

MEMORANDUM

TO: Ana Vohryzek, Britton Schwartz
FROM: Eric Moorman
DATE: October 22, 2016
RE: *Source Water Protection Under the SDWA's Underground Injection Control (UIC) Program*

I. QUESTION PRESENTED

To what extent does the Underground Injection Control (UIC) program under §§1421-1424 of the Safe Drinking Water Act (SDWA) authorize or require the U.S. Environmental Protection Agency (EPA) to protect underground drinking water sources from contamination?

II. SHORT ANSWER

Although the states generally have “primary authority” in administering their UIC programs under the SDWA, the UIC provisions grant EPA broad authority to protect underground sources of drinking water. First, the UIC provisions allow EPA to effectively veto and replace state UIC programs if EPA determines that such programs do not adequately protect underground source water. Second, the SDWA’s text and legislative history demonstrate that Congress clearly intended—consistent with the SDWA’s larger “preventative purpose”—for EPA to protect both *present and future* sources of underground drinking water from contamination. Courts have generally supported this broad interpretation of the UIC provisions, reading §§1421-1424 to require EPA to protect both current and future underground sources of drinking water. Third, both the text and legislative history of the UIC program generally instruct EPA to prioritize underground source water protection over oil and gas extraction activities. Finally, although EPA’s current administration of the UIC program suffers from serious problems, EPA’s close supervi-

sion of California’s UIC program demonstrates EPA’s ability to better protect underground drinking water supplies from contamination.

III. ANALYSIS

Today, nearly half of the U.S. population—or approximately 160 million people— rely on groundwater from public water systems or private wells to supply their drinking water, and nearly 90 percent of public water systems draw some or all of their drinking water from underground sources.¹ Underground injection operations for oil and gas production threaten these underground sources, injecting at least 2 billion gallons of fluids into over 172,000 wells daily.² Sections 1421-1424 of the SDWA (Underground Injection Control (UIC) program) require the EPA to protect these underground sources of drinking water.

A. Under the SDWA, EPA has Broad Authority to Protect Underground Source Water

Under SDWA §1422(b)(3), states have “primary enforcement responsibility” to administer underground water resources once EPA approves the state’s proposed UIC program.³ This is consistent with Congress’ intent that the EPA’s UIC regulations be “sufficiently flexible to per-

¹ U.S. EPA, “Drinking Water in New England.” https://www3.epa.gov/region1/eco/drinkwater/ne_drinkwater.html

² U.S. Government Accountability Office, “Report to Congressional Requesters: EPA Program to Protect Underground Sources from Injection of Fluids Associated with Oil and Gas Production Needs Improvement” (2014) <http://www.gao.gov/assets/670/664499.pdf>

³ Today, the majority of states have “primary authority” in administering and enforcing their UIC programs. (U.S. EPA, “Primary Enforcement Authority for the Underground Injection Control Program” (2014), <https://www.epa.gov/uic/primary-enforcement-authority-underground-injection-control-program>.) According to EPA, thirty four states and three territories currently have EPA-approved primacy programs for well classes I, II, III, IV and V. For the remaining states and territories, EPA currently administers federally-developed UIC programs through the EPA Regional Offices. Id.

mit states to take account of [] varying [local] conditions in their underground injection control programs.” H.R. Rep. No .95-338 (1977).⁴

Despite this emphasis on state primacy, the UIC provisions provide EPA with mechanisms to directly protect underground source water. These include (a) approval authority over proposed state programs, and (b) the ability to revoke state primacy and direct enforcement against violators of the UIC program. Together, with EPA’s affirmative duty to protect underground source water, these mechanisms allow EPA to override state UIC programs that do not sufficiently protect underground source water.

All state UIC programs require EPA approval.⁵ §1422(b)(1)(A). They also must meet certain “minimum requirements.” First, states must outlaw underground injection without a permit (§1421(b)(1)(A)). Second, the permit applicant must demonstrate that the underground injection will not endanger drinking water sources (§1421(b)(1)(B)(i)).⁶ State programs also must have set requirements for monitoring, inspection, record keeping and reporting. §1421(b)(1)(C).

