

**Responsiveness Summary to Public Comments
for
The Issuance of an Underground Injection Control (UIC) Permit
for
Columbia Gas of Pennsylvania, Inc.**

On September 4, 2025, the U.S. Environmental Protection Agency (EPA) Region 3 issued a public notice requesting comment and announcing the opportunity for a public hearing for the proposed issuance of an Underground Injection Control (UIC) Permit, PAS2D041BBEA, to Columbia Gas of Pennsylvania, Inc., to operate a Class II-D injection well in Beaver Falls, Beaver County, Pennsylvania. In this Responsiveness Summary, the EPA sometimes refers to the well by its name, the “John Galey C-5 well.” Throughout this Responsiveness Summary, the EPA refers to Columbia Gas of Pennsylvania, Inc. as “Columbia Gas” or the “Permittee.”

Under the Permit, the well would continue to operate as a Class II-D injection well. Class II-D wells are used to dispose of fluids brought to the surface in connection with natural gas storage operations. 40 C.F.R. § 144.6(b)(1). The injected fluids are produced from the use of the Blackhawk Storage Field for storing natural gas.

The EPA received numerous requests to hold a public hearing to receive comments on the draft Permit. On October 6, 2025, the EPA held a virtual public hearing. Twelve (12) people attended this public hearing, during which the EPA received oral comments from four (4) individuals/entities. The EPA also extended the public comment period until October 20, 2025.

The responsiveness summary which follows provides responses to the comments that were raised and sent to the attention of EPA Region 3 as well as comments received at the public hearing. The EPA thanks the commenters for their informative and thoughtful comments.

1. COMMENT: The proposed permit does not address the potential effects of the permit on matters that are distinct from the protection of underground sources of drinking water.

RESPONSE: Several commenters raised concerns about matters that are outside of the UIC program’s jurisdictional scope. The EPA lacks the regulatory authority to address these concerns in the UIC permitting process under the Safe Drinking Water Act (SDWA), 42 U.S.C. § 300f *et seq.* The concerns these commenters raised were issues associated with construction of an artificial intelligence data center, non-compliance by the operator with the Clean Water Act (33 U.S.C. § 1251 *et seq.*), criminal exploitation of natural resources, incentivization of fracking buildout, proximity of the injection well to homes and waterways, and general objections to the permit. The federal UIC permitting program does not include these concerns as ones that the EPA must address when it issues a UIC permit.

The concerns may be addressed by other federal, state, and local regulations. In addition, these concerns are often addressed by other needed authorizations since the EPA’s UIC permit is only one of

several authorizations that a permittee may need to obtain before being allowed to commence construction or operation.

The UIC permit contains several conditions that address compliance by the Permittee with other local, state, or federal laws. Paragraph I.A. of the permit provides that, “Issuance of this Permit does not convey property rights or mineral rights of any sort or any exclusive privilege; nor does it authorize any injury to any persons or property, any invasion of other private rights, or any infringement of State or local law or regulations.” In addition, Paragraph I.D.11. of the permit states, “Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation.” These provisions recognize that the Permittee is subject to multiple constraints on its actions.

When deciding on whether to issue a UIC permit, the UIC regulations limit the EPA’s jurisdiction to determine whether the proposed injection operation will safely protect underground sources of drinking water (USDWs) from contamination by the subsurface emplacement of fluids and a determination that the injection operation, as proposed, will be compliant with all federal UIC requirements that protect USDWs. When making the decision on whether to issue a UIC Permit, the EPA’s focus rests solely in determining whether the well’s construction and the permittee’s proposed operation will safely protect USDWs from contamination by the subsurface emplacement of fluids. The EPA therefore acknowledges the concerns of the comments, but they raise matters and issues that are not within the jurisdictional scope and purview of the UIC regulations and permitting process.

2. COMMENT: One commenter asked EPA to clarify if the injection well will still just be used to inject fluids in association with the Blackhawk Storage Field or if fluids from other locations will be brought in.

RESPONSE: The EPA revised the Permit conditions to match the Permittee’s intent to allow only for the injection of fluids produced in association with its natural gas storage operations at the Blackhawk Storage Field. The preamble of the Permit now stipulates that, “this Permit authorizes [Columbia Gas of Pennsylvania, Inc.] to operate a Class II-D disposal injection well, John Galey C-5 Well, API No. 37-007-20027, for the purpose of injecting fluids produced solely in association with Blackhawk Storage Field gas production operations into the Oriskany Sandstone Formation in accordance with the provisions of this Permit.”

Columbia Gas stores natural gas in the Blackhawk Storage Field. The gas is injected into the Oriskany Sandstone Formation. When the Permittee releases the natural gas from the storage field formation to the surface, this process also produces brine. While the gas is injected dry into the storage field formation, when the Permittee transfers the gas to the surface, fluids from the Oriskany Sandstone Formation also come up. To dispose of the brine, Columbia Gas operates the John Galey C-5 injection well. The injection well returns the brine back to the Oriskany Formation. In effect, the fluid produced from the geologic formation is being returned back to the same formation. According to the Permittee, the sole purpose of the injection well is to dispose of the brine. No drilling fluid waste, fract (flow-back) water or saltwater collected from non-Blackhawk wells has been or will be injected into the well.

The EPA emphasizes that this injection well is not permitted as a commercial disposal well. Therefore, the injection well is not permitted to take fluid from any other oil and gas operations. On page 5 of the permit application, the Permittee states that, "Source of Injection Fluids (including field and formation names): Brine water produced from gas production activity of the Blackhawk Field will be injected into the Oriskany Sandstone Formation located at the subsurface interval between approximately 4822 feet and 4884 feet." The Permittee does not intend to, nor is the Permittee permitted to, inject any fluid into the injection well except fluids produced solely in association with its gas storage operations and production of the gas from the storage field.

3. **COMMENT: One commenter asked if this permit was for a one-time injection or for a series of injections until the well is "full."**

RESPONSE: The preamble of the Permit provides that, "This Permit and its authorization to inject shall remain in effect for the operational life of the Facility, which includes the proper plugging and abandonment of the Injection Well when operations cease." This injection well was originally permitted by the EPA in 1985 and has been operational ever since. The Permit will allow the injection operations to continue throughout the operational life of the Facility. The term "operational life of the Facility" comes directly from the UIC regulations at 40 C.F.R. § 144.36: "UIC permits for Class II and III wells shall be issued for a period up to the operating life of the facility." Note that as described in the prior comment, when the Permittee produces natural gas from the formation, brine is brought to the surface. This brine is then reinjected back into the same formation.

