Memorandum

Environmental
Resources
Management

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Prepared For: California Air Resources Board

From: Victoria Evans, Ariane Burwell, ERM

On behalf of: CalAg, LLC; CalAg Aggregator LLC

Date: April 22, 2013

Subject: Supplemental Public Comments: Review of ARB Compliance Offset Protocol Development--Rice Management Practices

INTRODUCTION

ERM was retained by by CalAg , LLC and CalAg Aggregator, LLC ("Aggregator") to prepare public comments that are supplemental to comments that we filed on March 27, 2013. These comments include and incorporate those earlier comments, a copy which are attached as Exhibit A. These comments concern development of a rice cultivation protocol for registering rice management projects for future compliance carbon offset credits with the California Air Resources Board (ARB).

SUPPLEMENTAL COMMENTS

1. **Use of Monte Carlo runs in the DNDC Modeling process:** We recommend that ARB simplify the modeling approach for use of the DNDC Model by omitting unnecessary Monte Carlo runs as part of the calculation process. These runs are currently required for California rice growers under each of the current ACR and CAR protocols. We are unclear as to the value of these Monte Carlo runs since they introduce additional uncertainty to modeling the carbon benefits of changes in on-field rice cultivation practices. The use of Monte Carlo model runs adds significantly to the computer run time and to the labor associated with the already complex and labor intensive DNDC model version that is currently available. The impact on labor and model run times of these runs is discussed in detail in our earlier comments on pages 5-6. We believe the labor intensity and complexity of the currently available public version of the DNDC model render it to be commercially unusable at this time. To decrease time and cost, the step involving Monte Carlo runs should be omitted as a requirement since ARB indicated that a calibrated DNDC Model already exists for the California rice growing region.

2. **User friendly modeling tools for the DNDC Model:** To further simplify the complexity and length of the modeling process, we understand from public statements that a user-friendly modeling interface and tools for use by rice growers to streamline application of the DNDC Model have been developed and are available. Since federal grants (USDA Conservation Innovation Grants) as well as foundation funds were used to develop these tools, we are hopeful that ARB will recommend these tools be made available to all including rice growers, project developers and the public. We provided detail in our comments on this issue on pages 13-14 of our prior submittal.

3. **DNDC Modeling per field**: Our analysis shows this time to be substantial and extremely costly. This is detailed in our prior comments on pages 5-7. We strongly recommend that ARB conduct an analysis of the number of runs and labor requirements for modeling required of rice growers.

4. **Tiered Calculation method:** CalAg is concerned that only one quantification method is available. Currently, only one model and one tier (compared to other existing agricultural project protocols for on-field carbon offsets that allow a 3-tier approach). To reiterate our earlier comment on pages 16-18 and comments from others during the ARB Workshop in Sacramento on March 28, ARB should consider allowing a tiered approach (adding a Tier 1 and 2 method) to be used as an alternative to the DNDC Model (a Tier 3 approach).

5. **Scientific Working Group**: The DNDC Model forms the current basis for the calculation method proposed by ARB and is dependent upon a significant volume of science on biogeochemical mechanisms in rice cultivation and production. To ensure that the DNDC Model is a technically credible scientific basis for ARB's Rice Protocol, we recommend that ARB convene a Scientific Working Group to perform an objective scientific review of the DNDC model and the biogeochemical mechanisms contained therein. We recommend that this group be assembled by ARB to meet and operate alongside and in collaboration with the Technical Working Group (TWG) during the effort to prepare the Rice Management Protocol. This group would be tasked to provide an independent, technical review of the DNDC Model's mechanisms, of the modeling results (compared to empirical data) and of the

modeling approach that is being proposed here by the ARB for the Rice Protocol. This review of the modeling approach should include an assessment of the recommended modeling process and the multiple model runs required under the current ACR and CAR rice protocols. The TWG should have the benefit of a Scientific Review Group to ensure the DNDC Model is based upon best possible science, is credible and that the model is deemed to be regulatory grade for use by a state agency, the ARB, as a compliance offset protocol for rice projects.

6. **Monitoring Requirements:** The current requirements for monitoring, data collection and record keeping contained in both of the Final CAR and the Draft ACR protocols are a large burden for rice farmers to manage for each growing season. This is detailed in our prior comments on pages 11-13. We recommend that substantive changes be made in the ARB rice protocol to address this issue.

7. **Verification and Verifier Firms:** We have discussed verification with the two verifier firms (in addition to ERM) who were recently trained and certified under the CAR Protocol in February 2013. Uniquely, these two firms are not based in California, but in North Carolina. During the verifier training and in subsequent communications, it has become apparent that the verifiers are uncertain about the volume of work effort and the costs of verification under the CAR rice protocol. The verification process is similar under the ACR rice protocol. In each case, the verification process contains steps that make it unwieldy, especially compared to prior project protocols. It is clear that the rice project verification process is currently complex, creating a lengthy process, increasing costs to project developers and rendering the current program structure to appear to be commercially unviable. We recommend that ARB reach out to these two verifier firms to solicit their viewpoints and discuss their feedback. Our comments on this verification topic appear on pages 14-16 of our prior submittal.

Questions

1. How will ideas from the workshops and workgroups be integrated into the final Protocol?
2. Are any revisions planned for the DNDC model from the version that CAR and ACR are each using?

3. We have been told that the model is calibrated. Will documentation on the California calibration of the DNDC model be made available publicly? If so, by what date?
4. Has ARB completed an analysis of the model results relative to actual field data?
5. Is the science that was used to calibrate the model available for review?
6. In our meetings with CAR, ACR, and ARB, concerns expressed about the usability of the DNDC model have uncovered the fact that there are new tools under development to enhance the DNDC model. What will these tools do?
    a. What is the timeline for the development of each of the new tools?
    b. How will the new tools be integrated into the existing DNDC model for projects that are already underway?
    c. What impact do you expect these tools will have on the project development process? Will the tools increase the speed of verification and regulatory review? Has any analysis been done to quantify these impacts – benefits?
7. Will the model be retooled to run faster? Estimates from the CAR training show that the model could take hours to process for each run and given the number of runs per field to collect the baseline, this could take days, weeks, and months depending on the size of the aggregation.
8. Are there any substantive changes in the ARB Draft Protocol from the current provisions that are in the CAR and ACR published protocols? How will the format of the ARB Draft Protocol differ from these two published protocols?
9. How will additionality be addressed under the ARB Protocol?
10. Will improvements and streamlining tools made to DNDC (for rice) paid for by public funds (USDA CIG Grants) and foundation funds (Packard Foundation, a 501(c)(3) non-profit), be made available only to the grant project partners or will they be made available to the ARB and the public? If those tools will be made available to the public, when will that occur?