

Marjorie C. Yanity #1025 Comment-Response

Pennsylvania Department of Environmental Protection

March 16, 2017

Introduction:

On June 1, 2015, the Department held a public meeting/hearing in Marion Center, PA to solicit comments related to Pennsylvania General Energy's (PGE) permit application to convert the Marjorie C. Yanity #1025 (Yanity) well from a production well to an injection disposal well. This Comment and Response Document summarizes the comments submitted to the Department by thirty-five (35) commentators during the public hearing and before/after the public hearing. Where multiple commentators made a similar comment, the comment is paraphrased. Each public comment is listed with the identifying number for each commentator that made the comment to the Department. A list of the commentators, including names and affiliations/places of residence (if any) is provided as follows:

Commenters:

1. Donna J. McClelland
Council for the East Run Hellbenders Society
2. Daniel S. Fisher, PG
Wetstone Solutions, LLC for the East Run Hellbenders Society
N. Huntingdon, PA
3. Andy Pollak
Senior Reptile and Amphibian Attorney for the Center Of Biological Diversity
Blairsville, PA
4. Collette Adkins
Marion Center, PA
5. Lezetta K. Adair
DuBois, PA
6. Dr. Sandra Kinter
Rosemont, PA
7. Richard L. and Marianne Atkinson
President PASEC, Homer City, PA
DuBois, PA
8. Roberta Winters
Marion Center, PA
9. John T. Dudash
Dubois, PA
10. Grace Bergin
Marion Center, PA
11. Judy Wanchisn
Dubois, PA
12. Duane and Darlene Marshall
Marion Center, PA
13. Randy Degenkolb
Marion Center, PA
14. Robert and Carol Haldin
Marion Center, PA
15. Suzanne R. Watkins
Marion Center, PA
16. Fred W. Carlson
Marion Center, PA
17. Chad Nicholson
North Braddock, PA
18. Jim Ashbaugh
VP Engineering, Operations and Development for PGE
Marion Center, PA
19. William Woodcock
League of Women Voters
Glen Campbell, PA
20. Vicki Stelma
Chairman, Indiana County Commissioners
Marion Center, PA
21. Stacy Long
Indiana, PA
22. Rod Ruddock
Marion Center, PA
23. John Perry
Marion Center, PA
24. Barbara Hafer
Indiana, PA
25. Lisa Wanchisn
Marion Center, PA
26. Richard Wardrop
Marion Center, PA
27. Richard Farabaugh
Indiana, PA
28. Cynthia Walter
Greensburg, PA
29. Dr. John Michael Atherton
Greensburg, PA
30. Alanna Hartzok
Fayetteville, PA
31. Marty Hann
McConnellsburg, PA
32. Vern Blystoe
Evergreen Conservancy
Indiana, PA
33. Cindy Rogers
Marion Center, PA
34. Maria Jack
Marion Center, PA
35. Mark Long
Marion Center, PA

