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Re: Comments on the Draft CCAR Forest Project Protocol Version 3.0

We are grateful for the opportunity to comment on the Draft Revised Forest Project Protocol. The Wilderness Society appreciates the long hours and thoughtful work of the Forest Project Protocol Workgroup in developing this document and the revision includes many positive changes. However, we have concerns about certain components of the revised Forest Protocol and offer the following recommendations for your consideration.

2 Forest-Based GHG Projects

The Wilderness Society is opposed to including federal lands in the CCAR Forest Project Protocol at this time. States cannot set rules for federal land management. Federal forests operate under a different set of legal mandates and policy guidance compared with forests under state control. While the federal government may ultimately adopt forest carbon protocols, it has not done so to date, and federal protocols may include important differences with California or other state forest protocols. Some federal land managers have experimented with how private carbon markets could accomplish public purposes without compromising public land management objectives, and these have helped demonstrate that there are difficult issues raised when mixing private commercial transactions with public missions. For example, if carbon credits are sold to finance the reforestation of federal land after a fire, does this constrain the Forest Service from letting that acreage burn in a subsequent fire, even if the fire is natural and does not threaten any community? Or is Forest Service compelled to call in the smoke jumpers in order to protect a private carbon project? While these issues also arise at the interface of state-owned lands and the carbon markets, they may very well be answered differently at the federal level, if and when a federal forest protocol is adopted. Accounting rules for federal forests need to be established through federal policy development and a public review process that is consistent with federal laws and regulations.

Eligible Forest Project Types and Definitions, p. 2-3

The proposal calls for public lands to be eligible for offset projects through reforestation and improved forest management. The general requirements for project baselines on p. 4 state that they "must reflect legal, physical, and economic factors that influence changes in carbon stocks on project lands over time, as well as management practices that are present on lands with similar environmental conditions within a project's assessment area." In order to address climate change, federal lands agencies must establish clear mandates to manage for climate benefits, including both carbon sequestration and ecosystem resilience. If new federal regulations or policies require land management agencies to protect or enhance carbon stores, the "business as usual" baseline for those lands will rise (see p. 16, Section 6.2.1.2), the creditable carbon will fall, and federal agencies engaged in offset sales will lose revenue. Public lands should clearly be managed for the broad public good, including climate benefits, and financial incentives that favor a single service could potentially undermine that mission.

2.1.1 Reforestation, p. 2
Eligibility for reforestation is established through one of two possible land use histories – land out of forest cover for 10 years or a significant disturbance. Either of these situations seems subject to deliberate gaming or establishment of projects in a low stocking phase of the "business as usual" cycle. Projects on land out of forest cover for at least 10 years need to demonstrate that the land was not deforested as a result of intentional acts of the landowner. Land reforested after a disturbance should show that reforestation would not be accomplished in the absence of the offset project and that reforestation is ecologically appropriate.

2.1.2 Improved Forest Management, p. 3
The improved forest management project type appears to require harvest as part of the management regime. The avoided conversion project type is narrowly defined to include only projects where forests are likely to be lost to development. Projects on land with low development threat that propose to eliminate harvest to build carbon stocks fall through the cracks. Forest management projects should be defined broadly to include elimination of harvest activity on entire properties as a carbon-conserving strategy

3.5 Use of Native Species and Natural Forest Management Practices, p. 5
The forest protocol is intended to not only create climate benefits, "but also will improve and/or sustain natural ecosystem processes." Certain silvicultural practices (e.g., clearcutting) can undermine natural ecosystem processes by contributing to the accelerated loss of soil carbon. In cases where such silvicultural practices are used, long term monitoring for soil carbon loss should be required.

Table 3.1, p. 6
Using endemic as evaluation criteria could provide for a fairly narrow complement of species in a given area. Using the terms native or indigenous would more likely capture a broader representation of the species in a project area. We recommend that you replace endemic with native as evaluation criteria.

5 Defining a Forest Project's GHG Assessment Boundary--Table 5.1, p. 10
Emissions associated with processing and disposal of wood products, as well as emissions from transportation of wood products, should be included as downstream secondary effects for offset projects that include carbon storage in wood products and landfills. When wood in use and in landfills becomes an included carbon pool, the boundaries of the project have essentially extended to the permanent storage site for that wood. These processes can be a significant

source of GHG emissions that are necessary to the wood products carbon storage function (just as necessary as site preparation and timber harvesting). It is sometimes claimed that these emissions are already regulated under a fossil fuel emissions cap, but the allowances that cover these emissions are purchased by other parties so the benefits from those processes should not be fully credited to the landowner where the wood originated. The revised Forest Protocol requires that emissions from equipment use during site preparation and timber harvest be deducted as part of project accounting; assuming that transportation fuels are regulated at the refinery, then these emissions are also covered under the cap. In order to be consistent, all wood processing and transport and disposal emissions (including the global warming potential of methane released from decomposing wood) should also be included in project accounting.

