

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

_____)	
In re:)	
)	
Panoche Energy Center, LLC)	Appeal No. SDWA 22-01
)	
UIC Permit No. R9UIC-CA1-FY17-2R)	
)	
_____)	

EPA REGION 9'S RESPONSE TO PETITION FOR REVIEW

TABLE OF CONTENTS

TABLE OF AUTHORITIES	ii
TABLE OF ATTACHMENTS.....	iv
I. INTRODUCTION.....	1
II. STATUTORY AND REGULATORY BACKGROUND	2
III. FACTUAL BACKGROUND AND PROCEDURAL HISTORY	3
IV. STANDARD OF REVIEW.....	11
V. ARGUMENT.....	12
1. The Region had a rational basis for the Permit’s ambient monitoring requirement.....	13
a. The Administrative Record shows potential risk of movement of fluid from the injection wells or zone into the USDW	14
b. PEC fails to establish clear error or abuse of discretion	19
2. PEC’s arguments relating to property access to perform the monitoring at Silver Creek #18, including the associated costs, fail to demonstrate clear error or abuse of discretion	22
VI. CONCLUSION	25
VII. STATEMENT OF COMPLIANCE WITH THE WORD LIMITATION	26

TABLE OF AUTHORITIES

Cases

In re Archer Daniels Midland Co., 17 E.A.D. 380 (EAB 2017) 11, 12

In re Envotech, L.P., 6 E.A.D. 260 (EAB 1996) 12, 23

In re MHA Nation Clean Fuels Refinery, 15 E.A.D. 648 (EAB 2012) 11, 12

In re Peabody W. Coal Co., 12 E.A.D. 22 (EAB 2005) 12, 13, 18

In re Sunoco Partners Marketing & Terminals, LP,
UIC Appeal No. 05-01 (EAB June 1, 2006)..... 12

In re Environmental Disposal Sys., Inc., 12 E.A.D. 254 (EAB 2005)..... 12

In re Suckla Farms, 4 E.A.D. 686 (1993)..... 22

In re Town of Ashland Wastewater Treatment Facility, 9 E.A.D. 661 (EAB 2001) 11, 18

Statutes

42 U.S.C. § 300h *et seq.*..... 1

42 U.S.C. § 300h(b)(1) 2, 16

42 U.S.C. § 300h(b)(1)(B) 4

Regulations

40 C.F.R. § 122.6(a)..... 4

40 C.F.R. § 124.16(a)(i)..... 1

40 C.F.R. § 124.16(a)(ii)..... 1

40 C.F.R. § 124.17 9

40 C.F.R. § 124.19(a)(4)(i) 22, 24

40 C.F.R. § 124.19(a)(4)(i)(A)-(B)..... 11

40 C.F.R. § 124.19(d)(1)(iv), (d)(3)..... 26

40 C.F.R. § 144.1(g)	2
40 C.F.R. § 144.12	4
40 C.F.R. § 144.12(a).....	2, 18
40 C.F.R. § 144.12(b)	18
40 C.F.R. § 144.55(a).....	16
40 C.F.R. § 144.6.....	2
40 C.F.R. § 144.6(a)(2).....	2
40 C.F.R. § 146.13	24
40 C.F.R. § 146.13(a)(1).....	2
40 C.F.R. § 146.13(b)	3, 10
40 C.F.R. § 146.13(d)	10
40 C.F.R. § 146.13(d)(1).....	3, 13
40 C.F.R. § 146.13(d)(2)(i), (iii)-(iv).....	3
40 C.F.R. § 146.13(d)(2)(v)	3, 13
40 C.F.R. § 146.5	2
40 C.F.R. § 146.6.....	4
40 C.F.R. § 147.251	4
Other Authorities	
45 Fed. Reg. 33,290 (May 19, 1980)	11
53 Fed. Reg. 28,118 (July 26, 1988).....	13

TABLE OF ATTACHMENTS

Attachment	AR #	Document Description
1	-	Certified Index of the Administrative Record (“AR”)
2	AR #84	Final UIC Permit No. R9UIC-CA1-FY17-2R, dated, September 30, 2022
3	AR #83	Fact Sheet, UIC Permit No. R9UIC-CA1-FY17-2R, dated September 30, 2022
4	AR #48	EPA Response to Comments on UIC Permit No. R9UIC-CA1-FY17-2R, dated September 30, 2022
5	AR #1, 1a-1r	Update and Resubmittal of PEC’s Permit Renewal Application, dated March 1, 2019
6	AR #30	Letter of Permit Application Administrative Completeness, dated February 20, 2018
7	AR #31	Technical Review Letter issued to Permit Applicant, dated May 18, 2018
8	AR #32	Permit Applicant Response to May 2018 Technical Review Letter, dated July 12, 2018
9	AR #33	Technical Review Letter issued to Permit Applicant, dated September 7, 2018
10	AR #35	Technical Review Letter issued to Permit Applicant, dated June 21, 2019
11	AR #38	Technical Review Letter issued to Permit Applicant, dated December 3, 2019
12	AR #39	Permit Applicant Response to Dec. 2019 Comment 1(d) of Technical Review Letter, (January 17, 2020)
13	AR #9	Pre-Publication Draft Permit, UIC Permit No. R9UIC-CA1-FY17-2R, dated July 27, 2020
14	AR #12	PEC Comments on Pre-Publication Draft Permit, dated September 25, 2020
15	AR #10	Draft Permit, UIC Permit No. R9UIC-CA1-FY17-2R, dated April 12, 2021
16	AR #10a- h	Appendices to Draft Permit, UIC Permit No. R9UIC-CA1-FY17-2R, dated April 12, 2021
17	AR #43	PEC Comments on Draft Permit, dated May 11, 2021
18	AR #80	Plugging CalGEM Statutes and Regulations (excerpt), January 2020
19	AR #25	Spangler, L.E., Naftz, D.L., and Peterman, Z.E; Hydrology, Chemical Quality, and Characterization of Salinity in the Navajo Aquifer in and Near the Greater Aneth Oil Field, San Juan County, Utah; U.S. Geological Survey Water-Resources Investigations Report 96-4155 (1996) (“Utah Study”)