4. **COMMENT: Pennsylvania's Clean Water Act is perpetually violated by the petrochemical and fracking industries, impeding citizens' access to uncontaminated natural resources. The Permit also threatens the rights protected by the Environmental Rights Amendment of the Constitution of the Commonwealth of Pennsylvania. The Amendment guarantees every resident a right to clean air, pure water, and the preservation of the natural, scenic, historic, and esthetic values of the environment.**

RESPONSE: (There does not exist a law entitled the Pennsylvania's Clean Water Act. For the purpose of responding to this comment, the EPA assumed that the commenter was referring to Pennsylvania's Clean Streams Law. If the commenter is instead referring to the federal Clean Water Act, this comment is addressed in the response to comments #9 and #10.) The EPA responds that UIC Permits issued by the EPA are not subject to the requirements of Pennsylvania's Clean Streams Law. Compliance with a State statute is not set out in 40 C.F.R. § 146.24 as a consideration for the EPA when issuing a Class II permit.

Even if the final Permit was subject to the Clean Streams Law, the EPA responds that the operation of the well should not conflict with it. There should not be any effects on surface waters of streams or other bodies of water because of this permitting decision since the information the Permittee submitted for the Area of Review (AOR) surrounding the John Galey C-5 well demonstrates that there are not any streams or surface water bodies, active or abandoned mines, or abandoned wells penetrating the injection zone that could be affected by the injection well. To the extent that the Clean Streams Law might regulate impacts on USDWs, other underground waters, or surface waters, the Permit requires adequate protective measures.

The EPA did not consider the Environmental Rights Amendment (Article I, Section 27 of the Pennsylvania Constitution) because a decision to issue a UIC permit is based on the SDWA and UIC regulations, and state laws such as the Amendment are outside the scope of the UIC program. Even if the EPA were subject to the Amendment, the EPA disagrees with the allegation that this permit issuance would violate the Pennsylvania Constitution's guarantee of access to "clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment." UIC requirements and final permit conditions are designed to ensure non-endangerment of USDWs and to ensure that underground injection operations can proceed in a manner that protects drinking water for local residents.

5. **COMMENT: One commenter had concerns about the confining zones of the injection zone, noting that limestone is a very porous rock. The commenter asks if the limestone in the confining zones is a different form of limestone and how it is impermeable.**

RESPONSE: The lowermost USDW is separated from the upper limit of the injection zone by approximately 4,297 feet. Columbia Gas has stated that the Huntersville Chert and Onondaga limestone immediately overlying the Oriskany Sandstone Formation serve as an impermeable confining caprock for the Formation. Plus, there is the Tully limestone formation above Onondaga limestone. These lower permeability formations collectively provide confinement for all injected fluids, as they did previously for the natural gas that accumulated and was subsequently produced from the Oriskany Sandstone Formation. The Injection Well terminates in the injection zone at 4,840 feet below ground surface. Below the injection zone lies the Shriver Formation, which consists of shales and cherts that serve as a confining unit.

The EPA acknowledges that some limestone formations are very porous and would not necessarily be capable of serving as a confining unit. However, according to page 125 of a Pennsylvania Geological Survey mineral resource report by B. L. Miller, "In the western localities where the Onondaga has been recognized it is chiefly shale" (*Limestones of Pennsylvania*, 1934), which is much less porous than limestone generally is. Shale typically serves as a caprock to prevent escape of fluids due to its low permeability and porosity.

Furthermore, the John Galey C-5 well has been operating as an injection well since 1985. At no point during this well's operation (over 40 years to the date of this response) has the EPA observed any evidence of injection fluid not being confined to the intended injection zone.

The UIC regulations for Class II injection wells limit injection pressure to prevent the fracturing of the confining zone adjacent to the USDW. However, the Region has gone farther by adopting a more protective policy when it issues permits by imposing injection pressure limits to prevent the fracturing of the injection formation itself. Establishing a maximum injection pressure that prevents fracturing of the injection formation also protects the adjacent confining zones and helps to ensure the injection fluid remains in the intended formation. Therefore, the surface injection pressure limit of 1,832 psi and bottom-hole pressure limit of 4,340 psi in the Permit are sufficient to protect the confining zone adjacent to the injection zone from fracturing and thus prevent any communication with USDWs by the injected fluid.

6. **COMMENT:** Testing was performed in 2020 and showed some degradation of the cement at the very lowest level of the well. Are these tests to be repeated considering the existing permit says MIT would be done every 5 years? Would these tests be repeated before any injection occurs?

RESPONSE: The proper construction and mechanical integrity testing of injection wells are cornerstones of the UIC regulations and are integral to the EPA's permit application review process. The EPA's records show that cement record evaluation as well as casing and tubing pressure testing was done on the John Galey C-5 well in 2020. The commentor is correct that testing showed some degradation of cement at the very lowest level of the well.

The EPA contacted the permittee about this issue. As a result, the permittee has agreed to cement the bottom of the well and to conduct a cement bond log to confirm that the cement is in good condition and meets the requirements of the regulations. To address the cement degradation, the EPA has modified Paragraph III.A.2.d. of the Permit to read as follows: "ensure that the Injection well has 5 ½-inch long string casing installed from the ground surface to a depth of approximately 4,897 feet below ground surface, and cemented back at least 50 feet above the injection zone."

After the Permittee has completed cementing the well and before injection can commence, it must also demonstrate, in accordance with 40 C.F.R. § 146.8 and to the satisfaction of the EPA Region 3's Director of the Water Division (Director), that the injection well has mechanical integrity. Paragraph II.C.5. of the new Permit requires that the Permittee make a demonstration of mechanical integrity, in accordance with 40 C.F.R. § 146.8, at least once every five (5) years. Demonstrations must be conducted within five (5) years of the date that the previous demonstration was made. Also, the Permittee must conduct a mechanical integrity test demonstration on the Injection Well when the protective casing or tubing is removed from the well, the packer is reseated, a well failure is likely, or as requested by the Director. The Permittee may continue operation of the Injection Well only if the Permittee has demonstrated the mechanical integrity of the Injection Well to the Director's satisfaction. If a loss of mechanical integrity becomes evident or if the Permittee cannot demonstrate mechanical integrity, the Permit requires the Permittee to cease injection operations.

Finally, as noted elsewhere in this Responsiveness Summary, the Permit provides further protection of the well's mechanical integrity by requiring that the injection well be equipped with automatic shut-off devices which would be activated in the event of a mechanical failure.

7. **COMMENT:** There are concerns about the structural integrity of the well casing because the well was drilled in the late 1960s. Further, was the well originally designed for natural gas injection to the underground storage field? It is now being permitted for brine and unknown proprietary chemicals. Does the well meet the current design standards for an injection well? Has the well been video logged and when was the last time anybody actually looked into it?

