



June 29, 2022

Martha Guzman
Regional Administrator, Region 9
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105-3902

Re: Underground Injection Control Permit Application for the Carbon TerraVault 1 Carbon Capture and Sequestration Project, Project IDs R09-CA-0003 & -0007

Dear Administrator Guzman:

The Center for Biological Diversity and Kern-Kaweah chapter of the Sierra Club respectfully request that EPA Region 9 take several steps related to the Carbon TerraVault 1 LLC (“Carbon TerraVault”) applications for Class VI permits in the Elk Hills oilfield.

First, we urge EPA to require Carbon TerraVault to withdraw its applications for Class VI permits to sequester carbon at the Elk Hills oilfield because the applications are missing critical information about the source of carbon, method of transportation, amount of carbon to be injected, location of the project, and project timeline. We understand that Carbon TerraVault has submitted two applications to EPA to inject carbon into six wells at an annual rate of up to 2.21 million metric tons of CO₂, or up to 49.25 million metric tons total over the life of the project. However, these figures contradict information provided in other permit applications and to the media. They also shed no light on the lifecycle emissions that would be associated with the project or other harms of transporting compressed carbon from an unknown source through an environmental justice community to the injection site. These are not details that can be filled in at some later time. They are fundamental to what the project is and its impacts. To advance the Biden Administration’s priorities of protecting public health, promoting environmental justice, and tackling the climate crisis, the EPA must require Class VI applicants to disclose all information necessary to evaluate the project and its potential harms to local communities.

Further, although we understand that draft permits have not yet been prepared, EPA has so far followed the lead of the project applicant and is proceeding with its permit review in a highly fragmented, piecemeal manner—reviewing two applications¹ separately even though they involve the same operator, will both inject into the Monterey Formation beneath the Elk Hills oilfield, and will have shared surface infrastructure. EPA must take a more holistic approach. A disjointed application process obscures the full scope of project impacts from the public and decisionmakers. In addition, EPA must bear in mind that the project proponent here recently emerged from bankruptcy. Unless there are sufficient assurances that California Resources Corporation and Carbon TerraVault 1 LLC will have the financial resources to find and fix leaks or unexpected CO₂ migration for the entire proposed project into perpetuity, EPA cannot ensure

¹ Confusingly, EPA’s permit tracking website indicates there may be three applications pending, but we have seen only two applications in records responsive to Freedom of Information Act requests. U.S. EPA, *Class VI Wells Permitted by EPA*, <https://www.epa.gov/uic/class-vi-wells-permitted-epa#table> (last visited June 6, 2022).

and may not assume that the company will be around to clean up any future problems.

In addition, we request that if the application moves forward, EPA Region 9 provide the application and review materials in a publicly accessible location. If permits are drafted, EPA Region 9 should also provide the public with at least 90 days for comment on the draft, as well as at least two hearings translated into Spanish and any other language prevalent in the project area. The Elk Hills project is one of the first EPA Region 9 is considering. This review process will set the standard for future CCS projects in California, so EPA should prioritize public access. All notices of Class VI permits, comment periods, and public hearings should be included in the Federal Register and sent to interested stakeholders.

Finally, the Elk Hills project will serve to prolong fossil fuel dependency while diverting attention and resources from clean renewable energy. Although the specifics of the project remain opaque, California Resources Corporation has indicated that carbon storage will be combined with enhanced oil recovery (“EOR”) activities, which would increase oil and gas extraction and lead to additional air pollution and greenhouse gas emissions. The project will also prolong the life of the oilfield where the carbon is stored and the life of whatever industrial facility the carbon is sourced from. For example, one of the applications requests approval to inject CO₂ for 26 years, starting in 2025, potentially using the gas plant that powers oil and gas extraction at the oilfield as the source of carbon. This timeline would extend the life of the plant and oilfield beyond the 2045 date Governor Newsom has identified for phasing out oil extraction across California and the retirement date the California Public Utilities Commission has identified for the gas plant. In order to decarbonize, we must stop permitting projects that further entrench fossil fuels. Relying on questionable emission reductions from poorly conceived carbon capture and sequestration (“CCS”) projects to assert that long term state and national greenhouse reduction goals will be met, while forgoing the necessary steep reductions in fossil fuels today, will ensure climate catastrophe. Accordingly, we ask that EPA reject the Class VI permit requests from Carbon TerraVault and any other similar requests from other applicants.

I. The Elk Hills Oilfield CCS Class VI Applications Lack Critical Information, Contradict Other Public Information, and Have Been Improperly Piecemealed.

Through a series of Freedom of Information Act (“FOIA”) requests, we understand that California Resources Corporation formed an LLC—Carbon TerraVault²—that has submitted two separate applications to EPA for Class VI permits to inject carbon dioxide (“CO₂”) into the Elk Hills oilfield. Both applications lack critical information and contain inconsistencies. Additionally, submission of separate applications improperly obscures the project’s impacts from the public and decisionmakers.

The first application, submitted August 30, 2021, is for project “A1-A2.” The narrative description says it will involve injecting into two wells at a potential rate of 0.25 - 0.75 million metric tons of CO₂ annually for 15 years starting in 2024,³ or approximately 11.25 million metric tons over the life of the project. By contrast, information in the associated cost estimation spreadsheet of the application indicates that 8 million metric tons of CO₂ will be injected, rather

² Feuer, Daniel, U.S. EPA, Email to EPA Region 9 staff, re: CRC (July 19, 2021).

³ Carbon TerraVault 1, EPA Class VI Application, Attachment A: Class VI Permit Application Narrative for Elk Hills A1-A2 Storage at 1 (Aug. 2021).

than up to 11.25 million.⁴ Another inconsistency is that “the range of proposed daily injection rates allow for the exceedance of the modeled storage capacity,” which EPA noted in its review.⁵ In addition, at least one figure indicates that no additional CO₂ would be stored after five years of injection, contradicting the fifteen-year timeframe provided in the rest of the application.⁶

The second application, submitted November 1, 2021, is for project “26R,” to inject into four wells at a potential rate of up to 1.46 million metric tons of CO₂ annually for 26 years starting in 2025—a total of 38 million metric tons of CO₂.⁷

Together, the applications seek approval of six wells to inject up to 2.21 million metric tons of CO₂ annually, and 49.25 million metric tons total over the life of the projects. The applications provide no further details about how CO₂ will be transported to the site or where the CO₂ will be sourced from, beyond listing a few options, such as the “Elk Hills 550 MW natural gas combined cycle power plant, renewable diesel refineries, and/or other sources in the [Elk Hills oilfield] area.”⁸

The information included in the Class VI applications is different from information provided to the public in a parallel state-level environmental review process and to the media. In March 2022, in association with a land use permit application, Kern County issued a Notice of Preparation (“NOP”) of an Environmental Impact Report under the California Environmental Quality Act describing a single Elk Hills oilfield CCS project proposed by Carbon TerraVault. The project would entail four to six wells, with a capacity of up to 48 million metric tons of CO₂ at a rate of 1.5 million metric tons injected per year.⁹ Carbon TerraVault’s website and a local news article describe the total estimated capacity of the project as being lower, at 40 million metric tons of CO₂ storage.¹⁰ The NOP said the project would use “local industrial sources of CO₂ that are transported by a combination of truck, pipeline and/or rail” to the injection wells. The NOP also noted that, depending on the transportation option, CO₂ could pass within one quarter mile of a school during transport.¹¹ Further details about the proposed start date, injection timeline, and source of CO₂ were not disclosed.

Table 1 below shows the different CO₂ injection and storage numbers put forth in permit applications and to the public. These numbers should be consistent. The fact that they are not should raise red flags for EPA.

⁴ Carbon TerraVault 1, EPA Class VI Application, Cost Estimation Spreadsheet for Elk Hills A1-A2 (Aug. 2021).

⁵ See U.S. EPA, Evaluation of Operating Procedures in Carbon TerraVault’s Monterey Formation A1-A2 Permit Application (Jan. 11, 2022) at 6.

⁶ U.S. EPA, Evaluation of the AoR Delineation Modeling Approach in Carbon TerraVault’s Monterey Formation A1-A2 Class VI Permit Application (Jan. 11, 2022) at 6.

⁷ Carbon TerraVault 1, EPA Class VI Application, Attachment A: Class VI Permit Application Narrative for Elk Hills 26R Storage at 1 (Nov. 2021).

⁸ *Id.*; Carbon TerraVault 1, EPA Class VI Application, Attachment A: Class VI Permit Application Narrative for Elk Hills A1-A2 Storage at 1 (Aug. 2021).

⁹ Kern County Planning and Natural Resources Department, Notice of Preparation of Draft Environmental Impact Report for the Carbon TerraVault 1 Carbon Capture and Sequestration Project by California Resources Corporation (Mar. 4, 2022) [hereinafter Elk Hills NOP] at 1.

¹⁰ California Resources Corporation, Carbon TerraVault 1 Projects, <https://www.crc.com/carbon-terravault/carbon-terravault-i-projects> (last visited Apr. 21, 2022); Cox, John, *CRC applies for permit to capture, store carbon in western Kern*, Bakersfield.com, Aug. 6, 2021, https://www.bakersfield.com/news/crc-applies-for-permit-to-capture-store-carbon-in-western-kern/article_a3d6adc6-f6fa-11eb-bcaf-0766e8d6d18a.html.

¹¹ Elk Hills NOP at 35.