20	AR #49	Class I Underground Injection Control Program: Study of the Risks Associated with Class I Underground Injection Control Wells (March 2001)
21	AR #47	Final UIC Permit No. R9UIC-CA1-FY15-2R (Hilmar Cheese Company), dated September 27, 2021
22	AR #47a-i	Appendices to UIC Permit No. R9UIC-CA1-FY15-2R (Hilmar Cheese Company), dated September 27, 2021
23	AR #43o	Barker, S.E; Determining the Area of Review for Industrial Effluent Disposal Wells; University of Texas at Austin Graduate Program (1981)
24	AR #21	Additional Monitoring Requirements Applicable to all UIC Class I Wells, U.S. Environmental Protection Agency, Final Rule, 53 Fed. Reg. 28118 (July 26, 1998)
25	AR #43a	EPA and PEC Correspondence, dated May 10, 2021

I. INTRODUCTION

On October 28, 2022, Panoche Energy Center, LLC (“PEC” or “Petitioner”) filed a Petition for Review (“Petition”) with the Environmental Appeals Board (“EAB” or “Board”), seeking review of Permit No. R9UIC-CA1-FY17-2R (the “Permit”). The U.S. Environmental Protection Agency (“EPA”), Region 9 (“Region”), issued the Permit to PEC on September 30, 2022, under the Underground Injection Control (“UIC”) Program of the Safe Drinking Water Act (“SDWA”), 42 U.S.C. § 300h *et seq.* The Permit authorizes the injection of industrial wastewater from PEC’s facility into four existing and two potential Class I nonhazardous injection wells.

PEC’s Petition challenges Part II.E.2 of the Permit, which requires ambient monitoring to ensure that PEC’s injection activities do not endanger Underground Sources of Drinking Water (“USDWs”). As required by 40 C.F.R. § 124.16(a)(i), the Region identified the contested conditions and inseverable recordkeeping and reporting requirements that would be stayed pending final agency action on the Permit by the Board. On November 7, 2022, the Region notified Petitioner and the EAB that the uncontested (and severable) conditions of the Permit would become fully effective and enforceable 30 days from the date of the notice. *See* 40 C.F.R. § 124.16(a)(ii).

As explained below, the ambient monitoring requirement complies with the SDWA and the UIC regulations, and is supported by an extensive Administrative Record. The Region thoroughly responded to PEC’s concerns about the ambient monitoring requirement in the draft permit in the Response to Comments (“RTC”). Petitioner has not met its burden to demonstrate that Board review is warranted, and EPA requests that the Board deny the Petition. Attached to this Response to Petition for Review (“Response”) are a certified index of the Administrative Record for the challenged Permit and relevant portions of the Administrative Record.

II. STATUTORY AND REGULATORY BACKGROUND

Congress enacted the SDWA in 1974 to protect the Nation's sources of drinking water from contamination. Toward that end, the SDWA tasks EPA with implementing a UIC program "to prevent underground injection which endangers drinking water sources." 42 U.S.C. § 300h(b)(1). Central to the UIC permitting program is a non-endangerment standard. That is, the UIC regulations prohibit injection activities that would allow the movement of fluid containing contaminants into a USDW if the presence of the contaminant may cause a violation of drinking water standards or otherwise adversely affect human health. 40 C.F.R. §§ 144.1(g), 144.12(a). The permit applicant bears the burden of showing that its injection activities will meet these requirements. *Id.* § 144.12(a).

The UIC regulations classify injection wells into six classes. 40 C.F.R. §§ 144.6, 146.5. The permit at issue here authorizes injection into four existing and two potential Class I wells.¹ Class I wells include nonhazardous industrial waste disposal wells that "inject fluids beneath the lowermost formation containing, within one quarter mile of a well bore, an underground source of drinking water." 40 C.F.R. § 144.6(a)(2). Class I wells must be constructed to prevent the movement of fluids into a USDW, *Id.* § 146.12(b), and in no case shall cause the movement of injection or formation fluids into a USDW. *Id.* § 146.13(a)(1).

To authorize injection, EPA must ensure that Class I permits contain monitoring requirements that include, at a minimum, the following:

- (1) The analysis of the injected fluids with sufficient frequency to yield representative data of their characteristics;

¹ Class I wells are used to inject hazardous and non-hazardous waste into deep, confined rock formations. *See* 40 C.F.R. § 144.6(a).

- (2) Installation and use of continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string casing;
- (3) A demonstration of mechanical integrity . . . at least once every five years during the life of the well; and
- (4) The type, number, and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the underground sources of drinking water, the parameters to be measured and the frequency of monitoring.

40 C.F.R. § 146.13(b).

Additionally, and relevant to this appeal, the regulations require ambient monitoring if warranted by a “site-specific assessment of the potential for fluid movement from the well or the injection zone and on the potential value of monitoring wells to detect such movement.” 40 C.F.R. § 146.13(d)(1). Such a monitoring program may require the permittee to periodically monitor ground water quality in the lowermost USDW, perform continuous monitoring for pressure changes in the first aquifer overlying the confining zone, and periodically monitor ground water quality in the first aquifer overlying the injection zone.² *Id.* § 146.13(d)(2)(i), (iii)-(iv). EPA may also require “any additional monitoring necessary to determine whether fluids are moving into or between USDWs.” *Id.* § 146.13(d)(2)(v).

III. FACTUAL BACKGROUND AND PROCEDURAL HISTORY

1. Facility

Panoche Energy Center (the “Facility”) is a 400-megawatt simple-cycle electrical generating facility located in unincorporated Fresno County, California. AR #83 at 2. The Facility consists of four natural gas-fired combustion turbine generators. *Id.* On April 25, 2008, EPA issued UIC Permit No. CA10600001 to PEC, which authorized injection of nonhazardous

² Here, the lowermost USDW is the first aquifer that overlays both the confining zone (Moreno formation) and the injection zone (Panoche formation). *See* AR #1d at Figure D-3.

industrial wastewater into six Class I injection wells for a ten-year period.³ AR #50. The Facility's 2008 UIC permit expired on April 25, 2018. *Id.*

2. UIC Permit Renewal Application

On October 20, 2017, PEC timely applied for renewal of its UIC Class I permit.⁴ *See* AR #3. Upon receiving supplemental information from the applicant, which the Region had requested, the Region determined that the application was administratively complete, which administratively extended the 2008 UIC permit until the renewal permit was issued. 40 C.F.R. § 122.6(a); AR #30. The Region then engaged in an extensive technical review of the application to ensure that any eventual permit would be protective of USDWs. *See* 42 U.S.C. § 300h(b)(1)(B); 40 C.F.R. § 144.12; *see, e.g.*, AR #31; AR #32; AR #33; AR #35; and AR #38. As part of that review, the Region conducted a thorough site-specific assessment of the Facility's operations and injection activities, along with the geology of the injection and confining zones. *Id.*

Of primary concern to the Region were several old wells located within the "Area of Review" (AoR) that may have been improperly plugged and abandoned.⁵ RTC #1 at 2-3, #6 at 7; AR #1a at A-2. The AoR is the zone of endangering influence around the injection wells, or the area in which pressure due to injection may cause the migration of injection fluids into a USDW. 40 C.F.R. § 146.6. Improperly abandoned wells can serve as pathways for fluids to reach USDWs, and several site-specific factors concerned the Region here. AR #49 at 13. First, PEC

³ The EPA directly administers the UIC program in the State of California for Class I wells. *See* 40 C.F.R. § 147.251.