When devising requirements for state programs, “to the extent feasible” EPA must not “unnecessarily disrupt” ongoing state underground injection control programs. §1421(3)(A)(i). But an EPA regulation only “disrupts” a state UIC program if the state could not comply with both the EPA and state requirements. §1431(3)(B)(ii). A federal regulation, in turn, is “unneces-

⁴ However, Congress was clear that “[t]his authority for reasonable flexibility should not be construed to undermine or reduce the State’s duty to assure protection of underground water sources.” H.R. Rep. No.95-338, at p. 11.

⁵ Although Section 1422 requires only states that are “listed” by EPA to submit underground injection control programs for EPA approval, EPA has currently selected all states to submit UIC programs. Additionally, the legislative history makes clear that Congress contemplated that all states would be listed: “It is anticipated that this list... would include all 50 states.” H.R. Rep. No. 93-1185, at p. 32.

⁶ However, under certain conditions, EPA may authorize a state to issue temporary underground injection permits without requiring the permit applicant to demonstrate that the underground injection will not endanger drinking water sources. (§1421(c)(1)- (c)(2))

sary” only when underground source water is safe without federal regulations. §1431(3)(B)(iii).⁷ Therefore, EPA can issue requirements that would conflict with an existing state groundwater management program if EPA determines that the state’s current program is not sufficiently protective of underground source water.

If a state does not propose a program, or if the state’s proposed program does not meet EPA’s requirements, EPA retains control of the UIC program. §1422(c). EPA can also revoke a state’s ability to exercise “primary enforcement responsibility,” if “the Administrator determines, by rule, that such State no longer meets the [federal] requirements.” §1422(b)(3). If that occurs, EPA can prescribe a federally developed program. §1422(c). Additionally, the EPA can take direct enforcement action against any person within a state who violates the state’s UIC program if the state has not taken action against that person. §1423(a)(1).

B. The UIC Program Requires EPA to Protect Both Current and Future Potential Underground Drinking Water Sources

Even where it has delegated authority to the states, EPA has an affirmative duty to protect underground source water from contamination. Section 1421 provides that “nothing in this section shall be construed to alter or affect the *duty* to ensure that underground sources of drinking water will not be endangered by any underground injection.” §1421(b)(3)(C) (emphasis added). The SDWA’s UIC provisions, and the regulations implementing them, require EPA not only to protect current underground sources of drinking water, but future potential underground sources. The House Report makes this obligation clear: “[t]he Committee seeks to protect not only currently-used sources of drinking water, but also potential drinking water sources for the future. This may include water sources which presently exceed minimum intake water quality require-

⁷ “For the purpose of this subparagraph, a regulation prescribed by the Administrator under this section shall be deemed unnecessary only if, without such regulation, underground sources of drinking water will not be endangered by any underground injection.” §1431(3)(B)(iii).

ments or maximum contaminant levels or which are not presently accessible for use as a community drinking water supply source.” *Id.*

The text of the SDWA confirms EPA’s obligation to preserve drinking water sources. Under Section 1421, underground injection *endangers* drinking water sources if it “may result” in the presence of any contaminant in underground water “which supplies or *can reasonably be expected to supply* any public water system.” §1421(d)(2) (emphasis added). Endangerment must be “liberally construed so as to effectuate the *preventive and public health protective purposes* of [the SDWA].” H.R. Rep. No. 93-1185, at p. 32 (emphasis added). Accordingly, underground injection activities “endanger” underground drinking water sources “even if the amount of contaminant which may enter the water source would not by itself cause the maximum allowable levels to be exceeded.” *Id.* “Endangerment” might also occur where “injected material [is] not completely contained within the well, if it may enter either a *present or potential* drinking water source, and if it...may pose a threat to human health or render the water source unfit for human consumption.” *Id.* (emphasis added).

Consistent with the larger preventive purpose of the SDWA, EPA should protect underground source water from contamination “if there is *any reasonable likelihood* that these sources will be needed in the future to meet the public demand for water and if these sources may be used for such purpose in the future.” *Id.* This means that EPA need not be certain that underground source water will be used as future drinking water in order to protect it under the UIC program.

