



YSS

YOSEMITE STANISLAUS SOLUTIONS

Date: April 5, 2016

Dr. Russell Henly
Assistant Secretary, Forest Resource Management
California Natural Resources Agency
1416 Ninth Street, Suite 1311 Sacramento, California 95814

RE: Review of the "California Forest Carbon Plan Concept Paper"

Dear Dr. Henly,

These comments are submitted by the Yosemite Stanislaus Solutions (YSS) collaborative group. We appreciate the extensive effort by the FCAT staff in compiling this draft and believe it represents an important step forward in recognizing the essential role healthy and fire resilient forests must serve in order to achieve California's laudable and challenging GHG reduction goals.

Located in Tuolumne County, California, YSS is a collaborative group of diverse interests, ranging from timber companies to environmental organizations to local government representatives, working together to assist public and private land managers in achieving healthy forests and watersheds. There are 27 member organizations and five public agency liaisons actively engaged in our process. (For additional information concerning the collaborative see <http://yosemitestanislausolutions.com/about-yss/>).

YSS is committed to restoring and preserving healthy forestlands in California, specifically in the Tuolumne and Stanislaus watersheds, especially because of the multitude of environmental and economic benefits forestlands provide, including as an essential element of achieving California's greenhouse gas reduction goals.

Before providing specific comments on the current draft, we wish to convey several overarching factors we believe still need to be more fully addressed in order for appropriate goals and feasible approaches to forest health and resiliency to be established as part of the overall AB32 Program.

The stark reality is California's laudable GHG reduction targets cannot be achieved if we fail to address the growing trend of mega-fires that began before the current drought, and according to the recent science, will likely worsen in coming decades due to future droughts being hotter.

Additionally, as was highlighted in the public comments of Ms. Lucy Blake, President of the Northern Sierra Partnership, at a Joint USFS-Sierra Nevada Conservancy Public Forum on March 3, 2016, the current accounting by ARB of GHG emissions in California is incomplete and therefore inaccurate because of the continued failure to factor in wildfire emissions. Resources Agency Secretary

Laird has publicly noted the Rim Fire alone emitted the equivalent of the annual emission of 2.3 million cars. Perhaps more relevant is that the Rim Fire GHG emissions replaced almost three years of AB 32 program reductions achieved from all other sectors. In fact, the Rim Fire emitted five times more GHG than from the much more publicized Porter Ranch natural gas leak, the largest ever in U.S. history.

Engaging partners and beneficiaries beyond the Sierra Nevada Region in investing to protect and enhance those benefits is essential. We recognize it is extremely difficult to persuade such current beneficiaries, quite accustomed to their “free lunch,” to voluntarily contribute. The reality is, if one downstream beneficiary volunteered while others did not, the result would likely be a combination of creating a competitive disadvantage for the entity volunteering and resentment from their rate-payers.

Instead, we suggest you explore how to equitably have beneficiaries contribute to what they receive from healthy forests. Government has long embraced the responsibility of requiring those who profit/benefit from an activity to pay its full cost, including controlling pollution, rather than have the public subsidize their activities through increased public health costs. The corollary today is to fairly gauge the economic value to downstream beneficiaries attributable to forest health treatments. This should then become a basis for a public benefits charge that would be a very small cost to individual beneficiaries but a significant revenue stream for maintaining and enhancing forest and watershed health.

While minor modifications to existing wood and biomass utilization policies and contracts are now being explored due to the bark beetle crisis, restoring forest health can only occur with much more significant changes in current policies and investments. Again, achieving California’s AB 32 GHG reduction goals simply cannot be achieved without far-reaching advances in environmentally responsible utilization of the humongous volumes of biomass. Without a fundamentally new course of action, the existing forest biomass both enables future mega-fires and will emit vast streams of GHG even if they do not burn, but decompose in place. This was powerfully communicated in the coordinated Sierra Nevada Conservancy and Region 5 Forest Service August 4, 2015 presentation to the ARB that the burnt area “...will continue to emit GHG for decades resulting in emissions more than 4 times greater than those during the event.”

Wood and biomass require solutions commensurate with the magnitude of the challenge and the risk they pose to our forests and public health. Again, we urge full consideration of the Public Benefit Charge described above in relationship to downstream beneficiaries. In this case, all Californians are genuinely downstream beneficiaries. Additionally, it is imperative to foster and support innovation in more economical end-uses of biomass. This should include development of biofuels as part of meeting the Governor’s goal to reduce carbon in vehicle fuels by 50%; as well as the potential for building materials such as now being utilized in constructing a nine-story building in Portland, Oregon.

