

IN RE JORDAN DEVELOPMENT COMPANY, L.L.C.

UIC Appeal Nos. 18-06, 18-07, 18-08 & 18-09

ORDER DENYING REVIEW

Decided August 8, 2019

Syllabus

Mr. Emerson J. Addison, Dr. Ronald J. Kruske, D.D.S., Ms. Amy Kruske, and Ms. Jennifer Springstead each petition the Environmental Appeals Board (“Board”) to review an Underground Injection Control (“UIC”) Class II permit that the U.S. Environmental Protection Agency Region 5 (“Region”) issued to Jordan Development Company, L.L.C. (“Jordan”) in October 2018. The permit authorizes Jordan to convert an existing oil production well in Gladwin County, Michigan, for injection of brine, a byproduct of oil and natural gas drilling activities. The Board consolidated the four petitions given the common permitting decision and administrative record and the similar and overlapping issues and arguments.

Mr. Addison challenges the Region’s permit decision on four grounds. He argues that the Region: (1) erred in its evaluation of environmental justice matters in issuing this permit; (2) failed to adequately analyze the risks of natural and induced seismicity, rock fracturing, and rock dissolving events associated with injection at this well; (3) inadequately considered deficiencies in EPA’s oversight of state UIC programs and the existence of many “violations and problems” in Jordan’s compliance history; and (4) failed to respond to comments questioning Jordan’s financial assurances or ensure the company’s ability to pay for environmental costs of cleaning up leaks or spills.

Dr. Kruske and Ms. Springstead raise three challenges, arguing that the Region: (1) clearly erred and abused its discretion by issuing a UIC permit with no fixed limit on injection fluid volume, but only a recommended maximum, and failed to respond adequately to concerns that seismic activity may be induced by rapid injection of large volumes of fluids; (2) provided an insufficient response to comments criticizing, as too small, the “area of review” around the proposed well; and (3) misrepresented the nature of the fluids Jordan will inject and purposefully misled the public on this point.

Ms. Kruske also presents three challenges, arguing that the Region: (1) erred by stating that the public failed to offer specific sources of information to support claims that Class II wells leak; (2) erred by finding that commenters’ concerns about frequent well leaks “do not reflect EPA’s experience in Michigan”; and (3) abused its discretion by

failing to consider possible adverse impacts of UIC well leaks on nonendangered fish and wildlife.

Held: The Board denies the petitions for review.

With respect to Mr. Addison's petition, UIC Appeal No. 18-06, the Board first holds, consistent with applicable law and Board precedent, that Mr. Addison failed to: (a) preserve for review his arguments regarding the Region's lack of consideration of certain demographic and other factors; (b) demonstrate clear error in the Region's determination that certain comments are outside the scope of the UIC permitting process; and (c) show that the Region clearly erred or abused its discretion in considering environmental justice issues. In so holding, the Board rejects the Region's argument that all environmental justice issues were not preserved for review.

Second, the Board denies Mr. Addison's seismicity, rock fracturing, and rock dissolving claims. The Board holds that Mr. Addison failed to confront the Region's explanation on its consideration of these issues, or otherwise demonstrate clear error or abuse of discretion in the Region's technical judgments about injection volume and pressure, structural lineaments and faults, and brine corrosivity, all of which are relevant to these issues. Third, the Board denies review of Mr. Addison's arguments regarding EPA oversight of state UIC programs and Jordan's environmental compliance history. The Board holds that these arguments suffer from procedural flaws and that Mr. Addison failed to confront portions of the Region's responses to comments on these issues. The Board also concludes, consistent with Board precedent, that these arguments are beyond the scope of the UIC program. Fourth, the Board denies review of the financial assurances claims. The Board holds that Mr. Addison failed to confront the Region's responses to comments on these issues and thus failed to show clear error or abuse of discretion in the Region's decisionmaking on these grounds.

With respect to Dr. Kruske's and Ms. Springstead's petitions, UIC Appeal Nos. 18-07 and 18-09, the Board first denies the induced seismicity claims. The Board holds that Dr. Kruske and Ms. Springstead failed to demonstrate clear error or abuse of discretion in the Region's determination that induced seismicity risk is negligible. Second, the Board denies the claims related to the Region's analysis and determination of the area of review. The Board holds that Petitioners failed to confront the Region's response to comments on this issue and failed to demonstrate that the Region clearly erred or abused its discretion. Third, the Board denies the brine constituent claims, holding that Petitioners failed to demonstrate that the Region clearly erred or abused its discretion on this issue.

Finally, with respect to Ms. Kruske's petition, UIC Appeal No. 18-08, the Board first denies the leak-related claims. The Board holds that Ms. Kruske failed to demonstrate that the Region clearly erred or abused its discretion in its treatment of claims made during the public comment period, and failed to confront the Region's responses to comments on these claims. Second, the Board denies the fish, wildlife, and surface water claims. The Board holds that Ms. Kruske failed to confront the Region's responses to comments on

these issues and failed to demonstrate that the Region clearly erred or abused its discretion in its decisionmaking on these matters.

Before Environmental Appeals Judges Aaron P. Avila, Mary Kay Lynch, and Mary Beth Ward.

Opinion of the Board by Judge Lynch:

I. *STATEMENT OF THE CASE*

In this proceeding, the Environmental Appeals Board (“Board”) considers four petitions for review filed by individuals challenging an Underground Injection Control (“UIC”) Class II permit issued by the U.S. Environmental Protection Agency (“EPA” or “Agency”), Region 5 (“Region”), authorizing underground injection of brine – a byproduct of oil and natural gas drilling activities – in Gladwin County, Michigan. The Region issued the permit to Jordan Development Company, L.L.C. (“Jordan”), pursuant to the UIC Program, part C of the Safe Drinking Water Act (“SDWA”), 42 U.S.C. §§ 300h to 300h-8, and implementing regulations at 40 C.F.R. parts 124 and 144-148. Jordan intends to convert an existing oil well, called “Grove #13-11,” to dispose of “noncommercial brine” from its oil and natural gas production wells.

The Board administratively consolidated the four petitions given the common permitting decision and administrative record, and the similar and overlapping issues and arguments. Pursuant to a briefing schedule extended at the request of the parties, the parties completed the briefing of this matter on June 21, 2019.¹

Petitioners challenge the Region’s permit decision, including its consideration of environmental justice, injection volumes and pressures, and seismicity and other risks to underground sources of drinking water, as well as the Region’s categorization of certain comments as outside the scope of the UIC permitting program. Based on the record as a whole and the standard of review, the Board denies the petitions for the reasons discussed below. The Board takes seriously the concerns raised, but Petitioners do not demonstrate that the Region’s issuance of this permit was clearly erroneous or that the Region abused its discretion.

¹ Due to a lapse in federal appropriations, EPA was shut down from December 29, 2018, to January 26, 2019. The Board was closed during this period.

II. PRINCIPLES GOVERNING BOARD REVIEW

The Board's review of UIC permits is governed by Agency permitting regulations at 40 C.F.R. part 124, which authorize parties to file petitions for review of EPA permit decisions. 40 C.F.R. § 124.19(a)(1). EPA's intent in promulgating these regulations was that this "review should be only sparingly exercised." Consolidated Permit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980); *see also In re Beeland Grp., L.L.C.*, 14 E.A.D. 189, 195-96 (EAB 2008).

In any appeal from a permit decision issued under part 124, the petitioner (even when not represented by legal counsel) bears the burden of demonstrating that review is warranted. "[A] petition for review must identify the contested permit condition or other specific challenge to the permit decision and clearly set forth, with legal and factual support, petitioner's contentions for why the permit decision should be reviewed." 40 C.F.R. § 124.19(a)(4)(i); *accord In re Archer Daniels Midland Co.*, 17 E.A.D. 380, 382-83 (EAB 2017).

Where, as here, a petitioner is not represented by legal counsel, the Board endeavors to construe the petition to fairly identify the substance of the arguments being raised. *Archer Daniels*, 17 E.A.D. at 383; *In re Sutter Power Plant*, 8 E.A.D. 680, 687-88 (EAB 1999). The Board nonetheless expects such petitions to provide "sufficient specificity" regarding the issues being raised and "some supportable reason" explaining how or why the permit issuer erred or review otherwise is warranted. *Sutter*, 8 E.A.D. at 687-88; *accord In re Windfall Oil & Gas, Inc.*, 16 E.A.D. 769 *passim* (EAB 2015); *In re Env'tl. Disposal Sys., Inc.*, 12 E.A.D. 254, 292 n.26 (EAB 2005).

In considering any petition filed under 40 C.F.R. § 124.19(a), the Board evaluates whether the petitioner has met threshold procedural requirements, including, among other things, whether an issue has been preserved for Board review. *See* 40 C.F.R. § 124.19(a)(2)-(4); *see also In re Penneco Env'tl. Sols., L.L.C.*, 17 E.A.D. 604, 617-18 (EAB 2018); *In re Seneca Res. Corp.*, 16 E.A.D. 411, 412 (EAB 2014). A petitioner satisfies the issue preservation requirement by demonstrating that the issues and arguments it raises on appeal were raised previously, either during the public comment period on the draft permit or during a public hearing. *See In re Gen. Elec. Co.*, 17 E.A.D. 434, 445 (EAB 2018).

Under 40 C.F.R. § 124.19, the Board has discretion to grant or deny review of a permit decision. *Archer Daniels*, 17 E.A.D. at 383. The Board ordinarily denies a petition for review of a permit decision (and thus does not remand it) unless the petitioner demonstrates that the permit decision is based on a clearly erroneous finding of fact or conclusion of law or involves an exercise of discretion that

warrants review under the law. 40 C.F.R. § 124.19(a)(4)(i)(A)-(B); *see, e.g., In re La Paloma Energy Ctr., L.L.C.*, 16 E.A.D. 267, 269 (EAB 2014). To meet this standard, it is not enough for a petitioner to rely on previous statements of its objections during the administrative process leading up to the issuance of the permit, such as comments on a draft permit. A petitioner must demonstrate why the permit issuer's response to those objections (the permit issuer's basis for its decision) is clearly erroneous or otherwise warrants review. *See In re Guam Waterworks Auth.*, 15 E.A.D. 437, 444 (EAB 2011). In reviewing an exercise of discretion by the permit issuer, the Board applies an abuse of discretion standard. *See In re City of Palmdale*, 15 E.A.D. 700, 704 (EAB 2012). The Board will uphold a permit issuer's reasonable exercise of discretion if that decision is cogently explained and supported in the record. *See In re Ash Grove Cement Co.*, 7 E.A.D. 387, 397 (EAB 1997) (“[A]cts of discretion must be adequately explained and justified.”); *see also Motor Vehicles Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 48 (1983) (“We have frequently reiterated that an agency must cogently explain why it has exercised its discretion in a given manner * * *.”).

A permit issuer must articulate with “reasonable clarity” the reasons supporting its conclusions and the significance of the crucial facts relied on in reaching those conclusions. *E.g., Ash Grove*, 7 E.A.D. at 417. As a whole, the record must demonstrate that the permit issuer “duly considered the issues raised in the comments,” responded to the comments in a meaningful fashion, and ultimately adopted an approach that “is rational in light of all information in the record.” *In re Gov’t of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 342 (EAB 2002); *accord In re W. Bay Expl. Co.*, 17 E.A.D. 204, 222 (EAB 2016); *In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567-68 (EAB 1998), *pet. for review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999).

