March 23, 2020

USDA Forest Service
David Francomb
C/O Jay Strand
99 Ranger Road
Rochester, VT 05767

Re: Somerset Integrated Resource Project #53706 Environmental Assessment

Dear Mr. Strand:

Thank you for providing the opportunity to submit comments on the Somerset Integrated Resource Project #53706 Environmental Assessment (SIRP EA). I appreciate the research, thought, and work that went into the original Scoping Document and the Environmental Assessment. I respectfully submit the following comments and objections to the SIRP EA.

I would like to thank the US Forest Service (USFS) Green Mountain National Forest (GMF) staff for listening to previous public comments and allowing an additional opportunity for public comment to the SIRP EA.

As you will see from my comments and objections in this letter, I think that the SIRP EA is underrating impacts to resources, specifically Mature and Old age forest areas, and therefore an Environmental Impact Statement is necessary before moving forward with the SIRP.

I hope that I do not need to restate the fact that our world is in a critical state due to the amount of CO2 already in the atmosphere and the amount that continues to be released into the atmosphere. The USFS is significantly increasing logging not only the GMNF, but all forests in the US. The total proposed acres harvested from the Robinson Integrated Resource Project, the Early Successional Habitat Creation Project, and the Somerset Integrated Resource Project is approximately 34,000 acres which is approximately 9% of the GMNF. In response to my concerns about the cumulative impacts these actions are having on current carbon sequestration, future carbon uptake, and the carbon released as a result of harvest activities, the USFS keeps repeating the same comments that "*The emissions are extremely small relative to the total amount of carbon stored on the forest and the annual greenhouse gas emissions in the U.S. and globally."* This is analogous to saying that as the population increases and, as a result, there are more automobiles on the road releasing carbon into the atmosphere, we do not need to be concerned because any one automobile has extremely small impacts relative to the total amount of carbon being released in the US and globally. This argument seems weak and perhaps self-serving at best, and one that I would think is not responsible for a governmental agency. I continue to request that the USFS attempt to perform a meaningful cumulative impact analysis on the effects to current carbon sequestration, future carbon uptake, and the amount of carbon released during extraction and transportation of the timber harvesting programs.

Table 1-4, in the SIRP EA shows the Habitat Management Unit (HMU) Objective is to reduce the acres of forest habitat in the Mature and Old Age Classes from 27,042 acres (18,396 and 8,646 respectively) to a range of 9,298 – 21,320 acres (8,140 – 12,555 and 1,158 – 8,765 respectively). This is a 21% to 66% reduction in acres of two categories that are not only already storing large amounts of carbon, but will continue to uptake additional carbon (Mature change -32% to -56%, Old change +1.3% to -87%). These sections of forest are important to retaining already stored carbon as well as capturing more carbon in the future.

I object to the statements below that were in response to my Project Objection Letter and are included in the SIRP EA:

- *Carbon removed from the forest is not directly emitted to the atmosphere, rather it can be stored in durable wood products for many decades which also have substitution benefits.*
- *Any carbon losses from the ecosystem would be counterbalanced overtime as the forest recovers, thus timber removals can actually result in increased carbon storage when considering harvested wood products and regrowth.*
- *Furthermore, any initial carbon emissions would be balanced and possibly eliminated as the stand recovers and regenerates, because the remaining trees and newly established trees typically have higher rates of growth and carbon storage.*

Below is a list of articles that support the argument that intact mature/older forests, which already store significant amounts of carbon, continue to take in more carbon over time and that the stored carbon in extracted wood products does not offset that amount of carbon lost and released during the extraction process. (In some cases, I have underscored sentences for emphasis.)

Proforestation vs Reforestation:

"Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good; frontiers in Forests and Global Change June 11, 2019; William R. Moomaw, et. al" –

- Afforestation and reforestation can contribute to CDR (carbon dioxide removal), but newly planted forests require many decades to a century before they sequester carbon dioxide in substantial quantities.
- If deforestation were halted, and secondary forests were allowed to continue growing, they would sequester −120 GtC between 2016 and 2100 or ~12 years of current global fossil carbon emissions (Houghton and Nassikas, 2018). Northeast secondary forests have the potential to increase biological carbon sequestration between 2.3 and 4.2-fold (Keeton et al., 2011).
- Carbon is lost from forests in several ways: damage from natural disturbances including insects and pathogens ("pests"), fire, drought and wind; forest conversion to development or other non-forest land; and forest harvest/management. Together, fires,

drought, wind, and pests account for ~12% of the carbon lost in the U.S.; forest conversion accounts for ~3% of carbon loss; and forest harvesting accounts for 85% of the carbon lost from forests each year (Harris et al., 2016). Forests in the Southern US have the highest percentage of carbon lost to timber harvest (92%) whereas the Western US is notably lower (66%) because of the greater contribution of fires to carbon removal. The Northern U.S. is roughly equivalent to the national average at 86% (Harris et al., 2016).

