

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

In the Matter of:)
)
Pennsylvania General Energy Company, LLC)
)
)
)
UIC Permit No. PAS2D013BIND)
)
)

Permit Appeals: UIC 14-63, UIC 14-64,
and UIC 14-65

REGION III'S RESPONSE TO PETITIONS FOR REVIEW

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EXHIBIT LIST

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- Tab B May 2, 2013, Application as supplemented by Pennsylvania General Energy Company, L.L.C. (PGE) during the review process (excludes oversized (3 feet by 4 feet) PGE Yanity Well Facility Boundary with one Mile Sampling Buffer plan; only included samples of oversized Schlumberger Litho Density Compensated Nuetron Gamma Ray and Cement Bond Log)
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- Tab G Public notices of draft permit
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- Tab I Region 3 Framework for evaluating seismic potential associated with UIC Class II permits
- Tab J National Academy of Sciences, *Induced Seismicity Potential in Energy Technologies*, National Academy Press, 2013, in particular Chapters 2 and 3
- Tab K *Preliminary Report on the Northstar1 Class II Injection Well and the Seismic Events in Youngstown, Ohio Area*, Ohio Department of Natural Resources, March 2012
- Tab L Charlers Scharnberg, *Earthquake Hazard in Pennsylvania*, Pennsylvania Geological Survey, 2003
- Tab M *Earthquakes in Pennsylvania*, website, Pennsylvania Department of Conservation and Natural Resources
- Tab N *Where are the Fault Lines in the United States East of the Rockies*, website, United States Geological Survey, Earthquake Hazard Program
- Tab O Seismic maps of Pennsylvania
- Tab P Final Permit

- Tab Q Notice of Permit Issuance
- Tab R Responsiveness Summary
- Tab S PGE Zone of Endangering Influence Analysis
- Tab T Written Public Comments, League of Women Voters, October 28, 2013
- Tab U Email from Judy and Paul Wanchism [sic] dated November 4, 2013 with attached Comments on Draft UIC Permit PAS2DO13Bind Proposal

INTRODUCTION

The United States Environmental Protection Agency, Region III (Region) hereby responds to three petitions for review filed by Suzanne Watkins, Judy Wanchisn and Stacy Long, and William J. Woodcock III (collectively Petitioners). Pursuant to 40 C.F.R. § 124.19, Petitioners seek review by the Environmental Appeals Board (the Board) of a permit issued by the Region to Pennsylvania General Energy Company, L.L.C. (PGE) under the Underground Injection Control (UIC) Program, Part C of the Safe Drinking Water Act (SDWA), 42 U.S.C. § 300h *et seq.* Attached to this response is a certified index of the administrative record for the challenged permit.

For the reasons set forth below, the Petitioners have failed to meet their burden to obtain review by the Board, and therefore their petitions should be denied.

STATUTORY AND REGULATORY FRAMEWORK

Congress enacted the SDWA in 1974 to ensure that the Nation's sources of drinking water are protected against contamination and "to prevent underground injection which endangers drinking water sources." 42 U.S.C. § 300h(b). Part C of the SDWA, 42 U.S.C. §§ 300h to 300h-8, is designed to protect underground sources of drinking water from contamination caused by underground injection of fluids. Among other things, the SDWA directed EPA to promulgate permit regulations containing minimum requirements for State UIC programs. 42 U.S.C. § 300h. In states without an approved UIC program, EPA directly implements the UIC regulations and issues permits. The Commonwealth of Pennsylvania has not received approval to implement the UIC Program of the SDWA. Therefore, the Region is

the permitting authority for UIC Program in Pennsylvania. *See* 40 C.F.R. §§ 147.1951 – 147.1955.

EPA regulations implementing the UIC program are contained in 40 C.F.R. Parts 144-148. Part 144 establishes the regulatory framework, including permitting requirements, for EPA-administered UIC programs. Part 146 sets out technical criteria and standards that must be met in permits. Certain procedural requirements applicable to UIC permits are also found in 40 C.F.R. Part 124. In addition, certain state-specific requirements applicable in Pennsylvania are set forth in 40 C.F.R. §§ 147.1951 – 147.1955.

The UIC regulations classify injection wells as Class I, II, III, IV, V, or VI. *See* 40 C.F.R. §§ 144.6, 146.5. The permit in these appeals is for a Class II well. Class II wells are defined as

[w]ells which inject fluids: (1) Which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection; (2) For enhanced recovery of oil or natural gas; and (3) For storage of hydrocarbons which are liquid at standard temperature and pressure.

40 C.F.R. § 144.6(b).

STANDARD OF REVIEW

The Board must decline review of a UIC permit decision unless it finds that a permit condition was based on a clearly erroneous finding of fact or conclusion of law, or involved an important matter of policy or discretion that warrants review. 40 C.F.R. § 124.19; *see In re Beeland Group, LLC*, UIC Appeal Nos. 08-01, 08-02, & 08-03 (EAB Oct. 3, 2008), slip op. at 9-10, 14 E.A.D. _____. The discretion of the Board to review permit decisions should be exercised sparingly. *See In re Beeland Group*, UIC Appeal Nos. 08-01 et al, slip op. at 10 (Oct. 3 2008),

quoting the Consolidated Permit Regulations, preamble to 40 C.F.R. § 124.19, 45 Fed. Reg. 33,290, 33,412.