RESPONSE: According to its completion report, the John Galey C-5 well (API #: 37-007-20027) was redrilled as a gas storage well in 1970. The John Galey C-5 well was then permitted for use as an injection well in 1985. Following the conversion of the well to an injection well, Columbia Gas was

not able to initiate injection operations until it conducted an initial test to demonstrate the mechanical integrity of the injection well in accordance with 40 C.F.R. § 146.8. Paragraph II.C.5 of the final Permit continues the requirement that Columbia Gas must demonstrate mechanical integrity at least once every five (5) years.

In addition, since the well was originally permitted in March, 1985, Columbia Gas has been required to demonstrate the mechanical integrity of the well at least once every five years. 40 C.F.R. § 146.23(b)(3). and after any repair, modification, or rework of the injection well. Paragraph II.C.5 of the final Permit continues this requirement as well. Therefore, regardless of the age and original use of the injection well, the John Galey C-5 well is held to the same testing and monitoring standards as all other UIC wells permitted by the EPA Region 3 UIC Program.

As another commenter pointed out, the well is (at the time of this writing) overdue for a demonstration of mechanical integrity since the last demonstration was dated August 12, 2020. In order for the Permittee to restart operating the well, the Permittee must again demonstrate the well's mechanical integrity, further solidifying that it is up to current design standards.

In addition, the Region requires Permittees to install equipment that shuts down the well in case there is a problem with the well's mechanical integrity as a standard requirement for the Class II permits it issues. Paragraph II.B.5. of the Permit requires that, "The Injection Well shall be equipped with automatic shut-off devices which would be activated in the event of a mechanical failure."

The well is not required to be video logged, and, as such, no information regarding video logging is available within the permit application. However, the application does include a "HR Vertilog Inspection Final Report" performed by Baker Hughes on July 29, 2020, within the permit application that was reviewed before a draft Permit was written.

8. COMMENT: There are concerns about public health threats resulting from the injection well, including specific concerns regarding exposure to rare cancers and more radioactivity in groundwater. There are concerns about the risk of surface water contamination. Concerns over the composition of the proposed injection fluid and that the fluid may contain toxic, hazardous, radioactive components and TENORM (Technologically Enhanced Naturally Occurring Radioactive Material), or hydraulic fracturing fluids. One commenter was concerned about the possibility that the contaminants PFOA/PFAS were in the injected fluid. The Safe Drinking Water Act provides that "radioactive waste" can only be injected into Class I injection wells and defines "radioactive waste" to include "any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR part 20, appendix B, table II column 2." Most, if not all, produced water originating in the Marcellus and Utica shales will meet or exceed this threshold, making this material "radioactive waste" as defined by the Safe Drinking Water Act. At a very minimum, the permit must require sufficient monitoring to ensure the well does not receive produced water with radionuclide levels that meet the Safe Drinking Water Act's threshold for "radioactive waste."

RESPONSE: To protect the ground water under the site that qualifies as USDWs, the Permit limits the injection of fluids by the well to the Oriskany Sandstone Formation in the subsurface interval between approximately 4,822 feet to 4,884 feet below ground surface. Columbia Gas has

indicated that an effective vertical seal of the Oriskany Sandstone Formation has been provided by an average of 205 feet of dense, hard, massive crypto-crystalline carbonate formations known as the Huntersville Chert and Onondaga limestone immediately overlying the Oriskany Sandstone Formation. Those dense carbonate formations serve as an impermeable confining caprock for the Oriskany gas reservoir. In addition, an approximately 31 feet thick impermeable carbonate layer (Tully limestone) is present approximately 158 feet above the top of the Onondaga limestone. The lowermost USDW is separated from the upper limit of the injection zone by approximately 4,297 feet. The EPA found that adequate confinement exists to limit the injectate to the Oriskany Sandstone Formation and to prevent the injectate from moving into USDWs. In addition to the geologic barriers, the operating and other requirements set out in Parts II and III of the Permit provide additional protection for groundwater resources around the well.

With regard to surface water, proper confinement of the injectate also prevents the injectate from migrating to the surface through a spring, if one exists within the AOR. The Permittee indicated that no springs exist within the AOR. Also, proper confinement prevents injectate from reaching the surface after the well is operating or shut in. Based on this, it is the EPA's expectation that the well will have no effects on surface waterways or groundwater.

As discussed further in other responses to comments, the EPA is limited in its authority to address surface spill prevention through the UIC permitting process. However, the Pennsylvania Department of Environmental Protection (PADEP) controls surface disturbances, fluid containment and spills which could occur on the injection well site. PADEP is the State agency responsible for regulating all surface construction and spill prevention at the proposed well site. As part of the State's regulatory system, Title 25, Chapter 78, of the Pennsylvania Code requires well operators to report any surface spills or releases of brine to PADEP.

Paragraph III.B.2. of the Permit limits the wastewater injected into the well to fluids produced solely in association with the Permittee's gas storage and production activity plus any additives necessary to maintain the integrity of the Injection Well. This reflects the classification of the well as a Class II well. Paragraph III.B.2. also prohibits the injection of hazardous fluids that are not the result of gas storage production from the Blackhawk Storage Field.

As explained in the response to comment #2, the Permittee does not intend and is not permitted to inject hydraulic fracturing fluids. According to the permit application, "The sole purpose of the John Galey C-5 well is to return Oriskany saltwater produced and recovered by Blackhawk storage wells to the Oriskany formation. No drilling fluid waste, fract (flow-back) water or saltwater collected from non-Blackhawk wells has or will be injected into the John Galey C-5 disposal well."

Individual constituents within the fluid produced from a geologic reservoir used for natural gas storage potentially may be toxic, hazardous, or radioactive (including NORM or TENORM). This is true even if the formation was not hydraulically fractured. For example, the injected fluid may include Naturally Occurring Radioactive Material.

Naturally Occurring Radioactive Material or "NORM" are radioactive compounds that exist naturally at low levels in soils and rocks. Some oil and gas production fluids may contain these radioactive

byproducts (i.e., Ra-226 and Ra-228) depending upon the geologic formation from where the fluid has been produced. For example, fluids produced from shale tend to contain greater concentrations of natural radioactivity because of the clay content in the shale.

The fluid may also include TENORM. TENORM is NORM that has been concentrated or exposed to the accessible environment because of human activities such as manufacturing, mineral extraction, or water processing. TENORM is managed in the same way as NORM. TENORM associated with the production of oil and gas is considered to be part of Class II fluids and are permissible to be injected into a Class II injection well.