- Because existing trees are already growing, storing carbon, and sequestering more carbon more rapidly than newly planted and young trees (Harmon et al., 1990; Stephenson et al., 2014; Law et al., 2018; Leverett and Moomaw, in preparation), proforestation is a near-term approach to sequestering additional atmospheric carbon: a significant increase in "negative emissions" is urgently needed to meet temperature limitation goals.
- Each year a single tree that is 100 cm in diameter adds the equivalent biomass of an entire 10–20 cm diameter tree, further underscoring the role of large trees (Stephenson et al., 2014).
- Intact forests also may sequester half or more of their carbon as organic soil carbon or in standing and fallen trees that eventually decay and add to soil carbon (Keith et al., 2009).
- Some older forests continue to sequester additional soil organic carbon (Zhou et al., 2006) and older forests bind soil organic matter more tightly than younger ones (Lacroix et al., 2016).
- Far from plateauing in terms of carbon sequestration (or added wood) at a relatively young age as was long believed, older forests (e.g., >200 years of age without intervention) contain a variety of habitats, typically continue to sequester additional carbon for many decades or even centuries, and sequester significantly more carbon than younger and managed stands (Luyssaert et al., 2008; Askins, 2014; McGarvey et al., 2015; Keeton, 2018)
- Forestry models underestimate the carbon content of older, larger trees, and it is increasingly clear that trees can continue to remove atmospheric carbon at increasing rates for many decades beyond 100 years (Robert T. Leverett, pers. comm. Stephenson et al., 2014; Lutz et al., 2018; Leverett et al., under review).

"Public land, timber harvests, and climate mitigation: Quantifying carbon sequestration potential on U.S. public timberlands; Science Direct October 10 2007; Brooks M. Depro, Brian C. Murray, Ralph J. Alig, Alyssa Shanks"

- Our analysis found that a ''no timber harvest'' scenario eliminating harvests on public lands would result in an annual increase of 17–29 million metric tonnes of carbon (MMTC) per year between 2010 and 2050—as much as a 43% increase over current sequestration levels on public timberlands and would offset up to 1.5% of total U.S. GHG emissions.

"Old Growth Forests Are Valuable Carbon Sinks; Science Daily September 14, 2008; Oregon State University"

- Contrary to 40 years of conventional wisdom, a new analysis suggests that old growth forests are usually "carbon sinks" -- they continue to absorb carbon dioxide from the atmosphere and mitigate climate change for centuries.
- "Carbon accounting rules for forests should give credit for leaving old growth forest intact," researchers from Oregon State University and several other institutions concluded in their report. "Much of this carbon, even soil carbon, will move back to the atmosphere if these forests are disturbed."
- When an old growth forest is harvested, Law said, studies show that there's a new input of carbon to the atmosphere for about 5-20 years, before the growing young trees begin to absorb and sequester more carbon than they give off. The creation of new forests, whether naturally or by humans, is often associated with disturbance to soil and the previous vegetation, resulting in decomposition that exceeds for some period the net primary productivity of re-growth.

"Luyssaert, S., Schulze, E. D., et al. (2008). Old-growth forests as global carbon sinks. Nature, 455(7210), 213"

- We find that in forests between 15 and 800 years of age, net ecosystem productivity (the net carbon balance of the forest including soils) is usually positive. Our results demonstrate that old-growth forests can continue to accumulate carbon, contrary to the long-standing view that they are carbon neutral.
- Old-growth forests accumulate carbon for centuries and contain large quantities of it. We expect, however, that much of this carbon, even soil carbon, will move back to the atmosphere if these forests are disturbed.

"Harmon, M. E., Ferrell, W. K., & Franklin, J. F. (1990). Effects on carbon storage of conversion of old-growth forests to young forests. Science, 247(4943), 699-702"

- Simulations of carbon storage suggest that conversion of old-growth forests to young fast-growing forests will not decrease atmospheric carbon dioxide (CO(2)) in general, as has been suggested recently. During simulated timber harvest, on-site carbon storage is reduced considerably and does not approach old-growth storage capacity for at least 200 years. Even when sequestration of carbon in wooden buildings is included in the models, timber harvest results in a net flux of CO(2) to the atmosphere.