The federal regulations implementing the UIC program explicitly require EPA to protect future potential underground source water. Although the regulations allow the EPA to exempt certain aquifers from compliance with the UIC program (42 C.F.R. §144.7(a)), the EPA may ex-

empt aquifers only if they do not currently serve as a source of drinking water (*Id.* §146.4(a)) and “cannot now and will not in the future serve as a source of drinking water.” *Id.* §146.4(b).⁸ These exemptions are relatively narrow; if none of them apply, an aquifer cannot be exempted from UIC program compliance if it currently serves, or might one day serve, as a drinking water source.

EPA has recognized its own authority to protect future sources of underground drinking water, stating that, “potential sources of drinking water are protected *as stringently* as those sources currently used for drinking water.” U.S. EPA, “Introduction to the Underground Injection Control Program” (2003) (emphasis added). Similarly, it defined “underground source of drinking water” under the SDWA to include “ground water needed as a drinking water source *in the future.*” U.S. EPA, “General Information About Injection Wells.”⁹

Courts agree that EPA should use its authority to protect current and future drinking water. *See, e.g., U.S. v. King*, 660 F.3d 1071, 1079 (9th Cir. 2011) (recognizing that the UIC program is “preventive” in nature, and reflects Congress’ determination that “the most effective way to ensure clean drinking water [is] to prevent pollution of underground aquifers in the first place, rather than to clean up polluted aquifers after the fact.”); *Phillips Petroleum Co. v. U.S. Environmental Protection Agency*, 803 F.2d 545, 560 (10th Cir. 1986) (noting that Congress’ primary concern in passing the UIC Program was ““assuring the safety of present and potential sources of drinking water,” and that this concern overrode concerns about energy extraction through underground drilling); *Legal Environmental Assistance Foundation v. EPA*, 118 F.3d 1467, 1474-75

⁸ Aquifers cannot serve as a current or future source of drinking water for any the following reasons: (1) they are “mineral, hydrocarbon, or geothermal energy producing, (2) are situated in such a way as to make recovery of drinking water “economically or technologically impractical,” (3) are so contaminated “that it would be economically or technologically impractical to render that water fit for human consumption,” or (4) are located in an area “subject to subsidence or catastrophic collapse.” *Id.* §146.4(b)(1)-(4).

⁹ <https://www.epa.gov/uic/general-information-about-injection-wells>.

(11th Cir. 1997) (finding that the UIC program was intended to regulate *all* underground injection activities, including fracking¹⁰).

C. With Few Exceptions, Congress Requires EPA to Ensure that Oil and Gas Extraction Does Not Impact Drinking Water

Although Congress sought to strike a balance between underground injection operations and underground source water protection, it clearly intended for this balance to tilt in favor of source water protection. Congress intended for the UIC program to “eliminate practices which may reasonably be anticipated to endanger underground water sources, while not imposing unnecessary requirements which would impede or interfere with oil or gas production.” H.R. Rep. No. 95-338 (1977) at p. 11. Under no circumstances, however, did this balance permit EPA “to subordinate the concern for protection of underground water sources to that of energy production.” H.R. Rep. No. 95-338, at p. 12. This clear Congressional preference for protecting underground drinking water suggests that if there is a conflict between source water protection and underground injection activities, energy extraction activities should not trump protection of underground drinking water sources.

Exemptions for underground injection activities reflect this same balance. The SDWA contains several exemptions for underground injection activities relating to oil and gas extraction, including injection of brine or other fluids that aid in oil and gas recovery (§1421(a)(2)(A)) or “any underground injection for the secondary or tertiary recovery of oil or natural gas.” §1421(a)(2)(B). Congress made clear that these exemptions were qualified, describing them as intended “to assure that constraints on energy production activities would be kept as limited in

¹⁰ This case was decided long before Congress explicitly exempted fracking from UIC regulation in 2005.

scope as possible *while still assuring the safety of present and potential sources of drinking water.*” H.R. Rep. No. 93-1185, at p. 31(*emphasis added*). Consistent with the clear congressional intent that EPA not subordinate protection of underground source water to energy extraction, the above exemptions do not apply where the UIC program requirements “are essential to assure that underground sources of drinking water will not be endangered by such injection.” §1421(a)(2)(B). This language suggests that, in many cases, EPA can prohibit certain underground injection activities—even those routinely exempted from UIC compliance—if these methods would threaten the quality of underground source water.