While fluids from the Class II operations described in 40 C.F.R. § 144.6(b) may contain toxic, hazardous, and radioactive constituents such as NORM and TENORM, Congress has exempted these fluids from hazardous waste regulation. Such wastes are not classified as hazardous under the Resource Conservation and Recovery Act (RCRA). As a result, the disposal of these fluids in a Class II injection well is legally permissible. Furthermore, even though the fluids may contain NORM or TENORM with radioactive levels that exceed the radioactive level cited in the UIC rule definition of “radioactive waste,” the exemption precludes requiring monitoring for radioactivity.

Brine, often referred to as produced water, resides in the formations that hold oil and gas. Extraction of oil and gas usually produces large amounts of brine. Brine still remains in the formations even after operators have stopped producing the oil and gas that originally resided in the formation. This is the brine that natural gas storage operations produce when the natural gas is released to the surface.

Often saltier than seawater, this brine can contain toxic metals and radioactive substances. Brines can damage the environment and public health if discharged to water or land. Deep underground injection of brine in formations isolated from underground sources of drinking water prevents soil and water contamination. See EPA website for further discussion about Class II injection wells: [<https://www.epa.gov/uic/class-ii-oil-and-gas-related-injection-wells>].

UIC regulations mandate the consideration of a variety of measures to assure that injection activities will not endanger USDWs. The concept of endangerment is defined in 40 C.F.R. § 144.12(a): “No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. part 142 or may otherwise adversely affect the health of persons.”

9. **COMMENT: Issuing an Underground Injection Control (UIC) Permit for the John Galey C-5 well would violate the Safe Drinking Water Act and the Clean Water Act.**

RESPONSE: The Safe Drinking Water Act requires the EPA to develop minimum federal requirements for underground injection of waste fluids. The requirements set out in the EPA’s rules mandate practices that protect public health and prevent contamination of USDWs. Unless an injection well is authorized by rule, the owner or operator of an injection well must apply for a permit pursuant to 40 C.F.R. § 144.31.

In Pennsylvania, the Commonwealth never applied for or assumed primacy for the UIC program. Therefore, the EPA administers the program in the state. As a result, UIC well owners and operators must apply to the EPA to receive a UIC permit.

UIC regulations found at 40 C.F.R. Parts 144 and 146 set the requirements and standards that a permit applicant must meet to receive a permit. In addition, 40 C.F.R. Part 147, Subpart NN has additional requirements for UIC wells in Pennsylvania. These regulations primarily address the geology of a well site, well engineering, well operation and monitoring, and, finally, well closure. Permit applicants must perform a comprehensive review of the well site and submit the results of the review to the EPA. They must provide details about the well's construction, provide specific information about the well's operation, and set out the financial arrangements they have made to ensure the protection of all local USDWs. The EPA then reviews each permit application thoroughly to verify its completeness and technical authenticity prior to preparing a draft permit.

Region 3 reviewed Columbia Gas's permit application and related materials and issued a draft permit that in its judgment would comply with the SDWA and the applicable regulations. Region 3 has now reviewed the public comments on the draft permit. The EPA is issuing the final permit because the permit complies with the SDWA.

With regard to the Clean Water Act, it is the EPA's expectation that the well will have no effects on surface waterways if the Permittee complies with the Permit. Also, see response to next comment and the response to comment #8.

10. COMMENT: The injection well is 1,210 feet from Brush Run, a local stream in the Ohio River Basin that flows into the North Fork Little Beaver Creek, which then flows into the Ohio River. North Fork Little Beaver Creek is also a Pennsylvania tributary to the main Little Beaver Creek, flowing through Beaver County and near the town of Darlington before entering Ohio. It is a designated Wild and Scenic River in Ohio. Contamination would be devastating. The antidegradation policy established by the Clean Water Act requires that "the level of water quality necessary to protect [the stream's] existing uses shall be maintained and protected." The same antidegradation policy also requires that sufficient water quality must be maintained "to support the protection and propagation of fish, shellfish, and wildlife and recreation on and in the water."

RESPONSE: The EPA does not anticipate any direct adverse effects from the injection well on the Little Beaver Creek or any other surface water resources because the UIC regulations and the Permit's conditions are designed to prevent upward migration of injection fluid.

40 C.F.R. § 144.4(a) references the statutory requirement that the EPA comply with the Wild and Scenic Rivers Act, 16 U.S.C. § 1273 et seq. (Act), as applicable. As noted in the regulations, Section 7 of the Act, 16 U.S.C. § 1278, prohibits the Regional Administrator from assisting by license or otherwise the construction of any water resources project that would have a direct, adverse effect on the values for which a national wild and scenic river was established. Segments of the Little Beaver Creek, including the "North Fork of Little Beaver Creek, from the confluence of Brush Run and the North Fork to the

confluence of the North Fork with the main stem at Fredericktown (4¼ miles),” are designated as an Ohio state administered scenic river area under the Act. 41 Fed. Reg. 8518 (Feb. 27, 1976).

Commenter also references and quotes the EPA’s antidegradation policy, at 40 C.F.R. § 131.12, promulgated by the EPA under the Clean Water Act. Under this policy, states must ensure that existing instream water uses, and the water quality necessary for such uses, are maintained and protected. PADEP administers an EPA-approved antidegradation policy under Title 25, Chapter 93 of the Pennsylvania Code.

Based on the information in the permit application, including the United States Geological Survey map of the AOR, the EPA did not identify Brush Run as being located within ¼-mile of the Injection Well. The EPA recognizes that other sources suggest that a water feature may exist within ¼-mile of the Facility. Having considered this additional information, the EPA has not identified any direct or adverse effect on Brush Run, the Little Beaver Creek, or any other surface waters, for the following reasons.

As noted previously, the Permit imposes construction and operational requirements necessary to protect USDWs that have the further effect of protecting the surface waters from contamination from the injection well. Prevention of upward fluid movement is directly addressed in the EPA’s UIC regulations and permit conditions. For instance, 40 C.F.R. § 144.12 requires that, “No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. part 142 or may otherwise adversely affect the health of persons.” 40 C.F.R. § 146.24(c)(2) further requires that, prior to being approved for operation, Class II injection wells demonstrate “mechanical integrity,” which 40 C.F.R. § 146.8 describes as existing if “there is no significant leak in the casing, tubing or packer; and there is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.” Under 40 C.F.R. § 146.23(b)(3), such mechanical integrity must be monitored and demonstrated at least once every five years, and, under the Permit conditions, at any other time required by the Director. 40 C.F.R. § 146.22 requires that, “All Class II injection wells shall be cased and cemented to prevent movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well.” Additionally, the distance of the injection zone from the surface of the ground and the effective vertical seal of the limestone formations above the injection zone limit the movement of the injected fluids. Based on these requirements that are already applicable and incorporated into the Permit, it is the EPA’s determination that no effects on surface waterways should occur.