⁴ On May 18, 2018, EPA requested additional information from PEC to aid in its technical review of the permit renewal application. AR #31. On July 12, 2018, PEC provided additional information to EPA, that included follow-up questions. AR #32. EPA provided its response to PEC's July 2018 letter on September 7, 2018. AR #33. On March 1, 2019, PEC submitted an updated and revised renewal application to include the technical information that EPA requested. AR #1.

⁵ PEC identified 20 abandoned wells within a 3-mile radius of the Facility. *See* AR #1a at Table A-1; AR #1b at B-1.

identified several abandoned wells that lack cement plugs between the top of the PEC injection zone and the base of the lowermost USDW, meaning there is an increased risk that fluids could migrate from the injection zone with little to no resistance as they move upward through the abandoned wells into the USDW. AR #12 at 17, Table 1; AR #35 Enclosure at 1; RTC #6 at 7; AR #1a at Table A-1; AR #1c at C-4-C-8. Additionally, these abandoned wells penetrate the injection zone, which is an overpressured formation. AR #1c at C-1-C-9, Table C-1. An overpressured formation is concerning because, as injection activities proceed, subsurface pressures will continue to increase. RTC #13 at 13; AR #1a at A-1. Furthermore, if wastewater is injected into the injection zone when pressures are abnormally high, that could cause the initiation of new fractures or worsen existing ones, which could serve as additional potential pathways for fluid migration. AR #49 at 14. Based on these site-specific factors, the Region was rightly concerned with the risks that PEC's injection activities may pose to the USDW in the vicinity of the abandoned wells.

EPA and PEC met several times to discuss the means of resolving the Region's concerns, including through corrective action designed to ensure that fluids do not migrate out of the injection zone through abandoned wellbores. *See* AR #43a. EPA initially proposed requiring PEC to install monitoring wells for groundwater quality at two different depths—i.e., “dual-completion” wells—near three abandoned wells in the AoR: Silver Creek #18; England #1-31; and Souza #2. RTC #4 at 5. PEC expressed concern with the burdens, costs, and risks associated with the three proposed monitoring wells and suggested an alternative of installing a single monitoring well near the Souza #2 well, located 2.3 miles to the northwest of PEC's injection wells. *See Id.* According to PEC, if mud gel strength was removed as a consideration, Souza #2 was the only abandoned well in the AoR that needed monitoring for potential fluid migration

into USDWs. AR #39 Attachment A at 1-2, 6-7. PEC asserted that, based on its own estimates, all other wells in the AoR have sufficient mud gel strength to prevent fluid migration. *Id.* at 1-2.

3. Silver Creek #18 Well

Contrary to PEC's proposed monitoring approach, the Region was especially concerned with the Silver Creek #18 well. Silver Creek #18 is an abandoned oil and gas exploratory well located approximately 1.25 miles northeast of PEC's injection wells. AR #1c at C-7. The well penetrates the Panoche injection formation and is 8,698 feet deep. *Id.*; AR #1a at Table A-1. The well has no long-string casing⁶ and no cement plug between the PEC injection zone and the base of the USDW. *Id.* The lack of long-string casing increases the risk of fluids migrating laterally through the injection zone and into the abandoned wells. AR #49 at 13-14. This risk is further magnified by the lack of a cement plug at the base of the USDW, because if fluids reach Silver Creek #18, there would be no effective barrier preventing their upward migration, which would result in endangerment. *Id.* Together, these risks provide a pathway for the Facility's injection fluids to potentially endanger USDWs.

PEC acknowledged in its permit renewal application that "the potential exist[s] for pressure to enter the [Silver Creek #18] wellbore and move fluids into the USDW." AR #1c at C-7. PEC asserted, however, that its estimate of the mud gel strength in Silver Creek #18 provided assurance of USDW protection. *Id.* EPA therefore asked PEC to confirm with empirical evidence the longevity and strength of the mud as a plugging agent in the abandoned wells, including Silver Creek #18. See AR #35, Enclosure at 1. PEC declined to provide empirical

⁶ "Casing" means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole. 40 C.F.R. § 146.3. "Long-string casing" is a type of casing which is continuous from at least the top of the injection interval to the surface, and which is cemented in place.

evidence and instead relied on estimates about the assumed gel strength in each of the wells. *See* AR #39 at 3.

4. July 2020 Pre-Publication Draft Permit

On July 27, 2020, the Region shared an early pre-publication draft permit with PEC. AR #9. To address concerns raised by PEC about burdens and costs, that draft proposed only two, rather than three, dual-completion monitoring wells: one near Silver Creek #18 and the other near England #1-31. *Id.* at 10, 18. For the third well of concern, the pre-publication draft permit further proposed requiring PEC to plug the abandoned Souza #2 well with a cement plug at the base of the USDW. *Id.* at 9-10. PEC provided its comments on the pre-publication draft permit on September 25, 2020, disagreeing that any corrective action was necessary. *See* AR #12. PEC also protested that the monitoring requirements would impose costs between \$3 to \$4 million per well, which they deemed “significant.” *Id.* at 27-28.

Based on information that the Region received from PEC on the pre-publication draft of the permit, the Region revised the July 2020 draft Permit to eliminate re-entering and plugging Souza #2 and the monitoring requirements at England #1-31. RTC #4 at 5. The Region also reduced the monitoring requirement to a single monitoring well near Silver Creek #18 due to its superior location for monitoring potential fluid migration. *Id.* Silver Creek #18 is the closest abandoned well to the Facility and therefore the most likely to be the first location where subsurface pressures may cause fluid migration along a wellbore. RTC #4 at 5. Moreover, in addition to lacking long-string casing, the well was abandoned with a lighter-weight mud (which is less resistant to pressure increases) than the mud in the next closest abandoned well in the AoR, England #1-31. *Id.* The physical configuration and manner of plugging and abandonment of the Silver Creek #18 well thus make it a more significant concern, from a USDW-

endangerment standpoint, than the other wells. *Id.* The Region therefore determined that one ambient monitoring well was sufficient to obtain actual pressure measurements results in the AoR, and the Silver Creek property was the most appropriate location for that well.