On matters that are fundamentally technical or scientific in nature, the Board typically defers to a permit issuer's technical expertise and experience, as long as the permit issuer adequately explains its rationale and supports its reasoning in the administrative record. *See In re Dominion Energy Brayton Point, L.L.C.*, 12 E.A.D. 490, 510, 561-62, 645-47, 670-74 (EAB 2006); *see also, e.g., In re Russell City Energy Ctr., L.L.C.*, 15 E.A.D. 1, 12, 39-42, 66 (EAB 2010), *pet. for review denied sub nom. Chabot-Las Positas Cmty. Coll. Dist. v. EPA*, 482 F. App'x 219 (9th Cir. 2012).

III. LEGAL FRAMEWORK

Congress established the UIC program pursuant to the Safe Drinking Water Act and required EPA to promulgate regulations for underground injection control programs to protect underground sources of drinking water (“USDWs”). SDWA

§ 1421, 42 U.S.C. § 300h. EPA has promulgated such regulations, including minimum requirements for UIC permits. *See* 40 C.F.R. pts. 144-148. EPA administers the UIC program in states such as Michigan that are not authorized to administer their own UIC programs. *See* 40 C.F.R. §§ 144.1(e), 147.1151.²

The UIC program focuses on the protection of underground water that “supplies or can reasonably be expected to supply any public water system” from “any contaminant” that may be present as a result of underground injection activities. SDWA § 1421(d)(2), 42 U.S.C. § 300h(d)(2). The purpose of the UIC regulations is to prevent the movement of fluids containing contaminants into USDWs if the presence of those contaminants may cause a violation of a primary drinking water regulation or otherwise adversely affect human health. *See* 40 C.F.R. § 144.12(a). “[A]ll injection activities including construction of an injection well are prohibited until the owner or operator is authorized by permit.” *Id.* § 144.31(a).

Injection wells fall into six classes. *Id.* §§ 144.6, 146.5. Class II wells are used to inject fluids for three different purposes – storage of hydrocarbons, enhanced recovery of oil or natural gas, or, like the Grove #13-11 well at issue here, disposal of fluids from oil or gas production. *Id.* §§ 144.6(b)(1)-(3), 146.5(b)(1)-(3).

IV. PROCEDURAL AND FACTUAL HISTORY

Jordan applied for a permit to convert its Grove #13-11 well, an existing crude oil exploration well, into a Class II injection well. *See* Jordan Dev. Co., L.L.C., *Underground Injection Control Permit Application, Grove #13-11 Well* (June 7, 2017) (A.R. 1) (“Appl.”). Jordan sought approval to dispose of brine (which it produces as a byproduct of oil and natural gas drilling activities) by injecting the brine into a geological structure called the Dundee formation. *See id.* attaches. G-H.

The Region evaluated Jordan’s permit application and, in September 2017, issued a draft UIC permit that would authorize the requested well conversion and operation, along with notices inviting the public to submit comments on the draft permit. *See, e.g.,* Region 5, U.S. EPA, *EPA Seeks Comments on Draft*

² The UIC regulations use the term “Director” to describe the permitting authority. 40 C.F.R. § 146.3 (defining “Director”). Because this matter involves an EPA-administered program, the Board will refer to the “permit issuer” or the Region, as appropriate, in places where the regulations use the term “Director.”

Underground Injection Permit (Sept. 2017); Region 5, U.S. EPA, *Statement of Basis of Issuance of [UIC] Draft Permit for Grove #13-11 Well, Jordan Dev. Co., L.L.C.* (Sept. 15, 2017) (A.R. 5) (“*Stmt. of Basis*”). The public comment period extended from September 28, 2017, to October 31, 2017, during which time many commenters requested a public hearing. The Region notified the public of a second comment period, running from May 15, 2018, to June 22, 2018, and it held a public hearing on June 19, 2018, at Gladwin High School, which approximately 300 people attended. *See* Public Hearing Transcript (June 19, 2018) (A.R. 181) (“*Tr.*”); Region 5, U.S. EPA, *Response to Public Comments on UIC Permit No. MI-051-2D-0031, Jordan Dev. Co., L.L.C.* 1 (Oct. 23, 2018) (A.R. 183) (“*RTC*”). The Region received over 190 written and oral comments on the draft permit. *RTC* at 1. Each of the four Petitioners in this case participated in the public comment process on the draft permit.

In October 2018, the Region issued a final UIC permit to Jordan authorizing its requested activities, along with a response-to-comments document providing summaries of, and responses to, the public comments. *See* Region 5, U.S. EPA, *Underground Injection Control Permit No. MI-051-2D-0031, Grove #13-11 Well, Jordan Dev. Co., L.L.C.* (Oct. 23, 2018) (A.R. 191) (“*Final Permit*”); *RTC*. The Region concluded that “[t]he comments did not raise significant issues to modify EPA’s determination that the permit application and draft permit meet federal [UIC] requirements.” Letter from Linda Holst, Acting Div. Dir., Water Div., Region 5, U.S. EPA, to Commenters on UIC Permit No. MI-051-2D-0031, at 1 (Oct. 23, 2018) (A.R. 183). Accordingly, the Region issued the final permit without alteration from the draft permit.

These four appeals followed, submitted by Mr. Emerson J. Addison, UIC Appeal No. 18-06 (“*EA Pet.*”); Dr. Ronald J. Kruske, D.D.S., UIC Appeal No. 18-07 (“*RK Pet.*”); Ms. Amy Kruske, UIC Appeal No. 18-08 (“*AK Pet.*”); and Ms. Jennifer Springstead, UIC Appeal No. 18-09 (“*JS Pet.*”). As noted above, briefing was extended at the request of the parties and completed on June 21, 2019.

V. ANALYSIS

As previously noted, the Board administratively consolidated the four appeals as they involve a common permitting decision, have a common administrative record, and raise similar or overlapping arguments. Dr. Kruske’s and Ms. Springstead’s petitions (UIC Appeal Nos. 18-07 and 18-09) are essentially identical and three of the four petitions present very similar arguments about injection volume. The Board will address each of the petition’s arguments in the order of filing, but will address Dr. Kruske’s and Ms. Springstead’s petitions together. Before turning to the substantive issues raised in the petitions, however,

the Board first addresses an overarching procedural issue that Region 5 has raised with respect to all four petitions.

A. Threshold Question of Issue Preservation

As a preliminary matter, the Board addresses the threshold question of whether Petitioners have met their obligation to demonstrate that the issues and arguments they raise on appeal were preserved for Board review. The Region has objected to all four petitions on the grounds that, contrary to the intent of 40 C.F.R. § 124.19(a)(4)(ii), Petitioners failed to preserve for review the issues in their petitions by demonstrating that their issues and arguments were raised during the public comment periods or citing to where their issues, arguments, and supporting documents appear in the administrative record. Region 5, U.S. EPA, Response to Petitions for Review 9 (Mar. 12, 2019) (“Resp. Br.”). Except as to one issue in one petition (Ms. Kruske’s first argument, which the Region concedes is preserved), the Region argues that all four appeals should be dismissed in their entirety based on these alleged failures. *Id.* at 10.

A petitioner before the Board must demonstrate, among other things, “that each issue being raised in the petition was raised during the public comment period (including any public hearing).” 40 C.F.R. § 124.19(a)(4)(ii); *see, e.g., In re Penneco Env'tl. Sols., L.L.C.*, 17 E.A.D. 604, 617-18 (EAB 2018); *In re Seneca Res. Corp.*, 16 E.A.D. 411, 415 (EAB 2014). As the Board has previously explained, that regulation “is not an arbitrary hurdle, placed in the path of potential petitioners simply to make the process of review more difficult.” *In re BP Cherry Point*, 12 E.A.D. 209, 219 (EAB 2005); *accord In re City of Taunton Dep't of Pub. Works*, 17 E.A.D. 105, 122 (EAB 2016), *aff'd*, 895 F.3d 120 (1st Cir. 2018), *cert. denied*, 139 S. Ct. 1240 (2019); *In re City of Palmdale*, 15 E.A.D. 700, 721 (EAB 2012). Instead, the requirement to raise issues and arguments during the permitting process “serves an important function related to the efficiency and integrity of the overall administrative scheme.” *BP Cherry Point*, 12 E.A.D. at 219; *see also In re Encogen Cogen. Facility*, 8 E.A.D. 244, 249-50 (EAB 1999).

The Board, however, has determined that the applicable regulations do not warrant the summary disposal of any of the four petitions in their entirety on issue preservation grounds alone. As is pointed out in relevant sections in the analysis below, although some issues in the petitions were not raised during the public comment period, most of the petitions’ issues and arguments were so raised, and the Region responded to those issues and arguments in its responses to comments on the permit. Thus, the Board will address the issues and arguments that commenters raised below, in keeping with Board precedent. The Board, however, does not consider the few issues and arguments that could have been raised below

but were not, because the Region did not have the opportunity to address them in the response to comments.

B. *Mr. Addison's Petition, UIC Appeal No. 18-06*

Mr. Addison presents four issues in his petition. He argues that the Region: (1) erred in its evaluation of environmental justice matters in issuing this permit; (2) failed to adequately analyze the risks of natural and induced seismicity, rock fracturing, and rock dissolving events associated with what he views as high-volume and toxic brine injection at this well; (3) inadequately considered deficiencies in EPA's oversight of state UIC programs and the existence of many "violations and problems" in Jordan's compliance history; and (4) failed to respond to comments questioning Jordan's financial assurances or ensure the company's ability to pay for environmental costs of cleaning up leaks or spills. He requests that the permit be denied. The Board concludes that, based on the record, Mr. Addison has not demonstrated clear error or an abuse of discretion with respect to these claims.

1. *Mr. Addison's Environmental Justice Arguments*

Executive Order 12,898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" ("Executive Order on Environmental Justice" or "Executive Order"), provides that federal agencies "make achieving environmental justice part of [their] mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of [their] programs, policies, and activities on minority and low-income populations." Exec. Order No. 12,898 § 1-101, 59 Fed. Reg. 7629, 7629 (Feb. 16, 1994). Federal agencies are to implement the Executive Order on Environmental Justice "consistent with, and to the extent permitted by, existing law." *Id.* § 6-608, 59 Fed. Reg. at 7632. While the Executive Order gives permitting authorities discretion to determine how best to implement its mandate within the confines of existing law, the Executive Order does not dictate any particular outcome in a permit decision. *See id.* § 1-103, 59 Fed. Reg. at 7630 (directing agencies to develop their own agency-specific strategy for incorporating environmental justice goals into their programs, policies, and activities); *see also In re Energy Answers Arecibo, L.L.C.*, 16 E.A.D. 294, 325-26, 337 (EAB 2014), *pet. for review dismissed as untimely sub nom. Sierra Club de P.R. v. EPA*, 815 F.3d 22 (D.C. Cir. 2016); *In re Pio Pico Energy Ctr.*, 16 E.A.D. 56, 91-92 & n.30 (EAB 2013).