Table 1: Different Injection Rates and Injection Totals from Various Applications and Websites

Source	Annual Injection Rate of CO ₂	Life of Project	Total CO ₂ Injected
Class VI applications to EPA Region 9	2.21 million metric tons (total for 6 wells)	15-26 years	49.25 million metric tons
Kern County land use permit application	Over 1.5 million metric tons (total for 4-6 wells)	Unknown	48 million metric tons
Carbon TerraVault website, news story ¹²	Over 1 million metric tons	Unknown	40 million metric tons

California Resources Corporation has also previously indicated that it would like to combine the Class VI injection project with a Class II EOR project or expand it even further. In August 2020, the company met with EPA to discuss the possibility of advancing a Class VI and Class II project at the same time.¹³ In an investor presentation in 2021, the company noted that it sees the Elk Hills project as just the first in a series of CCS projects to take advantage of the company’s inventory of deep wells and depleted reservoirs, including in the Elk Hills oilfield.¹⁴

Project description inconsistencies and the fragmented nature of the applications indicate that the operator wants to secure Class VI injection permits before it has finalized key aspects of the project. This “permit now, finalize later” approach may be the applicant’s preferred way to secure financing and move the project forward, but—as explained in the sections that follow—it is a terrible way to manage Class VI permitting. We are disappointed that EPA has so far followed the applicant’s lead and reviewed the project piecemeal, evaluating the A1-A2 application first and responding with requests for further information in letters sent on December 15, 2021, January 11, 2022, and February 3, 2022. EPA knew before the first application was submitted that the project would be split into separate applications,¹⁵ and should not have consented to this disjointed approach. We ask that EPA require Carbon TerraVault to withdraw its applications and not consider any new application unless it covers the entire project.

II. EPA Cannot Properly Assess the Project’s Impacts Without Obtaining the Missing Information.

¹² Cox, John, *CRC applies for permit to capture, store carbon in western Kern*, Bakersfield.com, Aug. 6, 2021, https://www.bakersfield.com/news/crc-applies-for-permit-to-capture-store-carbon-in-western-kern/article_a3d6adc6-f6fa-11eb-bcaf-0766e8d6d18a.html.

¹³ McEvoy, Molly, U.S. EPA, Meeting Appointment for California Resources Corporation Class VI Discussion (Aug. 24, 2020); *see also* Haney, Kenneth, Enhanced Oil Recovery and Carbon Capture Storage Manager, California Resources Corporation, Email to William Bates, U.S. EPA, FW: UIC Class VI Meeting (Aug. 10, 2020) (“CRC is in the process of developing a holistic carbon capture and storage project (CalCapture) at our Elk Hills oil and gas complex in Central California. We are currently 60% complete on our capture plant Front End Engineering Design study, which utilizes DOE funding assistance, and are working on multiple permitting and carbon credit applications. As our project strategy evolves, we are considering options involving both Class II EOR-related storage along with a Class VI sequestration approach.”).

¹⁴ California Resources Corporation, Carbon Storage Update (Oct. 6, 2021) at 9 (describing goals of first injection by 2025, 200 MMT permitted by 2025, 5 MMT/PA injection by 2027), 13-15, 29.

¹⁵ Hurst, Travis, California Resources Corporation, Email to David Albright, U.S. EPA, Class VI Application (Aug. 19, 2021) (agenda with separate items for the Elk Hills A1-A2 Project and Elk Hills 26R Project).

Among other items, EPA is missing information about where Carbon TerraVault will source the CO₂ for the project and how that CO₂ will be transported to the injection wells. These project components have implications for environmental justice, public health, habitat and wildlife, and climate change impacts. Obtaining this information is necessary for EPA to make an informed decision that affords the fullest protection for communities and the environment. As a result, EPA should ask Carbon TerraVault to withdraw its applications until this information is provided, and then resubmit its Class VI applications for the *whole* of the project.

A. Carbon TerraVault Has Not Disclosed Its Carbon Source or Associated Impacts.

The applications indicate that the CO₂ could be sourced from the Elk Hills fossil gas plant through the CalCapture project, “renewable diesel refineries,” or other sources in the area. EPA cannot reasonably evaluate Carbon TerraVault’s applications without the company first pinning down its CO₂ source(s) and then analyzing the associated impacts, including the greenhouse gas emissions (“GHGs”), air pollution consequences, and proximity to nearby communities. This section describes potential harms related to the vague proposed carbon sources to illustrate why EPA cannot fully evaluate the project without more information.

1. CalCapture Gas Plant

The most likely source of carbon appears to be from the nearby gas plant that powers oil and gas extraction in the Elk Hills field. Any GHG emission reductions associated with adding a carbon capture to this plant are likely to be undercut by increased lifecycle emissions and the extension of extraction activities the plant enables.

First, experience has shown that power plants with carbon capture have frequently—and often drastically—failed to meet their CO₂ capture targets. In July 2021, Chevron, operator of Australia’s only commercial-scale CCS project, admitted that its self-described “world’s biggest” CCS project failed to meet its five-year capture target rate of 80% CO₂, and is now seeking a deal with regulators on how to make up for millions of tons of CO₂ emitted.¹⁶ Shell’s Quest project in Alberta promised a rate of 90% and delivered just 48%.¹⁷ In the United States, the Petra Nova coal-fired power plant in Texas achieved only a 65-70% CO₂ capture rate compared to the 90% promised, before being shut down indefinitely for being uneconomic.¹⁸

Second, these real-world failures of CCS projects don’t even take into account *lifecycle* emissions. For example, one Stanford study of the lifecycle emissions associated with Petra Nova CCS project found that “the [CCS] equipment captured the equivalent of only 10-11% of the emissions they produced, averaged over 20 years.”¹⁹ This research also considered the social

¹⁶ Mazengarb, Michael, *Chevron admits failure of \$3 billion CCS facility in Western Australia*, IEFFA (July 19, 2021), <https://ieefa.org/chevron-admits-failure-of-3-billion-ccs-facility-in-western-australia/>.

¹⁷ Meredith, Sam, *Shell’s massive carbon capture facility in Canada emits far more than it captures, study says*, CNBC, Jan. 24, 2022, <https://www.cnbc.com/2022/01/24/shell-ccs-facility-in-canada-emits-more-than-it-captures-study-says.html>.

¹⁸ Schlissel, David, *Reality of carbon capture not even close to proponents’ wishful thinking*, IEFFA (Aug. 8, 2019), <https://ieefa.org/reality-of-carbon-capture-not-even-close-to-proponents-wishful-thinking/>.

¹⁹ Kubota, Taylor, *Stanford Study casts Doubt on Carbon Capture*, Stanford News (Oct. 25, 2019), <https://news.stanford.edu/2019/10/25/study-casts-doubt-carbon-capture/>, citing Jacobson, Mark Z. The health and climate impacts of carbon capture and direct air capture, 12 *Energy Env’t. Sci.* 3567 (2019), <https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee02709b/unauth#!divAbstract>.

cost of carbon capture—in other words, the resulting air pollution, potential health problems, economic costs and overall contributions to climate change—and concluded that these costs are similar to or higher than a fossil fuel plant *without* carbon capture, meaning “it is always better to use the renewable electricity instead to replace coal or natural gas electricity or to do nothing.”²⁰ As the Institute for Energy Economics and Financial Analysis notes, the energy required to capture, transport, and inject carbon underground materially reduces its net benefit.²¹ For example, coal-fired power plants with carbon capture have an energy penalty of 25% or more, with an efficiency penalty as high as 15%.²² These “penalties” mean more fuel has to be burned to produce the same amount of power, which means higher energy costs, greater emissions of non-CO₂ air pollutants, and increased demand on the grid.²³ Generally, power plants and industries that sequester CO₂ are energy-intensive, using 15 to 25% more energy to produce the same amount of power as a conventional plant, and emitting more air pollution, including fine particulate matter, ammonia, hazardous volatile organic compounds, and other toxic pollutants that threaten the health of nearby communities.²⁴

Lifecycle emissions also include leakage back to the atmosphere, a near certainty given the long track record of fossil fuel industry leaks and spills. There is always a risk that CO₂ transported via pipeline, rail, or truck, and then stored underground, could leak back to the atmosphere. Researchers estimate that even a minor leakage of stored CO₂ could reduce the benefit of CCS by up to 35%.²⁵

Third, investment in the gas plant will incentivize California Resources Corporation to keep the plant running beyond its otherwise useful life. The longer the gas plant runs, the longer it will emit GHGs and expose the nearby community to air pollution. In addition, because the plant’s principle use is to supply electricity for the Elk Hills oilfield for EOR and other injection and production activities,²⁶ extending the plant’s life will extend the life of the oilfield and generate additional pollution. For example, the “26R” application requests approval to inject 48 million metric tons of CO₂ for 26 years, starting in 2025. This timeline extends beyond the 2045 date Governor Newsom has identified for phasing out oil extraction across California and the retirement date the California Public Utilities Commission has identified for the gas plant.²⁷

²⁰ *Id.* (noting that the social cost of coal with carbon capture powered by natural gas was about 24 percent higher, over 20 years, than the coal without carbon capture, and only when wind replaced the fossil fuel did the social cost decrease).

²¹ Butler, Clark, *Carbon Capture and Storage Is About Reputation, Not Economics*, IEEFA, at 5 (2020), https://ieefa.org/wp-content/uploads/2020/07/CCS-Is-About-Reputation-Not-Economics_July-2020.pdf.

²² Climate Action Network Int’l, CAN Position: Carbon Capture, Storage, and Utilisation at 9 (2021), <https://climatenetwork.org/resource/can-position-carbon-capture-storage-and-utilisation/>.

²³ *Id.*

²⁴ European Environment Agency, *Carbon capture and storage could also impact air pollution* <https://www.eea.europa.eu/highlights/carbon-capture-and-storage-could> (last modified Nov. 23, 2020).

²⁵ Vinca, A. et al., Bearing the Cost of Stored Carbon Leakage, 6 *Frontiers in Energy Res.* Art. 40 (2018), <https://www.frontiersin.org/articles/10.3389/fenrg.2018.00040/full>.

²⁶ California Resources Corporation, *Elk Hills Field*, <https://crc.com/our-business/where-we-operate/san-joaquin-basin/elk-hills-field> (last visited Mar. 31, 2022).