While the Region determined it appropriate to not include the corrective action requirement to re-enter and plug the abandoned Souza #2 well in the draft permit, the Region still believed that ambient monitoring was needed, based on its site-specific assessment of the Facility, the injection formation, and the older wells in the AoR that may have been improperly abandoned. *See* RTC #1 at 2-3. The ambient monitoring was necessary to confirm, with empirical data, that PEC's injection activities would not allow for potential fluid migration into abandoned wells. *Id.* PEC continued to oppose the requirement to conduct ambient monitoring near the Silver Creek #18 well. AR #55 at 2-3.

5. April 2021 Draft Permit

After reviewing all of PEC's application materials and other submitted information, and after several technical discussions with the applicant, the Region prepared a draft permit for public release. AR #10; AR #10a-h. As discussed above, the Region removed the corrective action requirements that were included in the July 2020 pre-publication draft, reasoning that the ambient monitoring well near Silver Creek #18 would supply the information necessary to confirm that the Permit continues to protect the USDW, and, in the event that it does not, alert the permittee and Agency that there may be a need for future corrective action. RTC #5 at 6.

6. Public Notice and Comment

On April 11, 2021, the Region published its notice of intent to issue a UIC Class I permit for Panoche Energy Center.⁷ AR #59. The comment period ended on May 11, 2022, with PEC providing the only comments. AR #43. While PEC commented on several aspects of the draft permit, its primary focus was the proposed monitoring conditions associated with the abandoned Silver Creek #18 well. *See Id.* at 2-39. PEC argued that it should not be required to install and operate a “multi-million dollar monitoring well” on land that it does not own because the Region provided no site-specific facts, empirical evidence, or supporting analysis to conclude that the hydrogeologic setting and the characteristics of PEC’s operations warrant such a requirement. *Id.* at 2, 6, 29.

The Region carefully considered all of PEC’s comments, incorporated some of them into the final Permit, and, as required by 40 C.F.R. § 124.17, prepared a detailed Response to Comments. AR #48. In that response, the Region thoroughly explained why it retained the ambient monitoring requirement in the final Permit. *Id.* at 2-17.

7. 2022 Final Permit

On September 30, 2022, the Region issued UIC Class I Permit No. R9UIC-CA1-FY17-2R to PEC for a ten-year period. AR #84. The Permit authorizes PEC to inject industrial wastewater into four existing wells (IW1, IW2, IW3, and IW4) and two potential ones (IW5 and IW6). *Id.* The injections would occur in the Panoche formation at depths ranging between approximately 7,199 to 8,897 feet below ground surface. Fact Sheet at 2—AR #83; Permit Part I—AR #84 at 4.

⁷ The Region published notice of the permit in The Fresno Bee, a daily newspaper serving Fresno, California, and on Regulations.gov (Docket. No. EPA-R9-OW-2021-0147).

The Permit authorizes PEC to inject the following fluids associated with operation of its natural gas-fired combustion generators:

- Cooling tower blowdown water,
- Reverse osmosis system reject water,
- Evaporative cooler blowdown water,
- Combustion turbine intercooler condensate,
- Enhanced wastewater system water, and
- Oil/water separator discharge water.

Permit Part I—AR #84 at 4, Permit Part II.D.5.a—AR #84 at 15, Fact Sheet at 2—AR #83.

The Permit authorizes the following maximum daily injection rates for each existing well:

- IW1: 144,039 gallons
- IW2: 172,041 gallons
- IW3: 155,147 gallons
- IW4: 164,002 gallons

Permit Part II.D.4.a—AR #84 at 14, Fact Sheet at 4—AR #83. The Permit includes injection volume (rate) limits, meaning that the total volume of wastewater injected across all of PEC's wells cannot increase even if PEC constructs IW5 and/or IW6. Permit Part II.D.4.a—AR #84 at 14.

The contested Part II.E.2 of the Permit requires USDW monitoring. AR #84 at 17-18. Pursuant to 40 C.F.R. § 146.13(b) and (d), the Region required PEC to install one monitoring well within 100 ft of Silver Creek #18 to perform chemical analysis⁸ and measure specific conductance and formation pressure in order to identify any potential changes in the USDW. *Id.* at 17-18. More specifically, Part II.E.2 requires PEC to submit a monitoring well construction

⁸ The Permit requires PEC to analyze monitoring well samples for the following: total dissolved solids, alkalinity, anions and cations, trace metals, hardness, pH, specific gravity, total sulfide, oil and grease, and total metals. PEC must perform this analysis monthly for the first year of monitoring, and quarterly thereafter. *See* Part II.E.2 of the Permit—AR #84 at 18.

plan within 60 days of permit issuance, construct the well within 120 days of receiving EPA approval of the plan, and monitor the USDW in the vicinity of Silver Creek #18. *Id.* PEC must drill the monitoring well to the base of the lowermost USDW. Permit Part II.E.2.b.i.—AR #84 at 17-18.

IV. STANDARD OF REVIEW

Because EPA policy favors final adjudication of permits at the permit issuer’s level, the Board “only sparingly exercise[s]” its power of review. *In re MHA Nation Clean Fuels Refinery*, 15 E.A.D. 648, 652-53 (EAB 2012) (citing 45 Fed. Reg. 33,290, 33,412 (May 19, 1980)). The Board will not, therefore, ordinarily review a permit decision unless the petitioner can demonstrate that it is “based on a clearly erroneous finding of fact or conclusion of law, or involves a matter of policy or exercise of discretion that warrants review.” *In re Archer Daniels Midland Co.*, 17 E.A.D. 380, 383 (EAB 2017) (citing 40 C.F.R. § 124.19(a)(4)(i)(A)-(B)).

