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Soil Enrichment Protocol v2.0 Update

Technical Task Force Meeting #1

July 31, 2024

Housekeeping

- Please keep yourselves muted unless / until you would like to speak
- Please use the raise your hand function when answering a question
- All other attendees/observers are in listen-only mode
- Observers are free to submit questions in the question box
 - **All attendees will be able to see questions submitted to the Q&A section, as well as comment on questions / up-vote questions**
- **For workgroup members submitting comments and questions via chat: Please change your message settings to send comments to Everyone**
- The slides and a recording of the presentation will be posted online



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AGENDA

- Introductions (25 mins)
- Protocol Update Process (10 mins)
- Model Calibration/Validation Approval Process (30 min)
- Permanence – Applicability of models (40 min)
- Future topics & Next Steps (15 min)



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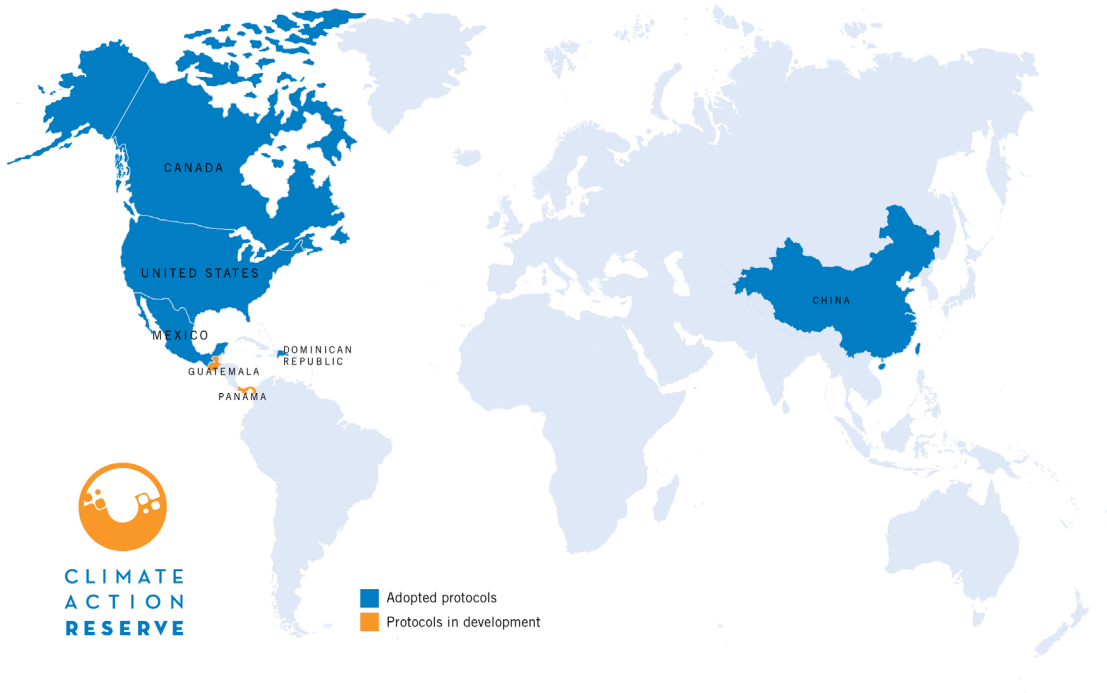
INTRODUCTIONS

Climate Action Reserve



- Mission: to develop, promote and support innovative, credible market-based climate change solutions that benefit economies, ecosystems and society
- Develop high-quality, stakeholder-driven, standardized carbon offset project protocols across North America
- Accredited Offset Project Registry under the California cap-and-trade program, State of Washington and CORSIA
- Serve compliance and voluntary carbon markets
- Reputation for integrity and experience in providing best-in-class registry services for offset markets
- Based in Los Angeles, CA

Climate Action Reserve



- Nonprofit, founded 2001
- Voluntary & compliance
- >500 Projects
- >200M Credits Issued
- Agriculture Protocols
- Soil Enrichment Protocol
- Nitrogen Management Protocol
- Grassland Protocols
- Rice Protocol
- Livestock Protocol

