October 30th, 2017

Mary Nichols, Chair

Air Resources Board

1001 I Street

Sacramento, CA

John Laird, Secretary

Natural Resources Agency

1416 9th Street, #1311

Sacramento, CA

Karen Ross, Secretary

California Department of Food and Agriculture

1220 N Street

Sacramento, CA

RE: California Natural and Working Lands Carbon Model, Version 2 (CALAND v2)

Thank you for the opportunity to provide public comment on the California Natural and Working Lands Carbon Model, Version 2 (CALAND v2). Given that the model uses an observational approach, the use of California data is critical. We particularly would like to thank you for the inclusion of the data from NRCS gSSURGO, 2016 and Silver et. al, 2010. For future model development, the California Natural Resources Conservation Service (NRCS) will complete its field trial for Compost Application on Grazed Rangelands that includes soil carbon science and was funded by the 4th climate assessment within the next year. We encourage the incorporation of that body of work within the model when it becomes available.

Within CALAND v2 we note that several management practices are being reviewed for inclusion within the model. Given that the compost amendments cited in Silver took place on grazed grasslands, we feel that it is important to find a way to incorporate grazing management into future versions of the model. We support the addition of rotational grazing, conservation crop rotation on cultivated lands, mulching and compost on cultivated lands and conversion of cultivated lands as activities where data is available. We would like to highlight both riparian restoration and windbreaks as important practices for future inclusion, specifically as they fall under the conversion of cultivated lands. Riparian restoration has demonstrated carbon benefits both above and below ground. It provides the additional benefits of improving water quality and increasing habitat and biodiversity on working lands. We recommend that as Version 2 is updated, the revised study, *“Creek carbon: Mitigating greenhouse gas emissions through riparian restoration”* be incorporated to specifically delineate riparian system restoration effects, including carbon and nitrogen sequestration in both soils and vegetation.[[1]](#footnote-1) Furthermore, we would like to encourage the LBNL team to review work commissioned by the CA Department of Conservation (DOC) on riparian carbon. DOC is developing a new tool, the Carbon in Riparian Ecosystems Estimator or CREEC, which will incorporate CA specific data sets for above ground riparian forest sequestration. The first round of findings from this work is due to be presented to CARB the by the first week of November 2017. Finally, we encourage future versions of the mode to include climate drivers for change in Carbon in natural and working lands over time. Without a variable Carbon flux, it will not be possible to capture the change in biogeochemical processes over time.

Again, we very much appreciate the progress that has been made and the on-going efforts we have highlighted. We also note that there are areas where significant gaps remain. There remains insufficient attention to the application of compost on the appropriate land types as a management practice within the model. We invite LBNL to consider use of CENTURY for the modeling of organic amendments (mulch and compost) on rangelands, as the N2O results from modelling in DNDC are inconsistent with the work conducted by Silver and Ryals. The absence of vegetation carbon for cultivated lands within CALANDS v2 is critical to address moving forward. We request that perennial and annual crops be segregated within Version 3. We highlight the need for orchards and vineyards data within the model, especially given that California has roughly 3,000,000 acres of orchards and vineyards.

Finally, we ask that careful consideration go into how CALANDs is used in the development of the Natural and Working Lands Implementation Plan and how it may be referenced by local and regional decision makers. Local governments and Resource Conservation Districts are using the COMET Planner and COMPOST-Planner through the Healthy Soils Initiative. They will need to understand how CALANDs interfaces with the tools and models the state has provided to them thus far to estimate local vegetation and soil carbon stock. Additionally, there is significant variability when it comes to choosing regionally appropriate and site specific practices on the ground across the different biomes or Major Land Resource Areas throughout the state. The development of CALANDS must be complemented by thoughtful conversations on the feasibility and applicability of carbon assignment for on ground practioners for the various practices within the model. The strengths and limitations of the observational model must be robustly discussed in determining appropriate use of the CALANDS. We encourage this team to reach out to policy makers and technical assistance providers at the local level during this next stage of development to share the CALANDs model and solicit and incorporate feedback for its use.

Thank you for your time and consideration,

John Wick,

Co-Founder of the Marin Carbon Project

1. *“Creek carbon: Mitigating greenhouse gas emissions through riparian restoration”* University of California Cooperative Extension in Marin County. Novato, California, Lewis et all Marin UCEE, 2015 . (Update due 2018). [↑](#footnote-ref-1)