In evaluating a permit decision for clear error, “the Board examines the administrative record . . . to determine whether the permit issuer exercised ‘considered judgement.’” *In re MHA Nation Clean Fuels Refinery*, 15 E.A.D. at 653. “The permit issuer must articulate with reasonable clarity the reasons supporting its conclusion and the significance of the crucial facts it relied on when reaching its conclusion.” *Id.* “As a whole, the record must demonstrate that the permit issuer duly considered the issues raised in the comments and ultimately adopted an approach that is rational in light of all the information in the record.” *Id.* (internal quotations and citation omitted). Clear error is not established, however, simply because the petitioner draws different conclusions from the record than the permit issuer. *See In re Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. 661, 667 (EAB 2001).

When reviewing a permit issuer’s exercise of discretion, the Board “will uphold a permit issuer’s reasonable exercise of discretion if that exercise is cogently explained and supported in the record.” *In re Archer Daniels Midland Co.*, 17 E.A.D. at 383-84. Moreover, where, as here, the disputed issues are technical in nature, the petitioner’s burden is a “particularly heavy” one. *In re MHA Nation Clean Fuels Refinery*, 15 E.A.D. at 653; accord *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 33 (EAB 2005). In such cases the Board typically defers to the permit issuer’s expertise, “so long as the permit issuer adequately explains its rationale and supports its reasoning in the administrative record.” *Archer Daniels*, 17 E.A.D. at 384.

Finally, the Board’s authority to review a UIC permit does not extend beyond the goals of the UIC program to protect USDWs. See *In re Environmental Disposal Sys., Inc.*, 12 E.A.D. 254, 266 (EAB 2005); see also *In re Sunoco Partners Marketing & Terminals, LP*, UIC Appeal No. 05-01, slip op. at 10 (EAB June 1, 2006); *In re Envotech, L.P.*, 6 E.A.D. 260, 264 (EAB 1996) (“[T]he SDWA . . . and the UIC regulations . . . establish the *only* criteria that EPA may use in deciding whether to grant or deny an application for a UIC permit.” (emphasis in original)).

V. ARGUMENT

Petitioner seeks Board review of the ambient monitoring conditions contained in Part II.E.2 of the Permit, arguing that they are “clearly erroneous” because (1) the Region did not provide a rational basis for concluding that there is potential risk of movement of fluid from the injection zone into a USDW and (2) the Region did not rationally explain how the ambient monitoring requirement would provide an “early warning” of USDW endangerment resulting from PEC’s injection activities. Pet. at 18.

Contrary to Petitioner’s assertion, the Region adequately explained and justified the ambient monitoring requirement in the Administrative Record and fully responded to all of

PEC's significant comments in its Response to Comments. *See* RTC –AR #48. Petitioner fails to demonstrate that the appealed Permit provision is based on a clearly erroneous finding of fact or conclusion of law or involves a matter of policy or exercise of discretion warranting review. Petitioner's challenge involves technical issues regarding the USDW monitoring requirement at the abandoned Silver Creek #18 well, for which the Region should be accorded substantial deference.

1. The Region had a rational basis for the Permit's ambient monitoring requirement

If warranted by site-specific conditions, the UIC Class I regulations allow for “[a]ny *additional monitoring* necessary to determine whether fluids are moving into or between USDWs.” 40 C.F.R. § 146.13(d)(1), (d)(2)(v) (emphasis added). The regulations thus afford the Agency considerable “discretion in determining an acceptable [ambient monitoring] program.” 53 Fed. Reg. 28,118, 28,141 (July 26, 1988); *see also In re Peabody W. Coal Co.*, 12 E.A.D. at 50-51 (noting the Board's deference to “Regional decisionmakers on technical matters in general and monitoring issues in particular”). Notwithstanding this authority, PEC asserts that the Region somehow lacked any rational basis for the ambient monitoring requirements at the Silver Creek #18 well. Pet. at 18. The Administrative Record strongly refutes this contention, however, showing that the Region, after carefully considering PEC's application, supplemental materials, and comments, required ambient monitoring for two primary reasons: (1) the Panoche formation is naturally overpressured, such that any additional injection poses an increased risk of fluid migration through the old wells in the AoR that lack long-string casing and cement plugs to isolate the injection zone from the base of the USDW, and (2) PEC's application contained modeling and estimates, but no empirical data directly addressing the current conditions of the abandoned wells within the AoR. RTC #1 at 2-3; Fact Sheet at 6—AR #83. The ambient

monitoring requirement complies with the SDWA and UIC regulations because it allows the Facility to accurately detect, with empirical data, any potential movement of fluid into USDWs in the vicinity of abandoned wells in the AoR. These grounds provide ample justification for the Board to deny PEC's petition.

a. The Administrative Record shows potential risk of movement of fluid from the injection wells or zone into the USDW

The Administrative Record fully supports EPA's decision that there is a potential risk of fluid movement from PEC's injection activities into the USDW near Silver Creek #18. As confirmed by PEC's own pressure measurements and permit application, the Panoche formation is naturally overpressured. *See* RTC #1 at 2; AR #1 at 3 and AR #1a at A-1. And every year, PEC injects millions of gallons of industrial wastewater into that formation. *See* RTC #1 at 2. These two factors mean that pressure builds up in subsurface areas near and around the injection zones. Overpressured formations present unique risks because subsurface pressures will increase as injection activities proceed. RTC #13 at 13-14. For example, artificial fractures may be created by injecting wastewater at excessive subsurface pressures, which could result in potential pathways for underground migration of fluid over long distances. *See* AR #49 at 14.

Against the backdrop of an overpressured formation, the Region repeatedly requested from PEC empirical data on the current condition of the mud as a plugging agent in the Silver Creek #18 well and other abandoned wells within the AoR. *See* AR #35, Enclosure at 1; AR #38, Enclosure at 1. The Region wanted this information because several of the abandoned wells in the AoR, including Silver Creek #18, penetrate through the injection zone, and have no long-string casing or cement plugs that isolate the top of the injection zone from the base of the USDW. RTC #6 at 7; RTC #4 at 5; AR #1c at C-7. Together, the artificial penetrations and lack

of long-string casing and cement plugs increase the risk of the abandoned wells, and especially Silver Creek #18, serving as conduits for potential fluid migration into USDWs. RTC #1 at 2-3; AR #49 at 13.