A notable exception to EPA’s ability to prohibit certain oil and gas extraction activities that are generally exempted from UIC compliance is hydraulic fracturing, or “fracking.” Under the modifications to the SDWA required by the 2005 Energy Policy Act,¹¹ fracking operations related to oil, gas or geothermal production—other than those using diesel fuels— are categorically excluded from the SDWA’s definition of “underground injection,” and therefore are not currently regulated under the UIC program. §1421(d)(1)(B)(ii). Unlike exemptions on brine/other fluid injection discussed above, EPA has no authority under the SDWA to proscribe fracking even if it believes that regulation of fracking is essential to ensure the quality of underground sources of drinking water. This blanket fracking exemption has been widely and harshly criticized. See Angela C. Cupas, *The Not-So-Safe Drinking Water Act: Why We Must Regulate Hydraulic Fracturing at the Federal Level* (2009) 33 Wm. & Mary Env’tl. L. & Pol’y Rev. 605.

D. EPA’s Administration of the UIC Program Suffers from Serious Problems

¹¹ Prior to 2005, fracking was not specifically addressed in the SDWA. In 1997, the Eleventh Circuit determined that fracking was regulated under the UIC program. (See Legal Environmental Assistance Foundation 276 F.3d. 1253 (11th Cir. 2001)) The 2005 Energy Policy Act effectively overruled this decision.

With the exception of fracking, the text, regulations and legislative history of the UIC program grant EPA broad authority to protect underground source water where states have not done so. EPA does not always exercise this authority effectively, however.

First, EPA's aquifer exemption regulations permit contamination of current drinking underground water sources by allowing migration of pollutants from non-exempt wells to exempt wells.¹² For instance,

- Existing aquifer exemption rules do not protect underground source water from contamination
 - Aquifer exemption boundaries are often arbitrary. In many cases, EPA has arbitrarily assumed that contamination from an exempt well will not travel further than one quarter of a mile, although scientific evidence appears to show otherwise. (See NRDC petition at p. 34-37.)
 - Aquifer exemption boundaries have been arbitrarily drawn to satisfy regulatory criteria
 - Existing rules allow exempted aquifers to be used as drinking water sources—there is evidence that members of the public are able to access underground water sources that have been exempted.
- Existing rules do not require modeling or monitoring for purposes of ensuring that contamination does not travel beyond the aquifer exemption boundary. This lack of monitoring leaves non-exempt aquifers that are adjacent to exempt aquifers vulnerable to contamination if contaminants migrate from exempt to non-exempt wells.
- Existing rules do not allow for aquifer exemptions without scientifically-based water quality criteria: EPA often has no information—or unreliable information—about the quality of groundwater in underground wells it approves for exemptions
- Aquifers should not be exempted solely on the basis that they are mineral, hydrocarbon or geothermal energy producing.— Current EPA rules allow EPA to exempt wells on the sole grounds that they are mineral, hydrocarbon or geothermal energy producing. This cuts directly against the SDWA's clear prohibition on subordinating groundwater protection to the needs of energy or mineral production.
- Existing rules do not account for the value of groundwater— Existing rules do not require EPA to consider the economic value of groundwater that is being exempted from protection—or if EPA does evaluate it, it underestimates its value.

¹² For more detail on below outline, see generally NRDC Petition, "Citizen Petition to Repeal or Amend the EPA's Aquifer Exemption Regulations to Protect Underground Sources of Drinking Water."

Second, EPA's current administration of the UIC program suffers from several problems, including failure to regularly monitor state compliance. A 2014 report by the Government Accountability Office (GAO) identified several deficiencies in EPA's administration of the UIC program for Class II wells,¹³ including EPA's failure to conduct annual on-site evaluations of state programs and to incorporate approved state program requirements into federal regulations through a rule-making, as required by the regulations. U.S. EPA, "Primary Enforcement Authority for the Underground Injection Control Program" (2014). This second deficiency is critical to EPA's effective protection of underground source water under the SDWA, since EPA cannot enforce state requirements that are not incorporated into federal regulations. *Id.* Therefore, EPA's failure to promptly conduct rule making to incorporate state requirements into federal regulations greatly hampers EPA's enforcement authority under the SDWA.