In this permitting action, EPA Region 5 relied on the EPA-published *Plan EJ 2014*, EPA's roadmap for integrating environmental justice ("EJ") into its

programs, policies, and activities, including its permitting activities. Janette E. Hansen, Region 5, U.S. EPA, *EJ Input for Administrative Record #MI-051-2D-0031* (July 5, 2017) (A.R. 13); *see* Office of Env'tl. Justice, U.S. EPA, *Plan EJ 2014* (Sept. 2011), <https://www.epa.gov/environmentaljustice/plan-ej-2014>. In considering Jordan's permit application, the Region used "EJSCREEN," the Agency's EJ screening tool, and, based on various environmental and demographic indicators, determined that the proposed well site is located in an area with potential EJ concerns "based on household income and population having less than a high school education." RTC Resp. #21, at 12; *see* Region 5, U.S. EPA, *EJSCREEN Report 3* (June 29, 2017) (A.R. 9) ("EJ Screen Report").

Mr. Addison argues that the Region erred in its EJ review when issuing the permit. He maintains that the Region's analysis of EJ concerns should have considered additional demographic factors about the local area, that the Region erred in deeming certain EJ-related concerns as "Out of Scope," and that the Region "failed to apply any meaningful Environmental Justice guidelines." EA Pet. at 8, 11. The Region argues that the Board should dismiss these claims because they raise new issues that were not raised during the permitting process, and because Mr. Addison failed to demonstrate that the Region's EJ screen and subsequent permitting action were clearly erroneous or otherwise warrant review. Resp. Br. at 11-13. For the reasons that follow, the Board denies Mr. Addison's EJ claims.

a. *Mr. Addison Did Not Preserve for Review His Arguments Regarding Consideration of Certain Demographic and Other Factors*

Mr. Addison first argues that the Region's EJ screen should have considered the local population's education, minority status, poverty levels, disability status, health insurance status, veteran status, unemployment rate, retail sales per capita, and reliance on tourism, recreational, and agricultural industries. *See* EA Pet. at 8-9. As explained further below, some of these factors were used; for the other factors, the issue has not been preserved for review.

The EJ screen in the administrative record (dated June 29, 2017) did in fact examine some of the factors that Mr. Addison claims in his petition were not considered by the Region, specifically the local population's education, minority status, and poverty levels. *See* EJ Screen Report at 3 (listing demographic factors evaluated as part of screening process).

With respect to the other factors, Mr. Addison failed to identify where in the comments on the draft permit the issue regarding the scope of the EJ screen was previously raised. As noted above, a petitioner before the Board must demonstrate, among other things, "that each issue being raised in the petition was raised during

the public comment period (including any public hearing).” 40 C.F.R. § 124.19(a)(4)(ii); *see, e.g., In re Penneco Env'tl. Sols., L.L.C.*, 17 E.A.D. 604, 617-18 (EAB 2018); *In re Seneca Res. Corp.*, 16 E.A.D. 411, 415 (EAB 2014).

In his reply brief, Mr. Addison argues that he may raise issues regarding the scope of the EJ screen because he is relying on information on these other factors from the U.S. Census Bureau, whose data are publicly available and whose reports and statistics qualify as “generally available reference materials” under 40 C.F.R. § 124.13. *See* Emerson J. Addison Reply Brief 14 (Mar. 27, 2019) (“EA Reply”). Though Mr. Addison is correct that the Census Bureau materials are “generally available reference materials,” the permit regulations only except such materials from the general requirement that when commenting, commenters “make supporting materials not already included in the administrative record available to EPA as directed by the Regional Administrator.” 40 C.F.R. § 124.13. Thus, the fact that the Census Bureau materials are generally available does not excuse Mr. Addison from demonstrating that comments relying on those materials were raised during the public comment period.

In sum, Mr. Addison’s petition failed to identify any comment during the public comment process that argued the Region should have included the additional demographic and other factors identified in his petition in the Region’s EJ screen prior to issuing the permit. The Board therefore concludes that Mr. Addison’s claim regarding additional demographic factors he believes should have been considered has not been preserved and denies review. *See In re Muskegon Dev. Co.*, 17 E.A.D. 740, 753-54 (EAB 2019) (denying review where demographic factors were not raised below and thus not preserved for review).

b. *Mr. Addison Failed to Demonstrate Clear Error Regarding Certain Comments the Region Determined to Be Outside the Scope of the UIC Permitting Program*

Next, Mr. Addison identifies three comments he views as related to EJ concerns that the Region labeled “out of scope” and thus not warranting a response. The comments include: (1) a request for money to pay for private well water testing; (2) a concern about decreases in property values caused by the proposed well; and (3) a request for changes to the UIC regulations. EA Pet. at 8.

The Region did not err in determining that these three comments were “out of scope,” as they do not fall within the purview of the UIC program. For the Board to consider claims in a UIC permit appeal, they must pertain exclusively to the UIC program and its focus on protecting underground sources of drinking water from possible harm caused by underground injection activities. *See In re Env'tl. Disposal*

Sys., 12 E.A.D. 254, 266 (EAB 2005) (citing cases). This is so, even if comments bear some relationship to EJ concerns, as the Executive Order on Environmental Justice provides that it is to be applied “consistent with” but only “to the extent permitted by, existing law.” Exec. Order No. 12,898 § 6-608, 59 Fed. Reg. 7629, 7632 (Feb. 16, 1994).

The Board has previously addressed the issues raised by these three comments and found in each instance that such issues are not properly before the Board. *See, e.g., Muskegon*, 17 E.A.D. at 757 (denying review of request for funds to pay for private well water testing where no showing of clear error made in decision to categorize request as out-of-scope comment); *In re Archer Daniels Midland Co.*, 17 E.A.D. 380, 404-05 (EAB 2017) (holding that “property rights are governed by legal precepts that are outside the scope of UIC permitting authority” and that Board is not appropriate forum in which to adjudicate objection to UIC regulation); *In re FutureGen Indus. All., Inc.*, 16 E.A.D. 717, 724 (EAB 2015) (denying review because Board is not appropriate forum to decide challenges to structure of UIC regulations and policies underlying them), *pet. for review dismissed as moot sub nom. DJL Farm L.L.C. v. EPA*, 813 F.3d 1048 (7th Cir. 2016). Accordingly, the Board concludes that Mr. Addison failed to demonstrate that the Region clearly erred in determining that these three comments were “out of scope.”

c. *Mr. Addison Failed to Demonstrate That the Region Clearly Erred or Abused Its Discretion in Addressing Environmental Justice Concerns Raised by Commenters*

Lastly, Mr. Addison argues that to the extent the Region did consider environmental justice, the issue was “inadequately addressed” and the Region “failed to apply any meaningful Environmental Justice guidelines.” EA Pet. at 11. In this regard, Mr. Addison identifies comments the Region did respond to as ones that “addressed Environmental Justice, either directly or indirectly.” *Id.* at 7-8 (e.g., Comments #7, #16, and #21).³ Mr. Addison further observes that the Board has held that EPA “has no authority to deny or condition a UIC permit where the permittee has demonstrated full compliance with statutory and regulatory

³ *See* RTC Resp. #7, at 5 (“Several commenters were concerned that injecting fluids into the subsurface would change the pressure of the subsurface or residential well water.”); *id.* #16, at 10 (“One commenter was concerned over threats to wildlife.”); *id.* #21, at 12 (“Commenters were concerned that Environmental Justice was not considered when making decisions about Jordan Development’s application for this well.”).

requirements.” *Id.* at 11 (quoting *In re Envotech, L.P.*, 6 E.A.D. 260, 280 (EAB 1996)). In such cases, EPA ““must issue the permit, regardless of the racial or socio-economic composition of the surrounding community and regardless of the economic effect of the facility on the surrounding community.”” *Id.* (quoting *Envotech*, 6 E.A.D. at 281) (further citation omitted). Mr. Addison contends that an “apparent contradiction” exists between this Board precedent, which seemingly forbids use of EJ concerns to modify permit decisions, and basic principles of EJ, which he argues allow and even mandate such modification. Mr. Addison asserts that, consistent with basic EJ principles, EPA should deny this permit and clarify its own EJ guidelines. *Id.*

The Region first seeks dismissal of Mr. Addison’s EJ claim, arguing that EJ issues were not raised during the public comment period. The Board disagrees. The Region itself summarized the public comments, including the public hearing testimony, as follows: “Commenters were concerned that Environmental Justice was not considered when making decisions about Jordan Development’s application for this well.” RTC Cmt. #21, at 12. This statement, and others in the record, reflect that the Region knew that EJ issues and concerns about impacts to the communities’ drinking water were of importance to Gladwin residents. *See, e.g.*, A.R. 111; *see also* A.R. 73, 81, 97, 101, 117, 121-123, 178; Tr. at 16, 21, 32, 36-37, 39.

On the merits, the Board disagrees with Mr. Addison’s contention that a contradiction exists between basic EJ principles and Board precedent. As noted above, the Executive Order on Environmental Justice provides that it is to be applied “consistent with” but only “to the extent permitted by, existing law.” Exec. Order No. 12,898 § 6-608, 59 Fed. Reg. at 7632. Thus, the Executive Order does not dictate any particular outcome in a permit decision. *Id.* § 1-103, 59 Fed. Reg. at 7630; *accord In re Energy Answers Arecibo, L.L.C.*, 16 E.A.D. 294, 325-26, 337 (EAB 2014), *pet. for review dismissed as untimely sub nom. Sierra Club de P.R. v. EPA*, 815 F.3d 22 (D.C. Cir. 2016); *In re Pio Pico Energy Ctr.*, 16 E.A.D. 56, 91-92 & n.30 (EAB 2013). In accordance with the Executive Order, the Board consistently has held that a permit issuer has no authority to deny or condition a UIC permit where the permittee has demonstrated full compliance with the statutory and regulatory requirements. *Envotech*, 6 E.A.D. at 280.

The Board’s decision in *Envotech*, however, does identify two areas where the Region may – in the exercise of its discretion – address EJ concerns in considering a proposed UIC permit. *Id.* at 279-80. One area is public participation, where permit issuers may exercise their discretion “to assure early and ongoing opportunities for public involvement in the permitting process.” *Id.* The second

area is the possible use of the UIC “omnibus authority,” *id.* at 280, which states that permit issuers “shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.” 40 C.F.R. § 144.52(a)(9). However, the omnibus authority is “limited to ensuring the protection of the USDWs upon which the minority or low-income community may rely.” *Envotech*, 6 E.A.D. at 281. It does not include “authority to redress impacts unrelated to the protection of underground sources of drinking water, such as alleged negative economic impacts on the community, diminution in property values, or alleged proliferation of undesirable land uses.” *Id.* at 281-82.

The Board concludes that Mr. Addison has not demonstrated that the Region clearly erred or abused its discretion in its consideration of EJ issues. With respect to public participation, the Region stated in its response to comments that it had taken several steps to ensure public comment opportunities were available and meaningful for Gladwin County residents, given that the well site is in “an area with potential Environmental Justice concerns based on household income and population having less than a high school education.” RTC Resp. #21, at 12. Specifically, in responding to commenters’ concern that “Environmental Justice was not considered when making decisions” about the permit (addressed as “Comment #21”), the Region stated:

This information [regarding potential EJ concerns] was considered when choosing a location and time for the information session and hearing and when designing outreach materials. The high attendance for the information session and hearing indicates that the location and time for the meetings was adequate for the community. The presentation for the information session was designed and delivered by a former teacher in an effort to be understandable to any members of the audience who may have less than a high school education.

Id. The Board finds no clear error or abuse of discretion in how the Region considered environmental justice in its public participation process.

