Responsiveness Summary to Public Comments
for
The Issuance of an Underground Injection Control (UIC) Permit
for
Sandstone Development LLC

On April 3, 2025, the U.S. Environmental Protection Agency (EPA) Region 3 issued a public notice requesting comment and the opportunity for a public hearing for the proposed issuance of an Underground Injection Control (UIC) permit, PAS2R430BMCK, to Sandstone Development LLC. The EPA received numerous requests to hold this hearing, and on May 6, 2025, the EPA held a virtual public hearing. 17 people attended this public hearing, during which the EPA received oral comments from nine (9) individuals/entities. The EPA also extended the public comment period until May 20, 2025.

The responsiveness summary which follows provides responses to 14 comments that were raised and sent to the attention of EPA Region 3. The EPA wishes to thank the commenters for their informative and thoughtful comments.

1. **COMMENT: The injection zone is not suitable for an injection well and groundwater resources may be impacted by the injection operations.**

RESPONSE: Class II enhanced recovery wells are used to assist in oil and gas production by injecting produced fluids into previously depleted production zones in oil and gas bearing formations to displace oil and/or gas and drive them to production wells. The Kane Sandstone Formation, or the injection zone, is an oil and gas bearing formation. At the McKay Lease, there are two production wells producing oil and/or gas from the Kane Sandstone Formation – the McKay 2A and McKay 12A wells. The Permittee wishes to inject produced fluid, such as brine from its production wells, into the formation to enhance the recovery of oil and/or gas. The injection formation is an oil and gas bearing zone and therefore compatible with the injectate given that the fluids to be injected are byproducts of oil and gas production. Production of oil and/or gas from the two wells will relieve pressure in the formation and provide a measure of protection to the USDW. In addition, the proper construction of the injection well and proper confinement of the injection formation will protect the USDW, regardless of what the formation pressure is.

In addition, the UIC regulations found at 40 C.F.R. § 146.22(a) provide that the Permittee may only inject into a formation that is "separated from any USDW by a confining zone that is free of known open faults or fractures within the area of review." The Permittee reported in the permit application that directly above the Kane Sandstone Formation is 180 feet of unnamed shale that is interbedded with sandstone. This will act as a confining unit for the injection zone. Additionally, there are multiple layers of shale ranging from 30 to 780 feet in thickness between the injection zone and the lowermost USDW. This confining unit and multiple layers of shale will protect groundwater from the injection activity at the McKay 7A injection well. Finally, the operational requirements set out in Part II of the permit provide additional protection for

groundwater resources around the well. See also the responses to Comments #s 6 and 12 about the suitability of the injection zone and the response to Comment 13 about the EPA's calculation of maximum allowable injection pressure and how the calculation protects groundwater resources.

2. **COMMENT: The proposed permit does not address certain concerns that are not regulated by the EPA's UIC program.**

RESPONSE: Several commenters raised concerns about matters outside of the UIC program's jurisdictional scope, which the EPA lacks the regulatory authority to address 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 noise and air pollution, increased truck traffic/impacts on the roads, and that the operator is not in compliance with the Clean Air Act, the Clean Water Act, and the Superfund Amendments & Reauthorization Act (SARA) Title II program. These concerns are outside of the federal UIC permitting process and are commonly addressed by other federal, state and local regulations.

When deciding on whether to issue a UIC permit, the EPA's UIC jurisdiction is limited to determining whether the proposed injection operation will safely protect underground sources of drinking water (USDWs) from the subsurface emplacement of fluids and a determination that the injection operation, as proposed, will be compliant with all federal UIC regulations. The EPA therefore acknowledges receipt and review 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.

The UIC permit contains several conditions that address compliance 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." 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 and/or operation.