Reserve Staff:

- McKenzie Smith, Associate Director
 - Protocol update lead
- Alison Nord, Manager
 - Protocol update support – Lead for Technical Task Force
- Jon Remucal, Director of Nature-Based Solutions
 - Protocol update support

Task Force Members

Organization (alphabetical)	Name	Nominating member
CIBO	Margaret Kosmala	Josiah McClellan
Environmental Defense Fund (EDF)	Jocelyn Lavallee / Emily Oldfield	
Grassroots Carbon LLC	Kabindra Adhikari / Sarah Coffman	Henk Mooiweer
HabiTerre	Ben Chen	Jennifer Nelligan
Indigo Ag	Missy Motew	Max DuBuisson
Kateri	Kevin Tu	Robert Parkhurst
Perennial	David Schurman	Sami Osman
Regrow Ag	Beth Ziniti	Lucia von Reusner
Soil Health Institute (SHI)	Jason Ackerson	
The Nature Conservancy (TNC)	Negar Tafti	
Viresco Solutions	Brian McConkey	



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PROTOCOL UPDATE OVERVIEW

Protocol Update Overview

- Adhere to high quality offset criteria and Reserve's principles
- Leverage lessons learned from emerging technologies, other offset protocols and projects, other regulatory programs, and other conservation programs
- Solicit and incorporate expert stakeholder feedback
- Direct carbon finance to nature-based solutions and make innovative agriculture projects more feasible and financially attractive to investors

Protocol Development Timeline

1. Kick-off meeting (*October 25, 2023*)
2. Workgroup process
 - Formation (*November 2023 – January 2024*)
 - Meeting 1 (*February 7, 2024*)
 - Meeting 2 (*March 29, 2024*)
 - Meeting 3 (*May 29, 2024*)
 - Meeting 4 (*July 9, 2024*)
 - *Additional Meetings - TBD*
3. 30-day public comment period (*TBD Fall 2024*)
4. Propose to Board adoption (*January 2025*)



Workgroup Process and Expectations

CAR/Process:

- Manage the development process
- Hold 5-6 workgroup meetings
- Reserve staff identify and solicit feedback on specific protocol criteria
 - **Specific questions for WG will be highlighted in red**
- Reserve staff will share draft protocol with WG
- Revise protocol based on feedback

WG/Expectations:

- Attend all (~5-6) workgroup sessions
- Be active participants: provide input and ask questions on protocol concepts and language
- After meetings, share additional input and expertise as needed
- Review draft protocol and provide written feedback to Reserve staff
- Be constructive, collaborative, and productive

Technical Task Force Focus Areas

- Provide technical guidance on
 - Soil Sampling & Testing Guidance (Section 6.5 of the protocol)
 - Model Calibration/Validation document
- Start today's discussion on model guidance & permanence.



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**Requirements and Guidance for
Model Calibration, Validation,
Uncertainty, and Verification**
For Soil Enrichment Projects

