ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In re	)	
Pratt Zero Carbon, LLC	)	**UIC Appeal No. 26-03**
Pratt Energy CCUS #1 (PECCUS-1)	)	
Pratt County, Kansas	)	
Class VI UIC Permit No. KSS151570001	)	

RESPONSE OF PRATT ZERO CARBON, LLC TO PETITION FOR REVIEW

ATTACHMENT 6

I am a person who cares about the current and future generations of Texans. I have concerns regarding the Pratt Zero Carbon CCUS Facility and I have suggestions on how to improve the permit application for the final draft. I have a background in chemistry, geology, petroleum engineering, and ecological restoration as well as a decade of experience working in the oil and gas industry, including CCS Projects. I also work with my community and the environment to coexist symbiotically. I understand the impacts to water and personal safety with regards to new technology as well as vague regulations and policy safeguards.

It has only been in the last 10-12 years that the carbon capture technology – the filters, membranes, chemicals that actually *separates out* the CO2 from any of the industries used as point sources to a "premium" quality – has been developed. According to the globally used Technology Readiness Scale (TRL), most of these technologies are still at TRL 4 and 5, demonstrating a proof-of-concept in a *laboratory* setting and shifting to a *pilot* plant. Anything above TRL 5 (and up to TRL 9) are still in demonstrations at the pilot facility or reached a commercial level in the last few years. What has been touted as the most advanced technologies, as a *proven and essential for decarbonization strategy,* is barely 3 years old and has had no longevity or durability evidence to withstand the lengths of times of 12 years of injection. For the permit applications and draft permits, Pratt Zero Carbon (and all companies applying) needs to include the carbon capture technology they plan to use, who else has used it, and how where it has been tested.

Pratt Zero Carbon must adhere to the minimum federal requirements, which for any Underground Injection Program (UIC) is the environmental policy known as the Safe Drinking Water Act (SDWA). They must ensure that they protect the underground sources of drinking water (USDWs) from endangerment of CO2 contamination, or any other potential pollutant – oil, heavy metals, or brine. CO2 is not taken seriously as a chemical compound and is in fact considered a hazardous chemical. Similarly to H2S, CO2 is also a colorless, odorless gas that is denser than air, and in large quantities can displace oxygen quickly and quietly, leading to asphyxiation. Additionally, CO2 is a compressible gas and injecting into an increasingly pressurized closed "tank" can result in ruptures of CO2, acidized-saline water, and other contaminants with enough force to injure or kill people, as well as destroy infrastructure. Because of these qualities, water is not the only resource that should be protected from contamination, and the UIC Program needs to expand to include regulations for air, land, and people.

After reviewing the draft permit, several sections demonstrate that Pratt Zero Carbon and Pratt Energy, 1) do not understand the risks involved with CO2 Injection and thus don't take the risks seriously enough for proper mitigation strategies and 2) do not have a team of

engineers, geologists, scientists, environmentalists, or technicians on staff to help them create a robust geologic model and emergency response plan.

1. Geology, USDW, and Induced Seismicity

According to page 7 of this permit, Pratt Zero Carbon can inject "as a liquid, supercritical fluid, or gas into the Shawnee Group at depths between 3,282 feet and 3,670 feet below ground surface and the Lansing Kansas City Group at depths between 3,804 feet and 4,165 feet below ground surface upon the express condition that the permittee meet the restrictions set forth herein. The designated confining zones for this injection are provided by low permeability layers within the Wabaunsee Group from 2,847 feet and 3,282 feet below ground surface and the Heebner Shale and Douglas Group from 3,670 feet and 3,804 feet below ground surface."

Pratt Zero Carbon states on page 326 that they "have additional potential injection and confining zones" and are waiting on their stratigraphic well PE AZM-1 to "gather site specific data." This is not how a permit application works as per this draft permit. If they didn't have sufficient information to properly account for the deeper formations for this permit application, then they should have waited until the stratigraphy well was complete, or just not include those formations. That is how it has been for other applications. They used the available data around their injection site, including hydrologic, geologic, or petroleum publication sources, and the stratigraphic well was only used to confirm the data obtained for the permitted injection and confining zones to better inform the geologic model. This updated data is a minor modification (under Permit Actions page 8), whereas adding multiple entire geologic formations and expecting to have the same AOR, Injection Plan, P&A Plan, Well Construction Plan, Financial Plan, PISC Plan, and ERR Plan is very unlikely.