²⁷ Office of Governor Gavin Newsom, California Moves to Prevent New Oil Drilling Near Communities, Expand Health Protections, Press Release (Oct. 21, 2021), <https://www.gov.ca.gov/2021/10/21/california-moves-to-prevent-new-oil-drilling-near-communities-expand-health-protections-2/>; California Energy Commission, *Elk Hills Power Project*, <https://www.energy.ca.gov/powerplant/combined-cycle/elk-hills-power-project> (last visited June 6, 2022) (noting that the plant started operating in 2003); California Public Utilities Commission, IRP Procurement Track, Baseline Generator List of resources as required by D.21-06-035 (Mar. 18, 2022), <https://www.cpuc.ca.gov/>

Extending the life of the gas plant and oilfield undercuts state goals and the urgent need to transition off fossil fuels. California Resources Corporation has been explicit about its goal of extending the life of the oilfield, noting in one article that energy generated from the plant would continue to power extraction at the field and that carbon captured would be both injected “deep underground, *and* be used to displace oil and extend the life of the prolific Elk Hills Oil Field.”²⁸ In other words, the company intends to also use the captured carbon for EOR using Class II wells, and has even approached EPA about this possibility.²⁹

There are many additional environmental impacts that may arise if Carbon TerraVault sources its CO₂ from the CalCapture project. It is in such an early and uncertain stage of development that such potential harms have not been studied.

2. Renewable Diesel Refineries

If Carbon TerraVault instead sources its CO₂ from “renewable diesel refineries,” or other sources in the area, this could lead to restart and entrenchment of facilities that will emit GHG emissions along with harmful air pollution. The nearest refineries to the oilfield that produce “renewable diesel” include the Kern Oil and Refining Co., which co-processes biomass,³⁰ and Crimson Renewable Energy, which uses used cooking oil, animal fats, and waste corn oil from the ethanol production process.³¹ Bakersfield Refinery may restart later this year following project delays and refine used cooking oil, rendered animal fats, and camelina.³²

Restarting or expanding any of these facilities would lead to a cascade of environmental damage. For example, if CRC gets its carbon from Kern Oil and Refining Co. biomass processing, that could lead to forest loss if the biomass is sourced from cutting forests. In California, forest-sourced biomass consumed in biomass plants includes whole trees and stemwood and there is no requirement that forests cut down for biomass energy be allowed to regrow. Even if new forests are regrown, there is no guarantee that new forests will be allowed to grow large enough to sequester as much carbon as the older, complex, carbon-rich forests that were cut. Research shows that it takes many decades to more than a century, if ever, for new trees to grow large enough to capture the carbon that was released.³³ If CRC instead gets carbon from a facility that processes food crop-based feedstocks, such as corn and soy, that will likely

/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/d2106035_baseline_gen_list_20220318.xlsx.

²⁸ Cox, John, *Kern looks to seize economic benefits of carbon management*, Bakersfield.com, Nov. 2, 2020, https://www.bakersfield.com/news/business/kern-looks-to-seize-economic-benefits-of-carbon-management/article_11f47012-199e-11eb-aebe-e7838e141d4a.html (emphasis added).

²⁹ McEvoy, *supra* note 13; Haney, *supra* note 13.

³⁰ Kern Oil & Refining Co., *Renewable Energy*, <https://www.kernoil.com/california-clean/renewable-energy/> (last visited June 6, 2022).

³¹ California Energy Commission, *Crimson Renewable Biodiesel Project*, <https://www.energy.ca.gov/showcase/driving-cleaner-transportation/crimson-renewable-biodiesel-project> (last visited June 6, 2022).

³² Cox, John, *Refinery conversion project hits delay*, Bakersfield.com, Mar. 24, 2022, https://www.bakersfield.com/news/refinery-conversion-project-hits-delay/article_d949297c-abca-11ec-bb54-57aa3c2f0e8c.html.

³³ Holtsmark, Bjart, The outcome is in the assumptions: Analyzing the effects on atmospheric CO₂ levels of increased use of bioenergy from forest biomass, 5 GCB Bioenergy 467 (2012); Schulze, E.D. et al., Large-scale bioenergy from additional harvest of forest biomass is neither sustainable nor greenhouse gas neutral, 4 GCB Bioenergy 611 (2012).

trigger emissions increases when forests are cut down, grassland is dug up, or wetlands are filled in to make way.³⁴ This is especially likely to occur as the number of “renewable diesel” refineries rises, increasing orders for food crop feedstocks as the supply of used and waste oils is unable to keep pace with demand. Food-based biofuels can also contribute to water scarcity, nutrient and pesticide contamination, and food insecurity.³⁵ Meanwhile, animal fats, animal manure, and used cooking oil result in displacement effects—redirecting those resources from current uses such as in animal feed, fertilizer, and the chemical industry.³⁶ Replacement will likely lead to land use changes with high GHG consequences, potentially negating emissions savings.³⁷ Further, animal fat and manure production are connected to the polluting animal agriculture industry.³⁸

In addition, none of these refineries has any carbon capture technology installed (or have made any announcements about future installation) and there is no infrastructure built out to transport any captured carbon to the oilfield. Adding pipelines or roads would fragment the landscape and require construction disruptions and emissions.

3. “Other” Carbon Sources

Finally, the applications do not specify what the “other” sources of carbon might be. Based on prior proposals to capture carbon nearby, however, these sources are also likely to be harmful to the climate, the environment, and public health and safety.

There have been two carbon capture projects previously proposed in the Elk Hills oilfield, both of which would have led to additional fossil fuel extraction. In 2011, a previous operator at the oil field—Occidental of Elk Hills—sought approval from the state to take produced gas collected from wells in the field, process it at gas processing facilities, then compress and pipe the miscible gas components (CO₂ and ethane) to a different area for EOR injection into 15 injection wells.³⁹ The project sought to expand on a CO₂ injection pilot conducted in the field in 2005. Like the CalCapture project, any project that would utilize carbon from the Elk Hills gas processing facilities would invest in fossil plants that primarily function to increase oil and gas activities in the field, thereby undermining state and national climate goals and the need to immediately transition off of fossil fuels.

³⁴ National Research Council, *Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy* (2011), <https://doi.org/10.17226/13105>; Pavlenko, N. & Searle, S., *Fueling flight: Assessing the sustainability implications of alternative aviation fuels*, International Council on Clean Transportation (2021); Zhao, X. et al., *Estimating induced land use change emissions for sustainable aviation biofuel pathways*, 779 *Science and the Total Environment* 146238 (2021).

³⁵ Gerbens-Leenes, P.W., *Bioenergy water footprints, comparing first, second and third generation feedstocks for bioenergy supply in 2040*, 59 *European Water* 373 (2017); National Research Council, *Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy* (2011), <https://doi.org/10.17226/13105>.

³⁶ O’Malley, J. et al., *Indirect emissions from waste and residue feedstocks: 10 case studies from the United States*, International Council on Clean Transportation (2021); Zhao, X. et al., *Estimating induced land use change emissions for sustainable aviation biofuel pathways*, 779 *Science and the Total Environment* 146238 (2021).

³⁷ Pavlenko, N. & Searle, S., *Fueling flight: Assessing the sustainability implications of alternative aviation fuels*, International Council on Clean Transportation (2021).

³⁸ National Research Council, *Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy* (2011), <https://doi.org/10.17226/13105>; Center for Biological Diversity & Collective Fashion Justice’s CIRCUMFAUNA Initiative, *Shear Destruction: Wool, Fashion and the Biodiversity Crisis* (2021); Twine, R., *Emissions from Animal Agriculture—16.5% Is the New Minimum Figure*, 13 *Sustainability* 6276 (2021).

³⁹ Occidental of Elk Hills, Inc., *Engineering Study, Geologic Study, and Injection Plan* (Nov. 8, 2011) at 1724.7(C).

The second previously proposed nearby carbon capture project is Hydrogen Energy California. In concept the plant would generate up to 400 MWe of electricity, produce one million tons of fertilizer per year using a coal and petroleum coke fuel blend, and capture approximately 2.6 million metric tons of CO₂ per year.⁴⁰ The initial proposal sought to compress the CO₂ from the facility and transport it to the Elk Hills oilfield through a pipeline to be used for EOR into 25 injection wells.⁴¹ The risk assessment for the 3.36 mile pipeline determined that a total of 273,423 pounds of CO₂ could be released into the atmosphere under a failure scenario.⁴² Exposure to this amount of CO₂ could lead to irritation, chronic or irreversible tissue damage, or narcosis if someone within 1,767 ft were exposed for more than 15 minutes, and to irreversible health effects, impairing, or even death for exposure within 1,476 ft of the release.⁴³ Another harmful aspect of the project is that it would require the extraction of coal in New Mexico and transportation of that coal from New Mexico to the project site in Kern.⁴⁴ The coal would either be transported by rail, which would require the construction of a 5-mile-long rail spur, or offloaded at the Wasco Transloading Facility in Bakersfield where it would be put into trucks for 400 round trips each day for the final 27 miles to the project site. 1,140 short tons of petcoke also would be transported to the site by truck from refineries in the Los Angeles area.⁴⁵

Both of these projects illustrate that Elk Hills oilfield operators and potential business partners have been eager to seek permits for projects that would supply carbon to increase oil and gas production at the field. The projects both stalled before construction, also showing how wasteful it can be for state and federal agencies to review projects before the applicants have provided critical missing project information. After spending \$288 million dollars of Department of Energy funding, receiving an air permit determination of compliance, and completion of a draft Environmental Impact Statement, the Hydrogen Energy California project faced delays and has been stalled since 2015.⁴⁶

B. Carbon TerraVault Has Not Disclosed Its Impacts on Environmental Justice, Air Quality, or Its Tribal Consultation Process.

EPA also needs additional information to understand how the environmental and public health burdens of the project might disproportionately impact certain vulnerable and historically harmed populations. These issues are intimately tied to where the carbon for this project will come from.

The proposed project location is described as the Elk Hills oilfield, approximately 26 miles from the City of Bakersfield, 8.5 miles from the City of Taft, and 4 miles from the

⁴⁰ Office of Fossil Energy and Carbon Management, *Hydrogen Energy California Project*, <https://www.energy.gov/fecm/hydrogen-energy-california-project> (last visited June 8, 2022).

⁴¹ Occidental of Elk Hills, Inc., Engineering Study, Geologic Study and Injection Plan, 14 (Oct. 2, 2012).

