Frank & Susan Zelman #1 Comment-Response

Pennsylvania Department of Environmental Protection

March 21, 2018

Introduction:

On March 7, 2016, the Department held a public hearing in DuBois, PA to solicit comments related to Windfall Oil & Gas, Inc.'s permit application for a proposed Frank & Susan Zelman #1 injection disposal well. This Comment and Response Document summarizes the comments submitted to the Department by fifty (50) commentators before, during, and 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.	Mr. Randall Baird Sr. and Highland St. Residents	DuBois, PA
2.	Valerie & Randall Powers	DuBois, PA
3.	Paula Lim	Pittsburgh, PA
4.	Stephanie Ulmer	Pittsburgh, PA
5.	Elizabeth Donohoe	Pittsburgh, PA
6.	Marta Guttenberg	Philadelphia, PA
7.	Matt Gabler	75th District, PA House of Representatives
8.	Thomas Falasca	
9.	Diane Esser	Founder, www.iamaplanetkid.org
10.	Sean & Emily Zimmerman	DuBois, PA
11.	James Dunlap	DuBois, PA
12.	Brady LaBorde	DuBois, PA
13.	Mike Kamandulis	Kersey, PA
14.	Stacy Long	Glen Campbell, PA
15.	Eric Maldonado	
16.	Loretta Slattery	DuBois, PA
17.	Ted & Rona Crytser	DuBois, PA
18.	Timothy Roschke	DuBois, PA
19.	Judy Wanchisn	Marion Center, PA
20.	Linda Archer	Brockway, PA
21.	Robert Jereski	
22.	Susan DeSantis	Brockway, PA
23.	Duane Marshall	DuBois, PA
24.	James Green & Darlene Marshall	Reynoldsville, PA & Dubois, PA
25.	Robert & Ethel Marshall	DuBois, PA
26.	Terry & Carole Lawson	DuBois, PA
27.	Gary Gilbert, Diane Bernardo, Randy Schmidt, James Aughenbaugh, Edward Walsh	City of DuBois Mayor & City Council
28.	Nancy Moore	DuBois, PA
29.	John Sobel, Antonio Scotto, Mark McCracken, Kim Kesner, Lisa McFadden	Clearfield Co. Commissioners, Solicitor & Chief Clerk
30.	Dave McKolanis	Falls Creek, PA
31.	Rich Kenawell	Representative Matt Gabler's Dubois Office Manager
32.	Thomas Lisak	Punxsutawney, PA
33.	Jenny Lisak	Punxsutawney, PA
34.	James Green	Reynoldsville, PA
35.	Richard Atkinson	DuBois, PA

36. Marianne Atkinson	DuBois, PA
37. Charlie Muth	Chairman, Brady Twp. Supervisors
38. Henry & Mary Madere	DuBois, PA
39. Grace Bergin	DuBois, PA
40. Beth Gilga	DuBois, PA
41. Vivian Marshall	DuBois, PA
42. Dawn Smith	Penfield, PA
43. Neil Conti	Luthersburg, PA
44. Arlie & Rosemary Frizzell	DuBois, PA
45. J. Stephen Cleghorn, PhD	Punxsutawney, PA
46. Pam Steckler	State College, PA
47. Patti Shaffer	Luthersburg, PA
48. Thomas Gusky	DuBois, PA
49. Janis Copenhaver	Reynoldsville, PA
50. Tom Wilsack	

A. COMMENT: How will the produced fluids stored for disposal be maintained? (1)
   - RESPONSE: Produced fluids stored for disposal will be in epoxy-lined steel tanks. Storage operations will be conducted on a concrete pad with retaining walls to serve as secondary containment, with a dike designed to contain at least 1.5 times the stored fluid volume. This is depicted in Windfall's Control & Disposal Plan, which meets the requirements of the Department's "Guidelines for the Development and Implementation of Environmental Emergency Response Plans" guidance document and associated regulations.

B. COMMENT: Is this proposed injection well subject to the Oil & Gas Conservation Law (Act 359) or the Coal & Gas Resource Coordination Act (Act 214)? (1, 23)
   - RESPONSE: The proposed injection horizon is subject to Act 359, however as an injection well, it is not subject to the Section 6(a) 330' spacing restriction to the nearest outside boundary line of the lease on which it is located. Section 3 of Act 214 exempts the proposed well from Act 214 and its provisions.