As to the second area – the possible use of its “omnibus authority” – the Region did not separately address this point in its response to Comment #21. In connection with its response to other comments, however, the Region did address whether additional permit conditions – beyond those already included in the draft permit – were necessary to prevent the migration of fluids into USDWs. For example, in connection with its response to Comment #7 – identified by

Mr. Addison as raising EJ concerns – the Region addressed concerns that pore pressure in the injection zone would affect USDWs, finding it would not, given that “[i]njection pressure is limited in the permit to avoid over-pressuring the rock, which could cause it to fracture” and that “[s]light changes in pore pressure in the injection zone will not affect USDWs, based upon the geologic setting described in [response to Comment] #2, above.” RTC Resp. #7, at 5.

In response to Comment #2, the Region addressed at greater length the concerns raised by “[m]any commenters * * * that injection is unsafe,” concerns “about the potential for the wells to contaminate their present and future sources of drinking water,” and questions as to “how the aquifer will be protected.” RTC Cmt. #2, at 2. As described by the Region, these comments directly implicated the sufficiency of the proposed permit conditions to protect USDWs and, by extension, raised the issue of whether additional conditions are necessary under the Region’s omnibus authority. And the Region addressed that issue, explaining at length that these proposed conditions were sufficient and that more was not needed:

The purpose of the UIC program is to protect Underground Sources of Drinking Water (USDWs) from endangerment by underground injection practices. * * * The permit application and the conditions in the Jordan Development, L.L.C. Class II permit are consistent with those regulations.

* * * *

The geologic setting is suitable for the injection of fluids. Injection is limited by the permit to the Dundee Formation in the interval between 3854 and 3856 feet below ground surface. (The well is running mostly horizontally in this interval.) This injection zone is separated from the lowermost USDW by approximately 3125 feet of rock. The primary confining zone is the Bell Shale between 3796 and 3854 feet below ground surface. According to the publication *Hydrogeology for Underground Injection Control in Michigan, Part I*[,] “The shales in the Traverse Group, especially the Bell Shale, are excellent confining layers.”

Pursuant to 40 C.F.R. § 146.22, all Class II wells shall be cased and cemented to prevent the migration of fluids into or between USDWs. The Grove #13-11 well exists. EPA has evaluated its construction and confirmed that it meets this regulation. * * * In accordance with 40 C.F.R. §§144.54 and 146.33, and permit conditions found in Permit MI-051-2D-0031, Parts I(E)(19) and

III(A), Jordan Development will be responsible for observing and recording injection pressure semi-monthly and reporting this to EPA on a quarterly basis. The injected and produced volumes shall be monitored daily and shall be reported quarterly. The specific gravity of the injected fluid shall be monitored semi-monthly and shall be reported quarterly. An analysis of the injected fluid must be submitted on a quarterly basis. In addition, the applicant is required to conduct and pass mechanical integrity tests and other well tests, in accordance with 40 C.F.R. §§146.8 and 146.33, after the well is completed and before authorization to inject is granted and every 60 months thereafter. If any question should arise about well integrity, EPA can require a mechanical integrity test to check for fluid movement pursuant to Part I(E)(18) of the permit. After the active life of the well, Jordan must plug the well according to the requirements laid out in the permit and submit a report of the plugging to the EPA.

RTC Resp. #2, at 3-4. In addition, in response to Comment #14, which raised concerns about potential contamination of surface waters, the Region reiterated that the “geologic siting, construction, operation, and monitoring of this well *will be sufficient* to prevent upward movement of the injected fluid into USDWs and also surface waters.” RTC Resp. #14, at 9 (emphasis added).

As the Region acknowledges, it did not conduct a further analysis under its omnibus authority to determine whether additional conditions were necessary to protect low-income or minority communities that may rely on the USDWs at issue here. Region 5, U.S. EPA, Supplemental Briefing 5 (June 12, 2019) (“Region 5 Suppl. Br.”). But the Region also correctly notes, as we said in prior Board decisions and our recent decision in *Muskegon*, that the Region has a choice about whether to do so. *Id.* at 5-6; *In re Muskegon Dev. Co.*, 17 E.A.D. 740, 756 (EAB 2019). And the Region argues that it reasonably exercised that discretion in concluding not to conduct a further analysis under its omnibus authority in this particular case. Region 5 Suppl. Br. at 5-6.

The Board agrees. Here, the Region expressly stated how it intended to address the potential EJ concerns by focusing on enhanced public participation – as described in response to Comment #21 – and separately made technical determinations, explained in its response to comments, that the proposed permit conditions were otherwise sufficient to protect USDWs and the public health, without any additional protections, regardless of the composition of the community surrounding the well site. *See, e.g.*, RTC Resp. #2, at 3-4, Resp. #7, at 5, Resp. #14,

at 9. Based on a review of the record as a whole, and under the specific facts presented here, the Board concludes that the Region did not clearly err or abuse its discretion in not undertaking a further analysis under its regulatory omnibus authority to determine whether additional permit conditions were necessary to protect the USDWs at issue here on which low-income or minority communities may rely.⁴

2. *The Region Did Not Clearly Err or Abuse Its Discretion in Analyzing Questions Pertaining to the Probabilities of Natural and Induced Seismicity, Rock Fracturing, and Rock Dissolving Events Occurring as a Result of Brine Injection into the Grove #13-11 Well*

Mr. Addison argues that brine injection under the permit presents “known seismicity risks,” EA Pet. at 12, and he raises a series of challenges to the Region’s treatment of seismicity- and rock fracturing-related issues. First, he criticizes the permit’s exclusion of an injection fluid volume limit and inclusion of (in his view) an overly high maximum injection pressure limit of 973 pounds per square inch gauge (“psig”). Second, he notes the close proximity of a fault-like landscape feature known as a “structural lineament” to the injection zone. Third, he suggests that the brine may contain “corrosive solvents” that can dissolve rock. Mr. Addison argues that each of these factors increases the probability that the confining rock layers for the Grove #13-11 well will fracture, seismic events such as earthquakes will occur, the well will crack and fail, and USDWs will be harmed. *Id.* at 12-13; EA Reply at 15-17.

⁴ In this regard, we note that in *Muskegon*, the Region simply stated that it had performed an EJ screen, but neither said, nor demonstrated, anything more about whether and how it addressed EJ in its permitting decision or how it chose under the UIC program to address potential EJ concerns. 17 E.A.D. at 756. *Muskegon* was thus a different case than the one before us here. At the same time, and in light of our decision in *Muskegon*, the Region’s decisionmaking process in a UIC permitting action would be made clearer to the public if it stated explicitly in a response to comments addressing EJ concerns whether and, if so, how it addressed EJ under the UIC permitting program, both in the area of enhanced public participation and in connection with its UIC regulatory omnibus authority. *See In re Ash Grove Cement Co.*, 7 E.A.D. 387, 397 (EAB 1997); *see also Motor Vehicles Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 48 (1983).

a. Mr. Addison Failed to Demonstrate Clear Error or Abuse of Discretion in the Region's Technical Judgments About Injection Volume and Pressure

In its response to comments, the Region explained that fluid volume “is not limited in the permit” but that, instead, it chose to include an injection pressure limit (i.e., a measurement of the force needed to inject liquid into the structural matrix of rock formations deep below ground surface) as a “more accurate indicator” of the possibility of rock fracture than fluid volume. RTC Resp. #6, at 5. The Region stated:

If pore space (openings in the rock) within the injection zone begins to get overfilled, the pore pressure (pressure within the openings) would increase and more pressure would be needed to inject additional fluid. This [injection pressure] is a more accurate indicator of filling pore spaces than estimating pore volume based on a small sample of rock. Injection pressure is limited in the permit to avoid over-pressuring the rock, to eliminate the possibility of fracturing the rock.

Id. The Region calculated the injection pressure limit using a mathematical equation that incorporates injection depth and specific gravity of the injected fluid. The draft and final permits provide:

The limitation on wellhead pressure^[5] serves to prevent confining-formation fracturing. This limitation was calculated using the following formula:

$$[\{ .80 \text{ psi/ft} - (0.433 \text{ psi/ft})(\text{specific gravity} + 0.05) \} \times \text{depth}] - 14.7 \text{ psi.}$$

The maximum injection pressure is dependent upon depth and specific gravity of the injected fluid. The Dundee Formation at 3854 feet was used as the depth and a specific gravity of 1.206 was used for the injected fluid.

⁵ The Region uses the term “wellhead pressure” as a synonym for “injection pressure.”

Region 5, U.S. EPA, *Draft Underground Injection Control Permit No. MI-051-2D-0031, Grove #13-11 Well, Jordan Dev. Co., L.L.C. pt. III A n.** (Sept. 15, 2017) (A.R. 4); Final Permit pt. III A n.*, at 14.

According to the Region, the limit derived using the equation – 973 psig – “will ensure that the pressure during injection does not initiate fractures in the injection zone.”⁶ Stmt. of Basis at 2. The Region added that “[s]light changes in pore pressure in the injection zone will not affect USDWs, based upon the geologic setting” present at this site. RTC Resp. #7, at 5. It described that setting as follows:

The geologic setting is suitable for the injection of fluids. Injection is limited by the permit to the Dundee Formation in the interval between 3854 and 3856 feet below ground surface. (The well is running mostly horizontally in this interval.) This injection zone is separated from the lowermost USDW by approximately 3125 feet of rock. The primary confining zone is the Bell Shale between 3796 and 3854 feet below ground surface. According to the publication *Hydrogeology for Underground Injection Control in Michigan*,

⁶ Attachment G to the permit application states the following:

The proposed formation for injection of produced fluids is the Dundee. The Dundee is a predominantly medium brown dolomitic limestone, very fine crystalline, which has an approximate thickness of 310 feet in the area of interest. Electric and drillers logs filed with the State of Michigan indicate zones of excellent porosity making this formation suitable for brine disposal.

The immediately overlying formation is the Bell Shale consisting of light to medium brown shale with an approximate thickness of 60 feet. There is no indication of open faults or fractures in the Bell Shale. Also, other Dundee disposal wells in this area of Michigan have had no issues with open faults or fractures in this same Bell Shale confining zone. The remaining overlying formations are listed on the attached Formation Record.

The immediately underlying formation is the Detroit River Anhydrite consisting of brown anhydrite with an approximate thickness of 90 feet.

Appl. attach. G.

Part I[,] “The shales in the Traverse Group, especially the Bell Shale, are excellent confining layers.”

RTC Resp. #2, at 3 (quoting Dep’t of Geology, W. Mich. Univ., *Hydrogeology for Underground Injection Control in Michigan: Part 1*, at II-76 (1981) (A.R. 16)).

In challenging the Region’s analysis of fluid volume and pressure, Mr. Addison makes an argument to the effect that the injection pressure limit in the permit is higher than the level at which sedimentary rock (such as the Bell Shale) is known to fracture. In his petition, Mr. Addison references a Region 5 guidance document that states, “[i]n general, tensile strength for sedimentary rocks is on the order of hundreds of [pounds per square inch (“psi”)].” EA Pet. at 13 (quoting Region 5, U.S. EPA, *[UIC] Section Regional Guidance: Determination of Maximum Injection Pressure for Class 1 Wells 4* (rev’d Jan. 1994), <https://www.epa.gov/sites/production/files/2015-09/documents/r5-deepwell-guidance7-determination-maximum-injection-pressure-class1-199401-9pp.pdf>); EA Reply at 15 (same). Mr. Addison also references a study, Matthew Weingarten et al., *High-Rate Injection Is Associated with the Increase in U.S. Mid-Continent Seismicity*, 348 *Science* 1336 (2015). EA Pet. at 13; EA Reply at 15. Mr. Addison argues that “should the rock fracture under these high pressures, it would create new openings in the pore spaces [i.e, the rock], thus allowing more fluid to be injected while simultaneously weakening and destabilizing the rock further.” EA Reply at 16.

