks:

- The promotion of standing live forest carbon stocks does not promote environmental integrity. The criteria should be expanded to include all forest carbon pools.
- The exceptions to this requirement are so broad as to make it moot. Either the exceptions should be constrained or the requirement deleted.
- It is very unlikely that a project could show an increase in total carbon stocks if there is a decrease in the standing live pool.
- The forest projects in the two figures are examples of projects that would clearly require the use of excess buffer pool credits and therefore should not be eligible for participation. **(NRDC)**

RESPONSE: Noted. The requirements associated with the on-site standing live forest carbon stocks are in place to enhance and secure the standing live tree portion of the project area. Workgroup members promoted this concept as a key co-benefit of forest carbon offset projects.

The exceptions to the requirement are inventory fluctuations that occur due to forest management prescriptions that result in improvements to forest health, habitat, or sustainable harvest schedules, or due to non-harvest disturbances such as wildfire or disease.

The illustrated examples would not require the use of buffer pool credits (nor would they be eligible to use buffer pool credits, since they are examples of planned, i.e., "avoidable," reversals). In both cases, the fluctuations in carbon stocks are part of

planned project activities and the forest owner would have to retire CRTs equal to the total reversal once it occurs. Projects are not made "ineligible" unless forest owners fail to fulfill their obligations in compensating for reversals, or actual live-tree carbon stocks fall below baseline levels (in which case the project is automatically terminated).

146. We have three significant concerns:

1. As written, this standard is going to be evaluated on an annual basis when it should be considered over a longer period. Annual or periodic flux will be a given in an actively managed forest. Year to year variation must be evaluated in the long term project context. We believe that normal, planned management flux should be permitted so long as over the project lifetime the live tree carbon stocks don't diminish. This can best be evaluated in concert with the reinventory cycle.
2. There appears to be a broad allowance granted in item #2 for a persistent, long term decrease in the live tree pool. This broad allowance could become an unintended loophole to the standard stated in the section's first sentence. While the graphic seems to indicate a situation where live stocks have grown substantially above the baseline prior to their reduction to a lower level, the actual language of the circumstance suggests that the live tree stocks could in fact be reduced and maintained at a level beneath the baseline. The language should be revised to ensure that the live stocks grow to some degree above the baseline over time.
3. In circumstance #3, the third sentence says, "Additionally, the actual project stocks shall not be less than what was declared from modeling the project at the project's initiation." We believe comparison of actual project stocks to the modeled projection should not be the basis for evaluation of whether the live tree carbon standard is being met. There are numerous legitimate reasons actual stocks may vary from projections as the projection is simply a modeled representation of future results from project activities and actual results will vary based on periodic management decisions as well as normal variation between modeling and reality. The real point is whether the actual stocks are being sustained or, preferably growing over time, relative to the starting stocks and the baseline. As recommended above, that can be evaluated at each reinventory period. Any variance between actual project live tree stocks and those projected initially are accounted for in the actual crediting for emissions reductions which only occurs based on actual results in relationship to the baseline. **(PFT)**

   RESPONSE: Noted. In response to #1, the policy has been revised to apply to monitoring over any 10-year consecutive period instead of annual monitoring results. In response to #2 and #3, the language has been clarified to ensure that the live stocks grow to some degree relative to the baseline over time.

4 Identifying a Forest Project's Geographic Boundary

147. The projects boundary is not specific on "tracts" vs. "aggregated forest projects to on the combined acreage of several entities" as stated in 2.2 Project Developers, page 5. As the protocol reads, a single project could take place on many tracks of land owned by many landowners (public and private), in many forest types. Please clarify scales of "tracts" and "aggregated forest projects" with respect to forest type, location, ownership etc. **(TGC)**

RESPONSE: A single project can take place on non-contiguous tracts of land owned by different landowners (as long as the project is represented by the same Forest Owner). Guidelines for aggregation, which should be available later this year, will provide more guidance in the case of a project with multiple landowners. Forest type and location are factors that could cause separation of projects. For improved forest management projects, the geographic area shall not extend beyond the boundaries of an assessment area by more than 5% of the project's total area. An improved forest management project that involves activities in multiple assessment areas must be submitted as a series of separate projects (one project for each assessment area).

148. Based on the approach advocated by the Working Group, using multiple assessment areas, there are opportunities for project owners to have tracts or parts of tracts in multiple areas. In item 4, the Working Group has required that in the event a project occupies multiple areas, each area is to be addressed individually, submitted as separate projects. It is our opinion that this practice will unnecessarily drive project development costs beyond the reach of many landowners, making this a non opportunity especially for smaller < 1000 acre landowners (which make up most of the NIPF lands in the country!). Limits on the requirement to submit separate project documentation for these areas are highly suggested, and may be most valuable to small project owners. **(Forecon)**

RESPONSE: Noted. The separation of projects is a requirement for Improved Forest Management projects due to the significant differences in baseline determination that will be result from location of tracts in distinct assessment areas.

149. New requirements like geographic boundary restrictions of 5% or less while at the same time allowing aggregation. **(FLC)**

RESPONSE: Noted. See response to Public Comments #147 and #148.

5 Defining a Forest Project's GHG Assessment Boundary

150. "Mobile combustion emissions" is not referenced or defined in the glossary. Adding requirements to the protocol only adds to the fixed costs associated with initiating a project. Is it the intent of the "mobile combustion emissions" clause to have a forest landowner report their emissions related to the ongoing management practices associated with their property? And if so wouldn't these emissions need to be counted by the entities performing the services? If a landowner has their roads graded by a contractor, does the landowner need to report the emissions associated with these actions against their net reductions? We would argue that those emissions are the responsibility of the contractor.

The workgroup should not need to be reminded that one of the reasons for drafting the new protocol was to make the new protocol more cost effective while simultaneously not sacrificing its integrity. The only improvement to the new draft protocol has made in regards to dealing with cost effectiveness that we can tell to this point is making large woody debris an optional pool, and the removal of the conservation easement requirement. The workgroup should be actively looking for ways to cut unnecessary costs associated with initiating a project from the protocol; not adding new ones in. Gross income minus expenses is equal to net revenue. Net revenue or

perceived future net revenue will be the largest motivating factor influencing forest landowners to initiate a project. The workgroup needs to take a proactive approach to dealing with undue costs, because over-burdensome costs are the greatest risk to the protocol's overall success.

Recommendation: Remove the requirement for project participants to report their mobile combustion emissions. **(NCRM)**

RESPONSE: Noted. The only mobile combustion emissions required in the protocol are those associated with site preparation involved with Reforestation Projects. A look-up table has been provided in the protocol to eliminate any costs associated with this calculation.

151. The Working Group has included the consideration of mobile combustion emissions in the list of those emissions required for reporting. In many cases in the private and public sectors, the mobile combustion sources associated with forest management are not under the control or ownership of the landowner. The Working Group should include a more detailed clarification on this circumstance and the requirements of the project owner in this scenario. **(Forecon)**

RESPONSE: Noted. See response to Public Comment #150.

5.1 Accounting for Primary Effects

152. How will the double accounting of mobile emissions be dealt with when they emitted by organization/company whom in the future will be reporting their emissions under the General Reporting Protocol? **(FCO)**

RESPONSE: Noted. At this time the only mobile combustion emissions required in the protocol are those associated with site preparation involved with Reforestation Projects. This is such a limited accounting of mobile emissions, it is expected that double counting can be addressed fairly easily. If mobile combustion emissions are regulated under a cap-and-trade system in the future, the protocol will be amended to reflect this.

153. The protocol should include mandatory accounting for soil carbon stocks. For four of the carbon pools at a project site—shrubs and herbaceous understory, lying dead wood, litter, and soil—reporting is optional for some projects. Table 5.1 at page 12 states that “Soil carbon is not anticipated to change significantly due to forestry activities, however, exceptions may exist including deep ripping or significant soil erosion.” It is important to note that soil carbon in this case includes an organic carbon pool of microbiotic components, separate from tree, shrub, and herbaceous belowground pools. The carbon contained in soil organic matter changes in response to management activities, and substantial losses from soil carbon stocks may continue for decades after harvesting. [See public comment submission for footnote reference of this text.] By making the soil (and other) carbon pools voluntary, the draft revision underestimates the carbon emissions and lower sequestration rates associated with soils in intensely harvested forests, and obscures the potentially significant differences between forest management scenarios. This is especially important because the soil carbon impacts are likely to be concentrated at the front end of a project, long before the greenhouse gas benefits of the project may be realized. **(CBD)**

RESPONSE: Noted. Accounting for soil carbon is not required due to the high costs of

collecting this data and because it is not anticipated to change significantly as a result of projects that manage for carbon sequestration benefits. The Reserve is considering possible exceptions where activities might result in negative impacts to soil carbon.

154. [Table 5.1, pg. 12] Making the measurement of coarse woody debris optional for all project types seems to be a reasonable compromise given the uncertainty involved in woody debris changes over time and its impact in overall carbon budgets. **(Ecotrust)**

RESPONSE: Noted.

155. [Table 5.1] Down dead wood should be a required carbon pool for forest management and reforestation projects. Intensive practices that reduce down dead wood should not be encouraged by ignoring the effects of project practices on pre-project carbon stored in coarse woody debris. The glossary defines this as a required pool. **(WS)**

RESPONSE: Noted. The protocols ensure that structural elements are included in forest projects. The focus of the accounting of structural elements is on the standing dead wood, since all lying dead wood originates as standing dead wood and standing dead wood lends itself to sampling practices that are commonplace among forest inventories. The protocol provides verification guidance to ensure that lying dead wood is sustained as part of the forest project.

156. [Table 5.1] The same is true of soil and litter carbon, although these are less likely to decrease under management that increases live tree stocking over time. These pools should be required, however, when practices planned under a project have a reasonable chance of depleting these carbon stores over time. **(WS)**

RESPONSE: Noted. The FPP addresses concerns about depletionary harvesting by requiring a demonstration of sustainable management (Section 3.9). Also, see response to Public Comment #153.

157. Optional pools should be made mandatory if the project includes activities the can be reasonably anticipated to substantially decrease optional pool.

- Salvage logging should require measurement of lying dead wood.
- Raking should require measurement of litter.
- Deep ripping should require measurement of soil and litter.
- Existing trees should be tracked along with new trees in reforestation projects. **(NRDC)**

RESPONSE: Noted. Requirements have been added to address structural elements following salvage harvesting. Guidance for raking will be provided if and when the practice is encountered. Threshold guidance for deep ripping has been provided that identifies the conditions under which soil carbon becomes a required pool. Existing trees must be inventoried and tracked along with new trees in reforestation projects (Section 6.1.1.).

5.2 Accounting for Secondary Effects

158. "Mobile" emissions are referenced on pages 12 and 13 as secondary emissions which need to be accounted for under Reforestation and which are optional under the other two project types. **(FCO)**

RESPONSE: Noted. Please see response to Public Comment #131. Mobile combustion emissions associated with site preparation for reforestation projects are likely to be significant compared to the baseline.

159. If the mobile emissions are accounted for in an "optional" situation, will the updates be allowed for instances when a logging is done by a company that has reported their emissions under the General Reporting Protocol? In most case an NTMP would have a new/different logging operating at every scheduled harvest. **(FCO)**

RESPONSE: Where emissions are reported optionally, the Reserve will review emissions estimation methods on a case-by-case basis.

160. It may be excessively burdensome for some reforestation projects to calculate mobile combustions emissions. Therefore, these emissions should be subject to a de minimis exclusion test. **(TGC)**

RESPONSE: Noted. The only mobile combustion emissions required in the protocol are those associated with site preparation involved with Reforestation Projects. A look-up table has been provided in the protocol to eliminate any costs associated with this calculation.

161. Due to the potential for significant mobile emissions in forest management projects, mobile emissions should be a required secondary GHG pool. **(TGC, NRDC)**

RESPONSE: Noted. Please see response to Public Comment #134.

162. Weyerhaeuser appreciates and supports the decision to remove the requirement to report mobile combustion emissions for forest management and avoided conversion projects. **(WC)**

RESPONSE: Noted.

163. Mobile combustion emissions and other processing emissions associated with wood products processing and transport should be accounted for if wood products are credited as a carbon pool. Reporting of emissions from harvesting equipment should also be required for forest management projects, although the magnitude of these emissions is likely to be small. pg. 12 Section 5 Defining a Forest Project's GHG Assessment Boundary states: "The GHG Assessment boundary include[sic] the carbon sources, sinks, and reservoirs that quantify the total GHGs produced or sequestered directly and indirectly from the activities involved in a forest project. Project-level reporting in this protocol addresses forest carbon stocks, biological CO_2 emissions, and mobile combustion emissions." When a harvested wood carbon pool is associated with a forest management project, processing and transport emissions are a direct effect of wood products carbon storage, just as surely as emissions from site preparation are a

direct effect of reforestation activities. Under an economy-wide cap, these activities will probably be covered by emissions allowances, but the impact of an offset project (by definition outside the cap) on activities within the cap should be reflected in some way through reductions in carbon credits. **(WS)**

RESPONSE: Noted. Please see response to Public Comment #134.

164. Among the emissions that must be accounted for as a Secondary Effect (i.e., GHG produced both directly and indirectly activities involved in a forest project) are those for mobile combustion and processing associated with wood products post harvest, including transportation to the mill and along the value chain. We urge CAR to incorporate this missing element in accounting for Secondary Effects. **(PFT)**

RESPONSE: Noted Please see response to Public Comment #134.

165. In addition, the quantification of leakage due to a shift to "substitute products" is potentially extremely onerous and should be further clarified. **(Blue Source)**

RESPONSE: Noted. Accounting for secondary effects for improved forest management projects is done using a standard formula (Section 6.2.6 in the final protocol), which is assumed to reflect leakage due to shifts to substitute products as well as shifts in harvesting activity.

166. [Table 5.2, pg. 13] The removal of mobile emissions sources for Improved Forest Management makes sense and will make accounting easier. However, we are concerned that accounting does not include emissions associated with fertilizer application, which could provide a large increase in greenhouse gas levels associated with a project. Broadcast fertilization is prohibited in reforestation projects. Why not extend this ban to all project types? Or simply apply an emissions factor to fertilizers? Numerous peer reviewed articles would provide this data. **(Ecotrust)**

RESPONSE: Noted. Eligibility rules have been clarified to prohibit use of broadcast fertilization for all project types (Section 2).

167. The inclusion of this requirement adds unnecessary complexity to the Protocol. While there may be some emissions associated with site preparation activities, in our experience these are likely to be significantly less than the agricultural and mobile combustion emissions associated with the baseline activities (cropping or grazing). Such emissions would therefore be considered de minimis relative to the carbon sequestered by the tree crop over the life of the forest.

We therefore recommend (a) conservatively ignoring all emissions associated with mobile combustion; or (b) allowing the inclusion of emissions associated with mobile combustion and agricultural emissions in the calculation of baselines for reforestation projects. **(New Forests)**

RESPONSE: Noted. Please see response to Public Comment #131. A look-up table has been provided in the protocol to eliminate costs and complexity associated with the calculations of mobile emissions for site preparation in Reforestation Projects. Further refinements to the requirements of mobile combustion emissions in forest projects will

likely occur with the addition of further research and experience.

6 Quantifying GHG Emission Reductions and Removal Enhancements

168. Will it be allowable under this protocol for pools that are optional for a given project to be included as the project continues through time and with inventory updates? The initial inventory and project development is quite expensive to moderate sized landowners, although, as credits are sold additional revenue will enable landowners to improve their inventories. If a project is submitted, for example, without any soil carbon data, in the future can this pool be amended into the project? **(FCO)**

RESPONSE: The Reserve welcomes the tracking of additional carbon pools over time. However, credits may or may not be issued for changes in carbon stocks that were not inventoried at the project's initiation, depending on how and whether a baseline for those stocks can be established and whether credible estimates can be obtained for how the stocks have changed over time under the project.

169. It is evident throughout the Protocol that the Working Group has chosen to meld the Business As Usual (BAU) policies of clean technology and industrial emissions accounting to terrestrial forest offsets. This has been a commonly embraced approach to measuring and reporting additional carbon from forests in the emerging voluntary carbon protocols, and one that presents significant challenges for forestry offsets.

There are strong opinions that carbon sequestration that would (or might) have happened in any event should not be allowed to offset industrial emissions. Often referred to as BAU, this scenario applies well to industrial emissions but much less well to land-based sequestration practices, where natural ecosystem dynamics and unpredictable future human actions make any projection highly uncertain. Changing forest management objectives, markets for alternative land uses, timber prices, and ecosystem service prices (e.g., the price of sequestered carbon) all contribute to a high level of uncertainty when defining a baseline under the BAU scenario. There are no credible field methods to separate the effects of management actions on a forest from the impacts of environmental conditions over time….

All of these compounding uncertainties make BAU a very difficult concept for establishing the likely future of a forest system. Attempts to accommodate these uncertainties by constantly adjusting the baseline mean that past carbon credits may be rendered non-additional at some future point. That uncertainty creates a disincentive to participation by forest landowners. In some of the emerging climate programs, the assumption is that all the changes (both negative and positive) on a managed forest are a result of management activities. To make these estimates most valid, all of the forests under the management unit program should be included, so that the owner cannot claim carbon credits on the increasing portion of the forest while ignoring losses on any areas of decrease. The forest-wide approach captures all planting, growth, natural mortality, thinning, and harvests and provides a net assessment of the carbon dynamics in the management unit over the measurement period. This approach has been termed a "base year" approach because the carbon content of the forest in the base year is established as the baseline from which additionality is calculated… The base-year approach, as

defined by 1605(b), CCX, and RGGI, is by far the most scientifically based and valid method of determining forest carbon changes. Any system that requires a prediction of future environmental, economic, social, or legal conditions is inherently uncertain, and amounts of carbon may be very difficult, if not impossible, to quantify and verify in the future. **(Forecon)**

RESPONSE: Noted. The standardized baseline reflecting "business as usual" for Improved Forest Management Projects takes into consideration management activities present on similar landscapes, project inventory in relation to common practice, legal requirements, and economic feasibility. Common practice is determined by the Reserve using an analysis of USDA Forest Service Forest Inventory and Analysis program (FIA) data, which provide an unbiased and objective measure of factors affecting forest management.. The approach is designed to yield an estimate of baseline carbon stocks that is appropriate and conservative when applied to individual projects, without attempting to assess individual landowner motivations. As an added conservative measure, landowners are required to maintain and/or increase stocks of live trees for the duration of the project. The Reserve is confident that the baseline method provides a reasonable and credible estimate of additional GHG reductions and removals from forest management projects.

Baseline estimates are determined at the project's initiation and are valid for the duration of the project.

6.1 Reforestation Projects

170. Limiting reforestation projects to non-economically viable projects on a net present value basis. **(FLC)**

RESPONSE: Noted. An indication that reforestation would not be economically viable in the absence of the project provides assurance that the project is additional (i.e., would not have happened in the absence of a carbon offset market), which is a fundamental criterion for generating carbon offsets. Please see response to Public Comment #61.

171. The possibility of GHG emissions from fertilizer use applies equally to all project types. Broadcast fertilizer use should not be an allowed practice for all project types. **(NRDC)**

RESPONSE: Agreed. The FPP has been revised to prohibit broadcast fertilization on all project types.

172. The protocol needs to provide guidance as to how a project developer would select the values for the "Determination of Eligible Reforestation Projects" analysis, particularly the stumpage value. The rotation age assumption for the "Determination of Eligible Reforestation Projects" analysis should be required in the PIA. Otherwise proponent will simply assume a long rotation age in order to be found eligible. **(NRDC)**

RESPONSE: The requirements and guidance for this are now provided in Appendix E of the protocol. Stumpage values and rotation ages are determined according to default values provided by the Reserve for each assessment area, as defined in Appendix F.

6.1.1 Primary Effect – Estimating On-Site Baseline Carbon Stocks

173. [Broadcast Fertilization] This provision is yet another element that will preclude many, if not most managed forests, from being eligible. It disqualifies any forest that employs this practice, which is a highly common method of fertilization in actively managed forest operations, both large and intermediate in size. The given rationale is that there is insufficient data to measure the emissions from such practices. However, there are methods for estimating N_2O emissions and the enhanced sequestration rates that result from the use of fertilizer. Of particular note are studies that show that such applications can significantly increase soil carbon storage, a recognized carbon stock pool, by as much as 250% in some cases. [See comment submission for data reference.] Private company estimates of N_2O emissions from actively managed forest operations, which normally apply fertilization only periodically, indicate that the total biomass sequestration is significantly in excess of N_2O emissions, often by one or more orders of magnitude. For these reasons, this barrier to participation would appear to be totally inappropriate and should be revised to simply require that expected N_2O releases from fertilizer use should be addressed in the baseline and annual carbon inventories. **(NAFO et al.)**

RESPONSE: Noted. The work group did not address the effects of fertilization in this version of the FPP. Subsequent efforts to update the protocol may address these effects.

174. [Financial Additionality] The addition of this parameter is completely inappropriate. The terms of this provision essentially preclude any economically viable managed forest operator from participating in the program. This issue has been long debated in the highly criticized Kyoto Protocol CDM program, and sends a message that only un-economical ventures are qualified to participate. Yet, few if any forest owners will undertake a forest operation that is not fundamentally sound on a primary economic basis, i.e., before the speculative value of carbon credits are considered. Further, as noted above, climate policy, and a forest offset program, should seek to enhance the economic attractiveness of managed forests, so as to ensure their continuance as working, sustainably managed forest operations and to ensure that the multiple climate and other ecological service benefits that forests provide to society are encouraged. The inclusion of this financial additionality hurdle encourages the opposite outcome and should be deleted. **(NAFO et al.)**

RESPONSE: Noted. Please see responses to Public Comments #170 and #61.

175. It is noted in this section that broadcast fertilization is not allowed for Reforestation. Presumably, as N_2O emissions are not included in the listed carbon pools for projects, fertilization is not allowed for any project activity. This should be clarified in the text. **(TGC)**

RESPONSE: Agreed. The FPP has been revised to prohibit broadcast fertilization on all project types.

176. Both broadcast fertilization and spot fertilization/spot application of fertilizer result in GHG emission. Suggestion: use “chemical” instead of “broadcast,” or clarify what is meant by “broadcast.” **(TGC)**

RESPONSE: Noted. Broadcast fertilization is defined in the Glossary as “A fertilizer application technique where fertilizer is spread across the soil surface.” Other

fertilization methods, such as plugs can be used.