A 2016 GAO report revealed additional deficiencies in EPA administration of the UIC program, including its failure to collect specific inspection and enforcement information, which hampered its ability to determine if states were in fact protecting underground source water. U.S. GAO, "Report to Congressional Requesters: EPA Needs to Collect Information and Consistently Conduct Activities to Protect Underground Sources of Drinking Water" (2016). The report concluded that, "EPA has not consistently conducted oversight activities necessary to assess whether state and EPA-managed programs are protecting underground sources of drinking water." *Id.* Overall, EPA's failure to collect information related to compliance and enforcement, and its failure to incorporate state program requirements into federal regulations, has seriously impeded its ability to exercise its full authority to protect underground source water under the SDWA.

¹³ Class II wells receive fluid injection associated with oil and gas production.

E. EPA's Review of California's UIC Program Demonstrates How EPA Can Exercise its Broad Authority under the SDWA to Protect Underground Source Water¹⁴

EPA's close review of California's UIC program suggests that EPA has, at least on some occasions, exercised its broad statutory authority to protect underground source water by taking an active, substantial oversight role over state UIC programs. EPA should take such a robust oversight role with respect to all state UIC programs.

In 2011, EPA audited California's class II UIC program, for which California has had primacy since 1983. U.S. EPA, "EPA's Review of California's Underground Injection Control (UIC) Program" (2011).¹⁵ The audit revealed several deficiencies in the program, and EPA subsequently transmitted several recommendations to California addressing these deficiencies, as well as a request that California submit an action plan addressing the problems. U.S. EPA, "July 2011 Letter to DOGGR" (2011).¹⁶ EPA's request was accompanied by a 490-page report documenting the deficiencies in the California program, as well as recommendations for improvement. U.S. EPA, "Final Report: California Class II Underground Injection Control Program Review" (2011).¹⁷ For example, EPA suggested that California prioritize inspections of wells in rural areas, which were not currently prioritized under California's UIC program. *Id.* at ES-8. The Report criticized the California program for being insufficiently protective of underground source water, (*id.* at 17) and noted that although the program required annual inspections for all injection wells, not all wells were inspected annually in all districts. *Id.* at 22.

¹⁴ Note: So far I have not been able to find statistics on the frequency with which EPA approves/disapproves state UIC programs, or the frequency with which it revokes states' primary enforcement authority.

¹⁵ <https://www.epa.gov/pacific-southwest-media-center/epas-review-californias-underground-injection-control-uic-program>.

¹⁶ <https://www.epa.gov/sites/production/files/2016-05/documents/epa-letter-doggr-w-final-report-2011-07.pdf>.

¹⁷ <https://www3.epa.gov/region9/water/groundwater/uic-pdfs/ca/DoggrClass2UicProgReviewReportJune2011.pdf>.

In 2014, when it became clear that California had made little progress in implementing EPA's recommendations from the 2011 report, EPA sent letters to California requesting information regarding the program's progress. U.S. EPA, "EPA's Review of California's Underground Injection Control (UIC) Program" (2011). EPA subsequently met regularly with California officials to discuss implementation of the class II UIC program and to establish a process for California's assessment of drinking water sources that might be impacted by underground injection. *Id.* Pursuant to these meetings, EPA requested that California submit a UIC Program Revision Plan by February 2015. *Id.*

In March of 2015, California issued orders to well operators to immediately cease injection where state agencies had found that injection wells were potentially impacting water supplies. U.S. EPA, "March 9 Letter to DOGGR" (2015).¹⁸ California then submitted a Program Revision Plan to EPA, and EPA responded with a letter praising California agencies for the progress made in protecting underground source water, and including a "schedule of required activities and deliverables, with target milestones and compliance deadlines" that California was required to meet. *Id.*

EPA's California audit demonstrates that even where a state enjoys "primary enforcement authority" of its underground drinking water sources under the SDWA, the EPA reserves broad authority under the UIC program to review a state's UIC program if EPA deems the program insufficiently protective of underground source water. By taking an aggressive oversight and monitoring role over California's UIC program, EPA exercised its broad statutory authority to protect underground sources of drinking water where a state had failed to do so.