The Region asks that the Board not consider these arguments and associated documents on procedural grounds, as they were not raised during the public comment period and thus are not preserved for review. Resp. Br. at 9-10, 14, 16. The Region also counters on the merits by explaining its determination that a maximum limit on injection pressure of 973 psig, measured weekly and reported monthly, will also limit injectate volume, as “injection must cease” once the maximum injection pressure is reached. *See* Final Permit pt. III A tbl., at 14; Resp. Br. at 15. The Region reiterates that it calculated maximum injection pressure using a formula that took into account the following factors bearing on the potential for injection-initiated rock fracture: “the fracture gradient of the injection zone rock,” “the specific gravity of the brine to be injected,” and “the depth of the top of the injection zone.” Resp. Br. at 17. On that basis, the Region concluded that the “limitation on wellhead pressure serves to prevent confining-formation fracturing.” Final Permit pt. III A n.*, at 14. The Region notes that no comments were filed questioning the accuracy of its formula for deriving an appropriate injection pressure and that, on appeal, Mr. Addison failed to acknowledge, substantively confront, or refute its explanation as to why its calculation of a maximum injection

pressure, and inclusion of that pressure as a permit limit, would prevent the fracturing of the confining rock formation and thus eliminate seismicity concerns. Resp. Br. at 15-16.

The Board disagrees with the Region's assertion that the injection pressure issue was not preserved for review. Comments made on the permit did generally raise concerns over the volume and pressure of fluid being injected under this permit. See RTC Resp. ##6-7, at 5, Resp. #15, at 9-10. But the two documents Mr. Addison relies on, and referenced above, were not presented to the Region in comments on the permit and thus cannot be relied upon on appeal. See *In re W. Bay Expl. Co.*, UIC Appeal No. 14-66, at 12-13 (EAB Sept. 22, 2014) (Order Denying Review) (noting that, based on 40 C.F.R. § 124.19(a)(4)(ii), "the Board has frequently barred petitioners from relying on documents on appeal that could have been, but were not, submitted to the permit issuer during the comment period"); see, e.g., *In re Penneco Envtl. Sols., L.L.C.*, 17 E.A.D. 604, 615 n.7 (EAB 2018); *In re Stonehaven Energy Mgmt, L.L.C.*, 15 E.A.D. 817, 832 (EAB 2013); *In re Russell City Energy Ctr., L.L.C.*, 15 E.A.D. 1, 34 n.35, 43 n.46 (EAB 2010) (denying review where reasonably ascertainable materials were not raised during comment period and thus not preserved for review on appeal).

In any event, putting aside these two documents, the record supports the Region's technical determination on injection pressure. The Board typically will defer to permit issuers' well-explained and -supported judgments about technical matters such as those involving fluid volume and injection pressure, absent compelling evidence to rebut those judgments. *Stonehaven*, 15 E.A.D. at 830 ("Deferral to the permitting agency clearly is appropriate on scientific and technical matters, such as questions regarding geological structure and potential earthquake risk."); accord *In re FutureGen Indus. All., Inc.*, 16 E.A.D. 717, 733-35 (EAB 2015) (deferring to permit issuer's plume boundary modeling determinations), *pet. for review dismissed as moot sub nom. DJL Farm L.L.C. v. EPA*, 813 F.3d 1048 (7th Cir. 2016); *In re Phelps Dodge Corp.*, 10 E.A.D. 460, 517-19 (EAB 2002) (noting that in technical areas, Board traditionally defers to permit issuer's expertise "in the absence of compelling evidence or argument to the contrary"). Based on the Region's technical determination as discussed above, Mr. Addison's arguments are not sufficient to overcome the heavy burden a petitioner must bear to show that the permit issuer clearly erred in this technical area.⁷ See, e.g., *In re Bear Lake*

⁷ For example, a brief examination of the *Science* article reveals the authors' findings that "several regions with large numbers of injection wells appear to be aseismic [i.e., not characterized by earthquake activity] during the study period [i.e., 1973 to 2014],

Props., L.L.C., 15 E.A.D. 630, 646 (EAB 2012) (denying review where petitioners failed to meet heavy burden of demonstrating that permit issuer erred in analyzing threat of injection-related seismicity); *see also In re Footprint Power Salem Harbor Dev.*, 16 E.A.D. 546, 555, 558 (EAB 2014) (denying review where petitioners “[fell] well short of the high threshold” needed to overcome permit issuer’s well-considered technical determinations); *see also In re Muskegon Dev. Co.*, 17 E.A.D. 740, 760 (EAB 2019) (denying review where no clear error shown in permit issuer’s analysis of injection pressure and fluid volume).

In sum, Mr. Addison failed to demonstrate that the Region clearly erred or abused its discretion on this technical issue.

b. *Mr. Addison Failed to Demonstrate That the Region Clearly Erred or Abused Its Discretion in Making Technical Judgments About Structural Lineaments and Faults*

Next, Mr. Addison contends that the existence of fault lines is a “major risk factor for seismicity.” EA Pet. at 13. He fears that, because a structural lineament is located within five miles of the Grove #13-11 well, RTC Cmt. #15, at 9, the risk that seismic events may be induced by Jordan’s project is too high and thus the permit “should be denied outright.” EA Pet. at 13. Mr. Addison argues that the Region “cannot prove” that the structural lineament is not a fault, or that “high injection volumes at high pressure will not affect it,” whether or not it is a fault. EA Reply at 17.

In the response to comments, the Region explained that a structural lineament is a “linear feature in the landscape” and not necessarily a fault. RTC Resp. #15, at 9. It further explained that the lineament in question here has not been active in thousands of years (“recent geologic time”) and so is not considered a “known fault.” *See id.*; Resp. Br. at 19. The Region evaluated induced seismicity risk by examining the historical record for seismic events in the proposed well area. Finding none, the Region concluded that “no active faults in a stressed state” exist in the area and thus “the geologic siting is appropriate for injection.”

including * * * the Michigan Basin,” which is centered in Michigan’s Lower Peninsula, near Gladwin. *See* 348 Science at 1337; *accord id.* at 1339 (referencing “the aseismic Michigan Basin”). Further, the Region 5 guidance document pertains to pressure calculations for Class I rather than Class II wells. While it discusses sedimentary rock’s “tensile strength” (a measurement of the force required to elongate or stretch the rock longitudinally until it breaks), it is not clear that injection pressure is equivalent to the rock’s tensile strength. And Mr. Addison does not attempt to make the connection.

RTC Resp. #15, at 9. The Region also examined the U.S. Geological Survey's ("USGS") Fifty-Year Earthquake Probability Map, the USGS assessment of earthquake hazard values, and area-specific factors for relevant evidence of seismicity. The Region concluded that the probability of a natural seismic event is negligible, as is the probability of the Grove #13-11 well inducing a seismic event. *Id.*

On this record, the Board defers to the Region's well-considered technical judgment about the risks posed by the structural lineament near Jordan's well. *See In re Bear Lake Props., L.L.C.*, 15 E.A.D. 630, 646 (EAB 2012). As discussed, the Region carefully examined the possible risks, evaluated relevant materials, and came to a reasoned conclusion. The Board concludes that Mr. Addison failed to confront the Region's explanation and otherwise has not demonstrated that the Region clearly erred or abused its discretion on this issue.

c. *Mr. Addison Failed to Show That the Region Clearly Erred or Abused Its Discretion in Considering Brine Corrosivity*

Finally, Mr. Addison argues that brine may contain "corrosive solvents that can dissolve rock," including hydrochloric and other acids used in "fracking fluid," thus increasing the risk of rock fractures, induced seismicity, and USDW harm.⁸ EA Pet. at 12, 13-15. The Region seeks dismissal on procedural grounds, claiming that the issues of brine constituents dissolving rock formations and increasing seismicity risks were not raised in public comments and so are not preserved for review. Resp. Br. at 20. In fact, the Region summarized the comments on the issue as follows: "Commenters were concerned over the composition of the injected fluid, calling it 'toxic waste[,] and wanted to know every possible constituent in the brine.'" RTC Cmt. #10, at 6. The Board will not dismiss this issue on procedural grounds.

The Region also seeks dismissal on the merits, pointing out, among other things, that Jordan submitted a representative sample of the brine it plans to inject into the Grove #13-11 well and that the sample had a pH that was nearly neutral. Resp. Br. at 23-24. In response to comments about brine composition, the Region

⁸ Mr. Addison also contends that first responders will incur unnecessary risk when handling emergency leaks, spills, or other events because they will not have full knowledge of brine constituents. EA Pet. at 14-15; EA Reply at 17-18. The Region correctly observes that the possibility of surface spills, and the implications such spills would have for first responders, are beyond the scope of the Board's authority to decide this UIC permit appeal. Resp. Br. at 20-21 (citing *In re Windfall Oil & Gas, Inc.*, 16 E.A.D. 769, 813 (EAB 2015)).

explained that, under 40 C.F.R. § 146.24(a)(4)(iii), representative brine samples must be submitted with UIC permit applications, and Jordan submitted such a sample. As noted, the Region analyzed the sample and determined it to be consistent with oil- or gas-production-related brine. RTC Resp. #10, at 7. The Region determined that the sample had a pH of 6.4, or nearly neutral (7.0), rather than a strongly acidic or alkaline pH. Resp. Br. at 24.

On appeal, Mr. Addison questions the “one representative analysis” used to assess the brine. EA Reply at 18. He argues that, over the life of this well, the source or composition of the brine may change, or the purpose of the well may change. *Id.* He therefore challenges the Region’s determination, based on this single sample, that the brine is “safe and in compliance” and purportedly will remain so over the life of the well. *Id.*

But, the Region addressed this issue as well, explaining that, under the permit, Jordan also must submit *annual* chemical composition analyses of the injection fluid, which are made publicly available. RTC Resp. #10, at 7; *see* Final Permit pt. III.A tbl. & n.**, at 14 (requiring that grab sample of injection fluid be collected annually, tested for chemical and physical composition (including pH), and results reported annually). This annual requirement is ongoing and extends over the life of the well.

Mr. Addison, however, failed to confront the Region’s response regarding requiring annual testing over the life of the permit, or otherwise refute the Region’s other responses on brine composition. As such, Mr. Addison failed to demonstrate clear error or abuse of discretion with regard to the Region’s consideration of brine corrosivity, in compliance with the applicable regulations, or in establishing the conditions in the permit on chemical composition analysis of injectate fluid.

3. *Mr. Addison’s Arguments Regarding EPA Program Oversight of State UIC Programs and Jordan’s Compliance History Are Beyond the Scope of the UIC Program*

Mr. Addison also challenges the Region’s responses to comments that: (1) questioned the Region’s decision to allow Jordan to self-monitor its well; (2) criticized the well integrity testing protocol as too infrequent; (3) claimed that well failure rates are underreported according to a recent U.S. Governmental Accountability Office (“GAO”) report; (4) alleged that Jordan has a history of “violations and problems”; and (5) demanded public notice in the event of a spill. EA Pet. at 15-16. Mr. Addison points out that the Region addressed these comments in the response-to-comments document but identified the last one, public notice of a spill, as an out-of-scope comment. *Id.* at 15; *see* RTC Resp. #8, at 5-6,

Resp. #13, at 8-9, Resp. #22, at 12. On appeal, Mr. Addison argues that all of these points taken together mean that EPA “is incapable of proper monitoring, failures in the oil and gas industry go underreported, and Jordan Development has a poor record for compliance.” EA Pet. at 16. He asks the Board to consider these facts and remand the permit so that the Region can more adequately address these issues.