For the foregoing reasons, it is not necessary to impose any more particular conditions on the Permit or to deny the Permit based upon Wild and Scenic Rivers Act or the antidegradation policy of the Clean Water Act. (For additional information, also see the responses to comments #4 and #9.)

The EPA understands the concerns regarding potential spills at the well surface and impacts to surface water. However, the UIC action at issue only pertains to the permitting of subsurface injection activities at the Facility, as discussed further in the responses to previous comments. State programs in Ohio and Pennsylvania would have primary authority over surface activities potentially impacting the Little

Beaver Creek or Ohio River. The EPA, of course, also reserves its other federal authorities and responsibilities. The Permit at issue here does not authorize the discharge of pollutants to waters of the United States, nor take any other actions under the Clean Water Act or other potentially applicable federal laws.

Surface disturbances, fluid containment, and spills which could occur on the injection well site are all regulated by PADEP, which is the State agency responsible for all surface construction and spill prevention at the proposed well site. In addition, Title 25, Chapter 78 of the Pennsylvania Code requires well operators to report any surface spills or releases of brine to PADEP.

The EPA once again emphasizes that the UIC permit contains conditions that address compliance with other local, state, or federal laws. See Paragraphs I.A. and I.D.1 of the Permit. Therefore, the EPA's UIC permit is only one of several authorizations that a permittee may be required to obtain before being allowed to commence construction or operation. When making the decision on whether to issue a UIC Permit, the EPA's focus rests solely in determining whether the well's construction and the permittee's proposed operation will safely protect USDWs from contamination by the subsurface emplacement of fluids.

11. COMMENT: The Safe Drinking Water Act¹ authorizes Class II UIC wells provided that the wells' permits limit the wells to the injection of fluids from conventional oil and gas development. Because this injection well proposes to accept unconventional frack fluids, it is in violation of federal regulations.

RESPONSE: The commentor's statement that the permit is in violation of federal regulations is based upon the assumption that the Permittee will be injecting "unconventional frack fluids" into the well. This assumption is incorrect.² Columbia Gas neither intends nor is it permitted to inject unconventional frack fluids. It will inject fluid resulting from natural gas storage operations.

When the Permittee injects the natural gas into the Oriskany Sandstone Formation in the storage field, the gas goes in dry, that is without fluid. However, when the Permittee produces the gas from the storage field, fluids (mainly brine) from the Oriskany come with gas to the surface. The injection well is just returning the fluid back to the Oriskany.

As stated in the permit application (and above), "The sole purpose of the John Galey C-5 well is to return Oriskany saltwater produced and recovered by Blackhawk storage wells to the Oriskany formation. No drilling fluid waste, fract (flow-back) water or saltwater collected from non-Blackhawk wells has or will be injected into the John Galey C-5 disposal well." The Permit #PAS2D041BBEA authorizes the John Galey C-5 injection well to operate "for the purpose of injecting fluids produced in association with Blackhawk Storage Field gas production operations into the Oriskany Sandstone Formation in accordance with the provisions of this Permit." Because the fluids to be injected result

¹ The classification scheme for injection wells was established by regulation and does not appear in the Safe Drinking Water Act.

² The Region disagrees with the commentor's underlying position that using the injection well to dispose of unconventional frack fluids would be a violation of federal regulations. Since this well will not be disposing of unconventional frack fluids, it is not necessary to address this statement here.

from natural gas storage operations, the assumption that this injection well proposes to accept unconventional frack fluids and is therefore in violation of federal regulations is both incorrect and irrelevant to this particular permitting decision. The injected fluids are produced entirely from natural gas storage. (Also see response to comment #2 for further information regarding this particular injection process.)

12. COMMENT: In a two-part audit of records, the U.S. Government Accountability Office (“GAO”) found that the EPA is failing to protect U.S. drinking water sources from fracking-related activities like waste disposal via injection wells. Short-term and long-term monitoring are both lax, and record-keeping varies widely from state to state. The EPA neither mandates nor recommends a fixed list of chemicals for monitoring on the grounds that injection fluids can vary widely in composition. Disposal of oil and gas waste via injection wells is, in fact, subject to regulation under the Safe Drinking Water Act, but, in practice, no one knows exactly what the waste contains, and regulations are deficient. Therefore, the EPA cannot credibly state that the design and integrity of this injection well is sufficient.

RESPONSE: The EPA has reviewed and processed the Permittee’s application under the applicable UIC statutes and regulations, and the resulting Permit fully comports with legal requirements.

Sub-Comment A – The GAO found that the EPA is failing to protect U.S. drinking water sources from fracking-related activities like waste disposal via injection wells.

Response – The commentor did not provide a specific citation to a GAO report. In 2014, the GAO issued a report on EPA’s Underground Injection Well Program, U.S. GAO, Drinking Water: EPA Program to Protect Underground Sources from Injection of Fluids Associated With Oil and Gas Production Needs Improvement (June 2014, <https://www.gao.gov/assets/gao-14-555.pdf>). To the extent this sub-comment is referring to the cited report, the EPA does not agree with the characterization of the GAO’s findings but will let the report and the EPA’s responses thereto speak for themselves.

Sub-Comment B – Record-keeping varies widely from state to state.

Response – This sub-comment is inapposite. For the Commonwealth of Pennsylvania, the EPA retains primacy for implementing the UIC Program in the state and maintains its own set of records consistent with applicable federal law. The UIC Program strives for transparency by maintaining public-facing webpages for all its active permits. For example, the page for UIC Permit: PAS2D041BBEA on the EPA’s web site (<https://www.epa.gov/uic/uic-permit-pas2d041bbee>) houses the Permittee’s existing permit for the Facility and all annual monitoring reports since 2017. If this Permit becomes final and effective, the new Permit and its permit application will be posted as well. This, and other relevant information, is available to the public and updated regularly as necessary. Furthermore, under 40 C.F.R. § 144.31(f), “Applicants shall keep records of all data used to complete permit applications and any supplemental information submitted under § 144.31 for a period of at least 3 years from the date the application is signed.” This information is required to be made available to the EPA upon request as needed.

Sub-Comment C – The EPA neither mandates nor recommends a fixed list of chemicals for monitoring on the grounds that injection fluids can vary widely in composition.

Response – While the EPA may not in general mandate nor recommend for UIC permits a fixed list of chemicals for monitoring, 40 C.F.R. § 146.23(b)(1) requires the “[m]onitoring of the nature of injected fluids at time intervals sufficiently frequent to yield data representative of their characteristics” by permittees. To implement this requirement, Paragraph II.C.3 of the Permit states, “The Permittee shall monitor the nature and composition of the injection fluid injected into the Injection Well by sampling, analyzing, and recording the injection fluid for the parameters listed below at the initiation of the injection operation and every two (2) years thereafter, or whenever the operator observes or anticipates a change in the injection fluid.” The listed testing parameters under the Permit include pH, Total Dissolved Solids, Chloride, and Barium.