¹⁸ <https://www.epa.gov/sites/production/files/2015-07/documents/cswrcb-uic-dswa-compliance-ltr-2015-03-09.pdf>.

IV. CONCLUSION

Although the states generally have primary authority in administering their UIC programs under the SDWA, the SDWA grants EPA broad authority to protect underground source water. First, the UIC provisions allow EPA to effectively override a state's UIC program if EPA determines that the state's program is not sufficiently protective of underground source water. Second, the SDWA's text and legislative history interpret "endangerment" under the UIC program broadly to require protection of both current and future underground drinking water sources. Third, both the text and legislative history of the UIC program generally prioritize underground source water protection efforts over oil and gas extraction operations, suggesting that when the two uses conflict, protection of source water is to be given priority. Fourth, federal courts have interpreted the UIC provisions broadly to protect both present and future sources of underground drinking water. Finally, although EPA's administration of the UIC program suffers from several serious problems, EPA's close supervision of California's UIC program shows that in some situations EPA has exercised its broad statutory authority to protect underground source water where states have failed to do so.

V. RESEARCH TRAIL

Legislative History (Compiled through ProQuest Legislative Insight)

- H.R. Rep. No. 93-1185 (1974)
- H.R. Rep. No. 95-338 (1977)

Safe Drinking Water Act

- §1421-1424 (the "UIC Provisions")

Federal Regulations

- 42 C.F.R. §144.7(a)
- 42 C.F.R. §146.4(a)-(b)

Federal Cases

- *U.S. v. King*, 660 F.3d 1071, 1079 (9th Cir. 2011)
- *Phillips Petroleum Co. v. U.S. Environmental Protection Agency*, 803 F.2d 545, 560 (10th Cir. 1986)
- *Legal Environmental Assistance Foundation v. EPA*, 118 F.3d 1467, 1474-75 (11th Cir. 1997)

Secondary Sources

- U.S. Government Accountability Office, “Report to Congressional Requesters: EPA Program to Protect Underground Sources from Injection of Fluids Associated with Oil and Gas Production Needs Improvement” (2014) (<http://www.gao.gov/assets/670/664499.pdf>)
- Angela C. Cupas, *The Not-So-Safe Drinking Water Act: Why We Must Regulate Hydraulic Fracturing at the Federal Level* (2009) 33 Wm. & Mary Envtl. L. & Pol’y Rev. 605
- U.S. EPA, “EPA’s Review of California’s Underground Injection Control (UIC) Program” (2011), (<https://www.epa.gov/pacific-southwest-media-center/epas-review-californias-underground-injection-control-uic-program>)
- U.S. EPA, “Introduction to the Underground Injection Control Program” (2003) (<https://cfpub.epa.gov/watertrain/pdf/uic.pdf>)
- U.S. EPA, “Primary Enforcement Authority for the Underground Injection Control Program” (2014), <https://www.epa.gov/uic/primary-enforcement-authority-underground-injection-control-program>
- U.S. EPA, “EPA’s Review of California’s Underground Injection Control (UIC) Program” (2011), <https://www.epa.gov/pacific-southwest-media-center/epas-review-californias-underground-injection-control-uic-program>
- U.S. EPA, “July 2011 Letter to DOGGR” (2011) (<https://www.epa.gov/sites/production/files/2016-05/documents/epa-letter-doggr-w-final-report-2011-07.pdf>)
- U.S. EPA, “March 9 Letter to DOGGR” (2015) (<https://www.epa.gov/sites/production/files/2015-07/documents/cswrcb-uic-dswa-compliance-ltr-2015-03-09.pdf>)
- U.S. EPA, “General Information About Injection Wells” (<https://www.epa.gov/uic/general-information-about-injection-wells>)
- U.S. EPA, “Final Report: California Class II Underground Injection Control Program Review” (2011) (<https://www3.epa.gov/region9/water/groundwater/uic-pdfs/ca/DoggrClass2UicProgReviewReportJune2011.pdf>)
- U.S. GAO, “Report to Congressional Requesters: EPA Needs to Collect Information and Consistently Conduct Activities to Protect Underground Sources of Drinking Water” (2016)