Petitioners have the burden of demonstrating that the issues raised in their petitions warrant review. *See In re Beeland Group*, UIC Appeal No. 08-01 et al, slip op. at 10 (Oct. 3 2008); *In re Env'tl. Disposal Sys., Inc.*, 12 E.A.D. 254, 264 (EAB 2005). A petitioner does not satisfy this burden merely by relying on previous comments or statements. Instead, the petitioner must demonstrate why the Region's response to particular comments or objections is clearly erroneous or warrants review. *See In re Beeland Group*, UIC Appeal No. 08-01 et al, slip op. at 10 (Oct. 3 2008); *In re Env'tl. Disposal Sys., Inc.*, 12 E.A.D. at 264; *In re Sunoco Partners Marketing & Terminals, LP*, UIC Appeal No. 05-01 (EAB June 1, 2006)(Order Denying Review in Part and Remanding in Part) at 9. In addition, the Board generally defers to the permitting agencies on the review of technical issues. *See, e.g., In re Beeland Group*, UIC Appeal No. 08-01 et al, slip op. at 14 (Oct. 3 2008); *In re Sunoco Partners*, UIC Appeal No. 05-01 (EAB June 1, 2006) at 9. Finally, the Board's authority to review a UIC permit does not extend beyond the goals of the UIC program to protect underground sources of drinking water (USDWs). *See In re Env'tl. Disposal Sys., Inc.*, 12 E.A.D. at 266; *see also In re Sunoco Partners*, UIC Appeal No. 05-01 (EAB June 1, 2006) at 10; *In re Envotech, L.P.*, 6 E.A.D. 260, 286 (EAB 1996)("[T]he SDWA ... and the UIC regulations ... establish the *only* criteria that EPA may use in deciding whether to grant or deny an application for a UIC permit.")(emphasis in the original).

FACTUAL AND PROCEDURAL BACKGROUND

On May 2, 2013, PGE applied for a Class II disposal permit for the construction and operation of a well identified as Marjorie C. Yanity 1025, located in Indiana County,

Pennsylvania (Well). Exh. B1-B9. The Well is an existing gas production well that PGE would convert to an injection well for disposal of fluids produced from gas and oil production. Exh. E at 1. The application for this permit included information related to the well construction, the geologic conditions surrounding the site, including shallow ground water information, how the well would be operated and monitored, and information on both shallow drinking water wells and gas production wells that exist in the area surrounding the PGE injection well. Exh. B1-B9.

Following receipt of the PGE application, the Region reviewed the application. As part of this review, the Region evaluated the geology of the injection and confining zones, and determined whether the well construction/conversion, proposed operation and monitoring of the well, plugging and abandonment plan, and financial assurances that were included in the application meet the regulatory requirements for Class II wells. *See* Exh. E. In compliance with the mandate of the SDWA, the PGE application review was conducted with the purpose of ensuring that if the Region granted the permit, USDWs¹ would be protected from endangerment from the injection operations. *See* 42 U.S.C. § 300h(b)(1)(B); 40 C.F.R. § 144.12.

Based on that review, the Region developed a draft permit and a statement of basis. Exhs. E, F. Consistent with the requirements of 40 C.F.R. § 124.10, the Region provided public notice on September 18, 2013, in the Indiana Gazette, an Indiana borough, Pennsylvania newspaper, that the Region was accepting public comment on the draft permit, and that it intended to hold a public hearing on October 28, 2013. Exh. G. Copies of the permit application as well as the statement of basis and the public notice were sent to the Indiana Free Library in Indiana, Pennsylvania, for public review. Exh. G. In addition, the notice was posted on September 19, 2013, on the Region's public notices internet site.

¹ An USDW is defined as an aquifer or its portion which contains less than 10,000 milligrams per liter of total dissolved solids and which is being or can be used as a source of drinking water. 40 C.F.R. § 144.3.

The Region received written comments on the draft permit by mail and email. These included written comments submitted by Petitioners Watkins, Wanchisn and Long. In addition, the Region conducted a public hearing on October 28, 2013. Participants were asked to sign a sign-up sheet and thirty people signed. Exh. H (Exhibit 1 of Transcript). A number of people provided oral testimony. Exh. H. During the hearing, the Region extended the public comment period until November 4, 2013. Exh. H at 43. The Region did not receive written comments from Petitioner Woodcock, whose name does not appear on the sign-up sheet, and who did not present testimony at the public hearing.

On March 19, 2014, the Region issued a final permit to PGE for the UIC Class II injection well. Exh. P. The Region also issued a Responsiveness Summary that included the Region's response to public comments. Exh. R. Pursuant to 40 C.F.R. § 124.15(a), the Region mailed or emailed the Notice of Final Permit to all who provided written comments which included links to the Region's EPA website where the public could obtain both the Responsiveness Summary and the final permit. Exh. Q. The Region posted the Responsiveness Summary and final permit on the EPA website.

In reaching this permit decision, the Region determined through its technical evaluation that the lowermost USDW at the location of the well site is about 520 feet below the ground surface. Exh. E at 2. The Region determined that approximately 7024 feet of shale or other rock separate the injection zone in the Huntersville Chert Formation from the lowermost USDW and that a confining zone, the Onondaga formation, consisting of about 180 feet of limestone and shale is located immediately above the injection zone. Exh. E at 2-3. Additional confining units of shale and/or limestone exist between the lowermost USDW and the Onondaga formation. Exh E at 3. The permit includes conditions developed to prevent the movement of fluids into

USDWs and to ensure prompt notification to EPA in the case of unforeseen potential of fluid migration. Exh. P. The permit requires the well to have surface casing cemented back to the surface from a depth of approximately 568 feet and intermediate casing cemented back to the surface from a depth of 1539 feet. Exh. R at 2; Q at 12. The permit also includes injection volume and pressure limits, as well as monitoring requirements, to ensure proper operation of the well. Exh. P at 6-7. The maximum injection pressure permit limit of 2933 psi was calculated to prevent fracturing of the injection zone during operation. *See* Exh. E at 2. The permit requires that, prior to commencing injection into this well, the permittee conduct a pressure test on the well to ensure its mechanical integrity. Exh. Q at 8, 12. Once the injection begins, continuous monitoring of the surface injection pressure, annular pressure and injection volume is required, to verify continuous compliance with injection pressure limits and the mechanical integrity of the well. Exh. P at 6. The well will also be equipped with an automatic shut-off device in the event of a mechanical integrity failure. Exh. P at 6.

RESPONSE TO PETITIONS FOR REVIEW

The petitions for review filed by the Petitioners fail on several grounds. First, Petitioner Woodcock lacks standing to petition the Board to review this permit because records indicate that he did not submit comments during the public comment period and did not participate at the hearing, nor does he claim in his petition that he participated in the public comment process. Furthermore, none of the petitions provide sufficient specificity to satisfy the requirements for review by the Board because they do not present sufficient evidence that a permit condition (or lack thereof) that is based upon a clearly erroneous finding of fact or conclusion of law, or to an abuse of discretion or an important policy consideration that the Board should review.