For the decision about which parameters must be sampled for monitoring, 40 C.F.R. § 146.23(b)(1) provides the EPA Regions directly implementing UIC programs with the discretion to require monitoring for the injection fluid constituents that they deem critical to protect underground sources of drinking water in their respective states or regions. Throughout the history of the Program, Region 3’s UIC Program has found that the testing parameters listed in this final permit are appropriate to characterize a Class II injection fluid. The required parameters reflect not only some typical constituents which are found in the injection fluid, but also in shallow ground water. Should a ground water contamination event occur during the operation of the well, by using these testing parameters, the EPA will be able to compare samples collected from groundwater with the injection fluid analysis to help determine whether the operation of the injection well may be the cause of the contamination.

Sub-Comment D – Disposal of oil and gas waste via injection wells is, in fact, subject to regulation under the Safe Drinking Water Act, but, in practice, no one knows exactly what the waste contains.

Response – See response to Comment # 8, above.

Sub-Comment E – EPA’s UIC Regulations are deficient.

Response – This sub-comment is inapposite. The EPA’s Environmental Appeals Board has held that a permit appeal to the Board is not intended to provide a forum for entertaining challenges to the validity of the applicable regulations. The regulatory procedures the EPA has established for issuing permits are similarly not a proper forum for a challenge to the underlying regulations. Furthermore, the EPA disagrees with the characterization of the UIC regulations as “deficient.”

Sub-Comment F – EPA is failing to protect U.S. drinking water sources from fracking-related activities like waste disposal via injection wells.

Response – As noted in a prior comment, this well will not be accepting fluids from fracking-related activities so this comment is inapposite to this injection well permit.

Sub-Comment G – The EPA cannot credibly state that the design and integrity of this injection well is sufficient. Also, the short-term and long-term monitoring required by the UIC Program permits is lax.

Response – As discussed in the response to comment #9, the Safe Drinking Water Act requires the EPA to develop minimum federal requirements for underground injection of waste fluids. For more details about the requirements of the SDWA and the UIC regulations, please refer to that response. The EPA maintains that the Permit's requirements for design, integrity, and monitoring of the Facility are sufficient and appropriate.

The determination whether to issue a UIC permit is based on specific information provided by an applicant that demonstrates the suitability of a geologic system to receive and contain the fluids proposed to be injected. When the EPA evaluates any proposed injection zone, the evaluation is site-specific and based on information about the geology in the vicinity of that particular injection well. As part of the EPA's review, a suitable injection zone is a primary consideration for a Class II UIC permit application. In this instance, the injection zone is the Oriskany Sandstone Formation.

The EPA has reviewed the information in the permit application about the Oriskany Sandstone Formation, *i.e.*, the proposed injection zone, to confirm its suitability for the proposed injection operation. This formation was thoroughly characterized and described in the permit application as follows: The Permittee reported that the Formation is approximately 51 feet thick, and lies at an average depth of 4,639 feet below ground surface in the well's AOR. As noted in the response to Comment No. 2, the lowermost USDW is separated from the upper limit of the injection zone by approximately 4,297 feet. Columbia Gas has stated that the Huntersville Chert and Onondaga limestone immediately overlying the Oriskany Sandstone Formation serve as an impermeable confining caprock for the Formation. Plus, there is the Tully Limestone Formation above the Onondaga limestone. There are no mapped faults or structural fronts in the ¼-mile and 1-mile radius AOR.

To minimize conduits for fluid to potentially contaminate USDWs, operating conditions in an injection well permit can expressly limit the injection pressure to prevent fracturing (that is, the cracking of the rock) of the injection zone. The fractures could act as conduits through which fluid could flow and act upon an existing fault.

The information in the permit application includes a well schematic for the well as it is currently constructed. The Permittee will provide an updated schematic after the cementing work is completed and before any injection occurs. The well schematic contains information on how the well is constructed, detailing the length and diameter of the steel casing and tubing components of the injection well. In the center of the well is a pipe that goes to the well's bottom. This pipe is referred to as a tubing string, or injection string. The Permittee injects the fluid down the tubing string.

Surrounding the tubing string is a series of casings, that is, steel cylinders. The purpose of the casings is to prevent the movement of injected fluid into any USDWs.

The first casing around the tubing string, the long string casing, goes from the ground surface to a depth of 4,897 feet. A second casing, the surface casing, goes around the long string casing and runs

from the surface to a depth of 1,157 feet. The surface casing protects the lowermost USDW which is approximately 564 feet below ground surface.

To prevent fluid from escaping the casings and contaminating a USDW, typically cement is pumped around the outside of the casings.

As discussed in the response to comment #8, fluid will be injected into the Oriskany Sandstone Formation. Injection is done through perforations in the long string casing and the cement around the long string casing. The perforations are between 4,830 feet to 4,925 feet below ground surface.

An additional component in the injection well is a packer. The packer is shaped like a doughnut and goes around the tubing string at about 30 feet above the injection zone. It serves as a dam that forces injected fluid out the perforations in the long string casing and prevents any injected fluid from flowing farther up between the tubing string and the long string casing.

All the space in the long string casing above the packer is referred to as the annulus. The Permittee fills the annulus with liquid and monitors the pressure of the liquid in the annulus. Any significant changes in the pressure indicates that there is a problem with the well.

If a leak were to develop in the tubing or packer, the annular pressure would increase significantly. If the well experiences a leak in the long string casing, the pressure in the annulus would decrease significantly. Either situation would automatically trigger shut-off devices that would cause the well to shut down and cease operating. This would constitute a mechanical integrity failure of the well and, in accordance with Paragraph II.C.7 of the permit, the Permittee would be required to cease injection immediately and to make the necessary repairs.

The Permittee must, over the life of the permit, demonstrate and maintain the mechanical integrity of the well. 40 C.F.R. § 146.23(b)(3) and Paragraphs II.C.7 and II.E.1 of the permit. The Permittee must maintain and operate the well to make sure that the well's mechanical integrity continues during its operation. Besides monitoring the annular pressure, the Permittee must provide continuous monitoring of surface injection pressure, flow rate, and cumulative volume as required in Paragraph II.C.2 of the permit. The final permit limits how much fluid can be injected in a month. Again, this limit is set at a volume that will not open or extend any fractures or disrupt any unknown faults in the area.

In addition, per Paragraph II.C.7 of the permit, the Permittee must demonstrate mechanical integrity at least once every five (5) years and after any repair, modification, or rework of the injection well. As described in the responses to comments #6 and 7, the final permit requires the well to be mechanically tested every five years to ensure integrity while it is operated.