Instead of providing the requested data, PEC supplied the Region with reports and studies with limited relevance or applicability to the situation because they addressed mud strength elsewhere or only in general terms or estimates based on speculative assumptions concerning the abandoned wells at issue here. RTC #9 at 8-11; *see also* AR #1c at C-7; AR #8; Pet. at Attachments 9-12, 15, 17-18. Some of the submitted studies described wells in other states, while others did not involve pressure build-up from fluid injection. RTC #9 at 10. Still others were general reviews or laboratory studies, one of which acknowledged that it could not replicate field conditions and cautioned against applying its results in the field setting. *See Id.*; *see also* AR #43o at 89 and 113 (explaining that: (1) gel strength varies with mud type and the condition of the mud, making it difficult to determine the exact gel strength of the mud in a particular abandoned well bore, and (2) lower end gel strength estimates are based only on professional judgement and not empirical data). None of the information contained site-specific empirical data of relevance to Silver Creek #18 or the other abandoned wells within the AoR, nor did it otherwise address local characteristics like the overpressured nature of the Panoche formation or the abandoned wells' lack of long-string casing and cement plugs at the base of the USDW. In fact, the only site-specific information pertaining to the wells that PEC submitted were plugging certificates from nearly fifty years ago, which may have meant that the wells were closed at the time according to State requirements, but said nothing about the present-day conditions of the

mud, including their ability to prevent fluid movement into the USDW, especially as pressures increase in the injection zone.⁹ RTC #5 at 6-7.

In the Region's considered judgment, PEC's submissions failed to counter the Region's conclusion that the monitoring well is required to address "the potential for fluid movement from the well or the injection zone" associated with the overpressured Panoche formation and the abandoned Silver Creek #18 well. *See* RTC #1 at 2-3; 40 C.F.R. § 146.13(d)(1). At most, the information supported PEC's arguments that drilling muds could potentially prevent fluid migration. And the Region considered those arguments in issuing the Permit without any corrective action requirements, which might have otherwise included re-entering and plugging some of the old wells.¹⁰ *See* 40 C.F.R. § 144.55(a) (requiring corrective action when necessary to prevent fluid migration from improperly abandoned wells). But without empirical evidence of the abandoned wells' ability to fully withstand all injection-related pressures, site-specific uncertainties—and therefore a potential risk of fluid migration—remain.

Accordingly, consistent with applicable regulations, not to mention the preventative nature Congress intended for UIC programs,¹¹ and consistent with other Class I permits,¹² the

⁹ Even if the wells in the AoR meet current California plugging requirements, that would not be dispositive of USDW protection. *See* RTC #11 at 12 (explaining that California's 2020 Onshore Well Regulations relate to the protection of fresh-saltwater interfaces, not USDWs); AR #80 at 215-16.

¹⁰ Petitioner misconstrues the basis for why the Region removed the corrective action requirement from the July 2020 draft Permit. EPA did not "agree" or "conclude" that there is no *potential* for fluid migration into the abandoned wells in the AoR. *See* Pet. at 1, 19-20. Rather, after a series of technical discussions with PEC, the Region removed the corrective action requirement to plug Souza #2 well due to the reduced injection volume associated with installation of an enhanced wastewater system and the reduction in the size of the AoR. RTC #5 at 6. However, the Region also makes clear in the Permit that ambient monitoring will result in data that will inform decisions on whether future corrective action is necessary. *See* Permit Part II.C.2.c—AR #84 at 10.

¹¹ Congress intended the UIC program to be preventative. *See* 42 U.S.C. § 300h(b)(1) ("Regulations...for State underground injection programs shall contain minimum requirements for effective program to prevent underground injection which endangers drinking water sources....").

¹² EPA explained to PEC that other UIC Class I permittees have been subject to similar USDW-monitoring requirements, including the Hilmar Cheese Company. *See* RTC at 8; AR #47 at 5, 14. Like Hilmar, PEC injects industrial nonhazardous wastewater into an over-pressured formation. Also, like Hilmar, PEC's facility is located in

Region decided that a single monitoring well would be sufficient to detect any fluid migration. The monitoring well will generate the empirical data not available in PEC's permit application and either "confirm that the project is operating as expected and no fluid movement is occurring along the boreholes in the wells in the AoR that could affect water quality in the USDW, or (2) provide early warning of potential endangerment to USDWs before any significant impact." RTC #14 at 14.

The Region's conclusion that there is a potential for fluid migration is supported by the Administrative Record, including a U.S. Geological Survey study in Utah ("Utah Study") that provided observations on fluid migration through mud to the surface of older wells penetrating the injection formation and that were not plugged and abandoned by current standards and procedures. RTC #9 at 10-11; AR #25. As observed in this study, older wells that lack cement in the casing/wellbore annulus or a cement plug to isolate the injection zone from the USDW, or where the integrity of the mud used to plug the wells has been compromised throughout time, provide a potential pathway for fluid movement. AR #25 at 29-30, 58, 87. Like the wells in the Utah Study, several of the abandoned wells in the AoR, notably Silver Creek #18, lack long-string casing and cement plugs at the base of the USDW. RTC #9 at 11; AR #1a at Table A-1; AR #1c at C-4-C-8. Additionally, PEC did not provide empirical evidence that the mud in the abandoned wells has not been compromised (a potential issue given the age of the well). *See* RTC #12 at 12. The Utah Study therefore supports the ambient monitoring requirement in light

an area with several nearby abandoned wells that penetrate the injection zone and lack cement plugs at the base of the USDW. RTC #7 at 8.

of the Region’s concerns about the potential for fluid migration in older abandoned wells that may not be properly plugged.¹³

PEC disputes the Region’s approach, but its arguments amount to little more than disagreement over EPA’s weighing of the evidence and its strategy for addressing the potential risks posed by PEC’s injection activities. That is, PEC believes that it conclusively established the abandoned wells’ resiliency, but EPA was unable to extrapolate that conclusion from PEC’s generalized or non-applicable submissions, seeing as they lacked empirical data on subsurface pressures and downhole mud properties specifically at Silver Creek #18 and the other AoR wells. *See, e.g.,* RTC #9 at 9-10. Disputes such as these do not amount to clear error, especially considering the deference afforded to the Region on technical and monitoring matters. *See In re Peabody W. Coal Co.*, 12 E.A.D. at 50-51 (noting this deference); *see also In re Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. at 667 (“[C]lear error or a reviewable exercise of discretion is not established simply because the petitioner presents a difference of opinion or alternative theory regarding a technical matter.”). While PEC may disagree that ambient monitoring is warranted here, the permit condition is fully supported by EPA’s site-specific assessment, the uncertainties and risks posed by un-monitored injection activity, and is well within the Region’s discretion to require it.