   - The Department reviewed and concurs with Windfall's submission received on April 15, 2016, which concluded that the disposal of fluids into the proposed Zelman well would not constitute a waste as defined in the Oil and Gas Conservation Law because the Chert/Oriskany reservoir is depleted of paying quantities of gas in the project area. Sammy-Mar's analysis of other Oriskany wells in the project area indicate that they are operating as negative net revenue wells (operating at a loss in revenue to the well operator). Review of "Subsurface Structure of the Plateau Region of North-Central and Western Pennsylvania on top of the Oriskany Formation" (Cate 1962) shows that it is likely that the proposed Zelman well and the other Oriskany wells analyzed by Sammy-

Mar are all located within the same pool of gas, as that term is defined in the Conservation Law.

C. COMMENT: Some waste fluid associated with oil & natural gas development can be radioactive. (1, 4, 5, 8, 9, 15, 21, 24, 30, 39)

- 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, in part, 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.elibrary.dep.state.pa.us/dsweb/Get/Document-112658/Pennsylvania%20Department%20of%20Environmental%20Protection%20TENORM%20Study%20Report%20Rev%201.pdf

D. COMMENT: The ¼ mi. Area of Review (AOR) referenced in Windfall Oil & Gas' (Windfall) application to the EPA is not large enough, and there are deficiencies with the EPA application. (1, 7, 10, 11, 17, 18, 23, 24, 25, 26, 28, 31, 34, 38, 40, 41, 42, 45)

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, information that was contained in PGE's UIC application to the EPA. The Department has sufficient information to conduct its review of this application, and its review is described in memoranda that are available in DEP's file for this well.

- The EPA calculated a zone of endangering influence (ZEI) around the well using information supplied in the permit application and published information on the geologic characteristics of the Huntersville Chert/Oriskany formations, and determined that the ZEI would extend 400 ft. from the well after 10 years of operation. Based on the Department's review of this information, the Department believes that the ¼ mi. (1320 ft.) AOR is adequate.

- Regarding deficiencies in the EPA application, the original EPA application contained a map that showed faults based on published geologic information. Later site-specific structural mapping based on review of well records showed no evidence of two of these previously mapped faults. Windfall explained this in its December 15, 2016 deficiency corrections.

E. COMMENT: What are the injection materials, how is the waste tracked, monitored and reported, how does the Department oversee operations? (1, 14, 19, 24)
   - RESPONSE: The EPA UIC permit limits this well to the disposal of fluids produced in association with oil and gas production with a limit of 30,000 barrels per month. Monitoring and reporting requirements are listed in Part II(C) and Part II(D) of the EPA UIC permit. The Department's Permit will be conditioned upon the existence of the EPA UIC permit and will require the submission of the annual monitoring report pursuant to 25 PA Code Ch. 78.125. Department personnel regularly inspect injection wells.

F. COMMENT: There seems to be a discrepancy with the depth of the proposed well (7306 ft. vs. 7500 ft.). (1, 24)
   - RESPONSE: Windfall anticipates the top of the Huntersville Chert/Oriskany Formation (injection formation) to be 7306 ft. below ground surface, and the anticipated total depth of the well to be 7500 ft. below ground surface. These two depths are presented on page 1 of Windfall's drilling permit application.

G. COMMENT: The burying of drill cuttings onsite is unacceptable and there are concerns that toxic waste will leach into the groundwater. (1, 23)
   - RESPONSE: Windfall has indicated that waste/drill cuttings will be disposed of on the well site, which is an allowable practice under the requirements of 25 PA Code Ch. 78.61-78.63. The intended function of the practices in 25 PA Code Ch. 78.61-78.63 is to guard against anything leaching into groundwater or surface water. If a well operator wishes to request an alternate practice for the disposal of waste/drill cuttings onsite, they would need to demonstrate that the practice provides equivalent or superior protection to the requirements of 25 PA Code Ch. 78.61-78.63, and approval from the Department would be needed before the practice is used.

H. COMMENT: Who is responsible for the remediation of surface spills or leaks? What happens in an emergency? There are general concerns with the Control and Disposal (C&D) Plan and Erosion and Sediment Control (E&S) Plan. (1, 5, 7, 8, 9, 10, 11, 15, 17, 18, 19, 21, 22, 23, 24, 25, 27, 31, 36, 38, 39, 40, 41, 42, 43, 45, 46)
   - RESPONSE: As the well operator, Windfall is responsible for the remediation of any surface spills or leaks. Windfall's C&D Plan indicates that in the event of an imminent or actual emergency, the agency coordinator should activate alarm systems, notify emergency response agencies listed in the plan, identify the problems, assess the health or environmental hazards and take all reasonable measures to stabilize the situation. The emergency coordinator should also be responsible for follow-up activities after the incident such as treating, storing or disposing of residues and contaminated soil, decontamination and maintenance of emergency equipment and submission of any reports.