YSS is also deeply concerned that the current California screening criteria used to identify Disadvantaged Communities may be sound for urban areas, but is highly prejudicial when applied to rural areas, such as Tuolumne County. This issue was particularly well-articulated and documented at the August 4, 2015 ARB public meeting by Mr. Jonathan Kusel, a panel participant representing the Sierra Institute. We request that you engage on this issue, as the failure to fairly recognize rural disadvantaged communities deprives them of significant public resources, including from the AB 32 GHG

funds. We understand this may require a change in statute, which we urge the Administration develop and pursue.

This draft makes a compelling case that appropriate, landscape level forest treatments will significantly reduce GHG over the coming decades. This justifies GGRF funding even as work continues to refine quantification. In light of these critical findings, we urge that the existing CAL FIRE Guidance on Methods for Evaluating GHG Emission Reductions for Programs in the CAL FIRE Greenhouse Gas Reduction Fund should be reviewed to simplify the procedure to be followed for GGRF grants.

Consideration should be given to federal and state agency collaboration on this revision to allow for landscape or watershed level analysis and not require a project specific analysis. Further, projects should be given the option of allowing the analysis to be conducted by CAL FIRE rather than requiring individual project analyses to be submitted. Analysis pursuant to the existing ARB Offset Protocol should not be required since no offset is being sought for projects on federal land and since the statutory requirement for GGRF expenditures is only to spend funds for "reductions". There is no requirement that such reductions be "real, quantifiable, verifiable, enforceable and additional" as for offsets.

Overall, we believe there is strong alignment between the underlying purposes and objectives of this document and the position of Yosemite Stanislaus Solutions (YSS). The paper provides a strong and defensible set of steps necessary to create a robust statewide forest carbon plan. The basic objectives are clear and largely supportable, though, some of the references used seem a bit dated. We stress the use of the most current science to bolster points being made in the document.

Specific Comments

Page 1- Vision Statement

You present a good list of aspirations within your vision. However, we suggest you include an additional bullet point that advocates management/policy that accommodates the dynamic, constantly changing nature of forests. People have a tendency to consider forests in a static condition, i.e., it will be largely unchanging over time. We know this is not true, but we tend to underestimate how much forests can change in response to natural succession and a variety of disturbances. The ever-dynamic nature of forests should be acknowledged explicitly.

Page 2 – Intentions for the Forest Carbon Plan (bottom half of page 2)

It is important to recognize appropriate strategies for carbon sequestration depend heavily on the forest type in question. For example, the strong seasonal conditions of Sierra Nevada forests are very different than the coastal Redwood/Douglas Fir forests. California has a diverse array of forest types north to south and west to east. More explicit recognition of this geographic diversity and its implications for carbon management is warranted.

An additional bullet for the intent of the Forest Carbon Plan should be the desire to fine-tune the quantification of carbon markets. This topic is alluded to elsewhere, but it seems important enough to include as part of the overarching intents of the plan.

Page 3- 1st paragraph

Recent drought conditions have certainly focused attention on forest health. It is important to couple that discussion with recognition that forest management over the last century has led to major

changes in forest structure and composition. Current conditions of a large proportion of the dry conifer forest types widely distributed across California are overly dense with a high proportion of shade-tolerant species. This has significantly exacerbated vulnerability to disturbance and increased risk of mortality. Again, this is addressed elsewhere in the document, but should be highlighted up front when discussing drought.

Similarly, we suggest some discussion about the periodicity of drought. Drought is a naturally recurring phenomenon. While unpredictable, it does recur periodically. Future climate conditions are likely going to include not only more frequent drought, but perhaps more importantly hotter droughts, which would increase water stress, as well as fire and pest susceptibility. Forests must, in turn, be capable of tolerating this conditions.

Page 3 – last paragraph

Add emphasis to a couple of points related to increased burning. Not only is fire burning larger areas, but importantly we are seeing a larger proportion of burned areas experiencing high severity fire, such as the almost 40% high severity burnt within the Rim Fire. This has obvious important implications for sustainability of forests. Also add emphasis to the increase in extreme weather conditions under which some fires are burning. These are the kinds of fires that result in stand replacement; significantly different outcomes than after a low-to-moderate severity fire which was more the norm until recently. Also, mention in this context, that past forest management activities, e.g. preferential and almost complete removal of the largest, most fire resistant trees, contributed to the fire risk we see today. Historic forests were characterized by low densities of mostly large trees with thick bark and high height to crown base. Current forests, in many places, have very different structure, largely characterized by dense smaller trees, ladder fuels, and abundant surface fuels.