Moreover, even if the Board should find that the petitioners have met these threshold procedural requirements for Board review, the Board should deny the petition because the permit applicant and the Region complied with the regulatory requirements for a UIC well permit.

1. Petitioner Woodcock Lacks Standing to Petition for Review

When considering a petition for review, the Board first evaluates whether the petitioner has met the threshold requirements such as timeliness, standing, issue preservation and specificity. *In re Chevron Michigan, LLC of Traverse City*, UIC Appeal No. 13-03 (EAB Nov. 7, 2013)(Order Denying Review) at 5; *In re Beeland Group*, UIC Appeal Nos. 08-01 et al, 14 E.A.D. ____, sl. op. at 8 (Oct. 3 2008). The regulations limit standing to those persons who filed comments on the draft UIC permit within the public comment period or participated in the public hearing regarding the permit. 40 C.F.R. § 124.19(a)(2); *see also, In re Beeland Group, LLC*, UIC Appeal Nos. 08-01 & 08-03 (EAB May 23, 2008), at 3-5. (denying petition for review when petitioner did not participate in public process). A person who failed to provide comments or failed to participate in the hearing can file a petition for review but only to challenge those conditions of the final permit that reflect changes from the proposed draft permit. *Id.*

Petitioner Woodcock did not provide comments or participate in the public hearing process. Review of the written comments, including those submitted electronically, the hearing transcript and the public hearing sign-up sheet included with the hearing transcript shows that Petitioner Woodcock did not participate at the hearing and did not submit comments. Petitioner Woodcock does not claim in his petition that he submitted comments, or that he attended the hearing. Furthermore, the Region did not make any changes from the draft to the final permit to which he could object and Petitioner does not claim that the Region made any changes to the

draft permit. Therefore, Petitioner Woodcock lacks standing to challenge the PGE permit and the Board should deny his petition.

2. Petitioners Do Not Meet the Specificity Requirements for Permit Review

Petitions must meet the standard of specificity for review, which contains, at a minimum two essential components: (1) clear identification of the conditions of the permit that are at issue and (2) the argument as to why the conditions warrant review, including an explanation as to why the Region's response to comment failed to address the Petitioners' concern. *See* 40 C.F.R. 124.19(a)(4); *see also In re Beeland Group*, UIC Appeal No.08-01 et al, 14 E.A.D. __, sl. op. at 9 (Oct. 3 2008). The Board will not consider the merits of a permit based on a challenge that is unacceptably vague. *In re Sunoco Partners Marketing & Terminals, LP*, UIC Appeal No. 05-01 (EAB June 1, 2006), at 11-12.

The petition filed in *In re Presidium Energy, LC*, UIC Appeal No. 09-01 (EAB Jul. 27, 2009) (Order Denying Review), was based on generalized concerns for the nearby drinking wells and the environment. That petition did not identify specific permit conditions for review; it did not discuss the response to comments; and it did not address why those responses were inadequate. Like the petitions in the case at hand, the *Presidium Energy* petitioner was not represented by legal counsel. Although, for that reason, the Board was willing to construe the petition liberally, the Board still found that the petition did not meet the requisite standards for review. *Id.* at 4; *see also In re Chevron Michigan, LLC of Traverse City*, UIC Appeal No. 12-01 (EAB Mar. 5, 2013), sl. op. at 15 (denying review of substantive claims where the petitioner did not challenge the validity of particular permit provisions); *In re Puna Geothermal Venture*, 9

E.A.D. at 275-76 (denying review where the petition did not challenge the validity of any particular permit provision).

In *In re Cherry Berry*, UIC Appeal No.09-02 (EAB Aug. 13, 2010), the Board found that the Grobbel petition was deficient because it failed to state why the response to comments on the draft permit is erroneous. In that case, the entire petition consisted of the comments, reorganized and reprinted, often verbatim, that Grobbel previously submitted on the draft Cherry Berry permit. The Board stated that it is not sufficient simply to repeat objections made during the comment period; instead a petitioner must demonstrate why the permit issuer's response to those objections is clearly erroneous or otherwise warrants review. *Id.* at 5.

Similarly, the Petitions in the instant case, with limited exceptions, do not challenge the validity of the permit, or specific permit conditions.² Although, Petitioners' dispute of the Region's area of review (AOR) and zone of endangering influence (ZEI) calculation and seismicity analysis, other than those two issues, Petitioners Wanchisn and Long raise forty-two questions that repeat verbatim comments raised during the public comment period by the League of Women Voters and fail to explain any objections to the permit conditions, identify particular permit conditions that warrant review, or explain why the Region's responses to comments with respect to these permit conditions was inadequate. *See* Exh. T and Wanchisn/Long Petition at 1-10. Additional questions raised by Ms. Wanchisn during the public comment period are also simply repeated in the Wanchisn/Long Petition. *See* Exh. U and Wanchisn/Long Petition at 11 - 17. Similarly, much of the Watkins Petition echoes the Wanchisn/Long Petition, repeating questions raised during the comment period, without addressing particular permit conditions.

² Although Mr. Woodcock's petition should be denied for lack of standing to challenge the permit, the Region also notes that the Woodcock Petition is most similar to *In re Presidium Energy* because it is a letter that expresses general concerns about the environment, does not address the permit conditions, the response to comments, or the information supporting the permit determination and therefore it also lacks required specificity for the Board to review his claim.

The Petitions address the general practice of underground injection, including, among other things, construction, operation, plugging and abandonment, seismicity, and the UIC regulatory requirements. Petitioners also raise matters that are outside EPA's SDWA jurisdiction.

The Region in the Responsiveness Summary directly responded to nearly all matters raised in the Petitions. The Board should refuse to review the matters raised in the Watkins and Wanchisn/Long Petitions that simply repeat comments raised during the public comment period, and that fail to challenge any permit conditions, or address the Region's response to comments.