Windfall's C&D Plan meets the Department's *"Guidelines for the Development and Implementation of Environmental Emergency Response Plans"* guidance (document #400-2200-001) and associated regulatory requirements. Windfall's E&S Plan meets the requirements of 25 PA Code Ch. 102 and 25 PA Code Ch. 105. These plans are appropriate for the site and contain measures to address spills and emergencies and to protect the watershed.

l. COMMENT: Injection into the Zelman well could pollute private or public water supplies by mechanical integrity/leaks, insufficient formation integrity, pathways such as mines, faults and other wells drilled into the injection zone (with fracs extending into the AOR), and may infringe on Zone II of the City of Dubois Source Water Protection Plan. (1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50)

- RESPONSE: No public water supplies exist within the ¼ mi. Area of Review, and the proposed location of the disposal well is approximately 13,500 ft. southwest of the closest portion of the City of DuBois Source Water Protection Plan Zone II boundary, and approximately 15,000 ft. southwest of the closest City of Dubois public water supply well. According to the October 2014 City of Dubois Source Water Protection Plan, Zone II is the surface representation of the "capture zone", the amount of water contributing to a well or spring in 10 years or less.

  Windfall identified several private water supplies within the area, with the deepest water well providing an underground source of drinking water identified as 360 ft. deep. Information gathered from driller's logs in the area indicates that the deepest fresh groundwater is 750 ft. deep, and the injection zone in the Huntersville Chert/Oriskany is 7300 ft. deep, making the separation between the injection zone and fresh groundwater at least 6550 ft. with multiple low permeability geologic confining zones existing between the injection zone and fresh groundwater. In addition, the Department conducted a review of PA DCNR's Web Driller Database, which identified the deepest water well in Brady Township and Sandy Township that is used for withdrawal as 440 ft. deep. Windfall's proposed surface casing will be set to a depth of 1000 ft., which would cover the identified water wells and the deepest fresh groundwater.

  The Department conducted a mechanical integrity review of the proposed Zelman casing & cementing plan 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 will be met and both the well and the injection zone would demonstrate structural integrity that is adequate for protection of fresh groundwater/water supplies. The EPA UIC permit also prohibits the injection of fluids into underground sources of drinking water, or at pressures which could initiate fractures in the confining zone, and prohibits the injection of fluids in a manner that

could cause the movement of injection fluids or formation fluids into an underground source of drinking water.

The Department's examination of available resources found no evidence that any mines, faults or other wells drilled into the injection zone would convey injected fluid from the Zelman well into fresh groundwater/water supplies. There are no operating mines in the area. Available resources indicate that historic mining of the Upper Freeport Coal Seam is present approximately 870 ft. west of the proposed disposal well, however the well would not be drilled directly through a mine. Given that the Department determined the proposed well and injection formation would have adequate integrity, it is not probable that injected fluid would be conveyed into a mined-out area.

Three faults were identified within the ¼ mi. AOR, but were determined to be "non-transmissive" (i.e. – faults which would prevent the movement of fluid along the fault and into other formations across the fault) based on seismic information evaluated by the EPA. The Department's review confirmed the location of these faults, and did not identify any additional faults around the proposed well. Therefore, it is not probable that injected fluid would be conveyed into fresh groundwater/water supplies along a fault.

No wells that penetrate the injection zone were identified within the fixed ¼ mi. AOR (1320 ft.). To evaluate the acceptability of the AOR, the EPA calculated a Zone of Endangering Influence (ZEI), which indicated that after ten years of operation (the EPA UIC permit expires July 30, 2019), the ZEI would extend only 400 ft. from the proposed Zelman well, or approximately 70% less than the AOR. Therefore, it is not probable that injected fluid would be conveyed outside of the AOR, into a well that penetrates the injection zone and upwards into fresh groundwater/water supplies. If an abandoned well is discovered within the AOR that could provide a conduit for fluid migration into an underground source of drinking water, the EPA permit requires corrective action to be taken.