Page 4 – 2nd paragraph

The opportunity to offset GHG emissions by forests will depend heavily on the forest type. Not all forests have the same capacity. It is true the mixture of ownerships and their respective forest management objectives presents a challenge to coordinating carbon storage strategies. However, it should be noted here there are a number of emerging programs to encourage cross-boundary collaboration such as the Department of Agriculture's "All Lands" initiative and the Good Neighbor Authority that increase the ability for the federal government to work with neighboring state and private lands.

Page 4 – last sentence going to Page 5

We support this statement (carbon storage among fewer, larger trees). It would be useful to discuss why this is a prudent approach.

Page 5 – 1st full paragraph

Acknowledge Table 1 is a crude summary and does not capture the diversity of forest types on different ownerships, especially the different ecological trajectories of different forest types depending on geography and ownership.

Page 5 – 2nd full paragraph

Acknowledge timber production and carbon sequestration are two quite different objectives that would result in different management decisions. A complete carbon accounting must consider many subtle details such as the value of dead wood in ecosystems despite the emission of carbon in that process, or the loss of carbon at many different stages of the wood processing cycle.

Page 5- last paragraph

Provide some discussion of the uncertainty in rates of carbon sequestration with changing climates. Higher concentrations of CO₂ could increase rates of sequestration but changes in growing seasons due to warming trends are two of many factors in flux that will collectively influence carbon sequestration. Uncertainty is a strong theme in response to changing climates.

Page 6 – 1st full paragraph

The availability of forest products infrastructure is a major concern for forest management in California. Almost all forest management activities that would be employed for restoring desirable conditions depend on having a forest products processing infrastructure. The clear decline in capacity over the last 30 years is limiting options. This is true not only with raw capacity, but also with the lack of ability to handle the diversity of materials that comes from a forest (e.g. biomass, small diameter trees, etc.). Important consideration. **(Colorado examples)**

Page 6 – 4th full paragraph

One needs to be careful when using broad generalizations such as the term “dense stands.” The significance of stand density and what constitutes a dense stand depends on a number of factors. This nuance is important to understand, because in some locations, it may be desirable to maintain what appears to be a dense stand (e.g. drainage bottoms that are inherently wetter and have deeper soils). While there is a need to make generalized statements to communicate, such statements should be qualified.

Page 7 – 1st paragraph

Discuss more about the vulnerability of trees to climate change depending on the life stage of the tree. Seedlings in today’s climate may respond very differently than seedlings that germinated 100 years ago. Mature trees may persist in a different climate than they germinated in, but there may be no recruitment of the same species.

Page 7 – 2nd paragraph

Climate predictions are less certain when it comes to changes in precipitation. We do not necessarily expect decreasing precipitation, although we do expect proportionately less snow and more rain.

Page 8 – 1st and 2nd paragraphs

Explain the significance of the “insect and disease threatened” areas. This seems like a very brief treatment of that topic and could use some more explanation.

Page 8 – “Implications for Forest Carbon Sinks”

This discussion is missing an important factor. Selective logging of large trees, across much of California over the last 100 years, has had an important influence on forest structure. Fire suppression/exclusion has certainly been an important factor but logging has also.

We do not necessarily expect thinned stands to enable unabated increases in carbon sequestration rates. There are many factors that will influence what we expect to be healthy, sustainable carbon sequestration. Rates will sooner or later begin to decline because growth rates of trees will slow and there will also be some amount of natural mortality, particularly in forests that are managed for multiple ecological objectives.

There are many moving parts in the balance of the carbon pool, even in response to fire. Large trees are typically more fire resistant, but can become more vulnerable under certain circumstances. It would be insightful here to discuss this. The main point is carbon fluxes in forests, over time, in response to many factors.

The notion that unmanaged forests can be carbon emitters vs. managed forests tend to sequester carbon begs more discussion. The entire carbon life cycle analysis must take into account many factors, including the management objectives of a given forest. Additionally, only considering wildfires through 2010 distorts the true picture of wildfire-related GHG emissions, as during the past five years California has experienced increasingly larger and higher severity wildfires, continuing what some of the most knowledgeable forest researchers believe will become more common.