3. Region Adequately Responded to Substantial Comments Submitted During the Public Comment Period

In responding to public comments, permitting authorities are neither expected nor required to respond on an individualized basis to every single discrete comment and subcomment submitted on a permit, in the same length and level of detail as the comment or subcomment itself. *In re: Env'tl Disposal Sys., Inc.* 12 E.A.D. 254 at 287 (EAB 2005) citing *In re Wash Aquaduct Water Supply Sys.*, 11 E.A.D. 565 at 585-586 (EAB 2004); *Hillman*, 10 E.A.D. 673 at 696 n.20 (EAB 2002). Instead, succinct responses answering significant comments are adequate in this context, 40 C.F.R. § 124.17(a)(2), so long as those responses, though brief, give thoughtful and full consideration to public comments. *In re: Env'tl Disposal Sys., Inc.* 12 E.A.D. at 287 citing *In re RockGen Energy CTR.*, 8 E.A.D. 536 at 557 (EAB 1999), and are clear and thorough enough to adequately encompass the issues raised. *In re: Env'tl Disposal Sys., Inc.* 12 E.A.D. at 287 quoting *In re Wash Aquaduct Water Supply Sys.*, 11 E.A.D. at 585.

During the public comment period for the PGE permit, the Region received comments from a number of people that addressed the same, or similar matters as those identified in the Watkins, Wanchisn and Long petitions presently before the Board. Consistent with the

procedure described by the EAB in *Envtl Disposal Sys. Inc.*, the Region consolidated the comments and provided responses to the significant comments using a categorized approach. The Region included in the Responsiveness Summary discussions on each of the topics identified in the Wanchisn/Long and Watkins Petitions.

a. Well Construction and Testing

Petitioners Watkins, Wanchisn and Long repeat questions raised during the comment period about the age and construction of the well including the pipe thickness, the cement around the well casings and parts of the casing that are not cemented, testing of surface casing without challenging any permit condition. *See* Watkins Petition at 2 and Wanchisn/Long Petition at 5.

The well in this case is already constructed. The Responsiveness Summary explains that the well construction was designed to meet the UIC regulatory requirements at 40 C.F.R. § 147.1955(b)(1) and describes the construction. *See* Exh. R at 2. Although 40 C.F.R. § 147.1955(b)(1) is applicable to the installation of new wells, the Region uses these standards for existing wells like the PGE well. The well has three layers of protective casing, even though only 2 are required in the regulations. *See* 40 C.F.R. § 147.1955(b)(1). The surface casing that is 11 3/4 inches in diameter extends to 568 feet, 48 feet below the lowermost USDW and is cemented from the elevation back to the surface. Exhs. P at 12 and R at 2. The intermediate casing which is 8 5/8 inches in diameter, was placed to a depth of approximately 1539 feet. Both of these casing strings are designed to protect USDW's as well as help prevent the rupture or collapse of the well. Exh. R at 2. While the construction requirements for new wells provide for surface casing and cementing that extends fifty feet below the lowermost USDW, in this case the additional intermediate casing, not required by the regulations, is cemented from 1539 feet point

back to the surface. In addition, 4 1/2 inch long string casing is installed to 7788 feet and has been cemented from that point to a depth of 6850 feet, a distance of more than 900 feet. Exh. R at 2.

The UIC regulations require a demonstration of the mechanical integrity of the injection well to show that there is no significant leak in the casing or packer and there is no significant fluid movement into an underground source of drinking water. 40 C.F.R. § 146.8(a). One method to show the absence of leaks is through a pressure test. 40 C.F.R. § 146.8(b). The Region explained in the Responsiveness Summary that the well will undergo pressure testing before operation and continuous pressure monitoring during operation for the purpose of identifying any potential issues that could result in a leak. Exh. R at 6. The permit requires additional pressure testing every five years. Exh. R at 4. To show no significant fluid movement, the regulations allow the permittee to demonstrate the presence of adequate cement to prevent fluid migration. 40 C.F.R. § 146.8(b). Cement records for the surface casing and intermediate casing were submitted by the permittee as well as a cement bond log for the long string casing to verify that there is adequate cement to prevent fluid movement. Exh. B(L). The well construction was reviewed by the Region, and was found to be in compliance with the UIC Regulations as described in the Responsiveness Summary. Exh. R at 2-4.

As discussed in the Responsiveness Summary, the permit also requires that the well be equipped with an automatic shut-off device if there is a mechanical integrity problem. Exh. R at 4. These methods are used to verify that the well is not leaking, to detect any potential future leak, and to ensure that the cement lasts for the life of the well. The UIC regulations do not require any specific pipe or cement thickness, nor do they require that the entire long string casing be cemented to the surface or that the well be any particular age. *See* 40 C.F.R. §§ 146.22

and 147.1955(b). Nevertheless, the Responsiveness Summary explains that most deep injection wells are designed to withstand significant internal and external pressure and that industry standards have been developed for casing and cementing wells. Exh. R at 10.

Based on the foregoing discussion, the Board should find that the Region adequately responded to the comments regarding well construction and testing. The petitioners do not address the Region's response to comments on these issues, nor meet their threshold burden of showing that such responses to comments was inadequate.

b. Injection and Confining Zones

The UIC regulations require new Class II wells to be sited in such a fashion that they inject into a formation which is separated from any USDW by a confining zone that is free of all known open faults and fractures within the area of review. In this case, as discussed in the Responsiveness Summary, the fluid will be injected into the Huntersville Chert formation which is overlain by a 180 feet thick confining layer known as the Onondaga formation. Exh. R at 10. The Onondaga formation has a very low permeability giving it the ability to confine and trap fluids from migrating upwards. Exh. R at 10. The Region explained other factors that will keep the injected fluid in place. Limiting the injection pressure to an amount that does not exceed the injection formation's fracture pressure to prevent fractures in the injection zone and confining zone will also serve to keep the injected fluid in place. Exh. R at 11. In addition, the absence of any other artificial penetrations (e.g. abandoned wells) into the injection zone within the area of review will prevent injection fluid from migrating into USDW. Exh. R at 10-11. Petitioner Watkins, in her petition, repeated questions addressed in the Responsiveness Summary about

what keeps the injected fluid from coming back to the surface, without address the Region's responses in the Responsiveness Summary. Watkins Petition at 2.

Petitioners Wanchisn and Long also present questions raised during the comment period regarding the injection and confining zone related to where the injected fluid will travel within the Huntersville Chert, yet at the same time, recognized in their petition that the injection formation extends laterally away from the well. Wanchisn/Long Petition at 6.

