Mr. James Melonas
Forest Supervisor Santa Fe National Forest
11 Forest Drive
Santa Fe, NM 87508

RE: Scoping comments for the Santa Fe Mountains Landscape Resilience Project

Mr. Melonas,

In Buddhist countries they use the word 'ignorance' quite differently than you and I do. To them it means ignoring or disregarding the big picture, and getting all caught up in one's little piece of things.

For all 7.3 billion of us on Earth today, the big picture is climate disruption, caused by warming stemming from too much carbon being dumped into the atmosphere. What few references to climate-related factors I've seen in your communications, or heard at your meetings, is seriously outdated and impoverished - to say the least!

We have no choice now but to begin keeping carbon in the ground and in the forest. If the city sewer was flooding your basement, you'd obviously address that. But if in the process you realized your house was on fire, that would take precedence. Like it or not, climate mitigation now trumps wildfire mitigation.

In a letter (included in full at the bottom of this) signed by 40 climate scientists, they state:

"While high-tech carbon dioxide removal solutions are under development, the "natural technology" of forests is currently the only proven means of removing and storing atmospheric CO2 at a scale that can meaningfully contribute to achieving carbon balance."

I am afraid that the pre-climate-change slash and burn technologies of the Resilience Project will not only ignore the priorities of global climate stability, **they will actually add to our mushrooming crisis**.

Dr. Chad Hansen writes:

"Any short-term reduction in potential fire behavior following prescribed fire lasts only 10-20 years, so using low-intensity prescribed fires ostensibly as a means to prevent mixed-intensity wildland fires would require burning a given area of forest every 10-20 years (Rhodes and Baker 2008).

This would represent a tenfold increase, or more, over current rates of burning occurring from wildland fire (Parks et al. 2015). Contrary to popular assumption, high-intensity fire patches produce relatively lower particulate smoke emissions (due to high efficiency of flaming combustion) while lowintensity prescribed fires produce high particulate smoke emissions, due to the inefficiency of smoldering combustion.

Therefore, even though high-intensity fire patches consume about three times more biomass per acre than low-intensity fire (Campbell et al. 2007), low-intensity fires produce 3-4 times more particulate smoke than high-intensity fire, for an equal tonnage of biomass consumed (Ward and Hardy 1991, Reid et al. 2005).

As a result, a landscape-level program of prescribed burning would cause at least a ten-fold increase in smoke emissions relative to current fire levels, and it would not stop wildland fires when they occur (Stephens et al. 2009)."

In other words: from a climate perspective, if the forest is to burn we're actually better off if it burns at moderate to high intensity than at low! You have chance here to be part of the solution rather than the problem. I urge you to consider that.

Personally speaking, I live on 10 acres in the WUI, adjacent to the Santa Fe National Forest. We thinned our 10 acres several years ago following a State Forestry prescription. We have not seen any benefit. In fact, our land has noticeably suffered. Thinning in drought conditions is NOT forest restoration; it's deforestation. When I think of what we did to degrade our 10 acres being done on 50,000 it makes me very angry and determined to fight your plan every inch of the way.

Respectfully (believe it or not),

Tom Brady
10 Cougar Walk
Santa Fe, NM

Five Reasons The Earth's Climate Depends On Forests

Statement from Scientist Signatories:

"The Intergovernmental Panel on Climate Change (IPCC) will issue a new report soon on the impacts of 1.5°C of global warming. Limiting average temperature rise to 1.5°C requires both drastic reduction of carbon dioxide (CO2) emissions and removing excess carbon dioxide from the atmosphere. While high-tech carbon dioxide removal solutions are under development, the "natural technology" of forests is currently the only proven means of removing and storing atmospheric CO2 at a scale that can meaningfully contribute to achieving carbon balance.

In advance of the IPCC report, we highlight five often overlooked reasons why limiting global warming requires protecting and sustainably managing the forests we have, and restoring the forests we've lost.

1. **The world's forests contain more carbon than exploitable oil, gas, and coal deposits, hence avoiding forest carbon emissions is just as urgent as halting fossil fuel use.** Recent research suggests that, in order to have a chance of limiting warming to 1.5°C, we cannot emit more than about 750 billion tons of CO2 in the coming century[i]. The carbon in readily exploitable fossil reserves could release 2.7 trillion tons[ii] of CO2 up to 2100. By comparison, forests store enough carbon to release over 3 trillion

tons[iii] of CO_2 if destroyed. And climate change itself makes forests more vulnerable, including to uncontrollable wildfires.

2. **Forests currently remove around a quarter of the CO_2 humans add to the atmosphere, keeping climate change from getting even worse.** By destroying forests, we not only emit carbon dioxide but also lose the role forests play, through photosynthesis, in taking carbon dioxide out of the atmosphere. Of the 39 billion tons of CO_2 that we emit into the atmosphere each year, 28%[iv] is removed on land (mostly by forests), and around a quarter by oceans. The remainder stays in the atmosphere. Maintaining and improving the management of existing forests is a critical part of climate change mitigation, with substantial additional benefits, including reducing air pollution, buffering against flooding, and conserving biodiversity.