- A. COMMENT: The analytical methods used by PGE and EPA to calculate Area of Review/Zone of Endangering Influence are deficient, and the EPA UIC application and Statement of Basis lacked sufficient information to characterize the site. (1, 2, 8, 24, 25, 28)
- RESPONSE: The 2012 Pennsylvania Oil & Gas Act and 25 PA Code Ch. 78 require a disposal well applicant to submit to the Department, a well permit application, control and disposal plan (C&D plan), erosion and sediment control plan (E&S plan), the approved EPA UIC permit application and the EPA UIC permit. Along with its review of the well permit application, C&D plan, and E&S plan, the Department conducted a geological assessment and a mechanical integrity review of the well utilizing, among other resources, the information that was contained in PGE's UIC application to the EPA. The Department's review of this application, including its geological review of the area, is described in memoranda that are available in DEP's file for this well.
- B. COMMENT: PGE's Erosion and Sediment Control Plan (E&S Plan) is generic and not site-specific, and accidental spills or discharges from trucks may lead to degradation of the Special Protection Watershed and harm the Eastern Hellbender or other wildlife. (1, 4, 5, 6, 8, 9, 10, 11, 12, 15, 20, 23, 24, 25, 27, 33)
- RESPONSE: PGE's E&S Plan complies with the requirements of 25 PA Code Ch. 102 and 25 PA Code Ch. 78, and its Control and Disposal Plan (C&D Plan) complies with the requirements of 25 PA Code Ch. 91. DEP reviewed the E&S and C&D Plans during its review of the permit application. These plans are appropriate for this site and contain measures to protect the watershed and its wildlife. In addition, a PNDI search encompassing the project area was conducted through the Pennsylvania Natural Heritage Program to search for potential threatened, endangered and special concern species. The PNDI search did not identify any species at the site as threatened, endangered or special concern.
- C. COMMENT: Injection into the Yanity well could pollute private or public water supplies. (1, 3, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 19, 21, 22, 24, 25, 26, 27, 28, 30, 31)
- RESPONSE: Within $\frac{1}{4}$ mile of the well location, referred to as the "Area of Review" in this document and in the application documents, there are several private water supplies, with the deepest identified as 190 ft. deep. Within the 1 mile buffer zone of the well, there are public water supplies associated with the Purchase Line School District. PGE identified the deepest well within the 1 mile buffer that provides an underground source of drinking water to be 520 ft. deep. The injection zone in the Huntersville Chert is 7532 ft. deep, making the separation between the injection zone and fresh groundwater at least 7012 ft., with multiple low permeability geologic confining zones existing between the injection zone and fresh groundwater. The Department believes that this would retard migration of injected fluid from the Huntersville Chert. To further evaluate the potential of groundwater/water supply impacts, the Department conducted a mechanical integrity review of the Yanity well and a geological assessment, which included an integrity assessment of the injection zone.

The Department concluded that the casing and cementing requirements of 25 PA Code Ch. 78 have been met and both the well and the injection zone demonstrate structural integrity that is adequate to protect groundwater/water supplies. The EPA UIC permit also prohibits the injection of fluids adjacent to underground sources of drinking water or at pressures which could initiate fractures in the confining zone. Considering all of the above factors, it is improbable that injection into the Yanity well would pollute water supplies.

D. COMMENT: Underground injection has the potential to cause earthquakes. (1, 2, 3, 8, 9, 10, 11, 12, 19, 20, 25, 29, 30)

- RESPONSE: The Department's geologic analysis does not show the likelihood that the operation of this well as an injection well would cause earthquakes. The majority of disposal wells in the United States do not pose a hazard for induced seismicity. Under some geologic and reservoir conditions some injection wells have been determined to be responsible for induced earthquakes due to the well's location near critically stressed faults. As part of the EPA permit process, injection rates were set to reduce effects of pore pressure increases in the injection zone. In some circumstances, pore pressure increases could initiate a seismic event. As part of the Department's analysis, a review was performed of geological structures such as faults and lineaments near the site. No known geologic structures exist within the ¼ mile Area of Review. The Chestnut Ridge Anticline fold axis was identified within the 1 mile Area of Review radius as delineated in the EPA application. Also, as part of the geological review, the Department did not identify any known historical seismic events within the Area of Review and no known earthquakes of magnitude 2.0 or greater have occurred within Indiana County. In addition, the Pre-Cambrian basement, which is believed to have occasionally contributed to earthquake activity in other states in association with injection activities, is separated vertically within the local stratigraphic setting from the injection zone by an approximate minimum of 9,300 feet. This separation with the existence of multiple low-permeability geologic confining zones within this distance likely negates any contribution of the Pre-Cambrian basement to potential seismic activity.

E. COMMENT: PGE has a violation history in Pennsylvania, and there are numerous violations associated with injection wells across the country. (5, 6, 11, 12, 17, 21, 23, 25, 30, 31)

- RESPONSE: PGE's violation history does not show that it is in violation or not capable of operating the Yanity Well in compliance with the 2012 Pennsylvania Oil & Gas Act. PGE has no open violations in Pennsylvania. Since 2003, 149 inspections of PGE wells in Pennsylvania identified violations. All of these violations have been corrected.