Petitioners Wanchisn and Long also ask whether the injected fluid will travel beyond the calculated ZEI. Although the Region did not specifically state the injection fluid might travel beyond that distance, it explained in the response to comments that the ZEI is calculated for the purpose of determining a distance at which the pressure in the injection zone over the ten year period of operation may cause the migration of the injection and/or formation fluid into an underground source of drinking water, if there is a conduit for fluid to travel, such as a well that penetrates the injection zone. 40 C.F.R. § 146.6(a); *See* Exh. R at 3-4. Therefore, the ZEI is not a measure of the extent to which the fluid may ultimately travel – but rather, a measure of the distance in which the fluid has the potential to endanger underground sources of drinking water. The fluid may travel laterally distances beyond the ZEI radius, but according to the calculation, at distances beyond the ZEI, the pressure would be lower and therefore the injection fluids could not travel vertically through a well that penetrates the injection zone to the level of the lowermost USDW³. *See* Exh. S. Extensive natural fracturing has been identified in the Huntersville Chert. Exh. B(G). In addition, the Huntersville Chert has been depleted of natural gas during production as discussed in the Responsiveness Summary. Exh. R at 9. For these reasons, the injected fluids will move into the pores and natural fractures of the injection formation.

³ No wells that penetrate the injection zone were found based on the permittee's record review.

The Petitioners Wanchisn/Long misquote the Statement of Basis when they ask where the fluid will go "if there are no known faults or fractures in the area of review." Wanchisn/Long Petition at 6. The Region actually stated that the Permittee shall inject through the injection well only into a formation which is free of known open faults or fractures within the area of review. *emphasis added*. Exh. E at 3. The UIC regulations preclude injection into formations with open faults and fractures as they can contribute to the potential for seismic activity. 40 C.F.R. § 146.22(a). In this case, as discussed in the Responsiveness Summary, no open faults have been identified through the search of available seismic information. Exh. R at 7.

Based on the foregoing discussion, the Board should find that the Region adequately responded to the comments regarding the injection and confining zone. The petitioners do not address the Region's response to comments on these issues, nor meet their threshold burden of showing that such responses to comments was inadequate.

c. Plugging, Abandonment and Financial Assurances

Petitioners ask if the \$60,000 cost estimate for plugging and abandonment is adequate. *See* Wanchisn/Long Petition at 9. The UIC regulations require the permittee to demonstrate financial responsibility sufficient to plug and abandon the well when operations cease. 40 C.F.R. § 144.52(a)(7). The Region stated in the Responsiveness Summary that PGE submitted a letter of credit with a standby trust agreement for \$60,000, the cost to plug and abandon the well was determined by a third party plugging contractor. Exh. R at 12. The Petitioners have not presented any evidence that disputes whether this amount is sufficient. The Region further stated in the Responsiveness Summary that under the permit terms, the Region can require the

permittee to increase the financial responsibility if the cost to plug and abandon the well increases. Exh. R at 12.

Based on the foregoing discussion, the Board should find that the adequately responded to the comments, regarding well plugging, abandonment and financial assurance requirements. The petitioners do not address the Region's response to comments on these issues, nor meet their threshold burden of showing that such responses to comments was inadequate.

d. Injection Fluid and Monitoring

The Region explained in the Responsiveness Summary that the conditions of the permit adequately characterize and monitor the wastewater for injection. Exh. R at 5. As required by the UIC regulations and stated in the Responsiveness Summary, the purpose of the monitoring is to verify that the fluids injected are the type of fluids authorized in the permit. 40 C.F.R. § 146.23(b)(1); Exh. R at 5. The permit requires sampling, analyzing and recording the injected fluid for the following parameters: pH, specific gravity, specific conductance, sodium, chloride, iron, magnesium, total organic carbon, manganese, total dissolved solids, barium, hydrogen sulfide, alkalinity, dissolved oxygen, and hardness. Exh. P at 6. The Region also stated that many of the parameters that will be monitored in the injection fluid are also found in shallow groundwater. Exh. R at 5. Therefore, if any sample results show shallow ground water contamination those results can be compared against the injection fluid analysis conducted by the injection well operator to determine whether the injection well may be the cause of that contamination. Exh. R at 5.

The Region also explained that whether the injection fluid will contain radioactive by products depends on the geologic formation from where the fluid has been produced. Exh. R at

4-5. Fluids produced from shale tend to contain greater concentrations of radioactivity because of the clay content in the shale. Exh. R at 4-5.

Based on the foregoing discussion, the Board should find that the adequately responded to the comments regarding the injection fluid and the monitoring provisions of the permit. The Petitioners do not address the Region's response to comments on these issues, nor meet their threshold burden of showing that such responses to comments was inadequate.

4. The Region Evaluated Seismicity Risk and Described Analysis In Responsiveness Summary

Petitioners Wanchisn and Long repeat in their petition a number of questions submitted during the comment period related to whether there is a potential for a seismic event and the consequences of such an event. Wanchisn/Long Petition at 7-8. However, the Region evaluated factors relevant to seismic activity as described in its Responsiveness Summary – and the petitioners fail to address the Region's responses, let alone meet their burden to explain why such responses were inadequate. The Region stated that the “Region 3 framework for evaluating seismic potential associated with UIC Class II permits” discusses more fully its evaluation. Exh. R 7; *see also* Exh. I.

As explained in its Responsiveness Summary, the Region recognizes that some injection wells have indeed been linked to earthquakes. *See* Exh. R at 7-10. However, there are only about 10 documented events nationwide of induced seismicity among over 30,000 waste water disposal wells. Exh. J at 6. The vast majority of brine disposal wells operate without inducing seismicity. Most significantly, none of the dozens of injection wells permitted by EPA in Pennsylvania since 1985 have caused injection-related seismic activity. EPA is not aware of any case where a seismic event caused an injection well to contaminate an USDW. Exh. I at 3.

As described in the Responsiveness Summary, the *Region 3 Framework for Evaluating Seismic Potential* explains that brine disposal wells have the potential to induce seismicity where there is a fault in near-failure state, the injected fluid reaches the fault, and the pressure exerted by the injected fluid is high enough and it lasts long enough to cause movement across the fault line. *See* Exh. I and R at 7-10. The Region has looked at the conditions at the wells associated with induced seismicity and compared them with the PGE well. As explained in the Responsiveness Summary, because of the geological conditions, including that no faults have been identified at the site, and the operating conditions in the permit, the PGE well is not at risk to cause injection-induced seismicity. *See* Exh. R at 7-9.

