Framework for Ecotoxicological Modeling of mCDR (FEMM) Comment Themes from Expert Review Period: May-June, 2025

An early draft of FEMM was circulated by invitation for expert review during May and June 2025. Experts were engaged both through targeted outreach and through presentations at two major conferences, the Society of Environmental Toxicology and Chemistry (SETAC) Europe 35th Annual Meeting (Vienna) and the Carbon to Sea Initiative 2025 Annual Convening (Washington, D.C.). The review process prioritized engagement with stakeholders from ecotoxicological risk assessment, ocean science, mechanistic modeling, and carbon removal project development. In total, feedback was received from eight reviewers across academia (4), NGOs (1) and industry (3), and originating from 5 countries. Reviewers had the option to remain anonymous or be credited here. The names of reviewers who selected to be credited are given below. Feedback from this drafting stage informed improvements to technical clarity, methodological consistency, and the inclusion of additional relevant approaches, while also strengthening applicability across diverse use cases. Hourglass extends its deep appreciation to all FEMM reviewers. Their efforts meaningfully improved the initial drafting of this document. Hourglass Climate thanks:

João Barbosa, PhD - Flemish Institute for Biotechnology

Nina Bednaršek, PhD - Oregon State University

Rick Berg, PhD - Banyu Carbon

Tim Cross - Planetary Technologies

Sam Fawcett - PML Applications

Andreas Focks, PhD - University of Osnabrück

Simon Hansul, PhD - University of Osnabrück

Noemma Olagaray - Cascade Climate

Please send any questions or comments related to this document to femm@hourglassclimate.org.

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Comments from this review period have been summarized into themes in the following table. The summary table of comment themes was generated by aggregating all written expert feedback. The full set of comments was processed using an AI tool to identify recurring themes (Column:Themes) and quantify the frequency of mentions for each theme (Column:Frequency). The resulting themes and summaries (Column:Summary) were then cross-checked against the original reviewer feedback to ensure accuracy.

Theme	Frequency	Summary
Data & Evidence	14	Many reviewers asked for more data to support claims or to quantify results (e.g., include evidence, analysis, or metrics to strengthen conclusions).
Methodology & Framework	14	Several comments sought clearer explanations of the modeling approach, assumptions, or framework design—suggesting that methods need more transparency or justification.
Structure & Organization	8	Feedback often pointed to improving how content is organized. E.g., clarifying figures, headings, or section flow to make the document easier to follow.
Clarity of Language	6	Comments noted wording that was confusing, vague, or overly technical, indicating a need to define key terms and simplify phrasing.
Policy & Integration	5	A few reviewers highlighted the need to better integrate regulatory or policy context (e.g., aligning with frameworks like NEPA or environmental guidelines).
Level of Detail	5	Some requested additional examples or elaboration in specific sections to make arguments or procedures more tangible.
Tone & Neutrality	4	A handful of comments referenced tone or bias, suggesting edits to keep language balanced and objective.

Terminology Consistency	4	Reviewers noted inconsistent or undefined terms that could confuse readers or misrepresent key concepts.
Scope & Boundaries	2	A few comments questioned what falls within the framework's intended scope, suggesting more explicit boundaries.