Version 1.1a

April 2022



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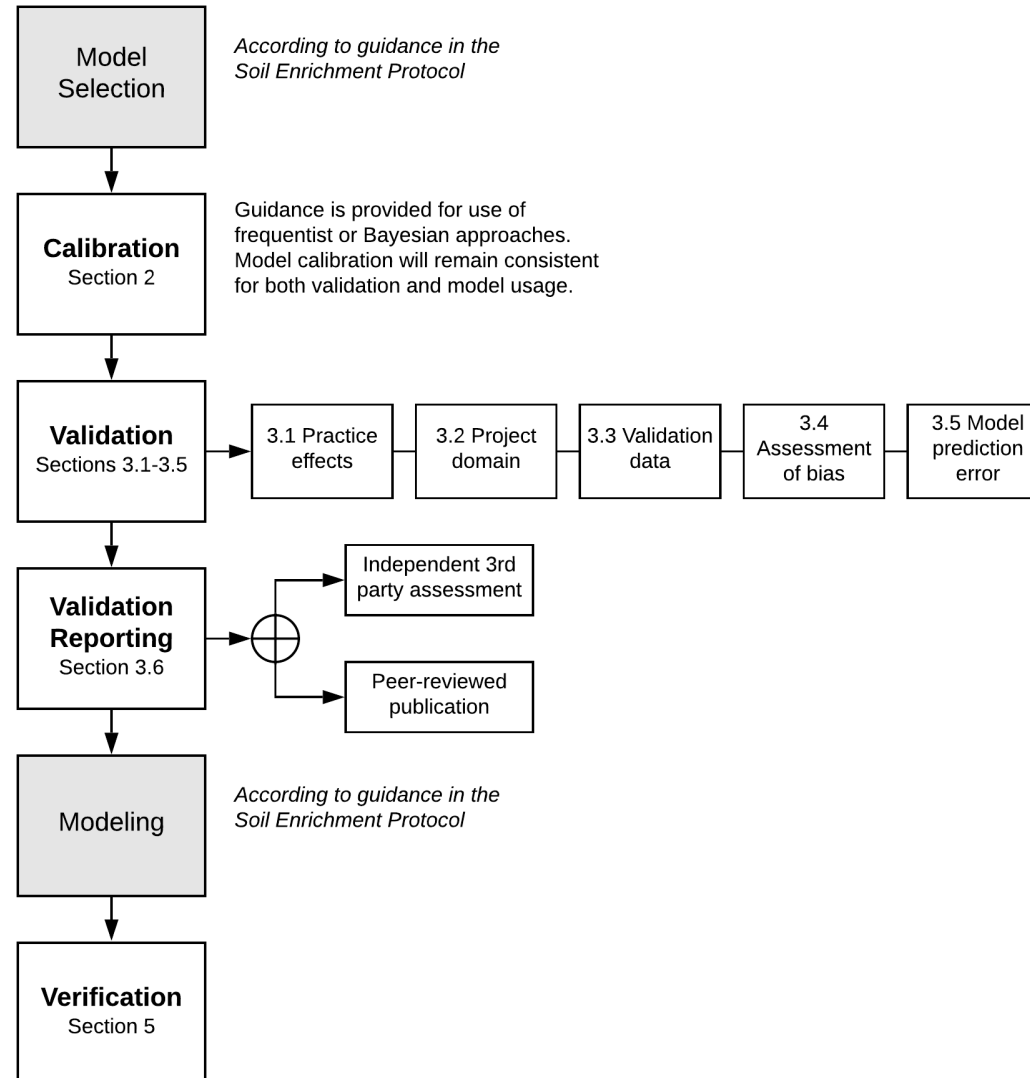
MODEL CALIBRATION / VALIDATION APPROVAL PROCESS

Model Calibration & Validation Process

- Projects are required to submit a model validation report (MVR) to the Reserve following requirements laid out in the model cal/val document
- MVR must be reviewed and approved by an independent expert stating requirements have been followed.
 - Model expert approved by the Reserve on a case-by-case basis
 - Includes submission of a conflict of interest (COI) form detailing model reviewer's qualifications
 - **Potential update:** Create list of pre-approved model reviewers and/or review form with minimum list of requirements for model expert to be approved

Model Calibration & Validation Process

Model Validation Report (MVR)