3. **COMMENT: Surface spills could contaminate local streams and waterways.**

RESPONSE: The EPA understands the concerns regarding potential spills during transportation of the injectate to the injection well and at the well surface. However, the UIC program only has jurisdiction for the permitting of subsurface injection activities. The EPA is not authorized under the SDWA, 42 U.S.C. §300f *et seq.*, to address surface spill prevention through the UIC permitting process. Surface disturbances, fluid containment, and surface spills which could occur on the injection well site are all regulated by the Pennsylvania Department of

Environmental Protection (PADEP), which is the State agency responsible for all surface construction and spill prevention at the proposed well site. Title 25, Chapter 78, of the Pennsylvania Code requires the well operator to report surface spills or releases of brine to the PADEP. There may also be local or county ordinances or regulations that address surface spill prevention. When making the decision on whether to issue a UIC permit, the EPA's jurisdiction rests solely in determining whether the proposed injection operation will safely protect USDWs from the subsurface emplacement of fluids, as discussed in the response to Comment No. 2.

4. **COMMENT: Concerns over the composition of the proposed injection fluid and that the fluid may contain toxic, hazardous, radioactive components and TENORM, or hydraulic fracturing fluids.**

RESPONSE: Individual constituents within the fluid produced from an oil or gas production reservoir potentially may be toxic, hazardous, or radioactive. However, Congress exempted oil and gas production fluids from hazardous waste regulation and such production wastes are not classified as hazardous under the Resource Conservation and Recovery Act (RCRA). As a result, the EPA lacks the authority to regulate those fluids produced in association with oil and gas production activities, including hydraulic fracturing fluids, as hazardous waste and the disposal of these fluids down a Class II injection well is legally permissible. Furthermore, Paragraph III.B.2. of the final Permit prohibits the Permittee from injecting "any hazardous waste, as defined by 40 C.F.R. § 261, nor any other fluid, other than the fluids produced solely in association with the Permittee's oil and gas production activity, and additives necessary to maintain the integrity of the Injection Well."

Additionally, naturally occuring 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. However, the management and disposal of NORM wastes associated with the production of oil and gas are not federally regulated and the EPA considers the injection of Class II fluids deep underground to pose minimal environmental risk. This also includes "TENORM" or technologically enhanced naturally occuring radioactive material. TENORM is NORM that have 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 down a Class II injection well.

The EPA also characterizes the reuse or recycling of produced fluid as a sound environmental management practice. Public and privately owned wastewater treatment facilities are unable to adequately remove many constituents found in brine, for example, chlorides and bromides. When these constituents are discharged to streams or rivers, they can pose serious risk to fish and other aquatic organisms living in the stream as well as contribute to serious health effects

for people who obtain their drinking water from these streams and rivers. The UIC Permitting program is designed to provide an alternative through which injection activities may occur in a regulated and environmentally protective manner which ensures that best management practices are identified and employed.

5. **COMMENT: The permit should be denied because the McKay 7A well will receive fluids produced through unconventional oil and gas drilling, or "shale water".**

RESPONSE: One commenter suggested the permit should be denied because it will receive fluids which will be brought to the surface by unconventional well drilling and 40 C.F.R. § 144.6(b)(1) limits Class II injection fluids to fluids brought to the surface through *conventional wells*. The Region thinks the comment is based upon a misinterpretation of 40 C.F.R. § 144.6. As noted previously, in this instance, the EPA is issuing a permit for an injection well that the operator will use for the enhanced recovery of oil and natural gas. In enhanced recovery wells, fluids consisting of brine, freshwater, steam, polymers, or carbon dioxide are injected into oil-bearing formations to recover residual oil and in limited applications, natural gas. The injected fluids thin (decrease the viscosity) or displace small amounts of extractable oil and gas. Oil and gas are then available for recovery. It is 40 C.F.R. § 144.6(b)(2) that classifies enhanced recovery wells as Class II wells.