177. This section does not allow fertilizer to be used for reforestation projects. What if the soil has been altered by grazing, crop use increased salinization of water tables, etc.? An example is boron deficiencies. This is a short sighted restriction that also rings of some type of co-benefit agenda. There should be an allowance for correcting imbalances in soil conditions. **(Kent)**

RESPONSE: Noted. Reforestation Projects that incorporate practices of broadcast fertilization are not eligible under the FPP at this time due the need to evaluate the emissions impacts of this practice.

178. The last sentence in this section describes how to treat baseline when forest cover is less than 10%. Less than 10% cover may be very common for reforestation projects. How will a narrative description of future conditions without the project be translated into a quantitative baseline for these projects? **(WS)**

RESPONSE: The final protocol has provided further guidance to address this concern.

179. The second sentence in second bullet strikes us as funny. It hadn't occurred to us that a project developer would assess the history of forest cover for a site any earlier than the last 200 years -- at longest. On this basis could a developer explain that the project area had been out of forest cover due to past glaciation but had previously been forested? What is the intent of the third sentence in the fourth paragraph, which states, "Further, Reforestation Projects are only eligible if there is no consideration of sawtimber harvest within the first 30 years of the project"? Even under business as usual, this is unlikely to occur as few forest types can yield what is typically called sawtimber in 30 years. Please explain what this qualification is meant to accomplish and revise to make more meaningful as an element meant to establish the additionality of the project. **(PFT)**

RESPONSE: Noted. The requirement that reforestation projects take place on land "previously under native forest cover" has been removed. The eligibility criteria for Reforestation Projects include limitations on the harvesting of pre-existing trees for a period of 30 years. Reforestation Projects have their focus in the planting of trees. Improved Forest Management Projects have their focus on changes in forest management where trees are of commercial size can be harvested. The 30-year criterion helps to distinguish the two project types.

180. In general, New Forests does not support the use of financial additionality tests for carbon offsets because they are either arbitrary or too easily gamed.

If the working group keeps the financial additionality test for reforestation (page 14 and Appendix E), we recommend that project developers be able to prove that a competing land use with a higher NPV would prevent the reforestation project from occurring in the absence of carbon revenue.

The test states that reforestation sites must be analyzed according to the look-up table in Appendix E; if the site NPV derived from the look-up table is above zero, the site does not qualify under the protocol because it is financially viable without carbon revenue. This logic will exclude sites where reforestation is financially viable but cannot compete with a better land use. For example, a previously forested site might currently be used for grazing at an NPV of $500/acre. Based on the criteria in Appendix E, this site might have a reforestation NPV of

$247/acre. In this example, reforestation would not occur without carbon revenue because the site is worth more for grazing, but it would be ineligible for a reforestation project under the Protocol because the NPV is greater than zero according to the look-up table.

If the Protocol does not allow project developers to demonstrate that a competing land use with a higher NPV currently prevents reforestation, reforestation projects will only occur on the least suitable, most marginal sites. **(New Forests)**

RESPONSE: The financial determination is only required for reforestation that occurs on forestland (after a significant natural disturbance). If competing land uses for that forestland are of significantly higher value, then the same project area (or a larger area) may qualify as an avoided conversion project. Tree planting and reforestation activities are allowed as part of avoided conversion projects.

6.1.2 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources

181. The leakage risk assessment should only be used as a default value in the absence of more defined and project appropriate data. A project should be able to provide alternative leakage assumptions, subject to review by the Validator, so long as they are rigorously defined and scientifically sound. The protocol text reads that "Project Developers must account for leakage in a Reforestation Project pursuant to the chart below…" It should be noted here that the Leakage Risk Assessment chart is to be used unless the Project Developer can present an alternative leakage approach. **(TGC)**

RESPONSE: Noted. The methodology in the FPP is the result of work group discussions over what kind of assessment would be both a reasonably accurate representation of secondary effects and a feasible calculation for the project developer from readily available sources of information. As more data becomes available at regional, national, and international levels, refinements will be made to the leakage estimates. A standardized approach will be required for all projects. The goal of developing leakage estimates is to ensure that project reductions are not over-stated. Over time, if alternative assumptions and data are presented to Reserve staff, they will be reviewed in light of making appropriate modifications and updating the FPP.

182. Increases in emissions associated with machinery use in site preparation should only be accounted for if they are above a de minimis level. **(TGC)**

RESPONSE: Noted. A look-up table has been provided in the protocol to eliminate costs and complexity associated with the calculations of mobile emissions for site preparation in Reforestation Projects. Use of this table will remove the need for a calculation or debate over what is considered "de minimis."

183. [Table, pg.17] This table is again, very California specific. If the protocols are designed to be used nationally, it is important that they provide guidance for projects outside of California. Emissions associated with site preparation may differ depending on the location, native species, habitat, and prior use of the project area. It is unclear how these variables are taken in to account in the current averages. **(SBC)**

RESPONSE: Noted. Further refinements to the calculations and requirements of mobile

combustion emissions in forest projects will likely occur with the addition of further research and experience.

184. The Leakage Risk Assessment chart uses the Murray et al. study as the source for assessing leakage on cropland that is commercially viable. We note that previous respondents have requested further guidance and analysis of actual carbon emissions resulting from conversion to cropland, including the types of land and associated carbon stocks. We also note that the Reserve, in its responses, has indicated that the final FPP will include modifications to leakage estimates resulting from consultation with Dr. Murray. We would like to express our agreement with those who support the need for empirical data on land conversion and the carbon density of such land in order to better estimate the leakage effects from activity shifting. **(ES)**

RESPONSE: The final FPP reflects the most up-to-date, peer-reviewed estimates of leakage from reforestation projects. Leakage estimates will improve as further research efforts address this issue.

185. [Table 6.1] It is unclear how the site prep – reforestation emissions associated with machinery use are to be incorporated into the overall leakage assessment as they are quantified in metric tons/acre and the Leakage Risk chart produces a percentage amount. **(PFT)**

RESPONSE: The procedure has been clarified in the current versions of the protocol.

186. I appreciate having the table showing the emissions associated with Site Prep. **(Collins)**

RESPONSE: Noted.

6.2 Improved Forest Management Projects

187. It is very helpful to have the diagrams. I just wondered, in that section, why the modeled baseline might be above the Control. **(Collins)**

RESPONSE: The "control," as defined by the minimum level of stocking for a baseline in an Improved Forest Management Project on private lands, may be determined by Common Practice (the average stocks of the live standing carbon pool from within the project's assessment area), the High Stocking Reference (80% of the highest carbon stocks in live trees during the preceding 10-year period), or by legal or economical constraints. The modeled baseline could be above the control if the initial carbon stocks started out above the control or if silvicultural treatments and harvest planning caused fluctuations in inventory above control levels.

188. As the CCAR Forestry Protocols have been revised, a number of aspects have become clearer. Some of the financial implications will remain poorly understood until there is more experience with the costs of measuring, verifying, and monitoring as well as the potential risks that can be covered by insurance, purchasers, or the forest owners. We presume that the financial aspects, and especially who bears the financial risks of future revaluations, will become clearer over time as more project level data is released. If CAR is not going to have protocols for renewable energy this year, I would also like to point out that it may be advisable to treat carbon-neutral energy the same way that landfill carbon storage is considered – accounted for but not credited

under this protocol.

It would appear that the April 15, 2009 Climate Action Reserve Forest Protocols count only two of the four directly measurable categories of climate benefits from managed forests that are currently recognized in the April 2009 US EPA Greenhouse Gas Inventory. In-forest carbon stocks and average carbon stocks in long-lived products over 100 years are included, but carbon stored in landfills and more importantly, the carbon-neutral energy produced from forest slash, sawmill residues and post-consumer waste are not credited. In the case of landfill storage in the 'still under discussion' forest product protocols, it appears that the climate benefits will be accounted for in both baseline and project cases, but not credited as part a forest project that would be registered and verified by CAR.

If the carbon-neutral energy benefits are not counted in both the 'without project' baseline and the with project' conditions, the estimated climate benefits of a project that reduces the volume to wood chips harvested could be inflated and eventually downgraded if the 2009 US EPA accounting rules are applied. This could be a serious problem for family forest owners who could be interested in participating in programs. [See Stewart public comment submission for further detail on this subject.]

As currently stated, the protocols undercount the climate benefits related to wood production and therefore would overestimate the climate benefits of increasing forest inventories by reducing harvest volumes sent to sawmills. The problem will be greater where the forest slash from commercial thinnings and commercial harvests are collected and used in wood fired biomass plants that generate RPS-eligible energy.

In 2007, the IPCC report pointed out the advantages of sustainable forestry for producing a wide array of climate benefits (Nabuurs et al., 2007). Schlamadinger (2008) also suggests the bioenergy has many advantages over a pure forest sequestration strategy. Without an accounting of carbon-neutral energy in both the baseline and project scenarios, it is possible that the CAR will come up with very different estimates of net climate benefits.

The proposed CAR protocols have mechanisms to deal with catastrophic loss from wildfire or massive insect or disease loss. However, if the harvested carbon goes into biomass feedstock for RPS electricity, it gets no credit under the CCAR Forest Protocol rules but will show up as a loss of carbon inventory for the project. This could be a perverse incentive for landowners to avoid undertaking actions to reduce the future probability of loss to fires, insects, and disease. **(Stewart)**

RESPONSE: Noted. Allocating credits for harvested carbon going into biomass feedstock to the forest sector is beyond the scope of the FPP. The Reserve supports the development of policies that encourage the combustion of biomass in place of fossil fuels. However, the Reserve believes that carbon offsets are an inappropriate mechanism in this regard. This is primarily because clear ownership claims to indirect emission reductions on electricity grids are difficult, if not impossible, to establish. Furthermore, in the United States, fossil fuel emissions are likely to be covered under a cap-and-trade system in the foreseeable future, obviating the need to address these emissions through carbon offset protocols. For further discussion of this issue, please see page 17 of the Offset Quality Initiative's 2008 white paper on "Ensuring Offset Quality," available at http://www.offsetqualityinitiative.org/pdfs/OQI_Ensuring_Offset_Quality_7_08.pdf.

189. The method for determining baseline is much clearer than in the previous draft. The graphs illustrate the rules well. As we understand this language, credits can be generated at the project outset for management decisions made many years earlier, effectively creating a system that rewards early action. **(Ecotrust)**

RESPONSE: Noted. The method for determining baseline allows credits to be generated at the project outset to the degree that initial live tree carbon stocks exceed Common Practice, and legal and economic constraints.

190. The use of the Improved Forest Management concept infers that only forests that are currently managing poorly or unsustainably can benefit from carbon finance opportunities. In other words, the consideration of carbon from management programs that have been poorly implemented are given a financial incentive to change their ways, while responsible forest managers that have minimal opportunity to create paradigm shifts in management for carbon are denied the opportunity to participate. This is a significant programmatic inequity and a discriminatory policy under this Protocol. **(Forecon)**

RESPONSE: Noted. The protocols do allow forest managers that have conducted management activities resulting in high stocks to participate. Participation is premised on the expectation that high stocks would be harvested as ownerships change or landowner needs change. Forest owners can therefore receive credit for avoiding carbon emissions associated with harvesting on land with high stocking levels. Credits are issued at the project outset to the degree that initial live tree carbon stocks exceed Common Practice, and legal and economic constraints.

191. Federal lands and state lands under broad ecological management mandates should not be eligible. **(NRDC)**

RESPONSE: Noted. It was the intent of the Reserve to establish accounting methodologies that could be used on all lands to identify the climate benefits of different management activities. However, forest projects on federal lands will only be eligible if and when their eligibility is approved through legislative processes. Projects on other public lands must use assumptions that lead to the "most conservative" (i.e., higher) levels of baseline carbon estimates.

192. The description of how assessment areas are to be defined is incomplete and un-workable and needs to be rewritten so as to be clear unambiguous.

- A reduction in the size of the assessment area does not necessarily mean an increase in the uncertainty in the estimate of the mean. Very small assessment areas could have much smaller confidence intervals (i.e. higher confidence) than large assessment areas.
- CAR should have a clear understanding of the scope of the effort needed to specify assessment areas, i.e. the approx. number of areas and the time and resources that will be required.
- The description of the baseline determination is not comprehensible and needs to be rewritten so that it is clear and unambiguous

- The proposal to use common practice as a control only for those projects that begin above common practice discriminates against good actors and creates an incentive to harvest stocks before enrolling projects after a fixed time period, e.g. 20 years. (**NRDC)**

RESPONSE: Noted.

A reduction in size of the assessment area could possibly lead to an increase in confidence if the smaller area were more homogeneous than the balance of the original assessment area. However, separating homogeneous plots out of the larger assessment area would result in the balance of the assessment area having lower confidence. The Reserve's approach to identifying assessment areas is based on developing an indicator of common practice across a broad population base of lands with similar tree species and governance oversight.

The work to further identify assessment areas is ongoing at the Reserve. Further information about the scope of this work and resources required will be forthcoming.

The description of the baseline determination for Improved Forest Management Projects has been edited for clarity.

The method for determining baseline allows credits to be generated at the project outset to the degree that initial live tree carbon stocks exceed Common Practice, and legal and economic constraints. This provides opportunity to reward early actions that resulted in increased levels of carbon stocks, on the grounds that future harvesting emissions will be avoided. The incentive to harvest before enrolling is avoided by the requirement to calculate the High Stocking Reference based on the highest stocking levels over the past 10 years. Any incentive to reduce stocks more than 10 years prior to enrolling is likely to be very low.

6.2.1.1 Improved Forest Management Baseline for Private Forest Lands

193. The baseline methodology for Improved Forest Management is too cumbersome and complex to be cost efficient and effective in practice.

Delta agrees with comments made by Baldwin, Blomstrom, Wilkinson & Associates, Inc (Q.211 – Summary of Contents and Responses) in the previous public comment period. For the FPP to be scalable, the baseline methodology ought to be easily understood, particularly since private landowners can bring forth projects themselves. Because of the complexity of this baseline approach, it is realistic to think that most private landowners will rely on a third-party project developer (or an aggregator, if approved) to quantify net carbon sequestration. It is also realistic to expect that project developers will collect significant fees for their work. Such a baseline methodology would increase enrollment costs, providing less of an incentive for landowner involvement.

If the intent of the FPP is "to facilitate the positive role that forests can play to address climate change," the Reserve must ensure that project development costs are minimized so the landowner maintains a financial incentive to participate. Delta believes that the best way to minimize project development costs and maintain the financial incentive for landowner participation is to simplify the methodology. **(Delta)**

RESPONSE: Noted. The baseline approach has been further clarified. The baseline approach is designed to ensure that projects are additional across the assessment area. Simplification was considered wherever possible. In order to assure a consistent approach to baseline characterization of live standing carbon pool, the FPP will continue to require that all Improved Forest Management projects use the methodology. Changes to the FPP regarding functionality and ease of implementation will continue to be reviewed and considered in future revisions of the FPP.

194. It is unclear how a private landowner or project developer would go about establishing the 80% stocking reference.

It is not clear how a project developer would "document changes in the project's live tree carbon over the preceding 10 years, or as long as the current owner has had control of the stocks." The requirement implies that the project developer must model existing data backwards or perform some regression analysis to determine changes in carbon stocks over the proceeding 10 years. In most cases, the landowner will only have an inventory developed at the start of this program. Using current data to determine past carbon storage rates is a complicated process that could introduce significant error. The CCX Forestry Committee discussed this issue, ultimately rejecting the use of regression analysis and "back-modeling" to calculate the rate of past carbon storage. Delta recommends the Reserve clarify this requirement or eliminate it altogether. **(Delta)**

RESPONSE: Noted. The High Stocking Reference, defined as 80% of the highest carbon stocks in live trees during 10 years prior to project initiation, is intended to prevent an intentional depletion in carbon stocks in anticipation of registering a forest project. The FPP will retain the 10-year look back as written as a standard for all projects. Further guidance will be forthcoming.

195. The determination of the financial and legal reference is difficult to understand.

After reviewing this section, the only clear aspect is that the project developer must take current inventory data and model it for a 100-year period, incorporating planned management activities, such as harvests or reforestation. The average amount of carbon sequestration per acre then becomes the financial and legal reference. However, the language implies that the financial and legal reference could be adjusted up or down if certain criteria are met, such as implementing best management practices or maintaining a conservation easement. In the context of an actual project, it is not clear how this would be done.

Calculation of the financial constraints could also use additional explanation. It is not clear how a landowner would "capture the relevant costs and returns for the baseline scenario, taking into consideration all legal, physical and biological constraints, with reference to…actual costs and returns on the subject property or other properties in the assessment area" and incorporate that information into the model run. Additionally, it is unclear how a landowner would incorporate "evidence of activities similar to the proposed activities in the baseline within the past 15 years in the assessment area" into the model run.

Delta understands the purpose behind the financial and legal reference calculation, but feels this particular methodology is too burdensome and expensive to effectively implement on a national level.

One possible solution is for the Reserve to incorporate this information in the eligibility requirements by creating a financial and legal screen. Lands that meet all requirements are fully credited. Lands that partially meet the requirements take a deduction. By simplifying the requirements and placing them early in the process, the administrative burden is lessened with little sacrifice to overall program accuracy. **(Delta)**

RESPONSE: Noted. The financial and legal constraints are largely quantifiable and determined by assessing their effects on project-specific management scenarios. Therefore these constraints are more appropriately incorporated into a modeling approach than an eligibility constraint. Further guidance regarding incorporation of these constraints in modeling will be provided with experience.

196. The modeling of live, on-site stocks in proximity to the control is difficult to understand (Step 3). It is not clear what is meant by modeling live, on-site stocks in proximity to the control. The sample figure in Step 3 shows that carbon stocks decline from the initial point to the Common Practice. In the absence of any disturbance, the carbon stock of a forest will increase over time. Only a late successional stage forest would be likely to show a stable or declining carbon stock. [See Delta Institute public comment submission, pg.8 and pg.9, for further detail.]

Delta suggests that the Reserve rewrite the instructions in Section 6.2.1.1 to be clearer and to include realistic data sets to illustrate the concepts. **(Delta)**

RESPONSE: Noted. The description of the baseline determination for Improved Forest Management Projects has been edited for clarity.

197. Under the heading "Determining Common Practice on Similar Landscapes", the Common Practice average is defined as being based on live trees (roots, bole, branches, and leaves). The term 'live tree carbon' is used extensively in this section.

Recommendation: A definition of live tree carbon, or live tree biomass should be added to the glossary. **(NCRM)**

RESPONSE: Agreed. A definition for live-tree carbon has been added to the Glossary.

198. This section fails to recognize that all forestland management activities are not conducted purely for financial returns. The motivations of many restoration forestry activities are rooted in social or ecological values, which often occur at a financial loss to forestland owners.

Recommendation: Recognize that all land management activities are not motivated purely by financial returns. **(NCRM)**

RESPONSE: Noted. Baseline determination for forest management projects follows a standardized approach. While we recognize that not all land management activities are motivated purely by financial returns, financial constraints are incorporated to provide a reasonable and conservative estimate of baseline carbon stocks for the vast majority of cases.

199. The description of the averaging of the modeling results for Steps 2 and 3 listed as Step 4 in the box is incorrect. Firstly Step 4 references Steps I and 2, and not Steps 2 and 3 as it should.

Secondly, the baseline is determined by averaging the modeling results for the entire IDO-year period which includes the modeling per Step 2 and the continuation of the modeling per Step 3. The average modeling result is not determined by averaging Step 2, averaging Step 3, and then averaging the two averages. The graph below Step 4 is incorrect without the clarification that the two averaged modeling results must be weighted by the portion of the IDO-year planning period for which they were run. In the example shown, this looks to be around 20 years for Step 2, and 80 years for Step 3. The live tree carbon baseline should be described as the average of the modeling shown in the graph at the bottom of page 22. This would be consistent with how the financial and legal reference is calculated.

Recommendation: Clarify the above described workflow and examples. **(NCRM)**

RESPONSE: Noted. The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

200. Item #2 on Page 23: The "and exceed or increase" language does not make sense. It seems that the live carbon stocks must increase until they meet or exceed the listed controls. This is especially confusing in light of the statement regarding the live carbon baseline being static once it reaches the higher of the controls.

The last statement on page 23 seems to contradict the description and graph under Step 5 on page 24. The only reason to model live tree carbon in proximity to the High Stocking Reference, Initial Carbon Stocks, or the Financial and Legal Reference is for the purpose of determining the contribution of wood products to the final baseline (assuming that the statement at the end of page 23 is correct, and the baseline of live tree carbon is static).

Recommendation: Clarify the language regarding the calculation of the project live tree carbon in proximity to the above referenced controls. **(NCRM)**

RESPONSE: Noted. The language referenced in this comment has been edited for clarity.

201. Under Step 5, the graph depicts a modeled baseline of live tree carbon that is entirely above the line depicted as the average of the modeling. This is not mathematically possible.

The Final Baseline Step describes the final baseline as having an increasing trajectory due to the inclusion of the averaged annual estimate of harvested carbon production, but the graph at the bottom of the page shows a flat line for the final baseline as does the description in the text. These two descriptions do not agree. It seems that adding wood products as an average over the 100-year period unfairly reduces project GHG reductions during the early part of the period. For a project that was initiated in 2001 that has done nothing but grow over the last eight years, adding wood products as an average across the 100-year period does not reflect the reality that no wood products were created from 2001 to 2009. Since the wood products contribution to the baseline is created through a modeling exercise, it seems logical to add wood products as they are projected by the modeling. At a minimum, wood products during the period from project initiation to the present should be added based on empirical data based on harvest records.

Recommendation: Clarify how wood products are added to the live tree baseline in order to arrive at the project baseline. Wood products should be added as they occur throughout the 100-year modeling period, and wood products additions from project initiation to the present should have wood products added as they were harvested. **(NCRM)**

RESPONSE: Noted. The description of the baseline determination for Improved Forest Management Projects and explanation for how to include accounting for harvested wood products have been edited for accuracy and clarity.

202. [pg.17] Stepwise instructions on how to use the FIA dataset should be provided in the FPP. This information could be provided in an annex to prevent confusion and guide project developers that may be unfamiliar with using and manipulating the FIA data. **(TGC)**

RESPONSE: Agreed. To be clear, the Reserve will establish standard measures of Common Practice stocking levels for predefined assessment areas. Forest owners will only be required to look up the appropriate value for the assessment area in which their project is located. Common practice metrics established by the Reserve will be provided in Appendix F and on the Reserve Web Site.