The Region looked at seismic maps of the region where the well is located, and imposed permit conditions to minimize fluid movement. As discussed in the Responsiveness Summary, the seismic maps of Pennsylvania reflect the lack of seismic activity or history of faults in the area. Exh. R at 7-8; *See* Exh. O; *see also* Exhs. L, M and N. The permit sets a maximum injection pressure and maximum volume to ensure that there is no over pressurization of the injection formation, as some induced earthquakes have been associated with high pressure injection and large volumes of fluid in a short period of time. These limits serve to protect USDW. *See* Exh. I.

In the Responsiveness Summary, EPA discussed reservoir pressure and how that reservoir pressure was reduced from the natural gas and water produced during the time of natural gas production from the reservoir. *See* Exh. R at 9. Significant quantities of natural gas have been produced from the Huntersville Chert, the receiving formation, within the geologic structure where the well is located. Historically, over 3.7 billion cubic feet (BCF) of natural gas is estimated to have been produced from the formation in this area. *See* Exh. R at 7-9. The

Pennsylvania Department of Conservation and Natural Resource website provides the following production information from the Yanity 1025 well and the two closet production wells located near the Yanity 1025, the Edwards 1 (API 37-063-28720) and the Mamau 1 (API 37-063-31663). The following production data covers the period from 1986 to 2009 for the Edwards 1 and from 1997 for the Yanity 1025 and Mamau 1 wells.

Yanity 1025: 4,179,731 mcf plus 48,489 barrels of produced fluid
Edwards 1: 1,773,242 mcf plus 9,292 barrels of produced fluid
Mamau 1: 1,776,696 mcf plus 31,783 barrels of produced fluid

Exhs. D and R at 9.

The Region explained in the Responsiveness Summary that the production of all this natural gas and produced water from the Huntersville Chert formation in this area has lowered the formation's pore pressure and has created available storage capacity, making this formation a good candidate for the disposal of fluids. The National Academy of Sciences reports that where fluids are injected into sites such as depleted oil, gas or geothermal reservoirs, they can make excellent disposal zones, because in those cases, pore pressures may not reach their original levels, or in some cases, may not increase at all due to the relative volumes of injection versus extracted fluid. National Academy of Sciences, *Induced Seismicity Potential in Energy Technologies*, National Academy Press 2013, Chapters 2 and 3. This is a key factor for preventing seismicity and was discussed in the Natural Academy of Sciences study and in the Responsiveness Summary. Exh. R at 9. The reservoir pressure throughout the operation will remain below the conservative pressure gradient used to develop the maximum injection pressure condition. The maximum injection pressure permit condition was developed to prevent the fracturing of the injection zone and the propagation of fractures that exist in the injection zone, as required in the UIC regulations. See 40 C.F.R. § 146.23(a)(1). Therefore, although fluids are

being added back into the reservoir, the resulting pressure from the injection will remain below original production reservoir pressure.

The petitioners do not address the Region's response to comments on these issues, nor meet their burden of showing that such responses to comments were inadequate. Based on the foregoing discussion, the Board should find that the Region adequately analyzed any potential seismicity risk and responded to the comments regarding the Region's analysis.

a. The Region Established the Maximum Injection Pressure in Accordance with the UIC Regulations and Adequately Responded to Comments

As discussed above, and in the Responsiveness Summary, the maximum injection pressure authorized by the permit was calculated to prevent the development of new fractures and the propagation of existing fractures. 40 C.F.R. § 146.23(a)(1); Exh. R at 10. The Region 3 Framework Document explains that this limitation helps to protect USDW. Exh. I at 2. The geologic reservoir information, including its physical and chemical characteristics were considered and used to develop the maximum injection pressure. Although petitioners Wanchisn and Long complain that the Region did not provide the input values for calculating the maximum injection pressure, the permit application provides those values, as well as the maximum injection pressure calculation which the Region verified and accepted. *See* Exhs. B5 at 34-36 and E at 3. Certain information such as the instantaneous shut-in pressure (ISIP) used to calculate the maximum injection pressure was obtained from data gathered when the well was drilled as a production well. Exh. R at 10. The permit application includes in graphic form, the derivation of the ISIP value of 3665 psi determined from the well hydraulic fracturing data. Exh. B5 at 36.

Moreover, the injection pressure in the permit is limited to a surface maximum of 2933 psi (pounds per square inch) as provided in the Statement of Basis and the draft permit. Exhs. E at 3 and F at 13. Whether the well will withstand the pressure of injection is determined using the mechanical integrity test, a pressure test that will be conducted before the well is operated and every five years after that, in addition to continuous pressure monitoring of the annular space. Exh. R at 4. The design of the pipe itself is not a requirement of the permit or the regulations. Since the well is already constructed, the testing and monitoring will determine its mechanical integrity. *See* 40 C.F.R. § 146.8(b). Furthermore, the Responsiveness Summary explains that most deep injection wells are designed to withstand significant internal and external pressure and that industry standards have been developed for casing and cementing wells. Exh. R at 10.

Based on the foregoing discussion, the Board should find that the Region established the maximum injection pressure in accordance with the UIC regulations and adequately responded to the comments regarding the maximum injection pressure. The petitioners do not meet their burden of showing that the Region's responses to comments were inadequate.

b. The Region is Entitled to Deference on Technical Issues of Seismicity Assessment and Injection Pressure Calculation

The review of geological data to ascertain the risk of seismic activity from injection and the calculation of maximum injection pressure are technical issues that rely on the scientific evaluation of the impact of the wells. With regards to technical issues of this nature, the Board traditionally defers to the permitting agency. *See In re Bear Lake Properties, LLC*, UIC Appeal No. 11-03, (EAB June 28, 2012), slip op. at 22 (finding that the determination regarding the risk

of injection-related seismicity is a technical issue on which the permit issuer is entitled to deference).