Page 10 – 2nd paragraph

The concept of variable density thinning is important to recognize as a needed approach to restoring resiliency to fire-adapted forests as it appropriately reflects the varied diversity of forest conditions.

Page 10 – “Species Range Shift”

There is much debate in the scientific literature, and relatively little empirical evidence to support any conclusions, about how species ranges will shift over time. Given the long life of trees, and the relative robustness of mature trees, it may be quite a while before the effects of changing climate results in a new equilibrium of vegetation across the landscape. Much of what we anticipate is speculation at this point is highly uncertain. Nonetheless, we agree with the principle that forest management and restoration practices undertaken today should be informed by expected future climates and should be robust to handle much uncertainty.

Page 12 – Description of Attributes for healthy California Forests

We recommend adding the term “heterogeneity” to this list of terms that characterizes resiliency. Many forests in California are inherently heterogeneous in response to periodic disturbance, especially fire. However, management activities in recent decades have trended forests towards homogeneous stands with even spacing. Restoring forests in many places will involve reestablishing heterogeneity at different scales.

Page 13 – 2nd through 4th paragraphs

These paragraphs mention that legal restrictions inhibit management efforts and treatment goals. It should be noted often it is policy considerations that have the biggest influence on what can or cannot be done on a given forest, particularly federal forests. Work to improve forest resiliency is underway, but is slow and limited for many reasons. For meaningful restoration to happen, it needs to be expanded to a landscape scale and there needs to be reasonable and carefully considered modifications to policies that are in place to prevent unforeseen outcomes from management. Without landscape-scale restoration efforts to restore forests, they will continue to fall further and further behind.

Page 14 –

Analytical approaches that combine LIDAR and FIA data are strong and provide the most data-rich and supportable evidence for taking actions. It offers a strong foundation for analysis and decision-making and expanding its availability, as funding permits, should be supported.

Page 15 – Carbon Storage

There are important questions around the assessment of below-ground carbon and the loss of carbon in the complete life cycle of wood product development. These are crucial facets of the complete carbon storage budget and must be carefully assessed and quantified. Below-ground carbon, as the paper suggests, is a significant component of live and dead sources of carbon in forest ecosystems. However, it is much harder to measure and undoubtedly varies from forest-type to forest-type. This should be fully fleshed out in the discussion. By the same token the amount of carbon stored in wood products after processing can vary quite a bit, as well, depending on the end product and the processing methods. For example, it is important to include the decomposition of slash and removal of non-marketable trees that result from the harvesting process. Once again, we urge the full Forest Carbon Plan thoroughly treat this topic and reveal the important nuances that will have a big impact on final assessments of carbon storage from wood products.

Page 16

It should be noted these estimates are a snapshot in time. Values are constantly changing, depending on many different conditions, especially significant events such as a wildfire or timber harvest. The importance of federal lands is starkly evident, comprising over 60% of total estimated carbon in California's forests. This needs to be highlighted, and appropriately reflected in action recommendations.

Page 16 – Carbon Storage – Wood Products and other Uses

The full life cycle of wood products has many junctures in the processing development where losses of carbon can occur. The phrase "less than 1% of the harvested material goes unused" is questionable. We recognize there are constant efforts to better utilize all material, however, it is likely more than 1% of the carbon from forests is emitted somewhere along the wood processing cycle. Ideally, all materials not used in manufacturing an end-product could be used for bioenergy. But current and recent markets suggest that is still not generally viable financially. So the point here is the Forest Carbon Plan should present a thorough life cycle analysis for the major wood products that reveals all sources of emissions, (e.g. fuels costs for trucks to haul material or decomposition of slash) as well as, the carbon savings where wood products provide a substitute for more energy-intensive materials (e.g. manufacturing furniture from metal).

Page 17 – last paragraph

Again the argument is made that private lands do a better job of sequestering carbon than public lands. This discussion should be expanded to reveal the reasons for these findings. There are many factors that play into this conclusion including current conditions, past management history, management objectives, future management plans, etc. Sequestration rates of 9.6 million metric tons of CO₂ per/year may not be sustainable depending on the many factors just mentioned. The point is the inherent variability of forests to sequester carbon over time.

Page 18 – Tables 4 and 5

It would be helpful to present these values on a per acre basis so the reader can get a better sense of performance.

Page 18 – Growth and Harvest by Ownership

Once again, to be fair and to leave the reader with an objective impression, it is important to express carbon balances in terms of management objectives, the impacts of natural disturbances, and the variability in current conditions. To state Forest Service Reserves are net sources of carbon

emissions sounds judgmental. Discuss the factors behind these conclusions, so the reader understands why emissions and sequestration varies between different ownerships. Critical to this discussion, once again, are underlying management objectives and a thorough understanding of the life cycle of different wood products.