203. [pg.19] For projects that have initial tree carbon stocks below common practice, with a start date of 2001, it may be excessively burdensome to demonstrate historical tree cover for the preceding ten years (1991 in this case). These rules should be relaxed somewhat for these projects. **(TGC)**

RESPONSE: Noted. In order to use a start date as early as 2001, all the necessary information must be provided to meet the requirements of the protocol, and project baseline data for each consecutive year following the project start date must be reported and verified. These data requirements are important to maintain accounting integrity in the case of historical start dates.

204. [pg.20] Some states do not have forest practice rules, and Best Management Practices may differ between state agencies, local governments, and federal programs (NRCS, USFS, etc.). Please clarify. **(TGC)**

RESPONSE: Noted. Baseline modeling should reflect the most conservative set of legal constraints (i.e., those that would result in the highest baseline stocking levels) where there are potential conflicts. This has been clarified in the final version of the protocol.

205. The deletion of the California Forest Practice Rules as the framework for establishing the "Business As Usual" (BAU) baseline is the second most substantive change. In its place a concept that relies on the "common practices" of one's neighbors within a region determined by CAR and as measured by the Forest Inventory and Analysis (FIA) data base of the USDA Forest Service – combined with a financial and regulatory test is proposed to determine BAU.

Issues: The approach is appealing because it utilizes a standardized FIA data base for forest lands across the United States and is generalizable beyond California. However, because the establishment of the carbon credit (i.e. CRTs, "climate reserve tonnes") is so completely reliant on this database, and because it has not been fully tested in a carbon baseline application, it raises questions regarding:

- the sufficiency of sample plots to adequately characterize the BAU "behavior" for different classes of ownership;
- Equity issues raised between Industrial and Non-Industrial land owners
- the transparency of the FIA database and its interpretation
- the complicated explanations required to describe, calculate and apply the approach.

[See Tuttle public comment submission for full explanation of these questions/issues; some are outlined in the below comments.] **(Tuttle)**

RESPONSE: Noted. The FPP workgroup determined that the added criteria for assessing a project's baseline were critical for the protocol's credibility. Landscape average stocking levels, as determined by FIA data, are considered an unbiased and objective measure of management activities present on similar landscapes. Issues with respect to the sufficiency of the sample plots, implications for different kinds of landowners, and interpretation of the FIA database will be resolved as the Reserve proceeds to establish common practice metrics for different assessment areas.

206. Although noble in goal, the FIA database has not yet been adequately field tested to determine if it is sufficiently fine-grained for purposes of establishing equitable BAU carbon baselines.

Therefore, it is suggested that:

• The supporting text of the Protocol clearly explain, with examples, whether baseline calculations based on the FIA approach will disadvantage any ownership class;
• CAR offer some form of "safety valve" to project developers to allow an adjusted baseline determination when 1) FIA data is believed to not reasonably reflect the actual "common practice" and when 2) adequately explained and justified by the project developer and concurred with by the Verifier and CAR;
• CAR, in cooperation with CDF, advocate for intensified or higher tier sampling for areas where issues are raised. **(Tuttle)**

RESPONSE: Noted. Issues of equitability were raised throughout the protocol development process. Baseline estimation methods are above all concerned with establishing accurate and credible projections of carbon stocks that would have occurred in the absence of a project, not necessarily fairness to particular ownership classes. The Reserve will continue to evaluate Common Practice metrics as the program evolves, but does not see the need for a "safety valve" or a formal exception procedure at this time. Allowing such exceptions would detract from the advantages of using a standardized approach to baseline determination.

207. Since there is such crucial reliance on the FIA data base, CAR should do more than just cite the umbrella FIA weblink. CAR should:

1) provide plain English explanations of FIA data and the sampling regime that the numbers are based on;
2) extract or highlight the references specifically for California, and for states where projects are proposed;
3) include examples of the worksheet process for different ownership classes and starting points
4) conduct periodic reviews of the adequacy of current FIA data for carbon baseline purposes;
5) be a firm advocate for improvements to the data base relevant to baseline purposes. **(Tuttle)**

RESPONSE: Noted. Work to expand the identification and use of FIA data and assessment areas is ongoing at the Reserve. Further information about the scope of this work and resources required will be forthcoming.

208. Complexity of explaining the Baseline calculations: Although the explanations and graphics have improved, they can still quickly lose informed readers, and experienced professionals can misunderstand use of equations. A more simplified, plain English version that talks through each case should continue to be an aspirational goal. **(Tuttle)**

RESPONSE: Noted. The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

209. The description of common practice needs to define "15% @ 1SE", for clarity purposes. **(SBC)**

RESPONSE: Noted. The language has been clarified. Please see response to Public Comment #202.

210. Step 4 describes that we should calculate one of the lines by finding the "Average of… to average", which is does not make sense. This example needs to better state that developer should "average the averages". SBC also requests that the protocol provides numerical examples. It is very difficult to replicate these steps just looking at imaginary lines with no numbers. The section also needs more guidance on how to average the “Baseline of live tree carbon" from initial to intersection, and how it is included in calculation of the 100 year average. **(SBC)**

RESPONSE: Noted. The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

211. Weyerhaeuser appreciates the clarification, in both the definition of baseline and the description of methodology, that additionality is a change above a baseline characterization that includes both mandatory land use laws and regulations and common practice.

Weyerhaeuser also appreciates the new graphs to explain the complex hybrid methodology. However, the new graphs have generated another set of questions:

1. It is unclear how the explicit recognition of fluctuations in carbon stocks depicted in the graphs can be reconciled with the requirement of 3.5.2. We believe this can be done by having the project proponent register only increases from an average trend. However, in this scenario there may be an instance where the average for a given year, is higher than the actual stock in that year. Please clarify how this would be resolved.

2. The bottom graph on page 24 does not match with the text described in "final baseline step." The text refers to an "increasing trajectory due to the inclusion of the average annual estimate of harvested carbon products," yet the graph below it shows a horizontal "completed baseline." If HWP carbon is included in the baseline then the baseline would be steadily increasing every year, as described in the text but not depicted in the graph. **(WC)**

RESPONSE: Noted.
1. Please see response to Public Comment #144.

2. The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

212. To qualify as a source for carbon credits, the property management must exceed local practices. Local practices vary widely throughout the state and the nation. The "business as usual" standard in the Southern subdistrict of the Coast District in California is the gold standard in forest management. The requirement to exceed this standard is next to unattainable and thus disqualifies much of the best stocked and managed property in the state, property which one would think CAR would be bending over backward to include. **(Moore)**

RESPONSE: Noted. The protocols must ensure that quantified GHG reductions and removals are additional. The use of landscape average stocking levels is expected to result in credible estimates of business-as-usual carbon stocks on lands affected by a project activity, as well as maintain an approach that is as fair as possible.

213. As witnessed in California, the social and financial land use pressure to convert timberlands to other uses such as homes, vineyards, water storage reservoirs and other developments must be considered "Common Practice". The high cost of forest regulation in California is also "Common Practice" and is major impediment to adopting forest growth (carbon sequestration) enhancements on private lands. The use of widely dispersed permanent plots that comprise the FIA program cannot accurately measure or account for either of these "common practice" anthropogenic influences that bias baseline calculations using only FIA data. The FIA program was developed to report on standing private forest land inventory and not timberland conversion rates or forest management restrictions.

Recommendation: Abandon the use of the FIA program for baseline determination until more accurate "California common practice" tools and methods are researched and demonstrated to incorporate anthropogenic forest management restrictions. In the mean time the use of the regulatory method (California Forest Practice Rules) of baseline determination as in the 2.1 protocol should be adopted for use in California in the 3.0 protocol. **(FCO)**

RESPONSE: Noted. Please see response to Public Comment #169. Where land-use conversion pressures are significant, landowners have the option under the FPP of registering an avoided conversion project. The baseline approach prescribed by version 3.0 of the FPP requires the incorporation of legal constraints, similar to version 2.1. Issues with respect to the sufficiency of the FIA sample plots, implications of using FIA data for different kinds of landowners, and interpretation of the FIA database will be resolved as the Reserve proceeds to establish common practice metrics for different assessment areas.

214. [Challenges revealed during the commenter's test of the use of USFS FIA data for the establishment of regional, eco-region, county, and state forest carbon baselines for private land in the Eastern U.S.] These items are bulleted below:

- Equity. The use of neighboring properties to establish performance criteria for a project site is not equitable. Individuals manage their lands or do not manage their lands based on situations, values, knowledge, and interests that are unique to them. Limiting or crediting carbon participation on a project site in proportion to the performance of its neighboring lands is at best, an arbitrary exercise and does not consider the real climate change benefits of the subject tract. In addition, the climate benefits equally when a ton of CO_2 is sequestered by a forest above or below the regional average. By putting those project owners below the regional average at a calculated disadvantage, the program reduces the opportunity to improve sustainability and preserve forest land use and its associated benefits on these lands for the future by reducing potential for carbon

revenues. Therefore, the use of regional baselines to establish performance thresholds creates a situation where those that have not been in a position to cut their timber are favored. This is a gross inequity of the draft Protocol.

- Accuracy. While analyzing the use of FIA data for multiple northeastern states, we found the FIA data process to be variable in procedure, chronology, and intensity from state to state. As such, using FIA data for this purpose (one for which it was not intended) will result in variable estimates based solely on the quality and quantity of the data for the area considered. FIA data is also coarse in resolution. States as large as California may be able to stratify the data by eco region and maintain statistically relevant results per region. Most other states cannot adequately stratify within political boundaries without experiencing wide ranging statistical results for volume estimation due to small sample size. Without reliable estimates, the calculation of financial instruments from project sites could vary enormously from one FIA measurement period to another based solely on data error and variability.

Regarding the CAR requirements under this approach, it is additionally concerning that reference is made to the previous 10 years sequestration as the determination of project carbon. In many cases, forest owners will not have access to these types of records, forcing them to go through a back growing modeling exercise that is often fraught with inaccuracies. The further distinction of using 80% of the highest tons in preceding 10 year period also seems contrived and/or arbitrary (why not 75% or 85%?). The end result of this set of calculations and policies is a regional approach to control carbon storage and uptake, rather than an approach that addresses, regulates, and rewards project specific calculations and qualities. We feel that addressing each individual project on its own capacity, limitations, climate benefits, and performance through site specific baselines is the only equitable, verifiable, and accurate approach. **(Forecon)**

RESPONSE: Noted. The comment mischaracterizes the baseline approach for projects where initial carbon stocks are below the regional average. These projects receive credit for any incremental growth in carbon stocks above the project's initial high stocking reference (80% of the highest stocks over the preceding 10 years), subject to legal and financial constraints. They are not penalized for starting below the regional average.

The Reserve will address regional challenges for the use of FIA data as they are encountered. The operating principle will always be to identify a credible indicator of the sum effects of all regional factors affecting forest management in order to produce a reasonable standardized baseline estimate.

With respect to the high stocking reference, please see response to Public Comment #194. The choice of 80% is a reasonable number to capture the high stocking level while allowing for fluctuations in forest inventories occurring as part of the normal cycles of harvesting practices.

215. The addition of the USDA Forest Service Forest Inventory and Analysis (FIA) program data significantly improves the guidance provided for establishing common practice on similar landscapes. However, a great deal of additional instruction is needed to assist project developers in determining their common practice baselines. Specifically, guidance on determining the assessment areas for locations outside of California needs to be developed or a method for project proponents to identify and submit suggested project specific assessment areas in the interim needs to be included. Similarly, the precise roles of the FIA and the verifier in approving regional and/or site specific allometric equations for modeling purposes and a

formal system for justifying the validity of proposed allometric equations needs to be established. **(Equator)**

RESPONSE: Noted. The Reserve is currently developing the assessment areas and Common Practice statistics outside of California. This work is being done with the assistance of USFS staff. The equations used to derive Common Practice statistics will be published on the Reserve's website. The Reserve will consider alternative allometric equations, provided they are approved by a state forestry authority (i.e.., a person meeting the definition of Professional Forester who is employed by a state agency responsible for the oversight of forests) who will acknowledge in writing that the equation is an improvement.

216. The proposed baseline methodology relies heavily on FIA data to define 'common practice' for each assessment area. Standard errors computed based on variability of live tree biomass estimates reported for FIA plots will understate the true uncertainty. Merchantable tree volume and live tree biomass listed in FIA data are not the result of direct measurements. FIA Phase 2 core measurements generally include only diameter and length of each tree. For obviously practical reasons, FIA does not directly measure roots, branches or leaves. Rather, total live tree biomass is estimated using allometric equations (when no equations are available for a species, equations for other species are substituted). Even though FIA may record some factors which could cause trees of the same diameter and height to vary dramatically in volume (e.g. rotten/missing cull portion, crown class, and tree damage), these variables are rarely considered in allometric equations. Because FIA tree biomass is an estimated value, the standard error for mean live tree biomass for an assessment area calculated using FIA data will therefore understate total estimation error. Higher uncertainty may not be an obstacle to using the data in this way, but registry administrators should be aware of the full extent of uncertainty. **(WS)**

RESPONSE: Noted. Project developers must incorporate the same equations as the equations used in the determination of Common Practice, thereby ensuring a reasonable fit between project data and the FIA data against which the project is compared. Issues with respect to the sufficiency of the FIA sample plots and interpretation of the FIA database will be resolved as the Reserve proceeds to establish common practice metrics for different assessment areas.

217. We urge CAR to provide greater transparency as to which how the assessment areas are developed and how the mean stocks are calculated for each, with identification of the land and ownership classifications (eg., timberland vs. forestland; private vs. public; commercial timberland vs. other types, etc.) and plot data used as the basis for mean stocks calculations. **(PFT)**

RESPONSE: Noted Please see response to Public Comment #202.

218. [Determining Common Practice on Similar Landscapes, pg. 17] However appealing it is to utilize a national database such as that of the FIA, and however credible it is for its current governmental uses, PFT and others question whether this dataset defensibly reflects common practice at the "assessment area" level. Are there sufficient datapoints within each assessment area and are they well distributed enough to capture current stocks? How ground-truthed are they? Is the data-set consistent enough across the U.S. to develop the common practice reference appropriately for ecologically logical assessment areas? **(PFT)**

RESPONSE: The protocols must ensure that quantified GHG reductions and removals are additional. The use of landscape average stocking levels is expected to result in credible estimates of business-as-usual carbon stocks on lands affected by a project activity, as well as maintain an approach that is as fair as possible.

The FPP workgroup identified the need for a measure of Common Practice in order to help develop reasonable baseline scenarios. The work group determined that the FIA plots are adequately robust to provide a credible estimate of Common Practice within the assessment areas that were developed for California.

The Reserve will address regional challenges for the use of FIA data as they are encountered. The operating principle will always be to identify a credible indicator of the sum effects of all regional factors affecting forest management in order to produce a reasonable standardized baseline estimate.

219. The section on determining an average landscape carbon value representing common practices (formerly referred to as the "applicable mean") is somewhat clearer in the latest draft. In the previous draft, there was some confusion as to how the landscape average would be calculated and who would do these calculations (the Reserve, FIA staff, or each individual project, itself). In the present draft, it is strongly implied that both the assessment areas and the calculations of landscape averages will be conducted by the Reserve in collaboration with the FIA program. This could be explicitly stated in the document. **(Ecotrust)**

RESPONSE: Agreed. Please see response to Public Comment #202. The final version of the protocol has been edited to make this clear.

220. There still remains some ambiguity about how landscape averages within assessment areas are determined. We are primarily concerned with the manner in which "distinct natural forest communities" are defined within assessment areas. We would encourage definitions of forest community types that are broad and represent the natural potential vegetation rather than a finely dissected map of current vegetation. That is, sections of a landscape may have been converted by management activities toward certain forest types which are more desirable timber species (for instance, Douglas-fir) but while naturally occurring, may not represent the dominant natural potential vegetation of the larger landscape (for instance, western hemlock in the western Olympic Peninsula). If the assessment area in this example is dissected to represent separate Douglas-fir and hemlock forest types based upon current vegetation cover, forest owners that continue to plant the naturally dominant species may be penalized in comparison against a landscape average based upon the non-converted naturally dominant forest community type which will continue to age and accumulate carbon. A more fair comparison would be against a landscape average determined by classifying FIA plots based upon the potential dominant vegetation and including both the converted and non-converted forest types within this broader area. Therefore, we would encourage an interpretation of "distinct natural forest communities" that is broad in geographic scope and that represents the dominant potential forest community type. We would discourage any interpretation of "distinct natural forest communities" that dissects the assessment area into finely defined forest community types that might distinguish among forest types that were preferentially planted versus those that would naturally be dominant. **(Ecotrust)**

RESPONSE: Agreed. The assessment areas will be developed based on a broad assessment of conditions within areas that have common potential to sustain natural vegetation conditions.

221. The description provided for determining the baseline for projects with initial live tree carbon stocks that are below common practice infers that the baseline becomes static as it intersects with the higher of the legal reference of high stocking ratio. However, the accompanying graph illustrates the baseline to be an average of a modeled baseline scenario. The Reserve needs to provide clarity in for this baseline methodology. Further, projects should receive credits, perhaps at a discounted rate, for increasing live tree carbon stocks above initial inventory carbon stocks before as they reach the common practice mean. **(Equator)**

RESPONSE: Noted. The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity. Projects with initial live tree carbon stocks that are below Common Practice will receive credit for increasing live tree carbon stocks above initial inventory carbon stocks (or the High Stocking Level, whichever is higher).

222. While we support production of flat lined, average baseline for its ease of use in accounting, but we note accounting implications of same in reference to risks to permanence. With averaged baseline, some carbon reduction tons will be booked earlier than otherwise and others later, so it is all the more important to ensure that the project actually lasts for its required lifetime or the overall accounting will be inaccurate. This makes the necessity of disincenting voluntary project "buy outs" (as potentially allowed under the new PIA) all the more important. **(PFT)**

RESPONSE: Forest owners must commit to achieving the definition of permanency as defined in the protocols. This means that every project is obligated through legal contract to maintain stocks associated with GHG reductions or removals for 100 years. Projects that terminate prior to ensuring permanence for their reductions/removals must compensate by retiring credits equal to, or greater than, the total number issued to them over the preceding 100 years. Because the baselines for Improved Forest Management projects are averaged, as indicated in the comment, any IFM projects that terminate prior to 50 years after their initiation must compensate at a higher than 1:1 ratio.

223. Language should be inserted into #3b (p.20 of the updated protocol) to include accepted forest certifications such as FSC in the types of voluntary agreements not required to be incorporated into the baseline scenario. **(Ecotrust)**

RESPONSE: Agreed. This edit has been made to the final version of the document.

224. Determination of High Stocking Reference, p. 19: Do the same measurement standards apply for the prior 10 years as those used for determining current stock estimates? What if the landowner does not have records or did not use measurement standards that meet the Reserve's required standards (e.g. only measured trees >8" dbh or had a high standard error at the 95% confidence level)? Guidance should be provided to clarify what are acceptable standards and methods for the "look back" inventory calculations. Determination of the Financial and Legal Reference, p. 20, last sentence says: "If the current project's live tree carbon stocks meet or exceed the Financial and Legal Reference, the project's baseline of live tree carbon is considered to be the current live tree carbon plus all of the additional required pools." This

RESPONSE: Please see response to Public Comment #194. The descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

225. It is unclear how pools other than live trees will be estimated for Common Practice or Financial/Legal or High Stocking references, as well as for baseline modeling. These pools vary considerably across forest properties, and some (particularly standing and down dead and harvested wood) are not directly correlated with live tree carbon. None are modeled particularly well by existing growth models. CAR should support additional regional research to improve baseline estimates for non-tree carbon pools. **(WS)**

RESPONSE: The only pool required for estimating Common Practice, High Stocking Reference, and the impact of legal and economic constraints is the live tree carbon pool. Other pools included in the project, such as standing dead, lying dead, and harvested carbon, are added after the baseline of live tree carbon is determined. Estimation methods for these pools are described in Appendix A of the protocol.

226. The protocol requires that the modeling of the live tree carbon baseline must reflect financial constraints as demonstrated through one of two options, one of which is "Providing evidence of activities similar to the proposed activities in the baseline within the past 15 years in the assessment area. The comparison must demonstrate that harvesting activities have taken place on at least one other comparable site where reduction in live standing stocks has occurred on: . . . b. Same zoning class." Because the baseline assessment areas will be fairly large, they may often encompass multiple local jurisdictions with different zoning systems that may not employ the same zoning classes. We suggest that the language be changed to "b. Equivalent zoning class." **(New Forests)**

RESPONSE: Agreed. An edit has been made to the final version of the document to clarify this issue.

227. The guidance provided in the protocol for demonstrating the financial viability needed to develop the financial and legal reference must be further detailed. Project developers must have clear guidance on how to determine financial feasibility of baseline scenarios in the financial and legal reference. **(Equator)**

RESPONSE: Noted. The guidance for demonstrating financial viability has been elaborated from previous drafts of the protocol. It is expected that further details will be added with additional experience over time.

228. [Step 2, pg. 22] The description below the chart for this step is difficult to understand as written. If we are understanding it correctly, it might be more clear to say (changes underlined), "At the point the baseline modeling intersects the higher of the controls described above . . . the live tree carbon shall be modeled to at least maintain this value on average over the remainder of the 100 year project period." . **(PFT)**

RESPONSE: Noted. The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

229. [Step 3, pg. 23] This is not described clearly in the box text (what does "modeling. . . conducted in the proximity of the control" mean in plainer English?) **(PFT)**

RESPONSE: The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

230. The sentence on page 23 describing projects with initial live tree carbon stocks below Common Practice seems to omit a necessary verb or object and is unclear: "For projects with initial live tree carbon stocks (metric tonnes per acre) that are below Common Practice, baseline modeling of standing live carbon stocks cannot go below the current live tree carbon stocks (metric tonnes per acre) and exceed or increase until the current stocks exceed the higher of: a. The Legal Reference, b. The High Stocking Reference".