The Region documented in the Responsiveness Summary, the seismicity history relevant to the PGE site and the conditions in the injection formation. Exh. R at 7-9. The permit application also includes the maximum injection pressure calculation, the basis of which includes injection formation characteristics and data available from when the well was drilled such as the Instantaneous shut in pressure (ISIP). Exh. B5 at 35-36. The Region determined that the maximum injection pressure was calculated to prevent the initiation of new or the propagation of existing fractures in the injection zone during operation of the well as required by 40 C.F.R. § 146.23(a).

Petitioners Wanchisn and Long in their petition present their position on how the seismicity should be analyzed. Their approach as described in the petition is identical to the comment submitted by Ms. Wanchisn during the public comment period. Petitioners state that the Region should have required the applicant to provide scientific data on the potential for induced seismicity, but ignore the facts that the Region obtained the data and conducted the seismicity analysis. Petitioners argue in their petition that the Region should have followed the approach described in the EPA draft document on Minimizing and Managing potential Impacts of Induced –Seismicity from Class II Disposal Wells, but fail to explain if or how the Region's approach to assessing the risks of seismicity failed to follow the approach in the report. Furthermore, the document is still in draft and is currently going through peer review, so although EPA could consider aspects of the report, EPA was not necessarily required to follow the approach described in the draft report. The Petitioners also reference the National Academy of Science (NAS), *Induced Seismicity Potential in Energy Technologies* document, arguing that

the Region should have followed procedures in that document. As discussed in the Responsiveness Summary, the Region relied on the NAS document in support of its seismicity analysis. Exh. R at 7-10. The Region considered Ms. Wanchisn's comments on seismicity submitted during the public comment period, determined that the Region's approach was appropriate and responded by describing the Region's seismicity analysis in the Responsiveness Summary. The petitioners do not address the Region's seismicity analysis in their petition. For the reason discussed above, the Board should defer to the technical judgment of the Region on the seismicity assessment and the maximum injection pressure calculations.

5. The Region Calculated the Zone of Endangering Influence in Accordance with the UIC Regulations and Adequately Responded to Comments

In the instant case, the Region established the area of review (AOR) and calculated the Zone of Endangering Influence in accordance with the UIC regulations. The UIC regulations provide that the area of review shall be determined according to either paragraph 40 C.F.R. § 146.6(a), Zone of Endangering Influence (ZEI), or (b), fixed radius. 40 CFR § 146.6. The Zone of Endangering Influence the area the radius of which is the lateral distance in which the pressure in the injection zone may cause the migration of the injection and/or formation fluid into an USDW. 40 CFR § 146.6(a)(1). Computation of the Zone of Endangering influence may be based upon the parameters identified in 40 C.F.R. § 146.6(a)(2).⁴ The modified Theis equation is illustrated in the regulations as one form which the mathematical model for calculating the ZEI may take. The alternative method for determining the Area of Review, is to

⁴ One mathematical formula for calculating the ZEI is provided in 40 CFR 146.6(a)(2) along with the following defined parameters to be used in the formulas: radius of endangering influence from injection well, hydraulic conductivity of the injection zone, thickness of the injection zone, time of injection, storage coefficient, injection rate, observed original hydrostatic head of injection zone, hydrostatic head of underground source of drinking water, specific gravity of fluid in the injection zone, and the constant π (3.142). 40 CFR § 146.6(a)(2).

use a fixed radius around the well of not less than one fourth mile. 40 C.F.R. § 146.6(b)⁵. PGE used the fixed radius of one quarter mile in its permit application. Exh. B2 at 1.

The Region explained in the Responsiveness Summary that in calculating the ZEI it used geologic information pertinent to the injection zone as well as anticipated operation parameters provided to EPA in the permit application. See Exh. R at 3. The Region routinely uses a mathematical electronic model established by EPA that calculates the ZEI when site specific parameters are entered into the program. Exh. S. The model used by the Region to calculate the ZEI is included in the administrative record. See Exh. S. A complete list of the parameters used for the model calculation are included on the model analysis which is part of the administrative record for the permit. See Exh. S. This data used by the Region was obtained from the permit application, including the applicant's response to the Region's notice of deficiency, and the established permit conditions, such as injection volume and term of permit. Exhs. B2 at 1; B5 at 31-32, 34-35, 91-92; B9 at 5, 7-8 and F at 1 and 13. Although the Region did not provide in the Responsiveness Summary the specific values for each of the parameters used or the ZEI model calculation, the Region stated that it used information such as the porosity and permeability of the injection zone, the existing reservoir pressure, and operational parameters such as injection rate and volume to calculate the ZEI. Exh. R at 3. Furthermore, the values for each parameter can be derived by looking at the model inputs that are part of the administrative record. Exh. S.

The Region stated in the Responsiveness Summary that it determined, based on the ZEI calculation, that after operating the well for ten years, the term of the permit, the ZEI would be a distance of 1450 feet away from the injection well.⁶ Exh. R at 3. While the PGE permit

⁵ In determining the fixed radius, the following factors shall be taken into consideration: Chemistry of injected and formation fluids; hydrogeology, population and ground water use and dependence and historical practices in the area. 40 CFR § 146.6(b)(2).

⁶ The result of the model calculation is in the form of a graph and the ZEI distance as depicted on the graph is the

application used a one quarter mile fixed radius as the AOR, the Region decided to use 1450 feet ZEI distance instead, which is 130 feet greater than one quarter mile, representing a more protective and conservative Area of Review, as discussed in the Responsiveness Summary. Exh. R at 3.

Although Petitioners Watkins, Wanchisn and Long claim that use of the AOR and ZEI methods are not appropriate, they fail to offer any other method for calculating the AOR. The Petitioners' claims are tantamount to a challenge to the UIC regulations that allow the AOR determination using ZEI calculations or a fixed radius. In this case, both were evaluated and the Region chose the larger more protective ZEI. The Board has explained that it generally will not entertain challenges to final agency regulations in the context of permit appeals. *In re Chevron Michigan, LLC of Traverse City, Michigan*, UIC Permit Appeal No 13-10 at 18 (EAB 2013). The Board has stated that it is not an appropriate forum in which to challenge the validity of the UIC regulations or the policy judgments underlying the structure of the UIC program. *Id.* at 19.