Page 20 - Carbon Accounting

This is a good discussion on the evolution of carbon accounting and methods for improving it. It is definitely an area that will need to provide reliable, defensible methods for quantifying carbon flux across complex landscapes and management outputs.

Page 22 – Protect

We suggest adding to the goal, managing forest ecosystems to minimize impacts of uncharacteristic disturbances such as high severity fire. With current conditions and changing climate, much of California’s forested landscape is vulnerable to catastrophic disturbance. It should be a priority to learn how to live with fire and other natural disturbances. For too long, we have tried to prevent these occurrences only causing more vulnerable conditions. This is clearly an “all-lands’ challenge given large scale disturbances easily cross ownership boundaries.

Managing fire is the first and foremost challenge throughout the Sierra Nevada and many other places in California. The problem is exacerbated by changing climates and also fragmentation of forest landscapes with structures scattered across the landscape. Firefighting has become a larger and larger portion of land management budgets, in large part because fire management agencies by default must assume responsibility to protect structures. There is a direct correlation between landscape fragmentation by human structures and firefighting challenges and this should be considered within the discussion of protecting wildland forests.

We suggest adding two of additional strategies to the list:

- * Develop approaches to identifying and prioritizing areas for management
- *Support the efforts of NGOs, such as The Nature Conservancy, in their efforts to manage and protect forests.

Pages 22 – 23: Enhance

The goal to enhance references increasing carbon storage pools “as ecological limits allow.” This is an interesting thought that should be expanded in the full Forest Carbon Plan. Given the variability of forest types throughout California, this will be an important discussion.

Coupling increased forest management targets with other directives, such as the State Wildlife Action Plan, will reveal some of the difficult challenges in balancing objectives. For example, the wildlife plan likely calls for some downed wood and decadent stands to provide habitat for certain species. This will run counter to objectives for net sequestration of as much carbon as possible. While this is not a bad thing, it is illustrative of the challenges of balancing many different objectives.

We applaud, and strongly endorse, the vision to step up treatments to larger areas. This is the only way current poor conditions, on many forests, can be reversed in a meaningful way. However, this will require some things to change, notably budgets for treatments and infrastructure for processing wood. Current levels of infrastructure are inadequate for handling larger volumes of material, especially smaller material that is not in the traditional lumber market. It would be helpful for the plan to discuss this challenge and to explore ways of encouraging investments in non-traditional and innovative wood processing infrastructure, such as biomass.

Page 24 – 2nd paragraph

When discussing reforestation after fire or harvest, it would seem important to consider how planting and other reforestation methods would perform under changing climates. This is a significant unknown with important consequences for reestablishing forests in the coming years.

Under the list of management parameters and actions we suggest adding a few thoughts:

- * Promote an “All-Lands” approach to landscape management actions
- * Work with the Air Resources Board to consider ways of increasing prescribed fire
- * Emphasize the value of variable density thinning and creating heterogeneity as part of forest management and restoration
- * Be cautious about employing “sanitation” treatments. Some can construe this as a need to remove all damaged or diseased trees. Such trees can be vitally important trees for many species of wildlife. There is a significant deficit of such structures in most forests as a result of sanitation treatments and other forest practices of the past several decades.

Page 25 – Strategies

We fully support the use of forest waste products for use in bioenergy. However, we already know the number one limiting factor to the development of bioenergy is relative costs in the energy market. Hauling biomass from its source to a market is expensive and thus the competitiveness of forest biomass is low.

We want to promote a variety of ways to make use of what is traditionally considered unusable forest waste valuable. Support innovative markets and industries that can make broader uses of forest products and create more competition for forest products, in general.

Page 29 – Investment Mechanisms

We add emphasis to the multi-ownership and cross boundary planning and funding strategies. Landscape restoration approaches offer the best opportunity for successful changes in forest conditions. This approach needs to be supported.

Page 31 – Research and Development

Do not relegate research and development to an afterthought. There are critical areas of additional information needed to forge desired progress. Research and development should be emphasized as a vital foundation for the entire Forest Carbon Plan.

Thank you for providing an opportunity to submit comments. YSS hopes our contribution is found useful and helps inform the final product. Please feel free to contact me if YSS can be of further assistance.

Sincerely,



Chris Trott
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