Finally, if a water supply is affected by injection fluids, Section 3218 of the 2012 Pennsylvania Oil & Gas Act would oblige the well operator to restore or replace the affected supply with an alternate source of water adequate in quantity or quality for the purposes served by the supply.

J. COMMENT: The $30,000.00 bond required by the EPA is not sufficient to cover damages if something goes wrong. (1, 10, 11, 17, 18, 23, 24, 25, 28, 37, 38, 40, 41, 42, 45, 46)
   - RESPONSE: In addition to a minimum $30,000.00 bond required by the EPA permit to close, plug and abandon the well, a $25,000 bond has been filed with the Department and is conditioned upon the operator's faithful performance of all drilling, water supply

replacement, restoration and plugging requirements of the 2012 Pennsylvania Oil & Gas Act.

K. COMMENT: What type of cement will be used, what is the curing time, what are the components and who inspects the cement? (39)
   - RESPONSE: Class A cement will be used, which is commonly used and acceptable in PA oil & gas well construction. Curing time varies with the temperature of the mix water and ground temperature. Basically Portland cement, Class A cement is manufactured through a controlled chemical combination of calcium, silicon, aluminum, iron and other ingredients. Other additives are commonly mixed in to provide specific properties to the cement blend. Department staff reviews the installation procedures and records to ensure that the cement and installation meet the requirements of 25 PA Code Ch. 78.81-78.85.

L. COMMENT: How will residents be notified of a violation? (24)
   - RESPONSE: Windfall's compliance history does not show any open violations in Pennsylvania. If a violation occurs, a Notice of Violation will be given to the operator which can be viewed through the Department's eFACTS database at http://www.ahs.dep.pa.gov/eFACTSWeb/default.aspx.

M. COMMENT: The City of Dubois was not notified as an adjacent municipality. (28)
   - RESPONSE: Windfall has met the notification requirements of the 2012 Pennsylvania Oil & Gas Act, which include 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. The City of Dubois is not an adjacent municipality.

N. COMMENT: What is the injection pressure and injection volume? Will the injection pressure cause the formation to frac or will the well be fraced? (4, 9, 24, 30, 37)
   - RESPONSE: The EPA permit limits the surface injection pressure to a maximum of 2443 psi, bottom hole injection pressure to a maximum of 6425 psi and injection volume to a maximum of 30,000 barrels per month. Injection at a pressure which initiates new fractures or propagates existing fractures in the confining zone adjacent to underground sources of drinking water or causes the movement of injection or formation fluids into an underground source of drinking water is prohibited by the EPA permit.

O. COMMENT: The PA DEP limits the pressure at the seat of the 1000 ft. deep surface casing to 80% of the fresh water pore pressure. The EPA allows a higher pressure which is limited by the fracture pressure of the formation at 1000 ft. deep. The EPA has stated in the Response to Comments for two other DIW's in Clearfield County that the PA DEP is responsible for monitoring the pressure at the seat of the 1000 ft. surface casing. Windfall Oil & Gas needs to conduct a formation integrity test below the seat of the 1000 ft. surface casing. Windfall Oil &

Gas needs to apply for permission for an "alternative method". Then the PA DEP needs to determine if the Windfall design will prevent contamination of the fresh water aquifer at 800 ft. deep. The automatic shutoff feature mandated by the EPA UIC permit should be modified to include excessive pressure at the 1000 ft. deep surface casing seat. (1, 35).

- RESPONSE: Much of this comment is based on 25 PA Code Ch. 78.73(c) and references the application of the pressure limit at the casing shoe depth of 1000 ft., which is not correct. The 25 PA Code Ch. 78.73(c) pressure limit is calculated using the casing shoe depth, but is only applicable at the surface elevation of the surface casing. Windfall has not submitted an "alternative method" request for casing and cementing, and there is no apparent deviation from 25 PA Code Ch. 78 that would require an "alternative method" request to be submitted. Windfall's casing and cementing plan meets the casing and cementing requirements of 25 PA Code Ch. 78, which is protective of the fresh water aquifer.

P. COMMENT: Why is this classified as a Well under Section 3231 of the 2012 Pennsylvania Oil & Gas Act, and also classified as a Conventional Well? (28)

- RESPONSE: Windfall's proposed disposal well would not be subject to Section 3231, as this section regulates underground gas storage, but it would meet the definition of a "Well" under Section 3203 of the 2012 Pennsylvania Oil & Gas Act. "Well" is defined as *"A bore hole drilled or being drilled for.....brine disposal....."*.