Section 144.6(b)(1) classifies injection wells used to dispose of wastewater that results from conventional oil and natural gas production as Class II wells. During oil and gas extraction, brines are also brought to the surface. To dispose of the brines, the brines are separated from hydrocarbons at the surface and reinjected through an injection well into the same or similar underground formations for disposal. Wastewater from hydraulic fracturing activities is also disposed of this way. Since the injection well here will be an enhanced recovery well, not a disposal well, Section 144.6(b)(2) applies, not Section 144.6(b)(1). While Section 114.6(b)(1) does contain a reference to fluids brought to the surface in connection with conventional oil and natural gas production, Section 144.6(b)(2) does not. As result, the comment's interpretation of Section 144(b)(1) that it limits the injection into Class II wells to fluids brought to the surface through conventional wells is not relevant to this permit and well. The Region notes that it disagrees with the commentor's interpretation of Section 144.6(b)(1), and the EPA Environmental Appeals Board has confirmed the Region's interpretation. *In re Penneco*, 19 E.A.B. 105, 124 (EAB, 2025).

6. **COMMENT: Commenters expressed concern with the number of abandoned and orphaned wells within McKean County as well as the possible migration of stray gas from these wells into the USDWs. There were concerns with poor records for the old wells near the injection well, communication between surrounding oil and gas wells, and the risk of contamination of nearby wells caused by the injection well. There were also concerns that many abandoned wells in, and around the McKay 7A well were only "capped" and not properly plugged and abandoned and that these caps can degrade over time due to age and exposure to the weather.**

RESPONSE: (For the purposes of this response, the EPA assumes the comment about "communication between surrounding oil and gas wells" refers to the possible impact of stray gas on the USDW caused by the injection well. Further, "the risk of contamination of nearby wells" refers to the contamination of nearby drinking water wells.) The determination of possible influence of the surrounding wells on the proposed injection well is carried out during the assessment of the Area of Review. Pursuant to the applicable regulations, 40 C.F.R. §§ 144.3 and 146.6(b), the "Area of Review" (or "AOR") 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. Sandstone proposed a fixed radius AOR of one-quarter mile, which the EPA has determined to be acceptable. In determining the fixed radius, the EPA has considered the following information provided by the Permittee: chemistry of injected and formation fluids; hydrogeology, population and groundwater use and dependence; and historical practices in the area. Within the permit application, Sandstone identified and described the fluid to be injected, the groundwater uses in the area, and the well population within the one-quarter mile AOR.

The EPA disagrees with the comment about poor records for the old wells near the injection well. All ten active wells reported within the AOR had full completion reports. Also, the one plugged oil and gas production well within the AOR had a full plugging report.

There are no known abandoned wells in the AOR that are unplugged or "capped". If any unplugged, abandoned wells that penetrate the injection zone are later found within the AOR, the final Permit requires the Permittee to perform corrective action.

With regard to protection of the drinking water near the injection well, there are no drinking water wells within the AOR as well nor any within a half mile radius of the Injection Well. The Permittee also indicated that there are ten (10) active production wells within the AOR, including the proposed injection well McKay 7A. Each of the 10 active production wells within the AOR has a surface casing set no higher than 550 feet below ground surface and no lower than 573 feet below ground surface to protect stray from gas or oil entering freshwater aquifers. The surface casing is designed to isolate freshwater zones from the well in order to prevent contamination. With the bottom of the lowermost USDW for the proposed injection well McKay 7A determined to be located 160 feet below ground surface, each production well within the AOR has at least 390 feet of surface casing between it and the bottom of the lowermost USDW.

Of the ten (10) active production wells that exist in the AOR, two (2) of them are drilled to the injection zone. These two wells, the McKay 2A well and the McKay 12A well, are the wells being used for the enhanced recovery of oil and/or gas. The other eight (8) wells within the AOR do not penetrate the injection zone and therefore would not be influenced by the injection activity.