We suggest that this sentence be changed to "baseline modeling of standing live carbon stocks cannot go below the current live tree carbon stocks (metric tons per acre) ~~and exceed or increase~~ and must increase until the modeled stocks exceed the higher of". **(New Forests)**

RESPONSE: The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

231. There appears to be a typo in the sentence following numeral 2 on p. 23. We believe it should read, "For projects with initial live tree carbon stocks that are below Common Practice . . . and exceed or must increase until the current stocks exceed the higher of . . ." Also, the last sentence states, "The baseline of live tree carbon stocks shall be considered static at the point the modeling of the baseline reaches the higher of the controls described above." Does this mean the project developer should average the modeled baseline value above the control? Please clarify. **(PFT)**

RESPONSE: The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

232. The sentence on page 23 describing projects with initial live tree carbon stocks below Common Practice refers to "The Legal Reference" rather than "Financial and Legal Reference." The figure illustrating "Step 5" of baseline modeling for such projects on page 24, however, notes that "Baseline modeling of live tree carbon is conducted . . . such that the average of the live tree carbon stocks is at or above the High Stocking Reference, the Financial and Legal Reference . . ." and the diagram itself refers to the "Financial and Legal Reference." Furthermore, page 20 of the text refers to the "Financial and Legal Reference" as one unified reference point constraining project baseline modeling. The omission of "Financial" in the text appears to be a typographical error.

For consistency and to prevent the gaming that would occur if the word "Financial" is omitted in the above sentence, we recommend that the sentence on page 23 be changed to "For projects with initial live tree carbon stocks (metric tonnes per acre) that are below Common Practice . . . exceed the higher of: a. The Financial and Legal Reference, b. The High Stocking Reference." **(New Forests)**

RESPONSE: The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

233. In Step 4 of the baseline procedure for IFM projects (page 23), the project developer is required to average the baseline from Step 1 and the baseline from Step 2. In effect this creates a baseline that does not realistically reflect the time it would take for a project with initial stocks above Common Practice to harvest down to Common Practice in states with significant forestry regulations (such as California). Averaging the entire baseline levels the playing field from a NPV perspective between project developers in states with forest practice rules and those in states without such rules. Because crediting in this early period of the baseline is essentially compensating a landowner for past good practice (which helps maintain existing stocks and avoid the incentive to harvest before initiating a carbon project), the particular year in which a project receives credit for stocks above Common Practice does not matter.

Nevertheless, a project developer may wish to receive CRTs for stocks above Common Practice more gradually for strategic or commercial reasons. We therefore recommend that the Protocol make Step 4 optional, enabling project developers at their election to model the time it would take to reduce stocks to Common Practice in a state like California or to average the entire IFM baseline. **(New Forests)**

RESPONSE: Noted. Averaging the baseline addresses issues that have been raised in previous public comment regarding the complexity of the approach. Averaging is a reasonable approach as the comment implies. Averaging reduces the complexity of calculating GHG reductions and removals as well. Standardized approaches are more easily verified than optional baseline development methods; as such we do not envision providing an option to not average.

234. [Step 4, pg. 23] The text at the top of the page above the box called Step 4 appears to refer to the Step 4 process and should be placed below the box to be consistent with how the formatting is for the other steps. **(PFT)**

RESPONSE: Noted. The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

235. [Step 4, pg. 23] It is not clear whether this average is weighted by year, but that would be most reasonable. An intersection of Step 2 and Step 3 baselines that occurs in project year 5 should produce a lower overall baseline than an intersection that does not occur until year 90. **(WS)**

RESPONSE: Noted. The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

236. [Step 5] The text on p. 23 implies that the modeled baseline cannot go below the higher of High Stocking or Financial/Legal Reference, and the chart on p. 24 seems consistent with this approach. The wording in the box on p. 24, however, implies that the modeled baseline must average at least as high as the relevant reference, which would be a less stringent requirement that would allow periodic depletion of stocking below the reference lines. **(WS)**

RESPONSE: Noted. The graphs and descriptions of the baseline determination for Improved Forest Management Projects have been edited for accuracy and clarity.

237. Further, we remain very concerned that the only that real effect of use of the "common practice" threshold as defined in the current draft is to minimize the climate benefits provided by landowners who have voluntarily made significant investments in growing and maintaining above high forest carbon stocks. Are we leaving no good deed unpunished by not permitting these forest owners to utilize the same baseline methodology as those with low stocks? We urge CAR to reconsider this approach and allow all forest owners to be evaluated similarly. If the two distinct pathways to baseline development are maintained (one for projects with starting stocks above the Common Practice reference and one for those below), it would facilitate understanding if each were described separately. While this may lead to some repetition of steps, the current blended format is hard to track. For instance, Step 5 (p. 24) is only relevant to projects with lower starting stocks. **(PFT)**

238. **RESPONSE: Projects with initial stocks below Common Practice receive credit only by increasing stocks above initial levels. Applying a similar approach to forest owners above Common Practice would allow them to only receive credit for further increasing their carbon stocks, for which there may be very limited potential. Instead, the protocol acknowledges that, on average, forest owners with high stocks will tend to reduce them over time for timber value. Therefore, landowners with high stocks are eligible to receive credit for both increased sequestration from additional growth and for avoided emissions that would have occurred due to harvesting. The Common Practice threshold does not "punish" forest owners with high stocks; rather, it is used to provide a conservative estimate of the baseline that is more realistic than simply equating the baseline with initial stocks. The FPP workgroup identified the need for a measure of Common Practice in order to help develop reasonable baseline estimates for landowners with high stocks.**

239. [Final Baseline Step, pg. 24] The example graph for the final baseline step does not show an "increasing trajectory" even though the text in the box immediately above it states that it should. Further, as the previous paragraph ("Completing the Baseline by Adding other Pools") states that the wood products value to be added in to the baseline is simply the average wood products value over the 100-year period (i.e. a static value, not one that increases over time), why would the baseline be anything other than flat, as depicted? **(PFT)**

RESPONSE: Noted. The graphs and description of steps in this section have been edited for accuracy and clarity.

6.2.1.2 Improved Forest Management Baseline for Public Lands

240. The District is pleased by the Reserve's expansion of opportunities for public lands to participate in the carbon offset market through the Updated Forest Project Protocol and believes the carbon market will provide important supplemental funding to support regional parkland acquisition throughout the State. **(East Bay)**

RESPONSE: Noted.

241. Clarity is needed whether City-owned forest lands are considered "Public Lands", and whether they fall under the requirements for public or private landowners. The City of Arcata for example is actively exploring forest carbon options for its city-owned forestlands.

Add a definition of "Public Land" with specific reference to municipalities.

Specify which FIA forest ownership class (e.g. public, private corporate, private non-corporate) should be applied to city calculations. **(Tuttle)**

RESPONSE: Noted. City-owned forest lands are considered "public lands" for the purposes of the FPP and the FIA ownership class. A definition of "Public Land" has been added to the Glossary.

242. Since cities operate forests more like the private sector, apply the provisions for private forestlands to municipalities, not the federal provisions.

City forestlands are regulated by the State Forest Practice Act and Rules like private owners. Cities may adopt more stringent provisions (e.g. FSC certification), but not more lenient. City decisions on forestland acquisitions and sales are more similar to private landowner behavior than federal. [See Tuttle public comment submission for more detail.] **(Tuttle)**

RESPONSE: Noted. See response to Public Comment #241.

243. Use of the Public Lands baseline assumption for public agencies, as described on Page 25, would likely exclude the City of Arcata from considering a forest project and registering VER's.

The City is on the cusp of registering a forest project and has inventoried a portion of the land base with the intention of doing so. I recommend that municipally owned community forests not be included in the Public Land category. There are many localities considering acquiring and managing forests under the community based forestry model. The carbon market could be a useful tool for financing such transactions thus it is important that we do not introduce a disincentive for such projects. Additionally, newly acquired lands for the purposes of managing as community forests would not have a ten year history to project forward so therefore applying this concept to new public forests of this type would be problematic. **(Arcata)**

RESPONSE: Noted. In order to ensure that credited GHG reductions and removals are truly additional, the City of Arcata will need to show how the baseline is a reasonable projection of what would have happened in the absence of a forest carbon offset project. The FIA data used to determine common practice for private lands do not include plots on public forestland, including municipally owned community forests. Evaluating baselines for municipally owned forestland using these data would therefore be inappropriate. The Reserve is open to suggestions on how to further improve the Improved Forest Management baseline estimation methods for public lands.

244. I also recommend that the Public Lands Baseline Guidance projection for Improved Forest Management Projects be guided by applicable statues, regulations, policies, plans and activity based funding over the past 30 years rather than the last 10 years. **(Arcata)**

RESPONSE: Noted. The FPP workgroup, which consisted of public lands' representatives, recommended a 10-year review.

245. Interpretations and methodologies for considering additionality from forests are as varied as the number of voluntary standards and programs themselves. To date, the least debated interpretation of additionality from mandatory and voluntary programs has been regulatory additionality. As is defined in the Protocol, conservation easements, use restrictions, forest

regulations, and other forms of law, restrict the carbon considered additional and marketable. To date, no public lands have been permitted under mandatory or voluntary programs to participate as true offsets. Public lands have been used to help municipalities realize their climate change objectives or caps, but we are aware of no instance where a public entity has been permitted to market its carbon from forests in a retail or open market transaction. This is for one reason…the management of public lands is governed by laws of the public good. Therefore, they are in inherent conflict with requirements of regulatory additionality. We strongly encourage the reconsideration of the participation of Public lands as offsets in any capacity in this Protocol. **(Forecon)**

RESPONSE: Noted. In reality, the management of public lands is commonly beset by conflicting laws over how to define how best to serve the "public good" and by inadequate budgets so that whatever may be decided as "public good" is left undone. An example would be recent issues concerning utility infrastructure easements through state parks. The eligibility of forest-base GHG projects on public lands is expected to allow for carbon sequestration projects to occur that would otherwise have not been initiated. If future research shows that additionality on these projects is not credible, the Reserve will revisit this issue in future versions of the FPP.

246. The draft lacks a definition of what constitutes a public entity, which is already leading to confusion. Please add a definition that identifies that "Public Lands" refers only to land owned state agencies. Federal lands should not be included as an eligible land type for IFM or other projects at this time. County or municipal lands should be given guidance to follow the Private Lands baseline and/or be included in a definition of private lands. **(PFT)**

RESPONSE: Noted. Federal, state, and city-owned forest lands are considered "public lands" for the purposes of the FPP and the FIA ownership class. A definition of "Public Land" has been added to the Glossary. It was the intent of the Reserve to establish accounting methodologies that could be used on all lands to identify the climate benefits of different management activities. However, forest projects on federal lands will only be eligible if and when their eligibility is approved through legislative processes. Projects on other public lands must use assumptions that lead to the "most conservative" (i.e., higher) levels of baseline carbon estimates. The FIA data used to determine common practice for private lands do not include plots on public forestland. Evaluating baselines for municipally owned forestland using these data would therefore be inappropriate. The Reserve is open to suggestions on how to further improve the Improved Forest Management baseline estimation methods for public lands.

247. The baseline for public lands with increasing carbon stocks is a projected increase until land reaches its "productive capacity". How is productive capacity defined, particularly for land with a high frequency of natural disturbances? Are future disturbances assumed identical to past, or should the agency project likely future disturbances given climate shifts? If policies or funding levels have recently changed or are projected to change in the future, how does that change affect the quantified baseline? **(WS)**

RESPONSE: The term 'productive capacity' has been removed and replaced with 'a stand composition consistent with comparable forested areas that have been relatively free of harvest over the past 60 years'. This is intended to include the effects of disturbance elements that have affected forest conditions in the past. The historical

248. The Wilderness Society believes that federal lands should not be included in the CAR protocol at this time (see comments on previous draft). Public mandates for federal lands are likely to change dramatically over a 100 year period. Projecting a baseline using past and current practices and administrative requirements is unlikely to define "business as usual" for these lands over time. Federal lands may be managed for ecologically appropriate carbon storage when that function is compatible with other public values, and may provide demonstration sites to improve measurement and monitoring of carbon stores. But they should not enter into binding contracts with outside parties that obligate them to maintain defined levels of carbon reserves until the federal land management agencies conduct a thorough scientific and public review of the impacts. These decisions should not be made piece-meal by local agency staff. **(WS)**

RESPONSE: Please see response to Public Comment #13.

6.2.2 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources

249. [Leakage] The concept of leakage where the forest project does not include all entity lands is not included in this worksheet. This concept of leakage was previously included in earlier versions of the draft protocol. John Nickerson indicated at a landowner meeting recently that leakage is only assessed at the forest project scale. The requirement in the natural forest management section that the entire entity must practice sustainable forestry hints at a concept of avoiding leakage, but does not address it directly.

Recommendation: Clarify that leakage is assessed at the project scale. **(NCRM)**

RESPONSE: Noted. The language in Section 6.2.2 has been corrected to remove the sentence referencing internal leakage review of harvest data for the entity. This requirement has been replaced with confirmation of sustainable management from third party certification or an agency-approved long-term management plan in Section 3.5. Leakage is assessed by estimating the total shift in harvesting that can be expected due to the effects of a project activity, not just shifts within an entity's holdings.

250. Add date to "(Murray et al, date)." **(TGC)**

RESPONSE: Noted. References in the final version of the FPP have been corrected.

251. It does not appear that the updated draft has removed the requirements for assessment of internal activity-shifting leakage. The revised draft states "Project Developers must account for internal leakage by reviewing increases in harvest data for the entity." This requirement is an improvement over requiring entity-wide reporting, but still is unnecessary. **(WC)**

RESPONSE: Noted. The language in Section 6.2.2 has been corrected to remove the sentence referencing internal leakage review of harvest data for the entity.

252. We want to reiterate our comments regarding market leakage as we do not feel they were adequately addressed in this updated draft. The leakage test is intended to account for both a

shift in harvest activities and a shift to substituted products, but it does not properly account for the latter. According to the worksheet, there is no circumstance where reducing harvest would encourage a shift away from wood to other substitute materials (Assumption #2, Demand of wood products is inelastic to supply). Consumers have a choice of building products and the market share for each product is elastic. Increasing rotation age can significantly reduce supply temporarily and at a large scale or over the long term would thoroughly disrupt a local wood basket. Harvesting would either be shifted elsewhere (hence to be consistent one would assign a 2% discount until the culmination of mean annual increment is reached) or market share of wood products may diminish, resulting in substitution to more energy intensive materials.

In addition, assigning a 2% discount for taking lands out of production means that the set-aside area would need to grow more than 2%/yr to have any net carbon accrual. This assumes that the activity is shifted to land that is managed in exactly the same way and assumes that all harvest is completely replaced. Other factors affect a landowner's decision to harvest beyond the actions of their neighbors (e.g. a project participant). The decision to harvest depends on landowner inventory, local market conditions, cash flow demands, and forest health, among others. **(WC)**

RESPONSE: Agreed. The FPP now prescribes a calculation of leakage based on an assessment of the overall market response to a project activity's reduced harvesting. Specifically, it is assumed that 20 percent of carbon emissions avoided through reduced harvesting at the project site are shifted elsewhere, due to the increased harvesting on other lands needed to meet market demand for forest products. This percentage is assumed to be net of any shift to alternative building materials.

253. "Leakage" is a particularly egregious concept. The property owner has no control over "leakage"; this "leakage" is not taking place on property he controls. Instead of calculating "leakage", why not pay the carbon extractor more? His neighbors will jump on the band wagon to get some of that pie for themselves. "Leakage" will go away. [See Catherine Moore public comment submission for further information and details.] **(Moore)**

RESPONSE: Noted. In order to accurately quantify a project's climate benefits, all of its effects on greenhouse gas emissions must be accounted for, not just effects that are under a forest owner's direct control. Because there is a broad market in the United States for forest products, reducing harvesting in one area will generally lead to increases in other areas in order to meet demand. This effect is approximated in the protocol using standard assumptions about the response of the market. The rate of leakage over time may depend to some extent on the relative price of carbon compared to forest products. The Reserve may adjust leakage rates over time to take into account changes in market prices, as appropriate.

254. The language for "optimal" management or stocking for carbon in points 3 and 4 should be removed. Point 3 states "The optimal management for carbon on 'working forests' bases rotation ages at the point where the average annual growth in that forest reaches its maximum, also known as the culmination of mean annual increment." This may be an appropriate characterization for the harvest rotations for optimal timber yields, but it is not appropriate in the context of carbon. As recognized by the avoided conversion project type, carbon is not optimized by yield, but by total storage amount, so land managers should optimize the amount of carbon stored, not the rate at which it is stored. For point 3, "optimal management for carbon" should be changed to "optimal management for timber yield." Point 4 should be removed

entirely because it is inaccurate. The optimal carbon stocking is the maximum total carbon storage that can be achieved for a particular land; maximum carbon storage is typically achieved by leaving a forest unmanaged. Since this "optimal" carbon storage point does not offer any insight into the leakage assessment, it should be removed. We do not want to mislead forest landowners into thinking that cutting forests is more carbon friendly than doing nothing. This is the same reason carbon storage is significantly decreased by the conversion of old forests to fast-growing young forests. There is not a culmination of mean annual carbon increment, and even if there was, it is critical that we prioritize carbon storage now, when impacts on climate change will have the most impact, rather than putting it off into the future. **(Ecotrust)**

RESPONSE: Agreed. The FPP now prescribes a calculation of leakage based on an assessment of the overall market response to a project activity's reduced harvesting. Specifically, it is assumed that 20 percent of carbon emissions avoided through reduced harvesting at the project site are shifted elsewhere, due to the increased harvesting on other lands needed to meet market demand for forest products.

255. First paragraph, last sentence: "Project developers must account for leakage by reviewing increases in harvest data for the entity." We suggest that this would be better said as "review data for increases in harvest." **(PFT)**

RESPONSE: Noted. This sentence has been removed.

256. [In reference to chart on page 27]: The second step described in the upper option under "Increasing Average Harvest Age of Commercial Species" is still unclear as how to apply. It reads as if one would multiply 2% times the number of years that the stand is past CMAI, but we understand from CAR that is not the intent. From our understanding of how this would be calculated this box should be reworded to say something like: "In each year beyond the culmination of mean annual increment, multiply 2% by the current inventory. This is assumed to be the annual sustainable harvesting level that has been shifted elsewhere." **(PFT)**

RESPONSE: Noted. The chart has been removed. The FPP now prescribes a calculation of leakage based on an assessment of the overall market response to a project activity's reduced harvesting. Specifically, it is assumed that 20 percent of carbon emissions avoided through reduced harvesting at the project site are shifted elsewhere, due to the increased harvesting on other lands needed to meet market demand for forest products.

257. If projects that reduce harvest rates reduce timber output by an estimated 2% compared to sustained yields, then only a portion of that amount should be assumed to "leak" to other properties. Leakage estimates have ranged from less than 10% to over 90% (Murray, Brian, Bruce McCarl, and Heng-Chi Lee. 2003. Estimating Leakage from Forest Carbon Sequestration Programs). If 2% is set as a default leakage discount, it should be permissible for projects to provide their own alternative leakage analysis based on unique characteristics of their project. **(WS)**

RESPONSE: Noted. The chart and use of the concept of culmination of mean annual increment to determine leakage is no longer required. The FPP now prescribes a calculation of leakage based on an assessment of the overall market response to a project activity's reduced harvesting. Specifically, it is assumed that 20 percent of

carbon emissions avoided through reduced harvesting at the project site is shifted elsewhere, due to the increased harvesting on other lands needed to meet market demand for forest products. This is a default value that will be applied to all projects. The Reserve may adjust leakage rates over time to take into account changes in market conditions, or more detailed data and analysis for specific regions.

258. We question the assertion that culmination of mean annual increment always defines the optimum forest stocking for carbon management. This rule-of-thumb fails to reflect non-live-tree pools, the effects of post-harvest residual stand volumes or uneven-age vs. even-age management, or the direct and indirect emissions from wood that is removed from the forest. However, that statement does not materially affect the protocol requirements and could easily be removed from the protocol text. **(WS)**

RESPONSE: Noted. Please see response to Public Comment #258.

6.3 Avoided Conversion Projects

259. Regarding the disparity in value, we strongly believe that the threshold of 40% is too high. This value has been increased from 25% in the previous protocol; what is the justification for this increase? A 40% disparity in value may exclude otherwise eligible projects, and should be lowered and expressed as a percentage of current interest rates. **(TGC)**

RESPONSE: Noted. A revised threshold of 40% was chosen for the FPP because of the need to establish a hurdle for a threat of conversion that parallels actual market behavior. The work group determined that 25% was not an accurate predictor of decisions regarding conversion when considered with other requirements. The 40% disparity in value requirement more accurately predicts what is required for a forest land owner to make the decision to pursue forest conversion complete with the associated financial risks. The Reserve will continue to research these values and update them when credible research is conducted to inform this decision.

260. In order to ensure that the criteria for identification of the likelihood of conversion in the appraisals are consistent for all project types, the mandatory criteria should be clearly listed in the FPP. The protocol currently lists “Additional Criteria”; it should be made explicit that these criteria are mandatory and must be included in the appraisal. **(TGC)**

RESPONSE: Agreed. The language has been revised accordingly.

261. The workgroup needs to justify the use of "at least 40%" for the disparity in value section. By placing a requirement of assessing disparity in value on a potential development site, the registry is creating more costs to landowner participation. The appraisal will provide a value which is comparable to other site sales in the area. A development analysis will also required to determine the difference between current land use value and fair market value of the proposed conversion, significantly increasing the cost of the appraisal. This section should also include some mechanism to evaluate location efficiency, as was included in the first version of the updated protocol. The current methods are very general, and do not take in to account the many variables that have effect of the value of development. **(SBC)**

RESPONSE: Noted. A revised threshold of 40% was chosen for the FPP because of the

need to establish a hurdle for a threat of conversion that parallels actual market behavior. The work group determined that 25% was not an accurate predictor of decisions regarding conversion when considered with other requirements. The 40% disparity in value requirement more accurately predicts what is required for a forest land owner to make the decision to pursue forest conversion complete with the associated financial risks. The "Additional Criteria" required in the appraisal include 1) proximity to metropolitan area, 2) proximity and access to services, 3) population growth within 180 miles, and 4) cost of services as elements to substantiate the likelihood of the proposed conversion. This is reasonable coverage of the variables that affect the value of development. The Reserve will continue to research these values and update them when credible research is conducted to inform this decision.