The final permit requires the Permittee to submit data on the amount of pressure necessary to fracture the formation and determine the instantaneous shut-in pressure. Instantaneous Shut-In Pressure ("ISIP") is the minimum pressure necessary to begin to re-open fractures created during the hydraulic fracturing process for oil and gas production. This pressure is significantly lower than the fracture pressure, that is, the pressure that would cause new fractures in the rock to open or activate any unknown faults. As a safety measure, the Region mandates that the Permittee use the ISIP as a basis to

establish a surface Maximum Allowable Injection Pressure (“MAIP”) and thereby prevent the initiation or propagation of fractures in the receiving formation, which could create conduits for the injected fluid to flow to any existing faults.

The final permit includes a formulation for determining the MAIP. (The formula and information about the values used to calculate the surface MAIP can be found in Paragraph III.B.4 of the permit.) To calculate the MAIP, it first requires calculating the value for the Fracture Gradient. The calculation uses the ISIP, the highest expected specific gravity value for the injected fluid, the distance between the surface and top of the Oriskany Sandstone Formation, and a constant value. Next it requires using the Fracture Gradient value, the highest specific gravity value, the distance value, and the same constant value to arrive at the MAIP.

When the Permittee elects to no longer operate the injection well, the well must be permanently plugged and abandoned in a manner that does not allow movement of fluids into or between USDWs. The Permittee must use appropriate plugging procedures and materials in accordance with Paragraph II.D.11 of the permit.

Additionally, to make sure proper plugging will occur, the Permittee must demonstrate it has made arrangements for financial assurance that will ensure that adequate financial resources are available to pay for plugging the injection well should the Permittee experience financial difficulty and be unable to pay for the plugging. Paragraph III.D of the permit requires the Permittee to secure a Performance Surety Bond in the amount of at least \$352,000 as financial assurance. The funding provided by the Bond will be able to cover the estimated cost to close, plug and abandon the injection well and is based upon an independent, third-party professional’s estimate of the costs associated with the plugging and abandonment of the John Galey C-5 well. The funding must be sufficient to preclude the possibility of abandonment without proper plugging and closure.

Based upon an extensive review of the construction of the John Galey C-5 well and the final permit’s requirements for continuous monitoring and periodic pressure testing, the EPA is confident that the well will maintain its mechanical integrity throughout the duration of injection operations. This confidence is based upon the EPA’s experience of permitting injection wells in Region 3. The EPA has no reason to expect any leakage based upon the Permittee meeting the aforementioned permit conditions and mechanical integrity requirements and the EPA’s experience with injection wells in Pennsylvania.

Region 3 reviewed the Permittee’s permit application and related materials and issued a draft permit that in its judgement would comply with the SDWA and the applicable regulations. After reviewing the public comments on the draft permit, the EPA has made the decision to issue the final permit because the Permit complies with the SDWA and the regulations promulgated thereunder.

ADDRESSING TECHNICAL RECOMMENDATIONS

13. COMMENT: This Permit should require injection fluid sampling for PFAS (PFOA, PFOS, PFHxS, PFNA, HFPO-DA/GenX, plus an EPA-recognized broader PFAS analyte list) as well as radiological screening and isotopic analysis for NORM/TENORM (gross alpha/beta, Ra-226/Ra-228, uranium, thorium).

RESPONSE: Section 146.23(b)(1) provides the EPA Regions with the discretion to require monitoring for the injection fluid constituents that they deem critical to protect underground sources of drinking water in their respective states or regions. Using its discretion, Region 3's UIC Program required the monitoring of the testing parameters listed in the final Permit because they are appropriate to characterize a Class II fluid. For further response to this comment, see the response to comment #12, sub comment B. NORM, TENORM and their constituents are discussed in the response to comment #8.

14. COMMENT: Establish numeric trigger levels for each monitored parameter based on USDW protection and site-specific hydrogeology. Define "incident" and require 24-hour notification whenever any parameter exceeds its trigger or shows a statistically significant upward trend. Require a written corrective action plan and temporary injection curtailment/suspension until cause and remedy are verified.

RESPONSE: There is no actionable limit on any of the sampling parameters. These parameters are sampled to characterize a Class II fluid and for comparison purposes to determine whether or not a hypothetical contamination event was caused by injection activities, as explained further in the response to comment #12, sub-comment B. Therefore, it is not necessary to establish numeric trigger levels for each monitored parameter. Since the reason for monitoring the parameters is to provide information about sources of contamination, it is unnecessary to require a written corrective action plan for the parameters that an exceedance of trigger levels or an increase in parameters would prompt.

15. COMMENT: Require at least quarterly injection fluid sampling for the full analyte list (including PFAS and radiological agents) with monthly reporting of continuous pressure/flow/volume data and public posting of results in an accessible online portal.

RESPONSE: For a response to this comment, also see response to comment #12, sub-comment B. See Paragraph II.C.3. of the Permit for the testing parameters.

The Permittee is required to compile monitoring data for continuously recorded surface injection pressure, annular pressure, flow rate, and cumulative volume on a monthly basis. The EPA agrees that this data should be posted publicly, and the UIC Program has been working to make this information available to the public on its website as it becomes available. Consistent with 40 C.F.R. § 146.23(c)(1), the Permittee is required to compile this information monthly, but it is only required to submit this information annually in the Annual Report that is due January 31 of each calendar year. The Annual Report to the EPA summarizes the results of the monitoring and testing activities required by the final Permit, including monthly monitoring records of the injection fluid, the results of any mechanical integrity testing, and information identifying any major changes in the characteristics of the injected fluid. After the EPA reviews this information for compliance purposes, it then publishes the Annual Report on its website (specifically at this link for Columbia Gas: <https://www.epa.gov/uic/uic-permit-pas2d041bbea>) for public viewing.

Per Paragraph II.C.4 of the Permit, the Permittee must monitor the specific gravity of the injection fluid injected into the Injection Well on a weekly basis and confirm that it does not exceed a specific gravity

of 1.20. If the specific gravity of the injection fluid is at any time determined to be greater than 1.20, then the Permittee must follow the Injection Pressure Limitation operating requirements set forth in Paragraph III.B.4 of the Permit. This specific gravity monitoring requirement ensures that the injection pressure limit continues to prevent the initiation or propagation of fractures that could create conduits for the injected fluid to flow to any existing faults. The Permittee must also compile the monitoring data monthly and submit it as part of the Annual Report.

Because the Permittee is only permitted to inject fluid produced in association with Blackhawk Storage Field gas production operations, and because any change in the injection fluid would warrant new sampling and analysis of the new injection fluid (Paragraph II.C.3 of the Permit), the EPA believes that the existing injection fluid sampling for the existing analyte list is sufficient.