5.1 Accounting for Significant Secondary Effects (Leakage), p. 10
This sentence has confusing wording – strike the extra phrase? "Leakage is an increase in greenhouse gas emissions ~~in sequestration~~ caused by a project outside of its geographic boundaries."

6.2.1.1 Private Forest Lands, p. 13
Is there a missing word at the end of this sentence? "All improved forest management project activities are analyzed in reference to the average stocks of the live standing carbon pool from within the project's assessment [area?]."

6.2.1.1 Private Forest Lands, p. 14
While the intent of the modeled projected baseline is clear and defensible, the specific methods will need much better definition. Model results depend upon the structure of the model and the values assumed for its parameters. According to the text, "the management scenario must maximize timber values as determined by growth and yield analysis." Is this the value of timber revenues net of costs, or simply maximized timber value? Are these revenues and costs discounted, and if so what is the appropriate discount rate? What is the acceptable range of predicted future prices for timber and for costs of management and operations? Must growth models account for expected responses to climate change and the likelihood of major disturbances? These details can make a HUGE difference in determining the optimal silvicultural activities that define the baseline. Although imperfect in defining "business as usual" for individual properties, it might be preferable to define a standardized baseline by forest type and region and ownership that does not depend on modeling by an individual project applicant, which can be easily manipulated to produce a desired result.

6.2.1.1 Private Forest Lands, p. 15
For projects with low stocks, an initial baseline of at least 80% of inventory over the previous 10 years is a good backstop to prevent gaming by drawing down inventory immediately prior to project initiation.

6.2.1.2 Public Lands Improved Forest Management Baseline, p. 15
This section should be reconsidered at a later date, after federal agencies have completed a public review process to determine whether it is appropriate for federal lands agencies to enter into offset contracts.

Projections of historic practice on public lands seems misleading as a baseline. Management goals on these lands are subject to public direction, which can change at any time, including in favor of higher carbon stores. In what sense would such a change be "additional" and hence marketable as an offset?

"In the event that such statutes, regulations, policies, budgets, and plans have changed to materially affect the project carbon over the past ten years, the policies outcomes that lead to the most conservative baseline carbon estimates should be used." May want to clarify that "conservative" in this context means relatively high carbon stocks over time.

6.2.1.2 Public Lands Improved Forest Management Baseline, p. 16

Text suggests that the effects of recently-changed policies that affect carbon stocks should be projected into the future to determine a public lands baseline. It seems reasonable that *future* policies and legal requirements that affect carbon stocks should also be accounted for as determinants of the public lands baseline. If public lands are made eligible, the public lands baseline should be revised at frequent intervals as policies change, rather than being determined by policies in place at the time of project initiation.

6.2.2 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources, p. 16

A simple rule of thumb for estimating leakage does seem desirable, but the particular leakage formulas included here seem somewhat arbitrary. More background is needed here to understand how to apply leakage percentages.

<u>Leakage Risk Assessment for Improved Forest Management Projects</u>

Point 3: Sustained harvest at 2% of stocking seems like a conservative estimate for commercial operations. For smaller landowners or conservation owners who typically manage less intensively, on the other hand, annual harvest at 2% of stocking may be well above typical "business as usual" volumes, and a leakage formula based on 2% timber yield could penalize these less intensive managers.

Point 4: "The theoretical optimal carbon stocking on managed forestlands occurs when harvest takes place at the point that biomass accumulation in a stand begins to decline." The meaning of this sentence is unclear, it generalizes too broadly, and it is not necessary to the leakage computation.[1] Culmination of mean annual increment of live above-ground biomass is often taken to define the optimum stocking that maximizes sustained timber yield (a very different matter from "optimal carbon stocking"). Given financial pressures and short-term management

[1] Is this intended to refer to the point where total biomass begins to decline (not likely to occur unless due to major disturbance events) or when the annual increase in biomass begins to decrease (this point is likely to be too soon for optimal carbon stocking in most cases) or when the mean annual increment reaches a maximum (which neglects the importance of dead material and soils in carbon storage). This statement seems to imply that harvest will involve clearcutting rather than some form of selection harvest (which will generally store more carbon over time)? If so, does it account for the significant carbon releases that occur for several years after a clearcut harvest before regeneration is established enough to fix significant carbon dioxide? Carbon dynamics also depend upon land use history, particularly as it affects the potential for soil to accumulate additional carbon (previously cleared or degraded lands may continue to accumulate soil carbon well past the point where live biomass reaches a maximum).