7. **COMMENT: The EPA failed to consider mechanical integrity failures of the production well before conversion to an injection well.**

RESPONSE: The EPA is not required to consider the mechanical integrity of the well before it is converted into an injection well. The EPA considers the mechanical integrity of the injection well once conversion of the well takes place and the Permittee submits the EPA Form 7520-18 ("Completion Report for Injection Wells") as required by Paragraph II.D.2. of the Permit. The Permittee must also demonstrate that the injection well has mechanical integrity in accordance with 40 C.F.R. § 146.8 to the satisfaction of the Director before injection can commence.

8. **COMMENT: Commentors expressed concerns about the geologic suitability of McKean County for the siting of the McKay 7A well and the proximity of the well to a Class II disposal well (Catalyst Energy Lot 580-1 well).**

RESPONSE: The EPA does not have the jurisdiction to direct a Permittee to construct their injection well in a particular geographic location. The location chosen by a Permittee is based on many factors: economics, local zoning or land use restrictions, property ownership and accessibility, and geologic suitability, to name a few. The EPA is responsible for reviewing each UIC permit application it receives and makes a determination as to whether USDWs will be protected from the proposed operation but does not have the authority under the SDWA, 42 U.S.C. § 300f *et seq.*, to identify suitable injection sites. Likewise, the EPA cannot deny a permit solely because of residents' opposition to the location when the Permittee meets the requirements of the UIC program.

The EPA understands the concerns that the Catalyst Energy Lot 580-1 disposal well is approximately 2.34 miles away from the McKay 7A well. However, it is unlikely that these two wells would interact with each other. The AOR for both wells are each one-quarter mile and both wells have different injection zones. The Lot 580-1 well injection zone is the Onondaga Reef Formation at a depth of 5,169 feet below ground surface and the McKay 7A well injection zone is the Kane Sandstone Formation at 2,295 feet below ground surface. Therefore, because the injection zones are different and the Areas of Review do not overlap, the two injection wells should not have any influence on each other.

In addition, the EPA received a comment regarding the proximity of the Lot 580-1 well and the McKay 7A to surface waters, more specifically the Tunungawant Creek and headwaters of the Allegheny River. The EPA understands the concerns regarding potential spills at the well surface and impacts to surface water. However, the EPA, through its UIC program, only has jurisdiction for the permitting of subsurface injection activities as discussed further in the response to Comment No. 3.

9. **COMMENT: One commenter erroneously referred to the McKay 7A well as a "fracking disposal well".**

RESPONSE: The proposed McKay 7A injection well will not be constructed as a disposal well but as an enhanced recovery well. Please see the response to Comment No. 1 and 5 for more information on enhanced recovery.

10. **COMMENT: Questions about where the injection fluid will come from and whether the operator can receive fluid from other oil and gas operators.**

RESPONSE: The Permit limits the Permittee to "injecting fluids produced solely in association with oil and gas production from Sandstone Development LLC". See Paragraph III.B.2 of the Permit. The injection facility is not permitted as commercial; therefore, the Permittee can only inject fluids produced by Sandstone Development LLC.

11. **COMMENT: The EPA did not consider implications of Pennsylvania's Environmental Rights Amendment.**

RESPONSE: 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 law is 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.

12. **COMMENT: The EPA failed to consider that the Maximum Injection Pressures permitted for the McKay 7A well have caused failure in prior drilled wells by Sandstone Development, LLC, and further failed to consider the injection pressures may/will cause communication with nearby oil and gas wells.**

RESPONSE: (For the purposes of this response, the EPA assumes the comment that the EPA has "failed to consider the injection pressures may/will cause communication with nearby oil and gas wells," refers to the possible impact of injected fluid on nearby abandoned gas and oil wells.) The comment is erroneous in that the EPA has only permitted one other injection well for Sandstone Development LLC – the Moody Lot 5 #17 well. The EPA issued this permit (EPA Permit No. PAS2R420BMCK) to Sandstone Development LLC on January 27, 2022. Since the permit issuance, the injection well has not failed mechanical integrity. In addition, the maximum allowable injection pressures (MAIPs) for the two wells are not the same, but they were calculated in the same way using the same formula described below.