F. COMMENT: DEP issues many more permits that it denies. (11, 23, 35)

- RESPONSE: If an application meets all applicable statutory/regulatory requirements in the 2012 Pennsylvania Oil & Gas Act, 2011 Coal and Gas Resource Coordination Act, 1961 Oil and Gas Conservation Law, 25 Pa. Code § 91.51, 25 Pa. Code Ch. 78, and other applicable legal requirements, the Department shall issue a permit.
- G. COMMENT: What are the injection materials, how is the waste tracked, monitored and reported, how does the Department oversee operations? (1, 11, 19, 23, 24, 25, 26, 28, 33)
- RESPONSE: The EPA UIC permit limits this well to the disposal of produced fluids associated with PGE's oil and gas production operations with an expected maximum volume of 30,000 barrels per month. Monitoring and reporting requirements are listed in Part II(B) and Part II(D) of the EPA UIC permit. The Department's "Change of Use Permit" will be conditioned upon the existence and compliance with the EPA UIC permit. Monitoring data is submitted to the EPA, and the Department. Department personnel regularly inspect injection wells.
- H. COMMENT: Some waste fluid associated with oil & natural gas development can be radioactive. (10, 11, 28)
- RESPONSE: The Department recently studied radioactivity in oil & gas related waters. This two-year DEP study of Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) was released in January 2015, and analyzed the naturally occurring levels of radioactivity associated with oil and natural gas development in Pennsylvania. The study concluded that there is little potential for harm to workers or the public from radiation exposure due to oil and gas development. The TENORM study can be found at:
http://www.portal.state.pa.us/portal/server.pt/community/oil___gas_related_topics/20349/radiation_protection/986697
- I. COMMENT: There are concerns with the well casing and cement integrity, formation integrity and mechanical integrity testing. (1, 2, 11, 12, 20, 22, 24, 25, 26, 28, 33)
- RESPONSE: The Department evaluated these items during its technical review and concluded that the overall integrity of the well and formation is adequate. PGE's five day step-rate test, which is used for determining when a fracture will propagate and/or when a pre-existing fracture will reopen, indicates that the proposed injection rates can reasonably be expected to maintain formation integrity. In addition, the EPA UIC permit prohibits the initiation of fractures in the confining zone and limits the injection pressure to an amount that does not exceed the injection formation's fracture pressure, and the Department will require a stimulation and treatment plan prior to any stimulation or treatment. Well integrity is demonstrated per EPA requirements by an initial pressure test and by subsequent tests performed at least once every five years.
 - The well is also currently in compliance with the well construction and operating requirements of 25 PA Code Ch. 78, which are adequate for protecting the integrity of

the casing cement and seal. The two outer casing seats are not exposed to the injection pressure. The well will be subject to a required 30-minute mechanical integrity test in which the 4.5 in. casing above the packer would be isolated from the injection pressure to confirm well integrity. Low pressure shut-down alarms are planned for the operation, and the EPA permit requires the well to be equipped with an automatic shut-off device which would be activated in the event of a mechanical integrity failure.

- J. COMMENT: There are concerns that preferential pathways for contamination exist, such as abandoned mines, gas storage fields, and other wells. (2, 3, 9, 11)
- RESPONSE: The Department's examination of available resources found no evidence of such pathways. DEP reviewers concluded that no operating or abandoned mines, gas storage fields, or wells that penetrate the Huntersville Chert exist within the ¼ mile Area of Review. Vertical separation between the mine and Huntersville Chert is approximately 6000 ft., with multiple low permeability geologic confining zones between them. The Department believes these units would retard any communication between the Huntersville Chert and the Lower Kittanning coal seam. Casing and cementing requirements of 25 PA Code Ch. 78 have been met and both the well and the injection zone demonstrate structural integrity that is adequate to protect groundwater/water supplies.
- K. COMMENT: The Grant Twp. Community Bill of Rights Ordinance bans injection wells, and the Grant Twp. Home Rule Charter makes it unlawful to deposit waste from oil and gas extraction within the township boundaries. (1, 11, 17, 22, 23, 24, 32, 34)
- RESPONSE: The Department acknowledges this comment as well as Magistrate Judge Baxter's October 14, 2015 Opinion which invalidated the section of the Grant Twp. Community Bill of Rights Ordinance (Section 3) that prohibits injection wells.
 - The Department also acknowledges subsequent comments that, in November 2015, Grant Twp. adopted a Home Rule Charter that included prohibitions similar to those in the Community Bill of Rights Ordinance. PGE has not challenged the Home Rule Charter. Besides incorporating provisions that were found unlawful in the Federal action (referred to above), the Home Rule Charter attempts to change state law via local law and is under review.
- L. COMMENT: The Grant Twp. Home Rule Charter makes it unlawful to deposit waste from oil and gas extraction within the township boundaries. (1)
- RESPONSE: In November 2015 Grant Twp. adopted a Home Rule Charter that included prohibitions similar to those in the Community Bill of Rights Ordinance. PGE has not challenged the Home Rule Charter. Besides incorporating provisions that were found unlawful in the Federal action (which is referred to in comment K), the Home Rule Charter attempts to change state law via local law and is under review.