⁴² Stantec, Hydrogen Energy Center Application for Certification Amendment –Attachment D: Hazards Assessment of CO₂ Supply Line, 7 (Apr. 12, 2011).

⁴³ *Id.* at 6-7.

⁴⁴ U.S. Department of Energy & California Energy Commission, Hydrogen California (08-AFC-08A) Preliminary Staff Assessment and Draft Environmental Impact Statement, 1-7 (June 2013).

⁴⁵ *Id.* at 1-3, 4.1-22.

⁴⁶ Office of Fossil Energy and Carbon Management, *supra* note 40. Most recently, in June 2020, Hydrogen Energy California submitted an amended application for certification of the project to the California Energy Commission. URS, Amended Application for Certification for Hydrogen Energy California (08-AFC-8) Volume I (amended application submitted in June 2020, though completed in May 2012).

unincorporated community of Buttonwillow.⁴⁷ These communities are designated as “disadvantaged” by the California EPA because they fall within the top 25% scoring areas from CalEnviroScreen—the higher the score, the higher the level of pollution burden relative to other California census tracts.⁴⁸ The census tract where the Elk Hills oilfield is located consistently scores in the top CalEnviroScreen percentiles due to its extreme concentration of industry pollution, with high levels of cumulative impacts to air, water, and soil contamination, coupled with health burdens and socioeconomic disadvantages. It is currently in the 97th percentile for pollution burden.⁴⁹

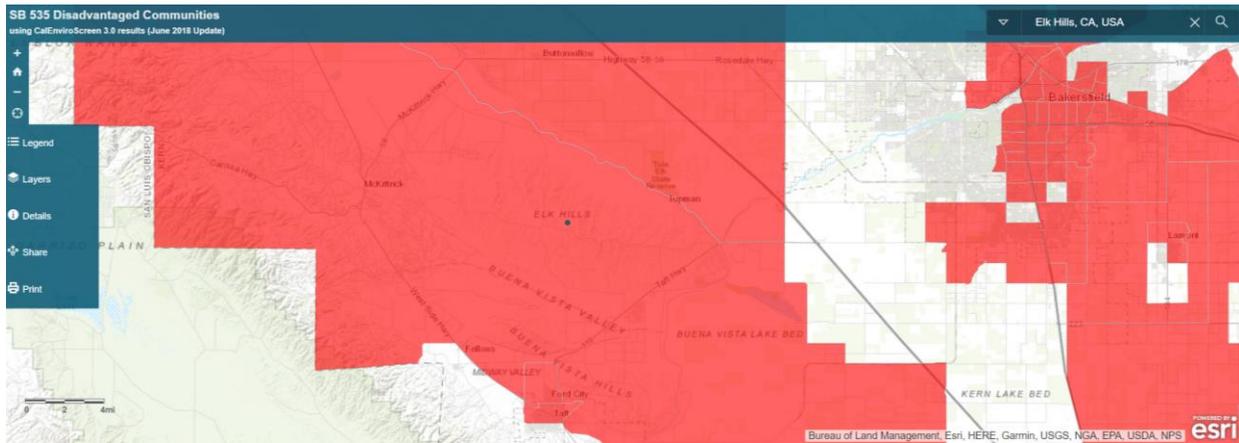


Figure 1: SB 535 Disadvantaged Communities in the Vicinity of the Elk Hills Oilfield

More broadly, Kern County, Taft, and Buttonwillow have a high percentage of residents of color, residents that are linguistically isolated, and residents that have less than a high school education. Taft is in the 85th percentile or greater in the categories of linguistic isolation, low income, and less than a high school education.⁵⁰ Further, the residents of Taft are in the 90th population percentile or greater for several of EPA’s Environmental Justice Indexes, including ozone and particulate matter 2.5, as compared to the U.S.⁵¹ 84% of the residents of Buttonwillow, an unincorporated community just four miles from the project, are people of color.⁵²

It is critical that EPA address the environmental justice impacts of the project and consider how it will exacerbate high levels of pollution and emissions at sensitive receptors surrounding the oilfield, near the facility that will source the carbon for the project, and in the areas where compressed carbon will pass through on its way to the Elk Hills oilfield. According to the American Lung Association, Bakersfield ranked 3rd for 24-hour particle pollution out of 216 cities in the US, 2nd for high ozone days out of 226 cities, and 1st for annual particle

⁴⁷ Elk Hills NOP at 1.

⁴⁸ California Office of Environmental Health Hazard Assessment, *SB 535 Disadvantaged Communities*, <https://oehha.ca.gov/calenviroscreen/sb535> (last visited Mar. 23, 2022).

⁴⁹ California Office of Environmental Health Hazard Assessment, *SB 535 Disadvantaged Communities Map*, Census Tract 6029003304, <https://oehha.ca.gov/calenviroscreen/sb535> (last visited Mar. 23, 2022).

⁵⁰ U.S. EPA, *EJSCREEN Mapper*, <https://ejscreen.epa.gov/mapper/> (last visited Mar. 21, 2022) (socioeconomic indicators tab once Taft / FIPS 060290035001 is selected).

⁵¹ *Id.* (environmental justice indices tab once Taft / FIPS 060290035001 is selected).

⁵² *Id.* (socioeconomic indicators tab once Buttonwillow / FIPS 060290037001 is selected).

pollution out of 199 cities.⁵³ EPA should pay special attention to the air impacts associated with the project given the already dangerous air quality of Kern County.

Finally, EPA should consider input from the Tejon Indian tribe. When the Department of Energy prepared an Environmental Impact Statement for the Hydrogen Energy California project and associated EOR, members of the tribe shared in meetings that they had concerns about potential damage to Native American archeological sites and human remains from EOR activities in the Elk Hills oilfield. The Tejon Indian Tribe requested further information about how it could continue to participate in the siting review process.⁵⁴

The White House Environmental Justice Advisory Council has called CCS projects a “type[] of project that will *not* benefit a community,” noting that “it would be unreasonable to have any climate investment working against historically harmed communities.”⁵⁵ Simply because the oil and gas industry touts a project as a climate solution does not mean EPA can assume it will benefit nearby disadvantaged communities.

C. EPA Must Get More Information About the Project’s Safety Hazards.

Compressed carbon is extremely dangerous, yet Carbon TerraVault’s Class VI applications have no information about CO₂ transportation and associated safety hazards. Real-world examples show just how dangerous CO₂ transport can be. In February 2020, a carbon pipeline ruptured in Yazoo County, Mississippi, requiring hundreds to be evacuated and hospitalization of dozens, with symptoms including extreme disorientation, gasping for air, unconsciousness, and seizures.⁵⁶ Even cars and emergency vehicles had a hard time working in the presence of the leaking CO₂, making evacuation and access by emergency vehicles difficult.⁵⁷ The Kern County NOP notes that, depending on the transportation option, CO₂ could pass within one quarter mile of a school during transport.⁵⁸ Transporting compressed CO₂ so close to a school raises a host of concerns about clean-up risks in the event of an accident. For example, an EOR field in Wyoming leaked and spewed carbon into the atmosphere next to a public school, with air pollution so severe that it took almost the entire school year to return the premises to safety.⁵⁹

Safety is also a concern with the Elk Hills project because California is one of the most seismically active states in the U.S. and earthquakes pose a risk in the project area. For example, a U.S. Department of Energy Draft Environmental Impact Statement from the time when Elk

⁵³ American Lung Association, *Report Cards Metropolitan Statistical Areas: Bakersfield, CA*, <https://www.lung.org/research/sota/city-rankings/msas/bakersfield-ca> (last visited Mar. 21, 2022).

⁵⁴ U.S. Department of Energy & California Energy Commission, *supra* note 44 at 1-13.

⁵⁵ White House Env’t Just. Advisory Council, Interim Final Recommendations at 55, 58 (May 13, 2021), https://www.epa.gov/sites/default/files/2021-05/documents/whejac_interim_final_recommendations_0.pdf (emphasis original).

⁵⁶ Mississippi Emergency Management Agency, *Pipeline Ruptures in Yazoo County* (Feb. 23, 2020), <https://www.msema.org/news/pipe-ruptures-in-yazoo-county-dozens-hospitalized/>.

⁵⁷ Zegart, Dan, *The Gassing of Satartia*, Huffpost, Aug. 26, 2021, https://www.huffpost.com/entry/gassing-satartia-mississippi-co2-pipeline_n_60ddea9fe4b0ddef8b0ddc8f.

⁵⁸ Elk Hills NOP at 35.

⁵⁹ Kusnetz, Nicholas, *Exxon Touts Carbon Capture as a Climate Fix, but Uses It to Maximize Profit and Keep Oil Flowing*, Inside Climate News, Sept. 27, 2020, <https://insideclimatenews.org/news/27092020/exxon-carbon-capture/>.

Hills was a Naval Petroleum Reserve discusses at length the risks posed by seismicity.⁶⁰ That EIS confirms that Elk Hills is in a seismically active region that has generated structurally significant earthquakes in recent times, including earthquakes on the Big Pine, San Andreas, and White Wolf faults.⁶¹ These three faults have all produced earthquakes with magnitudes exceeding 7.5 in the last 125 years.⁶² The most recent of these was a magnitude 7.7 earthquake on the White Wolf Fault in 1952,⁶³ which is approximately 24 miles southeast of Elk Hills—close enough for effects of such an earthquake to be felt in Elk Hills. In fact, in response to the 1952 White Wolf earthquake, sanding occurred in some 30 wells.⁶⁴

Studies link CO₂ injection to earthquakes.⁶⁵ For example, a 2012 study concluded that large-scale geologic storage of CO₂ carries has a “high probability” of triggering earthquakes, finding that “[b]ecause even small- to moderate-sized earthquakes threaten the seal integrity of CO₂ repositories, in this context, large-scale CCS is a risky, and likely unsuccessful, strategy for significantly reducing greenhouse gas emissions.”⁶⁶ A 2013 study found a strong correlation between earthquakes and CO₂ injection for EOR.⁶⁷ A 2016 study linked wastewater injection in the Tejon oilfield in Kern County to a September 2005 earthquake swarm of three M ≥ 4 events near the White Wolf Fault, signaling that this fault is sensitive to injection.⁶⁸ The San Andreas Fault is even closer to the Elk Hills oilfield than the White Wolf Fault, at approximately 14 miles to the southwest.⁶⁹ The full range of seismic impacts should be evaluated for the project as a whole, not just for the individual applications Carbon TerraVault submitted.