The Region seeks denial on procedural grounds, arguing that the issues were not raised during the public comment period and thus are not preserved for review, and/or to the extent they were raised, the Region’s responses were not confronted on appeal with sufficient specificity. Resp. Br. at 25-27. The Region also faults the GAO report as not submitted during the comment period, which bars its first-time use on appeal. *Id.* at 26 (citing multiple Board cases). On the merits, the Region contends that alleged underreporting of well failure rates has no bearing on its decision to issue a UIC permit, and in any event the GAO report discusses EPA’s oversight of *state* UIC programs, which is not relevant in states such as Michigan where EPA implements the UIC program directly. *Id.* at 26-27. The Region also points out that Board precedent establishes that a permittee’s compliance record is “not relevant” to a permit issuer’s decision to issue a UIC permit, and the Board lacks jurisdiction to review a permit based solely on a permittee’s past compliance history. *Id.* at 28 (citing *In re Envotech, L.P.*, 6 E.A.D. 260, 273-74 (EAB 1996)).

The Board agrees that some of Mr. Addison’s arguments suffer from procedural flaws. For example, Mr. Addison did not submit the GAO report during the public comment period, and it may not be introduced into the permitting proceeding for the first time on appeal. *See In re W. Bay Expl. Co.*, UIC Appeal No. 14-66, at 12-13 (EAB Sept. 22, 2014) (Order Denying Review); *cf.*, *e.g.*, *In re Pa. Gen. Energy Co.*, 16 E.A.D. 498, 511-12 n.12 (EAB 2014) (denying request to supplement record with untimely submitted GAO report). Mr. Addison also failed to confront portions of the Region’s responses to several of these comments. For instance, he did not address the Region’s statements that “[s]elf-monitoring and self-reporting are consistent with the SDWA” and are “fundamental elements of the UIC permitting program and other [f]ederal regulatory programs,” RTC Resp. #8, at 5, or that “UIC regulations do not authorize EPA to consider an applicant’s compliance history” in issuing a permit, *id.* Resp. #22, at 12. He also did not address the Region’s statements that Jordan must conduct mechanical integrity tests at least once every five years or whenever EPA decides such a test is necessary, or other practices related to well testing and reporting as explained in the Region’s response to comments. *Id.* Resp. #8, at 6.

Even considered on the merits, however, the arguments still fail to demonstrate that the Region clearly erred or abused its discretion in dealing with

these matters. As discussed above, the Board has limited jurisdiction to consider issues in a UIC permit appeal. In numerous prior cases, the Board “has made clear that its authority to review UIC permit decisions extends to the boundaries of the UIC permitting program itself, with its SDWA-directed focus on the protection of USDWs, and no farther.” *In re Env'tl. Disposal Sys.*, 12 E.A.D. 254, 266 (EAB 2005) (citing cases); *accord In re Archer Daniels Midland Co.*, 17 E.A.D. 380, 383 (EAB 2017). Indeed, as the Region explained in the response to comments, the UIC regulations at 40 C.F.R. § 146.24 “specify which factors EPA must consider in evaluating a UIC permit application. * * * EPA cannot deny or issue Jordan Development’s permit application based on issues outside of the site-specific factors allowed in regulations.” RTC Resp. #22, at 12.

Mr. Addison’s arguments pertaining to purported well failure rate, reporting deficiencies, EPA’s UIC program oversight, and Jordan’s compliance history fall outside the bounds of the UIC regulatory permitting program. These matters are not oriented exclusively toward the protection of underground sources of drinking water. *See In re Am Soda, L.L.P.*, 9 E.A.D. 280, 286 (EAB 2000) (holding that UIC program authorizes Board to review UIC permitting decisions only to extent those decisions affect well compliance with SDWA and applicable UIC regulations); *In re Brine Disposal Well*, 4 E.A.D. 736, 742 (EAB 1993) (holding that UIC program is “oriented exclusively toward the statutory objective of protecting drinking water sources”). As such, we lack jurisdiction to consider these claims.

4. *Mr. Addison Failed to Demonstrate Clear Error or Abuse of Discretion in the Region’s Decisions Regarding Jordan’s Financial Solvency*

Mr. Addison argues next that the Region failed to respond to comments questioning Jordan’s financial assurances and status as a limited liability company. He seeks a “full audit” of Jordan’s affairs to demonstrate the company’s financial solvency. EA Pet. at 16. He argues that the \$28,500 letter of credit Jordan proffered is “inadequate” and covers only the cost of plugging the well, not the cost of cleanup in the event of a leak or spill. He claims that “the oil industry sits on a mountain of debt,” and he is concerned that Jordan might go out of business or otherwise leave unfunded environmental costs in its wake. *Id.*

In response to comments expressing concern that Jordan’s financial assurances cover only the cost of plugging the well and not all potential environmental damages, the Region explained that “UIC regulations require the permittee to provide financial assurance for properly plugging the well,” but “[n]o SDWA provision or federal UIC regulation authorizes EPA to require Class II well owners/operators to be bonded for other reasons, including the cleanup costs of any potential contamination.” RTC Resp. #19, at 11; *see* 40 C.F.R. § 144.52(a)(7)

(requiring permittee to “demonstrate and maintain financial responsibility and resources to close, plug, and abandon the [UIC] operation in a manner prescribed by [permit issuer]”); 40 C.F.R. § 146.24(a)(9) (requiring permit issuer to consider, before issuing UIC permit, certificate that permit applicant “has assured through a performance bond or other appropriate means, the resources necessary to close[,] plug[,] or abandon the well,” as required by 40 C.F.R. § 144.52(a)(7)). The Region also discussed various mechanisms by which EPA can ensure compliance with, and enforcement of, UIC well monitoring, recordkeeping, and reporting requirements, to ensure USDWs are protected on an ongoing basis. RTC Resp. #20, at 11.

On appeal, Mr. Addison does not address these points but instead argues only that the Region “has made no attempt to guarantee” Jordan’s financial solvency in the event of a leak or accident. EA Reply at 19. In so arguing, Mr. Addison failed to confront the Region’s explanation that the UIC program does not require what he seeks, and so failed to show clear error or abuse of discretion in the Region’s permit decision on these grounds. *See In re Stonehaven Energy Mgmt., L.L.C.*, 15 E.A.D. 817, 835-36 (EAB 2013) (denying review of claim that performance bond to cover costs of plugging and abandoning UIC well is insufficient and should include monies to address potential USDW contamination); *see also In re Pa. Gen. Energy Co.*, 16 E.A.D. 498, 510-11 (EAB 2014) (discussing rules governing financial requirements for plugging and abandoning Class II UIC wells).

C. Dr. Ronald Kruske’s and Ms. Jennifer Springstead’s Petitions, UIC Appeal Nos. 18-07 and 18-09

Dr. Kruske and Ms. Springstead raise three issues in their petitions.⁹ They allege that the Region: (1) clearly erred and abused its discretion by issuing a UIC permit with no fixed limit on injection fluid volume, but only a recommended maximum, and failed to respond adequately to concerns that seismic activity may be induced by rapid injection of large volumes of fluids; (2) provided an insufficient response to comments criticizing, as too small, the “area of review” around the proposed well; and (3) misrepresented the nature of the fluids Jordan will inject and purposefully misled the public on this point. They ask that the permit be remanded. The Board concludes that Petitioners have not demonstrated that the Region clearly erred or abused its discretion on these issues.

⁹ Petitioners list four separate issues in their petitions, but their first and second issues are closely intertwined and thus we address them together as one issue.

1. *Dr. Kruske and Ms. Springstead Failed to Demonstrate Clear Error or Abuse of Discretion in the Region's Determination That Induced Seismicity Risk Is Negligible*

Dr. Kruske and Ms. Springstead allege that the Region erred and abused its discretion in responding to concerns that seismic activity might be induced by the rapid injection of large volumes of fluids. *See* RK Pet. at 1-2; JS Pet. at 1-2. They point out, similar to claims made by Mr. Addison, that Jordan's permit has no upper fluid volume limit, though it does include "recommended maximums" of 20,000 barrels per day ("bpd") or 600,000 barrels per month ("bpm"). RK Pet. at 3; JS Pet. at 3; *see* Stmt. of Basis at 2 (Sept. 15, 2017) (stating that "expected maximum daily volume of fluid to be injected is 20,000 barrels"). They observe that the Region explicitly considered many factors in responding to public comments on induced seismicity, including: (1) the presence of a known or suspected fault in the area of review; (2) the history of successful disposal wells in the proposed area; (3) USGS-recorded earthquake records; (4) a USGS fifteen-year "quick probability" map; (5) a USGS hazard value assessment; and (6) area-specific factors. RK Pet. at 2; JS Pet. at 2. Dr. Kruske and Ms. Springstead find it significant and concerning that this list did *not* include large-volume injection effects. They express concern that the Region nonetheless concluded that "the probability of [a] natural seismic event is negligible, as is the probability of this well causing an induced seismic event." RK Pet. at 2 (quoting RTC Resp. #15, at 10); JS Pet. at 2 (same). As support, they quote a 2017 newsletter published by the Pennsylvania Independent Oil & Gas Association, which reports that studies have found "the strongest correlation between induced seismicity and UIC disposal wells where high volumes of fluid – around 300,000 barrels a month – are injected quickly." RK Pet. at 3 (quoting newsletter, which references earthquakes in Oklahoma and Pennsylvania); JS Pet. at 3 (same).

The Region responded to comments about unlimited injection volume, as discussed in Part V.B.2.a above, by focusing on injection pressure, stating that such pressure "is limited in the permit to avoid over-pressuring the rock, which could cause it to fracture. Slight changes in pore pressure in the injection zone will not affect USDWs, based upon the geologic setting * * *." RTC Resp. #7, at 5 (quoted in RK Pet. at 3 & JS Pet. at 3); *see id.* Resp. #2, at 3 (description of geologic setting).

On appeal, Dr. Kruske and Ms. Springstead contend that the Region's conclusions about "geologic suitability" are erroneously based on a hydrogeological study published in 1981. RK Pet. at 4; JS Pet. at 4; *see* Dep't of Geology, W. Mich. Univ., *Hydrogeology for Underground Injection Control in Michigan: Part 1* (1981) (A.R. 16). They contend that this report "is far from

current literature” and argue that the oil and gas industry has changed in important ways, rendering reliance on such an old document problematic. RK Pet. at 4; JS Pet. at 4. The Region responds by explaining that it used the 1981 *Hydrogeology* document to help assess the Grove #13-11 well location’s suitability for injection, by examining underlying geologic formations, identifying potential confining zones, and the like. See Resp. Br. at 33. It did not use the document to determine injection volume, as Petitioners allege, but rather calculated injection pressure in accordance with the formula set out in the draft and final permits. *Id.*

Dr. Kruske and Ms. Springstead do not challenge the mathematics of the Region’s injection pressure calculation or criticize the resultant permit limit of 973 psig as “too high” or otherwise flawed. They do not identify any relevant similarities in the geology of the Michigan injection site to the sites in Pennsylvania or Oklahoma where they suggest induced seismicity occurred as a result of injection practices. They acknowledge that the Region examined “area-specific factors,” see RK Pet. at 2; JS Pet. at 2, but their contention that the Region erroneously relied on an outdated hydrogeology report fails. As the Region observes, rock formations change over geologic time, not over decades, and thus it appropriately used the 1981 report to locate geological structures that essentially are unchanged from forty years ago when the report was published. See Resp. Br. at 33.