- M. COMMENT: Grant Twp. has a floodplain ordinance. (11)
- RESPONSE: The well is not located within a FEMA 100 yr. Floodplain.
- N. COMMENT: Light, noise, truck traffic and dust emanating from the site would be a nuisance. (3, 12, 20, 28, 29)
- RESPONSE: The Department acknowledges this comment. During the June 1, 2015 public meeting/hearing in Marion Center, PA, PGE indicated that the site would be operating during normal business hours, which will reduce the potential for public nuisances. In addition, the area around the site is rural and surrounded on three sides by trees which could reduce the effects of site activity as expressed in this comment. The Department's approval of a permit to operate a well does not limit its ability to respond to future complaints from a citizen alleging a nuisance condition.
- O. COMMENT: There are general air quality concerns at the site. (3, 20)
- RESPONSE: The well is subject to the requirements of Exemption 38 of the Department's Plan Approval and Operating Permit Exemptions Policy, which applies to well sites and is available to the public as Document Number 275-2101-003. Nevertheless, the Department's approval of a permit to operate a well, or its exemption from air permitting requirements, does not limit the Department's ability to respond to future complaints from a citizen regarding an air quality concern.
- P. COMMENT: A disposal well will not be a benefit to the township or local employment and could result in decreased property values and harm local businesses. (5, 6, 10, 19, 28)
- RESPONSE: The Department acknowledges this comment.
- Q. COMMENT: There is a need for better waste disposal solutions and concern over the toxicity of the chemicals. (5, 11, 26)
- RESPONSE: The Department acknowledges this comment. Based on its evaluation and review of EPA's UIC approval, a mechanical integrity review of the Yanity well, and a geologic review of local structure and stratigraphy, the Department has concluded that injection of approved fluids at the Yanity well is safe and an environmentally protective method of disposal.
- R. COMMENT: Disposal into the Yanity well would violate the 1961 Oil and Gas Conservation Law, causing a waste of gas by drowning the stratum and affecting the Mumau well. (1, 2, 11, 16, 18)
- RESPONSE: The Department considered this issue. Several wells, the "Mumau Wells," are located to the northeast of the proposed disposal well, specifically #063-27011 (2500 ft. NE), #063-27674 (3100 ft. NE), #063-27045 (4000 ft. NE), #063-27046 (4300 ft. NE), and #063-31663 (5100 ft. NE). Of these wells, only one (#063-31663) penetrates the injection formation, but it is outside the ¼ mile Area of Review delineated in the EPA UIC application, which the Department considered to be a reasonable delineation of limits for waste fluids from disposal based upon its review of the application. In

addition, no spacing order pursuant to Section 7 of the 1961 Oil and Gas Conservation Law has been entered establishing a drilling unit, so the relationship between the Yanity well and well #063-31663 is not defined by a legal act. The Yanity well's gas production has also been in decline and PGE has indicated that it has not been capable of producing gas in paying quantities since 2012 and was shut in at that time. Production reports from the Yanity well show that the production declined up to 2012. Given that well #063-31663 is outside the ¼ mile Area of Review and that the Yanity well is no longer capable of producing gas in payable quantities, there is no evidence showing that it would be probable that injecting fluids would drown a stratum capable of producing payable quantities of gas. For these reasons, the Department concluded that the disposal of fluids into the Yanity well would not constitute a "waste" of gas as defined in the 1961 Oil and Gas Conservation Law.