D. EPA Must Conduct Endangered Species Consultation.

EPA also needs more information to understand the habitat and wildlife impacts of the project. EPA must conduct Endangered Species Act consultation for the federally listed species that may be affected by the project. Project construction and operation, including the injection wells and associated infrastructure, transportation, and carbon capture and storage, may affect numerous listed species and critical habitat in the Elk Hills area.

⁶⁰ U.S. Department of Energy, Draft EIS, Petroleum Production at Maximum Efficient Rate, Naval Petroleum Reserve No. 1 (Elk Hills) Kern County, California (1978), <https://play.google.com/books/reader?printsec=frontcover&output=reader&id=4AYxAQAAMAAJ&pg=GBS.SL5-PA18>.

⁶¹ *Id.* at E-12-13.

⁶² *Id.* at E-13.

⁶³ *Id.*

⁶⁴ *Id.* at E-15.

⁶⁵ Zoback, Mark D. & Steven M. Gorelick, Earthquake triggering and large-scale geologic storage of carbon dioxide, 109 *PNAS* 10164 (2012), <https://doi.org/10.1073/pnas.1202473109>; Gan, Wei & Cliff Frohlich, Gas injection may have triggered earthquakes in the Cogdell oilfield, Texas, 110 *PNAS* 18786 (2013), <https://doi.org/10.1073/pnas.1311316110>; Foulger, Gillian R. et al., Global review of human-induced earthquakes, 178 *Earth-Science Reviews* 438 (2018), <https://doi.org/10.1016/j.earscirev.2017.07.008>; Sano, Yuji et al., Groundwater anomaly related to CCS-CO₂ injection and the 2018 Hokkaido Eastern Iburu Earthquake in Japan, 8 *Frontiers in Earth Science* 611010 (2020), <https://doi.org/10.3389/feart.2020.611010>.

⁶⁶ Zoback & Gorelick, *supra* note 65.

⁶⁷ Gan & Frohlich, *supra* note 65.

⁶⁸ Goebel, T.H.W. et al., Wastewater Disposal and Earthquake Swarm Activity at the Southern End of the Central Valley, California, 43 *Geophysical Res. Letters* 1092 (2016).

⁶⁹ U.S. EPA, Site Characterization Evaluation of the Carbon TerraVault (CTV) Class VI A1-A2 Permit Application (Dec. 15, 2021) at 7-8.

The Endangered Species Act requires federal agencies to “insure that [their] action. . . is not likely to jeopardize the continued existence of any [listed] species or result in the destruction or adverse modification of [critical] habitat of such species.”⁷⁰ Even if jeopardy is avoided, federal agencies must have permission before “incidental[ly]” harming listed fish and wildlife.⁷¹ Any action that “may affect” endangered or threatened species or their habitat must undergo consultation.⁷² The “may affect” bar is “low,”⁷³ and broadly includes “[a]ny possible effect, whether beneficial, benign, adverse or of an undetermined character.”⁷⁴

Table 2 lists the rare, special, threatened, and endangered species that are found in the area around Elk Hills—specifically in the U.S. Geologic Survey quadrangles. Foreseeable impacts from the project include habitat degradation and destruction, and disturbance, injury and death of listed species resulting from the construction and operation of project. ESA consultation must evaluate the effects of all aspects of the project on listed species and their critical habitat including the construction and operation of the injection wells and associated infrastructure; CO₂ compression; CO₂ transport by pipeline, rail, truck or other means; ancillary transportation activities; long-term underground storage of CO₂; and any activities to source the carbon that are not currently in existence.

The project poses particular risks to listed species from leakage and uncontrolled blowout of compressed CO₂ from pipelines and injection wells. Compressed CO₂ forms a low dense cloud that can spread long distances from the release site and sicken and asphyxiate wildlife. CO₂ injection in oil fields and CO₂ pipeline transport have resulted in leakage and blowouts in several states that have caused wildlife deaths and significant habitat degradation. For example, a CO₂ injection well blowout in the Tinsley field, Mississippi, took 37 days to bring under control and killed deer, birds, fish, and other animals.⁷⁵ The blowout ejected CO₂ along with mud and drilling fluids, requiring the removal of 27,000 tons of drilling mud and contaminated soil and 32,000 barrels of liquids, and causing extensive habitat damage.

Burrowing species are particularly vulnerable to death from CO₂ suffocation in the event of CO₂ pipeline or injection well blowout, since released CO₂ would fill nearby burrows where animals are resting or retreating. Federally listed burrowing species in the project area include the San Joaquin kit fox, San Joaquin antelope squirrel, giant kangaroo rat, and blunt-nosed leopard lizard.

Finally, we understand that Carbon TerraVault has told EPA that its oil and gas operations have been covered by Section 7 permits and a draft 10a permit, and that the project area is covered by a Section 2081 Incidental Take permit. But prior federal Section 7 and 10(a) ESA permits that apply to Elk Hills oil and gas operations do not cover the CO₂ capture, compression, transportation, and injection activities that are the core of this project. Similarly,

⁷⁰ 16 U.S.C. § 1536(a)(2).

⁷¹ *Id.* § 1536(b)(4).

⁷² 50 C.F.R. § 402.14(a).

⁷³ *Nat'l Parks Conservation Ass'n. v. Jewell*, 62 F.Supp.3d 7, 12–13 (D.D.C. 2014)

⁷⁴ 51 Fed. Reg. 19,926, 19,949-50 (Jun. 3, 1986); *see also Karuk Tribe v. Cal. v. U.S. Forest Serv.*, 681 F.3d 1006, 1027 (9th Cir. 2012) (en banc) (“actions that have any chance of affecting listed species or critical habitat—even if it is later determined that the actions are ‘not likely’ to do so”—require consultation).

⁷⁵ Zegart, *supra* note 56; Amy, Jeff, *Oil spills in Mississippi, Alabama lead to \$3.5 million in penalties for the company*, Clarion Ledger, Apr. 30, 2019, <https://www.clarionledger.com/story/news/2019/04/30/oil-spills-penalties-mississippi/3625587002/>.

the draft Habitat Conservation Plan for Elk Hills Oil and Gas Field (2009), which was never put into place, and the Section 2081 Incidental Take permit from the California Department of Fish and Wildlife, do not cover the CO₂ capture, compression, transportation and injection activities of this project.

Table 2: Threatened, Endangered and Sensitive Animals, Plants, and Plant Communities of the Elk Hills Area (threatened and endangered species are bolded)

Common Name	Scientific Name	Federal/State
Plants		
<i>Horn's milk-vetch</i>	<i>Astragalus hornii</i> var. <i>hornii</i>	S/1B.1
<i>heartscale</i>	<i>Atriplex cordulata</i> var. <i>cordulata</i>	S/1B.2
California jewelflower	<i>Caulanthus californicus</i>	FE/SE, 1B.1
<i>Lemmon's jewelflower</i>	<i>Caulanthus lemmonii</i>	S/1B.2
<i>recurved larkspur</i>	<i>Delphinium recurvatum</i>	S/1B.2
Kern mallow	<i>Eremalche parryi</i> ssp. <i>kernensis</i>	FE/1B.2
<i>Temblor buckwheat</i>	<i>Eriogonum temblorense</i>	S/1B.2
<i>Tejon poppy</i>	<i>Eschscholzia lemmonii</i> ssp. <i>kernensis</i>	S/1B.1
<i>Coulter's goldfields</i>	<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	S/1B.1
<i>pale-yellow layia</i>	<i>Layia heterotricha</i>	S/1B.1
<i>Munz's tidy-tips</i>	<i>Layia munzii</i>	S/1B.2
<i>Jared's pepper-grass</i>	<i>Lepidium jaredii</i> ssp. <i>jaredii</i>	S/1B.2
<i>showy golden madia</i>	<i>Madia radiata</i>	S/1B.1
San Joaquin woollythreads	<i>Monolopia congdonii</i>	FE/1B.2
Plant Communities		
<i>Valley Saltbush Scrub</i>	<i>Valley Saltbush Scrub</i>	--/WL
Insects		
<i>Crotch bumble bee</i>	<i>Bombus crotchii</i>	--/WL
Kern primrose sphinx moth	<i>Euproserpinus euterpe</i>	FT/--
<i>Morrison's blister beetle</i>	<i>Lytta morrisoni</i>	--/WL
Amphibians		
<i>western spadefoot</i>	<i>Spea hammondii</i>	S/SSC
Reptiles		
<i>Temblor legless lizard</i>	<i>Anniella alexanderae</i>	--/SSC
<i>Bakersfield legless lizard</i>	<i>Anniella grinnelli</i>	--/SSC
<i>California legless lizard</i>	<i>Anniella</i> spp.	--/SSC
<i>California glossy snake</i>	<i>Arizona elegans occidentalis</i>	--/SSC
blunt-nosed leopard lizard	<i>Gambelia sila</i>	FE/SE, FP
<i>San Joaquin coachwhip</i>	<i>Masticophis flagellum ruddocki</i>	--/SSC
Birds		
<i>burrowing owl</i>	<i>Athene cunicularia</i>	S/SSC
<i>mountain plover</i>	<i>Charadrius montanus</i>	S/SSC
<i>Le Conte's thrasher</i>	<i>Toxostoma lecontei</i>	S/SSC
California condor	<i>Gymnogyps californianus</i>	FE/SE, FP
Mammals		
<i>Nelson's (San Joaquin) antelope squirrel</i>	<i>Ammospermophilus nelsoni</i>	S/CT
<i>giant kangaroo rat</i>	<i>Dipodomys ingens</i>	FE/SE