3. A**chieving the 1.5°C goal also requires massive forest restoration to remove excess carbon dioxide from the atmosphere.** Reforestation and improving forest management together have large potential to remove CO_2 from the atmosphere. These “natural climate solutions” could provide 18%[v] of cost-effective mitigation through 2030.

4. **Bioenergy is not the primary solution[vi]**. Achieving significant amounts of carbon dioxide removal through use of wood for energy and capturing the resulting carbon in geological reservoirs requires technology that is untested at large scale. In some areas, such as high carbon tropical forests and peatlands—both of which continuously remove carbon from the atmosphere—conservation is the best option. Climate benefits could also come from increased use of sustainably produced wood in longer-lived products, such as buildings, where timber can store carbon and substitute energy-intensive materials like concrete and steel.

5. **Tropical forests cool the air around them and the entire planet, as well as creating the rainfall essential for growing food in their regions and beyond[vii].** Standing forests pull moisture out of the ground and release water vapor to the atmosphere, regulating local, regional and global precipitation patterns and acting as a natural air conditioner[viii]. In contrast, cutting down tropical forests increases local surface temperatures by up to

3°C[ix]. These “climate regulation” effects of tropical forests make their conservation essential to protect food and water security.

In sum, we must protect and maintain healthy forests to avoid dangerous climate change and to ensure the world’s forests continue to provide services critical for the well-being of the planet and ourselves. The natural technology forests provide underpins economic growth but, like crumbling infrastructure, we’ve allowed forests to be degraded, even as we know that deferring maintenance and repair only increases the costs and the risk of disaster. In responding to the IPCC report, our message as scientists is simple: **Our planet’s future climate is inextricably tied to the future of its forests**.”

Signatories:

1. Paulo Artaxo, Physics Department, University of São Paulo
2. Gregory Asner, Department of Global Ecology, Carnegie Institution for Science and US National Academy of Sciences
3. Mercedes Bustamante, Ecology Department, University of Brasilia and Brazilian Academy of Sciences
4. Stephen Carpenter, Center for Limnology, University of Wisconsin-Madison
5. Philippe Ciais, Laboratoire des Sciences du Climat et de l’Environnement, Centre d’Etudes Orme des Merisiers
6. James Clark, Nicholas School of the Environment, Duke University
7. Michael Coe, Woods Hole Research Center
8. Gretchen C. Daily, Department of Biology and Woods Institute, Stanford University and US National Academy of Sciences
9. Eric Davidson, University of Maryland Center for Environmental Science and President of the American Geophysical Union
10. Ruth S. DeFries, Department of Ecology, Evolution and Environmental Biology, Columbia University and US National Academy of Sciences
11. Karlheinz Erb, University of Natural Resources and Life Sciences, Vienna (BOKU)
12. Nina Fedoroff, Department of Biology, Penn State University
13. David R. Foster, Harvard University
14. James N. Galloway, Department of Environmental Sciences, University of Virginia

15. Holly Gibbs, Center for Sustainability and the Global Environment, University of Wisconsin-Madison
16. Giacomo Grassi
17. Matthew C. Hansen, Department of Geographical Sciences, University of Maryland
18. George Homberger, Vanderbilt Institute for Energy and Environment
19. Richard Houghton, Woods Hole Research Center
20. Jo House, Cabot Institute for the Environment and Department of Geographical Sciences, University of Bristol.
21. Robert Howarth, Department of Ecology and Evolutionary Biology, Cornell University
22. Daniel Janzen, Department of Biology, University of Pennsylvania and US National Academy of Sciences
23. Carlos Joly, Institute of Biology, University of Campinas
24. Werner Kurz, Canada
25. William F. Laurance, College of Science and Engineering, James Cook University
26. Deborah Lawrence, Department of Environmental Sciences, University of Virginia
27. Katharine Mach, Stanford University Earth System Science
28. Jose Marengo, National Centre for Monitoring and Early Warning and Natural Disasters (CEMADEN, Brazil)
29. William R. Moomaw, Global Development and Environment Institute, Tufts University and Board Chair, Woods Hole Research Center
30. Jerry Melillo, Marine Biological Laboratory, University of Chicago
31. Carlos Nobre, Institute of Advanced Studies, University of São Paulo and US Academy of Sciences
32. Fabio Scarano, Institute of Biology, Federal University of Rio de Janeiro, and Brazilian Foundation for Sustainable Development (FBDS)
33. Herman H. Shugart, Department of Environmental Sciences, University of Virginia
34. Pete Smith, FRS, FRSE, University of Aberdeen, United Kingdom
35. Britaldo Soares Filho, Institute of Geosciences, Federal University of Minas Gerais
36. John W. Terborgh, Nicholas School of the Environment, Duke University

37. G. David Tilman, College of Biological Sciences, University of Minnesota
38. Adalberto Luis Val, Brazilian National Institute for Research of the Amazon (INPA)
39. Louis Verchot, International Center for Tropical Agriculture (CIAT)
40. Richard Waring, Department of Forest Ecosystems and Society, Oregon State University

The views expressed are those of the signatories as individuals and may not be regarded as stating an official position of their respective institutions.