Model Calibration & Validation Process

- **3 Types of MVRs**

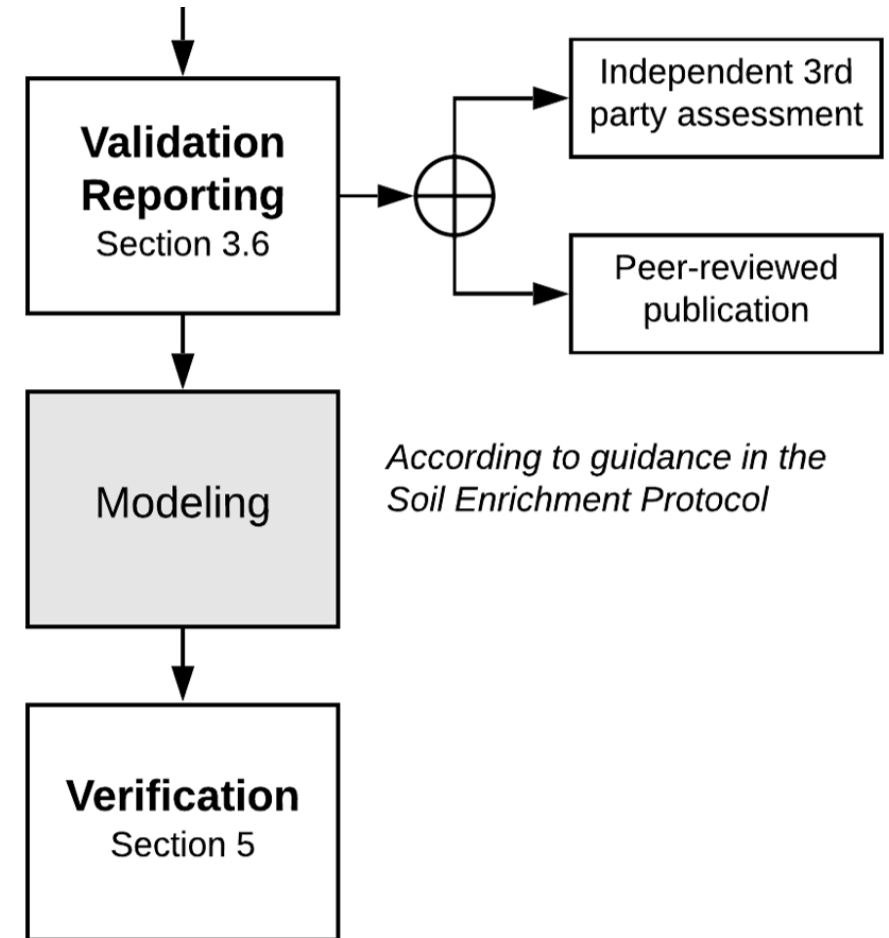
1. Project-specific – includes demonstration of model validation for a specific project's domain and combinations of crop functional groups, practice categories, and emission sources
2. Generalized – model calibration/validation not done with a specific project in mind, but rather demonstrates where model performance is valid over a range of possible practice changes and project domains (crop functional groups, land resource regions, soil attributes)
3. Project-specific and referencing an existing MVR (type 1 or 2)

Model Calibration & Validation Process

- 3 Types of MVRs
 1. **Project-specific** – includes demonstration of model validation for a specific project's domain and combinations of crop functional groups, practice categories, and emission sources
 2. **Generalized** – model calibration/validation not done with a specific project in mind, but rather demonstrates where model performance is valid over a range of possible practice changes and project domains (crop functional groups, land resource regions, soil attributes)
 - Carried out by a third-party model developer
 3. Project-specific and referencing an existing MVR (type 1 or 2)
 - This approach has not yet been used – may no longer be necessary?

Model Calibration & Validation Process

- **Independent 3rd party reviewer:**
 - Approved by the Reserve on a case-by-case basis
 - **Potential update:** Create list of pre-approved model reviewers and/or review form with minimum list of requirements for model expert to be approved?
- **Peer-reviewed publication:**
 - Applicability of this approach?
 - Unclear if this is allowed for both project-specific and generalized MVRs? Or just project-specific?