In short, Petitioners have offered no meaningful basis for us to question the Region’s decisions on these matters or on induced seismicity risk. Accordingly, they have failed to carry their burden of demonstrating clear error or abuse of discretion as to these decisions. See *In re Windfall Oil & Gas, Inc.*, 16 E.A.D. 769, 785 (EAB 2015) (noting that “failure to rebut the [permit issuer’s] technical conclusions leaves a record supportive of the * * * permitting decision”).

2. *Dr. Kruske and Ms. Springstead Failed to Demonstrate Clear Error or Abuse of Discretion in the Region’s Area of Review Analysis or Broader Seismicity Analysis*

Next, Dr. Kruske and Ms. Springstead contend that the Region abused its discretion in establishing the size of the “area of review” (“AOR”) for Jordan’s project and failed to respond adequately to public comments challenging the AOR as too small. RK Pet. at 3-5; JS Pet. at 1, 4-5.

The AOR is the area surrounding the well within which, among other things, the permit applicant must identify existing wells that penetrate the injection zone. 40 C.F.R. § 146.6; see *id.* §§ 144.55, 146.7; see also *Windfall*, 16 E.A.D. at 774-77 (explaining methods permit issuers may use to calculate AOR sizes). If any such existing well (whether producing, injecting, temporarily abandoned, or plugged and

abandoned) could provide a conduit for fluid migration into USDWs because it is improperly constructed, sealed, or plugged, the applicant must develop a corrective action plan to address the deficiency. 40 C.F.R. §§ 144.55, 146.7. For Class II wells in the State of Michigan, EPA must use a fixed-radius AOR of no less than one-quarter mile. 40 C.F.R. § 147.1155(a); RTC Resp. #5, at 4.

On appeal, Dr. Kruske and Ms. Springstead argue that the Region “purposefully misled” the public by stating that it was doubling the size of the AOR without specifying what that really meant. RK Pet. at 4; JS Pet. at 4. Dr. Kruske “[did] the math” and determined that the new AOR has a radius of one-quarter mile plus 550 feet. RK Pet. at 4-5. He suggests that this is hardly a meaningful difference. Petitioners also contend that induced seismicity is not always located near the injection point. They note that, according to the U.S. Geological Survey, pressure increases created by injection “can migrate substantial distances from the injection location,” and “induced earthquakes commonly occur several kilometers below the injection point.” RK Pet. at 5 (quoting USGS materials); JS Pet. at 4-5 (same).

In this case, the AOR used in the draft permit consisted of a circle with a one-quarter-mile radius centered on the Grove #13-11 well. RTC Resp. #5, at 4-5. When commenters criticized that AOR as too small, the Region doubled the AOR size. *Id.* Contrary to the Petitioners’ assertions, the Region explained that a one-quarter-mile-radius AOR is equivalent to a 0.196 square mile surface area, so a doubled AOR encompasses 0.392 square miles. *Id.* The Region found no producing or plugged-and-abandoned wells in the original AOR. In the doubled AOR, the Region located one additional well that had been drilled as a production well to a depth of 4300 feet but was found to be a nonproductive “dry hole.” RTC Resp. ##4-5, at 4-5. The Region evaluated the latter well’s construction and found it to be adequate to protect underground sources of drinking water. The Region therefore concluded that no conduits for liquid transmittal existed in the AOR for the Grove #13-11 well’s fluids to escape into USDWs. *Id.*

To the extent that Petitioners’ concern is that seismicity issues and risks be evaluated in a broader area than that circumscribed by the AOR, the Region did in fact conduct such an evaluation. In response to public comments expressing concern about earthquakes, the Region explained the following:

The Underground Injection Control National Technical Workgroup decision model recommends that EPA evaluate whether there is a history of successful disposal activity in the proposed well’s area and whether there have been seismic events there. While this well

has not been used previously for injection, other EPA-permitted injection wells are in the county and have a history of successful disposal activity. There is a structural lineament (a linear feature in a landscape, not a known fault) outside of the area of review but within 5 miles of the proposed injection well, but it has not been active in recent geologic time.

Recorded earthquakes serve as a general indicator of seismic activity and the potential existence of a stressed fault. A record of past earthquakes would be evidence of the presence of stressed faults in the area, a common criteria EPA considers when evaluating the potential for seismic activity and induced seismicity. The lack of seismic activity in the proposed well area is evidence that there are no active faults in a stressed state in the area and that the geologic siting is appropriate for injection. The three earthquakes that have occurred in recorded history in Michigan have all been over 100 [kilometers] from the well location, as was the April 20, 2018 quake in Amherstburg, Ontario, Canada. After examining the U.S. Geologic Survey (USGS) 50-Year Quake Probability Map and the USGS assessment of Hazard Values and the area-specific factors, we concluded that the probability of a natural seismic event is negligible, as is the probability of this well causing an induced seismic event.

RTC Resp. #15, at 9-10.

As the Region explains, it looked for active faults (faults “along which movement created an earthquake”) in a 100-kilometer radius around the proposed well site – i.e., *a far larger area than the AOR* – and found that, in recorded history, no earthquakes had occurred in that area. Resp. Br. at 35 (citing RTC Resp. #15, at 9-10). It consulted a number of sources in this research, including, as noted above and as recognized by Petitioners, USGS materials and area-specific factors. *Id.*; RTC Resp. #15, at 10; *see* RK Pet. at 2; JS Pet. at 2.

Petitioners did not confront the Region’s explanations and so have failed to demonstrate any clear error or abuse of discretion supporting a remand of this permit on this ground. The Board generally defers to the permit issuer’s technical expertise on these matters and finds no reason not to do so in this instance. *See Windfall*, 16 E.A.D. at 773-84 (discussing legal requirements related to AORs and declining to review permit issuer’s considered technical judgments).

3. *Dr. Kruske and Ms. Springstead Failed to Demonstrate That the Region's Responses to Questions About Brine Constituents Were Clearly Erroneous or an Abuse of Discretion*

Dr. Kruske and Ms. Springstead argue that, throughout this permitting process, the Region misrepresented the nature of the fluids Jordan plans to inject and purposefully misled the public on this issue. RK Pet. at 6-7; JS Pet. at 6-7. In their view, the Region failed to acknowledge that the fluids exhibit the characteristics of toxicity and are “completely incompatible with life.” RK Pet. at 2, 6; JS Pet. at 2, 6. They accuse the Region of refusing to divulge potential injectate constituents at the public hearing, despite “[r]igorous questioning” seeking that information, and they claim that the “actual public” – i.e., those who attended the public hearing – “remains uninformed” about the toxicity of the injectate. RK Pet. at 6; JS Pet. at 6.

Dr. Kruske and Ms. Springstead, however, acknowledge that the administrative record in this case contains written documentation of at least some of the injectate constituents Jordan will inject into Grove #13-11. RK Pet. at 6; JS Pet. at 6; *see* Appl. app. 5 (laboratory analysis of sample taken from Grove #1-14 well, reporting levels of various metals (barium, calcium, iron, magnesium, potassium, sodium) and other indicators (alkalinity, chloride, conductivity, pH, resistivity, specific gravity, sulfate, sulfide, total dissolved solids)). All materials in the administrative record are available to the public and are not secret in any way, so Dr. Kruske and Ms. Springstead are not correct in suggesting that record documents are not publicly available and reviewable. Moreover, the Region states that it presented a slideshow of the analytical results for the proposed injectate to the public “during an information session immediately before the recorded public hearing” on June 19, 2018. Resp. Br. at 37.

The Region also correctly notes that EPA regulations require only that “an appropriate analysis” be conducted of the “chemical and physical characteristics of the injection fluid.” *Id.* (quoting 40 C.F.R. § 146.24(a)(4)(iii)). The Region has interpreted this regulation to “require information regarding certain analytes to enable a determination as to whether the fluids constitute oil and gas production-related brine.” *Id.* Those analytes were measured in a representative brine sample and the results presented in appendix 5 of the permit application. *See* Appl. app. 5 (Grand Traverse Analytical, L.L.C., Independent Testing Lab, results for brine collected on February 27, 2017, at Grove #1-14 well). The Region further responded to commenters who “were concerned over the composition of the injected fluid, calling it ‘toxic waste’ and want[ing] to know every possible constituent in the brine.” RTC Cmt. #10, at 6. The Region explained the following:

Oilfield brines, or “produced water,” commonly may contain various amounts of hydrocarbons, such as benzene, ethylbenzene, toluene, xylene, naphthalene, and polycyclic aromatic hydrocarbons. Some producing formations can have low levels of naturally occurring radioactive materials. These compounds occur naturally in fluids that are separated from oil and gas. * * * [F]luid coming out of a production well, which is called brine but may also include drilling fluids among other things, can be injected into a Class II well, regardless of its constituents. As explained in the Response to Comment #2, above, the purpose of the permitting standards is to prevent exposure of the brine to fresh water, thus protecting people as well as terrestrial and aquatic wildlife and plants.

Id. Resp. #10, at 6.

The UIC program does not require testing of injectate to determine the concentrations of all possible constituents of the fluid. Instead, the program is designed to ensure that those compounds do not escape into USDWs. In its response to comments, the Region explained that injectate toxicity and radioactivity are low enough that EPA has explicitly exempted brine from regulation as “hazardous” under the Resource Conservation and Recovery Act. RTC Resp. #10, at 6. This point was also explained in another case before the Board involving a Class II well in Pennsylvania, as follows:

[Injection Fluids,] when produced in association with oil and gas production, are exempt from hazardous waste regulation and are not classified as hazardous under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq. In December 1978, EPA proposed hazardous waste management standards that included reduced requirements for several types of large volume wastes. *Generally, EPA believed these large volume “special wastes” were lower in toxicity than other RCRA regulated hazardous wastes.* Subsequently, Congress exempted the wastes from RCRA Subtitle C^[10] pending a study and regulatory determination by EPA. In 1988, EPA issued a regulatory determination that the control of oil and gas exploration and

¹⁰ RCRA subtitle C sets forth the statutory requirements of the Agency’s hazardous waste management program. *See* RCRA §§ 3001-3018(g), 42 U.S.C. §§ 6921-6939g.

production wastes under RCRA Subtitle C was not warranted, in part because other State and Federal programs, such as the UIC program, effectively manage the disposal of such wastes. Therefore, the UIC program regulates fluids produced in association with oil and gas production activities, but not as hazardous waste. Disposal of these fluids is permissible down a Class II brine disposal injection well.

In re Windfall Oil & Gas, Inc., 16 E.A.D. 769, 810 (EAB 2015) (emphasis added) (quoting response-to-comments document prepared by EPA Region 3 for Windfall Oil & Gas, Inc. UIC permit in Pennsylvania).

In sum, the Region determined, consistent with Agency findings and regulations, that brines and other wastes associated with oil and gas production are not hazardous and thus may lawfully be injected deep into the Earth through permitted UIC wells.¹¹ RTC Resp. #10, at 6; *see* 40 C.F.R. § 261.4(b)(5). Based on the foregoing, the Board concludes that Petitioners failed to demonstrate that the Region clearly erred or abused its discretion on these issues.