- S. COMMENT: Disposal into the Yanity well would violate Correlative Rights pursuant to the 1961 Oil and Gas Conservation Law. (1, 11, 16)
- RESPONSE: Because no spacing order has been entered in this area and no application is pending, the correlative rights are protected if the well is located at least 330 ft. from the nearest outside boundary line of the lease on which it is located, pursuant to Section 6(a) of the 1961 Oil and Gas Conservation Law. The proposed disposal well is located 500.5 ft. from the nearest outside boundary line of the lease depicted on the Well Location Plat, and meets this criterion.
- T. COMMENT: A new spacing or pooling notice was not recorded at the appropriate county court recorder's office, and the unit was changed without notification to property owners or DEP approval. (16)
- RESPONSE: The Department acknowledges this comment. The recordation and notification of property related matters is beyond the scope of the Department's review of PGE's application.
- U. COMMENT: Public notifications were invalid because they were based on the invalid fixed radius or modified Theis calculations for the Area of Review/Zone of Endangering Influence. (2)
- RESPONSE: Public notice was based on Section 3211 of the 2012 Pennsylvania Oil & Gas Act, which includes notifications to the landowner, the municipality, adjacent municipalities, and all surface landowners and water purveyors whose water supplies are within 1000 ft. of the proposed disposal well. PGE met the Law's requirements. In addition, notice of a public meeting/hearing was advertised in the Indiana Gazette prior to the June 1, 2015 public meeting/hearing.
- V. COMMENT: Surface casing is not set to 50' below the deepest fresh groundwater, as required by PA Code Title 25 Ch. 78. (2)
- RESPONSE: Because the surface casing was set to 569 ft. below the ground surface and the deepest fresh groundwater may be up to 520 ft. below the ground surface, surface

casing extends approximately 49 ft. below fresh groundwater. The one foot difference between the 49-foot separation observed here, satisfies the approximate 50-foot vertical separation between the base of fresh groundwater and the surface casing shoe identified in 25 PA Code § 78.83(c).

- W. COMMENT: Oil/Gas extraction wells were designed to extract fluids under negative pressure; they were not designed to withstand the long-term positive high pressures common to fluid injection wells. (2)
- RESPONSE: Injection wells only see positive pressure during injection, and not over the long term. The Yanity well can handle positive or negative pressure, and the EPA and Department's permits require the well to be equipped with an automatic shut-off device in the event of a mechanical integrity failure.
- X. COMMENT: Extraction of gas is not directly comparable to the injection of liquids. (2)
- RESPONSE: While extracting gas from a porous formation is different in some respects from injecting a liquid, the Yanity well can safely handle liquid injection. The liquid injection planned at the Yanity well is designed under EPA guidelines to take place at a pressure that allows the liquid to enter the available pore space, while preventing fracturing of the formation rock.
- Y. COMMENT: Is there any possibility of annular disposal through the Yanity well? (2)
- RESPONSE: The EPA UIC permit authorizes injection only into the Huntersville Chert and prohibits injecting between the outermost casing protecting underground sources of drinking water and the well bore, and also from injecting into any underground source of drinking water.
- Z. COMMENT: Concerns with pressures and use of drilling mud. Drilling mud left in the annulus would violate the pressure limitation in 25 PA Code Ch. 78.73(c). (7)
- RESPONSE: If drilling mud were left in the annulus between the production casing and intermediate casing, which is a standard industry practice, it would not violate the pressure limitation in 25 PA Code Ch. 78.73(c). Section 78.73(c) is a surface pressure limitation and does not apply to the intermediate casing. The mud is not designed or intended to stop a leak in the tubing/packer system or to protect the fresh groundwater. The fresh groundwater (approximately 520 ft. deep) is protected from the drilling mud and pressures by two strings of casing. Also, PGE has designed their operation to shut down the injection pump if leaks are detected, which is a requirement of the EPA UIC permit.
- AA. COMMENT: What is the pre-disposal treatment process for each material to be disposed of by injection into the well? (1)
- RESPONSE: PGE's application and the Department's permit do not address pre-disposal treatment.

BB. COMMENT: Will there be a storage tank onsite to hold waste to be injected into the well? (1)

- RESPONSE: The site will utilize three steel epoxy-lined above-ground storage tanks surrounded by a lined steel engineered containment system. The storage tanks are depicted in PGE's Site Specific PPC/Control & Disposal Plan, which meets the requirements of 25 PA Code Ch. 78.55 and the Department's "Guidelines for the Development and Implementation of Environmental Emergency Response Plans" guidance document.

CC. COMMENT: If this well goes in, how many more will follow? (6)

- RESPONSE: No other disposal well applications have been received for Grant Township, Indiana County.