Soil Enrichment Protocol V2.0 Update
Workgroup Meeting Notes and Takeaways

Workgroup Meeting Date: 3/29/2024

Workgroup Members in attendance:

Name	Organization	Present (P)/Absent (A)
Lincoln Day	AgriCapture	P
Matt Campbell	Aster Global Environmental Solutions, Inc.	P
Shawn McMahon	Aster Global Environmental Solutions, Inc. (Alternate)	A
Sami Osman	ATOA Carbon	A
George Burba	Water for Food Global Institute/LI-COR Biosciences	P
Jocelyn Lavallee	Environmental Defense Fund	P
Henk Mooiweer	Grassroots Carbon Public Benefit LLC	P
Max DuBuisson	Indigo Ag	P
Ryan Pape	Indigo Ag (Alternate)	P
Josiah McClellan	Land O'Lakes Truterra	P
Jennifer Nelligan	National Association of Conservation Districts	P
Michael Nassry	Nutrien	P
Mike Gill	Nutrien (Alternate)	A
Lucia von Reusner	Regrow Ag	P
Robert Parkhurst	Sierra View Solutions	P
Jason Ackerson	Soil Health Institute	P
Negar Tafti	The Nature Conservancy	P
Brian McConkey	Viresco Solutions Inc.	P
Karen Haugen-Kozyra	Viresco Solutions Inc. (Alternate)	P

Agenda:

- **Summary of Survey Results & Proposed Next Steps**
    - All 15 workgroup members submitted feedback regarding their views and priorities for the SEP v2.0 update. Workgroup feedback included general thoughts on the need for the update, ranking the importance of various protocol topics, and ranking the order in which workgroup members felt that topics should be addressed. General thoughts on the update reflected the need to incorporate project developers lessons learned through implementing the protocol, as well as gaps in the methodology that many felt need to be addressed to improve the usability of the SEP and the need to address verification challenges that have arisen from implementation of projects.
    - The top topics that workgroup members ranked as most important to address during this update included soil sampling, model guidance & validation documentation, quantification, QA/QC, and permanence. Quantification topics of most interested including defining the baseline, removals & reductions, methane & nitrous oxide emissions and cumulative accounting.
    - The order of topics that workgroup members felt were most important to address first included quantification, soil sampling, project definition and project start date. The Reserve has chosen to start with project definition and project start date for this workgroup meeting as decisions around these topics may influence other topics as well. As a second item to address in this meeting, quantification around fossil fuels and grazing will be addressed first as a first step in addressing larger quantification topics.
- **Item #1: Project definition and Project Start Date**
    - Based on workgroup feedback and general feedback that has been given to the Reserve, we have chosen to start the discussion around project definition and project start date first. Specifically addressing whether SOC quantification should be a requirement for every project and on every field needs to be determined. There is also a need to discuss which project activities are allowable under the protocol.
- **Item #2: Quantification (Fossil Fuels & Grazing)**
    - Quantification in general is a high priority topic that will be addressed in this update. Workgroup members provided feedback in the survey that they would like uncertainty to be addressed in greater detail in the protocol. This area of quantification may be addressed during discussions around soil sampling and modelling guidance. Cumulative accounting was also a topic raised by several workgroup members in the survey, and this topic will be addressed in future meetings. There was also interest in discussing guidance on sub-field management and sampling, which will be included in a larger discussion around soil sampling, and improved methane & nitrous oxide accounting, which may be included in both the project definition discussion and modelling discussions. For this workgroup meeting quantification discussions will start around fossil fuel accounting and grazing.
- **Open Discussion and Next Steps**

Main Points of Discussion in Meeting:

- **Project Definition Discussion**

- **Discussion around wording in project definition as "defined at the adoption of agricultural management practices that are intended to increase soil organic carbon (SOC) storage *and/or* decrease net emissions of CO2, CH4, and N2O from agricultural operations**
  - The question related to this definition is whether SOC should be *"and"* instead of *"and/or"*?
  - The intent of the protocol was to increase SOC on agricultural fields. And/or was put in to capture other emission sources other than SOC, but intent was not to have projects only doing reductions in CH4 and N2O. We have now seen though projects coming in that only do practices that address CH4 and N2O and not SOC. This update needs to decide if the protocol should allow for flexibility in which emission sources can be accounted for.
  - Currently, since the Reserve also has a nitrogen management protocol, we require projects only doing nitrogen reductions to use that protocol and not the SEP. However, there is no standardized guidance of whether there may be a threshold for projects with a mix of nitrogen reduction and other emissions sources (e.g. less than 50% of fields may be nitrogen reduction only)
  - Concern was raised around the default equations related to nitrogen and methane accounting in the protocol – if models being employed by the project cannot account for these emission sources, but projects are allowed to only include nitrogen or methane emissions, then the default equations that would be used need to be re-done to better measure these changes in emissions.
    - Questions whether that would be appropriate for this protocol or more appropriate for nitrogen or rice protocol.
  - Several workgroup members voiced support for requiring SEP to include SOC – felt that and/or does not allow for just CH4 and N2O, but that it was meant to include those other emission sources as additional to SOC.
    - Proposed changing wording to say that "practices that are intending to increase SOC ***with the option to also*** decrease net emissions of CO2, CH4, and N2O…"
  - Others noted that currently the flexibility of the SEP allows for project developers to more easily scale projects and account for the complexity of agricultural emissions. One member noted that being able to bring in fields with farmers who are more willing to start practice changes around nitrogen rather than SOC accrual allows them to be part of the larger project doing just nitrogen reduction. This allows for PDs to continue conversations with these farmers around other practice changes that would affect SOC and gives them time to allow farmers to get more comfortable with these other practice changes. Administratively it would be too complicated for a PD to have multiple projects with different protocols. They would prefer to just expand project scale.
    - Others argued that allowing for fields to gradually move into other practice changes that effect other emission sources, such as moving from nitrogen reduction to soil carbon accrual practices could add more complications to verification and become a barrier to project implementation.
  - Rice only protocol needs to be looked at in more depth if it's decided that rice practice changes should not be included in SEP. The Reserve's Rice protocol was developed in 2013 and no projects have been implemented under it.

There was concern voiced that if this protocol were to be updated it would need to account for both CH4 and N2O emissions as practice changes that affect CH4 emissions could increase N2O emissions and result in an overall net increase in emissions. Concerns were raised that rice only projects may have lots of challenges.

- Members expressed uncertainty around being able to establish a threshold or draw the line of which projects may or may not qualify for the SEP based on which practice changes and emissions they're accounting for. Preference was for keeping this open for now and not setting a threshold. Alternatively, it was proposed that the Reserve suggest project types that have come through for workgroup members to vote or make suggestions on what should be admissible under SEP.
- Given that carbon and nitrogen cycles are intrinsically linked in the soil, concern was raised over separating projects based on carbon and nitrogen emissions, with preference given for accounting for both whenever possible within a project. It was acknowledged that accounting for SOC in projects where only nitrogen reduction practices maybe occurring would be costly and with little benefit towards crediting. However, more thought needs to be put into integration between nitrogen and soil enrichment protocols.
- For agriculture projects that don't target soil carbon accrual, it was proposed that these projects be looked at in more depth to see if there are other protocols that need to be developed to accommodate these practice changes so that meaningful practices changes don't get overlooked. However, it was reiterated that for this protocol the emphasis should remain on soil carbon.
- For follow-up:
    - The Reserve will consider providing high level examples of different project types for workgroup to assess for suitability of the protocol
    - Overall agreement with not allowing projects that have no intent to account for soil carbon. However some flexibility may be allowable within a project to allow some fields without soil carbon accounting, but possibly on a case by case basis. The Reserve will work on summarizing workgroup thoughts on this issue and present draft language narrowing the project definition for future review.

- **Defining Project Activities (Section 2.2.1) – Based on list of suggested practice changes listed in the protocol, does this list need to be expanded or any practices excluded?**
    - Overall the defined project activities is broadly worded in the protocol, and members felt this is necessary to allow for flexibility for projects.
    - Enhanced rock weathering (ERW) was raised as a practice change to look at defining more explicitly
        - ERW in particular would require measuring of inorganic carbon and potentially runoff from fields, which may be beyond the scope of this protocol
        - Inclusion of ERW would require a separate discussion – we will re-visit as needed.
    - Organic amendments – biochar, microbials/biologicals were highlighted as practices that may need to be more explicitly mentioned under project activities beyond the current wording of "Application of soil amendments (organic or inorganic)"
    - Question was raised whether pesticides/herbicides were counted as practice change
        - Greenhouse gas emissions of pesticides and herbicides where usage of these inputs may increase under practice changes such as cover crop usage