  "Conventional Well" is not a defined term under Section 3203, however Section 3203 defines an "Unconventional Well" as *"A borehole drilled or being drilled for the purpose of or to be used for the production of natural gas from an unconventional formation"*. Windfall's proposed disposal well will not be used for the production of natural gas, and the Huntersville Chert/Oriskany is not an unconventional formation, so the well would not be an Unconventional Well.

Q. COMMENT: Why is the drilling permit reviewed/issued from the Southwest District Oil & Gas Office in Pittsburgh when the proposed well location is in Clearfield County. Who should be called in an emergency? (36)

- RESPONSE: Well permitting is handled out of two district offices located in Meadville, PA (Northwest District) and Pittsburgh, PA (Southwest District), and surface permitting and field operations are handled out of three district offices, Northwest District, Southwest District and an office located in Williamsport, PA (Eastern District). The Southwest District handles well permitting for Clearfield County, and the Eastern District handles the surface permitting and field operations. The Eastern District should be notified in the event of an emergency (570-321-6557).

R. COMMENT: DEP issues more permits than it denies. (19)

- 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 Ch. 91.51, 25 Pa. Code Ch. 78, and other applicable legal requirements, the Department shall issue a permit.

S. COMMENT: What is the length of time the well can operate as an injection well? (24)
   - The EPA permit authorizes injection until midnight July 30, 2019. The Department's permit will be conditioned upon the existence of the EPA permit.

T. COMMENT: Property values will decrease with a disposal well in the community. (1, 5, 8, 15, 21, 22, 23, 24, 44)
   - RESPONSE: The Department acknowledges this comment. The impact of an activity on property values is not a factor that the Department may consider when evaluating a permit application, and concerns in that regard may be directed to local officials that can consider zoning and land use concerns.

U. COMMENT: Truck traffic, road deterioration and diesel fumes will increase with a disposal well in the community. (1, 8, 13, 15, 16, 21, 39, 43, 44, 49)
   - RESPONSE: The Department acknowledges these comments. However, unless the activity is likely to create a nuisance, road maintenance, traffic, and vehicle emissions are not regulated by the well permitting process. With regard to truck traffic, the 2008 Pennsylvania Diesel-Powered Motor Vehicle Idling Act prohibits the owners and drivers of any diesel-powered motor vehicle with a gross weight of 10,001 lbs. or more engaged in commerce from causing the engine of the vehicle to idle for more than five minutes in any continuous 60-minute period, except as provided in the Act, and 25 Pa Code. Ch. 123.1 permits emissions from the use of roads or streets. Windfall has also indicated that the main route for truck traffic in Brady Township will be PA State Route 4009, and that a road bond is in place through the Pennsylvania Department of Transportation.

V. COMMENT: This is a residential area and Windfall should conduct an environmental impact study. (7, 23, 26, 31)
   - RESPONSE: Windfall's E&S Plan, which addresses erosion and sedimentation complies with the requirements of 25 PA Code Ch. 102 and 25 PA Code Ch. 105., and indicates that the well pad will be completely contained on Frank and Susan Zelman's property, so other properties should not be disturbed.

     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.

W. Is pressure and mechanical integrity monitoring required? What data is collected and how is it reported? (1, 4, 19, 23, 24, 35)

- RESPONSE: The EPA permit requires a demonstration of mechanical integrity initially and at least once every 2 years. Injection pressure, annular pressure, flow rate and cumulative volume are required to be recorded continuously beginning on the date on which the well commences operation and concluding when the well is plugged and abandoned. Pursuant to 25 PA Code Ch. 78.125, the Department will require Windfall to submit the annual monitoring report submitted to the EPA that includes at a minimum, monthly records of major changes in characteristics or sources of injected fluids, reports of volumes and pressures of injected fluids, reports of mechanical integrity testing and other information or reports required to be submitted to the EPA under 40 CFR Part 146.