Verification of Model Usage (Section 5)

- Models Validated for SEP webpage

<https://www.climateactionreserve.org/how/protocols/ncs/soil-enrichment/models-validated-for-sep/>

- Lists MVR, independent model reviewer reports, and Reserve model summary
 - Model summary most relevant for Type 2 reports and provides a summary for verifiers to confirm validated model parameters are within project parameters
 - LRR, practice change & crop functional groups by emission source

Verification of Model Usage (Section 5)

- *For projects employing the use of a third-party expert for calibration, validation, and/or running of the model... there will be no need for the verification team to independently verify such activities have been done appropriately, provided the verification team:*
 - Confirms that the use of such third-party has been approved by the Reserve &
 - That the party in question has the requisite expertise &
 - That all requisite steps as set out in Section 2 (Model Calibration) of this document have been followed &
 - **The expert provides the verification team with a sensitivity analysis regarding the requisite data inputs for the given model**
 - **More guidance is needed on what is required with this sensitivity analysis?**
 - **Other steps that could be added?**



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PERMANENCE – APPLICABILITY OF MODELS

Permanence & Accounting for Reversals

- Requirements for Permanence (Section 3.5 of the SEP)
 - SOC credit considered “permanent” if the quantity of carbon associated with that reduction is stored for at least 100 years following issuance
 - A reversal occurs if stored carbon is actually released through a disturbance of the project area or is deemed to be released through termination of the project or a portion of the project.
 - Regardless of the area of impact had by a reversal, permanence will be assessed at the project level, rather than the individual field level.
 - Decreases of SOC on individual fields will not affect permanence, so long as the project as a whole has had a stable or increasing SOC pool over the relevant time period.

Permanence & Accounting for Reversals

- Requirements for Permanence (Section 3.5 of the SEP)
 - **Permanence Period (Section 3.5.4)**
 - If a field opts out of the program prior to the end of its crediting period, the Project Owner must choose one of two options:
 - Consider CRTs issued based on GHG removals from the field to be automatically reversed. If a project is still active, this may not cause a reversal for the project – OR –
 - The field automatically enters the permanence period, following the monitoring and reporting procedures outlined in Section 7.6
 - » **However, if a reversal event is observed, there is no mechanism for quantifying amount of CRTs that should be compensated for**

Permanence & Accounting for Reversals

- **How to quantify CRTs lost from fields in their permanence period with observed reversal events?**
 - Potential Considerations:
 - CRTs issued are based on the *difference* between Δ SOC in the project scenario and Δ SOC in the baseline, not absolute amount of SOC. Given that reversals are defined as changes in **stored carbon**, CRTs subject to reversal would only be those where the project Δ SOC is positive.
 - Given CRTs are modeled at the project level, unclear at the field level whether the Δ SOC_{project} is positive or negative or the level of confidence in the sign of Δ SOC from model outputs?
 - Plan to create a separate equation for identifying removals/reductions of CRTs associated with SOC for current SEP update – this would still be at the project level, but may affect quantity of CRTs subject to permanence?

Permanence & Accounting for Reversals

- **How to quantify CRTs lost from fields in their permanence period with observed reversal events?**
 - Proposed solutions:
 - Use a ML algorithm built from inputs and outputs of a project's model to estimate the magnitude of CRTs lost from a field in its permanence period (assuming no farmer provided management data)
 - Threshold approach based on observed reversal event? [E.g., X # of tillage events following X cultivation cycles results in full amount of CRTs reversed]
 - Maintain current protocol language that considers all CRTs issued based on GHG removals from the field to be automatically reversed.
 - **Thoughts, concerns, alternative approaches?**



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NEXT STEPS / TOPICS FOR DISCUSSION



Future Topics for Discussion

- **Data requirements for model validation – second meeting?**
- Soil stratification guidance – third meeting?
- Soil sampling/analysis methods – third meeting?
- Cumulative Accounting
- Accounting for SOC re-measurement
- Others?

Next Steps

- Email us with any feedback on topics discussed today
- Reach out any time to discuss protocol topics or process
- All meeting materials related to the SEP update will be posted here:
<https://www.climateactionreserve.org/how/protocols/ncs/soil-enrichment/dev/>
- ***Next Workgroup Meeting TBD – Aug/Sept 2024 (Doodle Poll)***

Key contacts

Protocol development lead:

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Alison Nord, Manager

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General inquiries:

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THANK YOU!