262. The use of the "Secondary effects" table (which is not labeled) is overly general, and impossible to apply nationally. The protocol aims to simplify the process of quantifying avoided conversion, but results in over-simplification which does not credit the actual benefit to the atmosphere that these projects provide. Degradation of forests for development and agricultural use in the Sierra Nevada is a major issue, and whatever incentives and policies are adopted need to encourage densification rather than sprawl. By heavily discounting these projects, the registry may consider these standards conservative, but they are not reducing any barriers to participation; instead, they are building more. This section of the protocol also should provide more guidance on how to determine the rate of conversion, effects of conversion, and resulting carbon storage over time (to be used for baseline quantification and qualification), to the level necessary to guarantee reasonable estimates that can be accepted by a third□party verifier. **(SBC)**

RESPONSE: Noted. Section 6.3 on Avoided Conversion Projects has been revised with tables to include further guidance on determining the rates and effects of conversion. The process of expanding the Secondary Effects table to include other regions will be an ongoing process.

263. Having just experienced the process of obtaining a qualified appraisal of lands that exceed the slopes criteria I suggest that making the determination of Suitability of Project Area for Conversion be left to the Appraiser. How much of San Francisco would be unsuitable for conversion under the existing Criteria? **(GMR)**

RESPONSE: Noted. Although some exceptions may exist, the slope restriction for land conversion is considered a reasonable physical limitation for determining land eligible for this project type.

264. In Section 6.3 the 40% 'disparity in value' requirement may limit the participation of viable projects. This value seems high given current market conditions, including both the reduced value of real estate and the economic conditions faced by the forestry industry in many regions of the United States. For these reasons an appraisal of the land value may not provide a reasonable indication of the likelihood of conversion. In lieu of this requirement, documentation showing the intent of a developer to convert the land, combined with an assessment of trends within the geographical region (i.e. as discussed under the characterizing and projecting the baseline section) and an assessment of the 'additional' criteria' as listed in the protocol, may be a more appropriate requirement. It is unclear why an appraisal of property subject to agricultural, as opposed to residential or commercial, conversion needs to address 1) proximity to metropolitan area, 2) proximity and access to services, 3) population growth within 180 miles and 4) cost of services. Please clarify or explain why these factors are relevant to agricultural conversion projects. **(Blue Source)**

RESPONSE: Noted. Please see response to Public Comment #260. The language has been revised to clarify that the "Additional Criteria" are not necessary for agricultural conversion projects.

265. Limiting conversion projects by slope and to commercial, residential, and agricultural use only when all types of conversion result in deforestation. **(FLC)**

RESPONSE: Noted. Although some exceptions may exist, the slope restriction for land conversion is considered a reasonable physical limitation for determining land eligible for this project type.

266. The jump from a 40% discount for a 40% price differential between current value and full market value to 100% discount for a 39% price differential is so large that it might influence appraisers of properties near the dividing line to tweak results. **(WS)**

RESPONSE: Noted. The table has been replaced with a formula that removes the 'jumps' mentioned in the comment.

267. The requirements to establish the validity of the threat are overly burdensome. The condition that the proposed conversion must be at least 40% greater than the value of the current land use is arbitrary and arguably unnecessary when combined with additional eligibility criteria. In addition, the requisite documentation, including construction permits, needed to justify the imminent conversion of the proposed project would be extremely costly for a project developer to obtain and would limit participation in avoided conversion projects. **(Equator)**

RESPONSE: Noted. The uncertainties involved real estate developments are high. They encompass the risks involved with purchasing tracts of land, marketing the property, developing the building program and design, obtaining the necessary public approvals and financing, building structures, and leasing, managing, and ultimately selling the developed units. This high level of uncertainty inherent to the business requires a high level of substantiation concerning the likelihood of conversion of the project area. To clarify, projects are eligible to participate based on a risk assessment without having the permits and documentation to demonstrate a site-specific immediate threat.

268. The District wishes to comment on the criteria for avoided conversion projects in Section 6.3 of the Protocol, which allows project proponents to demonstrate that conversion is legally permissible by supplying proof that necessary government approvals were obtained for similarly situated lands nearby. [See public comment submission for footnote reference.] The District strongly supports this provision and believes it is essential to fulfill the intent of making the Protocol available for public lands, especially those near the urban boundary such as regional parks.

Regional park districts must pay fair market value for the properties they acquire. And because these properties surround urban areas, they are at greatest risk of conversion to non-forest uses, most often residential development. The conversion of such undeveloped lands is a multi-step process that often requires successive approvals from multiple governmental entities. The value of such properties increases sharply with each successive step and/or approval. Once a property-owner secures the approvals necessary to develop the property, it is highly unlikely

that the property will be purchased by a park district or private conservation entity, because the fair market value is too high. Scarce conservation dollars are better spent acquiring larger tracts for which no entitlements have been obtained, because prices are much lower. If the Protocol restricted eligibility to properties where conversion entitlements had already been obtained, it would effectively exclude regional park districts from participating in the carbon offset market, because entitled properties are far too expensive for parkland acquisition. Accordingly, the District applauds the Reserve's acceptance of evidence from similarly situated properties where such approvals have already been obtained.

The District urges the Reserve to remain flexible in how it evaluates the legal permissibility of conversion, especially for lands situated near urban areas where population growth and market forces fuel continuous urban sprawl that consumes forestlands and eliminates vital carbon sinks necessary to address Climate Change. The District appreciates the opportunity to comment on the Protocol and looks forward to participating in the protocol development process in an ongoing manner. **(East Bay)**

RESPONSE: Noted.

269. Given the increasing credibility of appraisals in the valuation of conservation easements, it is a reasonable approach to accept the difference between use value and market value as evidence of conversion pressure. This approach will, however, restrict the ability of smaller properties to offer projects, as appraisal costs are significant and are subject to economies of scale. Property owners who donate conservation easements, as opposed to those selling easements or land to non-profits or government entities, may not require an appraisal as part of the process of long-term protection. Consideration should be given to the possibility of aggregating avoided conversion projects within a uniform real estate market that might be covered by a joint appraisal. **(WS)**

RESPONSE: Noted. The Reserve will continue to look for methods that allow small landowners to participate without reducing project credibility.

270. Characteristics that affect likelihood of development might vary regionally – development on steep slopes and ridgelines, for instance, is common in mountain resort areas. **(WS)**

RESPONSE: Noted. Although some exceptions may exist, the slope restriction for land conversion is considered a reasonable physical limitation for determining land eligible for this project type.

271. The 3.6% leakage risk would represent the likelihood that any forestland in the area would be developed in a given year. This leakage assumption, like the harvest leakage assumption, essentially assumes 100% leakage over time (in other words, the project does not succeed in lowering the forest conversion rate in its region). CAR should remain open to more precise leakage estimates in the future. **(WS)**

RESPONSE: Noted. The leakage rate is applied only to the net increase in carbon stocks relative to the baseline in each year. The formula has been clarified in the final version of the protocol. It will not lead to a result of 100% leakage over time. The leakage assumptions for Avoided Conversion Projects will be refined with further research and

6.3.1 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources

272. This graph needs to be expanded to include all states/US affiliates, or state that the table is an example of how to determine leakage value. **(TGC)**

RESPONSE: Agreed. The Reserve will continue to expand the Secondary Effects table to include other regions.

6.4 Quantifying Total Net GHG Reductions

273. With all the difficulty and complication that it entails, it would be better to pay carbon credits on the lower limit of the confidence interval that results from whatever sample is installed. You are assured that at least that volume is involved, no penalty comes from guessing variability incorrectly, the inventory person has more flexibility and more control over their expenses, and everyone is better off.

The idea that "you get paid for the minimum you prove is there", rather than an average with sampling errors around it would be an advantage to everyone. If someone really wants a maximum payment they have to pay more for their inventory, and that would be their choice. Standards are always difficult to set, particularly in the early stages of a process, and this would protect everyone involved as well as keeping the process simple. Sampling costs and complications are often pumped up too high because of risk and anxiety at all levels, and this would certainly decrease it for everyone.

I would suggest that you use the t=1 or 68% level for the confidence interval (or better yet, the t=0.7 or 50% confidence level), which is more realistic and more interpretable as well. **(Iles)**

RESPONSE: This is an interesting suggestion that will be considered in future updates based on experience gained with the current system.

274. The penalty for the statistical error rate is unwarranted. If, for example, the calculated sampling error is 12%, then the true value will be found within 12% of the stated value. It might be up to 12% less, but it is equally likely to be up to 12% more. If you must impose a penalty, it should be no more than the stated 12% of the sampling error. **(Moore)**

RESPONSE: Noted. The work group developed the system to ensure project benefits are not overstated. Modifications to this approach will be considered in future updates if experience warrants it.

275. It appears that the figures in Row (or Line) #29 were obtained by multiplying Row #26 times 0.675. I think Row #26 should be multiplied by 0.47 to get the right values in Row #29. **(Collins)**

RESPONSE: Noted.

276. The example given in the table on pages 33-35 appears to have an error in it. Step 29 shows Total Annualized Carbon in Harvested Wood Products remaining in use of 0.9 tons in years 2 and 3. This is equal to 47% of the total harvested wood products (2.0 tons) instead of 47% of the harvested wood products adjusted for mill efficiency (1.4 tons). **(New Forests)**

RESPONSE: Noted.

277. The text and equations for calculating total net GHG emissions still make reference to the need to subtract confidence deductions from the estimates of actual carbon stocks to account for sampling error. We suggest that the text and equations be revised to delete any references to confidence deductions for sampling error, since this is now included in the determination of the buffer pool contribution for each project, and would otherwise result in a double deduction for sampling error. **(ES)**

RESPONSE: Noted. The confidence deduction has been restored as a component of the calculation, and is no longer a part of the buffer pool contribution.

278. Apparent double penalty for confidence deductions: Should the formula for calculating quantified reductions each year include the application of confidence deductions since the confidence deduction is also applied as part of the buffer pool contribution? **(PFT)**

RESPONSE: Please see response to Public Comment #277.

279. It is difficult to evaluate the cost burden posed by verification on landowners without knowing what will be included in the verification protocol. The verification process appears to emphasize a review of inventory procedures rather than an office review of modeling procedures. As projects approach their 100-year commitment period, forest growth rates will typically decrease and the number of carbon credits yielded over time will therefore decrease as well. It does not make sense to require expensive verification of field inventories over short time scales (e.g., every year or even every five years) if growth rates are too slow to provide enough revenue to cover verification costs. We are concerned that the costs of verification later on in the commitment period may outweigh potential income from carbon credits, particularly for landowners starting with older forests or smaller properties. The intervals for repeated verification of field inventories should consider the expectation of lower growth rates as the project's forests age. Clear guidelines for what is required by an "annual verification" should be stated in the draft protocol, or at the very least in the developing "verification protocol." **(Ecotrust)**

RESPONSE: Noted. These suggestions have merit and will be considered in the development of the Forest Verification Protocol. This protocol is underway at the Reserve and is expected to be completed shortly.

280. We like the addition of the statement: "The project modeling is a good faith estimate of projections at the project's initiation and is not verified." However, it seems most appropriate to verify the project modeling at project initiation but generally not subsequently. We suggest changing language to something like "… at project's initiation and is not verified after initial verification unless there is a material change in stocks or project activity." **(PFT)**

RESPONSE: Noted. The statement refers to discretionary modeling of a project's actual carbon stocks at the outset of a project. Since GHG reductions and removals are only credited based on verified actual carbon stocks, not modeled projections of actual carbon stocks, it is not necessary to have such modeling verified, even after a material change in conditions.

281. Under description of "CDy" and "CDy-1" should refer to Appendix C, not Appendix A. **(PFT)**

RESPONSE: Agreed. This reference has been corrected.

282. [Example of Annual Calculation Activities table, pg. 33] Under project activity and baseline stocks, Dead Standing Carbon includes stumps. There is no other guidance or mention of stumps in the Protocol, so they should not be referenced here as it is not the intent to require measurement of stumps. However, stumps that meet the downed wood minimum size specs (e.g. old growth redwood stumps) may be noted as eligible for measurement under the dead wood sampling specifications on page 53, table A.3.1 . **(PFT)**

RESPONSE: Agreed. Further clarification has been added to indicate that standing and lying dead wood does not include stumps. Stumps fall into the class of dead material identified as 'litter' and are therefore and optional pool for measurement. Stumps are not expected to be managed differently in baseline activities and project activities and will not, therefore, yield reductions. Quantification of any pool is required if it is removed as part of a site preparation activity.

283. [Example, pg. 33] Wood products stores should be subject to an uncertainty discount. Although the initial roundwood quantity is measured, estimation of the amount remaining in year 100 is highly speculative and uncertain. CAR response to TWS comments on the wood products draft asserts that this is a conservative assumption since underestimating the harvested wood baseline is more likely than overestimating the project harvested wood pool. What is the basis for drawing this conclusion? **(WS)**

RESPONSE: Forest projects may either increase or decrease wood-product production relative to baseline levels. A discount applied to carbon in wood products would err on the side of underestimating this carbon pool. This would result in conservatively underestimating total GHG reductions/removals associated projects that increase wood-product production, but it would lead to overestimating total GHG reductions/removals for projects that reduce wood-product production, because baseline levels of wood-product production would be undervalued. In order to balance these possible outcomes, no discount is applied to carbon in in-use wood products.

7 Ensuring Permanence of Credited Emissions Reductions

284. The conceptual change from Conservation Easement to a Buffer Pool is acceptable.

One of the most substantial amendments is the change in permanence requirements from a Conservation Easement to maintenance of a carbon stock buffer pool. The size of the buffer pool is determined by the risk of reversal from biologic and non-biologic causes and is largely patterned after concepts developed in the international forest arena, e.g. the "VCS" Voluntary

Carbon Standard.

Although a permanent Conservation Easement continues to provide the highest level of protection against loss of carbon stocks from land□use conversion, there has been an evolution of international thinking on permanence since the original passage of SB 812 (Sher) in 2002 requiring the Easement. The Buffer Pool incorporates other risks beyond land□use conversion, and better harmonizes with the international approach to permanence. **(Tuttle)**

RESPONSE: Noted.

285. SBC agrees with the American Forest and Paper Association that the commitment to demonstrate compliance with the protocol for 100 years is a major barrier to participation. In our experience with developing projects, landowners are extremely hesitant to entering into a 100 year contract with CCAR, who simply cannot predict what changes will result from future technologies, climate changes, and policies surrounding climate and carbon. Marland et al 2001 (references at end of comments) describes a system whereby emission credits could be rented rather then sold. CCX only requires landowners to maintain enrolled land for at least 15 years. VCS allocates buffer pool credits depending on the risk of reversal, but provides no time requirement for permanence. By reducing this requirement, CCAR would also gain the ability to host VCU's, since this issue is one of the few keeping the two registries from being interchangeable from both directions. SBC would like to reiterate the importance of revisiting and reducing these permanence requirements, as several other registers have done resulting in successful projects that are still credible. **(SBC)**

RESPONSE: Noted. Under the terms of the protocol, forest owners may terminate a project prior to the end of their 100-year commitment on the condition that they compensate by retiring CRTs equal to the total number that was issued to the project. Structurally, this allows for the kind of credit rental concept proposed in Marland et al. The difference is that the Reserve leaves it up to buyers and sellers to negotiate rental payment terms and transfer liability to buyers for replacing CRTs upon project termination (for administrative and policy reasons, it would not be feasible for the Reserve to assign this liability to buyers by default). As indicated in the Marland et al. paper, 15 years is an inadequate period for establishing permanence (please see response to Public Comment #28). The Reserve's understanding is that the buffer pool contributions required under the VCS are based on estimating the risk of reversal over a sufficiently long time period (e.g., 100 years). The approach is therefore substantively similar.

286. The term of the projects should be variable. 100 years is a theoretical life. Some countries or cap and trade systems may allow a shorter contract period. There should be an allowance for projects that have shorter lives. 100 years is a very long time to honor a contract/agreement with the Registry, and a number of landowners could hold a property over this time and be subject to an agreement based on conditions in the distance past. Without a clause for a buyout of an agreement, the financial gain achieved by selling carbon credits early in the term and the burden of the long term costs for monitoring and certification for 100 years will make properties unsellable due to these high costs and is a disincentive to create a project. **(Kent, Moore)**

RESPONSE: Noted. Please see responses to Public Comments #27 and #28.

287. This section needs to specify how withdrawals from the buffer pool (both project specific and collective) will be made up. **(NRDC)**

RESPONSE: Noted. Section 7 has been revised to provide further explanation of how the buffer pool will operate.

288. The provision that would allow for the specification of a new baseline needs to be deleted or moved to the section on baseline determination and clearly specified. **(NRDC)**

RESPONSE: Noted. Section 7 has been edited to clarify the disposition of projects following a reversal (see Section 7.4 in the final version of the protocol).

289. I think that if the guidelines were lowered to a shorter term of enrollment, more landowners would be interested. CCX is getting great response by doing shorter term lengths and opt out's every two years. Without the landowners and their property/tree's we aren't doing any good to the environment. **(LOG)**

RESPONSE: Noted. Please see response to Public Comment #285.

290. Broken contract replacement carbon offset credits should be assessed on an actual damages basis and restricted to the price of sale rather than current market prices. **(FLO)**

RESPONSE: Noted. Because monitoring and verification cease once a project terminates, the Reserve has no way to determine whether a project's carbon stocks remain intact, and therefore whether CRTs issued to the project remain valid. The protocol therefore assumes that all carbon stocks are reversed upon a project's termination. To compensate for this, the protocol requires the owners of terminated projects to retire a number of CRTs equal to the total number issued to the project over the preceding 100 years (with the exception of IFM projects that are terminated early; please see response to Public Comment #223). This ensures that the Reserve's program is made whole, and guarantees that every CRT still in circulation, or retired against an emissions obligation, remains valid according to the protocol's definition of permanence (i.e., 100 years). If forest owners do not have sufficient CRTs remaining in their accounts at the time of termination, they may negotiate the purchase of CRTs from other projects.

291. We support the use of a buffer pool to mitigate the risk of reversals due to natural disturbances. We note that the amount of required contributions to the buffer pool will need to re-assessed regularly by CAR as experience grows. **(PFT)**

RESPONSE: Agreed. The buffer pool contributions will be refined on a regular basis with the addition of research and experience.

292. We suggest including language that recognizes reversals do occur from time to time as a part of planned project activity (as noted in Section 3.5.2 and elsewhere). For example, planned timber harvests on small IFM project sites may cause reversals. Since these reversals are planned, including language that recognizes this and a requirement that developers of such projects accommodate for this situation by maintaining a reserve of unsold CRTs equal to or greater than the anticipated reversal amount. . **(PFT)**

RESPONSE: Agreed. This is acknowledged, for example, in Section 3.9.3 of the final

protocol. The protocol imposes a requirement on forest owners to compensate for intentional ("avoidable") reversals; it is the responsibility of forest owners to ensure that they have sufficient CRTs available to meet this obligation (which they may do, for example, by retaining CRTs previously issued, or by purchasing CRTs from other projects).

7.1 Definition of a Reversal

293. For clarity, the sentence "Project owners must demonstrate, through annual reporting, that any increase in carbon stocks relative to baseline levels that results in verified reductions must be maintained over time." should be changed to "…that results in verified reductions will be maintained over time". **(TGC)**

RESPONSE: The language in this section has been edited for clarity.

294. For clarity, the sentence "If the difference between project and baseline carbon stocks decreases from one year to the next that results in a loss of verified reductions, the Reserve…" should be changed to "…decreases from one year to the next, resulting in a loss of verified reductions, the Reserve…" **(TGC)**

RESPONSE: The language in this section has been edited for clarity.

295. [Section 7.1] "If the difference between project and baseline carbon stocks decreases from one year to the next that results in a loss of verified reductions, the Reserve will consider this to be a reversal in credited reductions." Well…. umm….your going to have fluctuations in carbon stocks from year to year due to periodic harvests, but as long as the harvests don't remove more than what will grow back by the next harvest in that area, I wouldn't think that would be considered a reversal. Maybe I'm not understanding this correctly. **(Collins)**

RESPONSE: Reductions in net carbon stocks due to planned harvests are treated as reversals. Please see response to Public Comment #292.

7.2 Insuring Against Reversals

7.2.1 Establishing a Buffer Pool Account

296. The Reserve should address the end of life scenario for credits in the buffer pool.

The buffer pool concept is one the Delta understands well and wholeheartedly supports. However, the Reserve does not address the "end of life" scenario for offsets in the buffer pool. What happens to the offsets at the end of 100 years? Are they returned to the landowner for sale on the market or does the landowner simply lose title to the buffer pool offsets? The Reserve must provide a scenario for the treatment of buffer pool offsets at the end of 100 years.

In lieu of a 100-year buffer pool, Delta suggests a 5-year cycle, upon which the project risk rating revised and all remaining offsets in the buffer pool are released to the landowner or project developer for sale on the market. A 5-year cycle, where risk is reevaluated and offsets

are released to the landowner, provides a financial incentive for a landowner to reduce future risk. **(Delta)**

RESPONSE: Noted. These suggestions have merit and will be considered in updates to the protocol.

297. Weyerhaeuser appreciates the detailed and innovative approach, yet still has a number of reservations that may be easily solved.

First, there is no need to contribute to buffer pool based on risk of intentional reversals (conversion, over-harvesting) as these would be considered the result of "gross negligence" and would require the purchase of conservation reserve tons (CRTs) from outside the buffer pool, per section 7.2.2. The following contribution types should be removed from the risk assessment Financial Failure, Illegal Forest Biomass Removal, Conversion, and Over-harvesting.

Second, there should be a periodic assessment of the entire Registry's reversals and the buffer pool should be adjusted accordingly. This will ensure that the Registry is not "over-charging" for reversal insurance and similarly will ensure that the Registry is able to give the buffer pool integrity in the event that the pool is overdrawn. **(WC)**

RESPONSE: Buffer pool contributions based on the risk of intentional ("avoidable") reversals are required to ensure that the Reserve will have the capacity to compensate for such reversals in instances where it is unable to obtain compensation from the forest owner, e.g., where a forest owner terminates a project and declares bankruptcy. The Reserve will periodically assess and update buffer pool contribution requirements over time as it gains experience with the program.

298. We feel that the "insurance pool" included in the Protocol will provide the appropriate protection for landowners whose projects are affected by fire or other natural disasters. **(RCRC)**

RESPONSE: Noted.