<i>short-nosed kangaroo rat</i>	<i>Dipodomys nitratooides brevinasus</i>	<i>S/SSC</i>
Tipton kangaroo rat	<i>Dipodomys nitratooides nitratooides</i>	<i>FE/SE</i>
<i>western mastiff bat</i>	<i>Eumops perotis californicus</i>	<i>S/SSC</i>
<i>Tulare grasshopper mouse</i>	<i>Onychomys torridus tularensis</i>	<i>S/SSC</i>
<i>American badger</i>	<i>Taxidea taxus</i>	<i>--/SSC</i>
<i>San Joaquin kit fox</i>	<i>Vulpes macrotis mutica</i>	<i>FE/ST</i>
<p>Federal Designation <i>FE—Federally listed as endangered</i> <i>FT—Federally listed as threatened.</i> <i>S—BLM Sensitive Species.</i></p> <p>State Designation <i>CE—State listed as endangered.</i> <i>CT—State listed as threatened. Species that although not presently threatened in California with extinction are likely to become endangered in the foreseeable future.</i> <i>SSC—California Department of Fish and Wildlife’s “Species of Special Concern.” Species with declining populations in California.</i> <i>WL—Watch List</i> <i>1B.1—Plant rare, threatened or endangered in Cal. and elsewhere, and very threatened in CA.</i> <i>1B.2—Plant rare, threatened or endangered in Cal. and elsewhere, and fairly threatened in CA.</i></p> <p>Data from California Natural Diversity Database – accessed March 2022</p>		

E. EPA Must Analyze the Project’s Cumulative Impacts.

EPA should also consider the cumulative impacts of co-locating a CCS project in an oil field. Kern County has repeatedly attempted to pass an oil and gas ordinance that, if upheld in court, would accelerate oil and gas development over the next two decades, allowing up to 43,000 new wells.⁷⁶ CO₂ injection activities will add to the air quality, water quality, and public health risks from drilling and injecting for traditional production in communities that are already overburdened. Elk Hills is one of the top ten producing oilfields in the state, producing 6% of California’s oil,⁷⁷ and the especially harmful techniques of injection and hydraulic fracturing have increased in the field recent decades.⁷⁸ There is growing evidence that these techniques are dangerous and environmentally destructive. For example, a 2015 California Council on Science & Technology report underscores the water intensity of these drilling practices and the dangers associated with the chemicals added to these wells and produced water they create.⁷⁹ The report also highlights the risk of surface expressions and spills, which occur with troubling regularity in

⁷⁶ Meley, Brian, *Kern County OKs plan for thousands of new oil and gas wells over environmental objections*, LA Times, Mar. 9, 2021, <https://www.latimes.com/environment/story/2021-03-09/kern-county-approves-new-oil-and-gas-wells-over-environmental-objections>.

⁷⁷ Fleming, John, *Killer Crude: How California Produces Some of the Dirtiest, Most Dangerous Oil in the World*, Center for Biological Diversity (2021) at 8.

⁷⁸ There were 1,318 active wells in the Elk Hills oilfield in 2000. California Dep’t of Conservation, Division of Oil, Gas & Geothermal Resources, 2000 Annual Report of the State Oil & Gas Supervisor (2000). There are now 3,420 active wells, including 2,863 oil and gas wells, 178 waterflood, and 80 water disposal wells. California Dep’t of Conservation, CalGEM, All Wells excel spreadsheet, *available at* <https://www.conservation.ca.gov/calgem/maps/Pages/GISMapping2.aspx>. 11 hydraulic fracturing permits were approved between 2016 and 2019. California Dep’t of Conservation, CalGEM, *WellSTAR database*, <https://wellstar-public.conservation.ca.gov/General/Account/PublicEntry?returnUrl=%2F> (last visited June 10, 2022).

⁷⁹ Cal. Council on Science & Technology, *An Independent Scientific Assessment of Well Stimulation in California*, Vol. II at 61, 92-97 (2015), <https://ccst.us/wp-content/uploads/160708-sb4-vol-II-7.pdf>.

California.⁸⁰ These risks will be heightened if the CCS Class VI project is combined with a Class II EOR project as Carbon TerraVault has foreshadowed.

III. EPA Has the Authority and the Responsibility to Request the Missing Information.

The Underground Injection Control regulations specify that the owner or operator of a proposed Class VI well “shall submit” proposed operating data for the site, including “*the source(s) of the carbon dioxide stream*” and “an analysis of the chemical and physical characteristics of the [CO₂] stream.”⁸¹ “The Director will evaluate . . . [the] proposed operating data submitted as part of the site characterization process, to ensure that planned activities at the facility are appropriate to the site-specific circumstances and address all risks of endangerment to USDWs.”⁸² The source of CO₂ is necessary to demonstrate that the CO₂ stream is compatible with fluids and minerals in the confining and injection zones,⁸³ to properly delineate and model the Area of Review, and also to inform the project specific testing and monitoring plan, because the appropriate frequency of CO₂ stream testing is dependent on the source of CO₂.⁸⁴

EPA has additional discretion to consider any other information it determines to be relevant to the permitting decision. Before issuing a permit, the Director must consider “[a]ny other information requested by the Director.”⁸⁵ The regulations and other guidance documents clarify that environmental justice and climate change concerns, in particular, should play a role in EPA’s decision making.

Under Executive Order 12,898, each federal agency has committed, “to the greatest extent practicable and permitted by law,” to “make achieving environmental justice part of its mission by identifying and addressing as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories”⁸⁶ Additionally, EPA recently committed to “make achieving environmental justice part of [its] mission[] by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.”⁸⁷ These broader commitments are reflected in the Underground Injection Control regulations, which have public participation requirements specifically designed to allow EPA to learn about environmental justice concerns and ensure these concerns are considered by decision-making officials.⁸⁸ In recent years, EPA has also drafted guidance for UIC Directors that emphasizes the importance of considering the potential impact of any Class VI permits on minority and low

⁸⁰ The report identified 575 spills of produced water between 2011 and 2014, 18% of which affected waterways; as well as 31 chemical spills including a 5,500-gallon spill of hydrochloric acid. *Id.* at 127-128.

⁸¹ 40 C.F.R. § 146.82(a)(7).

⁸² Federal Requirements Under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells, 75 Fed. Reg. 77,230, 77,248 (Dec. 10, 2010), codified at 40 C.F.R. §§ 124, 144, 145, 146, and 147.

⁸³ 40 C.F.R. § 146.82(c)(3).

⁸⁴ Federal Requirements Under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells, 75 Fed. Reg. at 77,259.

⁸⁵ 40 C.F.R. § 146.82(a)(21).

⁸⁶ Exec. Order 12,898 § 1-101 (Feb. 16, 1994).

⁸⁷ Exec. Order 14,008 § 219 (Jan. 27, 2021).

⁸⁸ Federal Requirements Under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells, 75 Fed. Reg. at 77,273.

income populations when evaluating Class VI injection well permit applications.⁸⁹ The guidance encourages consideration of other permitted facilities in the area as well as multiple/cumulative exposure risks.⁹⁰ EPA Region 9 already indicated that it will incorporate some environmental justice considerations into its review process when it performed an Environmental Justice screening to look at potential cumulative environmental burdens and the vulnerability of the community near the Mendota Clean Energy Systems facility.⁹¹ A similar analysis should be conducted here to evaluate the project impacts and to inform community outreach efforts.

EPA must also consider the project’s collective contribution to climate change given that the regulations governing Class VI permits were designed to create a new class of well that “could be deployed to reduce CO₂ emissions to the atmosphere and help to mitigate climate change.”⁹² Recently-proposed Council on Environmental Quality Guidance similarly notes that “[i]n addition to assessing criteria pollutants associated with CCUS activities, agencies should also assess carbon dioxide emissions from project infrastructure.”⁹³ To ensure a Class VI project actually reduces CO₂ emissions, it is necessary to account for the emissions associated with the carbon source (and any additional emissions from restarting or prolonging that source, if for example, it is a gas plant that powers further oil extraction), emissions associated with compressing and liquifying carbon dioxide, emissions from the loss of efficiency in industrial processes fitted with said equipment, emissions associated with injecting into Class VI wells, and any emissions associated with potential leakage from infrastructure throughout the system.

Finally, EPA should be particularly attentive to the impacts of the project as a whole—including the CO₂ source and transportation components—for environmental justice, public health, habitat and wildlife, and climate change, due to EPA’s unique role in permitting Class VI wells relative to other projects with significant environmental impacts. Under the current regulations, EPA states that Class VI wells are exempt from NEPA review.⁹⁴ The final rule establishing federal requirements for Class VI wells under the Safe Drinking Water Act asserted that the NPDES permitting process for Class VI wells is “functionally equivalent” to NEPA. We dispute this, but if we take EPA at its word that this is the intention with the Class VI permitting process, the Class VI permitting process must *actually be* functionally equivalent to a NEPA review. It should involve rigorous consideration of direct, indirect, and cumulative impacts to human health and the environment—as well as analysis of project alternatives, such as a “no action” alternative.⁹⁵

IV. EPA Must Take California Resources Corporation’s Precarious Financial Condition into Account When Evaluating the Project.

Allowing Carbon TerraVault to proceed with fragmented Class VI applications and without consideration of all aspects of the project would obscure the project’s cumulative costs

⁸⁹ U.S. EPA, Geologic Sequestration of Carbon Dioxide – UIC Quick Reference Guide: Additional Tools for UIC Program Directors (2011), <https://www.epa.gov/sites/default/files/2015-07/documents/epa816r11002.pdf>.

⁹⁰ *Id.* at 4.

⁹¹ Albright, David, U.S. EPA, Email to Rebecca Hollis et al, RE: EPA request for updates to application (May 28, 2021).

⁹² Federal Requirements Under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells 75 Fed. Reg. at 77,230.

⁹³ Carbon Capture, Utilization, and Sequestration Guidance, 87 Fed. Reg. 8,808, 8,809 (Feb. 16, 2022).