X. COMMENT: There are coal mines within the ¼ mi. Area of Review (AOR), which may cause acid mine drainage to deteriorate the casing. (5, 8, 9, 12, 15, 21, 23, 24, 26, 30)
   - RESPONSE: Based on available maps, there is no evidence to suggest that the proposed well will be drilled directly through an operating or abandoned mine, however coal and/or an abandoned coal mine may be present within the AOR. As protection to any potential threats at this depth, 25 Pa Code §78.83 requires well operators to set and cement a coal protective string of casing through workable coal seams. Windfall is subject to this requirement. The EPA permit also requires continuous monitoring of the well for injection pressure and annular pressure, and mechanical integrity testing. Further, 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. Oil and gas wells are regularly safely constructed and operated through coal seams, active and abandoned coal mines in Pennsylvania.

Y. COMMENT: What is the depth of fresh groundwater and how is the depth determined? (24)
   - RESPONSE: Windfall determined the deepest fresh groundwater to be 750 ft. below the surface based on gas well logs from the area. Additional information can be found in Windfall's Hydrology Report in the EPA application. The Department addresses deepest fresh groundwater above in its response to Comment I.

Z. COMMENT: Will Windfall conduct any monitoring? (1, 19, 23, 24, 37)
   - RESPONSE: Monitoring requirements are listed in Part II(C) of the EPA UIC permit, and include parameters such as injection pressure, annular pressure, flow rate, cumulative volume and the nature and composition of the injected fluid. Enforcement of these monitoring requirements is handled by the EPA. A copy of the annual monitoring report submitted to the EPA shall also be submitted to the Department in accordance with 25 Pa Code §78.125.

     Water testing of public or private water supplies may be conducted at the discretion of Windfall. It is typical practice that well operators sample water supplies to establish baseline water quality prior to drilling a new well. Owners of public or private water

supplies may also choose to collect baseline samples of their supplies. Establishing baseline water quality is important to verify if a post-drilling impact has occurred. If a water supply is affected, Section 3218 of the 2012 Pennsylvania Oil & Gas Act requires a well operator who affects a public or private water supply by pollution or diminution to restore or replace the affected supply with an alternate source of water adequate in quantity or quality for the purposes served by the supply.

Windfall has sampled and analyzed local water sources for the same parameters as the injection fluid (pH, alkalinity, specific conductance, total dissolved solids, chlorides, potassium, total suspended solids, sulfate, aluminum, barium, calcium, iron, magnesium, manganese, sodium and strontium). Windfall indicated in their application to the EPA that it will collect and analyze samples monthly during construction of the well and annually (at a minimum) during operation from four of these monitoring points.

AA. COMMENT: Noise & lights will bother residents in the community. (24, 34, 44)

- RESPONSE: The Department acknowledges this comment. Windfall indicated that deliveries will be restricted to between 7:00 AM and 6:00 PM Monday through Saturday, which will reduce the potential for public nuisances. The Department's approval of a permit to drill and operate a well does not limit its ability to respond to future complaints from a citizen alleging a nuisance condition.

BB. Earthquakes could occur as a result of the injection. (1, 3, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 34, 37, 38, 39, 40, 41, 42, 44, 45, 46)

- RESPONSE: The Department's analysis does not show the likelihood that the operation of this proposed well would cause earthquakes. The majority of disposal wells in the United States do not pose a hazard for induced seismicity, however faults in the Precambrian basement are believed by some experts to have generated seismic events in other states. The proposed Zelman well's injection zone is separated from the Precambrian basement by approximately 8700 ft. with multiple low-permeability geologic confining zones within this distance, and faults that were identified within the ¼ mi. AOR that were determined to be "non-transmissive" based on seismic information evaluated by the EPA. These factors would likely negate any contribution of the Precambrian basement to potential seismic activity. Additionally, the location is within the relatively seismically stable interior of the state of Pennsylvania, and the Department's review did not identify any known seismic events within the ¼ mi. AOR or historic earthquakes (since 1970) of magnitude two (2M) or greater within Clearfield County. Although the Department's review did not show that injection into the proposed Zelman well would likely cause earthquakes, Windfall will be required to monitor seismicity in an abundance of caution.

CC. COMMENT: The proposed Zelman well would violate Article 1, Section 27 of the Pennsylvania Constitution. (1, 19, 20)

- RESPONSE: The Department's review of Windfall's application determined that the proposed well's mechanical integrity is adequate, the injection formation's distance and geologic separation from public natural resources is adequate and Windfall is properly bonded. The requirements of applicable statutes, regulations and guidance manuals have been met in Windfall's application to the Department and permit conditions are in place to address seismicity, mechanical integrity, monitoring and reporting. In consideration of these factors, this project is unlikely to degrade public natural resources.