[i] Millar, R. J., Fuglestvedt, J. S., Friedlingstein, P., Rogelj, J., Grubb, M. J., Matthews, H. D., … & Allen, M. R. (2017). Emission budgets and pathways consistent with limiting warming to 1.5 C. Nature Geoscience, 10(10), 741. https://www.nature.com/articles/ngeo3031/. Goodwin, P., Katavouta, A., Roussenov, V. M., Foster, G. L., Rohling, E. J., & Williams, R. G. (2018). Pathways to 1.5 C and 2 C warming based on observational and geological constraints. Nature Geoscience, 11(2), 102. https://www.nature.com/articles/s41561-017-0054-8. Tokarska, K. B., & Gillett, N. P. (2018). Cumulative carbon emissions budgets consistent with 1.5° C global warming. Nature Climate Change, 8(4), 296. https://www.nature.com/articles/s41558-018-0118-9.pdf. These recent sources use different statistical methods and base years, all resulting in median estimates of 200-208 GtC remaining for a 50-66% probability of 1.5° C.
[ii] Heede, Richard and Naomi Oreskes (2016). Potential emissions of CO2 and methane from proved reserves of fossil fuels: An alternative analysis. Global Environmental Change 36 (2016) 12-20.
[iii] Pan, Y., Birdsey, R.A., Fang, J., Houghton, R., Kauppi, P.E., Kurz, W.A., Phillips, O.L., Shvidenko, A., et al. (2011). A large and persistent carbon sink in the world's forests. Science 333, 988–993; Pan, Y., Birdsey, R.A., Phillips, O.L., Jackson, R.B. (2013). The structure, distribution, and bio mass of the world's forests. Annu. Rev. Ecol. Evol. Syst. 44, 593–622.
[iv] Le Quéré, C. et al (2018). Global carbon budget 2017. Earth System Science Data, 10, 405-448. https://www.earth-syst-sci-data.net/10/405/2018/
[v] Calculated from Griscom et al (2017). Natural climate solutions (Supplementary Information). Proc. Natl. Acad. Sci. U. S. A., 114, 11645–

11650, doi:10.1073/pnas.1710465114. http://www.ncbi.nlm.nih.gov/pubmed/29078344. Categories included in the 18% mitigation potential (from the cost-constrained 2°C scenario) include reforestation, natural forest management, improved plantations, mangrove restoration, peatland restoration (assuming much of this was or is forested), trees in cropland and biochar. All natural climate solutions are assumed to ramp up at the same rate.
[vi] Field, C. and Mach, K. (2017). Rightsizing carbon dioxide removal: Betting the future on planetary-scale carbon dioxide removal from the atmosphere is risky. Science, VOL 356 ISSUE 6339; Heck, V., Gerten, D., Lucht, W. and Popp, A., 2018. Biomass-based negative emissions difficult to reconcile with planetary boundaries. Nature Climate Change, p.1; Anderson, K. and Peters, G. (2016). The trouble with negative emissions. Science, Vol. 354, Issue 6309; Turner, P.A., Mach, K.J., Lobell, D.B. et al. (2018). The global overlap of bioenergy and carbon sequestration potential. Climatic Change (2018) 148: 1. https://doi.org/10.1007/s10584-018-2189-z.
[vii] Lawrence, D. and Vandecar, K., 2015. Effects of tropical deforestation on climate and agriculture. Nature Climate Change, 5(1), p.27.
[viii] Ellison et al (2017). Trees, forests and water: Cool insights for a hot world. Global Environmental Change, Vol. 43, Pages 51-61.
[ix] Silvério, D.V., P.M. Brando, M.N. Macedo, P.S.A. Beck, M. Bustamante, and M.T. Coe (2015). Agricultural expansion dominates climate changes in southeastern Amazonia: The overlooked non-GHG forcing, Env. Res. Lett., 10, 104105, doi: 10.1088/1748-9326/10/10/104015; Coe, M.T., P.M. Brando, L.A. Deegan, M.N. Macedo, C. Neill, and D.V. Silvério (2017). The forests of the Amazon and Cerrado moderate regional climate and are the key to the future of the region. Trop. Consv. Sci., 10, 6pp., DOI: 10.1177/1940082917720671.