⁹⁴ See 40 C.F.R. 124.9(b)(6).

⁹⁵ 42 U.S.C. 4332(2)(C).

and put the public at risk of shouldering safety and long-term maintenance costs. To ensure the owner/operator has the resources to manage all project components, and to guarantee that carbon will be stored long-term, it is critical for Carbon Terravault and its parent company California Resources Corporation (“CRC”) to have the resources to construct and complete a multi-year project, monitor for leakage and migration, and respond to any emergencies or project failures.⁹⁶ This would be a tall order for any company, but it is an especially critical consideration here given that CRC recently emerged from bankruptcy and continues to owe billions of dollars in debt. Under the circumstances, EPA should reject the pending applications or at a minimum require that CRC obtain long-term insurance and post a bond to cover well plugging, site care, and closure.

As the fossil fuel industry sinks further into decline, companies like CRC have weaponized bankruptcy proceedings and other maneuvers to evade their environmental clean-up and financial obligations to the public and its workers.⁹⁷ CRC, a company spun off from U.S. oil giant Occidental Petroleum in 2014, “was created specifically to offload Occidental’s California cleanup liabilities.”⁹⁸ Occidental spun off CRC to takeover roughly 15,300 poor-quality oil and gas wells and immediately burdened the new corporation with \$4.95 billion of Occidental’s debt.⁹⁹ By July 2020, when CRC filed for bankruptcy,¹⁰⁰ the company held 17,971 unplugged wells, including 11,806 idle wells,¹⁰¹ and had an estimated outstanding debt of \$6.3 billion.¹⁰² Though CRC emerged from bankruptcy in October 2020 by restructuring \$4.4 billion of its debt into equity interests for its creditors,¹⁰³ the company still owes over \$2 billion and has little projected future revenue.

CRC’s outstanding debts will likely grow. Only a third of CRC’s wells are currently producing oil or gas and the company will soon incur substantial costs as it is required to plug and abandon idle wells. CRC projects that it will expend \$517 million to plug its nearly 18,000 wells, discounted over the expected life of the wells.¹⁰⁴ However, a recent analysis by Sierra

⁹⁶ Pursuant to 40 C.F.R. § 146.85, Class VI permit applicants must demonstrate financial responsibility for: performing corrective action on deficient wells in the area of review, plugging injection wells, post-injection site care and site closure, and emergency and remedial response. To make this demonstration, they must estimate the cost of each of these activities and provide qualifying financial instruments.

⁹⁷ Macey, Joshua, Bankruptcy as Bailout: Coal Company Insolvency and the Erosion of Federal Law, 71 Stanford Law Rev. 879 (2019), <https://review.law.stanford.edu/wp-content/uploads/sites/3/2019/04/Macey-Salovaara-71-Stan.-L.-Rev.-879.pdf>.

⁹⁸ Williams-Derry, Clark, IEEFA report: California Schemin’: What did Occidental Petroleum know about cleanup liabilities before the CRC spin-off?, Inst. For Energy Econ. & Fin. Analysis (Feb. 6, 2020), <https://ieefa.org/ieefa-report-california-schemin/>.

⁹⁹ Sierra Club, The Rise of Unplugged Wells for California’s Taxpayers: California Resources Corporation – A Case Study [hereinafter CRC Case Study] at 3 (2020),

https://www.sierraclub.org/sites/www.sierraclub.org/files/blog/2335%20CRC-Wells_Report_02_high.pdf;

Securities and Exchange Commission, Exhibit 2.1 Separation and Distribution Agreement by and between Occidental Petroleum Corporation and California Resources Corporation. (Nov. 25, 2014),

https://www.sec.gov/Archives/edgar/data/1609253/000110465914084170/a14-25233_1ex2d1.htm.

¹⁰⁰ Notice of Chapter 11 Bankruptcy Case at 1, *In re California Resources Corporation*, 20-33568 (Bankr. T.S.D. 2020) (No. 689).

¹⁰¹ CRC Case Study at 6-7. Idle wells are those that have not produced in two years.

¹⁰² *Id.* at 3.

¹⁰³ Final Decree Closing Certain of the Chapter 11 Cases at 1, *In re California Resources Corporation*, 20-33568 (Bankr. T.S.D. 2020) (No. 689); Sullivan & Cromwell, LLP., *California Resources Corporation Emerges from Chapter 11 Restructuring* at 7 (Nov. 3, 2020), <https://www.sullcrom.com/client-highlight-california-resources-corporation-emerges-from-chapter-11-restructuring>.

¹⁰⁴ CRC Case Study at 6 (citing California Resources Corporation, Annual Report (Form 10-K) at 65 (2020)).

Club showed that CRC is dramatically undervaluing its future closure costs and/or underestimating how soon those costs will come due.¹⁰⁵ The average cost for CRC to plug and abandon its idle wells will likely exceed \$50,000 per well, bringing its total projected well closure obligations to over \$900 million unless CRC dramatically accelerates its well closure rate.¹⁰⁶ To match CRC's predicted discounted costs of \$517 million, the analysis suggested that CRC will need to close more than 5,000 wells by 2025, and thereafter an average of over 620 wells per year until 2045.¹⁰⁷ In other words, CRC will need to expend roughly \$250 million on well plugging by 2025 and thereafter over \$31 million annually until 2045.

These looming costs are especially concerning because CRC's assets are not projected to be profitable. By 2020, only 4,274 of CRC's wells produced more than the equivalent of five barrels of oil per day.¹⁰⁸ Sierra Club concludes that CRC will likely default on its closure obligations by 2025 if the company cannot secure additional funding, at which point the company will attempt to dump the clean-up costs for its wells onto the state.¹⁰⁹ While Sierra Club's analysis predates the resolution of CRC's bankruptcy proceeding, which restructured \$4.4 billion of CRC's loan obligations, CRC's active wells are still likely to be insufficient to fund its outstanding debts, pay nearly \$1 billion in future well closure obligations, or meet its obligations to workers.¹¹⁰

Despite CRC's financial difficulties, its applications for the project have done little to allay concerns over its financial state and ability to pay for long term site care and emergency response. In its August 2021 application to EPA, the company stated, "financial responsibility will be covered by" a letter of credit for "Injection Well Plugging and Post-Injection Site Care and Closure," and insurance for "Emergency and Remedial Response."¹¹¹ The insurance is described to "expire after injection cease[s]."¹¹² In other words, the insurance would expire about fifteen years into a project that is supposed to sequester carbon forever.

We appreciate that EPA has asked for additional information about the cost estimates and financial assurances information provided with the A1-A2 project application, including third-party-generated financial responsibility cost estimates that cover post-injection site care, site closure, monitoring and emergency and remedial response; additional details about the proposed letter of credit; and information about "how the funds specified for Class VI financial responsibility . . . will be protected from other liabilities."¹¹³ However, we note that the 26R project application used an identical approach, providing similarly-deficient information to EPA about CRC's capacity to maintain the project and act quickly if there is an earthquake, carbon

¹⁰⁵ *Id.* at 1 (citing Boomhower, Judson et al., Orphan Wells in California: An Initial Assessment of the State's Potential Liabilities to Plug and Decommission Orphan Oil and Gas Wells, California Council on Science and Technology, at Table 8 (2020), <https://ccst.us/wp-content/uploads/CCST-Orphan-Wells-in-California-An-Initial-Assessment.pdf>).

¹⁰⁶ *Id.*

¹⁰⁷ *Id.* at 7.

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* at 8-10.

¹¹⁰ *Id.* at 8.

¹¹¹ Carbon TerraVault, Class VI Financial Responsibility Demonstration Cost Estimates Description 40 CFR 146.85, Elk Hills A1-A2 Storage Project (Aug. 2021).

¹¹² Carbon TerraVault, Class VI UIC Financial Responsibility Demonstration for Project ID R09-CA-0003 (Aug. 2021).

¹¹³ U.S. EPA, CTV-Elk Hills Oil Field Class VI A1-A2 Project Review of Financial Responsibility Information (Dec. 15, 2021).

leak, or other event that would require an emergency response. Given CRC's history of insolvency, the entire endeavor should be evaluated at once and EPA should demand much greater assurances.

Greater assurances and more information are especially important given that the carbon storage project requires carbon to be captured at a facility that may face cost overruns. Based on news articles and public statements by CRC, the most likely source of carbon is the Elk Hills gas plant that is owned and operated by CRC. But following completion of a Front End Engineering Design study to determine the technical and economic feasibility of deploying a carbon capture process at the power plant, CRC stated in an investor presentation in late 2021 that it is "re-evaluating FEED study results and evaluating ways to improve project economics."¹¹⁴ It is unknown how CRC will proceed with the project given its high cost.

EPA must reject applications or request withdrawal of applications when the necessary financial assurance has not been provided.¹¹⁵ In addition, the regulations allow EPA to accept trust funds, surety bonds, letter of credit, insurance escrow account, and self-insurance as financial instruments.¹¹⁶ However, this list is not exhaustive and the Director may use his or her discretion to determine whether an alternative financial instrument is adequate to prove financial responsibility.¹¹⁷ Under the circumstances, EPA should reject CRC's applications. At an absolute minimum, EPA cannot rationally proceed with consideration of the applications without requiring, from the outset, actual financial assurances, such as adequate bonding to cover well plugging, site care, and closure and insurance that does not immediately lapse once injection stops but actually covers the storage phase of the project.

V. Instead of Extending the Life of Carbon-Emitting Infrastructure, We Must End Fossil Fuel Development to Prevent Catastrophic Climate Change and Halt Further Environmental Injustices.

Our organizations reject the premise that CCS is a necessary approach to addressing the climate crisis and pollution burdens borne by frontline communities. This proposed project will emit substantial GHGs, even if it purports to capture and store other sources' climate-harming emissions. As detailed in this letter, the proposed project is inconsistent with California's goals to reduce emissions and protect vulnerable residents.