7.2.2 Compensating for Reversals

299. If a project is forced to purchase CRTs from outside of the buffer pool due to reversals caused by gross negligence, what additional penalties might the project developer be subject to? These additional penalties should be written into the PIA so that that the Reserve has the authority to levy any penalties it may deem appropriate. **(TGC)**

RESPONSE: Noted. The remedies are now spelled out in the Project Implementation Agreement. The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

300. The sentence "If a project is not terminated, the project can begin creating reductions immediately through project activities…" is unclear. Does this refer to a project where reductions occurred, but the reductions did not reduce the standing live forest stocks below the standing live forest stocks established in the baseline? If so, this should be clarified. **(TGC)**

RESPONSE: Agreed. This language has been edited for clarification (see Section 7.4 of the final version of the protocol).

301. We suggest further clarification of the sources and the circumstances for compensating for reversals. Specifically, it should be made clear whether Project Developers are always responsible for purchasing credits to compensate for reversals if the project's unsold credits and buffer account are not sufficient; or whether this obligation applies only in the event of gross negligence. We consider that the latter scenario is more consistent with the concept of "insurance" and a buffer pool. Also, we recommend further description of the Reserve's process for monitoring and taking actions to ensure the adequacy of the Reserve's overall buffer pool. An understanding of this process will help to build market confidence in this mechanism for ensuring the permanence of emission reductions that are credited by the Reserve. **(ES)**

RESPONSE: Noted. The language in this section has been revised and expanded to provide further clarification on these issues. Unintentional ("unavoidable") reversals will be compensated entirely through retirement of CRTs in the buffer pool. For intentional ("avoidable") reversals, landowners must retire a number of CRTs equal to the size of a reversal in CO_2-equivalent metric tonnes. The buffer pool will not be used to compensate for intentional reversals.

302. The methodology for compensating reversals now places the burden on the project developer to replace reversed tons first through unsold CRTs, then through buffer pool CRTs. Language should be inserted to clarify the difference between the individual project's buffer pool and the collective buffer pool of all forest projects in the Reserve. This ordering should then specify that reversed tons will first be pulled from the individual project's buffer pool prior to pulling from the collective buffer pool of forest projects in the Reserve. The way this text is currently written, it is not clear which buffer pool is being referred to (individual or collective). Although it seems unlikely that a single projects reversal's could overwhelm the entire collective buffer pool, language should be inserted here to require the replacement of any remaining reversed tons beyond the capacity of the collective buffer pool through the purchase of other CRTs regardless of whether the reversal is intended or not. **(Ecotrust)**

RESPONSE: Noted. Please see response to Public Comment #301. The buffer pool will consist of a single account managed by the Reserve on behalf of all forest projects.

303. Only reversals due to significant natural disturbances should be allowed to compensate for loss through buffer pool withdrawal. We urge CAR to incorporate all voluntary reversals not planned as part of project activities (especially including voluntary early termination of projects) be treated on the same basis as reversals due to gross negligence. **(PFT)**

RESPONSE: Noted. Please see response to Public Comment #301.

304. In addition to treating reversals due to gross negligence differently from unintentional reversals, it is critical that reversals due to intentional harvest activity also be treated differently from unintentional reversals. This seems to be the intent of the revised protocol, but the wording in this section could be clearer. Permitting projects to cover intentional reversals by drawing on the reserve would encourage behavior that amounts to burning down an insured building to collect an insurance settlement. The text on p. 39, 9.1 states that the PIA will determine how intentional

reversals are treated, but some general principles should be stated here. Requiring more than a 1:1 compensation for intentional reversals is appropriate to discourage projects that may seek to game the system by maintaining projects only as long as they support management that is already financially attractive. **(WS)**

RESPONSE: Noted. Please see responses to Public Comments #222 and #301.

305. The Reserve should set a minimum acceptable balance to be maintained at all times. Widespread reversals caused by a bad fire season or pest outbreak could easily deplete this pool. The Reserve should be authorized to purchase additional offsets or emissions allowances to replenish the pool, and assess projects for this cost as a normal cost of risk insurance (e.g. premiums for flood insurance may rise in the years after a major flood event). Authorizing emissions allowance purchases as a fall-back (assuming regulations are passed) will go a long way to improve confidence in forest offsets. **(WS)**

RESPONSE: Noted. The Reserve has determined contribution rates that it believes will ensure that the buffer pool is sufficiently capitalized. The Reserve is also in the process of securing reinsurance for the buffer pool in case of a catastrophic loss.

7.2.3 Other Insurance Options for Reversals

306. We applaud the potential addition of alternative insurance options in the FPP. However, if projects opt to use third party financial insurance options to hedge against reversals, a minimum contribution to the buffer pool should still be required to prevent a failure of the buffer pool system. **(TGC)**

RESPONSE: Noted. The Reserve is in discussions with insurance companies that may add additional options and further efficiency to the administration of the buffer pool.

307. The property owner is being required to absorb a disproportionate amount of the risk in the venture. The FPP encourages a management strategy of overstocking to achieve “additionality” and mitigate “leakage”. This creates an environment at high risk for wildfire and disease. To mitigate this, the property owner is required to disallow 20% of his carbon resources to provide a risk buffer. Wouldn’t it make a lot more sense to let him manage his property for the health of the flora and allow him to sell the overgrowth to “carbon-neutral” biomass-fueled generation plants? California is currently losing the biomass capability it has because the costs of collecting and transporting the chips is too much. **(Moore)**

RESPONSE: Noted. With respect to biomass fuels, please see response to Public Comment #188. The protocol recognizes the value of forest management activities that reduce fuel risks by allowing a reduced contribution to the buffer pool.

308. It is also not common practice for the seller to insure a product after purchase. If I buy a house, I buy its insurance policy. When I buy a car, I buy its insurance policy. So why am I providing the insurance when someone else is buying my carbon rights? **(Moore)**

RESPONSE: To the contrary, it is quite common for sellers to insure a product after it is

purchased. That is the model behind all manufacturer warranties, for example, including automobile warranties. Under the Reserve's carbon offset program, the "product" forest owners are selling is a permanent GHG reduction. Permanence is required in order to make forest carbon offsets equivalent to carbon offsets from other sectors, such as those from methane reductions at landfills. It is not unreasonable to require forest owners to guarantee this essential attribute of the offsets they sell. The Reserve considered other models for assigning liability for reversals, such as obligating buyers to replace CRTs, but rejected them on administrative and policy grounds. Experience with other programs that have tried these models, such as the Kyoto Protocol's Clean Development Mechanism (CDM), has shown that they significantly impair market demand for forest carbon offsets.

7.3 Risk Assessment for Reversals

309. [Section 7.3] "Each year a project is issued CRTs, a risk rating is calculated and a corresponding percentage of CRTs is placed in the buffer pool." So, let me get this straight. You project what your additionality will average over one hundred years and figure a certain percentage in the buffer pool. Then each CRT that is verified has that percentage put into the buffer pool. Okay, I guess I can see that. Every projected CRT with a buffer ultimately needs to be verified with that same percentage buffer. **(Collins)**

RESPONSE: Noted. The language in this section has been edited for clarity. Buffer pool contributions are based on actual verified GHG reductions and removals, not on projected GHG reductions and removals.

8 Project Monitoring

310. There should be a clause that the protocols can be quickly adapted to new carbon measurement technology. Lidar is showing promise and is much less expensive for monitoring and certification and may actually be much more reliable than field measurements which rely on numerous assumptions. Lidar would certainly be more consistent and less biased by sampling methodologies. I suggest the Registry keep Lidar on their screen to include as measurement tool. If Lidar proves effective a cooperative effort between landowners to have their properties flown on a periodic basis would keep costs down, and organizing and managing such flights should be the responsibility of the Reserve. **(Kent)**

RESPONSE: Noted. New carbon measurement technologies for initial inventory work and monitoring are expected to be incorporated over time with additional research and experience. There are no limitations in the protocols on the use of new and improved methodologies. The data provided must be able to demonstrate a sound inventory by species and be able to be projected using growth and yield models. The methodology must also be verifiable. The Reserve will not assume responsibility for developing project baselines or conducting monitoring exercises on behalf of a project developer. The Reserve does require that the equations soon to be published on the Reserve's website be used to quantify inventory estimates.

8.1 Crediting Period and Required Duration of Monitoring Activities

311. The monitoring requirements for the 100 year forest carbon projects should be developed to minimize the disparity between expected project revenues and the long-term expenses of monitoring. Landowner participation, in part, depends on the financial feasibility of project development which will be heavily influenced by monitoring requirements. **(Equator)**

RESPONSE: Noted. Monitoring and verification requirements have been clarified in the final version of the protocol. Annual monitoring reports are required and must undergo a desk-review by verifiers. CRTs may be issued based on annual desk reviews. Verification site visits are required every six years. The Reserve will consider ways to streamline monitoring and verification requirements over the long term as it gains experience with the program.

312. There seems to be some confusion over whether projects must monitor for 100 years from the time the first reduction achieved by the project is measured and reported, or from the time the last reduction is measured and reported. Suggested wording: "The Reserve requires all forest projects to ensure the project's CRTs are sustained for 100 years from the year in which the last project reduction is measured and reported." **(WS)**

RESPONSE: Noted. The requirement has been clarified in the final version of the protocol. Specifically, Section 3.4 states that "Forest Owners must monitor and verify a Forest Project for a period of 100 years following the issuance of any CRT for GHG reductions or removals achieved by the project. For example, if CRTs are issued to a Forest Project in year 99 following its start date, monitoring and verification activities must be maintained until year 199."

8.2 Annual Monitoring Requirements

313. Once the Forest Verification Protocol is released the periods for complete field reviews should be re-written into the Forest Project Protocol. The cost associated with complete field review may be the determining factor for some landowners/Project Developers and should be made very clear. **(TGC)**

RESPONSE: Noted. The final version Forest Project Protocol requires site visit verifications at least once every six years (Section 10.2). Verification also includes verifier oversight of annual monitoring in the interim years between site verification. CRTs may be issued for GHG reductions or removals reported in verified annual monitoring reports. The Reserve will consider ways to streamline monitoring and verification requirements over the long term as it gains experience with the program.

314. This section refers to a periodic monitoring requirement. Has periodic been defined? Weyerhaeuser believes that annual reporting of model results combined with a field "true-up" every 10 years would balance credit assurance with project efficiency. Ten years is the general time period in which forest inventories are updated. **(WC)**

RESPONSE: Noted. Please see response to Public Comment #313.

315. The extent of the survey needed to prove that the property owner has the carbon he claims is much too expensive. Our existing timber cruises are not allowed, since they typically don't count every downed branch and oak sapling, yet the entire system still relies on statistical sampling, just like a timber cruise. After a certain sampling point, the numbers counted will provide a reasonably accurate portrait of the landscape. The statistical timber cruise has been used successfully for decades for both management and harvest operations. There is no reason why people like the UC Extension foresters can't put together a set of constant factors to be multiplied into an existing timber cruise based on terrain type to produce an equivalent carbon count. This would save the property owner tens of thousands of dollars over redoing his cruises to meet FPP requirements. If CAR finds this method unpalatable, then they can low-ball the constants slightly to ensure the carbon stated is really there. **(Moore)**

RESPONSE: Noted. Accurate carbon inventories are necessary to ensure carbon offset credits are issued for real GHG reductions and removals. An accurate inventory is particularly important for baseline carbon estimates. Low-balling a baseline inventory using standard discounts could result in over-crediting of GHG reductions if inventory methods are subsequently improved over the course of the project. The Reserve will consider ways to streamline inventory requirements as it gains experience with the program.

316. I suggest that Conservation Easement monitoring be include as a sufficient substitute. **(GMR)**

RESPONSE: Noted. The Reserve's verification process requires that an approved third-party verification body (listed on the Reserve's website at www.climateactionreserve.org) review and assess reported data to confirm that the forest owner has adhered to the Reserve's reporting protocols and has compiled GHG inventories accurately each year. Verification of inventories and growth and yield models requires professionals with appropriate training.

317. The draft FPP makes references to the FVP and the plan to publish revisions within 90 days of the adoption of the FPP. We note that the current Reserve Program Manual calls for initial verification of all projects must occur within 30 months of listing with the Reserve (section 2.4.2). We also note that the FVP specifies that verification shall involve reviewing the project's forest carbon inventory. For reforestation projects, it may not be practical or cost-effective to undertake a forest carbon inventory for at least 10 years, due to the slow growth of trees (and small amount of biomass) in the initial years after planting. We therefore suggest, for purposes of annual reporting and for verification, that reforestation projects are allowed to use data from the initial planting as inputs to those models approved in Appendix B for purposes of estimating forest carbon stocks prior to the initial forest carbon inventory. **(ES)**

RESPONSE: Noted. The final protocol allows reforestation projects to defer inventories and verification until planted trees have grown sufficiently (as determined by the forest owner). Credits will not be issued until an inventory is completed and verified.

318. We would propose clear requirements for annual third party review, and would suggest that strong consideration be given to reducing verification costs by providing more intensive verification review every five years and somewhat less rigorous verification on an annual basis. The ultimate goal in developing projects should be to reward land managers for making good choices rather than providing a lucrative income stream for third party verifiers. The CAR should

also consider a combination of inventory reports and remote sensing to provide comfort that carbon stocks are in place without expensive field verification where appropriate. **(Ecotrust)**

RESPONSE: Noted. Please see response to Public Comment #312.

319. Annual verification and reporting of the project's GHG reductions or net CO_2 reductions are excessive and costly. **(FLC)**

RESPONSE: Noted. Please see response to Public Comment #313.

8.2.1 Annual Monitoring Report

320. In order to determine how reversals are treated, the annual report should state whether any disturbance was planned (requires compensation by the individual project) or unintended (may be eligible for compensation through the buffer pool). Reporting of unintended reversals should include documentation that the event was an act of nature outside the control of the project, just as an insurance claim would require an investigation to protect against insurance fraud. **(WS)**

RESPONSE: Noted. This requirement has been added under "Annual Monitoring Reports" (now Section 9.2). In addition, the protocol requires that all reports that reference carbon stocks must be submitted with the oversight of a Professional Forester.

8.2.2 Field Review

321. The rational for Verifiers checking development areas in proximity to a project's area is not clearly defined or understood. Verification activities should be focused on the activities of the project, not the activities of the project's neighbors. Again this will add to overall project costs.

Recommendation: Remove or clearly define the clause "Check development activities in proximity to project area." **(NCRM)**

RESPONSE: Noted. Reporting requirements for each project type have been clarified; this language was removed.

8.3 Rationale for Verification

322. The burdens of verification have been placed on the property owner, when they belong with either the purchaser or the marketer managing the carbon trade transactions. In all the large business transactions I have participated in, buying real estate and so forth, it was always incumbent on the buyer to pay for his own validation of the correctness of the contract he was entering. It seems fishy for the seller to pay for the verification of his own product. **(Moore)**

RESPONSE: Noted. The seller of a carbon offset credit must demonstrate that the credit is backed by a permanent GHG reduction or removal. Permanency is a basic "specification" of the commodity being sold. Verifying the long-term storage of carbon is therefore part of the cost of producing carbon offsets from forest projects. Because an offset credit may change hands many times before it is finally retired in order to offset

emissions, it would be impractical, if not logistically impossible, for offset buyers to conduct verification activities on behalf of forest owners. Buyers will in any case pay for verification costs because these costs will be embedded in the price of offset credits.

9 Reporting Requirements

323. Annual and periodic monitoring and verification requirements obviously have a significant impact on project economics and viability. In particular, requirements for third-party verification of annual monitoring reports, as well as the required schedule for third-party field audits are key. These requirements are not clear in the current draft protocol and will need further explanation and review by stakeholders. **(Blue Source)**

RESPONSE: Noted. Please see the response to Public Comment #313.

9.1 Forest Carbon Inventory

324. As a general comment, an explanation as to the reasoning behind certain carbon pools being either required or optional would be helpful as a means to provide clarification and ensure transparency. **(Blue Source)**

RESPONSE: Carbon pools are required when they represent a high percentage of the primary or secondary effects of project activities. Carbon pools are optional when they represent a low percentage of primary or secondary effects and have high costs associated with their quantification and monitoring. Explanations for why particular pools are required or options for specific project types have been included in the final protocol.

325. The FPP requires that all forest carbon inventory reports that reference biological emissions are submitted with the oversight of a professional forester. While one could interpret that oversight is not required for reports referencing only biological removals, we consider the underlying issue in both cases is the reliability of the forest carbon inventory that has been prepared. A professional forester is defined by the FPP as someone who is "credentialed in jurisdictions that have professional forester licensing laws and regulations". In jurisdictions where there are no professional licensing laws, a professional forester is someone who holds Certified Forester credentials from the Society of American Foresters (SAF). Per the SAF, only 15 states currently have professional forester licensing laws or regulations. It is our experience that there are many biometricians and forest scientists capable of preparing forest carbon inventory reports who are not eligible to become an SAF Certified Forester. For example, most are not eligible because they do not meet certain requirements related to management experience. While management experience is critical to becoming a qualified forest manager, it is not essential for the forest carbon inventory work outlined in the protocol. It should also be noted that not all those foresters meeting the professional forester definition are qualified to oversee the preparation of forest carbon inventories. We recommend deleting the requirement for professional forester oversight when submitting forest carbon inventories. We believe this provision will result in unnecessary costs and will limit the number of technical providers, creating bottlenecks in preparing forest carbon inventory reports. The existing provisions of the FPP, which prescribe the statistical rigor and process for developing forest carbon inventories, and require independent verification by a qualified, third party, are more than sufficient to provide confidence to the market. **(ES)**

RESPONSE: Noted. Please note that Section 9 of the protocol states the following: "The Reserve may evaluate and approve alternative certification credentials if requested, but only for jurisdictions where professional forester laws or regulations do not exist. This requirement does not preclude the project's use of technicians or other unlicensed/uncertified persons working under the supervision of the Professional Forester." These qualifying statements have been added for many of the reasons cited in this comment.

326. This section distinguishes intentional from unintentional reversals, and we urge that distinction apply as well to Section 7.2.2. Text refers to a remedy for intentional reversals as defined in a PIA, but that aspect of a PIA is not clearly described. **(WS)**

RESPONSE: Agreed. Section 7.3 of the final protocol makes clear the distinction between intentional and unintentional reversals (now termed "avoidable" and "unavoidable" reversals). The Project Implementation Agreement has been revised to reflect feedback received over the last three months. The latest version of this agreement can be found on the Reserve's Web Site at http://www.climateactionreserve.org/how-it-works/protocols/adopted-protocols/forest/forest-project-protocol-update/.

327. Required use of a RPF for activities outside the scope of the forest practice act. **(FLC)**

RESPONSE: The protocols require that a professional forester be involved in issues related to the reporting of carbon stocks. This includes reporting on forest inventories and growth and yield modeling.

9.2 Attestation of Title

9.3 Transparency

328. We assume this section is intended to include the kind of summary level data currently required and not detailed inventory data. If not, this ought to be clarified since many landowners consider inventory data to be sensitive and proprietary. **(PFT)**

RESPONSE: Noted. Reporting requirements include summary data of carbon stocks. The inventory data used to calculate the summary reports of carbon stocks is not required.

10 Glossary of Terms

329. The definition of 'Applicable Mean' and 'Common Practice' are very similar. Other than the glossary, the term "Applicable Mean" cannot be found in the revised protocol. Both of these definitions refer to standing live carbon, while the text on page 17 describes Common Practice as being based on live trees including roots, bole, branches and leaves, and not the standing live pool which is synonymous with above-ground.

The definition of 'Applicable Mean' should be removed from the glossary. **(NCRM)**

RESPONSE: Agreed. The definition of "Applicable Mean" is a remnant of an earlier version of the protocol.

330. The 'Common Practice' definition should be revised to refer to live tree carbon as presented on page 17 of the protocol. **(NCRM)**

RESPONSE: Agreed. The definition of "Common Practice" has been revised according to this comment.

331. The Financial and Legal Reference should be defined in the glossary.**(NCRM)**

RESPONSE: Noted. The use of a defined term "Financial and Legal Reference" has been removed from the protocol.

332. The High Stocking Reference should be defined in the glossary. **(NCRM)**

RESPONSE: Agreed. This term has been added and defined in the Glossary.

333. 'Live tree carbon' should be defined in the glossary. Page 26 includes a reference to 'standing live tree carbon'. This should be changed to 'live tree carbon'. **(NCRM)**

RESPONSE: Agreed. These changes have been made to the protocol.

334. Harvest unit, as defined by the FPP, should be listed in the Glossary of Terms. **(TGC)**

RESPONSE: Noted. This term no longer appears in the protocol.

335. "Public Lands" should be defined in the glossary a/terms. It is not clear if this section was developed for federally owned timberlands. **(Arcata)**

RESPONSE: Agreed. This term has been added and defined in the Glossary.

336. The term "sawtimber" is used differently in different forest markets and should be further defined in the protocol. (Blue Source)

RESPONSE: Noted. This term no longer appears in the protocol.

337. The definitions need to be reviewed and revised for accuracy and clarity. The following definitions are particularly problematic.

De minimis
Equity share
Forest management
Historically dominant economic activity
Lying dead biomass
Non-forest use

Primary effects **(NRDC)**

RESPONSE: Noted. The comment does not specify what elements of the definitions are problematic. The definition of the term "Primary Effect" is derived from the WRI/WBCSD *GHG Protocol for Project Accounting*. Other terms throughout the glossary have been reviewed and revised or removed, as appropriate.

Appendix A Developing a Forest Project Carbon Inventory

338. RCRC's main concern with the proposed Protocol is that it considers woody material harvested for use in the energy sector as an emission, rather than taking the entire life-cycle into account. According to the U.S. Energy Information Administration (EIA) (http://www.eia.doe.gov/oiaf/1605/coefficients.html#note2), which bases its recommendations on greenhouse gas accounting methods developed by the Intergovernmental Panel on Climate Change (IPCC), wood, wood waste, and other biomass fuels in which the carbon is entirely biogenic should be assigned an emission factor of zero. If a project exports wood for use as biomass, the Protocol should consider that entire life cycle and at a minimum designate that export as a carbon neutral activity now instead of waiting until it is addressed in the energy sector protocol. Landowners with registered projects should not be penalized for contributing to the development of the biomass industry, particularly considering its potential to replace petroleum and coal-based energy sources in the future. **(RCRC)**

RESPONSE: Noted. Please see response to Public Comment #188.