Furthermore, by demanding from the Region direct evidence of deficiencies in the abandoned wells, PEC attempts to shift its evidentiary burden. As discussed, the permit applicant

¹³ The Utah Study is not the Region’s sole piece of evidence to support the ambient monitoring requirement. As explained throughout this Response, site-specific factors, such as old-abandoned wells near the Facility that lack long-string casing and cement plugs between the top of the injection zone and base of the USDW, coupled with the overpressured formation, warrant ambient monitoring to ensure USDW protection. Although this study concerns wells that are not located in the specific area of concern to the Permit, one key observation remains—old wells that may have been improperly plugged or whose mud was compromised over time provide a potential pathway for fluid migration into a USDW. *See* RTC #9 at 11.

bears the burden of establishing, to the Region's satisfaction, that its injection activities will not endanger USDWs. 40 C.F.R. § 144.12(a); RTC #1 at 3. The Region, in turn, must impose permit conditions that will ensure that USDWs remain protected. *Id.* § 144.12(b). Therefore, if a permit applicant fails to provide sufficient evidence to conclusively redress a known risk, the Region may, as it did here, and in keeping with the approach it takes in cases concerning overpressured formations and abandoned wells that can serve as conduits to USDWs, require additional monitoring to address any potential fluid migration.

Throughout the permitting process, the Region cogently explained the rationale for the ambient monitoring requirement, drawing support for its conclusions from PEC's application and other record materials, and therefore did not clearly err or abuse its discretion in requiring ambient monitoring near Silver Creek #18.

b. PEC fails to establish clear error or abuse of discretion

PEC's arguments against the monitoring requirement, many of which mirror the comments it submitted on the draft permit, fail to establish that the Region erred in imposing the ambient monitoring condition. For example, PEC contends that its air operating permit limits Facility operations to such a level that would result in no endangerment to USDWs and obviate the need for ambient monitoring. Pet. at 14-15, 20, and 28. PEC's air permit, however, contains no provisions for the protection of USDWs, and regardless of how PEC's air permit might impact its operations, the UIC Permit does not limit PEC from injecting more than 84 million gallons/year or preclude PEC from injecting industrial wastewater during periods when the Facility is not operating, such as injecting wastewater held in on-site wastewater collection tanks. AR #1i at K-2, K-5. PEC speculates with a conclusory statement that its maximum estimated

injection volume would be 84 million gallons/year. Pet. at 20. But there is no indication of how PEC arrived at this figure, and the Region will not assume without actual evidence that any air-related limits on the operation of PEC's facility will affect injection volumes and guarantee no potential risk of fluid movement into USDWs. *See* RTC #13 at 13-14.

PEC also asserts that there is “no potential value” of a monitoring well next to Silver Creek #18 because it would not provide an “early warning” of potential endangerment to USDW resulting from its injection activities. Pet. at 18, 26-29. This is wrong. As the abandoned well closest to PEC's injection wells, Silver Creek #18 “would most likely be the first location where subsurface pressures may increase to the point where fluid migration along a wellbore might occur.” RTC #4 at 5. And as explained in RTC #13, this monitoring is necessary to gain empirical pressure and water quality data that will either provide evidence of hydraulic communication (and early warning of USDW endangerment) or support a conclusion that there are no pressure changes in the injection zone that could adversely affect USDWs. RTC #13 at 13-14. After collecting the initial baseline data from the monitoring well, ongoing pressure data and constituent monitoring results will be compared to the baseline data, per Part II.E.2.b of the Permit, and trends over time can provide an understanding of pressure and water quality conditions within the USDW. RTC #14 at 14-15. A trend showing pressure or water quality changes in the USDW could indicate a hydraulic communication between the injection zone and the USDW, potentially warranting a full evaluation of the potential impact to the USDW. *Id.* If appropriate, the Region could exercise its authority to either require corrective action or require PEC to shut in the wells (stop injecting fluids). *Id.*; Permit Part II.C—AR #84 at 9-10.

PEC also asserts that ambient monitoring would not indicate one way or another whether a borehole plug has failed. Pet. at 26-27. PEC adds, in this vein, that there is no basis for the

Region's assertion that a change in pressure in the USDW would somehow indicate that a wellbore plug has failed, since USDW pressure changes could occur for a variety of reasons. Pet. at 27. Given the depth of the USDW to be monitored, however, any changes would likely be associated with a deficient wellbore. RTC #14 at 15. Furthermore, even if there were multiple reasons why water quality could change or subsurface pressure could increase, that does not render the monitoring requirement unwarranted. The monitoring is expected to prove instrumental in discovering such changes, *see* RTC #13 at 14, and any such discovery would, where appropriate, trigger further scrutiny to determine if the changes observed are due to PEC's injection activities. The Region would then work with PEC to determine whether corrective action is necessary.

Again, it is unreasonable for PEC to assert that the monitoring well lacks any *potential* value. Without empirical evidence attesting to the strength of the muds in Silver Creek #18 or of pressure measurements in the injection zone at this abandoned wellbore, actual conditions (e.g., pressure and water quality) cannot be confirmed based upon the information the Permit otherwise requires PEC to report. *Id.* PEC has not conclusively established that there is no potential risk of fluid migration from its injection activities. Hence, the Region was reasonable in requiring installation of a monitoring well near the abandoned Silver Creek #18 well.

PEC continues that the other monitoring requirements in Part II.E.4.a. of the Permit are adequate and more likely to provide an "early warning" of any wellbore plug failure. Pet. at 28. Part II.E.4.a requires PEC to monitor injection rates, volumes, wellhead pressure, and annular pressures, and while that is useful information for understanding conditions at the location of the injection wells, it does not inform PEC or the Region of the actual pressure in the injection formation at the location of one or more of the abandoned wellbores, or the strength of the mud

in each well. As explained in response to PEC's comments, without the ambient monitoring required in Part II.E.2, there would be no empirical data on the current condition of the wells in the AoR and the potential for them to act as conduits for fluid movement along the boreholes and into the lowermost USDW.¹⁴ RTC #1 at 2-3. The requirements at Parts II.E.2 and II.E.4.a. of the Permit, *together*, are designed to ensure that USDW monitoring provides comprehensive information on whether there is any fluid movement between the injection zone into the USDW.¹⁵

In sum, the Region properly considered all the information in the Administrative Record, including information submitted by Petitioner, and concluded that the facts support the inclusion of the monitoring requirement at the abandoned Silver Creek #18 well to determine whether fluids are migrating toward the USDW. Petitioner has failed to demonstrate that the Region's permitting decision constitutes clear error or an abuse of discretion. 40 C.F.R. § 124.19(a)(4)(i).