Petitioners assert that the highly fractured nature of Huntersville Chert render the standard AOR and ZEI calculations, including the modified Theis equation, inadequate. Petitioners do not provide any technical or reasoned explanation sufficient to support their allegations. Petitioners seem focused on the fractured nature of the Huntersville Chert; however they have not demonstrated how that characteristic might render the AOR methods inappropriate. The fractures and pore space within the Huntersville Chert are the characteristics that enable the formation to allow the flow of gas to production wells and also will allow the formation to receive injection fluid.

Once the AOR is determined, the UIC regulations require that a permit application identify all wells, including abandoned wells, within that area of review. *See* 40 C.F.R.

point where the water level crosses the base of the USDW. Exh. S.

§ 146.24(a)(2). The Region explained in the Responsiveness Summary that within the AOR, (1) the permit applicant provides information of public record on the existence of all wells that penetrate the zone of injection, including active injection and production wells, inactive production and injection wells and any wells that have been plugged and abandoned. Exh. R at 3; *see also* 40 C.F.R. §§ 144.3, 144.55 and 146.6. PGE provided this information, in addition, PGE completed an in-field survey of the private drinking wells. Exh. R at 3. PGE reviewed public records to identify all wells within the area of review as required by the regulations, *see* 40 C.F.R. §146.24(a)(2). No gas or oil wells that penetrate the injection zone were found within the ZEI. Exh. B3 at 2. PGE identified through its document search the three closest wells that reach the receiving formation even though those wells are outside the area of review. These three wells are located approximately one half to one mile away from the injection well, or one quarter to one half mile beyond the calculated 1450 feet ZEI. Exh. B3 at 2.

Therefore, the Region calculated the AOR according to the UIC regulations, PGE identified all the wells within the AOR as required by the regulations and none of those wells penetrate the injection zone. PGE also identified wells that penetrate the injection zone that are approximately 1/4 to 1/2 mile beyond the calculated AOR. The Petitioners arguments purport to challenge the regulations and the AOR/ZEI calculations, but fail to adequately explain their position. For these reasons, the Board should determine that the Region calculated the AOR in accordance with UIC regulations and adequately responded to the Petitioners comments.

6. EPA Lacks Jurisdiction under SDWA and UIC Regulations to Address Matters within State or Local Authority

When petitioners have raised issues under a state's regulatory authority, the Board typically has denied their requests for UIC permit review on the ground that the Board lacks the authority to adjudicate such issues. In re Envirotech, L.P., 6 E.A.D. 260, 275-276)(EAB 1996)

(The Board does not have authority to consider issues raised by petitioners concerning matters that are exclusively within the States power to regulate). Petitioners Watkins, Wanchisn and Long raise issues that come within the jurisdiction of the state or local government.

In response to questions raised during the public comment period about surface disturbance, fluid containments and spills, the Region explained in the Responsiveness Summary that these matters are regulated by the Pennsylvania Department of Environmental Protection and that the Region only regulates the injection of fluids from the wellhead down to the injection zone. Exh. R at 6-7. Even though the UIC program does not have jurisdiction to address spills to surface waters, the Region noted that because the unnamed tributary (i.e. Mill Run) is part of the East Run watershed, which, in turn, is part of the larger Little Mahoning Creek watershed, the Little Mahoning Creek watershed would not be directly affected by any surface spill if one occurred at the site. Exh. R at 6-7. Ms. Watkins in her Petition alleges that the Region's statements of water courses are untrue. Wartkins Petition at 1. On the contrary, the Region accurately described the watersheds in the Responsiveness Summary, the basis of which is a topographic map included in the record that shows the ground area that would flow into the nearby streams. Exh. C. Irrespective of these arguments, the UIC Program is without jurisdiction to address potential surface spills.

In addition, Petitioners Wanchisn and Long ask whether there will be a prohibition of future production wells that penetrate the injection zone within the AOR. Wanchisn/Long Petition at 4. The Responsiveness Summary specifically addresses future gas production and provides that PADEP, not EPA, regulates production well development in Pennsylvania. Exh. R at 11. The Petitioners also ask about storage containment on site, vehicle equipment, traffic accidents, site-specific plan for spills, and spill response training. *See* Wanchisn/Long Petition at

9 and 10. The Region advised the commenters that it has no jurisdiction to address these matters. *See* Exh. R at 1.

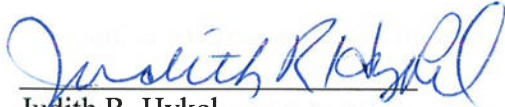
When making its determination about whether to issue a UIC permit, EPA's jurisdiction rests solely in determining whether the proposed injection operation will safely protect underground sources of drinking water. Exh. R at 1. EPA is not authorized to address other areas of concern. The public would need to seek assistance through local township or county ordinances for truck traffic and road damages and the Pennsylvania Department of Environmental Protection is the agency responsible for all surface construction at the proposed well site as well as for surface spill prevention. Exh. R at 2.

CONCLUSION

The Woodcock Petition does not meet the threshold requirement of standing. The Wanchisn/Long and Watkins Petitions do not satisfy the specificity requirement, as discussed above, to warrant review of the petition by the Board. The Region complied with the regulations in performing the AOR/ZEI calculation. Further, the petitions do not identify any permit conditions based on clearly erroneous findings of fact, or an exercise of discretion or important policy consideration which the Board should, in its discretion, review. As discussed, the Region responded to substantial comments raised by the Petitioners and complied with the UIC regulatory requirements in establishing the permit conditions and issuing the permit. Therefore,

the Region respectfully requests that the Board deny the petitions.

Respectfully submitted,



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CERTIFICATE OF SERVICE

I hereby certify that I delivered a copy of the foregoing Region III's Response to Petitions for Review and the attached exhibits on the date specified below, by certified mail, return receipt requested to:

Suzanne Watkins
723 East Run Road
Marion Center, PA 15759

Judy and Paul Wanchisn
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Stacy and Mark Long
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Glenn Campbell, PA 15742

William J. Woodcock III
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I also certify that I filed the original electronically with the Environmental Appeals Board. In addition I filed one copy of the exhibits by Next Day UPS with the Clerk of the Environmental Appeals Board at:

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