A.2 Measure Carbon Pools in the Project Area

339. [Table A.2: Carbon Quantification for Dead Stumps and Roots] Dead stumps and roots from previous harvesting activities are not explicitly mentioned in any of the carbon pools listed in Appendix A. A significant quantity of carbon can be stored in dead below ground biomass and this should be an optional pool for forest management projects. **(New Forests)**

RESPONSE: The protocols allow for the accounting of soil carbon as an optional pool. A landowner could choose to include the roots in with the soil carbon pool and include the measurements. Should the landowner wish to include this pool, the baseline calculation will need to include an estimate of the carbon in roots as well.

A.3 On-Site Forest Inventories

340. Example A.3 should show DBH in inches, and total height in feet as described on page 54 and in table A.3.2. **(NCRM)**

RESPONSE: Noted. Project developers may choose to collect their data using the standard or metric system. The Reserve is in the process of establishing the online reporting template that will define the units of the summary reports.

341. Having a 12 year complete inventory, temporary flagging at plot center, and no plot measurements being over 18 years old is a good compromise to permanent plots. The cost of

new forest inventories and permanent plots is a deterrent to many landowners/project developers. Allowing projects with older inventories to enter the Climate Action Reserve gives them the financial opportunity needed to update inventories. Though not all forest inventories include all the required sampling criteria listed in Table A.3.1. re-surveying for some criteria like Herbaceous Understory may be a compromise. **(TGC)**

RESPONSE: Noted. Existing inventories can be used provided they can be verified. The herbaceous understory pool mentioned in the comment is an optional pool.

342. [Step 1] Please clarify what is meant by "permanent plot monumenting" and why permanent plots would be relocated. **(TGC)**

RESPONSE: Permanent plots are not required in the FPP. Monumenting of plots with the use of temporary flagging will allow them to be verified by a third party for a reasonable period of time after they were sampled. Some landowners may find benefits to the use of permanent plots as they can be statistically efficient in certain cases. A landowner who decides to use permanent plots may decide to move them in such a way to ensure the breadth of forest conditions are sampled.

343. [Table A.3.1] Fix formatting at bottom. Unable to read "Management Standards." **(TGC)**

RESPONSE: Formatting of the tables in the protocol has been fixed.

344. [Table A.3.1, pg. 53] The last sentence in the description of the requirement under Lying Dead Biomass in Table A.3.1 is not consistent with the first two sentences. It suggests that material smaller than the specifications listed above shall be considered litter. But the specifications in the first two sentences both indicate that a maximum minimum ("not to be greater than") is required rather than a specific minimum. As such, it seems like the project developer can alter what may have been intended to be considered litter by lowering the minimum specifications applied. **(PFT)**

RESPONSE: Agreed. This table has been edited for clarification.

345. I think you need to revise the statistical test proposed to support the exception to the 12-plot life explained in pages 51-52 of the FPP.

As stated, the Project Developer will always be able to demonstrate that the subsample is not different from the updated inventory, simply by using a small sample size. Small sample size leads to large variance and large variance leads to small t-value with few degrees of freedom.

Small t and few dfe lead to non-significance and "acceptance" of Ho.

One way to resolve this is to specify a different D that is the largest acceptable between subsample and updated inventory to take them as not "biologically significantly" different. Then pose the following:

Ho: the absolute difference between subsample and updated inventory is greater than D.
Ha: the difference is smaller than D and we can then assume they update is good enough.

The rest of the test should be described more or less the same way, except that you have to specify that in order to get the exception, Ho must be rejected with alpha=0.10, and you have to correct the test to be two-tailed instead of one-tailed, unless you want to accept underestimation by the computer model. **(Laca)**

RESPONSE: The language has been updated to indicate that the subsample must have at least 10% of the plot numbers included in the updated inventory

346. Section A.3 of the FPP specifies that forest inventories must use plot data that have been sampled within the last 12 years. Exceptions to the 12 year rule are allowed if it can be demonstrated that the process for updating the inventory, addressing forest growth and harvest, adequately estimates the current inventory with a 90% confidence. In this context, the FPP includes the formulae for the t statistic and the standard error for stock estimates. It will be equally important for the protocol to provide guidance on quantifying uncertainty around change in stock estimates. Permanent plots are likely to be employed by many projects for their greater capacity for change detection. The formula for the standard error estimate for re-measured permanent plots (per statistics developed for Continuous Forest Inventory) is [see comment letter for footnote reference]: [see original comment letter for formula] where is [s_d] the standard error of the difference, [s 2/t1] is the variance at time t1,[s 2/t2] is the variance at time t2, Covar(t1,t2) is the covariance between the t1 and t2 measurements, and n is the sample size. **(ES)**

RESPONSE: Noted. The uncertainty of change in stock estimates is based on maintaining an inventory with high levels of confidence and limiting the useful life of a plot, which ensures inventory estimates are reasonable up to date.

347. Including the potential for the Reserve to grant approval to use regional and site specific allometric equations increases the accuracy of carbon quantification and improves the ability for projects to be implemented nationwide. Also, providing exception to the 12-year plot life where it can be demonstrated that the updated inventory process provides adequate estimates encourages landowner participation by allowing increased flexibility in management decisions. **(Equator)**

RESPONSE: Noted. The approval process of regional and site-specific allometric equations will require review by a state forestry authority (i.e.., a person meeting the definition of Professional Forester who is employed by a state agency responsible for the oversight of forests). The approval process requires that the authority acknowledges in writing that the equation is an improvement. **.**

348. The clarification on resampling the inventory is helpful and provides good detail on how to utilize forest growth modeling and subsampling in lieu of a complete forest inventory.**(Ecotrust)**

RESPONSE: Noted.

349. Table A.3.2 (Page 54) gives some examples of formulas that are being used to calculate biomass weight for bark and live crown for Douglas Fir, Ponderosa Pine and Redwood. It would be good to have specific links listed where we can find the formulas for the other species. I have some concerns about all these regression equations for different components of the trees. For example, the formulas for live crown weight in Douglas Fir and White Fir indicate less weight in

the live crown than in the bark. The formula for live crown weight in Sugar Pine indicates that the live crown weight in a small tree is 10% of its above ground weight but when you get up to a 50-inch diameter tree, the live crown weight is 42% of its above ground weight. If we could find, or come up with factors for each species that would derive bark and live crown weight from the bole weight, that would seem more straight forward. But maybe these regression equations are the best we have right now. **(Collins)**

RESPONSE: Noted. The Reserve is using equations based on advice and consultation with the USFS research stations. These are thought to be the best available at this time. Alternative equations may be proposed and approved, but must go through a review process that includes review by USFS biometricians.

350. Statistical inventory precision is overly conservative and excessively expensive. **(FLC)**

RESPONSE: Noted. The work group continues to make every effort to streamline the process and costs where we can do so without compromising accounting or environmental integrity. The Reserve will continue to solicit feedback for changes to the FPP regarding functionality and ease of implementation and these will be considered in future revisions of the FPP. Research and experience are expected to lower inventory costs over time.

351. [Step 2 – Estimate Carbon in Live Trees from Sample Plots, pg. 54] It appears that the second sentence of second paragraph should state “Appendix H” rather than “the references.” Fifth sentence would be improved by stating, “The bole total cubic foot volume (VOL) is calculated first and then multiplied by the wood density value (pounds/cubic foot) for each species.” **(PFT)**

RESPONSE: Agreed. These items will be corrected in the final draft.

352. We strongly recommend an appendix in place of Table A.3.2 in order to provide the equations for all species written out as is done in Table A.3.2 in order to ensure that all project developers are using the exact same equations as other project developers. Functions listed in the references sited may be interpreted differently since there are different versions of Waddel and Hiserote (2005) in distribution. **(PFT)**

RESPONSE: Table A.3.2 (now Table A.3) is an example of the equations that will be used. The Reserve will provide a list of all available equations as suggested.

353. [Step 3 – Estimate Carbon in Standing Dead Biomass from Sample Plots, pg. 56] As currently written, a landowner must sample material to establish density values for standing dead biomass, while published density values (Harmon et al 2008) are available for use in lying dead. The published density values should apply to standing dead as well rather than requiring sampling. **(PFT)**

RESPONSE: Agreed. The final protocol will provide guidance to enable the calculation of density using published tables rather than requiring project developers to develop their own densities.

354. The last sentence in Paragraph 1 should refer to Appendix G, not Appendix C. **(PFT)**

RESPONSE: Agreed. The reference has been corrected.

355. [Steps 5-7 (as well as other steps), pg. 58] These alternate between referring to "Table A[.5.4]" and "worksheet in Step 10." Probably better to pick one and use it, or refer to "Table A.5.4 under Step 10." **(PFT)**

RESPONSE: These references have been clarified.

356. The revised procedure allows projects to forego field sampling for as long as 18 years. Models used to estimate carbon pools should be carefully checked to ensure that they accurately account for changes in non-tree carbon pools (particularly below-ground tree carbon and standing and down dead wood). Most growth models were developed to track merchantable volume, so they do not fully reflect the effects of harvest practices on other carbon pools. Given these limitations, it is unlikely that models alone would produce overall inventory estimates within +/-20% of the mean at 90% confidence (the threshold for a 100% risk contribution, which essentially makes the project not creditable). Until models better reflect non-tree carbon pools, field sampling should be required for these pools whenever a significant disturbance, including harvest activity, takes place. **(WS)**

RESPONSE: As noted in the comment, non-live tree carbon has not been the focal point of growth and yield modeling. It is assumed that the non-live tree carbon will remain static over the 18 year period. Inventory updates of non harvested plots are conducted using growth models to 'grow' the plots since their measurement year. Disturbance events, including harvest, are managed in inventory systems by adjusting vegetation classifications for the effected stands in inventory databases and re-sampling activities.

357. [Step 4] Down dead biomass should be included in initial project inventory, because this pool is likely to be reduced under some common management practices, and its removal could in some cases result in creditable off-site harvested wood carbon. **(WS)**

RESPONSE: Forest projects must include policies that address how the lying dead wood pool will be maintained and/or increased over the project life. This provision is part of meeting the 'Natural Forest Management' criteria. The implementation of the policy must be verified during site-verification. There is not a requirement to measure the lying dead wood pool.

358. [Step 5 and Step 6] Litter and soil carbon should also be required pools when the project design indicates that planned practices may deplete these carbon pools over time. . **(WS)**

RESPONSE: The protocol has been modified to provide guidance when site preparation activities must be measured.

A.4. Estimate Carbon in Wood Products

359. Table A.5.4 (pg.62) still lists optional pools as requiring justification, and does not match table A.2 on page 50. **(NCRM)**

RESPONSE: Agreed. Edits have been made to correct Table A.5.4 for accuracy and

consistency.

360. Not all forestry management enterprises have third party scaling reports. Some forest management enterprises harvest trees on their lands, mill their own wood and final products are sold to many different companies, at different locations, in different years, etc. The original 2/03/09 Draft Forest Project Protocol – Wood Products states "Your annual estimate for your wood products pool must be based on the current or most recent harvest volume reported to the California Board of Equalization (BOE) or third party scaling reports." Suggested keep text as it was in the 2/03/09 Draft Forest Project Protocol – Wood Products. **(TGC)**

RESPONSE: Agreed. This clarification has been made in the final protocol.

361. The term "applicant" is used inappropriately here. It should be "Project Developer" to keep standard; otherwise it is unclear who the applicant is. **(TGC)**

RESPONSE: Agreed. The term "applicant" has been replaced in the document with the appropriate term.

362. Accounting for Harvested Wood Products: The final draft protocol fails to reflect the advancement in the knowledge base with respect to the carbon-storing benefits of long-lived harvested wood products (HWPs). As presently stated in the draft and its appendices, the amount of carbon stored in HWPs in use for 100 years is calculated to be far less than their atmospheric effect. It should be noted that the weighted average effect of 1 metric ton of CO_2 in the atmosphere over 100 years is equivalent to 0.491 metric tons of CO_2, due to the decay of the CO_2 over that time period. The weighted average effect of carbon stored in wood products over 100 years is equal to 0.47 metric tons. Thus, storing 1 metric ton of CO_2 in harvested wood products for 100 years is actually equivalent to offsetting 97.9 percent of a 1 metric ton emission of CO_2 from fossil fuel. Further, this does not take into account the additional storage afforded by the fraction of long-lived wood products that remain in landfills for 100 years or more. In effect, this would argue that a large portion of the carbon stored in the wood product in use and in landfills carbon stock pools is well in excess of the CO_2 emissions that would be offset by a credit derived from this category of carbon storage pools under the draft protocol's methodologies. Unfortunately, none of this scientific information is reflected in the draft protocol and its appendices that set forth the methodologies for accounting for this stock pool of sequestered atmospheric carbon. **(NAFO et al.)**

RESPONSE: Noted. The fact that approximately 50% of the emitted CO2 is cycled back to terrestrial ecosystems within 100 years is what enables the protocols to make a reasonable claim of permanence at 100 years. The additional 50% of the carbon that has not cycled back continues to persist in the atmosphere for longer periods of time, while wood products continue to decay.

Accounting for landfill carbon is conducted for thoroughness but is ignored in determining net sequestration for the purpose of issuing CRTs. Although data exists from the U.S Department of Energy 1605(b) about the quantity of carbon from wood products that goes to landfills, there is still too much uncertainty about future trends and the sequestration rates for other options such as composite wood products and composting/mulching. In order to ensure conservativeness, the Reserve has decided to include accounting for landfill carbon using 1605(b) data in years where harvesting is reduced relative to baseline levels. Notwithstanding the uncertainties, this helps to ensure that total net GHG reductions and removals are not overestimated (i.e., the

reduction in landfill carbon is debited from total net GHG reductions, as measured against the baseline scenario).

363. Crediting Wood Products: Wood products act a carbon store rather than a carbon sink. Proposed methodology for accounting for wood products as a biological store of carbon may not accurately credit the other more significant climate benefits wood products provide. The climate benefit of substituting wood products for more energy□intensive construction materials is more significant to the atmosphere than the fact that wood is a carbon store. The atmospheric benefit of substituting wood or biomass for fossil fuel□based energy sources is greater still. Intelligent and sustainable use of wood has the potential to more substantially reduce CO_2 in the atmosphere than wood product accounting for carbon storage can alone. Carbon accounting should reflect the full array of climate benefits from wood products. Such accounting methodology would promote a cascade of wood uses, where wood would land in an energy plant rather than in a landfill. To maximize the benefits to the atmosphere, however, wood product accounting needs to extend beyond the forest sector to both the construction and energy sectors as follows: 1) long□term wood products (accounted for in forest sector), 2) construction in place of brick, concrete, or steel (accounted for in construction sector), and 3) renewable energy generation in place of coal or other fossil fuels (accounted for in the energy sector).

We understand that it is beyond the scope of the forest protocol to add carbon accounting protocol for other sectors; suffice to say, we would like to see the option for future integration with these other sectors left open. **(SBC)**

RESPONSE: Noted. The protocol assumes that energy-related GHG emissions in the United States will be capped in the near future, and will therefore not change in response to changes in wood product production and utilization. This assumption may be revised if national cap-and-trade legislation is not enacted.

364. We support the protocols approach to recognizing that the continued storage of sequestered carbon in forest products in landfills is a known fact and physical reality. While the protocol recognized the physical reality of landfill carbon storage, the protocol does not seek to claim credit for forest product landfill carbon storage. We support this approach taken by the proposed forest project protocol. **(WM)**

RESPONSE: Noted.

365. We support statements made in advisory committee meetings that the protocol does not capture the potential GHG reduction benefits that may be associated with wood product recycling or energy recovery. We can support the forest protocol that does not attempt to seek credit from these activities that utilize waste forest products. We believe the person that exercises operational control over the recycling or energy recovery from forest products should be the owner of any GHG reduction credits that may be associated with these activities in the future. **(WM)**

RESPONSE: Noted.

366. Landfill storage recommended additional language (footnote 11):

Actual flows of wood products to landfills are much more accurately accounted for at the landfill. Also, to avoid potential double counting, the maintenance of stored carbon in forest products in

367. Wood products recommended additional language (Process 3: Wood product in use accounting):

Calculations for carbon storage in wood products does not include GHG emission reduction benefits that may be obtained from the recycling or subsequent energy recovery from wood products. This protocol does not pose any double-counting problems that may be due to the potential future production of GHG reduction credits that may be derived in the future from the recycling of, or energy recovery from, wood products. [See Waste Management public comment submission for further details and suggested language for Process 4.] **(WM)**

RESPONSE: Noted. Please see response to Public Comment #363.

368. Recent work by Galik and Jackson (2009) indicates that inclusion of wood products in carbon accounting results in increased rotation age as carbon prices rise. Inclusion of wood products also serves as a way to reduce activity shifting leakage. Since the goal of the Climate Action Reserve is to reduce atmospheric CO_2 concentrations, recognizing carbon storage in wood products and the associated co-benefits provides a fuller carbon accounting of forest projects. **(Hurteau et al.)**

RESPONSE: Noted.

369. The protocol discusses carbon sequestration in harvested wood products and mentions landfilling, but does not discuss biomass/residues that are used in a biomass to energy project. How are these residues accounted for to both ensure no double counting and leave the potential for future biomass to energy project development? **(Blue Source)**

RESPONSE: Noted. Please see response to Public Comments #188 and #363.

370. The references all need to be checked for accuracy. **(NRDC)**

RESPONSE: Agreed. References have been checked for accuracy and completeness in the final version of the protocol.

371. The calculation of losses from mill inefficiencies needs to include all losses of material. **(NRDC)**

RESPONSE: The calculation of losses from mill inefficiencies does include all losses of material. It is based on the biomass in the product output compared to the biomass in the product input. Although many of the material losses are used in biomass energy and other materials that are not immediately emitted, the assumption at this time is that those secondary products are considered immediately emitted.

372. This section needs to identify what factor to use where the Reserve does not provide an appropriate factor. **(NRDC)**

RESPONSE: The Reserve will provide an appropriate factor for all mill efficiencies, by identified assessment area.

373. Storage in wood products should include a factor to account for net energy use in wood product manufacturing. **(NRDC)**

RESPONSE: Please see response to Public Comment #363.

374. CAR needs to have a clear understanding of the level of time and effort that will be required to provide wood product classes for each assessment from mill surveys within each survey area. **(NRDC)**

RESPONSE: Noted. The work to further identify relevant data for assessment areas is ongoing at the Reserve. Further information about the scope of this work and resources required will be forthcoming.

375. The 100-year storage factors for each product type do not match the source data and need to be checked for accuracy. **NRDC)**

RESPONSE: Noted. The storage factors have been checked for accuracy.

376. The landfill storage calculation should be deleted. **NRDC)**

RESPONSE: Noted. Please see response to Public Comment #362.

377. Needs to delete or clarify provision that required pools can be excluded "unless justified." **NRDC)**

RESPONSE: Agreed. Edits have been made to correct Table A.5.4 for accuracy and consistency.

378. [Process 4] If landfilled wood is ever considered as a credited harvested wood pool in future protocol revisions, it will be critical to report methane emissions from wood decomposition. Approximately 50% of carbon from decomposing wood in landfills is released as methane, which is 25 times more potent than carbon dioxide as a greenhouse gas. Depending on the amount of wood that decomposes, rate of decomposition, and extent to which methane is flared or captured for energy, methane emissions can overwhelm any wood storage advantages of landfills. **(WS)**

RESPONSE: Noted. Consistent with the other offset protocols under development by the Reserve, the forest project protocol assumes that methane emissions from landfills in the United States will be largely controlled in the near-term future. Methane emissions are therefore not expected to outweigh the atmospheric benefits of wood storage over the next 100 years.

379. The draft revision does not credit wood products discarded in landfills. We commend the Registry and the working group for deciding against providing credits for wood products discarded in landfills. "While recognized herein as a potential storage pool, landfill stores of wood products are not accounted for in calculations of emissions reductions at this time due to the potential of change in wood flows to landfills over the lifetime of projects. Further, accounting for wood products in landfills presents significant challenges to accuracy and verification of emissions reductions at the project level." Page 59. As we noted previously, there is a high potential for perverse incentives associated with credits for wood sent to landfills, and it is completely inappropriate to provide credits for converting California's forests into landfill waste. Perhaps more important, such a credit threatens to complicate and obstruct the development of policies in the waste and recycling sectors to divert wood and biomass from being discarded in landfills. This standard should also be applied to waste wood materials from wood processing, if those materials are discarded into landfills.

The most recent draft states that the calculations of carbon discarded in landfills will be reported separately, but does not explain how those calculations will be used or credited. "Due to uncertainty as to the volume and duration of landfill storage over 100 years, the figures derived from the DOE 1605(b) Table 1.9 (landfill) will not be included in the verifiable calculations of project emissions reductions but will be reported separately." Page 61. **(CBD)**

RESPONSE: Noted. Please see response to Public Comment #362.

380. The conversion from metric tons to pounds is listed as "1 metric ton = 2,240 pounds" The conversion should read "1 metric ton = 2,204.6 pounds. **(Equator, Collins)**

RESPONSE: Agreed. The conversion factor has been corrected.

381. The accurate accounting of the long-term stores in harvested wood products (HWP) net of primary and secondary GHG effects is difficult if not impossible to ascertain with precision at the level of an individual project absent more comprehensive accounting for the forest sector overall and the flow of wood within the forest sector and across to other sectors.

At the project level, unlike on-site forest carbon stocks and flux, post harvest HWP flows out of the project owner's control; end uses and losses vary widely along the chain of custody; and the ultimate destiny of the HWP is not subject to independent verification at this time. The best available data on which to base broad, general calculations such as those proposed in the current draft, including that used to create the 1605(b) tables, has relatively high uncertainty (Skog communication to the CAR Work Group 2009). On the other hand, a credible Forest Project Protocol must acknowledge and account for the fact that when wood is harvested its carbon is not immediately emitted to the atmosphere. A significant portion is transferred into the reservoir of HWP. The challenge is how to begin to conservatively quantify and account for HWP at the project level given the above constraints.

Ultimately the accounting challenge needs to be resolved as through a comprehensive system as described above, allowing forest owners to account for logs delivered to mills net of harvest and transportation based emissions. Losses and continued stores associated with primary and secondary processing, transportation, construction, biomass energy, other uses, landfills, recycling, etc., would be accounted for in their respective sectors. In fact, such an integrated approach to forest accounting would provide the basis for crediting the use of wood over more carbon intensive fuels and building materials in their respective sectors. In the meanwhile, we believe the framework for HWP accounting at the project level presented in the current draft

Protocol is an acceptable starting point, given the uncertainties associated with HWP calculations. We believe the methodology used arrives at a reasonable representation of the value of carbon stored in HWP over the course of a project. Further, we urge CAR to continue consulting with experts and stakeholders to incorporate new knowledge and systems into these calculations as they become available. It would help readers of the Protocol to better understand the HWP accounting if the calculations were simply summarized in reference to how much live tree C is considered stored. **(PFT)**

RESPONSE: Noted.