CCS is frequently championed by polluting industries like the biomass and fossil fuel industries in order to enable business-as-usual operations, yet by far the best use of resources is to hasten the necessary transition away from fossil fuels and toward clean, cheaper renewable energy. In fact, CCS is *not* required under Intergovernmental Panel on Climate Change pathways

¹¹⁴ California Resources Corporation, *supra* note 14 at 15.

¹¹⁵ 40 C.F.R. § 146.85(a); *see also* U.S. EPA, Letter to Roya Kambin, Mendota Carbon Negative Energy Project Co LLC, Re. Permit Application Withdrawal – Underground Injection Control (UIC) Permit Application No. R9UIC-CA6-FY20-1 (Carbon Capture and Storage Project in Mendota, California) (Mar. 25, 2022).

¹¹⁶ 40 C.F.R. § 146.85(a)(1).

¹¹⁷ U.S. EPA, Research and Analysis in Support of UIC Class VI Program Financial Responsibility Requirements and Guidance (816-R-10-017) at 9 (2010), <https://www.epa.gov/sites/default/files/2015-07/documents/uicclass6researchandanalysisupdatedpg84.pdf>.

to limit temperature rise to 1.5°C and avert climate catastrophe.¹¹⁸ At the state level, CCS is also not necessary for California to achieve its climate goals and would do nothing to advance state orders directing that policies and programs undertaken to achieve carbon neutrality must “improve air quality and support the health and economic resiliency of . . . particularly low-income and disadvantaged communities.”¹¹⁹

After billions of dollars of investment and decades of development, many CCS projects around the world have consistently failed to meet their GHG emission reduction promises. As mentioned above, projects in Australia, Canada, and the US have missed their carbon sequestration targets by wide margins, especially when considering lifecycle emissions. When the lifecycle GHG impacts of carbon capture and storage projects are taken into account, any purported climate benefits often evaporate. A Stanford study recommended replacing fossil fuels with renewables such as wind or solar as the best and most effective method of reducing emissions rather than encouraging and investing in CCS.¹²⁰

From the information available, the Elk Hills project appears to be another example of a project that will entrench fossil fuels. Most of the potential carbon sources would prop up the oil or coal industries. The potential EOR component of the proposal continues the trend of projects that are ostensibly designed to reduce emissions while in fact unlocking additional oil and gas reserves to be burned. It is estimated that over 80% of global captured carbon is used to increase oil production through EOR.¹²¹ EPA should not continue to invest resources in reviewing applications that lack the information necessary to confirm that they will meaningfully reduce carbon emissions. Investment of time and money into such projects only prolongs the necessary shift to renewable energy.

VI. EPA Should Make Project Information Available to the Public; If a Complete Project Application is Ever Submitted, EPA Should Provide the Public 90 Days for Comment on the Draft Permit and at Least Two Translated Hearings.

EPA should take several steps to increase public trust as it reviews what will likely be the first Class VI permits in California. First, we request that EPA increase transparency by posting

¹¹⁸ The IPCC-modeled pathway with the best chance of keeping warming at or below the target of 1.5°C makes no use of fossil fuels with carbon capture and storage (CCS) or bioenergy with carbon capture and storage (BECCS). IPCC, Summary for Policymakers in Global Warming of 1.5°C: An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (2018) at 14, Section C.1.1., Figure SPM 3b (Pathway 1); *see also id.* at Ch. 2.3.3 and Table 2.SM.12. *See also* Center for International Environmental Law, *Confronting the Myth of Carbon Free Fossil Fuels* at 2, <https://www.ciel.org/wp-content/uploads/2021/07/Confronting-the-Myth-of-Carbon-Free-Fossil-Fuels.pdf>.

¹¹⁹ State of California, Executive Department, Executive Order B-55-18 (2018),

<https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>.

¹²⁰ *Id.* (“There is a lot of reliance on carbon capture in theoretical modeling, and by focusing on that as even a possibility, that diverts resources away from real solutions. It gives people hope that you can keep fossil fuel power plants alive. It delays action. In fact, carbon capture and direct air capture are always opportunity costs.”).

¹²¹ Garcia Freites, S & C. Jones, *A Review of the Role of Fossil Fuel-Based Carbon Capture and Storage in the Energy System*, Tyndall Centre (2021),

https://www.research.manchester.ac.uk/portal/files/184755890/CCS_REPORT_FINAL_v2_UPLOAD.pdf.

Expanding EOR in the United States could result in an additional 400,000 barrels per day oil production by 2035, which would directly lead to as much as 50.7 million metric tons of net CO₂ emissions annually. Oil Change International, *Expanding Subsidies for CO₂-Enhanced Oil Recovery: A Net Loss for Communities, Taxpayers, and the Climate* (2017), <https://priceofoil.org/content/uploads/2017/10/45q-analysis-oct-2017-final.pdf>.

project applications and EPA review documents in an easily accessible location. To track this project, we have had to submit multiple FOIA requests.¹²² Drafting requests and parsing responsive documents takes time, but there is no other way for nearby community members and environmental groups to know which projects are on the horizon. EPA’s Class VI permit tracker shows only that *three* (not two) Carbon TerraVault applications are under review.¹²³ The tracker does not indicate where in Kern County the project would be located nor the proposed injection rate and volume.

Second, while we reiterate that the current project applications should not move forward and EPA should not draft permits without additional information, should EPA ever draft a permit in association with a complete application for this project, we urge EPA to take the following steps:

1. Automatically extend the comment period on any Class VI carbon injection draft permit to at least 90 days. This is important given that a Class VI draft permit has never before been reviewed in California. EPA has the authority to provide a 90-day comment opportunity. According to the regulations, the public must be given “*at least 30 days for public comment*” on Class VI underground injection permit applications. *See* 40 C.F.R. § 124.10(b)(1); *see generally id.* § 124.10(c)(1)(xi).¹²⁴ And, as explained in detail in a recent letter to EPA Region 9 Administrator Martha Guzman, comment extensions would give the public and decisionmakers—who have no experience reviewing CCS projects under the Safe Drinking Water Act Underground Injection Control regulations—more time to review the wide array of environmental impacts associated with carbon sequestration. The proposed project location is near highly-impacted, vulnerable, and overburdened residents of the San Joaquin Valley who care deeply about their communities’ wellbeing and future economic development. The input, questions, and perspectives of those who will be most affected by the proposed projects must be heard. In addition, there is widespread and growing concern over CCS from community, environmental justice, and other groups across the state and country.¹²⁵ It is likely that many groups outside the Valley will want to take a close look at the draft permit and provide EPA with input, concerns, and questions.
2. For each draft Class VI permit, hold at least two public hearings in impacted communities, with those hearings simultaneously translated into Spanish and any other language prevalent in the project area, such as Punjabi.

¹²² FOIA Request # EPA-R9-2021-005939 (submitted Aug. 10, 2021, interim responses Sept. 9, 2021, Oct. 7, 2021, Oct. 29, 2021, and Nov. 17, 2021), EPA-R9-2022-000323 (submitted Oct. 15, 2021, interim responses Dec. 3, 2021 and Dec. 16, 2021), EPA-R9-2022-002411 (submitted Feb. 8, 2022, response Mar. 4, 2022), and EPA-2022-003552 (submitted April 6, 2022, response Apr. 21, 2022).

¹²³ U.S. EPA, *Class VI Wells Permitted by EPA*, <https://www.epa.gov/uic/class-vi-wells-permitted-epa#table> (last visited June 6, 2022).

¹²⁴ As noted in EPA’s Public Participation Guide for Class VI wells, “UIC Program Directors are required to solicit public participation in the Class VI permit application review and approval process pursuant to 40 CFR 124.” U.S. EPA, Geologic Sequestration of Carbon Dioxide – UIC Quick Reference Guide: Additional Considerations for UIC Program Directors on the Public Participation Requirements for Class VI Injection Wells (2011), https://www.epa.gov/sites/default/files/2015-07/documents/uic-quick-reference-guide_public-participation_final-508.pdf. We would expect EPA to provide this input during the draft permit stage, if not before.

¹²⁵ The 1,500 member-organizations of Climate Action Network International adopted a shared position statement stating that the members “do[] not consider currently envisioned CCS applications as proven sustainable climate solutions.” Climate Action Network, *supra* note 22 at 6 (2021). In July 2021, over 500 organizations sent an open letter to lawmakers calling on them to reject CCS as a “dangerous distraction.” Center for International Environmental Law, Letter Re: Carbon capture is not a climate solution (July 19, 2021), https://www.ciel.org/wp-content/uploads/2021/07/CCS-Letter_FINAL_US-1.pdf.

3. Translate the draft permit and other key documents—including press releases, summaries, and presentations—into Spanish, Punjabi, and any other language translation requested by County residents, in order to ensure the community has the opportunity to understand and comment on the project.
4. Publish in the Federal Register and send notice to stakeholders of all notices of Class VI permits, comment periods, and public hearings.

VII. Conclusion

In conclusion, EPA must require that all Class VI project applicants provide sufficient information to enable the agency to carefully consider associated environmental impacts. The current applications are wholly inadequate to enable this review, so EPA should request that Carbon TerraVault withdraw them. In addition, as currently proposed, the Elk Hills CCS project is dangerous and threatens to take resources away from the clean energy investment needed to achieve state and national goals of reaching near-zero emissions by midcentury to limit global warming to 1.5°C. EPA should reject the Elk Hills applications. Permitting this Class VI project and any others like it would only subvert California's progress toward a carbon free future. Thank you for your consideration of these important issues. Please do not hesitate to contact us if you have any questions.

Liz Jones
Staff Attorney
Center for Biological Diversity

Gordon Nipp
Vice-Chair
Sierra Club Kern-Kaweah Chapter

CC: Tomás Torres EPA Region 9 Water Division Director
David Albright, EPA Region 9 Groundwater Protection Section Manager
Calvin Ho, EPA Region 9 Groundwater Protection Section
Mark Ghann-Amoah, CalGEM Inland District
Janice Zinky, CA State Water Resources Control Board
Clay Rodgers, Central Valley Regional Water Quality Control Board
Julie Vance, California Department of Fish and Wildlife

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