Please remove the language that Pratt Zero Carbon will is allowed to wait on the stratigraphic well PE AZM-1 to "gather site-specific data" to add more "injection and confining zones" to this permit. It will be the entire first paragraph under Injection and Confining Zone Details on page 326. As stated earlier, it's not part of this permit, and the public will not be able to review these added zones to make comments or suggestions to this permit draft. Additionally, adding injection and confining zones after this permit draft and subsequent final permit will cause Pratt Zero Carbon to be in direct violation of this permit for the two clauses:

1) "The permittee is allowed to engage in underground injection in accordance with the conditions of this permit"
    a. The Effect of Permit page 8
    b. This only includes the injection and confining zones found on page 7

2) “The permittee authorized by this permit shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of injection, annulus or formation fluids into underground sources of drinking water (USDWs) or any unauthorized zones.”
    a. The Effect of Permit page 8
    b. They cannot construct a well without fulling understanding the impacts of the well, which comes from the work done in this current version of the permit

Additionally, on the EPA website under Class VI Wells Used for Geologic Sequestration, it states that "public participation and transparency are important components of EPA’s UIC regulatory framework” and “if the technical review determines that the permit application meets the requirements of the Class VI Rule and the proposed project is suitable for CO_2 injection for GS, a draft permit will be prepared, specifying the conditions that the well would be able to operate under. The permit includes the Class VI Project Plans as enforceable conditions.” This is irrefutable evidence that Pratt Zero Carbon cannot add injection and confining zones to this permit because of these specific conditions and without informing the public.

The second very important issue in this permit is that Pratt Zero Carbon does not include the High Plains Aquifer/Ogallala Aquifer in their permit, despite overwhelming evidence that this aquifer is at the injection site and beyond. On page 350, under the Site Characterization Section, they briefly mention the Sappa & Grand Island Formations and the Fullerton & Holdrege Formations, sourced from material not updated since 1973. These aren’t even Formations in their own right, and are in fact members of the Meade Formation and Blanco Formation, respectively.

According to a Kansas State University Presentation “Groundwater Resources in Kansas: KS Legislature-Special Committee on Water Aug 19, 2022” the average reported use of water between 2012 and 2021in the western and south-central portions of the state is dominated by agricultural irrigation that is primarily sourced from groundwater. On slide 6, there is a map color coded to delineate the extent of the Kansas’ major and minor aquifers, and Pratt County is colored blue to demonstrate its “saturated extent” of the High Plains Aquifer. On slide 20, they highlight that the High Plains Aquifer is the state’s largest and most heavily used aquifer, averaging 70-80% of groundwater diversion each year, and most importantly for many counties it is the sole source for all uses. The following slide indicates the extent of the High Plains Aquifer across the United States: Texas, New Mexico, Oklahoma, Colorado, Kansas, Nebraska, Wyoming, and South Dakota; as well as focusing on the extent it has across Kansas. The Kansas Geological Survey (KGS) has multiple

publications demonstrating the lateral extent of the High Plains Aquifer (and so much more information) available. Below are a few examples with the year published:

1) "Kansas Groundwater: An Intro to the State's Water Quantity, Quality, and Management" dated in 1993 now publicly available as a free, online publication
2) GIS Data and Maps: ArcGIS Online Map of the Aquifer Extents, which was updated February 2, 2024, and provides free and open access

Additionally, the USGS also has a free, online 72-page paper on the High Plains Project called "USGS Geohydrology of the High Plains Aquifer in part of CO, KS, NE, NM, OK, SD, TX, WY" from 1984 that also delineates the extent of the aquifer (and contains so much more information).

According to multiple sources, including the KU presentation (previously mentioned), the Kansas Department of Agriculture, and the Groundwater Management District Home page, Pratt County belongs to the Great Bend Prairie of the High Plains Aquifer and falls under the GMD 5. The GMD 5 provides water management programs and policies within their districts to locally control what happens to their water resources. Kansas Groundwater Monitoring Districts highly regulate the water usage because each year 90% of the water comes from the groundwater, and 80-85% is for irrigation for crops that farmers sell to make a living, and people eat those crops to survive. According to a 1997 USGS Groundwater Atlas Report regarding KS, MS, and NE, "The economy of the High Plains area, which provides a major part of the food supply of the Nation, is dependent on the successful growing of crops…During 1985, about 10.5 million acres were irrigated on the High Plains in Nebraska and Kansas. Most of the water that supplies these irrigation needs was withdrawn from the High Plains aquifer." This report goes into great detail about the hydro-geologic units (lithology, extent, strat), groundwater hydrology (flow, recharge, discharge, saturation), and groundwater development (uses, quality, and withdrawal rates).