16. COMMENT: Require complaint hotlines and rapid response protocols for residents. Consider sentinel groundwater monitoring where feasible to verify protection of USDWs. Require an updated survey and direct notification out to at least one mile thus expanding the AOR. The commenter specifically expressed concern about the AOR that, “That narrow [one-quarter mile] radius can miss households just outside the line – even though migration pathways can have consequences beyond ¼-mile. . . Relying on a fixed ¼-mile AOR underestimates real-world proximity and community concern.”

RESPONSE: According to the U.S. Geological Survey, “A sentinel well is a groundwater-monitoring well located between a known area of groundwater contamination and drinking-water supply wells. The purpose of a sentinel well is to provide advanced warning of movement of groundwater contamination towards the drinking water supply wells” (<https://www.usgs.gov/news/state-news-release/usgs-begin-drilling-sentinel-wells-near-kirtland-air-force-base>). The EPA once again emphasizes that it does not expect any groundwater contamination resulting from Injection Well operations. The EPA, under the SDWA, is not able to require sentinel groundwater monitoring for injection well permits, nor does the EPA consider sentinel groundwater monitoring to be necessary for injection well permits. Similarly, the EPA, under the SDWA, does not have the authority to require Permittees to maintain complaint hotlines and rapid response protocols for residents as part of an Injection Well permit.

As an alternative to a permittee-maintained hotline, the EPA Region 3 maintains two citizen hotlines: (800) 438-2474 (toll-free number from Pennsylvania) and (215) 814-5122. (Call the Region weekdays during normal business hours 8:00 am to 4:30 pm. You can leave a message if you call outside of business hours.) Also, the EPA maintains the [Report Environmental Violations page](#) for the public to report what appears as a possible violation of environmental laws and regulations.

Pursuant to the applicable regulations, 40 C.F.R. §§ 144.3 and 146.6(b), the “Area of Review” is an area surrounding the Injection Well for which the applicant must first research, and then develop, a program for corrective action to address any wells that penetrate the injection zone and which may provide conduits for fluid migration during the injection operation at the Facility. Columbia Gas proposed a fixed radius AOR of a quarter (¼) mile.

As part of its permit application, Columbia Gas also provided a Zone of Endangering Influence (ZEI) calculation that determined the ZEI radius to be 897 feet. This calculation factored in items such as the hydraulic conductivity of the injection zone, the thickness of the injection zone, time of injection, storage coefficient, injection rate, hydrostatic heads of the injection zone and USDW, and specific gravity of the fluid in the injection zone.

The EPA chose the quarter-mile fixed radius for the AOR because it creates a larger AOR for evaluation than the ZEI figure and therefore is more protective. In reviewing Columbia Gas' proposed fixed radius for the AOR, the EPA considered the following information provided by the Permittee: current information available for all wells obtained from Columbia Gas internal records, the chemistry of the injection and formation fluids, hydrogeology, population and groundwater use and dependence and historical practices in the area.

Based upon the Permittee's calculated ZEI, the ¼-mile AOR actually overestimates the proximity of the injection well's influence on the areas of the commenter's concern. Moreover, the ¼-mile radius AOR adheres to the requirements set out in 40 C.F.R. §§ 144.3 and 146.6(b). For these reasons, the EPA does not agree that the AOR needs to be extended, as it does not anticipate any effects from the Injection Well within the scope of the UIC regulations on properties either within the ¼-mile AOR or beyond.

17. COMMENT: The EPA should also require automatic shut-down and immediate notification upon any out-of-trend injection pressure anomalies, unexpected volume spikes, or annular pressure deviations – paired with a root-cause analysis before restart.

RESPONSE: Paragraph II.C.2. of the Permit #PAS2D041BBEA requires that, "The Permittee shall continuously monitor and record surface injection pressure, annular pressure, flow rate, and cumulative volume in the Injection Well beginning on the date on which the Injection Well commences operation and concluding when the Injection Well is plugged and abandoned. The Injection Well shall be equipped with automatic shut-off devices which would be activated in the event of a mechanical integrity failure." Paragraph II.B of the Permit limits the injection volume to 21,000 barrels per month, and it limits the maximum allowable injection pressure to 1,832 psi with a maximum bottom-hole pressure of 4,340 psi. Part II.D of the Permit requires that the Permittee report any Permit noncompliance which may endanger, or which has endangered, human health and the environment to the EPA Region 3 UIC Hotline within twenty-four (24) hours from the time the Permittee becomes aware, or otherwise has reason to know, of such noncompliance. This provision also requires the Permittee to report all other instances of noncompliance to the Director in writing within ten (10) days of when the Permittee initially becomes aware, or otherwise has reason to know, of such noncompliance. Lastly, the Permittee shall give advance written notice to the Director prior to initiating any activity or of making any planned changes at the permitted Facility which may result in noncompliance.

In response to these situations, Paragraph II.D.2 of the Permit also requires that, "The Permittee shall provide a written submission to the Director within five (5) business days of the time the Permittee becomes aware of the circumstances described [in Paragraph II.D.2.a]. The written submission shall contain a description of the noncompliance and its cause(s); the period(s) of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time that any

such noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.”

Any instances of the injection pressure or monthly volume going above its permitted limit would constitute noncompliance, thus triggering the above response. Though the Permittee must monitor the annular pressure, this Permit, as is the case in all other UIC Permits in Region 3, does not limit the annular pressure of the Injection Well. A noticeable rise in annular pressure generally points to a loss of mechanical integrity. As explained above, a failure of mechanical integrity would activate the automatic shut-off devices of the well until such time that it is corrected. As such, the Permit does require automatic shut-down in the event of a loss of mechanical integrity, notification of noncompliance, and analysis in response to that noncompliance.

18. COMMENT: Add daily rate caps, require public monthly disclosures, and link exceedances to immediate incident reporting and operational curtailment until the EPA approves corrective actions.

RESPONSE: The EPA does not believe daily rate caps are necessary for this injection well Permit. The final Permit does include an injection volume limitation of 21,000 barrels per month. Per the EPA’s records, this limit has not been reported to have been exceeded to the EPA’s knowledge since the well was originally permitted in 1985. The Permittee is also required to continuously monitor and record the surface injection pressure, annular pressure, flow rate, and cumulative volume in the Injection Well. This information is compiled monthly and then provided to the EPA in the Annual Report. This report is and will continue to be posted publicly each year on the EPA’s website (<https://www.epa.gov/uic/uic-permit-pas2d041bbea>) after it is reviewed for compliance.

Part II.D of the Permit requires that the Permittee must report to the Director any Permit noncompliance which may endanger, or has endangered, human health or the environment within twenty-four (24) hours from the time the Permittee becomes aware of such noncompliance, among other reporting requirements.