objectives, commercial timber operations often maintain stocking well below this level. So using this stocking level to represent "business as usual" most likely over-estimates the timber flow that is taken off the market due to reduced or delayed harvest. It might be preferable to use the FIA mean stocking by forest type and ownership and region as a standard, and compute "typical" sustainable harvest as 2% of that level. Or since it is really changes from past harvest volume on the project property that is relevant, it might be more appropriate still to use a rolling average of past harvest volumes on this property as a benchmark, and consider reductions below this level to be subject to leakage deductions at some level calculated using market elasticities.

6.2.2 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources, p. 17

The leakage formulas in the worksheet assume that 100% of reduced harvest is shifted off-site. This would be true only if demand was perfectly inelastic or supply was extremely elastic compared to demand. If this is intended to be a very conservative assumption, that should be stated in the explanatory text, but it will selectively penalize projects that involve reduction or delay of timber harvest, and these projects are most likely to provide important co-benefits.

This worksheet also needs a rule for selection harvest systems. To be comparable to other rules, perhaps as long as annual harvest volume averaged over "x" years equals at least 2% of volume at full stocking (defined consistently with even-aged systems), there is presumed to be no leakage.

Table 6.2, p. 20

These formulas may need refinement to fit individual area circumstances. Proximity in hours (assumed by car?) and size of nearby urban areas does not fully capture popularity of some remote second home locations, for instance. Ski areas may experience rapid development even with single-season access. Number of new structures in a defined surrounding area during the recent past seems like a more direct measure, if available. Some of the other criteria might be useful predictors of future development pressure.

6.3.2 Secondary Effects – Quantifying Net Changes at Other Affected GHG Sources, p. 21

Second paragraph seems out of place in this section.

Table 6.4, p. 22

Alameda forest conversion rate in table differs from figure cited in text.

The use of recent past conversion rates, as proposed in the protocol draft, captures the likelihood that areas with rapid development are more likely to experience leakage as pent-up demand for building finds other suitable properties nearby. But it is difficult to justify us of these specific numbers to estimate leakage. Annual county-wide conversion rates represent the total risk that non-project properties will be developed, which is not the same as the risk of development *that results specifically from protection of an offset project property.* It is *changes* in conversion rates from pre- to post-project that would actually capture leakage.

6.4 Annual Calculation Activities Worksheet, p. 26

Before line 24 in the spreadsheet, text states that wood products carbon is not subject to a confidence deduction since the initial value is measured directly rather than sampled. This may be true of harvested roundwood volumes, but the portion of wood carbon remaining in year 100 is based on very small data samples across broad geographic areas, and also makes assumptions about future product technology and consumer behavior, so a substantial confidence deduction is entirely appropriate. It will be difficult to develop a confidence interval, given the multiple sources of data and accompanying uncertainty in these estimates, so consistent with elsewhere in the protocol assumptions should lead to conservative carbon estimates.

This table should also include a line for transport and processing emissions and landfill emissions associated with wood products processing (including methane at its global warming potential in CO_2-equivalents).

7 Ensuring Permanence of Credited Emissions Reductions, p. 27

100 years is not "effectively permanent". This period has apparently resulted from two separate influences. One, it is difficult to induce landowners to make a commitment of longer than 100 years. This is really an admission that forest offsets cannot be fully equivalent to emissions reductions, rather than a reason to consider 100 years as fully equivalent to permanent reductions. Two, the majority of CO_2 released today (perhaps 70-80%) will possibly be reabsorbed over the next 100 years as the content in the atmosphere re-equilibrates with the much larger ocean sink. There is strong evidence, however, that the ocean sink may be failing due to acidification, changing currents, biodiversity loss, etc., so emissions may last much longer in the atmosphere than has been true in the recent past.

Climate Reserve Tons (CRTs) need to be defined prior to this section.

The protocol offers buffer pools and insurance contracts as options for addressing the risk of reversals. As we have seen recently, purely financial insurance can fail catastrophically. There should be a requirement that any insurance mechanism is backed by a physical pool of emissions reductions or new offsets. It may be advisable to require geographic and forest type diversity in the buffer pool, to reduce the risk that catastrophic natural events will destroy the entire pool.

7.2.2 Use of the Buffer to Compensate for Reversals, p. 28

When a project draws on buffer pool CRTs contributed by other projects, there should be a requirement to repay those credits if the buffer pool manager or insurer can show that reversals were due to negligence or intent of the project developer. Otherwise the sharing of risk could encourage "free riding" by projects intent on gaming the system (again real estate markets provide a precautionary lesson).