Returning to the KU Presentation, slide 30 has another map averaging the depth to water in 2020-2022, where near the injection site it is about 50-100' from surface with an estimated thickness of 100-150'. Additionally, other sources highlight its connectivity to upper minor aquifers (Fullerton & Holdrege Members of the Blanco Formation), which outcrop in adjacent counties. On the GMD 5 website, their resources include four maps delineating: 1) the distribution of groundwater use by section between 2011-2015 (averaged) 2) the change in groundwater levels between 1940-1950s (averaged) 3) the change in groundwater levels between 1994-1996 to 2014-2016 (averaged) and 4) an averaged saturated thickness by section. All maps and sources include Pratt Count in its entirety.
EPA Region 7 Team, why wasn't this major aquifer included in the draft permit when there are resources going back 40 years demonstrating its extent and significance? Why did you

deem this project suitable and ready for a draft permit? It feels really hard to believe in the EPA Class VI permitting process when y'alls main objective is to protect USDWs and this USDW wasn't included in this permit and thus remains unprotected; actually worse, it is in danger of this project. It wasn't included in the geologic modeling, well construction, aor – in any of the plans submitted.

How can Pratt Zero Carbon not include the High Plains Aquifer in their Permit Draft, when multiple agencies and programs include this essential and important aquifer in their programs and research for the last forty years? This information was available with simple searches into google, that were found at the top of the page (see below for all my sources). Pratt Zero Carbon did not do the necessary research to properly mitigate the risks involved with CO2 injection. They are already in violation of this permit by not properly doing the work required to prevent polluting the main drinking, irrigation, industry water source within and beyond state lines.

This next section emphasizes that Pratt Zero Carbon does not have a team who can properly research, inform, and act in the best interests of this permit.

- The use of "Phanerozoic" on page 308 of the permit draft in the regional geologic structures section is another indication that there is not a geologist on their team. This is an inaccurate, vague description because Phanerozoic Time covers the last 500 Ma years of deposition without taking into account both structural (faults folds) or stratigraphic (erosion and weathering) that can partially or completely erase formations in a non-homogenized manner across a region. This is such a blatant disregard to the local geology that has been beautifully and heavily detailed by the Kansas Geological Society and USGS.
- The Excel created Stratigraphic Column is incorrect because they combine their injection zone and "potential injection zones" of different formations into a single "grouping" with a single depth. Those formations have variable depths across the state, and the whole point of a stratigraphic column is to highlight where a formation is compared to others, what depth it's at, and if the upper/lower boundaries are unconformities. Also, the aquifers they do mention are labeled as "alluvium" and "lowermost" USDW. This is incorrect, and as mentioned earlier, these are members of Pleistocene formations. It is also missing information for unconformities and/or eroded/weathered formations, such as the Mesozoic sediments, and for the sediments post-Mesozoic as well as the Pliocene & Pleistocene Aquifers. Additionally, all subsequent computer-generated logs do not include post-Permian Sediments.

- According to the KGS site, the Mesozoic sediments do not extend to the eastern half of the state, and end before Pratt County. Meaning, the Pliocene-Pleistocene High Plains Aquifer sits unconformably on top of their confining zone.
- According to the KGS site, an unconformity truncates High Plains Aquifer at a low angle, where abraded pebbles/cobbles of Ogallala "cap rock" locally form the lower few feet of the Blanco Formation (Fullerton & Holdrege Members). Meaning, it is likely there is communication between these two formations.