The EPA calculated the MAIP by using a formula that considers the depth of the well to the top of the injection zone, the specific gravity of the injection fluid and the injection zone's fracture gradient which is based on the zone's instantaneous shut-in pressure (ISIP). The ISIP is the minimum pressure necessary to begin to re-open existing fractures created during the hydraulic

fracturing process for oil and gas production. The pressure is significantly lower than the fracture pressure. This conservative calculation ensures that injection operations will not create new fractures or propagate existing fractures in the injection zone. A conservative MAIP protects the confining unit from fracturing. An intact confining unit and, for this injection well, the multiple layers of shale above it will protect the USDW. Finally, as discussed in the response to Comment #6, the EPA is only aware of one abandoned well in the AOR and that well has been plugged.

13. **COMMENT: The EPA failed to require or perform hydrological reports, testing, or studies in order to adequately protect against harm to the local aquifers, surface waters, and underground drinking water sources.**

RESPONSE: The EPA evaluated the permit application that was submitted by the Permittee for geological information to ensure that USDWs would be protected from underground injection. The Permittee provided geologic and geophysical information that was ascertained from offset drillers logs for the ten active production wells in the AOR, including the McKay 7A well. The EPA also obtained the completion reports for all wells within the AOR. These records were cross referenced with the well record for the McKay 7A to identify the site-specific geology where injection will take place. The EPA found that adequate confinement exists to limit the injectate to the Kane Sandstone Formation and prevent the injectate from moving into USDWs. Proper confinement will also prevent the injectate from migrating to the surface through a spring, if one exists within the AOR. It must be noted that the Permittee indicated that no springs exist within the AOR.

14. **COMMENT: Concerns about the impact that budget and/or staffing cuts may have on PADEP's and/or the EPA's ability to provide oversight for injection well activities.**

RESPONSE: The EPA understands the concerns about state and federal oversight of the injection well and ensuring the well is operated in an environmentally safe and lawful manner. Because the McKay 7A will be converted to an injection well, the injection well will be under the jurisdiction of the EPA's UIC program. While the EPA does not possess the requisite authority to enforce the Commonwealth of Pennsylvania's oil and gas regulations (that authority rests solely with the PADEP), the EPA does have direct implementation and enforcement authority for the UIC program in Pennsylvania. The EPA must stress that its evaluation of the subject permit application is limited to ensuring that the McKay 7A injection well does not endanger USDWs in accordance with the UIC program requirements. Pursuant thereto, the proposed well will be subject to all applicable UIC regulatory requirements and conditions for construction, testing, maintenance, and financial assurance to ensure that it maintains mechanical integrity throughout the life of the well and is properly closed.

Furthermore, ensuring compliance with UIC permitting provisions remains a priority for the EPA. The EPA's UIC program is firmly committed to protecting USDWs from contamination. Through comprehensive oversight, inspections, enforcement, and required permit reporting obligations,

the program ensures that injection practices do not endanger current or future sources of drinking water. In doing so, the UIC program fulfills its statutory obligations under the SDWA.

With regard to Pennsylvania's regulation of wells, production wells (i.e., not injection wells) are regulated under Pennsylvania's Oil and Gas Act. It must be noted that the PADEP issues a separate UIC permit for Class II disposal wells. In addition, surface disturbances, fluid containment, spills, and proper signage and labeling are regulated by the PADEP. The Pennsylvania oil and gas laws and regulations found at 25 Pa. Code Chapter 78 and 78a "Environmental Protection Standards at Oil & Gas Well Sites", comprehensively address surface activities and industry practices at oil and gas well sites. These oversight activities include water supply protection, site specific Preparedness, Prevention and Contingency Plans for well site waste management, and secondary containment and corrosion control for storage tanks. Nevertheless, the PADEP is a separate regulatory agency from the EPA and conducts its oversight activities in its own way and based on its own policy and regulations.