D. Ms. Amy Kruske's Petition, UIC Appeal No. 18-08

Ms. Amy Kruske presents three issues in her petition, addressed below. She argues in each instance that the Region's responses to public comments on these issues failed to address particular comments, were insufficiently supported, were an abuse of discretion (i.e., "lack discretion"), or were clearly erroneous. She asks that the permit be remanded.

¹¹ The Board has no jurisdiction to entertain a challenge to the regulations authorizing brine injection into Class II wells or the determination on which it is based. *See, e.g., In re Archer Daniels Midland Co.*, 17 E.A.D. 380, 405 (EAB 2017) (holding that Board is not appropriate forum in which to adjudicate objection to UIC regulation); *In re FutureGen Indus. All., Inc.*, 16 E.A.D. 717, 724 (EAB 2015) (denying review because Board is not appropriate forum to decide challenges to structure of UIC regulations and policies underlying them), *pet. for review dismissed as moot sub nom. DJL Farm L.L.C. v. EPA*, 813 F.3d 1048 (7th Cir. 2016); *In re City of Port St. Joe*, 7 E.A.D. 275, 287 (EAB 1997) ("A permit appeal proceeding is not the appropriate forum in which to challenge either the validity of Agency regulations or the policy judgments that underlie them.").

1. *Ms. Kruske Failed to Demonstrate That the Region Clearly Erred or Abused Its Discretion by Finding That Commenters Failed to Mention Any Specific Sources of Information Regarding Class II UIC Well Leak Statistics*

Ms. Kruske contends that Region 5 clearly erred by stating, in its response to comments, that the public failed to offer specific sources of information to support claims that Class II injection wells leak. AK Pet. at 3 (citing RTC Resp. #13, at 8). Ms. Kruske attempts to rebut the Region's statement by citing the testimony of three witnesses at the June 19, 2018 hearing, as follows:

- Mr. Tyler Roberson: "By your own research, there's been 457 leaks in just eight states, and that's just between 2006 and 2012. [Fifty] percent of those were directly related to storage wells just like the ones you are trying to bring to our community. That is according to your guys' research. * * * Pennsylvania alone had 271 confirmed cases of water contamination last year from brine storage." Tr. at 10-11.
- Ms. Amy Kruske: "There were 6,000 spills in 2014 in just four states. Tr. at 22.
- Ms. LuAnn Kozma: "And as well casing failures do happen, and we need to know that failure rate. You know the failure rate. In fact, in 2016 your own study showed that * * * from December 13, 2016, specifically saying that injection wells are a source of contamination, that's your own EPA information, and so you reverse course, according to the New York Times." Tr. at 47-48.

In each of these three instances, the commenter alleged that leaks or well casing failures occur, and in two of the instances the commenter stated that he or she was relying on EPA data for the leak information. In none of the cases, however, did the commenters reference any specifically identifiable EPA or other study to support their claims.

The Region states that it attempted to locate the sources referenced by the commenters, but it failed to find them. Resp. Br. at 40. The Region identified one source with a December 13, 2016 date as a possible match for a source mentioned by a commenter, but it ruled out that document (a hydraulic fracturing study) as irrelevant in the substantively different context of brine disposal injection. *Id.* at 40-41 n.11. Without the sources, the Region found itself unable to verify or

directly and specifically respond to the commenters' purported statistics regarding UIC well leaks. *Id.* at 40.

The Board concludes that the Region did not clearly err or abuse its discretion in its treatment of this matter. As discussed in the next section, the Region did, in fact, address well casing failures/leaks as a general matter. It stated that “[t]he ‘statistics’ that commenters mentioned do not reflect EPA’s experience in Michigan.” RTC Resp. #13, at 8. We turn to that issue next.

2. *Ms. Kruske Failed to Demonstrate That the Region Clearly Erred or Abused Its Discretion in Responding to Commenters’ Concerns About Leaks from Class II Injection Wells*

Ms. Kruske objects to the Region’s observation, noted above, that commenters’ statements regarding the frequency of leaks or well fractures “do not reflect EPA’s experience in Michigan.” AK Pet. at 3. Ms. Kruske contends that “[t]here is mounting evidence that Class II injection wells can and do leak” in areas around the country. *Id.* In her petition, she quotes two lengthy passages from nonprofit group documents (Environment America and ProPublica) that discuss well leaks and their adverse effects. She notes that ProPublica reviewed over 220,000 well inspection records and found that well failures are “routine.” *Id.* at 4. She also points out that Environment America cited examples of well leaks in Ohio, Pennsylvania, and Texas. *Id.* Ms. Kruske asks how Michigan, which “is not an island,” could be any different. *Id.* at 3. She criticizes the Region’s statement that the well failure rate in Michigan has been “no higher than 5% in any given year,” arguing that “[i]f 5 out of 100 wells per year leak and need repair th[e]n the probability of any particular well in that sample having a leak in the next 20 years is, unfortunately, 100%!” *Id.* at 4.

The Region first contends that procedural flaws bar a portion of Ms. Kruske’s argument, claiming that she failed to identify the locations where the ProPublica and Environment America documents appear in the administrative record, as the regulations require, and on this procedural ground the Board should not consider her argument based on these documents. Resp. Br. at 41 (citing cases and 40 C.F.R. § 124.19(a)(4)(ii)). The Region states that it “eventually found” the ProPublica document in the record but was unable to locate the Environment America document in the record. *Id.* The Region argues that Ms. Kruske may not use the Environment America document for the first time on appeal. *Id.* (citing cases and 40 C.F.R. § 124.13). The Region is correct that Ms. Kruske cannot rely on documents presented for the first time on appeal. *See, e.g., In re Penneco Env'tl. Sols., L.L.C.*, 17 E.A.D. 604, 611 nn.2, 4 (EAB 2018) (holding that articles raised for first time in petition for review “are not a part of the administrative record” and

cannot be relied on on appeal); *In re W. Bay Expl. Co.*, UIC Appeal No. 14-66, at 12-13 (EAB Sept. 22, 2014) (Order Denying Review). But we also observe that the issue of well leaks was raised in the comments, RTC Resp. ##13-14, at 8-9, so we turn next to the merits.

The Region claims it responded reasonably to public concerns that Class II UIC wells may leak. The Region stated that the well failure rate in Michigan is “no higher than 5% in any given year” and noted further that this failure rate is “almost entirely (100% to 99.72%) limited to annulus fluid leaking into the tubing and then into the injection zone, and **not** injectate fluid (brine) passing through the casing into an area other than the intended injection zone.” RTC Resp. #13, at 8. “Such casing leaks are extremely rare in Michigan,” stated the Region, with the rate of casing needing repairs in the last five years ranging from 0 to 0.28% per year. *Id.* The Region then explained the well configuration at Grove #13-11, *id.* at 8-9, and emphasized that injection wells “must be constructed and operated to prevent the injection fluid from contaminating a USDW.” *Id.* at 8.

Given that the Region stated that casing leaks of fluid into nontarget areas are “extremely rare” in Michigan, and that more common leaks of annulus fluid into the injection zone are not of concern, Ms. Kruske should have submitted arguments rebutting or otherwise contradicting these statements. She did not do so, but instead relied on documents regarding UIC well hazards in general, but without addressing the Region’s actual points. Because Ms. Kruske did not confront the Region’s response to comments, she failed to carry her burden to demonstrate that the Region clearly erred or abused its discretion in making this permit decision. The Board therefore denies review on this issue. *See Penneco*, 17 E.A.D. at 615-16 (denying review where permit issuer provided thorough, reasoned responses to public comments and petitioner failed to confront those responses on appeal); *In re Windfall Oil & Gas, Inc.*, 16 E.A.D. 769, 795-98 (EAB 2015) (same); *In re Pa. Gen. Energy Co.*, 16 E.A.D. 498, 503-12 (EAB 2014) (same).

The Board again notes that in technical matters such as this one involving injection well leaks and casing failures, the Board generally defers to the permit issuer’s technical expertise. *See, e.g., In re FutureGen Indus. All., Inc.*, 16 E.A.D. 717, 733-35 (EAB 2015) (deferring to permit issuer’s modeled predictions of injection plume size and area of review), *pet. for review dismissed as moot sub nom. DJL Farm L.L.C. v. EPA*, 813 F.3d 1048 (7th Cir. 2016); *In re Beeland Group, L.L.C.*, 14 E.A.D. 189, 199-200 (EAB 2008) (deferring to permit issuer’s technical judgment regarding permeability of Bell Shale Formation underlying Antrim County, Michigan). The Board so defers to the Region in this context.

3. *Ms. Kruske Failed to Demonstrate That the Region Clearly Erred or Abused Its Discretion in Evaluating Impacts to Fish and Wildlife and Surface Waters in the Cedar River Watershed*

Finally, Ms. Kruske argues that the Region abused its discretion in failing to consider possible adverse impacts of UIC well leaks on nonendangered fish and wildlife in the Cedar River watershed. AK Pet. at 5. Ms. Kruske also charges that the Region abused its discretion by failing to consider the harm UIC well leaks or spills could cause to surface waters in the Cedar River Watershed, including the Cedar River, Pratt and Wiggins Lakes, the Tittabawasee River, and Saginaw Bay. *Id.* at 5-6 (citing RTC Resp. #16, at 10).

In so arguing, Ms. Kruske cites the Region's response to comments on "threats to wildlife." *Id.* at 5 (citing RTC Resp. #16, at 10). There, the Region explained that part of a UIC permit review includes examining possible impacts to species protected under the federal Endangered Species Act ("ESA"). The Region conducted such an examination and determined that "because there will be no new construction in the area, including no tree clearing and no earth-disturbing activities, this permit will have no effect on threatened or endangered wildlife." RTC Resp. #16, at 10.

As to concerns about risks of the proposed well leaking into surface waters, the Region stated the following:

Because the purpose of UIC permit requirements is to protect USDWs, these requirements also protect surface waters that may be connected to USDWs and prevent upward movement of injected fluids. A watershed's connection with aquifers is limited to the aquifers that have connections with surface bodies of water. While area creeks, streams, lakes, and rivers may be in hydraulic communication with shallow groundwater or depend on shallow groundwater for flow, they are not deeper than the base of the lowermost USDW and there is no hydrologic connection with the injection zone. Similarly, wetlands, lakes and potholes, or kettle lakes are also shallower than the lowermost USDW. The geologic siting, construction, operation, and monitoring of this well will be sufficient to prevent upward movement of the injected fluid into USDWs and also surface waters.

RTC Resp. #14, at 9.

In short, the Region observed that it is legally obliged only to review ESA issues in conjunction with issuing a UIC permit, and it did so in this case, finding no effect on protected species. RTC Resp. #16, at 10. Ms. Kruske does not confront the Region on this basis or explain why evaluation of nonendangered or nonthreatened wildlife species is required under the UIC permit regime. Similarly, the Region examined the question of the UIC well leaking into surface water bodies and found no basis for concern. Ms. Kruske does not confront the Region's response and does not identify or cite the surface water response (RTC Resp. #14, at 9) as a relevant consideration in her petition. *See* AK Pet. at 5-6. Ms. Kruske thus failed to demonstrate clear error or abuse of discretion in the Region's treatment of these matters.

VI. *CONCLUSION*

For the foregoing reasons, the Board denies the petitions for review.

So ordered.