- In their "strat column" they have listed Pleasanton Group, Marmaton Group, and the Cherokee Group, but only describe the Marmaton Group. These are three different formations and require lithologic descriptions and depositional environment histories.
  - According to KGS site, the Kansas City Group (not the Lansing – Kansas City Group as these are two different formations), sits on top of the Pleasanton Group. On page 321, they combine their injection zone formations and suggest they overlie the Marmaton Group. Did the Pleasanton Group pinch out? This is a major inconsistency – what are the proper depths here and how will this affect the well construction and where the packer is placed?
  - Pleasanton Group and Cherokee Group are only mentioned in the "strat column" and no where else in the permit draft. Do they add to the depths or provide a confining zone – both pertinent to the well construction? It doesn't make sense to include them, but not provide data or significance to them. Especially, since I have found them as three separate entities in publications with Stratigraphic Columns; it seems important that these be included in this permit draft.
- Their geochemistry section starting on page 353. To mention that CO2 does cause "changes in porosity and permeability due to calcite dissolution and consequent changes in injectivity at and near the injection site", and that "geochemical changes in rock properties are expected" when their confining zones are also made of similar carbonates and limestone is a complete disregard to the potential of leaks into unauthorized zones and USDWs. F
  - According to their own words on page 46, their "AOR model currently doesn't factor in the geochemical effects of CO2 injection". This isn't a deep saline storage formation either. They are using two publications to suggest that geochemistry does not "lie within the scope of this project's operations," which goes against their responsibility to be as conservative and thorough as possible to ensure them injecting CO2 through three significant aquifers will

not cause for leaks or contamination. It doesn't matter if they don't think it is a big deal, geochemistry is inherent to the operation of this facility, and they are bound by this permit to include geochemical parameters into their AOR Model.
    - Also do they seriously plan to inject freshwater flushes in between CO2 injections??
- The basement cannot be the bottom confining zone, especially when their permitted injection zone bottom depth is at 4,164' and the basement top is at ~5,000'. Either the Pleasanton, Marmaton, or Cherokee Groups can act as a Confining Zone, which they will need to prove with petrophysical data, or they will only be limited to injecting into the Shawnee Group. As stated earlier, the "potential injection zones" are not permitted here, and thus any CO2 entering these formations would be leaks into unauthorized zones, as well as an endangerment to the USDWs.

Speaking of the basement rock, injecting near the basement especially in an oil and gas region is going to be a big risk. While Pratt Zero Carbon attempts to address this issue on page 344 by adding a disclaimer of "micro-earthquakes that are too small to be felt or to cause damage" and "induced seismicity associated with wastewater injection has occurred in nearby counties" these are from sources from 2014 and do not properly consider the risks associated with a pressurized subsurface. The map source they use to demonstrate that Pratt County is in a region of "2% probability of exceeding of exceeding ground acceleration greater than 6% of gravitational acceleration" is disingenuous. Perhaps there would be a low probability of naturally occurring earthquakes, but from research and collected data over the las 80 years, Salt-Water Disposal (SWD) has resulted in an increase of seismicity with also increasing magnitudes.

According to the KGS Site, the Pre-Cambrian basement is the source for all the earthquakes, due to the two cross-cutting fault zones that intersect in central Kansas – including the injection zone. Adding CO2 injection into a region that has SWD will add pressure to the basement rock and increase the potential to set off earthquakes. In a 2018 news release, the KGS links how SWD can result in distant earthquakes away from the initial injection areas. These fault systems are statewide, where an increase in pore pressure in say the Arbuckle Group results in an increase in pore pressure to hydraulically or fault connected formations above, below, and miles away. While the Arbuckle Group fluid pressure is monitored, that doesn't mean Pratt Zero Carbon's injection zone is monitored by other UIC programs or neighboring companies. Considering that the basement is a little less than a mile from the surface, the additional pressure from CO2

injection can result in catastrophic damage at surface or result in subsurface fractures that create pathways to the USDW.

This is a very real risk, and the oil and gas industry will not be reducing or stopping their wastewater injection in the same formations that Pratt Zero Carbon plans to inject CO2. They need to responsibly consider the pressures associated with SWD in their geologic modeling. Even if these field operations are “miles away”, they need to include petrophysics and reservoir modeling of the adjacent SWD wells, including those not in their projected “AOR” because these fields or injection sites are creating additional highly pressurized fronts that may already be near the fracture gradient of the confining zones.

This doesn’t encompass the number of incorrect or missing information in the Site Characterization Section. However, for the sake of everyone, including myself, I need to move on to the other parts of the permit. In essence, Pratt Zero Carbon needs to hire a team of geologists, engineers, and modelers to research and review all the aquifers and formations in this injection area and provide clear evidence of a stratigraphic column from surface to basement, to determine thick confining zones, and to create a properly informed geologic model with all this information included. I highly recommend y’all request additional documentation before the final permit.

