



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105-3901

Sent electronically only

September 21, 2022

William Chessum  
Carbon Terravault Holdings LLC  
27200 Tourney Road, Suite 200  
Santa Clarita, CA 91355

Re: Administrative Review – Supplemental Notice of Incomplete Application  
Carbon TerraVault Holdings LLC (CTV) III Project  
Underground Injection Control (UIC) Permit Application  
Class VI Pre-Construction Permit Application No. R9UIC-CA6-FY22-5

Dear William Chessum:

On June 9, 2022, the United States Environmental Protection Agency, Region 9 (EPA) sent Carbon TerraVault Holdings LLC (CTV) a Notice of Incomplete Application regarding the subject permit application. After reviewing CTV's responses submitted on August 8 and September 9, 2022, we have determined that the application is still incomplete. The deficiencies that need to be addressed are described below.

**Information on Carbon Dioxide Stream<sup>1</sup>**

EPA's regulations for Class VI permits require the owner or operator, prior to the issuance of a permit for the construction of a new Class VI well, to submit information about the source(s) of the carbon dioxide stream and an analysis of the chemical and physical characteristics of the carbon dioxide stream (40 C.F.R. §§ 146.82(a)(7)(iii) and (iv)). Such information is necessary for CTV to demonstrate that the carbon dioxide stream is compatible with fluids and minerals in both the injection and the confining zone(s), and the well construction materials. In addition, this information is needed to properly model the Area of Review (AoR) and to inform the project specific testing and monitoring plan. Although CTV stated in the application that it is currently considering multiple sources of anthropogenic carbon dioxide for the project and that the carbon dioxide stream will consist of a minimum of 95% carbon dioxide by volume and water content of less than 25 lb/mmscf, EPA needs more detailed information about the carbon dioxide stream to inform a holistic evaluation.

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<sup>1</sup> *Carbon dioxide stream* means carbon dioxide that has been captured from an emission source (e.g., a power plant), plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. This subpart [subpart H of 40 C.F.R. Part 146] does not apply to any carbon dioxide stream that meets the definition of a hazardous waste under 40 C.F.R. Part 261. See 40 C.F.R. § 146.81(d).

EPA therefore requests CTV provide the following information about the carbon dioxide stream proposed for injection:

- Identification of specific source(s) and location(s) of the carbon dioxide stream;
- An analysis<sup>2</sup> of the chemical and physical characteristics of the carbon dioxide stream for baseline data, which includes but is not limited to the items below:
  - A list of chemicals analyzed, including carbon dioxide and other constituents in the carbon dioxide stream (e.g., sulfur oxides, hydrogen sulfide, nitrogen oxides, water content), with percentages of the constituents in the carbon dioxide stream;
  - A description of the sampling methodology;
  - Any laboratory analytical parameters and methods used, the name of the laboratory performing the analysis, and official laboratory analytical reports including sample chain-of-custody forms;
  - All sample dates and times;
  - A tabulation of all available carbon dioxide stream analyses, including any quality assurance/quality control samples;
  - Interpretation of the results with respect to regulatory requirements (e.g., the compatibility of the carbon dioxide stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), and with well construction materials);
  - Any identified necessary changes to the proposed project Testing and Monitoring Plan due to the chemical and physical characteristics of the carbon dioxide stream to ensure protection of underground sources of drinking water;
  - Identification and explanation of data gaps, if any.
- Update of the AoR modeling that incorporates data derived from the analysis of the carbon dioxide stream (e.g., to account for any adverse reactions between the carbon dioxide and the well construction materials or subsurface formations or fluids in the model).

### **Considerations for Community Engagement and Environmental Justice**

The permit application CTV submitted to EPA's Geologic Sequestration Data Tool (GSDDT) contains very significant redactions due to confidential business information (CBI) claims. The redactions prevent the public from determining fundamental project information, such as a map showing the precise location of the proposed injection and monitoring wells. The redacted information also includes the applicable AoR, the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations including the proposed injection and confining zones, all wells within the AoR that require corrective actions, baseline geochemical data on subsurface formations including all underground sources of drinking water

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<sup>2</sup> For future sources, a carbon dioxide study may be conducted using industry-recognized process modeling software to characterize and understand the chemical and physical properties of the carbon dioxide. The modeler should be knowledgeable about the industrial processes of the facility where the carbon dioxide stream will be sourced from.

in the AoR of the proposed storage site, and the proposed operating data including average and maximum injection pressure and rate.

As you are aware, communities and organizations with environmental justice concerns have submitted comments to EPA Region 9 regarding pending CTV applications for UIC Class VI permits. These groups want to ensure that the public participation process is procedurally fair and that the permits are protective of underground sources of drinking water. Further, EPA wants to ensure that environmental justice considerations, as appropriate, are incorporated into all aspects of the permitting process. We strongly believe that communities, including communities with environmental justice concerns, need to be fully informed, as early as possible, about the fundamentals of proposed carbon storage projects to enable equitable public participation in a robust and transparent permitting process.

Please submit the requested information on the proposed carbon dioxide stream by November 28, 2022. If you have any questions about this letter, please contact Calvin Ho at (415) 972-3262, or call me at (415) 972-3971.

Sincerely,

David Albright  
Manager, Groundwater Protection Section

cc (via email): Travis Hurst, Carbon TerraVault Holdings LLC  
Chris Jones, CalGEM Inland District  
Clay Rodgers, Central Valley Regional Water Quality Control Board  
Janice Zinky, California State Water Resources Control Board