Harvested Wood Products:

"Forest carbon storage in the northeastern United States: Net effects of harvesting frequency, post harvest retention, and wood products; Rubenstein School of Environment and Natural Resources December 18 2009; Jared S. Nunery, William S. Keeton"

- The results supported both our first hypothesis that passive management sequesters

more C than active management, as well as our second hypothesis that management practices favoring lower harvesting frequencies and higher structural retention sequester more C than intensive forest management.

- We showed that even with consideration of C sequestered in harvested wood products, unmanaged northern hardwood forests will sequester 39 to 118% more C than any of the active management options evaluated.

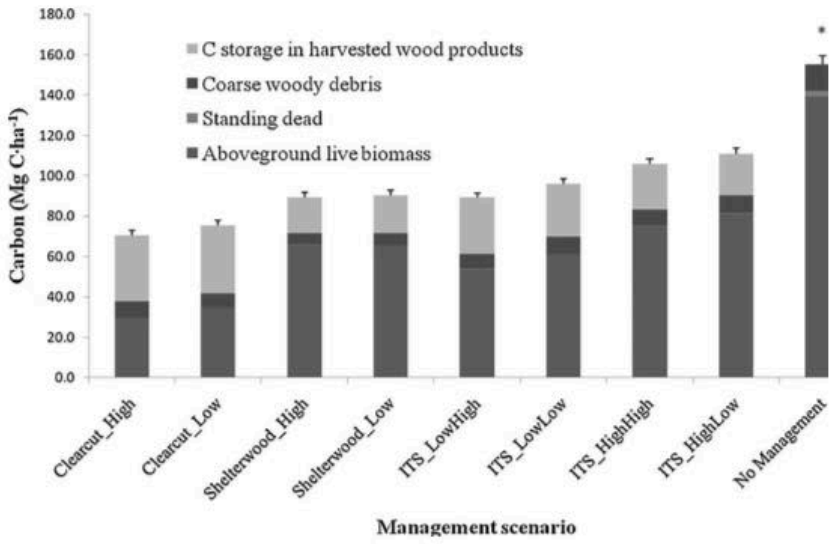

Fig. 3. Comparison of mean C stocks in nine different management scenarios. Error bars show + one standard error of the mean. For management scenario descriptions refer to Tables 2 and 3. Asterisk notes significant difference ($p < 0.01$) between active and passive management scenarios. Significant differences between active management treatment effects are described in Table 7.

"Emission Omissions: Carbon accounting gaps in the built environment; International Institute for Sustainable Development, April 2019; Seton Stiebert, Daniella Echeverria, Philip Gass, Lucy Kitson"

- Biogenic carbon emissions and sequestration related to the production and end-of-life stages of wood building products hold the most significant uncertainty in existing LCAs (Life Cycle Assessment).
- Whereas emissions from the production of concrete and steel are well understood, accounting for emissions and sinks in the biogenic carbon cycle of wood products is complex and requires sophisticated carbon models that can track exchanges between different carbon pools. LCA studies typically do not track biogenic carbon but simply assume that whatever carbon is harvested is replaced sustainably by new forest growth in the future (i.e., carbon neutrality). Criticisms of this assumption include that it ignores significant and measurable GHG emissions from soil disturbance, carbon losses from the conversion of old-growth primary forest and real-world silvicultural success rates than can be significantly less than 100 per cent. Previous studies have also found that as little as 15 per cent of the carbon stored in a standing tree is sequestered in the final wood

product. Few LCAs account for the immediate climate change impacts of these carbon losses relative to the small amount of carbon stored, nor do they account for the time required to recapture that carbon and other biogenic carbon losses in new forest growth.

Climate scientists have been and continue to tell us that CO2 levels in the atmosphere are at dangerous levels and that we need to take every action, no matter how small or large, to address the problem. Our forests provide a significant capability to absorb a large amount of the carbon in our atmosphere. Given their level of importance for carbon storage and the amount of carbon that will be released from this and other GMNF planned harvests, I request that a thorough Environmental Impact Statement be performed. The Environmental Impact Statement should take into consideration other scientific studies related to forest management and forest carbon sequestration, and take into consideration the cumulative effects of this and the other GMNF harvesting plans.

Thank you for allowing me to submit comments and objections to the SIRP EA.

Sincerely,
Mark Nelson