2. AOR and P&A Strategy for Existing Wells

On page 357, Pratt Zero Carbon states, “A computational model was built to model the subsurface injection of CO2 into the Shawnee Group and the Lansing-Kansas City Group at PECCUS-1” and thus the AOR is not accounting for their “potential injection/confining zones”, nor the SWD pressures of wells from adjoining fields who are injecting into the same intervals they are and/or formations that are connected to each other through the existing fault systems originating from the basement rock. They can’t control neighboring companies injection patterns, and these neighbors include the whole Central Kansas Uplift, Sedgwick Basin, and the Hugoton Basin (Anadarko Basin) because increasing pressure over time in the same region for decades will result in fault slip. They can only control their injection rate and monitor their pressure front, but that doesn’t negate the cumulative effects of those injecting saltwater, implementing EOR operations, or producing (leading to reservoir instability) in their region and in their Injection Interval.

According to the KGS Subsurface Geology…, “Pay horizons considered are sub-Arbuckle; Arbuckle; Simpson; Viola and Maquoketa; "Hunton" (Silurian and Devonian limestones); Chattanooga and Misener; Mississippian; Morrow and Atoka; Cherokee and Marmaton; Pleasanton, Kansas City and Lansing; Douglas, Shawnee, and Wabaunsee; Admire; Council Grove; Chase; Sumner; and Niobrara,” where the Central Kansas Uplift “is the

locus of most of the major oil fields in the state" and "most fields in [the northern] part of the Central Kansas uplift produce from porous limestones and dolomites of the Arbuckle and Lansing-Kansas City groups." Pratt Zero Carbon needs to update their AOR Model to a dynamic model (page 58 states a static model) and should extend their AOR Model to get an accurate idea of how existing oil & gas operations, including SWD facilities, will impact their injection rate, combined fluid composition downhole, and pressure front. Also, since Marmaton, Pleasanton, and Cherokee Groups are producing zones, it would not be a good idea to use these as confining zones, meaning they will need to limit their injection zone to the Shawnee Group.

Pratt Zero Carbon needs to re-evaluate the AOR every 1 year at the least. Also, providing a publicly accessible database of the data allows for transparency of the project and to the people who live in the area. Enacting regulations against withholding data, or not providing the results of the updated model would be key to reducing the risk for USDW contamination and holding Zero Pratt Carbon accountable. The permit as a whole should be re-evaluated at least once every three years (for a total of four times) during injection and then at least once every 5 years (for a total of 10 times) during post-injection.

In the permit application, Orchard lists 2 wells that need corrective action and 5 wells in their buffer zone that they don't plan to remediate (page 93), which with the problems associated with their AOR Model may need to be remediated. These 7 wells construction materials are without CO2 resistant steel or cement. CO2 pitting or corrosion will occur during and/or after the injection period. Any future wells will not be made with CO2 resistant steel or cement. Thus these 7 wells (and future wells), especially the deeper wells that are open to the Arbuckle Formation, remain as conduits to the USDWs and aquifers. The 2 wells they have identified as potential conduits, Rolf#1 and Swingle#1, will only have plugs instead of cementing the whole well – and not utilizing CO2 resistant cement. Again, considering the well construction was not made with CO2 resistant materials, this is not acting in the best interests in protecting the USDW. In their well diagrams, they include a lithology which does show the "base of the USDW" at 212' that overlies the Permian Nippewalla Group. However, as discussed, this doesn't include the High Plains Aquifer and will need to adjust the depths. Oddly, they are missing the Cherokee, Marmaton, and Pleasanton Groups so this is an inaccurate diagram.

3. Well Construction & Operations

Pratt Zero Carbon states "All critical components including tubing, casing, packer, and wellhead equipment exposed to CO_2 will be constructed from 25Cr stainless steel, a high-performance alloy known for its excellent resistance to CO_2-induced corrosion, carbonic acid degradation, and formation brines" (page 384). A major challenge is limited data of

corrosion resistant alloys in CCS projects. The corrosion of both steel and cement has been an issue for decades in oil and gas operations but only recently has the materials, such as the steel, cement, seals, etc, been adapted to withstand corrosion for longer periods of time and it is still considered a new technology with very little historical data to indicate longevity and durability – and this is according to a presentation at the AADE in 2023. Even though the 25Cr is the best steel alloy to use, it is unknown how sustainable it will be with periods of injection-shut in cycles over a twelve year period, and then in the fifty years after. CO2 doesn't just disappear from the injection zone, it stays in solution within the injection zone meaning even after the injection the CO2 will be in constant contact of the wellbore.