This section needs clarification.

"If the reversal exceeds the buffer pool for the project, the Reserve will draw proportionally from other pooled buffers to fully compensate the loss." [If the buffer pool is insufficient, then what?]

"As described in Section 8.1, the expected project life is 100 years, and a project may terminate if a reversal reduces the project activity's live standing forest carbon stocks below the standing live stocks established for the baseline." [If a project terminates, then presumably CRTs are withdrawn from the buffer pool sufficient to meet the project's full commitment, as described in the previous paragraph.]

"If the project is not terminated, the project can begin creating reductions immediately". [Presumably the reversal described is not intentional, in which case allowing a project to create new reductions may be inadvisable. Clarify that these reductions will be creditable only if the buffer pool was sufficient to fully compensate for all prior reversals by the project.]

8.2 Annual Monitoring Requirements, p. 29
Before explaining the monitoring process, some description of how additional carbon is actually credited would be helpful. Explaining project life as 100 years is a bit confusing for projects that claim new carbon credits in later years of the project. Is the following description accurate?

Project carbon minus baseline carbon for a given year is considered additional, and permits the project developer to register CRTs. If project carbon in Year 2 exceeds baseline by the same amount as in Year 1, this situation merely meets the first year of the 100-year permanence obligation for Year 1 CRTs. No new carbon is credited in Year 2, and monitoring will merely continue to confirm that project carbon exceeds baseline carbon by at least this amount every year for the next 100 years.

If Year 2 carbon exceeds baseline carbon by more than the Year 1 CRTs, however, then *new* credits could be claimed in Year 2 if the project developer is willing to maintain and monitor that carbon until 101 years after project initiation. CRTs claimed in later years essentially extend the life of the project to 100 years after CRTs are claimed, rather than 100 years after project initiation. (This pattern of new CRTs credited each year would be typical for reforestation/afforestation projects which depend on increasing stocks over several decades).

Appendix A -- Table A-2, p. 41
Are plot-level allometric equations for below-ground biomass sufficiently accurate for very old forest stands? Very large old trees are generally under-represented in the data sets used to develop these equations. Should the protocol at least allow single-tree equations at the discretion of the project developer?

Appendix A.5, p. 47
1605(b) methods taken as a whole are insufficiently precise for purposes of registering tradeable offsets. Regional averages are based on very limited data, with interpolations and extrapolations very common. Infrequent mill surveys and logging residue surveys, for instance, are used to derive percentage losses applied to harvest volumes. Mill efficiencies vary tremendously from one facility to the next, and among specific product types within the very broad categories used in the USDA Forest Service publication GTR NE-343 (the basis for the 1605(b) methodology). Secondary processing losses (from production of flooring, doors, windows, cabinets, etc.) assumed in these tables are too low and there is no accounting for disposal of wood prior to expected product lifetime due to renovations. The form of equation used to estimate products in

use results in larger estimates of 100-year wood remaining compared to alternative assumptions[2]. Landfill emissions are calculated based on carbon accounting alone, without addressing the much higher global warming potential of methane released from landfilled wood.

Additional region-specific research should be conducted to determine the expected lifetimes of products in particular regions using particular construction techniques and to update other assumptions about wood loss through the product chain. Construction methods, consumer preference for renovations, and disposal habits also change over time, so it would be important to update these assumptions frequently. Landfill decay parameters were already revised recently to reflect faster and more complete decomposition of wood products than initially assumed in the GTR NE-343 publication.

We highly recommend requiring some level of project-specific sampling to determine appropriate carbon loss estimates for wood products. The draft protocol calls for determining end uses by surveying the mills supplied by a project. If this type of survey is practical, then gathering data on mill efficiencies should not be too onerous. Generic estimates of GHG emissions associated with processing and transport and disposal of wood products should also be included, based on more detailed life-cycle research.

Appendix C, p. 53-72
The risk analysis included here seems unnecessarily complex, given the many unknowns associated with levels of risk over 100 years. Perhaps a continuous adjustment of risk assessments would be possible, based on observed losses across project types . A climate risk estimate should be included – changes in climate could affect forest viability by affecting fire, insect/pest/disease outbreaks, and weather events.

For more information on our comments, please contact Stan Van Velsor stan_vanvelsor@tws.org or Ann Ingerson, ann_ingerson@tws.org.

[2] Miner, Reid. 2006. The 100-year method for forecasting carbon sequestration in forest products in use. Mitigation and Adaptation Strategies for Global Change. Mitigation and Adaptation Strategies for Global Change.