2. PEC's arguments relating to property access to perform the monitoring at Silver Creek #18, including the associated costs, fail to demonstrate clear error or abuse of discretion

PEC argues that the ambient monitoring requirement is impractical, and potentially impossible, because it requires PEC to install the monitoring well on land that it does not own or control. Pet. at 6, 29. PEC elaborates that if the private landowner denies PEC access necessary to install and operate the well, "it would amount to an effective denial of the Permit." Pet. at 29.

In other cases, the Board has found issues of property rights and access to be beyond the scope of the UIC permitting process and Board review, and should do so here. *See In re Suckla*

¹⁴ Even if the monitoring data generated required by Part II.E.4 of the Permit could be used to predict pressure changes in the location of the abandoned wells, those predictions would be based on the same lack of empirical evidence about the strength of the mud in abandoned wells. RTC #2 at 3-4.

¹⁵ Part II.E.2 requires monitoring at the abandoned wells in the AoR, and Part II.E.4.a at the location of the Facility's injection wells. AR #1 at 17-20.

Farms, 4 E.A.D. 686, 694 (1993) (“the Region was not required to take ownership of land into account in issuing a final [UIC] permit decision.”) (quoting Columbia Gas Transmission Co., UIC Appeal No. 87-1 (Adm’r, April 13, 1987));¹⁶ *see also In re Envotech, L.P.*, 6 E.A.D. 260, 276 (“[T]he regulations make clear that issuance of a UIC permit does not implicate private property rights, these arguments are beyond the scope of the permitting process and Board review.”). The Board should likewise reject PEC’s attempt to call into question the Region’s technical assessment of the need for, and location of, an ambient monitoring well based on the specter of property rights issues.

The fact that PEC does not own the Silver Creek property does not undercut the Region’s determination that ambient monitoring in the vicinity of Silver Creek #18 is warranted. The monitoring well will generate data critical to determining whether there is potential fluid migration from the Facility’s injection activities into the nearby abandoned wells in the AoR. RTC #1 at 3. Even though PEC does not own the Silver Creek land, that does not *per se* preclude PEC from installing the proposed monitoring well. RTC #3 at 4. For example, other UIC Class I permittees in Region 9 have negotiated access to private property to drill monitoring wells or drilled directional/deviated monitoring wells to monitor in subsurface areas where surface access is not available. *See* RTC #3 at 4; AR #47h at 3.1. There is nothing in the Administrative Record indicating whether PEC has taken any steps towards negotiating access to the Silver Creek property. In fact, there is nothing in the record indicating that PEC will have any difficulty

¹⁶ In *In re Suckla Farms*, 4 E.A.D. 686, 694 (1993), the Board rejected an argument, advanced by the owner of the well site at issue appealing the permit issuance, that a permittee lacked sufficient access to a Class I well site under the terms of the relevant lease to effectively operate the well in a manner that would ensure protection of USDWs. The Board rejected the argument as providing no basis for review, reasoning that if the permittee truly lacked access, then injection “will simply not occur,” on the other hand, if the permittee had access, “the permittee is obligated to conduct such disposal in full compliance with all of the conditions of the permit.”

obtaining access—only PEC’s unsupported observation that the landowner “could” deny access. Pet. at 29.

PEC appears to suggest at various points in the Petition that the ambient monitoring requirement is irrational, in part, because it will need to “expend millions of dollars” to perform the monitoring.¹⁷ Pet. at 1, 3, 29. Even assuming PEC’s cost estimates are generally accurate, they do not undermine the Region’s technical determination, made in compliance with the SDWA and UIC regulations—that do not require consideration of cost, that ambient monitoring is warranted in the vicinity of Silver Creek #18. RTC #1 at 2-3.

Notably, the preamble to the rule promulgating 40 C.F.R. § 146.13 acknowledged industry concerns that ambient monitoring would be “too costly.” See RTC #6 at 7; AR #21 at 28145. EPA countered that ambient monitoring is not “particularly expensive when compared to the information received” from the monitoring results. *Id.* As discussed, that is precisely the case here, where ambient monitoring will be critical to determining whether there is potential fluid migration from the Facility’s injection activities into the nearby abandoned wells that could impact USDWs. See RTC #1 at 3.¹⁸ For the above reasons, Petitioner has failed to demonstrate that the Region’s permitting decision constitutes clear error or an abuse of discretion. 40 C.F.R. § 124.19(a)(4)(i).

¹⁷ PEC’s argument about the costs of the monitoring requirement reiterates its comments on the various draft permits. See AR #12 at 29-30; AR #43 at 2, 30, n37.

¹⁸ While not required by the SDWA, EPA acknowledged PEC’s concerns about monitoring costs and engaged in a collaborative discussion and refinement of the monitoring conditions (i.e., elimination of plugging Souza #2, reducing dual-completion monitoring at two locations to a single monitoring well at one location). RTC #6 at 7. The final Permit substantially reduced monitoring costs to the Petitioner while still meeting the UIC regulatory criteria.

VI. CONCLUSION

The Region's final decision on the Permit was made in accordance with the SDWA and the UIC regulations. The Permit is supported by the Administrative Record, including a thorough Response to Comments. The final Permit includes significant modifications to the corrective action and monitoring requirements from the July 2020 pre-publication draft permit meant to address PEC's comments and concerns. These changes had the effect of reducing the burden on PEC while still providing the minimum necessary empirical data to ensure USDW protection. The final Permit also includes technical revisions to the April 2021 draft Permit to address concerns raised by the Petitioner during the public notice and comment period. The Permit is protective of USDWs and has a strong and well-developed technical basis that is supported in the Administrative Record.

The Petitioner has not identified any contested Permit conditions or any policy decisions by the Region that warrant Board review. The Region therefore respectfully requests that the Board deny the Petition for Review for UIC Permit No. R9UIC-CA1-FY17-2R.

VII. STATEMENT OF COMPLIANCE WITH THE WORD LIMITATION

In accordance with 40 C.F.R. § 124.19(d)(1)(iv) and (d)(3), the Region certifies that this Response to Petition for Review does not exceed 14,000 words.

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CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing *RESPONSE TO PETITION FOR REVIEW* in the matter of Panoche Energy Center, LLC, Appeal No. SDWA 22-01, were served via email upon the persons listed below.

December 23, 2022

Respectfully submitted,

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