Naturally occurring Calcium, Magnesium, and Oxygen found in meteoric water, injected water, and rock layers will mix with the stated 99% pure CO2 and lead to corrosion-inducing chemical compounds, such as acids, that will affect the geological confining layers and/or the wellbore. Despite the use of corrosion inhibitors, which will only be effective near the wellbore, this is not an unpredictable chemical reaction that will occur throughout the injection zone over time. This can easily be reproduced, and publications have demonstrated at higher temperatures and pressures the ease at which the resultant chemical compounds of H2S, HCO3-, and O2 can shut down a well due to severe corrosion after a single month in operation. Also, the formation fluid will have a very low pH because of the CO2 injection, leading to a feedback loop of increasing rates of corrosion and decreasing pH because of the increasing concentration of acids. The pH near the wellbore is predicted to remain very low for many years after injection stops.

The CO2 resistant materials for the wells need to be throughout the well, instead of employing Portland, Celloflake, Pozmix cements or Carbon Steel Alloys to maximize protection from leaks into unauthorized zones or USDWs. A note on the time this application was submitted, and where we are now in the global market. Please have Pratt Zero Carbon update the financials on the cost of all these CO2 resistant materials and equipment. The US tariffs on the industrial coatings market, which has impacted the oil and gas infrastructure and metal fabrication, and will affect the CCS infrastructure as well. The tariffs triggered cost escalation, and it's possible that the well construction is now cost prohibitive.

4. Injection Plan

As stated in page 35, Pratt Zero Carbon expects their operational parameters to remain constant throughout the duration of the injection period, despite the possibilities of poor efficiencies with the CO2 capture technology and/or inconsistent volume of CO2 sources. Other CO2 projects have struggled to meet a 95% CO2 stream composition, and it seems

highly unlikely that Pratt will be able to achieve a 99.92% CO2 stream composition. The CO2 Capture Technology should be included as part of the permit application because it is essential to understand it's water and waste requirements. While they expect to have a low water content in their injectate stream, any water content from the formation or condensation within the wellbore during shut-in times will cause corrosion over time – it could be in 5, 10 or 12 years, it could happen after the well is shut in – bicarbonate corrosion can happen during times where the well is shut in (which is a common outcome for the active CCUS projects), and to say that "it is likely not to cause any corrosion" is not properly mitigating this risk (page 36) and a direct violation to this permit.

A concerning aspect of the injection plan is the poor explanation of how the CO2 will transition from liquid to supercritical in the wellbore (page 36). The depth and pressure of the Shawnee Group is barely over the supercritical point of 88 deg F and 1,000 psi. Meaning the CO2 will not transition while in the wellbore, but maybe just as it is exiting the wellbore and it is unlikely all the CO2 will convert from liquid phase to supercritical phase. This is a huge concern because this sounds like a UIC Class II program instead of Class VI. It's possible the CO2 will not phase shift on its own and will require additional equipment – an unexpected cost. Additionally, the liquid phase injected into the reservoir will cause a higher injection pressure than predicted pressure if the CO2 was supercritical, which will result in rupturing the confining zones and leaks to other formations, into USDWs, to surface. Please have Pratt Zero Carbon address this because if they are permitted to complete this well construction/operation as described then they will contaminate the USDWs and even leaks to surface.

5. Maintenance & ERR

All data collected during and post injection should be in a public database to improve public relations by being transparent. The Director of Region 7 should commit to physical follow-up visits to the site with publicly accessible reports or at the very least meetings with the people overseeing the daily operations with publicly accessible reports.

Before an emergency event, the EPA need to ensure Pratt Zero Carbon will have the required personnel training that is maintained on the same schedule as other safety training and PPE on-site for a CO2 leak to atmosphere/aquifer. As a person who has worked in oil & gas industry, and received HSE and HAZWOPPER Training, neither of these include anything with CO2 contamination or CO2 injection operations in general. Nor does this type of training extend to the local first responders. Slow CO2 leaks are especially dangerous because they often go unnoticed until someone experiences dizziness or shortness of breath. In the field, these symptoms can easily be mistaken for fatigue or dehydration.