was raised as a concern.
        - It was noted that emissions of these inputs are in the manufacturing of these products, so these emissions are not considered within SSR boundaries of the SEP
    - Additional language around application or threshold of cover crop usage was highlighted as one area that needs further clarification. Proposed a minimum threshold that may be needed for cover crop usage to be counted as a practice change.
    - Follow up for this section – The Reserve will revisit the language in section 2.2.1 to further define this list and determine if practices that explicitly affect SOC should be prioritized over others
- **Section 2.2.2 Defining the project area – confusion over project start date vs. field start date, further clarification on native ecosystem definition and allowable tree canopy**
    - A question was raised on whether federal lands would be allowed
        - Flagged as an area for follow-up
    - For language around start date – it was raised that Verra has a different definition to project start date than CAR, and it was proposed that we try to align these definitions between the two registries.
    - Allowable tree canopy
        - Need for differentiation in protocol between allowable amounts of trees in field vs. sections of forests
        - Current definition defines cropland and grasslands as having <10% tree canopy cover.
        - In the Grassland protocol we are also updating the language around defining 10% tree canopy cover more explicitly. We'll share this language for the SEP workgroup to see if a similar definition can be used.
- **Section 2.2.3 Project Aggregation (field submittal requirements)**
    - Improvements needed around field enrollment to make more efficient on the Reserve and verifiers.
    - Will work with verifiers more to strengthen this process
- **Section 3.2 – Project Start Date**
    - Currently project start date is set by the earliest field start date in the project and each field must be submitted to the registry within 12 months of it's start date.
    - Concerns have been raised that the 12 month submittal deadline is too restrictive. Some have proposed using field contracts as start dates.
    - One member raised concerns with using field contracts as a field's start date. Currently with multiple programs offering payments to farmers for practice changes, farmers are implementing practice changes before committing to a program and then joining the program that offers the most competitive pricing. This raises concerns that since contracts are being signed after a practice change, contract dates may not be the best option for indicating the start of a project.
    - Millpont is looking at a similar issue – we will look into other proposed solutions and bring back to the group.
- **Quantification Discussion**
    - Permanence was highlighted as an issue that members would like to discuss – could be a discussion within quantification or permanence but will be addressed further.
    - Additional guidance on the true-up section (soil sampling resampling) of the protocol was highlighted as an area of need as well as allowability of gap filling with soil grids data.

- It was decided that separate task force meetings related to soil sampling and modelling are needed to further discussions around these topics.
- Cumulative accounting was flagged as a topic of interest for the next meeting
  - Workgroup members who have been proposing cumulative accounting will put together a visual to explain the method.
- Fossil Fuel Quantification – currently included in the quantification of this protocol
  - Currently draft changes have been made to change Equation 5.29 based on agronomic practice rather than farmer records of fossil fuel consumption.
- Grazing Quantification
  - Different emission sources related to grazing. Currently there's a decision tree on whether these different emission sources can be modelled or measured, but quantification guidance related to grazing activities could be improved.
  - There's support for allowing Animal Unit Equivalents (AUEs) and Animal Unit Months (AUMs) to be allowed as an alternative metric of grazing activity rather than Animal Grazing Days (AGDs), which is the current metric allowed in the protocol.
  - Models are currently being developed that should soon be able to model grazing activity effects on SOC, such as MEMS. Others noted that the main limitations to models incorporating grazing effects on SOC is validation data, and cautioned using quantification methods that make assumptions on effects from grazing rather than measured outcomes as the literature on these effects is not always clear.
  - Concerns were raised around different emission impacts that could occur through improved grazing practices such as AMP and whether this would be a net benefit to emissions reductions. For example if stocking rates increased under AMP practices, resulting in increased methane emissions but also increased SOC, would that have a net negative or net positive effect on credits?
  - Further definitions are needed for what defines "improved grazing practices" to more clearly define the baseline vs. practice change.

Action Items for the Reserve:

- Summarize workgroup thoughts on project definition and draft language narrowing the project definition for workgroup review. This may include a high level overview of project types that may be assessed by the workgroup for eligibility within the SEP.
- Revisit the language in section 2.2.1 to further define the project activities list and determine if practices that explicitly affect SOC should be prioritized over others
- Provide the workgroup with language around allowable tree canopy that is being implemented in the Grasslands protocol as a starting point for further defining this in the SEP.
- Look into solutions for adjusting language around project start dates, specifically look at examples from other programs in how this is defined.
- Start organizing soil sampling and modelling task force as a sub-group to address these topics
- Doodle poll will be sent out to schedule April meeting.