382. Mill efficiency needs to be more fully addressed, including clarification of the appropriate conversion rate data, separating out hardwoods and softwoods, primary and secondary processing. Further losses from debarking need to be addressed as they can be material. **(PFT)**

RESPONSE: The Reserve will provide the conversion rates based on DOE 1605b data. The level of resolution will be consistent with the level of resolution provided in the 1605b tables. The conversion efficiencies in the DOE 1605b data are based on logs delivered to the mill, which includes biomass in bark.

383. [Last paragraph before Process 1, pg. 59] The means of calculating the 100-year average in-use percentage this needs to be described for transparency. This calculation should correspond to straight line average computed from annual values. **(PFT)**

RESPONSE: The calculation approach has been clarified.

384. [Process 1: Determine Amount of carbon harvested and transferred to Wood Products Pool, pg. 59] Fourth paragraph, fourth sentence starts, “The BOE….” BOE is not included in the list of acronyms, and it is not applicable to projects outside of California. A suggested change to consider is, “Tax statements or scaling bureau reports or similar verifiable documentation should be obtained to provide a summary of harvested volume by species delivered to the point of sale”. **(PFT)**

RESPONSE: The language has been clarified.

385. [Process 4: Landfill Storage, pg. 62]: While we continue to be uncomfortable with any calculation and reporting of possible landfill stores, if this remains in the Protocol the last sentence in this section would read more clearly as, “Guidance will be provided by the Reserve about how to track or report the resulting numbers.” **(PFT)**

RESPONSE: Guidance for landfill carbon accounting has been clarified.

386. First, we support the protocol's exclusion of renewable energy or other combustion-related uses of wood products, because the Forest Protocol is intended to quantify long-term carbon sequestration. However, we very much urge the Reserve to pursue with all due haste the development of a fuel-switching protocol, so that reductions in direct fossil fuel emissions resulting from a change from fossil to renewable fuels (such as the sustainable use of woody biomass in energy/heat production) can be properly credited. **(TerraPass)**

RESPONSE: Noted. Please see responses to Public Comments #188 and #363.

387. Accounting for harvested wood carbon is very complex and uncertain and should be based on conservative assumptions. **(WS)**

RESPONSE: Agreed. Assumptions have been clarified in the final protocol.

388. This section as a whole should make some reference to updating assumptions due to improved data or changes in technology or consumer behavior (just as forest growth models will be adjusted over time). One suggestion would be for the protocol to use wood products estimation methods consistent with the EPA's annual Inventory of U.S. Greenhouse Gas Emissions and Sinks. This report uses the same basic assumptions as the 1605(b) tables, but the methodology is updated regularly. New offset projects could utilize the estimation methods in place at the time their project is first registered. The following statement seems to imply that only landowners who also operate their own mills may claim wood products credits. "A harvest that leads to the production of wood products within your entity must occur for the wood products pool to have value." **(WS)**

RESPONSE: **Noted. This is a good suggestion. The Reserve will investigate the referenced EPA report and consider as a source for updating the assumptions in the protocol. The referenced language has been clarified.**

389. The text describes the harvested wood credited by the proposed CAR methodology as "average adjusted value for wood that is estimated to still be in-use after 100 years". The factors proposed are actually much higher than the amount of wood still in use after 100 years. A better description of the methodology would be "amount of wood that is estimated to still be in-use each year [see original comment submission for an accurate formula that would fit this description], averaged over a 100 year period". **(WS)**

RESPONSE: **The alternative accounting strategy considered for wood products is to utilize the published (1605b) decay rates over the 100-year period as an amortization schedule. This is a complex accounting exercise since wood products potentially generated annually in baseline modeling and project activities. The average 100-year method is favored due to its accounting advantages.**

390. [Process 1] The text mentions BOE reports, which are specific to California. When applied outside California, other reliable means of determining wood volume delivered to the mill will need to be substituted. **(WS)**

RESPONSE: Noted. The guidance has been clarified.

391. [Process 2] The text implies that the 1605(b) mill conversion rate of 67.5% for Pacific Southwest softwoods will apply whenever CAR mill efficiencies specific to each assessment area are not available. The 1605(b) figure applies to softwood only and does not distinguish between sawlogs and smaller material. The 1605(b) table provides a mill conversion rate of 56.8% for all hardwood west-wide, and this would be a more appropriate default figure for hardwood. If CAR develops mill conversion rates for each assessment area, that will be an improvement over the regional 1605(b) estimates, but even a mean value for an assessment area will be extremely

imprecise since areas are so large. Data for sawlogs and smaller logs, softwood and hardwood, from the specific mills served by a project, would greatly improve the accuracy of the estimates, and this information could be collected while surveying project mills for wood product types. **(WS)**

RESPONSE: The Reserve will develop guidelines that are based on credible data that can be verified. Until this data can be substantiated, the guidelines will be based on 1605b tables.

392. [Process 2] The conversion percentages in the 1605(b) table also assume no bark. Bark is generally used for very short-lived uses like fuelwood or mulch, so this portion will need to be deducted before computing product mass if the roundwood volume delivered to the mill includes bark. Pacific Coast softwood bark is about 15% of total roundwood volume including bark (US Forest Service, GTR NE-343 Table 5). **(WS)**

RESPONSE: Agreed. The guidance in the final protocol will describe that the volume of logs delivered to the mill is net of bark.

393. The CAR response to TWS' comments on the wood products draft states that the 5-year-interval averaging procedure is simpler than averaging annual amounts and will result in similar results. Please reconsider our comments. Averaging all years in the 100-year modeling period for each product type would be no more complex than calculating the average of values at five-year intervals. Once an average is computed, participants merely multiply their initial wood product figure by the computed factor, just as they would under the CAR proposal. The alternative approaches can differ significantly for short-lived products like paper. The year-by-year in-use estimates by product type, from Table 8 of US Forest Service GTR NE-343, are copied below [see page 8 of original comment letter] for your reference, along with averages starting in Year 0 and Year 1 and the factors from CAR draft Table A.5.2. Ken Skog, Supervisory Research Forester at the US Forest Products Laboratory, concurs that averaging the annual amounts would be preferable to averaging the values at five-year intervals. The Wilderness Society continues to believe that using the 1605(b) approach, which credits harvested wood carbon estimated to remain in year 100, would be much simpler and a better compromise position (see comment submission). The use formulas summarized by the CAR factors in Table A.5.2 are applicable after products are placed in use. Losses that occur between mill and placing products in use (secondary processing, construction), which may amount to 10% to 80% of wood material, are not accounted for. **(WS)**

RESPONSE: Noted. The numbers have been corrected to reflect averaging of the annual amounts.

394. The following statement needs clarification: "Since the values incorporate a 100-year in-use value there is no need to make further adjustments with time." Projects must be monitored for 100 years after the last credit is verified, so the entire monitoring period could theoretically extend to 150 or 200 years. Following the recommended CAR procedures, harvested wood carbon credited from the first year of a 20-year project is reported as part of the harvested carbon pool during the entire 100 year period after that wood is harvested. After that time, products continue to leave use each year, hence no longer contribute to long-term storage. Continuing to credit the average amount after 100 years will further overestimate harvested wood storage. The chart below [see page 11 of original comment letter] illustrates the treatment

of one metric ton of carbon embodied in paper produced annually during a twenty year crediting period, followed by 100 years of monitoring, under three assumptions.

- The red line shows carbon in-use estimates using the 1605(b) parameters, which would allow no credit for carbon in-use for paper, due to its relatively short use life.
- The orange dotted line shows the CAR procedure as proposed, which apparently proposes to continue crediting harvested wood carbon beyond 100 years after harvest. This scenario implies that the five-year interval carbon average continues to be stored 100 years after manufacture, which is clearly not a conservative assumption when compared to the actual projections of carbon in-use.
- The blue line shows the situation if wood carbon is debited from the harvested wood pool after 100 years. No compensation would be required for reversals after year 100 for the carbon harvested in year 1, but the year 1 harvested carbon should not continue to be counted along with the pools attributed to years 2 and later.

Avoidance of such complex accounting was the reason the 1605(b) program chose to credit only wood product carbon remaining as of Year 100. This approach undercounts earlier storage but overcounts later storage, and is a reasonable compromise. We recommend returning to the simpler 1605(b) methodology. **(WS)**

RESPONSE: Noted. To be clear, the protocol requires accounting for carbon in harvested wood products separately from carbon in other pools. Accounting for wood-product carbon is not done on a stock-change basis. Instead, the difference between actual and baseline wood-product carbon is estimated in each year, this value is converted to the average amount estimated to be stored over 100 years, and the final value is added to or subtracted from annual estimate of GHG reductions and removals. See the response to comment #389.

Appendix B Modeling Carbon Stocks

395. The last sentence refers to “a state forester”: does this mean the State Forester, or a forester in a state, or ? It is not clear why this person would make the finding, regardless. We believe it is sufficient for CAR require a project developer or other stakeholder to demonstrate that a model meets the listed qualifications. **(PFT)**

RESPONSE: Noted. The protocol now states that approval of a state forestry authority (i.e.., a person meeting the definition of Professional Forester who is employed by a state agency responsible for the oversight of forests) who will acknowledge in writing that the model:

B.1 About models and their eligibility for use in the Reserve

396. The reference should include total height and diameter as the means of calculating biomass as the new equations for biomass utilize both diameter and height.

FORSEE should be included as an approved model. FORSEE contains the CRYPTOS and CACTOS growth models with a windows front end. The FORSEE model has been substantially financed by CAL FIRE, and tested by Dr. Bruce Krumland, one of the original authors of CRYPTOS.

Appendix C Determination of the Buffer Pool Contribution for Forest Projects

397. Delete all reference to "Deed restrictions" in Buffer Pool requirements since they provide materially less protection than a "Conservation Easement". (Also in Sections C.6 and 3.3)

The legal construct of a "Deed restriction", its interpretation in case law and its practical application make deed restrictions substantially flimsier than the binding provisions of Conservation Easements. Deed restrictions charge no specific party with enforcement and are easier to remove from the deed. The Conservation Easement provides more legal protections under most state statutes and is given greater deference by courts in the event of disputes. In regulatory actions the California State Coastal Commission specifically and consistently requires Conservation Easements over deed restrictions to provide the permanence that the Commission intends when such measures are called for.

Lack of confidence in forest carbon permanence is one of the strongest arguments in opposition to the validity of forest offsets, therefore standards must be as rigorous as possible. The term "deed restriction" should be deleted from the Protocol. **(Tuttle)**

RESPONSE: The reference has been clarified to include *qualified* deed restrictions and conservation easements. The important qualities these instruments can provide is in their ability to run with the land, protect the project stocks through a reference to the Project Implementation Agreement, and endure the challenges of permanency as defined in the protocol. Deed restrictions will require the reduced contribution to the buffer pool if they can demonstrate that they meet the stated qualities.

398. The changes to Buffer Pool contributions resulting from a reassessment should only apply to future years, and not be retroactive. **(PFT)**

RESPONSE: Noted. The protocol has been edited for clarification of this issue. However, CAR may choose to redistribute buffer pool CRTs once the buffer pool is fully capitalized.

399. [Table C, pg. 65] In the Financial section, under Description, it should read, "Financial failure can lead to bankruptcy and/or alternative management decisions . . . " **(PFT)**

RESPONSE: Agreed. The edit has been made accordingly.

400. If bankruptcy can lead to dissolution of agreements then the financial risk contribution needs to be much greater than 1%. " **(NRDC)**

RESPONSE: The Reserve has determined risk ratings in consultation with the workgroup and insurance experts that it believes are sufficient to cover potential liabilities.

401. The risk of illegal harvesting should be deleted since this only applies to the United States where it is assumed to be negligible. **(NRDC)**

RESPONSE: Illegal harvesting is included to indicate that it was considered and addressed. Illegal harvesting is an important consideration in international contexts.

402. The social risk section needs to be substantially revised since it is composed of management risks and/or factors that don't pose a risk to permanence of reductions. **(NRDC)**

RESPONSE: Social risk factors can lead to reversals where they involve dissolution of agreements, similar to financial risks.

403. The natural disturbance risks need to be linked to factors that are relevant to the specified risk than rotation length. **(NRDC)**

RESPONSE: These risks have been restated as default risks in the final protocol.

404. The confidence level risk contribution needs to be reviewed and rewritten so that it makes statistical sense and is workable. **(NRDC)**

RESPONSE: The confidence deduction is applied as a discount to quantified GHG reductions/removals; it is no longer a component of buffer pool contributions.

C.1 Financial Risk
C.2 Management Risk

405. Clarify that the remedy for conversion or over-harvesting requires full replacement of credits. Leaving standards entirely to the PIA leaves room open for unequal treatment. **(WS)**

RESPONSE: This is now clarified in Section 7.3 of the protocol.

C.3 Social Risk

406. Text states that social risk totals 5% but table shows 2%. **(WS)**

RESPONSE: The protocol has been edited to correct the text.

407. The last sentence on page 67 states an overall assessment value of 5% is assigned to social risks while tables on p. 68 and p. 71 show 2%. Please correct. **(PFT)**

RESPONSE: The protocol has been edited to correct the text.

408. Section C.3 on page 67 states an overall social risk of 5% will be applied to all projects, regardless of project type and location, but the last line of the table on page 68 shows a default social risk of 2%. Which figure is correct? **(New Forests)**

RESPONSE: The protocol has been edited to correct the text.

C.4 Natural Disturbance Risk

409. This shows the need for a Fire Risk Reduction Management option. Now that the protocol can be broadly applied to the United States, a Fire Risk Reduction Management option is needed more than ever. As fire season is lengthening every year, and fire suppression costs expected over $1 Billion, landowners need incentives for fuel load reductions. Fuel load reduction forest management is one of the highest returns on the USFS budget. **(TGC)**

RESPONSE: Agreed. A mitigation adjustment for fuel treatments has been included in the wildfire risk assessment. Research and experience will refine this risk assessment calculation over time.

410. Natural Disturbance Risk I – Wildfire: We suggest revising this paragraph to read "techniques including reducing surface fuel loads, removing ladder fuels, adding fuel breaks, and reducing stand density. However, these techniques cannot reduce emission risk to zero because all landowners will not undertake fuel treatments, nor can they prevent wildfire from occurring." **(Hurteau et al.)**

RESPONSE: Agreed. This language has been edited.

411. The natural disturbance risk identification table (Table C.4.1) is a marked improvement over the previous draft. While using the previous 30-years of fire data for a project assessment area is likely to underestimate the fire risk, especially given the potential for climate change to impact fire size (Westerling and Bryant 2008), the conservative accounting of fire risk reduction treatments should provide an adequate buffer pool contribution in the near-term. Additionally, recognizing the risk reduction benefits of high severity fire mitigation treatments reduces the incentive for maximizing stocking levels in fire-prone forest types (Galik and Jackson 2009). However, row 2 in Table C.4.1 should be eliminated. Further dividing the annual fire probability by 2 yields an unsubstantiated reduction in the estimated likelihood of a fire event occurring, this could result in an insufficient buffer pool contribution. We suggest that where assessment area fire data are lacking, applying the approach developed by Hurteau et al. (2009) using LANDFIRE data would provide a quantitative assessment of fire risk. **(Hurteau et al.)**

RESPONSE: Agreed. Row 2 in Table C.4.1 has been removed.

412. [Table C.4.1 and Table C.4.2] The assumption that risk of loss to insects, diseases and windthrow doubles when forests are not harvested at least every 30 years appears unfounded, particularly as a general rule to be used nation-wide. It is just as likely that harvest will increase these hazards as that it will reduce them. Harvest that simplifies stand structure, decreases species or age diversity, or damages soils or residual stand would likely make stands more vulnerable to insect and disease outbreaks. Many stands are more susceptible to windthrow

after thinning. Rather than try to distinguish risk based on harvest activity, given the varied responses of specific ecosystems to different harvesting methods, a single risk factor for disturbances would be most appropriate. **(WS)**

RESPONSE: Agreed. This edit has been made to the table.

413. Are the values for long term fire risk potential for each assessment area determined by CAR? Or are there references to sources for fire history perimeter maps that CAR can provide. Will there be a look up table provided, or is this up to each project developer to determine? If the latter, more guidance would be helpful. **(PFT)**

RESPONSE: CAR will provide the risk factors for fires for each assessment area.

C.5 Accuracy of Carbon Stock Estimates

414. These accuracy standards are very tight, and result in increased costs primarily for small landowners who don't benefit from economies of scale associated with stratification. A 30,000 acre property could require the same number of plots as a 3,000 acre property in order to obtain the same level of accuracy. As a comparison, a small project that is estimating a 10,000 Mg reduction with a 5% reduction for inventory accuracy has the potential to overestimate or underestimate the true reduction by 500 Mg, whereas a larger project that is claiming a 1,000,000 Mg reduction has the potential to have an error of plus or minus 50,000 Mg. It is clear that larger projects have a greater potential to create a 'significant' overestimate of GHG reductions. We believe that the accuracy standards should be scaled to match project size, or the level of GHG reductions claimed by the project.

What we are really arguing for is that the protocol be designed to include smaller landowners, and not drive them away based on costs of implementation. **(NCRM)**

RESPONSE: Noted. The Reserve is investigating methods that will allow greater participation by small landowners.

415. We recommend that the risk contribution for sampling error greater than 5% of the mean should be equal to the amount of sampling error over 5.1%, rounded to the nearest 1/10th percentage (including for sampling error greater than 20% of the mean estimate). While mean estimates with higher sampling errors result in lower precision, the range of uncertainty related to the mean estimate can still be quantified and incorporated into the risk contribution. Our experience on the ground, shared by others, has shown that the mean estimates of some stands, especially young stands, have high variation (coefficient of variations from 70-90%) and non-normal distributions. In these cases, impractical sample sizes approaching 900 plots, may be required to achieve the lowest precision requirement currently allowed by the FPP (20% of the mean estimate). Adjusting the risk contribution for all precision levels over 5% would allow projects to assess the cost/benefit of achieving higher precision levels during early years, while still providing incentives to achieve higher levels over the life of the project. **(ES)**

RESPONSE: The Reserve will continue looking for rational ways to encourage participation without compromising accuracy. This issue will be discussed as part of ongoing improvements to the protocol.

416. More guidance on or references for computing standard error on combined pools would be very helpful. **(PFT)**

RESPONSE: The Protocol now states that the standard error shall be based on the standing live and standing dead carbon stocks. These two pools address the vast majority (90% +) of carbon subject to changes in forest carbon projects and are commonly measured on sample plots. Both are also required pools in the Forest Protocol.

C.6 Summarizing the Risk Analysis and Contribution to Buffer Pool

417. The table in section C.6 contains a summary of the contributions to the buffer pool for the various risk types specified by the FPP. To be consistent with the guidance in C.4, the table should be revised to reference the use of default values (not worksheets) as the Source for risk related to disease/insect outbreak and other catastrophic events. **(ES)**

RESPONSE: Agreed. This edit has been made to the table.

418. The overall default values are insufficient, in our opinion, to adequately mitigate the risks indicated. A minimum contribution of 10% should be established for all projects until there is greater data and project history from which to determine risk. The formula at the bottom of the page is incorrect. It appears to calculate the reductions that would remain when the risk contribution is applied rather than just calculating the risk contribution, which is what is stated. We believe it is correct when stated as follows:

(100% -((1- Financial Failure %) * (1- Illegal Forest Biomass Removal %) * (1- Conversion %) * (1- Over-Harvesting %) * (1- Social %) * (1- Wildfire %) * (1- Disease or Insect Outbreak %) * (1- Other Catastrophic Events %) * (1-Accuracy of Carbon Stocks Estimates)))* (Reductions accrued in Year X) **(PFT)**

RESPONSE: Agreed. The average contribution will be approximately 25% until the buffer pool is fully capitalized and additional research is conducted to refine the contributions. The formula has been clarified in the final protocol.

Appendix D Native Forests Resources
Appendix E Reforestation Criteria

Appendix F California Assessment Areas

419. Forests can occur in a wide range of native species composition levels from pure stands of one species to many species. The likelihood of stands occurring with a species composition where anyone species exists at more than 80% increases as stand size decreases. Certainly at the landscape level it is unlikely that natural stands would occur with species composition in excess of 80% for a single species. What is the scientific basis for the 80% species composition criterion? Perhaps this species composition threshold should be evaluated at some minimum stand size.

In terms of species composition, it may be necessary to plant a nurse crop such as ponderosa pine in order to successfully reforest a given site with Douglas-fir. The long term goal is to reoccupy the site with native species, at natural levels, but in order to do so other native species must be planted at temporarily high levels that exceed natural levels.

Recommendation: Eliminate the "Composition of Native Species Threshold" contained in Appendix F. **(NCRM)**

RESPONSE: The work group agreed that meeting environmental integrity criteria require that standards be developed for species diversity. The maximum percentage of any one native species has been adjusted for each assessment area based on professional judgment of reasonable diversity levels within each assessment area. The protocol also acknowledges that there are special cases where achieving the diversity goal is problematic and allows for an opinion from state agencies to confirm that the site is not conducive to diversity targets.

420. A shapefile of the assessment areas should be made available to project developers upon request to ensure accurate location of projects relative to assessment areas. **(PFT)**

RESPONSE: A shapefile will be available upon request once the protocol is adopted.

421. In Appendix F (Page 76) the “Common Practice Indicator”, of Carbon Tons per acre in Live Trees for California Mixed Conifer in the Sierra Nevada-Southern Cascades is 39 tons per acre. Is this metric tons? I calculated an average of 41.6 metric tons per acre in live trees on the Collins Almanor Forest, and this includes root mass. We average over 16 thousand board feet per acre on our forest. I’m surprised that we’re so close to the baseline. **(Collins)**

RESPONSE: The figures presented do include both the above ground and below ground biomass associated with live trees. The figure is in metric tonnes on a per acre basis. Please make sure that you are using the equations provided to ensure the comparison to the FIA data is on the same terms.