During an emergency event, notification to adjacent landowners and businesses should be faster than written communication. Sending out an email/emergency text (like those alerts we get on our phones when a child is abducted or a volcano is erupting) and/or incorporating an alarm is necessary to allow people to remove themselves from a contaminated site as quickly as possible.

6. Financial Responsibility

With everything I have covered in these 11 pages, Pratt Zero Carbon is not well enough covered financially, whether on their own terms or insured, to accommodate the number of risks they are willing to subject the people of Pratt and adjoining counties to with this CCUS project. They are only willing to cover one "mitigated leakage event throughout the project's life", which is 62 years, in their ERR (page 359). They have no idea what contaminating a multi-state aquifer, and two local aquifers, will do to the people and the community who depend on this water for drinking, living, and the integrated food system that connects the state of Kansas to all the people they feed with their crops.

From reviewing this draft permit and the multiple times they admitted that they feel like certain risks didn't apply to them/this project, it appears that they don't care about the risks, the water, or these people. I would highly recommend denying this and any permit for Pratt Zero Carbon. I recognize this is harsh and I don't have your (the EPA Region 7) authority. However, to allow them to continue with this project, even if they amended this permit, does not mean they will take CO2 injection seriously – the complexity and the risks – to properly mitigate. And it will be a disaster to allow them to continue, for Region 7, for the Pratt Energy employees, for the people of Kansas, for everyone, really.

As a final note, I took a couple weeks researching, reviewing, and compiling the data you just read. I used my own experience and knowledge to write this public comment, and refuse Artificial Intelligence (AI) to use it for any sort of data collection, re-use, or training. Thank you for taking the time to read my concerns and suggestions. I really hope y'all made it this far.

Alexis Iwasiw

Sources (in no apparent order because its super late):

- KGS Geologic History of Kansas—Stratigraphy & Tectonic Framework
- https://www.kgs.ku.edu/Publications/Bulletins/162/05_tect.html
- https://www.kgs.ku.edu/Publications/Oil/primer09.html
- https://www.kgs.ku.edu/Publications/Bulletins/162/03_strat.html
- https://www.researchgate.net/publication/332978279_Lithofacies_Control_on_Reservoir_Quality_of_the_Viola_Limestone_in_Southwest_Kansas_and_Unsupervised_Machine_Learning_Approach_of_Seismic_Attributes_Facies-Classification
- Surface Map of Pratt County https://www.kgs.ku.edu/General/Geology/County/nop/pratt.html
- 2026 KU Geo Aquifers https://geokansas.ku.edu/aquifers
- 2026 KS Dept of Ag GMD & Ogallala/HPA https://www.agriculture.ks.gov/divisions-programs/division-of-water-resources/managing-kansas-water-resources/information-about-kansas-water-resources/ogallala-high-plains-aquifer
- 2026 GMD 5 https://gmd5.org/annual-report#5fa7ac7e-7a24-400e-aa89-e4d0768bcb7e
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- Hyd Balance Model of the RCW KS https://www.kgs.ku.edu/Publications/Bulletins/GW11/index.html
- 2024 KGS GIS Data and Maps Aquifer Extents https://kgs-gis-data-and-maps-ku.hub.arcgis.com/maps/7684344eb6854fa3a6d0b567d470fd9e/about
- 1997 USGS Groundwater Atlas of the US: KS, MS, and NE https://pubs.usgs.gov/ha/ha730/ch_d/index.html
- 1993 KGS Kansas Groundwater: An Intro to the State's Water Quantity, Quality, and Management (Occurrence) Issues https://www.kgs.ku.edu/Publications/Bulletins/ED10/index.html
- 1984 USGS Geohydrology of the High Plains Aquifer in part of CO, KS, NE, NM, OK, SD, TX, WY (pg. 20)

- 1973 Geology of Pratt County Source: https://www.kgs.ku.edu/General/Geology/Pratt/10_plates.html
- 1952 Pleistocene Geology Source: https://www.kgs.ku.edu/Publications/Bulletins/99/05_strat.html AND https://www.kgs.ku.edu/Publications/Bulletins/99/05_strat2.html
- https://geokansas.ku.edu/seismic-activity-kansas
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